United States
Department of
Agriculture

Forest Service

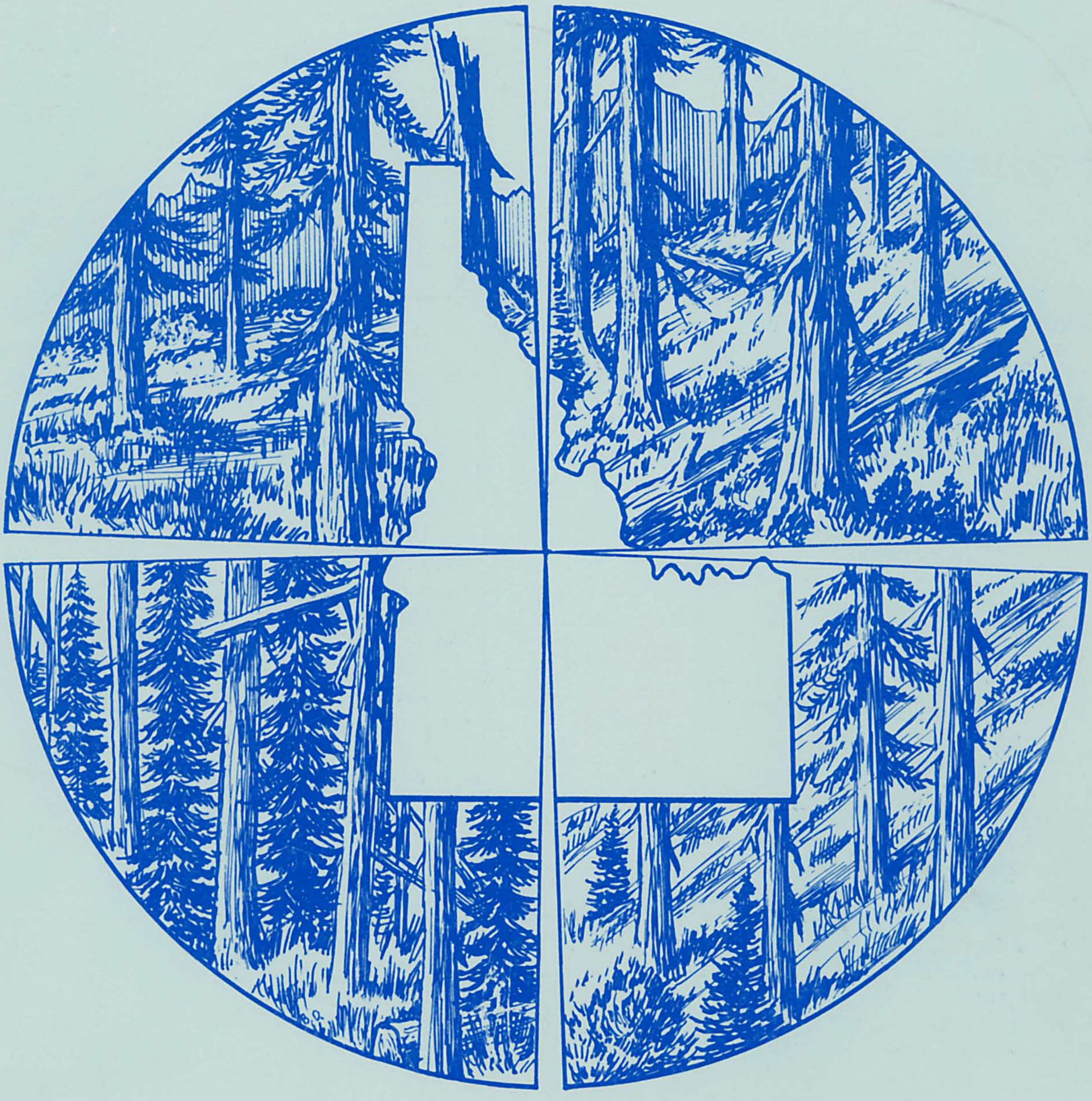
**Intermountain
Forest and Range
Experiment Station**

General Technical
Report INT-114

September 1981

# Forest Habitat Types of Central Idaho

**Robert Steele
Robert D. Pfister
Russell A. Ryker
Jay A. Kittams**



# THE AUTHORS

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# ACKNOWLEDGMENTS

Major financial support for this study was provided by the Intermountain Region of the Forest Service, U.S. Department of Agriculture, through a cooperative agreement with the Intermountain Forest and Range Experiment Station.

Many people have assisted this effort by providing supplementary field data and comment during development of the classification. Dr. Edward Schlatterer (Intermountain Region) donated data taken during his reconnaissance of the Sawtooth, White Cloud, Boulder, and Pioneer Mountains (Schlatterer 1972, unpubl. ref.). Tom Phillips (Sawtooth National Forest) donated vegetation data from the northern division of the Sawtooth National Forest. Ron Hamilton (Salmon National Forest), Ron Wardleigh (Challis National Forest), Mert Lombard (U.S. Department of the Interior, Bureau of Land Management), Dick Cooper and Dave Gruenhagen (Idaho Department of Lands), and Herb Malaney, Dave Van DeGraff, Dell Dodd, and John Kwader (Boise Cascade Corporation) provided site information from their forest inventory data. Vegetative data from studies of plant communities critical to wildlife were provided by Cecil Brown and Dr. Steven Judd (Idaho State Fish and Game Department), Dr. James Peek (University of Idaho), and Ed Linquist (Sawtooth National Recreation Area). George Wendt (Boise National Forest) supplied vegetation data from the land systems inventory.

The interpretations of forest habitat types for wildlife values were developed through contributions from Cecil Brown, Bill Hickey, and Walt Bodie (Idaho State Fish and Game Department), Hadley Roberts (Salmon National Forest), Dean Doell (Boise National Forest), Tom Phillips (Sawtooth National Forest), Dr. Dean Medin (Intermountain Station), and Dr. Edward Schlatterer (Intermountain Region). Richard Johnstone (Bureau of Land Management) donated his data from a 5-month study of nongame wildlife in east-central Idaho. The contributions of these people made it possible to expand the written information on wildlife values in the habitat type descriptions.

Norm Bare (Sawtooth National Forest), Laverne Nelson (Salmon National Forest), Richard Thompson (Payette National Forest), and George Wendt (Boise National Forest) identified parent materials and soil textural classes. James Clayton (Intermountain Station) also assisted with identification of parent materials. John Arnold (Boise Zone Office) supplied information on land systems and their relationship to vegetation. Dr. Walter Megahan (Intermountain Station) provided additional weather data from forest habitats.

Mont E. Lewis (USDA Forest Service, retired) assisted with identification and verification of numerous plant specimens and was especially helpful with the graminoids. Dr. Douglass Henderson (University of Idaho) also helped with some difficult specimens.

David Ondov (Intermountain Station) conducted the computer programing and much of the data processing. Summer assistants Gaylen Jones and Virginia Graham handled numerous laboratory duties and endured many long hours in the field. Dr. Stephen Arno and Bernard Kovalchik (Intermountain Station) provided several helpful reviews in relation to similar work they had completed in Montana. Others who reviewed the manuscript and offered helpful criticism were Frederic D. Johnson (University of Idaho), Dr. Stephen Cooper (University of Nevada), Ron Hamilton (Salmon National Forest), Earle Layser (Bridger-Teton National Forest), Dr. Edward Schlatterer, Al Dahlgreen, and Kermit Larson (Intermountain Region), and Dick Stemple (Boise National Forest).

# RESEARCH SUMMARY

A land-classification system based upon potential natural vegetation is presented for the forests of central Idaho. It is based on reconnaissance sampling of about 800 stands. A hierarchical taxonomic classification of forest sites was developed using the habitat type concept. A total of eight climax series, 64 habitat types, and 55 additional phases of habitat types are defined. A diagnostic key is provided for field identification of the types based on indicator species used in development of the classification.

In addition to site classification, descriptions of mature forest communities are provided with tables to portray the ecological distribution of all species. Potential productivity for timber, climatic characteristics, surface soil characteristics, and distribution maps are also provided for the types. Preliminary implications for natural resource management are provided, based on field observations and current information.

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## INTRODUCTION

The forest vegetation of central Idaho presents a complex array of composition and structure. As a result, people who manage these lands need classifications that reduce this diversity to a reasonable number of units. Technical classifications such as forest cover types have limited applicability beyond the specific use for which they were developed. In contrast, natural classifications not structured for a specific use can have wide application and need not be changed as management objectives change. In the long run, natural classifications can accommodate the greatest number of applications because they reflect existing patterns in nature and avoid arbitrary delineations.

Natural classification of forest ecosystems by habitat type has proven useful in forest management and research; application has expanded rapidly over the last decade (Layser 1974). Similar classification systems have now been developed for about 20 areas in the western United States (Pfister 1976). This widespread use reflects recognition of the need to emphasize management of ecosystems rather than individual resources. Specialists in different resources also recognize the need for a common medium for communication, management decision, and research application.

The habitat type system of site classification was initially developed over a 20-year period by Daubenmire (1952) for forests of northern Idaho and eastern Washington. Later, R. and J. Daubenmire (1968) refined their original system. Since then it has served as a model for classification of other areas. After considering other approaches, the Intermountain Forest and Range Experiment Station and the Intermountain Region of the USDA Forest Service began a cooperative study in 1972 to classify forest habitat types of central Idaho.

This study has been closely coordinated with a similar study initiated in Montana in 1971 (Pfister and others 1977).

### Study Objectives and Scope

The objectives of this study were:

1. To develop a habitat type classification (taxonomy) for the forested lands of central Idaho based on potential climax vegetation.

2. To describe the general geographic, topographic, climatic, and edaphic features of each habitat type. (A glossary is provided in appendix G.)

3. To describe the late seral and climax communities characteristic of each type.

4. To provide information on successional development, timber productivity potential, and other biological observations of importance to forest land managers.

5. To develop and test a reconnaissance-plot method of data gathering that allows development of a habitat type classification in a minimum period of time.

The area covered by this classification extends from the northern edge of the Snake River Plains north to the Salmon-Clearwater divide and from Hells Canyon east to the Montana border (fig. 1). This area of about 16.6 million acres (6.7 million hectares) includes five National Forests and adjacent forest land regardless of ownership. Flood plains dominated by broadleaved trees and minor areas of *Juniperus osteosperma* in the southeast were not included. Likewise, pure stands of *Populus tremuloides* are not part of this classification but are noted at the series level.

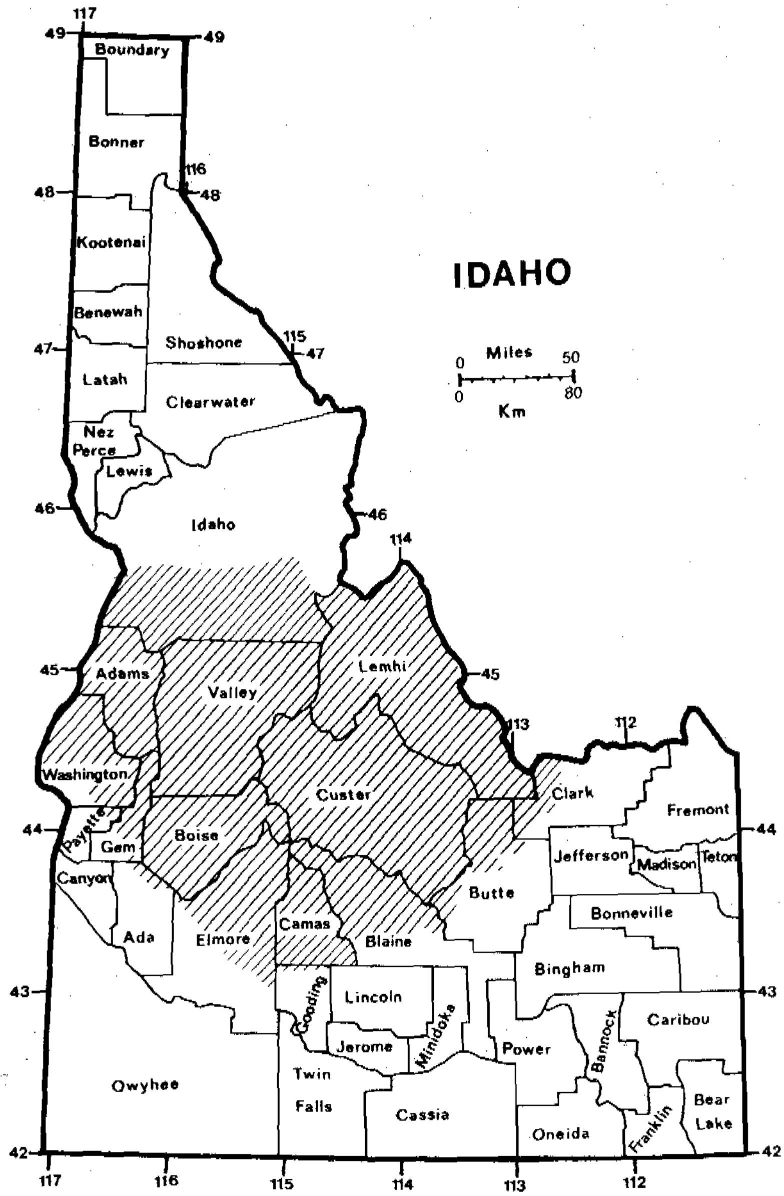



*Figure 1. — The portion of Idaho (hatched area) covered in this study.*

# METHODS

## Field Methods

The fundamental technique for collecting field data was to efficiently sample a full range of environmental conditions in central Idaho forests. Random and systematic sampling procedures were considered inefficient and impractical for this study. Instead we adopted a sampling technique similar to the "subjective, without preconceived bias" method supported by Mueller-Dombois and Ellenberg (1974). This basic philosophy was applied to all three steps of plot location: (1) selecting road transects, (2) selecting stands, and (3) placing the plot within the stand. With this approach, plots were not selected by the probable placement of a stand within any classification or by applicability to specific management problems.

Elevational road transects were selected to reflect the full range of environmental conditions in central Idaho forests. Usually the team leader made note of potential sites as he reconnoitered the transect. Brief stops were made to inspect undergrowth composition; overstory and general undergrowth patterns were observed en route. On the return trip, mature stands that best represented the different kinds of plant communities for that area were selected for sampling.

Plots were located within a homogeneous portion of the stand to provide a representative sample. To do this, the team leader examined the tree canopy from the road. For uneven-aged stands, the largest tree or group of trees in the stand was chosen as the plot center. For even-aged stands, the center of the largest homogeneous expanse of tree canopy was used. Upon reaching the predetermined spot in the stand, the surrounding area was examined to insure that the sample plot would represent the stand. If the sample plot included ecotones, obvious microsites, or severe disturbance, it was relocated to avoid these conditions.

Plot center for a 375-$m^2$ (about one-tenth acre) circular plot was marked with a labeled wooden stake. The plot center was referenced to a roadside feature to enable revisitation during the study.

Trees more than 4.5 ft tall were tallied by 2-inch d.b.h. classes according to species. Trees between 0.5 and 4.5 feet in height were recorded by species in a 50-$m^2$ circular plot.

Amounts of all vascular plant species were estimated by seven canopy-coverage classes (+ = present in stand but not in plot, T = 0-1 percent coverage, 1 = 1-5 percent, 2 = 5-25 percent, 3 = 25-50 percent, 4 = 50-75 percent, 5 = 75-95 percent, 6 = 95-100 percent). For maximum efficiency, these coverages were estimated within the entire 375-$m^2$ plot instead of the usual series of small quadrats (Daubenmire 1959). With practice and coordination among the samplers (including practice layouts within the plot representing areas of 1 percent, 5 percent, and 25 percent), it is possible to visualize and estimate coverage of all the plants by this one method. Accuracy may be less than where coverages are estimated in small quadrats, but the number of stands sampled in a day can be at least doubled, thus providing better sample coverage of the region. Coverage-class values can be used directly in association tables or in ordinations.

All unidentified plants on each plot were collected and preserved for later identification or verification. Many plants in flower were also collected for voucher specimens.

A relatively free-growing tree of each species present was measured for height, age, and diameter in order to estimate site potential by species. Suitable site trees for each species were not always available, especially in the denser stands.

Plot aspect was obtained to the nearest 5 degrees with a compass. Slope (percentage) and tree heights were measured with a clinometer, and altitudes were estimated with a pocket altimeter.

Thicknesses of litter, fermentation, and humus layers were measured at three locations in the plot. Samples of the upper 20 cm (ca. 8 inches) of mineral soil were collected for laboratory analysis of percentage of coarse fraction and pH. Samples of the parent material were also collected when available.

Observations were made on fire history, insect and disease occurrence, animal use, and environmental position of the stand in relation to adjoining stands. This latter observation proved valuable during analysis of relationships between plant community types and environmental gradients.

Pfister and Ryker initiated this study on a part-time basis during 1970 and 1971 by sampling 82 stands on the Boise and Payette National Forests. During the summer of 1972, Steele and Kittams sampled 312 stands on a wide variety of environments in the same two National Forests. These data were combined and provided the basis for a preliminary habitat type classification for that area (Pfister and others 1973, unpubl. ref.)

The following summer (1973), Steele and Kittams sampled 277 stands throughout the Challis, Salmon, and Sawtooth National Forests. These data were combined with previous sampling by Ryker and with data from a study by Schlatterer (1972, unpubl. ref.). From these data, a preliminary classification for the Challis, Salmon, and Sawtooth National Forests (Steele and others 1974, unpubl. ref.) was derived.

Areas where previous data appeared inadequate were sampled in the summer of 1974. Considerable time was also spent examining areas peripheral to central Idaho to obtain additional data on types weakly represented in the study area and to insure future compatability with classifications on forest lands adjacent to central Idaho.

In 1975, the Nezperce National Forest was sampled and a preliminary classification (Steele and others 1976, unpubl. ref.) was made to link the central Idaho classification with that of R. and J. Daubenmire (1968) in northern Idaho. Eastern Idaho and western Wyoming were sampled in 1976, as were additional areas in the Lemhi, Lost River, and Beaverhead Ranges. A preliminary classification (Steele and others 1977, unpubl. ref.) for eastern Idaho and western Wyoming helped categorize some types in east central Idaho. Additional sampling in 1977 was directed mainly toward problem areas in central Idaho. Although all of the above data were considered when finalizing the central Idaho classification, only those data from central Idaho were used in the charts and tables presented herein.

## Office Methods

Development of the classification followed the general procedures outlined below.

1. After each field season we listed prospective habitat types based on our field observations. New situations not conforming to classifications of adjoining areas were briefly described.

2. Voucher specimens of plants were identified and some were sent to other herbariums for verification. Unknown vegetative material was compared with identified flowering specimens. All positive identifications were entered on the field forms. Each species with occurrence in five or more stands was numerically

coded. All plot data were then keypunched for computer processing.

3. Synthesis tables (Mueller-Dombois and Ellenberg 1974) were computer-printed from the data available for our area. Synthesis tables were compiled for each preliminary classification (1973 and 1974) and the review draft (1975) and were updated and revised for the final publication. Stands were arranged according to general similarities of vegetal composition and relationships to existing classifications from adjacent areas. Separate tables were prepared for each series (all stands having the same climax tree species). The synthesis tables were studied in detail and those species that showed consistent differential distributions were underlined. Synthesis tables were rearranged several times to group those stands most similar in overall composition and to segregate groups with consistent differences. The final arrangement provided the formal basis for series, habitat types, and phases.

4. Following the summers of 1972 and 1975, several ordinations (Bray and Curtis 1957) were used to arrange the stands graphically on a quantitative basis of species composition and coverage. Because of the large number of stands involved, plots were grouped by climax tree species (series) prior to ordination. These analyses were used to review the previous stand groupings and the value of certain species as indicators. Occasionally new relationships were suggested. [Analysis of synthesis tables received greater relative emphasis in this study than in a similar concurrent study in Montana (Pfister and others 1977).]

5. Characteristic vegetational parameters for the habitat types and phases were identified, described, and then translated into a key to the habitat types. The key was then applied to all plot data on hand. Type descriptions and/or the key were revised to accommodate individual stand data.

6. Following the previous adjustments, constancy and average cover values were calculated for the important indicator plants. A presence list was prepared for all species represented in at least five stands to allow further evaluation of the distribution of species of interest.

7. Terminology for the types was adjusted to allow direct comparison with R. and J. Daubenmire (1968), Pfister (1972), Cooper (1975), and Pfister and others (1977), and to express the interrelationships of types as clearly as possible. The phase was used to subdivide habitat types based on consistent vegetative differences attributable to apparently minor environmental differences. In some cases, a phase represents a portion of a habitat type with some characteristic of an adjacent habitat type — for example, *Abies lasiocarpa/Vaccinium scoparium* habitat type, *Calamagrostis rubescens* phase. Phases may also distinguish geographic subdivisions of types having very wide distributions — for example *Pseudotsuga menziesii/Calamagrostis rubescens* habitat type, *Pinus ponderosa* phase.

8. Preliminary classifications (Pfister and others 1973, unpubl. ref.; Steele and others 1974, unpubl. ref.) were developed after each of the first two field seasons. The preliminary classifications, including brief descriptions of each type, were presented at training sessions in 1973 and 1974 and immediately put into use on central Idaho National Forests. User evaluations were solicited; among problems revealed were areas that needed more sampling.

9. The two preliminary classifications and 1974 data were combined in a review draft (Steele and others 1975, unpubl. ref.). Technical review and comments from field users in 1975 suggested additional sampling for problem areas. Supplementary data were collected in 1976 and 1977. These were included when developing synthesis tables, redefining types where necessary, rewriting the keys, checking all stands against the classification, and mutually agreeing on the types and phases. About 3 percent of our sample stands did not fit the resulting classification. Many of these evidently represented ecotones, vegetational mosaics, unusual seral communities, very dense stands with little undergrowth, or unique situations. However, it is also possible that some may either represent local habitat types for which we have insufficient data or habitat types that occur mainly in areas not yet studied.

10. A dot map showing the known locations of each habitat type was prepared using data from this study and supplemental data from several cooperators who were using the working classification for other field studies (see acknowledgments). As these distribution maps became more complete, the affinities of a habitat type to certain climatic or geologic influences became more evident and improved our understanding of each classified unit.

11. Each defined habitat type was described including a general discussion of physical environmental features, geographical distribution, key vegetational features, descriptions of phases and basis for their separation, and general implications for management.

12. An understanding of the environmental and vegetative features of each habitat type provided general guidance for many immediate management questions. Some of the more obvious relationships have been pointed out in the habitat type descriptions and discussion section. This classification serves as a foundation for development of further "site-specific" management implications by users of the system and in future research studies.

## Taxonomic Considerations

Most plants were identifiable to species, but a few nonflowering specimens remained unidentified. Voucher collections, representing a few thousand plants, were compiled in the course of stand sampling.

About 2,000 of the better collections were deposited in the herbarium of the Intermountain Forest and Range Experiment Station at Boise. Many of the specimens were identified or verified by Mont E. Lewis (USDA Forest Service, retired) who in turn forwarded some specimens, especially the *Poa* and *Castilleja* spp., to Arthur H. Holmgren and Noel H. Holmgren, respectively, at Utah State University. Also, certain specimens were identified or verified by Dr. Douglass Henderson at the University of Idaho.

Taxonomic nomenclature originally followed Hitchcock and others (1955-69). A condensed edition (Hitchcock and Cronquist 1973) with minor revisions became available during the study and was consulted for the final nomenclature. For example, *Luzula glabrata* was changed to *L. hitchcockii* and *Antennaria rosea* to *A. microphylla.*

Stickney (1972, unpubl. ref.) found that essentially all of the *Vaccinium globulare-V. membranaceum* material collected in Montana would best be labeled *V. globulare.* Based on shape of flowers and leaves, most flowering material observed in central Idaho also best conforms to *V. globulare.* In our study area the strongest divergence from this generality appeared in a few areas from McCall northward where some specimens displayed intermediate characteristics. Thus we have chosen *V. globulare* as the epithet for this complex in central Idaho. Populations farther north, however, require additional investigation.

Special attention is needed to distinguish *Pinus albicaulis* from *P. flexilis. Pinus albicaulis* occurs mostly within the higher elevations of forest growth across central Idaho. *Pinus flexilis* occurs mostly in the eastern one-third of this area near lower timberline and extends to mid-elevations of the forested zone on dry exposed sites. Cones of *P. albicaulis* are somewhat purple and disintegrate on the tree, leaving only detached scales on the ground. Cones of *P. flexilis* turn from green to brown and fall to the ground intact.

In some areas, *Spiraea pyramidata* dominates undergrowth where one would expect to find *S. betulifolia* dominant. *Spiraea pyramidata* is considered by Davis (1952) and Peck (1961) but not Hitchcock and others (1955-69) to represent a hybrid between the dry site *S. betulifolia* and the wet site *S. douglasii.* Our reconnaissance has shown that *S. pyramidata* occupies an intermediate moisture regime between its two supposed progenitors. However, it appears to coexist more readily with *S. betulifolia* than with *S. douglasii.* For this reason *S. pyramidata* is used as an alternate indicator of *S. betulifolia.*

In the western half of central Idaho, *Symphoricarpos oreophilus* and *S. albus* occur together and are easily confused. *S. oreophilus* ranges from good to poor timber sites and is nonrhizomatous, forming individual clumps. One- to three-year-old stems have pith-filled centers. *Symphoricarpos albus* occurs only on good sites and is rhizomatous, forming uniform patches or colonies. Its stems have hollow centers. (To check the stems, slice obliquely with a sharp knife on an unbranched section of the main stem.)

# SYNECOLOGICAL PERSPECTIVE AND TERMINOLOGY

## Definition and Application of Habitat Types

A habitat type is all the land capable of producing similar plant communities at climax (Daubenmire 1968). Because it is the end result of plant succession, the climax plant community reflects the most meaningful integration of the environmental factors affecting vegetation. Each habitat type represents a relatively narrow segment of environmental variation that is delineated by a certain potential for vegetative development. Although one habitat type may support a variety of disturbance-induced or seral plant communities, the ultimate product of vegetative succession anywhere within one habitat type will be similar climax communities. Thus, the habitat type system is a method of site classification that uses the plant community as an integrated indicator of environmental factors as they affect species reproduction, competition, and plant community development.

The climax community type, or association, provides a logical name for the habitat type, for example, *Pseudotsuga menziesii/Calamagrostis rubescens.* The first part of this name is based on the climax tree species, usually the most shade-tolerant tree species adapted to the site. This level of stratification is called the series and encompasses all habitat types having the same dominant tree at climax. The second part of the name is based on the dominant or characteristic undergrowth species in the climax community.

Use of climax community types to name habitat types does not imply that we have an abundance of climax vegetation in the present landscape; actually, most vegetation in the landscape reflects some form of disturbance and various stages of succession towards climax. Furthermore, habitat type names do not imply that we should manage for climax vegetation; in fact, seral species are usually favored for management. In addition, this method does not require the presence of a climax stand to identify the habitat type. It can be identified during most stages of succession by comparing the relative reproductive success of the present tree species with known successional trends and by inspecting the existing undergrowth vegetation. The undergrowth seems to progress more rapidly toward climax than does succession in the tree layer and composition of the undergrowth may become relatively stable soon after the coniferous canopy closes. For stands in very early successional stages, the habitat type can be identified by comparison with adjacent mature stands having similar topographic and edaphic features.

The habitat type classification system has several features that are useful for land and resource management. Habitat types provide a permanent and ecologically based system of land stratification in terms of vegetation potential (Daubenmire 1976). Habitat types also provide a vegetational classification system for near-climax forest communities. Each habitat type encompasses a certain amount of environmental variation, but the variation within a particular habitat type should be less than between types. Thus, plant succession should be predictable for each habitat type and responses to management treatments should be similar on most lands within the same type.

## Some Ecologic and Taxonomic Relationships

Certain analogies with systematic botany (plant taxonomy) are useful for conveying the taxonomic and ecologic nature of habitat types. Habitat types (like plant species) have internal variation, thereby complicating identification of individual stands (like individual plants). Closely related habitat types (like plant species) share many characteristics and are distinguished by relatively few characteristics. Individual stands (like individual plants) may display some modal characteristics and some traits transitional to other types (other species), especially along gradual contacts between major climatic, edaphic, or topographic regimes.

Habitat types have geographic distributions and geographic variation (similar to plant species) that follow regional patterns of floristics, climate, and topography. Near the center of their distribution, they may occupy various soils and topographic positions, but at their extremes, they are often restricted to specific topographic positions and substrates. One can even talk of "endemic" and "disjunct" distribution among habitat types. Thus, amount of area occupied by a habitat type varies geographically although the relative position in zonal or topographic sequences usually remains the same.

In developing habitat type taxonomy, total stand characteristics and differential species are both emphasized during initial formulation of the types. Geographic distribution and amplitudes of types are reevaluated more carefully during validation of the preliminary types. Geographic variation and observed local patterns of boundaries between types are both incorporated in finalizing the classification to minimize arbitrary delineation of types.

Selection of differential species to develop and define the classification system requires consideration of their (1) ecologic amplitude and (2) competitive abilities. In order for a species to dominate at climax, it must have a competitive advantage over those species having overlapping amplitudes. Often, this results in a species becoming the climax dominant on sites that are not optimum for that species growth, but these are the sites unfavorable for potential superior competitors. In general, a species becomes a climax dominant between its own environmental limits and the environmental limits of its superior competitors. Some differential species are selected that do not attain climax dominance. However, these species have the capability to persist in the face of competition, thereby becoming useful as indicator species.

Competitive abilities include reproduction, growth, and tolerance during the entire cycle from birth to death. Most of the coniferous tree species reproduce primarily by seed. If seed production and seedbed conditions are adequate, competition is primarily expressed through relative growth rates, shade tolerance, and longevity. Many species in the undergrowth have the capability for vegetative reproduction that often provides an additional competitive advantage. During later successional stages, vegetative reproduction may be a primary factor in maintaining their competitive position. During earlier successional stages, both seed and vegetative reproduction are important to achieve or maintain dominance.

Intergrades exist in any classification system and one must work between extreme concepts of either (1) narrowly defined types with resultant broad ecotones, or (2) broadly defined types with narrow ecotones. One must also choose between a simple system of a few broad types versus numerous narrowly defined types. Our written description of types portrays modal conditions, emphasizing the central characteristics of the type. On the other hand, the key is written in quite specific terms in order to narrow the ecotones for field identification. Therefore, we have tried to achieve a manageable balance between numbers of classified units, natural variation, and application of the taxonomy to field conditions. Some variation is recognized within all habitat types; where possible, phases are defined to reflect major within-type variation.

Use of this taxonomy in field situations requires some judgment in recognizing ecotones because the sequence of types varies from one geographic area to another. For instance, a type may occupy a broad area between two other types in one geographic area, but may be recognizable only as a narrow ecotonal situation in other geographic areas. Scale of mapping and type of management action will influence how these transitional areas are interpreted and displayed. Transitional areas (ecotones) and "hybrid" stands may create some frustration, but can still be mapped as intergrades, referenced to adjacent types, and managed accordingly.

In discussing the relationship of a habitat type to certain environmental features, we have followed the general polyclimax concept of Tansley (1935). Thus, a **climatic climax** is found on deep, loamy soils of gently undulating relief; an **edaphic climax** develops on "abnormal" soils; and a **topographic climax** reflects compensating effects of aspect, or different microclimatic effect. The ***topoedaphic climax*** is a convenient way to designate deviation from a climatic climax due to combined effects of soils and topography. Some habitat types are exclusively one type of climax, but most can be found in any category, depending on the interaction of specific environmental features. In the mountainous terrain of Idaho, climatic climax sites are scarce; most stands are influenced strongly by topographic features such as aspect and slope or by edaphic features such as loess or volcanic ash deposits.

### Habitat Type Versus Continuum Philosophy

For many years, ecologists who study plant communities have vigorously debated the interpretation of plant-community organization. Although several philosophies have developed, debate often centers on two of them: (1) advocates of typal communities argue that distinct vegetation types develop at climax and reappear across the landscape wherever environmental conditions are similar (Daubenmire 1966); (2) continuum advocates argue that even at climax, vegetation, like environment, varies continuously over the landscape (Cottam and McIntosh 1966; Vogl 1966). Some who accept the typal communities philosophy relate habitat type classifications to the relatively "clear-cut" taxonomic classification of the plant kingdom. Some continuum advocates regard habitat type classifications as an attempt to categorize arbitrary intervals along a complex vegetational continuum. Collier and others (1973) present these contrasting philosophies and advocate an intermediate viewpoint.

While this debate may be of considerable interest academically, it need not preoccupy natural resource managers and field biologists who need a logical, ecologically based environmental classification with which to work. We acknowledge the philosophy that a continuum may exist; nevertheless our objective was to develop a logical classification that reflects the natural patterns found on the landscape. Local conditions that deviate from this classification can still be described in terms of how they differ from typal descriptions presented herein.

## THE PHYSICAL SETTING

### Vegetation and Climate

Many plants in the Coast and Cascade Mountain Ranges of the Pacific Northwest extend eastward to northern and central Idaho because the environment is moderated by a maritime climate during winter and early spring. During this time, precipitation frequently occurs as prolonged, gentle rainfall interspersed with periods of fog and heavy cloud cover, all of which help moderate temperatures and other conditions for plant growth.

In late spring, the maritime influence diminishes and is replaced by a continental climate (Ross and Savage 1967) that contrasts markedly with the maritime influence. Long intervals of cloudless skies cause warm days and cold nights. Small amounts of precipitation are delivered in brief downpours. On steeper terrain much of this moisture is lost through runoff and daily temperature extremes deter plant growth and even survival. As a result, plant species must tolerate greater summer drought and severely fluctuating temperatures.

Idaho's maritime climate can be visualized as an environmental gradient, with a strong maritime influence in the north that decreases southward and disappears in southeastern portions of central Idaho (Ross and Savage 1967). As a result, many northern Idaho plant species reach their environmental limits within the central Idaho study area.

Although plant species in central Idaho are distributed as a continuum, their potential to dominate communities at climax is not. At climax, *Abies grandis* cannot dominate more shade tolerant *Thuja* and *Tsuga* of northern Idaho. Beyond the environmental limits of these two species, the *Abies* readily dominates until it reaches its own environmental limit farther south. Many undergrowth species react in a similar manner. *Spiraea betulifolia* becomes a climax dominant where it surpasses the limits of *Symphoricarpos albus*. *Carex geyeri* can dominate beyond the limits of *Calamagrostis rubescens*. Thus a number of species found in small amounts in the north dominate at climax along segments of the environmental gradient farther south.

The north-south gradient is confounded by other gradients having a simultaneous effect. A west-to-east climatic gradient of diminishing maritime influence also exists. Changing elevations and soils add further complexity. Although the north-south climatic gradient often exerts a dominant influence, species reaction to other factors causes different relative amplitudes in different areas. These influences are given careful consideration in this classification.

### Physiography

The physiographic provinces in central Idaho have been recently classified and described at the section level (Arnold 1975, unpubl. ref.). Physiographic provinces are broad, relatively homogeneous areas that reflect stratification of similar geologic structure, geomorphic history, and climate. Sections are further refinements of a province using similar criteria and provide framework for describing habitat type distributions. The following province and section descriptions are paraphrased from Arnold (1975, unpubl. ref.):

#### NORTHERN ROCKY MOUNTAIN PROVINCE

Most of central Idaho occurs in the Northern Rocky Mountain physiographic province, a complex of high, massive mountains dissected by deep valleys. Large-scale folding or faulting creates the basic topography of this province. In some areas, this structural framework has a parallel arrangement of high ridges and broad valleys. Elsewhere it has produced masses of poorly defined mountain ranges with narrow can-

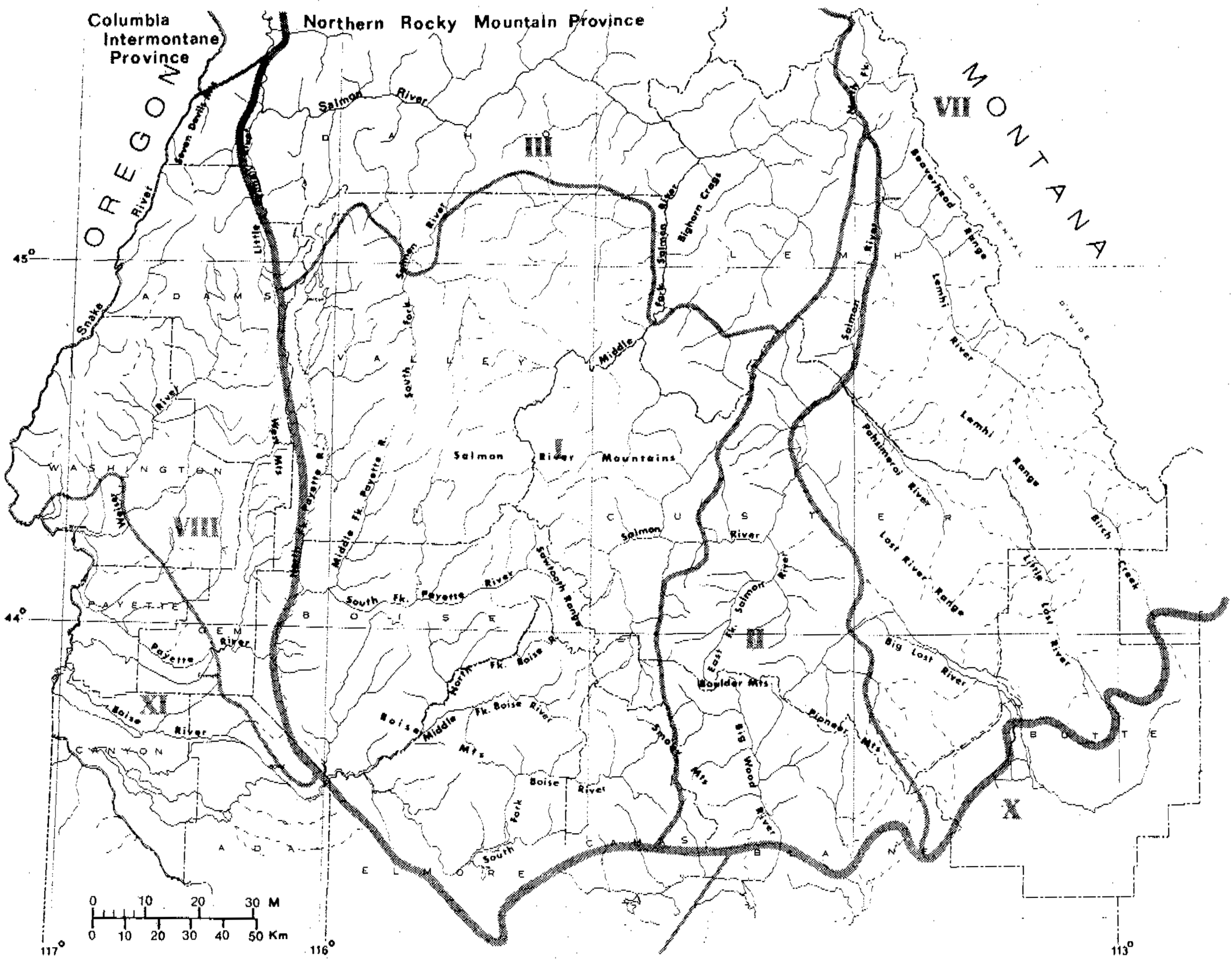



*Figure 2. — Physiographic sections of central Idaho (I - Southern Batholith, II - Challis, III - Salmon Uplands, VII - Open Northern Rockies, VIII - Wallowa-Seven Devils).*

yons. Granitic rocks of the Idaho batholith underlie much of the central Idaho portion of this province. Precambrian rocks occur under northeastern portions of the area. Volcanic rocks occur in some areas and quaternary and tertiary sediments partially fill many valleys (Ross and Savage 1967). In central Idaho, four sections have been recognized in this province (fig. 2).

**Southern Batholith Section (I).** — This section delineates the southern lobe of the Idaho batholith and forms the southwestern border of the Northern Rocky Mountain province (I, fig. 2). The Southern Batholith section is drained to the north chiefly by the South and Middle Forks of the Salmon River and to the south by the Boise and Payette Rivers. Elevations range from about 3,000 feet (910 m) to over 10,000 feet (3 050 m) with a median elevation of about 6,500 feet (1 980 m). While the southern batholith contains several rather flat basins (Long Valley, Stanley, Idaho City, Warm Lake, and Deadwood) and some rolling uplands (Landmark Valley and Bear Valley), most of the area has a mountainous relief between 5,000 and 9,000 feet (1 520 and 2 740 m).

Most of the area is underlaid by granitic rocks of the Idaho batholith with some overlying patches of Challis volcanics (mainly in the northeastern portion), some tertiary and quaternary sediments (mostly in the southwestern portion), and even some basalts. Dike swarms of intermediate volcanic character are also common in some areas.

Soils from granitic parent materials occupy more than 80 percent of the section. Such soils are mostly moderately coarse to coarse textured throughout their profiles and are stony in the strongly glaciated, frost-churned areas, and in some depositional conditions. Most soils are deep except on extremely steep slopes, ridges, and headlands. Soils from parent materials other than granite range from sandy loam to predominantly stony.

This section generally has dry summers and a wet season from November through March. Most precipitation during this period is delivered by cyclonic storms from the Pacific Ocean. Precipitation records show average monthly totals of less than 0.5 inches (1.3 cm) during July and August, the driest months of the year. Average annual precipitation for the entire section is 32.1 inches (81.5 cm) but varies widely; the southern portion averages less than 15 inches (38.1 cm) a year, while some high mountain peaks receive more than 60 inches (152.4 cm).

April 1 snow surveys record the highest water accumulation, amounting to 55 to 60 percent of the total annual precipitation. Slopes are typically bare below an elevation of 4,500 feet (1 370 m) during the winter.

Average annual air temperatures for this section at median elevation are: maximum, 46° F (8° C); mean, 36° F (2° C); minimum, 22° F (-6° C). The maximum-minimum variation is 24° F or 14° C. This relatively wide temperature variation is due partly to reduced influence of Pacific Ocean air masses as compared to more northern sections of the State. Also, elevational relief within the section is about 7,000 feet (2 130 m), which can account for about a 23° F or 12° C temperature difference between the lowest and highest areas at any one time.

**Challis Section (II).** — The Challis section is an elongated area that extends roughly from Hailey to Salmon, Idaho (II, fig. 2). The area is about 40 miles (64 km) wide near Ketchum but only about 5 miles (8 km) wide near Salmon. Its western border meets the Southern Batholith section (I) except in the Salmon River Mountains where it borders the Salmon Uplands section (III). The Challis section is bounded entirely on the east by the Open Northern Rockies section (IV) and on the south by the Columbia Intermontane province.

The area contains the Boulder-Pioneer-White Cloud Ranges and Smokey Mountain Range, and eastern slopes of the Salmon River Mountains. The wide portion to the south is drained mainly by the Big Wood, East Fork of the Salmon, and the headwaters of the Big Lost River. On the north the section is drained by a series of small streams which drain the east slope of the Salmon River Mountains directly into the Main Salmon River. Elevations range from about 4,000 feet (1 220 m) to over 11,500 feet (3 510 m). The median elevation is about 7,400 feet (2 260 m).

Bedrock of the Challis section is largely volcanic and sedimentary in origin. Bedrock is composed of an extensive Paleozoic section, large masses of Tertiary volcanics, and some Precambrian rocks (table 1). Bedrock contains only minor amounts of granitic rock and produces soil and hydrologic features that contrast markedly to those of the granitic area to the west.

Soil characteristics vary widely. Table 1 shows the kinds of soil textures that can be expected of surface soils and textural B horizons when they are present. Most of the soils derived from quartzite, sandstone, welded tuffs, and basalt are stony as well. Soil depths vary with position on slope, steepness, and dissection.

The north-south orientation and its position just east of a major mountain mass strongly affects the climate of this section. The high mountains to the west and a dominant easterly aspect create a rainshadow over much of the section, allowing only peripheral benefits of winter storms from the Pacific Ocean. Average annual precipitation for the entire section is relatively low, only 21.3 inches (54 cm), and ranges from about 7 inches (20 cm) in valleys to over 45 inches (114 cm) on the higher mountains.

Two basic storm patterns affect the Challis section. Low altitude cyclonic storms from the Pacific Ocean move eastward and provide most winter precipitation (November through March). Northern and central portions of the Challis section contain mostly easterly slopes and valleys which lie in an effective rainshadow and do not receive full benefit of these storms. The southern portion, however, contains mountains that help offset this rainshadow effect and so receives more winter precipitation. High altitude convectional storms from the Gulf of Mexico and the California Coast move northward and deliver precipitation to both portions of the section in May and June. Thus the southern portion of the section has two wet seasons, a winter (maritime) and a summer (continental), while the northern and central portions receive only the summer wet season.

As with most snow course data in central Idaho, April 1 surveys in this section generally record the highest water content, amounting to 60 percent of the total annual precipitation. May 1 surveys follow closely, with about 50 percent of the total annual precipitation accumulated in snowpack.

The average annual air temperatures for this section at median elevation are: maximum, 49.9° F (10° C); mean, 33.9° F (1° C); and minimum, 18.0° F (-8° C). The main reason for relatively cool temperatures is the high median elevation (7,400 ft, 2 260 m). The reduced Pacific maritime influence and elevational relief (8,000 ft, 2 440 m) within the section creates a maximum-minimum variation of 31.9° F or 18° C. The range in elevation alone can create a 28° F or 15° C difference from the lowest to highest areas of the section at any one time.

**Salmon Uplands Section (III).** — The Salmon Uplands section is roughly bisected by the Salmon River Canyon (III, fig. 2). About 75 percent of the area drains into the Main Salmon River. Less than 5 percent drains into the Bitterroot River and about 20 percent into the Selway River. The western two-thirds of the area shows remnants of an uplifted land surface. In the eastern one-third, the old land surface is less evident.

Table 1.--Dominant parent materials and related soil textures of the Challis section (from Arnold 1975, unpubl. ref.)

| Parent material | | | Soil texture (Surface/B horizon) |
|---|---|---|---|
| Paleozoics | | | |
| | Phyllites | | Loams/loams |
| | Dolomites | | Silt loams/heavy silt loams |
| | Argillaceous | (siliceous) (calcareous) | Sandy loams/loams |
| | Slates | | Silt loams |
| | Conglomerates | | Loams |
| | Quartzites | | Loamy sands to sandy loams |
| | Limestone | | Silt loams/clay loams |
| | Sandstone | (siliceous) (calcareous) | Sandy loams/sandy clay loams |
| Tertiary volcanics (Challis volcanics) | | | |
| | Latite-andesite flows | (purple to lavender to brownish) | Loams/heavy loams<br>Loams/clay loams |
| | Basalt | (browns to dark grayish) | Loams/clay loams |
| Tuffs | (buff colored) | | Silt loams/silty clay loams |
| | Welded tuffs | | Sandy loams |
| | Rhyolite | | Sandy loams |
| Precambrian rocks - mainly quartzites | | | |

Elevations range from 2,000 to over 10,000 feet (610 to 3 050 m). The canyonlands have relief in excess of 5,000 feet (1 520 m).

The central portion of this area contains mostly granitic rock. "Border Zone" rocks — Precambrian metasediments strongly altered by batholith intrusions — occur on west and north portions of the area. Much of the north-central and east-central portions contain Precambrian metasediments of the Belt Series. Some contacts also occur with Challis volcanics on the south-central and southeastern boundaries and with Columbia River basalts near the northwestern boundary.

Excluding the Salmon River Canyonlands, median elevation of this section is about 7,000 feet (2 130 m). Elevations in these latitudes provide the most southerly evidence of frost churning in the State. In places, frost churning masks remnant deposits from pre-Wisconsin glacial activities.

Near Elk City, at elevations below the frost churning, large areas of Eocene gravel deposits have been mapped. Thick to thin eolian deposits also cover much of the area surrounding Elk City. These deposits rapidly thin south of the Salmon River, but have been identified in the Warm Lake Basin and Bear Valley-Landmark areas to the south. Frost churning has mixed eolian materials to considerable depths in some areas.

Soils are usually deep and overlie highly weathered bedrock materials. Thick soils overlying well-weathered Border Zone rocks high in mica form some of the most massively unstable lands in the area. Thin soils overlying well-weathered granitics are among the highest producers of sediment when subjected to runoff.

Low-altitude storms from the Pacific Coast create wet winters from November through January. High-altitude storms from the Gulf of Mexico and California Coast provide moisture during May and June. The latter wet season often averages greater monthly precipitation than the former; however, the higher elevations probably receive slightly more precipitation during the winter. Annual precipitation for the section averages 31.2 inches (79 cm) and ranges from less than 10 to more than 50 inches (25 to 127 cm), depending on elevation.

Snow surveys record the highest water content on April 1, amounting to 50 to 55 percent of total annual precipitation. Slopes are usually bare below 3,500 feet (1 067 m).

Average annual temperatures for this section at median elevation are: maximum, 50.7° F (10° C); mean, 37.0° F

(3° C); and minimum, 22.4° F (-5° C). Maximum-minimum variation is 28.3° F or 15° C. Elevational relief of about 8,000 feet (2 440 m) can create a 28° F or 15° C) difference at any one time.

**Open Northern Rockies Section (VII).** — The Idaho portion of this section includes the White Knob Mountains, Lost River and Lemhi Ranges, western slopes of the Beaverhead Range, and intervening valleys (VII, fig. 2). It is drained to the southeast primarily by Birch Creek, Little Lost River, and Big Lost River. To the northwest it is drained mostly by the North Fork of the Salmon, Lemhi, and Pahsimeroi Rivers, and Warm Springs Creek, all of which flow into the Salmon River.

The dominant topography in this section is largely the result of fault block activity. Much of the area displays a lineal basin and range topography typical of the Great Basin. The extreme northern portion has characteristics more similar to the faulted and folded mountains to the northeast. Mountain ranges in this section are among the highest in the State, with numerous peaks above 10,000 feet (3 050 m). Intervening valleys are usually broad and gentle, with base elevations about 5,000 feet (1 520 m).

This section as a whole receives the strongest continental weather patterns in central Idaho. The "wet season" here occurs from May to July and provides 30 to 40 percent of the yearly precipitation, which varies from 7 to 11 inches (18 to 28 cm) in the valleys. This wet cycle results mainly from high altitude convectional storms originating over the Gulf of Mexico and California Coast. Most moisture in low altitude cyclonic storms from the Pacific Ocean is intercepted by numerous mountains to the west. Only extreme northern portions of the section receive partial benefit from the winter storm pattern.

Temperatures are typically cool most of the year, with an annual average at median elevation of about 31.8° F (0° C). The broad intermountain valleys collect considerable cold air, creating severe winter conditions. Cold arctic air lying east of the Continental Divide occasionally invades this section and further lowers winter temperatures.

### COLUMBIA INTERMONTANE PROVINCE

The extreme western portion of central Idaho lies in the Columbia Intermontane Province. This area is characterized by numerous sheets of basalt up to several thousand feet thick that surround or abut the higher mountains. These flows occurred periodically from Miocene through Recent, often impounding and then incorporating lake and stream sediments and volcanic ash (Ross and Savage 1967). Part of one section in this province is in west-central Idaho.

**Wallowa-Seven Devils Section (Idaho Portion) (VIII).** — The Idaho portion of this section (VIII, fig. 2) extends north from Boise to Lucile, Idaho. It is bounded on the south mainly by the Malheur-Boise-King Hill section (XI), on the north by the Tri-State Uplands section (IX), and on the east by the Northern Rocky Mountain province (fig. 2). Hells Canyon forms the western border of the Idaho portion of this section. Elevation ranges from less than 1,500 feet (460 m) in Hells Canyon to over 9,000 feet (2 740 m) in the Seven Devils.

In Idaho, the most extensive rock type in this section is the Columbia River basalts. Older rocks include metamorphosed lavas, sediments, and intrusions of Idaho batholith granitics. The Seven Devils, Cuddy, and Hitt Mountains also contain metamorphic volcanics, sedimentary and intrusive rocks. Younger rocks include sediments of the Payette and Idaho formations in the Boise and Emmett areas.

Block faulting and glacial erosion are common topographic features of this section. Lacustrine and alluvial sediments partially fill some of the down-faulted valleys, particularly at New Meadows, Council, and Horseshoe Bend.

In contrast to eastern sections of the State, this section receives a considerable percentage of its annual precipitation in the winter months. The low elevation cyclonic storms from the Pacific Ocean not only still contain much moisture, but also provide considerable cloud cover and high humidity. This results in moist, moderate winters with few temperature extremes. In spring, the Pacific maritime influence diminishes and clear skies, lower humidity, and variable temperatures prevail during the summer.

Average annual precipitation varies from less than 15 inches to over 45 inches (38 to 114 cm), with runoff ranging from 1 to 30 inches (2 to 76 cm). When the Seven Devils Mountains are excluded, precipitation ranges from less than 15 inches to 40 inches (38 to 102 cm) and the runoff ranges from 1 to 20 inches (2 to 51 cm).

## SUCCESSIONAL STATUS OF CENTRAL IDAHO FORESTS

### Fire History

As Wellner (1970) noted, fire has burned over most all forest land in the Northern Rocky Mountains at one time or another. There appears, however, to be a trend for fires to occur more often in some areas than others. Over a 5-year period, the Northern Region experienced about three times as many fires from lightning as the Intermountain Region (Barrows 1951). About 89 percent of these fires in the Northern Region occurred west of the Continental Divide. No correlation was found between number of natural fires and critical burning conditions. Instead, a broad lightning zone was recognized across the Clearwater and Nezperce Forests and eastward. This zone, which lies across the northern edge of the central Idaho study area, had more lightning-caused fires than anywhere else in Idaho or Montana.

Western portions of central Idaho also reveal a higher frequency of stand replacing fires than eastern portions. It was notably more difficult to find near-climax stands of closed forest in western and central portions of the area than in the east. The mesic conditions to the west apparently produce more fuels, which may allow greater spread of individual fires. However, frequency of lightning storms may also differ in the two areas enough to be a major factor.

Wellner (1970) suggests that fire has been a natural part of Northern Rocky Mountain ecosystems. Numerous plants including *Pinus monticola, P. contorta, Larix occidentalis,* and *Ceanothus sanguineus* have adapted so well to the effects of repeated burning that much of their present distribution is strongly related to past fires. *Pinus monticola, Larix occidentalis,* and *Ceanothus sanguineus* occur widely in northern Idaho, but become increasingly restricted southward due to unfavorable climate. However, the abundance of seral *Pinus contorta, Ceanothus velutinus,* and *Pinus ponderosa* is often strongly related to fire history in central Idaho.

Though fire frequency may be less in central Idaho than farther north, stand-replacing fires still occur here. In some cases, conflagrations result from dead foliage of trees killed by insect epidemics (Wellner 1970; Hockaday 1968, unpubl. ref.). In other cases, large fires result from unusually dry weather conditions.

Man has caused many of the fires in the Northern Rocky Mountains. Before the white man came, aborigines burned the vegetation for various reasons (DeVoto 1953). Later, prospectors started fires to expose mineral outcrops (Space 1964; unpubl. ref.) and settlers set fires to improve the range (Smith undated, unpubl. ref.). Many of these fires crept into the forest and burned unchecked until extinguished by fall rains. In recent years, some of the most catastrophic fires in central Idaho have been man-caused. According to Barrows (1961), the Intermountain Region had more man-caused fires than the Northern Region during the same period.

Recent studies indicate that low-intensity ground fires were frequent in some parts of the Northern Rocky Mountains prior to the advent of suppression activities in the early 1900's. On the Bitterroot National Forest in western Montana, mean fire-free intervals ranged from 6 to 41 years in different habitat types (Arno 1976). Fire scars were also evident in many central Idaho sample stands, especially at lower elevations. Thus, the composition of many existing stands may reflect the partial influence of one or more ground fires during the life of the stand. The prevalence of *Pinus ponderosa* on many sites within the *Pseudotsuga menziesii* habitat types may reflect these historic fires.

## Grazing History

Early grazing by cattle and later by sheep have caused considerable destruction to range and soil resources in central Idaho. The most severe depletion was, and apparently still is, on private and public lands. Here free, unregulated use resulted in forage depletion of more than 50 percent and some areas were estimated at over 75 percent depletion (McArdle and others 1936). Most of the range depleted by cattle was nonforest or open forests at lower elevations.

Range depletion by sheep occurred from lower elevations to the ridges and mountain meadows at upper elevations. Perhaps the most severely abused areas were in the foothills of the Weiser River drainage where one early account (Hockaday 1968, unpubl. ref.) notes soil losses up to 1 foot and a great increase in surface rock. Here several mud-rock and debris floods were attributed to severe overgrazing by sheep. The railhead at Ketchum became the largest shipping point for sheep in the United States (Goodwin and Hussey undated, unpubl. ref.). Sheep trailed into Ketchum from all over central Idaho and elsewhere and so badly overcrowded the Sawtooth Valley that it became almost impossible to graze there. Ten to 20 bands of sheep (up to 3,000 per band) could be commonly seen on the hills above Ketchum awaiting shipping. As a result, the Big Wood River drainage and Sawtooth Valley were severely overgrazed.

By 1903, Idaho had 2.6 million sheep (Stewart 1936), a large percentage of which grazed in central Idaho at least part of the year. Because there were no grazing allotments, sheep men would race herds to choice range in the high country each spring and were then forced to graze one drainage all summer because all other range was occupied (Hockaday 1968, unpubl. ref.; Goodwin and Hussey undated, unpubl. ref.).

On the granitic soils in central Idaho, *Carex geyeri* once formed a dominant ground cover on many sites. In hopes of producing a more palatable forage, sheepherders would destroy the *Carex* swards by trailing their flocks over them (Mont Lewis, USDA Forest Service, retired, personal communication). Other times, just the number of animals in the area destroyed the *Carex*. The results did not always produce more forage and many sites were left exposed to erosion. The *Carex* has only partially recovered but *Artemisia* now partly protects many areas. Artificial revegetation on granitic soils has seen only limited success and rates of natural recovery here are extremely slow.

Today, small bands of sheep still graze the upper ridges and meadows. Cattle graze the densely forested land where they find excellent forage near streams, in natural openings, and in openings created by logging. The widespread grazing abuse of the early 1900's has ended and much of the range is recovering at various rates. Localized damage still may occur where animals congregate. New clearcuts seem especially attractive to livestock; trampling of conifer seedlings and disturbance of soils often outweighs the value of consumed forage.

## Logging History

Since arrival of early pioneers, considerable timber has been cut in central Idaho forests. In mineralized areas, prospectors used many logs for construction and fuel and sometimes the land near mining towns was cleared of trees. Early farmers and ranchers often cleared the most fertile forest lands to raise crops and depended on the nearby stands of timber for building materials and fuel. Lumbermen first concentrated on more accessible areas but soon gained access to more remote stands of valuable timber. Access to uncut stands is sought continually so that eventually only very remote areas or those designated for preservation will remain in their natural state. With aerial logging techniques now removing timber once considered impractical to harvest, even small stands of uncut forest may eventually disappear.

Much of the land in central Idaho recovers slowly from logging disturbance, especially in the southern and eastern portions. The clearcut and burn technique of timber management successful farther north has often failed as a tree regeneration method in these areas. Grazing pressure, droughty soils, and low fertility often contribute to the difficulty of reforestation on these sites.

# THE HABITAT TYPE CLASSIFICATION

We defined 51 forest habitat types for central Idaho. This large number reflects the range of climatic, geologic, topographic, and floristic diversity of the study area. The total classification (table 2) includes 13 incidental habitat types. To save space, the term "habitat type" is abbreviated "h.t." ("h.t.'s" plural). Frequently used h.t. names in the text are also abbreviated: The first two letters of the genus and the first two letters of the species of the appropriate overstory and undergrowth species make up the taxonomic abbreviation of each h.t. Scientific names of h.t.'s and their abbreviations are listed in table 2. Scientific, abbreviated, and common names of indicator species are listed in the h.t. field form (appendix F). Common names are not used in the text because local variations may be confusing. Initially, our abbreviations may seem awkward, but professional foresters and biologists easily learn them and accept them as a convenient substitute for common names.

The classification is presented in the following order:

1. Key to the habitat types (fig. 3). — To identify the habitat type, one must first carefully read the provided instructions and definitions of terms used in the key. Identification proceeds from climax series to habitat type, and finally to the phase (where appropriate).

2. Series description. — Some h.t. characteristics are summarized at the series level, rather than repeating similarities in each habitat type description.

3. Habitat type description. — This information summarizes geographic range, vegetation, phases, and general management implications.

Arrangement of the h.t.'s within the keys tends to follow a pattern of moderate to severe environments. Species appearing first in the key tend to have the least ecologic amplitude and the greatest importance as indicators in any given series. Thus at the lower elevations, progression through the keys leads one to increasingly drier h.t.'s and at upper elevations it leads one to increasingly colder types. Occasionally this order deviates when habitat types from different geographic areas are merged into one key. Once familiar with the key, awareness of this sequence can help the user identify sites that are difficult to key out.

**Table 2.--Forest habitat types of Central Idaho**

| ADP Code[1] | Abbreviation | Habitat types and phases: Scientific name | Habitat types and phases: Common name | Page number |
|---|---|---|---|---|
| 000 | | ***PINUS FLEXILIS* SERIES** | | (Refer to Key or Contents) |
| 080 | PIFL/HEKI h.t. | *Pinus flexilis/Hesperochloa kingii* h.t.[2] | limber pine/spikefescue | |
| 050 | PIFL/FEID h.t. | *Pinus flexilis/Festuca idahoensis* h.t. | limber pine/Idaho fescue | |
| 060 | PIFL/CELE h.t. | *Pinus flexilis/Cercocarpus ledifolius* h.t.[2] | limber pine/curl-leaf mountain-mahogany | |
| 070 | PIFL/JUCO h.t. | *Pinus flexilis/Juniperus communis* h.t.[2] | limber pine/common juniper | |
| 100 | | ***PINUS PONDEROSA* SERIES** | | |
| 120 | PIPO/STOC h.t. | *Pinus ponderosa/Stipa occidentalis* h.t. | ponderosa pine/western needlegrass | |
| 130 | PIPO/AGSP h.t. | *Pinus ponderosa/Agropyron spicatum* h.t. | ponderosa pine/bluebunch wheatgrass | |
| 140 | PIPO/FEID h.t. | *Pinus ponderosa/Festuca idahoensis* h.t. | ponderosa pine/Idaho fescue | |
| 160 | PIPO/PUTR h.t. | *Pinus ponderosa/Purshia tridentata* h.t. | ponderosa pine/bitterbrush | |
| 161 | -AGSP phase | -*Agropyron spicatum* phase | -bluebunch wheatgrass phase | |
| 162 | -FEID phase | -*Festuca idahoensis* phase | -Idaho fescue phase | |
| 195 | PIPO/SYOR h.t. | *Pinus ponderosa/Symphoricarpos oreophilus* h.t. | ponderosa pine/mountain snowberry | |
| 170 | PIPO/SYAL h.t. | *Pinus ponderosa.Symphoricarpos albus* h.t. | ponderosa pine/common snowberry | |
| 190 | PIPO/PHMA h.t. | *Pinus ponderosa/Physocarpus malvaceus* h.t.[2] | ponderosa pine/ninebark | |

| ADP Code[1] | Abbreviation | Habitat types and phases: Scientific name | Habitat types and phases: Common name | Page number |
|---|---|---|---|---|
| 200 | | ***PSEUDOTSUGA MENZIESII* SERIES** | | |
| 210 | PSME/AGSP h.t. | *Pseudotsuga menziesii/Agropyron spicatum* h.t. | Douglas-fir/bluebunch wheatgrass | |
| 220 | PSME/FEID h.t. | *Pseudotsuga menziesii/Festuca idahoensis* h.t. | Douglas-fir/Idaho fescue | |
| 221 | -FEID phase | -*Festuca idahoensis* phase | -Idaho fescue phase | |
| 222 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 380 | PSME/SYOR h.t. | *Pseudotsuga menziesii/Symphoricarpos oreophilus* h.t. | Douglas-fir/mountain snowberry | |
| 370 | PSME/ARCO h.t. | *Pseudotsuga menziesii/Arnica cordifolia* h.t. | Douglas-fir/heartleaf arnica | |
| 372 | -ASMI phase | -*Astragalus miser* phase | -weedy milkvetch phase | |
| 371 | -ARCO phase | -*Arnica cordifolia* phase | -heartleaf arnica phase | |
| 360 | PSME/JUCO h.t. | *Pseudotsuga menziesii/Juniperus communis* h.t. | Douglas-fir/common juniper | |
| 330 | PSME/CAGE h.t. | *Pseudotsuga menziesii/Carex geyeri* h.t. | Douglas-fir/elk sedge | |
| 332 | -SYOR phase | -*Symphoricarpos oreophilus* phase | -mountain snowberry phase | |
| 334 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 331 | -CAGE phase | -*Carex geyeri* phase | -elk sedge phase | |
| 395 | PSME/BERE h.t. | *Pseudotsuga menziesii/Berberis repens* h.t. | Douglas-fir/Oregon grape | |
| 397 | -SYOR phase | -*Symphoricarpos oreophilus* phase | -mountain snowberry phase | |
| 398 | -CAGE phase | -*Carex geyeri* phase | -elk sedge phase | |
| 396 | -BERE phase | -*Berberis repens* phase | -Oregon grape phase | |
| 385 | PSME/CELE h.t. | *Pseudotsuga menziesii/Cercocarpus ledifolius* h.t. | Douglas-fir/curl-leaf mountain mahogany | |
| 320 | PSME/CARU h.t. | *Pseudotsuga menziesii/Calamagrostis rubescens* h.t. | Douglas-fir/pinegrass | |
| 325 | -FEID phase | -*Festuca idahoensis* phase | -Idaho fescue phase | |
| 324 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 323 | -CARU phase | -*Calamagrostis rubescens* phase | -pinegrass phase | |
| 375 | PSME/OSCH h.t. | *Pseudotsuga menziesii/Osmorhiza chilensis* h.t. | Douglas-fir/mountain sweet-root | |
| 340 | PSME/SPBE h.t. | *Pseudotsuga menziesii/Spiraea betulifolia* h.t. | Douglas-fir/white spirea | |
| 344 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 343 | -CARU phase | -*Calamagrostis rubescens* phase | -pinegrass phase | |
| 341 | -SPBE phase | -*Spiraea betulifolia* phase | -white spirea phase | |
| 310 | PSME/SYAL h.t. | *Pseudotsuga menziesii/Symphoricarpos albus* h.t. | Douglas-fir/common snowberry | |
| 315 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 313 | -SYAL phase | -*Symphoricarpos albus* phase | -common snowberry phase | |
| 280 | PSME/VAGL h.t. | *Pseudotsuga menziesii/Vaccinium globulare* h.t.[2] | Douglas-fir/blue huckleberry | |
| 390 | PSME/ACGL h.t. | *Pseudotsuga menziesii/Acer glabrum* h.t. | Douglas-fir/mountain maple | |
| 392 | -SYOR phase | -*Symphoricarpos oreophilus* phase | -mountain snowberry phase | |
| 393 | -ACGL phase | -*Acer glabrum* phase | -mountain maple phase | |
| 200 | | ***PSEUDOTSUGA MENZIESII* SERIES Continued** | | |
| 260 | PSME/PHMA h.t. | *Pseudotsuga menziesii/Physocarpus malvaceus* h.t. | Douglas-fir/ninebark | |
| 262 | -CARU phase | -*Calamagrostis rubescens* phase[2] | -pinegrass phase | |
| 264 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 265 | -PSME phase | -*Pseudotsuga menziesii* phase | -Douglas-fir phase | |
| 290 | PSME/LIBO h.t. | *Pseudotsuga menziesii/Linnaea borealis* h.t.[2] | Douglas-fir/twinflower | |
| 250 | PSME/VACA h.t. | *Pseudotsuga menziesii/Vaccinium caespitosum* h.t.[2] | Douglas-fir/dwarf huckleberry | |
| 400 | | ***PICEA ENGELMANNII* SERIES** | | |
| 493 | PIEN/HYRE h.t. | *Picea engelmannii/Hypnum revolutum* h.t. | spruce/hypnum | |
| 440 | PIEN/GATR h.t. | *Picea engelmannii/Galium triflorum* h.t.[2] | spruce/sweetscented bedstraw | |
| 490 | PIEN/CADI h.t. | *Picea engelmannii/Carex disperma* h.t. | spruce/soft leaved sedge | |
| 410 | PIEN/EQAR h.t. | *Picea engelmannii/Equisetum arvense* h.t.[2] | spruce/common horsetail | |
| 500 | | ***ABIES GRANDIS* SERIES** | | |
| 585 | ABGR/CARU h.t. | *Abies grandis/Calamagrostis rubescens* h.t. | grand fir/pinegrass | |
| 505 | ABGR/SPBE h.t. | *Abies grandis/Spiraea betulifolia* h.t. | grand fir/white spirea | |
| 515 | ABGR/VAGL h.t. | *Abies grandis/Vaccinium globulare* h.t. | grand fir/blue huckleberry | |
| 510 | ABGR/XETE h.t. | *Abies grandis/Xerophyllum tenax* h.t.[2] | grand fir/beargrass | |
| 525 | ABGR/ACGL h.t. | *Abies grandis/Acer glabrum* h.t. | grand fir/mountain maple | |
| 527 | -PHMA phase | -*Physocarpus malvaceus* phase | -ninebark phase | |
| 526 | -ACGL phase | -*Acer glabrum* phase | -mountain maple phase | |
| 590 | ABGR/LIBO h.t. | *Abies grandis/Linnaea borealis* h.t. | grand fir/twinflower | |
| 593 | -VAGL phase | -*Vaccinium globulare* phase | -blue huckleberry phase | |
| 592 | -XETE phase | -*Xerophyllum tenax* phase[2] | -beargrass phase | |
| 591 | -LIBO phase | -*Linnaea borealis* phase | -twinflower phase | |
| 580 | ABGR/VACA h.t. | *Abies grandis/Vaccinium caespitosum* h.t. | grand fir/dwarf huckleberry | |
| 511 | ABGR/COOC h.t. | *Abies grandis/Coptis occidentalis* h.t.[2] | grand fir/goldthread | |
| 520 | ABGR/CLUN h.t. | *Abies grandis/Clintonia uniflora* h.t. | grand fir/queencup beadlily | |

| ADP Code[1] | Abbreviation | Habitat types and phases: Scientific name | Habitat types and phases: Common name | Page number |
|---|---|---|---|---|
| 600 | | ***ABIES LASIOCARPA* SERIES** | | |
| 605 | ABLA/CABI h.t. | *Abies lasiocarpa/Caltha biflora* h.t. | subalpine fir/marsh marigold | |
| 650 | ABLA/CACA h.t. | *Abies lasiocarpa/Calamagrostis canadensis* h.t. | subalpine fir/bluejoint | |
| 655 | -LEGL phase | *-Ledum glandulosum* phase | -Labrador tea phase | |
| 654 | -VACA phase | *-Vaccinium caespitosum* phase | -dwarf huckleberry phase | |
| 652 | -LICA phase | *-Ligusticum canbyi* phase | -Canby's ligusticum phase | |
| 651 | -CACA phase | *-Calamagrostis canadensis* phase | -bluejoint phase | |
| 635 | ABLA/STAM h.t. | *Abies lasiocarpa/Streptopus amplexifolius* h.t. | subalpine fir/twisted stalk | |
| 637 | -LICA phase | *-Ligusticum canbyi* phase | -Canby's ligusticum phase | |
| 636 | -STAM phase | *-Streptopus amplexifolius* phase | -twisted stalk phase | |
| 620 | ABLA/CLUN h.t. | *Abies lasiocarpa/Clintonia uniflora* h.t. | subalpine fir/queencup beadlily | |
| 625 | -MEFE phase | *-Menziesia ferruginea* phase[2] | -menziesia phase | |
| 621 | -CLUN phase | *-Clintonia uniflora* phase | -queencup beadlily | |
| 638 | ABLA/COOC h.t. | *Abies lasiocarpa/Coptis occidentalis* h.t.[2] | subalpine fir/goldthread | |
| 670 | ABLA/MEFE h.t. | *Abies lasiocarpa/Menziesia ferruginea* h.t. | subalpine fir/menziesia | |
| 672 | -LUHI phase | *-Luzula hitchcockii* phase[2] | -smooth woodrush phase | |
| 671 | -MEFE phase | *-Menziesia ferruginea* phase | -menziesia phase | |
| 645 | ABLA/ACGL h.t. | *Abies lasiocarpa/Acer glabrum* h.t. | subalpine fir/mountain maple | |
| 640 | ABLA/VACA | *Abies lasiocarpa/Vaccinium caespitosum* h.t. | subalpine fir/dwarf huckleberry | |
| 660 | ABLA/LIBO h.t. | *Abies lasiocarpa/Linnaea borealis* h.t. | subalpine fir/twinflower | |
| 661 | -LIBO phase | *-Linnaea borealis* phase | -twinflower phase | |
| 662 | -XETE phase | *-Xerophyllum tenax* phase[2] | -beargrass phase | |
| 663 | -VASC phase | *-Vaccinium scoparium* phase[2] | -grouse whortleberry phase | |
| 740 | ABLA/ALSI h.t. | *Abies lasiocarpa/Alnus sinuata* h.t.[2] | subalpine fir/Sitka alder | |
| 600 | | ***ABIES LASIOCARPA* SERIES Continued** | | |
| 690 | ABLA/XETE h.t. | *Abies lasiocarpa/Xerophyllum tenax* h.t. | subalpine fir/beargrass | |
| 691 | -VAGL | *-Vaccinium globulare* phase | -blue huckleberry phase | |
| 692 | -VASC phase | *-Vaccinium scoparium* phase | -grouse whortleberry phase | |
| 694 | -LUHI phase | *-Luzula hitchcockii* phase | -smooth woodrush phase | |
| 720 | ABLA/VAGL h.t. | *Abies lasiocarpa/Vaccinium globulare* h.t. | subalpine fir/blue huckleberry | |
| 723 | -VAGL phase | *-Vaccinium globulare* phase | -blue huckleberry phase | |
| 721 | -VASC phase | *-Vaccinium scoparium* phase[2] | -grouse whortleberry phase | |
| 705 | ABLA/SPBE h.t. | *Abies lasiocarpa/Spiraea betulifolia* h.t. | subalpine fir/white spirea | |
| 830 | ABLA/LUHI h.t. | *Abies lasiocarpa/Luzula hitchcockii* h.t. | subalpine fir/smooth woodrush | |
| 831 | -VASC phase | *-Vaccinium scoparium* phase | -grouse whortleberry phase | |
| 833 | -LUHI phase | *-Luzula hitchcockii* phase | -smooth woodrush phase | |
| 730 | ABLA/VASC h.t. | *Abies lasiocarpa/Vaccinium scoparium* h.t. | subalpine fir/grouse whortleberry | |
| 731 | -CARU phase | *-Calamagrostis rubescens* phase | -pinegrass phase | |
| 732 | -VASC phase | *-Vaccinium scoparium phase* | -grouse whortleberry phase | |
| 734 | -PIAL phase | *-Pinus albicaulis* phase | -whitebark pine phase | |
| 750 | ABLA/CARU h.t. | *Abies lasiocarpa/Calamagrostis rubescens* h.t. | subalpine fir/pinegrass h.t. | |
| 790 | ABLA/CAGE h.t. | *Abies lasiocarpa/Carex geyeri* h.t. | subalpine fir/elk sedge h.t. | |
| 791 | -CAGE phase | *-Carex geyeri* phase | -elk sedge phase | |
| 793 | -ARTR phase | *-Artemisia tridentata* phase | -big sagebrush phase | |
| 745 | ABLA/JUCO h.t. | *Abies lasiocarpa/Juniperus communis* h.t. | subalpine fir/common juniper | |
| 810 | ABLA/RIMO h.t. | *Abies lasiocarpa/Ribes montigenum* h.t. | subalpine fir/mountain gooseberry | |
| 780 | ABLA/ARCO h.t. | *Abies lasiocarpa/Arnica cordifolia* h.t. | subalpine fir/heartleaf arnica | |
| 850 | PIAL-ABLA h.t.s. | *Pinus albicaulis-Abies lasiocarpa* h.t.s. | whitebark pine-subalpine fir | |
| 870 | | ***PINUS ALBICAULIS* SERIES** | | |
| 870 | PIAL h.t.s. | *Pinus albicaulis* h.t.s. | whitebark pine | |
| 900 | | ***PINUS CONTORTA* SERIES** | | |
| 920 | PICO/VACA | *Pinus contorta/Vaccinium caespitosum* c.t.[2] | lodgepole pine/dwarf huckleberry | |
| 940 | PICO/VASC | *Pinus contorta/Vaccinium scoparium* c.t.[2] | lodgepole pine/grouse whortleberry | |
| 955 | PICO/CAGE | *Pinus contorta/Carex geyeri* c.t.[2] | lodgepole pine/elk sedge | |
| 905 | PICO/FEID | *Pinus contorta/Festuca idahoensis* h.t. | lodgepole pine/Idaho fescue | |

Total number of habitat types = 64 (includes 13 incidental h.t.'s and 22 h.t.'s with defined phases).
Total number of phases = 55 (includes 7 incidental phases).
Total number of *Pinus contorta* community types = 3.
Total number of categories at lowest level of hierarchy = 100 (includes 20 incidental h.t.'s and phases).

[1] Automatic data processing codes.

[2] Incidental habitat types, phases or community types in central Idaho; not listed in other charts and tables.

| ADP Code[1] | Abbreviation | Habitat types and phases: Scientific name | Habitat types and phases: Common name | Page number |
|---|---|---|---|---|
| 200 | | ***PSEUDOTSUGA MENZIESII* SERIES** | | |
| 210 | PSME/AGSP h.t. | *Pseudotsuga menziesii/Agropyron spicatum* h.t. | Douglas-fir/bluebunch wheatgrass | |
| 220 | PSME/FEID h.t. | *Pseudotsuga menziesii/Festuca idahoensis* h.t. | Douglas-fir/Idaho fescue | |
| 221 | -FEID phase | -*Festuca idahoensis* phase | -Idaho fescue phase | |
| 222 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 380 | PSME/SYOR h.t. | *Pseudotsuga menziesii/Symphoricarpos oreophilus* h.t. | Douglas-fir/mountain snowberry | |
| 370 | PSME/ARCO h.t. | *Pseudotsuga menziesii/Arnica cordifolia* h.t. | Douglas-fir/heartleaf arnica | |
| 372 | -ASMI phase | -*Astragalus miser* phase | -weedy milkvetch phase | |
| 371 | -ARCO phase | -*Arnica cordifolia* phase | -heartleaf arnica phase | |
| 360 | PSME/JUCO h.t. | *Pseudotsuga menziesii/Juniperus communis* h.t. | Douglas-fir/common juniper | |
| 330 | PSME/CAGE h.t. | *Pseudotsuga menziesii/Carex geyeri* h.t. | Douglas-fir/elk sedge | |
| 332 | -SYOR phase | -*Symphoricarpos oreophilus* phase | -mountain snowberry phase | |
| 334 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 331 | -CAGE phase | -*Carex geyeri* phase | -elk sedge phase | |
| 395 | PSME/BERE h.t. | *Pseudotsuga menziesii/Berberis repens* h.t. | Douglas-fir/Oregon grape | |
| 397 | -SYOR phase | -*Symphoricarpos oreophilus* phase | -mountain snowberry phase | |
| 398 | -CAGE phase | -*Carex geyeri* phase | -elk sedge phase | |
| 396 | -BERE phase | -*Berberis repens* phase | -Oregon grape phase | |
| 385 | PSME/CELE h.t. | *Pseudotsuga menziesii/Cercocarpus ledifolius* h.t. | Douglas-fir/curl-leaf mountain mahogany | |
| 320 | PSME/CARU h.t. | *Pseudotsuga menziesii/Calamagrostis rubescens* h.t. | Douglas-fir/pinegrass | |
| 325 | -FEID phase | -*Festuca idahoensis* phase | -Idaho fescue phase | |
| 324 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 323 | -CARU phase | -*Calamagrostis rubescens* phase | -pinegrass phase | |
| 375 | PSME/OSCH h.t. | *Pseudotsuga menziesii/Osmorhiza chilensis* h.t. | Douglas-fir/mountain sweet-root | |
| 340 | PSME/SPBE h.t. | *Pseudotsuga menziesii/Spiraea betulifolia* h.t. | Douglas-fir/white spirea | |
| 344 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 343 | -CARU phase | -*Calamagrostis rubescens* phase | -pinegrass phase | |
| 341 | -SPBE phase | -*Spiraea betulifolia* phase | -white spirea phase | |
| 310 | PSME/SYAL h.t. | *Pseudotsuga menziesii/Symphoricarpos albus* h.t. | Douglas-fir/common snowberry | |
| 315 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 313 | -SYAL phase | -*Symphoricarpos albus* phase | -common snowberry phase | |
| 280 | PSME/VAGL h.t. | *Pseudotsuga menziesii/Vaccinium globulare* h.t.[2] | Douglas-fir/blue huckleberry | |
| 390 | PSME/ACGL h.t. | *Pseudotsuga menziesii/Acer glabrum* h.t. | Douglas-fir/mountain maple | |
| 392 | -SYOR phase | -*Symphoricarpos oreophilus* phase | -mountain snowberry phase | |
| 393 | -ACGL phase | -*Acer glabrum* phase | -mountain maple phase | |
| 200 | | ***PSEUDOTSUGA MENZIESII* SERIES Continued** | | |
| 260 | PSME/PHMA h.t. | *Pseudotsuga menziesii/Physocarpus malvaceus* h.t. | Douglas-fir/ninebark | |
| 262 | -CARU phase | -*Calamagrostis rubescens* phase[2] | -pinegrass phase | |
| 264 | -PIPO phase | -*Pinus ponderosa* phase | -ponderosa pine phase | |
| 265 | -PSME phase | -*Pseudotsuga menziesii* phase | -Douglas-fir phase | |
| 290 | PSME/LIBO h.t. | *Pseudotsuga menziesii/Linnaea borealis* h.t.[2] | Douglas-fir/twinflower | |
| 250 | PSME/VACA h.t. | *Pseudotsuga menziesii/Vaccinium caespitosum* h.t.[2] | Douglas-fir/dwarf huckleberry | |
| 400 | | ***PICEA ENGELMANNII* SERIES** | | |
| 493 | PIEN/HYRE h.t. | *Picea engelmannii/Hypnum revolutum* h.t. | spruce/hypnum | |
| 440 | PIEN/GATR h.t. | *Picea engelmannii/Galium triflorum* h.t.[2] | spruce/sweetscented bedstraw | |
| 490 | PIEN/CADI h.t. | *Picea engelmannii/Carex disperma* h.t. | spruce/soft leaved sedge | |
| 410 | PIEN/EQAR h.t. | *Picea engelmannii/Equisetum arvense* h.t.[2] | spruce/common horsetail | |
| 500 | | ***ABIES GRANDIS* SERIES** | | |
| 585 | ABGR/CARU h.t. | *Abies grandis/Calamagrostis rubescens* h.t. | grand fir/pinegrass | |
| 505 | ABGR/SPBE h.t. | *Abies grandis/Spiraea betulifolia* h.t. | grand fir/white spirea | |
| 515 | ABGR/VAGL h.t. | *Abies grandis/Vaccinium globulare* h.t. | grand fir/blue huckleberry | |
| 510 | ABGR/XETE h.t. | *Abies grandis/Xerophyllum tenax* h.t.[2] | grand fir/beargrass | |
| 525 | ABGR/ACGL h.t. | *Abies grandis/Acer glabrum* h.t. | grand fir/mountain maple | |
| 527 | -PHMA phase | -*Physocarpus malvaceus* phase | -ninebark phase | |
| 526 | -ACGL phase | -*Acer glabrum* phase | -mountain maple phase | |
| 590 | ABGR/LIBO h.t. | *Abies grandis/Linnaea borealis* h.t. | grand fir/twinflower | |
| 593 | -VAGL phase | -*Vaccinium globulare* phase | -blue huckleberry phase | |
| 592 | -XETE phase | -*Xerophyllum tenax* phase[2] | -beargrass phase | |
| 591 | -LIBO phase | -*Linnaea borealis* phase | -twinflower phase | |
| 580 | ABGR/VACA h.t. | *Abies grandis/Vaccinium caespitosum* h.t. | grand fir/dwarf huckleberry | |
| 511 | ABGR/COOC h.t. | *Abies grandis/Coptis occidentalis* h.t.[2] | grand fir/goldthread | |
| 520 | ABGR/CLUN h.t. | *Abies grandis/Clintonia uniflora* h.t. | grand fir/queencup beadlily | |

| ADP Code[1] | Abbreviation | Habitat types and phases: Scientific name | Habitat types and phases: Common name | Page number |
|---|---|---|---|---|
| 600 | | ***ABIES LASIOCARPA* SERIES** | | |
| 605 | ABLA/CABI h.t. | *Abies lasiocarpa/Caltha biflora* h.t. | subalpine fir/marsh marigold | |
| 650 | ABLA/CACA h.t. | *Abies lasiocarpa/Calamagrostis canadensis* h.t. | subalpine fir/bluejoint | |
| 655 | -LEGL phase | -*Ledum glandulosum* phase | -Labrador tea phase | |
| 654 | -VACA phase | -*Vaccinium caespitosum* phase | -dwarf huckleberry phase | |
| 652 | -LICA phase | -*Ligusticum canbyi* phase | -Canby's ligusticum phase | |
| 651 | -CACA phase | -*Calamagrostis canadensis* phase | -bluejoint phase | |
| 635 | ABLA/STAM h.t. | *Abies lasiocarpa/Streptopus amplexifolius* h.t. | subalpine fir/twisted stalk | |
| 637 | -LICA phase | -*Ligusticum canbyi* phase | -Canby's ligusticum phase | |
| 636 | -STAM phase | -*Streptopus amplexifolius* phase | -twisted stalk phase | |
| 620 | ABLA/CLUN h.t. | *Abies lasiocarpa/Clintonia uniflora* h.t. | subalpine fir/queencup beadlily | |
| 625 | -MEFE phase | -*Menziesia ferruginea* phase[2] | -menziesia phase | |
| 621 | -CLUN phase | -*Clintonia uniflora* phase | -queencup beadlily | |
| 638 | ABLA/COOC h.t. | *Abies lasiocarpa/Coptis occidentalis* h.t.[2] | subalpine fir/goldthread | |
| 670 | ABLA/MEFE h.t. | *Abies lasiocarpa/Menziesia ferruginea* h.t. | subalpine fir/menziesia | |
| 672 | -LUHI phase | -*Luzula hitchcockii* phase[2] | -smooth woodrush phase | |
| 671 | -MEFE phase | -*Menziesia ferruginea* phase | -menziesia phase | |
| 645 | ABLA/ACGL h.t. | *Abies lasiocarpa/Acer glabrum* h.t. | subalpine fir/mountain maple | |
| 640 | ABLA/VACA | *Abies lasiocarpa/Vaccinium caespitosum* h.t. | subalpine fir/dwarf huckleberry | |
| 660 | ABLA/LIBO h.t. | *Abies lasiocarpa/Linnaea borealis* h.t. | subalpine fir/twinflower | |
| 661 | -LIBO phase | -*Linnaea borealis* phase | -twinflower phase | |
| 662 | -XETE phase | -*Xerophyllum tenax* phase[2] | -beargrass phase | |
| 663 | -VASC phase | -*Vaccinium scoparium* phase[2] | -grouse whortleberry phase | |
| 740 | ABLA/ALSI h.t. | *Abies lasiocarpa/Alnus sinuata* h.t.[2] | subalpine fir/Sitka alder | |
| 600 | | ***ABIES LASIOCARPA* SERIES Continued** | | |
| 690 | ABLA/XETE h.t. | *Abies lasiocarpa/Xerophyllum tenax* h.t. | subalpine fir/beargrass | |
| 691 | -VAGL | -*Vaccinium globulare* phase | -blue huckleberry phase | |
| 692 | -VASC phase | -*Vaccinium scoparium* phase | -grouse whortleberry phase | |
| 694 | -LUHI phase | -*Luzula hitchcockii* phase | -smooth woodrush phase | |
| 720 | ABLA/VAGL h.t. | *Abies lasiocarpa/Vaccinium globulare* h.t. | subalpine fir/blue huckleberry | |
| 723 | -VAGL phase | -*Vaccinium globulare* phase | -blue huckleberry phase | |
| 721 | -VASC phase | -*Vaccinium scoparium* phase[2] | -grouse whortleberry phase | |
| 705 | ABLA/SPBE h.t. | *Abies lasiocarpa/Spiraea betulifolia* h.t. | subalpine fir/white spirea | |
| 830 | ABLA/LUHI h.t. | *Abies lasiocarpa/Luzula hitchcockii* h.t. | subalpine fir/smooth woodrush | |
| 831 | -VASC phase | -*Vaccinium scoparium* phase | -grouse whortleberry phase | |
| 833 | -LUHI phase | -*Luzula hitchcockii* phase | -smooth woodrush phase | |
| 730 | ABLA/VASC h.t. | *Abies lasiocarpa/Vaccinium scoparium* h.t. | subalpine fir/grouse whortleberry | |
| 731 | -CARU phase | -*Calamagrostis rubescens* phase | -pinegrass phase | |
| 732 | -VASC phase | -*Vaccinium scoparium phase* | -grouse whortleberry phase | |
| 734 | -PIAL phase | -*Pinus albicaulis* phase | -whitebark pine phase | |
| 750 | ABLA/CARU h.t. | *Abies lasiocarpa/Calamagrostis rubescens* h.t. | subalpine fir/pinegrass h.t. | |
| 790 | ABLA/CAGE h.t. | *Abies lasiocarpa/Carex geyeri* h.t. | subalpine fir/elk sedge h.t. | |
| 791 | -CAGE phase | -*Carex geyeri* phase | -elk sedge phase | |
| 793 | -ARTR phase | -*Artemisia tridentata* phase | -big sagebrush phase | |
| 745 | ABLA/JUCO h.t. | *Abies lasiocarpa/Juniperus communis* h.t. | subalpine fir/common juniper | |
| 810 | ABLA/RIMO h.t. | *Abies lasiocarpa/Ribes montigenum* h.t. | subalpine fir/mountain gooseberry | |
| 780 | ABLA/ARCO h.t. | *Abies lasiocarpa/Arnica cordifolia* h.t. | subalpine fir/heartleaf arnica | |
| 850 | PIAL-ABLA h.t.s. | *Pinus albicaulis-Abies lasiocarpa* h.t.s. | whitebark pine-subalpine fir | |
| 870 | | ***PINUS ALBICAULIS* SERIES** | | |
| 870 | PIAL h.t.s. | *Pinus albicaulis* h.t.s. | whitebark pine | |
| 900 | | ***PINUS CONTORTA* SERIES** | | |
| 920 | PICO/VACA | *Pinus contorta/Vaccinium caespitosum* c.t.[2] | lodgepole pine/dwarf huckleberry | |
| 940 | PICO/VASC | *Pinus contorta/Vaccinium scoparium* c.t.[2] | lodgepole pine/grouse whortleberry | |
| 955 | PICO/CAGE | *Pinus contorta/Carex geyeri* c.t.[2] | lodgepole pine/elk sedge | |
| 905 | PICO/FEID | *Pinus contorta/Festuca idahoensis* h.t. | lodgepole pine/Idaho fescue | |

Total number of habitat types = 64 (includes 13 incidental h.t.'s and 22 h.t.'s with defined phases).
Total number of phases = 55 (includes 7 incidental phases).
Total number of *Pinus contorta* community types = 3.
Total number of categories at lowest level of hierarchy = 100 (includes 20 incidental h.t.'s and phases).

