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Forest Vegetation on National Forests in the Rocky Mountain and Intermountain Regions: Habitat Types and Community Types

Robert R. Alexander

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Forest Vegetation on National Forests in the Rocky Mountain and Intermountain Regions: Habitat Types and Community Types

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Abstract

Habitat types and community types and their phases for the major forest tree species in the Rocky Mountain and Intermountain regions are tabulated. Included are the name(s), general location, elevation, relative site, successional status, principal tree and undergrowth associates, and the authority.

¹Headquarters is in Fort Collins, in cooperation with Colorado State University.

Forest Vegetation on National Forests in the Rocky Mountain and Intermountain Regions: Habitat Types and Community Types

Robert R. Alexander

In 1985, a list was published that documented habitat types, community types, and plant communities in the Rocky Mountain and Intermountain regions in which interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* occurred as either a major climax, co-climax, minor climax, or major seral species (Alexander 1985). This paper is intended to supplement the 1985 publication by including newly available data and data on phases omitted in the 1985 publication. Moreover, the habitat and community types in the series in which the naming species occurs, listed in the 1985 publication, are repeated for the readers convenience. In addition to the species listed above, forested habitat types and community types and their phases are included that are dominated by *Pinus leiophylla*, *Pinus engelmannii*, *Pinus strobiformis*, *Abies grandis*, *Thuja plicata*, *Tsuga heterophylla*, *Picea glauca*, *Pinus flexilis*, *Pinus aristata*, *Tsuga mertensiana*, *Pinus albicaulis*, and *Larix lyalli*. Woodland and riparian habitat types and community types are not included, because these classifications are incomplete.

Table A1 lists the identified habitat types and community types and their phases for all forest tree species in the Rocky Mountain and Intermountain regions. Also included are the general location, elevation, site, successional status, principal tree and undergrowth associates, and the authority for the classification.

Some of the terms used in the table are clarified as follows.

1. Habitat type is the basic unit in classifying lands based on potential (climax) natural vegetation. A "habitat type" represents, collectively, all parts of the landscape that support, or have the potential of supporting, the same climax vegetation. The climax vegetation upon which the classification is based is called a "plant association." The first level of the classification is the "series," which is the grouping of all plant associations having the same overstory (climax) dominants. For example, all habitat types with *Pinus leiophylla* as the potential climax dominant are grouped into the *Pinus leiophylla* series.

2. Habitat types within a series are distinguished on the basis of undergrowth unions, the smallest "structural unit" of the vegetation. Each union comprises one or more undergrowth species that exhibit similar microenvironmental requirements.

3. The term "community type" has been used to identify vegetation that may be either (1) climax, but about which there is uncertainty; (2) seral, but the trend toward climax is not evident; or (3) the recognized plant com-

munity in place, which varies at any given time. Community types have one or more overstory dominants and characteristic undergrowth species. The undergrowth may be climax, but the overstory dominants often are long-lived, seral species that may be self-perpetuating because of repeated disturbance that prevents or slows down the succession to climax vegetation.

4. The description of the site (e.g., warm dry, cool dry) refers only to the series and location and, therefore, is relative. Obviously, a warm dry *Pinus ponderosa* site is not the same as a warm dry *Abies lasiocarpa* site.

5. In those habitat types where more than one phase is recognized, the typic phase is listed first, followed by the other phases. Phase is a subdivision of a habitat type representing a characteristic variation in climax vegetation and environmental conditions.

6. Synonyms of habitat types and closely related habitat types (which may be the same habitat type) are included within brackets.

7. Under the heading "Principal undergrowth species," the undergrowth species for which the habitat type is named is listed first, followed in order by shrubs, graminoids, and forbs.

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Table A1.—Forest habitat types and community types in the Rocky Mountains.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
Pinus leiophylla series						
Pinus leiophylla/ Arctostaphylos pungens C.T.	Mountains of south-central Arizona (5,200-7,100)	Hot very dry	P. leiophylla probably climax	Juniperus deppeana	A. pungens Quercus spp.	Muldavin et al. 1988
Pinus leiophylla/ Quercus arizonica H.T.	Mountains of south-central Arizona (4,900-7,100)	Hot very dry	P. leiophylla climax or co-climax with Pinus ponderosa Pinus discolor J. deppeana	P. ponderosa P. discolor J. deppeana	Q. arizonica Arctostaphylos spp. Quercus hypoleucoides Rhus aromatica Muhlenbergia longiligula	DeValice and Ludwig 1983 Muldavin et al. 1988
Pinus leiophylla/ Quercus emoryi H.T.	Mountains of south-central Arizona (4,900-6,500)	Hot very dry	P. leiophylla climax or co-climax with P. discolor J. deppeana	P. discolor J. deppeana	Q. emoryi Q. arizonica Aristida orcuttiana Muhlenbergia spp.	Muldavin et al. 1986
Pinus leiophylla/ Quercus hypoleucoides H.T.	Mountains of south-central Arizona (5,600-7,100)	Hot dry	P. leiophylla climax or co-climax with P. discolor J. deppeana	P. discolor J. deppeana	Q. hypoleucoides Q. arizonica Muhlenbergia spp.	DeValice and Ludwig 1983 Muldavin et al. 1986
Pinus leiophylla/ Quercus toumeyii H.T.	Mountains of south-central Arizona (5,500-6,500)	Hot very dry	P. leiophylla climax or co-climax with P. discolor. J. deppeana minor climax	P. discolor J. deppeana	Q. toumeyii A. pungens	DeValice and Ludwig 1983
Pinus leiophylla/ Piptochaetium limbratum H.T. (Semi-riparian forest)	Mountains of south-central Arizona (5,000-6,000)	Hot moist	P. leiophylla climax or co-climax with P. discolor J. deppeana	Pinus engelmannii P. discolor Cupressus arizonica J. deppeana Juniperus erythrocarpa	P. limbratum Juglans major Prunus serotina Q. arizonica Q. hypoleucoides	DeValice and Ludwig 1983 Muldavin et al. 1986
Pinus engelmannii series						
Pinus engelmannii/ Quercus arizonica H.T.	Mountains of south-central Arizona (6,000-6,500)	Warm very dry	P. engelmannii climax or co-climax with J. deppeana. P. discolor minor climax	P. leiophylla P. discolor J. deppeana	Q. arizonica M. longiligula	DeValice and Ludwig 1983
Pinus engelmannii/ Quercus emoryi H.T.	Mountains of southern Arizona (5,500-6,000)	Warm very dry	P. engelmannii climax	P. leiophylla J. deppeana	Q. emoryi Muhlenbergia emersleyi M. longiligula	Muldavin et al. 1986
Pinus engelmannii/ Quercus hypoleucoides H.T.	Mountains of south-central Arizona (5,800-7,100)	Warm dry	P. engelmannii climax, P. discolor P. deppeana minor climaxes	P. leiophylla P. discolor J. deppeana	Q. hypoleucoides Q. arizonica M. longiligula	DeValice and Ludwig 1983 Muldavin et al. 1986
Pinus engelmannii/ Quercus rugosa H.T.	Mountains of south-central Arizona (7,200-8,000)	Warm dry to well-drained	P. engelmannii climax	P. leiophylla J. deppeana	Q. rugosa M. longiligula	Muldavin et al. 1986
Pinus engelmannii/ Muhlenbergia longiligula H.T.	Mountains of south-central Arizona (6,500-7,000)	Warm dry	P. engelmannii climax. P. discolor J. deppeana minor climaxes	P. discolor J. deppeana	M. longiligula Q. gambelii Q. hypoleucoides	DeValice and Ludwig 1983
Pinus ponderosa series						
Pinus ponderosa/ Arctostaphylos petula H.T.	Mountains of southern Utah and western Colorado (7,500-8,500)	Warm very dry	P. ponderosa climax	Pinus flexilis Juniperus scopulorum	A. patula Berberis repens Quercus gambelii Purshia tridentata Carex rossii	Hoffman 1988 Youngblood and Mauk 1985
Pinus ponderosa/ Arctostaphylos pungens C.T. [P. ponderosa/ Arctostaphylos spp. C.T.] [P. ponderosa/Mixed chaparral C.T.]	Mountains of Arizona (5,000-7,600)	Warm very dry	P. ponderosa climax or co-climax with J. deppeana	P. edulis J. deppeana	A. pungens Arctostaphylos spp. Cercocarpus montanus Quercus spp. Bouteloua gracilis Muhlenbergia virescens	Fitzhugh et al. 1987 Hanks et al. 1983 Muldavin et al. 1986
Pinus ponderosa/ Arctostaphylos uva-ursi H.T.	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (5,100-6,700); mountains of southeastern Wyoming (8,300-8,300), southern Colorado, and northern New Mexico (7,700-9,200)	Warm very dry	P. ponderosa climax. P. menziesii may be minor climax (CO,NM)	Usually pure stands (SD) P. flexilis Populus tremuloides (WY) Pseudotsuga menziesii (CO,NM)	A. uva-ursi Symphoricarpos albus Festuca arizonica Muhlenbergia montana Carex spp. Arnica cordifolia Lathyrus ochroleucus Lupinus argenteus	Alexander et al. 1986 DeValice et al. 1986 Hoffman and Alexander 1987
Pinus ponderosa/ Artemisia nova H.T. [P. ponderosa/ Artemisia arbuscula H.T.]	Mountains of southern Utah (8,000-9,000), northern New Mexico, and southern Colorado (8,000-8,200)	Warm very dry	P. ponderosa climax (UT) or co-climax with P. edulis J. scopulorum (CO,NM)	P. edulis P. flexilis (UT) J. scopulorum	A. nova A. arbuscula Chrysothamnus viscidiflorus Q. gambelii Tetradymia canescens B. gracilis	DeValice et al. 1986 Youngblood and Mauk 1985
Pinus ponderosa/ Cercocarpus ledifolius H.T.	Mountains of central and southern Utah (6,800-8,100)	Warm very dry	P. ponderosa climax. J. scopulorum minor climax	P. edulis J. scopulorum	C. ledifolius A. tridentata Juniperus spp. Q. gambelii Symphoricarpos oreophilus	Youngblood and Mauk 1985
Pinus ponderosa/ Cercocarpus montanus H.T. [P. ponderosa/C. montanus- Rhus trilobata H.T.]	Front Range, north-central Colorado (6,300-7,000)	Warm very dry	P. ponderosa climax	Usually pure stands. May contain P. menziesii	C. montanus Opuntia polyacantha R. trilobata C. rossii Artemisia tridentata Geranium fremontii	Hass and Alexander 1986 Radtke 1983
Pinus ponderosa/ Cowanla mexicana C.T.	Mountains of northern Arizona (8,700-7,500)	Warm very dry	P. ponderosa climax	Usually pure stands. May contain P. edulis J. scopulorum	C. mexicana B. gracilis M. montana Sitanion hystrix	Hanks et al. 1983
Pinus ponderosa/ Juglans major H.T. (Semi-riparian forest)	Mountains of south-central Arizona (5,500-8,500)	Warm moist	P. ponderosa climax	Usually pure stands	J. major Agropyron spp. Panicum bulbosum Poa pratensis	Muldavin et al. 1986

Table A1.—Continued.

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Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Pinus ponderosa</i> / <i>Juniperus communis</i> H.T.	Bighorn Mountains, north-central Wyoming; Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming; mountains of southwestern North Dakota and south-eastern Montana (4,000-6,300)	Warm dry to well-drained	<i>P. ponderosa</i> climax	Usually pure stands. May contain <i>P. tremuloides</i> <i>Quercus macrocarpa</i> (tree and/or shrub)	<i>J. communis</i> <i>B. repens</i> <i>Spiraea betulifolia</i> <i>S. albus</i> <i>Hesperochloa kingii</i> <i>P. pratensis</i> <i>Astregalus miser</i> <i>Clematis tenuiloba</i>	Hansen and Hoffman 1988 Hoffman and Alexander 1987
<i>Pinus ponderosa</i> - <i>Juniperus scopulorum</i> H.T. [<i>P. ponderosa</i> - <i>J. scopulorum</i> / <i>Bouteloua curtipendula</i> H.T.]	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (3,800-4,000)	Warm dry to well-drained	<i>P. ponderosa</i> climax to co-climax with <i>J. scopulorum</i>	<i>J. scopulorum</i>	<i>B. curtipendula</i> <i>Oryzopsis micrantha</i> <i>Anemone patens</i> <i>A. frigida</i> <i>Campenula rotundifolia</i>	Hoffman and Alexander 1987
<i>Pinus ponderosa</i> / <i>Physocarpus malveceus</i> H.T.	Mountains of northern and central Idaho and eastern Washington (<3,000)	Warm dry	<i>P. ponderosa</i> climax	Usually pure stands	<i>P. malveceus</i> <i>Coanothus senguineus</i> <i>Holodiscus discolor</i> <i>Erythronium grandiflorum</i> <i>Gellum boreale</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Physocarpus monogynus</i> H.T.	Bighorn Mountains, north-central Wyoming (6,100-6,600); Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (5,100-5,700)	Warm dry to well-drained	<i>P. ponderosa</i> climax	Usually pure stands. May contain <i>J. scopulorum</i>	<i>P. monogynus</i> <i>B. repens</i> <i>S. betulifolia</i> <i>S. albus</i> <i>Cystopteris fragilis</i> <i>G. boreale</i> <i>Solidago speciosa</i>	Hoffman and Alexander 1978, 1987
<i>Pinus ponderosa</i> / <i>Prunus virginiana</i> H.T.(MT,ND); C.T.(SD) <i>P. virginiana</i> (typic) phase <i>Shepherdia canadensis</i> phase (MT)	Mountains of south-eastern Montana, southwestern North Dakota, and northern Black Hills, South Dakota (3,500-4,300)	Warm moist to well-drained	<i>P. ponderosa</i> climax	Usually pure stands	<i>P. virginiana</i> <i>Amelanchier alnifolia</i> <i>B. repens</i> <i>S. canadensis</i> <i>S. albus</i> <i>Arnica cordifolia</i> <i>C. fragilis</i>	Hansen and Hoffman 1988 Hoffman and Alexander 1987 Pflister et al. 1977
<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> H.T. <i>P. tridentata</i> (typic) phase <i>Agropyron spicatum</i> phase (ID,MT) <i>Festuca idahoensis</i> phase (ID,MT)	Mountains of Montana, northern and central Idaho, eastern Washington (3,000-6,000), and southern Utah (7,100-9,000); Front Range of north-central Colorado (7,600-8,700)	Warm dry	<i>P. ponderosa</i> climax. <i>J. scopulorum</i> minor climax	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>P. lrideniata</i> <i>A. tridentata</i> <i>P. virginiana</i> <i>A. spicatum</i> <i>Aristida longiseta</i> <i>F. idahoensis</i> <i>M. montana</i> <i>C. rossii</i> <i>Belsemorhiza sagittata</i>	Daubenmire and Daubenmire 1968 Hess and Alexander 1986 Pflister et al. 1977 Steele et al. 1981 Youngblood and Mauk 1985
<i>Pinus ponderosa</i> / <i>Quercus arizonica</i> H.T. <i>Q. arizonica</i> (typic) phase <i>Bouteloua gracilis</i> phase	Mountains of south-central Arizona (5,500-7,800)	Hot dry	<i>P. ponderosa</i> climax or co-climax with <i>J. deppeana</i> . <i>P. discolor</i> minor climax	<i>P. discolor</i> <i>J. deppeana</i>	<i>Q. arizonica</i> <i>Coanothus fendleri</i> <i>Quercus</i> spp. <i>B. gracilis</i> <i>M. longiligula</i>	DeVellce and Ludwig 1983 Muldavin et al. 1986
<i>Pinus ponderosa</i> / <i>Quercus emoryi</i> H.T.	Mountains of south-central Arizona (5,300-6,900)	Warm dry	<i>P. ponderosa</i> climax	<i>J. deppeana</i>	<i>Q. emoryi</i> <i>Arctostaphylos</i> spp. <i>C. fendleri</i> <i>Garrya wrightii</i> <i>Q. arizonica</i>	Muldavin et al. 1986
<i>Pinus ponderosa</i> / <i>Quercus gambelii</i> H.T. [<i>P. ponderosa</i> - <i>Pinus edulis</i> / <i>Q. gambelii</i> H.T.] [<i>P. ponderosa</i> / <i>Q. gambelii</i> - <i>Cerex geyeri</i> H.T.] [<i>P. ponderosa</i> / <i>Poa fendleriana</i> C.T.] <i>Q. gambelii</i> (typic) phase <i>P. edulis</i> phase (AZ,CO,NM) <i>Symphoricarpos oreophilus</i> phase (CO,UT) <i>Bouteloua gracilis</i> phase (AZ,NM) <i>Festuca arizonica</i> phase (AZ,CO,NM) <i>Muhlenbergia longiligula</i> phase (AZ,NM) <i>Schizachyrium scoparium</i> phase (NM)	Mountains of southern Utah, Colorado, New Mexico, and south-central and eastern Arizona (6,500-9,200)	Warm dry	<i>P. ponderosa</i> climax or co-climax with <i>P. edulis</i> . <i>Pinus engelmannii</i> <i>J. deppeana</i> <i>Juniperus monosperma</i> <i>J. scopulorum</i> minor climaxes	<i>P. edulis</i> <i>P. menziesii</i> <i>P. discolor</i> <i>P. engelmannii</i> <i>J. deppeana</i> <i>J. monosperma</i> <i>Juniperus osteosperma</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>B. repens</i> <i>J. communis</i> <i>Rosa woodsii</i> <i>S. oreophilus</i> <i>B. gracilis</i> <i>F. arizonica</i> <i>Koeleria cristata</i> (K. <i>macrantha</i>) <i>Muhlenbergia</i> spp. <i>P. fendleriana</i> <i>S. scoparium</i> <i>C. geyeri</i> <i>Achillea lanulosa</i>	Alexander et al. 1984a, 1987 DeVellce et al. 1986 DeVellce and Ludwig 1983 Flitzhugh et al. 1987 Hanks et al. 1983 Hess and Wasser 1982 Hoffman 1988 Muldavin et al. 1986 Youngblood and Mauk 1985
<i>Pinus ponderosa</i> / <i>Quercus grisea</i> H.T. <i>Q. grisea</i> (typic) phase <i>Muhlenbergia longiligula</i> phase <i>Muhlenbergia montana</i> phase	Mountains of southwestern New Mexico and eastern Arizona (6,100-8,800)	Warm dry	<i>P. ponderosa</i> climax or co-climax with <i>P. edulis</i> <i>J. deppeana</i> <i>J. monosperma</i> . <i>P. menziesii</i> minor climax	<i>P. edulis</i> <i>P. menziesii</i> <i>J. deppeana</i> <i>J. monosperma</i>	<i>Q. grisea</i> <i>B. gracilis</i> <i>M. longiligula</i> <i>M. montana</i> <i>M. virescens</i> <i>P. fendleriana</i>	Flitzhugh et al. 1987
<i>Pinus ponderosa</i> / <i>Quercus hypoleucoides</i> H.T.	Mountains of south-central Arizona (5,700-8,000)	Warm dry	<i>P. ponderosa</i> climax. <i>P. discolor</i> <i>Pinus engelmannii</i> <i>J. deppeana</i> minor climaxes	<i>P. engelmannii</i> <i>P. leiophylla</i> <i>P. discolor</i> <i>J. deppeana</i>	<i>Q. hypoleucoides</i> <i>C. fendleri</i> <i>G. wrightii</i> <i>Quercus</i> spp. <i>M. longiligula</i> <i>P. fendleriana</i>	DeVellce and Ludwig 1983 Muldavin et al. 1986
<i>Pinus ponderosa</i> / <i>Quercus macrocarpa</i> H.T.	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (4,100-5,300)	Warm dry to well-drained	<i>P. ponderosa</i> climax	Usually pure stands	<i>Q. macrocarpa</i> <i>A. alnifolia</i> <i>B. repens</i> <i>Ostrya virginiana</i> <i>Elymus virginicus</i>	Hoffman and Alexander 1987
<i>Pinus ponderosa</i> / <i>Quercus rugosa</i> H.T.	Mountains of south-central Arizona (7,000-8,800)	Warm moist to well-drained	<i>P. ponderosa</i> climax	Usually pure stands. May contain <i>Pinus strobiliformis</i> <i>P. menziesii</i>	<i>Q. rugosa</i> <i>Quercus</i> spp.	DeVellce and Ludwig 1983 Muldavin et al. 1986
<i>Pinus ponderosa</i> / <i>Quercus undulata</i> H.T. <i>Q. undulata</i> (typic) phase <i>Muhlenbergia dubia</i> phase (NM) <i>Muhlenbergia longiligula</i> phase (NM)	Mountains of northern and southern New Mexico (6,500-8,000)	Hot dry	<i>P. ponderosa</i> climax or co-climax with <i>P. edulis</i> . <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i> minor climaxes	<i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. edulis</i> <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i>	<i>Q. undulata</i> <i>Q. arizonica</i> <i>Q. gambelii</i> <i>Andropogon</i> spp. <i>Bouteloua</i> spp. <i>M. dubia</i> <i>M. longiligula</i> <i>Artemisia ludoviciana</i>	Alexander et al. 1984a DeVellce et al. 1986
<i>Pinus ponderosa</i> / <i>Ribes inermis</i> H.T. (Scree forest)	Mountains of northern New Mexico (7,500-8,500)	Cool dry	<i>P. ponderosa</i> climax	<i>P. menziesii</i> <i>P. edulis</i> <i>J. scopulorum</i> <i>J. deppeana</i>	<i>R. inermis</i> <i>Q. gambelii</i> <i>M. montana</i> <i>P. fendleriana</i>	DeVellce et al. 1986