[1] Automatic data processing codes.

[2] Incidental habitat types, phases or community types in central Idaho; not listed in other charts and tables.

# Figure 3.-- Key to climax series, habitat types, and phases.

READ THESE INSTRUCTIONS FIRST!

1. Use this key for stands with a mature tree canopy that are not severely disturbed by grazing, logging, forest fire, etc. (If the stand is severely disturbed or in an early successional stage, the habitat type can best be determined by extrapolating from the nearest mature stand occupying a similar site.)

2. Accurately identify and record canopy coverages for all indicator species (appendix F).

3. Check plot data in the field to verify that the plot is representative of the stand as a whole. If not, take another plot.

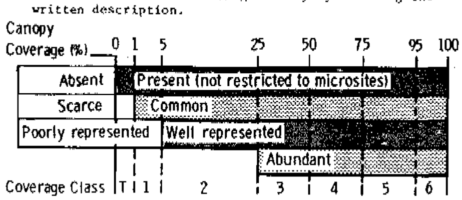
4. Identify the correct potential climax tree species in the SERIES key. (Generally, a tree species is considered reproducing successfully if 10 or more individuals per acre occupy or will occupy the site.)

5. Within the appropriate series, key to HABITAT TYPE by following the key literally. Determine PHASE by matching the stand conditions with the phase descriptions for the type. (The first phase description that fits the stand is the correct one.)

6. Use the definitions diagramed below for canopy coverage terms in the key. If you have difficulty deciding between types, refer to constancy and coverage data (appendix C-1) and the habitat type descriptions.

7. In stands where undergrowth is obviously depauperate (unusually sparse) because of dense shading or duff accumulations, adjust the above definitions to the next lower coverage class (e.g., well represented >1%, common >0%).

8. Remember, the key is NOT the classification! Validate the determination made using the key by checking the written description.




KEY TO CLIMAX SERIES

(Do Not Proceed Until You Have Read The Instructions)

| | |
|---|---|
| 1. Abies grandis present and reproducing more successfully than Abies lasiocarpa | ABIES GRANDIS SERIES (item E) |
| 1. Abies grandis not the indicated climax | 2 |
| 2. Abies lasiocarpa present and reproducing successfully | ABIES LASIOCARPA SERIES (item G) |
| 2. Abies lasiocarpa not the indicated climax | 3 |
| 3. Picea engelmannii present and reproducing successfully | PICEA ENGELMANNII SERIES (item D) |
| 3. Picea engelmannii not the indicated climax | 4 |
| 4. Pinus flexilis a successfully reproducing dominant in old growth stands; often sharing that status with Pseudotsuga | PINUS FLEXILIS SERIES (item A) |
| 4. Pinus flexilis absent or clearly seral | 5 |
| 5. Pseudotsuga menziesii present and reproducing successfully | PSEUDOTSUGA MENZIESII SERIES (item C) |
| 5. Pseudotsuga menziesii not the indicated climax | 6 |
| 6. Pinus albicaulis well represented and reproducing successfully | PINUS ALBICAULIS SERIES (p. 82) |
| 6. Pinus albicaulis not the indicated successional dominant | 7 |
| 7. Pinus contorta dominant and reproducing successfully | PINUS CONTORTA SERIES (item F) |
| 7. Pinus contorta not the indicated successional dominant | 8 |
| 8. Pinus ponderosa present and reproducing successfully | PINUS PONDEROSA SERIES (item B) |
| 8. Pinus ponderosa not the indicated climax | 9 |
| 9. Populus tremuloides the indicated dominant | POPULUS TREMULOIDES SERIES (p. 87) |
| 9. Populus tremuloides not the indicated dominant | Minor forest types (p. 87) |

A. Key to Pinus flexilis Habitat Types

| | |
|---|---|
| 1. Juniperus communis well represented | PINUS FLEXILIS/JUNIPERUS COMMUNIS h.t.* (p. 22) |
| 1. J. communis poorly represented | 2 |
| 2. Cercocarpus ledifolius is well represented | PINUS FLEXILIS/CERCOCARPUS LEDIFOLIUS h.t.* (p. 22) |
| 2. C. ledifolius poorly represented | 3 |
| 3. Festuca idahoensis well represented | PINUS FLEXILIS/FESTUCA IDAHOENSIS h.t. (p. 20) |
| 3. F. idahoensis poorly represented, Hesperochloa kingii (Leucopoa kingii) common | PINUS FLEXILIS/HESPEROCHLOA KINGII* h.t. (p. 20) |

B. Key to Pinus ponderosa Habitat Types

| | |
|---|---|
| 1. Physocarpus malvaceus well represented | PINUS PONDEROSA/PHYSOCARPUS MALVACEUS h.t.* (p. 29) |
| 1. P. malvaceus poorly represented | 2 |
| 2. Symphoricarpos albus well represented | PINUS PONDEROSA/SYMPHORICARPOS ALBUS H.T. (p. 28) |
| 2. S. albus poorly represented | 3 |
| 3. Symphoricarpos oreophilus or Prunus virginiana well represented | PINUS PONDEROSA/SYMPHORICARPOS OREOPHILUS h.t. (p. 27) |
| 3. S. oreophilus and P. virginiana poorly represented | 4 |
| 4. Purshia tridentata well represented | PINUS PONDEROSA/PURSHIA TRIDENTATA h.t. (p. 26) |
| 4a. Festuca idahoensis well represented | FESTUCA IDAHOENSIS phase |
| 4b. F. idahoensis poorly represented | AGROPYRON SPICATUM phase |
| 4. P. tridentata poorly represented | 5 |
| 5. Festuca idahoensis well represented | PINUS PONDEROSA/FESTUCA IDAHOENSIS h.t. (p. 25) |
| 5. F. idahoensis poorly represented | 6 |
| 6. Agropyron spicatum well represented on sites in good condition | PINUS PONDEROSA/AGROPYRON SPICATUM h.t. (p. 24) |
| 6. A. spicatum poorly represented on sites in good condition and Stipa spp. well represented | PINUS PONDEROSA/STIPA OCCIDENTALIS h.t. (p. 24) |

*h.t.s and phases incidental to central Idaho and omitted from charts and tables.

## C. Key to Pseudotsuga menziesii Habitat Types

1. Vaccinium caespitosum common . . . . . PSEUDOTSUGA MENZIESII/VACCINIUM CAESPITOSUM h.t.* (p. 46)
1. V. caespitosum scarce . . . . . 2

 2. Linnaea borealis common . . . . . PSEUDOTSUGA MENZIESII/LINNAEA BOREALIS h.t.* (p. 46)
 2. L. borealis scarce . . . . . 3

3. Physocarpus malvaceus and/or Holodiscus discolor well represented . . . PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS h.t. (p. 44)
 3a. Pinus ponderosa present or potentially present
  a. Calmagrostis rubescens and/or Carex geyeri dominant; Physocarpus forming only a broken, patchy cover . . . . . CALAMAGROSTIS RUBESCENS phase*
  b. Not as above . . . . . PINUS PONDEROSA phase
 3b. P. ponderosa absent and unable to establish . . . . . PSEUDOTSUGA MENZIESII phase
3. P. malvaceus and H. discolor poorly represented . . . . . 4

 4. Acer glabrum well represented . . . . . PSEUDOTSUGA MENZIESII/ACER GLABRUM h.t. (p. 43)
  4a. Penstemon wilcoxii and/or Clematis columbiana usually present; sites mainly west of the Big Wood River . . . . . ACER GLABRUM phase
  4b. Pinus flexilis usually present, sites mainly east of the Big Wood River . . . . . SYMPHORICARPOS OREOPHILUS phase
 4. A. glabrum poorly represented . . . . . 5

5. Vaccinium globulare or Xerophyllum tenax well represented . . . . . PSEUDOTSUGA MENZIESII/VACCINIUM GLOBULARE h.t.* (p. 43)
5. V. globulare and X. tenax poorly represented . . . . . 6

 6. Symphoricarpos albus well represented . . . . . PSEUDOTSUGA MENZIESII/SYMPHORICARPOS ALBUS h.t. (p. 42)
  6a. Pinus ponderosa present or potentially present . . . . . PINUS PONDEROSA phase
  6b. P. ponderosa absent and unable to establish . . . . . SYMPHORICARPOS ALBUS phase
 6. S. albus poorly represented . . . . . 7

7. Spiraea betulifolia or S. pyramidata well represented . . . . . PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA h.t. (p. 40)
 7a. Pinus ponderosa present or potentially present . . . . . PINUS PONDEROSA phase
 7b. Calamagrostis rubescens well represented . . . . . CALAMAGROSTIS RUBESCENS phase
 7c. Not as above in 7a or 7b . . . . . SPIRAEA BETULIFOLIA phase
7. S betulifolia and S. pyramidata poorly represented . . . . . 8

 8. Osmorhiza chilensis well represented . . . . . PSEUDOTSUGA MENZIESII/OSMORHIZA CHILENSIS h.t. (p. 40)
 8. O. chilensis poorly represented . . . . . 9

9. Calamagrostis rubescens well represented . . . . . PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS h.t. (p. 38)
 9a. Pinus ponderosa present or potentially present . . . . . PINUS PONDEROSA phase
 9b. P. ponderosa absent and unable to establish; Festuca iahoensis well represented . . . . . FESTUCA IDAHOENSIS phase
 9c. Not as above in 9a or 9b . . . . . CALAMAGROSTIS RUBESCENS phase
9. C. rubescens poorly represented . . . . . 10

 10. Cercocarpus ledifolius well represented and the indicated climax dominant shrub . . . . . PSEUDOTSUGA MENZIESII/CERCOCARPUS LEDIFOLIUS h.t. (p. 38)
 10. C. ledifolius poorly represented or seral . . . . . 11

11. Berberis repens well represented . . . . . PSEUDOTSUGA MENZIESII/BERBERIS REPENS h.t. (p. 36)
 11a. Carex geyeri abundant . . . . . CAREX GEYERI phase
 11b. C. geyeri not abundant, Symphoricarpos oreophilus abundant, stands never achieving closed canopies . . . . . SYMPHORICARPOS OREOPHILUS phase
 11c. S. oreophilus not abundant, stands eventually achieving closed canopies . . . . . BERBERIS REPENS phase
11. B. repens poorly represented . . . . . 12

 12. Carex geyeri well represented . . . . . PSEUDOTSUGA MENZIESII/CAREX GEYERI h.t. (p. 35)
  12a. Pinus ponderosa present or potentially present . . . . . PINUS PONDEROSA phase
  12b. P. ponderosa absent and unable to establish; Symphoricarpos oreophilus or Artemisia tridentata well represented . . . . . SYMPHORICARPOS OREOPHILUS phase
  12c. Not as above in 12a or 12b . . . . . CAREX GEYERI phase
 12. C. geyeri poorly represented . . . . . 13

13. Juniperus communis well represented . . . . . PSEUDOTSUGA MENZIESII/JUNIPERUS COMMUNIS h.t. (p. 34)
13. J. communis poorly represented . . . . . 14

 14. Arnica cordifolia or Astragalus miser well represented or a dominant forb of normally depauperate undergrowths . . . . . PSEUDOTSUGA MENZIESII/ARNICA CORDIFOLIA h.t. (p. 33)
  14a. Arnica cordifolia well represented . . . . . ARNICA CORDIFOLIA phase
  14b. A. cordifolia poorly represented; Astragalus miser well represented . . . . . ASTRAGALUS MISER phase
 14. A. cordifolia and A. miser poorly represented or not a dominant forb . . . . . 15

15. Symphoricarpos oreophilus, Ribes cereum or Prunus virginiana well represented . . . . . PSEUDOTSUGA MENZIESII/SYMPHORICARPOS OREOPHILUS h.t. (p. 32)
15. S. oreophilus, R. cereum and P. virginiana poorly represented . . . 16

 16. Festuca idahoensis well represented . . . . . PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS h.t. (p. 31)
  16a. Pinus ponderosa present . . . . . PINUS PONDEROSA phase
  16b. P. ponderosa absent . . . . . FESTUCA IDAHOENSIS phase
 16. F. idahoensis poorly represented; Agropyron spicatum or Melica bulbosa well represented on sites in good condition . . . . . PSEUDOTSUGA MENZIESII/AGROPYRON SPICATUM h.t. (p. 30)

## D. Key to Picea engelmannii Habitat Types

1. Equisetum arvense abundant . . . . . PICEA ENGELMANNII/EQUISETUM ARVENSE h.t.* (p. 49)
1. E. arvense not abundant . . . . . 2

 2. Carex disperma well represented . . . . . PICEA ENGELMANNII/CAREX DISPERMA h.t. (p. 47)
 2. C. disperma poorly represented . . . . . 3

3. Galium triflorum, Actaea rubra or Streptopus amplexifolius common either individually or collectively . . . . . PICEA ENGELMANNII/GALIUM TRIFLORUM h.t.* (p. 47)
3. Not as above, Hypnum revolutum (a prostrate moss) well represented . . . . PICEA ENGELMANNII/HYPNUM REVOLUTUM h.t. (p. 47)

*h.t.s and phases incidental to central Idaho and omitted from charts and tables.

## E. Key to *Abies grandis* Habitat Types

| | |
|---|---|
| 1. *Clintonia uniflora* present | ABIES GRANDIS/CLINTONIA UNIFLORA h.t. (p. 58) |
| 1. *C. uniflora* absent | 2 |
| 2. *Coptis occidentalis* common | ABIES GRANDIS/COPTIS OCCIDENTALIS h.t.* (p. 58) |
| 2. *C. occidentalis* scarce | 3 |
| 3. *Vaccinium caespitosum* common | ABIES GRANDIS/VACCINIUM CAESPITOSUM h.t. (p. 56) |
| 3. *V. caespitosum* scarce | 4 |
| 4. *Linnaea borealis* common | ABIES GRANDIS/LINNAEA BOREALIS h.t. (p. 54) |
| 4a. *Xerophyllum tenax* common | .XEROPHYLLUM TENAX phase* |
| 4b. *X. tenax* scarce; *Vaccinium globulare* well represented | .VACCINIUM GLOBULARE phase |
| 4c. Not as above in 4a or 4b | .LINNAEA BOREALIS phase |
| 4. *L. borealis* scarce | 5 |
| 5. *Acer glabrum*, *Physocarpus malvaceus* or *Holodiscus discolor* well represented. If only common then *Adenocaulon bicolor* or *Disporum trachycarpum* present | ABIES GRANDIS/ACER GLABRUM h.t. (p. 54) |
| 5a. *Acer glabrum* well represented; if only common then at least more prevalent than *Physocarpus* and *Holodiscus* | ACER GLABRUM phase |
| 5b. *A. glabrum* poorly represented and less prevalent than *Physocarpus* and *Holodiscus* | PHYSOCARPUS MALVACEUS phase |
| 5. Not as above | 6 |
| 6. *Xerophyllum tenax* well represented | ABIES GRANDIS/XEROPHYLLUM TENAX h.t. * (p. 53) |
| 6. *X. tenax* poorly represented | 7 |
| 7. *Vaccinium globulare* well represented | ABIES GRANDIS/VACCINIUM GLOBULARE h.t. (p. 52) |
| 7. *V. globulare* poorly represented | 8 |
| 8. *Spiraea betulifolia* or *Lathyrus nevadensis* well represented | ABIES GRANDIS/SPIRAEA BETULIFOLIA h.t. (p. 52) |
| 8. *S. betulifolia* and *L. nevadensis* poorly represented; *Calamagrostis rubescens* well represented | ABIES GRANDIS/CALAMAGROSTIS RUBESCENS h.t. (p. 50) |

## F. Key to *Pinus contorta* communities

| | |
|---|---|
| 1. *Calamagrostis canadensis* or *Ledum glandulosum* well represented | ABIES LASIOCARPA/CALAMAGROTIS CANADENSIS h.t. (p. 61) |
| 1. *C. canadensis* and *L. glandulosum* poorly represented | 2 |
| 2. *Streptopus amplexifolius*, *Senecio triangularis*, *Ligusticum canbyi* or *Trautvetteria caroliniensis* well represented either individually or collectively | ABIES LASIOCARPA/STREPTOPUS AMPLEXIFOLIUS h.t. (p. 61) |
| 2. Not as above | 3 |
| 3. *Clintonia uniflora* present | ABIES LASIOCARPA/CLINTONIA UNIFLORA h.t. (p. 61) |
| 3. *C. uniflora* absent | 4 |
| 4. *Coptis occidentalis* common | ABIES LASIOCARPA/COPTIS OCCIDENTALIS h.t.* (p. 65) or ABIES GRANDIS/COPTIS OCCIDENTALIS h.t.* (p. 58) |
| 4. *C. occidentalis* scarce | 5 |
| 5. *Menziesia ferruginea* well represented | ABIES LASIOCARPA/MENZIESIA FERRUGINEA h.t.(p. 66) |
| 5. *M. ferruginea* poorly represented | 6 |
| 6. *Vaccinium caespitosum* common | PINUS CONTORTA/VACCINIUM CAESPITOSUM c.t. (p. 84) |
| 6. *V. caespitosum* scarce | 7 |
| 7. *Linnaea borealis* common | ABIES LASIOCARPA/LINNAEA BOREALIS h.t. (p. 68) or ABIES GRANDIS/LINNAEA BOREALIS h.t. (p. 54) |
| 7. *L. borealis* scarce | 8 |
| 8. *Alnus sinuata* well represented | ABIES LASIOCARPA/ALNUS SINUATA h.t.* (p. 69) |
| 8. *A. sinuata* poorly represented | 9 |
| 9. *Xerophyllum tenax* well represented | ABIES LASIOCARPA/XEROPHYLLUM TENAX h.t. (p. 69) or ABIES GRANDIS/XEROPHYLLUM TENAX h.t. (p. 53) |
| 9. *X. tenax* poorly represented | 10 |
| 10. *Vaccinium globulare* well represented | ABIES LASIOCARPA/VACCIMIUM GLOBULARE h.t. (p. 70) or ABIES GRANDIS/VACCINIUM GLOBULARE h.t. (p. 52) |
| 10. *V. globulare* poorly represented | 11 |
| 11. *Spiraea betulifolia* well represented | ABIES LASIOCARPA/SPIRAEA BETULIFOLIA h.t. (p. 72) or PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA h.t. (p. 40) |
| 11. *S. betulifolia* poorly represented | 12 |
| 12. *Luzula hitchcockii* common | ABIES LASIOCARPA/LUZULA HITCHCOCKII h.t. (p. 72) |
| 12. *L. hitchcockii* scarce | 13 |
| 13. *Vaccinium scoparium* well represented | PINUS CONTORTA/VACCINIUM SCOPARIUM c.t. (p. 85) |
| 13. *V. scoparium* poorly represented | 14 |
| 14. *Calamagrostis rubescens* well represented | ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS h.t. (p. 76) or PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS h.t. (p. 38) |
| 14. *C. rubescens* poorly represented | 15 |
| 15. *Carex geyeri* well represented | PINUS CONTORTA/CAREX GEYERI c.t. (p. 85) |
| 15. *C. geyeri* poorly represented | 16 |
| 16. *Juniperus communis* well represented | ABIES LASIOCARPA/JUNIPERUS COMMUNIS h.t. (p. 78) or PSEUDOTSUGA MENZIESII/JUNIPERUS COMMUNIS h.t. (p. 34) |
| 16. *J. communis* poorly represented | 17 |
| 17. *Arnica cordifolia* well represented or the dominant forb of normally depauperate undergrowths | ABIES LASIOCARPA/ARNICA CORDIFOLIA h.t. (p. 79) or PSEUDOTSUGA MENZIESII/ARNICA CORDIFOLIA h.t. (p. 33) |
| 17. Not as above; *Festuca idahoensis* common | PINUS CONTORTA/FESTUCA IDAHOENSIS h.t. (p. 85) |

*h.t.s and phases incidental to central Idaho and omitted from charts and tables

## G. Key to Abies lasiocarpa Habitat Types

| | |
|---|---|
| 1. Caltha biflora common | ABIES LASIOCARPA/CALTHA BIFLORA h.t. (p. 59) |
| 1. C. biflora scarce | 2 |
| 2. Equisetum arvense abundant | PICEA ENGELMANNII/EQUISETUM ARVENSE h.t.* (p. 49) |
| 2. E. arvense not abundant | 3 |
| 3. Carex disperma well represented | PICEA ENGELMANNII/CAREX DISPERMA h.t. (p. 47) |
| 3. C. disperma poorly represented | 4 |
| 4. Calamagrostis canadensis or Ledum glandulosum well represented | ABIES LASIOCARPA/CALAMAGROSTIS CANADENSIS h.t. (p. 61) |
| 4a. Ledum glandulosum well represented | LEDUM GLANDULOSUM phase |
| 4b. Not as above in 4a; Vaccinium caespitosum common | VACCINIUM CAESPITOSUM phase |
| 4c. Not as above in 4a or 4b; Ligusticum canbyi or Trautvetteria caroliniensis present | LIGUSTICUM CANBYI phase |
| 4d. Not as above in 4a, 4b, or 4c | CALAMAGROSTIS CANADENSIS phase |
| 4. C. canadensis and L. glandulosum poorly represented | 5 |
| 5. Streptopus amplexifolius, Senecio triangularis, Ligusticum canbyi or Trautvetteria caroliniensis well represented either individually or collectively | ABIES LASIOCARPA/STREPTOPUS AMPLEXIFOLIUS h.t. (p. 61) |
| 5a. Ligusticum canbyi or Trautvetteria caroliniensis present | LIGUSTICUM CANBYI phase |
| 5b. L. canbyi and T. caroliniensis absent | STREPTOPUS AMPLEXIFOLIUS phase |
| 5. Not as above | 6 |
| 6. Clintonia uniflora present | ABIES LASIOCARPA/CLINTONIA UNIFLORA h.t. (p. 65) |
| 6a. Menziesia ferruginea well represented | MENZIESIA FERRUGINEA phase* |
| 6b. M. ferruginea poorly represented | CLINTONIA UNIFLORA phase |
| 6. C. uniflora absent | 7 |
| 7. Coptis occidentalis common | ABIES LASIOCARPA/COPTIS OCCIDENTALIS h.t.* (p. 65) |
| 7. C. occidentalis scarce | 8 |
| 8. Menziesia ferruginea well represented | ABIES LASIOCARPA/MENZIESIA FERRUGINEA h.t. (p. 65) |
| 8a. Luzula hitchcockii common | LUZULA HITCHCOCKII phase* |
| 8b. L. hitchcockii scarce | MENZIESIA FERRUGINEA phase |
| 8. M. ferruginea poorly represented | 9 |
| 9. Acer glabrum well represented | ABIES LASIOCARPA/ACER GLABRUM h.t. (p. 67) |
| 9. A. glabrum poorly represented | 10 |
| 10. Vaccinium caespitosum common | ABIES LASIOCARA/VACCINIUM CAESPITOSUM h.t. (p. 67) |
| 10. V. caespitosum scarce | 11 |
| 11. Linnaea borealis common | ABIES LASIOCARPA/LINNAEA BOREALIS h.t. (p. 68) |
| 11a. Xerophyllum tenax well represented | XEROPHYLLUM TENAX phase* |
| 11b. X. tenax poorly represented; Vaccinium scoparium well represented | VACCINIUM SCOPARIUM phase* |
| 11c. Not as above in 11a or 11b | LINNAEA BOREALIS phase |
| 11. L. borealis scarce | 12 |
| 12. Alnus sinuata well represented | ABIES LASIOCARPA/ALNUS SINUATA h.t.* (p. 69) |
| 12. A. sinuata poorly represented | 13 |
| 13. Xerophyllum tenax well represented | ABIES LASIOCARPA/XEROPHYLLUM TENAX h.t. (p. 69) |
| 13a. Vaccinium globulare or Spiraea betulifolia well represented | VACCINIUM GLOBULARE phase |
| 13b. Not as above in 13a; Luzula hitchcockii common | LUZULA HITCHCOCKII phase |
| 13c. Not as above in 13a or 13b; Vaccinium scoparium usually abundant | VACCINIUM SCOPARIUM phase* |
| 13. X. tenax poorly represented | 14 |
| 14. Vaccinium globulare well represented | ABIES LASIOCARPA/VACCINIUM GLOBULARE h.t. (p. 70) |
| 14a. Vaccinium scoparium abundant | VACCINIUM SCOPARIUM phase* |
| 14b. V. scoparium not abundant | VACCINIUM GLOBULARE phase |
| 14. V. globulare poorly represented | 15 |
| 15. Spiraea betulifolia well represented | ABIES LASIOCARPA/SPIRAEA BETULIFOLIA h.t. (p. 72) |
| 15. S. betulifolia poorly represented | 16 |
| 16. Luzula hitchcockii common | ABIES LASIOCARPA/LUZULA HITCHCOCKII h.t. (p. 72) |
| 16a. Vaccinium scoparium well represented | VACCINIUM SCOPARIUM phase |
| 16b. Not as above in 16a, Luzula hitchcockii well represented | LUZULA HITCHCOCKII phase |
| 16c. Not as above in 16a or 16b | 22 |
| 16. L. hitchcockii scarce | 17 |
| 17. Vaccinium scoparium well represented | ABIES LASIOCARPA/VACCINIUM SCOPARIUM h.t. (p. 74) |
| 17a. Calamagrostis rubescens well represented | CALAMAGROSTIS RUBESCENS phase |
| 17b. Not as above in 17a; Pinus albicaulis well represented | PINUS ALBICAULIS phase |
| 17c. Not as above in 17a or 17b | VACCINIUM SCOPARIUM phase |
| 17. V. scoparium poorly represented | 18 |
| 18. Calamagrostis rubescens well represented | ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS h.t. (p. 76) |
| 18. C. rubescens poorly represented | 19 |
| 19. Carex geyeri well represented | ABIES LASIOCARPA/CAREX GEYERI h.t. (p. 76) |
| 19a. Artemisia tridentata well represented | ARTEMISIA TRIDENTATA phase |
| 19b. A. tridentata poorly represented | CAREX GEYERI phase |
| 19. C. geyeri poorly represented | 20 |
| 20. Juniperus communis well represented | ABIES LASIOCARPA/JUNIPERUS COMMUNIS h.t. (p. 78) |
| 20. J. communis poorly represented | 21 |
| 21. Ribes montigenum well represented or the dominant plant of normally depauperate undergrowths | ABIES LASIOCARPA/RIBES MONTIGENUM h.t.(p. 79) |
| 21. Not as above | 22 |
| 22. Arnica cordifolia well represented or a dominant forb of normally depauperate undergrowths | ABIES LASIOCARPA/ARNICA CORDIFOLIA h.t. (p. 79) |
| 22. Not as above; Pinus albicaulis usually well represented and Abies lasiocarpa often stunted | PINUS ALBICAULIS - ABIES LASIOCARPA h.t (p. 80) |

*h.t.s and phases incidental to central Idaho and omitted from charts and tables

Users of the classification should remember that not all series and habitat types occur in one area. In fact, a major floristic division occurs between the western and eastern portions of central Idaho. Figures 4 and 5 depict the general zonational sequence in these two areas at the series level.

## *Pinus flexilis* Series

**Distribution.**—*Pinus flexilis* is primarily restricted to the continental climate of the Challis and Open Northern Rockies sections (fig. 2). Small populations were found on the Lost River, Lemhi, and Beaverhead Ranges. Other small populations were seen near the towns of Mackay, Ketchum, Challis, and Clayton. Isolated occurrences were confirmed from southwest of Cobalt (Ron Hamilton, Salmon National Forest, personal communication) and the Little Salmon River Canyon (Frederic D. Johnson, Univ. of Idaho, personal communication). *Pinus flexilis* also occupies certain volcanic substrates near Craters of the Moon National Monument (Eggler 1941). However, the extensive populations mapped by Little (1971) elsewhere in central Idaho could not be confirmed.

The *Pinus flexilis* series frequently occurs below the lower limits of *Pseudotsuga* forest. It also appears on exposed rocky slopes within the *Pseudotsuga* zone. In both cases, these are the driest forested sites in the area.

**Vegetation.**—*Pinus flexilis* is the only tree present or, more often, is a climax codominant with *Pseudotsuga*. In the latter case, neither species appears capable of outcompeting the other. Undergrowths usually resemble the adjacent nonforest communities dominated by *Hesperochloa kingii, Festuca idahoensis,* or *Cercocarpus ledifolius*.

**Soil.**—The *Pinus flexilis* series shows its best development on calcareous soils of the Lemhi and Lost River Ranges. Where sampled, these soils are gravelly silt loams to very gravelly loams. Exposed soil or surface rock seldom exceed 30 percent coverage. Litter depths on the better sites averaged only 3 cm.

**Productivity/Management.**—*Pinus flexilis* sites have little potential for producing timber. Regeneration of both *Pinus* and *Pseudotsuga* is sporadic and growth rates and stockability are low. In most cases, resources for grazing and wildlife outweigh other values.

**Other studies.**—Habitats dominated by *P. flexilis* have been described in Montana (Pfister and others 1977), in Wyoming (Reed 1969; Despain 1973; Wirsing 1973; Cooper 1975), and in Utah (Ellison 1954; Ream 1964; Henderson and others 1976, unpubl. ref.).

### *PINUS FLEXILIS/HESPEROCHLOA KINGII* H.T. (*PIFL/HEKI*; LIMBER PINE/SPIKEFESCUE)

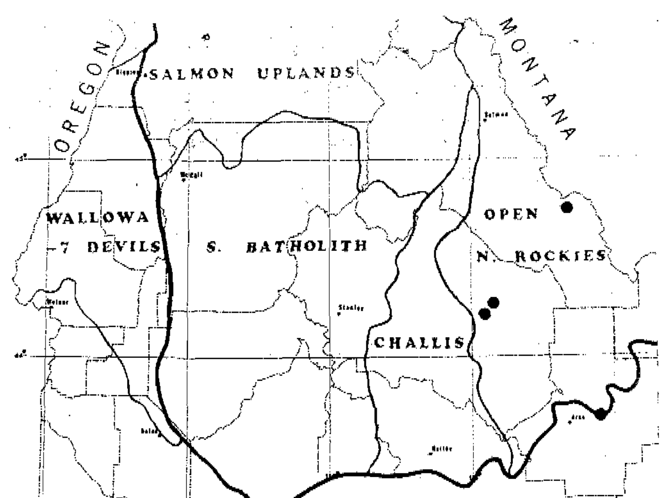
**Distribution.**—*PIFL/HEKI* is an incidental h.t. in the southern end of the Lemhi and Beaverhead Ranges. From here it extends eastward, appearing sporadically in extreme southern Montana and becoming more common in Wyoming. In central Idaho *PIFL/HEKI* normally occupies severe, windy, south-facing sites. Here, it borders nonforest communities at 7,800 to 8,800 feet (2 380 to 2 680 m) in areas that have *Abies* or *Picea* on north slopes.

**Vegetation.**—Widely spaced *Pinus flexilis* with various amounts of *Pseudotsuga* dominate a bunchgrass undergrowth. Stands generally resemble an open forest or savanna with *Hesperochloa kingii* and (usually) *Agropyron spicatum* as codominant grasses.

**Productivity/Management.**— Grazing by livestock is usually light. Slopes are usually steep and the livestock prefer adjacent flats and meadows. Although generally underutilized, forage production is low. Mule deer use is frequent but light.

**Other studies.**— This h.t. occurs in southeastern Wyoming (Wirsing 1973) and in western Wyoming (Steele and others 1979, unpubl. ref.). Pfister and others (1977) note that the portion of their *Pinus flexilis/Agropyron spicatum* h.t. in southern Montana is similar to *PIFL/HEKI*.

### *PINUS FLEXILIS/FESTUCA IDAHOENSIS* H.T. (*PIFL/FEID*; LIMBER PINE/IDAHO FESCUE)




**Distribution.**—This minor h.t. occurs in the Open Northern Rockies section near lower limits of the forested zone at 6,600 to 8,300 feet (2 010 to 2 530 m) in elevation. It occupies various cool, dry aspects that usually border sagebrush-grass communities containing *Festuca idahoensis*. Adjacent moister sites are usually *Pseudotsuga* forest.

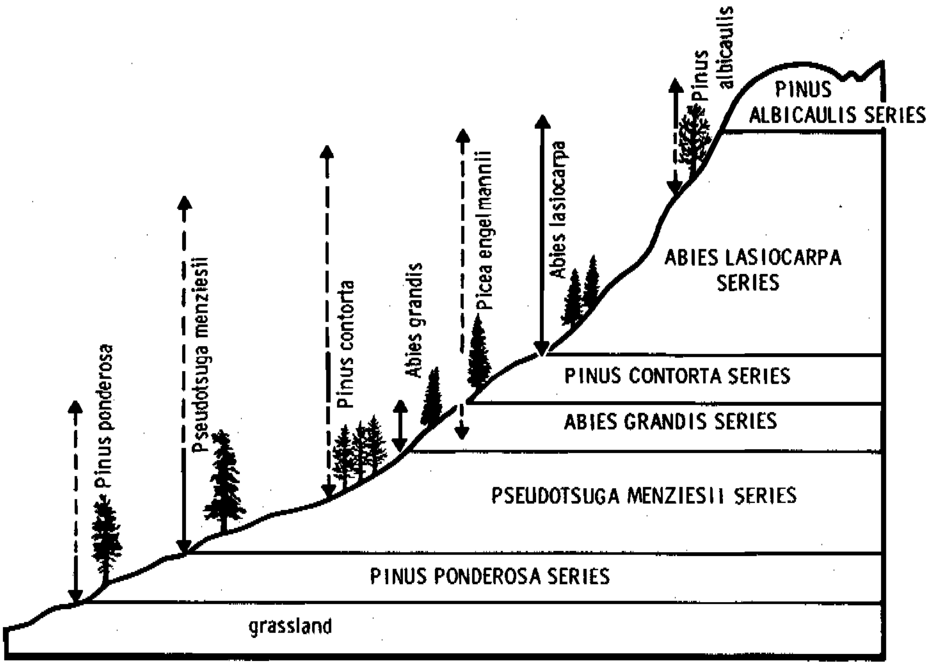



*Figure 4. — General distribution of forest trees in west-central Idaho. Arrows show the relative elevational range of each species; solid portion of the arrow indicates where a species is the potential climax, dashed portion shows where it is seral.*

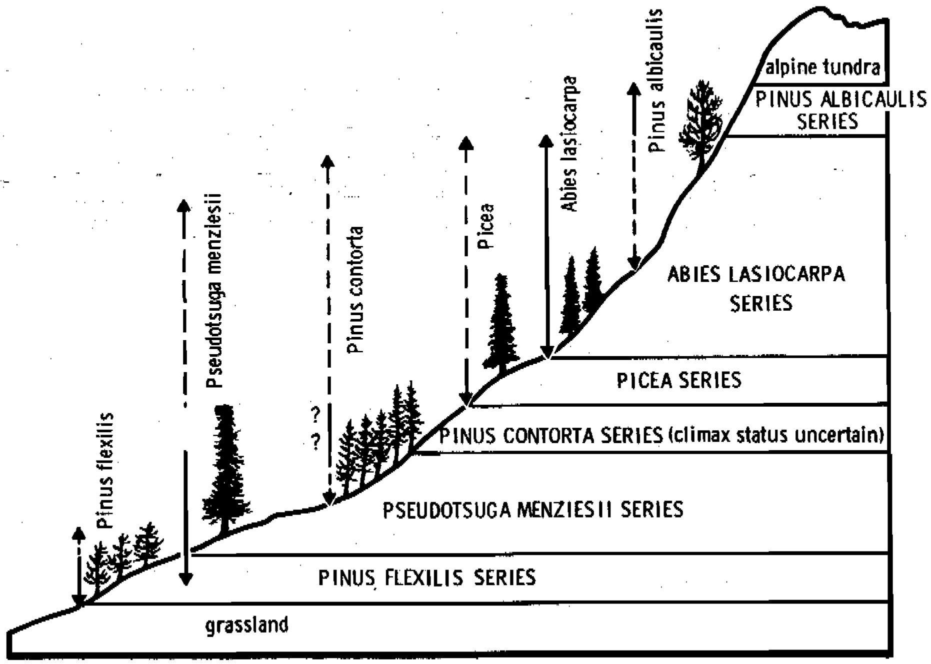



*Figure 5. — General distribution of forest trees in east-central Idaho. Arrows show the relative elevational range of each species; solid portion of the arrow indicates where a species is the potential climax, dashed portion shows where it is seral.*

**Vegetation.**—Bunchgrasses and numerous forbs dominate beneath open stands of *Pinus flexilis* and *Pseudotsuga. Festuca idahoensis* may codominate with either *Agropyron spicatum* or *Hesperochloa kingii.* Occasionally *Artemisia tridentata* ssp. *vaseyana* is conspicuous, but other shrubs occur only in minor amounts.

**Fire.**—Fire frequency seems quite low in this h.t. Fires that do occur here apparently have low intensity and cause little damage to larger trees. Most of the grasses and forbs quickly regenerate from underground organs.

**Productivity/Management.**—Cattle make moderate use of this h.t., apparently with little damage to the site. Elk and bighorn sheep find important winter forage here and mule deer use these sites for cover.

**Other studies.**—In Montana, Pfister and others (1977) recognized two phases of this h.t. In central Idaho, only the *Festuca idahoensis* phase was found and it appears comparable to that described in Montana. Small amounts of *PIFL/FEID* also occur in western Wyoming (Steele and others 1979, unpubl. ref.).

### *PINUS FLEXILIS/CERCOCARPUS LEDIFOLIUS* H.T. (*PIFL/CELE;* LIMBER PINE/CURL-LEAF MOUNTAIN-MAHOGANY)

**Distribution.**—This incidental h.t. ranges from eastern central Idaho to the Wyoming border and southward to the Wasatch Mountains of northern Utah. It ranges from 7,000 to 8,400 feet (2 130 to 2 560 m) where it usually occupies southerly aspects and merges with *Cercocarpus* dominated communities at lower timberline.

**Vegetation.**—Open stands of *Pinus flexilis,* often with *Pseudotsuga,* dominate a layer of *Cercocarpus. Juniperus scopulorum* may be present in various amounts and *Berberis repens* and *Symphoricarpos oreophilus* are also common. The most common grasses are *Hesperochloa kingii* and *Agropyron spicatum.*

**Productivity/Management.**—Existing trees have their greatest value as a source of food and shelter for wildlife. The *Cercocarpus* provides big game with important browse and winter protection but may limit production of forbs and grasses.

**Other studies.**—*PIFL/CELE* also occurs in northern Utah and adjacent Idaho (Henderson and others 1976, unpubl. ref.) and in eastern Idaho (Steele and others 1979, unpubl. ref.).

### *PINUS FLEXILIS/JUNIPERUS COMMUNIS* H.T. (*PIFL/JUCO;* LIMBER PINE/COMMON JUNIPER)

**Distribution.**—This incidental h.t. occurs sporadically from the Lost River and Lemhi Mountains to south central Montana and western Wyoming. It was found from 8,000 to 9,200 feet (2 440 to 2 800 m) on severe southerly to westerly aspects where *Pseudotsuga* forest occurs on more favorable adjacent sites.

**Vegetation.**—Open stands of *Pinus flexilis* and *Pseudotsuga* codominate scattered patches of *Juniperus communis* (fig. 6). Forbs are normally sparse, with *Astragalus miser* being the most common. Many calcareous surface rocks often cover much of the site.

**Productivity/Management.**—Livestock use is very light, due to the difficult accessibility and poor forage. Mule deer and possibly bighorn sheep apparently make use of these sites.

**Other studies.**—Pfister and others (1977) describe this h.t. in Montana where it is more common than in central Idaho. Steele and others (1979, unpubl. ref.) describe it in western Wyoming.

## *Pinus ponderosa* Series

**Distribution.**—In northwestern portions of central Idaho, *Pinus ponderosa* forms climax stands that border grasslands and also is a common seral tree on many other forest sites. To the south and east, the country becomes drier and the minimum moisture required for pine establishment occurs at increasingly higher elevations. Here, pine gradually becomes scarce because of cold temperatures. Eastern limits of the *Pinus ponderosa* series lie near the eastern boundaries of the Southern Batholith and Salmon Uplands sections with minor extensions into drainages of the North Fork of the Salmon River.

**Vegetation.**—Usually *Pinus ponderosa* is the only tree in this series, but occasionally *Populus tremuloides* is also found. Drier sites have undergrowth vegetation typical of adjacent nonforest communities. Moister sites have undergrowth similar to part of the *Pseudotsuga menziesii* series.

Typical dominants of adjacent nonforest include *Agropyron spicatum, Artemisia tridentata, Purshia tridentata,* and *Symphoricarpos oreophilus.* Dominants common also in the *Pseudotsuga* series are mainly *Symphoricarpos albus* and *Physocarpus malvaceus.*

**Soil.**—Most soils in the *Pinus ponderosa* series are derived from granitics, basalt, or andesite. Habitat types in this series show little overall relationship to parent material (appendix D) although local distribution patterns may be evident. Soils derived from granitics and andesite are mostly sandy loams to loamy sands, some of which are also gravelly. Those from basalt range from silty clay-loam to loam. Soil pH ranges from 5.0 to 6.8, with most samples between 5.5 and 6.5. No correlation between pH and h.t. was evident.

**Fire.**—Fire has had minor effects on vegetation within this series. Although most sites contain some charcoal, fire scars suggest lightning strikes on a few trees, coupled with slowly creeping fires that kill only the smaller trees. Grasses, forbs, and most shrubs

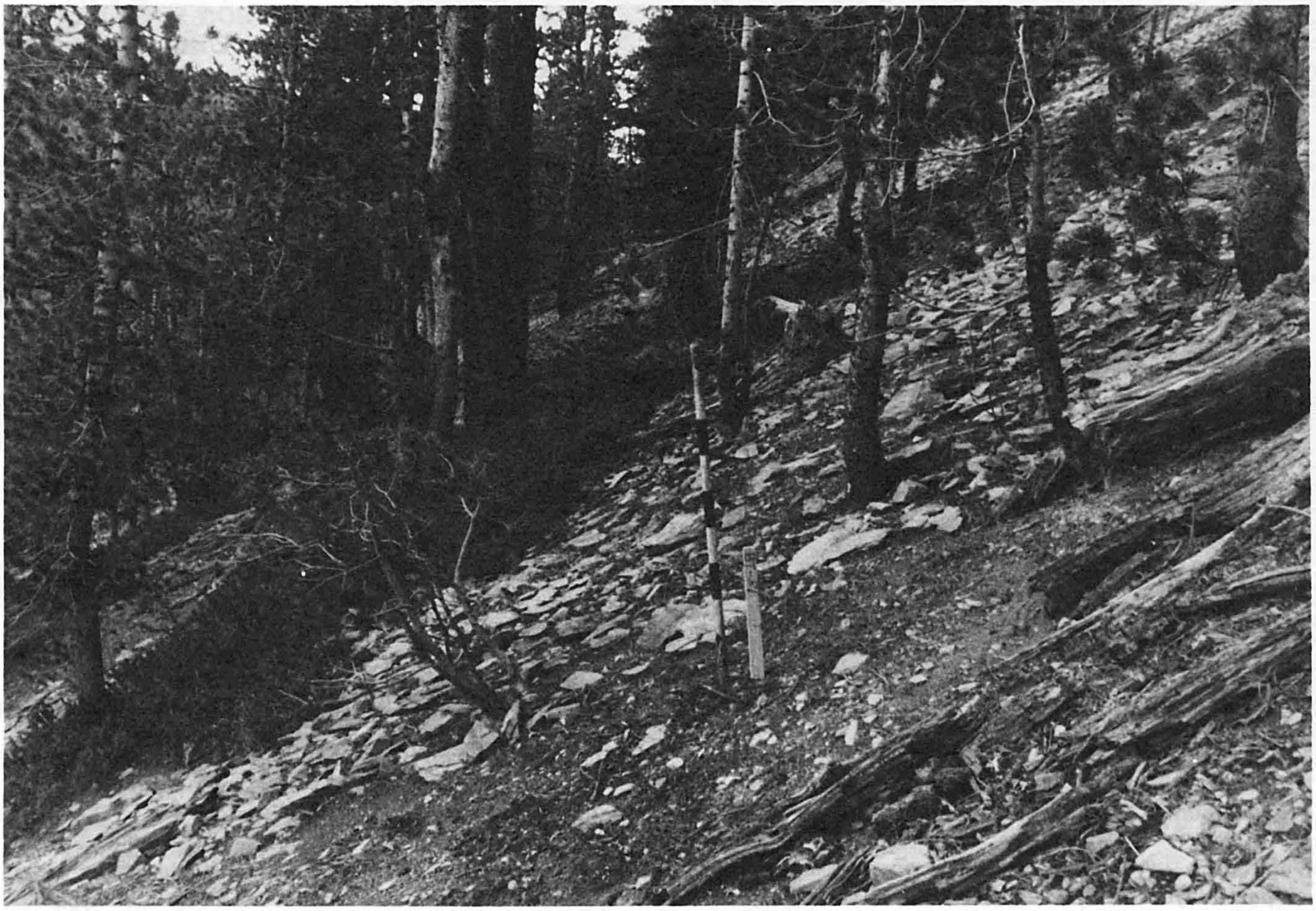


*Figure 6. — Pinus flexilis/Juniperus communis h.t. on a westerly exposure h.t. in the Lemhi Mountains northeast of Patterson, Idaho (9,200 feet [2 800 m] elevation).* Pinus flexilis *and scattered* Pseudotsuga menziesii *dominate the stand.* Juniperus communis *forms scattered patches in a very depauperate undergrowth.*

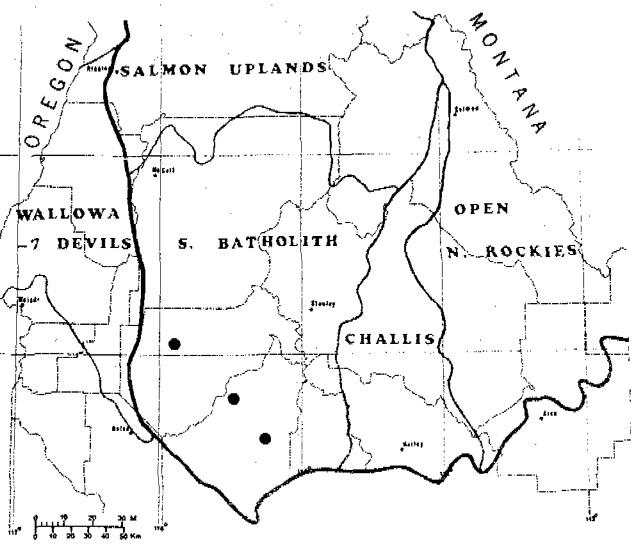
regenerate quickly from underground organs. Most fires in this series apparently occurred more than 60 years ago. The recent reduction in fire may be credited to control efforts, but continued grazing has also maintained low levels of light fuels on these sites.

**Productivity/Management.**—The *Pinus ponderosa* series reflects some of the least productive timberland in the area. Because no other conifer is successful here, the existing trees must be managed prudently to maintain a tree cover. Tree regeneration is sometimes sporadic and may coincide with periodic burning or years of higher moisture. Forage value for grazing often outweighs other values of these sites. Most undergrowth consists of dry-site shrubs and grasses which grow well beneath open canopies of pine. These plants can produce considerable forage most years, but recovery from overuse often requires several years or even decades.

Trees in most stands of this series appeared free of disease. Dwarf mistletoe *(Arceuthobium* spp.) was observed in 15 percent of the stands. It was about equally distributed in all h.t.'s except where *Stipa* dominated the undergrowth and probably it would be found there too if more stands were sampled. The sporadic but widespread occurrence of mistletoe in central Idaho contrasts markedly with findings of other studies. In northern Idaho and eastern Washington, R. and J. Daubenmire (1968) noted widespread infection that was restricted to sites where dry-site grasses or *Purshia* dominated the undergrowth. In Montana, it was not found at all (Pfister and others 1977).

Very little insect damage to pine was observed in this series. However, in 1972, populations of pine butterfly *(Neophasia menapia)* were exceptionally large along the lower South Fork of the Salmon River where several *Pinus ponderosa* h.t.'s are common.

## *PINUS PONDEROSA/STIPA OCCIDENTALIS* H.T. (*PIPO/STOC;* PONDEROSA PINE/WESTERN NEEDLEGRASS)




**Distribution.**—Minor amounts of *PIPO/STOC* occur along the South Fork of the Payette and South and Middle Forks of the Boise River. This h.t. ranged from 3,500 to 4,800 feet (1 070 to 1 460 m) and was found on very gentle river terraces in areas where the *PIPO/AGSP* h.t. was common on steeper slopes.

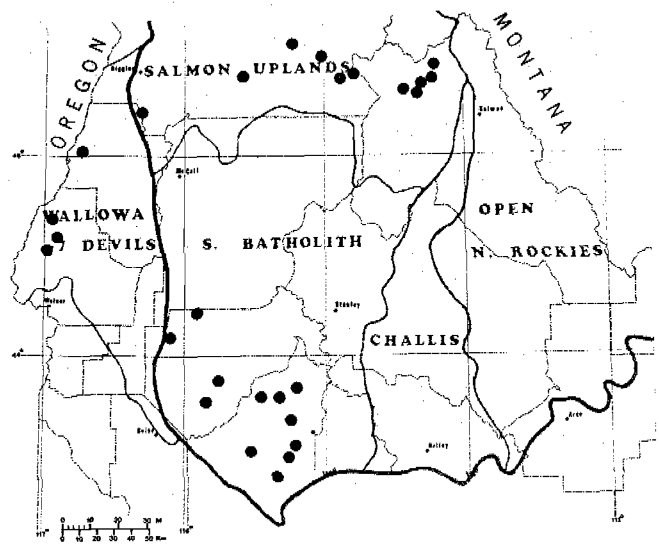
**Vegetation.**—Widely spaced *Pinus ponderosa* dominate a sparse layer of *Stipa occidentalis.* On some very similar sites, *Stipa thurberiana* was the undergrowth dominant. Small amounts (poorly represented) of *Purshia tridentata* are usually present but shrubs in general are very inconspicuous.

**Soil.**—The soils appear to be old alluvial deposits and are mainly sandy loams (appendix D). Soil pH ranged from 5.3 to 6.2 and averaged 5.7. Exposed surface rock varies from 0.5 to 15 percent and bare soil ranges from 0 to 30 percent. Litter depths are less than 3.5 cm.

**Productivity/Management.**—Timber productivity is apparently very low to low and of poor quality. The trees regenerate sporadically and form open stands with limited stocking. Forage production is low, but the gentle terrain attracts livestock. Use by wildlife is generally light.

**Other studies.**—R. and J. Daubenmire (1968) describe a *Pinus ponderosa/Stipa comata* h.t. in eastern Washington that appears very similar to *PIPO/STOC.* In fact, two of their stands were dominated by *Stipa thurberiana* in the undergrowth and three *Stipa* spp. now treated as *S. occidentalis* by Hitchcock and Cronquist (1973) also appeared in their stands.

## *PINUS PONDEROSA/AGROPYRON SPICATUM* H.T. (*PIPO/AGSP;* PONDEROSA PINE/BLUEBUNCH WHEATGRASS)




**Distribution.**—The *PIPO/AGSP* h.t. occurs mostly near lower timberline in the Southern Batholith, Salmon Uplands, and Wallowa-Seven Devils sections. This h.t. ranges from 3,300 to 5,100 feet (1 010 to 1 550 m) and usually occupies steep slopes having southerly aspects.

In most cases the *PIPO/AGSP* h.t. reflects the hot, dry extreme of the forested zone. It normally occurs between steppe communities and more moist *Pinus ponderosa* h.t.'s, but in some areas it simply occupies the driest sites within the forest mosaic.

**Vegetation.**—The bunchgrass ecotype of *Agropyron spicatum* dominates the undergrowth of undisturbed stands. Near the Sawtooth Mountains *Melica bulbosa* also becomes a dominant species. With grazing, annuals and unpalatable forbs gradually replace *A. spicatum* but *Artemisia tridentata* seldom becomes dominant.

In the Southern Batholith section, the *PIPO/AGSP* h.t. occupies granitic soils that have high erosion potential. Here, this h.t. supports a depauperate forb component. In the Wallowa-Seven Devils section it occurs mostly on basalt—and some andesite—derived soils that are much less erosive and support many forbs. Here, *Lomatium dissectum* var. *multifidum* often codominates with *Agropyron spicatum* (fig. 7).

**Soil.**—Soils range from loam to clay loam on basalt and andesite, and from sandy loam to loamy sand on granitics (appendix D). Soil pH varies from 5.2 to 6.8 and averages 6.0. The soils on granitics are slightly more acidic, but this is not always the case. Areas of exposed rock or soil are often high, up to 75 percent. Litter is shallow, usually less than 2.5 cm.

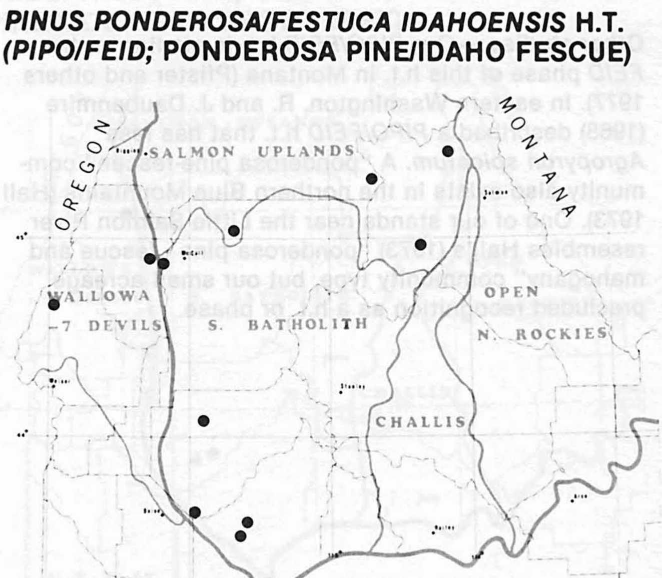
*Figure 7. — *Pinus ponderosa/Agropyron spicatum* h.t. on a steep southerly exposure in the Hitt Mountains west of Cambridge, Idaho (4,200 feet [1 280 m] elevation). Scattered* Pinus ponderosa *form an open stand which dominates a layer of* Agropyron spicatum *and* Lomatium dissectum.

**Productivity/Management.**—Timber productivity is low to very low because of low site index (appendix E-1) and apparent stockability limitations (appendix E-2). Natural regeneration requires a long time to produce adequate stocking. Artificial regeneration would be expensive because the probability of survival is very low.

These sites can produce good forage for livestock, but unregulated grazing can easily reduce forage production and create considerable erosion. On ranges used by both livestock and big game, forage production may need to be allocated, depending on objectives. Big game forage production is low; but the big game winter demand may be relatively high. In some areas, the dried grasses provide important winter forage for elk and bighorn sheep. The large, spreading trees may provide winter cover for mule deer and important roosts for wild turkey.

**Other studies.**—The *PIPO/AGSP* h.t. has been recognized in several adjacent areas. It was described in northern Idaho and eastern Washington by R. and J. Daubenmire (1968) and in Montana by Pfister and others (1977). In central Idaho, this h.t. includes minor amounts of *Festuca idahoensis,* as opposed to the Daubenmires' description, but it does not contain the Great Plains species included in Pfister's and others (1977) description. In the Blue Mountains of Oregon, Hall's (1973) "ponderosa pine-wheatgrass without shrubs" appears comparable to our *PIPO/AGSP* h.t.

## *PINUS PONDEROSA/FESTUCA IDAHOENSIS* H.T. (*PIPO/FEID;* PONDEROSA PINE/IDAHO FESCUE)



**Distribution.**—The *PIPO/FEID* h.t. occurs in minor amounts wherever *Pinus ponderosa* is climax. It is probably most common from 3,500 to 5,800 feet (1 070 to 1 770 m) in canyons of the Salmon Uplands section near lower timberline. It often occupies north and east aspects in areas where the *PIPO/AGSP* h.t. is found on south and west exposures. Thus *PIPO/FEID* appears slightly more moist than *PIPO/AGSP* and the cooler aspects often compensate for the dry climatic conditions. The usual relative position for the *PIPO/FEID* h.t. is between *PIPO/AGSP* or nonforest *Festuca idahoensis* communities and the *PIPO/SYAL* h.t.

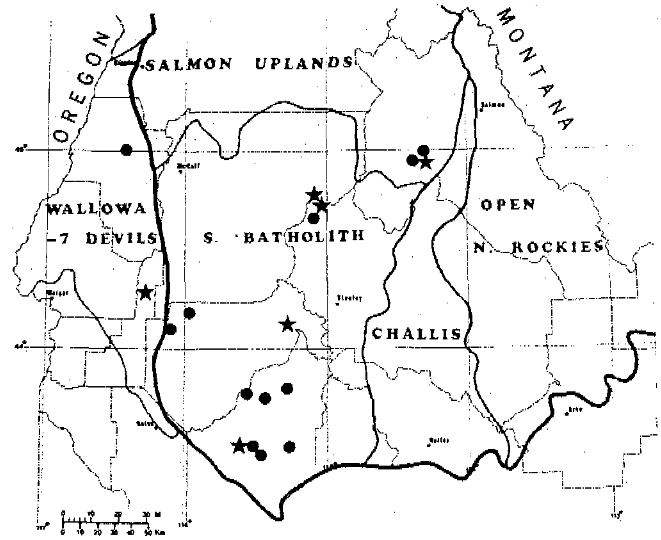
**Vegetation.**—*Festuca idahoensis* and *Agropyron spicatum* are the dominant grasses on sites in good condition. Forbs are more common here than in the *PIPO/AGSP* h.t. and usually include *Balsamorhiza sagittata, Achillaea millefolium,* and *Eriogonum heracleoides. Artemisia tridentata* ssp. *vaseyana* is also more common here than in *PIPO/AGSP.*

**Soil.**—Soils are mainly of granitic or basaltic origin (appendix D). Textures range from loam to clay loam on basalts and from loam to gravelly loamy sand on granitics. Soil pH varies from 5.5 to 6.7 and averages 6.1. In contrast to *PIPO/AGSP,* surface rock varies from 0 to only 20 percent, and bare soil ranges from 0.5 to 20 percent. Litter depths vary from 0.3 to 7.5 cm.

**Productivity/Management.**—Timber productivity is low (appendix E-2). Management considerations are similar to *PIPO/AGSP;* however, forage production should be greater due to a more moderate environment and greater number of plant species (appendix C). Wildlife and livestock considerations are similar to those of *PIPO/AGSP.*

**Other studies.**—Our *PIPO/FEID* h.t. is similar to the *FEID* phase of this h.t. in Montana (Pfister and others 1977). In eastern Washington, R. and J. Daubenmire (1968) described a *PIPO/FEID* h.t. that has less *Agropyron spicatum.* A "ponderosa pine-fescue" community also exists in the northern Blue Mountains (Hall 1973). One of our stands near the Little Salmon River resembles Hall's (1973) "ponderosa pine - fescue and mahogany" community type, but our small acreage precluded recognition as a h.t. or phase.

## *PINUS PONDEROSA/PURSHIA TRIDENTATA* H.T. (*PIPO/PUTR;* PONDEROSA PINE/BITTERBRUSH)




•*Agropyron spicatum* phase (*AGSP;* bluebunch wheatgrass)

★ *Festuca idahoensis* phase (*FEID;* Idaho fescue)

**Distribution.**—The *PIPO/PUTR* h.t. occurs mostly on dry southerly slopes and benches in the Southern Batholith section. It also appears in the Wallowa-Seven Devils and Salmon Uplands sections. Most sites ranged from 3,000 to 5,000 feet (910 to 1 520 m), occurring either near lower timberline or as dry sites within lower elevations of the forest mosaic. A few sites were as high as 6,500 feet (1 980 m) but maintained the same relative position.

**Vegetation.**—Open stands of *Pinus ponderosa* dominate a layer of *Purshia* (fig. 8). On sites in good condition, *Agropyron spicatum* usually dominates between the shrubs. Other grasses and forbs are usually present and include *Achillaea millefolium* and *Balsamorhiza sagittata.*

*Agropyron spicatum (AGSP)* phase.—This is the most common phase in much of central Idaho. Its description fits that given above. At its dry extreme, this phase usually borders nonforest communities or the *PIPO/AGSP* h.t. At the moist extreme, this phase may merge with a *PIPO/SYAL* or *PSME/SPBE* h.t.

*Festuca idahoensis (FEID)* phase.—In some areas, especially the Salmon Uplands section, *Festuca idahoensis* is well represented beneath the layer of *Purshia* and may even codominate with *Agropyron.* This phase usually borders a nonforest community or the *PIPO/FEID* h.t. at the dry extreme and the *PIPO/SYAL* h.t. at the moist extreme.

**Soil.**—Soil parent materials are mainly andesite, rhyolite, and granitics (appendix D). A few sites occur on basalts. Soil textures vary from gravelly loamy sand

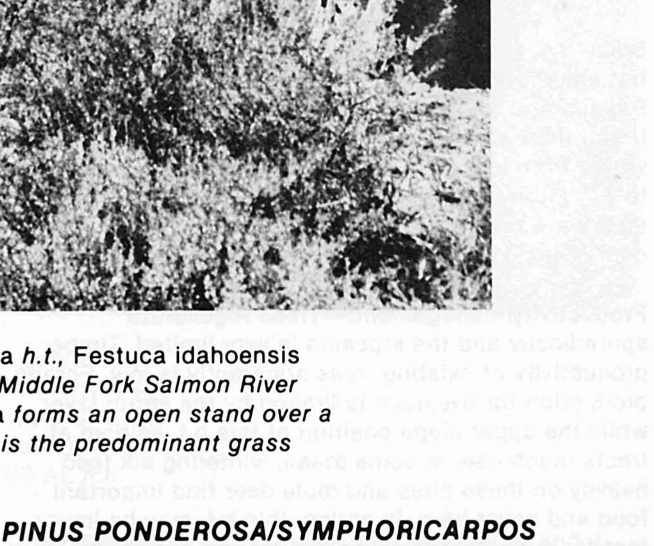
*Figure 8.* — Pinus ponderosa/Purshia tridentata *h.t.,* Festuca idahoensis *phase on an alluvial terrace near Indian Creek, Middle Fork Salmon River (4,600 feet [1 400 m] elevation).* Pinus ponderosa *forms an open stand over a layer of* Purshia tridentata. Festuca idahoensis *is the predominant grass between the shrubs.*

to clay loam but are mostly sandy loam to loamy sand. Soil pH ranges from 5.0 to 6.4, with both extremes from granitic soils. Coverages of both surface rock and bare soil range from 0 to 30 percent. The large areas of bare soil have resulted either from livestock, or earth movement on steep slopes. Average litter depth seldom exceeds 4 cm.

**Productivity/Management.**—Timber productivity ranges from low to very low (appendix E-2). Some forage is available for livestock but grazing abuse can easily deplete production potential. In some areas, elk and mule deer use this h.t. heavily for winter forage and cover and, in spring, black bear feed heavily on the perennial grasses and forbs. The large spreading trees may also provide roosts for wild turkey.

**Other studies.**—*PIPO/PUTR* also occurs in eastern Washington (R. and J. Daubenmire 1968) and in Montana (Pfister and others 1977). In the Blue Mountains, Hall (1973) lists three "pine/bitterbrush" community types each having a different graminoid dominating the shrub interspaces.

## *PINUS PONDEROSA/SYMPHORICARPOS OREOPHILUS* H.T. (*PIPO/SYOR*; PONDEROSA PINE/MOUNTAIN SNOWBERRY)



**Distribution.**—This minor h.t. was seen only in southern portions of the Wallowa-Seven Devils and Southern Batholith sections. It typically occurs on southerly ridges and upper slopes at around 5,000 feet (1 520 m) and is best described as an overlap between *Pinus ponderosa* and the mountain shrub communities of *Symphoricarpos oreophilus*. Adjacent sites that are less severe are usually a *Pseudotsuga* h.t.

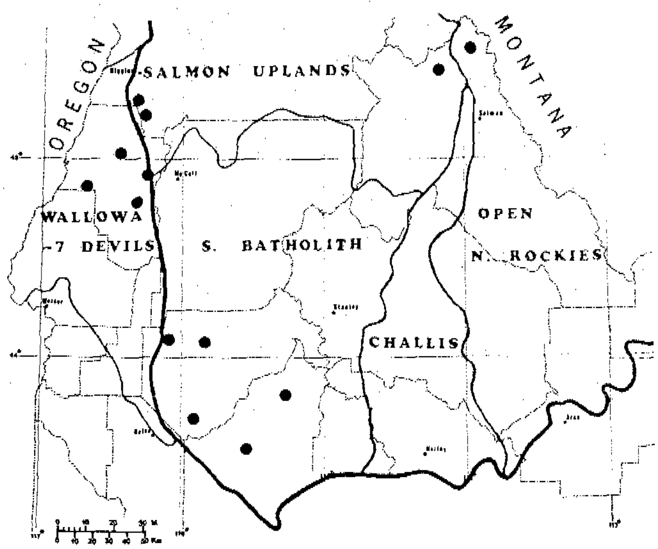
**Vegetation.**—Very open stands of *Pinus ponderosa* dominate a shrubby layer that contains various amounts of *Symphoricarpos oreophilus, Purshia tridentata, Amelanchier alnifolia, Artemisia tridentata,* and *Prunus virginiana. Agropyron spicatum, Balsamorhiza sagittata,* and *Eriogonum* spp. are common in the herbaceous layer.

**Soil.**—These dry sites often have shallow rocky soils but are cooler than most *Pinus ponderosa* h.t.'s. Basalts and granitics are the common parent materials. In the three samples taken (appendix D), soil texture varied from loam to clay loam and pH ranged from 6.1 to 6.2. Litter depth is usually less than 3.5 cm. The sites have only small amounts of exposed rock (2 percent or less) and less than 10 percent bare soil.

**Productivity/Management.**—Trees regenerate sporadically and the stocking is very limited. Timber productivity of existing trees apparently is low. Forage production for livestock is limited by the shrub layer while the upper slope position of this h.t. seldom attracts much use. In some areas, wintering elk feed heavily on these sites and mule deer find important food and cover here. In spring, this h.t. may be important for mule deer fawning and rearing and for black bear that feed on perennial grasses and forbs. Blue grouse will also nest and raise their young here. Fall berry crops may be important to blue grouse and black bear.

**Other studies.**—The *PIPO/SYOR* h.t. has not been described elsewhere.

## *PINUS PONDEROSA/SYMPHORICARPOS ALBUS* H.T. *(PIPO/SYAL;* PONDEROSA PINE/ COMMON SNOWBERRY)




**Distribution.**—The *PIPO/SYAL* h.t. is common throughout the Wallowa-Seven Devils section. It is also common in western canyons of the Salmon Uplands section, but becomes increasingly scarce toward the eastern edge. It occurs in western portions of the Southern Batholith section, but eastward in the Boise River drainage it becomes scarce and is restricted to alluvial fans, land slumps, and stream terraces. Most sites are below 5,000 feet (1 520 m) and border the lower limits of *Pseudotsuga* forest.

**Vegetation.**—Fairly open stands of *Pinus ponderosa* dominate a layer of low shrubs (fig. 9). *Symphoricarpos albus* is well represented and usually dominant. *Spiraea betulifolia* and *Rosa* spp. may be codominant. A few stands contain high coverages of *Calamagrostis rubescens* or *Carex geyeri,* but most of these sites occur at the upper limits of *PIPO/SYAL* within a mosaic of *Pseudotsuga* forest.

**Soil.**—These sites normally have well-drained, sandy loam to clay loam soils (appendix D). Most parent materials are basalt or granitic. Soil pH varies between 5.6 and 6.4 and averages 5.9. Unless disturbed, these sites have only trace amounts of bare soil or rock and litter depths often reach 4 to 6 cm.

**Productivity/Management.**—This h.t. produces more timber than most other sites where *Pinus ponderosa* is climax (appendix E-2) and trees seem to regenerate more readily. Amounts of livestock forage will vary with grass species and coverage (appendix C). Big game forage is limited by the few palatable shrub species present, but deer and elk make light to moderate use of these sites.

**Other studies.**—North of our area, R. and J. Daubenmire (1968) described a similar h.t. In Montana, Pfister

*Figure 9. —* Pinus ponderosa/Symphoricarpos albus *h.t. on a gentle easterly exposure near Price Valley Guard Station west of New Meadows, Idaho (4,550 feet [1 370 m] elevation).* Pinus ponderosa *dominates a layer of* Symphoricarpos albus *and* Spiraea betulifolia. *This stand contained high coverages of* Calamagrostis rubescens *and bordered a* PSME/SYAL *h.t.*

and others (1977) described a more extensive and variable type with two phases. Their *Symphoricarpos albus* phase is most comparable to our h.t.

### *PINUS PONDEROSA/PHYSOCARPUS MALVACEUS* H.T. *(PIPO/PHMA;* PONDEROSA PINE/NINEBARK)

**Distribution.**—Small amounts of this incidental h.t. were found in the South Fork Payette and Little Salmon River drainages. It becomes more common north of our study area.

**Vegetation.**—*Pinus ponderosa* dominates an undergrowth similar to that of the *PSME/PHMA* h.t. *Physocarpus malvaceus* is the dominant shrub, with a layer of *Symphoricarpos albus* beneath.

**Soil.**—Soils vary from silty loam to loamy sand and are derived from basalt or granitic material. Of the three samples taken, soil pH ranged from 5.6 to 6.3. Only 0 to 2 percent bare soil was found; exposed rock was absent. Litter depths ranged from 3 to 8 cm.

**Productivity/Management.**—Timber production should be similar to that of the *PIPO/SYAL* h.t. Utility for livestock and wildlife should be similar to that of the *PSME/PHMA* h.t.

**Other studies.**—This h.t. was described by R. and J. Daubenmire (1968) in northern Idaho and eastern Washington.

## *Pseudotsuga menziesii* Series

*Pseudotsuga menziesii* occupies the broadest range of environmental conditions of any conifer in central Idaho both as a seral and as a climax species. It ranges from areas that receive the strongest maritime influence to those enduring the strongest continental climate and in certain areas grows from lower timberline to some topoedaphic upper timberlines. The broad ecologic amplitude of *Pseudotsuga* is evidence of considerable genetic diversity. North of our area, Rehfeldt (1974) showed that substantial genetic variation exists in *Pseudotsuga,* not only between populations in different areas but also between certain h.t.'s. In central Idaho, nursery-grown seedlings of *Pseudotsuga* also indicate substantial genetic differences between populations (Frank Morby, Lucky Peak Nursery, *personal communication). In the nursery, seed from different areas in central Idaho produce not only seedling populations with notably different heights, but also considerable height diversity within populations. This suggests a strong potential for improving nursery stock through genetic selection.

**Distribution.**—The genetic diversity of *Pseudotsuga* no doubt contributes to the extensive nature of the *Pseudotsuga menziesii* series. In the Challis and Open Northern Rockies sections it often borders steppe vegetation at lower timberline or it may border the *Pinus flexilis* series. Near its dry limits in the Wallowa-Seven Devils, Salmon Uplands, and Southern Batholith sections, the series usually merges with the *Pinus ponderosa* series. At higher elevations throughout central Idaho it abuts the *Abies lasiocarpa* series except in the western portion where it usually meets the *Abies grandis* series.

**Vegetation.**—*Pinus ponderosa* is a vigorous seral conifer in major portions of the *Pseudotsuga* series. *Pinus contorta* will form dominant stands in a few h.t.'s but *Larix occidentalis* rarely occurs in this series. Where the *Pseudotsuga* series surpasses the elevational or geographical limits of *Pinus ponderosa, Pseudotsuga* is often the seral dominant as well as the climax dominant. Undergrowths vary from dense, shrubby layers to scattered, dry-site grasses. Several of the drier h.t.'s have an open-forest to savannah-like appearance.

**Soil.**—Soil parent materials vary widely in the *Pseudotsuga* series and range from granitic and volcanic materials to limestone (appendix D). In general, *Pseudotsuga* h.t.'s show little affinity for a particular soil condition although such relationships often occur locally. Exceptions to the above are noted within the appropriate h.t. description.

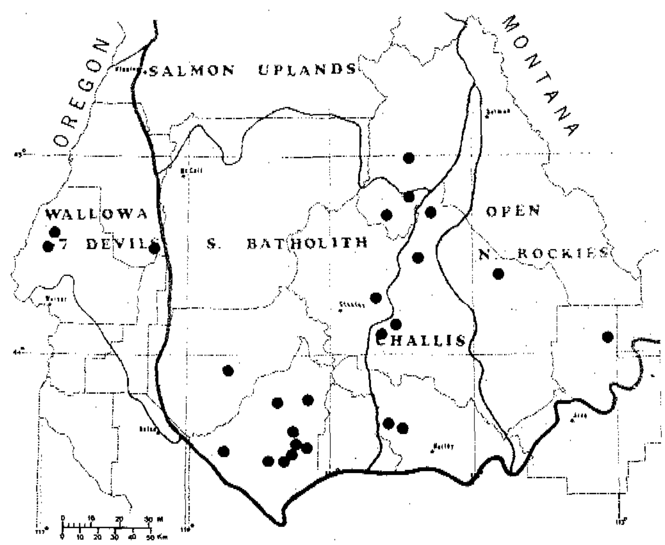
**Fire.**—Fire has strongly influenced stand development in portions of this series. *Pseudotsuga* h.t.'s in the Challis and Open Northern Rockies sections have experienced only slight alteration by fire, whereas those in northern and western portions of central Idaho reflect relatively more fire influence. Here fire-induced *Pinus ponderosa* dominates or, more often, codominates with older *Pseudotsuga* whose thick bark provides protection from fire.

In some h.t.'s of this series, burning or logging may result in a layer of *Ceanothus velutinus* or unusually high coverages of *Calamagrostis rubescens*. Seeds of the *Ceanothus* can remain dormant in forest stands for 200-300 years and germinate abundantly after fire (Gratkowski 1962). The resulting layer of *Ceanothus* may suppress conifer seedlings and dominate the undergrowth for several decades. Being rhizomatous, the *Calamagrostis* can increase rapidly following fire or logging and develop a dense sod that impedes establishment of other species including trees.

**Productivity/Management.**—Productivity and response to management vary widely in this series as noted in the h.t. descriptions. Over much of the series *Calamagrostis rubescens* proliferates after fire or logging and develops extensive sod. This condition requires careful site preparation for successful regeneration of conifers. On certain soils, Stewart and Beebe (1974) found chemical treatment more effective than mechanical removal of *C. rubescens* for survival of *Pinus ponderosa* seedlings; however, thorough scarification suffices on most sites in central Idaho.

Dwarf mistletoe *(Arceuthobium* spp.) occurs in many stands and varies considerably in severity of infection. Locally, infection may appear correlated with h.t., but no such relationship is evident throughout the distribution of any *Pseudotsuga* h.t. Perhaps this is because infection was assessed at one point in time and the potential for infection is not yet evident in all stands of a given h.t. Needlecast *(Rhabdocline pseudotsugae)* was notably severe in a few areas but, like mistletoe, shows little overall relationship with h.t.'s when based on a single sample of the area. Insect damage and sporophores of pathogenic fungi were also observed in minor amounts. However, these occurrences vary seasonally and provide little meaning when sampled in different stands throughout the field season.

## *PSEUDOTSUGA MENZIESII/AGROPYRON SPICATUM* H.T. (*PSME/AGSP;* DOUGLAS-FIR/BLUEBUNCH WHEATGRASS)




**Distribution.**—*PSME/AGSP* occurs throughout much of central Idaho but is best developed in southern portions of the Southern Batholith section. It occupies steep southerly to westerly aspects from 3,800 to 7,500 feet (1 160 to 2 290 m) and in many areas forms the lower timberline. Elsewhere it represents the driest forested sites in the area. At its dry extreme, *PSME/AGSP* normally borders nonforest communities that have *Agropyron spicatum* as a major component. At the cool moist extremes, it most often borders a *PSME/CAGE* or *PSME/SPBE* h.t.

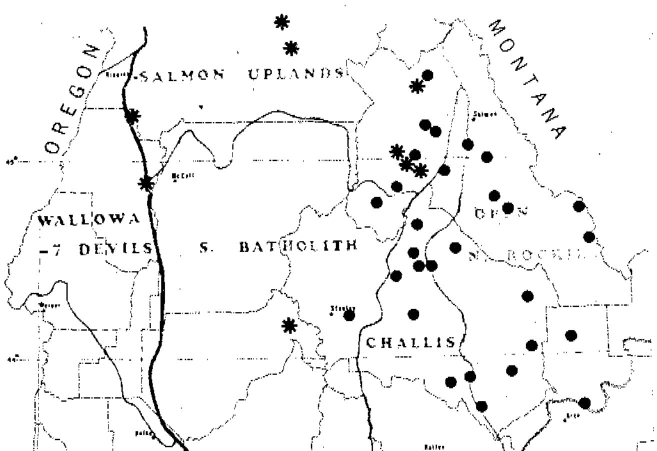
**Vegetation.**—Widely spaced *Pseudotsuga,* often with *Pinus ponderosa,* codominate an undergrowth of dry-site grasses and forbs creating an open-forest to savannah-like appearance. Normally, on sites in good condition, *Agropyron spicatum* dominates the undergrowth, but in the Sawtooth Mountains *Melica* *bulbosa* occasionally codominates or even dominates this layer. With grazing, annuals and unpalatable forbs gradually replace the *Agropyron* and *Melica.* On some sites, especially those beyond the limits of *Pinus ponderosa, Artemisia tridentata* ssp. *vaseyana* creates a conspicuous layer in the openings.

**Soils.**—*PSME/AGSP* is found on soils derived from a variety of parent rock, ranging from basalt to quartzite (appendix D). Because much of central Idaho is occupied by the Idaho Batholith, most soils are of granitic origin. Soil pH ranges from 5.4 to 7.1, with a mean of 6.1. On steep slopes, as much as 60 percent of the surface is bare soil or rock. Litter depths seldom exceed 3 cm.

**Productivity/Management.**—*PSME/AGSP* has low to very low potential for producing timber (appendix E-2). Natural regeneration of trees is slow because of extreme droughty conditions and grass competition. These sites produce some forage for livestock but the steep slopes and loose soil may preclude domestic grazing. In some areas, elk, mule deer, and occasionally bighorn sheep find important forage or cover here, especially during the winter. These sites may also provide important spring forage for black bear and, where large *Pinus ponderosa* are present, important year-round habitat for wild turkey.

**Other studies.**—The *PSME/AGSP* h.t. is described in Montana (Pfister and others 1977) but has not been reported elsewhere.

## *PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS* H.T. (*PSME/FEID;* DOUGLAS-FIR/IDAHO FESCUE)




•*Festuca idahoensis* phase (*FEID;* Idaho fescue)

* *Pinus ponderosa* phase (*PIPO;* ponderosa pine)

**Distribution.**—*PSME/FEID* occurs mainly in the Challis and Open Northern Rockies sections, but it extends westward in the Salmon Uplands section. It occurs on mid- to lower slopes and benches at lower elevations of the forested zone. It appears most often on gentle to steep slopes having northerly to easterly aspects at elevations ranging from 3,000 to 8,000 feet (910 to 2 440 m).

*PSME/FEID* represents lower timberline throughout much of its area. At its dry extreme, it usually borders a nonforest community having *Festuca idahoensis* as a major component. At its moist extreme it merges most often with the *PSME/ARCO* and *PSME/CARU* h.t.'s.

**Vegetation.** — Normally, the trees form a broken canopy and create an open forest but tree density can vary from a nearly closed canopy to a savannah appearance (fig. 10). *Festuca idahoensis* is usually well represented and often accompanied by *Agropyron spicatum.* Numerous forbs are generally present but not always conspicuous.

*Festuca idahoensis (FEID)* phase. — This is the common phase in the Challis and Open Northern Rockies sections and it occurs at higher elevations (6,000 to 8,000 feet [1 830 to 2 440 m]) than the *PIPO* phase. Usually *Pseudotsuga* is the only tree present. *Antennaria microphylla* and *Arenaria congesta* are more common here than in the *PIPO* phase.

*Pinus ponderosa (PIPO)* phase. — This phase appears mainly in the Salmon Uplands section. It tends to occur on steeper slopes than the *FEID* phase and denotes a warmer, lower elevation (3,000 to 6,500 feet [910 to 1 980 m]) segment of the h.t. *Pinus ponderosa* is usually present as a codominant with *Pseudotsuga.* Small amounts of *Amelanchier, Prunus, Rosa,* and *Eriogonum* are more common here than in the *FEID* phase.

**Soils.** — The soils are derived from a variety of parent materials including quartzite, granitics, and various volcanics (appendix D). They range from silty loam to gravelly sandy loam but are mainly gravelly loams. Soil pH ranges from 5.4 to 6.7 and averages 6.1. Occasionally the amount of surface rock reaches 30 percent but usually it is less than 10 percent. Most sites have less than 5 percent of the area in bare soil. Average litter depth per site is usually less than 4 cm.

**Productivity/Management.** — Timber productivity is low to very low (appendix E-2) and tree regeneration is sporadic. Although some natural stands appear well stocked, natural regeneration is a slow process. The *FEID* phase tends to occur on more gentle, stable slopes, which makes it relatively compatible with livestock use. In some areas, values of livestock forage production may exceed those of timber. In other areas, elk, mule deer, and occasionally bighorn sheep and mountain goats find important forage or cover here, especially during the winter. This h.t. may also provide important spring forage for black bear and, in the *PIPO* phase, important year-round habitat for wild turkey.

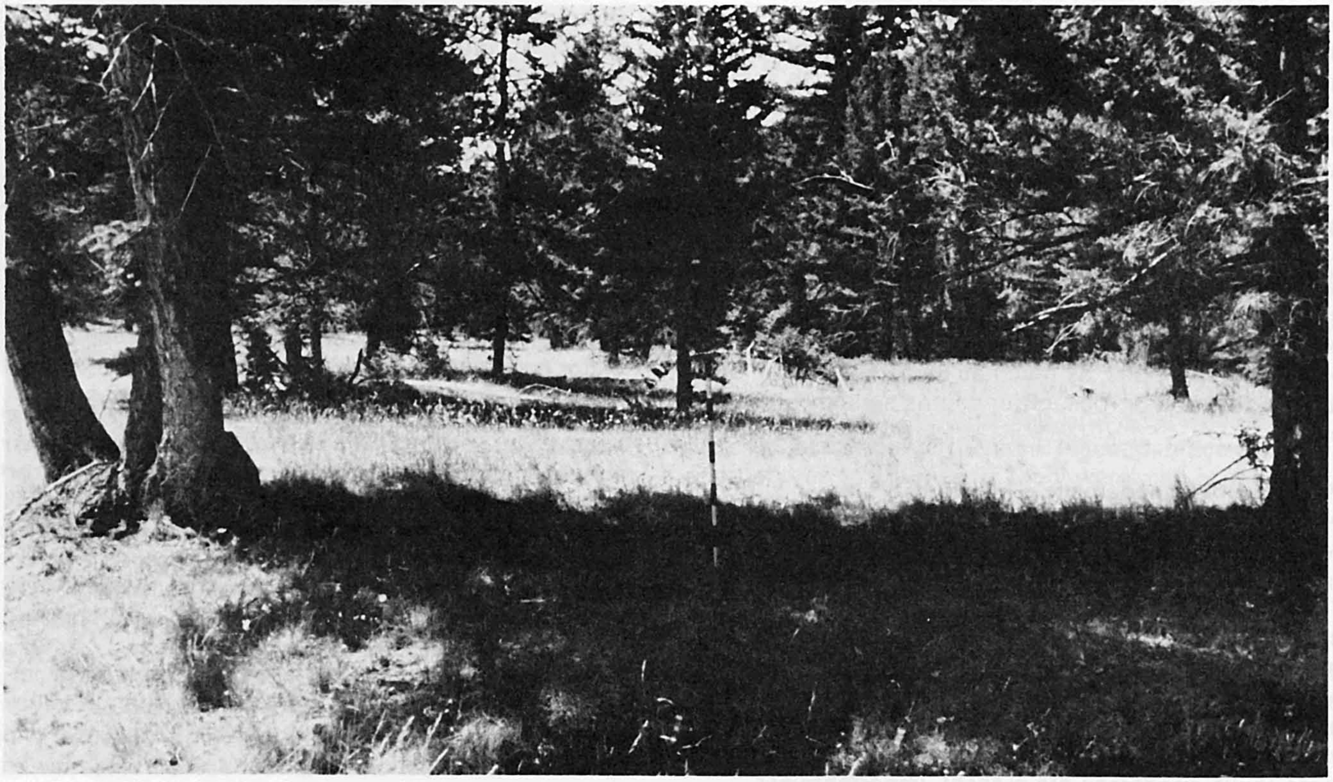
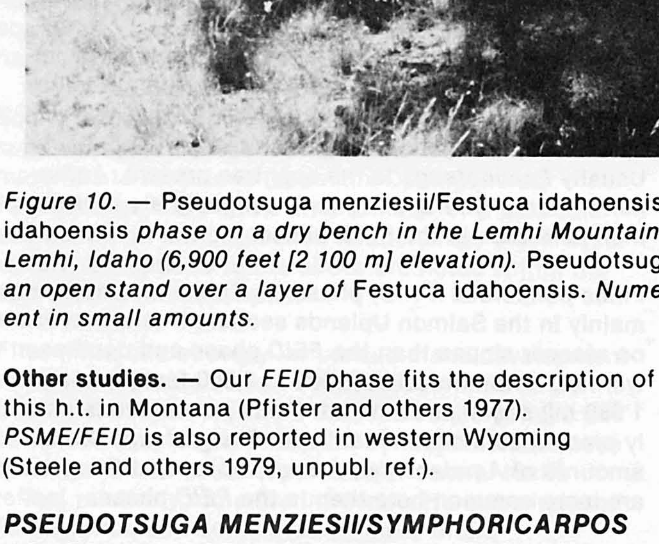


*Figure 10.* — Pseudotsuga menziesii/Festuca idahoensis *h.t.,* Festuca idahoensis *phase on a dry bench in the Lemhi Mountains southwest of Lemhi, Idaho (6,900 feet [2 100 m] elevation).* Pseudotsuga menziesii *forms an open stand over a layer of* Festuca idahoensis. *Numerous forbs are present in small amounts.*

**Other studies.** — Our *FEID* phase fits the description of this h.t. in Montana (Pfister and others 1977). *PSME/FEID* is also reported in western Wyoming (Steele and others 1979, unpubl. ref.).

## *PSEUDOTSUGA MENZIESII/SYMPHORICARPOS OREOPHILUS* H.T. *(PSME/SYOR;* DOUGLAS-FIR/MOUNTAIN SNOWBERRY)




**Distribution.** — *PSME/SYOR* is a minor h.t. across southern portions of the Challis, Open Northern Rockies, and Southern Batholith sections. It occurs mainly from 4,500 to 8,000 feet (1 370 to 2 440 m) near lower timberline on steep slopes having southerly to westerly aspects.

This h.t. can be considered an overlap of *Pseudotsuga* forest and mountain shrub communities. Adjacent nonforested areas are normally dominated by *Symphoricarpos oreophilus* with *Prunus* or *Artemisia* as a codominant shrub. Adjacent forested sites are usually the more moist *PSME/ARCO* h.t. in the Challis and Open Northern Rockies sections and the *PSME/CAGE* or *PSME/SPBE* h.t. in the Southern Batholith section.

**Vegetation.** — Usually *Pseudotsuga* is the only tree present and creates an open-forest to savannah-like appearance. Occasionally *Pinus flexilis* appears in small amounts and sometimes *Pinus ponderosa* may codominate with *Pseudotsuga. Pinus contorta* and *Pinus albicaulis* may appear as accidentals.

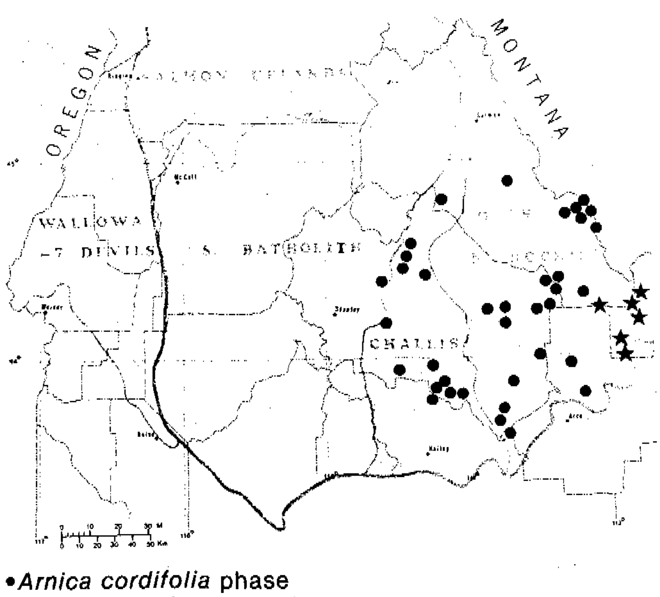
*Symphoricarpos oreophilus* is usually a dominant or codominant shrub. A few stands having only *Prunus virginiana* or *Ribes cereum* as the dominant shrub have been included in this h.t. *Agropyron spicatum* and a few dry-site forbs often dominate the shrub interspaces.

**Soil.** — Soils are derived from most major parent materials in the area (appendix D). Texturally they range from loam and gravelly silt loam to very gravelly loamy sand. Soil pH ranges from 8.0 to 6.0 and averages 6.8. Coverages of bare rock reach 70 percent on some sites and areas of bare soil attain 20 percent on other sites. Average litter depth on a site seldom exceeds 4.6 cm.

**Productivity/Management.** — Timber productivity is low to very low (appendix E-2) and trees regenerate very sporadically. Success at artificial regeneration is apt to be poor. The shrubs and grasses attract both wild and domestic herbivores and the tree canopies can shelter animals that use adjacent rangeland. These sites often provide important forage and cover for mule deer and blue grouse and, in some areas, are very important to wintering elk.

**Other studies.** — Reed (1969) describes a *PSME/SYOR* community in Wyoming that is broader than our h.t. Schlatterer (1972, unpubl. ref.) also describes a broader *PSME/SYOR* community type. Pfister and others (1977) report minor amounts of *PSME/SYOR* h.t. from southwestern Montana, and Steele and others (1979, unpubl. ref.) describe it in eastern Idaho and western Wyoming.

## *PSEUDOTSUGA MENZIESII/ARNICA CORDIFOLIA* H.T. (*PSME/ARCO;* DOUGLAS-FIR/HEARTLEAF ARNICA)




•*Arnica cordifolia* phase (ARCO; heartleaf arnica)

★ *Astragalus miser* phase (*ASMI;* weedy milkvetch)

**Distribution.** — *PSME/ARCO* occurs in the Challis and Open Northern Rockies sections. It appears on various dry aspects at lower elevations of the forested zone where it ranges from 6,500 to 8,600 feet (1 980 to 2 620 m).

**Vegetation.** — *Pseudotsuga* is often the only conifer present but *Pinus contorta* and *P. flexilis* may occur here as seral species. When approaching climax, undergrowths are normally depauperate. Seral conditions may support shrubs such as *Artemisia tridentata* and *Cercocarpus ledifolius* which also grow on adjacent drier sites.

*Astragalus miser (ASMI)* phase. — This phase occurs in southern portions of the Lemhi and Beaverhead Mountains. Small amounts of *Pinus flexilis* appear more often here than in the *ARCO* phase and tree growth potential is somewhat less. *Astragalus miser* dominates a forb layer that is often even more depauperate than in the *ARCO* phase.

*Arnica cordifolia (ARCO)* phase. — This is the more common phase within the h.t. In old growth stands, *Arnica cordifolia* usually dominates a depauperate undergrowth (fig. 11). Sometimes *Astragalus miser* will codominate with the *Arnica* and may denote areas that are transitional to the *ASMI* phase.

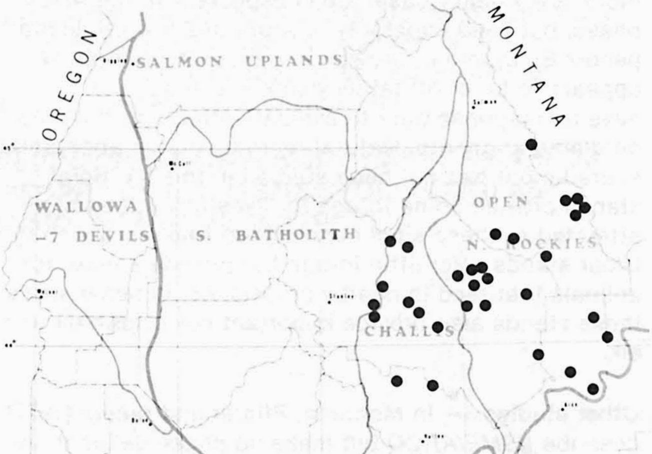
**Soil.** — Soil parent materials include limestone, quartzite, andesite, dacite, schist, and Challis basalt (appendix D). Soil textures range from sandy loam to silt loam and most are gravelly to very gravelly. The pH ranges from 5.3 to 8.2 and averages 6.8. Coverage of bare rock is usually less than 10 percent but can approach 70 percent. Litter often had a high coverage but its depth seldom averaged more than 7 cm on any one site.

**Productivity/Mangement.** — These sites support moderately heavy basal areas especially in the *ARCO* phase, but yield capability is within the low range (appendix E). Diameter growth increment in both phases appears to taper off rather quickly with age but we have no response data to evaluate effects of thinning on diameter growth. Natural reproduction is apparently sporadic but has not been studied in this h.t. Seral stands provide some forage for livestock but animals attracted to these sites may impede tree reproduction. Older stands offer little forage but provide shelter for animals that feed in nearby grasslands. In some areas these stands also provide important cover for deer and elk.

**Other studies.** — In Montana, Pfister and others (1977) describe *PSME/ARCO* but make no phase delineations. Both phases of *PSME/ARCO* also occur in western Wyoming (Steele and others 1979, unpubl. ref.).

*Figure 11.* — Pseudotsuga menziesii/Arnica cordifolia *h.t.,* Arnica cordifolia *phase near Doublesprings Pass, Lemhi Mountains northeast of Dickey, Idaho (7,860 feet [2 400 m] elevation). A pure stand of* Pseudotsuga menziesii *dominates a depauperate undergrowth in which* Arnica cordifolia *is the predominant forb.*

## *PSEUDOTSUGA MENZIESII/JUNIPERUS COMMUNIS* H.T. (*PSME/JUCO*; DOUGLAS-FIR/COMMON JUNIPER)




**Distribution.** — This h.t. occurs mainly in the Challis and Open Northern Rockies sections of Idaho and in adjacent Montana. It normally appears from 7,500 to 8,400 feet (2 290 to 2 560 m) on exposed rocky sites at lower to mid-elevations of the forested zone.

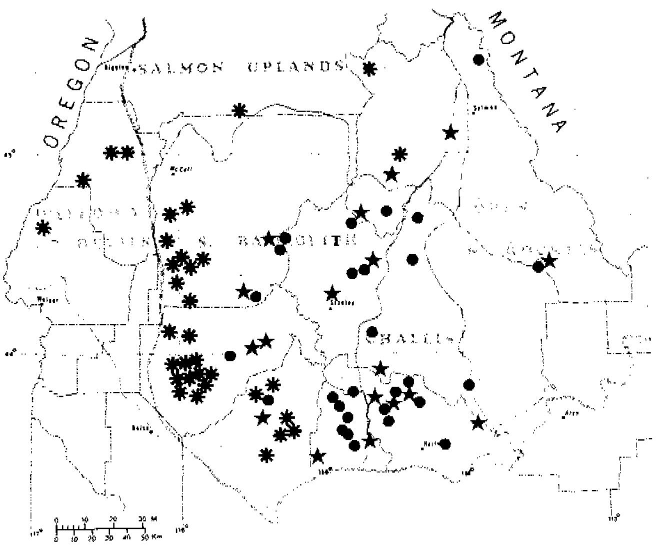
**Vegetation.** — Usually *Pseudotsuga* is the predominant tree, with lesser amounts of *Pinus flexilis, P. contorta,* and sometimes *P. albicaulis. Juniperus communis* gradually forms large patches that are easily destroyed by fire. *Symphoricarpos oreophilus* is normally present and *Shepherdia canadensis* often occurs in younger stands. *Arnica cordifolia* usually dominates a depauperate forb layer.

**Soil.** — Soil parent materials are mainly quartzite, with occasional stands occurring on limestone or granitics (appendix D). Soils are usually gravelly or very gravelly loams or silt loams and contain a high proportion of angular cobbles and stones. Soil pH ranges from 6.1 to 8.1 and averages 7.1. Coverage of bare rock can reach 40 percent and areas of bare soil 10 percent. Average litter depth seldom exceeds 4 cm.

**Productivity/Management.** — Timber potential is low to very low (appendix E-2). When present, *Pinus contorta* may be in a marginal environment and not respond well to management. Regeneration of *Pseudotsuga* may be sporadic and timber harvests should be guided by the patterns and frequency of regeneration observed in the stand. Most of these sites have little potential for livestock, but may provide important cover for deer and elk.

**Other studies.** — *PSME/JUCO* h.t. also occurs in Montana (Pfister and others 1977) and small areas appear in western Wyoming (Steele and others 1979, unpubl. ref.).

## *PSEUDOTSUGA MENZIESII/CAREX GEYERI* H.T. (*PSME/CAGE*; DOUGLAS-FIR/ELK SEDGE)




•*Carex geyeri* phase
(*CAGE;* elk sedge)

★ *Symphoricarpos oreophilus* phase
(*SYOR;* mountain snowberry)

* *Pinus ponderosa* phase
(*PIPO;* ponderosa pine)

**Distribution.** — *PSME/CAGE* occurs mainly in the Southern Batholith section but extends into most other sections of central Idaho. It occurs on dry aspects throughout much of the *Pseudotsuga* zone and ranges from 3,700 to 8,700 feet (1 130 to 2 650 m). It occupies a variety of sites from rolling benchlands to steep unstable slopes.

**Vegetation.** — Older trees are usually widely spaced and create a parklike appearance, but some seral stands are relatively dense. Normally, *Carex geyeri* dominates a depauperate forb layer. Beneath openings in the tree canopy a few forbs such as *Balsamorhiza, Geranium,* and *Lupinus* may be conspicuous. *Berberis repens* and *Ribes cereum* may be present in small patches, especially beneath large trees.

*Symporicarpos oreophilus (SYOR)* phase. — The *SYOR* phase occurs throughout the geographic range of the *PSME/CAGE* h.t. but usually appears at mid- to upper elevations (6,500 to 8,000 feet [1 980 to 2 440 m]) of the type. These sites often border the drier *PSME/SYOR* h.t. or a mountain shrub community that contains *Symphoricarpos oreophilus.*

The trees may be widely spaced creating an open-forest or savannah-like appearance. Usually *Pseudotsuga* is the only tree present. *Prunus virginiana* or *Artemisia tridentata* ssp. *vaseyana* often codominate the shrub layer with *Symphoricarpos.* These shrubs maintain a dominant layer in old growth stands.

*Pinus ponderosa (PIPO)* phase. — This phase occurs only in the western half of central Idaho and at the lower elevations (3,700 to 6,300 feet [1 130 to 1 920 m]) of the type. *Pinus ponderosa* often dominates the site and in some areas the *Pseudotsuga* reinvades very slowly. Other tree species are seldom present in large numbers. Seral undergrowths often contain *Amelanchier alnifolia, Purshia tridentata, Prunus virginiana,* or *Symphoricarpos oreophilus* in varying amounts. Following fire, *Ceanothus velutinus* may sprout from seed stored in the soil and develop a dominant layer that persists for several decades. Coverages of all these shrubs decrease with development of a *Pseudotsuga* canopy.

*Carex geyeri (CAGE)* phase. — This phase is most common and appears at mid- to upper elevations (5,300 to 8,700 feet [1 620 to 2 650 m]) of the type. It is common in the Challis section and in colder portions of the Southern Batholith section. *Pinus contorta* may dominate seral stands and sometimes *P. flexilis* or *P. albicaulis* are weakly represented. Shrubs are usually sparse, but *Prunus virginiana, Ribes cereum, Salix scouleriana,* or *Symphoricarpos oreophilus* may appear in seral undergrowths.

**Soil.** — The most common soil parent materials are granitics (appendix D). Other materials include quartzite, latite, andesite, rhyolite, and basalt. Soil textures vary accordingly from silty clay loam to very gravelly loamy sand. The pH ranges from 5.2 to 7.2 and averages 5.9. On most sites coverage of bare rock is less than 10 percent but a few sites have up to 60 percent. Exposed soil is usually less than 10 percent of the area but can reach 30 percent. Average litter depth on a site seldom exceeds 5 cm.

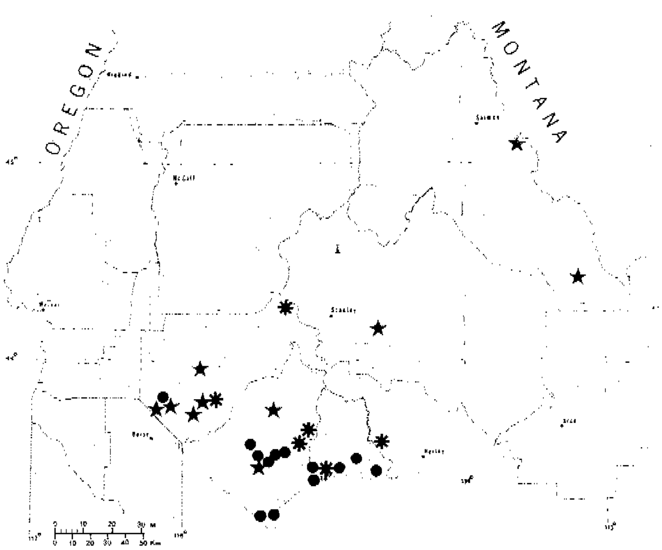
**Productivity/Management.** — Timber productivity ranges from low to high depending on the tree species present and the phase (appendix E). The *SYOR* phase appears least productive; a moderate site index for *Pinus ponderosa* gives the *PIPO* phase greatest productivity. Natural regeneration of *Pseudotsuga* is often sporadic and apparently requires some site protection. Artificial regeneration of *Pseudotsuga* assumes considerable risk of success. In the *PIPO* phase, the pine may regenerate more readily as a seral species than *Pseudotsuga.* The root system of the *Carex* is several times greater than the leafy portion and presents formidable competition to tree seedlings. Thus site preparation is needed even where spaces among the *Carex* might appear adequate for seedling establishment.

Forage production is generally low, and on steep slopes the gravelly soils are readily exposed by grazing animals. Destruction of the *Carex* sod may cause erosion scars that are difficult to revegetate. On some overgrazed sites, *Artemisia tridentata* now dominates the undergrowth. Burning or spraying the *Artemisia* denies *Carex geyeri* seedlings shade and protection from trampling and jeopardizes recovery of the *Carex* sod.

In some areas, the *SYOR* phase provides important forage and cover for deer, elk, and blue grouse. The widely spaced trees and frequent ridge-line locations of this phase are well suited for birds of prey. Burning in the *PIPO* phase may increase forage for deer and elk.

**Other studies.** — The *PSME/CAGE* h.t. is recognized in Montana by Pfister and others (1977). Small amounts are also reported near the Idaho-Utah border (Henderson and others 1976, unpubl. ref.). In our area, Schlatterer (1972, unpubl. ref.) describes a Douglas-fir/elk sedge-snowberry community that resembles the *PSME/CAGE* h.t. Hall (1973) describes a "ponderosa pine-Douglas-fir-elk sedge community" in the Blue Mountains of Oregon that resembles our *PSME/CAGE* h.t., *PIPO* phase.

### *PSEUDOTSUGA MENZIESII/BERBERIS REPENS* H.T. (*PSME/BERE;* DOUGLAS-FIR/OREGON GRAPE)




•*Berberis repens* phase (*BERE;* Oregon grape)

★*Symphoricarpos oreophilus* phase (*SYOR;* mountain snowberry)

**Carex geyeri* phase (*CAGE;* elk sedge)

**Distribution.** — This h.t. occurs mainly in southeastern Idaho and adjacent Utah but also extends into southern portions of central Idaho as a minor h.t. Here it is found primarily in mountain ranges that overlook either the Snake River Plain or Camas Prairie. It occupies a variety of aspects at lower to mid-elevations of the forested zone and ranges from 4,500 to 7,700 feet (1 370 to 2 350 m). Adjacent drier sites usually contain the *PSME/SYOR* h.t. or support nonforest communities.

**Vegetation.** — Usually *Pseudotsuga* is the only tree present but in central Idaho *Pinus ponderosa* may be present at the lower elevations. *Prunus virginiana* and *Symphoricarpos oreophilus* often dominate the undergrowth of seral stands. In stands that develop closed canopies, *Berberis repens* persists as the dominant shrub. *Arnica cordifolia, Smilacina racemosa,* and *Thalictrum occidentale* are the most common forbs and occasionally they develop high coverages.

*Symphoricarpos oreophilus (SYOR)* phase. — This phase is found mainly in the Boise Front Range and related mountains to the southeast. The sites often border nonforest communities dominated by *Prunus virginiana,* and *Symphoricarpos oreophilus.* Many openings remain between the trees, even in old growth stands, and the taller shrubs are never excluded (fig. 12).

*Carex geyeri (CAGE)* phase. — The *CAGE* phase appears mainly in the Southern Batholith section and has characteristics similar to *PSME/CAGE.* Some *Prunus, Amelanchier,* and *Symphoricarpos oreophilus* may codominate seral undergrowths, but *Berberis repens* with a layer of *Carex geyeri* dominates the undergrowth of older stands (fig. 13). As in *PSME/CAGE,* the tree canopy remains partially open.

*Berberis repens (BERE)* phase. — This phase, common throughout the range of the h.t., is restricted to leeward aspects where site protection and deep soils permit development of a closed tree canopy. Here the taller shrubs are eventually suppressed, leaving *Berberis repens* as the dominant shrub.

**Soil.** — Soil parent materials are mainly granitic, quartz monzonite, andesite, and basalt (appendix D). Soil textures range from loam to loamy sand and are sometimes gravelly. The pH ranged from 5.3 to 6.4 and averaged 5.8. Coverage of bare rock seldom exceeds 5 percent but in a few cases is as high as 25 percent. In the *SYOR* phase exposed boulders may account for 70 percent coverage. Areas of exposed soil are usually less than 10 percent and average litter depth on a site seldom exceeds 7 cm.

**Productivity/Management.** — Timber productivity is moderate to high (appendix E-2), but tree seedlings may require some protection from wind and sun. Although forage may be scarce, livestock use these sites for rest and shelter when grazing areas are nearby. Mule deer use the *BERE* phase for rest and shelter and the *SYOR* phase provides important browse in some areas.

**Other studies.** — The *PSME/BERE* h.t. is described in southern Idaho (Steele and others 1974, unpubl. ref.) and in northwestern Utah (Henderson and others 1976, unpubl. ref.). It is also reported from eastern Idaho-western Wyoming (Steele and others 1979, unpubl. ref.).

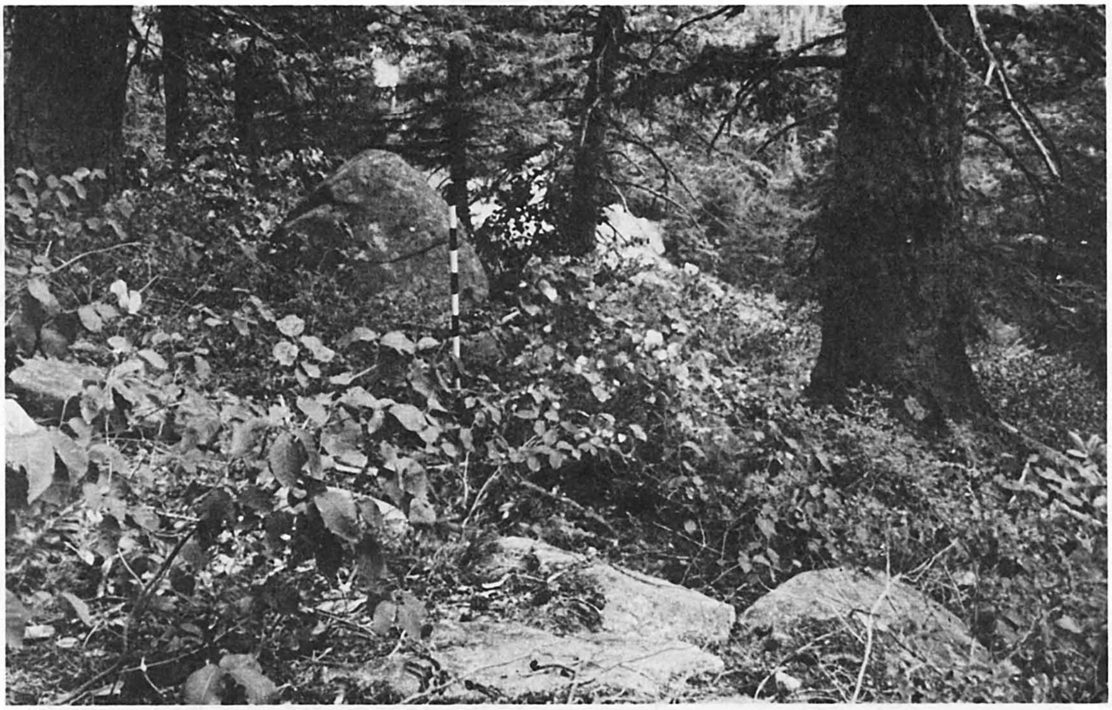


*Figure 12. — Pseudotsuga menziesii/Berberis repens h.t., Symphoricarpos oreophilus phase on a convex ridge northwest of Rocky Bar, Idaho (7,100 feet [2 160 m] elevation). Pseudotsuga menziesii forms an open stand over a layer of Symphoricarpos oreophilus, Prunus virginiana, and Berberis repens. The dry southerly aspect and many large boulders prevent Pseudotsuga from developing a more dense stand.*

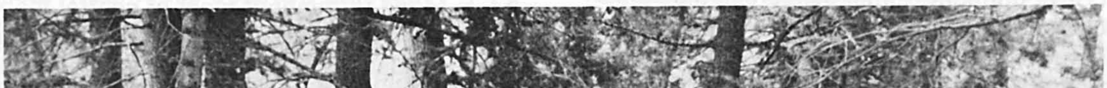
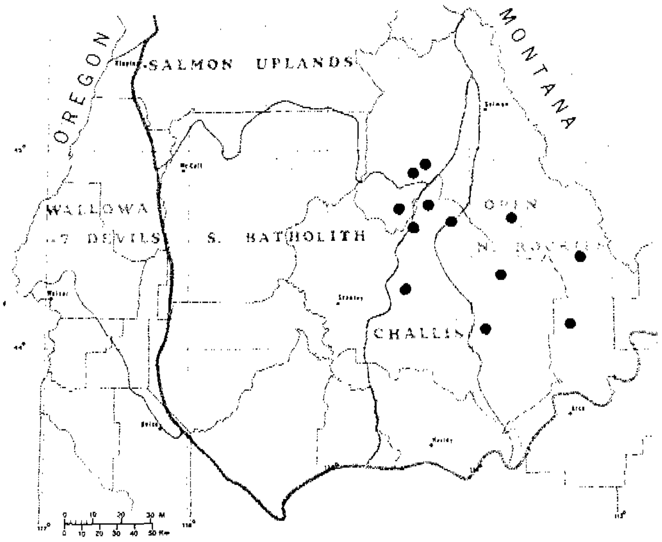


*Figure 13. — Pseudotsuga menziesii/Berberis repens h.t., Carex geyeri phase on a southerly exposure west of Ketchum, Idaho (7,500 feet [2 280 m] elevation). Pseudotsuga menziesii forms a partially open stand over a moderate coverage of Berberis repens and Carex geyeri.*

## *PSEUDOTSUGA MENZIESII/CERCOCARPUS LEDIFOLIUS* H.T. *(PSME/CELE;* DOUGLAS-FIR/MOUNTAIN MAHOGANY)




**Distribution.** — The *PSME/CELE* h.t. occurs mainly in the Challis and Open Northern Rockies sections from 6,000 to 8,100 feet (1 830 to 2 470 m) in elevation. It appears on various aspects at lower timberline where it often borders a *Cercocarpus* shrub community.

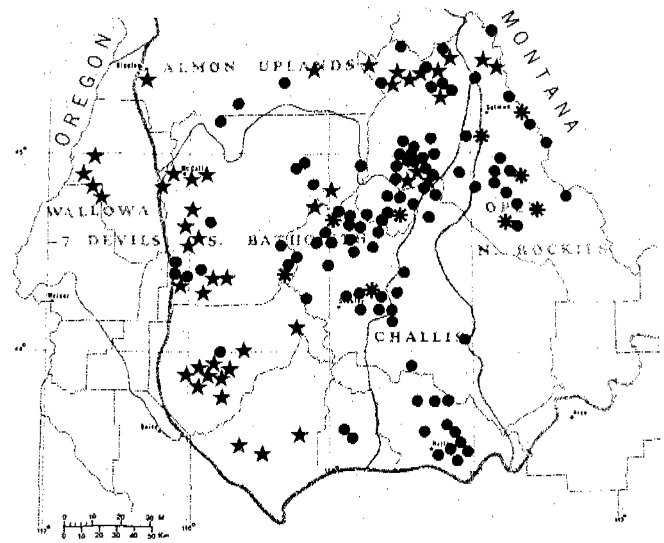
**Vegetation.** — Trees are often widely scattered. *Pseudotsuga* is usually the only tree present, but small amounts of *Pinus flexilis* are not uncommon. In parts of the Salmon River drainage, *Pinus ponderosa* may also appear in this h.t. A layer of *Cercocarpus* dominates the tree interspaces. Either *Symphoricarpos oreophilus* or *Agropyron spicatum* may form a subordinate layer.

**Soil.** — Soil parent materials vary widely and include limestone, shale, sandstone, pumice, quartz monzonite, and quartzite (appendix D). Soil textures are mostly loams or sandy loams and are often gravelly. The pH ranged from 5.5 to 7.9 and averaged 6.4. Coverage of bare rock reaches 40 percent on some sites and areas of bare soil can reach 30 percent. Average litter depth per site seldom surpasses 1.5 cm.

**Productivity/Management.** — Timber potential is low to very low based on limited data (appendix E-1), and tree regeneration is very sporadic. Livestock forage is sparse here, which is partly due to shrub density. In some areas this h.t. provides important browse and cover for elk, mule deer, antelope, and wild horses. As a result, it is an important breeding and hunting area for mountain lion. This h.t. also provides important nesting sites for the blue grouse, dusky flycatcher, rock wren, and American kestrel.

**Other studies.** — The *PSME/CELE* h.t. is also described in Utah and southeastern Idaho (Henderson and others 1976, unpubl. ref.) and in eastern Idaho-western Wyoming (Steele and others 1979, unpubl. ref.).

## *PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS* H.T. *(PSME/CARU;* DOUGLAS-FIR/PINEGRASS)




•*Calamagrostis rubescens* phase (*CARU;* pinegrass)

★ *Pinus ponderosa* phase (*PIPO;* ponderosa pine)

* *Festuca idahoensis* phase (*FEID;* Idaho fescue)

**Distribution.** — *PSME/CARU* has one of the broadest distributions of any h.t. in the *Pseudotsuga* series. The h.t. is found throughout most of central Idaho, but primarily in the Salmon Uplands and Southern Batholith sections. Usually it is found on upper slopes and ridges. It generally occurs at lower to mid-elevations of the forested zone, where it ranges from 4,100 to 7,900 feet (1 250 to 2 410 m). It occupies various cool, dry aspects having gentle to moderate relief.

**Vegetation.** — On the warmer sites of this h.t., *Pinus ponderosa* and *Pseudotsuga* often codominate the overstory. On cooler sites in gentle terrain, *Pinus contorta* may occur as a seral species. However, in much of this h.t., *Pseudotsuga* is the only tree present. *Calamagrostis rubescens* dominates the herb layer and often creates the main aspect (fig. 14). Seral shrubs may be present in various amounts as a reflection of past disturbance.

*Festuca idahoensis (FEID)* phase. — This minor phase occurs mainly in the Challis and Open Northern Rockies sections, but is also found near Stanley, Idaho. It represents a drier segment of the h.t. and generally borders nonforest communities between 6,800 and 7,600 feet (2 070 to 2 320 m). *Pseudotsuga* dominates the overstory along with an occasional *Pinus contorta*. *Calamagrostis rubescens* interspersed with *Festuca idahoensis* dominates the undergrowth. Forbs are usually sparse.

*Figure 14.* — Pseudotsuga menziesii/Calamagrostis rubescens *h.t.,* Calamagrostis rubescens *phase on a broad northerly exposure northwest of Spencer, Idaho (7,500 feet [2 290 m] elevation). A pure stand of all-age* Pseudotsuga menziesii *dominates a layer of* Calamagrostis rubescens. Arnica cordifolia *and* Antennaria racemosa *are the predominant forbs.*

*Pinus ponderosa (PIPO)* phase. — The *PIPO* phase occurs throughout much of the Southern Batholith, Wallowa-Seven Devils, and Salmon Uplands sections. It represents the warm, low elevation (4,100 to 6,500 feet [1 250 to 1 980 m]) segment of the h.t. with *Pinus ponderosa* often dominating or codominating the overstory. Because these stands are fairly open, the pine is seldom excluded. Occasionally *Pinus contorta* is present. Occurrence and coverage of *Amelanchier, Prunus,* and *Purshia* are higher in this phase than in the *CARU* or *FEID* phase.

*Calamagrostis rubescens (CARU)* phase. — This, the predominant phase in the Challis and Open Northern Rockies sections, also extends westward across central Idaho. This phase represents the cool, upper elevation (6,400 to 7,900 feet [1 950 to 2 410 m]) segment of the h.t. *Pinus contorta* is a major seral tree but it does not occur everywhere within this phase. *Symphoricarpos oreophilus* is the most common shrub, but on some sites *Ceanothus velutinus* may appear following fire and persist for several decades.

**Soil.** — Granitics, quartzite, quartz monzonite, trachyte, andesite, and basalt are the common soil parent materials (appendix D). Most soil textures range from loam to loamy sand and many are gravelly. Soil pH ranged from 5.5 to 7.1 and averaged 6.2. Coverages of bare rock are usually less than 5 percent but may sometimes reach 50 percent. Areas of bare soil rarely exceed 5 percent. Average litter depth on a site is seldom more than 6 cm.

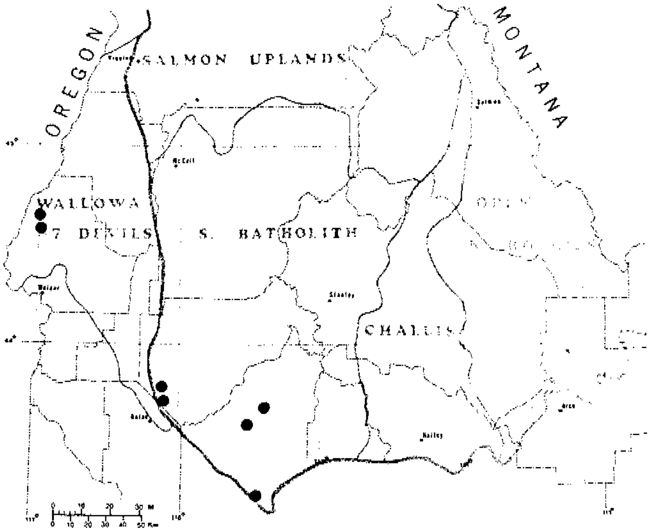
**Productivity/Management.** — Timber production is low to moderate in the *CARU* phase and moderate to high in the *PIPO* phase (appendix E-2). When the overstory is reduced, the *Calamagrostis* may develop a thick sod. To establish conifers, the sod often requires special treatment, as outlined under the *Pseudotsuga* series description. When present, *Pinus ponderosa* or *P. contorta* can be regenerated in openings that receive full sunlight if the site is adequately prepared and protected from grazing animals. Where *Pseudotsuga* is the only conifer adapted to the site, its seedlings often require additional protection from wind and sun.

If these sites are burned, *Ceanothus velutinus* may sprout from seed stored in the soil and form a dominant layer for several decades. The amount of seed stored in the soil varies. Lyon (1971) describes succession on a burned area in this h.t. that contained a large amount of *Ceanothus* seed.

Seral stands that produce *Ceanothus, Salix,* and *Populus tremuloides* are very important to deer and elk. In some areas the sites may be important for elk calving. Old-growth stands are important nesting sites for the Steller's jay, western tanager, and pine siskin. Livestock make some use of these sites if on gentle terrain, but forage production tends to be low.

**Other studies.** — In studies of adjacent areas, R. and J. Daubenmire (1968) describe a PSME/CARU h.t. in northern Idaho and eastern Washington. They also note its occurrence in the Wallowa Mountains of eastern Oregon and the eastern foothills of the Cascade Mountains in Washington. *PSME/CARU* is also reported from Montana (Pfister and others 1977), and eastern Idaho-western Wyoming (Steele and others 1979, unpubl. ref.). The lower elevation portions of Hall's (1973) "mixed conifer-pinegrass" communities in eastern Oregon appear comparable to our *PSME/CARU* h.t., *PIPO* phase.

### *PSEUDOTSUGA MENZIESII/OSMORHIZA CHILENSIS* H.T. *(PSME/OSCH;* DOUGLAS-FIR/MOUNTAIN SWEET-ROOT)




**Distribution.** — This is a minor h.t. in central Idaho that has its main distribution south of the Snake River Plains. It usually appears on the leeward slopes of ridges that are adjacent to the Snake River Plain or related deserts. Most sites occur from 5,300 to 7,400 feet (1 620 to 2 260 m). Adjacent warmer slopes often support nonforest communities.

**Vegetation.** — Usually *Pseudotsuga* is the only conifer present. *Populus tremuloides* and sometimes *Pinus contorta* may dominate seral stands. Species from adjacent mountain shrub communities may also invade disturbed sites. *Osmorhiza chilensis* usually dominates the forb layer. When a *PSME/CARU* or *PSME/CAGE* h.t. is nearby on drier sites, the *Calamagrostis* or *Carex* may be well represented, especially in younger stands.

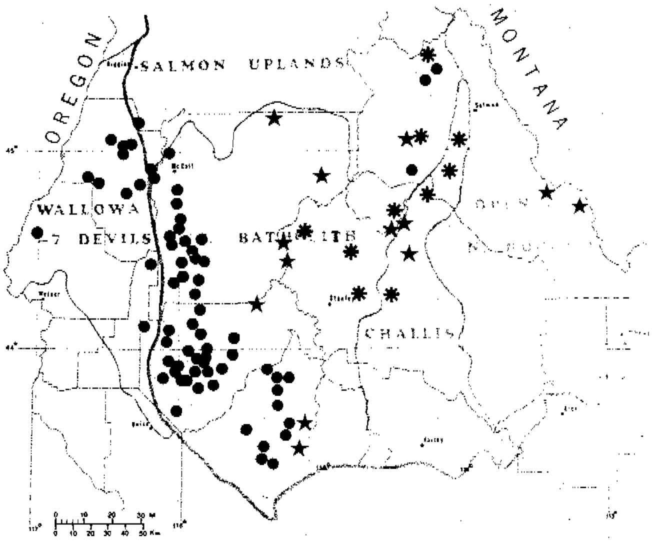
**Soil.** — Soil parent materials include granitics, andesite, rhyolite, and basalt (appendix D). Textures are mainly loams or sandy loams; a few are gravelly. Soil pH ranged from 5.5 to 6.6 and averaged 5.8. Areas covered by bare soil or rock are less than 5 percent. Litter depths seldom exceed 5.5 cm.

**Productivity/Management.** — Timber productivity is moderate to high (appendix E-2). *Pseudotsuga* regenerates most easily in the shade of older trees and is often the only conifer adapted to the site. If present, *Populus tremuloides* can quickly dominate cleared areas in this h.t.; otherwise, shrubs from adjacent communities will dominate the clearings and suppress conifer seedlings. Pocket gophers are sometimes numerous and may destroy young trees. Livestock often use these sites as resting areas but find little forage here.

Big game use is normally light but may increase in early seral stages. A few sites provide important resting areas for mule deer.

**Other studies.** — *PSME/OSCH* is also described from southeastern Idaho and adjacent Utah (Steele and others 1979, unpubl. ref.; Henderson and others 1976, unpubl. ref.).

### *PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA* H.T. *(PSME/SPBE;* DOUGLAS-FIR/WHITE SPIRAEA)




•*Pinus ponderosa* phase (*PIPO;* ponderosa pine)

★ *Spiraea betulifolia* phase (*SPBE;* white spiraea)

* *Calamagrostis rubescens* phase (*CARU;* pinegrass)

**Distribution.** — *PSME/SPBE* occurs throughout much of central Idaho but is most prevalent in the Southern Batholith section. Usually, *PSME/SPBE* occupies dry southerly exposures and occurs from 3,300 to 8,100 feet (1 010 to 2 470 m). It exists in a variety of conditions, from steep, unstable slopes to gentle, rolling terrain.

**Vegetation.** — Overstory composition varies between the phases noted below. Normally, *Spiraea betulifolia* dominates a low shrub layer but sometimes *S. pyramidata* occurs in its place. *Calamagrostis rubescens* or *Carex geyeri* often form a layer beneath the *Spiraea*.

*Pinus ponderosa (PIPO)* phase. — This phase, occurring mainly in the Wallowa-Seven Devils and Southern

*Figure 15. — Pseudotsuga menziesii/Spiraea betulifolia h.t., Spiraea betulifolia phase on a northerly exposure northeast of Pine, Idaho (6,860 feet [2 090 m] elevation). Pseudotsuga menziesii and a few Pinus contorta codominate a layer of Spiraea betulifolia. This site is apparently too cool to support Pinus ponderosa.*

Batholith sections, represents the warm, lower elevations (3,300 to 6,000 feet [1 010 to 1 830 m]) of the h.t. Usually *Pinus ponderosa* is present as a long-lived seral species that is seldom excluded by *Pseudotsuga*. *Amelanchier* and *Salix* are also common in this phase.

*Calamagrostis rubescens (CARU)* phase. — The *CARU* phase is found in the Challis and Salmon Uplands sections and higher elevations of the Southern Batholith section and extends eastward into western Wyoming. This phase represents the cool, upper elevations (6,000 to 7,900 feet [1 830 to 2 410 m]) of the h.t. *Pinus contorta* is more common in this phase than in the other phases, and *Symphoricarpos oreophilus* is a common shrub. The *Calamagrostis* creates a conspicuous layer in most stands, resembling the *PSME/CARU h.t.*

*Spiraea betulifolia (SPBE)* phase. — This phase occurs in higher elevations of the Southern Batholith section and in the Challis and Salmon Uplands sections and also extends eastward into Wyoming. It occupies the mid- to upper segment (5,200 to 8,100 feet [1 590 to 2 470m]) of the h.t. Here the sites are too cool for *Pinus ponderosa* and apparently the substrates are unsuitable for heavy *Calamagrostis* development. Usually *Pseudotsuga* is the only tree growing on these sites (fig. 15), but occasionally *Pinus contorta, P. flexilis* or *Populus tremuloides* is present. *Symphoricarpos oreophilus* and *Berberis repens* are the most common associates of *Spiraea*.

**Soil.** — Soil characteristics appear to vary between phases (appendix D). In the *PIPO* phase, soil parent materials are mostly granitics, basalt, and some andesite. Textures range from loamy sand to clay loam, but most are loams and a few are gravelly. Soil pH ranged from 5.4 to 6.4 and averaged 5.9. Areas of bare rock reach 60 percent and bare soil 30 percent, although most sites have less than 5 percent of either surface. Average litter depth on a site can attain at least 6.5 cm.

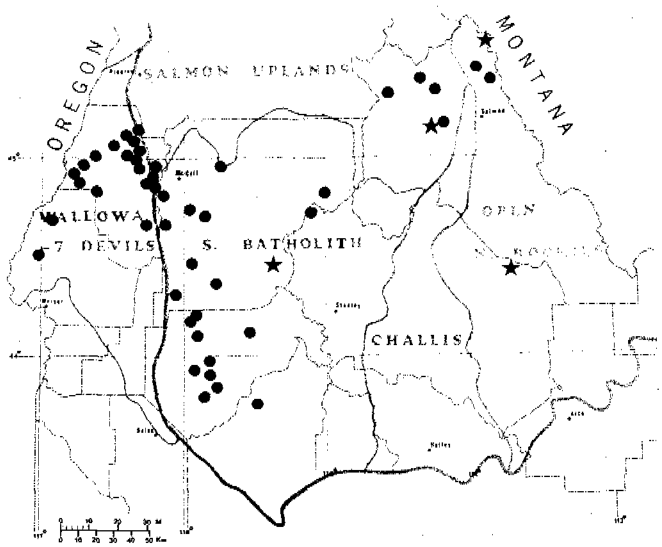
Soil parent materials in the *CARU* phase are mostly quartzite and some latite. The textures vary from sandy loam to loam and most are gravelly. Soil pH ranged from 6.2 to 6.7 and averaged 6.4. Coverages of bare rock are less than 5 percent and areas of bare soil less than 2 percent. Litter depths seldom exceed 3.5 cm.

The *SPBE* phase has the most variable soils. Parent materials include granitics, quartzite, diorite, dacite, quartz monzonite, and andesite. Textures vary from sandy loam to loam and most are gravelly to very gravelly. Coverages of bare rock vary and may reach 40 percent. The pH ranged from 5.7 to 7.7 and averaged 6.6. Areas of bare soil are usually less than 5 percent. Average litter depth seldom exceeds 3.5 cm.

**Productivity/Management.** — Timber productivity is low to moderate in the *SPBE* phase and moderate to high in the *PIPO* phase (appendix E-2). If present, *Pinus ponderosa* or *P. contorta* are usually best suited for regenerating the stand. Where *Pseudotsuga* is the only species suitable for timber, the seedlings may need protection from wind and sun. If a layer of *Calamagrostis* or *Carex* is present, the site may need careful preparation for adequate stocking. In most areas livestock use the sites only lightly, but big game use them frequently. Some sites provide important forage and cover for elk and mule deer. Deer may also use these areas for fawning. This h.t. provides important nesting sites for the Steller's jay, red-breasted nuthatch, and Cooper's hawk. In the *PIPO* phase, wild turkey may roost in the large pines and feed on the seeds.

**Other studies.** — In Montana, Pfister and others (1977) describe the *PSME/SPBE* h.t. but assign stands with high coverages of *Calamagrostis* or *Carex* to other h.t.'s. From eastern Washington, R. and J. Daubenmire (1968) report one stand in their *PSME/SYAL* h.t. that conforms to our *PSME/SPBE* h.t. Steele and others (1979 unpubl. ref.) also describe this h.t. in eastern Idaho.

## *PSEUDOTSUGA MENZIESII/SYMPHORICARPOS ALBUS* H.T. (*PSME/SYAL*; DOUGLAS-FIR/COMMON SNOWBERRY)




•*Pinus ponderosa* phase (*PIPO*; ponderosa pine) ★*Symphoricarpos albus* phase (*SYAL*; common snowberry)

**Distribution.** — *PSME/SYAL* occurs mainly in the Wallowa-Seven Devils, Salmon Uplands, and Southern Batholith sections.

It occupies warm, dry slopes and benches and ranges from 3,200 to 7,100 feet (980 to 2 160 m) at lower to mid-elevations of the forested zone.

**Vegetation.** — Overstories vary between the phases noted below. Undergrowths are usually dominated by a layer of *Symphoricarpos albus*, often accompanied by *Spiraea betulifolia* and *Rosa* spp. On many sites *Calamagrostis rubescens* or *Carex geyeri* forms a layer beneath the shrubs.

*Pinus ponderosa (PIPO)* phase. — This is the most common phase in central Idaho. It occurs from 3,200 to 6,200 feet (980 to 1 890 m) and represents the warmer segment of the h.t. *Pinus ponderosa* is a long-lived seral dominant that is seldom excluded by *Pseudotsuga*. Occasionally *Pinus contorta* is also present.

*Symphoricarpos albus (SYAL)* phase. — This phase appears mainly east of the study area but it extends westward in the colder segment of the h.t. at elevations from 5,100 to 7,100 feet (1 560 to 2 160 m). *Pseudotsuga* is usually the only conifer on these sites, but seral stands may contain *Populus tremuloides*.

**Soils.** — Most of our sample stands occur on granitics, quartz monzonite, or basalt (appendix D). Soil textures vary from sandy loam to clay loam and some are gravelly to very gravelly. The pH ranges from 5.5 to 7.0 and averages 6.4 Areas of bare rock or bare soil seldom exceed 5 percent. Average litter depth can reach 8.7 cm.

**Productivity/Management.** — Timber productivity is moderate to high (appendix E-1). In the *PIPO* phase, *Pinus ponderosa* is usually the conifer most suitable for restocking the site. It grows best in openings that receive full sunlight. When present, *Calamagrostis rubescens* also responds to increased sunlight and can form a dense sod that retards conifer reproduction. In the *SYAL* phase, *Pseudotsuga* is usually the only conifer well adapted to these sites. Here, the existing stand must be managed carefully to protect *Pseudotsuga* seedlings from severe wind and sun.

Livestock usually find low amounts of forage in this h.t.; but may sometimes congregate because of the gentle terrain. In some areas, the seral shrubs provide important browse for elk, whitetail deer, or mule deer. In the *PIPO* phase, ruffed grouse may use these sites year round and wild turkey may roost in the large pines and feed on pine seeds.

**Other studies.** — R. and J. Daubenmire (1968) described the *PSME/SYAL* h.t. in northern Idaho and eastern Washington but included one stand that fits our *PSME/SPBE* h.t. Pfister and others (1977) describe *PSME/SYAL* in Montana. It is also reported from eastern Idaho and western Wyoming (Cooper 1975; Steele and others 1979, unpubl. ref.). In eastern Oregon, a portion of Hall's (1973) "ponderosa pine-Douglas-fir-snowberry-oceanspray" community is apparently similar to our PSME/SYAL h.t., PIPO phase.

## *PSEUDOTSUGA MENZIESII/VACCINIUM GLOBULARE* H.T. (*PSME/VAGL*; DOUGLAS-FIR/ BLUE HUCKLEBERRY)

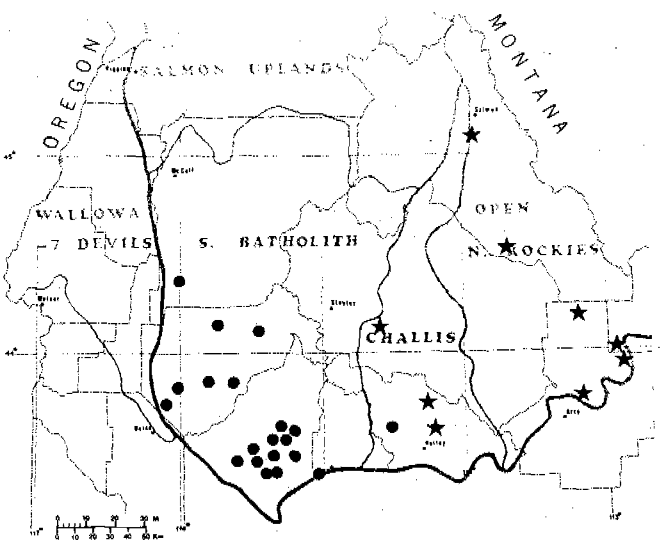
**Distribution.** — *PSME/VAGL* is an incidental type, occurring mainly in Montana and eastern Idaho. Small amounts appear in the Southern Batholith and Salmon Uplands sections.

**Vegetation.** — *Pinus ponderosa* and *P. contorta* are the common seral conifers. *Vaccinium globulare* forms a dominant layer in the undergrowth. *Spiraea betulifolia* and *Calamagrostis rubescens* are common associates of the *Vaccinium*.

**Productivity/Management.** — If present, *Pinus ponderosa* or *P. contorta* should regenerate wherever the tree canopy is removed and a seedbed is available. *Pseudotsuga* seedlings may benefit from a light tree canopy, but the undergrowth of shrubs and grass can impede their establishment. In summer and fall, elk and deer may seek food and cover on these sites and the berry crops attract bears, grouse, and humans.

**Other studies.** — Pfister and others (1977) describe *PSME/VAGL* in Montana as a major h.t. Cooper (1975) describes it in eastern Idaho where it is less common.

## *PSEUDOTSUGA MENZIESII/ACER GLABRUM* H.T. (*PSME/ACGL*; DOUGLAS-FIR/MOUNTAIN MAPLE)




★ *Symphoricarpos oreophilus* phase (*SYOR*; mountain snowberry)

• *Acer glabrum* phase (*ACGL*; mountain maple)

**Distribution.** — *PSME/ACGL* extends across central Idaho to western Wyoming and southeastern Idaho. However, it appears to be absent from the Wallowa-Seven Devils and Salmon Uplands sections. It is a minor h.t. that usually appears on steep northerly aspects at mid-elevations of the forested zone. It was found from 4,800 to 8,000 feet (1 460 to 2 440 m) elevation.

**Vegetation.** — Overstories vary between the phases noted below. *Acer glabrum* is usually well represented and on steep slopes forms large, spreading shrubs in old-growth stands. On gentle slopes deer and elk may browse the entire shrub and prevent development of an *Acer* canopy. In seral condition, tall-to-medium shrubs often dominate the site for several decades. Shrub species vary between phases. This h.t. sometimes borders the *Abies lasiocarpa* series and occasionally includes isolated *Abies*.

*Symphoricarpos oreophilus (SYOR)* phase. — The *SYOR* phase is found mainly in the Lemhi Mountains and occasionally westward to the Wood River. Elevations range from 6,700 to 8,000 feet (2 040 to 2 440 m). Although it represents the cool, dry portion of the h.t., it usually indicates some of the most moist uplands in the area and borders a *PSME/SYOR* or *PSME CELE* h.t. on drier sites. Small amounts of *Pinus flexilis* are common, but *Pseudotsuga* is the only tree capable of dominating the site. *Acer glabrum is usually well* represented in a sparse layer of medium-to-tall shrubs. Of these, *Symphoricarpos oreophilus* and *Ribes cereum* are most common.

*Acer glabrum (ACGL)* phase. — The *ACGL* phase appears mainly in the Southern Batholith section but extends eastward to about the Wood River. It represents the warmer segment of the h.t. and occurs from 4,800 to 6,800 feet (1 460 to 2 070 m) elevation. Conceptually, this phase would support *Abies grandis* if this species had a broader distribution in our area. On some sites, *Pinus ponderosa* is present and may codominate with *Pseudotsuga*. In seral stands *Amelanchier, Salix,* and *Prunus* are common associates of *Acer glabrum*. *Penstemon wilcoxii* and *Arenaria macrophylla* are common in the forb layer.

**Soils.** — Soil characteristics vary between phases (appendix D). Soils in the *SYOR* phase are derived mostly from calcareous sedimentaries and a few from quartzite. The textures are mostly loams or silt-loams and are usually gravelly to very gravelly. Areas of bare rock often reach 15 percent, but bare soil seldom exceeds 5 percent. Average litter depth per site can approach 8 cm.

Soils in the *ACGL* phase are derived from quartz monzonite, diorite, granitics, basalt, and occasionally sedimentaries. Textures are mostly loams to sandy loams and a few are gravelly. Soil pH ranges from 5.9 to 6.6 and averages 6.3. Coverage of bare rock can reach 15 percent but is usually less than 5 percent.

Areas of bare soil seldom exceed 5 percent. Average litter depth per site can approach 10 cm.

**Productivity/Management.** — Timber productivity is moderate to very high in the *ACGL* phase (appendix E-2). In openings, *Pinus ponderosa,* if present, grows well and regenerates easily; however, a dense layer of shrubs may develop and suppress conifer seedlings for several decades. Artificial regeneration of *Pseudotsuga* can be successful with adequate site preparation (Kittams and Ryker 1975). Part of Lyon's (1971) study of succession after fire included this h.t. and probably this phase.

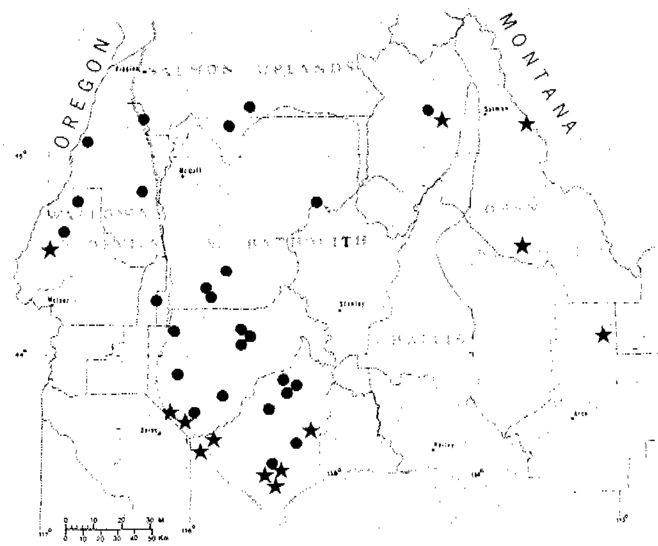
In the *SYOR* phase, timber potential is low to moderate (appendix E-2). *Pseudotsuga* is the only suitable timber species for these sites and its regeneration may be slow to establish. Overstory removal will stimulate the growth of shrubs, which may suppress conifer seedlings.

In both phases, livestock find little forage in mature stands but may seek shelter from sun and insects. In most areas, however, livestock seldom use these sites because adjacent areas provide more gentle slopes and better forage.

*PSME/ACGL* sites may be important to wildlife, depending upon location and stage of succession. The seral shrubs provide important forage and cover for elk and mule deer but snow depths usually prevent winter use. The sites may provide important habitat for ruffed grouse most of the year and for blue grouse in summer and fall.

**Other studies.** — Schlatterer (1972, unpubl. ref.) first recognized *PSME/ACGL* in his "Douglas-fir/tall shrubs" community. In southeastern Idaho, Henderson and others (1976, unpubl. ref.) describe a *PSME/ACGL* h.t. which has been classified as the *Pachistima myrsinites* phase (Steele and others 1979, unpubl. ref.).

## *PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS* H.T. (*PSME/PHMA;* DOUGLAS-FIR/NINEBARK)




•*Pinus ponderosa* phase (*PIPO;* ponderosa pine)
★ *Pseudotsuga menziesii* phase (*PSME;* Douglas-fir)

**Distribution.** — In central Idaho, *PSME/PHMA* is most common in the Southern Batholith, Salmon Uplands, and Wallowa-Seven Devils sections. It occurs most often on relatively steep slopes that have northerly aspects. This h.t. ranges from 3,100 to 7,100 feet (950 to 2 160 m) and represents warm, mild environments at lower to mid-elevations of the forested zone. It may also extend to lower timberline on steep north slopes.

**Vegetation.** — *Pinus ponderosa* is the only major seral conifer found in *PSME/PHMA.* Its occurrence varies between phases noted below. *Physocarpus* forms a patchy to uniform layer but generally dominates the undergrowth. *Amelanchier* is the most common associate of *Physocarpus.* Various forbs occur wherever there is sufficient light. On some sites, *Calamagrostis rubescens* or *Carex geyeri* form a conspicuous layer.

*Calamagrostis rubescens (CARU)* phase. — In central Idaho, this incidental phase occurs occasionally in the Salmon Uplands and Southern Batholith sections. *Pinus ponderosa* is a major seral species and often codominates with *Pseudotsuga. Physocarpus,* though well represented, appears as scattered shrubs or shrub patches and the prevailing undergrowth is *Calamagrostis rubescens* or *Carex geyeri* (fig. 16). These sites appear transitional to a *PSME/CARU* h.t. and should respond similarly to management.

*Pinus ponderosa (PIPO)* phase. — The *PIPO* phase occurs throughout the Southern Batholith, Salmon Uplands, and Wallowa-Seven Devils sections. Usually, *Pinus ponderosa* is a long-lived seral species but it

*Figure 16. —* Pseudotsuga menziesii/Physocarpus malvaceus *h.t., Calamagrostis rubescens phase on a steep, southwest exposure east of Grangeville, Idaho (3,150 feet [960 m] elevation).* Pseudotsuga menziesii *and* Pinus ponderosa *codominate patches of* Physocarpus malvaceus *and* Calamagrostis rubescens. *This phase is uncommon in the study area.*

does not always dominate seral stands. *Physocarpus* generally forms a nearly complete cover except beneath large trees. *Spiraea betulifolia* and *Berberis repens* are usually present in this phase.

*Pseudotsuga menziesii (PSME)* phase. — This phase appears mainly in the Challis and Open Northern Rockies sections and locally along the northern edge of the Snake River Plains. Usually *Pseudotsuga* is the only tree on these sites. *Physocarpus* varies from nearly complete to a patchy cover. *Symphoricarpos oreophilus* commonly associates with the *Physocarpus.*

**Soil.** — Soil parent materials are mostly granitics or basalt and occasionally quartzite or quartz monzonite (appendix D). Soil textures vary from silty clay loam to sandy loam and a few are gravelly to very gravelly. Soil pH ranges from 5.5 to 6.9 and averages 6.4. Coverages of bare rock are usually less than 5 percent but can reach 60 percent in some cases. Areas of bare soil are usually less than 5 percent. Average litter depth on a site can reach at least 11 cm.

**Productivity/Management.** — Timber productivity is moderate in the *PSME* and moderate to high in the *PIPO* phase. In much of the *PIPO* and *CARU* phases, *Pinus ponderosa* is a vigorous seral species and regenerates easily where it receives full sunlight. In the *PSME* phase, *Pseudotsuga* is the only tree adapted to the site and requires careful stand manipulation for successful regeneration. Removing the tree canopy may stimulate shrub development and retard growth of tree seedlings.

Livestock seldom graze these sites unless severe disturbance has caused invasion of grasses and forbs.

Big game frequent these areas; amount of use varies with stage of succession and location of site. In some wintering areas, these sites are important for elk, especially if seral shrubs are present and, in a few areas, moose utilize the forage and cover year round. Along the Salmon River, bighorn sheep use these sites for forage, cover, and escape. Whitetail deer, mule deer, and black bear also use the heavy cover. Ruffed grouse and, to a lesser extent, blue grouse may use these sites much of the year. When large *Pinus ponderosa* are present, wild turkeys may forage and roost here and flying squirrels are known to use the old, hollow pines. This h.t. is also considered important for the pileated woodpecker, mountain chickadee, red-breasted nuthatch, and pygmy owl.

**Other studies.** — This h.t. has been reported by R. and J. Daubenmire (1968), Hall (1973), Pfister and others (1977), Cooper (1975), Henderson and others (1976, unpubl. ref.) and Steele and others (1979, unpubl. ref.). Widespread distribution results in differences in composition which are partially differentiated by the phase designations.

### *PSEUDOTSUGA MENZIESII/LINNAEA BOREALIS* H.T. (*PSME/LIBO;* DOUGLAS-FIR/TWINFLOWER)

**Distribution.** — *PSME/LIBO* occurs as an incidental type in the North Fork of the Salmon River drainage. From here it extends north and east into Montana where it becomes more prevalent.

**Vegetation.** — In our study area, seral stands may contain *Pinus contorta* or *P. ponderosa.* Undergrowths normally contain a layer of *Calamagrostis rubescens,* with *Linnaea* throughout. *Symphoricarpos albus* and *Vaccinium globulare* may also form conspicuous layers, which denote different phases in Montana (Pfister and others 1977).

**Productivity/Management.** — Timber productivity should be moderate in our area. If present, *Pinus contorta* or *P. ponderosa* should regenerate in openings that receive full sunlight. However, when the tree canopy is removed *Calamagrostis* may increase and create a need for special site preparation.

**Other studies.** — *PSME/LIBO* is described more fully in Montana (Pfister and others 1977) but is not reported elsewhere.

### *PSEUDOTSUGA MENZIESII/VACCINIUM CAESPITOSUM* H.T. (*PSME/VACA;* DOUGLAS-FIR/DWARF HUCKLEBERRY)

**Distribution.** — *PSME/VACA* is an incidental h.t. in the Southern Batholith and Salmon Uplands sections. It also occurs in the South Fork of the Clearwater drainage in north Idaho, but the bulk of its distribution lies in Montana.

**Vegetation.** — *Pinus contorta* and *P. ponderosa* are seral species in this h.t. *Vaccinium caespitosum* is normally associated with *Arctostaphylos uva-ursi, Calamagrostis rubescens,* and *Carex geyeri.*

**Productivity/Management.** — Timber productivity should be moderate. *Pinus ponderosa* and *P. contorta* can regenerate in openings that receive ample sunlight. If *Calamagrostis rubescens* is present in large amounts, the sod may need to be broken for successful tree regeneration.

**Other studies.** — Pfister and others (1977) describe *PSME/VACA* in Montana, but it has not been reported elsewhere.

## *Picea engelmannii* Series

**Distribution.** — Along streams with cool air drainage, *Picea engelmannii* and *Abies lasiocarpa* often extend into lower elevations of the *Pseudotsuga* zone. In the Challis and Open Northern Rockies sections, *Picea* exceeds the warm limits of *Abies* and forms climax stands on moist slopes and along drainage ways. This situation is especially common in the Lemhi and Beaverhead Mountains. It becomes more prevalent in Montana where *Picea* displays an infusion of *Picea glauca* genes in the population (Pfister and others 1977; Ogilvie 1962). Daubenmire (1974) also reports *Picea* hybrids east of the Continental Divide from Canada to Wyoming, but evidence of *Picea glauca* traits is scarce in our area.

**Vegetation.** — On very wet sites, *Picea engelmannii* appears as the climax dominant, often replacing seral *Pinus contorta.* Here, *Abies lasiocarpa* is often present, usually as unthrifty seedlings or saplings incapable of replacing *Picea.* Undergrowths vary by h.t. and generally reflect wet substrates with poor aeration.

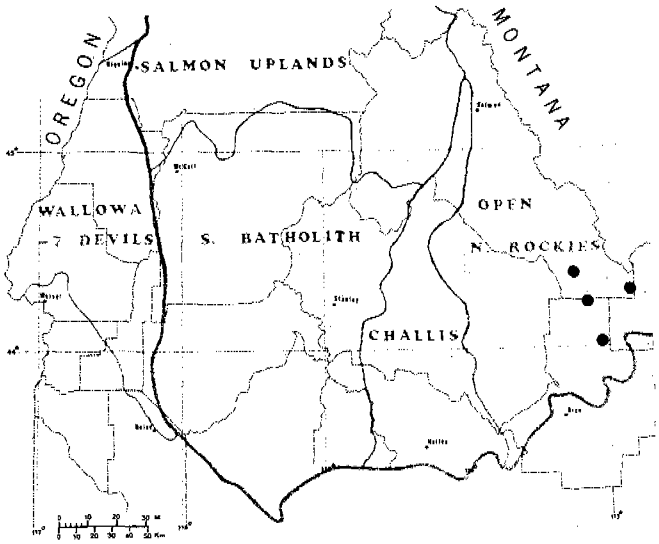
On drier sites, *Picea* codominates with *Pseudotsuga* but appears incapable of excluding it. Small amounts of *Pinus flexilis* are sometimes present. Undergrowths are very depauperate — often consisting of a few scattered shrubs or forbs — with mosses, lichens, and duff attaining the highest coverages.

**Soil.** — Soil characteristics at the series level are extremely variable and are described at the h.t. level where they are fairly uniform.

**Fire.** — Stand structure and species composition suggest that fire has altered these plant communities. Some charcoal is usually found on these sites, but the small amounts suggest that fire frequents these sites less often than on contiguous slopes. Also, some charcoal on the bottomland sites may have been transported by gravity or water. In general, undergrowths in this series normally appear either too wet or too depauperate to burn well, but the trees could maintain a hot fire that was generated elsewhere.

**Productivity/Management.** — Timber productivities vary from low to high. The highest productivities are streamside locations that are seldom conducive to intensive timber management. Also, these wet sites are easily degraded by livestock and machinery but can be important to deer, elk, moose, and bear.

## *PICEA ENGELMANNII/HYPNUM REVOLUTUM* H.T. (*PIEN/HYRE*; SPRUCE/HYPNUM)




**Distribution. —** This h.t. occurs mainly in the southern half of the Lemhi and Beaverhead ranges and in western Wyoming. In all cases, these sites occur on steep, northerly aspects where snow apparently accumulates in winter and persists in the spring. Though well drained and very dry, these are usually the most moist upland sites in the area. They tend to represent lower to mid-elevations of a very narrow forest zone and range from 7,300 to 8,100 feet (2 230 to 2 470 m).

**Vegetation. —** *Pseudotsuga* predominates in most stands, with lesser amounts of *Picea* occurring throughout. In old-growth stands, regeneration of the two trees is often equal. *Pinus flexilis* usually appears in small amounts. Shrubs, forbs, and grasses are notably sparse but, if present, usually include *Juniperus communis, Shepherdia canadensis, Symphoricarpos oreophilus,* and *Arnica cordifolia.* Unless disturbed, a thin layer of moss, *Hypnum revolutum,* dominates the undergrowth (fig. 17). Other mosses may be scarce, although *Dicranowiesia crispula* and the lichen, *Cladonia fimbriata,* are usually present on rotting wood. The foliose lichen, *Peltigera rufescens,* is usually evident throughout the stand.

**Soil. —** Soils are gravelly and derived mostly from calcareous shale and sandstone, and limestone (appendix D). In our few samples, soil pH ranged from 7.7 to 8.4 and averaged 8.0. Coverages of bare rock are less than 5 percent and areas of bare soil less than 1 percent. Average litter depth per site seldom exceeds 4 cm.

**Productivity/Management. —** Timber productivity is low (appendix E-2). *Pseudotsuga* and especially *Picea* grow slowly and their diameter increments decline at a relatively early age. Consequently, gains from thinning may be marginal. Tree regeneration may be sporadic and timber harvests should remove trees according to the pattern and frequency of regeneration observed in the stand. Big game and livestock find very little forage here but may use these sites for cover.

**Other studies. —** *PIEN/HYRE* has been described in western Wyoming (Steele and others, 1979 unpubl. ref.). It appears related to the *Picea/Senecio streptanthifolius* h.t. in Montana (Pfister and others 1977).

## *PICEA ENGELMANNII/GALIUM TRIFLORUM* H.T. (*PIEN/GATR*; SPRUCE/SWEETSCENTED BEDSTRAW)

**Distribution. —** *PIEN/GATR* is an incidental h.t. in east-central Idaho. It is most common in Montana and occurs in western Wyoming. Typically, these sites occur on alluvial terraces or bottomlands and sometimes appear on slopes associated with seeps.

**Vegetation. —** Normally *Picea* dominates the stand. Occasionally *Abies lasiocarpa* achieves a minor foothold and small amounts of *Pinus contorta* may invade following disturbance. Undergrowths vary considerably as a reflection of site history and adjacent plant communities; however, *Galium triflorum* and *Actaea rubra* are common throughout the h.t. *Senecio triangularis* and *Streptopus amplexifolius* may occur in the wetter portions.

**Productivity/Management. —** Timber productivity is probably moderate to high. *Picea* and sometimes *Pinus contorta* grow well here, but the streamside locations may restrict timber harvest. Machinery and livestock easily disrupt the soil and may expose high water tables. Protection of soil and water resources may outweigh other values.

**Other studies. —** *PIEN/GATR* is described in Montana (Pfister and others 1977) and in western Wyoming (Cooper 1975; Steele and others 1979, unpubl. ref.).

## *PICEA ENGELMANNII/CAREX DISPERMA* H.T. (*PIEN/CADI*; SPRUCE/SOFT LEAVED SEDGE)

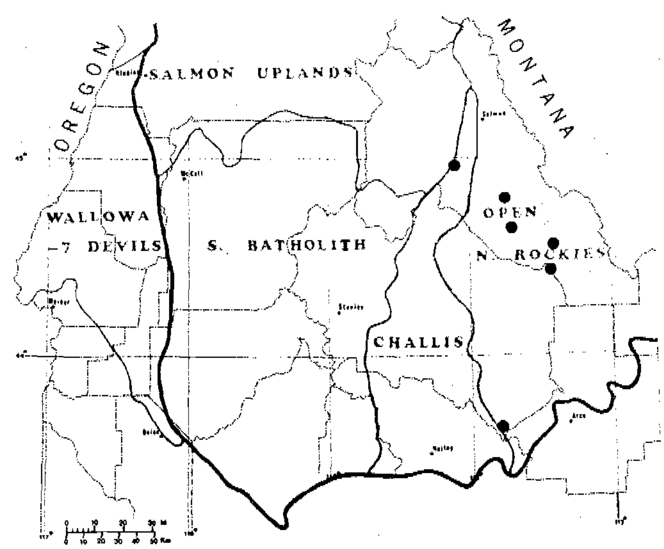


*Figure 17. — Picea engelmannii/Hypnum revolutum h.t. on a north exposure in the Beaverhead Mountains northeast of Blue Dome, Idaho (8,100 feet [2 470 m] elevation).* Pseudotsuga menziesii *is the dominant tree, but the regeneration is* Picea engelmannii. Pinus flexilis *is scattered throughout the stand; the moss,* Hypnum revolutum, *forms the predominant undergrowth layer.*

**Distribution.** — *PIEN/CADI* occurs mainly in the Challis and Open Northern Rockies sections, from 6,200 to 7,800 feet (1 890 to 2 380 m) in elevation. It is a minor h.t. found on stream terraces near the lower limits of *Abies lasiocarpa.* It usually occurs in patches or strips that seldom exceed 1 acre (0.4 ha) of continuous habitat.

**Vegetation.** — *Picea engelmannii* usually dominates the site. Lesser amounts of *Pinus contorta* may be present as a seral species. In some areas, *Abies lasiocarpa* seedlings and saplings will grow here, but are usually short lived and incapable of replacing *Picea.* In good condition, these sites are covered with a carpet of *Carex disperma* (fig. 18). Numerous wet-site herbs, graminoids, and shrubs may be present but seldom dominate (appendix C). Mosses often form a pronounced layer; characteristic species are *Aulocomnium palustre, Amblystegium juratzkanum,* and *Tetraphis pellucida* (Steele 1974).

**Soil.** — Most substrates in this h.t. consist of a deep organic layer associated with a high water table (appendix D). The pH ranged from 4.9 to 6.2 and averaged 5.6. Areas of bare rock and bare soil are negligible.

**Productivity/Management.** — Timber productivity is moderate (appendix E-2). Although relatively small in area, these sites should be recognized when planning access to and use of adjacent h.t.'s. Livestock and machinery can easily destroy the *Carex* mat and leave the substrate exposed to erosion. Tree regeneration may depend on the raised microsites of hummocks and fallen logs. Partial cutting in old-growth stands may subject remaining large trees to windthrow.

Livestock find little forage here but use these cool, wet sites for resting and watering. Elk, moose, and black bear use these sites for wallows. *PIEN/CADI* also provides important nesting sites for the MacGillivray's warbler, American robin, and warbling vireo.

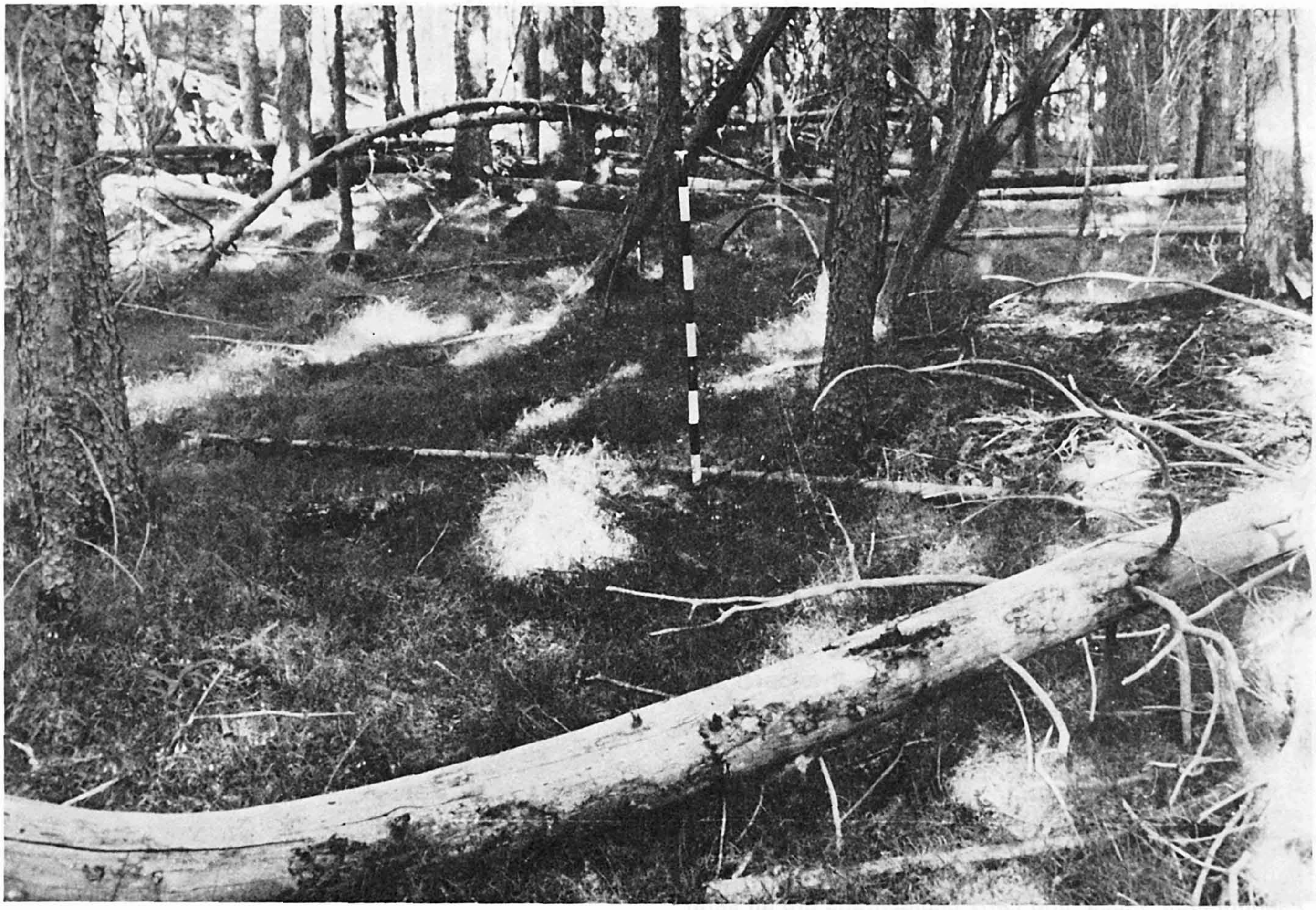


*Figure 18. —* Picea engelmannii/Carex disperma *h.t. on an alluvial terrace in the Lemhi Mountains southwest of Lemhi, Idaho (6,850 feet [2 090 m] elevation).* Picea engelmannii *has replaced a previous stand of* Pinus contorta. *The fallen stems of* Pinus contorta *have protected the carpet of* Carex disperma *from destruction by livestock.*

**Other studies.** — This h.t. is also noted in western Wyoming (Steele and others 1979, unpubl. ref.).

### *PICEA ENGELMANNII/EQUISETUM ARVENSE* H.T. (*PIEN/EQAR*; SPRUCE/COMMON HORSETAIL)

**Distribution.** — *PIEN/EQAR* is an incidental h.t. in the Challis and Open Northern Rockies sections. It becomes more common eastward in Montana and western Wyoming. These sites usually occur on stream terraces and very wet benches; rarely do they occur on sloping seeps. In most cases they occupy a limited area.

**Vegetation.** — Usually *Picea engelmannii* is the dominant tree. *Pinus contorta* may be present in seral stands and sometimes *Abies lasiocarpa* appears in minor amounts. *Equisetum arvense* usually dominates a rich undergrowth of wet-site forbs and graminoids. A wide assortment of subalpine species grows on the raised microsites. Mosses often form a notable layer here.

**Productivity/Management.** — Timber potentials are probably moderate to high. *Picea* grows well here, but timber harvest is limited by the easily destroyed substrates and windthrow potential of existing trees. Big game seek the lush forbs on these sites and may use the area for wallows. Domestic stock will graze here as other sites become drier in late summer, but concentrated use can easily destroy the plant cover.

**Other studies.** — *PIEN/EQAR* is described in Montana (Pfister and others 1977) and in eastern Idaho and western Wyoming (Cooper 1975; Steele and others 1979, unpubl. ref.).

## *Abies grandis* Series

**Distribution.** — *Abies grandis* grows primarily in the western third of central Idaho, but it also occurs sporadically eastward in the Salmon Uplands section to Colson Creek near Shoup, Idaho. Its known southern limit is in Alder Creek, south of Garden Valley.

Daniels (1969) showed that most *Abies grandis* in central Idaho are intergrades between *A. grandis* and *A.*

*concolor.* This zone of intergradation extends from central Idaho across eastern Oregon to northern California. Although individual trees may conform to either species (Hitchcock and Cronquist 1973), Daniels (1969) found that the majority of the population in central Idaho had a stronger resemblance to *A. grandis* than *A. concolor.* For this reason, we have chosen *A. grandis* as the epithet for the entire population. This genetic diversity appears partly responsible for extension of *A. grandis* to drier sites, resulting in a relatively large number of *A. grandis* h.t.'s in this area.

In general, the *Abies grandis* series indicates areas in central Idaho that experience some of the greatest moderating effects of the Pacific maritime influence. In Idaho, this influence is best reflected in the moist *Thuja* and *Tsuga* forests to the north of our study area. Undergrowth species common to these forests extend southward in the *Abies grandis* series and approach their environmental limits here.

The *Abies grandis* series lies between the drier *Pseudotsuga* series and the cooler *Abies lasiocarpa* series. Where *A. grandis* and *A. lasiocarpa* overlap, series designations are based on competitive potential. Stands where *A. grandis* is more successful than *A. lasiocarpa* are placed in the *A. grandis* series and vice versa. Thus, either species may appear as a minor climax component of the opposing series.

**Vegetation.** — This series has the most diverse floristics in central Idaho. *Pinus ponderosa, P. contorta, Pseudotsuga, Picea,* and *Larix occidentalis* are all seral species in at least part of this series. *Pinus ponderosa* and *Pseudotsuga* are the most prevalent. Climax undergrowths may resemble some of those in the *Pseudotsuga* series as well as the *Abies lasiocarpa* series. Seral stands can be quite diverse because of the large number of species capable of growing on these sites.

**Soil.** — Soils vary from clay loams to sandy loams and are mostly loams (appendix D). The parent materials are mostly granitic or basalt. Soil pH varies from 5.0 to 6.9. In general, soil conditions appear similar throughout the *Abies grandis* series, although soil-habitat type relationships may occur locally.

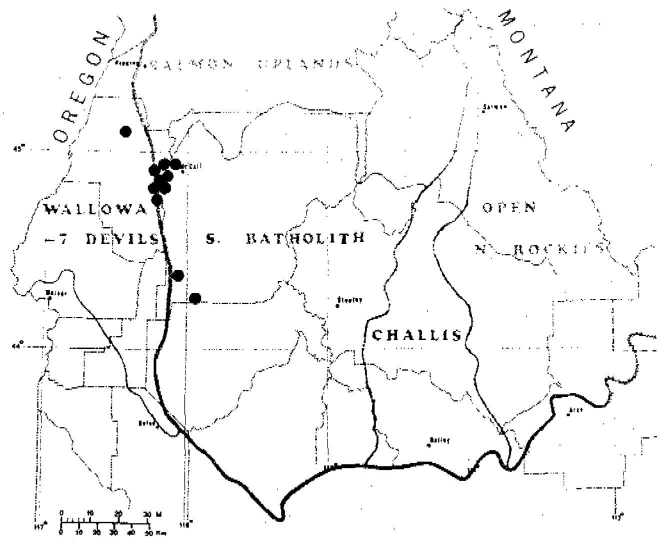
**Fire.** — Most vegetation in this series reflects considerable alteration by fire. The drier h.t.'s are often dominated by large *Pinus ponderosa* and *Pseudotsuga,* with undergrowths having high coverages of *Calamagrostis rubescens.* Obviously, fire has maintained these conditions because the frequent reinvasions of *Abies grandis* easily suppress regeneration of *Pinus* and *Pseudotsuga* as well as the growth of *Calamagrostis.* Even on more moist h.t.'s, the *Pinus* and *Pseudotsuga* often dominate an understory of *Abies grandis* and the undergrowth contains numerous seral species.

**Productivity/Management.** — This series provides the most productive timberlands and greatest silvicultural diversity in central Idaho. *Pinus ponderosa* and *Pseudotsuga* grow exceptionally well here and *Picea, Pinus contorta,* and even *Larix occidentalis* will grow on certain h.t.'s. On some of the drier sites in this series, growth rates of the *Abies* may equal or even surpass that of the seral species. Relative acreages of this series are quite small in our area, increasing further the timber value of these sites.

Frederick and Partridge (1977) studied the occurrence of decay in *Abies grandis* and its relationship to certain undergrowth species. They found a low incidence of decay on the drier sites that support high coverages of *Calamagrostis rubescens* and *Symphoricarpos albus.* Much of this condition would occur in the *ABGR/SPBE* and *ABGR/CARU* h.t.'s. We also noted remarkably few sporophores of *Echinodontium tinctorium* in these two h.t.'s.

In 1972, insect damage to the needles and new growth of *Abies, Picea,* and *Pseudotsuga* were noted throughout this series. Most of this damage was presumedly caused by western spruce budworm *(Choristoneura fumiferana)* and appeared concentrated geographically rather than by h.t. Infestation apparently increased northward and became notably severe around McCall, Idaho.

## *ABIES GRANDIS/CALAMAGROSTIS RUBESCENS* H.T. *(ABGR/CARU;* GRAND FIR/PINEGRASS)




**Distribution.** — *ABGR/CARU* occurs as a minor h.t. in the Wallowa-Seven Devils section and western edge of the Southern Batholith section. Here it is found on gentle slopes and convex ridges at 5,200 to 6,100 feet (1 590 to 1 860 m). Usually it borders other *Abies grandis* h.t.'s, but occasionally it merges with *PSME/CARU.*

*Figure 19. — Abies grandis/Calamagrostis rubescens h.t. on a gentle, southeast exposure just west of McCall, Idaho (5,250 feet [1 600 m] elevation).* Abies grandis *and some* Pseudotsuga menziesii *are replacing an old growth stand of* Pinus ponderosa. Calamagrostis rubescens *and* Carex geyeri *codominate the undergrowth. Forbs and shrubs are very sparse throughout the stand.*

**Vegetation.** — *Pseudotsuga, Pinus contorta,* and *P. ponderosa* are the major seral trees. Shrubs are very sparse but small amounts of *Spiraea, Salix,* and *Amelanchier* are often present. *Calamagrostis rubescens* and *Carex geyeri* codominate the undergrowth (fig. 19). Forbs are sparse but usually include *Arnica* and *Osmorhiza.*

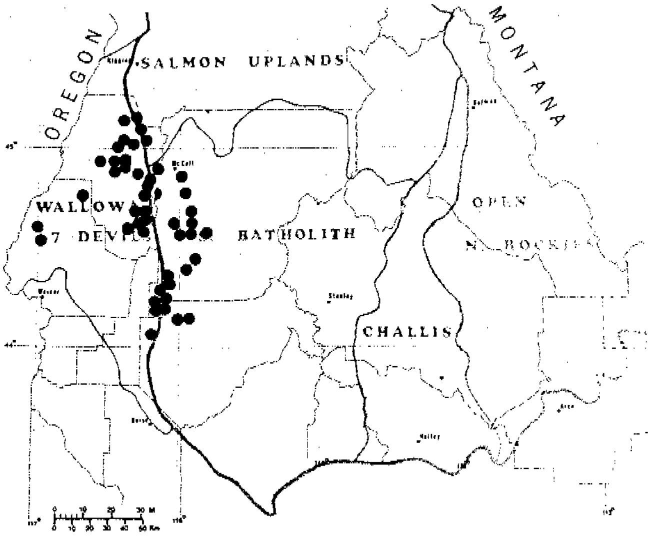
**Soil.** — Soil parent materials include basalt, granitics, and mixtures of granitics and rhyolite (appendix D). The textures vary from clay loam to sandy loam. Soil pH ranges from 5.7 to 6.3 and averages 6.1. Areas of bare rock or bare soil seldom exceed 2 percent. Litter depths on a site can average at least 5 cm.

**Productivity/Management.** — Timber productivity is moderate to high (appendix E-2). *Pseudotsuga, Pinus ponderosa,* and, on some sites, *P. contorta* all grow well here. However, the *Calamagrostis* sod may need scarification or other treatment to obtain prompt regeneration. *Abies grandis* seldom contains much heartrot in this h.t. and may be at least as productive as the seral trees.

Livestock frequent these sites due to the gentle terrain but find only moderate amounts of forage here. In some areas these sites may provide important forage and cover for deer and elk.

**Other studies.** — In eastern Oregon, Hall (1973) describes a "mixed conifer-pinegrass" community, part of which is similar to our *ABGR/CARU* h.t. He has also developed additional management implications for timber production and grazing on these sites.

## *ABIES GRANDIS/SPIRAEA BETULIFOLIA* H.T. (*ABGR/SPBE;* GRAND FIR/WHITE SPIRAEA)




**Distribution. —** *ABGR/SPBE* occurs mostly in the Wallowa-Seven Devils and Southern Batholith sections. It is found from gentle benches to upper slopes that face south to west. It represents a warm, dry extreme of the *Abies grandis* series and occurs from 4,300 to 6,400 feet (1 310 to 1 950 m) in elevation.

**Vegetation. —** *Pinus ponderosa* and *Pseudotsuga* are the major seral trees. *Pinus contorta* and *Picea* are usually absent. In old-growth stands, *Spiraea* usually forms a light cover in the undergrowth and *Thalictrum occidentale* often becomes the dominant forb (fig. 20). On some sites, *Symphoricarpos albus* will dominate instead of *Spiraea.* Under dense tree canopies, *Arnica cordifolia* and *Chimaphila umbellata* may dominate the undergrowth.

In seral condition, *Calamagrostis rubescens* can form a dense sod beneath open stands of *Pinus ponderosa* and *Pseudotsuga.* Then, only the layer of *Spiraea* will distinguish *ABGR/SPBE* from *ABGR/CARU.*

In a few areas near Banks, Idaho, *Lathyrus nevadensis* var. *cusickii* apparently replaces *Spiraea.* This anomaly appears most similar to *ABGR/SPBE* and is included herein.

**Soil. —** Soil parent materials are mostly basalt and occasionally granitics (appendix D). Textures vary from clay loam to sandy loam. The pH ranges from 5.5 to 6.4 and averages 6.0. Areas of bare rock and soil are less than 1 percent on most sites. Average litter depths per site can reach at least 6 cm.

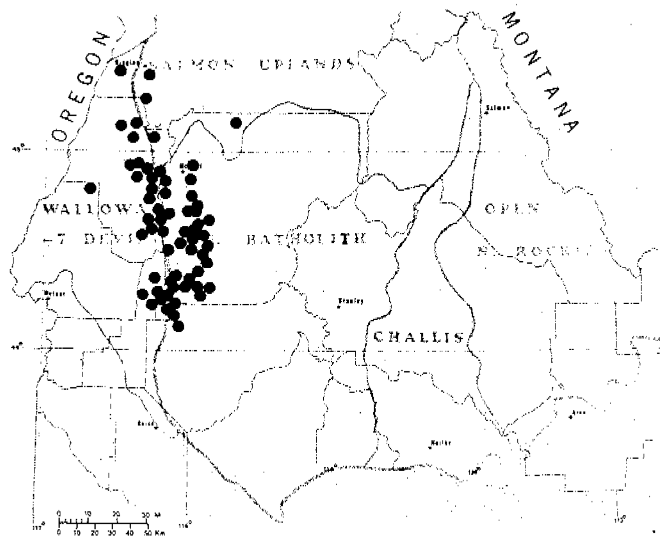
**Productivity/Management. —** Timber productivity is high to very high (appendix E-2). *Pinus ponderosa* and *Pseudotsuga* should regenerate well in small clearings. *Abies grandis* can regenerate in partial shade and, in some areas, can grow at least as fast as the pine when given adequate sunlight. If a *Calamagrostis* sod is present, site preparation will be needed to achieve adequate stocking.

Livestock use the gentle terrain of these sites but find little forage beneath the trees.

Some of these sites may provide important food and cover for deer, elk, and black bear and important nesting areas for ruffed grouse.

**Other studies. —** No one has described *ABGR/SPBE* from other areas but some of Hall's (1973) "mixed conifer-pinegrass" communities in the Blue Mountains probably relate to this h.t.

## *ABIES GRANDIS/VACCINIUM GLOBULARE* H.T. (*ABGR/VAGL;* GRAND FIR/BLUE HUCKLEBERRY)




**Distribution. —** *ABGR/VAGL* occurs mainly in the Wallowa-Seven Devils and Southern Batholith sections. It is usually found from 4,500 to 6,500 feet (1 370 to 1 980 m) in elevation, on moist slopes and benches that face north to east. It represents cool extremes of the *Abies grandis* series and often merges with *Abies lasiocarpa* h.t.'s

**Vegetation. —** Some *Pinus ponderosa* and sometimes *Larix occidentalis* may be present, but *Pinus contorta, Pseudotsuga,* and *Picea* are the predominant seral trees. Small amounts of *Abies lasiocarpa* are often a minor climax component. *Vaccinium globulare* usually dominates an undergrowth containing small amounts of numerous forbs. *Lonicera utahensis* is the most frequent associate of the *Vaccinium.*

**Soil. —** Soil parent materials are either basalt or granitics (appendix D). Textures vary from loam to sandy loam and are mostly loam. The pH ranges from 5.2 to 6.8 but averages 5.9. Areas of bare rock and soil are negligible. Average litter depths on a site can reach at least 7 cm.

*Figure 20. — Abies grandis/Spiraea betulifolia h.t. on a northwest exposure east of Cascade, Idaho (6,400 feet [1 950 m] elevation). A near-climax stand of* Abies grandis *dominates an undergrowth composed mainly of* Spiraea betulifolia *and* Thalictrum occidentale.

**Productivity/Management.** — Timber productivity is generally high (appendix E-2). *Picea* and *Pseudotsuga* have the highest site indexes (appendix E-2). If present, *Pinus contorta* should regenerate well in small clearings. Areas with partial shade will favor *Pseudotsuga, Picea,* and *Abies.*

Seral stands may provide important forage and cover for elk and occasionally whitetail deer. The berry crops of *Vaccinium* are important for black bear, ruffed grouse, and to a lesser extent, blue grouse.