Table A1. —Continued.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Pinus ponderosa</i> / <i>Spiraea betulifolia</i> H.T.	Bighorn Mountains, north-central Wyoming (5,600-5,900)	Warm dry	<i>P. ponderosa</i> climax	Usually pure stands	<i>S. betulifolia</i> <i>C. tenuifolia</i> <i>S. albus</i> <i>F. idahoensis</i> <i>H. kingii</i> <i>G. borealis</i>	Hoffman and Alexander 1976
<i>Pinus ponderosa</i> / <i>Symphoricarpos albus</i> H.T. <i>S. albus</i> (typic) phase <i>Berberis repens</i> phase (MT) <i>Oryzopsis asperifolia</i> phase (SD) <i>Balsamorhiza sagittata</i> phase (SD)	Mountains of eastern Washington, northern and central Idaho, and central and southeastern Montana (2,600-5,400); Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (4,200-6,000)	Warm dry	<i>P. ponderosa</i> climax	Usually pure stands. May contain <i>P. tremuloides</i> (SD,WY)	<i>S. albus</i> <i>B. repens</i> <i>J. communis</i> <i>P. virginiana</i> <i>Rosa</i> spp. <i>S. canadensis</i> <i>S. betulifolia</i> <i>O. asperifolia</i> <i>Carex lasiocarpa</i> <i>B. sagittata</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Hoffman and Alexander 1987 Pflster et al. 1977 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Symphoricarpos oreophilus</i> H.T.	Mountains of central Idaho (≤5,000) and southern Utah (7,900-8,800)	Warm dry	<i>P. ponderosa</i> climax	Usually pure stands (ID). May contain (UT) <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>A. alnifolia</i> <i>B. repens</i> <i>P. virginiana</i> <i>P. tridentata</i> <i>A. spicatum</i>	Steele et al. 1981 Youngblood and Mauk 1985
<i>Pinus ponderosa</i> / <i>Agropyron spicatum</i> H.T.	Mountains of eastern Washington, Idaho, southeastern and west-central Montana, north-central Wyoming, and southwestern North Dakota (2,400-6,000)	Hot very dry	<i>P. ponderosa</i> climax. <i>J. scopulorum</i> may be minor climax	Usually pure stands. May contain <i>J. scopulorum</i>	<i>A. spicatum</i> <i>Artemisia</i> spp. <i>A. longisetosa</i> <i>Bromus tectorum</i> <i>F. idahoensis</i> <i>Poa</i> spp. <i>B. sagittata</i> <i>Lomatium dissectum</i> <i>Melica bulbosa</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1988 Hansen and Hoffman 1988 Hoffman and Alexander 1976 Pflster et al. 1977 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Andropogon</i> spp. H.T.	Mountains of southeastern Montana (≤4,000)	Warm very dry	<i>P. ponderosa</i> climax. <i>J. scopulorum</i> minor climax	<i>J. scopulorum</i>	<i>A. gerardii</i> <i>A. scoparius</i>	Pflster et al. 1977
<i>Pinus ponderosa</i> / <i>Bouteloua gracilis</i> H.T. <i>B. gracilis</i> (typic) phase <i>Pinus edulis</i> phase (AZ) <i>Artemisia tridentata</i> phase (AZ) <i>Quercus gambelii</i> phase (AZ) <i>Andropogon hallii</i> phase (AZ) <i>Schizachyrium scoparium</i> phase (NM) <i>Vitis arizonica</i> phase (AZ)	Mountains of Arizona and New Mexico (5,700-8,600)	Warm very dry	<i>P. ponderosa</i> climax or co-climax with <i>P. edulis</i> <i>P. discolor</i> <i>J. deppeana</i> <i>J. monosperma</i> minor climaxes	<i>P. edulis</i> <i>P. discolor</i> <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i>	<i>B. gracilis</i> <i>A. tridentata</i> <i>Q. gambelii</i> <i>Q. grisea</i> <i>A. hallii</i> <i>M. longiligula</i> <i>P. fendleriana</i> <i>S. scoparium</i> <i>V. arizonica</i>	Alexander et al. 1987 DeVelice et al. 1986 DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Hanks et al. 1983 Muldavin et al. 1986
<i>Pinus ponderosa</i> / <i>Festuca arizonica</i> H.T. <i>F. arizonica</i> (typic) phase <i>Quercus gambelii</i> phase (AZ,NM) <i>Bouteloua gracilis</i> phase <i>Dentothia perryi</i> phase (CO,NM)	Mountains of Arizona and New Mexico (7,200-9,500), Front Range and mountains of southern Colorado (9,500-9,900)	Warm dry	<i>P. ponderosa</i> climax. <i>P. edulis</i> <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i> minor climaxes in some phases (AZ,NM)	<i>P. edulis</i> <i>P. strobiliformis</i> <i>P. monziesii</i> (CO) <i>P. aristata</i> (CO) <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i>	<i>F. arizonica</i> <i>C. fendleri</i> <i>Q. gambelii</i> <i>Ribes cereum</i> <i>B. gracilis</i> <i>D. perryi</i> <i>M. montana</i> <i>P. fendleriana</i> <i>Haplopappus perryi</i>	Alexander et al. 1987 DeVelice et al. 1986 Fitzhugh et al. 1987 Hanks et al. 1983 Komarkova et al. 1988 Radloff 1983
<i>Pinus ponderosa</i> / <i>Festuca idahoensis</i> H.T. <i>F. idahoensis</i> (typic) phase <i>P. ponderosa</i> phase (ID) <i>Arctostaphylos patula</i> phase (UT) <i>Artemisia tridentata</i> phase (UT) <i>Festuca scabrella</i> phase (MT)	Mountains of eastern Washington, Idaho, central and southeastern Montana, northern Utah, north-central Wyoming (2,500-6,000), and south-central Colorado (8,800-9,300)	Warm dry	<i>P. ponderosa</i> climax	Usually pure stands. May contain (UT) <i>Pinus contorta</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>F. idahoensis</i> <i>A. patula</i> <i>A. tridentata</i> <i>B. repens</i> <i>P. tridentata</i> <i>S. albus</i> <i>A. spicatum</i> <i>Calamagrostis rubescens</i> <i>F. scaberula</i> <i>Achillea millefolium</i> <i>B. sagittata</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Hansen and Hoffman 1988 Hoffman and Alexander 1976 Komarkova et al. 1988 Mauk and Henderson 1984 Pflster et al. 1977 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Hesperochloa kingii</i> H.T.	Mountains of north-central Colorado (7,300-8,400)	Warm dry	<i>P. ponderosa</i> climax	<i>P. monziesii</i> <i>P. flexilis</i>	<i>H. kingii</i> <i>R. cereum</i> <i>K. cristata</i> (<i>K. mecrantha</i>) <i>Allium georgii</i> <i>A. tridactylum</i> <i>G. fremontii</i> <i>Sedum stenopetalum</i>	Hess and Alexander 1986
<i>Pinus ponderosa</i> / <i>Muhlenbergia montana</i> H.T. [<i>P. ponderosa</i> - <i>Pseudotsuga menziesii</i> <i>M. montana</i> H.T.] [<i>P. ponderosa</i> / <i>Poa longiligula</i> C.T.]	Mountains of Arizona and New Mexico, central and southern Utah, and central and southern Colorado (6,800-8,800)	Warm dry	<i>P. ponderosa</i> climax. <i>P. edulis</i> <i>J. deppeana</i> minor climaxes	<i>P. menziesii</i> <i>P. edulis</i> <i>P. flexilis</i> <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i>	<i>M. montana</i> <i>B. repens</i> <i>C. montanus</i> <i>Q. gambelii</i> <i>B. gracilis</i> <i>P. fendleriana</i> <i>P. longiligula</i> <i>S. hystris</i> <i>Senecio neomexicanus</i> <i>Smilacina stellata</i> <i>Solidago canadensis</i> <i>Yucca glauca</i>	Alexander et al. 1987 DeVelice et al. 1986 Fitzhugh et al. 1987 Hanks et al. 1983 Hess and Alexander 1986 Muldavin et al. 1986 Radloff 1983 Youngblood and Mauk 1985
<i>Pinus ponderosa</i> / <i>Muhlenbergia virescens</i> H.T. [<i>P. ponderosa</i> /M. <i>virescens</i> - <i>Festuca arizonica</i> H.T.] [<i>P. ponderosa</i> /M. <i>virescens</i> - <i>F. arizonica</i> H.T.] <i>Bouteloua gracilis</i> C.T.] <i>M. virescens</i> (typic) phase <i>Quercus gambelii</i> phase <i>B. gracilis</i> phase (AZ) <i>F. arizonica</i> phase	Mountains of Arizona and southwestern New Mexico (8,800-9,300)	Warm dry	<i>P. ponderosa</i> climax. <i>P. edulis</i> <i>P. menziesii</i> <i>P. strobiliformis</i> <i>Pinus engelmannii</i> <i>J. deppeana</i> minor climaxes	<i>P. edulis</i> <i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. engelmannii</i> <i>J. deppeana</i>	<i>M. virescens</i> <i>B. repens</i> <i>C. fendleri</i> <i>Quercus</i> spp. <i>B. gracilis</i> <i>F. arizonica</i> <i>M. montana</i> <i>P. fendleriana</i> <i>P. longiligula</i> <i>Cerex</i> spp. <i>Senecio wootonii</i>	Alexander et al. 1987 DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Hanks et al. 1983 Muldavin et al. 1986
<i>Pinus ponderosa</i> / <i>Oryzopsis hymenoides</i> H.T. (Sand hills)	Mountains of northern New Mexico and southern Colorado (5,500-8,000)	Warm very dry	<i>P. ponderosa</i> climax. <i>J. monosperma</i> minor climax	<i>J. monosperma</i>	<i>Q. hymenoides</i> <i>C. montanus</i> <i>S. scoparium</i> <i>S. hystris</i> <i>Heterotheca fulcreta</i>	DeVelice et al. 1986

Table A1.—Continued.