**Other studies.** — Hall (1973) described a "white fir - big huckleberry" community type in eastern Oregon. Part of this community is similar to our *ABGR/VAGL* h.t.

### *ABIES GRANDIS/XEROPHYLLUM TENAX* H.T. (*ABGR/XETE;* GRAND FIR/BEARGRASS)

**Distribution.** — This incidental h.t. occurs mainly in eastern portions of the Nezperce National Forest and in adjacent Montana. Small amounts also occur southeast of McCall, Idaho. Like *ABGR/VAGL,* it too represents cool extremes of the *Abies grandis* series and often merges with *Abies lasiocarpa.*

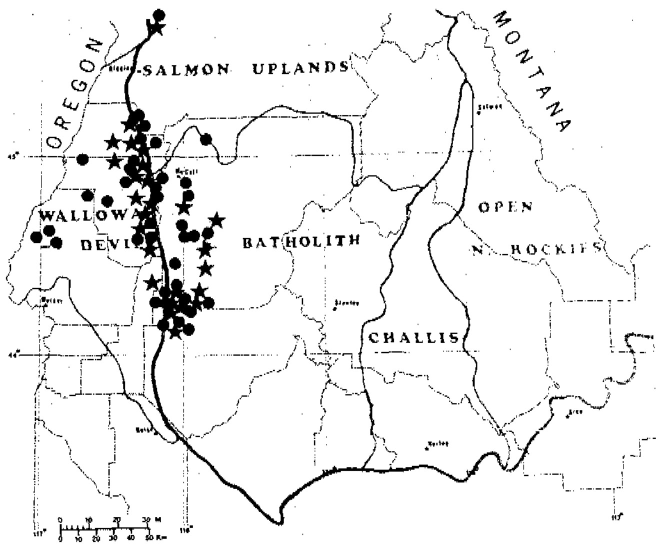
**Vegetation.** — In seral condition, *Pinus contorta* followed by *Pseudotsuga* are the major successional species. Occasionally, *Larix occidentalis, Pinus ponderosa,* or *Picea* are also present. In older stands, small amounts of *Abies lasiocarpa* often grow with *A. grandis.* In both cases *Xerophyllum tenax* and *Vaccinium globulare* usually codominate the undergrowth.

**Productivity/Management.** — Only limited data on timber productivity are available, but yield capability is probably moderate to high. On most sites *Pinus contorta* should regenerate well in clearings. Openings with partial shade will favor *Pseudotsuga* and *Abies.*

Early successional stages offer limited forage for deer and elk, and the sites are seldom accessible for winter use. The *Vaccinium* berries are sought by black bear, grouse, and humans.

**Other studies.** — Pfister and others (1977) describe *ABGR/XETE* in Montana, and Steele and others (1976, unpubl. ref.) describe it on the Nezperce National Forest.

## *ABIES GRANDIS/ACER GLABRUM* H.T. (*ABGR/ACGL;* GRAND FIR/MOUNTAIN MAPLE)




•*Acer glabrum* phase
(*ACGL;* mountain maple)

★ *Physocarpus malvaceus* phase
(*PHMA;* ninebark)

**Distribution.** — *ABGR/ACGL* occurs mainly in the Wallowa-Seven Devils and Southern Batholith sections. This h.t. usually ranges from 3,800 to 6,400 feet (1 160 to 1 950 m) in elevation and occupies the mid- to lower slopes that face north to east. It also extends down drainages and interfingers with the warmer and drier *PSME/PHMA* and *ABGR/SPBE* h.t.'s

**Vegetation.** — *Pinus ponderosa* and *Pseudotsuga* are vigorous seral dominants. Lesser amounts of *Picea, Larix,* and *Abies lasiocarpa* sporadically occur here. Shrub layers vary between phases noted below. When tree canopies become dense and the shrubs become depauperate, the more shade-tolerant forbs *Adenocaulon* and *Disporum* help indicate this h.t. Where fire or logging has removed the overstory, a dense layer of tall shrubs persists for several decades.

*Physocarpus malvaceus (PHMA)* phase. — The *PHMA* phase represents a warm, dry variant of the h.t. and often borders *PSME/PHMA. Physocarpus* is usually the dominant shrub although coverages may be low in dense stands. A layer of *Symphoricarpos, Spiraea,* or occasionally *Pachistima* may be present. A layer of *Calamagrostis rubescens* is also common in this phase.

*Acer glabrum (ACGL)* phase. — This phase is found on the more moist aspects of areas occupied by the *PHMA* phase. *Acer glabrum* typically dominates the shrub layer in old-growth stands (fig. 21). Shrubs common to the *PHMA* phase may also occur here and *Sorbus scopulina* occurs more frequently. *Calamagrostis rubescens* seldom develops high coverages.

**Soil.** — Soil parent materials are mainly basalt, granitics, and occasionally quartz diorite (appendix D). Textures range from clay loam to sandy loam and a few are gravelly. The pH ranges from 5.6 to 6.7 and averages 6.1. Areas of bare rock or bare soil seldom exceed 5 percent. Litter depths can average 10 cm on a site.

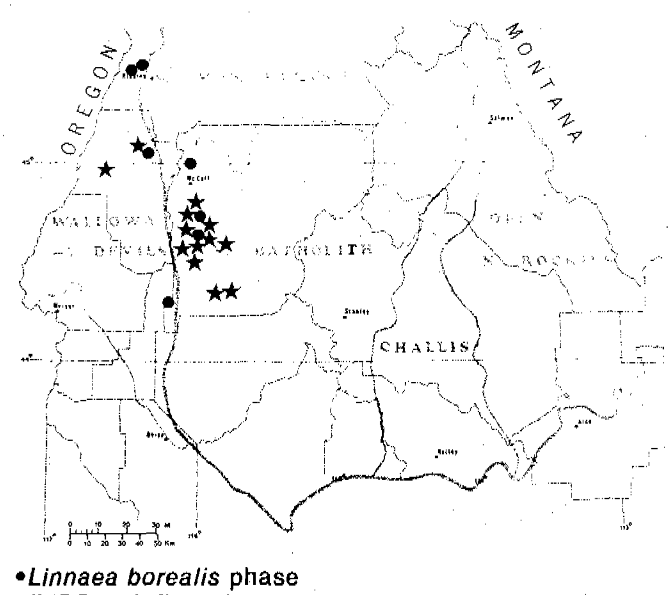
**Productivity/Management.** — Timber productivities are generally high to very high (appendix E-2). Both *Pseudotsuga* and *Pinus ponderosa* should regenerate well wherever they escape competition of the shrubs and tree canopy. Complete removal of overstories may allow suppressed shrubs to develop a tall, dense layer that will persist for several decades.

Livestock find little forage in old-growth stands but may use early successional stages.

*ABGR/ACGL* provides important forage and cover for elk, mule deer, and, in some areas, whitetail deer. Seral conditions, especially, produce an abundance of browse and the berry crops of a few species are important to black bear. When a tree canopy is present, these sites become important habitat for ruffed grouse.

**Other studies.** — No other studies have described this h.t.

## *ABIES GRANDIS/LINNAEA BOREALIS* H.T. (*ABGR/LIBO;* GRAND FIR/TWINFLOWER)




•*Linnaea borealis* phase
(*LIBO;* twinflower)

★ *Vaccinium globulare* phase
(*VAGL;* blue huckleberry)

**Distribution.** — *ABGR/LIBO* occurs in the Wallowa-Seven Devils, Salmon Uplands and Southern Batholith sections. This h.t. is usually found at lower elevations of the *Abies grandis* series and ranges from 3,400 to 5,600 feet (1 040 to 1 710 m). It occupies relatively

*Figure 21. —* Abies grandis/Acer glabrum *h.t.,* Acer glabrum *phase on a concave, northerly exposure north of Crouch, Idaho (4,100 feet [1 250 m] elevation). An old-growth stand of* Abies grandis *dominates a layer of shrubs composed mainly of* Acer glabrum, Physocarpus malvaceus, *and* Sorbus scopulina.

gentle slopes and benches that are protected from extreme sun and wind.

**Vegetation.** — Plant composition varies between phases, as noted below. In all cases, however, *Linnaea borealis* tends to form a fairly extensive mat in old-growth stands.

*Vaccinium globulare (VAGL)* phase. — This phase reflects some of the cooler conditions within the h.t. Small amounts of *Abies lasiocarpa* may be present and *Picea* is a common seral tree. Lesser amounts of *Pseudotsuga, Pinus contorta,* and *P. ponderosa* may be present. *Vaccinium globulare* usually dominates the undergrowth.

*Xerophyllum tenax (XETE)* phase. — This phase occurs mainly in the Clearwater drainage and in Montana. It is a very minor phase in our study area. The undergrowth resembles that of the *VAGL* phase except *Xerophyllum tenax* is an additional component. Seral overstories include less *Picea* than the *VAGL* phase and more *Pinus ponderosa* and *Pseudotsuga.*

*Linnaea borealis (LIBO)* phase. — The *LIBO* phase is most common in mountains nearest the Oregon border. *Pinus ponderosa* and *Pseudotsuga* are the major seral dominants. Shrub layers are normally sparse in older stands (fig. 22), although *Amelanchier* and *Rosa gymnocarpa* are usually present.

**Soil.** — Soil parent materials are mainly basalt, andesite, and granitics (appendix D). Textures are usually loamy and sometimes gravelly. The pH ranges from 5.4 to 6.9 and averages 6.0. Areas of bare soil and bare rock are usually negligible. Litter depths can reach 9 cm.

**Productivity/Management.** — Timber productivity data is scarce, but yield capabilities appear to range from moderate to very high. The *VAGL* phase apparently is less productive than the *LIBO* phase. *Pinus ponderosa* should regenerate well wherever openings eliminate competition from larger trees. Smaller openings will favor *Pseudotsuga* and *Abies grandis* (and *Picea* in the *VAGL* phase).

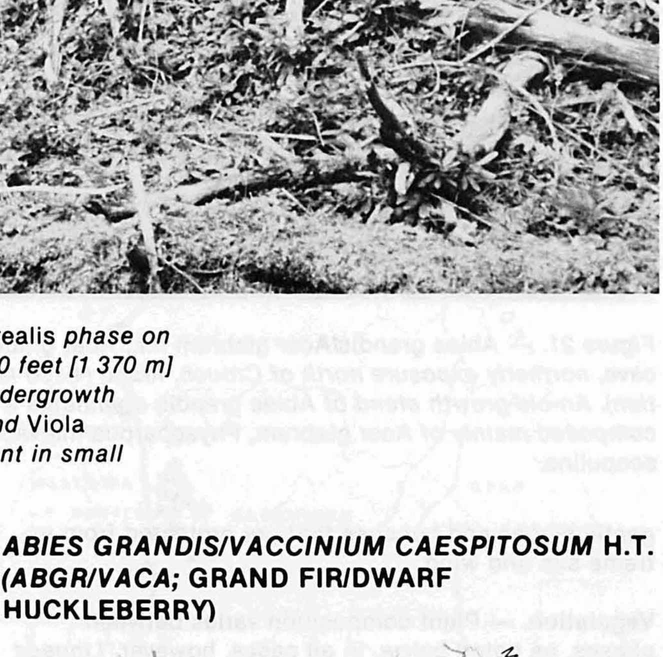
*Figure 22. — Abies grandis/Linnaea borealis h.t., Linnaea borealis phase on a gentle northerly exposure northwest of Riggins, Idaho (4,500 feet [1 370 m] elevation). A pure stand of* Abies grandis *dominates a low undergrowth composed mainly of* Linnaea borealis, Trifolium latifolium, *and* Viola orbiculata. *Numerous other forbs and a few shrubs are present in small amounts.*

The gentle terrain may attract livestock to these sites, but timbered stands seldom provide much forage.

Early successional stages may produce good browse for deer and elk, but the sites are seldom accessible in winter. Older stands may be important nesting sites for ruffed grouse. In the *VAGL* phase, the *Vaccinium* fruits are important to black bear, grouse, and humans.

**Other studies.** — Pfister and others (1977) describe *ABGR/LIBO* in Montana. In eastern Oregon, Hall (1973) mentions a "white fir-twinflower-forb" community that probably occupies this h.t.

## *ABIES GRANDIS/VACCINIUM CAESPITOSUM* H.T. (*ABGR/VACA*; GRAND FIR/DWARF HUCKLEBERRY)



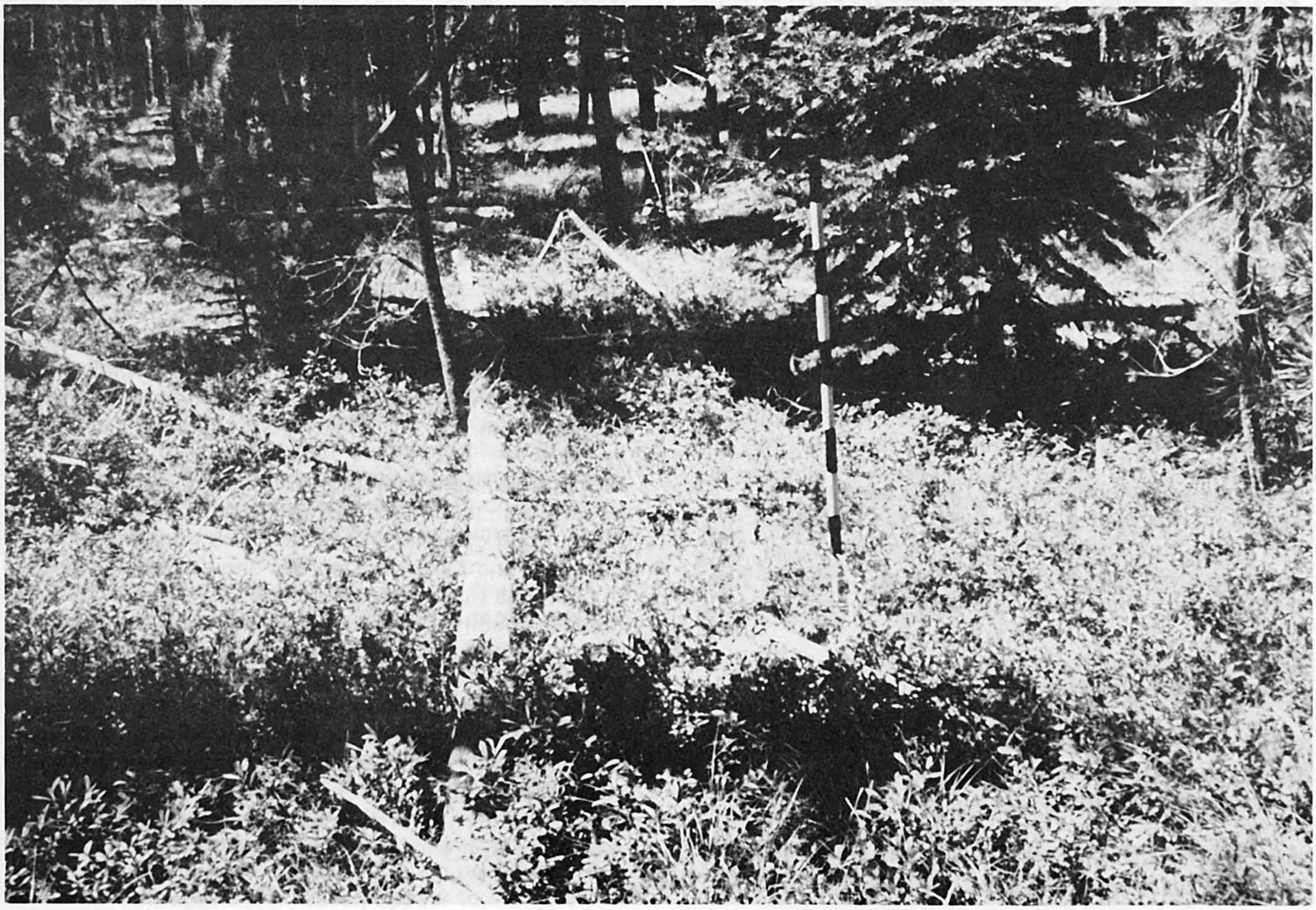


*Figure 23. —* Abies grandis/Vaccinium caespitosum *h.t. on a broad alluvial terrace northeast of Donnelly, Idaho (5,450 feet [1 660 m] elevation).* Abies grandis *is slowly replacing a stand of* Pinus contorta. *The undergrowth consists mainly of* Vaccinium caespitosum, Calamagrostis rubescens, *and* Fragaria virginiana.

**Distribution.** — This minor h.t., mainly found in the Southern Batholith section, is restricted to gentle alluvial terraces and glacial outwash, from 4,600 to 5,500 feet (1 400 to 1 680 m). Although they occur at mid-elevations of the *Abies grandis* zone, these sites lie within frost pockets and have relatively severe environments. Adjacent uplands are often the warmer *ABGR/SPBE* or *PSME/SPBE* h.t.

**Vegetation.** — *Pinus contorta* persists as a seral dominant on most of these sites. Small amounts of *Populus tremuloides* are also common. *Pseudotsuga, Picea,* and occasionally *Larix* gradually replace the pine and aspen. *Abies grandis* and small amounts of *A. lasiocarpa* usually appear with the *Pseudotsuga* and *Picea* (fig. 23). *Vaccinium caespitosum* normally dominates the undergrowth. Many forbs are often present in small amounts. *Fragaria virginiana* and *Calamagrostis rubescens* are the most common components of the forb layer.

**Soil.** — The soils are depositional, largely of granitic origin, and are mostly clay loams to sandy loams. A few are gravelly. The pH ranges from 5.0 to 5.6. Areas of bare rock and bare soil are negligible. Litter depths on a site can average at least 3 cm.

**Productivity/Management.** — Timber productivity is moderate to high (appendix E-2). *Pinus contorta* should regenerate in any clearing that receives ample sunlight. Although *Picea* and *Pseudotsuga* may establish naturally beneath the pine, plantings may be damaged by untimely frosts.

The gentle terrain may attract livestock, but the animals find only moderate forage here. Elk and whitetail deer use the cover on these sites, but find much of their browse on adjacent h.t.'s

**Other studies.** — No one else has described this h.t.

### *ABIES GRANDIS/COPTIS OCCIDENTALIS* H.T. (*ABGR/COOC*; GRAND FIR/WESTERN GOLDTHREAD)

**Distribution.** — A few isolated sites of this incidental h.t. occur on the Payette and Salmon National Forests in central Idaho. The main occurrence is on the Nezperce National Forest between the South Fork of the Clearwater and Salmon Rivers.

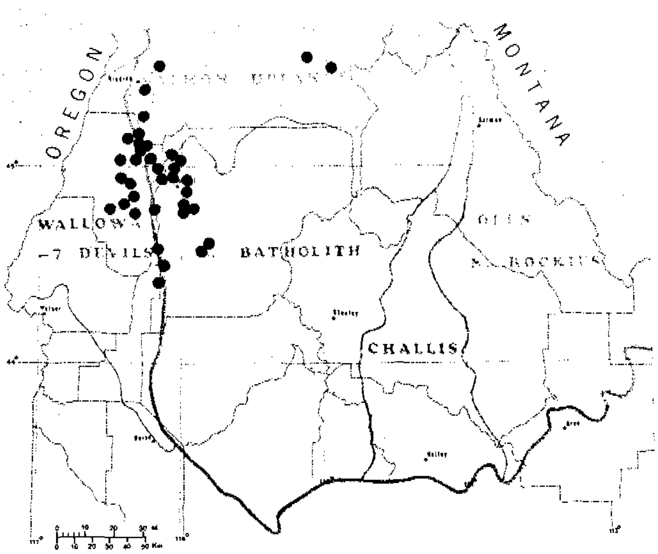
**Vegetation.** — *Pinus contorta, P. ponderosa,* or *Larix occidentalis* may dominate early successional stages. *Pseudotsuga* or *Picea* may dominate the later stages. *Coptis occidentalis* is common throughout the undergrowth and often dominates the forb layer. In some areas, *Xerophyllum* and *Vaccinium globulare* form a dominant layer.

**Productivity/Management.** — Timber productivity should be nearly as high as that of the *ABGR/CLUN* h.t. and silvicultural treatments should be similar. When *Pinus ponderosa* or *P. contorta* are naturally present plantations of the appropriate pine have been very successful.

Livestock, deer, and elk use these sites only lightly.

**Other studies.** — *ABGR/COOC* is described on the Nezperce National Forest (Steele and others 1976, unpubl. ref.) but not elsewhere.

### *ABIES GRANDIS/CLINTONIA UNIFLORA* H.T. (*ABGR/CLUN*; GRAND FIR/QUEENCUP BEADLILY)




**Distribution.** — *ABGR/CLUN* occurs mainly in the Wallowa-Seven Devils and Southern Batholith sections. It represents a warm, moist extreme of the *Abies grandis* series and usually occurs at mid-elevations of the forested zone. It ranges from 3,900 to 5,900 feet (1 190 to 1 800 m) in elevation and normally occupies moist, well-drained slopes, benches, and stream terraces that are protected from extreme sun and wind.

**Vegetation.** — *Pinus ponderosa, Larix occidentalis,* and occasionally *Pinus contorta* are the primary invaders of severely disturbed sites. *Pseudotsuga* and *Picea* usually act as secondary seral dominants. *Clintonia uniflora* occurs throughout the stand and accompanies a mixture of moist site forbs. In some areas *Vaccinium globulare* or *Acer glabrum* dominate the undergrowth. Throughout the h.t., tall shrubs often invade when the tree canopy is removed.

**Soils.** — Soil parent materials are usually basalt or granitics (appendix D). Textures range from loam to sandy loam. Soil pH varies from 5.5 to 6.3 and averages 5.9. Areas of bare soil and bare rock are normally less than 1 percent. Average litter depth on a site can reach at least 5 cm.

**Productivity/Management.** — Timber productivity is usually high (appendix E-2), with a wide choice of silvicultural options. If present, *Pinus ponderosa, P. contorta,* and *Larix occidentalis* should regenerate best in openings that eliminate competition from older trees. Smaller openings with partial shade will favor *Pseudotsuga, Picea,* and *Abies grandis.* Both artificial and natural regeneration should prove successful on properly prepared sites. Young *Pinus ponderosa* grow rapidly but sampling only the near-climax conditions precluded a meaningful site index for this species. Daubenmire (1961) found that *P. ponderosa* grew most rapidly on these sites for the first 50-60 years. After age 60, the pine showed higher productivity on *PSME/PHMA* and *PIPO/PHMA* h.t.'s.

Livestock find very little forage on timbered sites. Early succession following major disturbances may produce some forage.

These sites can provide important browse and cover for elk and whitetail deer. Early seral stages often produce high-quality browse, but snow depths may prevent winter use. *ABGR/CLUN* provides good ruffed grouse habitat and, when *Vaccinium globulare* is present, food for black bear.

**Other studies.** — Pfister and others (1977) describe *ABGR/CLUN* in Montana and recognize three phases. Most of R. and J. Daubenmire's (1968) *Abies grandis/Pachistima myrsinites* h.t. in northern Idaho and eastern Washington also corresponds to *ABGR/CLUN*. We used *Clintonia uniflora* instead of *Pachistima myrsinites* to name this h.t. because *Pachistima* is usually absent and members of the "*Pachistima* union" meet their southern limits independently in our area.

## *Abies lasiocarpa* Series

**Distribution.** — The *Abies lasiocarpa* series occurs at upper elevations throughout most of central Idaho. In the western portion, lower limits of this series merge with *Abies grandis.* Here, moisture is adequate for both species. This ecotone probably relates best to temperature as does the *A. lasiocarpa* ecotone with

*Thuja* and *Tsuga* (Daubenmire 1956); however, in most of central Idaho, lower limits of *A. lasiocarpa* merge with the *Pseudotsuga* zone and both moisture and temperature appear to be controlling factors.

Near its upper limits, the *Abies lasiocarpa* series borders various alpine communities or grassy balds dominated by *Festuca idahoensis*. *Pinus albicaulis* becomes increasingly prevalent toward the upper limits of this series and may form pure stands on the most severe exposures.

**Vegetation.** — At lower elevations of this series, *Pseudotsuga* often acts as the major seral species. However, *Pinus contorta* fills this role throughout most subalpine forests in central Idaho. Its successional role varies from a rapidly replaced species to one that reproduces and persists as a dominant for many years. Some sites with high water tables support dominant stands of long-lived, but seral, *Picea engelmannii*.

Undergrowth is variable and may include dense, tall-shrub layers, lush, moist-site forb layers, depauperate layers of dry-site forbs and open, grassy parks. Because of short growing seasons, disturbed undergrowths recover very slowly. The limited number of species adapted to low temperatures allows even less opportunity for revegetation. Frequent disturbance such as grazing can easily destroy the plant cover and expose the soil to erosion. Plants that indicate disturbance are sometimes scarce in this series, which confounds the difficulty of identifying areas that need attention. A few species, however, appear to indicate disturbance in many areas. *Polygonum phytolaccaefolium* and, on moist sites, *Veratrum viride* can increase markedly with grazing. Grazing abuse may also produce high coverages of *Spraguea umbellata*. On some sites, high coverages of *Penstemon attenuatus* and *Potentilla glandulosa* reflect past disturbance, mainly grazing, and *Epilobium angustifolium* often attains high coverages on moist sites following fire or logging.

**Soils.** — Most soils in this series ranged from gravelly loam to sandy loam. Habitat types showed little overall correlation with soil parent materials that varied from granitics and volcanics to sedimentaries. A few exceptions are noted under the appropriate h.t.

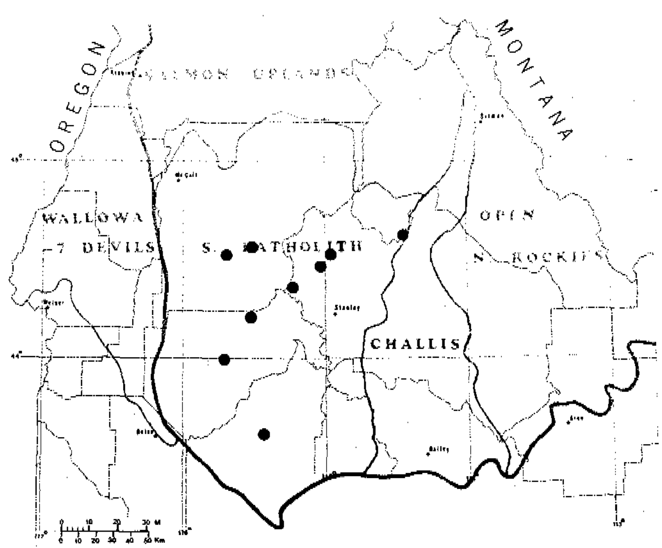
**Fire.** — Alteration by fire remains evident for many decades and even centuries. Stands of fire-induced *Pinus contorta* dominate large areas, and the reduced seed sources of other conifers delay their replacement. Repeated wildfire further depletes seed sources of other conifers in the area. This leads to even more uniform stands of *P. contorta* which, when mature, create epidemic potentials for insects and disease. Harvesting *P. contorta* interrupts the cycle by removing fuels of future fires and the nurseries of insects and disease. Well-regulated harvesting can also create stands of varied ages, which further disrupts stand uniformity and reduces epidemic potentials.

In many areas, undergrowths in this series reflect only moderate alteration by fire. However, at lower elevations, *Calamagrostis rubescens* often persists under near-climax conditions and responds to burning as outlined under the *Pseudotsuga* series. *Shepherdia canadensis* may also increase following burning, particularly on certain sites in the Challis and Open Northern Rockies sections. Here it may dominate the undergrowth until *Abies lasiocarpa* replaces the open canopy of *Pinus contorta*.

**Productivity/Management.** — Lower-elevation sites within the *Abies lasiocarpa* series have the highest timber potentials. Here *Pseudotsuga* is often the most productive species, but regeneration is sometimes difficult to obtain. *Pinus contorta* responds better to silvicultural treatments and is fairly productive throughout much of this series. *Picea* grows well on many sites but is susceptible to windthrow in partially cut stands, especially on those sites with high water tables. These sites with excess moisture almost always require special consideration during timber harvest and stand regeneration.

Upper-elevation sites within this series have low timber potential and are best suited for recreation, wildlife, and snowpack management.

### *ABIES LASIOCARPA/CALTHA BIFLORA* H.T. (*ABLA/CABI*; SUBALPINE FIR/MARSH MARIGOLD)




**Distribution.** — This minor type occurs mainly in the Southern Batholith section, but extends north to at least the Salmon-Clearwater divide. It ranges from 6,200 to 7,800 feet (1 890 to 2 380 m) in elevation and occurs mostly on wet, gentle terrain in the middle to upper portions of the subalpine zone. This h.t. denotes some of the wettest sites in this series.

**Vegetation.** — Long-lived *Picea engelmannii* codominates these sites with *Abies lasiocarpa*. The

*Figure 24. — Abies lasiocarpa/Caltha biflora h.t. on a wet bench near Bear Valley Creek northwest of Stanley, Idaho (7,300 feet [2 230 m] elevation).* Picea engelmannii *and scattered* Pinus contorta *dominate the site. Young* Abies lasiocarpa *occur beneath the* Picea. Caltha biflora *and* Dodecatheon jeffreyi *are the dominant forbs. The conspicuous graminoids are* Calamagrostis canadensis *and* Carex scopulorum.

*Picea* acts as a persistent seral species and may attain large diameters. The *Abies* seedlings gradually outnumber those of *Picea* and will achieve dominance at climax. In the undergrowth, numerous wet-site forbs dominate (fig. 24) and may obscure the presence of *Caltha.* With increasing shade, many of the forbs decrease and *Caltha* becomes more evident. *Lonicera involucrata, Pedicularis bracteosa,* and *Dodecatheon jeffreyi* also occur here regularly. Shrubs typical of drier sites, such as *Vaccinium scoparium,* often grow on hummocks or at the base of large trees. A notable moss layer also occurs on these sites; dominant species normally include *Aulacomnium palustre, Bryum weigelii,* and *Campylium stellatum* (Steele 1974).

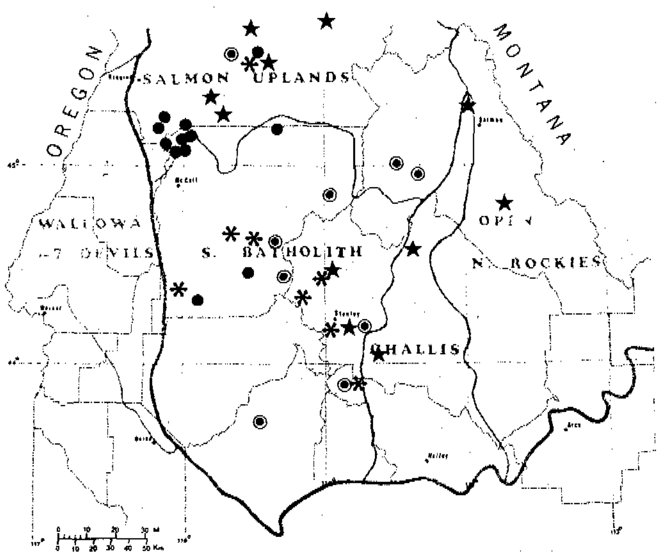
**Soil.** — Substrates in this h.t. often consist of a thick layer (20 + cm) of organic material overlying loamy to sandy loam soils (appendix D-1). Soil parent materials are primarily granitic. Soil pH ranges from 4.9 to 6.2 and averages 5.2. Areas of bare soil and bare rock are negligible.

**Productivity/Management.** — Timber productivity is moderate to high (appendix E-2). *Picea engelmannii* grows well here, but regeneration often is limited to the raised microsites within the stands. If the large trees are removed, water tables are likely to rise and seriously impede tree regeneration. Most disturbances can degrade these sites to a bog-like condition. Livestock and machinery can easily churn the wet substrate and destroy considerable undergrowth. Acreages of this h.t. are usually small locally but require recognition when considering access and use of adjacent h.t.'s. Hazards to soil and water resources may result from almost any manipulation of these sites.

This h.t. is very important to elk in summer and fall. The many lush forbs and proximity to water create important feeding areas, and the wet depressions provide excellent elk wallows. Mule deer also find important forage here in summer and fall. Black bear, too, forage and wallow on these sites and Franklin's grouse seek food and cover here.

**Other studies.** — *ABLA/CABI*, not described elsewhere, is central Idaho's counterpart of the *Abies lasiocarpa/Caltha leptosepala* h.t. found in the Uinta Mountains of Utah (Henderson and others 1977, unpubl. ref.).

## *ABIES LASIOCARPA/CALAMAGROSTIS CANADENSIS* H.T. (*ABLA/CACA*; SUBALPINE FIR/BLUEJOINT)




•*Ligusticum canbyi* phase (*LICA;* Canby's ligusticum)

★ *Ledum glandulosum* phase (*LEGL;* Labrador tea)

✱*Vaccinium caespitosum* phase (*VACA;* dwarf huckleberry)

◉*Calamagrostis canadensis* phase (*CACA;* bluejoint)

**Distribution.** — *ABLA/CACA* is widespread in central Idaho but is most prevalent in the Southern Batholith section. It usually appears at middle to upper elevations of the subalpine zone where it ranges from 6,400 to 9,000 feet (1 950 to 2 740 m). It also extends to as low as 4,600 feet (1 400 m) in frost pockets and along cold-air drainages. It usually occupies moist toe-slopes, terraces, and bottom lands associated with streams and lakes.

**Vegetation.** — *Pinus contorta* and *Picea* are the major seral conifers. Usually *Calamagrostis canadensis* is conspicuous in the undergrowth but codominates with different species, depending on the phases noted below. Shrubs characteristic of drier sites may grow on hummocks or at the base of trees.

*Ledum glandulosum (LEGL)* phase. — This phase occurs sporadically throughout the range of *ABLA/CACA*. It represents the colder or higher extremes (4,700 to 9,000 feet [1 430 to 2 740 m]) of the h.t. *Ledum glandulosum* forms a dominant undergrowth (fig. 25) and *Gaultheria humifusa* occurs here more frequently than in other h.t.'s or phases. At the upper elevations of this phase *Phyllodoce empetriformis* may accompany the *Ledum*, and *Calamagrostis canadensis* becomes increasingly scarce.

*Vaccinium caespitosum (VACA)* phase. — This phase occurs mainly in the Southern Batholith section of Idaho and in Montana (Pfister and others 1977). Although it often occurs at lower elevations (4,600 to 7,200 feet [1 400 to 2 200 m]) of the h.t., it usually represents a frost-pocket condition. Consequently its best development is in gentle valleys that impound cold air. These sites usually contain coarse alluvium, especially glacial outwash. This phase often merges with *ABLA/VACA* on drier sites. Usually *Pinus contorta* is a persistent seral dominant, with lesser amounts of *Picea* and *Abies lasiocarpa* (fig. 26). *Vaccinium caespitosum* is common throughout the stand. It is often accompanied by *Ligusticum tenuifolium* and *Lonicera caerulea*, which are somewhat restricted to this phase.

*Ligusticum canbyi (LICA)* phase. — The *LICA* phase extends slightly north and south of its center in the Salmon Uplands section. This phase seems to reflect the more moderate environments of the stronger maritime influence in this area. Usually the *LICA* phase occupies stream terraces and wet benchlands at lower to mid-elevations (5,400 to 7,400 feet [1 650 to 2 260 m]) of the h.t. It has a rich assortment of forbs, which suggests higher productivity potentials (fig. 27). *Ligusticum canbyi* or *Trautvetteria caroliniensis* are often the dominant forbs and *Pedicularis bracteosa* is regularly present. *Picea* is the major seral dominant while *Pinus contorta* is less abundant than in the other phases.

*Calamagrostis canadensis (CACA)* phase. — This phase occurs mainly south and east of the *LICA* phase and is the typical phase throughout much of the *ABLA/CACA* distribution. It occurs at the lower to mid-elevations (4,700 to 7,500 feet [1 430 to 2 290 m]) of the h.t. *Calamagrostis canadensis* often creates a sward appearance and obscures the forb layer (fig. 28). Other features of this phase correspond to the general description of the *ABLA/CACA* h.t.

**Soil.** — Soil parent materials are mainly granitic but also include quartzite, quartz monzonite, and trachyte (appendix D-1). The textures are mostly loams but range from loam to loamy sand. A few are gravelly. Soil pH ranges from 4.6 to 6.4 and averages 5.1. Areas of bare soil or rock are negligible on most sites. Average litter depths on a site can reach 13 cm.

**Productivity/Management.** — Timber productivity varies from low to high, depending on the phase involved (appendix E-2). The *LICA* phase has the highest potential. *Pinus contorta* may be the easiest conifer to regenerate but in the *LICA* and *CACA* phases, *Picea* should yield more timber. These sites can be prepared for planting in late summer after they have dried enough to support machinery. Plantings of *Picea* in contour trenches have

*Figure 25.* — Abies lasiocarpa/Calamagrostis canadensis *h.t.*, Ledum glandulosum *phase on a broad stream terrace south of Dixie, Idaho (5,250 feet [1 600 m] elevation.* Abies lasiocarpa *and* Picea engelmannii *are replacing a stand of* Pinus contorta. Ledum glandulosum *dominates the undergrowth.*

*Figure 26.* — Abies lasiocarpa/Calamagrostis canadensis *h.t.*, Vaccinium caespitosum *phase on an alluvial flat near Alturas Lake southeast of Stanley, Idaho (7,050 feet [2 150 m] elevation).* Abies lasiocarpa *and* Picea engelmannii *are slowly increasing in a multiage stand of* Pinus contorta. Vaccinium caespitosum *and* Calamagrostis canadensis *codominate the undergrowth.*

*Figure 27.* — Abies lasiocarpa/Calamagrostis canadensis *h.t.*, Ligusticum canbyi *phase on a wet bench near Cloochman Creek north of McCall, Idaho (6,200 feet [1 890 m] elevation).* Abies lasiocarpa *and* Picea engelmannii *codominate the site.* Calamagrostis canadensis *and a rich mixture of forbs forms the undergrowth. The most conspicuous forbs are* Ligusticum canbyi, Aconitum columbianum, *and* Dodecatheon jeffreyi.

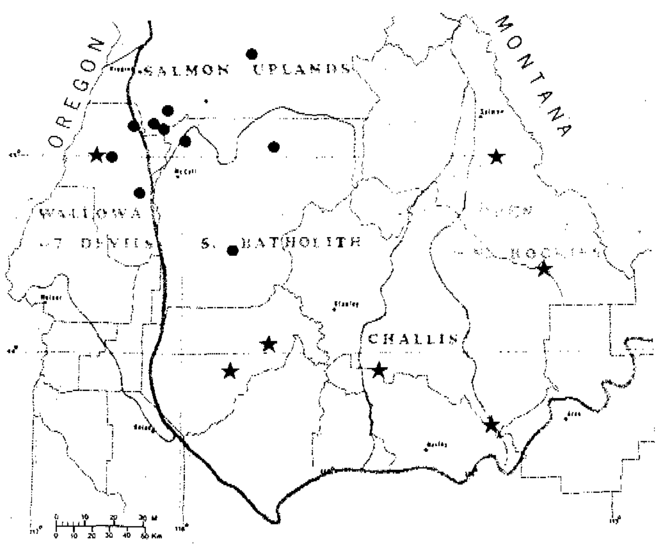
*Figure 28.* — Abies lasiocarpa/Calamagrostis canadensis *h.t.*, Calamagrostis canadensis *phase on an alluvial flat above Alturas Lake southeast of Stanley, Idaho (7,100 feet [2 160 m] elevation).* Abies lasiocarpa *and* Picea engelmannii *are invading a multiage stand of* Pinus contorta. Calamagrostis canadensis *dominates the undergrowth.*

been successful where grazing was restricted. *Picea* may also regenerate naturally with adequate site preparation but longer periods of grazing protection are needed. In all phases of this h.t., partial cutting leaves the remaining large trees especially prone to windthrow. Overstory removal permits water tables to rise and allows the *Calamagrostis* and *Carex* species to increase and outcompete conifer seedlings.

Livestock may find considerable forage here, and the adjacent streams attract many animals. But until late summer, the animals can easily churn the wet soil and destroy the plant cover as well as conifer seedlings. Depending on location, these sites may provide important food and cover for moose, elk, deer, black bear,and Franklin's grouse. The elk and bear can make wallows in the wet spots and seral stages can produce willows and abundant sedges. The *LICA* phase, especially, produces many lush forbs and whitetail deer are frequently found here.

**Other studies.** — *ABLA/CACA* also occurs in Montana (Pfister and others 1977), northwestern Wyoming (Cooper 1975), and the Unita Mountains of northeastern Utah (Henderson and others 1977, unpubl. ref.).

### *ABIES LASIOCARPA/STREPTOPUS AMPLEXIFOLIUS* H.T. (*ABLA/STAM*; SUBALPINE FIR/ TWISTED STALK)




•*Ligusticum canbyi* phase (*LICA;* Canby's ligusticum)

★ *Streptopus amplexifolius* phase (*STAM;* twisted stalk)

**Distribution.** — *ABLA/STAM* is a minor h.t. that occupies very moist slopes and alluvial terraces in the middle to lower portions of the subalpine zone. It normally ranges from 4,500 to 8,000 feet (1 370 to 2 440 m) in elevation. As in *ABLA/CACA*, these sites seem influenced by higher water tables, but the two h.t.'s seldom border each other.

**Vegetation.** — *Picea* usually dominates the stand as a long-lived seral species. In openings, seral undergrowths normally appear as lush, tall-forb communities that usually include *Senecio triangularis.* Beneath closed canopies, undergrowths become more sparse; then either *Streptopus amplexifolius, Ligusticum canbyi,* or *Trautvetteria caroliniensis* prevails as the most shade-tolerant forb, depending on the phases noted below. Rivulets bordered by high coverages of *Saxifraga arguta* are common.

*Ligusticum canbyi (LICA)* phase. — The *LICA* phase appears mainly in the Salmon Uplands section. Usually, *Ligusticum canbyi* or *Trautvetteria caroliniensis,* or both, dominate the forb layer of mature stands. *Vaccinium globulare* is the most common shrub. Adjacent drier sites often support *Clintonia* or *Xerophyllum.*

*Streptopus amplexifolius (STAM)* phase. — This phase occurs mainly to the south and east of the *LICA* phase. *Streptopus* tends to become a conspicuous forb in old-growth stands and *Ribes lacustre* is the most common shrub.

**Soil.** — Soil parent materials are mainly granitics and basalt but also include quartzite, quartz monzonite, and rhyolite (appendix D-1). The textures range from loam to sandy loam and are mostly loam. A few are gravelly. Soil pH ranges from 4.7 to 6.1 and averages 5.4. Areas of bare soil or bare rock are usually less than 1 percent. Litter depths can reach at least 9 cm.

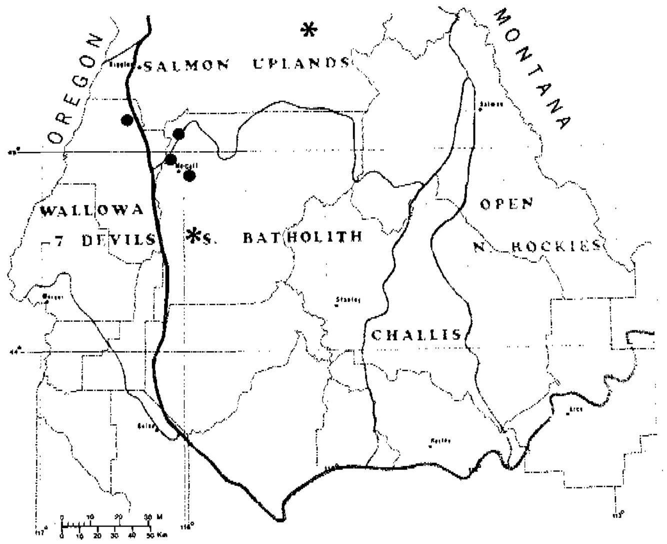
**Productivity/Management.** — Timber potential is moderate to high (appendix E-2). *Picea* is the most productive species, but high water tables hamper timber management.

Forage is often abundant in seral stands and the nearby streams also attract livestock. However, the animals can easily churn the wet soil with their hooves and destroy the plant cover and tree seedlings.

In certain areas this h.t. may provide important forage and cover for elk and the wet spots make good wallows. The food and cover on these sites may also be important to moose, mule deer, black bear, and Franklin's grouse.

**Other studies.** — *ABLA/STAM* also occurs in the Uinta Mountains of Utah (Henderson and others, 1977, unpubl. ref.) and in the Teton Mountains of Wyoming (Steele and others 1979, unpubl. ref.). In some respects, *ABLA/STAM* is related to the *ABLA/CACA* h.t., *Galium triflorum* phase, and *ABLA/GATR* h.t. in Montana (Pfister and others 1977). *ABLA/STAM* appears to be transitional to those conditions in our Open Northern Rockies section but never has *Calamagrostis canadensis* well represented.

### *ABIES LASIOCARPA/CLINTONIA UNIFLORA* H.T. (*ABLA/CLUN*; SUBALPINE FIR/QUEENCUP BEADLILY)




•*Clintonia uniflora* phase (*CLUN;* queencup beadlily)

***Menziesia ferruginea* phase (*MEFE;* menziesia)

**Distribution.** — *ABLA/CLUN* is a minor h.t. restricted mainly to the western portions of the Salmon Uplands section and the extreme northwestern corner of the Southern Batholith section. Here it ranges from 5,100 to 5,500 feet (1 550 to 1 680 m) in elevation and occupies moist slopes, benches, and stream terraces. It is found in lower portions of the *Abies lasiocarpa* zone and denotes some of the most moderate conditions for plant growth in this series. Its warm extreme usually borders the *Abies grandis* zone.

**Vegetation.** — *Pseudotsuga, Picea,* and *Pinus contorta* are the major seral species. This is one of the few subalpine h.t.'s in central Idaho that supports *Larix occidentalis.* Quite often the undergrowth is a variable mixture of shrubs and forbs, leaving *Clintonia* as the most dependable indicator of this h.t. Occasionally *Menziesia ferruginea* creates a dominant layer and denotes the *Menziesia* phase. In most of our area, *Vaccinium globulare* dominates the undergrowth but does not appear to warrant phasal status.

*Menziesia ferruginea (MEFE)* phase. — This incidental phase occurs mainly north of our area and represents a cooler segment of the h.t. Its upper limits often merge with *ABLA/MEFE,* and the layer of *Menziesia* is similar in both cases.

*Clintonia uniflora (CLUN)* phase. — This is the common phase in our area and fits the general description of the h.t.

**Soil.** — Soil parent materials are mainly granitics and the textures are loam to fine sandy loam (appendix D-1). The pH ranges from 5.3 to 5.8 and averages 5.5. Areas of bare rock and bare soil are negligible. Litter depths on a site can average at least 7 cm.

**Productivity/Management.** — Limited data suggest that timber potential is high. *Pinus contorta* and *Larix occidentalis* often regenerate easily and grow vigorously in clearings that receive adequate sunlight. *Pseudotsuga* and *Picea* may also regenerate easily and grow well here.

Normally, livestock find little food on the timbered sites but are attracted to openings, which produce lush forage. Here the animals may trample or bruise seedlings and can retard timber production for many years.

Seral shrubs can produce considerable summer forage for elk and whitetail deer. These sites may also be important to ruffed grouse and the *Vaccinium* berries are important food for black bear.

**Other studies.** — The *ABLA/CLUN* h.t. in our area is similar to the *Abies lasiocarpa/Pachistima myrsinites* h.t. of northern Idaho (R. and J. Daubenmire 1968). *Clintonia uniflora* is used to provide a more definitive name than R. and J. Daubenmire's (1968) "*Pachistima* union" because members of this union reach their range limits independently going southward in central Idaho. *ABLA/CLUN* also occurs in northwestern Montana (Pfister and others 1977).

### *ABIES LASIOCARPA/COPTIS OCCIDENTALIS* H.T. (*ABLA/COOC;* SUBALPINE FIR/WESTERN GOLDTHREAD)

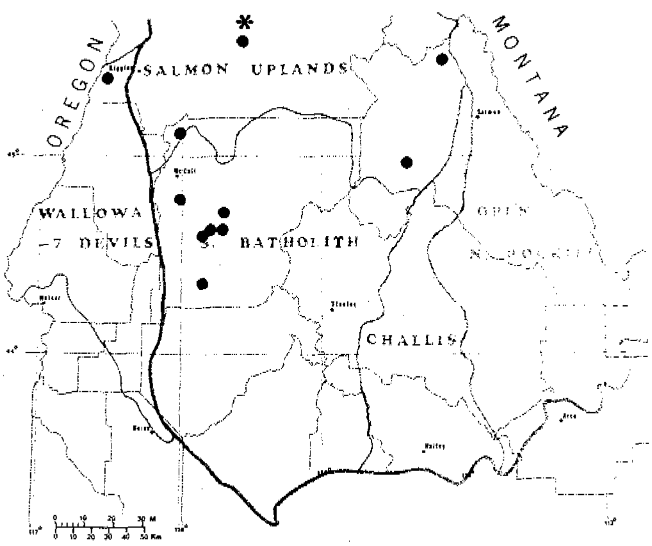
**Distribution.** — This incidental h.t. occurs in minor amounts between the South Fork of the Clearwater and the Salmon River. It ranges from 5,150 to 6,650 feet (1 570 to 2 030 m) at lower to mid-elevations of the *Abies lasiocarpa* zone. Geographically, it appears closely related to the *ABGR/COOC* h.t. and usually occurs in areas where this type is prevalent on warmer aspects. *ABLA/COOC* was found on all but warm southerly exposures and appears slightly drier than the *ABLA/CLUN* h.t.

**Vegetation.** — *Pinus contorta* followed by *Picea* are the major seral dominants. *Pseudotsuga* and sometimes *Larix* are occasionally present in seral stands. *Menziesia ferruginea* often dominates with a light cover but is seldom vigorous. *Vaccinium globulare* and *Xerophyllum* may also be well represented. *Coptis* is common throughout the stand and is usually accompanied by *Anemone piperi.*

**Productivity/Management.** — Timber productivity should be nearly as high as that of the *ABLA/CLUN* h.t. and silvicultural treatments should be similar. However, our limited data suggest that wildlife values may be less than in *ABLA/CLUN. Amelanchier, Ribes lacustre,* *Rubus parviflorus*, and *Sorbus* are notably absent in this h.t., whereas they all occur frequently in *ABLA/CLUN*.

**Other studies.** — The *ABLA/COOC* h.t. is described on the Nezperce National Forest (Steele and others 1976, unpubl. ref.).

## *ABIES LASIOCARPA/MENZIESIA FERRUGINEA* H.T. *(ABLA/MEFE;* SUBALPINE FIR/MENZIESIA)




•*Menziesia ferruginea* phase (*MEFE;* menziesia)

**Luzula hitchcockii* phase (*LUHI;* smooth woodrush)

**Distribution.** — *ABLA/MEFE* is a minor h.t. in the Wallowa-Seven Devils section and in western portions of the Southern Batholith section. It also extends eastward through the Salmon Uplands section into Montana and northward to Canada. It ranges from 5,600 to 7,200 feet (1 710 to 2 200 m) and usually occurs at middle to upper elevations of the *Abies lasiocarpa* zone but may follow cold-air drainages down to 4,500 feet (1 370 m). It tends to occupy moist northerly aspects that are often quite steep and sheltered from extreme sun and wind.

**Vegetation.** — Usually *Picea* is the major seral dominant. *Pinus contorta, Pseudotsuga,* and occasionally *Larix occidentalis* or *Abies grandis* grow here in minor amounts. *Menziesia* dominates the undergrowth and often forms a tall, dense layer. A diverse group of moist-site herbs grow beneath the shrubs; of these, *Viola orbiculata* and *Pyrola secunda* are the most common.

*Luzula hitchcockii (LUHI)* phase. — The *LUHI* phase occurs mostly north of our area, but small amounts also appear in the Salmon Uplands section. This phase represents the upper elevations (6,200 to 7,200 feet [1 890 to 2 200 m]) of *ABLA/MEFE* where deep snow may persist later in the growing season. *Luzula hitchcockii* is common throughout the stand and species diversity is slightly less than in the *MEFE* phase. Upper limits of the *LUHI* phase usually border the *ABLA/LUHI* h.t.

*Menziesia ferruginea (MEFE)* phase. — This is the most common phase in our area. Its description follows that given for the type.

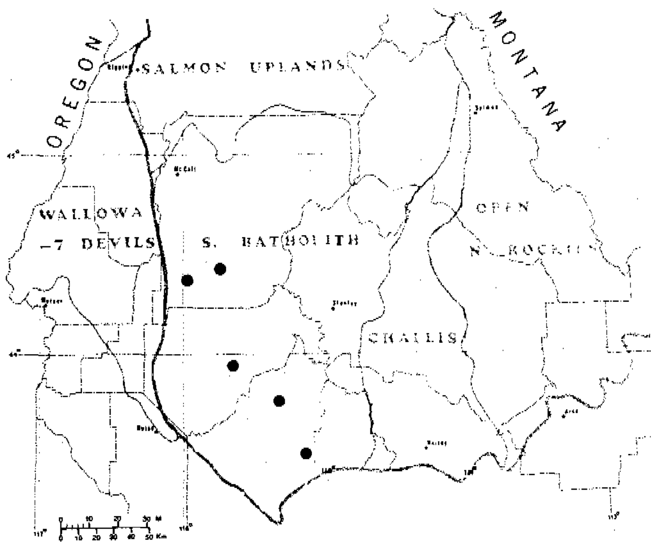
**Soil.** — The soils are derived mainly from granitics and vary from loam to loamy sand. The pH ranges from 5.1 to 6.2 and averages 5.4 in the *MEFE* phase. The *LUHI* phase should average somewhat less. Areas of bare soil or rock are usually negligible, but boulders and rock outcrops may be present. Litter depths can average at least 9 cm on a site.

**Productivity/Management.** — Limited data suggest that timber potentials are moderate to high in the *MEFE* phase and somewhat lower in the *LUHI* phase. *Picea* appears productive and though it regenerates easily in openings that receive partial shade, the most vigorous growth is attained in clearcut areas (Roe and DeJarnette 1965). Overstory shade eventually favors *Abies lasiocarpa.* Exposing mineral soil and prescribed burning produce better regeneration than the undisturbed forest floor, scarification being the more effective treatment (Roe and DeJarnette 1965). When the overstory is removed, densities of *Menziesia, Vaccinium,* and other shrubs can increase and retard regeneration of conifers. Where mineral soil is exposed in openings, *Alnus sinuata* can easily invade and remain dominant for many years; however, the nitrogen-fixing capabilities of *Alnus* may be useful on some sites.

Domestic livestock seldom find much forage here, but in the summer and fall, big game, especially elk, benefit considerably from the dense cover and browse. In certain areas, moose, mule deer, black bear and Franklin's grouse also seek food and cover on these sites. In winter, old-growth stands are important habitat for marten (Koehler and Hornocker 1977).

**Other studies.** — In northern Idaho, R. and J. Daubenmire (1968) describe *ABLA/MEFE* as containing *Xerophyllum tenax* throughout the h.t. In central Idaho, *ABLA/MEFE* extends south of the range of *X. tenax* and so it lacks this species in some areas. The *ABLA/MEFE* h.t. in Montana (Pfister and others 1977) corresponds to our *MEFE* phase; however, our *LUHI* phase apparently reflects the downslope extension of *LUHI* to milder summer environments (because of longer-lasting snowpack) than in Montana. Cooper (1975) reports isolated occurrences of this h.t. in Wyoming's Teton Range.

## *ABIES LASIOCARPA/ACER GLABRUM* H.T. (*ABLA/ACGL;* SUBALPINE FIR/MOUNTAIN MAPLE)




**Distribution.** — This minor h.t. occurs mainly in southern portions of the Southern Batholith section where it usually occupies moist north to easterly aspects. It ranges from 4,800 to 6,500 feet (1 460 to 1 980 m) at lower elevations of the subalpine zone. Adjacent warmer sites are usually *Pseudotsuga* h.t.'s

**Vegetation.** — *Pseudotsuga* is the dominant seral tree throughout the h.t. Other seral conifers are rare. In old-growth stands, large spreading *Acer glabrum* usually dominate an undergrowth of declining, less shade-tolerant shrubs. In the forb layer *Thalictrum occidentale, Penstemon wilcoxii,* and the vine, *Clematis columbiana,* occupy the shrub interspaces. Under dense canopies, both the *Penstemon* and *Clematis* can serve as alternate indicators of this h.t. In seral conditions, a thick cover of tall shrubs dominates the undergrowth. *Sorbus, Salix, Prunus,* and *Amelanchier* are the common components of these communities.

**Soil.** — Parent materials are mainly granitic but also include quartz monzonite and rhyolite (appendix D-1). Textures are mostly loam to fine sandy loam and are occasionally gravelly. The pH ranges from 5.4 to 6.2 and averages 5.8. Areas of bare soil or bare rock are usually less than 5 percent. Average litter depths can reach at least 6 cm on a site. Soils are deep and fertile. Much of this h.t. occupies cryoplanated lands where soil moisture occurs near the surface (John Arnold, USDA Forest Service, retired; personal communication). This moisture apparently transports plant nutrients through the root zone and increases effective fertility in spite of low-nutrient parent materials.

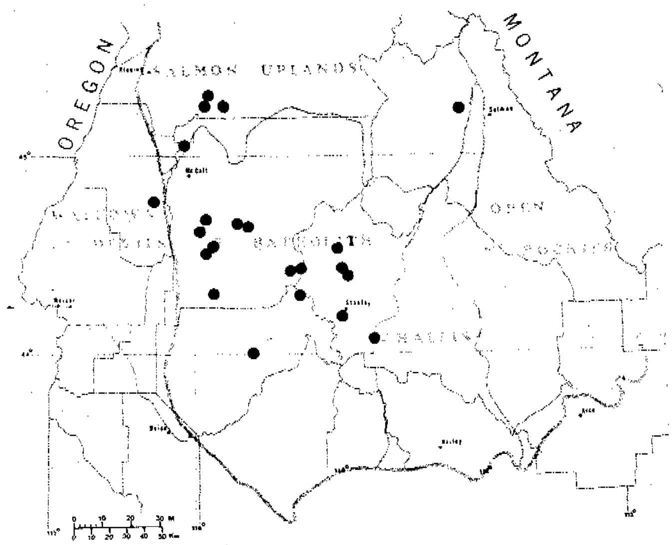
**Productivity/Management.** — Timber productivity is moderate to high (appendix E-2). *Pseudotsuga* is the most productive species and should regenerate well on carefully prepared sites that benefit from partial shade. Complete overstory removal by fire or logging can produce a tall shrub field that persists for decades and retards conifer seedlings.

Livestock find little forage here, but sheep can feed on the numerous forbs and lower limbs of the tall shrubs. In some brushfields defoliation and trampling by sheep may improve conditions for tree establishment after the sheep are removed.

The seral shrubs in this h.t. have high forage value to elk and mule deer but snow depths usually prevent winter use. The shrubs may also provide food and cover for black bear and blue grouse.

**Other studies.** — Henderson and others (1976, unpubl. ref.) describe *ABLA/ACGL* in southeastern Idaho and northern Utah. Steele and others (1979, unpubl. ref.) also found it in western Wyoming and classified that entire population the *Pachistima myrsinites* phase. The central Idaho population should be considered as the *Acer glabrum* phase.

## *ABIES LASIOCARPA/VACCINIUM CAESPITOSUM* H.T. (*ABLA/VACA;* SUBALPINE FIR/DWARF HUCKLEBERRY)




**Distribution.** — This minor h.t. occurs mainly in the Southern Batholith and Salmon Uplands sections. *ABLA/VACA* ranges from 5,200 to 6,700 feet (1 590 to 2 040 m) and occupies flat to gently rolling terrain at middle to lower elevations of the *Abies lasiocarpa* zone. It often occurs on deposits of well-drained glacial outwash in areas that impound cold air. Adjacent sites usually include *ABLA/CACA* h.t., *VACA* phase.

**Vegetation.** — Stable communities of *Pinus contorta* usually dominate these sites. Seedlings of *P. contorta* are numerous and the trees vary in age distribution. Scattered and often stunted *Picea* and *Abies lasiocarpa* usually occur throughout the stand. The *Abies* reproduction is often vegetative and forms broad patches that prevent establishment of *Pinus contorta.*

As this h.t. approaches more moderate conditions, or sites with greater relief, the *Abies* and *Picea* appear more vigorous and *Vaccinium scoparium* becomes more prevalent. Normally undergrowth is characterized by a layer of *Vaccinium caespitosum* and *Calamagrostis rubescens. Fragaria virginiana, Viola adunca,* and depauperate *Epilobium angustifolium* occur throughout the stand.

**Soil.** — The soils, though often alluvial, are mainly of granitic origin (appendix D-1). Textures vary from silt loam to loamy sand and are frequently gravelly. Soil pH ranges from 5.1 to 5.7 and averages 5.3. Areas of bare soil or rock are normally less than 1 percent. Average litter depth on a site seldom exceeds 4 cm.

**Productivity/Management.** — Timber potentials are low to moderate (appendix E-2). *Pinus contorta* is apparently the only species suitable for timber on these sites. It has mostly nonserotinous cones and the seedlings appear to establish quite readily. The gentle terrain makes these sites amenable to intensive silviculture, but no data are available to assure a satisfactory response to silvicultural treatment.

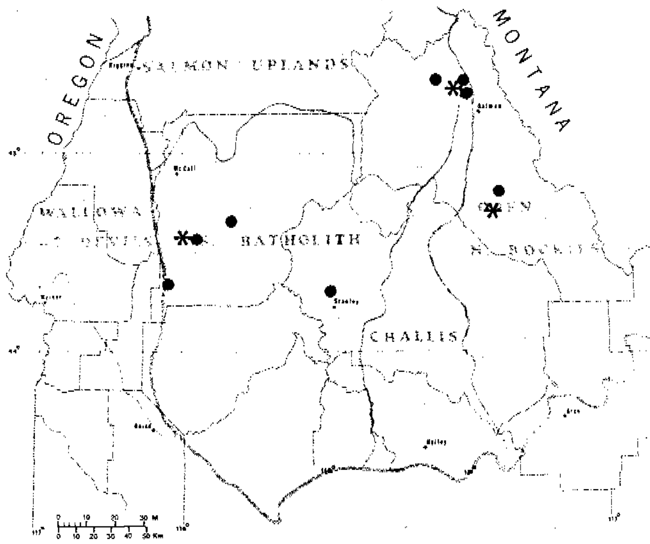
Although the terrain is suitable for grazing, livestock find only light to moderate forage in the form of *Calamagrostis rubescens* and *Carex geyeri.*

Because *ABLA/VACA* often borders moist meadows, elk and mule deer use these sites for cover in summer and fall. These sites may also be important habitat for Franklin's grouse.

In some areas, this h.t. has been developed for campgrounds. Both *Vaccinium caespitosum* and *Calamagrostis rubescens* can withstand light foot traffic, but heavy, uncontrolled use can destroy plant cover and expose soil. The gentle terrain provides easy access and is well suited for campground development; however, knowledgeable campers may prefer areas that receive less frost and fewer mosquitoes, which thrive in adjacent wet sites.

**Other studies.** — *ABLA/VACA* also occurs in Montana (Pfister and others 1977) and in the Uinta Mountains of Utah (Henderson and others 1977, unpubl. ref.).

## *ABIES LASIOCARPA/LINNAEA BOREALIS* H.T. (*ABLA/LIBO;* SUBALPINE FIR/TWINFLOWER)




•*Linnaea borealis phase* (*LIBO;* twinflower)

**Vaccinium scoparium* phase (*VASC;* grouse whortleberry)

**Distribution.** — Minor amounts of *ABLA/LIBO* occur in the Southern Batholith section. It ranges from 5,000 to 7,400 feet (1 520 to 2 260 m) and usually occupies cool gentle terrain at lower to mid-elevations of the subalpine zone.

**Vegetation.** — *Pinus contorta, Pseudotsuga,* and *Picea* are the major seral dominants. In some areas *Alnus sinuata* forms a dominant layer beneath *Pinus contorta. Linnaea* is common throughout the stand even though other shrubs may create the dominant aspect. Other features vary between the phases noted below.

*Linnaea borealis (LIBO)* phase. — This phase may occur throughout the range of *ABLA/LIBO. Pseudotsuga, Picea,* and to a lesser extent *Pinus contorta* are the common seral dominants in most of our area. *Alnus sinuata* may dominate undergrowths of seral stands. In older stands, *Vaccinium globulare* may form a light layer and *Linnaea* tends to form a fairly extensive mat.

*Xerophyllum tenax (XETE)* phase. — This incidental phase occurs mainly in Montana, but one stand was found in adjacent Idaho. This phase is similar to the *LIBO* phase but has an additional layer of *Xerophyllum* in older stands. *Pachistima myrsinites* is also a common associate of *Xerophyllum* in the Montana stands.

*Vaccinium scoparium (VASC)* phase. — This incidental phase occurs mainly in Montana and Wyoming but appears sporadically in central Idaho. *Pinus contorta* is the most common seral dominant and *Vaccinium scoparium* dominates the undergrowth. *Calamagrostis rubescens* often forms a conspicuous layer with the *Vaccinium,* especially in the more seral situations.

**Soil.** — Soil parent materials are mainly granitic and occasionally andesite (appendix D-1). Textures are clay loams to fine sandy loams. Soil pH ranges from 5.1 to 6.4 and averages 5.5. Areas of bare soil and rock are negligible although exposed boulders may be present. Average litter depth on a site can reach at least 6 cm.

**Productivity/Management.** — Limited data suggest that timber potential is moderate, with the *VASC* phase having the lowest productivity. *Pinus contorta* is the most productive conifer in the *VASC* phase and regenerates readily wherever there is ample sunlight. In the *LIBO* phase *Pseudotsuga* and *Picea* should regenerate well in partially shaded openings.

Livestock may be attracted by the gentle terrain of these sites but find mainly *Calamagrostis rubescens* as forage. The animals cause little damage here except for the trampling of conifer seedlings.

*ABLA/LIBO* can provide escape cover for deer and elk, and the *Vaccinium* fruits may be important feed for grouse and black bear.

**Other studies.** — Pfister and others (1977) describe *ABLA/LIBO* in Montana; Cooper (1975) notes it in Yellowstone National Park as the *Picea-Abies/Linnaea borealis* h.t. Steele and others (1979, unpubl. ref.) describe *ABLA/LIBO* in the Wind Range of Wyoming.

## *ABIES LASIOCARPA/ALNUS SINUATA* H.T. (*ABLA/ALSI;* SUBALPINE FIR/SITKA ALDER)

**Distribution.** — This incidental h.t. occurs mainly in Montana but also was found in the vicinity of Salmon, Idaho. It tends to occupy cool northerly aspects in lower portions of the subalpine zone.

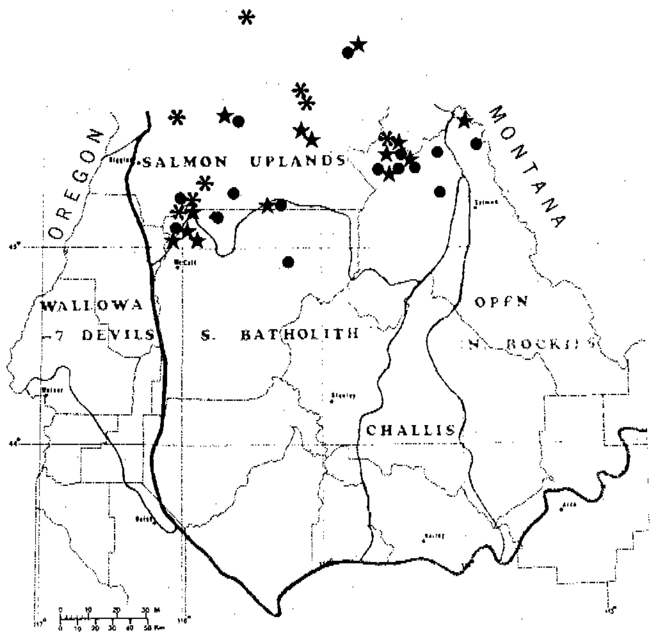
**Vegetation.** — Seral stands are dominated by *Pinus contorta* and usually have lesser amounts of *Picea, Abies lasiocarpa,* and occasionally *Pseudotsuga. Alnus sinuata* forms a dense but patchy layer in the undergrowth. *Xerophyllum, Vaccinium globulare,* or *V. scoparium* may be conspicuous below the *Alnus.* Old-growth stands of *Picea* and *Abies* are rare.

*ABLA/ALSI* appears most similar to the *ABLA/MEFE* and *ABLA/LIBO* h.t.'s. It is uncertain whether *Alnus sinuata* can persist as the climax dominant but no other species present is an adequate indicator of the moisture regime that occurs here. Although the *Alnus* may not persist in dense stands, it is the only practical interim indicator for these relatively moist, cool sites.

**Productivity/Management.** — Limited data suggest that timber productivity should be moderate, with *Pinus contorta* as the major species. The pine can regenerate easily in clearings that receive full sunlight, but *Alnus sinuata* will also invade the clearings wherever bare soil occurs and may retard the seedlings. The alder suggests that soils are wet at least part of the year, which may create problems for access and timber harvest. Use by both livestock and big game appears to be light.

**Other studies.** — Pfister and others (1977) describe *ABLA/ALSI* in Montana where it is more common. R. and J. Daubenmire (1968) and possibly others describe *Alnus sinuata* brushfield and snowslide situations. These should not be confused with our definition of *ABLA/ALSI.*

## *ABIES LASIOCARPA/XEROPHYLLUM TENAX* H.T. (*ABLA/XETE;* SUBALPINE FIR/BEARGRASS)




• *Vaccinium scoparium* phase (*VASC;* grouse whortleberry)

★ *Vaccinium globulare* phase (*VAGL;* blue huckleberry)

✱ *Luzula hitchcockii* phase (*LUHI;* smooth woodrush)

**Distribution.** — *ABLA/XETE* occurs mainly in the Salmon Uplands section. It ranges from 6,000 to 8,300 feet (1 830 to 2 530 m) and occupies various slopes and aspects from middle to upper elevations of the subalpine zone. Occasionally it extends into the lower subalpine (5,400 feet [1 650 m]).

**Vegetation.** — *Pinus contorta* is the most common seral dominant of these sites. In some areas, *Picea* and occasionally *Pseudotsuga* are also major seral trees. Various amounts of *Vaccinium globulare* and *Vaccinium scoparium* may codominate with *Xerophyllum.*

*Vaccinium globulare (VAGL)* phase. — This phase delineates the more moderate segment (5,400 to 7,000 feet [1 650 to 2 130 m]) of the h.t. *Pseudotsuga* is more common in this phase and *Picea* often attains higher coverages and appears more vigorous. *Vaccinium* *globulare* usually codominates the undergrowth with *Xerophyllum. Sorbus scopulina* and *Spiraea betulifolia* are often present in small amounts.

*Vaccinium scoparium (VASC)* phase. — The *VASC* phase tends to occur along the southern and eastern periphery of the *ABLA/XETE* distribution and delineates the upper elevations (6,500 to 8,300 feet [1 980 to 2 530m]) of the h.t. in these areas. In seral stands, *Pinus contorta* is the major dominant; small amounts of *Picea* are usually present. *Vaccinium scoparium* usually dominates between the clumps of *Xerophyllum*, which are often widely spaced.

*Luzula hitchcockii (LUHI)* phase. — The *LUHI* phase denotes upper elevations (6,100 to 7,800 feet [1 860 to 2 380 m]) of *ABLA/XETE* within the more central portions of its distribution. Upper limits of this phase tend to merge with the *ABLA/LUHI* h.t. *Pinus contorta* dominates seral stands and small amounts of *Pinus albicaulis* are usually present. Undergrowths are a mixture of *Xerophyllum* and *Vaccinium scoparium*, with patches of *Luzula hitchcockii*.

**Soil.** — Soil parent materials are mostly granitic but include some quartzite, andesite, and schist (appendix D-1). Textures are mainly loam to sandy loam and are often gravelly, especially in the *VASC* phase. The pH ranges from 4.5 to 5.9 and averages 5.0. Areas of bare rock are usually less than 5 percent, but occasionally exposed boulders amount to 30-percent coverage. Most sites have less than 5 percent bare soil. Average litter depth on a site can reach 6 cm.

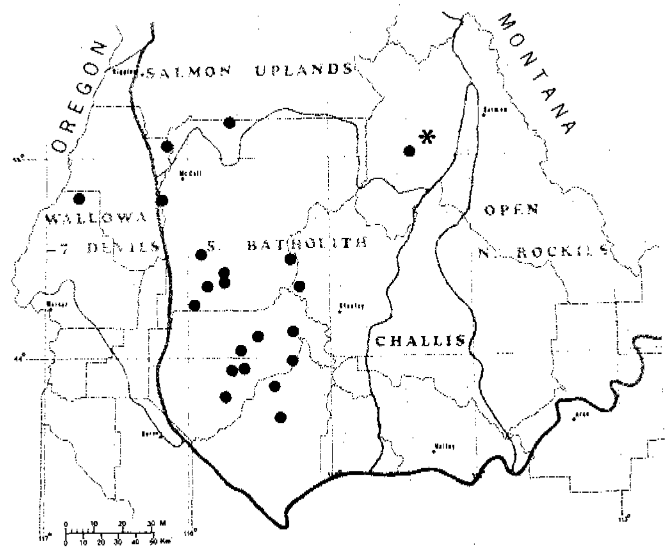
**Productivity/Management.** — Timber potential appears low in the *LUHI* phase and is generally moderate in the *VASC* and *VAGL* phases (appendix E). *Pinus contorta* is usually the most productive species and regenerates well in clearings that receive full sunlight. Occasionally *Picea* or *Pseudotsuga* are suitable timber species in the *VAGL* phase.

Livestock find little forage in this h.t. but may congregate in clearings and reduce survival of tree seedlings. In summer and fall, these sites can provide forage and cover for deer and elk. The *Vaccinium* fruits are usually important to black bear, blue grouse, and Franklin's grouse.

Many of the sites accumulate a considerable snowpack each year and are often visited by recreationists during the summer.

**Other studies.** — In northern Idaho, R. and J. Daubenmire (1968) describe *ABLA/XETE* as usually lacking *Picea*. Otherwise their stands (except No. 57) are comparable to our *VAGL* phase. In Montana, Pfister and others (1977) describe comparable *VAGL* and *VASC* phases but place those stands having *Luzula hitchcockii* present in the *ABLA/LUHI* h.t. About half of the *ABLA/XETE* sites sampled in central Idaho contain *L. hitchcockii* in various amounts. In our area, it appears that the *Luzula* occupies sites at lower relative elevations of the subalpine zone than in Montana. Thus, we feel justified in defining the *LUHI* phase to distinguish these sites from the *ABLA/LUHI* h.t. described in Montana. Both Horton (1971, unpubl. ref.) and Cooper (1975) mention isolated outposts of *ABLA/XETE* in northwestern Wyoming.

## *ABIES LASIOCARPA/VACCINIUM GLOBULARE* H.T. (*ABLA/VAGL*; SUBALPINE FIR/BLUE HUCKLEBERRY)




• *Vaccinium globulare* phase (*VAGL*; blue huckleberry)

* *Vaccinium scoparium* phase (*VASC*; grouse whortleberry)

**Distribution.** — *ABLA/VAGL* occurs mainly in the Southern Batholith section from 5,100 to 7,300 feet (1 550 to 2 230 m). It occupies north-to-easterly aspects at lower to mid-elevations of the subalpine zone and often borders *Pseudotsuga* h.t.'s.

**Vegetation.** — Depending on the phases described below, *Pseudotsuga, Picea,* or *Pinus contorta* dominate seral stands. *Vaccinium globulare* forms a dominant layer in the undergrowth and is usually accompanied by *Lonicera utahensis* (fig. 29). In many respects these sites resemble *ABLA/XETE*, except that *Xerophyllum* is absent.

*Vaccinium globulare (VAGL)* phase. — This is the common phase in our area. *Pseudotsuga* and *Picea* are the seral dominants. *Pinus contorta* also grows here but in lesser amounts. This phase is similar to the *VAGL* phase of *ABLA/XETE* but lacks *Xerophyllum*.

*Vaccinium scoparium (VASC)* phase. — This is an incidental phase in our area but becomes common in western Wyoming. It represents an upper elevation segment of *ABLA/VAGL* and often borders *ABLA/VASC*. *Pinus contorta* followed by *Picea* are the common seral

*Figure 29.* — *Abies lasiocarpa/Vaccinium globulare h.t. on a north exposure northwest of Rocky Bar, Idaho (7,300 feet [2 230 m] elevation).* Abies lasiocarpa *and scattered* Picea engelmannii *dominate the site.* Vaccinium globulare *forms a dominant layer in the undergrowth.*

dominants. Here, the *Vaccinium globulare* is normally superimposed on a layer of *V. scoparium.*

**Soil.** — Soil parent materials are mostly granitics but also include quartz monzonite, rhyolite, and metasediments (appendix D-1). Textures are mostly loams or sandy loams and are often gravelly. The pH ranges from 5.0 to 6.2 and averages 5.5. Areas of bare soil or bare rock are usually less than 3 percent. Average litter depth on a site can reach at least 5 cm.

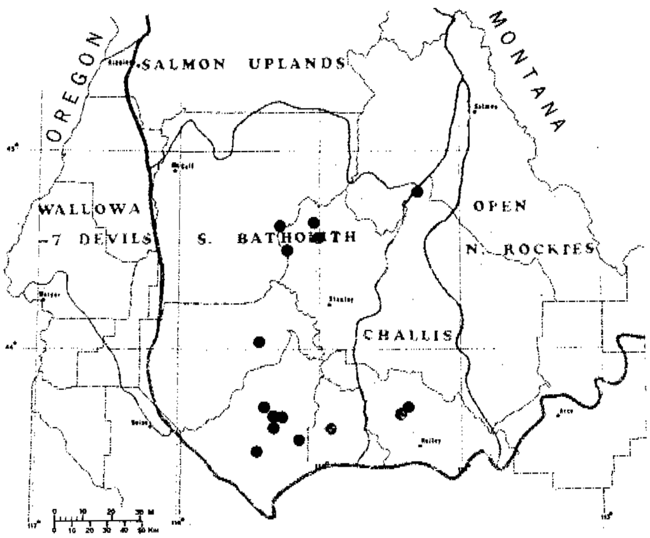
**Productivity/Management.** —Timber potentials are moderate in the *VAGL* phase (appendix E-2) and appear to be somewhat lower in the *VASC* phase. *Picea* and *Pseudotsuga* are the best suited timber species for the *VAGL* phase and should regenerate in small clearings that receive partial shade. *Pinus contorta* is best suited for the *VASC* phase and regenerates well in clearings that receive full sunlight. When the tree canopy is reduced, *Vaccinium globulare* may increase and compete with conifer seedlings, especially toward the moist extreme of this h.t.

Livestock find very little forage in this h.t. and seldom spend much time here.

These sites can provide cover and some forage for elk and mule deer in summer and fall. The berry crops of *Vaccinium* are used by black bear, grouse, and humans.

**Other studies.** — The *ABLA/VAGL* h.t. also occurs in southern Montana, eastern Idaho, and northwestern Wyoming (Cooper 1975; Steele and others 1979, unpubl. ref.). In northern Utah, and adjacent Idaho, Henderson and others (1976, unpubl. ref.) describe a very similar condition as the *Abies lasiocarpa/Vaccinium membranaceum* h.t. and Hall (1973) mentions a "subalpine fir-big huckleberry community type" in eastern Oregon.

## *ABIES LASIOCARPA/SPIRAEA BETULIFOLIA* H.T. (*ABLA/SPBE*; SUBALPINE FIR/WHITE SPIRAEA)




**Distribution.** — *ABLA/SPBE* occurs mainly in the Southern Batholith section, from 5,300 to 7,200 feet (1 620 to 2 200 m). It is a relatively minor h.t. and represents a warm, dry extreme of the *Abies lasiocarpa* series. It usually occupies northerly aspects where the *Pseudotsuga* series occurs on adjacent sites.

**Vegetation.** — *Pseudotsuga* and *Pinus contorta* are the major seral dominants. *Spiraea betulifolia* usually dominants the undergrowth even though taller shrubs may be present. On some sites, *Carex geyeri* or *Calamagrostis rubescens* forms a layer beneath the *Spiraea*.

**Soil.** — Soil parent materials are mainly granitic or quartz monzonite (appendix D-1). Textures range from loam to loamy sand and are often gravelly. Soil pH varies from 5.3 to 6.2 and averages 5.7. Areas of bare soil are usually negligible, but bare rock may reach 20 percent. Average litter depths on a site may reach 4 cm.

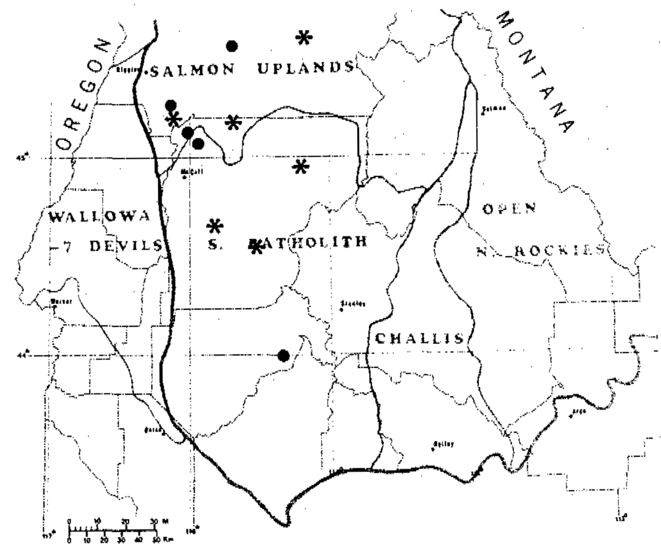
**Productivity/Management.** — Timber potential is low to moderate (appendix E-2). *Pseudotsuga* usually grows best on these sites and should regenerate in small clearings that receive partial shade. If present, *Pinus contorta* will regenerate in unshaded clearings, but its productivity may be less than *Pseudotsuga*.

Livestock find little forage on these sites except when *Carex geyeri* or *Calamagrostis rubescens* are present.

Mule deer and occasionally elk find cover and some forage here in summer and fall. Seral stands can produce some shrubs with high forage value to big game. In spring and summer, *ABLA/SPBE* is considered important habitat for red squirrel, flying squirrel, red-backed vole, and marten. It is also considered as nesting habitat for pine siskin, dark-eyed junco, mountain chickadee, and red-breasted nuthatch.

**Other studies.** — *ABLA/SPBE* is reported in western Wyoming and adjacent Idaho (Steele and others 1979, unpubl. ref.). It also resembles Cooper's (1975) *ABLA/VAGL* h.t., *SPBE* phase in the same area.

## *ABIES LASIOCARPA/LUZULA HITCHCOCKII* H.T. (*ABLA/LUHI*; SUBALPINE FIR/WOODRUSH)




•*Luzula hitchcockii phase* (*LUHI*; smooth woodrush)

**Vaccinium scoparium* phase (*VASC*; grouse whortleberry)

**Distribution.** — *ABLA/LUHI* occurs mainly in the Salmon Uplands section and occasionally southward. It ranges from 7,000 to 8,200 feet (2 130 to 2 500 m) and appears at middle to upper elevations of the subalpine zone. It occupies cold sites that retain a snow cover late into the summer and often occurs near cirque headlands wherever the soil escaped glacial scouring.

**Vegetation.** — *Picea, Pinus contorta,* and *P. albicaulis* are considered the major seral dominants, but because succession is slow and often interrupted *Picea* and *Pinus albicaulis* are seldom completely replaced in the stand. *Arnica latifolia, Chionophila tweedyi,* and *Pedicularis contorta* are characteristic forbs of an undergrowth often dominated by *Luzula hitchcockii* or *Vaccinium scoparium.*

*Vaccinium scoparium (VASC)* phase. — This phase is the most common and it occurs throughout the range of the h.t. Normally, *Vaccinium scoparium* dominates the undergrowth and *Luzula* occupies the shrub interspaces.

*Luzula hitchcockii (LUHI)* phase. — The *LUHI* phase occurs mostly near upper timberline and often borders sites having *Juncus parryi* as the dominant undergrowth. *Pinus albicaulis* is often the only major seral dominant and, on some sites, may codominate in stable stands. *Luzula hitchcockii* usually forms a thick

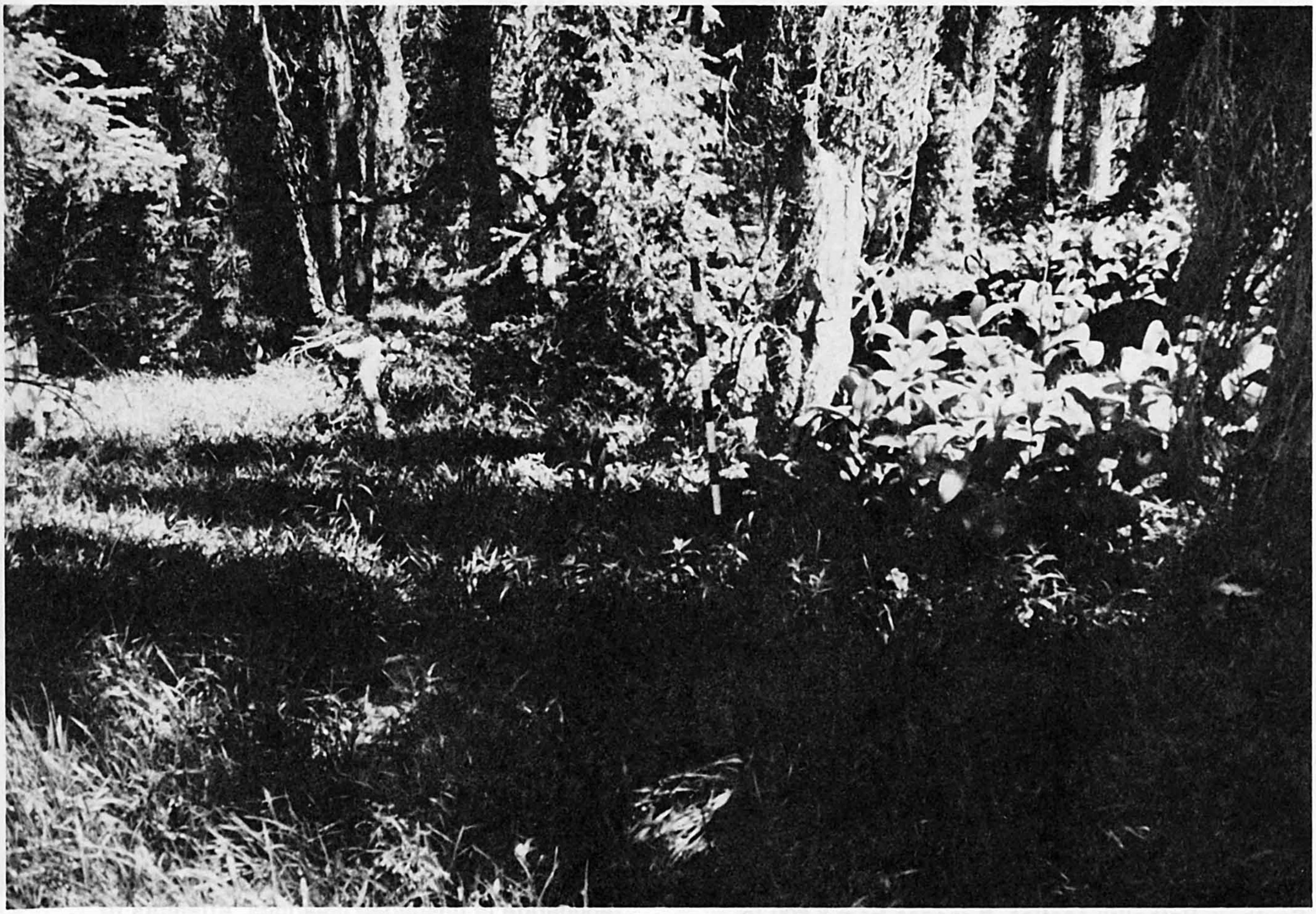


*Figure 30.* — Abies lasiocarpa/Luzula hitchcockii *h.t.*, Luzula hitchcockii *phase on a gentle, northerly exposure near Kenneth Lake north of McCall, Idaho (7,500 feet [2 290 m] elevation).* Abies lasiocarpa *dominates the site.* Luzula hitchcockii *forms a notable layer in the undergrowth.*

sod and dominates the undergrowth (fig. 30). Patches of *Veratrum viride* or *Polygonum phytolaccaefolium* may appear in disturbed areas.

**Soil.** — The soils are derived mainly from granitics and sometimes andesite (appendix D-1). They vary from loam to fine sandy loam and a few are gravelly. In the *LUHI* phase, soil pH ranges from 4.3 to 5.0 and averages 4.6. In the *VASC* phase it ranges from 4.9 to 5.2 and averages 5.0. In both phases, coverage of bare rock is usually less than 5 percent, but exposed boulders may reach 50 percent. Areas of bare soil are mostly less than 10 percent. Average litter depths can reach at least 3 cm.

**Productivity/Management.** — Limited data suggest timber potentials are low and it may be difficult to achieve tree regeneration after logging. Heavy snowpacks often deform the smaller trees and regeneration of *Abies lasiocarpa* may be largely vegetative.

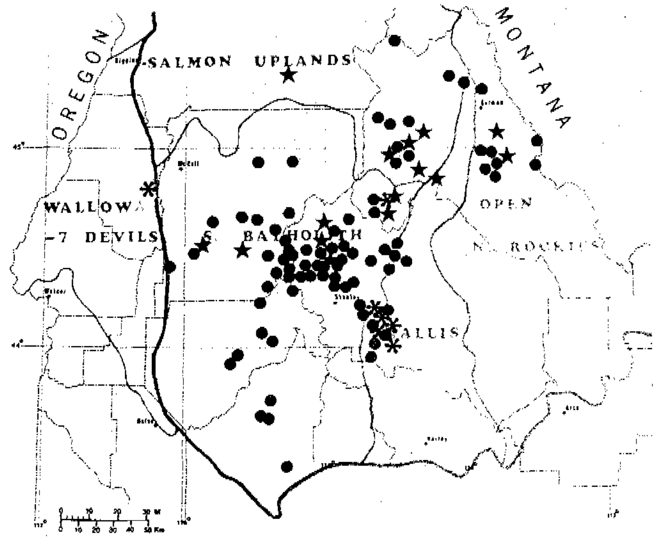
Livestock find little forage here; but in the past, domestic sheep trailed across these sites and destroyed the *Luzula* sod. In some areas, the bared soil was then eroded by melting snowpacks.

In summer and fall, *ABLA/LUHI* provides cover and forage for elk, mule deer, mountain goat, and in some areas bighorn sheep. In fall and winter, these sites are important to blue grouse, which feed on the leaves and buds of *Abies lasiocarpa*.

The depth and persistence of snow in this h.t. indicates that water is a key resource for management consideration.

**Other studies.** — In Montana, Pfister and others (1977) define a somewhat broader *ABLA/LUHI* h.t. (see the discussion of our *LUHI* phase in the *ABLA/XETE* and *ABLA/MEFE* h.t.'s). In Wyoming, Cooper (1975) mentions small areas of this h.t. in the Teton Range.

## ABIES LASIOCARPA/VACCINIUM SCOPARIUM H.T. (ABLA/VASC; SUBALPINE FIR/GROUSE WHORTLEBERRY)




• *Vaccinium scoparium phase* (*VASC;* grouse whortleberry)

★ *Calamagrostis rubescens* phase (*CARU;* pinegrass)

✱ *Pinus albicaulis* phase (*PIAL;* whitebark pine)

**Distribution.** — *ABLA/VASC* occurs mainly in the Southern Batholith section. It ranges from 6,600 to 9,200 feet (2 010 to 2 800 m) at middle to upper elevations of the subalpine zone and occupies a variety of slopes and aspects. Occasionally it follows cold-air drainages into lower elevations (5,700 feet [1 740 m]).

**Vegetation.** — *Pinus contorta* dominates seral stands throughout most of this h.t. *Picea* and *Pseudotsuga* are often present as minor species. *Pinus albicaulis* appears in various amounts and ranges from seral at the warm extreme to coclimax at the cold extreme. A low cover of *Vaccinium scoparium* dominates the undergrowth (fig. 31). Other shrubs, if present, are usually sparse and well scattered. A few forbs such as *Arnica, Lupinus,* and *Valeriana* are usually present.

*Calamagrostis rubescens (CARU)* phase. — At lower elevations (5,700 to 7,500 feet [1 740 to 2 290 m]) of the *ABLA/VASC* h.t., *Calamagrostis rubescens* codominates the undergrowth with *Vaccinium.* Here *Pseudotsuga* may appear as a major seral tree and codominate the stand with *Pinus contorta.* Warm, dry extremes of this phase often border *ABLA/CARU* or *PSME/CARU.*

*Vaccinium scoparium (VASC)* phase. — This phase is the most common and represents the middle segment (6,600 to 8,900 feet [2 010 to 2 710 m]) of the h.t. *Pinus contorta* dominates most seral stands and *Picea* is usually present in minor amounts. Replacement by *Abies lasiocarpa* is quite slow. This phase has a conspicuous moss layer more frequently than the other phases. The most common mosses are *Brachythecium velutinum* and *Polytricadelphus lyallii* (Steele 1974).

*Pinus albicaulis (PIAL)* phase. — This phase appears in the upper elevations (7,100 to 9,200 feet [2 160 to 2 800 m]) of the h.t. It is scarce in central Idaho but becomes more common eastward into Montana and Wyoming. *Pinus albicaulis* usually codominates the stand with *Abies lasiocarpa, Pinus contorta,* and *Picea.* These stands appear more open than in the other phases and apparently afford *Pinus albicaulis* a permanent role in the forest community. Upper limits of this phase often border *PIAL-ABLA* h.t.'s. This phase is comparable to the *ABLA-PIAL/VASC* h.t. defined for Montana (Pfister and others 1977).

**Soil.** — Soil parent materials vary considerably and usually reflect overall geology of the area. They include granitics, quartzite, quartz monzonite, diorite, trachyte, latite, andesite, and basalt (appendix D-1). Soil textures are loam to sandy loam and are often gravelly. The pH ranges from 4.7 to 5.7 and averages 5.1. Coverage of bare rock is usually less than 5 percent but can reach 15 percent. Areas of bare soil are less than 5 percent. Average litter depths can reach at least 5 cm.

**Productivity/Management.** — Timber potentials are moderate in the *VASC* phase (appendix E-2). (Limited data suggest low productivity in the *PIAL* phase and low-to-moderate productivity in the *CARU* phase.) *Pinus contorta* is the most suitable timber species and will regenerate in unshaded clearings. Attempts to regenerate other species assume considerable risk. In the *CARU* phase, coverages of *Calamagrostis rubescens* and *Carex geyeri* may impede tree regeneration unless there is thorough site preparation. However, soil scarification may increase hazards to frost heaving.

Livestock find little forage here due to short growing seasons, limited numbers of forage species, and shade of the tree canopy.

In fall, *ABLA/VASC* can provide escape cover for elk and mule deer and the *Vaccinium* fruits are important food for both blue and Franklin's grouse. It is considered important habitat for snowshoe hare, flying squirrel, red squirrel, red-backed vole, porcupine, marten, and lynx. It also provides important nesting habitat for the red crossbill, dark-eyed junco, mountain chickadee, and red-breasted nuthatch.

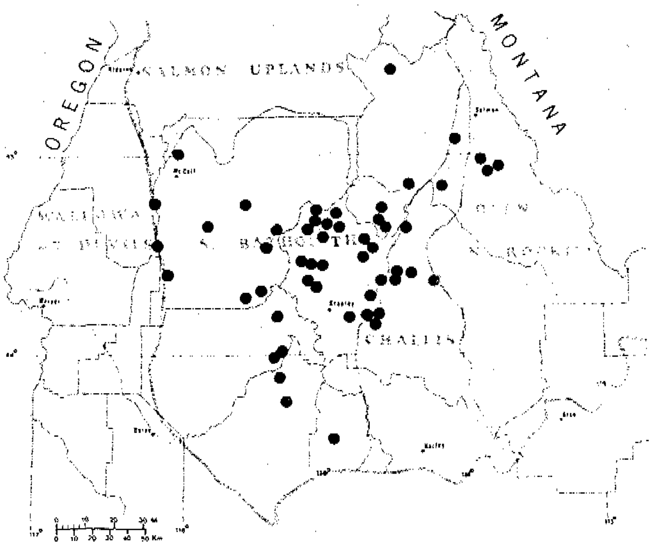
Annual snowpacks may produce high quantities of water in certain watersheds and recreational summer use may also be quite high.

**Other studies.** — *ABLA/VASC* is a widespread h.t. throughout the Northern Rockies except for areas in northern Idaho and adjacent Montana where the maritime influence is strongest. R. and J. Daubenmire (1968) describe *ABLA/VASC* in eastern Washington and

*Figure 31. —* Abies lasiocarpa/Vaccinium scoparium *h.t.,* Vaccinium scoparium *phase on a gentle northerly exposure east of Lowman, Idaho (7,200 feet [2 200 m] elevation).* Abies lasiocarpa *is regenerating beneath an overstory of* Pinus contorta. Vaccinium scoparium *dominates the undergrowth.*

northeastern Oregon and note its occurrence in British Columbia, Montana, and Colorado. Hall (1973) records similar situations in eastern Oregon. In Montana, Pfister and others (1977) report this h.t. as being very abundant and delineate three phases. Cooper (1975) and Steele and others (1979, unpubl. ref.) report a prevalence of *ABLA/VASC* in western Wyoming. It is also descrbed in Wyoming's Medicine Bow (Wirsing and Alexander 1975), and Bighorn (Hoffman and Alexander 1976) Mountains, the Uinta Mountains in northeastern Utah (Pfister 1972; Henderson and others 1977, unpubl. ref.) and the front range of Colorado (Marr 1961; Moir 1969).

## *ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS* H.T. *(ABLA/CARU;* SUBALPINE FIR/PINEGRASS)




**Distribution.** — *ABLA/CARU* is most common in the Southern Batholith section. Here it occupies gentle upper slopes and ridges and, under certain soil conditions, stream terraces and valley floors. It ranges from 6,400 to 8,900 feet (1 950 to 2 710 m) in elevation and normally occurs from lower to mid-elevations of the subalpine zone. At the warm extreme it usually merges with *PSME/CARU.*

**Vegetation.** — *Pinus contorta* is the major seral dominant throughout the h.t., and *P. albicaulis* may appear in minor amounts. *Pseudotsuga* may also dominate seral stands at the warm extremes of this type. *Calamagrostis rubescens* often accompanied by *Carex geyeri* dominates the undergrowth. *Symphoricarpos oreophilus* and other shrubs are often present but very scattered. Forbs are usually sparse on undisturbed sites.

**Soil.** — Soil parent materials are mostly granitic but also include quartz monzonite, trachyte, and basalt (appendix D-1). The textures vary from loam to loamy sand and may be gravelly to very gravelly. Soil pH ranges from 4.9 to 6.1 and averages 5.4. Areas of bare soil or bare rock are usually less than 5 percent. Average litter depth on a site can reach 3 cm.

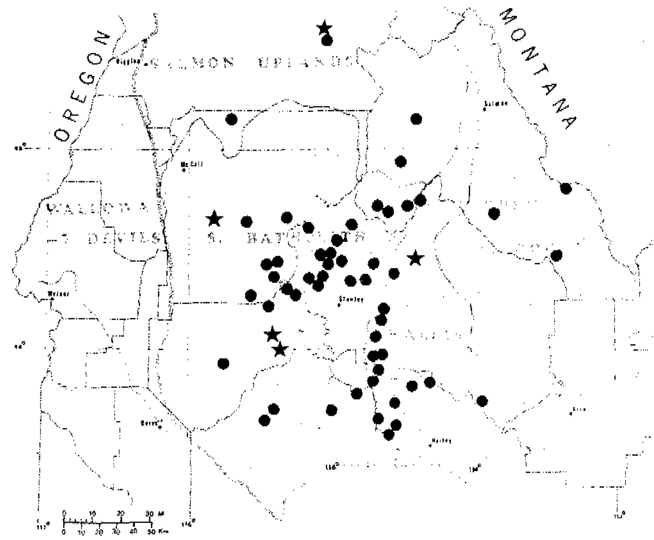
**Productivity/Management.** — Timber potentials are low to moderate (appendix E-2). If present, *Pinus contorta* is the most dependable species for timber management and should regenerate in clearings that have ample sunlight. Attempts to establish other conifers are risky and should be guided by patterns and frequency of regeneration in the stand. If the overstory is removed, the *Calamagrostis* and *Carex* may increase rapidly and retard seedling establishment.

Normally livestock use these sites only lightly but are attracted to recent clearings where the forbs and graminoids have renewed vigor. Here the animals may congregate and trample tree seedlings.

Elk and mule deer use these sites for cover in summer and fall and the elk will also feed on the graminoids present. Seral stands may produce some shrubs and forbs with light forage value to deer and elk. These sites are also considered important for red-breasted nuthatch and, in some areas, great gray owl.

**Other studies.** — This h.t. has been described in Montana (Pfister and others 1977), southern Idaho and adjacent Utah (Henderson and others 1976, unpubl. ref.), and in eastern Idaho and western Wyoming (Steele and others 1979, unpubl. ref.).

## *ABIES LASIOCARPA/CAREX GEYERI* H.T. *(ABLA/CAGE;* SUBALPINE FIR/ELK SEDGE)




•*Carex geyeri* phase
*(CAGE;* elk sedge)

★ *Artemisia tridentata* phase
*(ARTR;* big sagebrush)

**Distribution.** — *ABLA/CAGE* occurs widely in the Southern Batholith section and to a lesser extent in the Challis section. It usually ranges from 7,300 to 9,200 feet (2 230 to 2 800 m) where it occupies various aspects at middle to upper elevations of the subalpine zone. Occasionally it extends down to 6,600 feet (2 010 m) in frost pockets that occur on dry stream terraces and valley floors. It may merge with *PSME/CAGE* at its warm extreme and the *PIAL-ABLA* zone at the cold extreme.

**Vegetation.** — *Pinus contorta* is the most common seral dominant of this h.t. Toward the warm extreme, *Pseudotsuga* may also be a seral dominant. *Picea* and *Pinus albicaulis* appear sporadically throughout the

*Figure 32. — Abies lasiocarpa/Carex geyeri h.t., Carex geyeri phase on a southeast exposure near Dollarhide Summit west of Ketchum, Idaho (8,700 feet [2 650 m] elevation). An open stand of* Abies lasiocarpa *and scattered* Pinus albicaulis *dominate the site.* Carex geyeri *dominates the undergrowth.*

type with *P. albicaulis* showing increasing abundance toward the cold extreme. *Carex geyeri* dominates the herb layer of undisturbed sites and forbs are usually scarce (fig. 32). Under certain conditions *Artemisia tridentata* and occasionally *Symphoricarpos oreophilus* create a shrub layer. In some areas, *Polygonum phytolaccaefolium* increases notably after disturbance.

*Carex geyeri (CAGE)* phase. — This is the most common phase of the h.t. Its description fits that given above.

*Artemisia tridentata (ARTR)* phase. — This phase constitutes a high-elevation variant of *ABLA/CAGE* and is often transitional to nonforested communities near the *PIAL-ABLA* zone. *Pinus albicaulis* is usually the dominant seral species and may even persist as coclimax. Lesser amounts of *Pseudotsuga* and *Pinus contorta* may be present. On many sites the trees grow in clusters pioneered by *Pinus albicaulis* and appear incapable of independent invasion on the site. *Artemisia tridentata* ssp. *vaseyana* forms a shrub layer and its density appears to have increased as the *Carex* sod was destroyed by past grazing abuse. Occasionally *Symphoricarpos oreophilus* codominates with the *Artemisia.*

**Soil.** — Soil parent materials are largely granitic but also include quartzite, monzonite, dacite, trachyte, rhyolite, andesite, and basalt (appendix D-1). The textures are loam to loamy sand and are almost always gravelly to very gravelly. The pH ranges from 4.6 to 6.4 and averages 5.5. Bare rock usually has less than 5 percent coverage but may reach 20 percent. Areas of bare soil are often 5-10 percent and may reach 40 percent from past grazing abuse. Average litter depth on a site seldom exceeds 4 cm.

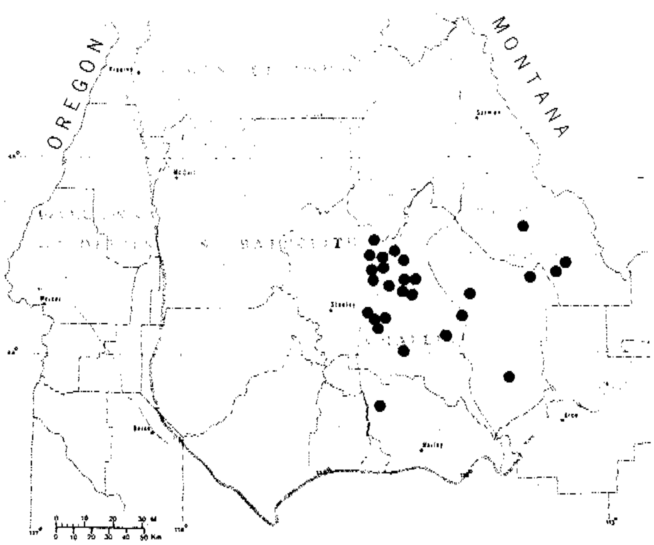
**Productivity/Management.** — Timber potentials are low to moderate (appendix E-2). *Pinus contorta,* when present, is the only practical tree for regeneration but its site index is relatively low. *Pseudotsuga,* if present, usually grows slowly and reproduces sporadically. In the *ARTR* phase, *Pinus albicaulis* is more prevalent than *P. contorta,* but its production is low and its regeneration is marginal.

Livestock find little forage here except for *Carex geyeri.* In some areas, disturbing the *Carex* sod permits invasion of forbs and grasses but quite often such disturbance provides little forage and increases erosion hazards. Generally these soils are easily eroded and difficult to revegetate.

In general, elk and mule deer use these sites for cover in summer and fall and the elk may feed on the *Carex.* These sites may also be important for both blue and Franklin's grouse. In certain areas the *ARTR* phase provides habitat for mountain goats and bighorn sheep and the elk reportedly use these sites for calving. Because the *ARTR* phase often occurs on ridges, it provides important perching and foraging habitat for blue grouse and birds of prey.

**Other studies.** — Minor amounts of *ABLA/CAGE* occur in Montana (Pfister and others 1977). It also appears in the Medicine Bow Range of Wyoming (Wirsing and Alexander 1975) and near the Idaho-Wyoming border (Cooper 1975). In the Blue Mountains of Oregon, Hall (1973) describes a similar situation that conforms mostly to our *ARTR* phase.

## *ABIES LASIOCARPA/JUNIPERUS COMMUNIS* H.T. *(ABLA/JUCO;* SUBALPINE FIR/COMMON JUNIPER)




**Distribution.** — *ABLA/JUCO* occurs mainly in the eastern half of central Idaho. It ranges from 7,400 to 8,600 feet (2 260 to 2 620 m) at mid-elevations of the subalpine zone. Occasionally it follows cold-air drainages into lower elevations (6,700 feet [2 040 m]) where it occupies toe-slopes and dry stream terraces. Lower limits of *ABLA/JUCO* may merge with *ABLA/ARCO* where only the coverage of *Juniperus* provides an often arbitrary delineation.

**Vegetation.** — *Pinus contorta* and *Pseudotsuga* are the major seral conifers. Occasionally *Picea* is present. Large, widely spaced patches of *Juniperus communis* create the dominant aspect of the undergrowth. *Arnica cordifolia* usually dominates the forb layer which is often quite depauperate. In some seral stands, *Shepherdia canadensis* forms a persistent shrub layer which may obscure the *Juniperus.* Mosses form a notable layer in some stands; *Brachythecium collinum, Dicranoweisia crispula,* and *Tortula ruralis* are the most common species (Steele 1974).

**Soil.** — Soil parent materials are mostly quartzite but also include trachyte and dacite (appendix D-1). Textures vary from loam to sandy loam and are usually gravelly to very gravelly. The pH ranges from 5.6 to 7.9 and averages 6.0. Coverage of bare rock is often 10-15 percent and may reach 60 percent. Areas of bare soil are usually negligible but occasionally reach 15 percent. Average litter depth on a site seldom exceeds 4 cm.

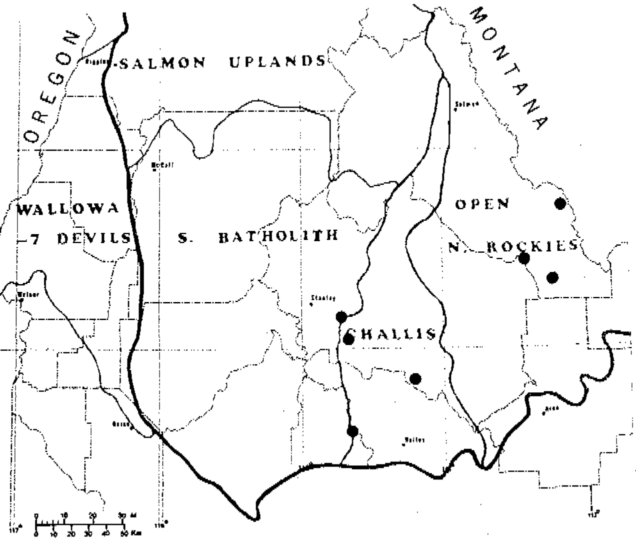
**Productivity/Management.** — Timber potentials are low (appendix E-2) and management alternatives are limited. If present, *Pinus contorta* may establish in clearings that receive adequate sunlight but its production is usually low. When *P. contorta* is absent, timber harvests of other species should be guided by patterns and frequency of natural regeneration.

Livestock find little forage here and seldom use this h.t. except when it occurs on benches or dry stream terraces.

*ABLA/JUCO* can provide cover for elk and mule deer that feed on other sites nearby. Seral stands may produce *Shepherdia canadensis,* which is occasionally browsed in some areas.

**Other studies.** — This h.t. is not described elsewhere although its presence is noted in western Wyoming (Steele and others 1979, unpubl. ref.)

## *ABIES LASIOCARPA/RIBES MONTIGENUM* H.T. (*ABLA/RIMO*; SUBALPINE FIR/MOUNTAIN GOOSEBERRY)




**Distribution.** — *ABLA/RIMO* occurs as a minor type in the Challis and Open Northern Rockies sections. It appears from 8,400 to 9,800 feet (2 560 to 2 990 m) at upper elevations of the forest zone. It may occupy various slopes but is usually on northerly aspects.

**Vegetation.** — *Pinus albicaulis* and *Abies lasiocarpa* codominate most sites in our area. Small amounts of *Picea* or *Pseudotsuga* may be present. *Picea* becomes increasingly prevalent to the south and east. Undergrowths are often very depauperate. *Ribes montigenum* is the most conspicuous shrub and may form a sprawling cover.

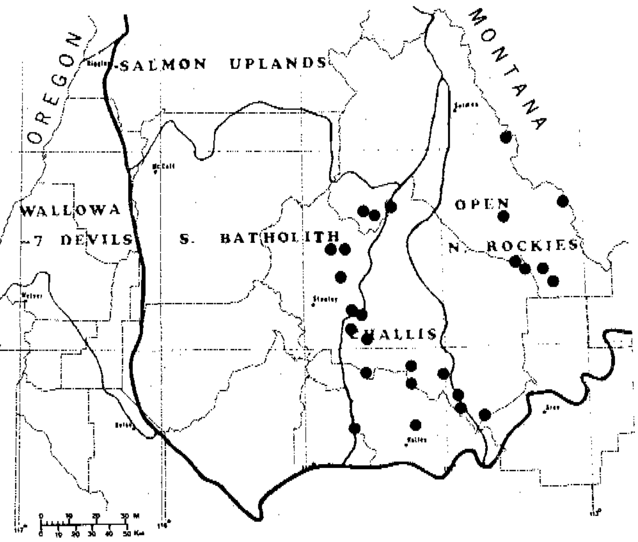
**Soil.** — Soil parent materials include quartzite, sandstone, and limestone (appendix D-1). Textures vary from loam to sandy loam and are usually gravelly. Areas of bare soil or rock may reach 15 to 20 percent. Average litter depth on a site may reach 5 cm.

**Productivity/Management.** — Limited data suggest that timber productivity is low to very low (appendix E-1), and regeneration may be sporadic. Large clearings in the stand may subject tree seedlings to damage from frost heaving and extreme sunlight. Recovery from any disturbance is apt to be very slow.

Both big game and livestock may seek shelter on these sites but find very little forage. Snowpacks persist late into the growing season and, in some areas, may be the most valuable resource present.

**Other studies.** —Pfister (1972) first described *ABLA/RIMO* in Utah and Henderson and others (1976 and 1977, unpubl. ref.) describe three phases from this area. It is also reported in southern Montana (Pfister and others 1977) and western Wyoming (Steele and others 1979, unpubl. ref.).

## *ABIES LASIOCARPA/ARNICA CORDIFOLIA* H.T. (*ABLA/ARCO*; SUBALPINE FIR/HEARTLEAF ARNICA)




**Distribution.** — *ABLA/ARCO* occurs mainly in the Challis and Open Northern Rockies sections but encroaches into the Southern Batholith section. It ranges from 7,100 to 8,800 feet (2 160 to 2 680 m) and usually occupies northerly to easterly aspects at lower to mid-elevations of the subalpine zone.

**Vegetation.** — *Pinus contorta* may dominate seral stands but more often *Pseudotsuga* or *Picea* dominate and form dense overstories. *Shepherdia canadensis* occasionally dominates the undergrowth in seral stands but usually shrubs are sparse in most of the later successional stages. Small amounts of *Juniperus communis* and *Symphoricarpos oreophilus* may also be present in the stand. *Arnica cordifolia* normally dominates the forb layer (fig. 33) and *Pyrola secunda* may codominate with the *Arnica*. Some stands have a notable moss layer in which *Brachythecium collinum* and *Dicranoweisia crispula* are the characteristic species (Steele 1974).

**Soil.** — Soil parent materials are mainly quartzite but include dacite, trachyte, latite, and quartz monzonite (appendix D-1). Textures are loam to sandy loam and most are gravelly to very gravelly. The pH ranges from 4.7 to 6.3 and averages 5.5. Areas of bare rock or bare soil vary considerably among stands and may reach 20 percent. Average litter depth on a site can reach 3 cm.

**Productivity/Management.** — Timber potentials are low to moderate (appendix E-2). Even though these may be the most productive sites in the area, management alternatives are limited. If present, *Pinus contorta* should regenerate in clearings that receive ample sunlight. When *P. contorta* is absent, timber harvest should be guided by the natural patterns and frequency of regeneration in the stand.

*Figure 33. — *Abies lasiocarpa/Arnica cordifolia *h.t. on a northerly exposure in the Lemhi Mountains west of Leadore, Idaho (7,900 feet [2 410 m] elevation).* Pseudotsuga menziesii, Pinus contorta, *and* Pinus albicaulis *dominate the site but the regeneration is mainly* Abies lasiocarpa *and a few* Picea engelmanii. Arnica cordifolia *is the dominant forb in the undergrowth.*

Livestock seldom find much forage here but may use these sites for shelter.

*ABLA/ARCO* provides little forage for big game, but elk and mule deer that feed in adjacent areas will use these sites for thermal and hiding cover.

**Other studies.** — *ABLA/ARCO* occurs in Montana (Pfister and others 1977) and along the Idaho-Wyoming border (Cooper 1975). It is also described in Wyoming's Bighorn Mountains (Hoffman and Alexander 1976) and in western Wyoming (Steele and others 1979, unpubl. ref.).

## *PINUS ALBICAULIS-ABIES LASIOCARPA* H.T.'s (*PIAL-ABLA*; WHITEBARK PINE-SUBALPINE FIR)

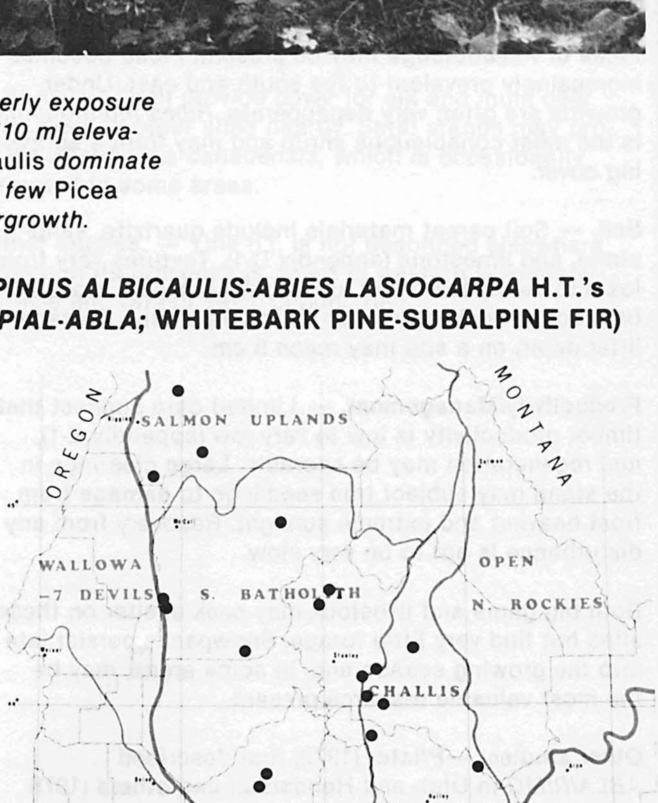


*Figure 34. — A* Pinus albicaulis-Abies lasiocarpa *h.t. on a steep southwest exposure on Gospel Hill southeast of Grangeville, Idaho (7,700 feet [2 350 m] elevation).* Pinus albicaulis *and* Abies lasiocarpa *codominate the site and neither appears capable of outcompeting the other. In the undergrowth,* Juncus parryi *is most prevalent but* Festuca idahoensis, Luzula hitchcockii, *and* Pedicularis contorta *are also common.*

**Distribution.** — *PIAL-ABLA* h.t.'s include upper timberline sites across much of central Idaho, especially in the Southern Batholith and Salmon Uplands sections. The complex occurs from 7,700 to 9,400 feet (2 350 to 2 870 m) on a variety of slopes and aspects. A plural designation (h.t.'s) is used for the complex because of considerable variation in tree life-form and undergrowth composition. Individual h.t.'s are not recognized at this time because of the data requirements and the apparent lack of need for management applications at a more detailed level.

**Vegetation.** — Clusters of *Pinus albicaulis* and *Abies lasiocarpa* codominate most sites in this group (fig. 34). *Pinus contorta* and *Picea* are seldom present and *Pinus flexilis* is absent. The trees are often deformed by severe wind or heavy snowpack. With increasing elevation, the trees become increasingly deformed and appear as widely scattered patches amidst alpine tundra. With lower elevations, the trees show improved growth form and vigor and their canopies gradually converge. Here, undergrowth dominants of *Abies lasiocarpa* forests also appear with increasingly regularity and coverage.

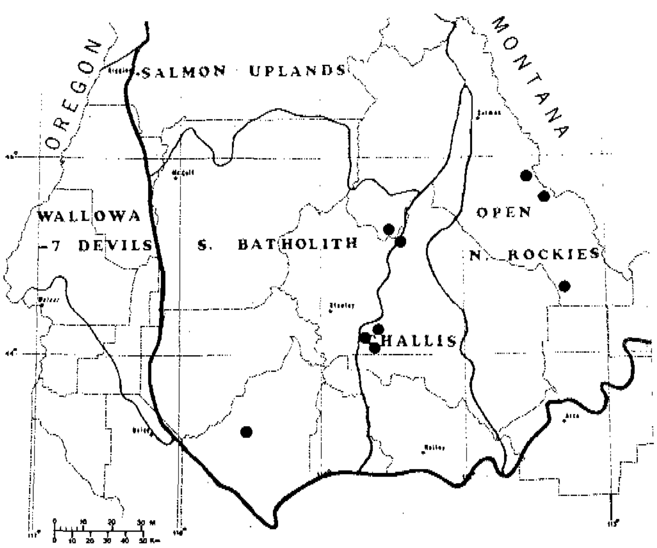
Within the undergrowth complex, at least two conditions show some evidence of representing different h.t.'s and a few others are suspect. Windward aspects exposed to intense sunlight are dominated by grasses. The sites farthest removed from areas of heavy grazing have undergrowths dominated by *Festuca idahoensis.* Similar sites elsewhere have *Stipa occidentalis* as the dominant grass. Leeward aspects that accumulate considerable snow may be dominated by *Juncus parryi,* with *Chionophila tweedyi* as a common forb. In some areas, the cover of *Juncus* may appear as ribbons along the contours as a reflection of past sheep use. In other areas, sheep have obliterated evidence of environmental relationships and have caused erosion that has permanently degraded the site. In many areas, where these conditions prevail, *Polygonum phytolaccaefolium* is now the undergrowth dominant.

**Soil.** — Soil parent materials are mostly granitic but include quartzite, quartz monzonite, and trachyte (appendix D-1). Textures vary from loam to loamy sand and are usually gravelly to very gravelly. The pH ranges from 4.3 to 5.6 and averages 4.9. Areas of bare rock and bare soil can be quite high, 60 and 80 percent, respectively, but past grazing has aggravated this condition and it is now difficult to characterize natural condition of the ground surface. Litter depths on a site can average up to 4 cm beneath the tree canopy.

**Productivity/Management.** — The *PIAL-ABLA* h.t.'s apparently have low to very low timber potential (appendix E-1) but may have high watershed value. Forage production may sustain light grazing, but in many areas grazing abuse has decimated the forage and exposed the soil. The vegetation recovers very slowly and, in some areas, soil loss may prevent complete restoration. The open slopes with light undergrowth afford easy travel and the surrounding scenery has considerable esthetic appeal. Hence recreationists seek these areas for hiking and camping but, if concentrated, these activities can easily disrupt soils and vegetation. In some areas, these sites provide important food and cover for mountain goats and bighorn sheep. The sheep also use these sites for lambing and rearing. Elk and mule deer find food and cover here and the elk will feed in the swards of *Festuca idahoensis* found in some areas. *PIAL-ABLA* h.t.'s may also be important wintering areas for blue grouse.

**Other studies.** — In northern Idaho, R. and J. Daubenmire (1968) noted similar situations. Their description resembles best the lower extremes of our *PIAL-ABLA* zone. In Montana, Pfister and others (1977) describe comparable conditions although *Picea* is more prevalent there. Hall (1973) reports similar sites in the Blue Mountains of Oregon, although much of his description includes the upper portion of our *ABLA/CAGE* h.t.

## *Pinus albicaulis* Series




**Distribution.** — *Pinus albicaulis* h.t.'s appear in the Challis and Open Northern Rockies sections but are more common in the Wind River Range of Wyoming and northward into Montana. The *P. albicaulis* h.t.'s extend downward from upper timberline on dry exposed ridges and on southerly to westerly aspects. At lower elevations or on cooler aspects they merge with *Abies lasiocarpa* or *Pinus contorta* communities.

**Vegetation.** — *Pinus albicaulis* is the dominant tree and is often deformed or stunted by wind, cold, or drought. Undergrowths vary considerably and range from a layer of *Festuca idahoensis* on very exposed sites (fig. 35) to *Carex geyeri* and *Vaccinium scoparium* on more moderate sites.

**Productivity/Management.** — These h.t.'s appear to have very low timber potential but may have high watershed values. Forage production may sustain light grazing but grazing abuse can easily decimate the forage and expose the soil. The vegetation recovers very slowly and, in some areas, soil loss can prevent complete restoration. These sites generally have low undergrowths that permit easy travel and the surrounding scenery has considerable esthetic appeal. Recreationists seek these areas for hiking and camping, but if concentrated, these activities can easily disrupt soils and vegetation.

**Other studies.** — Some people have delineated h.t.'s within the *PIAL* series. Cooper (1975) and Reed (1976) discuss a *Pinus albicaulis/Vaccinium scoparium* h.t. in western Wyoming. This h.t. also extends into Montana (Pfister and others 1977; Weaver and Dale 1974) and occupies the moister portions of the *Pinus albicaulis* zone. Cooper (1975) describes a *Pinus albicaulis/Carex geyeri* h.t. that represents small topoedaphic conditions in western Wyoming and adjacent Idaho. Some sites that are very exposed to wind and sun support a *Pinus albicaulis/Festuca idahoensis* community. This condition appears in the Wind River Range of Wyoming (Steele and others 1979, unpubl. ref.) and in Montana (Pfister and others 1977) as well as in central Idaho.

The above studies suggest that there is considerable diversity within the *Pinus albicaulis* series. Until we obtain more data from these difficult-access areas we prefer not to subdivide h.t.'s within the *Pinus albicaulis* series for central Idaho. However, all of these conditions have generally low productivity values and can be treated collectively as *Pinus albicaulis* h.t.'s for the practicalities of management.

## *Pinus contorta* Series

**Distribution.** — This series consists of pure stands of *Pinus contorta* that contain little evidence that any other tree species is climax. Environmentally it is similar to colder portions of the *Pseudotsuga* series and drier parts of the *Abies lasiocarpa* series. Theoretically it may occur wherever *P. contorta* can dominate the site, but mostly it appears on the gentle terrain of benches, toe-slopes, and valley bottoms.

*Figure 35. — A* Pinus albicaulis *h.t. on a westerly exposure in the Lemhi Mountains south of Gilmore, Idaho (9,400 feet [2 870 m] elevation). A few* Abies lasiocarpa *appear in the swale, but only* Pinus albicaulis *occupies the slopes and is regenerating successfully.* Festuca idahoensis *dominates the undisturbed undergrowth in the foreground.*

**Vegetation/Ecology.** — In all cases *P. contorta* acts as the pioneer conifer, but its ability to remain dominant appears related to topoedaphic factors (Pfister and Daubenmire 1975). In central Idaho it tends to be more persistent on gentle terrain than on steep slopes. In some broad, high-elevation valleys it persists for many generations with little or no evidence of replacement by other conifers. Upper limits of these persistent *P. contorta* stands often resemble a contour, which suggests a response to impoundment of cold air or possibly storage of subsurface water. Slopes above these valleys have intermediate situations where *P. contorta* persists but is gradually replaced by *Abies lasiocarpa*, *Pseudotsuga*, or both. *P. contorta* also dominates some gentle slopes and benches near upper timberline, occasionally accompanied by minor amounts of *Pinus albicaulis*.

*Pinus contorta* is well adapted to cold-air drainages as evidenced by its ability to invade sites near receding glaciers (Heuser 1969). Over millenia, *P. contorta* seedlings have periodically invaded raw substrates of glacial alluvium and were subjected to intense daily insolation and nightly cold air accumulation and frost. Today, *P. contorta* still dominates glacial deposits of valley floors in Idaho and Wyoming in spite of other coniferous seed sources on adjacent uplands. Although *Abies lasiocarpa* and *Picea engelmannii* extend to upper timberline and easily replace *P. contorta* on steeper slopes, their tolerance to daily temperature extremes on these gentle valley floors appears less than that of *P. contorta*.

Fluctuating water tables may also contribute to the success of *P. contorta*. In central Idaho, many valleys where *P. contorta* now dominates were formed by fault block tectonics and later accumulated glacial outwash. The outwash apparently serves as an aquifer that is recharged by spring snowmelt but becomes very dry near the surface by late summer. Thus tree roots on these sites must endure a substrate that changes from waterlogged to droughty during the growing season. Tarrant (1953) summarized several studies that show *P. contorta* to be well adapted to coarse-textured soils with intermittent high water tables. Stephens (1966) reports *P. contorta* to be well adapted to very poorly drained, and very well drained, glacial tills. In our area it is possible that high-water periods, or summer frost, prevent invasion of *Pseudotsuga* and the drought from low water periods excludes *Picea* and *Abies*.

**Fire.** — Pure *P. contorta* stands have often been attributed to repeated fire and in some areas this is the case. Yet fire is a minor factor in the most persistent stands in central Idaho. Undergrowths in these valley-bottom stands are generally sparse and produce little fuel. Most of the fuel occurs on adjacent slopes and natural fires on the valley floor that did not ascend these slopes would be very unusual. Yet quite often only the valley bottom contains pure *P. contorta* and adjacent slopes are in advanced stages of succession to *Abies* and *Pseudotsuga*. Also, upper limits of the persistent *P. contorta* stands often resemble a contour rather than previous patterns of fire. Furthermore, most *P. contorta* cones in central Idaho are nonserotinous. Thus, in these areas there is little evidence for fire maintenance of stable *P. contorta* stands. In fact, those stands that appear to be most stable have the widest spaced trees, the least undergrowth, and the gentlest slopes — all of which are unfavorable to fire spread.

**Productivity/Management.** — Timber potentials should be low to moderate in most of this series. From a practical standpoint, these sites can be managed as if *Pinus contorta* were climax even though *Pseudotsuga* or *Abies* may eventually invade the stand.

Deer and elk may use these sites for cover and escape. These communities may have other values to wildlife or livestock, depending on the type of undergrowth that is present.

Most of these sites have gentle terrain which provides easy access and development for recreation facilities. However, the recreationist may prefer areas that receive less frost and have a less monotonous appearance.

The community types (c.t.'s) in this series represent situations in which *Pinus contorta* is the only conifer on the site. On some h.t.'s this situation occurs only in initial stages of secondary succession and indications of the climax community soon become evident. On other sites, climax indicators invade more slowly. Here, determining habitat type is more tenuous and often requires some interpretation following investigation of the site and adjacent sites. However, such conditions can also be handled within this classification.

If the indicator species are present in the undergrowth, the stands can be assigned to the proper *Abies* or *Pseudotsuga* h.t. by using the key to *Pinus contorta* communities. Other sites where climax status for *P. contorta* is suspect can be treated as c.t.'s and managed as if *P. contorta* were climax. Although several conditions on gentle terrain are suspected to support *P. contorta* climax, only the *PICO/FEID* h.t. was found to consistently maintain *P. contorta* as the climax dominant.

**Other studies.** — In Montana, Pfister and others (1977) describe a *Pinus contorta* series in a similar manner. They note four community types and a *Pinus contorta/Purshia tridentata* h.t. near West Yellowstone. Cooper (1975) also describes this h.t. from the same area as occurring on very gentle terrain and receiving frequent summer frost. The substrate is obsidian sand underlain with lake silt. In Wyoming, Hoffman and Alexander (1976) describe *P. contorta/Arctostaphylos uva-ursi* and *P. contorta/Vaccinium scoparium* h.t.'s in the Bighorn Mountains and Reed (1976) notes a *P. contorta/Poa nervosa* h.t. in the Wind River Mountains. In south-central Oregon, Franklin and Dryness (1973) describe climax stands of *P. contorta* on pumice soils. These stands occur on nearly level areas in enclosed depressions that impound cold air at night. On the Colorado Front Range, Moir (1969) recognized a stable zone of *P. contorta* that occurs mainly on gentle undulating terrain rather than canyon topography.

These studies collectively demonstrate that *P. contorta* can remain dominant on gentle terrain for many generations. The governing factors on these sites appear to be nightly cold air accumulation, with frequent summer frost and droughty substrates, perhaps with fluctuating water tables. On these sites, *P. contorta* remains dominant because other conifers are unable to grow there, not superiority in interspecific competition. These studies also show that although *P. contorta* typically forms seral stands that persist to varying degrees, in some parts of its environmental spectrum it does form climax stands.

## *PINUS CONTORTA/VACCINIUM CAESPITOSUM* COMMUNITY TYPE (*PICO/VACA* C.T.; LODGEPOLE PINE/DWARF HUCKLEBERRY)

**Distribution** — The *PICO/VACA* c.t. occurs most often in the higher valleys of the Southern Batholith section. Here it occupies the gentle to undulating terrain of glacial outwash and adjacent toe-slopes near lower elevations of the *Abies lasiocarpa* zone. Most sites apparently accumulate considerable cold air at night and severe frost is not uncommon throughout the summer.

**Vegetation/Ecology.** — A layer of *Vaccinium caespitosum* is common in the undergrowth and is usually accompanied by *Calamagrostis rubescens*. Seral shrubs are normally scarce. All stands of the *PICO/VACA* c.t. observed to date appear closely related to the *ABLA/VACA* h.t., but occasional stands may represent the cold extreme of *PSME/VACA*. Usually, conifers other than *P. contorta* invade very sporadically and determination of the climax dominant can be very difficult.

**Productivity/Management.** — For timber production, all stands of the *PICO/VACA* c.t. can be managed as the *ABLA/VACA* h.t. (see p. 67).

**Other studies.** — Pfister and others (1977) also found a *PICO/VACA* c.t. in Montana. In central Oregon, Franklin and Dryness (1973) mention a *Pinus contorta/Vaccinium uliginosum* c.t. that contains *V. caespitosum* and resembles our *PICO/VACA* c.t.

## *PINUS CONTORTA/VACCINIUM SCOPARIUM* COMMUNITY TYPE *(PICO/VASC* C.T.; LODGEPOLE PINE/GROUSE WHORTLEBERRY)

**Distribution.**— The *PICO/VASC* c.t. occurs mainly in the Southern Batholith and Salmon Uplands sections. It can also be found in the Open Northern Rockies section, especially in the Beaverhead Mountains, and in Montana, Wyoming, eastern Idaho, and eastern Oregon. It is found on a variety of slopes and aspects at mid- to upper elevations of the *Abies lasiocarpa* zone.

**Vegetation/Ecology.** — A low cover of *Vaccinium scoparium* usually dominates the undergrowth. Other shrubs, if present, are usually sparse and well scattered. A few forbs such as *Arnica, Lupinus,* and *Valeriana* are often present. *Pinus albicaulis* may be present in various amounts.

Most *PICO/VASC* c.t.'s occupy the *ABLA/VASC* h.t.; however, on gentle slopes and broad benches an occasional *PICO/VASC* c.t. may appear so persistent as to suggest a *P. contorta* climax.

**Productivity/Management.** — In all cases, *P. contorta* is the most suitable timber species and other management guidelines should follow those of the *ABLA/VASC* h.t. (see p. 74).

**Other studies.** — In Montana, Pfister and others (1977) describe a *PICO/VASC* c.t. that occurs near and east of the Continental Divide. Hoffman and Alexander (1976) describe a *PICO/VASC* h.t. in Wyoming's Bighorn Mountains that is very similar to our *PICO/VASC* c.t. This c.t. is also described in eastern Idaho and western Wyoming (Steele and others 1979, unpubl. ref.), and in eastern Oregon (Hall 1973).

## *PINUS CONTORTA/CAREX GEYERI* COMMUNITY TYPE *(PICO/CAGE* C.T.; LODGEPOLE PINE/ELK SEDGE)

**Distribution.**— The *PICO/CAGE* c.t. is most common on granitic soils of the Southern Batholith section, but may also occur in other areas. It usually occupies the cool, dry aspects of relatively gentle terrain and is common in the broad high valleys of central Idaho near lower elevations of the *Abies lasiocarpa* zone.

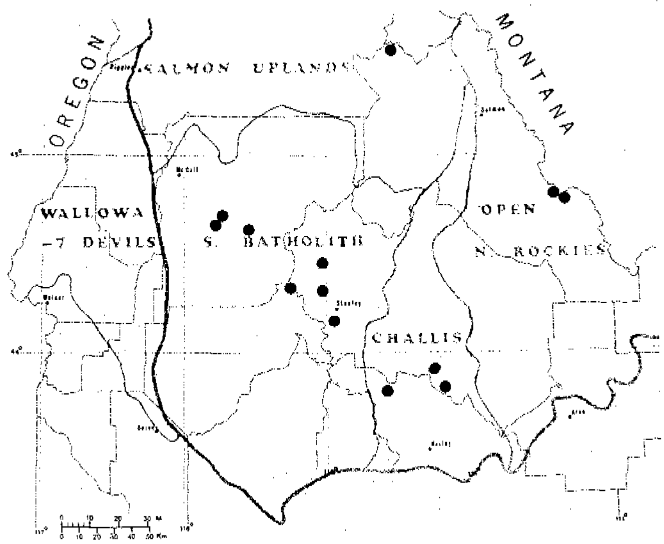
**Vegetation/Ecology.** — Normally *Carex geyeri* dominates a depauperate undergrowth that contains only a few forbs. Shrubs are seldom conspicuous.

Most stands of the *PICO/CAGE* c.t. apparently occupy the *ABLA/CAGE* h.t. A few may also occur near the cool extremes of the *PSME/CAGE* h.t. An occasional stand appears persistent enough to suggest that *P. contorta* is climax.

**Productivity/Management.** — Timber potentials should be low to moderate. In all cases, *Pinus contorta* appears to be the most suitable timber species. Other management guidelines should follow those for the *ABLA/CAGE* h.t. (see p. 76).

**Other studies.** — This c.t. is also mentioned in western Wyoming and eastern Idaho (Steele and others 1979, unpubl. ref.)

## *PINUS CONTORTA/FESTUCA IDAHOENSIS* H.T. *(PICO/FEID;* LODGEPOLE PINE/IDAHO FESCUE)




**Distribution.**— The *PICO/FEID* h.t. is best represented in the Southern Batholith section. Small amounts also appear in the Challis, Salmon Uplands, and Open Northern Rockies sections. It ranges from 5,200 to 7,500 feet (1 590 to 2 286 m) and tends to occur at mid- to lower elevations of the subalpine zone but may occur up to 9,000 feet (2 746 m) on broad, gentle ridges. It is usually restricted to very gentle terrain on glacial moraines, outwash, and terrace lands. On the same landform, this h.t. often borders the *ABLA/VACA* h.t. on more mesic sites and *Artemisia/Festuca* communities on drier sites. Adjacent slopes and benches are usually the *ABLA/CAGE* or *ABLA/CARU* h.t. dominated by persistent stands of *Pinus contorta.*

**Vegetation.**— *Pinus contorta* is usually the only tree present but *Pinus albicaulis* may occur here sporadically. *Festuca idahoensis* dominates a normally depauperate undergrowth which may have small amounts of *Carex rossii, Arenaria, Antennaria, Penstemon,* and occasionally *Calamagrostis rubescens* (fig. 36). *Artemisia* is also often present and may dominate when the tree canopy is removed.

In some areas, widely scattered *Pinus contorta* dominate a sparse undergrowth that is apparently too dry for *Festuca idahoensis.* Here *Stipa occidentalis* is

*Figure 36. —* Pinus contorta/Festuca idahoensis *h.t. on a broad flat in Landmark Valley northeast of Cascade, Idaho (6,720 feet [2 050 m] elevation). A pure, open stand of multi-age* Pinus contorta *dominates the site.* Festuca idahoensis *dominates a very depauperate undergrowth.*

dominant and probably represents a different environment. The small areas involved, however, preclude positive h.t. recognition and for most practical purposes can be included with the *PICO/FEID* h.t. However, a *Pinus contorta/Stipa occidentalis* h.t. is described in central Oregon (Franklin and Dyrness 1973).

**Soil.** — Soil parent materials are mostly quartz monzonite or granitics and occasionally andesite or quartzite. Textures vary from loam to sandy loam and are usually gravelly. The pH ranges from 5.0 to 5.9 and averages 5.4. Coverage of bare rock is usually less than 5 percent but areas of bare soil may reach 30 percent. Average litter depth on a site seldom exceeds 1 cm.

**Productivity/Management.** — Timber potential is usually low to very low (appendix E-2). Trees regenerate consistently, but their growth is slow and their natural spacing is often quite wide.

Forage production is usually low, but livestock use these sites for shelter and light grazing. In early spring when the soil is wet, cattle may uproot the small clumps of *Festuca* and thereby reduce forage yield and soil cover.

Browse for big game is nil but where this h.t. borders meadows, it is used for cover by elk, mule deer, red fox, and coyotes. These sites may also have some value for elk calving and provide perches for raptors that hunt adjacent meadows.

The gentle terrain of these sites provides easy access and development for recreation facilities, but recreationists may prefer more scenic diversity.

**Other studies.** — Schlatterer (1972, unpubl. ref.) first described *PICO/FEID* in central Idaho but no one has reported it from outside the study area. Similar situations with *Purshia* as the undergrowth dominant are described in south-central Montana (Pfister and others 1977) and central Oregon (Franklin and Dyrness 1973).

## Other Vegetation Types

Although this classification covers the vast majority of forest land in central Idaho, several situations supporting trees are excluded.

### *JUNIPERUS OSTEOSPERMA* COMMUNITIES

*Juniperus osteosperma* extends northward from the Great Basin into southern portions of the Lemhi and Lost River Ranges. Here it forms extensive woodlands on foothills overlooking the valley floor. Attempts to classify h.t.'s of the pinyon-juniper zone in the Great Basin may eventually include this outlying population of juniper.

### *PINUS FLEXILIS* COMMUNITIES

Near Craters of the Moon National Monument, widely scattered *Pinus flexilis* grow on a raw substrate of lava. Undergrowth vegetation is practically nonexistent. The peculiarities of these stands appear unique in Idaho and may be broadly treated as a single unit. Small amounts of other undefined *P. flexilis* communities in our area may consolidate with future studies to the south and southeast.

### FLOOD PLAIN COMMUNITIES

In central Idaho, a few of the larger rivers and streams form floodplains as they encounter more gentle terrain toward the steppe. Various proportions of *Populus, Betula, Salix, Crataegus,* and occasionally *Alnus* dominate a rank undergrowth of tall shrubs and lush forbs. Sometimes conifers are weakly represented. Fluctuations of stream activity may continually alter soil depths and water tables and cyclic floods can alter substrate composition. The frequent interruption of succession and substrate alterations present unique difficulties in applying the potential climax concept that is commonly used for habitat type classification of more stable sites.

### *POPULUS TREMULOIDES* COMMUNITIES

*Populus tremuloides* dominates a variety of sites within the study area. Its successional role varies from a rapidly seral species to persistently seral and even climax. The most apparent climax conditions are those stands that occur beyond the lower limits of conifers. These stands tend to occupy the concave slopes of low hills. Small amounts of this condition appear in foothills bordering the Camas Prairie and Snake River Plain in Elmore, Camas, and Blaine Counties. It becomes much more prevalent in southeastern Idaho and Utah where classification of these communities is in progress.

### GRASS AND SHRUB COMMUNITIES

Grass and shrub communities are interspersed throughout much of central Idaho's forest. Schlatterer (1972, unpubl. ref.) has described many of these conditions in the Sawtooth, White Cloud, Boulder, and Pioneer Mountains. Mueggler and Harris (1960) offer some stratification to the mountain grasslands. Some classifications from adjacent areas may also be applied to portions of central Idaho. Daubenmire's (1970) classification of grasslands in Washington may apply to the extreme northwestern part of our area, and Hall's (1973) work in eastern Oregon may be helpful in our Weiser River drainage. A classification of grasslands and shrublands in Montana (Mueggler and Handl 1974, unpubl. ref.; Mueggler and Stewart 1980) should apply to adjacent portions of east-central Idaho. A current study of communities in southern Idaho (Hironaka 1977, unpubl. ref.) will also apply to southern portions of our area.

# INDIVIDUAL ATTRIBUTES OF HABITAT TYPES

## Soils

Characteristics of the upper 10 cm of soil are summarized in appendix D-1 and as a paragraph in each habitat type description. Soil samples and rock samples were first examined in the laboratory by a soil scientist (George Wendt, Richard Thompson, Norm Bare, or Laverne Nelson; USDA Forest Service) to determine the textural class and parent material. Air-dry samples were then weighed, sieved (2 mm) to separate the gravel, and reweighed to determine percent gravel content. The soil separate was tested for pH with a glass-electrode pH meter in a 12-hour water paste solution.

Soil sampling and analyses were designed to obtain a simple characterization of surface soils for each habitat type, rather than detailed soil-vegetation relationships. Even our limited data (appendix D-1) make it evident that some habitat types are strongly controlled by edaphic or topoedaphic factors and have a narrow range of soil characteristics. The *PIFL/FEID* and *PIEN/HYRE* h.t.'s show a strong affinity for calcareous substrates. Several habitat types such as *PIEN/CADI*, *ABLA/CACA*, *ABLA/CABI*, and *ABLA/STAM* occur where water tables are close to the surface at least part of the year. Other habitat types such as *PSME/CARU*, *ABLA/CARU*, and *ABLA/VASC* occur on a broad range of soils. There is also a tendency for some of the wet-site habitat types to have the greatest litter accumulations and least exposed soil and rock. In contrast, the most severe habitat types have the least litter and greatest areas of exposed soil and rock.

It is often theorized that vegetation or habitat types can be predicted from soil characteristics. But R. and J. Daubenmire (1968) have emphasized that correlation between habitat types and soil types (classified on the basis of standard soil profile characteristics) is too weak to allow prediction of habitat types from soil types, or vice versa. We support this viewpoint as a general rule for several reasons. First, the development of a soil profile reflects a long-term integration of soil forming factors, whereas vegetation development is much more sensitive to current climatic conditions. Second, soil classification systems are not designed to primarily reflect influences on vegetational development; therefore, predictive capabilities should not necessarily be expected. Third, vegetational development depends on many factors, of which soil characteristics is only one. According to the principle of factor interaction, plants are able to grow on a wide range of substrates when other factors provide compensatory effects.

Land managers should be cautious about attempting to "shortcut" inventories of either vegetative potentials or soils through the process of "assumed correlations". Some useful correlations undoubtedly exist; but they must be developed objectively, tested adequately, and extrapolated with caution.

## Climate

Appendix D-2 shows climatic patterns that represent various habitat types and phases. Most of the data are from U.S. Weather Service stations. The habitat type and phase shown for each station is an estimation of the appropriate climatic climax.

Other climatic data representing specific forest habitat types may be available from Weather Service records or special studies made by various researchers. However, careful evaluation of the site is necessary to determine the appropriate climatic climax. For instance, climatic data from a site supporting an edaphic climax should be interpreted in relation to the nearest expression of a climatic climax, rather than the immediate edaphic climax.

## Vegetation

### ECOLOGIC ROLES OF PLANT SPECIES

Most plant species are distributed independently along environmental gradients. However, many species express different ecologic roles in different segments of their distribution. A single species can be either dominant or subordinant, and either climax or seral in different environments. Thus a species value as an ecologic indicator depends on its position along the gradient being considered and the relative position of its associates. Relative ecologic expressions of important species in central Idaho forests are presented in several ways.

The occurrence and roles of tree species (appendix B) reflects the relative amplitude and successional status of our tree species in the various h.t.'s and phases. This chart provides some of the basic information needed to select and manage the tree species best adapted to a given segment of the forest environment.

For instance, *Pinus ponderosa* is a major seral species in some *Abies grandis* and *Pseudotsuga* habitat types but is climax in the *Pinus ponderosa* series. Furthermore, *P. ponderosa* reaches highest site index values (appendix E-1; Daubenmire 1961) in *Abies grandis* habitat types where it is a rapidly replaced seral species, intermediate site indexes in the *Pseudotsuga* series where it is a more persistent seral species, and lowest site indexes in the *Pinus ponderosa* series where it is climax. Generally, species with both climax and seral occurrence attain their maximum growth rates on some sites where they are seral. In addition, seral species are also usually easier to regenerate following disturbance than the climax species. However, in determining application of these generalities to specific sites and species, the user is cautioned to check the appropriate appendix tables and other available information.

When relative height growth rates are compared (appendix E-1), it is apparent that in many h.t.'s at least one of the seral species tends to grow faster than the climax species. One notable exception, however, is the *Abies grandis* x *A. concolor* hybrids that have greater height growth rates than *Pinus ponderosa* in some *Abies grandis* habitat types. This anomaly is found in our Wallowa-Seven Devils section and is also reported in eastern Oregon (Hall 1973). However, the question of hybrid vigor arises and we do not yet know if the *Abies* that can outproduce *P. ponderosa* in seral stands is the same genotype that dominates at climax.

The constancy and average coverage data (appendix C) portray the relative amplitude of major forest species and degree of dominance through the spectrum of forest habitat types. Comparison of habitat types using these data from mature stands provides insight to the habitat type classification that is not available in the keys or written descriptions. These tables also condense the vegetal information of each habitat type and reduce the need for elaborate vegetative descriptions.

For instance, *Lonicera caerulea* is relatively uncommon in central Idaho, yet it occurs in 80 percent of the stands sampled in the *ABLA/CACA* h.t., *VACA* phase. Also, it has an average coverage of 4 percent in those stands where it occurs, but it has an ecologic amplitude of only five different habitat types or phases.

Using appendix C, it is also possible to contrast differences between habitat types or phases. For instance, the difference between the *PIPO* and *SPBE* phases of *PSME/SPBE* (appendix C) is more than the ability to produce *Pinus ponderosa*. The *PIPO* phase can also support *Ceanothus velutinus*, *Salix scouleriana*, and *Penstemon wilcoxii*, none of which are listed for the *SPBE* phase.

## TIMBER PRODUCTIVITY

Timber productivity is one of the key management implications for which data were collected during this study. Site trees were selected to determine the potential height growth of relatively free-growing trees. One site tree of each species was selected for each stand wherever possible. Site trees showing marked suppression of diameter growth (diameter growth during a 30-year period less than growth during any subsequent 10-year period) were rejected during analysis of the increment cores. Diameter growth suppression of 10- and occasionally 20-year periods were not uncommon in the site trees remaining for productivity analyses. Old-growth and stagnated trees were not used for productivity estimation. Even though only a single site tree per species per stand was used, the data are reasonably consistent. Comparisons appear to be valid, and the large number of sample sites (541 stands) permits comparison of productivity among habitat types as well as variability within each habitat type.

Determination of site index from height-age data requires specific procedures for each tree species. The number of years to reach breast height (4.5 feet [1.4m]) must be measured or estimated for species having height-total age site curves. If a site curve is not available, a curve from another species must be substituted. Criteria used to determine total age, as well as sources of site index curves and yield capability data for this analysis, are summarized in table 3.

We used *Pinus ponderosa* curves for determining *Pseudotsuga* site index rather than Brickell's (1968) *Pseudotsuga* curves because the curve shapes for *Pinus ponderosa* are more realistic for our data (giving closer estimates for different-aged site trees in the same stand). Furthermore, because *Pinus ponderosa* yield tables are currently used to estimate *Pseudotsuga* yields in the Northern Rocky Mountains, it is more logical to use the *Pinus ponderosa* site index curves for *Pseudotsuga* height-age data.

We used Alexander's (1967) *Picea engelmannii* curves rather than Brickell's (1966) because: (1) Alexander's are based on breast-height age (data available) rather than total age (estimate required); (2) the curve shapes are more realistic for our data (giving closer estimates for different-aged site trees in the same stand); and (3) yield data related to the curves are available (Alexander and others 1975). We also used Alexander's (1967) *Picea engelmannii* curves for *Abies lasiocarpa*, for which there are no site index curves available.

The site index data (base age 50 years) have been summarized by species within habitat types (appendix E-2). The mean site index was calculated whenever three or more values were available. With five or more values, a 95-percent confidence interval for estimation of the true population mean was calculated. (The confidence interval narrows with both decreased variability and increased sample size.) The same procedure was used for summarizing basal areas of sample stands.

Although site productivity can be compared by using site index alone, a more useful comparison can be made by using the estimated net yield capability of the site (cubic-volume production). Until managed-stand yield tables are completed, the best approach is to use natural-stand yield tables for assessing yield capability. As stated by Brickell (1970), "Yield capability, as used by Forest Survey, is defined as mean annual increment of growing stock attainable in fully stocked natural stands at the age of culmination of mean annual increment." (In other words, yield capability = maximum mean annual increment attainable in fully stocked natural stands. For additional explanation see Glossary, appendix G.)

The curves used to estimate yield capability from site index are presented in figure 37.

Yield capability values are based on cubic feet of all trees (>0.5 inch d.b.h.). The *Larix occidentalis* curve was derived from Schmidt and others (1976). (Brickell's [1970] curve for this species was only for trees greater

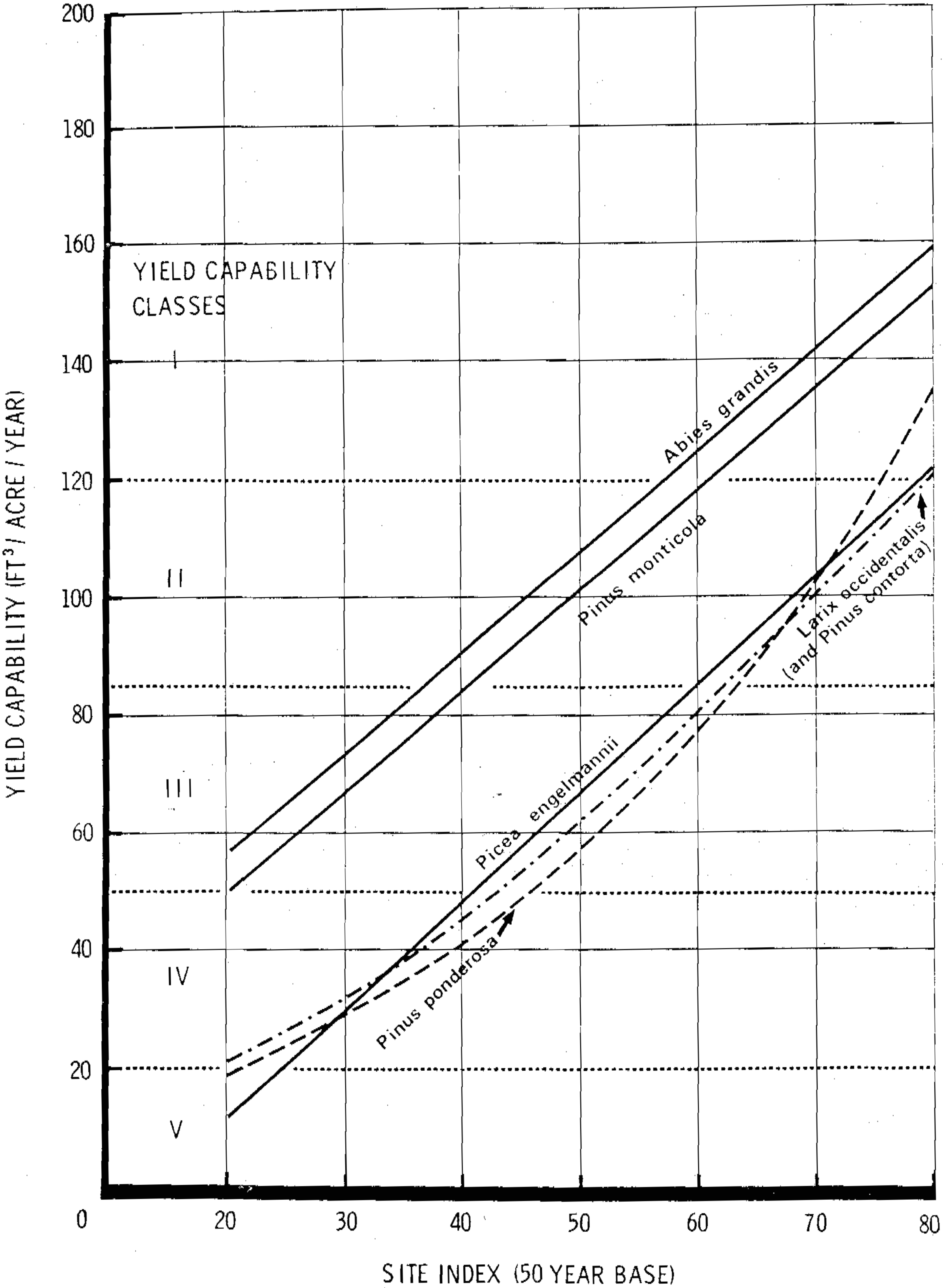



*Figure 37. — Yield capability of fully stocked natural stands in relation to site index (from Pfister and others 1977).*

Table 3.--Criteria and sources for determining site index and for estimating yield capability

| Species | Estimated years to obtain breast height | Source of site curve[1] | Yield capability (all trees - fig. 37) |
|---|---|---|---|
| PIPO | 10 | Lynch 1958 | Brickell 1970 |
| PSME | 10 | ---Used PIPO curves--- | |
| PICO | 10 | Alexander 1966 | Used LAOC curve[2] |
| LAOC | 5 | Schmidt and others 1976 | Schmidt and others 1976[2] |
| PIEN | ([3]) | Alexander 1967 | Alexander[4] |
| ABGR | ([3]) | Stage 1959 | Brickell 1970 |
| ABLA | ([3]) | ---Used PIEN curves--- | |

[1] *All site curves with a 100-year index age were converted to a 50-year index age.*

[2] Brickell's (1970) curves for PICO and LAOC (trees larger than 5.0 inches) were nearly identical. A new curve (based on all trees) was developed for LAOC from yield data in Schmidt and others (1976). The LAOC curve for all trees appears to be as accurate as any available for estimating PICO yield capability for all trees.

[3] Curves based on age at breast height were used.

[4] Data used in a recent yield study (Alexander and others 1975) were provided by Alexander. Site index and mean annual increment from 21 fully stocked natural stands were used to develop the curve shown in figure 37. (Yield capability = 26.0 + 1.84 Site Index (50; $R^2$ = 0.66.)

than 5.0 inches in diameter.) The *Larix* curve was also used for *Pinus contorta* because Brickell's (1970) curves (trees >5.0 inches) are almost identical for the two species, and because natural-stand yield data have not been published for *Pinus contorta.*

The *Picea* curve was derived from original data used in developing managed-stand yield tables (Alexander and others 1975). We calculated mean annual increment for all trees for 21 of Alexander's fully stocked natural stands near the age of culmination of mean annual increment (ages from 97 to 165 years). A linear regression of yield capability on Alexander's (1967) site index was conducted, converted to site index at base-age 50, and plotted in figure 37. (Yield capability = -26.0 + (1.84 x 50-year site index), $R^2 = 0.66$.) The other curves were developed by Brickell (1970) from natural-stand yield tables.

The large spread in site index-yield capability curves (fig. 37) illustrates the importance of using species-specific curves for estimating productivity. We suspect that the *Abies grandis* curve (developed in northern Idaho) may be incorrectly estimating yield capabilities for central Idaho. However, we did not have central Idaho yield data to test the relationship.

Our best current estimates of yield capability (in cubic feet/acre/year) for each habitat type are shown in appendix E-2. Procedures used to develop these estimates were:

1. Yield capability was estimated for each site tree from appropriate species curves according to the criteria in table 3. These values were plotted by habitat type and phase for a visual display of distribution.

2. Adjusted yield capability figures were developed for those habitat types where stockability appears to limit productivity. Basal area data for plots in these types were compared with Meyer's (1938) basal area data for fully stocked "normal" stands, following the approach of MacLean and Bolsinger (1973). This ratio was multiplied by yield capability for a given site index to determine the adjusted yield capability for each site tree.

3. Mean yield capability (or adjusted yield capability) for all site trees in each habitat type was calculated and cutoff points were established to approximate 90 percent of the range of our data. Only those types with a minimum of five sample stands are shown in appendix E-2. A mean stockability factor is shown for those types where yield capabilities were adjusted.

These current best estimates (appendix E-2) portray both relative productivity of habitat types and the range of productivity within a habitat type. From these, it is possible to assign a ranking or qualitative rating of potential timber productivity of natural stands for use in planning.

As Daubenmire (1976) emphasized, natural vegetation serves as a convenient indicator of productivity over large areas of land. However, productivity within habitat types (appendix E) often varies substantially. Reasons for this variability and suggestions for reducing it are as follows:

1. Site-index curves were used to obtain productivity data from yield tables. Different height-growth patterns undoubtedly occur in different habitat types, but data to account for this variation are not available.

2. Yield tables and site curves have not been developed for all species, making extrapolation necessary.

3. Yields of mixed species stands can be estimated by several individual species' yield tables. We found that a range of 30 to 40 cubic feet/acre/year in yield capability was common in individual stands, depending upon the species used for estimation. The *Abies grandis* types show an unusually wide range in productivity because of relatively high site index values (appendix E-1) coupled with the high yield capability/site ratio (fig. 37).

4. Some variability in productivity within a habitat type is to be expected within a natural classification system. The habitat type classification is based on abilities of species to reproduce and mature under competition, not on their rates of growth. The correlation between this and productivity is imperfect. (For instance, in some stands tree roots draw on underground water tables and achieve excellent growth rates, while surface drought limits establishment of tree seedlings and undergrowth.)

5. Where a more accurate estimate of productivity is needed for local areas, we recommend taking additional site-index samples.

6. It has been suggested that productivity estimates for habitat types could be improved by incorporating classifications of soils, topography, or climate. Differences in productivity within a habitat type due to topography or soils are apparent in some local areas. However, because of the limitations of existing site index curves and yield tables, further refinement of productivity estimates will likely require additional data and more accurate methods of estimating productivity. For instance, natural-stand yield capability could be estimated more precisely by direct measurements of volume growth, rather than by using site index to enter a yield table based on averages. This would require analysis of those existing timber inventory plots representing maximum growth potential and probably additional field measurements.

7. Recent stand growth models (Stage 1973, 1975) utilize growth coefficients based on habitat types. These add a new dimension to yield prediction, provide the basis for developing managed-stand yield tables, and should improve our knowledge of productivity within and between habitat types.

## Zonal Relationships of Habitat Types

Just as individual species occur in a predictable sequence with changing environments, h.t.'s also display predictable patterns in local areas. On a larger scale, the sequence of h.t.'s will vary through additions or omissions but their relative positions should remain constant. Thus *Pseudotsuga* h.t.'s normally occur in warmer and drier environments than *Abies lasiocarpa* h.t.'s, but *Abies grandis* h.t.'s may occur between the two series or may be absent. This rule applies to patterns of individual h.t.'s and phases as well as series.

In order to demonstrate the relative positions of central Idaho h.t.'s, schematic diagrams (figs. 38-45) are presented for characteristic localities of each physiographic section. These diagrams are frustrated by the difficulty of depicting a three-dimensional landscape in two dimensions, and so are not literally accurate. Also, the number of h.t.'s in any given transect may vary from the general diagram for that particular area. Nevertheless, they do present a generalized concept of habitat type zonation in different geographical areas.

## Relationship to Previous Habitat Type Classifications in Idaho

As in any classification procedure, increased accuracy is obtained through a series of approximations, with each step adding refinement. This classification suggests several possible refinements to the pioneering work of R. and J. Daubenmire (1968) in northern Idaho although it is by no means intended to cover that area. It also represents a few revisions to the preliminary classifications for central Idaho (Pfister and others 1973, unpubl. ref.; Steele and others 1974, unpubl. ref.). Figure 46 illustrates the relationships of these classifications in terms of the variation encompassed by each h.t. and phase.

*Figures 38-45. — Schematic relationships of trees and key undergrowth species that could be encountered with increasing elevation in mature forest stands. Length and position of horizontal bars portray relative occurrences of species along a climatic gradient. Heavy lines indicate that climatic gradient. Heavy lines indicate that portion of a species environmental range where it is used to designate a habitat type.*

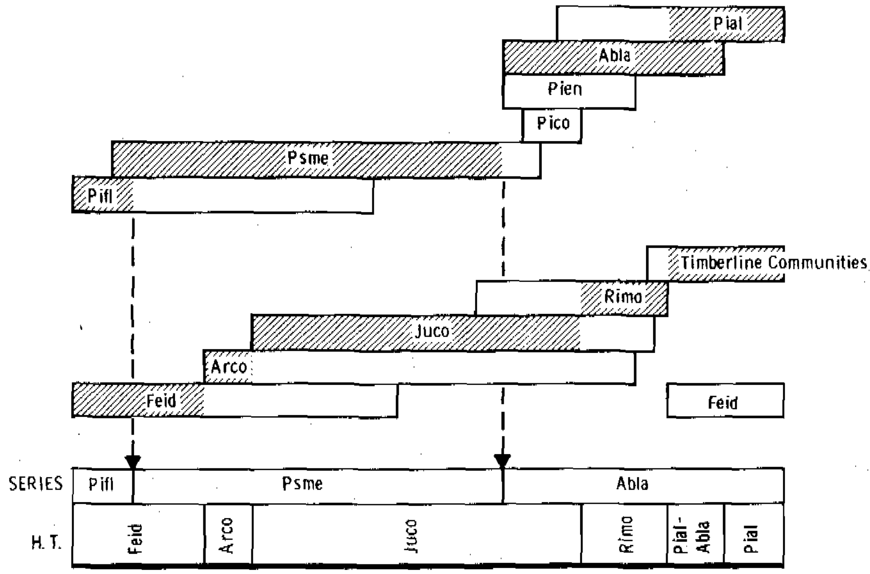



*Figure 38. — General relationships of forest vegetation in the open Northern Rockies section near Gilmore, Idaho.*

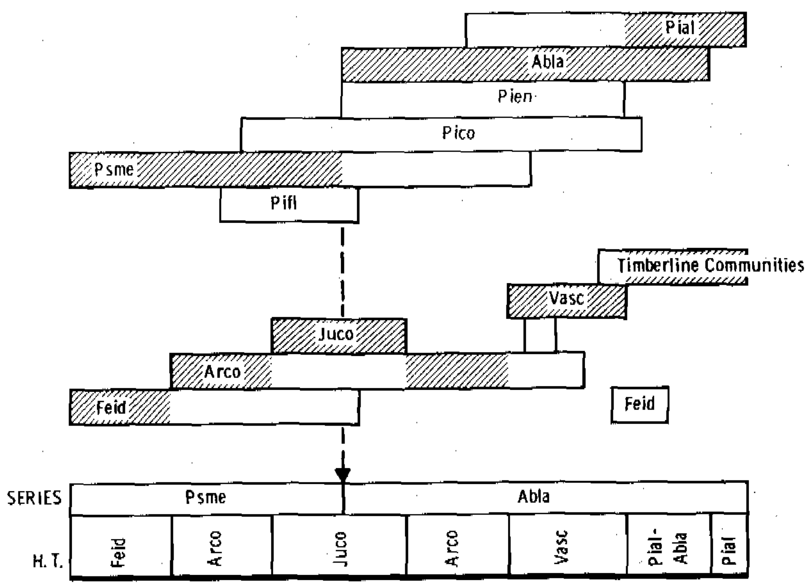



*Figure 39. — General relationships of forest vegetation in the Challis section near Challis, Idaho.*

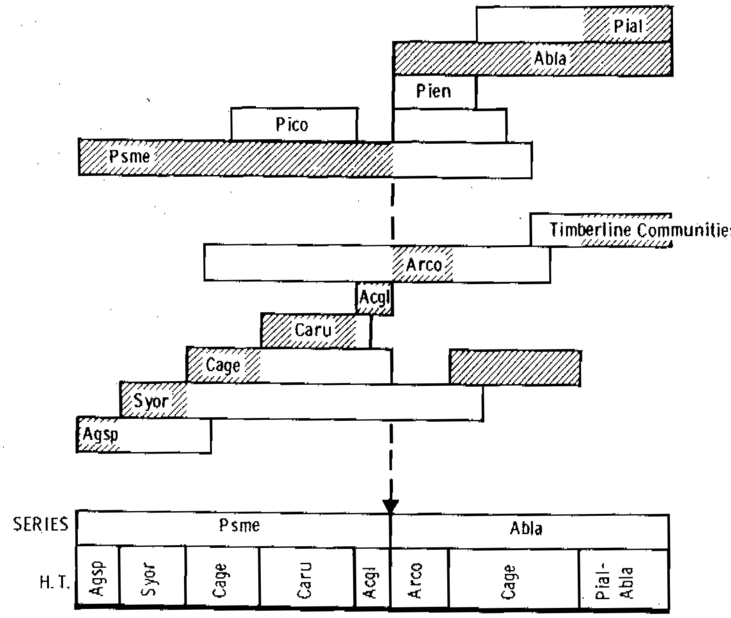



*Figure 40. — General relationships of forest vegetation in the Challis section near Ketchum, Idaho.*

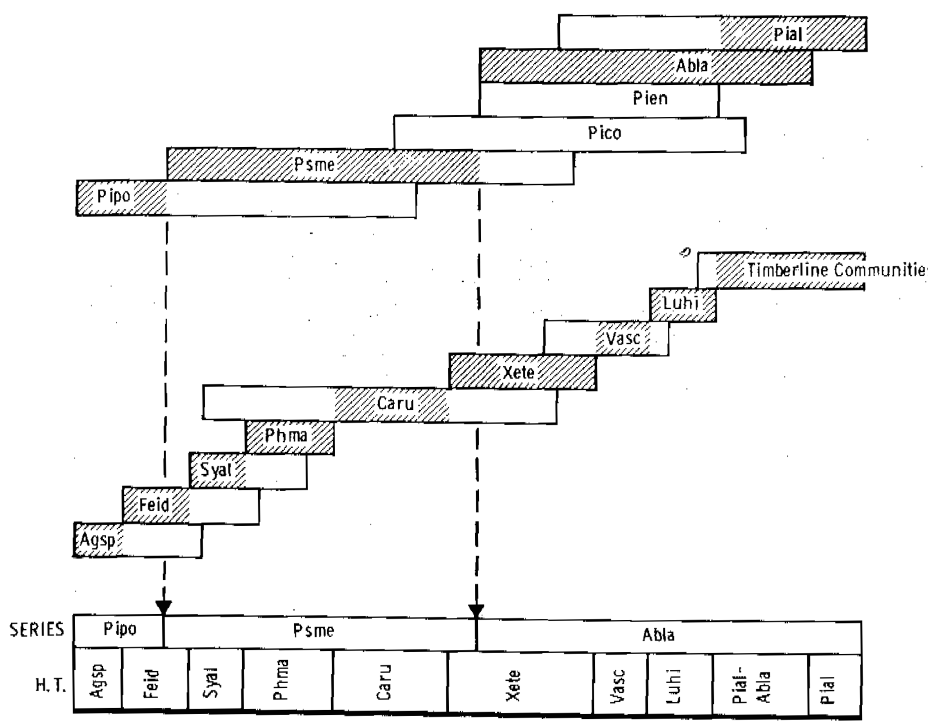



*Figure 41. — General relationships of forest vegetation in the Salmon Uplands section near Shoup, Idaho.*

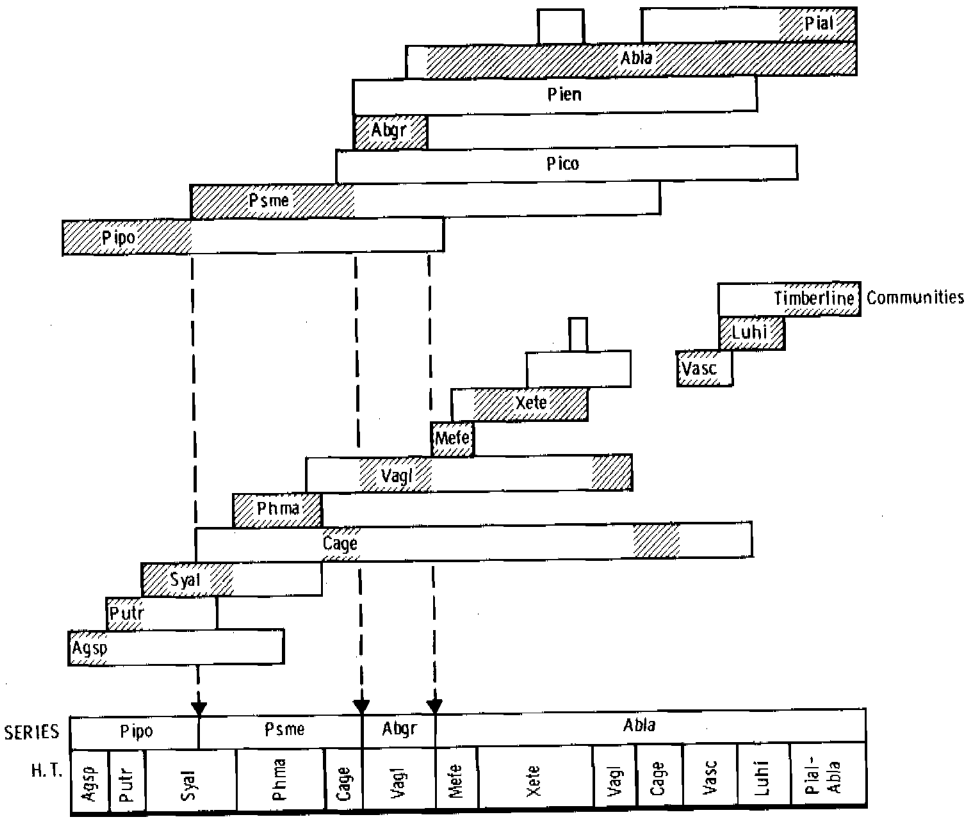



*Figure 42. — General relationships of forest vegetation in the Salmon Uplands section near Warren, Idaho.*

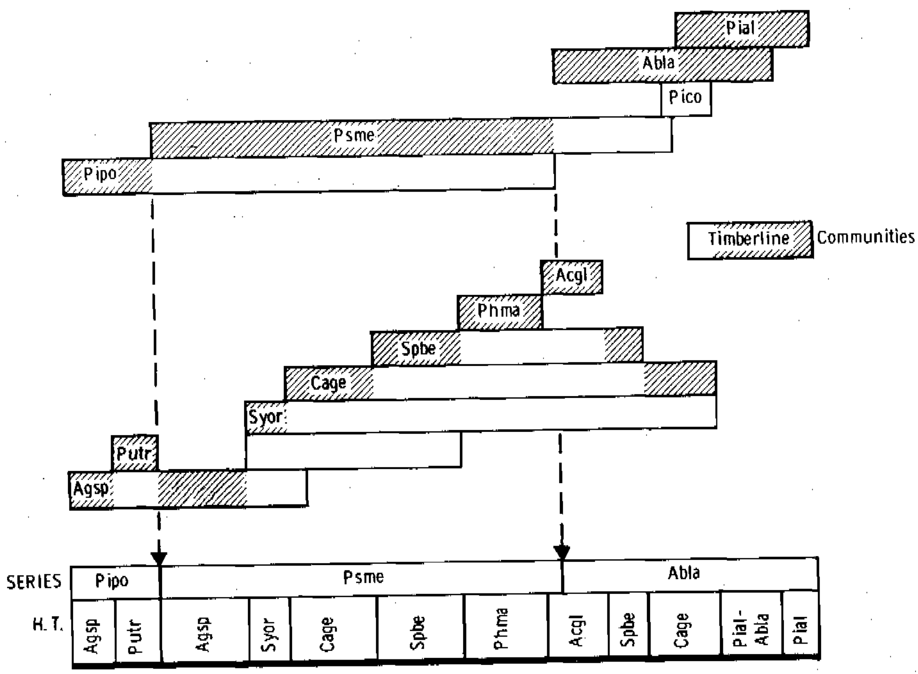



*Figure 43. — General relationships of forest vegetation in the Southern Batholith section near Featherville, Idaho.*

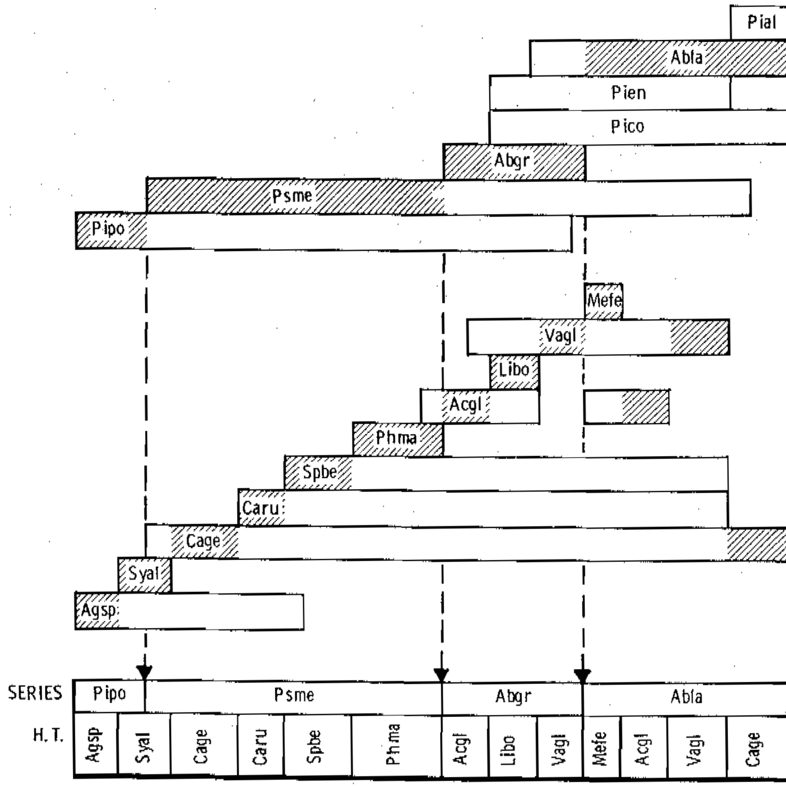



*Figure 44. — General relationships of forest vegetation in the Southern Batholith section north of Crouch, Idaho.*

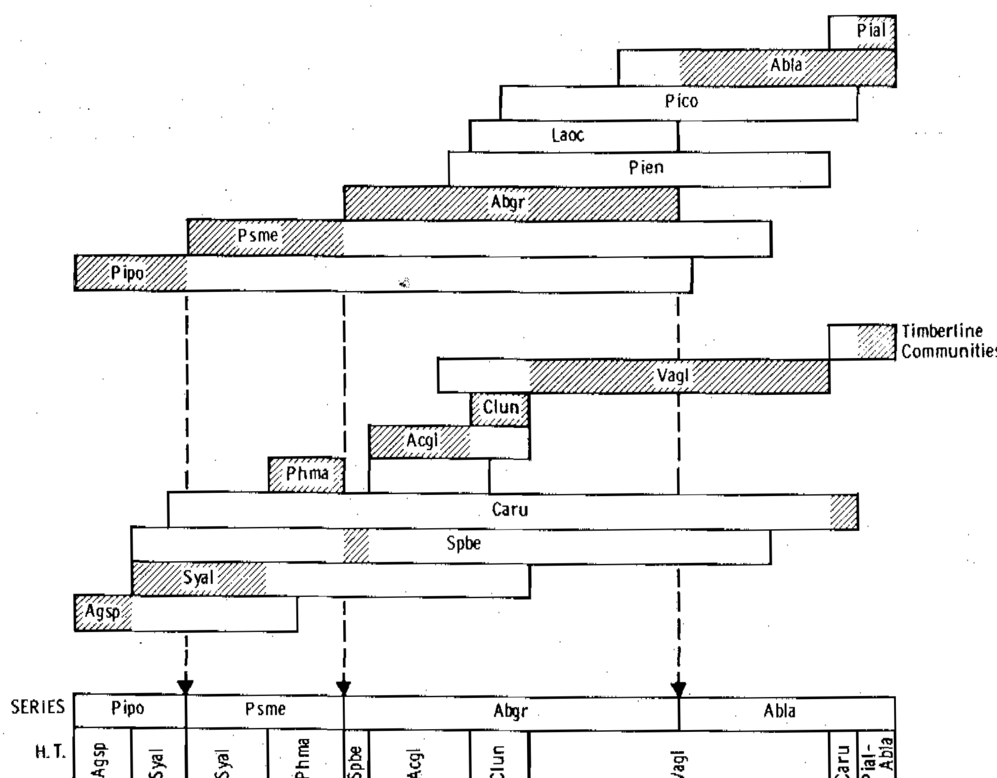



*Figure 45. — General relationships of forest vegetation in the Wallowa-Seven Devils section near Council, Idaho.*

| NORTHERN IDAHO & EASTERN WASH. R & J DAUBENMIRE 1968 | BOISE & PAYETTE N.F. PFISTER & OTHERS 1973 | CHALLIS, SALMON, & SAWTOOTH N.F. STEELE & OTHERS 1974 | CENTRAL IDAHO REVIEW DRAFT STEELE & OTHERS 1975 | CENTRAL IDAHO H.T.S. | |
|---|---|---|---|---|---|
| PIPO/ STCO | | | PIPO/ STOC | PIPO/ STOC | |
| PIPO/ AGSP | PIPO/ AGSP | PIPO/ AGSP | PIPO/ AGSP | PIPO/ AGSP | |
| PIPO/ FEID | PIPO/ FEID | PIPO/ FEID | PIPO/ FEID | PIPO/ FEID | |
| | | | PIPO/ PUTR AGSP | PIPO/ PUTR AGSP | |
| PIPO/ PUTR | PIPO/ PUTR | PIPO/ PUTR | PIPO/ PUTR FEID | PIPO/ PUTR FEID | |
| | PIPO/ PRVI | | PIPO/ SYOR | PIPO/ SYOR | |
| PIPO/ SYAL | PIPO/ SYAL | PIPO/ SYAL | PIPO/ SYAL | PIPO/ SYAL | |
| PIPO/ PHMA | PIPO/ PHMA | | PIPO/ PHMA | PIPO/ PHMA | |
| | | PIFL/ FEID | PIFL/ FEID | PIFL/ FEID | |
| | PSME/ AGSP | PSME/ AGSP | PSME/ AGSP | PSME/ AGSP | |
| | PSME/ SYOR (IN PART) | PSME/ SYOR SYOR | PSME/ SYOR SYOR | PSME/ SYOR | |
| | PSME/ PRVI (IN PART) | PSME/ SYOR PRVI | PSME/ SYOR PRVI | | |
| | PSME/ FEID | PSME/ FEID | PSME/ FEID | PSME/ FEID | FEID<br>PIPO |
| | | PSME/ CELE | PSME/ CELE | PSME/ CELE | |
| | | PSME/ ARCO | PSME/ ARCO | PSME/ ARCO | ASMI<br>ARCO |
| | | PSME/ OSCH | PSME/ OSCH | PSME/ OSCH | |
| | | PSME/ JUCO | PSME/ JUCO | PSME/ JUCO | |
| | | | | PSME/ BERE | SYOR<br>CAGE<br>BERE |
| | PSME/ SYOR (IN PART)<br>PSME/ PRVI (IN PART) | PSME/ CAGE SYOR | PSME/ CAGE SYOR | PSME/ CAGE SYOR | |
| | PSME/ CAGE ARTR | PSME/ CAGE ARTR | PSME/ CAGE ARTR | | |
| | PSME/ CAGE CAGE | PSME/ CAGE CAGE | PSME/ CAGE CAGE | PSME/ CAGE | PIPO<br>CAGE |
| | PSME/ SYOR (IN PART) | PSME/ CARU SYOR | | | PIPO |
| PSME/ CARU CARU | PSME/ PRVI (IN PART) | PSME/ CARU CARU | PSME/ CARU CARU | PSME/ CARU | FEID |
| PSME/ CARU ARUV | PSME/ CARU | PSME/ CARU ARUV | PSME/ CARU ARUV | | CARU |
| | PSME/ SPBE CAGE | PSME/ SPBE CAGE | PSME/ SPBE CAGE | | PIPO |
| | PSME/ SPBE CARU | PSME/ SPBE CARU | PSME/ SPBE CARU | PSME/ SPBE | CARU |
| | PSME/ SPBE SPBE | PSME/ SPBE SPBE | PSME/ SPBE SPBE | | SPBE |
| | | PSME/ SYAL SYAL | PSME/ SYAL SYAL | | PIPO |
| PSME/ SYAL | PSME/ SYAL | PSME/ SYAL ARUV | PSME/ SYAL ARUV | PSME/ SYAL | SYAL |
| | | | PSME/ VAGL | PSME/ VAGL | |
| | PSME/ ACGL | PSME/ ACGL | PSME/ ACGL | PSME/ ACGL | SYOR<br>ACGL |
| | PSME/ XETE | PSME/ XETE | PSME/ XETE | | |
| | | | PSME/ PHMA ACGL | | PIPO |
| PSME/ PHMA | PSME/ PHMA | PSME/ PHMA | PSME/ PHMA PHMA | PSME/ PHMA | PSME |
| | | | PSME/ PHMA CARU | PSME/ PHMA CARU | |
| | | | | PSME/ LIBO | |
| | | | | PSME/ VACA | |
| | | PIEN/ CADI | PIEN/ CADI | PIEN/ EQAR<br>PIEN/ CADI | |
| | | UNCLASSIFIED COMMUNITIES | UNCLASSIFIED COMMUNITIES | PIEN/ GATR | |
| | | | | PIEN/ HYRE | |

*Figure 46. — Relationships of central Idaho habitat types to previous classifications in Idaho.* con

*Figure 46.* — con

| NORTHERN IDAHO & EASTERN WASH. R & J DAUBENMIRE 1968 | BOISE & PAYETTE N.F. PFISTER & OTHERS 1973 | CHALLIS, SALMON, & SAWTOOTH N.F. STEELE & OTHERS 1974 | CENTRAL IDAHO REVIEW DRAFT STEELE & OTHERS 1975 | CENTRAL IDAHO H.T.S. |
|---|---|---|---|---|
| | | | | ABGR/CARU |
| | ABGR/ SPBE (IN PART) | | ABGR/ SPBE | ABGR/ SPBE |
| | ABGR/ VAGL (IN PART) | ABGR/ VAGL (IN PART) | ABGR/ VAGL | ABGR/ VAGL |
| | | | ABGR/ XETE | ABGR/ XETE |
| | ABGR/SPBE (IN PART)<br>ABGR/VAGL (IN PART) | ABGR/ VAGL (IN PART) | ABGR/ ACGL | ABGR/ ACGL PHMA ACGL |
| ABGR/PAMY (IN PART ?) | ABGR/ VAGL (IN PART) | ABGR/ VAGL (IN PART) | ABGR/ LIBO VAGL | ABGR/ LIBO VAGL |
| | | | | ABGR/ LIBO XETE |
| | | | ABGR/ COOC | ABGR/ COOC |
| ABGR/ PAMY | ABGR/ CLUN | ABGR/ CLUN | ABGR/ CLUN | ABGR/ CLUN |
| | | | | |
| | ABLA/ CABI | ABLA/ CABI | ABLA/ CABI | ABLA/ CABI |
| ABLA/ PAMY (IN PART) | ABLA/ CLUN | | ABLA/ CLUN | ABLA/ CLUN |
| ABLA/ MEFE | ABLA/ MEFE | ABLA/ MEFE | ABLA/ MEFE | ABLA/ MEFE |
| | ABLA/ VACA CACA | ABLA/ VACA CACA | ABLA/ VACA CACA | ABLA/ CACA VACA |
| | ABLA/ VACA VACA | ABLA/ VACA VACA | ABLA/ VACA VACA | ABLA/ VACA |
| | ABLA/ CACA LICA | | ABLA/ CACA LICA | ABLA/ CACA LICA |
| | ABLA/ CACA CACA | ABLA/ CACA | ABLA/ CACA CACA | ABLA/ CACA CACA |
| | ABLA/ LICA | ABLA/ STAM | ABLA/ STAM | ABLA/ STAM LICA STAM |
| ABLA/ PAMY (IN PART) | ABLA/ VAGL (IN PART) | | ABLA/ LIBO LIBO | ABLA/ LIBO LIBO |
| | | | | ABLA/ LIBO XETE |
| | | ABLA/ LIBO | ABLA/ LIBO VASC | ABLA/ LIBO VASC |
| | ABLA/ LEGL | ABLA/ LEGL | ABLA/ LEGL | ABLA/ CACA LEGL |
| | ABLA/ ACGL | ABLA/ ACGL | ABLA/ ACGL | ABLA/ ACGL |
| | ABLA/ XETE VAGL | ABLA/ XETE VAGL | ABLA/ XETE VAGL | ABLA/ XETE VAGL |
| ABLA/ XETE | ABLA/ XETE XETE | ABLA/ XETE XETE | ABLA/ XETE XETE | ABLA/ XETE VASC |
| | | | | ABLA/ XETE LUHI |
| ABLA/ PAMY (IN PART) | ABLA/ VAGL (IN PART) | ABLA/ VAGL | ABLA/ VAGL | ABLA/ VAGL VASC VAGL |
| | ABLA/ SPBE | ABLA/ SPBE | ABLA/ SPBE | ABLA/ SPBE |
| | ABLA/ LUHI VASC | | ABLA/ LUHI VASC | ABLA/ LUHI VASC |
| | ABLA/ LUHI LUHI | | ABLA/ LUHI LUHI | ABLA/ LUHI LUHI |
| ABLA/ VASC | ABLA/ VASC | ABLA/ VASC CARU | ABLA/ VASC CARU | ABLA/ VASC CARU |
| | | ABLA/ VASC VASC | ABLA/ VASC VASC | ABLA/ VASC VASC |
| | | | | ABLA/ VASC PIAL |
| | ABLA/ CARU | ABLA/ CARU | ABLA/ CARU | ABLA/ CARU |
| | | ABLA/ CAGE CAGE | | |
| | ABLA/ CAGE CAGE | ABLA/ CAGE SYOR | ABLA/ CAGE CAGE | ABLA/ CAGE CAGE |
| | ABLA/ CAGE ARTR | ABLA/ CAGE ARTR | ABLA/ CAGE ARTR | ABLA/ CAGE ARTR |
| | | ABLA/ JUCO | ABLA/ JUCO | ABLA/ JUCO |
| | | ABLA/ RIMO | ABLA/ RIMO | ABLA/ RIMO |
| | | ABLA/ ARCO | ABLA/ ARCO | ABLA/ ARCO |
| PIAL- ABLA | ABLA/ PIAL | PIAL- ABLA | PIAL- ABLA | PIAL- ABLA H. T. S. |
| | | | PIAL | PIAL H. T. S. |
| | | | | |
| | PICO/ FEID | PICO/ FEID | PICO/ FEID | PICO/ FEID |

# USE OF THE CLASSIFICATION

## Validation

This classification attempts to provide a natural stratification of forest lands in terms of vegetative development. It is designed to reflect the combined forces of the environment upon a given site and discounts the temporary alterations of disturbance. Although the actual environmental parameters of a vegetal unit are often unknown, the major importance of this classification lies in the knowledge of the relative positions of the vegetal units. As R. and J. Daubenmire (1968) have pointed out, "that system may be considered the closest to a natural one that allows the most predictions about a unit from a mere knowledge of its position in the system."