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Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Pinus ponderosa</i> / <i>Poa pratensis</i> H.T. [<i>Pinus ponderosa</i> / Riparian forest H.T.]	Mountains of southwestern and northern New Mexico and southern Colorado (6,000-8,500)	Warm moist	<i>P. ponderosa</i> climax	<i>Populus angustifolia</i> <i>Acor negundo</i>	<i>P. pratensis</i> <i>Ainus tenuifolia</i> <i>Q. gambellii</i> <i>Galium</i> spp. <i>Iris missouriensis</i> <i>Juncus</i> spp.	Alexander et al. 1987 DeVelice et al. 1988
<i>Pinus ponderosa</i> / <i>Stipa comata</i> H.T.	Mountains of northern Idaho and eastern Washington (2,500-3,000)	Warm very dry	<i>P. ponderosa</i> climax	Usually pure stands	<i>S. comata</i> <i>A. longiseta</i> <i>Poa secunda</i> <i>Stipa</i> spp.	Daubenmire and Daubenmire 1968
<i>Pinus ponderosa</i> / <i>Stipa occidentalis</i> H.T.	Mountains of central Idaho (3,500-4,800)	Warm very dry	<i>P. ponderosa</i> climax	Usually pure stands	<i>S. occidentalis</i> <i>P. tridentata</i> <i>Stipa thurberiana</i>	Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Carex gayari</i> H.T.	Mountains of northern Utah (7,200-8,300), and south-eastern Wyoming (6,100-8,500)	Cool dry	<i>P. ponderosa</i> climax	<i>P. contorta</i> (UT) <i>P. tremuloides</i>	<i>C. gayari</i> <i>B. repens</i> <i>Pachistima myrsinites</i> <i>Poa nervosa</i> <i>A. cordifolia</i>	Alexander et al. 1986 Mauk and Henderson 1984
<i>Pinus ponderosa</i> / <i>Carex heliophylla</i> H.T.	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (4,500-5,200); mountains of southwestern North Dakota and south-eastern Montana (3,900-4,000)	Warm very dry	<i>P. ponderosa</i> climax	Usually pure stands. May contain <i>J. scopulorum</i>	<i>C. heliophylla</i> <i>A. spicatum</i> <i>Danthonia spicata</i> <i>F. idahoensis</i> <i>P. pratensis</i> <i>Stipa</i> spp. <i>Aster ciliolatus</i> <i>Heterotheca villosa</i>	Hansen and Hoffman 1988 Hoffman and Alexander 1987
<i>Pinus ponderosa</i> / <i>Carex rossii</i> H.T.	Front Range, north-central Colorado, and mountains of southeastern Wyoming (5,800-6,400)	Warm dry to well-drained	<i>P. ponderosa</i> climax	Usually pure stands. May contain <i>P. monziesii</i> (CO) <i>J. scopulorum</i>	<i>C. rossii</i> <i>J. communis</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>M. montana</i> <i>A. lanulosa</i>	Alexander et al. 1988 Hess and Alexander 1986
<i>Pinus ponderosa</i> / Cinder Solis H.T.	Mountains of north-central and northwestern New Mexico (7,700-8,500)	Warm dry	<i>P. ponderosa</i> climax. <i>P. edulis</i> minor climax	<i>P. edulis</i>	<i>Q. gambellii</i> <i>R. cereum</i> <i>B. gracilis</i> <i>M. montana</i> <i>Lupinus</i> spp.	Alexander et al. 1987
<i>Pinus ponderosa</i> / Rockland H.T.	Mountains of eastern Arizona, and northern and southwestern New Mexico (8,300-8,700)	Warm dry	<i>P. ponderosa</i> climax. <i>P. monziesii</i> <i>P. edulis</i> <i>J. douglasiana</i> minor climaxes	<i>P. monziesii</i> <i>P. edulis</i> <i>P. strobiliformis</i> <i>J. douglasiana</i>	<i>Q. grisea</i> <i>Bouteloua</i> spp. <i>F. arizonica</i> <i>M. montana</i> <i>M. virescens</i> <i>Solidago</i> spp.	Alexander et al. 1987 Fitzhugh et al. 1987
<i>Pinus strobiliformis</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern Arizona (7,500-9,000)	Warm dry	<i>Pinus strobiliformis</i> series <i>P. strobiliformis</i> co-climax with <i>P. monziesii</i>		<i>F. arizonica</i> <i>B. repens</i> <i>Bromus ciliatus</i> <i>M. montana</i>	Moir and Ludwig 1979

Pseudotsuga menziesii series

<i>Pseudotsuga menziesii</i> <i>Acer glabrum</i> H.T. <i>A. glabrum</i> (typic) phase <i>Pachistima myrsinites</i> phase (ID,WY) <i>Symphoricarpos oreophilus</i> phase (ID)	Mountains of central and southeastern Idaho, northwestern Wyoming (4,800-8,300), and northern Utah (5,800-7,700)	Cool moist	<i>P. menziesii</i> climax	<i>Abies grandis</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>A. alnitola</i> <i>P. myrsinites</i> <i>P. virginiana</i> <i>R. cereum</i> <i>S. oreophilus</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Mauk and Henderson 1984 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> <i>Acer grandidentatum</i> H.T.	Mountains of south-central Arizona (6,500-7,000)	Warm moist	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>J. douglasiana</i>	<i>A. grandidentatum</i> <i>Holodiscus dumosus</i> <i>Q. arizonica</i> <i>Q. hypoleucoides</i>	DeVelice and Ludwig 1983
<i>Pseudotsuga menziesii</i> <i>Arctostaphylos patula</i> H.T.	Mountains of central and southern Utah (7,200-8,700)	Warm dry	<i>P. menziesii</i> climax. <i>J. scopulorum</i> minor climax	<i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>B. repens</i> <i>Ceanothus martinii</i> <i>S. oreophilus</i>	Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of central Montana (4,700-6,500), and south-western New Mexico (9,500-10,000)	Warm very dry	<i>P. menziesii</i> climax or co-climax with <i>P. strobiliformis</i>	<i>P. strobiliformis</i> (NM) <i>P. ponderosa</i> <i>P. flexilis</i> (MT) <i>P. tremuloides</i> (NM)	<i>A. uva-ursi</i> <i>A. spicatum</i> <i>B. ciliatus</i> <i>Festuca</i> spp. <i>M. montana</i> <i>B. sagittata</i> <i>Lithospermum ruderalis</i> <i>Solidago spathulata</i>	Fitzhugh et al. 1987 Pfister et al. 1977
<i>Pseudotsuga menziesii</i> <i>Barberis repens</i> H.T. <i>B. repens</i> (typic) phase <i>Pinus ponderosa</i> phase (UT) <i>Juniperus communis</i> phase (ID,UT,WY) <i>Symphoricarpos oreophilus</i> phase (ID,UT,WY) <i>Carex geyeri</i> phase (ID,UT)	Mountains of central and southeastern Idaho (4,500-7,700), north-western Wyoming (5,700-8,500), and northern Utah (5,400-9,700); mountains of north-central Wyoming (7,000-8,500), and western Colorado (8,000-9,900)	Warm dry to well-drained	<i>P. menziesii</i> climax. <i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> minor climaxes	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>A. grandis</i> (Not WY) <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>C. geyeri</i> <i>C. rossii</i> <i>A. cordifolia</i> <i>Galium septentrionale</i> <i>Smilacina racemosa</i>	Hoffman 1988 Hoffman and Alexander 1976 Mauk and Henderson 1984 Steele et al. 1981, 1983 Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Cercocarpus ledifolius</i> H.T.	Mountains of southeastern and central Idaho, and Utah (8,000-8,100)	Warm dry	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i> . <i>P. flexilis</i> <i>J. scopulorum</i> minor climaxes	<i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>C. ledifolius</i> <i>B. repens</i> <i>S. oreophilus</i> <i>A. spicatum</i> <i>A. cordifolia</i> <i>B. sagittata</i> <i>Crepis aluminata</i>	Mauk and Henderson 1984 Steele et al. 1981, 1983 Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Cercocarpus montanus</i> H.T.	Mountains of central and southern Utah (7,200-8,200)	Warm dry	<i>P. menziesii</i> climax. <i>P. edulis</i> <i>J. osteosperma</i> <i>J. scopulorum</i> minor climaxes	<i>P. edulis</i> <i>J. osteosperma</i> <i>J. scopulorum</i>	<i>C. montanus</i> <i>B. repens</i> <i>J. communis</i> <i>Shepherdia rotundifolia</i> <i>S. oreophilus</i>	Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Clamatis pseudoalpina</i> H.T.	Front Range, central Colorado (7,800-9,300)	Warm well-drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. pseudoalpina</i> <i>J. communis</i> <i>Rosa</i> spp. <i>Calamagrostis purpurascens</i> <i>Carex</i> spp. <i>Fragaria</i> spp. <i>Saxifraga bronchialis</i> <i>Thalictrum fendleri</i> <i>Valeriana edulis</i>	Radloff 1983

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Table A1.—Continued.

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Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Pseudotsuga menziesii</i> <i>Holodiscus dumosus</i> H.T. (Scree forest)	Mountains of northern and southwestern New Mexico, and southern Colorado (9,600-9,900)	Warm dry	<i>P. menziesii</i> climax or co-climax with <i>P. strobiliformis</i>	<i>P. strobiliformis</i> <i>Abies lasiocarpa</i> <i>Picea engelmannii</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>H. dumosus</i> <i>C. montanus</i> <i>Jamesia americana</i> <i>Ribes</i> spp. <i>Salix scouleriana</i> <i>S. oreophilus</i>	DeVelice et al. 1988 Fitzhugh et al. 1987
<i>Pseudotsuga menziesii</i> <i>Jamesia americana</i> H.T.	Front Range, north-central Colorado, and mountains of south-central Colorado (7,200-9,800)	Cool dry to well-drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>J. americana</i> <i>A. glabrum</i> <i>J. communis</i> <i>P. monogynus</i> <i>Fragaria ovalis</i> (<i>F. virginiana</i>) <i>Potentilla frissa</i>	Hess and Alexander 1986 Komarkova et al. 1988 Radloff 1983
<i>Pseudotsuga menziesii</i> <i>Juniperus communis</i> H.T.	Mountains of central and southwestern Montana (6,400-7,800), central Idaho, and north-western Wyoming (7,400-10,300)	Cool dry to excessively drained	<i>P. menziesii</i> climax	<i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>J. communis</i> <i>Juniperus horizontalis</i> <i>S. canadensis</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>A. miser</i> <i>F. ovalis</i> (<i>F. virginiana</i>)	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> <i>Linnaea borealis</i> H.T. <i>L. borealis</i> (typic) phase <i>Symphoricarpos albus</i> phase (MT) <i>Vaccinium globulare</i> phase (MT) <i>Calamagrostis rubescens</i> phase (MT)	Mountains of central and northwestern Montana, and central Idaho (2,600-6,500)	Warm moist to well-drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>Larix occidentalis</i>	<i>L. borealis</i> <i>S. albus</i> <i>S. betulifolia</i> <i>V. globulare</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> <i>Pachistima myrsinites</i> H.T. [<i>P. menziesii</i> / <i>P. myrsinites</i> - <i>Carex geyeri</i> H.T.]	Mountains of central and western Colorado (7,100-10,000)	Cool dry to well-drained	<i>P. menziesii</i> climax	<i>Picea engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>B. repens</i> <i>Q. gambellii</i> <i>S. oreophilus</i> <i>Vaccinium myrtillus</i> <i>C. geyeri</i> <i>A. cordifolia</i>	Hess and Wasser 1982 Hoffman and Alexander 1980, 1983 Komarkova et al. 1988
<i>Pseudotsuga menziesii</i> <i>Physocarpus malvaceus</i> H.T. <i>P. malvaceus</i> (typic) phase <i>Pseudotsuga menziesii</i> phase <i>Pinus ponderosa</i> phase (ID) <i>Pachistima myrsinites</i> phase (ID,WY) <i>Calamagrostis rubescens</i> phase (ID,MT) <i>Smilacina stellata</i> phase (ID)	Mountains of eastern Washington, Idaho, Montana (2,000-7,100), northwestern Wyoming (5,400-7,500), and Utah (5,000-9,100)	Cool moist to well-drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>L. occidentalis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>P. malvaceus</i> <i>A. alnifolia</i> <i>B. repens</i> <i>H. discolor</i> <i>P. myrsinites</i> <i>S. albus</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>S. stellata</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Mauk and Henderson 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Physocarpus monogynus</i> H.T.	Mountains of northwestern and north-central Wyoming (6,100-8,600); Front Range, north-central Colorado (5,900-7,700)	Warm well-drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>P. monogynus</i> <i>B. repens</i> <i>J. americana</i> <i>S. betulifolia</i> <i>S. oreophilus</i> <i>H. kingii</i> <i>P. pratensis</i> <i>G. fremontii</i>	Hess and Alexander 1986 Hoffman and Alexander 1976 Steele et al. 1983
<i>Pseudotsuga menziesii</i> <i>Purshia tridentata</i> H.T. [<i>P. menziesii</i> / <i>Arctostaphylos uva-ursi</i> H.T.] <i>Pinus ponderosa</i> / <i>Artemisia tridentata</i> H.T.]	Mountains of south-central Colorado (8,800-9,800)	Warm dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. tridentata</i> <i>A. tridentata</i> <i>A. uva-ursi</i> <i>J. communis</i> <i>K. cristata</i> (<i>K. macroantha</i>) <i>C. foenea</i>	Komarkova et al. 1988
<i>Pseudotsuga menziesii</i> <i>Quercus arizonica</i> H.T.	Mountains of south-central Arizona (5,800-7,000)	Warm very dry	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. discolor</i> <i>J. deppeana</i>	<i>Q. arizonica</i> <i>Q. gambellii</i> <i>Q. hypoleucoides</i> <i>M. longiligula</i>	DeVelice and Ludwig 1983 Muldavin et al. 1986
<i>Pseudotsuga menziesii</i> <i>Quercus gambellii</i> H.T. <i>Q. gambellii</i> (typic) phase <i>Holodiscus dumosus</i> phase (NM) <i>Festuca arizonica</i> phase (NM) <i>Muhlenbergia virescens</i> phase (AZ,NM)	Mountains of New Mexico, Arizona, southern Utah, and southern Colorado (6,500-9,600)	Warm dry	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>J. scopulorum</i> minor climaxes	<i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. edulis</i> <i>Pinus engelmannii</i> <i>J. deppeana</i> <i>J. scopulorum</i>	<i>Q. gambellii</i> <i>H. dumosus</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>F. arizonica</i> <i>M. montana</i> <i>M. virescens</i> <i>P. fendleriana</i> <i>C. rossii</i>	Alexander et al. 1984a, 1984b, 1987 DeVelice et al. 1986 DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Muldavin et al. 1986 Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Quercus hypoleucoides</i> H.T.	Mountains of south-central and eastern Arizona, and southwestern New Mexico (6,800-8,800)	Warm dry to well-drained	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. strobiliformis</i> <i>Pinus engelmannii</i> <i>P. discolor</i> <i>P. edulis</i> <i>Abies concolor</i>	<i>Q. hypoleucoides</i> <i>Agave</i> spp. <i>Q. arizonica</i> <i>Q. gambellii</i> <i>Q. rugosa</i> <i>Opuntia</i> spp. <i>M. longiligula</i> <i>P. fendleriana</i>	DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Moir and Ludwig 1979 Muldavin et al. 1986 Youngblood and Mauk 1985
<i>Pseudotsuga menziesii</i> <i>Quercus rugosa</i> H.T.	Mountains of south-central Arizona (8,500-8,700)	Warm to well-drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. strobiliformis</i>	<i>Q. rugosa</i> <i>Q. hypoleucoides</i>	DeVelice and Ludwig 1983 Muldavin et al. 1986
<i>Pseudotsuga menziesii</i> <i>Spiraea betulifolia</i> H.T. <i>S. betulifolia</i> (typic) phase <i>Pinus ponderosa</i> phase (ID) <i>Calamagrostis rubescens</i> phase (ID,WY)	Mountains of central Montana, Idaho (3,300-8,100), and northwestern Wyoming (6,000-8,200)	Warm dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. betulifolia</i> <i>A. alnifolia</i> <i>B. repens</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>F. ovalis</i> (<i>F. virginiana</i>)	Cooper et al. 1987 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> <i>Symphoricarpos albus</i> H.T. <i>S. albus</i> (typic) phase <i>Pinus ponderosa</i> phase (ID) <i>Agropyron spicatum</i> phase (MT) <i>Calamagrostis rubescens</i> phase (ID,MT)	Mountains of eastern Washington, Idaho, Montana (2,700-7,200), and northwestern Wyoming (5,700-7,400)	Warm dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>P. virginiana</i> <i>Rosa</i> spp. <i>S. betulifolia</i> <i>A. spicatum</i> <i>C. rubescens</i> <i>Festuca</i> spp. <i>C. geyeri</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> <i>Symphoricarpos oreophilus</i> H.T.	Mountains of central Idaho, southwestern Montana, north-western Wyoming (4,500-8,300), northern and southern Utah, and central and southern Colorado (7,000-9,800)	Warm dry	<i>P. menziesii</i> climax. <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i> minor climaxes	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>A. tridentata</i> <i>B. repens</i> <i>P. virginiana</i> <i>Ribes</i> spp. <i>H. kingii</i> <i>C. geyeri</i> <i>Stellaria jamesiana</i> <i>T. fendleri</i>	Hess and Wasser 1982 Komarkova et al. 1988 Mauk and Henderson 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Youngblood and Mauk 1985

Table A1.—Continued.

	Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree ecotone	Principal undergrowth species	Authority
14	<i>Pseudotsuga menziesii</i> <i>Vaccinium caespitosum</i> H.T.	Mountains of northern and central Idaho, and west-central and northwestern Montana (2,500-6,400)	Warm moist	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>A. uva-ursi</i> <i>L. borealis</i> <i>S. albus</i> <i>C. rubescens</i> <i>C. geyseri</i>	Cooper et al. 1987 Pflister et al. 1977 Steele et al. 1981
	<i>Pseudotsuga menziesii</i> <i>Vaccinium globulare</i> H.T. <i>V. globulare</i> (typic) phase <i>Arctostaphylos uva-ursi</i> phase (MT) <i>Xerophyllum tenax</i> phase (MT)	Mountains of north-central Montana, and Idaho (4,300-7,400)	Cool dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>A. uva-ursi</i> <i>C. geyseri</i> <i>A. cordifolia</i> <i>Osmorhiza chilensis</i> <i>X. tenax</i>	Cooper et al. 1987 Pflister et al. 1977 Steele et al. 1981, 1983
	<i>Pseudotsuga menziesii</i> <i>Agropyron spicatum</i> H.T.	Mountains of central Montana, and northern and central Idaho (3,800-7,500)	Warm very dry	<i>P. menziesii</i> co-climax with <i>P. ponderosa</i> . <i>P. flexilis</i> <i>J. scopulorum</i> minor climaxes	<i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>A. tridentata</i> <i>F. idahoensis</i> <i>B. sagittata</i> <i>M. bulbosa</i>	Cooper et al. 1987 Pflister et al. 1977 Steele et al. 1981
	<i>Pseudotsuga menziesii</i> <i>Bromus ciliatus</i> H.T.	Mountains of southwestern New Mexico (9,000-10,000)	Cool moist to wet	<i>P. menziesii</i> climax.	<i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>B. ciliatus</i> <i>A. glabrum</i> <i>P. fendleriana</i> <i>Erigeron eximius</i> (<i>E. superbus</i>)	Alexander et al. 1987 Fitzhugh et al. 1987
	<i>Pseudotsuga menziesii</i> <i>Calamagrostis rubescens</i> H.T. <i>C. rubescens</i> (typic) phase <i>Pinus ponderosa</i> phase (ID,MT) <i>Arctostaphylos uva-ursi</i> phase (ID,MT) <i>Pachistima myrsinites</i> phase (ID,WY) <i>Agropyron spicatum</i> phase (MT) <i>Festuca idahoensis</i> phase (ID)	Mountains of eastern Washington, Idaho, Montana, northern Utah (4,100-7,900), and northwestern Wyoming (6,000-8,100)	Cool dry to well- drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>A. uva-ursi</i> <i>B. repens</i> <i>P. myrsinites</i> <i>A. spicatum</i> <i>F. idahoensis</i> <i>C. geyseri</i> <i>A. cordifolia</i> <i>Smilacina amplexicaulis</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Mauk and Henderson 1984 Pflister et al. 1977 Steele et al. 1981, 1983
	<i>Pseudotsuga menziesii</i> <i>Festuca arizonica</i> H.T.	Mountains of northern and southwestern New Mexico, eastern Arizona, and southern Colorado (8,200-10,000)	Warm dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>Pinus aristata</i> <i>P. edulis</i> <i>J. deppeana</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>A. uva-ursi</i> <i>H. dumosus</i> <i>O. gambellii</i> <i>B. ciliatus</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>M. montana</i> <i>P. fendleriana</i>	Alexander et al. 1984b, 1987 DeVelice et al. 1986 Fitzhugh et al. 1987 Moir and Ludwig 1979
	<i>Pseudotsuga menziesii</i> <i>Festuca idahoensis</i> H.T. <i>F. idahoensis</i> (typic) phase <i>Pinus ponderosa</i> phase (ID)	Mountains of southwestern Montana, northern and central Idaho (3,000-8,000), and south-central Colorado (6,000-10,000)	Warm dry	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i>	<i>F. idahoensis</i> <i>A. alnifolia</i> <i>P. virginiana</i> <i>Rosa</i> spp. <i>A. spicatum</i> <i>C. rubescens</i> <i>Eriogonum</i> spp.	Cooper et al. 1987 Pflister et al. 1977 Steele et al. 1981 Komarkova et al. 1988
	<i>Pseudotsuga menziesii</i> <i>Festuca scabrella</i> H.T.	Mountains of central and northwestern Montana (2,700-7,400)	Warm dry	<i>P. menziesii</i> co-climax with <i>P. ponderosa</i> . <i>P. flexilis</i> minor climax	<i>P. ponderosa</i> <i>P. flexilis</i>	<i>F. scabrella</i> <i>F. idahoensis</i> <i>A. spicatum</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>B. sagittata</i>	Pflister et al. 1977
	<i>Pseudotsuga menziesii</i> <i>Muhlenbergia montana</i> H.T.	Mountains of southwestern New Mexico and eastern Arizona (7,500-9,800)	Warm dry	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. edulis</i> <i>J. deppeana</i> <i>J. monosperma</i> <i>J. scopulorum</i>	<i>M. montana</i> <i>B. repens</i> <i>O. gambellii</i> <i>P. fendleriana</i> <i>Geranium caespitosum</i> <i>Lithospermum multiflorum</i>	Alexander et al. 1987 Fitzhugh et al. 1987
	<i>Pseudotsuga menziesii</i> <i>Muhlenbergia virescens</i> H.T. [<i>P. menziesii</i> - <i>Pinus strobiliformis</i> <i>M. virescens</i> H.T.]	Mountains of southwestern New Mexico and Arizona (7,800-9,400)	Warm dry	<i>P. menziesii</i> climax or co-climax with <i>P. ponderosa</i> <i>P. strobiliformis</i> . <i>A. concolor</i> minor climax	<i>P. ponderosa</i> <i>P. strobiliformis</i> <i>A. concolor</i> <i>J. deppeana</i> <i>P. tremuloides</i>	<i>M. virescens</i> <i>C. fendleri</i> <i>O. gambellii</i> <i>B. ciliatus</i> <i>P. fendleriana</i> <i>C. rossii</i> <i>Geranium richardsonii</i> <i>F. ovalis</i> (<i>F. virginiana</i>)	Alexander et al. 1984b DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Moir and Ludwig 1979 Muldavin et al. 1986
	<i>Pseudotsuga menziesii</i> <i>Carex geyseri</i> H.T. <i>C. geyseri</i> (typic) phase <i>Pinus ponderosa</i> phase (ID) <i>Symphoricarpos oreophilus</i> phase (ID)	Mountains of Montana east of Continental Divide (6,100- 7,600) and northern and central Idaho (3,700-8,700); Front Range and mountains of south-central Colorado (7,800-8,800)	Cool dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>J. scopulorum</i> <i>P. tremuloides</i> (CO)	<i>C. geyseri</i> <i>A. uva-ursi</i> <i>P. virginiana</i> <i>S. oreophilus</i> <i>A. spicatum</i> <i>A. lanulosa</i> <i>A. cordifolia</i> <i>Fragaria</i> spp.	Cooper et al. 1987 Hess and Alexander 1986 Komarkova et al. 1988 Pflister et al. 1977 Steele et al. 1981
	<i>Pseudotsuga menziesii</i> <i>Carex rossii</i> H.T.	Front Range of north-central Colorado (5,800-8,200)	Warm dry to well- drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>J. scopulorum</i>	<i>C. rossii</i> <i>J. communis</i> <i>P. monogynus</i> <i>A. lanulosa</i> <i>C. rotundifolia</i> <i>C. fragilis</i>	Hess and Alexander 1986
15	<i>Pseudotsuga menziesii</i> <i>Arnica cordifolia</i> H.T. <i>A. cordifolia</i> (typic) phase <i>Astragalus miser</i> phase (ID)	Mountains of central and southwestern Montana, central and southeastern Idaho (5,900-8,600), and northwestern Wyoming (6,900-9,500)	Cool dry	<i>P. menziesii</i> climax	<i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. cordifolia</i> <i>B. repens</i> <i>J. communis</i> <i>S. oreophilus</i> <i>F. idahoensis</i> <i>P. nervosa</i> <i>A. miser</i> <i>Thalictrum occidentale</i>	Pflister et al. 1977 Steele et al. 1981, 1983
	<i>Pseudotsuga menziesii</i> <i>Osmorhiza chilensis</i> H.T.	Mountains of central and southeastern Idaho, and northern Utah (5,300-7,800)	Warm moist to well- drained	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>A. grandis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>P. myrsinites</i> <i>P. virginiana</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>S. racemosa</i> <i>Viola nuttallii</i>	Mauk and Henderson 1984 Steele et al. 1981, 1983
	<i>Pseudotsuga menziesii</i> Sparse H.T. [<i>P. menziesii</i> - <i>Barbarts repens</i> H.T.]	Mountains of north-central Arizona (7,000-8,500)	Warm dry	<i>P. menziesii</i> climax	<i>P. ponderosa</i> <i>P. strobiliformis</i>	<i>B. repens</i> <i>Bromus richardsonii</i> <i>P. fendleriana</i> (undergrowth sparse)	Alexander et al. 1984b

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Succesional status	Tree associates	Principal undergrowth species	Authority
Abies concolor series						
<i>Abies concolor</i> <i>Acer glabrum</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> <i>A. glabrum</i> H.T.] <i>A. glabrum</i> (typic) phase <i>Berberis repens</i> phase (AZ,NM) <i>Holodiscus dumosus</i> phase (AZ,NM) <i>Pachistima myrsinites</i> phase Riparian phase (NM)	Mountains of New Mexico, Arizona, southern Colorado (8,000-9,800), and southern Utah (7,400-8,400)	Cool moist to well-drained	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>Picea engelmannii</i> , <i>Picea pungens</i> , <i>P. ponderosa</i> , <i>P. strobiliformis</i> minor climaxes in some phases	<i>P. menziesii</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>A. alnifolia</i> <i>A. tenuifolia</i> <i>B. repens</i> <i>H. dumosus</i> <i>P. myrsinites</i> <i>P. virginiana</i> <i>Q. gambelii</i> <i>B. ciliatus</i> <i>G. richardsonii</i> <i>S. emplexicaulis</i> <i>T. fendleri</i>	Alexander et al. 1984a, 1987 DeVelice et al. 1986 DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Moir and Ludwig 1979 Muldavin et al. 1986 Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Acer grandidentatum</i> H.T. <i>A. grandidentatum</i> (typic) phase <i>Holodiscus dumosus</i> phase	Mountains of south-central and eastern Arizona, and southwestern New Mexico (6,500-8,500)	Warm moist to well-drained	<i>A. concolor</i> climax or co-climax with <i>P. menziesii</i> , <i>P. engelmannii</i> , <i>P. strobiliformis</i> minor climaxes	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>A. grandidentatum</i> <i>H. dumosus</i> <i>J. major</i> <i>Q. gambelii</i> <i>C. foenea</i> <i>T. fendleri</i> <i>Viola canadensis</i>	Alexander et al. 1984a DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Moir and Ludwig 1979 Muldavin et al. 1988
<i>Abies concolor</i> <i>Arctostaphylos patula</i> H.T.	Mountains of southern Utah (8,100-8,500)	Warm dry	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>Pinus longaevo</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>B. repens</i> <i>J. communis</i> <i>P. tridentata</i> <i>Q. gambelii</i> <i>S. oreophilus</i>	Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colorado (7,900-9,500)	Cool dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>P. myrsinites</i> <i>J. communis</i> <i>F. ovalls</i> (<i>F. virginiana</i>)	DeVelice et al. 1986
<i>Abies concolor</i> <i>Berberis repens</i> H.T. <i>B. repens</i> (typic) phase <i>Juniperus communis</i> phase <i>Symphoricarpos oreophilus</i> phase	Mountains of Utah (5,700-9,600)	Cool dry	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>P. pungens</i> <i>A. grandis</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>R. woodsii</i> <i>S. oreophilus</i> <i>Lathyrus leucanthus</i> <i>Qsmorhiza</i> spp.	Mauk and Henderson 1984 Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Cercocarpus ledifolius</i> H.T.	Mountains of central and southern Utah (7,000-9,400)	Warm dry	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>A. alnifolia</i> <i>B. repens</i> <i>Q. gambelii</i> <i>S. oreophilus</i>	Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Holodiscus dumosus</i> H.T. (Scree forest)	Mountains of northern and southwestern New Mexico, and southern Colorado (8,000-10,000)	Cool dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>P. strobiliformis</i>	<i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>H. dumosus</i> <i>J. americana</i> <i>Ribes</i> spp. <i>B. ciliatus</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>P. fendleriana</i>	DeVelice et al. 1986 Fitzhugh et al. 1987
<i>Abies concolor</i> <i>Juglens major</i> H.T.	Mountains of southern New Mexico and south-central Arizona (6,500-7,000)	Warm moist	<i>A. concolor</i> climax, <i>P. menziesii</i> minor climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>Frexinus pennsylvanica</i> <i>A. negundo</i>	<i>J. major</i> <i>Q. gambelii</i> <i>P. pretensis</i> <i>Gallium mexicanum</i> <i>T. fendleri</i> <i>V. arizonica</i>	Alexander et al. 1984a Fitzhugh et al. 1987 Muldavin et al. 1986
<i>Abies concolor</i> <i>Juniperus communis</i> H.T.	Mountains of southern Utah (7,000-9,000)	Cool dry	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>P. pungens</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>B. repens</i> <i>R. woodsii</i> <i>S. oreophilus</i> <i>C. rossii</i>	Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Physocarpus malvaceus</i> H.T.	Mountains of Utah (5,000-7,000)	Warm moist	<i>A. concolor</i> climax or co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. grandis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>P. malvaceus</i> <i>A. alnifolia</i> <i>Q. gambelii</i> <i>S. oreophilus</i> <i>Mitella steuropolata</i> <i>S. racemosa</i>	Mauk and Henderson 1984 Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Quercus gambelii</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> <i>Q. gambelii</i> H.T.] <i>Q. gambelii</i> (typic) phase <i>Holodiscus dumosus</i> phase (NM) <i>Festuca arizonica</i> phase (AZ,NM) <i>Muhlenbergia dubia</i> phase (NM) <i>Muhlenbergia virescens</i> phase (AZ,NM)	Mountains of New Mexico, Arizona, Utah, and southern Colorado (6,500-9,500)	Warm dry to well-drained	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>P. ponderosa</i> , <i>P. strobiliformis</i> minor climaxes in some phases	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. engelmannii</i> <i>J. doppeene</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>Q. gambelii</i> <i>B. repens</i> <i>H. dumosus</i> <i>S. oreophilus</i> <i>F. arizonica</i> <i>M. dubia</i> <i>M. virescens</i> <i>Lathyrus arizonicus</i> <i>T. fendleri</i>	Alexander et al. 1984a, 1987 DeVelice et al. 1986 DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Moir and Ludwig 1979 Muldavin et al. 1986 Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Robinia neomexicana</i> H.T.	Mountains of eastern Arizona and southwestern New Mexico (8,500-9,000)	Warm dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>R. neomexicana</i> <i>Q. gambelii</i> <i>Rubus</i> spp. <i>C. foenea</i> <i>G. richardsonii</i>	Fitzhugh et al. 1987 Moir and Ludwig 1979
<i>Abies concolor</i> <i>Symphoricarpos oreophilus</i> H.T.	Mountains of central and southern Utah (6,800-9,300)	Warm dry to well-drained	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>A. alnifolia</i> <i>R. woodsii</i> <i>P. fendleriana</i> <i>C. rossii</i>	Youngblood and Mauk 1985
<i>Abies concolor</i> <i>Veccinium myrtillius</i> H.T.	Mountains of northern New Mexico and southern Colorado (8,500-9,200)	Cool dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>A. lesiocarpa</i> , <i>P. engelmannii</i> , <i>P. pungens</i> minor climaxes	<i>P. menziesii</i> <i>A. lesiocarpa</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>V. myrtillius</i> <i>A. glabrum</i> <i>A. alnifolia</i> <i>A. uva-ursi</i> <i>B. repens</i> <i>P. myrsinites</i> <i>Rubus parviflorus</i>	DeVelice et al. 1986
<i>Abies concolor</i> <i>Elymus triticoides</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> <i>E. triticoides</i> H.T.]	Mountains of southern New Mexico (7,500-9,500)	Warm dry to well-drained	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>P. strobiliformis</i> minor climax	<i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>E. triticoides</i> <i>H. dumosus</i> <i>Q. gambelii</i> <i>B. richardsonii</i> <i>M. montana</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Abies concolor</i> <i>Festuca arizonica</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> <i>Poa fendleriana</i> H.T.] <i>F. arizonica</i> (typic) phase <i>Quercus gambelii</i> phase <i>P. fendleriana</i> phase	Mountains of eastern Arizona, and northern and southwestern New Mexico (8,200-10,200)	Warm dry	<i>A. concolor</i> climax or co-climax with <i>P. menziesii</i> , <i>P. flexilis</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>Q. gambelii</i> <i>M. montana</i> <i>P. fendleriana</i> <i>Erigeron</i> spp. <i>Fraseria vosca</i> (<i>F. americana</i>)	DeVelice et al. 1986 Fitzhugh et al. 1987 Moir and Ludwig 1979