This classification reflects 6 years of sampling, preliminary drafts, and field testing by foresters. Suggested revisions were analyzed and often incorporated. These inputs have substantially improved the classification, but because this classification was developed through a series of approximations, it should always remain open to further refinement.

# USE OF HABITAT TYPES

Layser (1974) and Pfister and others (1976) have outlined potential values of habitat types in resource management. Perhaps the most important use is a land stratification system — designating land areas with approximately equivalent environments or biotic potential — providing a tool for cataloging (1) research results, (2) administrative study results, (3) accumulated field observations, and (4) intuitive evaluations. The habitat type classification provides a foundation upon which to base predictions of response to activities related to vegetation management. One caution, however, is that habitat types are **not** a panacea for all decision making or interpretations. Habitat types **will** complement information on soils, outdoor recreation, socio-economic conditions, hydrology, and wildlife, and will aid development of more intensive land-management planning and practices. They also do not provide a substitute for maps or classifications of existing vegetation such as forest cover types.

Some of the current and potential uses of habitat types include:

1. Communication — provide a common framework for site recognition and interdisciplinary activities;

2. Timber management — stratification of seed source, species selection for planting, cutting and regeneration methods, assessing relative timber productivity;

3. Range and wildlife management — assessing relative forage production and wildlife habitat values;

4. Watershed — estimating relative plant available moisture levels and evapotranspiration rates; recognizing areas of heavy snowpack, and high water tables;

5. Recreation — assessing suitability for various types of recreational use, impacts of recreational use on the plant communities and sites, and esthetic recovery rates following stand disturbances;

6. Forest protection — categorization of fuel buildup, fuel management, and the natural role of fire (frequency and intensity of burns); assessment of susceptibility to various insects and diseases;

7. Natural area preservation — help insure that the environmental spectrum is adequately represented in research natural areas; and

8. Research — stratification tool for designing studies; reporting results in a format suitable for appropriate extrapolation.

Some management implications are discussed in the descriptions of the habitat types in this report. The appendix data can provide additional implications through interpretation by appropriate functional specialists. Field personnel can also document repeated observations to help expand our knowledge of vegetative reactions on specific habitat types.

## Mapping

Habitat type maps have become an important management tool in the Northern Region of the USDA Forest Service (Deitschman 1973; Stage and Alley 1973; Daubenmire 1973). Maps provide a permanent record of habitat type distribution on the landscape and a basis for acreage estimates for land-use planning.

Maps may be made at various scales and degrees of accuracy, depending upon objectives. For research studies, project planning, etc., maps should be accurate and detailed; each phase of a habitat type should be delineated, especially for research studies. The map scale should range from 4 to 8 inches per mile. At a broader level of planning (multiple use planning unit, National Forests, etc.) map accuracy and detail may decrease and mapping efforts may be extensive. Habitat types are often the finest subdivisions shown, and map scale can range from one-half to 2 inches per mile.

Still broader levels of mapping may be required for regional needs (selection of powerline corridors, State or regional planning); these may employ scales of one-fourth to one-half inch per mile, and may depict only habitat type groups or series. These should be synthesized from large-scale habitat type maps whenever the latter are available.

Selecting a mapping approach and appropriate scale to produce an acceptable map must be based on the following: (1) anticipated use of the map, (2) accuracy level required, (3) availability of adequately trained personnel, and (4) amount of time and financial support available to achieve the specified accuracy level.

Table 4.--An example of grouping based on similar ecologic and geographic characteristics

| Group | Components |
|---|---|
| 1 | *PIPO/STOC, PIPO/AGSP, PIPO/FEID* |
| 2 | *PIPO/PUTR, PIPO/SYOR* |
| 3 | *Pinus flexilis* series |
| 4 | *PSME/AGSP, PSME/FEID* |
| 5 | *PSME/SYOR, PSME/BERE SYOR* phase, *PSME/CAGE SYOR* phase |
| 6 | *PSME/ARCO, PSME/JUCO, PIEN/HYRE* |
| 7 | *PSME/CAGE CAGE* phase, *PSME/CARU CARU* phase, *PSME/SPBE CARU* phase |
| 8 | *PSME/SPBE SPBE* phase, *PSME/SYAL SYAL* phase |
| 9 | *PSME/BERE, PSME/OSCH* |
| 10 | *PSME/ACGL, PSME/PHMA PSME* phase |
| 11 | *ABGR/CARU, ABGR/SPBE* |
| 12 | *ABGR/VAGL, ABGR/ACGL, ABGR/LIBO, ABGR/CLUN* |
| 13 | *ABLA/CLUN, ABLA/LIBO, ABLA/ACGL* |
| 14 | *ABLA/VACA, PICO/FEID* |
| 15 | *ABLA/CACA, ABLA/STAM* |
| 16 | *ABLA/XETE, ABLA/VAGL* |
| 17 | *ABLA/VASC CARU* phase, *ABLA/CARU* |
| 18 | *ABLA/VASC VASC* phase, *ABLA/CAGE CAGE* phase |
| 19 | *ABLA/ARCO, ABLA/JUCO* |
| 20 | *ABLA/CAGE ARTR* phase, *PIAL-ABLA* h.t.'s, *PIAL* h.t.'s |

At scales of 4 to 8 inches per mile, the habitat types or phases are useful as the mapping units, accepting inclusions (up to 15 percent) of other types too small to map separately. In complex topography and at smaller map scales, special mapping units must be developed, which may be called complexes or mosaics. Such mapping-unit complexes must be defined for each area being mapped, rather than on a preconceived grouping. The amount and relative positions of habitat types and phases within a complex must be specified because the management interpretations of a mapping unit are tied to the taxonomic units — series, habitat type, and phase.

Regardless of the mapping scale used, the field reconnaissance should identify stands to the phase level. The amount and location of field reconnaissance should also be specified on the map or in a report for users of the map. Finally, the map accuracy should be estimated and checked to maintain quality control in application of the habitat type classification.

## Grouping

Because this classification system for potential vegetation is hierarchical, it can be used at various levels of differentiation for various purposes. Collecting and recording of field data (vegetation inventories) should be done with enough detail to allow for determination of habitat type and phase and should be recorded in a standard format such as a checklist (appendix F). Using this approach is only slightly more time-consuming than taking cruder field data, and it enhances the value of the data as well as the comprehension of the investigator and his professional credibility. Above all, it provides flexibility in the ultimate use of the data. In contrast, if data are collected at the habitat type group level, rearrangement or more detailed analysis is not possible.

In a given forested area, only a small percentage of all the forest habitat types and phases will occur. Moreover, some of these will be so minor in extent or so poorly developed that once their presence is documented they need not enter into most broad scale forest management considerations. This leaves a relatively small number of habitat types to be identified (and mapped) as such. After the distributional patterns of all the habitat types in a given area are identified, the types can be arranged in logical categories (table 4) to facilitate resource planning and public presentations.

Where implications for management are similar, it may be desirable to consider an entire series, such as the *Pinus flexilis* series or *Abies grandis* series, as one group. Conversely, where management considerations contrast strongly even at the phase level, as in the phases of *PSME/CARU,* it may be desirable to split a habitat type in the grouping process.

Other bases for groupings may be useful for various specialists in resource management. Again, it is important to clarify that such groupings, if used at all in preference to habitat types alone, should be made **after** a thorough inventory has been completed at the habitat type level. Any group category used should include a record of the relative amounts of each habitat type (and phase) included therein to document the basis for general statement about the group.

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# APPENDIX A. NUMBER OF SAMPLE STANDS BY HABITAT TYPE, PHASE, AND NATIONAL FOREST IN CENTRAL IDAHO

**APPENDIX A - NUMBER OF SAMPLE STANDS BY HABITAT TYPE, PHASE, AND NATIONAL FOREST IN CENTRAL IDAHO**

B = Boise National Forest
C = Challis National Forest
N = Nezperce National Forest
P = Payette National Forest
SL = Salmon National Forest
ST = Sawtooth National Forest
T = Targhee National Forest

| Habitat type, phase | National Forest vicinity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | C | N | P | SL | ST | T | Total | |
| ***PINUS FLEXILIS* SERIES** | | | | | | | | | |
| *PIFL/FEID* | . | 2 | . | . | 1 | . | . | 3 | |
| | | | | | | | | | 3 |
| ***PINUS PONDEROSA* SERIES** | | | | | | | | | |
| *PIPO/STOC* | 3 | . | . | . | . | . | . | 3 | |
| *PIPO/AGSP* | 11 | . | 1 | 5 | 1 | . | . | 18 | |
| *PIPO/FEID* | 3 | . | . | 3 | 1 | . | . | 7 | |
| *PIPO/PUTR, AGSP* | 6 | . | . | 2 | 3 | . | . | 11 | |
| *PIPO/PUTR, FEID* | 1 | . | . | 2 | . | . | . | 3 | |
| *PIPO/SYOR* | 2 | . | . | 1 | . | . | . | 3 | |
| *PIPO/SYAL* | 5 | . | . | 5 | 1 | . | . | 11 | |
| | | | | | | | | | 56 |
| ***PSEUDOTSUGA MENZIESII* SERIES** | | | | | | | | | |
| *PSME/AGSP* | 9 | 4 | . | 3 | 1 | 3 | . | 20 | |
| *PSME/FEID, FEID* | . | 7 | . | . | 4 | . | . | 11 | |
| *PSME/FEID, PIPO* | 1 | . | . | 2 | 3 | . | . | 6 | |
| *PSME/SYOR* | 2 | 14 | . | . | 2 | 5 | 3 | 26 | |
| *PSME/ARCO, ASMI* | . | . | . | . | . | . | 6 | 6 | |
| *PSME/ARCO, ARCO* | . | 15 | . | . | 5 | 2 | . | 22 | |
| *PSME/JUCO* | . | 7 | . | . | 2 | 2 | 2 | 13 | |
| *PSME/CAGE, SYOR* | 4 | 1 | . | . | 1 | 5 | . | 11 | |
| *PSME/CAGE, PIPO* | 8 | . | . | 5 | . | . | . | 13 | |
| *PSME/CAGE, CAGE* | 2 | 3 | . | . | . | 9 | . | 14 | |
| *PSME/BERE, SYOR* | 3 | . | . | . | . | . | . | 3 | |
| *PSME/BERE, CAGE* | 2 | . | . | . | . | 3 | . | 5 | |
| *PSME/BERE, BERE* | 10 | . | . | . | . | 3 | . | 13 | |
| *PSME/CELE* | . | 2 | . | . | 3 | . | 1 | 6 | |
| *PSME/CARU, FEID* | 1 | . | . | . | 1 | . | . | 2 | |
| *PSME/CARU, PIPO* | 11 | . | . | 2 | 3 | . | . | 16 | |
| *PSME/CARU, CARU* | 4 | 10 | . | 2 | 7 | 8 | . | 31 | |
| *PSME/OSCH* | 5 | . | . | 2 | . | . | . | 7 | |
| *PSME/SPBE, PIPO* | 19 | . | . | 6 | . | . | . | 25 | |
| *PSME/SPBE, CARU* | . | 3 | . | . | 2 | . | . | 5 | |
| *PSME/SPBE, SPBE* | 1 | 3 | . | 1 | 2 | 2 | . | 9 | |
| *PSME/SYAL, PIPO* | 1 | . | . | . | 2 | . | . | 20 | |
| *PSME/SYAL, SYAL* | 8 | . | . | 9 | 3 | . | . | 3 | |
| *PSME/ACGL, SYOR* | . | 2 | . | . | . | 1 | 2 | 5 | |
| *PSME/ACGL, ACGL* | 6 | . | . | . | . | 2 | . | 8 | |
| *PSME/PHMA, PIPO* | 18 | . | . | 8 | 1 | . | . | 27 | |
| *PSME/PHMA, PSME* | 7 | 2 | . | 1 | 2 | 1 | . | 13 | |
| | | | | | | | | | 340 |
| ***PICEA ENGELMANNII* SERIES** | | | | | | | | | |
| *PIEN/HYRE* | . | . | . | . | . | . | 5 | 5 | |
| *PIEN/CADI* | . | 2 | . | . | 3 | 1 | 1 | 7 | |
| | | | | | | | | | 12 |

continued

## APPENDIX A - NUMBER OF SAMPLE STANDS BY HABITAT TYPE, PHASE, AND NATIONAL FOREST IN CENTRAL IDAHO

| Habitat type, phase | National Forest vicinity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | B | C | N | P | SL | ST | T | Total | |
| ***ABIES GRANDIS* SERIES** | | | | | | | | | |
| *ABGR/CARU* | 2 | . | . | 5 | . | . | . | 7 | |
| *ABGR/SPBE* | 1 | . | . | 7 | . | . | . | 8 | |
| *ABGR/VAGL* | 8 | . | 1 | 3 | . | . | . | 12 | |
| *ABGR/ACGL, PHMA* | 5 | . | 1 | 6 | . | . | . | 12 | |
| *ABGR/ACGL, ACGL* | 5 | . | 1 | 8 | . | . | . | 14 | |
| *ABGR/LIBO, VAGL* | 3 | . | . | 1 | . | . | . | 4 | |
| *ABGR/LIBO, LIBO* | 1 | . | 2 | 1 | . | . | . | 4 | |
| *ABGR/VACA* | 2 | . | . | 6 | . | . | . | 8 | |
| *ABGR/CLUN* | 3 | . | 1 | 11 | . | . | . | 15 | |
| | | | | | | | | | 84 |
| ***ABIES LASIOCARPA* SERIES** | | | | | | | | | |
| *ABLA/CABI* | 5 | 3 | . | . | . | . | . | 8 | |
| *ABLA/CACA, LEGL* | . | 3 | 3 | 2 | 2 | 1 | . | 11 | |
| *ABLA/CACA, VACA* | 3 | 2 | 1 | . | . | 2 | . | 8 | |
| *ABLA/CACA, LICA* | 2 | . | 1 | 11 | . | . | . | 14 | |
| *ABLA/CACA, CACA* | 2 | 2 | . | 1 | 1 | 1 | . | 7 | |
| *ABLA/STAM, LICA* | 1 | . | 1 | 9 | . | . | . | 11 | |
| *ABLA/STAM, STAM* | 2 | 2 | . | 1 | 1 | 1 | . | 7 | |
| *ABLA/CLUN* | . | . | . | 3 | . | . | . | 3 | |
| *ABLA/MEFE* | 5 | . | 1 | 2 | . | . | . | 8 | |
| *ABLA/ACGL* | 4 | . | . | . | . | 1 | . | 5 | |
| *ABLA/VACA* | 7 | . | . | 3 | 1 | 2 | . | 13 | |
| *ABLA/LIBO* | 2 | . | . | . | 2 | . | . | 4 | |
| *ABLA/XETE, VAGL* | . | . | . | 8 | 1 | . | . | 9 | |
| *ABLA/XETE, VASC* | . | . | . | 5 | 1 | . | . | 6 | |
| *ABLA/XETE, LUHI* | . | . | 2 | 3 | . | . | . | 5 | |
| *ABLA/VAGL* | 8 | . | . | 3 | . | . | . | 11 | |
| *ABLA/SPBE* | 4 | . | . | . | . | 3 | . | 7 | |
| *ABLA/LUHI, VASC* | . | . | . | 5 | . | . | . | 5 | |
| *ABLA/LUHI, LUHI* | 1 | . | . | 4 | . | . | . | 5 | |
| *ABLA/VASC, CARU* | 1 | 1 | . | . | 1 | . | . | 3 | |
| *ABLA/VASC, VASC* | 5 | 5 | . | . | 1 | 2 | . | 13 | |
| *ABLA/VASC, PIAL* | 1 | 1 | . | . | . | 1 | . | 3 | |
| *ABLA/CARU* | 6 | 4 | . | 3 | 1 | 1 | . | 15 | |
| *ABLA/CAGE, CAGE* | 8 | 6 | . | 1 | 1 | 14 | . | 30 | |
| *ABLA/CAGE, ARTR* | 2 | 1 | . | . | . | . | . | 3 | |
| *ABLA/JUCO* | . | 5 | . | . | 2 | 1 | . | 8 | |
| *ABLA/RIMO* | . | 1 | . | . | . | 2 | 2 | 5 | |
| *ABLA/ARCO* | . | 6 | . | . | 3 | 3 | . | 12 | |
| *PIAL-ABLA* | 6 | 4 | 1 | 3 | . | 1 | . | 15 | |
| | | | | | | | | | 254 |
| ***PINUS ALBICAULIS* SERIES** | | | | | | | | | |
| *PIAL* | 1 | 1 | . | . | 2 | 1 | . | 5 | |
| | | | | | | | | | 5 |
| ***PINUS CONTORTA* SERIES** | | | | | | | | | |
| *PICO/FEID* | 3 | 6 | . | . | 1 | 2 | . | 12 | |
| | | | | | | | | | 12 |
| **Unclassified stands** | 9 | 3 | . | 3 | 1 | 4 | 1 | 21 | |
| | | | | | | | | | 21 |
| **Total** | 271 | 126 | 17 | 177 | 77 | 88 | 23 | | 787 |

## APPENDIX B. OCCURRENCE AND ROLES OF TREE SPECIES BY HABITAT TYPES

Occurrence and Roles of Tree Species by Habitat Types

Occurrence of tree species through the series of habitat types, showing their status in forest succession as interpreted from central Idaho reconnaissance plot data.

C = major climax species    S = major seral species    a = accidental
c = minor climax species    x = minor seral species    ( ) = only in certain areas of h.t.

| Habitat Type, Phase | JUSC | POTR | PIFL | PIPO | PSME | PICO | PIEN | LAOC | ABGR | ABLA | PIAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIFL/FEID | (c) | . | C | . | C | . | . | . | . | . | . |
| PIPO/STOC | . | . | . | C | . | . | . | . | . | . | . |
| PIPO/AGSP | . | . | . | C | a | . | . | . | . | . | . |
| PIPO/FEID | . | a | . | C | a | . | . | . | . | . | . |
| PIPO/PUTR, AGSP | . | a | . | C | a | . | . | . | . | . | . |
| PIPO/PUTR, FEID | . | . | . | C | a | . | . | . | . | . | . |
| PIPO/SYOR | . | . | . | C | a | . | . | . | . | . | . |
| PIPO/SYAL | . | (s) | . | C | a | . | . | . | . | . | . |
| PSME/AGSP | . | a | . | (C) | C | . | . | . | . | . | . |
| PSME/FEID, FEID | . | . | . | . | C | a | . | . | . | . | . |
| PSME/FEID, PIPO | . | . | . | C | C | a | . | . | . | . | . |
| PSME/SYOR | . | a | (c) | (c) | C | a | . | . | . | . | . |
| PSME/ARCO, ASMI | a | . | s | . | C | . | a | . | . | . | . |
| PSME/ARCO, ARCO | . | a | (s) | . | C | (s) | a | . | . | a | a |
| PSME/JUCO | . | . | (s) | . | C | (s) | . | . | . | a | a |
| PSME/CAGE, SYOR | . | a | a | . | C | (s) | . | . | . | a | a |
| PSME/CAGE, PIPO | . | . | . | S | C | a | . | . | . | . | . |
| PSME/CAGE, CAGE | . | a | a | . | C | (s) | . | . | . | a | a |
| PSME/BERE, SYOR | . | . | . | (c) | C | . | . | . | . | . | . |
| PSME/BERE, CAGE | . | . | . | S | C | . | . | . | . | . | . |
| PSME/BERE, BERE | . | . | . | (S) | C | (c) | . | . | . | . | . |
| PSME/CELE | . | . | (c) | (C) | C | a | . | . | . | . | . |
| PSME/CARU, FEID | . | . | . | . | C | . | . | . | . | . | . |
| PSME/CARU, PIPO | . | . | . | S | C | (S) | . | . | . | . | . |
| PSME/CARU, CARU | . | s | . | . | C | (S) | a | . | . | a | a |
| PSME/OSCH | . | . | . | (S) | C | . | . | . | . | a | . |
| PSME/SPBE, PIPO | . | a | . | S | C | a | a | . | . | a | . |
| PSME/SPBE, CARU | . | . | . | . | C | (S) | . | . | . | . | . |
| PSME/SPBE, SPBE | . | . | a | . | C | (s) | . | . | . | a | . |
| PSME/SYAL, PIPO | . | (s) | . | S | C | (s) | . | . | . | . | . |
| PSME/SYAL, SYAL | . | a | . | . | C | a | . | . | . | a | . |
| PSME/ACGL, SYOR | s | . | s | . | C | . | . | . | . | . | . |
| PSME/ACGL, ACGL | . | (S) | . | (S) | C | . | . | . | . | a | . |
| PSME/PHMA, PIPO | . | . | . | S | C | . | . | . | . | a | . |
| PSME/PHMA, PSME | . | . | . | . | C | . | . | . | . | . | . |
| PIEN/HYRE | . | . | s | . | C | . | C | . | . | . | . |
| PIEN/CADI | . | a | . | . | a | s | C | . | . | c | . |

**(con.)**

| Habitat Type, Phase | JUSC | POTR | PIFL | PIPO | PSME | PICO | PIEN | LAOC | ABGR | ABLA | PIAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ABGR/CARU | . | . | . | S | S | (S) | a | . | C | a | a |
| ABGR/SPBE | . | (s) | . | S | S | . | a | a | C | . | . |
| ABGR/VAGL | . | a | . | s | S | S | S | (s) | C | (c) | . |
| ABGR/ACGL, PHMA | . | . | . | S | S | . | a | a | C | (c) | . |
| ABGR/ACGL, ACGL | . | . | . | S | S | . | a | a | C | (c) | . |
| ABGR/LIBO, VAGL | . | . | . | s | S | S | S | (s) | C | (c) | . |
| ABGR/LIBO, LIBO | . | . | . | S | S | s | a | a | C | . | . |
| ABGR/VACA | . | . | . | (s) | (S) | S | s | s | C | c | . |
| ABGR/CLUN | . | . | . | s | S | (s) | S | S | C | (c) | . |
| ABLA/CABI | . | a | . | . | . | s | S | . | . | C | . |
| ABLA/CACA, LEGL | . | . | . | . | s | S | S | . | a | C | a |
| ABLA/CACA, VACA | . | (s) | . | . | a | S | s | . | a | C | . |
| ABLA/CACA, LICA | . | . | . | . | a | s | S | . | . | C | . |
| ABLA/CACA CACA | . | a | . | . | a | S | S | . | . | C | . |
| ABLA/STAM, LICA | . | . | . | . | a | s | S | . | a | C | . |
| ABLA/STAM, STAM | . | . | . | . | a | s | S | . | . | C | . |
| ABLA/CLUN CLUN | . | . | . | a | S | s | S | (S) | (c) | C | . |
| ABLA/MEFE, MEFE | . | . | . | . | s | (S) | S | (S) | (c) | C | . |
| ABLA/ACGL | . | a | . | . | S | . | . | . | . | C | . |
| ABLA/VACA | . | a | . | . | s | S | s | . | a | C | s |
| ABLA/LIBO, LIBO | . | . | . | . | S | S | S | . | a | C | a |
| ABLA/XETE, VAGL | . | . | . | . | (S) | S | S | . | . | C | . |
| ABLA/XETE, VASC | . | . | . | . | (S) | S | s | . | . | C | (s) |
| ABLA/XETE, LUHI | . | . | . | . | . | (s) | (s) | . | . | C | s |
| ABLA/VAGL, VAGL | . | . | . | a | S | s | S | . | a | C | a |
| ABLA/SPBE | . | . | . | a | S | (S) | a | . | . | C | a |
| ABLA/LUHI, VASC | . | . | . | . | . | S | s | . | . | C | s |
| ABLA/LUHI, LUHI | . | . | . | . | . | s | s | . | . | C | s |
| ABLA/VASC, CARU | . | . | . | . | s | S | s | . | . | C | . |
| ABLA/VASC, VASC | . | . | . | . | a | S | s | . | . | C | s |
| ABLA/VASC, PIAL | . | . | . | . | . | (S) | a | . | . | C | C |
| ABLA/CARU | . | . | . | . | S | S | . | . | a | C | s |
| ABLA/CAGE, CAGE | . | a | . | . | (S) | (S) | (s) | . | . | C | s |
| ABLA/CAGE, ARTR | . | . | . | . | (s) | a | . | . | . | C | c |
| ABLA/JUCO | . | . | . | . | (S) | (S) | s | . | . | C | s |
| ABLA/RIMO | . | . | . | . | a | . | (s) | . | . | C | S |
| ABLA/ARCO | . | . | . | . | S | (S) | S | . | . | C | s |
| PIAL/ABLA | . | . | . | . | . | (s) | a | . | . | C | C |
| PICO/FEID | . | . | . | . | . | C | . | . | . | . | (c) |

APPENDIX C-1

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | PINUS PONDEROSA SERIES (con) | | | | | | | | PSEUDOTSUGA MENZIESII SERIES | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PIFL | | | | | | | | | | | | |
| | | FEID h.t. | STOC h.t. | AGSP h.t. | FEID h.t. | PUTR h.t. | | SYOR h.t. | SYAL h.t. | AGSP h.t. | FEID h.t. | | CELE h.t. | SYOR h.t. |
| | | | | | | FEID Phase | AGSP Phase | | | | PIPO Phase | FEID phase | | |
| | | n= 3 | n= 3 | n=13 | n= 7 | n= 7 | n=11 | n= 3 | n=11 | n=20 | n= 6 | n=11 | n= 6 | n=26 |
| | TREES | | | | | | | | | | | | | |
| 001 | Abies grandis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 002 | Abies lasiocarpa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 006 | Larix occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 007 | Picea engelmannii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 009 | Pinus albicaulis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 3) | - ( 0) | + ( 3) |
| 010 | Pinus contorta | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 3 ( 2) | 1 ( 3) | 3 ( 2) | 1 ( 1) |
| 011 | Pinus flexilis | 10 (23) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | 2 ( 1) | - ( 0) | 2 ( 0) | 2 ( 5) |
| 013 | Pinus ponderosa | - ( 0) | 10 (30) | 10 (24) | 10 (35) | 10 (30) | 10 (30) | 10 (23) | 10 (48) | 5 (15) | 10 (22) | - ( 0) | 2 (37) | 1 (20) |
| 014 | Populus tremuloides | - ( 0) | 3 ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 5) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | 1 ( 8) |
| 016 | Pseudotsuga menziesii | 10 (25) | - ( 0) | - ( 0) | 3 ( 0) | - ( 0) | 2 ( 2) | 7 ( 0) | 1 ( 0) | 10 (27) | 10 (17) | 10 (34) | 10 (17) | 10 (47) |
| | SHRUBS and SUBSHRUBS | | | | | | | | | | | | | |
| 102 | Acer glabrum | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | 2 ( 0) | - ( 0) | - ( 0) | 2 ( 3) | 1 ( 1) |
| 104 | Alnus sinuata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 105 | *Amelanchier alnifolia* | - ( 0) | 7 ( 1) | 3 ( 1) | 6 ( 1) | 7 ( 0) | 6 ( 5) | 10 ( 1) | 8 ( 6) | 5 ( 1) | 7 ( 1) | - ( 0) | 2 ( 1) | 2 ( 2) |
| 201 | Arctstaphylos uva-ursi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 (19) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 0) | 3 ( 1) | + ( 1) |
| 150 | Artemisia tridentata | 10 (13) | 3 ( 1) | 2 ( 1) | 7 (14) | 3 ( 1) | 2 ( 3) | 3 (15) | 1 ( 1) | 6 (10) | 5 ( 6) | 9 (10) | 5 (11) | 6 ( 9) |
| 203 | Berberis repens | - ( 0) | - ( 0) | 3 ( 4) | - ( 0) | - ( 0) | 1 ( 1) | 3 ( 0) | 3 ( 1) | 2 ( 1) | 2 ( 3) | - ( 0) | 3 ( 2) | 1 ( 0) |
| 107 | Ceanothus velutinus | - ( 0) | 3 ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 4 ( 1) | 4 ( 3) | 2 ( 0) | - ( 0) | - ( 0) | + ( 3) |
| 173 | Cercocarpus ledifolius | 3 ( 1) | - ( 0) | 1 ( 3) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | 2 ( 1) | - ( 0) | 10 (42) | 1 ( 2) |
| 204 | Clematis columbiana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 205 | Gaultheria humifusa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 111 | Holodiscus discolor | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 112 | Juniperus communis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 5 ( 0) | 3 ( 2) |
| 113 | Ledum glandulosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 206 | Linnaea borealis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 154 | Lonicera caerulea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 115 | Lonicera utahensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 116 | Menziesia ferruginea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 118 | Pachistima myrsinites | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 122 | Physocarpus malvaceus | - ( 0) | - ( 0) | 1 ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 1) |
| 124 | Prunus virginiana | - ( 0) | - ( 0) | 3 ( 3) | 1 ( 3) | 7 ( 2) | 4 ( 2) | 7 ( 8) | 7 ( 2) | 5 ( 1) | 2 ( 1) | - ( 0) | 2 ( 1) | 2 (16) |
| 125 | Purshia tridentata | - ( 0) | 10 ( 1) | 6 ( 1) | 3 ( 2) | 10 (23) | 10 (25) | 10 ( 6) | 3 ( 2) | 6 ( 2) | 5 ( 6) | - ( 0) | 3 ( 9) | 2 ( 1) |
| 128 | Ribes cereum | - ( 0) | - ( 0) | 2 ( 2) | 7 ( 1) | 3 ( 0) | 1 ( 1) | 7 ( 1) | 4 ( 5) | 5 ( 1) | 5 ( 1) | 5 ( 1) | 3 ( 9) | 7 ( 8) |
| 130 | Ribes lacustre | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 159 | Ribes montingenum | 7 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 3) | - ( 0) | - ( 0) |
| 131 | Ribes viscosissimum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 133 | Rosa gymnocarpa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 161 | Rosa nutkana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 134 | Rosa woodsii | - ( 0) | - ( 0) | 1 ( 1) | 3 ( 2) | - ( 0) | 2 ( 2) | 3 ( 1) | 4 ( 2) | 2 ( 4) | 5 ( 1) | - ( 0) | 2 ( 3) | 1 ( 2) |
| 136 | Rubus parviflorus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 137 | Salix scoul[illegible] | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 3) | 2 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 139 | Sheperdia canadensis | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + (37) |
| 140 | Sorbus scopulina | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 142 | Spiraea betulifolia | - ( 0) | - ( 0) | 2 ( 4) | 3 ( 2) | - ( 0) | 3 ( 1) | - ( 0) | 2 (39) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | + ( 3) |
| 162 | Spiraea pyramidata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 143 | Symphoricarpos albus | - ( 0) | - ( 0) | 1 ( 3) | 3 ( 1) | 3 ( 3) | - ( 0) | - ( 0) | 10 (41) | 1 ( 0) | 2 ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 163 | Symphoricarpos oreophilus | 10 ( 1) | 3 ( 1) | 1 ( 1) | - ( 0) | 3 ( 1) | 1 ( 0) | 10 (11) | 3 ( 1) | 5 ( 2) | 2 ( 1) | 5 ( 1) | 7 ( 5) | 9 (21) |
| 144 | Taxus brevifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 145 | Vaccinium caespitosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 146 | Vaccinium globulare | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 148 | Vaccinium scoparium | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| | FERNS and FERN ALLIES | | | | | | | | | | | | | |
| 253 | Cystopteris fragilis | - ( 0) | - ( 0) | 2 ( 1) | 3 ( 2) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | 2 ( 0) | 5 ( 2) | 2 ( 1) | - ( 0) | - ( 0) |
| 254 | *Equisetum arvense* | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 259 | Pteridium aquilinum | - ( 0) | - ( 0) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| | GRAMINOIDS | | | | | | | | | | | | | |
| 301 | Agropyron spicatum | 7 (31) | 3 ( 1) | 10 (25) | 9 (14) | 7 (26) | 9 (17) | 10 ( 6) | 5 ( 4) | 9 (27) | 8 (24) | 7 (14) | 10 (24) | 7 (11) |
| 304 | Bromus vulgaris | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 305 | Calamagrostis canadensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 307 | Calamagrostis rubescens | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 2 ( 9) | - ( 0) | 5 (41) | - ( 0) | 2 ( 1) | 2 ( 1) | 2 ( 1) | 1 ( 3) |
| 308 | Carex concinnoides | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 2 ( 1) | + ( 1) |
| 339 | Carex disperma | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 309 | Carex geyeri | - ( 0) | 7 ( 1) | 1 ( 1) | 3 ( 2) | 3 ( 3) | 1 ( 1) | 7 ( 0) | 5 (15) | 2 ( 2) | 3 ( 1) | 2 ( 1) | - ( 0) | 2 ( 2) |
| 311 | Carex rossii | 7 ( 1) | 7 ( 2) | 1 ( 1) | 4 ( 1) | 3 ( 1) | 5 ( 1) | 7 ( 0) | 4 ( 1) | 2 ( 1) | 5 ( 1) | 2 ( 1) | 8 ( 1) | 3 ( 1) |
| 316 | Elymus glaucus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 1) |
| 317 | Festuca idahoensis | 10 (23) | 3 ( 0) | 3 ( 2) | 10 (33) | 10 (18) | 3 ( 2) | 3 ( 1) | 1 ( 1) | 3 ( 1) | 10 (41) | 10 (23) | 2 (37) | 3 (21) |
| 348 | Hesperochloa kingii | 7 (15) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 2) | - ( 0) | 3 ( 2) | 2 (15) | 2 ( 4) |
| 322 | Juncus parryi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 323 | Koeleria cristata | 3 ( 1) | - ( 0) | 1 ( 1) | 3 ( 1) | 3 ( 1) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 2 ( 3) | 2 ( 1) | 1 ( 1) |
| 325 | Luzula hitchcockii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 349 | Melica bulbosa | - ( 0) | - ( 0) | 3 (13) | 1 ( 1) | - ( 0) | 1 ( 1) | 3 ( 1) | 1 ( 1) | 3 ( 7) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) |
| 331 | Poa nervosa | 3 ( 1) | - ( 0) | 1 (15) | - ( 0) | - ( 0) | 2 ( 1) | 3 ( 1) | - ( 0) | 3 ( 6) | - ( 0) | - ( 0) | 2 ( 1) | 4 ( 4) |
| 360 | Stipa occidentalis | - ( 0) | 10 (23) | 1 ( 0) | 3 ( 3) | - ( 0) | 1 ( 1) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 1 ( 2) |

* Code to constancy values: + = 0- 5%, 1 = 5-15%, 2 = 15-25%, 3 = 25-35%, 4 = 35-45%, 5 = 45-55%, 6 = 55-65%, 7 = 65-75%, 8 = 75-85%, 9 = 85-95%, 10 = 95-100%

| ADP NUMBER | SPECIES | PIFL: FEID h.t. | PINUS PONDEROSA SERIES (con): STOC h.t. | AGSP h.t. | FEID h.t. | PUTR h.t: FEID Phase | PUTR h.t: AGSP Phase | SYOR h.t. | SYAL h.t. | PSEUDOTSUGA MENZIESII SERIES (con): AGSP h.t. | FEID h.t.: PIPO Phase | FEID h.t.: FEID Phase | CELE h.t. | SYOR h.t. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **FORBS** | n= 3 | n= 3 | n=18 | n= 7 | n= 3 | n=11 | n=3 | n=11 | n=20 | n= 6 | n=11 | n= 6 | n=26 |
| 401 | Achillaea millefolium | 3 (1) | 10 (1) | 5 (1) | 10 (1) | 10 (2) | 6 (3) | 7 (1) | 9 (1) | 3 (1) | 8 (1) | 5 (1) | 7 (1) | 3 (1) |
| 402 | Actaea rubra | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 565 | Aconitum columbianum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 403 | Adenocaulon bicolor | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 738 | Antennaria corymbosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 414 | Antennaria microphylla | 10 (1) | - (0) | 1 (1) | 1 (1) | 3 (1) | 3 (1) | - (0) | 1 (1) | 2 (1) | 2 (1) | 10 (3) | 8 (1) | 5 (5) |
| 413 | Antennaria racemosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | - (0) | 1 (1) | - (0) | + (1) |
| 577 | Arenaria aculeata | - (0) | - (0) | 1 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | 2 (1) | + (1) |
| 420 | Arenaria macrophylla | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | 2 (1) | 1 (3) | 2 (0) | - (0) | - (0) | - (0) |
| 421 | Arnica cordifolia | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | 3 (18) | - (0) | 2 (3) | 2 (3) | 2 (1) | 2 (1) |
| 422 | Arnica latifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 426 | Aster conspicuus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 582 | Aster engelmannii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) |
| 430 | Astragalus miser | 3 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) |
| 431 | Balsamorhiza sagittata | - (0) | 3 (3) | 7 (12) | 6 (15) | 7 (15) | 5 (9) | 10 (14) | 4 (8) | 5 (5) | - (0) | 2 (9) | 7 (2) | 1 (15) |
| 696 | Caltha biflora | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 741 | Castilleja covilleana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 438 | Castilleja miniata | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) |
| 595 | Chaenactis douglasii | - (0) | - (0) | 3 (0) | 1 (1) | - (0) | 2 (1) | - (0) | - (0) | 4 (0) | - (0) | - (0) | - (0) | - (0) |
| 442 | Chimaphila umbellata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 447 | Clintonia uniflora | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 449 | Coptis occidentalis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 602 | Crepis accuminata | 3 (1) | - (0) | 3 (1) | 4 (1) | 3 (3) | 4 (1) | 3 (1) | 3 (1) | 4 (1) | - (0) | - (0) | 3 (2) | 3 (1) |
| 458 | Dodecatheon jeffreyi | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 455 | Disporum trachycarpum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 459 | Epilobium angustifolium | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 3 (1) | - (0) | - (0) | 1 (1) | - (0) | + (1) |
| 465 | Fragaria vesca | - (0) | - (0) | - (0) | 1 (1) | - (0) | 4 (1) | - (0) | 3 (2) | 1 (2) | 3 (1) | 1 (1) | - (0) | 1 (1) |
| 466 | Fragaria virginiana | - (0) | - (0) | - (0) | 1 (3) | 3 (1) | 2 (1) | - (0) | 2 (9) | 1 (0) | 3 (2) | 2 (1) | 2 (1) | + (1) |
| 471 | Galium triflorum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | - (0) | - (0) | - (0) | - (0) |
| 620 | Geranium richardsonii | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | 3 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 473 | Geranium viscosissimum | - (0) | 3 (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 5 (1) | 1 (1) | - (0) | - (0) | - (0) | 1 (2) |
| 474 | Geum triflorum | 7 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 3 (1) | 5 (1) | 3 (1) | 2 (3) |
| 476 | Goodyera oblongifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 484 | Hieracium albiflorum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 486 | Hieracium gracile | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 636 | Lathyrus nevadensis | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (1) | 3 (1) | 3 (1) | - (0) | 2 (15) | - (0) | - (0) | - (0) |
| 489 | Ligusticum canbyi | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 490 | Ligusticum tenuifolium | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 497 | Lomatium dissectum | - (0) | - (0) | 4 (10) | - (0) | - (0) | 3 (1) | - (0) | - (0) | 6 (8) | 3 (1) | - (0) | - (0) | 2 (0) |
| 641 | Lupinus argenteus | - (0) | - (0) | - (0) | 1 (1) | 3 (1) | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (3) | - (0) | 1 (1) |
| 642 | Lupinus polyphyllus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 649 | Mitella pentandra | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 502 | Mitella stauropetala | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 505 | Osmorhiza chilensis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (0) | 4 (5) | - (0) | - (0) | - (0) | - (0) | + (1) |
| 653 | Osmorhiza depauperata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | + (1) |
| 507 | Pedicularis bracteosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 509 | Pedicularis racemosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 514 | Penstemon wilcoxii | - (0) | - (0) | - (0) | 1 (1) | - (0) | 2 (1) | - (0) | 1 (1) | 2 (1) | 2 (1) | - (0) | - (0) | - (0) |
| 663 | Phacelia hastata | - (0) | - (0) | 3 (1) | - (0) | - (0) | 5 (1) | - (0) | - (0) | 4 (1) | - (0) | 1 (1) | 2 (1) | 2 (1) |
| 669 | Potentilla diversifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 521 | Potentilla flabellifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 670 | Potentilla gracilis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (1) | 4 (1) | - (0) | 3 (1) | - (0) | 2 (1) | - (0) |
| 526 | Pyrola asarifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 529 | Pyrola secunda | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 676 | Saxifraga arguta | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 538 | Senecio pseudaureus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 681 | Senecio streptanthifolius | 3 (1) | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 3 (1) |
| 539 | Senecio triangularis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 542 | Smilacina racemosa | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | 3 (0) | 3 (1) | 2 (1) | 3 (1) | - (0) | - (0) | 2 (1) |
| 543 | Smilacina stellata | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 1 (0) |
| 684 | Solidago multiradiata | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (2) | - (0) | - (0) | - (0) | 2 (1) | 1 (1) | 5 (1) | - (0) |
| 546 | Streptopus amplexifolius | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 547 | *Thalictrum occidentalis* | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (2) | - (0) | - (0) | - (0) | - (0) | + (3) |
| 563 | Trautvetteria caroliniensis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 560 | Trillium ovatum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 551 | Valeriana sitchensis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 552 | Veratrum viride | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | + (1) |
| 554 | Viola adunca | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 693 | Viola nuttallii | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (1) | - (0) | 2 (1) | - (0) | - (0) | 2 (1) | - (0) | + (3) |
| 557 | Viola orbiculata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 694 | Viola purpurea | - (0) | 3 (0) | 3 (1) | - (0) | 3 (1) | 2 (1) | 3 (0) | - (0) | 4 (1) | - (0) | - (0) | 3 (0) | 1 (1) |
| 558 | Xerophyllum tenax | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phrases.

PSEUDOTSUGA MENZIESII SERIES (con)

| ADP NUMBER | SPECIES | ARCO h.t. | | JUCO h.t. | CAGE h.t. | | | BERE h.t. | | | CARU h.t. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ASMI Phase | ARCO Phase | | SYOR Phase | CAGE Phase | PIPO Phase | SYOR Phase | BERE Phase | CAGE Phase | PIPO Phase | CARU Phase | FEID Phase |
| | | n= 6 | n=22 | n=13 | n=11 | n=14 | n=13 | n= 3 | n=13 | n= 5 | n=16 | n=31 | n= 2 |
| | TREES | | | | | | | | | | | | |
| 001 | Abies grandis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 002 | Abies lasiocarpa | - ( 0) | 1 (14) | - ( 0) | 1 (15) | 2 ( 1) | - ( 0) | 3 ( 0) | - ( 0) | 2 ( 0) | - ( 0) | 2 ( 1) | - ( 0) |
| 006 | Larix occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 007 | Picea engelmannii | 2 ( 1) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) |
| 009 | Pinus albicaulis | - ( 0) | 1 ( 1) | 1 ( 3) | 1 ( 1) | 1 ( 8) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) |
| 010 | Pinus contorta | - ( 0) | 1 (22) | 2 ( 9) | 2 ( 0) | 3 (16) | 1 ( 1) | - ( 0) | 1 (37) | - ( 0) | 4 (22) | 5 (20) | - ( 0) |
| 011 | Pinus flexilis | 7 (10) | 1 ( 6) | 5 ( 7) | 1 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 013 | Pinus ponderosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 10 (45) | - ( 0) | 4 ( 8) | 6 (22) | 10 (30) | - ( 0) | - ( 0) |
| 014 | Populus tremuloides | - ( 0) | + ( 1) | - ( 0) | 1 ( 3) | 1 ( 1) | - ( 0) | - ( 0) | 2 (13) | - ( 0) | 1 (19) | 4 ( 9) | - ( 0) |
| 016 | Pseudotsuga menziesii | 10 (50) | 10 (55) | 10 (60) | 10 (33) | 10 (48) | 8 (24) | 10 (40) | 10 (58) | 10 (52) | 8 (31) | 10 (47) | 10 (50) |
| | SHRUBS and SUBSHRUBS | | | | | | | | | | | | |
| 102 | Acer glabrum | 2 ( 0) | 2 ( 4) | 2 ( 1) | - ( 0) | 3 ( 4) | - ( 0) | - ( 0) | 3 ( 1) | 6 ( 0) | 1 ( 1) | 1 ( 2) | - ( 0) |
| 104 | Alnus sinuata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 105 | Amelanchier alnifolia | - ( 0) | 1 ( 5) | - ( 0) | 1 ( 1) | 1 ( 1) | 10 ( 4) | 7 ( 2) | 9 ( 6) | 6 ( 7) | 4 ( 5) | 1 ( 1) | - ( 0) |
| 201 | Arctstaphylos uva-ursi | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 (32) | + (37) | - ( 0) |
| 150 | Artemisia tridentata | 5 ( 1) | 1 ( 1) | 2 ( 5) | 6 (26) | 3 ( 1) | 2 ( 8) | 3 ( 1) | - ( 0) | 2 ( 1) | 1 ( 2) | 2 ( 4) | 5 (15) |
| 203 | Berberis repens | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 4) | 4 ( 1) | 5 ( 1) | 10 (31) | 10 (19) | 10 (24) | 6 ( 1) | 4 ( 3) | 10 ( 1) |
| 107 | Ceanothus velutinus | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 2) | 3 ( 3) | 1 ( 1) | - ( 0) | 1 (20) | 2 (25) | - ( 0) |
| 173 | Cercocarpus ledifolius | 2 ( 1) | 1 ( 2) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) |
| 204 | Clematis columbiana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) |
| 205 | Gaultheria humifusa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 111 | Holodiscus discolor | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 112 | Juniperus communis | 3 ( 0) | 5 ( 1) | 10 (24) | 1 ( 1) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 2) | 1 ( 0) | - ( 0) |
| 113 | Ledum glandulosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 206 | Linnaea borealis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 154 | Lonicera caerulea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 115 | Lonicera utahensis | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | + ( 1) | - ( 0) |
| 116 | Menziesia ferruginea | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 118 | Pachistima myrsinites | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 122 | Physocarpus malvaceus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | 1 ( 0) | - ( 0) |
| 124 | Prunus virginiana | 2 ( 3) | 1 ( 1) | - ( 0) | 2 (14) | 1 ( 2) | 5 ( 8) | 10 (33) | 4 (29) | 6 (18) | 6 ( 9) | - ( 0) | - ( 0) |
| 125 | Purshia tridentata | - ( 0) | - ( 0) | 2 ( 2) | 1 (15) | 1 ( 1) | 5 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 4 (12) | 1 ( 1) | - ( 0) |
| 128 | Ribes cereum | 7 ( 1) | 3 ( 3) | 5 ( 7) | 5 ( 1) | 5 ( 5) | 2 ( 7) | 7 ( 1) | 1 ( 1) | 2 ( 1) | 4 ( 1) | 3 ( 1) | 5 ( 1) |
| 130 | Ribes lacustre | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) |
| 159 | Ribes montigenum | 2 ( 1) | 1 ( 1) | 1 ( 1) | - ( 0) | 1 ( 8) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 131 | Ribes viscosissimum | - ( 0) | 1 ( 0) | 2 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 2) | - ( 0) |
| 133 | Rosa gymnocarpa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 2) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) |
| 161 | Rosa nutkana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 2 ( 5) | - ( 0) | - ( 0) |
| 134 | Rosa woodsii | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 3 (15) | 4 ( 1) | 2 ( 1) | 3 ( 1) | 1 ( 2) | - ( 0) |
| 136 | Rubus parviflorus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 137 | Salix scouleriana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 2 ( 0) | 3 ( 3) | 1 ( 0) | - ( 0) | 3 ( 2) | 2 ( 3) | - ( 0) |
| 139 | Sheperdia canadensis | 5 ( 1) | 3 ( 3) | 5 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 5) | 1 ( 0) | - ( 0) |
| 140 | Sorbus scopulina | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 3 ( 3) | 3 ( 2) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 142 | Spiraea betulifolia | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | 3 ( 2) | - ( 0) | - ( 0) | - ( 0) | 4 ( 3) | 3 ( 1) | 5 ( 3) |
| 162 | Spiraea pyramidata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 143 | Symphoricarpos albus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 2) | - ( 0) | - ( 0) | 2 ( 3) | 3 ( 2) | - ( 0) | - ( 0) |
| 163 | Symphoricarpos oreophilus | 7 ( 1) | 9 (10) | 8 ( 9) | 10 (21) | 9 ( 2) | 5 (10) | 10 (54) | 9 ( 7) | 8 ( 7) | 4 (14) | 9 ( 4) | 5 ( 1) |
| 144 | Taxus brevifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 145 | Vaccinium caespitosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) |
| 146 | Vaccinium globulare | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 148 | Vaccinium scoparium | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| | FERNS and FERN ALLIES | | | | | | | | | | | | |
| 253 | Cystopteris fragilis | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 2) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 254 | Equisetum arvense | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 259 | Pteridium aquilinum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| | GRAMINOIDS | | | | | | | | | | | | |
| 301 | Agropyron spicatum | 5 ( 1) | 2 ( 0) | - ( 0) | 9 ( 6) | 4 ( 2) | 4 ( 4) | - ( 0) | - ( 0) | 2 ( 3) | 5 ( 1) | 1 ( 1) | - ( 0) |
| 304 | Bromus vulgaris | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 3) | 1 (37) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 305 | Calamagrostis canadensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 307 | Calamagrostis rubescens | - ( 0) | 1 ( 3) | 1 ( 0) | 1 ( 1) | 5 ( 1) | 3 ( 2) | - ( 0) | 1 ( 3) | 4 ( 3) | 10 (34) | 10 (60) | 10 (26) |
| 308 | Carex concinnoides | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 0) | - ( 0) |
| 339 | Carex disperma | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 309 | Carex geyeri | - ( 0) | 2 ( 2) | 2 ( 1) | 10 (26) | 10 (24) | 10 (35) | 3 ( 3) | 7 (16) | 10 (43) | 8 (15) | 8 (11) | 10 ( 8) |
| 311 | Carex rossii | 2 ( 1) | 4 ( 0) | 4 ( 1) | 1 ( 1) | 6 ( 1) | 2 ( 1) | - ( 0) | 3 ( 1) | - ( 0) | 5 ( 1) | 2 ( 1) | 5 ( 1) |
| 316 | Elymus glaucus | - ( 0) | - ( 0) | 1 (37) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) |
| 317 | Festuca idahoensis | 5 (13) | 5 ( 4) | 3 ( 2) | 3 ( 6) | 1 ( 9) | 4 ( 1) | - ( 0) | - ( 0) | 2 ( 1) | 3 ( 8) | 3 ( 1) | 10 (15) |
| 348 | Hesperochloa kingii | 7 ( 1) | 3 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 322 | Juncus parryi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 323 | Koeleria cristata | - ( 0) | - ( 0) | - ( 0) | 1 ( 2) | 1 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 325 | Luzula hitchcockii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 349 | Melica bulbosa | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 1 ( 2) | 1 ( 1) | 3 ( 1) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 331 | Poa nervosa | 8 ( 1) | 6 ( 2) | 2 ( 1) | 9 ( 3) | 6 ( 2) | 6 ( 1) | - ( 0) | 2 ( 1) | 2 ( 1) | 5 ( 1) | 6 ( 3) | 10 ( 1) |
| 360 | Stipa occidentalis | - ( 0) | - ( 0) | - ( 0) | 2 ( 2) | 1 ( 1) | 2 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 1) | 1 ( 1) | - ( 0) |

*Code to constancy values:

| | | | | | |
|---|---|---|---|---|---|
| + = 0-5 % | 2 = 15-25% | 4 = 35-45% | 6 = 55-65% | 8 = 75-85% | 10 = 95-100% |
| 1 = 5-15% | 3 = 25-35% | 5 = 45-55% | 7 = 65-75% | 9 = 85-95% | |

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phrases.

| ADP NUMBER | SPECIES | PSEUDOTSUGA MENZIESII SERIES (con) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ARCO h.t. | | JUCO h.t. | CAGE h.t. | | | BERE h.t. | | | CARU h.t. | | |
| | | ASMI Phase | ARCO Phase | | SYOR Phase | CAGE Phase | PIPO Phase | SYOR Phase | BERE Phase | CAGE Phase | PIPO Phase | CARU Phase | FEID Phase |
| | | n= 6 | n=22 | n=13 | n=11 | n=14 | n=13 | n= 3 | n=13 | n= 5 | n=16 | n=31 | n= 2 |
| | FORBS | | | | | | | | | | | | |
| 401 | Achillaea millefollium | 3 ( 1) | 1 ( 1) | 3 ( 1) | 5 ( 1) | 5 ( 0) | 6 ( 1) | - ( 0) | 2 ( 1) | 4 ( 1) | 7 ( 1) | 5 ( 2) | - ( 0) |
| 402 | Actaea rubra | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 565 | Aconitum columbianum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 403 | Adenocaulon bicolor | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 738 | Antennaria corymbosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 414 | Antennaria microphylla | 8 ( 2) | 3 ( 1) | 3 ( 2) | 2 ( 1) | 4 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 5 ( 1) | 4 ( 1) | 5 ( 1) |
| 413 | Antennaria racemosa | - ( 0) | 2 ( 8) | 2 (19) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | 2 ( 3) | - ( 0) |
| 577 | Arenaria aculeata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 420 | Arenaria macrophylla | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 3) | 2 ( 1) | 3 ( 1) | 3 ( 1) | 2 ( 1) | 4 ( 1) | 1 ( 1) | - ( 0) |
| 421 | Arnica cordifolia | 3 ( 2) | 10 (18) | 7 (14) | 4 ( 4) | 5 (17) | 5 ( 5) | - ( 0) | 6 ( 6) | 6 ( 2) | 6 ( 8) | 7 (16) | 5 ( 3) |
| 422 | Arnica latifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 426 | Aster conspicuus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 3) | 3 ( 1) | 4 ( 1) | 1 (37) | 1 ( 2) | - ( 0) |
| 582 | Aster engelmannii | - ( 0) | + ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 430 | Astragalus miser | 8 (31) | 3 ( 8) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 (15) | - ( 0) | - ( 0) |
| 431 | *Balsamorhiza sagittata* | 2 ( 1) | 1 ( 1) | - ( 0) | 4 ( 7) | 1 (19) | 5 ( 4) | 3 ( 1) | 2 ( 1) | 2 ( 1) | 3 ( 0) | 2 ( 2) | - ( 0) |
| 696 | Caltha biflora | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 741 | Castilleja covilleana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 438 | Castilleja miniata | - ( 0) | 1 ( 1) | 2 ( 1) | 1 ( 1) | 1 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) |
| 595 | Chaenactis douglasii | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 442 | Chimaphila umbellata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 447 | Clintonia uniflora | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 449 | Coptis occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 602 | Crepis accuminata | - ( 0) | 2 ( 0) | - ( 0) | 3 ( 1) | 1 ( 1) | 4 ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | 1 ( 2) | - ( 0) |
| 458 | Dodecatheon jeffreyi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 455 | Disporum trachycarpum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | 1 ( 0) | - ( 0) | - ( 0) |
| 459 | Epilobium angustifolium | - ( 0) | 3 ( 1) | 2 ( 1) | 2 ( 1) | 1 ( 1) | 1 ( 1) | 3 ( 0) | - ( 0) | 1 ( 0) | 5 ( 1) | 4 ( 2) | - ( 0) |
| 465 | Fragaria vesca | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 ( 1) | - ( 0) | - ( 0) | 4 ( 9) | 3 ( 5) | 1 ( 1) | - ( 0) |
| 466 | Fragaria virginia | - ( 0) | + ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 5 ( 6) | 1 ( 0) | - ( 0) |
| 471 | Galium triflorum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 (15) | - ( 0) | 2 ( 3) | - ( 0) | - ( 0) | - ( 0) |
| 620 | Geranium richardsonii | - ( 0) | + ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 473 | Geranium viscosissimum | - ( 0) | + ( 1) | 1 ( 1) | 4 ( 1) | - ( 0) | 4 ( 1) | 3 ( 1) | 3 ( 4) | 8 ( 4) | 5 ( 3) | 1 ( 0) | 5 ( 1) |
| 474 | Geum triflorum | 2 ( 1) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 5 ( 1) |
| 476 | Goodyera oblongifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 5 ( 1) |
| 484 | Hieracium albiflorum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | 2 ( 1) | 2 ( 1) | + ( 1) | - ( 0) |
| 486 | Hieracium gracile | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 636 | Lathyrus nevadensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 489 | Ligusticum canbyi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 490 | Ligusticum tenuifolium | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 497 | Lomatium dissectum | - ( 0) | - ( 0) | - ( 0) | 1 ( 8) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 641 | Lupinus argenteus | - ( 0) | + ( 1) | - ( 0) | 1 ( 1) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | + ( 1) | - ( 0) |
| 642 | *Lupinus polyphyllus* | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 649 | Mitella pentandra | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 502 | Mitella stauropetala | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 505 | Osmorhiza chilensis | - ( 0) | + ( 1) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 3) | 3 ( 3) | 7 ( 2) | 6 ( 1) | 3 ( 1) | 1 ( 1) | - ( 0) |
| 653 | Osmorhiza depauperata | - ( 0) | + ( 1) | - ( 0) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | 1 ( 9) | - ( 0) | - ( 0) | + ( 1) | - ( 0) |
| 507 | Pedicularis bracteosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 509 | Pedicularis racemosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 514 | Penstemon wilcoxii | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 4 ( 1) | 7 ( 2) | 4 ( 2) | 6 ( 1) | 4 ( 1) | 1 ( 1) | - ( 0) |
| 663 | Phacelia hastata | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | 2 ( 0) | 3 ( 1) | - ( 0) | 2 ( 1) | - ( 0) | 1 ( 1) | - ( 0) |
| 669 | Potentilla diversifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 521 | Potentilla flabellifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 670 | Potentilla gracilis | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 (15) | 1 ( 0) | - ( 0) |
| 526 | Pyrola asarifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 529 | Pyrola secunda | - ( 0) | 2 ( 2) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 676 | Saxifraga arguta | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 538 | Senecio pseudaureus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 681 | Senecio streptanthifolius | 8 ( 1) | 8 ( 1) | 6 ( 4) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 3) | - ( 0) |
| 539 | Senecio triangularis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 542 | Smilacina racemosa | - ( 0) | 1 ( 1) | 1 ( 1) | 1 ( 1) | 4 ( 1) | 4 ( 8) | 3 ( 1) | 7 ( 8) | 6 ( 5) | 4 ( 1) | 3 ( 1) | - ( 0) |
| 543 | Smilacina stellata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 3) | 1 ( 3) | 2 ( 1) | 1 ( 1) | - ( 0) | - ( 0) |
| 684 | Solidago multiradiata | - ( 0) | 3 ( 1) | 5 ( 5) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | + ( 1) | - ( 0) |
| 546 | Streptopus amplexifolius | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 547 | Thalictrum occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 2) | 2 ( 1) | 3 ( 3) | 6 (13) | 8 (10) | 4 ( 1) | 2 ( 4) | - ( 0) |
| 563 | Trautvetteria caroliniensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 560 | Trillium ovatum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 551 | Valeriana sitchensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 552 | Veratrum viride | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 554 | Viola adunca | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | 2 ( 1) | 2 ( 1) | 3 ( 1) | 1 ( 1) | - ( 0) |
| 693 | Viola nuttallii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 2 ( 1) | 3 ( 1) | 1 ( 1) | - ( 0) | 1 ( 0) | + ( 1) | - ( 0) |
| 557 | Viola orbiculata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 694 | Viola purpurea | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 2 ( 1) | 2 ( 1) | 3 (15) | 1 ( 2) | - ( 0) | 3 ( 0) | 1 ( 1) | - ( 0) |
| 558 | Xerophyllum tenax | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) |

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | PSEUDOTSUGA MENZIESII SERIES (con) | | | | | | | | | | PIEN SERIES | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OSCH h.t. | SPBE h.t. | | | SYAL h.t. | | ACGL h.t. | | PHMA h.t. | | CADI h.t | HYRE h.t. |
| | | | CARU Phase | SPBE Phase | PIPO Phase | SYAL Phase | PIPO Phase | SYOR Phase | ACGL Phase | PSME Phase | PIPO Phase | | |
| | TREES | n= 7 | n= 5 | n= 9 | n=25 | n= 3 | n=20 | n= 5 | n= 8 | n=13 | n=27 | n= 7 | n= 5 |
| 001 | Abies grandis | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | 1 ( 3) | - ( 0) | - ( 0) |
| 002 | Abies lasiocarpa | - ( 0) | - ( 0) | 2 ( 1) | + ( 3) | 3 ( 1) | - ( 0) | - ( 0) | 2 ( 3) | - ( 0) | 1 ( 1) | 7 ( 5) | - ( 0) |
| 006 | Larix occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 007 | Picea engelmannii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 10 (72) | 10 (24) |
| 009 | Pinus albicaulis | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 010 | Pinus contorta | - ( 0) | 6 ( 6) | 2 ( 9) | + ( 3) | - ( 0) | 2 (10) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 8) | - ( 0) |
| 011 | Pinus flexilis | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 8 ( 5) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 10 ( 4) |
| 013 | Pinus ponderosa | 1 (63) | - ( 0) | - ( 0) | 10 (27) | - ( 0) | 10 (30) | - ( 0) | 5 (18) | - ( 0) | 9 (19) | - ( 0) | - ( 0) |
| 014 | Populus tremuloides | - ( 0) | - ( 0) | - ( 0) | 1 (19) | - ( 0) | 2 ( 6) | - ( 0) | 2 (26) | - ( 0) | + ( 0) | 3 ( 1) | - ( 0) |
| 016 | Pseudotsuga menziesii | 10 (48) | 10 (43) | 10 (66) | 10 (30) | 10 (38) | 10 (51) | 10 (62) | 10 (48) | 10 (51) | 10 (46) | 1 ( 1) | 10 (57) |
| | SHRUBS and SUBSHRUBS | | | | | | | | | | | | |
| 102 | Acer glabrum | 3 ( 2) | 2 ( 1) | 4 ( 5) | 3 ( 2) | 3 (15) | 1 ( 1) | 10 (13) | 10 (17) | 4 ( 2) | 5 ( 6) | - ( 0) | 2 ( 1) |
| 104 | Alnus sinuata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 105 | Amelanchier alnifolia | 6 ( 8) | 4 ( 1) | 7 ( 4) | 10 ( 4) | 3 ( 1) | 8 ( 6) | 2 ( 1) | 10 (14) | 8 ( 4) | 10 ( 4) | - ( 0) | - ( 0) |
| 201 | Arctstaphylos uva-ursi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 (38) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 150 | Artemisia tridentata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | + ( 1) | - ( 0) | - ( 0) |
| 203 | Berberis repens | 6 (11) | 6 ( 1) | 7 (12) | 7 ( 1) | 10 ( 6) | 6 ( 2) | 1 ( 1) | 9 ( 4) | 5 ( 3) | 7 ( 4) | - ( 0) | - ( 0) |
| 107 | Ceanothus velutinus | 1 ( 3) | - ( 0) | - ( 0) | 5 ( 3) | - ( 0) | 2 ( 7) | - ( 0) | - ( 0) | 5 ( 2) | 3 ( 3) | - ( 0) | - ( 0) |
| 173 | Cercocarpus ledifolius | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 3) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 204 | Clematis columbiana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 ( 6) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) |
| 205 | Gaultheria humifusa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 111 | Holodiscus discolor | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) | - ( 0) |
| 112 | Juniperus communis | - ( 0) | 2 ( 0) | 2 ( 9) | - ( 0) | - ( 0) | - ( 0) | 6 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 3) |
| 113 | Ledum glandulosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 4 ( 0) | - ( 0) |
| 206 | Linnaea borealis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 (15) | - ( 0) |
| 154 | Lonicera caerulea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 115 | Lonicera utahensis | - ( 0) | 2 ( 0) | - ( 0) | 2 ( 2) | 3 ( 1) | 1 ( 1) | - ( 0) | 4 ( 1) | - ( 0) | 2 ( 2) | 3 ( 1) | - ( 0) |
| 116 | Menziesia ferruginea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 118 | Pachistima myrsinites | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 122 | Physocarpus malvaceus | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | 2 ( 2) | - ( 0) | - ( 0) | 10 (58) | 10 (56) | - ( 0) | - ( 0) |
| 124 | Prunus virginiana | 1 (63) | - ( 0) | 4 ( 8) | 4 ( 5) | 3 (15) | 5 ( 3) | 2 (37) | 5 ( 1) | 5 ( 3) | 3 ( 2) | - ( 0) | - ( 0) |
| 125 | Purshia tridentata | - ( 0) | - ( 0) | 2 ( 1) | 2 (11) | - ( 0) | 2 ( 8) | - ( 0) | - ( 0) | 3 ( 1) | 1 ( 1) | - ( 0) | - ( 0) |
| 128 | Ribes cereum | 1 ( 1) | 6 ( 1) | 6 ( 3) | + ( 1) | 7 ( 2) | 3 ( 8) | 10 ( 3) | 4 ( 1) | 3 ( 2) | - ( 0) | - ( 0) | - ( 0) |
| 130 | Ribes lacustre | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 7 (10) | - ( 0) |
| 159 | Ribes montigenum | - ( 0) | 2 ( 3) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 (15) | 4 ( 8) |
| 131 | Ribes viscosissimum | - ( 0) | 4 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 2 ( 1) | 1 ( 3) | 1 ( 3) | - ( 0) | - ( 0) |
| 133 | Rosa gymnocarpa | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | 1 ( 2) | - ( 0) | - ( 0) | - ( 0) | 4 ( 2) | 1 ( 1) | - ( 0) |
| 161 | Rosa nutkana | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 4) | 2 ( 1) | - ( 0) | - ( 0) | 1 ( 6) | - ( 0) | - ( 0) |
| 134 | Rosa woodsii | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | 4 ( 2) | - ( 0) | - ( 0) | 2 ( 1) | 1 ( 2) | - ( 0) | - ( 0) |
| 136 | Rubus parviflorus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 4 ( 9) | - ( 0) | 2 ( 6) | 3 ( 2) | - ( 0) |
| 137 | Salix scouleriana | 1 ( 1) | - ( 0) | - ( 0) | 5 ( 3) | 3 ( 1) | 2 ( 3) | - ( 0) | 1 ( 3) | 2 ( 1) | 3 ( 6) | - ( 0) | - ( 0) |
| 139 | Sheperdia canadensis | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | 6 ( 5) | - ( 0) | 1 ( 0) | + ( 3) | - ( 0) | 6 ( 1) |
| 140 | Sorbus scopulina | - ( 0) | - ( 0) | 2 ( 1) | 2 ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 4 ( 6) | - ( 0) | 3 ( 0) | - ( 0) | - ( 0) |
| 142 | Spiraea betulifolia | 1 ( 1) | 10 (24) | 9 (47) | 9 (36) | 3 ( 3) | 8 (31) | - ( 0) | 2 ( 3) | 4 (17) | 10 (14) | - ( 0) | - ( 0) |
| 162 | Spiraea pyramidata | - ( 0) | - ( 0) | 1 (85) | 2 (32) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 143 | Symphoricarpos albus | - ( 0) | - ( 0) | - ( 0) | 2 ( 2) | 10 (11) | 10 (41) | - ( 0) | 1 (15) | 2 (20) | 6 (11) | - ( 0) | - ( 0) |
| 163 | Symphoricarpos oreophilus | 6 (10) | 10 ( 7) | 10 (11) | 6 ( 5) | 7 ( 2) | 4 ( 2) | 10 (12) | 8 ( 1) | 7 ( 5) | 3 ( 2) | - ( 0) | 6 ( 1) |
| 144 | Taxus brevifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 145 | Vaccinium caespitosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 146 | Vaccinium globulare | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 (15) | - ( 0) | 1 (29) | - ( 0) | - ( 0) |
| 148 | Vaccinium scoparium | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) |
| | FERNS and FERN ALLIES | | | | | | | | | | | | |
| 253 | Cystopteris fragilis | - ( 0) | - ( 0) | 1 ( 1) | 3 ( 0) | - ( 0) | 2 ( 0) | - ( 0) | 1 ( 3) | 5 ( 3) | 3 ( 1) | - ( 0) | - ( 0) |
| 254 | Equisetum arvense | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 7 ( 1) | - ( 0) |
| 259 | Pteridium aquilinum | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| | GRAMINOIDS | | | | | | | | | | | | |
| 301 | Agropyron spicatum | - ( 0) | 2 ( 1) | 3 ( 7) | 2 ( 4) | 3 ( 1) | 4 ( 2) | 4 ( 2) | 1 ( 1) | 3 ( 1) | + ( 3) | - ( 0) | - ( 0) |
| 304 | Bromus vulgaris | - ( 0) | - ( 0) | 1 ( 3) | 1 ( 1) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) |
| 305 | Calamagrostis canadensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 7 ( 5) | - ( 0) |
| 307 | Calamagrostis rubescens | 1 (63) | 10 (80) | 3 ( 3) | 6 (34) | 10 (26) | 8 (26) | - ( 0) | - ( 0) | 2 ( 2) | 6 ( 8) | 1 ( 3) | - ( 0) |
| 308 | Carex concinnoides | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 339 | Carex disperma | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 10 (33) | - ( 0) |
| 309 | Carex geyeri | 9 (15) | 8 ( 1) | 6 (21) | 8 (11) | 7 ( 9) | 9 (19) | - ( 0) | 7 (14) | 3 ( 2) | 7 (16) | 1 ( 1) | - ( 0) |
| 311 | Carex rossii | 3 ( 0) | - ( 0) | 1 ( 1) | 3 ( 1) | - ( 0) | 4 ( 1) | 2 ( 1) | 1 ( 1) | 4 ( 1) | 1 ( 1) | - ( 0) | - ( 0) |
| 316 | Elymus glaucus | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 2 ( 1) | - ( 0) | 1 ( 1) | 1 ( 1) | 1 ( 1) | 1 ( 1) | - ( 0) |
| 317 | Festuca idahoensis | - ( 0) | 2 ( 1) | 2 ( 2) | 1 ( 1) | 3 ( 3) | 4 ( 1) | - ( 0) | - ( 0) | 2 ( 2) | + ( 1) | - ( 0) | 4 ( 1) |
| 348 | Hesperochloa kingii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 322 | Juncus parryi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 323 | Koeleria cristata | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 325 | Luzula hitchcockii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 349 | Melica bulbosa | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | 1 ( 0) | + ( 1) | - ( 0) | - ( 0) |
| 331 | Poa nervosa | 3 ( 1) | 10 ( 1) | 6 ( 1) | 4 ( 1) | - ( 0) | 2 ( 1) | 6 ( 1) | 4 ( 1) | 4 ( 1) | 3 ( 1) | - ( 0) | 2 ( 1) |
| 360 | Stipa occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |

* Code to constancy values:

+ = 0-5 %  1 = 5-15%  2 = 15-25%  3 = 25-35%  4 = 35-45%  5 = 45-55%  6 = 55-65%  7 = 65-75%  8 = 75-85%  9 = 85-95%  10 = 95-100%

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | PSEUDOTSUGA MENZIESII SERIES (con) OSCH h.t. | SPBE h.t. CARU Phase | SPBE h.t. SPBE Phase | SPBE h.t. PIPO Phase | SYAL h.t. SYAL Phase | SYAL h.t. PIPO Phase | ACGL h.t. SYOR Phase | ACGL h.t. ACGL Phase | PHMA h.t. PSME Phase | PHMA h.t. PIPO Phase | PIEN SERIES (con) CADI h.t. | PIEN SERIES (con) HYRE h.t. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n= 7 | n= 5 | n= 9 | n=25 | n= 3 | n=20 | n= 5 | n= 8 | n=13 | n=27 | n= 7 | n= 5 |
| | FORBS | | | | | | | | | | | | |
| 401 | Achillaea millefollium | 3 ( 1) | 6 ( 1) | 4 ( 1) | 5 ( 1) | 7 ( 1) | 7 ( 1) | 2 ( 1) | - ( 0) | 2 ( 1) | 3 ( 1) | - ( 0) | 2 ( 1) |
| 402 | Actaea rubra | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 7 ( 4) | - ( 0) |
| 565 | Aconitum columbianum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 403 | Adenocaulon bicolor | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | + ( 3) | - ( 0) | - ( 0) |
| 738 | Antennaria corymbosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 414 | Antennaria microphylla | - ( 0) | 8 ( 1) | 2 ( 2) | 2 ( 0) | - ( 0) | 3 ( 0) | 6 ( 1) | - ( 0) | 1 ( 1) | 1 ( 0) | - ( 0) | 4 ( 1) |
| 413 | Antennaria racemosa | - ( 0) | 2 ( 1) | 6 ( 2) | 3 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 2 ( 1) | 1 ( 0) | 1 (18) | - ( 0) | - ( 0) |
| 577 | Arenaria aculeata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 420 | Arenaria macrophylla | 7 ( 8) | - ( 0) | 2 ( 1) | 7 ( 3) | - ( 0) | 6 ( 1) | - ( 0) | 8 ( 2) | 2 (14) | 8 ( 1) | - ( 0) | - ( 0) |
| 421 | Arnica cordifolia | 6 ( 4) | 8 (23) | 4 ( 6) | 8 ( 9) | 7 ( 3) | 6 (13) | 6 (12) | 9 ( 7) | 8 ( 4) | 9 (10) | 7 ( 2) | 8 ( 1) |
| 422 | Arnica latifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 426 | Aster conspicuus | 3 ( 8) | 2 ( 1) | 1 ( 1) | 4 ( 3) | 3 ( 3) | 3 ( 2) | - ( 0) | 6 ( 1) | 5 (10) | 4 ( 1) | - ( 0) | - ( 0) |
| 582 | Aster engelmannii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 430 | Astragalus miser | - ( 0) | - ( 0) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | 2 (63) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 4 ( 1) |
| 431 | Balsamorhiza sagittata | 3 ( 0) | 2 ( 1) | 6 ( 4) | 3 ( 1) | 7 ( 1) | 3 ( 3) | 2 ( 1) | - ( 0) | 2 ( 1) | 1 ( 1) | - ( 0) | - ( 0) |
| 696 | Caltha biflora | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 741 | Castilleja covilleana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | - ( 0) |
| 438 | Castilleja miniata | - ( 0) | 4 ( 1) | 3 ( 1) | 1 ( 0) | 3 ( 1) | 1 ( 1) | 6 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 595 | Chaenactis douglasii | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 442 | Chimaphila umbellata | - ( 0) | 2 ( 1) | - ( 0) | 3 ( 3) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 447 | Clintonia uniflora | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 449 | Coptis occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 602 | Crepis accuminata | - ( 0) | - ( 0) | - ( 0) | + ( 1) | 3 ( 1) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 458 | Dodecatheon jeffreyi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 455 | Disporum trachycarpum | - ( 0) | - ( 0) | - ( 0) | + ( 1) | 3 ( 1) | 2 ( 1) | 2 ( 1) | 4 ( 1) | 2 ( 2) | 3 ( 1) | - ( 0) | - ( 0) |
| 459 | Epilobium angustifolium | 1 (15) | 2 ( 0) | 1 ( 3) | 3 ( 1) | 3 ( 1) | 4 ( 2) | 2 ( 1) | 1 ( 1) | 2 ( 0) | 3 ( 0) | 9 ( 1) | 2 ( 1) |
| 465 | Fragaria vesca | - ( 0) | 4 ( 2) | 1 (15) | 5 ( 5) | 3 ( 3) | 7 ( 4) | - ( 0) | 4 (14) | 2 ( 2) | 6 ( 4) | 1 ( 1) | - ( 0) |
| 466 | Fragaria virginiana | - ( 0) | 2 ( 1) | 2 ( 8) | 1 ( 1) | - ( 0) | 3 ( 4) | - ( 0) | - ( 0) | 1 ( 1) | + ( 3) | 4 ( 1) | - ( 0) |
| 471 | Galium triflorum | 1 ( 1) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | 1 ( 2) | - ( 0) | 2 ( 1) | 2 ( 0) | 3 ( 5) | 7 ( 4) | - ( 0) |
| 620 | Geranium richardsonii | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 473 | Geranium viscosissimum | 3 ( 2) | - ( 0) | 1 ( 3) | 5 ( 3) | - ( 0) | 4 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 0) | - ( 0) | - ( 0) |
| 474 | Geum triflorum | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | 3 ( 3) | 1 ( 1) | 4 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 476 | Goodyera oblongifolia | - ( 0) | 2 ( 1) | 1 ( 1) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) |
| 484 | Hieracium albiflorum | 1 ( 1) | - ( 0) | 2 ( 3) | 4 ( 1) | - ( 0) | 2 ( 1) | 2 ( 1) | 2 ( 1) | - ( 0) | 5 ( 1) | - ( 0) | - ( 0) |
| 486 | Hieracium gracile | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 636 | Lathyrus nevadensis | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 2 ( 5) | - ( 0) | - ( 0) | - ( 0) | 2 ( 4) | - ( 0) | - ( 0) |
| 489 | Ligusticum canbyi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 490 | Ligusticum tenuifolium | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 497 | Lomatium dissectum | 1 ( 1) | - ( 0) | 2 ( 1) | 1 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 641 | Lupinus argenteus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 642 | Lupinus polyphyllus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 649 | Mitella pentandra | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 2) | - ( 0) |
| 502 | Mitella stauropetala | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | - ( 0) | - ( 0) |
| 505 | Osmorhiza chilensis | 10 (21) | - ( 0) | 1 ( 1) | 2 ( 1) | 3 ( 1) | 2 ( 4) | - ( 0) | 6 ( 2) | 2 ( 3) | 4 ( 1) | 4 ( 1) | - ( 0) |
| 653 | Osmorhiza depauperata | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | 6 ( 1) | - ( 0) |
| 507 | Pedicularis bracteosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | - ( 0) |
| 509 | Pedicularis racemosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 514 | Penstemon wilcoxii | 3 ( 1) | 4 ( 1) | - ( 0) | 4 ( 1) | 7 ( 0) | 3 ( 1) | - ( 0) | 8 ( 1) | 3 ( 1) | 3 ( 0) | - ( 0) | - ( 0) |
| 663 | Phacelia hastata | - ( 0) | - ( 0) | - ( 0) | + ( 1) | 3 ( 1) | 1 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 669 | Potentilla diversifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 521 | Potentilla flabellifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 670 | Potentilla gracilis | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 526 | Pyrola asarifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 1) | - ( 0) |
| 529 | Pyrola secunda | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 2) | - ( 0) | 1 ( 1) | 2 ( 1) | 1 ( 3) | 1 ( 0) | 1 ( 2) | 10 ( 4) | 6 ( 1) |
| 676 | Saxifraga arguta | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 7 ( 8) | - ( 0) |
| 538 | Senecio pseudaureus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 681 | Senecio streptanthifolius | - ( 0) | - ( 0) | 2 ( 2) | - ( 0) | - ( 0) | - ( 0) | 10 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 1) |
| 539 | Senecio triangularis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 7 ( 8) | - ( 0) |
| 542 | Smilacina racemosa | 7 ( 8) | 4 ( 1) | 3 ( 2) | 6 ( 2) | 10 ( 5) | 6 ( 3) | 2 ( 3) | 9 ( 8) | 6 ( 4) | 9 ( 1) | - ( 0) | - ( 0) |
| 543 | Smilacina stellata | - ( 0) | - ( 0) | - ( 0) | + ( 1) | 3 ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 2 ( 2) | 1 ( 2) | 4 ( 2) | - ( 0) |
| 684 | Solidago multiradiata | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 3 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 546 | Streptopus amplexifolius | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 4 ( 1) | - ( 0) |
| 547 | Thalictrum occidentalis | 3 ( 1) | - ( 0) | 1 (15) | 2 ( 1) | 7 (20) | 4 ( 6) | - ( 0) | 6 (25) | 1 ( 1) | 4 ( 6) | 6 (10) | - ( 0) |
| 563 | Trautvetteria caroliniensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 560 | Trillium ovatum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) |
| 551 | Valeriana sitchensis | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 (15) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 552 | Veratrum viride | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 554 | Viola adunca | - ( 0) | - ( 0) | - ( 0) | + ( 0) | - ( 0) | 4 ( 1) | - ( 0) | 2 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 693 | Viola nuttallii | 4 ( 1) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 557 | Viola orbiculata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 694 | Viola purpurea | - ( 0) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | + ( 1) | - ( 0) | - ( 0) |
| 558 | Xerophyllum tenax | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |

APPENDIX C-1 (con)