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Succeastonal status	Tree associates	Princtpal undergrowth species	Authority
<i>Abies concolor</i> / <i>Muhlenbergia virescens</i> H.T.	Mountains of eastern Arizona and southwestern New Mexico (8,000-9,200)	Warm dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>M. virescens</i> <i>Q. gambellii</i> <i>B. cilifatus</i> <i>P. fendleriana</i> <i>C. rossii</i> <i>L. erizonicus</i> <i>Senecio</i> spp.	Fitzhugh et al. 1987
<i>Abies concolor</i> / <i>Cerex foeneae</i> H.T.	Mountains of eastern and south-central Arizona (8,600-9,500)	Warm moist to well-drained	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>C. foeneae</i> <i>B. cilifatus</i> <i>P. pretensis</i> <i>G. richardsonii</i> <i>Frageria</i> spp.	DeVelice and Ludwig 1983 Molr and Ludwig 1979 Muldavin et al. 1986
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> <i>E. superbus</i> H.T.)	Mountains of northern and southwestern New Mexico, south-central and eastern Arizona, and Colorado (8,500-9,800)	Cool moist	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>P. engelmannii</i> , <i>P. pungens</i> minor climaxes	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>E. eximius</i> (<i>E. superbus</i>) <i>B. cilifatus</i> <i>C. foeneae</i> <i>F. ovalis</i> (<i>F. virginiana</i>) <i>H. perryi</i> <i>L. arizonicus</i>	DeVelice et al. 1986 Fitzhugh et al. 1987 Molr and Ludwig 1979 Muldavin et al. 1986
<i>Abies concolor</i> / <i>Gallium triflorum</i> H.T. (Riparian forest)	Mountains of northern New Mexico and southern Colorado (7,500-9,000)	Cool moist	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>J. scopulorum</i> <i>P. angustifolia</i>	<i>G. triflorum</i> <i>A. glebrum</i> <i>A. tenuifolia</i> <i>P. virginiana</i> <i>Q. gambellii</i> <i>P. pretensis</i> <i>T. fendleri</i>	DeVelice et al. 1986
<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> <i>Lathyrus erizonicus</i> H.T.	Mountains of north-central Arizona (8,000-10,000)	Cool dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>L. arizonicus</i> <i>B. repens</i> <i>G. richardsonii</i>	Molr and Ludwig 1979
<i>Abies concolor</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of northern Utah (5,400-7,000)	Warm moist to well-drained	<i>A. concolor</i> climax	<i>P. menziesii</i> <i>A. grandis</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>Q. chilensis</i> <i>A. alnifolia</i> <i>P. malvaceus</i> <i>P. myrsinites</i> <i>P. virginiana</i>	Mauk and Henderson 1984
<i>Abies concolor</i> / Sparse H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> H.T.) <i>Berberis repens</i> phase <i>Robinia neomexicana</i> phase	Mountains of northern and southwestern New Mexico, south-central and eastern Arizona, and southern Colorado (8,000-9,800)	Cool dry	<i>A. concolor</i> co-climax with <i>P. menziesii</i> , <i>P. pungens</i> , <i>P. engelmannii</i> minor climaxes	<i>P. menziesii</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. aristata</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>B. repens</i> <i>Q. gambellii</i> <i>R. neomexicana</i> <i>B. cilifatus</i> (undergrowth sparse)	Alexander et al. 1984a DeVelice et al. 1986 DeVelice and Ludwig 1983 Fitzhugh et al. 1987 Molr and Ludwig 1979 Muldavin et al. 1986
Picea pungens series						
<i>Picea pungens</i> / <i>Amelanchier alnifolia</i> H.T. (Riparian forest) [<i>P. pungens</i> / <i>A. alnifolia</i> - <i>Cornus stolonifera</i> / <i>Carex geyeri</i> H.T.) [<i>P. pungens</i> / <i>Alnus tenuifolia</i> HT]	Mountains of central and western Colorado (6,600-8,500)	Warm moist	<i>P. pungens</i> climax	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. angustifolia</i>	<i>A. alnifolia</i> <i>A. tenuifolia</i> <i>C. stolonifera</i> (<i>Swida sericea</i>) <i>R. woodsii</i> <i>Festuca thurberi</i> <i>C. geyeri</i>	Hess and Wasser 1982 Hoffman 1988 Komarkova et al. 1988
<i>Picea pungens</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico (7,900-9,200)	Warm dry	<i>P. pungens</i> co-climax with <i>P. menziesii</i> , <i>A. concolor</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>B. cilifatus</i> <i>F. ovalis</i> (<i>F. virginiana</i>) <i>S. stellata</i>	DeVelice et al. 1986
<i>Picea pungens</i> / <i>Berberis repens</i> H.T. <i>B. repens</i> (typic) phase <i>Symphoricarpos oreophilus</i> phase	Mountains of Utah (7,800-9,000)	Cool dry	<i>P. pungens</i> climax, <i>P. menziesii</i> minor climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>Ribes montigenum</i> <i>S. oreophilus</i> <i>Aquilegia caerulea</i> <i>Pyrola secunda</i>	Mauk and Henderson 1984 Pflster 1972 Youngblood and Mauk 1985
<i>Picea pungens</i> / <i>Cornus stolonifera</i> H.T. [<i>P. pungens</i> / <i>Swida sericea</i> H.T.) (Riparian forest)	Mountains of northern and southwestern New Mexico, and southern Colorado (7,500-9,200)	Warm moist	<i>P. pungens</i> co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. angustifolia</i>	<i>C. stolonifera</i> (<i>S. sericea</i>) <i>A. glabrum</i> <i>A. tenuifolia</i> <i>B. repens</i> <i>Selx</i> spp. <i>Calamagrostis canadensis</i> <i>C. foeneae</i> <i>G. triflorum</i> <i>G. richardsonii</i> <i>S. stellata</i>	Alexander et al. 1987 DeVelice et al. 1986
<i>Picea pungens</i> / <i>Juniperus communis</i> H.T.	Mountains of central Utah (8,000-8,600)	Cool dry	<i>P. pungens</i> climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>B. repens</i> <i>P. myrsinites</i> <i>S. oreophilus</i>	Youngblood and Mauk 1985
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> H.T. <i>L. borealis</i> phase]	Mountains of northern New Mexico and southern Colorado (8,200-9,200)	Cool moist to well-drained	<i>P. pungens</i> co-climax with <i>P. menziesii</i> , <i>A. concolor</i> , <i>A. lasiocarpa</i> , <i>P. engelmannii</i> minor climaxes	<i>P. menziesii</i> <i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>R. parviflorus</i> <i>V. myrtilus</i> <i>C. foeneae</i> <i>E. eximius</i> (<i>E. superbus</i>)	DeVelice et al. 1986 Molr and Ludwig 1979
<i>Picea pungens</i> / <i>Agropyron spicatum</i> H.T.	Mountains of northern Utah (7,800-8,800)	Warm very dry	<i>P. pungens</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>A. spicatum</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>A. cordifolia</i>	Mauk and Henderson 1984
<i>Picea pungens</i> / <i>Festuca erizonica</i> H.T. [<i>P. pungens</i> / <i>Carex foeneae</i> H.T. <i>Pinus ponderosa</i> phase]	Mountains of northern and southwestern New Mexico, eastern Arizona, and southern and western Colorado (8,200-9,800)	Warm dry	<i>P. pungens</i> climax (CO) or co-climax with <i>P. menziesii</i> (AZ,NM), <i>A. concolor</i> , <i>P. ponderosa</i> minor climaxes	<i>P. menziesii</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. aristata</i> (CO) <i>P. tremuloides</i>	<i>F. arizonica</i> <i>C. foeneae</i> <i>A. frigida</i> <i>Erigeron</i> spp. <i>Frageria</i> spp. <i>L. arizonicus</i> <i>Senecio</i> spp.	DeVelice et al. 1986 Komarkova et al. 1988 Fitzhugh et al. 1987 Molr and Ludwig 1979

Tabla A1.—Continuad.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Picea pungens</i> / <i>Pice pratensis</i> H.T. (Riparian forest)	Mountains of northern and southwestern New Mexico, eastern Arizona, and southern Colorado (8,000-9,100)	Warm to cool moist	<i>P. pungens</i> climax or co-climax with <i>P. menziesii</i> , <i>A. lasiocarpa</i> minor climax	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>P. pretensis</i> <i>E. eximius</i> (<i>E. superbus</i>) <i>G. richardsonii</i> <i>F. ovells</i> (<i>F. virginiana</i>)	DeVelice et al. 1986 Filizhugh et al. 1987 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Pice</i> spp. H.T. (Not riparian)	Mountains of north-central Colorado (6,500-8,000)	Warm to well-drained	<i>P. pungens</i> climax	Usually pure stands. May contain <i>P. menziesii</i> <i>P. tremuloides</i>	<i>Pice</i> spp. <i>A. elniifolia</i> <i>Rosa</i> spp. <i>Salix</i> spp.	Hoffman and Alexander 1983
<i>Picea pungens</i> / <i>Carex foenea</i> H.T. [<i>P. pungens</i> / <i>C. foenea</i> H.T. <i>Pseudotsuga menziesii</i> phase]	Mountains of northern and eastern Arizona, northern and southwestern New Mexico, and southern Colorado (8,000-9,500)	Cool moist to well-drained	<i>P. pungens</i> co-climax with <i>P. menziesii</i> , <i>A. concolor</i> <i>P. engelmannii</i> minor climaxes	<i>P. menziesii</i> <i>A. concolor</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. foenea</i> <i>B. repens</i> <i>F. arizonica</i> <i>M. montana</i> <i>B. cilietus</i> <i>Festuca</i> spp. <i>F. ovells</i> (<i>F. virginiana</i>)	Alexander et al. 1987 DeVelice et al. 1986 Filizhugh et al. 1987 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Arnica cordifolia</i> H.T. (Riparian forest)	Front Range, north-central Colorado (7,500-9,000)	Cool moist	<i>P. pungens</i> climax	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>J. communis</i> <i>R. woodsii</i> <i>C. canadensis</i> <i>S. stellata</i>	Hess and Alexander 1988
<i>Picea pungens</i> / <i>Equisetum arvense</i> H.T.	Mountains of southern Utah (8,000-9,000)	Warm moist	<i>P. pungens</i> climax. <i>P. engelmannii</i> minor climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>E. arvense</i> <i>G. richardsonii</i> <i>O. chilensis</i> <i>T. fendleri</i>	Youngblood and Mauk 1985
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> <i>E. superbus</i> H.T.] <i>E. eximius</i> (typic) phase <i>Pinus ponderosa</i> phase (AZ,NM)	Mountains of northern and southwestern New Mexico, eastern Arizona, and southern Colorado (8,000-9,800)	Cool moist to well-drained	<i>P. pungens</i> co-climax with <i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> , <i>A. lasiocarpa</i> minor climax	<i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>E. eximius</i> (<i>E. superbus</i>) <i>B. cilietus</i> <i>C. foenea</i> <i>G. richardsonii</i> <i>F. vesca</i> (<i>F. americana</i>) <i>H. perryi</i> <i>T. fendleri</i>	DeVelice et al. 1986 Filizhugh et al. 1987 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fregeria ovalis</i> H.T.	Mountains of southern New Mexico (7,500-9,800)	Cool moist	<i>P. pungens</i> co-climax with <i>P. menziesii</i> , <i>A. concolor</i> <i>P. engelmannii</i> minor climaxes	<i>P. menziesii</i> <i>A. concolor</i> <i>P. engelmannii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>F. ovells</i> (<i>F. virginiana</i>) <i>A. glebrum</i> <i>H. dumosus</i> <i>B. richardsonii</i> <i>P. pratensis</i> <i>F. vesca</i> (<i>F. americana</i>)	Alexander et al. 1984a
<i>Picea pungens</i> / <i>Senecio cernuine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> <i>S. cernuine</i> H.T.]	Mountains of eastern Arizona and southwestern New Mexico (8,800-9,200)	Cool moist	<i>P. pungens</i> co-climax with <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>S. cernuine</i> <i>F. ovells</i> (<i>F. virginiana</i>) <i>G. richardsonii</i> <i>Helenium hoopesii</i> <i>Pteridium aquilinum</i> <i>V. canadensis</i>	Filizhugh et al. 1987 Moir and Ludwig 1979
<i>Picea pungens</i> - <i>Pseudotsuga menziesii</i> H.T. <i>Arctostaphylos uva-ursi</i> phase <i>Juniperus communis</i> phase <i>Veteriana acutifolia</i> phase	Mountains of New Mexico, Arizona, and southern Colorado (7,800-9,500)	Warm dry to well-drained	<i>P. pungens</i> co-climax with <i>P. menziesii</i> , <i>P. engelmannii</i> minor climax In some phases	<i>P. menziesii</i> <i>A. concolor</i> <i>P. engelmannii</i> <i>P. strobiliformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>P. myrsinites</i> <i>E. eximius</i> (<i>E. superbus</i>) <i>L. arizonicus</i> <i>V. acutifolia</i>	Moir and Ludwig 1979
Abies grandis series						
<i>Abies grandis</i> / <i>Acer glabrum</i> H.T. <i>A. glebrum</i> (typic) phase <i>Physocarpus malveceus</i> phase	Mountains of central Idaho (3,800-6,400)	Cool moist	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>A. glebrum</i> <i>P. malveceus</i> <i>S. betulifolia</i> <i>S. elbus</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Linnaea borealis</i> H.T. <i>L. borealis</i> (typic) phase <i>Veccinium globulare</i> phase (ID) <i>Xerophyllum tenax</i> phase	Mountains of northern (2,200-5,200) and central Idaho, and southern Montana (3,400-5,600)	Warm moist to well-drained	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> minor climax In some phases	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>A. elniifolia</i> <i>V. globulare</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>Lupinus</i> spp. <i>X. tenax</i>	Cooper et al. 1987 Pflieger et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington (2,600-4,900)	Cool dry to well-drained	<i>A. grandis</i> climax	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>Pinus monticola</i> <i>L. occidentalis</i>	<i>P. myrsinites</i> <i>L. borealis</i> <i>Bromus vulgaris</i> <i>G. trillorum</i> <i>S. stellata</i> <i>T. occidentalis</i>	Daubenmire and Daubenmire 1968
<i>Abies grandis</i> / <i>Physocarpus malveceus</i> H.T. <i>P. malveceus</i> (typic) phase <i>Coptis occidentalis</i> phase	Mountains of northern Idaho (2,200-5,300)	Warm dry	<i>A. grandis</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>P. malveceus</i> <i>A. glebrum</i> <i>H. discolor</i> <i>C. occidentalis</i> <i>O. chilensis</i> <i>S. racemosa</i>	Cooper et al. 1987
<i>Abies grandis</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of northern and central Idaho (4,300-8,400)	Warm dry	<i>A. grandis</i> climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>S. betulifolia</i> <i>S. elbus</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Cooper et al. 1987 Steele et al. 1981
<i>Abies grandis</i> / <i>Veccinium caespitosum</i> H.T.	Mountains of central Idaho (4,600-5,500)	Cool moist to well-drained frost pockets	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>F. ovalis</i> (<i>F. virginiana</i>) <i>T. occidentalis</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium globulare</i> H.T.	Mountains of northern and central Idaho (4,500-8,500)	Cool moist	<i>A. grandis</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>Lonicera utahensis</i> <i>S. betulifolia</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>C. rossii</i>	Cooper et al. 1987 Steele et al. 1981
<i>Abies grandis</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of central Idaho (5,200-8,100)	Cool dry	<i>A. grandis</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>C. rubescens</i> <i>S. betulifolia</i> <i>C. geyeri</i> <i>A. cordifolia</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Asarum caudatum</i> H.T. <i>A. caudatum</i> (typic) phase <i>Menziesii ferruginea</i> phase <i>Taxus brevifolia</i> phase	Mountains of northern Idaho (2,200-5,950)	Warm moist	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> may be minor climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>A. caudatum</i> <i>H. discolor</i> <i>M. ferruginea</i> <i>T. brevifolia</i> <i>C. uniflora</i> <i>C. occidentalis</i>	Cooper et al. 1987

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Abies grandis</i> / <i>Clintonia uniflora</i> H.T. <i>C. uniflora</i> (typic) phase <i>Menziesia ferruginea</i> phase (ID) <i>Physocarpus malvaceus</i> phase (ID) <i>Taxis brevifolia</i> phase (ID) <i>Aralia nudicaulis</i> phase (MT) <i>Xerophyllum tenax</i> phase	Mountains of northern Montana, and northern and central Idaho (2,000-6,100)	Warm moist	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>A. glabrum</i> <i>L. borealis</i> <i>M. ferruginea</i> <i>P. malvaceus</i> <i>T. brevifolia</i> <i>V. globulare</i> <i>B. vulgaris</i> <i>A. nudicaulis</i> <i>G. triflorum</i> <i>X. tenax</i>	Cooper et al. 1987 Pflster et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Coptis occidentalis</i> H.T.	Mountains of central Idaho (1,600-6,000)	Warm dry	<i>A. grandis</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>C. occidentalis</i> <i>S. albus</i> <i>V. globulara</i> <i>X. tenax</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Senecio trianguliferis</i> H.T.	Mountains of northern Idaho (2,600-4,600)	Warm moist	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> may be minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>L. occidentalis</i>	<i>S. triangularis</i> <i>Athyrium filix-femina</i> <i>Circaea alpina</i> <i>C. occidentalis</i> <i>Trautvetteria carolinensis</i>	Cooper et al. 1987
<i>Abies grandis</i> / <i>Xerophyllum tenax</i> H.T. <i>X. tenax</i> (typic) phase <i>Vaccinium globulare</i> phase (ID) <i>Coptis occidentalis</i> phase (ID)	Mountains of northern and central Idaho, and northwestern Montana (4,400-6,500)	Cool dry	<i>A. grandis</i> climax. <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>P. myrsinites</i> <i>V. globulare</i> <i>Vaccinium scoparium</i> <i>C. rubescens</i> <i>Arnica latifolia</i> <i>C. occidentalis</i>	Cooper et al. 1987 Pflster et al. 1977 Steele et al. 1981
Thuja plicata series						
<i>Thuja plicata</i> / <i>Oplopanax horridum</i> H.T.	Mountains of Montana, northern Idaho, and eastern Washington (1,600-4,900)	Cool moist	<i>T. plicata</i> climax or co-climax with <i>T. heterophylla</i> . <i>A. lasiocarpa</i> may be minor climax	<i>T. heterophylla</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. grandis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>O. horridum</i> <i>A. filix-femina</i> <i>Dryopteris dilatata</i> <i>S. triangularis</i> <i>S. stellata</i> <i>Streptopus amplexifolius</i> <i>Tiarella</i> spp.	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Pflster et al. 1977
<i>Thuja plicata</i> / <i>Pechistima myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington (2,600-4,700)	Cool dry to well-drained	<i>T. plicata</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>P. myrsinites</i> <i>A. glabrum</i> <i>C. occidentalis</i> <i>Disporum oregonum</i> <i>G. triflorum</i> <i>S. stellata</i>	Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Adiantum pedatum</i> H.T.	Mountains of northern Idaho (<3,000)	Cool moist	<i>T. plicata</i> climax. <i>T. heterophylla</i> minor climax	<i>T. heterophylla</i> <i>A. grandis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>A. pedatum</i> <i>A. filix-femina</i> <i>C. uniflora</i> <i>D. dilatata</i>	Cooper et al. 1987
<i>Thuja plicata</i> / <i>Asarum caudatum</i> H.T. <i>A. caudatum</i> (typic) phase <i>Menziesia ferruginea</i> phase <i>Taxis brevifolia</i> phase	Mountains of northern Idaho (2,200-5,200)	Warm moist	<i>T. plicata</i> climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. grandis</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>A. caudatum</i> <i>A. glabrum</i> <i>M. ferruginea</i> <i>T. brevifolia</i> <i>C. occidentalis</i> <i>Polystichum munitum</i> <i>P. agullinum</i> <i>Viola glabella</i>	Cooper et al. 1987
<i>Thuja plicata</i> / <i>Athyrium filix-femina</i> H.T. <i>A. filix-femina</i> (typic) phase <i>Adiantum pedatum</i> phase (ID)	Mountains of northern Idaho and eastern Washington (1,500-4,700)	Warm moist to wet	<i>T. plicata</i> climax or co-climax with <i>T. heterophylla</i>	<i>T. heterophylla</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. monticola</i>	<i>A. filix-femina</i> <i>A. pedatum</i> <i>G. triflorum</i> <i>S. triangularis</i> <i>S. amplexifolius</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Clintonia uniflora</i> H.T. <i>C. uniflora</i> (typic) phase <i>Menziesia ferruginea</i> phase <i>Taxis brevifolia</i> phase (ID) <i>Aralia nudicaulis</i> phase (MT) <i>Xerophyllum tenax</i> phase (ID)	Mountains of northern Idaho and northwestern Montana (1,500-5,500)	Warm dry bottomlands	<i>T. plicata</i> climax. <i>A. lasiocarpa</i> <i>A. grandis</i> <i>T. heterophylla</i> minor climaxes	<i>A. lasiocarpa</i> <i>A. grandis</i> <i>T. heterophylla</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>L. borealis</i> <i>M. ferruginea</i> <i>V. globulare</i> <i>T. brevifolia</i> <i>A. nudicaulis</i> <i>X. tenax</i>	Cooper et al. 1987 Pflster et al. 1977
<i>Thuja plicata</i> / <i>Gymnocarpium dryopteris</i> H.T.	Mountains of northern Idaho (3,200-4,500)	Cool dry	<i>T. plicata</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. monticola</i>	<i>G. dryopteris</i> <i>A. pedatum</i> <i>A. filix-femina</i> <i>C. uniflora</i>	Cooper et al. 1987
Tsuga heterophylla series						
<i>Tsuga heterophylla</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of northern Idaho (± 5,000)	Warm well-drained	<i>T. heterophylla</i> climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>M. ferruginea</i> <i>V. globulare</i> <i>X. tenax</i>	Cooper et al. 1987
<i>Tsuga heterophylla</i> / <i>Pechistima myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington (2,700-3,900)	Cool moist	<i>T. heterophylla</i> climax	<i>T. plicata</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>P. myrsinites</i> <i>L. borealis</i> <i>Vaccinium membranaceum</i> <i>C. uniflora</i> <i>G. dryopteris</i>	Daubenmire and Daubenmire 1968
<i>Tsuga heterophylla</i> / <i>Asarum caudatum</i> H.T. <i>A. caudatum</i> (typic) phase <i>Menziesia ferruginea</i> phase <i>Aralia nudicaulis</i> phase	Mountains of northern Idaho (2,200-5,000)	Warm well-drained	<i>T. heterophylla</i> climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. monticola</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>T. plicata</i>	<i>A. caudatum</i> <i>L. borealis</i> <i>M. ferruginea</i> <i>P. myrsinites</i> <i>A. nudicaulis</i> <i>C. uniflora</i> <i>C. occidentalis</i> <i>P. hookeri</i>	Cooper et al. 1987
<i>Tsuga heterophylla</i> / <i>Clintonia uniflora</i> H.T. <i>C. uniflora</i> (typic) phase <i>Menziesia ferruginea</i> phase (ID) <i>Aralia nudicaulis</i> phase <i>Xerophyllum tenax</i> phase (ID)	Mountains of northern Idaho and northwestern Montana (2,000-4,500)	Warm moist to well-drained	<i>T. heterophylla</i> climax. <i>A. lasiocarpa</i> <i>A. grandis</i> <i>T. plicata</i> minor climaxes	<i>A. lasiocarpa</i> <i>A. grandis</i> <i>T. plicata</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>T. brevifolia</i> <i>V. globulare</i> <i>V. membranaceum</i> <i>A. nudicaulis</i> <i>X. tenax</i>	Cooper et al. 1987 Pflster et al. 1977
<i>Tsuga heterophylla</i> / <i>Gymnocarpium dryopteris</i> H.T.	Mountains of northern Idaho (2,500-4,500)	Warm dry to well-drained	<i>T. heterophylla</i> co-climax with <i>T. plicata</i>	<i>T. plicata</i> <i>P. engelmannii</i> <i>A. grandis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>G. dryopteris</i> <i>A. caudatum</i> <i>C. uniflora</i> <i>C. occidentalis</i> <i>S. stellata</i>	Cooper et al. 1987
Pinus flexilis series						
<i>Pinus flexilis</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colorado (9,500-10,000)	Cool dry	<i>P. flexilis</i> co-climax with <i>P. menziesii</i> . <i>P. engelmannii</i> minor climax	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>J. communis</i>	DeVelice et al. 1986
<i>Pinus flexilis</i> / <i>Berberis repens</i> H.T.	Mountains of northern Utah (6,500-7,000)	Warm dry	<i>P. flexilis</i> climax	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>B. repens</i> <i>P. myrsinites</i> <i>P. virginiana</i> <i>S. oreophilus</i> <i>A. spicatum</i>	Meek and Henderson 1984

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Pinus flexilis</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of southeastern Idaho and northern Utah (7,000-8,700)	Warm dry	<i>P. flexilis</i> climax or co-climax with <i>P. menziesii</i> , <i>J. scopulorum</i> minor climax	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>B. repens</i> <i>S. oreophilus</i> <i>A. spicatum</i> <i>H. kingii</i> <i>B. segittata</i>	Mauk and Henderson 1984 Steele et al. 1983
<i>Pinus flexilis</i> / <i>Juniperus communis</i> H.T.	Mountains of Montana (4,600-8,300), northwestern Wyoming (7,000-9,500), southeastern Wyoming, and central and western Colorado (8,300-9,300)	Warm dry	<i>P. flexilis</i> climax, <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. ponderosa</i> minor climaxes	<i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. canadensis</i> <i>C. purpurascens</i> <i>C. rossii</i> <i>A. cordifolia</i>	Alexander et al. 1986 Hess and Alexander 1986 Hoffman 1988 Holtman and Alexander 1980 Pilster et al. 1977 Steele et al. 1983
<i>Pinus flexilis</i> <i>Agropyron spicatum</i> H.T.	Mountains of Montana east of Continental Divide (4,400-6,600)	Warm very dry	<i>P. flexilis</i> climax or co-climax with <i>J. scopulorum</i> , <i>P. ponderosa</i> minor climax	<i>P. ponderosa</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>B. gracilis</i> <i>H. kingii</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>Carex</i> spp.	Pilster et al. 1977
<i>Pinus flexilis</i> / <i>Colemeqrostis purpurascens</i> H.T.	Mountains of north-central Colorado (9,700-11,000)	Cool dry	<i>P. flexilis</i> climax	Usually pure stands. May contain <i>P. engelmannii</i> <i>P. contorta</i>	<i>C. purpurascens</i> <i>Aranaria fendleri</i> <i>Eriqeron</i> spp. <i>Pulsatilla ludoviciana</i>	Hess and Alexander 1986
<i>Pinus flexilis</i> / <i>Festuca Idahoensis</i> H.T. <i>F. Idahoensis</i> (typic) phase <i>Festuca scabrella</i> phase (MT)	Mountains of southwestern Montana, central Idaho, and northwestern Wyoming (4,800-8,300)	Warm dry	<i>P. flexilis</i> co-climax with <i>P. menziesii</i> , <i>J. scopulorum</i> minor climax	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>F. Idahoensis</i> <i>A. tridentata</i> <i>A. scirpatum</i> <i>H. kingii</i> <i>F. scabrella</i> <i>B. segittata</i>	Pilster et al. 1977 Steele et al. 1981, 1983
<i>Pinus flexilis</i> / <i>Hesperochloa kingii</i> H.T.	Mountains of northwestern and southeastern Wyoming (7,200-9,300)	Warm dry	<i>P. flexilis</i> climax or co-climax with <i>P. menziesii</i> , <i>J. scopulorum</i> minor climax	Usually pure stands (SE WY). May contain (NW WY) <i>P. menziesii</i> <i>J. scopulorum</i>	<i>H. kingii</i> <i>A. spicatum</i> <i>K. cristata</i> <i>C. rossii</i> <i>A. miser</i> <i>B. segittata</i>	Alexander et al. 1986 Steele et al. 1983
<i>Pinus flexilis</i> <i>Saxifraga bronchialis</i> H.T. (<i>P. flexilis</i> / <i>Ciliaria austromontana</i> H.T.)	Mountains of south-central Colorado (8,500-9,500)	Cool dry	<i>P. flexilis</i> climax	<i>P. menziesii</i>	<i>S. bronchialis</i> (<i>C. austromontana</i>) <i>J. communis</i> <i>R. woodsii</i> <i>S. oreophilus</i> <i>F. thurberi</i>	Komarkova et al. 1988
<i>Pinus flexilis</i> / <i>Trifolium dasphyllum</i> H.T.	Mountains of north-central Colorado (11,000-11,500)	Cool dry to well-drained	<i>P. flexilis</i> climax	Usually pure stands. May contain <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>T. dasphyllum</i> <i>C. foenea</i> <i>A. fendleri</i> <i>Mertensia viridis</i> <i>Oreoxis alpina</i>	Hess and Alexander 1986
<i>Pinus flexilis</i> - <i>Pinus longaeva</i> H.T.	Mountains of central and southern Utah (9,000-10,200)	Cool dry	<i>P. flexilis</i> co-climax with <i>P. longaeva</i> , <i>P. menziesii</i> , <i>J. scopulorum</i> minor climaxes	<i>P. longaeva</i> <i>P. menziesii</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>B. repens</i> <i>J. communis</i> <i>A. patula</i> <i>C. rossii</i> <i>A. miser</i>	Youngblood and Mauk 1985
Populus tremuloides series and other P. tremuloides-dominated vegetation						
<i>Populus tremuloides</i> / <i>Acer glabrum</i> C.T. (Riparian forest)	Mountains of south-central Colorado (9,000-9,200)	Warm wet	<i>P. tremuloides</i> climax or sere	<i>P. engelmannii</i> <i>Populus balsamifera</i>	<i>A. glabrum</i> <i>B. repens</i> <i>R. montigenum</i> <i>O. depauperata</i> <i>T. fendleri</i>	Powell 1987
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Amelanchier alnifolia</i> C.T.	Mountains of eastern Idaho and Utah (5,800-7,800)	Cool dry	<i>P. tremuloides</i> sere to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. alnifolia</i> <i>P. virginiana</i> <i>S. oreophilus</i> <i>Aster engelmannii</i> <i>O. chilensis</i> <i>T. fendleri</i>	Mueggler 1987
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Amelanchier alnifolia</i> C.T.	Mountains of northern Utah and southeastern Idaho (5,600-7,500)	Warm dry	<i>P. tremuloides</i> sere to <i>P. menziesii</i>	<i>P. menziesii</i>	<i>A. alnifolia</i> <i>B. repens</i> <i>P. virginiana</i> <i>S. betulifolia</i> <i>S. oreophilus</i> <i>Agropyron trachycaulum</i> <i>Elymus glaucus</i> <i>T. fendleri</i>	Mueggler 1987
<i>Populus tremuloides</i> / <i>Amelanchier alnifolia</i> C.T. [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>Prunus virginiana</i> H.T.(CO)] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>Symphoricarpos oreophilus</i> / <i>Bromus cernatus</i> C.T.] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>S. oreophilus</i> / <i>Calamagrostis rubescens</i> C.T.] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>S. oreophilus</i> / <i>Thalictrum fendleri</i> C.T.] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>S. oreophilus</i> /tall forb C.T.] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>Pteridium aquilinum</i> C.T.] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>T. fendleri</i> C.T.] [<i>P. tremuloides</i> / <i>A. alnifolia</i> - tall forb C.T.]	Mountains of southeastern Idaho, Utah, Nevada, western Wyoming (5,500-8,800), and central and western Colorado (8,000-8,500)	Warm dry	<i>P. tremuloides</i> climax (CO). Stable or grazing disclimax (ID,NE, UT,WY)	Usually pure stands	<i>A. alnifolia</i> <i>A. glabrum</i> <i>A. grandidentatum</i> <i>P. myrsinites</i> <i>P. virginiana</i> <i>Q. gambelii</i> <i>S. betulifolia</i> <i>S. oreophilus</i> <i>C. rubescens</i> <i>B. carnelius</i> <i>C. gayi</i> <i>A. engelmannii</i> <i>Geranium viscosissimum</i> <i>O. chilensis</i> <i>P. equinum</i> <i>T. fendleri</i>	Johnston and Hendzel 1985 Komarkova et al. 1988 Mueggler 1987
<i>Populus tremuloides</i> - <i>Abies concolor</i> / <i>Arctostaphylos patula</i> C.T.	Mountains of eastern Nevada (8,300-9,500)	Warm dry	<i>P. tremuloides</i> sere to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i>	<i>A. patula</i> <i>B. repens</i> <i>P. fendleriana</i> <i>C. rossii</i> <i>Penstemon watsoni</i> <i>S. jamesiana</i>	Mueggler 1987
<i>Populus tremuloides</i> / <i>Arctostaphylos uva-ursi</i> H.T.; C.T.	Mountains of south-central Colorado; Front Range, Colorado (9,500-10,500)	Cool dry	<i>P. tremuloides</i> climax or sere to <i>P. contorta</i> <i>P. flexilis</i>	Usually pure stands. May contain <i>P. contorta</i> <i>P. flexilis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>S. oreophilus</i> <i>Bromus porteri</i> <i>C. foenea</i> <i>Carex geophila</i>	Komarkova et al. 1988 Powell 1987 Radloff 1983

Tabla A1. —Continuad.

	Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
26	<i>Populus tremuloides</i> / <i>Artemisia tridentata</i> C.T.	Mountains of southaastern Idaho, Utah, Nevada, and western Wyoming (8,900-9,400)	Warm dry	<i>P. tremuloides</i> stable or seral to unknown ultimate climax	Usually pure stands	<i>A. tridentata</i> <i>J. communis</i> <i>S. oreophilus</i> <i>B. ciliatus</i> <i>S. occidentalis</i> <i>Taraxicum officinale</i>	Mueggler 1987
	<i>Populus tremuloides</i> / <i>Barberis rapens</i> H.T.	Mountains of southwestern North Dakota, and southeastern Montana (3,500-4,000)	Warm dry to well-drained	<i>P. tremuloides</i> climax	Usually pure stands. May contain <i>A. negundo</i> <i>F. pennsylvanica</i>	<i>B. rapans</i> <i>A. glabrum</i> <i>P. virginiana</i> <i>S. albus</i> <i>P. pratensis</i> <i>G. boreale</i>	Hansen and Hollman 1988
	<i>Populus tremuloides</i> / <i>Betula occidentalis</i> H.T.	Theodore Roosevelt National Park, North Dakota (2,400-2,800)	Warm well-drained	<i>P. tremuloides</i> climax	<i>J. scopulorum</i> <i>A. negundo</i> <i>Crataegus chrysocarpa</i> <i>F. pennsylvanica</i> <i>Ulmus americana</i>	<i>B. occidentalis</i> <i>P. virginiana</i> <i>Symphoricarpos</i> spp. <i>Toxicodendron rydbergii</i> <i>D. micrantha</i> <i>Apocynum androsaemifolium</i>	Hansen et al. 1984
	<i>Populus tremuloides</i> - <i>Corylus cornuta</i> H.T.(SD,WY); C.T.(CO) <i>Aralia nudicaulis</i> phase (SD) <i>Pteridium aquilinum</i> phase (SD)	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (3,900-6,300); Front Range, Colorado (>8,000)	Warm moist to well-drained	<i>P. tremuloides</i> climax (SD,WY). Stable or seral (CO) to <i>P. menziesii</i> <i>P. pungens</i>	<i>P. menziesii</i> (CO) <i>P. pungens</i> (CD) <i>Betula papyrifera</i>	<i>C. cornuta</i> <i>S. arbus</i> <i>A. nudicaulis</i> <i>Aster ciliolatus</i> <i>G. triflorum</i> <i>O. chilensis</i> <i>P. aquilinum</i> <i>V. canadensis</i>	Hoffman and Alexander 1987 Powell 1987
	<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Juniperus communis</i> C.T.	Mountains of northern Utah and eastern Nevada (8,000-10,000)	Cool dry	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>J. communis</i> <i>B. repens</i> <i>S. oreophilus</i> <i>Bromus</i> spp. <i>S. occidentalis</i> <i>A. millatfolium</i> <i>F. vesca</i> (<i>F. americana</i>) <i>T. officinale</i>	Mueggler 1987
	<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Juniperus communis</i> C.T.	Mountains of northern Utah, plateaus of southern Utah, and mountains of eastern Nevada (7,500-9,200)	Warm dry	<i>P. tremuloides</i> seral to <i>P. menziesii</i>	<i>P. menziesii</i>	<i>J. communis</i> <i>B. repens</i> <i>S. oreophilus</i> <i>A. trachycaulum</i> <i>S. occidentalis</i> <i>Antennaria microphylla</i> <i>A. miser</i> <i>T. fendleri</i>	Mueggler 1987
	<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Juniperus communis</i> C.T.	Mountains of northern Utah (>8,000)	Cool dry	<i>P. tremuloides</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>J. communis</i> <i>B. rapans</i> <i>S. oreophilus</i> <i>A. trachycaulum</i> <i>C. geyeri</i> <i>A. millatfolium</i> <i>A. miser</i> <i>L. argenteus</i>	Mueggler 1987
	<i>Populus tremuloides</i> / <i>Juniperus communis</i> H.T.(UT); C.T.(CO,UT,WY) [<i>P. tremuloides</i> / <i>J. communis</i> - <i>Carex geyeri</i> C.T.(UT)] [<i>P. tremuloides</i> / <i>J. communis</i> - <i>Astragalus miser</i> C.T.(UT)] [<i>P. tremuloides</i> / <i>J. communis</i> - <i>Lupinus argenteus</i> C.T.(UT,WY)]	Mountains of western Wyoming, southeastern Idaho, and Utah (8,000-9,000); Front Range, central Colorado (9,000-9,500)	Cool dry	<i>P. tremuloides</i> climax, stable, or seral to unknown ultimate climax. Probably <i>P. menziesii</i>	Usually pure stands. May contain <i>P. menziesii</i> <i>A. lasiocarpa</i> (CO) <i>P. engelmannii</i> (CD) <i>P. pungens</i> (CD) <i>P. contorta</i> <i>P. flexilis</i>	<i>J. communis</i> <i>B. repens</i> <i>R. woodsii</i> <i>S. canadensis</i> <i>S. oreophilus</i> <i>S. hystrix</i> <i>Stipa</i> spp. <i>C. geyeri</i> <i>C. rossii</i> <i>A. miser</i> <i>L. argenteus</i>	Mauk and Henderson 1984 Mueggler 1987 Powell 1987 Radloff 1983
	<i>Populus tremuloides</i> / <i>Lonicera involucrata</i> C.T.	Front Range, central Colorado (9,700-10,200)	Cool moist to well-drained	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. balsamifera</i>	<i>L. involucrata</i> <i>R. montigenum</i> <i>R. woodsii</i> <i>B. porteri</i> <i>C. toenea</i> <i>F. ovalis</i> (<i>F. virginiana</i>)	Powell 1987 Radloff 1983
	<i>Populus tremuloides</i> / <i>Physocarpus monogynus</i> C.T.	Front Range, central Colorado (8,500-9,500)	Cool moist	<i>P. tremuloides</i> seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>P. monogynus</i> <i>S. oreophilus</i> <i>B. ciliatus</i> <i>Dryopsis asperifolia</i> <i>G. boreale</i>	Powell 1987
27	<i>Populus tremuloides</i> / <i>Ribes montigenum</i> C.T. (Riparian forest)	Mountains of south-central Colorado (9,760-10,600)	Cool moist	<i>P. tremuloides</i> seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i>	<i>R. montiganum</i> <i>Betula frontinalls</i> <i>B. rapens</i> <i>R. woodsii</i> <i>P. aquilinum</i>	Powell 1987
	<i>Populus tremuloides</i> / <i>Rubus parviflorus</i> H.T.(CD); C.T.(ID,UT,WY)	Mountains of southaastern Idaho, western Wyoming, Utah (8,000-9,300), and western Colorado (8,000-10,000)	Cool moist	<i>P. tremuloides</i> climax (CD). Stable or seral to unknown ultimate climax (ID,UT,WY). Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	Usually pure slands. May contain <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> (ID,UT,WY)	<i>R. parviflorus</i> <i>A. glabrum</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>V. myrtilius</i> <i>A. cordifolia</i> <i>G. viscosissimum</i> <i>D. chilensis</i>	Hollman 1988 Muaggler 1987
	<i>Populus tremuloides</i> / <i>Salix scouleriana</i> C.T.	Mountains of southeastern Idaho, northern Utah, and aastarn Nevada (5,800-7,400)	Warm to well-drained	<i>P. tremuloides</i> stable. May be climax	Usually pure stands	<i>S. scouleriana</i> <i>A. alnifolia</i> <i>P. virginiana</i> <i>S. oreophilus</i> <i>B. carlnatus</i> <i>E. glaucus</i> <i>O. chilensis</i> <i>T. landleri</i>	Mueggler 1987
	<i>Populus tremuloides</i> / <i>Sambucus racemosa</i> C.T.	Mountaina of Utah (8,000-10,500)	Cool dry	<i>P. tremuloides</i> stable or seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	Usually pure stands. May contain <i>A. lasiocarpa</i>	<i>S. racemosa</i> <i>Sambucus ceurla</i> <i>A. trachycaulum</i> <i>B. carlnatus</i> <i>Martansia arizonica</i> <i>D. occidentalis</i> <i>Rudbackia occidentalis</i> <i>T. landleri</i>	Mueggler 1987
	<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Shephardia canadensis</i> C.T.	Mountains of western Wyoming, southeastern Idaho, and northern Utah (7,000-8,300)	Cool dry to well-drained	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. canadensis</i> <i>B. rapans</i> <i>R. woodsii</i> <i>E. glaucus</i> <i>A. cordifolia</i> <i>O. chilensis</i> <i>T. fendleri</i>	Mueggler 1987

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Populus tremuloides</i> / <i>Shepherdia canadensis</i> C.T.	Mountains of southeastern Idaho and western Wyoming (8,000-9,000); Front Range, central Colorado (9,000-10,000)	Cool dry to well-drained	<i>P. tremuloides</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. canadensis</i> <i>B. repens</i> <i>J. communis</i> <i>R. woodsii</i> <i>B. ciliatus</i> <i>G. boreale</i> <i>G. viscosissimum</i> <i>L. argenteus</i> <i>O. chilensis</i>	Powell 1987 Muaggler 1987
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Symphoricarpos oreophilus</i> C.T. [<i>P. tremuloides</i> - <i>A. lasiocarpa</i> / <i>S. oreophilus</i> - <i>Bromus carinatus</i> C.T.] [<i>P. tremuloides</i> - <i>A. lasiocarpa</i> / <i>S. oreophilus</i> - <i>Thalictrum fendleri</i> C.T.] [<i>P. tremuloides</i> - <i>A. lasiocarpa</i> / <i>S. oreophilus</i> -tall forb C.T.]	Mountains of southeastern Idaho, northern Utah, and western Wyoming (7,000-9,000)	Warm dry to well-drained	<i>P. tremuloides</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	May be pure stands. Usually contain <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. menziesii</i>	<i>S. oreophilus</i> <i>A. alnifolia</i> <i>A. tridentata</i> <i>B. repens</i> <i>P. virginiana</i> <i>B. carinatus</i> <i>C. rubescens</i> <i>E. glaucus</i> <i>P. pratensis</i> <i>C. geyeri</i> <i>G. viscosissimum</i> <i>L. argenteus</i> <i>R. occidentalis</i> <i>Senecio serotinus</i> <i>T. fendleri</i>	Muaggler 1987 Staala et al. 1983
<i>Populus tremuloides</i> - <i>Abies concolor</i> / <i>Symphoricarpos oreophilus</i> C.T.	Mountains of northern Utah and eastern Nevada (7,000-9,000)	Warm dry	<i>P. tremuloides</i> seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. pungens</i>	<i>S. oreophilus</i> <i>B. repens</i> <i>R. woodsii</i> <i>A. trachycaulium</i> <i>E. glaucus</i> <i>A. engelmannii</i> <i>R. occidentalis</i> <i>O. chilensis</i> <i>S. serotinus</i>	Muaggler 1987
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Symphoricarpos oreophilus</i> C.T.	Mountains of southeastern Idaho and northern Utah (6,000-7,500)	Warm dry	<i>P. tremuloides</i> seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. contorta</i>	<i>S. oreophilus</i> <i>R. woodsii</i> <i>C. rubescens</i> <i>E. glaucus</i> <i>G. viscosissimum</i> <i>L. argenteus</i> <i>T. fendleri</i>	Mueggler 1987
<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Symphoricarpos oreophilus</i> C.T.	Mountains of southeastern Idaho and northern Idaho (5,700-9,800)	Warm dry	<i>P. tremuloides</i> seral to unknown ultimate climax	<i>P. contorta</i>	<i>S. oreophilus</i> <i>P. myrsinites</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>G. viscosissimum</i> <i>O. chilensis</i> <i>T. fendleri</i>	Mueggler 1987
<i>Populus tremuloides</i> / <i>Symphoricarpos oreophilus</i> H.T., C.T.(CO);C.T.(ID,UT,NE,WY) [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Wyethia amplexicaulis</i> C.T.]	Mountains of Utah, southeastern Idaho, northwestern Wyoming, eastern	Warm moist to well-drained	<i>P. tremuloides</i> climax (CO). Stable or seral to unknown ultimate climax	Usually pure stands. Seral stands in CO may contain <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>S. oreophilus</i> <i>B. repens</i> <i>P. myrsinites</i> <i>O. gambelii</i> <i>W. amplexicaulis</i>	Hess and Wasser 1982 Hoffman 1988 Hoffman and Alexander 1980, 1983
[<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Bromus carinatus</i> C.T.] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Calamagrostis rubescens</i> C.T.] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Festuca thurberi</i> C.T.(UT)] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Poa pratensis</i> C.T.(NE,UT)] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Carex geyeri</i> H.T.(CO)] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Carex rossii</i> C.T.] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - <i>Thalictrum fendleri</i> C.T.] [<i>P. tremuloides</i> / <i>S. oreophilus</i> - tall forb C.T.]	Nevada (7,000-9,000), and central and western Colorado (8,000-10,000)		(CO,UT,ID,WY). Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i>	<i>B. carinatus</i> <i>C. rubescens</i> <i>F. thurberi</i> <i>P. pratensis</i> <i>C. geyeri</i> <i>C. rossii</i> <i>A. engelmannii</i> <i>M. arizonica</i> <i>R. occidentalis</i> <i>S. serotinus</i> <i>T. fendleri</i>	Johnston and Handzel 1985 Komarkova et al. 1988 Mauk and Handerson 1984 Mueggler 1987 Powell 1987
<i>Populus tremuloides</i> / <i>Vaccinium caespitosum</i> C.T.	Front Range, central Colorado (7,600-7,800)	Cool moist to well-drained	<i>P. tremuloides</i> seral to <i>P. menziesii</i>	<i>P. menziesii</i>	<i>V. caespitosum</i> <i>A. glabrum</i> <i>A. alnifolia</i> <i>R. woodsii</i> <i>E. glaucus</i> <i>A. cordifolia</i>	Powell 1987
<i>Populus tremuloides</i> / <i>Vaccinium myrtillus</i> C.T.	Front Range, central Colorado (9,000-10,500)	Cool dry	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. engelmannii</i>	<i>V. myrtillus</i> <i>B. repens</i> <i>P. monogynus</i> <i>V. scoparium</i> <i>A. cordifolia</i>	Powell 1987
<i>Populus tremuloides</i> / <i>Wyethia amplexicaulis</i> C.T.	Mountains of southeastern Idaho, Utah, eastern Nevada, and western Wyoming ($\leq$ 7,000)	Cool well-drained	<i>P. tremuloides</i> stable or seral to unknown ultimate climax	Usually pure stands	<i>W. amplexicaulis</i> <i>B. carinatus</i> <i>P. pratensis</i> <i>G. viscosissimum</i> <i>R. occidentalis</i> <i>S. serotinus</i>	Mueggler 1987
<i>Populus tremuloides</i> / <i>Bromus carinatus</i> C.T.	Mountains of southeastern Idaho, Utah, eastern Nevada, and western Wyoming (6,200-10,000)	Warm to cool dry	<i>P. tremuloides</i> stable or seral to unknown ultimate climax. May be grazing disclimax	Usually pure stands	<i>B. carinatus</i> <i>A. trachycaulium</i> <i>E. glaucus</i> <i>P. pratensis</i> <i>A. millefolium</i> <i>R. occidentalis</i> <i>T. fendleri</i> <i>V. americana</i>	Muaggler 1987
<i>Populus tremuloides</i> / <i>Bromus ciliatus</i> C.T.	Front Range, central Colorado (9,000-10,200)	Cool moist	<i>P. tremuloides</i> seral to <i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. contorta</i>	<i>B. ciliatus</i> <i>A. uva-ursi</i> <i>J. communis</i> <i>F. thurberi</i> <i>Poa spp.</i> <i>G. boreale</i> <i>S. stellata</i>	Powell 1987
<i>Populus tremuloides</i> / <i>Calamagrostis canadensis</i> C.T.	Front Range, central Colorado (9,000-10,500)	Cool moist	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>C. canadensis</i> <i>R. woodsii</i> <i>P. pratensis</i> <i>Ligusticum porteri</i> <i>S. triangularis</i> <i>V. canadensis</i>	Powell 1987 Radloff 1983
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> C.T.	Mountains of southeastern Idaho and western Wyoming (8,400-7,800)	Cool dry	<i>P. tremuloides</i> seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>E. glaucus</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>L. argenteus</i> <i>O. chilensis</i> <i>T. fendleri</i>	Mueggler 1987

Table A1.—Continued.