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | ABIES GRANDIS SERIES | | | | | | | | | ABIES LASIOCARPA SERIES | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CARU h.t | SPBE h.t | VAGL h.t | ACGL h.t. | | LIBO h.t. | | VACA h.t. | CLUN h.t. | CABI h.t. | CACA h.t. | | | |
| | | | | | PHMA Phase | ACGL Phase | VAGL Phase | LIBO Phase | | | | CACA Phase | VACA Phase | LICA Phase | LEGL Phase |
| | | n= 7 | n= 8 | n=12 | n=12 | n=14 | n= 4 | n= 4 | n= 8 | n=15 | n= 8 | n= 7 | n= 8 | n=14 | n=11 |
| | TREES | | | | | | | | | | | | | | |
| 001 | Abies grandis | 10 (41) | 10 (40) | 10 (44) | 10 (44) | 10 (65) | 10 (44) | 10 (51) | 10 (14) | 10 (47) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 2 ( 1) |
| 002 | Abies lasiocarpa | 1 ( 1) | - ( 0) | 6 (16) | 1 (37) | 1 ( 3) | 3 (37) | - ( 0) | 8 ( 3) | 1 (15) | 10 (37) | 9 (10) | 9 (21) | 10 (35) | 9 (35) |
| 006 | Larix occidentalis | - ( 0) | 3 ( 2) | 3 (15) | 2 ( 2) | 1 ( 8) | - ( 0) | 3 ( 0) | 3 ( 8) | 5 ( 9) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 007 | Picea engelmannii | 1 ( 1) | 1 ( 1) | 7 (20) | 1 (15) | 1 ( 3) | 10 (14) | 3 ( 1) | 5 ( 1) | 9 (27) | 10 (34) | 10 (33) | 10 ( 8) | 10 (33) | 10 (30) |
| 009 | Pinus albicaulis | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) |
| 010 | Pinus contorta | 6 (13) | - ( 0) | 7 (15) | 1 ( 0) | - ( 0) | 5 ( 3) | 5 ( 1) | 10 (44) | 2 ( 5) | 4 ( 2) | 9 (25) | 10 (38) | 7 (16) | 8 ( 9) |
| 011 | Pinus flexilis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 013 | Pinus ponderosa | 7 ( 7) | 9 (26) | 3 ( 7) | 6 (16) | 5 (12) | 5 ( 2) | 5 (19) | 1 (15) | 4 ( 9) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 014 | Populus tremuloides | - ( 0) | 3 ( 9) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 (11) | - ( 0) | 1 ( 3) | - ( 0) | 3 (20) | 1 ( 0) | - ( 0) |
| 016 | Pseudotsuga menziesii | 10 (26) | 10 (17) | 7 (31) | 10 (21) | 9 (16) | 8 ( 3) | 8 (18) | 9 (13) | 8 (19) | - ( 0) | 1 ( 1) | 1 ( 1) | 1 ( 1) | 4 ( 1) |
| | SHRUBS and SUBSHRUBS | | | | | | | | | | | | | | |
| 102 | Acer glabrum | - ( 0) | 4 ( 1) | 2 ( 2) | 5 ( 2) | 10 (21) | 5 ( 1) | 5 ( 3) | - ( 0) | 5 (16) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 104 | Alnus sinuata | - ( 0) | - ( 0) | 2 (15) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | 2 (23) | 3 ( 2) | 1 ( 1) | - ( 0) | 1 ( 3) | 1 ( 3) |
| 105 | Amelanchier alnifolia | 7 ( 3) | 6 ( 2) | 8 ( 2) | 7 ( 3) | 8 ( 7) | 10 ( 1) | 10 ( 5) | 5 ( 2) | 9 ( 3) | - ( 0) | 1 ( 1) | 1 ( 3) | 3 ( 5) | - ( 0) |
| 201 | Arctstaphylos uva-ursi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 150 | Artemisia tridentata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 203 | Berberis repens | 3 ( 1) | 3 ( 2) | 2 ( 1) | 5 ( 1) | 2 ( 0) | 3 ( 1) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 107 | Ceanothus velutinus | 3 ( 2) | 5 ( 1) | 1 ( 3) | 6 ( 4) | 1 ( 1) | 5 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 173 | Cercocarpus ledifolius | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 204 | Clematis columbiana | - ( 0) | 1 ( 3) | 2 ( 1) | 2 ( 1) | 2 ( 1) | 3 ( 3) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 205 | Gaultheria humifusa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | 1 ( 1) | 1 ( 0) | 5 ( 7) |
| 111 | Holodiscus discolor | 1 ( 1) | - ( 0) | - ( 0) | 2 ( 2) | 1 ( 8) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 112 | Juniperus communis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 0) |
| 113 | Ledum glandulosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 ( 8) | - ( 0) | 3 ( 1) | - ( 0) | 10 (47) |
| 206 | Linnaea borealis | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 10 (41) | 10 (15) | 1 ( 1) | 6 (17) | - ( 0) | - ( 0) | 3 ( 8) | 1 ( 8) | 3 (18) |
| 154 | Lonicera caerulea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 3 ( 2) | 8 ( 4) | - ( 0) | 2 ( 1) |
| 115 | Lonicera utahensis | 6 ( 1) | 4 (14) | 10 ( 9) | 7 ( 8) | 7 ( 5) | 10 ( 5) | 8 ( 3) | 8 ( 2) | 10 ( 9) | 3 ( 8) | 1 ( 3) | 1 ( 1) | 6 ( 3) | 5 ( 1) |
| 116 | Menziesia ferruginea | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 (85) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | 2 (31) |
| 118 | Pachistima myrsinites | - ( 0) | - ( 0) | 1 ( 3) | 2 (50) | - ( 0) | - ( 0) | 3 ( 3) | 1 ( 1) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 122 | Physocarpus malvaceus | - ( 0) | - ( 0) | 2 ( 2) | 10 (25) | 7 (10) | 3 ( 1) | 5 ( 8) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 124 | Prunus virginiana | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | 3 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 125 | Purshia tridentata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 128 | Ribes cereum | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 130 | Ribes lacustre | - ( 0) | 1 ( 1) | 2 ( 1) | 2 ( 2) | 2 ( 1) | 5 ( 2) | 3 ( 1) | - ( 0) | 6 ( 4) | 4 ( 2) | 7 ( 1) | 1 ( 0) | 5 ( 1) | 2 ( 8) |
| 159 | Ribes montigenum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) |
| 131 | Ribes viscosissimum | 1 ( 0) | 1 ( 1) | 3 ( 2) | 3 ( 1) | 5 ( 1) | 5 ( 2) | - ( 0) | - ( 0) | 5 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 133 | Rosa gymnocarpa | 3 ( 1) | 8 ( 5) | 7 ( 1) | 9 ( 4) | 9 ( 2) | 10 ( 2) | 10 ( 2) | 1 ( 3) | 9 ( 3) | - ( 0) | - ( 0) | 1 ( 3) | 1 ( 1) | - ( 0) |
| 161 | Rosa nutkana | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 134 | Rosa woodsii | - ( 0) | 1 ( 1) | 2 ( 1) | - ( 0) | 1 ( 1) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) |
| 136 | Rubus parviflorus | 1 ( 1) | 3 ( 1) | 5 ( 2) | 6 ( 6) | 6 ( 5) | 8 ( 1) | 5 ( 2) | - ( 0) | 9 ( 4) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) |
| 137 | Salix scouleriana | 6 ( 2) | 8 ( 1) | 5 ( 4) | 7 (10) | 3 ( 1) | 3 ( 1) | 3 ( 1) | - ( 0) | 4 ( 1) | - ( 0) | 3 ( 2) | - ( 0) | 1 ( 2) | 1 ( 0) |
| 139 | Sheperdia canadensis | - ( 0) | - ( 0) | 3 ( 1) | 1 ( 1) | - ( 0) | 3 ( 3) | - ( 0) | 1 ( 3) | 1 ( 3) | - ( 0) | - ( 0) | + ( 1) | - ( 0) | 3 ( 2) |
| 140 | Sorbus scopulina | 3 ( 1) | 1 ( 3) | 6 ( 2) | 3 ( 1) | 6 ( 4) | 3 ( 1) | 5 ( 1) | 6 ( 1) | 8 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 6 ( 0) | - ( 0) |
| 142 | Spiraea betulifolia | 9 ( 2) | 8 (20) | 8 ( 4) | 8 (10) | 6 ( 4) | 10 ( 1) | 8 ( 1) | 5 ( 2) | 5 ( 5) | - ( 0) | - ( 0) | - ( 0) | 1 ( 2) | 1 ( 1) |
| 162 | Spiraea pyramidata | - ( 0) | 3 (39) | - ( 0) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | 1 (15) | - ( 0) | - ( 0) | - ( 0) | 3 (19) | - ( 0) | 2 ( 2) |
| 143 | Symphoricarpos albus | 4 ( 1) | 6 ( 7) | - ( 0) | 7 ( 8) | 6 ( 6) | - ( 0) | 5 ( 1) | 5 ( 2) | 3 ( 4) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 163 | Symphoricarpos oreophilus | 3 ( 2) | 1 ( 1) | 2 ( 1) | 1 ( 3) | 1 ( 9) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 3) | - ( 0) | 1 ( 3) | - ( 0) |
| 144 | Taxus brevifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 145 | Vaccinium caespitosum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 (37) | - ( 0) | 10 (47) | - ( 0) | 4 ( 1) | 1 ( 1) | 10 (19) | 1 ( 1) | 2 ( 8) |
| 146 | Vaccinium globulare | 4 ( 1) | 3 ( 2) | 10 (60) | 5 (14) | 5 (14) | 8 (23) | 10 ( 2) | - ( 0) | 9 (27) | 3 ( 2) | - ( 0) | - ( 0) | 8 ( 7) | 1 ( 3) |
| 148 | Vaccinium scoparium | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | 1 ( 1) | 1 ( 1) | 9 ( 6) | 4 ( 5) | 6 ( 3) | 6 (10) | 10 (39) |
| | FERNS and FERN ALLIES | | | | | | | | | | | | | | |
| 253 | Cystopteris fragilis | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 254 | Equisetum arvense | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 4 ( 7) | 3 ( 1) | 4 ( 1) | 1 ( 2) | 3 ( 1) |
| 259 | Pteridium aquilinum | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | 1 ( 1) | - ( 0) | 3 ( 1) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| | GRAMINOIDS | | | | | | | | | | | | | | |
| 301 | Agropyron spicatum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 304 | Bromus vulgaris | 1 ( 3) | 1 ( 1) | 5 ( 1) | 3 ( 1) | 6 ( 4) | 5 ( 1) | 10 ( 1) | - ( 0) | 9 ( 2) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 1 ( 1) |
| 305 | Calamagrostis canadensis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 6 ( 4) | 10 (62) | 9 (51) | 10 (26) | 6 (10) |
| 307 | Calamagrostis rubescens | 10 (48) | 9 (14) | 6 ( 5) | 8 (11) | 4 ( 3) | 8 ( 2) | 5 (15) | 10 (32) | 4 ( 3) | - ( 0) | 4 ( 2) | - ( 0) | - ( 0) | 3 ( 1) |
| 308 | Carex concinnoides | 3 ( 1) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | 8 ( 1) | 5 ( 1) | 1 ( 1) | 3 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) |
| 339 | Carex disperma | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | 1 ( 3) | - ( 0) | 1 ( 1) | 2 ( 2) |
| 309 | Carex geyeri | 10 ( 5) | 6 ( 3) | 7 ( 3) | 7 ( 1) | 6 ( 2) | 8 ( 1) | 5 ( 0) | 8 (23) | 3 (10) | 4 ( 6) | 1 ( 1) | 1 ( 1) | - ( 0) | 4 ( 1) |
| 311 | Carex rossii | 6 ( 1) | 4 ( 1) | 8 ( 1) | 5 ( 1) | 6 ( 0) | 3 ( 1) | 3 ( 1) | 4 ( 1) | 6 ( 1) | 4 ( 1) | 4 ( 1) | 4 ( 2) | 4 ( 2) | - ( 0) |
| 316 | Elymus glaucus | 1 ( 3) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 1 ( 2) | - ( 0) | 3 ( 1) | 1 ( 1) | 4 ( 1) | - ( 0) |
| 317 | Festuca idahoensis | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) | - ( 0) |
| 348 | Hesperochloa kingii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 322 | Juncus parryi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 323 | Koeleria cristata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 325 | Luzula hitchcockii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 8) | - ( 0) |
| 349 | Melica bulbosa | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 331 | Poa nervosa | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 3 ( 1) | - ( 0) | - ( 0) |
| 360 | Stipa occidentalis | 4 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 0) | - ( 0) |

* Code to constancy values:

| | | | | | |
|---|---|---|---|---|---|
| + = 0-5 % | 2 = 15-25% | 4 = 35-45% | 6 = 55-65% | 8 = 75-85% | 10 = 95-100% |
| 1 = 5-15% | 3 = 25-35% | 5 = 45-55% | 7 = 65-75% | 9 = 85-95% | |

APPENDIX C-1 (con)

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | ABIES GRANDIS SERIES (con) CARU h.t | SPBE h.t | VAGL h.t | ACGL h.t. PHMA Phase | ACGL h.t. ACGL Phase | LIBO h.t. VAGL Phase | LIBO h.t. LIBO Phase | VACA h.t. | CLUN h.t. | ABIES LASIOCARPA SERIES (con) CABI h.t. | CACA h.t. CACA Phase | CACA h.t. VACA Phase | CACA h.t. LICA Phase | CACA h.t. LEGL Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORBS | n= 7 | n= 8 | n=12 | n=12 | n=14 | n= 4 | n= 4 | n= 8 | n=15 | n= 8 | n= 7 | n= 8 | n=14 | n=11 |
| 401 | Achillaea millefolium | 6 ( 1) | 4 ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 6 ( 1) | [illegible] | | | | | |
| 402 | Actaea rubra | - ( 0) | - ( 0) | 1 (15) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 (15) | - ( 0) | 1 ( 1) | - ( 0) |
| 565 | Aconitum columbianum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 9 ( 9) | 3 ( 1) | 9 ( 2) | 6 ( 7) | 1 ( 1) |
| 403 | Adenocaulon bicolor | - ( 0) | 1 ( 3) | - ( 0) | 4 ( 6) | 5 ( 7) | 3 (15) | 5 ( 2) | - ( 0) | 5 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 738 | Antennaria corymbosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 4 ( 1) | - ( 0) | - ( 0) |
| 414 | Antennaria microphylla | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 0) | 4 ( 1) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) |
| 413 | Antennaria racemosa | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | 2 ( 1) | 3 ( 1) | 5 ( 2) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) |
| 577 | Arenaria aculeata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 420 | Arenaria macrophylla | 7 ( 1) | 9 ( 3) | 8 ( 1) | 8 ( 1) | 9 ( 1) | 10 ( 1) | 10 ( 1) | 1 ( 1) | 9 ( 3) | 3 ( 8) | 1 ( 1) | - ( 0) | 5 ( 1) | - ( 0) |
| 421 | Arnica cordifolia | 9 ( 1) | 8 (15) | 9 ( 3) | 7 (11) | 5 (13) | 8 ( 2) | 10 ( 1) | - ( 0) | 5 ( 3) | 3 ( 1) | 4 ( 1) | - ( 0) | 2 ( 1) | 5 (16) |
| 422 | Arnica latifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) | 2 ( 9) |
| 426 | Aster conspicuus | - ( 0) | 6 ( 2) | 6 ( 1) | 5 ( 1) | 4 ( 1) | 3 ( 1) | 3 ( 1) | - ( 0) | 4 ( 3) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 582 | Aster engelmannii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 430 | Astragalus miser | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 431 | Balsamorhiza sagittata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 696 | Caltha biflora | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 10 (21) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 741 | Castilleja covilleana | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 438 | Castilleja miniata | - ( 0) | 3 ( 1) | - ( 0) | 2 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | 1 ( 3) | 1 ( 1) | - ( 0) | 1 ( 1) | 3 ( 1) | 1 ( 1) | - ( 0) |
| 595 | Chaenactis douglasii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 442 | Chimaphila umbellata | 7 ( 1) | 8 (10) | 8 ( 2) | 8 ( 3) | 8 ( 4) | 10 ( 5) | 10 ( 5) | 8 ( 4) | 9 ( 4) | - ( 0) | - ( 0) | - ( 0) | 4 ( 1) | 1 ( 0) |
| 447 | Clintonia uniflora | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 10 ( 6) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 449 | Coptis occidentalis | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | - ( 0) | 3 (23) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 3 ( 1) |
| 602 | Crepis accuminata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 458 | Dodecatheon jeffreyi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 10 (21) | 1 ( 3) | 5 ( 1) | 6 (10) | 5 ( 3) |
| 455 | Disporum trachycarpum | - ( 0) | - ( 0) | - ( 0) | 4 ( 1) | 6 ( 1) | 5 ( 0) | 5 ( 1) | - ( 0) | 7 ( 1) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 1) | - ( 0) |
| 459 | Epilobium angustifolium | 3 ( 1) | 4 ( 1) | 3 ( 2) | 2 ( 0) | 1 ( 1) | 3 ( 1) | - ( 0) | 8 ( 1) | 1 ( 1) | 6 ( 2) | 9 ( 1) | 10 ( 1) | 4 ( 2) | 5 ( 1) |
| 465 | Fragaria vesca | 6 ( 2) | 5 ( 1) | 7 ( 1) | 9 ( 1) | 7 ( 2) | 5 ( 1) | 10 ( 2) | 1 ( 3) | 9 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 466 | Fragaria virginiana | 1 ( 1) | 3 ( 2) | 4 ( 1) | - ( 0) | 1 ( 1) | 5 ( 0) | 3 ( 1) | 10 (17) | 3 ( 1) | 4 ( 1) | 9 ( 7) | 10 ( 8) | 1 ( 3) | 4 ( 2) |
| 471 | Galium triflorum | 3 ( 1) | 4 ( 1) | 6 ( 1) | 5 ( 1) | 9 ( 2) | 8 ( 1) | 3 ( 1) | 3 ( 1) | 9 ( 4) | - ( 0) | 3 ( 8) | 3 ( 1) | 4 ( 3) | - ( 0) |
| 620 | Geranium richardsonii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | - ( 0) |
| 473 | Geranium viscosissimum | 6 ( 1) | 3 ( 1) | 3 ( 1) | 1 ( 3) | 2 ( 1) | 3 ( 1) | 3 ( 1) | 5 ( 1) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 474 | Geum triflorum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 3) | - ( 0) |
| 476 | Goodyera oblongifolia | 1 ( 1) | 6 ( 3) | 7 ( 1) | 6 ( 1) | 9 ( 1) | 8 ( 1) | 8 ( 1) | 3 ( 1) | 8 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 2 ( 1) |
| 484 | Hieracium albiflorum | 6 ( 1) | 4 ( 1) | 5 ( 1) | 7 ( 1) | 5 ( 1) | 5 ( 1) | 8 ( 1) | 8 ( 1) | 4 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | 4 ( 1) | - ( 0) |
| 486 | Hieracium gracile | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 0) | 1 ( 1) |
| 636 | Lathyrus nevadensis | 1 ( 1) | 6 (13) | 1 ( 1) | - ( 0) | 4 (11) | 2 ( 1) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 489 | Ligusticum canbyi | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 4 ( 5) | - ( 0) | 1 ( 3) | 6 (18) | 2 ( 8) |
| 490 | Ligusticum tenuifolium | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 8 (17) | - ( 0) | 2 ( 1) |
| 497 | Lomatium dissectum | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 641 | Lupinus argenteus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | 1 ( 3) | 1 ( 1) | 1 ( 3) | - ( 0) | 2 ( 2) |
| 642 | Lupinus polyphyllus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 4 ( 2) | 3 ( 2) |
| 649 | Mitella pentandra | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 8 ( 3) | 3 ( 1) | 3 ( 1) | 2 ( 1) | 3 ( 1) |
| 502 | Mitella stauropetala | - ( 0) | - ( 0) | 1 ( 1) | 1 ( 1) | 4 ( 1) | 3 ( 0) | 5 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) |
| 505 | Osmorhiza chilensis | 9 ( 1) | 6 ( 0) | 7 ( 1) | 7 ( 1) | 10 ( 2) | 8 ( 1) | 10 ( 0) | 6 ( 1) | 9 ( 1) | 4 ( 5) | 1 ( 3) | 4 ( 1) | 7 ( 4) | - ( 0) |
| 653 | Osmorhiza depauperata | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 2) | 6 ( 1) | 1 ( 1) | - ( 0) | 4 ( 1) |
| 507 | Pedicularis bracteosa | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 9 ( 0) | - ( 0) | 3 ( 1) | 6 ( 1) | 2 ( 1) |
| 509 | Pedicularis racemosa | - ( 0) | 1 ( 0) | 3 ( 1) | 2 ( 1) | 1 ( 1) | 3 ( 3) | 5 ( 1) | - ( 0) | 4 ( 4) | 3 ( 1) | - ( 0) | - ( 0) | 4 ( 1) | - ( 0) |
| 514 | Penstemon wilcoxii | 3 ( 1) | 3 ( 1) | - ( 0) | 3 ( 0) | 3 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 663 | Phacelia hastata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 669 | Potentilla diversifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 521 | Potentilla flabellifolia | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 5 ( 2) | 3 ( 1) | 3 ( 8) | 4 ( 5) | 1 ( 3) |
| 670 | Potentilla gracilis | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 1) | - ( 0) | 1 ( 3) | 3 ( 2) | 5 ( 1) | - ( 0) | - ( 0) |
| 526 | Pyrola asarifolia | - ( 0) | - ( 0) | 2 ( 2) | - ( 0) | - ( 0) | 5 ( 2) | 3 ( 1) | - ( 0) | 3 ( 2) | 4 ( 1) | 3 ( 0) | 3 ( 1) | 2 ( 7) | 3 ( 1) |
| 529 | Pyrola secunda | 6 ( 1) | 5 ( 1) | 8 ( 1) | 5 ( 1) | 6 ( 1) | 5 ( 1) | 8 ( 1) | 4 ( 1) | 9 ( 1) | 4 ( 1) | 4 ( 1) | 1 ( 1) | 5 ( 3) | 5 ( 1) |
| 676 | Saxifraga arguta | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 9 ( 7) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) |
| 538 | Senecio pseudaureus | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 9 ( 0) | 1 ( 1) | - ( 0) | - ( 0) |
| 681 | Senecio streptanthifolius | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 539 | Senecio triangularis | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 9 ( 4) | 1 ( 1) | 1 ( 1) | 7 ( 4) | 4 ( 1) |
| 542 | Smilacina racemosa | 7 ( 1) | 5 ( 1) | 6 ( 1) | 7 ( 1) | 9 ( 1) | 5 ( 1) | 5 ( 1) | - ( 0) | 7 ( 2) | - ( 0) | 3 ( 1) | 1 ( 1) | 1 ( 1) | - ( 0) |
| 543 | Smilacina stellata | 1 ( 0) | 1 ( 1) | 1 ( 1) | 2 ( 1) | 2 ( 2) | 3 ( 1) | - ( 0) | 3 ( 1) | 7 ( 1) | - ( 0) | 9 ( 2) | 5 ( 1) | 2 ( 1) | 1 ( 3) |
| 684 | Solidago multiradiata | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 3 ( 1) | 1 ( 3) | - ( 0) | - ( 0) |
| 546 | Streptopus amplexifolius | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 3) | 5 ( 5) | 3 ( 1) | 1 ( 1) | 5 ( 2) | 3 ( 5) |
| 547 | Thalictrum occidentalis | 6 ( 2) | 8 (15) | 9 ( 8) | 8 ( 2) | 9 (10) | 10 ( 2) | 8 ( 6) | 6 ( 4) | 9 ( 5) | 3 ( 8) | 7 (11) | 6 ( 4) | 8 ( 4) | 4 ( 1) |
| 563 | Trautvetteria caroliniensis | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | 2 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 2 ( 1) | 5 (11) | 1 ( 0) |
| 560 | Trillium ovatum | 6 ( 1) | 4 ( 1) | 8 ( 1) | 7 ( 1) | 6 ( 1) | 5 ( 1) | 8 ( 1) | 5 ( 1) | 9 ( 1) | 1 ( 1) | - ( 0) | 3 ( 1) | 6 ( 1) | 3 ( 1) |
| 551 | Valeriana sitchensis | 3 ( 2) | 1 ( 1) | 5 ( 1) | - ( 0) | 3 ( 2) | 3 ( 3) | 3 ( 1) | 1 ( 1) | 4 ( 1) | 5 ( 5) | 1 ( 1) | 1 ( 1) | 6 ( 2) | 5 ( 1) |
| 552 | Veratrum viride | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | 1 (15) | - ( 0) | 1 ( 1) | 6 ( 2) | 1 ( 1) |
| 554 | Viola adunca | 6 ( 1) | 3 ( 1) | 4 ( 1) | 3 ( 0) | 6 ( 1) | 5 ( 1) | 8 ( 1) | 5 ( 1) | 5 ( 1) | - ( 0) | 4 ( 1) | 4 ( 1) | 1 ( 0) | - ( 0) |
| 693 | Viola nuttallii | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 557 | Viola orbiculata | - ( 0) | - ( 0) | 6 ( 4) | 1 ( 3) | 1 ( 2) | 5 ( 2) | 10 ( 5) | 3 ( 2) | 9 ( 4) | 1 ( 1) | 1 ( 1) | - ( 0) | 5 ( 1) | 5 ( 1) |
| 694 | Viola purpurea | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | 1 ( 1) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) |
| 556 | Xerophyllum tenax | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | - ( 0) | 6 ( 1) | 5 (18) |

APPENDIX C-1 (con)

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | ABIES LASIOCARPA SERIES (con) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | STAM h.t. | | CLUH h.t. | MEFE h.t. | ACGL h.t. | VACA h.t. | LIBO h.t. | XETE h.t. | | | VAGL h.t. | SPBE h.t. |
| | | LICA Phase | STAM Phase | | | | | | LUHI Phase | VASC Phase | VAGL Phase | | |
| | TREES | n=11 | n=7 | n=3 | n=8 | n=5 | n=13 | n=4 | n=5 | n=6 | n=9 | n=11 | n=7 |
| 001 | Abies grandis | 1 (15) | - (0) | 3 (3) | 3 (2) | - (0) | 1 (1) | 5 (2) | - (0) | - (0) | - (0) | 2 (0) | - (0) |
| 002 | Abies lasiocarpa | 10 (23) | 10 (10) | 10 (23) | 10 (19) | 10 (41) | 9 (12) | 10 (33) | 10 (53) | 10 (40) | 10 (46) | 10 (32) | 10 (23) |
| 006 | Larix occidentalis | 1 (1) | - (0) | 3 (63) | 4 (7) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 007 | Picea engelmannii | 10 (32) | 10 (59) | 10 (33) | 10 (38) | - (0) | 5 (7) | 10 (25) | 2 (37) | 7 (9) | 8 (14) | 6 (17) | 1 (1) |
| 009 | Pinus albicaulis | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (2) | 3 (1) | 8 (4) | 3 (8) | 1 (3) | 1 (1) | 1 (1) |
| 010 | Pinus contorta | 5 (8) | 3 (20) | 7 (1) | 5 (8) | - (0) | 10 (58) | 8 (23) | 6 (2) | 10 (14) | 7 (11) | 5 (4) | 9 (10) |
| 011 | Pinus flexilis | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 013 | Pinus ponderosa | - (0) | - (0) | 3 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (8) | 1 (3) |
| 014 | Populus tremuloides | - (0) | - (0) | - (0) | - (0) | 2 (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 016 | Pseudotsuga menziesii | 1 (1) | 1 (3) | 10 (14) | 4 (3) | 10 (27) | 3 (8) | 10 (11) | - (0) | 2 (3) | 4 (23) | 9 (28) | 9 (50) |
| | SHRUBS and SUBSHRUBS | | | | | | | | | | | | |
| 102 | Acer glabrum | 2 (1) | - (0) | 3 (3) | - (0) | 10 (14) | - (0) | - (0) | - (0) | - (0) | - (0) | 5 (1) | 3 (2) |
| 104 | Alnus sinuata | 2 (3) | - (0) | 7 (2) | 4 (30) | - (0) | - (0) | 3 (37) | - (0) | - (0) | 1 (1) | 1 (0) | - (0) |
| 105 | Amelanchier alnifolia | - (0) | 1 (1) | 10 (1) | 1 (15) | 8 (1) | 2 (1) | - (0) | - (0) | - (0) | 2 (0) | 4 (2) | 7 (4) |
| 201 | Arctstaphylos uva-ursi | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (8) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 150 | Artemisia tridentata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 203 | Berberis repens | - (0) | 1 (1) | - (0) | - (0) | 6 (1) | - (0) | - (0) | - (0) | - (0) | 3 (1) | 1 (1) | 6 (5) |
| 107 | Ceanothus velutinus | - (0) | - (0) | 3 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) |
| 173 | Cercocarpus ledifolius | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 204 | Clematis columbiana | - (0) | - (0) | 3 (1) | - (0) | 8 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 205 | Gaultheria humifusa | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 111 | Holodiscus discolor | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 112 | Juniperus communis | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 113 | Ledum glandulosum | - (0) | 1 (3) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 2 (1) | 1 (3) | - (0) | - (0) |
| 206 | Linnaea borealis | 1 (15) | 1 (3) | 7 (9) | 4 (23) | - (0) | - (0) | 10 (59) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 154 | Lonicera caerulea | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 115 | Lonicera utahensis | 5 (0) | 1 (1) | 10 (14) | 5 (2) | 6 (6) | 4 (4) | 10 (5) | 10 (1) | 5 (1) | 8 (2) | 10 (15) | 4 (2) |
| 116 | Menziesia ferruginea | 2 (3) | - (0) | - (0) | 10 (65) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (2) | - (0) | - (0) |
| 118 | Pachistima myrsinites | 1 (1) | - (0) | 3 (37) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 122 | Physocarpus malvaceus | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 124 | Prunus virginiana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 125 | Purshia tridentata | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 128 | Ribes cereum | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (0) |
| 130 | Ribes lacustre | 5 (1) | 10 (4) | 7 (2) | 6 (1) | 6 (1) | - (0) | 8 (1) | 2 (1) | 2 (1) | 1 (3) | 4 (1) | - (0) |
| 159 | Ribes montigenum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 131 | Ribes viscosissimum | - (0) | - (0) | 7 (0) | 1 (1) | 6 (1) | - (0) | - (0) | - (0) | 2 (0) | 1 (1) | 2 (1) | 4 (1) |
| 133 | Rosa gymnocarpa | 1 (1) | 1 (1) | 3 (15) | 3 (3) | 4 (1) | - (0) | 5 (2) | - (0) | - (0) | 1 (1) | 5 (3) | - (0) |
| 161 | Rosa nutkana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 134 | Rosa woodsii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 136 | Rubus parviflorus | 1 (3) | 3 (0) | 7 (3) | 5 (2) | 2 (1) | - (0) | 5 (2) | - (0) | - (0) | 1 (0) | 4 (5) | - (0) |
| 137 | Salix scouleriana | - (0) | - (0) | - (0) | - (0) | 4 (1) | 1 (15) | 3 (0) | - (0) | - (0) | 1 (1) | 2 (2) | 3 (2) |
| 139 | Sheperdia canadensis | - (0) | - (0) | - (0) | 1 (15) | - (0) | 4 (2) | 5 (1) | - (0) | - (0) | - (0) | 2 (1) | 4 (2) |
| 140 | Sorbus scopulina | 4 (1) | 1 (3) | 10 (0) | 3 (0) | 10 (2) | 1 (1) | 3 (1) | - (0) | - (0) | 6 (1) | 6 (2) | 6 (1) |
| 142 | Spiraea betulifolia | 2 (1) | - (0) | - (0) | 4 (1) | 2 (1) | 1 (1) | 5 (2) | - (0) | - (0) | 7 (2) | 5 (2) | 10 (52) |
| 162 | Spiraea pyramidata | - (0) | 1 (1) | - (0) | - (0) | - (0) | 4 (2) | 3 (3) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 143 | Symphoricarpos albus | 2 (1) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | - (0) |
| 163 | Symphoricarpos oreophilus | - (0) | 1 (1) | - (0) | 1 (1) | 8 (2) | - (0) | - (0) | - (0) | - (0) | 1 (3) | 3 (1) | 4 (5) |
| 144 | Taxus brevifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 145 | Vaccinium caespitosum | 1 (1) | - (0) | - (0) | - (0) | - (0) | 10 (42) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 146 | Vaccinium globulare | 8 (8) | 4 (22) | 10 (11) | 8 (18) | - (0) | 2 (43) | 8 (14) | 6 (1) | 5 (1) | 9 (41) | 10 (48) | - (0) |
| 148 | Vaccinium scoparium | 5 (1) | 6 (1) | - (0) | 4 (6) | - (0) | 7 (13) | 8 (1) | 10 (39) | 10 (40) | 4 (11) | 3 (5) | - (0) |
| | FERNS and FERN ALLIES | | | | | | | | | | | | |
| 253 | Cystopteris fragilis | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 254 | Equisetum arvense | 3 (1) | 1 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 259 | Pteridium aquilinum | - (0) | - (0) | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| | GRAMINOIDS | | | | | | | | | | | | |
| 301 | Agropyron spicatum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 304 | Bromus vulgaris | 4 (10) | - (0) | 7 (1) | 4 (1) | - (0) | - (0) | - (0) | - (0) | 2 (1) | 2 (1) | 6 (1) | - (0) |
| 305 | Calamagrostis canadensis | 4 (0) | 1 (1) | - (0) | - (0) | - (0) | 3 (2) | 3 (1) | 2 (1) | 2 (3) | 3 (1) | - (0) | - (0) |
| 307 | Calamagrostis rubescens | 2 (1) | 1 (1) | 3 (3) | 3 (9) | - (0) | 8 (30) | 8 (14) | - (0) | 5 (1) | 4 (2) | 5 (14) | 6 (5) |
| 308 | Carex concinnoides | - (0) | 1 (0) | - (0) | 3 (1) | - (0) | 4 (2) | 10 (1) | 2 (1) | - (0) | 3 (1) | 1 (1) | - (0) |
| 339 | Carex disperma | - (0) | 4 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 309 | Carex geyeri | 3 (0) | 1 (1) | 3 (3) | 3 (1) | 8 (2) | 9 (8) | 5 (1) | 6 (6) | 7 (2) | 3 (2) | 7 (4) | 7 (20) |
| 311 | Carex rossii | 3 (0) | 4 (1) | 10 (1) | 3 (1) | 6 (1) | 5 (1) | 5 (1) | 6 (1) | 5 (1) | 8 (1) | 5 (1) | 1 (1) |
| 316 | Elymus glaucus | 2 (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 2 (0) | - (0) | 2 (1) | - (0) | 1 (1) |
| 317 | Festuca idahoensis | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (2) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 348 | Hesperochloa kingii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 322 | Juncus parryi | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 323 | Koeleria cristata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 325 | Luzula hitchcockii | 5 (3) | - (0) | - (0) | 3 (0) | - (0) | - (0) | - (0) | 10 (3) | 3 (1) | 3 (21) | 1 (1) | - (0) |
| 349 | Melica bulbosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 331 | Poa nervosa | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (2) | - (0) | - (0) | 3 (0) | - (0) | - (0) | 3 (1) |
| 360 | Stipa occidentalis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |

*Code to constancy values:

| | | | | | |
|---|---|---|---|---|---|
| + = 0-5 % | 2 = 15-25% | 4 = 35-45% | 6 = 55-65% | 8 = 75-85% | 10 = 95-100% |
| 1 = 5-15% | 3 = 25-35% | 5 = 45-55% | 7 = 65-75% | 9 = 85-95% | |

APPENDIX C-1 (con)

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | ABIES LASIOCARPA SERIES (con) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | STAM h.t. | | CLUN h.t. | MEFE h.t. | ACGL h.t. | VACA h.t. | LIBO h.t. | XETE h.t. | | | VAGL h.t. | SPBE h.t. |
| | | LICA Phase | STAM Phase | | | | | | LUHI Phase | VASC Phase | VAGL Phase | | |
| | FORBS | n=11 | n= 7 | n= 3 | n= 8 | n =5 | n=13 | n= 4 | n=5 | n= 6 | n= 9 | n=11 | n= 7 |
| 401 | Achillaea millefollium | 2 (1) | 3 (1) | - (0) | - (0) | - (0) | 7 (1) | - (0) | - (0) | 2 (1) | - (0) | 1 (1) | 1 (1) |
| 402 | Actaea rubra | - (0) | 4 (1) | 3 (1) | - (0) | 2 (1) | - (0) | 3 (1) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 565 | Aconitum columbianum | 6 (2) | 4 (1) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | - (0) |
| 403 | Adenocaulon bicolor | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 738 | Antennaria corymbosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 414 | Antennaria microphylla | 1 (1) | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 413 | Antennaria racemosa | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 3 (1) | - (0) | - (0) | 1 (1) | - (0) | 1 (3) |
| 577 | Arenaria aculeata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 420 | Arenaria macrophylla | 5 (0) | 1 (1) | 7 (2) | 6 (0) | 10 (4) | 2 (1) | 5 (8) | - (0) | 3 (1) | 8 (1) | 9 (1) | 3 (1) |
| 421 | Arnica cordifolia | 5 (3) | 7 (5) | 3 (3) | 6 (12) | 4 (8) | 3 (2) | 8 (6) | - (0) | 2 (1) | 4 (1) | 7 (3) | 9 (4) |
| 422 | Arnica latifolia | 3 (6) | 1 (3) | - (0) | 4 (2) | - (0) | 1 (1) | 3 (1) | 2 (1) | - (0) | 1 (15) | 1 (0) | - (0) |
| 426 | Aster conspicuus | - (0) | - (0) | 3 (1) | 1 (1) | 6 (6) | 1 (1) | 5 (1) | - (0) | - (0) | - (0) | 1 (1) | 4 (1) |
| 582 | Aster engelmannii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 430 | Astragalus miser | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 431 | Balsamorhiza sagittata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 696 | Caltha biflora | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 741 | Castilleja covilleana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 438 | Castilleja miniata | - (0) | 1 (1) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 595 | Chaenactis douglasii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 442 | Chimaphila umbellata | 3 (1) | 4 (1) | 10 (1) | 5 (1) | - (0) | 4 (1) | 8 (6) | - (0) | 3 (1) | 6 (4) | 7 (2) | 1 (1) |
| 447 | Clintonia uniflora | 1 (3) | - (0) | 10 (14) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 449 | Coptis occidentalis | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 602 | Crepis accuminata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 458 | Dodecatheon jeffreyi | 4 (2) | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | - (0) |
| 456 | Disporum trachycarpum | - (0) | 1 (1) | 7 (1) | - (0) | 4 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (1) | - (0) |
| 459 | Epilobium angustifolium | 4 (1) | 1 (1) | - (0) | - (0) | 2 (1) | 7 (1) | 3 (1) | - (0) | 2 (1) | 1 (1) | 3 (1) | 3 (2) |
| 465 | Fragaria vesca | - (0) | - (0) | 7 (2) | 1 (1) | - (0) | - (0) | 5 (2) | - (0) | - (0) | - (0) | 4 (1) | 1 (1) |
| 466 | Fragaria virginiana | 4 (10) | 7 (1) | 7 (1) | 1 (1) | - (0) | 8 (4) | 3 (3) | - (0) | 2 (1) | - (0) | 1 (1) | 1 (1) |
| 471 | Galium triflorum | 4 (1) | 7 (1) | 7 (2) | 4 (1) | 2 (3) | - (0) | 8 (1) | - (0) | - (0) | 1 (0) | 5 (4) | 1 (1) |
| 620 | Geranium richardsonii | - (0) | 1 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 473 | Geranium viscosissimum | 2 (1) | 1 (1) | - (0) | - (0) | 4 (1) | 2 (1) | 5 (1) | - (0) | - (0) | - (0) | 2 (1) | 4 (1) |
| 474 | Geum triflorum | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 476 | Goodyera oblongifolia | 2 (1) | 3 (1) | 7 (2) | 6 (1) | 4 (1) | - (0) | 3 (1) | - (0) | - (0) | 4 (1) | 7 (0) | 3 (1) |
| 484 | Hieracium albiflorum | 2 (2) | - (0) | 3 (1) | 1 (1) | - (0) | 2 (1) | 3 (1) | 2 (1) | 5 (1) | 6 (2) | 4 (1) | 6 (1) |
| 486 | Hieracium gracile | 1 (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 2 (0) | 3 (1) | - (0) | - (0) | - (0) |
| 636 | Lathyrus nevadensis | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 489 | Ligusticum canbyi | 5 (15) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | 2 (1) | - (0) | - (0) |
| 490 | Ligusticum tenuifolium | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 497 | Lomatium dissectum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 641 | Lupinus argenteus | - (0) | - (0) | 3 (1) | - (0) | - (0) | 1 (15) | - (0) | 2 (0) | - (0) | 1 (1) | - (0) | - (0) |
| 642 | Lupinus polyphyllus | 3 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) |
| 649 | Mitella pentandra | 4 (1) | 7 (12) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 502 | Mitella stauropetala | - (0) | 1 (1) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (1) | 1 (0) |
| 505 | Osmorhiza chilensis | 6 (8) | 7 (1) | 7 (2) | 3 (1) | 4 (1) | - (0) | 3 (1) | - (0) | - (0) | 4 (0) | 7 (0) | 7 (1) |
| 653 | Osmorhiza depauperata | 1 (1) | 3 (1) | - (0) | - (0) | - (0) | - (0) | 5 (2) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 507 | Pedicularis bracteosa | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (0) | - (0) | - (0) |
| 509 | Pedicularis racemosa | 6 (1) | 1 (1) | 7 (0) | 3 (0) | - (0) | 1 (1) | 3 (15) | - (0) | 5 (1) | 9 (1) | 3 (1) | - (0) |
| 514 | Penstemon wilcoxii | - (0) | - (0) | - (0) | - (0) | 8 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 663 | Phacelia hastata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 669 | Potentilla diversifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 521 | Potentilla flabellifolia | 2 (2) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 670 | Potentilla gracilis | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 526 | Pyrola asarifolia | 2 (2) | 3 (2) | - (0) | 3 (1) | - (0) | 1 (1) | 8 (1) | - (0) | - (0) | 1 (1) | - (0) | - (0) |
| 529 | Pyrola secunda | 7 (0) | 10 (1) | 10 (2) | 10 (2) | 2 (1) | 1 (1) | - (2) | 2 (1) | 3 (1) | 1 (1) | 8 (3) | 7 (1) |
| 676 | Saxifraga arguta | 1 (0) | 9 (10) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 538 | Senecio pseudaureus | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 681 | Senecio streptanthifolius | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 539 | Senecio triangularis | 8 (9) | 10 (16) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 2 (0) | - (0) |
| 542 | Smilacina racemosa | 1 (1) | - (0) | 10 (1) | 3 (1) | 10 (4) | - (0) | - (0) | - (0) | 2 (1) | 1 (1) | 5 (1) | 3 (0) |
| 543 | Smilacina stellata | 3 (1) | 1 (1) | 7 (2) | 1 (1) | - (0) | 1 (1) | 3 (15) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 684 | Solidago multiradiata | - (0) | 1 (1) | - (0) | - (0) | - (0) | 2 (2) | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 546 | Streptopus amplexifolius | 5 (0) | 7 (11) | - (0) | 4 (1) | - (0) | - (0) | 3 (1) | - (0) | - (0) | - (0) | 2 (2) | - (0) |
| 547 | Thalictrum occidentalis | 10 (3) | 6 (5) | 10 (18) | 4 (1) | 8 (36) | 1 (0) | 8 (10) | - (0) | 5 (0) | 3 (5) | 8 (7) | 6 (1) |
| 563 | Trautvetteria caroliniensis | 8 (42) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 560 | Trillium ovatum | 6 (1) | - (0) | 7 (2) | 4 (1) | - (0) | 1 (1) | 5 (1) | - (0) | - (0) | 4 (0) | 3 (0) | - (0) |
| 551 | Valeriana sitchensis | 5 (3) | 3 (1) | 7 (2) | 4 (1) | 8 (2) | 2 (1) | 3 (3) | 2 (0) | 7 (2) | 4 (0) | 8 (2) | 3 (8) |
| 552 | Veratrum viride | 5 (6) | - (0) | 3 (1) | 4 (1) | - (0) | - (0) | - (0) | 4 (1) | - (0) | 3 (1) | - (0) | - (0) |
| 554 | Viola adunca | 2 (1) | 1 (1) | 7 (2) | - (0) | - (0) | 5 (1) | - (0) | - (0) | - (0) | - (0) | 2 (1) | 3 (0) |
| 693 | Viola nuttallii | - (0) | - (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 557 | Viola orbiculata | 8 (3) | 3 (2) | 10 (1) | 9 (4) | - (0) | 2 (1) | 5 (1) | 2 (1) | 5 (1) | 6 (1) | 3 (1) | - (0) |
| 694 | Viola purpurea | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 558 | Xerophyllum tenax | 5 (1) | - (0) | - (0) | 3 (2) | - (0) | 1 (37) | - (0) | 10 (57) | 10 (42) | 10 (49) | - (0) | - (0) |

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | ABIES LASIOCARPA SERIES (con) | | | | | | | | | | | | PICO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LUHI h.t. | | VASC h.t. | | | CARU h.t. | CAGE h.t. | | JUCO h.t. | ARCO h.t. | RIMO h.t. | PIAL-ABLA h.t.s. | FEID h.t. |
| | | VASC Phase | LUHI Phase | VASC Phase | CARU Phase | PIAL Phase | | CAGE Phase | ARTR Phase | | | | | |
| | | n= 5 | n= 5 | n=13 | n= 3 | n= 3 | n=15 | n=30 | n= 3 | n= 8 | n=12 | n= 5 | n=15 | n=12 |
| | TREES | | | | | | | | | | | | | |
| 001 | Abies grandis | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 002 | Abies lasiocarpa | 10 (48) | 10 (55) | 10 (40) | 10 (7) | 10 (34) | 10 (27) | 10 (37) | 10 (38) | 10 (19) | 10 (35) | 10 (38) | 10 (19) | - (0) |
| 006 | Larix occidentalis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 007 | Picea engelmannii | 10 (4) | 6 (2) | 8 (8) | 7 (1) | 3 (3) | - (0) | 3 (4) | - (0) | 5 (20) | 9 (12) | 2 (15) | 1 (0) | - (0) |
| 009 | Pinus albicaulis | 6 (11) | 8 (2) | 6 (1) | - (0) | 10 (46) | 4 (0) | 4 (6) | 10 (15) | 4 (6) | 4 (2) | 6 (26) | 9 (18) | 2 (3) |
| 010 | Pinus contorta | 10 (20) | 6 (0) | 9 (17) | 10 (53) | 10 (11) | 8 (18) | 9 (23) | 7 (2) | 8 (30) | 7 (9) | 2 (0) | 3 (10) | 10 (43) |
| 011 | Pinus flexilis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (16) | - (0) | 4 (1) | - (0) | 2 (6) | - (0) | - (0) |
| 013 | Pinus ponderosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 014 | Populus tremuloides | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (10) | + (37) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 016 | Pseudotsuga menziesii | - (0) | - (0) | 1 (0) | 7 (2) | - (0) | 6 (33) | 3 (14) | 7 (8) | 8 (22) | 7 (37) | 4 (0) | - (0) | - (0) |
| | SHRUBS and SUBSHRUBS | | | | | | | | | | | | | |
| 102 | Acer glabrum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 104 | Alnus sinuata | - (0) | - (0) | 2 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 105 | Amelanchier alnifolia | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (1) | 1 (0) | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 201 | Arctstaphylos uva-ursi | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 150 | Artemisia tridentata | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (19) | 2 (0) | 10 (23) | - (0) | - (0) | 2 (1) | 1 (8) | 4 (17) |
| 203 | Berberis repens | - (0) | - (0) | - (0) | 3 (1) | - (0) | 3 (0) | 1 (2) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 107 | Ceanothus velutinus | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 173 | Cercocarpus ledifolius | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 204 | Clematis columbiana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) |
| 205 | Gaultheria humifusa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 111 | Holodiscus discolor | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 112 | Juniperus communis | - (0) | - (0) | 1 (1) | - (0) | 3 (3) | 1 (1) | 1 (2) | - (0) | 10 (16) | 4 (2) | - (0) | - (0) | 1 (1) |
| 113 | Ledum glandulosum | - (0) | - (0) | 1 (1) | 3 (1) | 3 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 206 | Linnaea borealis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 154 | Lonicera caerulea | - (0) | - (0) | - (0) | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 115 | Lonicera utahensis | 4 (1) | 8 (0) | 7 (1) | 10 (1) | - (0) | 1 (1) | 2 (1) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) |
| 116 | Menziesia ferruginea | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 118 | Pachistima myrsinites | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 122 | Physocarpus malvacrus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 124 | Prunus virginiana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 125 | Purshia tridentata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | 1 (0) |
| 128 | Ribes cereum | - (0) | - (0) | 1 (15) | - (0) | - (0) | 2 (3) | 2 (1) | 7 (2) | 4 (2) | 1 (1) | - (0) | - (0) | 2 (0) |
| 130 | Ribes lacustre | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (2) | 1 (1) | - (0) | - (0) | - (0) |
| 159 | Ribes montigenum | - (0) | 2 (3) | 2 (0) | - (0) | - (0) | - (0) | 4 (2) | 3 (3) | 3 (2) | 4 (2) | 10 (43) | 1 (1) | - (0) |
| 131 | Ribes viscosissimum | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 2 (1) | - (0) | - (0) | - (0) |
| 133 | Rosa gymnocarpa | - (0) | - (0) | - (0) | 3 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 161 | Rosa nutkana | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 134 | Rosa woodsii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 136 | Rubus parviflorus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 137 | Salix scouleriana | - (0) | - (0) | - (0) | 3 (1) | - (0) | 1 (0) | - (0) | - (0) | 1 (3) | - (0) | - (0) | - (0) | - (0) |
| 139 | Sheperdia canadensis | - (0) | - (0) | - (0) | 7 (0) | - (0) | - (0) | - (0) | - (0) | 10 (18) | 5 (1) | - (0) | - (0) | 1 (1) |
| 140 | Sorbus scopulina | - (0) | - (0) | 2 (1) | - (0) | - (0) | 1 (15) | 1 (2) | - (0) | - (0) | 1 (1) | 2 (3) | - (0) | - (0) |
| 142 | Spiraea betulifolia | - (0) | - (0) | 2 (2) | 3 (1) | - (0) | 2 (1) | 1 (1) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 162 | Spiraea pyramidata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 143 | Symphoricarpos albus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 163 | Symphoricarpos oreophilus | - (0) | - (0) | 2 (2) | - (0) | - (0) | 7 (4) | 3 (2) | 10 (6) | 9 (3) | 4 (2) | 4 (1) | - (0) | - (0) |
| 144 | Taxus brevifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 145 | Vaccinium caespitosum | 2 (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 146 | Vaccinium globulare | - (0) | - (0) | 2 (2) | 3 (1) | 3 (3) | 1 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 148 | Vaccinium scoparium | 10 (53) | 4 (0) | 10 (73) | 10 (74) | 10 (70) | 1 (2) | 1 (0) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) |
| | FERNS and FERN ALLIES | | | | | | | | | | | | | |
| 253 | Cystopteris fragilis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 254 | Equisetum arvense | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 259 | Pteridium aquilinum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| | GRAMINOIDS | | | | | | | | | | | | | |
| 301 | Agropyron spicatum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 3 (3) | - (0) | - (0) | - (0) | 1 (3) | 3 (1) |
| 304 | Bromus vulgaris | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | + (1) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 305 | Calamagrostis canadensis | 2 (3) | - (0) | - (0) | - (0) | - (0) | 1 (37) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 307 | Calamagrostis rubescens | - (0) | - (0) | 2 (1) | 10 (38) | - (0) | 10 (45) | - (0) | 3 (1) | 3 (2) | 1 (1) | - (0) | - (0) | 2 (26) |
| 308 | Carex concinnoides | - (0) | - (0) | - (0) | 3 (1) | - (0) | 1 (1) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 339 | Carex disperma | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 309 | Carex geyeri | 6 (1) | 6 (2) | 9 (13) | 7 (8) | 10 (3) | 10 (13) | 10 (32) | 10 (23) | 6 (1) | 6 (1) | 6 (2) | 5 (2) | 4 (4) |
| 311 | Carex rossii | 8 (1) | 8 (1) | 5 (1) | 7 (1) | 3 (1) | 6 (3) | 3 (3) | 3 (1) | 5 (1) | 3 (1) | 4 (2) | 5 (3) | 8 (2) |
| 316 | Elymus glaucus | - (0) | 2 (1) | 2 (1) | - (0) | - (0) | 1 (1) | + (1) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) |
| 317 | Festuca idahoensis | - (0) | - (0) | 1 (1) | - (0) | - (0) | 2 (7) | 4 (4) | - (0) | - (0) | 1 (1) | 4 (1) | 4 (24) | 10 (18) |
| 348 | Hesperochloa kingii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) |
| 322 | Juncus parryi | 2 (3) | 4 (0) | - (0) | - (0) | - (0) | - (0) | + (15) | - (0) | - (0) | - (0) | - (0) | 3 (43) | - (0) |
| 323 | Koeleria cristata | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (0) | + (1) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 3 (1) |
| 325 | Luzula hitchcockii | 10 (17) | 10 (77) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 349 | Melica bulbosa | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | 7 (2) | - (0) | - (0) | 2 (1) | 1 (31) | - (0) |
| 331 | Poa nervosa | 2 (1) | - (0) | 3 (0) | - (0) | 3 (1) | 4 (1) | 6 (2) | 7 (1) | 6 (1) | 2 (1) | 4 (9) | 3 (2) | 6 (1) |
| 360 | Stipa occidentalis | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (1) | 2 (1) | 7 (3) | - (0) | - (0) | 2 (1) | 5 (15) | 2 (3) |

*Code to constancy values:

| | | | | | |
|---|---|---|---|---|---|
| + = 0-5 % | 2 = 15-25% | 4 = 35-45% | 6 = 55-65% | 8 = 75-85% | 10 = 95-100% |
| 1 = 5-15% | 3 = 25-35% | 5 = 45-55% | 7 = 65-75% | 9 = 85-95% | |

Constancy* and average canopy coverage percent (the latter in parentheses) of important plants in central Idaho habitat types and phases.

| ADP NUMBER | SPECIES | ABIES LASIOCARPA SERIES (con): LUHI h.t. | | VASC h.t. | | | CARU h.t. | CAGE h.t. | | JUCO h.t. | ARCO h.t. | RIMO h.t. | PIAL-ABLA h.t.s. | PICO (con): FEID h.t. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | VASC Phase | LUHI Phase | VASC Phase | CARU Phase | PIAL Phase | | CAGE Phase | ARTR Phase | | | | | |
| | | n= 5 | n= 5 | n=13 | n= 3 | n= 3 | n=15 | n=30 | n= 3 | n= 8 | n=12 | n= 5 | n=15 | n=12 |
| | FORBS | | | | | | | | | | | | | |
| 401 | Achillaea millefollium | - (0) | 2 (3) | 1 (1) | 3 (1) | 10 (1) | 8 (1) | 6 (1) | 7 (2) | 3 (1) | 2 (1) | 6 (1) | 4 (1) | 4 (1) |
| 402 | Actaea rubra | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 565 | Aconitum columbianum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 403 | Adenocaulon bicolor | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 738 | Antennaria corymbosa | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 414 | Antennaria microphylla | - (0) | - (0) | 1 (1) | - (0) | - (0) | 3 (1) | 4 (1) | 3 (1) | 4 (1) | 1 (1) | - (0) | 3 (1) | 8 (4) |
| 413 | Antennaria racemosa | - (0) | - (0) | 2 (1) | - (0) | - (0) | 1 (1) | + (1) | - (0) | 5 (2) | 6 (4) | - (0) | - (0) | - (0) |
| 577 | Arenaria aculeata | - (0) | - (0) | 1 (1) | - (0) | 3 (1) | 3 (1) | 2 (3) | - (0) | 1 (1) | - (0) | 2 (1) | 7 (3) | 1 (15) |
| 420 | Arenaria macrophylla | - (0) | 2 (1) | 2 (1) | - (0) | - (0) | 2 (3) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 421 | Arnica cordifolia | 4 (1) | 2 (1) | 2 (2) | 3 (1) | 7 (20) | 4 (10) | 4 (7) | - (0) | 10 (7) | 10 (21) | 8 (1) | - (0) | 1 (1) |
| 422 | Arnica latifolia | 6 (1) | 6 (6) | 5 (2) | - (0) | 3 (1) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 3 (1) | - (0) |
| 426 | Aster conspicuus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 2 (2) | - (0) | - (0) | - (0) |
| 582 | Aster engelmannii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 430 | Astragalus miser | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 4 (1) | - (0) | - (0) |
| 431 | Balsamorhiza sagittata | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (2) | + (1) | 3 (1) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 696 | Caltha biflora | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 741 | Castilleja covilleana | - (0) | - (0) | + (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (0) | - (0) | - (0) | 1 (1) | - (0) |
| 438 | Castilleja miniata | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (3) | 1 (0) | - (0) | 3 (8) | - (0) | - (0) | - (0) | - (0) |
| 595 | Chaenactis douglasii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 442 | Chimaphila umbellata | 2 (1) | - (0) | 2 (2) | 3 (1) | - (0) | 2 (1) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 447 | Clintonia uniflora | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 449 | Coptis occidentalis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 602 | Crepis accuminata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) |
| 458 | Dodecatheon jeffreyi | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 455 | Disporum trachycarpum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 459 | Epilobium angustifolium | 4 (2) | 2 (1) | 4 (1) | 3 (1) | 7 (2) | 3 (1) | 4 (1) | 3 (1) | 9 (3) | 3 (1) | 4 (19) | 1 (1) | 1 (1) |
| 465 | Fragaria vesca | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 466 | Fragaria virginiana | - (0) | - (0) | 2 (1) | 7 (1) | - (0) | 2 (0) | 2 (1) | - (0) | 3 (1) | 2 (1) | - (0) | - (0) | - (0) |
| 471 | Galium triflorum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 620 | Geranium richardsonii | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (0) | + (15) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 473 | Geranium viscosissimum | - (0) | - (0) | 1 (15) | - (0) | - (0) | 1 (3) | + (3) | - (0) | 1 (1) | 1 (1) | 2 (1) | - (0) | - (0) |
| 474 | Geum triflorum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 476 | Goodyera oblongifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | 3 (1) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 484 | Hieracium albiflorum | - (0) | - (0) | 2 (1) | - (0) | 3 (1) | 3 (1) | 1 (0) | - (0) | - (0) | 1 (1) | - (0) | 1 (1) | - (0) |
| 486 | Hieracium gracile | 4 (1) | 2 (1) | 2 (1) | 3 (1) | - (0) | 1 (1) | 1 (1) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) |
| 636 | Lathyrus nevadensis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 489 | Ligusticum canbyi | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 490 | Ligusticum tenuifolium | 2 (3) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 497 | Lomatium dissectum | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 641 | Lupinus argenteus | - (0) | 6 (2) | 2 (2) | - (0) | 3 (15) | 1 (15) | 2 (13) | - (0) | 1 (15) | 1 (3) | 2 (15) | 4 (14) | 1 (15) |
| 642 | Lupinus polyphyllus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 649 | Mitella pentandra | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 502 | Mitella stauropetala | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 505 | Osmorhica chilensis | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (1) | 1 (1) | - (0) | - (0) | 1 (1) | 2 (1) | 1 (1) | - (0) |
| 653 | Osmorhica depauperata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 4 (1) | 3 (1) | - (0) | 1 (1) | - (0) |
| 507 | Pedicularis bracteosa | - (0) | 2 (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 509 | Pedicularis racemosa | 6 (1) | 2 (1) | 3 (2) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 514 | Penstemon wilcoxii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 663 | Phacelia hastata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 7 (1) | - (0) | - (0) | 2 (1) | - (0) | - (0) |
| 669 | Potentilla diversifolia | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | 1 (1) | - (0) | 1 (1) | - (0) | 2 (1) | 1 (1) | 1 (1) |
| 521 | Potentilla flabellifolia | - (0) | 2 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 670 | Potentilla gracilis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | 1 (1) | 2 (1) | 1 (1) | - (0) |
| 526 | Pyrola asarifolia | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 529 | Pyrola secunda | - (0) | - (0) | 2 (1) | 3 (1) | 3 (1) | 1 (1) | 2 (1) | - (0) | 6 (1) | 8 (5) | 2 (0) | - (0) | - (0) |
| 676 | Saxifraga arguta | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 538 | Senecio pseudaureus | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 681 | Senecio streptanthifolius | - (0) | - (0) | 1 (1) | - (0) | 3 (1) | 1 (1) | 3 (1) | - (0) | 8 (1) | 4 (1) | 2 (1) | 1 (1) | 1 (1) |
| 539 | Senecio triangularis | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 542 | Smilacina racemosa | - (0) | - (0) | 1 (1) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) |
| 543 | Smilacina stellata | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 684 | Solidago multiradiata | - (0) | - (0) | 2 (1) | 3 (1) | 3 (3) | 3 (4) | 1 (5) | - (0) | 9 (1) | 3 (1) | 2 (3) | - (0) | - (0) |
| 546 | Streptopus amplexifolius | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 547 | Thalictrum occidentalis | - (0) | 2 (1) | 2 (2) | - (0) | - (0) | 1 (9) | 1 (1) | - (0) | 3 (1) | 3 (14) | - (0) | - (0) | - (0) |
| 563 | *Trautvetteria caroliniensis* | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 560 | *Trillium ovatum* | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 551 | Valeriana sitchensis | - (0) | 6 (1) | 6 (1) | 3 (1) | 10 (2) | 3 (1) | 3 (1) | - (0) | - (0) | 2 (1) | - (0) | - (0) | - (0) |
| 552 | Veratrum viride | - (0) | 4 (8) | - (0) | - (0) | - (0) | 1 (1) | + (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 554 | Viola adunca | - (0) | - (0) | - (0) | - (0) | - (0) | 3 (1) | 1 (2) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |
| 693 | Viola nuttallii | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | + (1) | - (0) | - (0) | - (0) | 4 (1) | - (0) | 1 (1) |
| 557 | Viola orbiculata | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (3) | - (0) |
| 694 | Viola purpurea | - (0) | - (0) | - (0) | - (0) | - (0) | 1 (1) | 1 (1) | 7 (1) | - (0) | - (0) | 2 (1) | 3 (4) | 3 (1) |
| 558 | Xerophyllum tenax | 4 (1) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) | - (0) |

# APPENDIX C-2

**APPENDICES C-2 –** Presence list: Numbers of sample stands where each species occurred, by habitat type and phase.
(Appendices C-2 is not included in this PDF file. It has been included as two separate PDF files that are labeled “HabitatTypes_C-ID_AppC-2a.pdf” and “HabitatTypes_C-ID_AppC-2b.pdf” and can be downloaded from the same directory where this file is located.)

# APPENDIX D-1. SUBSTRATE FEATURES OF CENTRAL IDAHO HABITAT TYPES AND PHASES

Substrate features of central Idaho habitat types and phases

| Soil Characteristics | PIFL | PINUS PONDEROSA SERIES | | | | | | | PSEUDOTSUGA MENZIESII SERIES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FEID h.t. | STOC h.t. | AGSP h.t. | FEID h.t. | PUTR h.t. | | SYOR h.t. | SYAL h.t. | AGSP h.t. | FEID h.t. | | CELE h.t. | SYOR h.t. | ARCO h.t. | |
| | | | | | FEID phase | AGSP phase | | | | PIPO phase | FEID phase | | | ASMI phase | ARCO phase |
| | n=3 | n=3 | n=18 | n=7 | n=3 | n=11 | n=3 | n=11 | n=20 | n=6 | n=11 | n=6 | n=26 | n=6 | n=22 |
| | COARSE FRAGMENT TYPES (percent of stands) | | | | | | | | | | | | | | |
| SEDIMENTARY | | | | | | | | | | | | | | | |
| Calcarceous | 67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10 | 17 | 10 | 33 | 37 |
| Noncalcarceous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 17 | -- | 33 | 5 |
| METAMORPHIC | | | | | | | | | | | | | | | |
| Quartzite | 33 | -- | -- | -- | -- | -- | -- | -- | 12 | -- | 30 | 17 | 26 | -- | 26 |
| Gneiss & schist | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 |
| Miscellaneous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | -- |
| IGNEOUS | | | | | | | | | | | | | | | |
| Basalt & andesite | -- | -- | 28 | 29 | 67 | 30 | 67 | 55 | 24 | 33 | 10 | -- | 16 | -- | 21 |
| Dacite, trachyte & latite | -- | -- | -- | -- | -- | -- | -- | 9 | 12 | 17 | 30 | -- | 26 | -- | 5 |
| Rhyolite | -- | -- | -- | -- | -- | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Other volcanics | -- | -- | -- | -- | -- | -- | -- | -- | -- | 17 | -- | 33 | -- | -- | -- |
| Quartz monzonite & granitic | -- | -- | -- | 14 | -- | -- | -- | -- | -- | 17 | -- | 17 | 10 | -- | -- |
| Granitics (undifferentiated) | -- | 67 | 72 | 57 | 33 | 60 | 33 | 36 | 53 | 17 | 20 | -- | 5 | -- | -- |
| Miscellaneous | -- | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- |
| MIXED | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | SUBSTRATE CHARACTERISTICS | | | | | | | | | | | | | | |
| EXPOSED ROCK (mean %) | 10 | 5 | 22 | 4 | 6 | 5 | 2 | 3 | 14 | 3 | 8 | 18 | 19 | 1 | 8 |
| EXPOSED SOIL (mean %) | 2 | 16 | 30 | 4 | 15 | 8 | 6 | 1 | 16 | 1 | 10 | 10 | 4 | 0.2 | 2 |
| LITTER DEPTH (mean con) | 1.6 | 3.2 | 1.5 | 3.0 | 2.8 | 2.4 | 2.6 | 4.9 | 1.8 | 3.1 | 1.8 | 0.7 | 3.0 | 2.6 | 3.6 |
| REACTION (mean pH) | 7.6 | 5.7 | 6.0 | 6.1 | 5.9 | 5.9 | 6.2 | 5.9 | 6.1 | 6.0 | 6.1 | 6.4 | 6.8 | -- | 6.8 |
| GRAVEL CONTENT (mean %) | 20 | 17 | 8 | 12 | 7 | 12 | 12 | 5 | 20 | 19 | 39 | 30 | 41 | 39 | 41 |
| TEXTURAL CLASS (percent of stands) | | | | | | | | | | | | | | | |
| Loamy sand | -- | -- | 23 | 14 | 33 | 18 | -- | -- | -- | -- | -- | -- | 17 | -- | -- |
| Sandy loam | -- | 67 | 47 | 29 | 33 | 36 | -- | 27 | 41 | 16 | 14 | 33 | 22 | -- | 21 |
| Loam | 67 | 33 | 12 | 43 | 33 | 36 | 33 | 36 | 47 | 67 | 57 | 67 | 48 | -- | 68 |
| Silt loam & silt | 33 | -- | -- | -- | -- | -- | -- | 9 | 12 | 16 | 28 | -- | 13 | -- | 10 |
| Silty clay loam & clay loam | -- | -- | 18 | 14 | -- | 9 | 67 | 27 | -- | -- | -- | -- | -- | -- | -- |

(Con.)

**APPENDIX D-1 (con.)**

Substrate features of central Idaho habitat types and phases (con.)

| Soil Characteristics | JUCO h.t. | CAGE h.t. | | | BERE h.t. | | | CARU h.t. | | | OSCH h.t. | SPBE h.t. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PSEUDOTSUGA MENZIESII SERIES (con.) | | | | | | | | | | | | | |
| | | SYOR phase | CAGE phase | PIPO phase | SYOR phase | BERE phase | CAGE phase | PIPO phase | CARU phase | FEID phase | | CARU phase | SPBE phase | PIPO phase |
| | n=13 | n=11 | n=14 | n=13 | n=3 | n=13 | n=5 | n=16 | n=31 | n=2 | n=7 | n=5 | n=9 | n=25 |
| COARSE FRAGMENT TYPES (percent of stands) | | | | | | | | | | | | | | |
| SEDIMENTARY | | | | | | | | | | | | | | |
| Calcarceous | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Noncalcarceous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| METAMORPHIC | | | | | | | | | | | | | | |
| Quartzite | 50 | 11 | 17 | -- | -- | -- | -- | -- | 38 | -- | -- | 75 | 14 | -- |
| Gneiss & schist | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Miscellaneous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| IGNEOUS | | | | | | | | | | | | | | |
| Basalt & andesite | -- | 22 | 25 | 25 | -- | 27 | -- | 21 | 12 | -- | 43 | -- | 14 | 38 |
| Dacite, trachyte & latite | -- | 11 | 17 | -- | -- | -- | -- | 14 | -- | -- | -- | 25 | 14 | -- |
| Rhyolite | -- | 11 | -- | -- | -- | -- | -- | -- | -- | -- | 14 | -- | -- | -- |
| Other volcanics | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Quartz monzonite & granitic | -- | -- | 8 | 8 | -- | -- | 60 | 14 | 19 | -- | -- | -- | 29 | -- |
| Granitics (undifferentiated) | 17 | 44 | 33 | 67 | 100 | 64 | 20 | 50 | 31 | -- | 43 | -- | 14 | 62 |
| Miscellaneous | -- | -- | -- | -- | -- | 9 | -- | -- | -- | -- | -- | -- | 14 | -- |
| MIXED | -- | -- | -- | -- | -- | -- | 20 | -- | -- | -- | -- | -- | -- | -- |
| SUBSTRATE CHARACTERISTICS | | | | | | | | | | | | | | |
| EXPOSED ROCK (mean %) | 15 | 7 | 4 | 4 | 35 | 2 | 6 | 0.5 | 5 | -- | 1 | 2 | 18 | 8 |
| EXPOSED SOIL (mean %) | 2 | 7 | 4 | 7 | 1 | 1 | 3 | 2 | 2 | -- | 1 | 1 | 4 | 5 |
| LITTER DEPTH (mean cm) | 3.5 | 1.4 | 2.6 | 3.5 | 1.6 | 4.1 | 3.3 | 3.8 | 3.3 | -- | 4.7 | 2.3 | 2.2 | 3.7 |
| REACTION (mean pH) | 7.1 | 5.9 | 5.9 | 5.8 | 5.6 | 6.0 | 6.0 | 6.0 | 6.3 | -- | 5.8 | 6.4 | 6.6 | 5.9 |
| GRAVEL CONTENT (mean %) | 31 | 43 | 42 | 8 | 24 | 16 | 37 | 15 | 31 | -- | 18 | 24 | 34 | 9 |
| TEXTURAL CLASS (percent of stands) | | | | | | | | | | | | | | |
| Loamy sand | -- | 11 | 10 | 25 | -- | 17 | 20 | 20 | -- | -- | -- | -- | -- | 12 |
| Sandy loam | -- | 44 | 30 | 25 | 67 | 33 | 40 | 27 | 35 | -- | 40 | 40 | 38 | 28 |
| Loam | 40 | 44 | 50 | 42 | 33 | 50 | 40 | 53 | 65 | -- | 60 | 60 | 62 | 56 |
| Silt loam & silt | 60 | -- | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silty clay loam & clay loam | -- | -- | -- | 8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4 |

(Con.)

**APPENDIX D-1 (con.)**

Substrate features of central Idaho habitat types and phases (con.)

| Soil Characteristics | PSEUDOTSUGA MENZIESII SERIES (con.): SYAL h.t. | | ACGL h.t. | | PHMA h.t. | | PIEN SERIES: CADI h.t. | HYRE h.t. | ABIES GRANDIS SERIES: CARU h.t. | SPBE h.t. | VAGL h.t. | ACGL h.t. | | LIBO h.t. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SYAL phase n=3 | PIPO phase n=20 | SYOR phase n=5 | ACGL phase n=8 | PSME phase n=13 | PIPO phase n=27 | n=7 | n=5 | n=7 | n=8 | n=12 | PHMA phase n=12 | ACGL phase n=14 | VAGL phase n=4 | LIBO phase n=4 |
| | | | | | | | | COARSE FRAGMENT TYPES (percent of stands) | | | | | | | |
| SEDIMENTARY | | | | | | | | | | | | | | | |
| Calcarceous | -- | -- | 50 | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- |
| Noncalcarceous | -- | -- | -- | 17 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | -- |
| METAMORPHIC | | | | | | | | | | | | | | | |
| Quartzite | 50 | -- | 50 | -- | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Gneiss & schist | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Miscellaneous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| IGNEOUS | | | | | | | | | | | | | | | |
| Basalt & andesite | -- | 28 | -- | 17 | 20 | 23 | -- | -- | 43 | 50 | 40 | 30 | 31 | 33 | 33 |
| Dacite, trachyte & latite | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Rhyolite | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Other volcanics | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Quartz monzonite & granitic | 50 | 17 | -- | 17 | 10 | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Granitics (undifferentiated) | -- | 44 | -- | 33 | 30 | 64 | -- | -- | 14 | 38 | 50 | 40 | 62 | 33 | 33 |
| Miscellaneous | -- | -- | -- | 17 | -- | -- | -- | -- | -- | -- | -- | 10 | 7 | -- | -- |
| MIXED | -- | 11 | -- | -- | 20 | 9 | -- | -- | 43 | 12 | 10 | 20 | -- | -- | 33 |
| | | | | | | | | SUBSTRATE CHARACTERISTICS | | | | | | | |
| EXPOSED ROCK (mean %) | 0.3 | 3 | 8 | 5 | 12 | 0.7 | 0 | 2 | 1 | 1 | 0 | 0.3 | 0 | 0 | 0.5 |
| EXPOSED SOIL (mean %) | 1 | 0.2 | 2 | 1 | 2 | 0.5 | 0 | 0.4 | 1 | 0.2 | 0 | 1 | 0.8 | 0.2 | 1 |
| LITTER DEPTH (mean con) | 3.2 | 4.8 | 4.1 | 4.7 | 4.9 | 4.8 | 14.0 | 2.8 | 2.7 | 3.9 | 3.9 | 3.6 | 4.4 | 3.6 | 4.6 |
| REACTION (mean pH) | 6.6 | 6.2 | -- | 6.3 | 6.5 | 6.3 | 5.6 | 8.0 | 6.1 | 6.0 | 5.9 | 6.3 | 6.0 | 6.3 | 5.8 |
| GRAVEL CONTENT (mean %) | 41 | 17 | -- | 19 | 24 | 15 | 3 | 27 | 3 | 4 | 2 | 4 | 10 | 21 | 5 |
| TEXTURAL CLASS (percent of stands) | | | | | | | | | | | | | | | |
| Loamy sand | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sandy loam | -- | 37 | -- | 25 | 11 | 40 | -- | -- | 50 | 25 | 20 | 38 | 57 | -- | -- |
| Loam | 100 | 47 | 33 | 75 | 67 | 55 | -- | -- | 25 | 62 | 80 | 50 | 43 | -- | -- |
| Silt loam & silt | -- | 5 | 67 | -- | 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silty clay loam & clay loam | -- | 10 | -- | -- | -- | 5 | -- | -- | 25 | 12 | -- | 12 | -- | -- | -- |

(con.)

**APPENDIX D-1 (con.)**

Substrate features of central Idaho habitat types and phases (con.)

| Soil Characteristics | ABGR S (con.) VACA h.t. n=8 | ABGR S (con.) CLUN h.t. n=15 | ABIES LASIOCARPA SERIES: CABI h.t. n=8 | CACA h.t.: CACA phase n=7 | CACA h.t.: VACA phase n=8 | CACA h.t.: LICA phase n=14 | CACA h.t.: LEGL phase n=11 | STAM h.t.: LICA phase n=11 | STAM h.t.: STAM phase n=7 | CLUN h.t. n=3 | MEFE h.t. n=8 | ACGL h.t. n=5 | VACA h.t. n=13 | LIBO h.t. n=4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COARSE FRAGMENT TYPES (percent of stands) | | | | | | | | | | | | | | |
| SEDIMENTARY | | | | | | | | | | | | | | |
| Calcarceous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Noncalcarceous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| METAMORPHIC | | | | | | | | | | | | | | |
| Quartzite | -- | -- | -- | 67 | 17 | 9 | -- | -- | 17 | -- | -- | -- | -- | -- |
| Gneiss & schist | -- | 8 | -- | -- | -- | -- | -- | -- | -- | -- | 20 | -- | -- | -- |
| Miscellaneous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| IGNEOUS | | | | | | | | | | | | | | |
| Basalt & andesite | -- | 50 | -- | -- | -- | -- | -- | 17 | 33 | -- | -- | -- | -- | -- |
| Dacite, trachyte & latite | -- | -- | -- | -- | -- | -- | 12 | -- | -- | -- | -- | -- | 9 | -- |
| Rhyolite | -- | -- | -- | -- | -- | -- | -- | -- | 17 | -- | -- | -- | -- | -- |
| Other volcanics | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Quartz monzonite & granitic | -- | -- | 20 | 33 | -- | -- | 12 | -- | 17 | -- | -- | 20 | -- | -- |
| Granitics (undifferentiated) | -- | 33 | 60 | -- | 83 | 82 | 75 | 83 | 17 | 100 | 80 | 60 | 73 | -- |
| Miscellaneous | -- | -- | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MIXED | -- | 8 | -- | -- | -- | 9 | -- | -- | -- | -- | -- | 20 | 18 | -- |
| SUBSTRATE CHARACTERISTICS | | | | | | | | | | | | | | |
| EXPOSED ROCK (mean %) | 0 | 0.2 | 0.6 | 0.1 | 0 | 1 | 1 | 0.5 | 0.4 | 0 | 0.7 | 0.4 | 0.3 | 5 |
| EXPOSED SOIL (mean %) | 0 | 0.3 | 0.3 | 0.1 | 0.3 | 0.5 | 0 | 0.1 | 0.7 | 0 | 2 | 1 | 1 | 0 |
| LITTER DEPTH (mean con) | 1.8 | 4.8 | 7.5 | 4.4 | 3.1 | 4.6 | 5.3 | 4.3 | 8.0 | 6.5 | 6.0 | 3.4 | 2.4 | 4.7 |
| REACTION (mean pH) | 5.3 | 5.9 | 5.2 | 5.3 | 5.0 | 5.1 | 5.1 | 5.1 | 5.6 | 5.5 | 5.4 | 5.8 | 5.2 | 5.5 |
| GRAVEL CONTENT (mean %) | 7 | 4 | 19 | 13 | 16 | 8 | 10 | 10 | 14 | 2 | 10 | 18 | 24 | 2 |
| TEXTURAL CLASS (percent of stands) | | | | | | | | | | | | | | |
| Loamy sand | -- | -- | -- | -- | -- | -- | 17 | -- | -- | -- | -- | -- | 8 | -- |
| Sandy loam | -- | 59 | 29 | 29 | 14 | 27 | 17 | 14 | 25 | 67 | 50 | 60 | 50 | 33 |
| Loam | -- | 50 | 71 | 71 | 86 | 73 | 67 | 86 | 75 | 33 | 50 | 40 | 25 | 33 |
| Silt loam & silt | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8 | -- |
| Silty clay loam & clay loam | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 |

(Con.)

Substrate features of central Idaho habitat types and phases (con.)

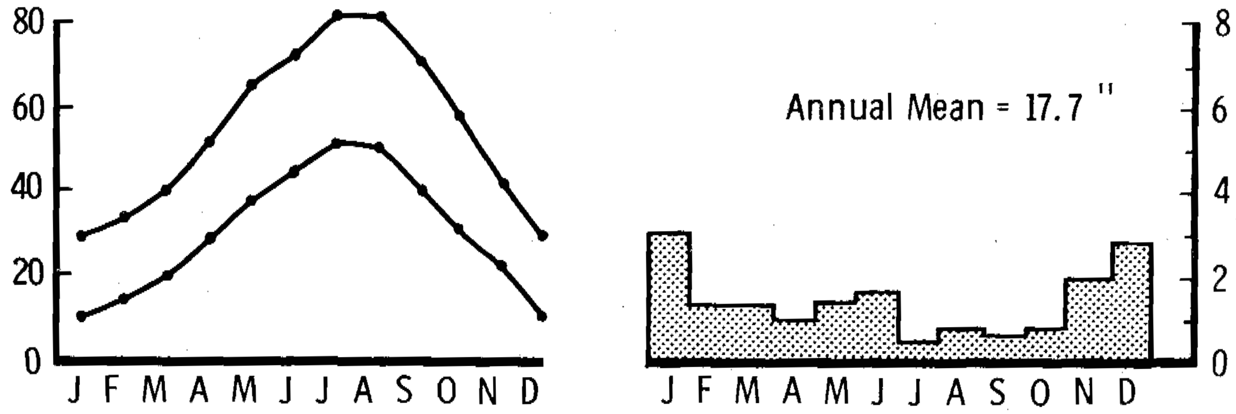
| Soil Characteristics | ABIES LASIOCARPA SERIES (con.) XETE h.t. LUHI phase n=5 | XETE h.t. VASC phase n=6 | XETE h.t. VAGL phase n=9 | VAGL h.t. n=11 | SPBE h.t. n=7 | LUHI h.t. VASC phase n=5 | LUHI h.t. LUHI phase n=5 | VASC h.t. VASC phase n=13 | VASC h.t. CARU phase n=3 | VASC h.t. PIAL phase n=3 | CARU h.t. n=15 | CAGE h.t. CAGE phase n=30 | CAGE h.t. ARTR phase n=3 | JUCO h.t. n=8 | ARCO h.t. n=12 | RIMO h.t. n=5 | PIAL/ABLA h.t.s. n=15 | PICO SERIES FEID h.t. n=12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COARSE FRAGMENT TYPES (percent of stands) | | | | | | | | | | | | | | | | | | |
| SEDIMENTARY | | | | | | | | | | | | | | | | | | |
| Calcarceous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 50 | -- | -- |
| Noncalcarceous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| METAMORPHIC | | | | | | | | | | | | | | | | | | |
| Quartzite | -- | 20 | 12 | -- | -- | -- | -- | 27 | -- | -- | -- | 28 | -- | 62 | 56 | 50 | 8 | 18 |
| Gneiss & schist | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Miscellaneous | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| IGNEOUS | | | | | | | | | | | | | | | | | | |
| Basalt & andesite | -- | 20 | -- | -- | -- | 25 | -- | 9 | 33 | -- | 21 | 5 | -- | -- | -- | -- | -- | 18 |
| Dacite, trachyte & latite | -- | -- | -- | -- | -- | -- | -- | 9 | -- | -- | 14 | 14 | 33 | 38 | 33 | -- | -- | -- |
| Rhyolite | -- | -- | -- | 11 | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- | -- | -- | -- | -- |
| Other volcanics | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Quartz monzonite & granitic | -- | -- | -- | 11 | 33 | -- | -- | 9 | 33 | -- | 7 | 14 | -- | -- | 11 | -- | 17 | 36 |
| Granitics (undifferentiated) | 60 | 60 | 88 | 56 | 67 | 75 | 100 | 36 | 33 | -- | 57 | 28 | 67 | -- | -- | -- | 67 | 27 |
| Miscellaneous | -- | -- | -- | -- | -- | -- | -- | 9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MIXED | -- | -- | -- | 22 | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- | -- | -- | 8 | -- |
| SUBSTRATE CHARACTERISTICS | | | | | | | | | | | | | | | | | | |
| EXPOSED ROCK (mean %) | 0.6 | 2 | 8 | 0.6 | 5 | 2 | 11 | 2 | 0.8 | 4 | 1 | 3 | 4 | 13 | 3 | 5 | 15 | 3 |
| EXPOSED SOIL (mean %) | 0.6 | 4 | 0.6 | 0.4 | 0.1 | 3 | 4 | 2 | 0 | 2 | 2 | 7 | 18 | 3 | 2 | 4 | 24 | 7 |
| LITTER DEPTH (mean con) | 2.6 | 2.2 | 3.6 | 3.8 | 3.3 | 2.3 | 1.9 | 2.3 | 1.6 | 0.9 | 1.9 | 2.2 | 2.5 | 1.7 | 2.7 | 2.3 | -- | 0.7 |
| REACTION (mean pH) | 4.7 | 5.1 | 5.2 | 5.5 | 5.7 | 5.0 | 4.6 | 5.1 | 5.1 | 5.0 | 5.4 | 5.2 | 5.5 | 6.0 | 5.5 | 6.0 | -- | 5.4 |
| GRAVEL CONTENT (mean %) | 13 | 25 | 19 | 12 | 22 | 20 | 19 | 29 | 23 | 28 | 25 | 34 | 17 | 33 | 43 | 41 | -- | 35 |
| TEXTURAL CLASS (percent of stands) | | | | | | | | | | | | | | | | | | |
| Loamy sand | -- | 33 | -- | -- | 17 | -- | -- | -- | -- | -- | 14 | 4 | -- | -- | -- | -- | 8 | -- |
| Sandy loam | 67 | -- | 25 | 44 | 33 | 25 | 25 | 27 | 33 | -- | 28 | 26 | 67 | 12 | 44 | -- | 67 | 36 |
| Loam | 33 | 67 | 75 | 55 | 50 | 75 | 75 | 73 | 67 | -- | 57 | 70 | 33 | 88 | 56 | -- | 25 | 64 |
| Silt loam & silt | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silty clay loam & clay loam | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

## APPENDIX D-2. CLIMATIC PARAMETERS FOR WEATHER STATIONS WITHIN SELECTED HABITAT TYPES IN CENTRAL IDAHO

## PINUS FLEXILIS SERIES

### PIFL/?

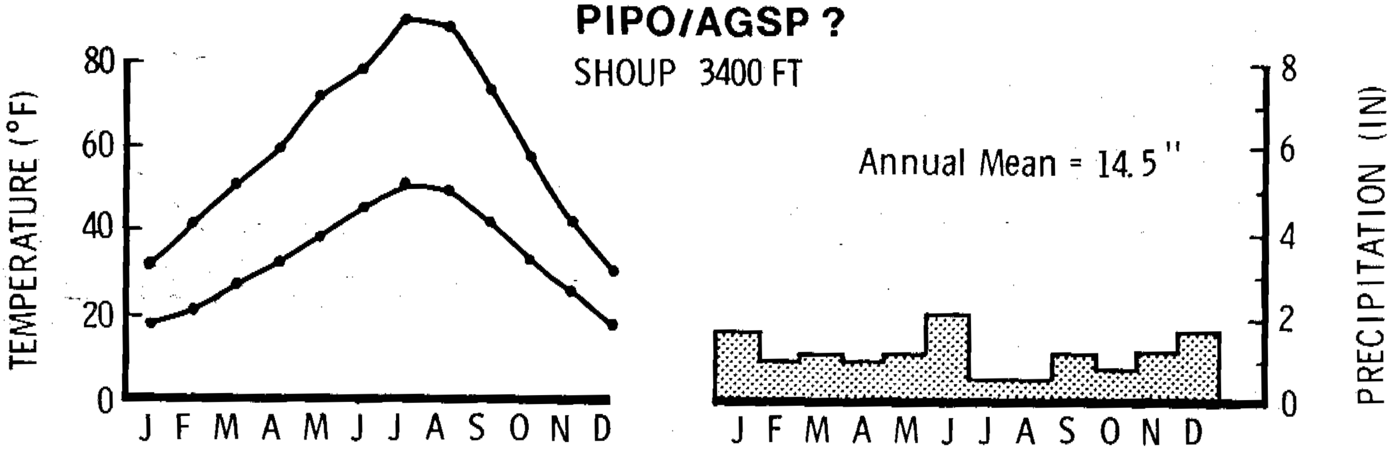
CRATERS OF THE MOON 5897 FT




## PINUS PONDEROSA SERIES

### PIPO/AGSP ?

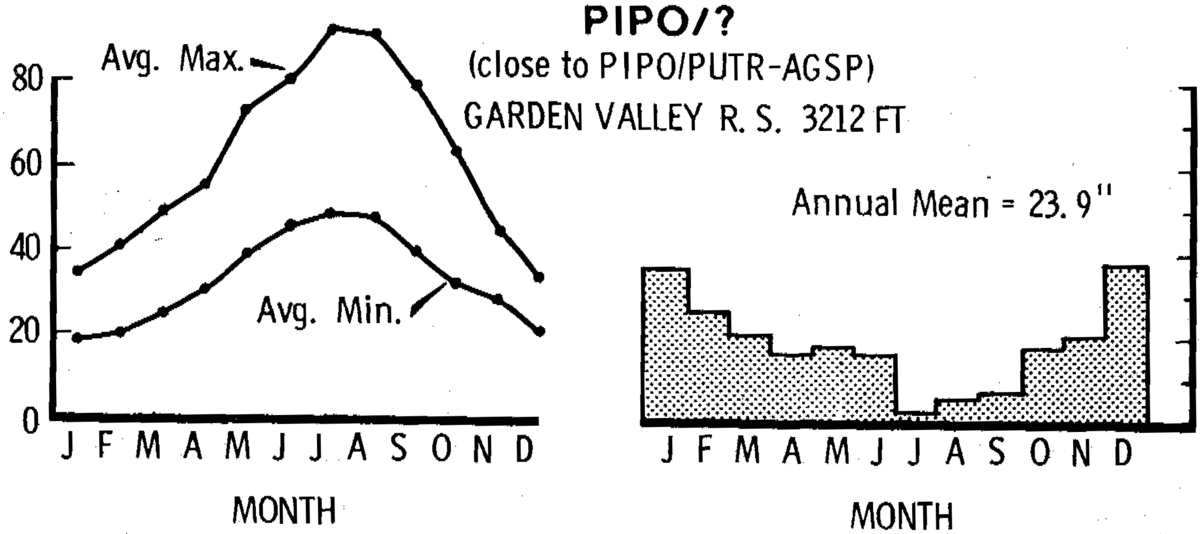
SHOUP 3400 FT




### PIPO/?

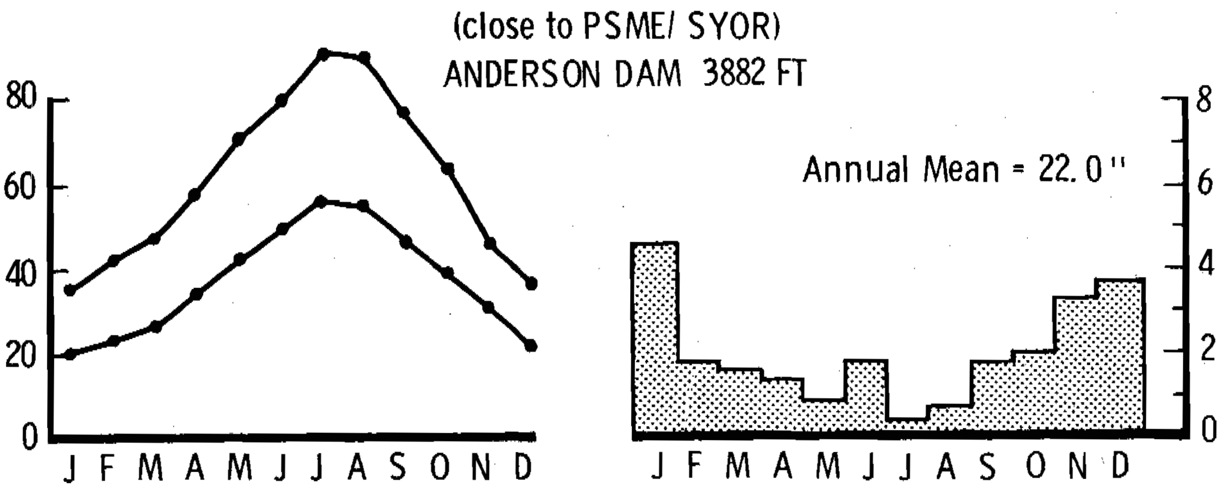
(close to PIPO/PUTR-AGSP)

GARDEN VALLEY R. S. 3212 FT

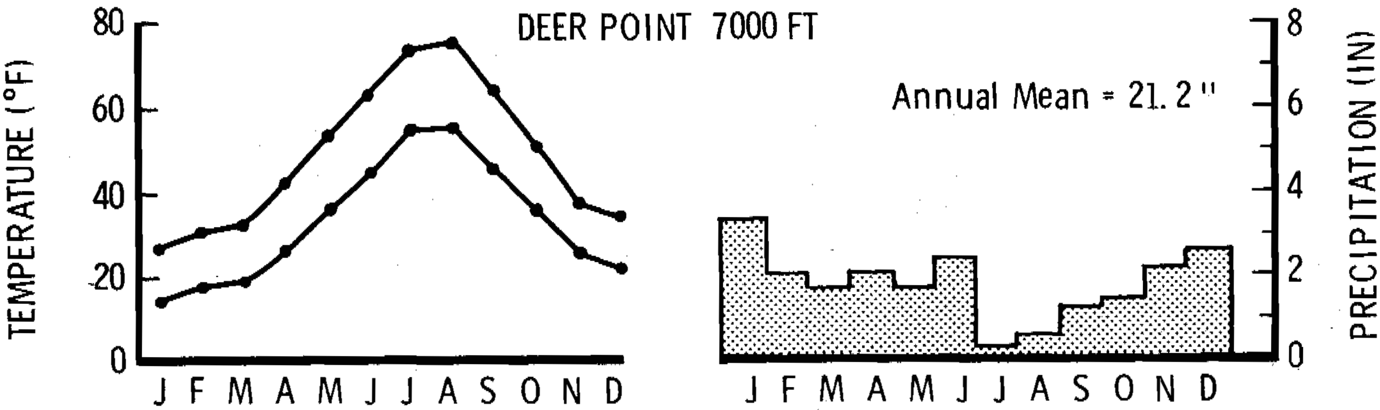


## PSEUDOTSUGA MENZIESII SERIES

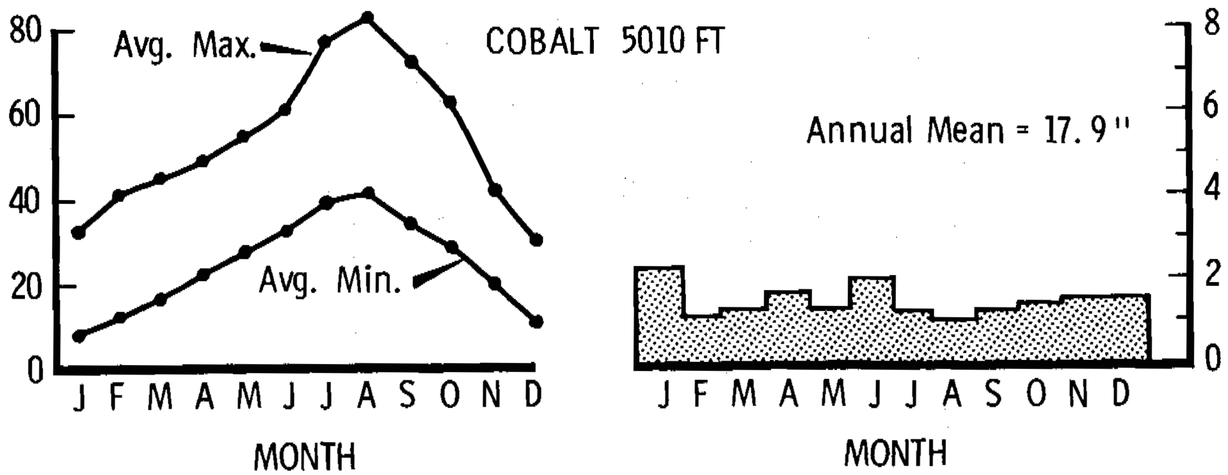
### PSME – lower timberline



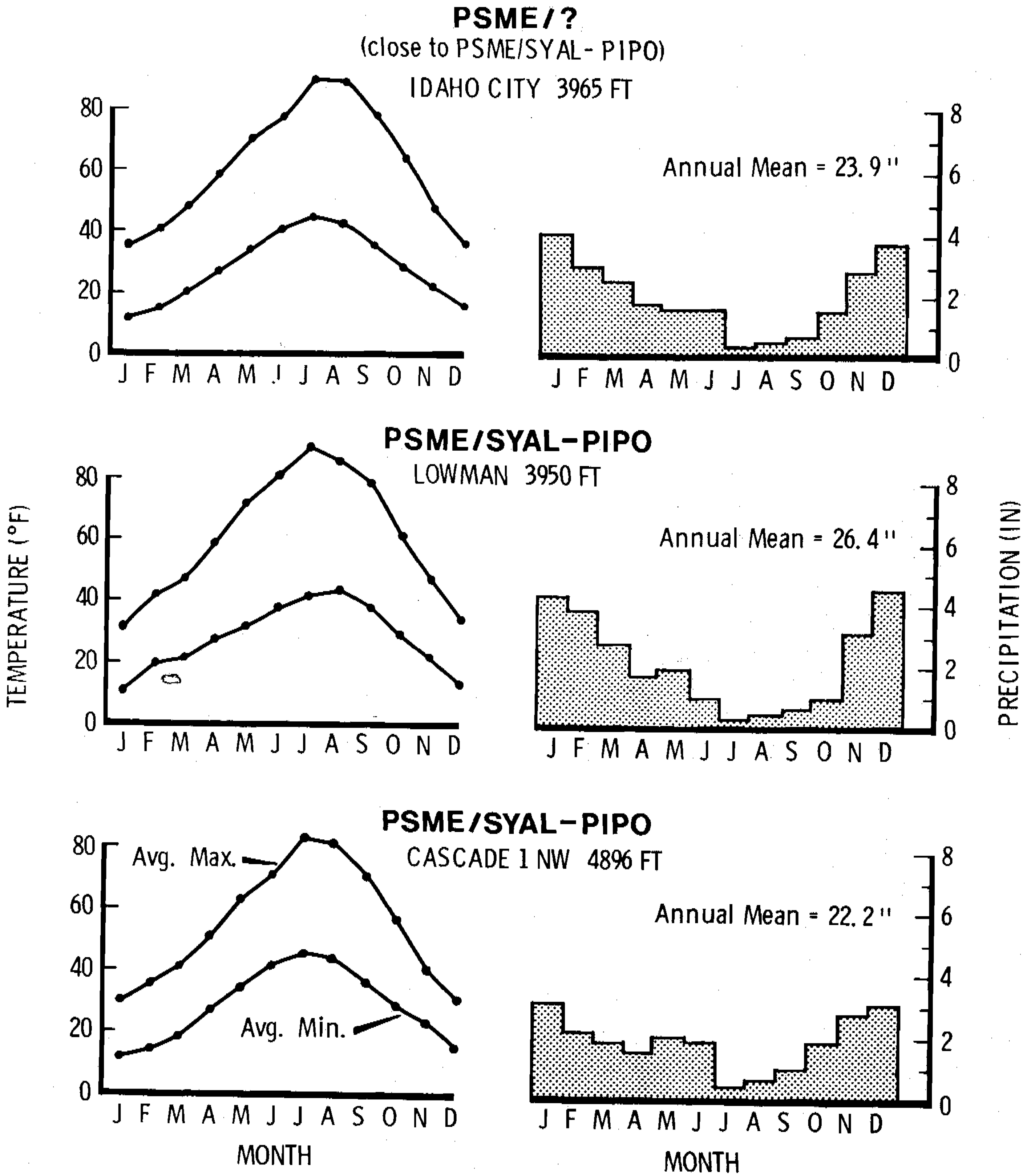

### PSME/BERE-SYOR




### PSME/CARU-CARU

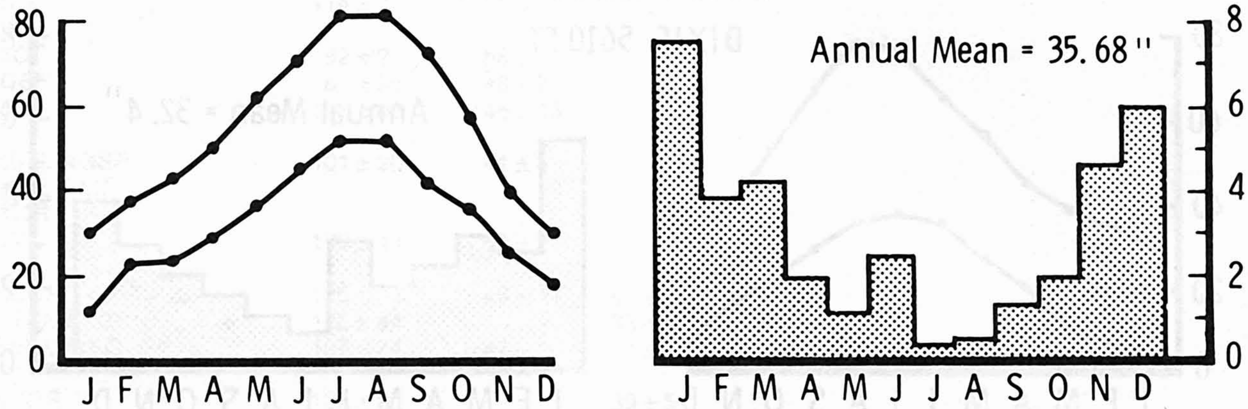


## PSEUDOTSUGA MENZIESII SERIES



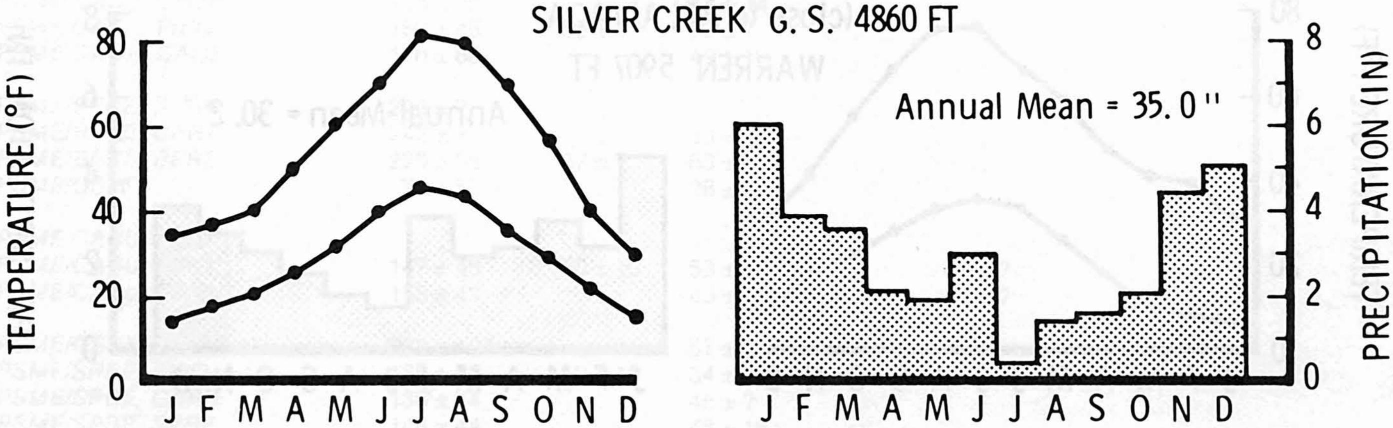
## PSEUDOTSUGA MENZIESII SERIES

### PSME/PHMA-PIPO
PINE CREEK 4950 FT

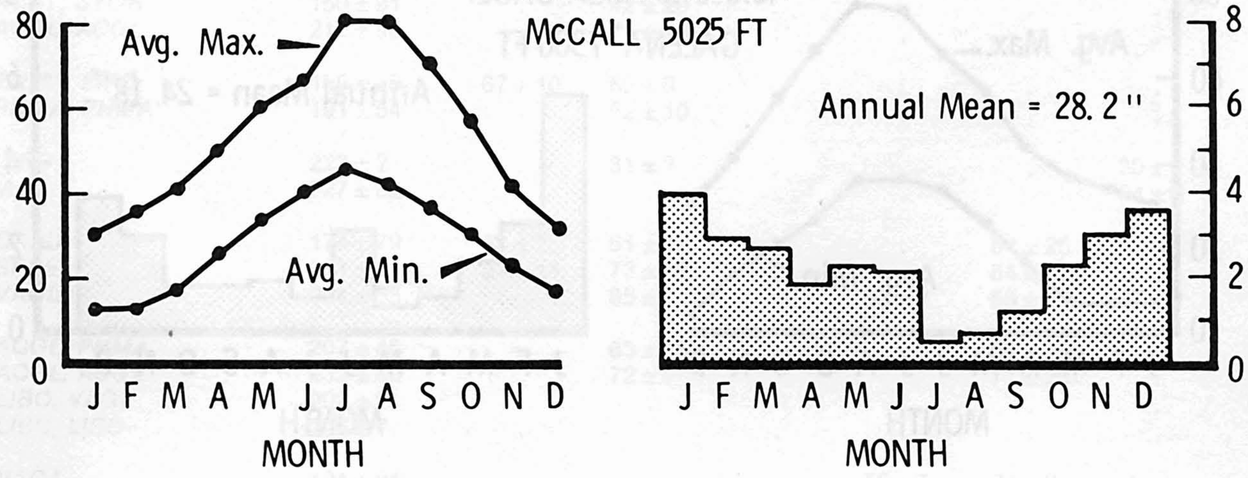



## ABIES GRANDIS SERIES

### ABGR/LIBO
SILVER CREEK G. S. 4860 FT

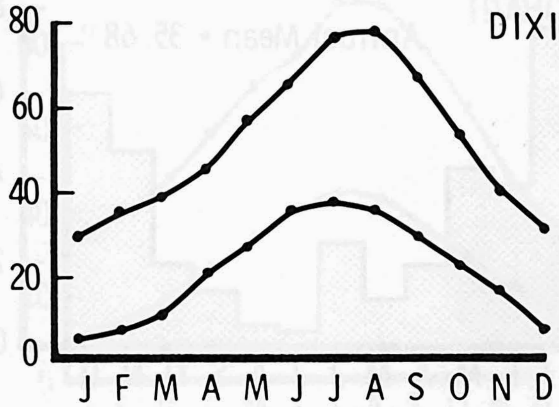


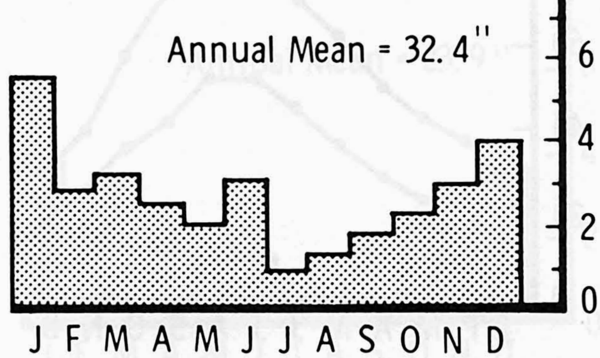

### ABGR/LIBO?
McCALL 5025 FT



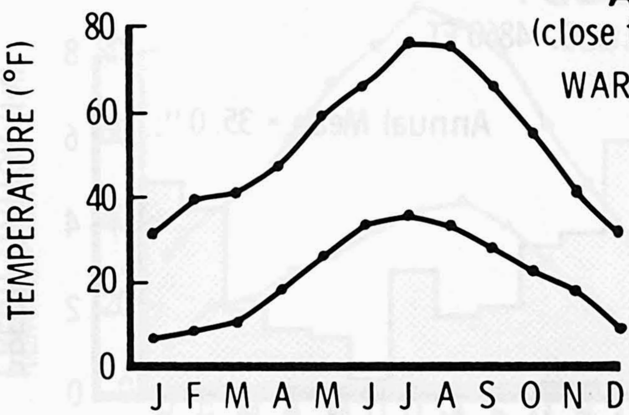
## ABIES LASIOCARPA SERIES

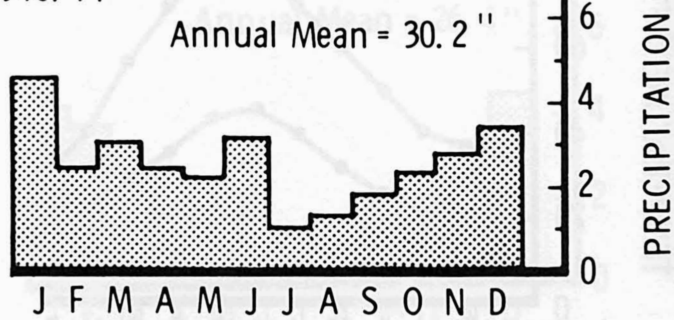
### ABLA/VASC
(close to ABLA/VACA)
DIXIE 5610 FT



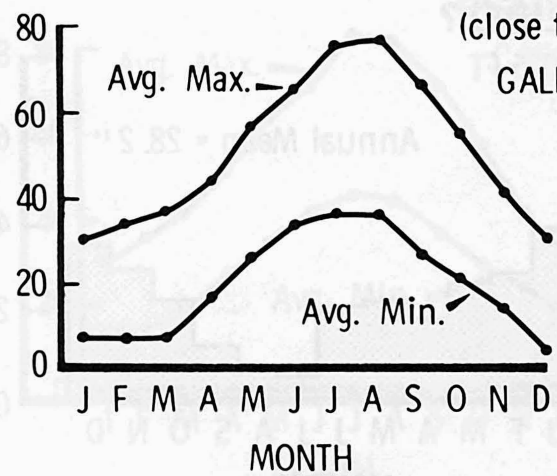



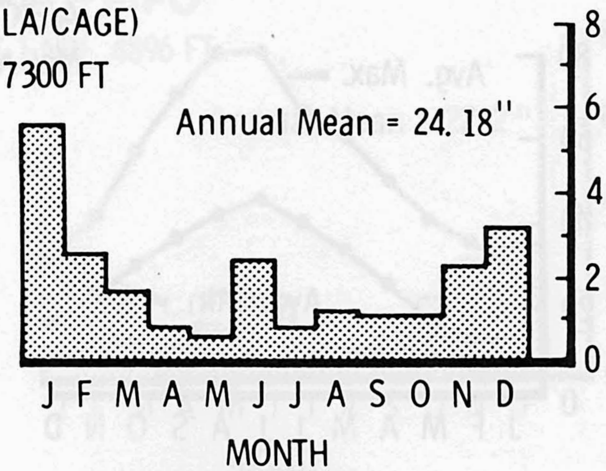

### ABLA/?
(close to ABLA/VACA)
WARREN 5907 FT




### ABLA/?
(close to ABLA/CAGE)
GALENA 7300 FT



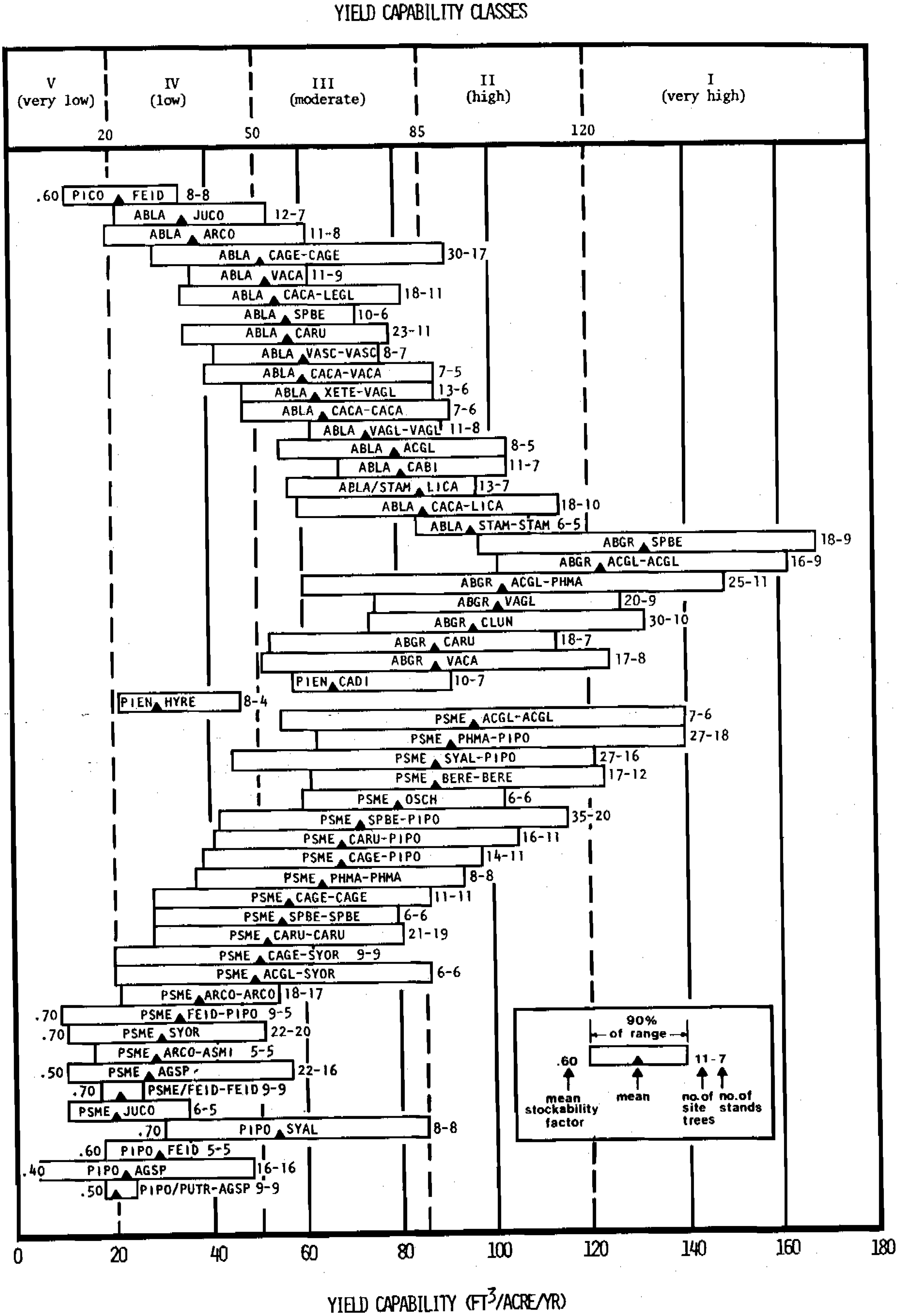



**APPENDIX E-1 - MEAN BASAL AREAS AND 50-YEAR SITE INDEXES FOR CENTRAL IDAHO STANDS BY HABITAT TYPE. MEANS ARE SHOWN WHERE *n* = 3 OR MORE; CONFIDENCE LIMITS (95 PERCENT) FOR ESTIMATING THE MEAN ARE GIVEN WHERE n = 5 OR MORE**

| Habitat type | Basal area | Site index by species | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | PIPO | PSME | LAOC | PICO | ABGR | PIEN | ABLA |
| | $Ft^2$/acre | | | | | | | |
| *PIFL/FEID* | 114 ± ? | . | . | . | . | . | . | . |
| *PIPO/STOC* | 82 ± ? | 58 ± ? | . | . | . | . | . | . |
| *PIPO/AGSP* | 84 ± 36 | 46 ± 7 | . | . | . | . | . | . |
| *PIPO/FEID* | 108 ± 62 | 46 ± 13 | . | . | . | . | . | . |
| *PIPO/PUTR, AGSP* | 101 ± 20 | 41 ± 8 | . | . | . | . | . | . |
| *PIPO/PUTR, FEID* | . | . | . | . | . | . | . | . |
| *PIPO/SYOR* | . | . | . | . | . | . | . | . |
| *PIPO/SYAL* | 179 ± 43 | 59 ± 7 | . | . | . | . | . | . |
| *PSME/AGSP* | 120 ± 34 | 49 ± 11 | 46 ± 5 | . | . | . | . | . |
| *PSME/FEID, FEID* | 122 ± 44 | . | 33 ± 4 | . | . | . | . | . |
| *PSME/FEID, PIPO* | 107 ± 74 | 47 ± 10 | 41 ± ? | . | . | . | . | . |
| *PSME/SYOR* | 132 ± 35 | . | 39 ± 5 | . | . | . | . | . |
| *PSME/ARCO, ASMI* | 145 ± 34 | . | 29 ± 13 | . | . | . | . | . |
| *PSME/ARCO, ARCO* | 190 ± 34 | . | 36 ± 5 | . | . | . | . | . |
| *PSME/JUCO* | 183 ± 50 | . | 23 ± 15 | . | . | . | . | . |
| *PSME/CAGE, SYOR* | 128 ± 56 | . | 44 ± 14 | . | . | . | . | . |
| *PSME/CAGE, PIPO* | 156 ± 45 | 55 ± 11 | 52 ± ? | . | . | . | . | . |
| *PSME/CAGE, CAGE* | 170 ± 66 | . | 49 ± 10 | . | . | . | . | . |
| *PSME/BERE, SYOR* | 223 ± ? | . | . | . | . | . | . | . |
| *PSME/BERE, CAGE* | 242 ± ? | . | 53 ± ? | . | . | . | . | . |
| *PSME/BERE, BERE* | 226 ± 58 | 67 ± ? | 63 ± 8 | . | . | . | . | . |
| *PSME/CELE* | 77 ± 58 | . | 28 ± ? | . | . | . | . | . |
| *PSME/CARU, FEID* | . | . | . | . | . | . | . | . |
| *PSME/CARU, PIPO* | 147 ± 45 | 60 ± 10 | 53 ± 16 | . | 44 ± ? | . | . | . |
| *PSME/CARU, CARU* | 158 ± 41 | . | 45 ± 6 | . | 51 ± ? | . | . | . |
| *PSME/OSCH* | 263 ± 107 | . | 57 ± 5 | . | . | . | . | . |
| *PSME/SPBE, PIPO* | 159 ± 32 | 59 ± 10 | 54 ± 6 | . | . | . | . | . |
| *PSME/SPBE, CARU* | 136 ± 44 | . | 46 ± ? | . | . | . | . | . |
| *PSME/SPBE, SPBE* | 148 ± 44 | . | 48 ± 15 | . | . | . | . | . |
| *PSME/SYAL, PIPO* | 183 ± 33 | 66 ± 8 | 61 ± 10 | . | . | . | . | . |
| *PSME/SYAL, SYAL* | . | . | . | . | . | . | . | . |
| *PSME/ACGL, SYOR* | 150 ± 91 | . | 42 ± 20 | . | . | . | . | . |
| *PSME/ACGL, ACGL* | 212 ± 95 | . | 71 ± 29 | . | . | . | . | . |
| *PSME/PHMA, PIPO* | 195 ± 38 | 67 ± 10 | 62 ± 8 | . | . | . | . | . |
| *PSME/PHMA, PHMA* | 191 ± 54 | . | 52 ± 10 | . | . | . | . | . |
| *PIEN/HYRE* | 222 ± ? | . | 31 ± ? | . | . | . | 30 ± ? | . |
| *PIEN/CADI* | 227 ± 52 | . | . | . | . | . | 54 ± 6 | . |
| *ABGR/CARU* | 174 ± 79 | 62 ± ? | 61 ± 12 | . | . | 54 ± 25 | . | . |
| *ABGR/SPBE* | 261 ± 81 | 81 ± 11 | 73 ± 18 | . | . | 84 ± 17 | . | . |
| *ABGR/VAGL* | 224 ± 58 | . | 65 ± ? | . | 53 ± ? | 58 ± 13 | 77 ± ? | . |
| *ABGR/ACGL, PHMA* | 207 ± 45 | . | 63 ± 15 | . | . | 61 ± 15 | . | . |
| *ABGR/ACGL, ACGL* | 232 ± 60 | . | 72 ± ? | . | . | 71 ± 20 | . | . |
| *ABGR/LIBO, VAGL* | 202 ± ? | . | . | . | . | . | . | . |
| *ABGR/LIBO, LIBO* | 206 ± ? | . | . | . | . | . | . | . |
| *ABGR/VACA* | 131 ± 61 | . | . | . | 55 ± 7 | 74 ± ? | . | . |
| *ABGR/CLUN* | 245 ± 54 | . | 66 ± 16 | 64 ± 6 | . | 50 ± 8 | 70 ± 16 | . |

con.

**APPENDIX E-2. ESTIMATED YIELD CAPABILITIES OF CENTRAL IDAHO HABITAT TYPES BASED ON SITE INDEX AND STOCKABILITY FACTORS**



**APPENDIX E-1 Continued.**

| Habitat type | Basal area | Site index by species | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | PIPO | PSME | LAOC | PICO | ABGR | PIEN | ABLA |
| | Ft²/acre | | | | | | | |
| *ABLA/CABI* | 240 ± 127 | . | . | . | . | . | 58 ± 7 | 58 ± ? |
| *ABLA/CACA, LEGL* | 158 ± 36 | . | . | . | 41 ± ? | . | 45 ± 9 | 48 ± ? |
| *ABLA/CACA, VACA* | 132 ± 14 | . | . | . | 51 ± 15 | . | . | . |
| *ABLA/CACA, LICA* | 209 ± 53 | . | . | . | . | . | 67 ± 10 | 57 ± 12 |
| *ABLA/CACA, CACA* | 161 ± 60 | . | . | . | 52 ± ? | . | 52 ± ? | . |
| *ABLA/STAM, LICA* | 204 ± 55 | . | . | . | 57 ± ? | . | 62 ± 17 | 62 ± ? |
| *ABLA/STAM, STAM* | 258 ± 86 | . | . | . | . | . | 65 ± ? | . |
| *ABLA/CLUN, CLUN* | . | . | . | . | . | . | . | . |
| *ABLA/MEFE, MEFE* | 183 ± 53 | . | . | . | . | . | 65 ± ? | . |
| *ABLA/ACGL* | 196 ± ? | . | 54 ± ? | . | . | . | . | 64 ± ? |
| *ABLA/VACA* | 129 ± 34 | . | . | . | 48 ± 7 | . | . | . |
| *ABLA/LIBO, LIBO* | 212 ± ? | . | . | . | . | . | 56 ± ? | . |
| *ABLA/XETE, VAGL* | 194 ± 122 | . | . | . | 54 ± ? | . | 51 ± ? | 48 ± 6 |
| *ABLA/XETE, VASC* | 140 ± ? | . | . | . | . | . | . | . |
| *ABLA/XETE, LUHI* | 136 ± ? | . | . | . | . | . | . | 32 ± ? |
| *ABLA/VAGL, VAGL* | 139 ± 51 | . | 54 ± 11 | . | . | . | . | 56 ± ? |
| *ABLA/SPBE* | 150 ± 52 | . | 51 ± ? | . | 45 ± ? | . | . | 46 ± ? |
| *ABLA/LUHI, VASC* | . | . | . | . | . | . | . | . |
| *ABLA/LUHI, LUHI* | 167 ± ? | . | . | . | . | . | . | . |
| *ABLA/VASC, CARU* | . | . | . | . | . | . | . | . |
| *ABLA/VASC, VASC* | 130 ± 26 | . | . | . | 42 ± ? | . | . | 51 ± ? |
| *ABLA/VASC, PIAL* | . | . | . | . | . | . | . | . |
| *ABLA/CARU* | 154 ± 55 | . | 46 ± 16 | . | 43 ± 9 | . | . | 50 ± 7 |
| *ABLA/CAGE, CAGE* | 133 ± 21 | . | 49 ± ? | . | 38 ± 7 | . | . | 42 ± 8 |
| *ABLA/CAGE, ARTR* | 207 ± ? | . | . | . | . | . | . | . |
| *ABLA/JUCO* | 114 ± 20 | . | 38 ± ? | . | 26 ± ? | . | 29 ± ? | 38 ± ? |
| *ABLA/RIMO* | 96 ± 62 | . | . | . | . | . | . | 31 ± ? |
| *ABLA/ARCO* | 171 ± 43 | . | . | . | . | . | 30 ± 12 | 35 ± 7 |
| *PIAL/ABLA* | 82 ± 55 | . | . | . | . | . | . | . |
| *PICO/FEID* | 94 ± 32 | . | . | . | 37 ± 5 | . | . | . |

## APPENDIX F. CENTRAL IDAHO HABITAT TYPE FIELD FORM

Central Idaho habitat type field form

| Name | | | | |
|---|---|---|---|---|
| (Code Description) | Date | | | |
| Topography: / Horizontal Configuration: / Vegetation Coverage Class: | Plot No. | | | |
| 1-Ridge | Location | | | |
| 2-Upper Slope / 1-Convex (Dry) / 0-None / 3-25 to 50% | T. R. | | | |
| 3-Mid Slope / 2-Straight / T-Rare to 1% / 4-50 to 75% | Section | | | |
| 4-Lower Slope / 3-Concave (wet) / 1-1 to 5% / 5-75 to 95% | Elevation | | | |
| 5-Bench or Flat / 4-Undulating / 2-5 to 25% / 6-95 to 100% | Aspect | | | |
| 6-Streambottom | Slope (%) | | | |
| Note: Rate trees (>4") and regen (0-4") separately (e.g. 4/2) | Topography | | | |
| | Configuration | | | |

| TREES | Abbrev. | Common Name | Canopy | Coverage | Class |
|---|---|---|---|---|---|
| 1. Abies grandis | ABGR | grand fir | / | / | / |
| 2. Abies lasiocarpa | ABLA | subalpine fir | / | / | / |
| 3. Larix occidentalis | LAOC | western larch | / | / | / |
| 4. Picea engelmannii | PIEN | Engelmann spruce | / | / | / |
| 5. Pinus albicaulis | PIAL | whitebark pine | / | / | / |
| 6. Pinus contorta | PICO | lodgepole pine | / | / | / |
| 7. Pinus flexilis | PIFL | limber pine | / | / | / |
| 8. Pinus ponderosa | PIPO | ponderosa pine | / | / | / |
| 9. Pseudotsuga menziesii | PSME | Douglas-fir | / | / | / |
| 10. Populus tremuloides | POTR | quaking aspen | / | / | / |
| SHRUBS AND VINES | | | | | |
| 1. Acer glabrum | ACGL | mountain maple | | | |
| 2. Alnus sinuata | ALSI | mountain alder | | | |
| 3. Artemisia tridentata | ARTR | big sagebrush | | | |
| 4. Berberis repens (+ aquifolium) | BERE | Oregon grape | | | |
| 5. Cercocarpus ledifolius | CELE | curl-leaf mountain-mahogany | | | |
| 6. Clematis columbiana | CLCO | rock clematis | | | |
| 7. Holodiscus discolor | HODI | ocean-spray | | | |
| 8. Juniperus communis | JUCO | common juniper | | | |
| 9. Ledum glandulosum | LEGL | Labrador tea | | | |
| 10. Linnaea borealis | LIBO | twinflower | | | |
| 11. Menziesia ferruginea | MEFE | menziesia | | | |
| 12. Physocarpus malvaceus | PHMA | ninebark | | | |
| 13. Prunus virginiana | PRVI | chokecherry | | | |
| 14. Purshia tridentata | PUTR | bitterbrush | | | |
| 15. Ribes cereum | RICE | squaw current | | | |
| 16 Ribes montigenum | RIMO | mountain gooseberry | | | |
| 17. Spiraea betulifolia (+ pyramidata) | SPBE | white spirea | | | |
| 18. Symphoricarpos albus | SYAL | common snowberry | | | |
| 19. Symphoricarpos oreophilus | SYOR | mountain snowberry | | | |
| 20. Vaccinium caespitosum | VACA | dwarf huckleberry | | | |
| 21. Vaccinium globulare (+ membranaceum) | VAGL | blue huckleberry | | | |
| 22. Vaccinium scoparium (+ myrtillus) | VASC | grouse whortleberry | | | |
| GRAMINOIDS | | | | | |
| 1. Agropyron spicatum | AGSP | bluebunch wheatgrass | | | |
| 2. Calamagrostis rubescens | CARU | pinegrass | | | |
| 3. Calamagrostis canadensis | CACA | bluejoint | | | |
| 4. Carex disperma | CADI | soft-leaved sedge | | | |
| 5. Carex geyeri | CAGE | elks edge | | | |
| 6. Festuca idahoensis | FEID | Idaho fescue | | | |
| 7. Hesperochloa kingii | HEKI | spikefescue | | | |
| 8. Luzula hitchcockii | LUHI | smooth woodrush | | | |
| 9. Stipa occidentalis | STOC | western needlegrass | | | |
| FORBS, FERNS, AND FERN ALLIES | | | | | |
| 1. Actaea rubra | ACRU | baneberry | | | |
| 2. Adenocaulon bicolor | ADBI | trail-plant | | | |
| 3. Arnica cordifolia | ARCO | heartleaf arnica | | | |
| 4. Astragalus miser | ASMI | weedy milkvetch | | | |
| 5. Caltha biflora | CABI | twinflower marsh marigold | | | |
| 6. Clintonia uniflora | CLUN | queencup beadlily | | | |
| 7. Coptis occidentalis | COOC | western goldthread | | | |
| 8. Disporum trachycarpum | DITR | sierra fairybell | | | |
| 9. Equisetum arvense | EQAR | common horsetail | | | |
| 10. Lathyrus nevadensis cusickii | LANC | Cusick's peavine | | | |
| 11. Ligusticum canbyi | LICA | Canby's ligusticum | | | |
| 12. Osmorhiza chilensis | OSCH | mountain sweet-root | | | |
| 13. Penstemon wilcoxii | PEWI | Wilcox's penstemon | | | |
| 14. Senecio triangularis | SETR | arrowleaf groundsel | | | |
| 15. Streptopus amplexifolius | STAM | twisted stalk | | | |
| 16. Trautvetteria caroliniensis | TRCA | false bugbane | | | |
| 17. Xerophyllum tenax | XETE | beargrass | | | |
| | | Series | | | |
| | | Habitat type | | | |
| | | Phase | | | |

## APPENDIX G. GLOSSARY

### Glossary

Certain terms used in this report have various definitions among technical specialists; therefore, we compiled a glossary to minimize misunderstanding. Hanson (1962) and Ford-Robertson (1971) were the primary references.

**Abundant.** When relating to plant coverage in the habitat type key, any species having a canopy coverage of 25 percent or more in a stand.

**Accidental.** A species that is found rarely or at most occasionally as scattered individuals in a given habitat type.

**Association.** Climax plant (forest) community type.

**Basal area.** The area of the cross-section of a tree trunk 4.5 feet above the ground, usually expressed as the sum of tree basal areas in square feet per acre.

**Bench, benchland.** An area having flat or gently-sloping terrain (less than 15 percent slope), applied usually to the higher ground in a river valley.

**Browse.** Shrubby forage utilized especially by big game. (verb) To eat shrubby forage.

**Canopy coverage.** The area covered by the gross outline of an individual plant's foliage, or collectively covered by all individuals of a species within a stand or sample plot. Canopy coverage is expressed as a percentage of the total area in the plot, or as a canopy coverage class (for example, class #1 = 1 to 5 percent coverage).

**Climax community.** The culminating stage in plant (forest) succession for a given environment, that develops and perpetuates itself in the absence of disturbance.

**Climax species.** A species that is self-regenerating in the absence of disturbance, with no evidence of replacement by other species.

**Climax, types of** . . . in relation to environment (Polyclimax Concept).

- **Climatic climax.** The climax that develops on "normal" (well-drained, medium-textured) soils and gently sloping topography.
- **Edaphic climax.** A variation from the climatic climax caused by "abnormal" soil conditions.
- **Topographic climax.** A variation from the climatic climax caused by topography that markedly influences microclimate.
- **Topo-edaphic climax.** A variation from the climatic climax caused by the combination of topographic and edaphic effects. (Example: *Pseudotsuga menziesii* stands occupying rocky north-slopes surrounded by nonforest habitat types.)

**Common.** When relating to plant coverage in the habitat type key, any species having a canopy coverage of 1 percent or more in a stand.

**Community (plant community).** An assembly of plants living together, reflecting no particular ecological status.

**Constancy.** The percentage of stands in a habitat type that contain a given species. (Appendix C-1 uses "constancy classes" — "1" = 5 to 15 percent, "2" = 15 to 25 percent, etc.)

**d.b.h. (diameter at breast height).** Tree-trunk diameter measured 4.5 feet above the ground.

**Depauperate.** Describing an unusually sparse coverage of undergrowth vegetation. This condition usually develops beneath an especially dense forest canopy, often on sites having a deep layer of duff.

**Disjunct.** A small segment of a population that is separated geographically from the main population.

**Ecosystem.** Any community of organisms along with its environment that forms an interacting system.

**Ecotone.** The boundary or transition zone between adjacent plant communities, often delineating different habitat types.

**Ecotype.** A genetic race of a species that is adapted to a particular habitat.

**Edaphic.** Refers to soil.

**Endemic.** Confined naturally to particular geographic area.

**Forb.** An herbaceous plant that is not a graminoid.

**Frequency.** The percentage of quadrats (tiny plots) in a single sample stand that contain a given species, or more generally the degree of uniformity with which individuals of a species are distributed in a stand.

**Graminoid.** All grasses (Gramineae) and grasslike plants, including sedges *(Carex)* and rushes *(Juncus)*.

**Habitat type.** An aggregation of all land areas potentially capable of producing similar plant communities at climax.

**Indicator plant.** A plant whose presence or abundance indicates the presence of certain environmental conditions — presence of a habitat type or phase.

**Phase.** A subdivision of an association and a habitat type representing minor differences in climax vegetation and environmental conditions, respectively.

**Phenotype.** A group of individuals distinguished on the basis of visible characteristics — in contrast to a "genotype" which is defined on the basis of genetic similarities.

**Physiography.** The study of the genesis and evolution of land forms.

**Poorly represented.** When relating to plant coverage in the habitat type key, any species that is absent or has a canopy coverage of less than 5 percent.

**Riparian.** Vegetation bordering watercourses, lakes, or swamps.

**Scarce.** When relating to plant coverage in the habitat type key, any species that is absent or has a canopy coverage of less than 1 percent.

**Scree.** Any slope covered with loose rock fragments. This includes accumulation of rock at the base of a cliff (talus) as well as loose material lying on slopes without cliffs.

**Seral.** A species or community that is replaced by another species or community as succession progresses.

**Series.** A group of habitat types having the same climax tree species. For example the *Pinus flexilis* series contains the *PIFL/HEKI, PIFL/FEID, PIFL/CELE,* and *PIFL/JUCO* h.t.s.

**Site index.** An index of timberland productivity based upon the height of specific trees at a certain reference age (usually 50 or 100 years).

**Stand.** A plant community that is relatively uniform in composition, structure, and habitat conditions; thus it may serve as a local example of a community type on a habitat type.

**Stockability factor.** An estimate of the stocking potential on a given site; for example a factor of 0.8 indicates that the site is capable of supporting only about 80 percent of "normal" stocking as indicated in yield tables.

**Stocking.** A general term for the number of trees (considering their size class) per acre.

**Succession.** The progressive changes in plant communities toward climax.

**Union.** A classified vegetation layer consisting of one or more species having similar environmental amplitudes within a geographic area; thus their presence is indicative of certain microenvironmental conditions.

**Well represented.** When relating to plant coverage in the habitat type key, any species having a canopy coverage of greater than 5 percent.

**Yield capability.** The maximum mean annual increment attainable in a fully stocked natural stand, expressed in cubic feet per acre per year. (See a forest mensuration textbook for the distinction between "mean annual increment" and "periodic annual increment"; growth in a specific year, or period of years, is termed the latter.)

**Zone.** An area of land named by a climatic climax vegetation type.

Steele, Robert, Robert D. Pfister, Russell A. Ryker, and Jay A. Kittams. 1981. Forest habitat types of central Idaho. USDA For. Serv. Gen. Tech. Rep. INT-114, 138 p. Intermt. For. and Range Exp. Stn., Ogden, Utah 84401.

A land-classification system based upon potential natural vegetation is presented for the forests of central Idaho. It is based on reconnaissance sampling of about 800 stands. A hierarchical taxonomic classification of forest sites was developed using the habitat type concept. A total of eight climax series, 64 habitat types, and 55 additional phases of habitat types are defined and described. A diagnostic key is provided for field identification of the types based on indicator species used in development of the classification.

KEYWORDS: forest vegetation, Idaho, habitat types, plant communities, forest ecology, forest management, classification

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# Contents in back pocket

**FIGURE 3 –** Key to climax series, habitat types, and phases.

**FIGURE 46 –** Relationships of central Idaho habitat types to previous classifications in Idaho.

**APPENDICES C-2 –** Presence list: Numbers of sample stands where each species occurred, by habitat type and phase.
(Appendices C-2 is not included in this PDF file. It has been included as two separate PDF files that are labeled "HabitatTypes_C-ID_AppC-2a.pdf" and "HabitatTypes_C-ID_AppC-2b.pdf" and can be downloaded from the same directory where this file is located.)

**APPENDIX F –** Central Idaho habitat type field form

**POSTER –** Examples of forest habitat types in central Idaho
(The poster is not included in this PDF file. It is labeled "HabitatTypes_C-ID_examples.pdf" and can be downloaded from the same directory where this file is located.)

# Figure 3.-- Key to climax series, habitat types, and phases.

READ THESE INSTRUCTIONS FIRST!

1. Use this key for stands with a mature tree canopy that are not severely disturbed by grazing, logging, forest fire, etc. (If the stand is severely disturbed or in an early successional stage, the habitat type can best be determined by extrapolating from the nearest mature stand occupying a similar site.)

2. Accurately identify and record canopy coverages for all indicator species (appendix F).

3. Check plot data in the field to verify that the plot is representative of the stand as a whole. If not, take another plot.

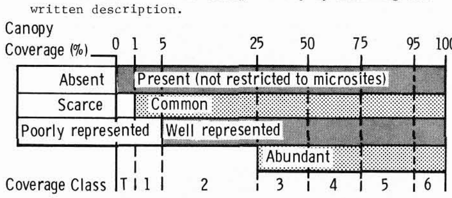
4. Identify the correct potential climax tree species in the SERIES key. (Generally, a tree species is considered reproducing successfully if 10 or more individuals per acre occupy or will occupy the site.)

5. Within the appropriate series, key to HABITAT TYPE by following the key literally. Determine PHASE by matching the stand conditions with the phase descriptions for the type. (The first phase description that fits the stand is the correct one.)

6. Use the definitions diagramed below for canopy coverage terms in the key. If you have difficulty deciding between types, refer to constancy and coverage data (appendix C-1) and the habitat type descriptions.

7. In stands where undergrowth is obviously depauperate (unusually sparse) because of dense shading or duff accumulations, adjust the above definitions to the next lower coverage class (e.g., well represented >1%, common >0%).

8. Remember, the key is NOT the classification! Validate the determination made using the key by checking the written description.




KEY TO CLIMAX SERIES

(Do Not Proceed Until You Have Read The Instructions)

1. Abies grandis present and reproducing more successfully than Abies lasiocarpa . . . . . . . . . . ABIES GRANDIS SERIES (item E)
1. Abies grandis not the indicated climax . . . . . . . . . . 2

  2. Abies lasiocarpa present and reproducing successfully . . . . . . . . . . ABIES LASIOCARPA SERIES (item G)
  2. Abies lasiocarpa not the indicated climax . . . . . . . . . . 3

3. Picea engelmannii present and reproducing successfully . . . . . . . . . . PICEA ENGELMANNII SERIES (item D)
3. Picea engelmannii not the indicated climax . . . . . . . . . . 4

  4. Pinus flexilis a successfully reproducing dominant in old growth stands; often sharing that status with Pseudotsuga . . . . . . . . . . PINUS FLEXILIS SERIES (item A)
  4. Pinus flexilis absent or clearly seral . . . . . . . . . . 5

5. Pseudotsuga menziesii present and reproducing successfully . . . . . . . . . . PSEUDOTSUGA MENZIESII SERIES (item C)
5. Pseudotsuga menziesii not the indicated climax . . . . . . . . . . 6

  6. Pinus albicaulis well represented and reproducing successfully . . . . . PINUS ALBICAULIS SERIES (p. 82)
  6. Pinus albicaulis not the indicated successional dominant . . . . . . . . 7

7. Pinus contorta dominant and reproducing successfully . . . . . . . . . . PINUS CONTORTA SERIES (item F)
7. Pinus contorta not the indicated successional dominant . . . . . . . . . . 8

  8. Pinus ponderosa present and reproducing successfully . . . . . . . . . . PINUS PONDEROSA SERIES (item B)
  8. Pinus ponderosa not the indicated climax . . . . . . . . . . 9

9. Populus tremuloides the indicated dominant . . . . . . . . . . POPULUS TREMULOIDES SERIES (p. 87)
9. Populus tremuloides not the indicated dominant . . . . . . . . . . Minor forest types (p. 87)

A. Key to Pinus flexilis Habitat Types

1. Juniperus communis well represented . . . . . . . . . . PINUS FLEXILIS/JUNIPERUS COMMUNIS h.t.* (p. 22)
1. J. communis poorly represented . . . . . . . . . . 2

  2. Cercocarpus ledifolius is well represented . . . . . . . . . . PINUS FLEXILIS/CERCOCARPUS LEDIFOLIUS h.t.* (p. 22)
  2. C. ledifolius poorly represented . . . . . . . . . . 3

3. Festuca idahoensis well represented . . . . . . . . . . PINUS FLEXILIS/FESTUCA IDAHOENSIS h.t. (p. 20)
3. F. idahoensis poorly represented, Hesperochloa kingii (Leucopoa kingii) common . . . . . . . . . . PINUS FLEXILIS/HESPEROCHLOA KINGII* h.t. (p. 20)

B. Key to Pinus ponderosa Habitat Types

1. Physocarpus malvaceus well represented . . . . . . . . . . PINUS PONDEROSA/PHYSOCARPUS MALVACEUS h.t.* (p. 29)
1. P. malvaceus poorly represented . . . . . . . . . . 2

  2. Symphoricarpos albus well represented . . . . . . . . . . PINUS PONDEROSA/SYMPHORICARPOS ALBUS H.T. (p. 28)
  2. S. albus poorly represented . . . . . . . . . . 3

3. Symphoricarpos oreophilus or Prunus virginiana well represented . . . . PINUS PONDEROSA/SYMPHORICARPOS OREOPHILUS h.t. (p. 27)
3. S. oreophilus and P. virginiana poorly represented . . . . . . . . . . 4

  4. Purshia tridentata well represented . . . . . . . . . . PINUS PONDEROSA/PURSHIA TRIDENTATA h.t. (p. 26)
    4a. Festuca idahoensis well represented . . . . . . . . . . FESTUCA IDAHOENSIS phase
    4b. F. idahoensis poorly represented . . . . . . . . . . AGROPYRON SPICATUM phase
  4. P. tridentata poorly represented . . . . . . . . . . 5

5. Festuca idahoensis well represented . . . . . . . . . . PINUS PONDEROSA/FESTUCA IDAHOENSIS h.t. (p. 25)
5. F. idahoensis poorly represented . . . . . . . . . . 6

  6. Agropyron spicatum well represented on sites in good condition . . . PINUS PONDEROSA/AGROPYRON SPICATUM h.t. (p. 24)
  6. A. spicatum poorly represented on sites in good condition and Stipa spp. well represented . . . . . . . . . . PINUS PONDEROSA/STIPA OCCIDENTALIS h.t. (p. 24)

*h.t.s and phases incidental to central Idaho and omitted from charts and tables.

## C. Key to Pseudotsuga menziesii Habitat Types

| | |
|---|---|
| 1. Vaccinium caespitosum common | PSEUDOTSUGA MENZIESII/VACCINIUM CAESPITOSUM h.t.* (p. 46) |
| 1. V. caespitosum scarce | 2 |
| 2. Linnaea borealis common | PSEUDOTSUGA MENZIESII/LINNAEA BOREALIS h.t.* (p. 46) |
| 2. L. borealis scarce | 3 |
| 3. Physocarpus malvaceus and/or Holodiscus discolor well represented | PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS h.t. (p. 44) |
| 3a. Pinus ponderosa present or potentially present | |
| a. Calmagrostis rubescens and/or Carex geyeri dominant; Physocarpus forming only a broken, patchy cover | CALAMAGROSTIS RUBESCENS phase* |
| b. Not as above | PINUS PONDEROSA phase |
| 3b. P. ponderosa absent and unable to establish | PSEUDOTSUGA MENZIESII phase |
| 3. P. malvaceus and H. discolor poorly represented | 4 |
| 4. Acer glabrum well represented | PSEUDOTSUGA MENZIESII/ACER GLABRUM h.t. (p. 43) |
| 4a. Penstemon wilcoxii and/or Clematis columbiana usually present; sites mainly west of the Big Wood River | ACER GLABRUM phase |
| 4b. Pinus flexilis usually present, sites mainly east of the Big Wood River | SYMPHORICARPOS OREOPHILUS phase |
| 4. A. glabrum poorly represented | 5 |
| 5. Vaccinium globulare or Xerophyllum tenax well represented | PSEUDOTSUGA MENZIESII/VACCINIUM GLOBULARE h.t.* (p. 43) |
| 5. V. globulare and X. tenax poorly represented | 6 |
| 6. Symphoricarpos albus well represented | PSEUDOTSUGA MENZIESII/SYMPHORICARPOS ALBUS h.t. (p. 42) |
| 6a. Pinus ponderosa present or potentially present | PINUS PONDEROSA phase |
| 6b. P. ponderosa absent and unable to establish | SYMPHORICARPOS ALBUS phase |
| 6. S. albus poorly represented | 7 |
| 7. Spiraea betulifolia or S. pyramidata well represented | PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA h.t. (p. 40) |
| 7a. Pinus ponderosa present or potentially present | PINUS PONDEROSA phase |
| 7b. Calamagrostis rubescens well represented | CALAMAGROSTIS RUBESCENS phase |
| 7c. Not as above in 7a or 7b | SPIRAEA BETULIFOLIA phase |
| 7. S betulifolia and S. pyramidata poorly represented | 8 |
| 8. Osmorhiza chilensis well represented | PSEUDOTSUGA MENZIESII/OSMORHIZA CHILENSIS h.t. (p. 40) |
| 8. O. chilensis poorly represented | 9 |
| 9. Calamagrostis rubescens well represented | PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS h.t. (p. 38) |
| 9a. Pinus ponderosa present or potentially present | PINUS PONDEROSA phase |
| 9b. P. ponderosa absent and unable to establish; Festuca iahoensis well represented | FESTUCA IDAHOENSIS phase |
| 9c. Not as above in 9a or 9b | CALAMAGROSTIS RUBESCENS phase |
| 9. C. rubescens poorly represented | 10 |
| 10. Cercocarpus ledifolius well represented and the indicated climax dominant shrub | PSEUDOTSUGA MENZIESII/CERCOCARPUS LEDIFOLIUS h.t. (p. 38) |
| 10. C. ledifolius poorly represented or seral | 11 |
| 11. Berberis repens well represented | PSEUDOTSUGA MENZIESII/BERBERIS REPENS h.t. (p. 36) |
| 11a. Carex geyeri abundant | CAREX GEYERI phase |
| 11b. C. geyeri not abundant, Symphoricarpos oreophilus abundant, stands never achieving closed canopies | SYMPHORICARPOS OREOPHILUS phase |
| 11c. S. oreophilus not abundant, stands eventually achieving closed canopies | BERBERIS REPENS phase |
| 11. B. repens poorly represented | 12 |
| 12. Carex geyeri well represented | PSEUDOTSUGA MENZIESII/CAREX GEYERI h.t. (p. 35) |
| 12a. Pinus ponderosa present or potentially present | PINUS PONDEROSA phase |
| 12b. P. ponderosa absent and unable to establish; Symphoricarpos oreophilus or Artemisia tridentata well represented | SYMPHORICARPOS OREOPHILUS phase |
| 12c. Not as above in 12a or 12b | CAREX GEYERI phase |
| 12. C. geyeri poorly represented | 13 |
| 13. Juniperus communis well represented | PSEUDOTSUGA MENZIESII/JUNIPERUS COMMUNIS h.t. (p. 34) |
| 13. J. communis poorly represented | 14 |
| 14. Arnica cordifolia or Astragalus miser well represented or a dominant forb of normally depauperate undergrowths | PSEUDOTSUGA MENZIESII/ARNICA CORDIFOLIA h.t. (p. 33) |
| 14a. Arnica cordifolia well represented | ARNICA CORDIFOLIA phase |
| 14b. A. cordifolia poorly represented; Astragalus miser well represented | ASTRAGALUS MISER phase |
| 14. A. cordifolia and A. miser poorly represented or not a dominant forb | 15 |
| 15. Symphoricarpos oreophilus, Ribes cereum or Prunus virginiana well represented | PSEUDOTSUGA MENZIESII/SYMPHORICARPOS OREOPHILUS h.t. (p. 32) |
| 15. S. oreophilus, R. cereum and P. virginiana poorly represented | 16 |
| 16. Festuca idahoensis well represented | PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS h.t. (p. 31) |
| 16a. Pinus ponderosa present | PINUS PONDEROSA phase |
| 16b. P. ponderosa absent | FESTUCA IDAHOENSIS phase |
| 16. F. idahoensis poorly represented; Agropyron spicatum or Melica bulbosa well represented on sites in good condition | PSEUDOTSUGA MENZIESII/AGROPYRON SPICATUM h.t. (p. 30) |

## D. Key to Picea engelmannii Habitat Types

| | |
|---|---|
| 1. Equisetum arvense abundant | PICEA ENGELMANNII/EQUISETUM ARVENSE h.t.* (p. 49) |
| 1. E. arvense not abundant | 2 |
| 2. Carex disperma well represented | PICEA ENGELMANNII/CAREX DISPERMA h.t. (p. 47) |
| 2. C. disperma poorly represented | 3 |
| 3. Galium triflorum, Actaea rubra or Streptopus amplexifolius common either individually or collectively | PICEA ENGELMANNII/GALIUM TRIFLORUM h.t.* (p. 47) |
| 3. Not as above, Hypnum revolutum (a prostrate moss) well represented | PICEA ENGELMANNII/HYPNUM REVOLUTUM h.t. (p. 47) |

*h.t.s and phases incidental to central Idaho and omitted from charts and tables.

## E. Key to Abies grandis Habitat Types

| | |
|---|---|
| 1. Clintonia uniflora present | ABIES GRANDIS/CLINTONIA UNIFLORA h.t. (p. 58) |
| 1. C. uniflora absent | 2 |
| 2. Coptis occidentalis common | ABIES GRANDIS/COPTIS OCCIDENTALIS h.t.* (p. 58) |
| 2. C. occidentalis scarce | 3 |
| 3. Vaccinium caespitosum common | ABIES GRANDIS/VACCINIUM CAESPITOSUM h.t. (p. 56) |
| 3. V. caespitosum scarce | 4 |
| 4. Linnaea borealis common | ABIES GRANDIS/LINNAEA BOREALIS h.t. (p. 54) |
| 4a. Xerophyllum tenax common | .XEROPHYLLUM TENAX phase* |
| 4b. X. tenax scarce; Vaccinium globulare well represented | .VACCINIUM GLOBULARE phase |
| 4c. Not as above in 4a or 4b | .LINNAEA BOREALIS phase |
| 4. L. borealis scarce | 5 |
| 5. Acer glabrum, Physocarpus malvaceus or Holodiscus discolor well represented. If only common then Adenocaulon bicolor or Disporum trachycarpum present | ABIES GRANDIS/ACER GLABRUM h.t. (p. 54) |
| 5a. Acer glabrum well represented; if only common then at least more prevalent than Physocarpus and Holodiscus | ACER GLABRUM phase |
| 5b. A. glabrum poorly represented and less prevalent than Physocarpus and Holodiscus | PHYSOCARPUS MALVACEUS phase |
| 5. Not as above | 6 |
| 6. Xerophyllum tenax well represented | ABIES GRANDIS/XEROPHYLLUM TENAX h.t. * (p. 53) |
| 6. X. tenax poorly represented | 7 |
| 7. Vaccinium globulare well represented | ABIES GRANDIS/VACCINIUM GLOBULARE h.t. (p. 52) |
| 7. V. globulare poorly represented | 8 |
| 8. Spiraea betulifolia or Lathyrus nevadensis well represented | ABIES GRANDIS/SPIRAEA BETULIFOLIA h.t. (p. 52) |
| 8. S. betulifolia and L. nevadensis poorly represented; Calamagrostis rubescens well represented | ABIES GRANDIS/CALAMAGROSTIS RUBESCENS h.t. (p. 50) |

## F. Key to Pinus contorta communities

| | |
|---|---|
| 1. Calamagrostis canadensis or Ledum glandulosum well represented | ABIES LASIOCARPA/CALAMAGROTIS CANADENSIS h.t. (p. 61) |
| 1. C. canadensis and L. glandulosum poorly represented | 2 |
| 2. Streptopus amplexifolius, Senecio triangularis, Ligusticum canbyi or Trautvetteria caroliniensis well represented either individually or collectively | ABIES LASIOCARPA/STREPTOPUS AMPLEXIFOLIUS h.t. (p. 61) |
| 2. Not as above | 3 |
| 3. Clintonia uniflora present | ABIES LASIOCARPA/CLINTONIA UNIFLORA h.t. (p. 61) |
| 3. C. uniflora absent | 4 |
| 4. Coptis occidentalis common | ABIES LASIOCARPA/COPTIS OCCIDENTALIS h.t.* (p. 65) or ABIES GRANDIS/COPTIS OCCIDENTALIS h.t.* (p. 58) |
| 4. C. occidentalis scarce | 5 |
| 5. Menziesia ferruginea well represented | ABIES LASIOCARPA/MENZIESIA FERRUGINEA h.t.(p. 66) |
| 5. M. ferruginea poorly represented | 6 |
| 6. Vaccinium caespitosum common | PINUS CONTORTA/VACCINIUM CAESPITOSUM c.t. (p. 84) |
| 6. V. caespitosum scarce | 7 |
| 7. Linnaea borealis common | ABIES LASIOCARPA/LINNAEA BOREALIS h.t. (p. 68) or ABIES GRANDIS/LINNAEA BOREALIS h.t. (p. 54) |
| 7. L. borealis scarce | 8 |
| 8. Alnus sinuata well represented | ABIES LASIOCARPA/ALNUS SINUATA h.t.* (p. 69) |
| 8. A. sinuata poorly represented | 9 |
| 9. Xerophyllum tenax well represented | ABIES LASIOCARPA/XEROPHYLLUM TENAX h.t. (p. 69) or ABIES GRANDIS/XEROPHYLLUM TENAX h.t. (p. 53) |
| 9. X. tenax poorly represented | 10 |
| 10. Vaccinium globulare well represented | ABIES LASIOCARPA/VACCIMIUM GLOBULARE h.t. (p. 70) or ABIES GRANDIS/VACCINIUM GLOBULARE h.t. (p. 52) |
| 10. V. globulare poorly represented | 11 |
| 11. Spiraea betulifolia well represented | ABIES LASIOCARPA/SPIRAEA BETULIFOLIA h.t. (p. 72) or PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA h.t. (p. 40) |
| 11. S. betulifolia poorly represented | 12 |
| 12. Luzula hitchcockii common | ABIES LASIOCARPA/LUZULA HITCHCOCKII h.t. (p. 72) |
| 12. L. hitchcockii scarce | 13 |
| 13. Vaccinium scoparium well represented | PINUS CONTORTA/VACCINIUM SCOPARIUM c.t. (p. 85) |
| 13. V. scoparium poorly represented | 14 |
| 14. Calamagrostis rubescens well represented | ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS h.t. (p. 76) or PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS h.t. (p. 38) |
| 14. C. rubescens poorly represented | 15 |
| 15. Carex geyeri well represented | PINUS CONTORTA/CAREX GEYERI c.t. (p. 85) |
| 15. C. geyeri poorly represented | 16 |
| 16. Juniperus communis well represented | ABIES LASIOCARPA/JUNIPERUS COMMUNIS h.t. (p. 78) or PSEUDOTSUGA MENZIESII/JUNIPERUS COMMUNIS h.t. (p. 34) |
| 16. J. communis poorly represented | 17 |
| 17. Arnica cordifolia well represented or the dominant forb of normally depauperate undergrowths | ABIES LASIOCARPA/ARNICA CORDIFOLIA h.t. (p. 79) or PSEUDOTSUGA MENZIESII/ARNICA CORDIFOLIA h.t. (p. 33) |
| 17. Not as above; Festuca idahoensis common | PINUS CONTORTA/FESTUCA IDAHOENSIS h.t. (p. 85) |

*h.t.s and phases incidental to central Idaho and omitted from charts and tables

## G. Key to Abies lasiocarpa Habitat Types

| | |
|---|---|
| 1. Caltha biflora common | ABIES LASIOCARPA/CALTHA BIFLORA h.t. (p. 59) |
| 1. C. biflora scarce | 2 |
| 2. Equisetum arvense abundant | PICEA ENGELMANNII/EQUISETUM ARVENSE h.t.* (p. 49) |
| 2. E. arvense not abundant | 3 |
| 3. Carex disperma well represented | PICEA ENGELMANNII/CAREX DISPERMA h.t. (p. 47) |
| 3. C. disperma poorly represented | 4 |
| 4. Calamagrostis canadensis or Ledum glandulosum well represented | ABIES LASIOCARPA/CALAMAGROSTIS CANADENSIS h.t. (p. 61) |
| 4a. Ledum glandulosum well represented | LEDUM GLANDULOSUM phase |
| 4b. Not as above in 4a; Vaccinium caespitosum common | VACCINIUM CAESPITOSUM phase |
| 4c. Not as above in 4a or 4b; Ligusticum canbyi or Trautvetteria caroliniensis present | LIGUSTICUM CANBYI phase |
| 4d. Not as above in 4a, 4b, or 4c | CALAMAGROSTIS CANADENSIS phase |
| 4. C. canadensis and L. glandulosum poorly represented | 5 |
| 5. Streptopus amplexifolius, Senecio triangularis, Ligusticum canbyi or Trautvetteria caroliniensis well represented either individually or collectively | ABIES LASIOCARPA/STREPTOPUS AMPLEXIFOLIUS h.t. (p. 61) |
| 5a. Ligusticum canbyi or Trautvetteria caroliniensis present | LIGUSTICUM CANBYI phase |
| 5b. L. canbyi and T. caroliniensis absent | STREPTOPUS AMPLEXIFOLIUS phase |
| 5. Not as above | 6 |
| 6. Clintonia uniflora present | ABIES LASIOCARPA/CLINTONIA UNIFLORA h.t. (p. 65) |
| 6a. Menziesia ferruginea well represented | MENZIESIA FERRUGINEA phase* |
| 6b. M. ferruginea poorly represented | CLINTONIA UNIFLORA phase |
| 6. C. uniflora absent | 7 |
| 7. Coptis occidentalis common | ABIES LASIOCARPA/COPTIS OCCIDENTALIS h.t.* (p. 65) |
| 7. C. occidentalis scarce | 8 |
| 8. Menziesia ferruginea well represented | ABIES LASIOCARPA/MENZIESIA FERRUGINEA h.t. (p. 65) |
| 8a. Luzula hitchcockii common | LUZULA HITCHCOCKII phase* |
| 8b. L. hitchcockii scarce | MENZIESIA FERRUGINEA phase |
| 8. M. ferruginea poorly represented | 9 |
| 9. Acer glabrum well represented | ABIES LASIOCARPA/ACER GLABRUM h.t. (p. 67) |
| 9. A. glabrum poorly represented | 10 |
| 10. Vaccinium caespitosum common | ABIES LASIOCARA/VACCINIUM CAESPITOSUM h.t. (p. 67) |
| 10. V. caespitosum scarce | 11 |
| 11. Linnaea borealis common | ABIES LASIOCARPA/LINNAEA BOREALIS h.t. (p. 68) |
| 11a. Xerophyllum tenax well represented | XEROPHYLLUM TENAX phase* |
| 11b. X. tenax poorly represented; Vaccinium scoparium well represented | VACCINIUM SCOPARIUM phase* |
| 11c. Not as above in 11a or 11b | LINNAEA BOREALIS phase |
| 11. L. borealis scarce | 12 |
| 12. Alnus sinuata well represented | ABIES LASIOCARPA/ALNUS SINUATA h.t.* (p. 69) |
| 12. A. sinuata poorly represented | 13 |
| 13. Xerophyllum tenax well represented | ABIES LASIOCARPA/XEROPHYLLUM TENAX h.t. (p. 69) |
| 13a. Vaccinium globulare or Spiraea betulifolia well represented | VACCINIUM GLOBULARE phase |
| 13b. Not as above in 13a; Luzula hitchcockii common | LUZULA HITCHCOCKII phase |
| 13c. Not as above in 13a or 13b; Vaccinium scoparium usually abundant | VACCINIUM SCOPARIUM phase* |
| 13. X. tenax poorly represented | 14 |
| 14. Vaccinium globulare well represented | ABIES LASIOCARPA/VACCINIUM GLOBULARE h.t. (p. 70) |
| 14a. Vaccinium scoparium abundant | VACCINIUM SCOPARIUM phase* |
| 14b. V. scoparium not abundant | VACCINIUM GLOBULARE phase |
| 14. V. globulare poorly represented | 15 |
| 15. Spiraea betulifolia well represented | ABIES LASIOCARPA/SPIRAEA BETULIFOLIA h.t. (p. 72) |
| 15. S. betulifolia poorly represented | 16 |
| 16. Luzula hitchcockii common | ABIES LASIOCARPA/LUZULA HITCHCOCKII h.t. (p. 72) |
| 16a. Vaccinium scoparium well represented | VACCINIUM SCOPARIUM phase |
| 16b. Not as above in 16a, Luzula hitchcockii well represented | LUZULA HITCHCOCKII phase |
| 16c. Not as above in 16a or 16b | 22 |
| 16. L. hitchcockii scarce | 17 |
| 17. Vaccinium scoparium well represented | ABIES LASIOCARPA/VACCINIUM SCOPARIUM h.t. (p. 74) |
| 17a. Calamagrostis rubescens well represented | CALAMAGROSTIS RUBESCENS phase |
| 17b. Not as above in 17a; Pinus albicaulis well represented | PINUS ALBICAULIS phase |
| 17c. Not as above in 17a or 17b | VACCINIUM SCOPARIUM phase |
| 17. V. scoparium poorly represented | 18 |
| 18. Calamagrostis rubescens well represented | ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS h.t. (p. 76) |
| 18. C. rubescens poorly represented | 19 |
| 19. Carex geyeri well represented | ABIES LASIOCARPA/CAREX GEYERI h.t. (p. 76) |
| 19a. Artemisia tridentata well represented | ARTEMISIA TRIDENTATA phase |
| 19b. A. tridentata poorly represented | CAREX GEYERI phase |
| 19. C. geyeri poorly represented | 20 |
| 20. Juniperus communis well represented | ABIES LASIOCARPA/JUNIPERUS COMMUNIS h.t. (p. 78) |
| 20. J. communis poorly represented | 21 |
| 21. Ribes montigenum well represented or the dominant plant of normally depauperate undergrowths | ABIES LASIOCARPA/RIBES MONTIGENUM h.t.(p. 79) |
| 21. Not as above | 22 |
| 22. Arnica cordifolia well represented or a dominant forb of normally depauperate undergrowths | ABIES LASIOCARPA/ARNICA CORDIFOLIA h.t. (p. 79) |
| 22. Not as above; Pinus albicaulis usually well represented and Abies lasiocarpa often stunted | PINUS ALBICAULIS - ABIES LASIOCARPA h.t (p. 80) |

*h.t.s and phases incidental to central Idaho and omitted from charts and tables

| NORTHERN IDAHO & EASTERN WASH. R & J DAUBENMIRE 1968 | BOISE & PAYETTE N.F. PFISTER & OTHERS 1973 | CHALLIS, SALMON, & SAWTOOTH N.F. STEELE & OTHERS 1974 | CENTRAL IDAHO REVIEW DRAFT STEELE & OTHERS 1975 | CENTRAL IDAHO H.T.S. |
|---|---|---|---|---|
| PIPO/ STCO | | | PIPO/ STOC | PIPO/ STOC |
| PIPO/ AGSP | PIPO/ AGSP | PIPO/ AGSP | PIPO/ AGSP | PIPO/ AGSP |
| PIPO/ FEID | PIPO/ FEID | PIPO/ FEID | PIPO/ FEID | PIPO/ FEID |
| | | | PIPO/ PUTR AGSP | PIPO/ PUTR AGSP |
| PIPO/ PUTR | PIPO/ PUTR | PIPO/ PUTR | PIPO/ PUTR FEID | PIPO/ PUTR FEID |
| | PIPO/ PRVI | | PIPO/ SYOR | PIPO/ SYOR |
| PIPO/ SYAL | PIPO/ SYAL | PIPO/ SYAL | PIPO/ SYAL | PIPO/ SYAL |
| PIPO/ PHMA | PIPO/ PHMA | | PIPO/ PHMA | PIPO/ PHMA |
| | | PIFL/ FEID | PIFL/ FEID | PIFL/ FEID |
| | PSME/ AGSP | PSME/ AGSP | PSME/ AGSP | PSME/ AGSP |
| | PSME/ SYOR (IN PART)<br>PSME/ PRVI (IN PART) | PSME/ SYOR SYOR<br>PSME/ SYOR PRVI | PSME/ SYOR SYOR<br>PSME/ SYOR PRVI | PSME/ SYOR |
| | PSME/ FEID | PSME/ FEID | PSME/ FEID | PSME/ FEID — FEID, PIPO |
| | | PSME/ CELE | PSME/ CELE | PSME/ CELE |
| | | PSME/ ARCO | PSME/ ARCO | PSME/ ARCO — ASMI, ARCO |
| | | PSME/ OSCH | PSME/ OSCH | PSME/ OSCH |
| | | PSME/ JUCO | PSME/ JUCO | PSME/ JUCO |
| | | | | PSME/ BERE — SYOR, CAGE, BERE |
| | PSME/ SYOR (IN PART)<br>PSME/ PRVI (IN PART)<br>PSME/ CAGE ARTR | PSME/ CAGE SYOR<br>PSME/ CAGE ARTR | PSME/ CAGE SYOR<br>PSME/ CAGE ARTR | PSME/ CAGE SYOR |
| | PSME/ CAGE CAGE | PSME/ CAGE CAGE | PSME/ CAGE CAGE | PSME/ CAGE — PIPO, CAGE |
| PSME/ CARU CARU | PSME/ SYOR (IN PART)<br>PSME/ PRVI (IN PART)<br>PSME/ CARU | PSME/ CARU SYOR<br>PSME/ CARU CARU<br>PSME/ CARU ARUV | PSME/ CARU CARU<br>PSME/ CARU ARUV | PSME/ CARU — PIPO, FEID, CARU |
| PSME/ CARU ARUV | | | | |
| | PSME/ SPBE CAGE<br>PSME/ SPBE CARU<br>PSME/ SPBE SPBE | PSME/ SPBE CAGE<br>PSME/ SPBE CARU<br>PSME/ SPBE SPBE | PSME/ SPBE CAGE<br>PSME/ SPBE CARU<br>PSME/ SPBE SPBE | PSME/ SPBE — PIPO, CARU, SPBE |
| PSME/ SYAL | PSME/ SYAL | PSME/ SYAL SYAL<br>PSME/ SYAL ARUV | PSME/ SYAL SYAL<br>PSME/ SYAL ARUV | PSME/ SYAL — PIPO, SYAL |
| | | | PSME/ VAGL | PSME/ VAGL |
| | PSME/ ACGL | PSME/ ACGL | PSME/ ACGL | PSME/ ACGL — SYOR, ACGL |
| | PSME/ XETE | PSME/ XETE | PSME/ XETE | |
| PSME/ PHMA | PSME/ PHMA | PSME/ PHMA | PSME/ PHMA ACGL<br>PSME/ PHMA PHMA | PSME/ PHMA — PIPO, PSME |
| | | | PSME/ PHMA CARU | PSME/ PHMA CARU |
| | | | | PSME/ LIBO |
| | | | | PSME/ VACA |
| | | PIEN/ CADI | PIEN/ CADI | PIEN/ EQAR<br>PIEN/ CADI |
| | | UNCLASSIFIED COMMUNITIES | UNCLASSIFIED COMMUNITIES | PIEN/ GATR<br>PIEN/ HYRE |

*Figure 46. — Relationships of central Idaho habitat types to previous classifications in Idaho.* con

*Figure 46.* — con

| NORTHERN IDAHO & EASTERN WASH. R & J DAUBENMIRE 1968 | BOISE & PAYETTE N.F. PFISTER & OTHERS 1973 | CHALLIS, SALMON, & SAWTOOTH N.F. STEELE & OTHERS 1974 | CENTRAL IDAHO REVIEW DRAFT STEELE & OTHERS 1975 | CENTRAL IDAHO H.T.S. |
|---|---|---|---|---|
| | | | | ABGR/CARU |
| | ABGR/ SPBE (IN PART) | | ABGR/ SPBE | ABGR/ SPBE |
| | ABGR/ VAGL (IN PART) | ABGR/ VAGL (IN PART) | ABGR/ VAGL | ABGR/ VAGL |
| | | | ABGR/ XETE | ABGR/ XETE |
| | ABGR/SPBE (IN PART) ABGR/VAGL (IN PART) | ABGR/ VAGL (IN PART) | ABGR/ ACGL | ABGR/ ACGL PHMA / ACGL |
| ABGR/PAMY (IN PART ?) | ABGR/ VAGL (IN PART) | ABGR/ VAGL (IN PART) | ABGR/ LIBO VAGL | ABGR/ LIBO VAGL |
| | | | | ABGR/ LIBO XETE |
| | | | ABGR/ COOC | ABGR/ COOC |
| ABGR/ PAMY | ABGR/ CLUN | ABGR/ CLUN | ABGR/ CLUN | ABGR/ CLUN |
| | | | | |
| | ABLA/ CABI | ABLA/ CABI | ABLA/ CABI | ABLA/ CABI |
| ABLA/ PAMY (IN PART) | ABLA/ CLUN | | ABLA/ CLUN | ABLA/ CLUN |
| ABLA/ MEFE | ABLA/ MEFE | ABLA/ MEFE | ABLA/ MEFE | ABLA/ MEFE |
| | ABLA/ VACA CACA | ABLA/ VACA CACA | ABLA/ VACA CACA | ABLA/ CACA VACA |
| | ABLA/ VACA VACA | ABLA/ VACA VACA | ABLA/ VACA VACA | ABLA/ VACA |
| | ABLA/ CACA LICA | | ABLA/ CACA LICA | ABLA/ CACA LICA |
| | ABLA/ CACA CACA | ABLA/ CACA | ABLA/ CACA CACA | ABLA/ CACA CACA |
| | ABLA/ LICA | ABLA/ STAM | ABLA/ STAM | ABLA/ STAM LICA / STAM |
| ABLA/ PAMY (IN PART) | ABLA/ VAGL (IN PART) | | ABLA/ LIBO LIBO | ABLA/ LIBO LIBO |
| | | | | ABLA/ LIBO XETE |
| | | ABLA/ LIBO | ABLA/ LIBO VASC | ABLA/ LIBO VASC |
| | ABLA/ LEGL | ABLA/ LEGL | ABLA/ LEGL | ABLA/ CACA LEGL |
| | ABLA/ ACGL | ABLA/ ACGL | ABLA/ ACGL | ABLA/ ACGL |
| | ABLA/ XETE VAGL | ABLA/ XETE VAGL | ABLA/ XETE VAGL | ABLA/ XETE VAGL |
| ABLA/ XETE | ABLA/ XETE XETE | ABLA/ XETE XETE | ABLA/ XETE XETE | ABLA/ XETE VASC |
| | | | | ABLA/ XETE LUHI |
| ABLA/ PAMY (IN PART) | ABLA/ VAGL (IN PART) | ABLA/ VAGL | ABLA/ VAGL | ABLA/ VAGL VASC / VAGL |
| | ABLA/ SPBE | ABLA/ SPBE | ABLA/ SPBE | ABLA/ SPBE |
| | ABLA/ LUHI VASC | | ABLA/ LUHI VASC | ABLA/ LUHI VASC |
| | ABLA/ LUHI LUHI | | ABLA/ LUHI LUHI | ABLA/ LUHI LUHI |
| | | ABLA/ VASC CARU | ABLA/ VASC CARU | ABLA/ VASC CARU |
| ABLA/ VASC | ABLA/ VASC | ABLA/ VASC VASC | ABLA/ VASC VASC | ABLA/ VASC VASC |
| | | | | ABLA/ VASC PIAL |
| | ABLA/ CARU | ABLA/ CARU | ABLA/ CARU | ABLA/ CARU |
| | | ABLA/ CAGE CAGE | | |
| | ABLA/ CAGE CAGE | ABLA/ CAGE SYOR | ABLA/ CAGE CAGE | ABLA/ CAGE CAGE |
| | ABLA/ CAGE ARTR | ABLA/ CAGE ARTR | ABLA/ CAGE ARTR | ABLA/ CAGE ARTR |
| | | ABLA/ JUCO | ABLA/ JUCO | ABLA/ JUCO |
| | | ABLA/ RIMO | ABLA/ RIMO | ABLA/ RIMO |
| | | ABLA/ ARCO | ABLA/ ARCO | ABLA/ ARCO |
| PIAL- ABLA | ABLA/ PIAL | PIAL- ABLA | PIAL- ABLA | PIAL- ABLA H. T. S. |
| | | | PIAL | PIAL H. T. S. |
| | | | | |
| | PICO/ FEID | PICO/ FEID | PICO/ FEID | PICO/ FEID |

# APPENDIX C-2

**APPENDICES C-2 –** Presence list: Numbers of sample stands where each species occurred, by habitat type and phase.
(Appendices C-2 is not included in this PDF file. It has been included as two separate PDF files that are labeled “HabitatTypes_C-ID_AppC-2a.pdf” and “HabitatTypes_C-ID_AppC-2b.pdf” and can be downloaded from the same directory where this file is located.)

## APPENDIX F. CENTRAL IDAHO HABITAT TYPE FIELD FORM

Central Idaho habitat type field form

Name

(Code Description)

| Topography: | Horizontal Configuration: | Vegetation Coverage Class: | |
|---|---|---|---|
| 1-Ridge | | | |
| 2-Upper Slope | 1-Convex (Dry) | 0-None | 3-25 to 50% |
| 3-Mid Slope | 2-Straight | T-Rare to 1% | 4-50 to 75% |
| 4-Lower Slope | 3-Concave (wet) | 1-1 to 5% | 5-75 to 95% |
| 5-Bench or Flat | 4-Undulating | 2-5 to 25% | 6-95 to 100% |
| 6-Streambottom | | | |

Note: Rate trees (>4") and regen (0-4") separately (e.g. 4/2)

| Date | | | |
|---|---|---|---|
| Plot No. | | | |
| Location | | | |
| T. R. | | | |
| Section | | | |
| Elevation | | | |
| Aspect | | | |
| Slope (%) | | | |
| Topography | | | |
| Configuration | | | |

| TREES | Abbrev. | Common Name | Canopy | Coverage | Class |
|---|---|---|---|---|---|
| 1. Abies grandis | ABGR | grand fir | / | / | / |
| 2. Abies lasiocarpa | ABLA | subalpine fir | / | / | / |
| 3. Larix occidentalis | LAOC | western larch | / | / | / |
| 4. Picea engelmannii | PIEN | Engelmann spruce | / | / | / |
| 5. Pinus albicaulis | PIAL | whitebark pine | / | / | / |
| 6. Pinus contorta | PICO | lodgepole pine | / | / | / |
| 7. Pinus flexilis | PIFL | limber pine | / | / | / |
| 8. Pinus ponderosa | PIPO | ponderosa pine | / | / | / |
| 9. Pseudotsuga menziesii | PSME | Douglas-fir | / | / | / |
| 10. Populus tremuloides | POTR | quaking aspen | / | / | / |
| SHRUBS AND VINES | | | | | |
| 1. Acer glabrum | ACGL | mountain maple | | | |
| 2. Alnus sinuata | ALSI | mountain alder | | | |
| 3. Artemisia tridentata | ARTR | big sagebrush | | | |
| 4. Berberis repens (+ aquifolium) | BERE | Oregon grape | | | |
| 5. Cercocarpus ledifolius | CELE | curl-leaf mountain-mahogany | | | |
| 6. Clematis columbiana | CLCO | rock clematis | | | |
| 7. Holodiscus discolor | HODI | ocean-spray | | | |
| 8. Juniperus communis | JUCO | common juniper | | | |
| 9. Ledum glandulosum | LEGL | Labrador tea | | | |
| 10. Linnaea borealis | LIBO | twinflower | | | |
| 11. Menziesia ferruginea | MEFE | menziesia | | | |
| 12. Physocarpus malvaceus | PHMA | ninebark | | | |
| 13. Prunus virginiana | PRVI | chokecherry | | | |
| 14. Purshia tridentata | PUTR | bitterbrush | | | |
| 15. Ribes cereum | RICE | squaw current | | | |
| 16 Ribes montigenum | RIMO | mountain gooseberry | | | |
| 17. Spiraea betulifolia (+ pyramidata) | SPBE | white spirea | | | |
| 18. Symphoricarpos albus | SYAL | common snowberry | | | |
| 19. Symphoricarpos oreophilus | SYOR | mountain snowberry | | | |
| 20. Vaccinium caespitosum | VACA | dwarf huckleberry | | | |
| 21. Vaccinium globulare (+ membranaceum) | VAGL | blue huckleberry | | | |
| 22. Vaccinium scoparium (+ myrtillus) | VASC | grouse whortleberry | | | |
| GRAMINOIDS | | | | | |
| 1. Agropyron spicatum | AGSP | bluebunch wheatgrass | | | |
| 2. Calamagrostis rubescens | CARU | pinegrass | | | |
| 3. Calamagrostis canadensis | CACA | bluejoint | | | |
| 4. Carex disperma | CADI | soft-leaved sedge | | | |
| 5. Carex geyeri | CAGE | elk sedge | | | |
| 6. Festuca idahoensis | FEID | Idaho fescue | | | |
| 7. Hesperochloa kingii | HEKI | spikefescue | | | |
| 8. Luzula hitchcockii | LUHI | smooth woodrush | | | |
| 9. Stipa occidentalis | STOC | western needlegrass | | | |
| FORBS, FERNS, AND FERN ALLIES | | | | | |
| 1. Actaea rubra | ACRU | baneberry | | | |
| 2. Adenocaulon bicolor | ADBI | trail-plant | | | |
| 3. Arnica cordifolia | ARCO | heartleaf arnica | | | |
| 4. Astragalus miser | ASMI | weedy milkvetch | | | |
| 5. Caltha biflora | CABI | twinflower marsh marigold | | | |
| 6. Clintonia uniflora | CLUN | queencup beadlily | | | |
| 7. Coptis occidentalis | COOC | western goldthread | | | |
| 8. Disporum trachycarpum | DITR | sierra fairybell | | | |
| 9. Equisetum arvense | EQAR | common horsetail | | | |
| 10. Lathyrus nevadensis cusickii | LANC | Cusick's peavine | | | |
| 11. Ligusticum canbyi | LICA | Canby's ligusticum | | | |
| 12. Osmorhiza chilensis | OSCH | mountain sweet-root | | | |
| 13. Penstemon wilcoxii | PEWI | Wilcox's penstemon | | | |
| 14. Senecio triangularis | SETR | arrowleaf groundsel | | | |
| 15. Streptopus amplexifolius | STAM | twisted stalk | | | |
| 16. Trautvetteria caroliniensis | TRCA | false bugbane | | | |
| 17. Xerophyllum tenax | XETE | beargrass | | | |

| | | | |
|---|---|---|---|
| Series | | | |
| Habitat type | | | |
| Phase | | | |

# Poster with color images

**POSTER –** Examples of forest habitat types in central Idaho
(The poster is not included in this PDF file. It is labeled “HabitatTypes_C-ID_examples.pdf” and can be downloaded from the same directory where this file is located.)

The Intermountain Station, headquartered in Ogden, Utah, is one of eight regional experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems.

The Intermountain Station includes the States of Montana, Idaho, Utah, Nevada, and western Wyoming. About 273 million acres, or 85 percent, of the land area in the Station territory are classified as forest and rangeland. These lands include grasslands, deserts, shrublands, alpine areas, and well-stocked forests. They supply fiber for forest industries; minerals for energy and industrial development; and water for domestic and industrial consumption. They also provide recreation opportunities for millions of visitors each year.

Field programs and research work units of the Station are maintained in:

Boise, Idaho

Bozeman, Montana (in cooperation with Montana State University)

Logan, Utah (in cooperation with Utah State University)

Missoula, Montana (in cooperation with the University of Montana)

Moscow, Idaho (in cooperation with the University of Idaho)

Provo, Utah (in cooperation with Brigham Young University)

Reno, Nevada (in cooperation with the University of Nevada)