	Heblitel type or community type	Locetlon and elevation (feet)	Site	Successlonal status	Tree assoclates	Prlnclpal undergrowth species	Authorltly
30	<i>Populus tremuloides</i> / <i>Calamagrostls rubescens</i> H.T. (SE WY);C.T.(NW WY,ID,UT)	Mountelns of southeastern Ideho, Uteh, and northwestern end southeastern Wyoming (8,000-8,600)	Cool dry	<i>P. tremuloides</i> cllmex (SE WY). Stable or seral to unknown ultlmete cllmex (NW WY,ID,UT). Probably <i>A. laslocarpa</i> <i>P. menziesli</i>	Usually pure stands (SE WY). May contain <i>A. laslocarpa</i> <i>P. menziesli</i> <i>P. contorta</i> (NW WY,ID,UT)	<i>C. rubescens</i> <i>S. oreophilus</i> <i>P. pratensis</i> <i>C. geyeri</i> <i>Fragaria</i> spp. <i>G. viscosissimum</i> <i>O. chilensis</i> <i>T. fendleri</i>	Alexander et al. 1986 Mueggler 1987
	<i>Populus tremuloides</i> / <i>Elymus glaucus</i> C.T.	Front Renge, central Colorado (9,500-10,000)	Cool wet	<i>P. tremuloides</i> seral to <i>A. laslocarpa</i> <i>P. engelmannii</i>	<i>A. laslocarpa</i> <i>P. engelmannii</i>	<i>E. glaucus</i> <i>B. ciliatus</i> <i>P. pratensis</i> <i>Aconitum columbllenum</i> <i>Erigeron</i> spp. <i>Heracleum sphondylium</i> (<i>H. lanatum</i>)	Powell 1987
	<i>Populus tremuloides</i> / <i>Festuca arizonica</i> H.T.	Mountains of south-central Colorado (9,500-10,000)	Warm dry	<i>P. tremuloides</i> cllmex	Usually pure stands	<i>F. arizonica</i> <i>F. thurberi</i> <i>M. montana</i> <i>L. argenteus</i>	Komarkova et al. 1988
	<i>Populus tremuloides</i> / <i>Festuca thurberi</i> H.T.,C.T.(CO); C.T.(UT) [<i>P. tremuloides</i> / <i>F. thurberi</i> - <i>Carex geyeri</i> H.T.(CO)]	Mountelns of Utah (8,000- 10,000) and Colorado (9,000-10,500)	Warm dry	<i>P. tremuloides</i> cllmex or stable (CO). Stable or seral to unknown ultimate cllmex (UT). Probably <i>A. laslocarpa</i> <i>P. engelmannii</i>	Usually pure stands. May contain <i>A. laslocarpa</i> <i>P. engelmannii</i> <i>P. menziesli</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>F. thurberi</i> <i>S. oreophilus</i> <i>B. carinatus</i> <i>S. occidentalis</i> <i>C. geyeri</i> <i>L. leucanthus</i> <i>T. officinale</i> <i>T. fendleri</i>	Hess and Alexander 1986 Hess and Wasser 1982 Johnston and Hendzel 1985 Komarkova et al. 1988 Mueggler 1987 Powell 1987 Mueggler 1987
	<i>Populus tremuloides</i> - <i>Abies concolor</i> / <i>Poa pratensis</i> C.T.	Mountelns of southern Utah and eastern Nevada (8,000-8,800)	Warm dry to well- drained	<i>P. tremuloides</i> seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesli</i>	<i>P. pratensis</i> <i>J. communis</i> <i>A. trachycaulium</i> <i>B. carinatus</i> <i>S. occidentalis</i> <i>T. officinale</i> <i>T. fendleri</i>	
	<i>Populus tremuloides</i> / <i>Poa pratensis</i> C.T.	Mountains of southeastern Ideho, southern Utah, and eastern Nevada (7,000- 9,000); Front Range, central Colorado (8,500-9,600)	Cool moist to well- drained	<i>P. tremuloides</i> stable or seral to unknown ultimate cllmex (ID,NE,UT). May be grazing discllmex. Seral (CO) to <i>A. laslocarpe</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. menziesli</i>	<i>A. laslocarpa</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. menziesli</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>P. pratensis</i> <i>P. monogynus</i> <i>B. carinatus</i> <i>C. rubescens</i> <i>P. nervosa</i> <i>A. millefolium</i> <i>S. stellata</i> <i>T. officinale</i> <i>T. fendleri</i> <i>Trifolium longipes</i> <i>V. americana</i>	Mueggler 1987 Powell 1987
	<i>Populus tremuloides</i> / <i>Stlpa comata</i> C.T.	Mountains of southeastern Ideho south to the plateaus of southern Utah (6,500-9,500)	Warm dry	<i>P. tremuloides</i> stable or seral to unknown ultimate cllmex. Probably <i>P. ponderosa</i>	Usually pure stands. May contain <i>P. ponderosa</i>	<i>S. comata</i> <i>F. Idahoensis</i> <i>P. fendleriana</i> <i>S. hystrix</i> <i>A. microphylla</i> <i>L. argenteus</i> <i>T. officinale</i>	Mueggler 1987
	<i>Populus tremuloides</i> / <i>Carex loeneae</i> C.T.	Front Range, central Colorado (9,300-10,700)	Cool moist	<i>P. tremuloides</i> seral to <i>A. concolor</i> <i>P. menziesli</i> (low elevatlons) <i>A. laslocarpa</i> <i>P. engelmannii</i> (high elevatlons)	<i>A. concolor</i> <i>P. menziesli</i> <i>A. laslocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>C. loeneae</i> <i>B. ciliatus</i> <i>R. woodsii</i> <i>A. millefolium</i> <i>A. miser</i> <i>F. ovalls</i> (<i>F. virginiana</i>) <i>Thermopsis divaricarpa</i>	Powell 1987
	<i>Populus tremuloides</i> - <i>Abies laslocarpa</i> / <i>Carex geyeri</i> C.T.	Mountains of southeastern Ideho, Uteh, and western Wyoming (6,000-10,000)	Cool dry	<i>P. tremuloides</i> seral to <i>A. laslocarpe</i> <i>P. engelmennii</i>	<i>A. laslocarpa</i> <i>P. engelmannii</i> <i>P. menziesli</i>	<i>C. geyeri</i> <i>S. oreophilus</i> <i>C. rubescens</i> <i>S. occidentalis</i> <i>C. rossii</i> <i>A. millefolium</i> <i>A. miser</i> <i>F. vesca</i> (<i>F. americana</i>) <i>O. chilensis</i> <i>T. fendleri</i> <i>T. longipes</i>	Mueggler 1987
	<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Carex geyeri</i> C.T.	Mountains of southeastern Ideho and northeastern Utah (8,200-9,400)	Cool dry	<i>P. tremuloides</i> seral to unknown ultimate cllmex. Probably <i>A. laslocarpa</i> <i>P. menziesli</i>	<i>A. laslocarpa</i> <i>P. menziesli</i> <i>P. contorta</i>	<i>C. geyeri</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>L. argenteus</i> <i>O. chilensis</i> <i>T. fendleri</i>	Mueggler 1987
31	<i>Populus tremuloides</i> / <i>Carex geyeri</i> H.T.	Mountains of Utah, south- eastern Wyoming, and north-central and west-central Colorado (7,500-10,000)	Cool dry to well- drained	<i>P. tremuloides</i> cllmex (CO,WY). Seral to unknown ultimate cllmex (UT)	Usually pure stands. May contain (CO) <i>A. laslocarpe</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>G. geyeri</i> <i>B. repens</i> <i>J. communis</i> <i>S. oreophilus</i> <i>C. rossii</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>L. leucanthus</i> <i>Ligusticum</i> spp. <i>O. depauperata</i>	Alexander et al. 1986 Hess end Alexander 1986 Hoflman and Alexander 1983 Johnston and Hendzel 1985 Mauk and Henderson 1984
	<i>Populus tremuloides</i> - <i>Abies laslocarpa</i> / <i>Carex rossii</i> C.T.	Mountains of southern Utah and eastern Nevada (8,000-10,300)	Cool dry	<i>P. tremuloides</i> seral to <i>A. laslocarpa</i> <i>P. engelmennii</i>	<i>A. laslocarpa</i> <i>P. engelmannii</i>	<i>C. rossii</i> <i>Bromus anomalus</i> <i>A. miser</i> <i>L. argenteus</i> <i>T. officinale</i> <i>Trifolium</i> spp.	Mueggler 1987
	<i>Populus tremuloides</i> / <i>Carex rossii</i> C.T.	Mountains of southern Utah and eastern Nevada (8,000-10,500)	Cool dry	<i>P. tremuloides</i> stable or seral to unknown ultimate cllmex. Probably <i>A. laslocarpa</i> <i>P. engelmannii</i>	<i>A. laslocarpa</i> <i>P. engelmannii</i> <i>P. flexilis</i>	<i>C. rossii</i> <i>A. tridentata</i> <i>S. oreophilus</i> <i>A. trachyceulium</i> <i>B. anomalus</i> <i>P. fendleriane</i> <i>S. occidentalis</i> <i>T. officinale</i>	Mueggler 1987
	<i>Populus tremuloides</i> / <i>Astragalus miser</i> C.T.	Mountains of western Wyoming and Utah (7,500- 10,000), and south-central Colorado (10,000-10,600)	Cool to well- drained	<i>P. tremuloides</i> stable or seral to unknown ultimate cllmex. May be grazing discllmex (UT).	<i>P. flexilis</i>	<i>A. miser</i> <i>C. geyeri</i> <i>A. millefolium</i> <i>G. viscosissimum</i> <i>L. argenteus</i> <i>T. fendleri</i>	Mueggler 1987 Powell 1987

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Populus tremuloides</i> / <i>Heracleum sphondylium</i> H.T., C.T. [<i>P. tremuloides</i> / <i>Heracleum lanatum</i> H.T.)]	Mountains of south-central and western Colorado (8,500-9,900)	Warm moist to wet	<i>P. tremuloides</i> climax or stable	Usually pure stands. May contain <i>P. balsamifera</i>	<i>H. sphondylium</i> (<i>H. lanatum</i>) <i>A. tenuifolia</i> <i>B. ciliatus</i> <i>E. glaucus</i> <i>Pedicularis bracteosa</i> <i>T. fendleri</i>	Hess and Wasser 1982 Hoffman 1988 Hoffman and Alexander 1980, 1983 Powell 1987
<i>Populus tremuloides</i> / <i>Lathyrus leucanthus</i> C.T.	Front Range, central Colorado (10,000-10,500)	Cool moist to well- drained	<i>P. tremuloides</i> stable or seral to unknown ultimate climax. May be grazing disclimax.	Usually pure stands	<i>L. leucanthus</i> <i>R. woodsii</i> <i>B. porterii</i> <i>F. thurberi</i> <i>A. millefolium</i>	Powell 1987
<i>Populus tremuloides</i> / <i>Ligularia bigelovii</i> C.T. [<i>P. tremuloides</i> <i>Senecio bigelovii</i> C.T.]	Front Range, central Colorado (8,500-9,000)	Cool moist	<i>P. tremuloides</i> seral to unknown ultimate climax. Probably <i>P. menziesii</i> <i>P. pungens</i> <i>A. concolor</i>	<i>P. menziesii</i> <i>P. pungens</i> <i>A. concolor</i> <i>P. contorta</i>	<i>L. bigelovii</i> <i>J. communis</i> <i>R. woodsii</i> <i>F. ovalis</i> (<i>F. virginiana</i>) <i>G. boreale</i> <i>G. richardsonii</i>	Powell 1987
<i>Populus tremuloides</i> / <i>Ligusticum porteri</i> H.T.;C.T.	Front Range, central Colorado, and mountains of southwestern Colorado (9,000-10,000)	Warm moist to well- drained	<i>P. tremuloides</i> climax or seral to unknown ultimate climax. Probably <i>A. concolor</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> climax	Usually pure stands. May contain <i>A. concolor</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. flexilis</i>	<i>L. porteri</i> <i>S. oreophilus</i> <i>C. geyeri</i> <i>L. leucanthus</i> <i>T. fendleri</i> <i>V. americana</i>	Johnston and Hendzel 1985 Powell 1987
<i>Populus tremuloides</i> / <i>Lupinus argenteus</i> H.T.	Bighorn Mountains, north-central Wyoming (7,000-7,800)	Warm well- drained	<i>P. tremuloides</i> climax	Usually pure stands	<i>Lupinus</i> spp. <i>Carex</i> spp. <i>Trifolium</i> spp.	Hoffman and Alexander 1976
<i>Populus tremuloides</i> / <i>Pteridium aquilinum</i> H.T.;C.T. (CO);C.T.(UT)	Front Range, central Colorado; mountains of western and south-central Colorado (8,000-9,000), and northern Utah (5,800-9,400)	Warm poorly- drained	<i>P. tremuloides</i> climax or stable (CO). Stable or seral to unknown ultimate climax (UT)	Usually pure stands. May contain <i>P. menziesii</i> (FR CO)	<i>P. equilinum</i> <i>B. carinatus</i> <i>E. glaucus</i> <i>C. geyeri</i> <i>Melica subuleta</i> <i>R. occidentalis</i> <i>S. serpa</i> <i>T. fendleri</i>	Hoffman 1988 Hoffman and Alexander 1980, 1983 Komarkova et al. 1988 Mueggler 1987 Powell 1987
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Thalictrum fendleri</i> C.T.	Mountains of southeastern Idaho, western Wyoming, Utah, and eastern Nevada (7,000-10,100)	Cool moist	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>T. fendleri</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>B. carinatus</i> <i>C. rossii</i> <i>G. viscosissimum</i> <i>O. chilensis</i>	Mueggler 1987
<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Thalictrum fendleri</i> C.T.	Mountains of northern Utah (7,100-8,900)	Warm moist to well- drained	<i>P. tremuloides</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i>	<i>T. fendleri</i> <i>S. oreophilus</i> <i>A. trachycaulum</i> <i>E. glaucus</i> <i>G. viscosissimum</i> <i>O. chilensis</i>	Mueggler 1987
<i>Populus tremuloides</i> / <i>Thalictrum fendleri</i> H.T. (CO, SE WY); C.T.(CO, W WY,ID, NE,UT) [<i>P. tremuloides</i> / <i>T. fendleri</i> - <i>Carex geyeri</i> H.T.(CO)] <i>T. fendleri</i> (typic) phase <i>Delphinium barbeyi</i> phase (CO) <i>Ligusticum porteri</i> phase (CO)	Mountains of southeastern Idaho, Utah, eastern Nevada, western and southeastern Wyoming, and Colorado (8,000-10,500)	Cool moist	<i>P. tremuloides</i> climax (SE WY, CO). Stable or seral to unknown ultimate climax (FR CO, ID, NE, UT). Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	Usually pure stands. May contain <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>P. contorta</i>	<i>T. fendleri</i> <i>S. oreophilus</i> <i>B. ciliatus</i> <i>E. glaucus</i> <i>C. geyeri</i> <i>D. barbeyi</i> <i>G. richardsonii</i> <i>L. leucanthus</i> <i>Ligusticum filicinum</i> <i>L. porteri</i> <i>L. argenteus</i>	Alexander et al. 1986 Hass and Alexander 1986 Hess and Wasser 1982 Hoffman 1988 Hoffman and Alexander 1980, 1983 Komarkova et al. 1988 Johnston and Hendzel 1985 Mueggler 1987 Powell 1987
<i>Populus tremuloides</i> / <i>Thermopsis divaricarpa</i> C.T.	Front Range, central Colorado (9,600-10,400)	Cool moist	<i>P. tremuloides</i> seral to <i>A. concolor</i> <i>P. menziesii</i> (low elevations) <i>A. lasiocarpa</i> <i>P. engelmannii</i> (high elevations)	<i>A. concolor</i> <i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>T. divaricarpa</i> <i>J. communis</i> <i>R. woodsii</i> <i>C. foeneae</i> <i>A. millefolium</i> <i>F. ovalis</i> (<i>F. virginiana</i>)	Powell 1987
<i>Populus tremuloides</i> / <i>Veratrum tenuipetalum</i> H.T.(CO) [<i>P. tremuloides</i> / <i>V. californicum</i> C.T.(NE,UT)]	Mountains of northwestern Colorado, northern Utah, and eastern Nevada (7,000-8,000)	Cool moist	<i>P. tremuloides</i> climax (CO). Stable or seral to unknown ultimate climax (NE,UT)	Usually pure stands	<i>V. californicum</i> <i>V. tenuipetalum</i> <i>B. ciliatus</i> <i>Poa elpinum</i> <i>Carex hoodii</i> <i>L. porteri</i> <i>M. arizonica</i> <i>Mertensia ciliata</i> <i>S. jamesiana</i>	Hoffman and Alexander 1980 Mueggler 1987
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / Tall forb C.T.	Mountains of southeastern Idaho, western Wyoming, Utah, and eastern Nevada (6,800-10,200)	Warm well- drained	<i>P. tremuloides</i> seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>B. carinatus</i> <i>E. glaucus</i> <i>A. engelmannii</i> <i>Delphinium occidentale</i> <i>Osmorhiza</i> spp. <i>R. occidentalis</i> <i>Valeriana occidentalis</i>	Mueggler 1987
<i>Populus tremuloides</i> / Tall forb C.T.	Mountains of western Wyoming, Utah, and eastern Nevada (7,000-9,000)	Warm moist to well- drained	<i>P. tremuloides</i> stable or seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i>	<i>Agastache urticifolia</i> <i>A. engelmannii</i> <i>D. occidentalis</i> <i>Hackelia floribunda</i> <i>H. sphondylium</i> (<i>H. lanatum</i>) <i>M. erizonica</i>	Mueggler 1987
<i>Populus tremuloides</i> - <i>Pinus ponderosa</i> C.T.	Mountains of Utah (8,000-8,900)	Warm dry	<i>P. tremuloides</i> seral to <i>P. ponderosa</i>	<i>P. ponderosa</i>	<i>B. repens</i> <i>J. communis</i> <i>Q. gambellii</i> <i>S. oreophilus</i> <i>P. fendleriana</i> <i>A. millefolium</i> <i>T. officinale</i>	Mueggler 1987
<i>Populus tremuloides</i> - <i>Pinus flexilis</i> C.T.	Mountains of western Wyoming, Utah, and eastern Nevada (>9,000)	Cool dry	<i>P. tremuloides</i> usually stable. May be succeeded by <i>P. flexilis</i>	<i>P. flexilis</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>A. trachycaulum</i> <i>C. rossii</i> <i>A. millefolium</i> <i>S. jamesiana</i>	Mueggler 1987

Table A1.—Continued.

Hebltet type or community type	Location and elevetion (feet)	Site	Succassional etetus	Tree associates	Principal undergrowth species	Authority
<i>Populus tremuloides</i> - <i>Picea pungens</i> C.T.	Mountains of Uteh (7,400-9,100)	Cool dry	<i>P. tremuloides</i> seral to <i>P. pungens</i>	<i>P. pungens</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>B. enomalus</i> <i>P. pretensis</i> <i>A. millefolium</i> <i>T. officinale</i>	Mueggler 1987
Pinus contorta series end other P. contorto-domineted vegetetion						
<i>Pinus contortai</i> <i>Arctostaphylos uva-ursi</i> H.T.	Mounteins of northern Utah and north-central Wyoming; Front Range, Colorado (7,800-9,500)	Warm dry to well-drained	<i>P. contorta</i> climex or stable	Usually pure stends. May conteln <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>B. repens</i> <i>J. communis</i> <i>S. betulifolle</i> <i>S. hystrix</i> <i>C. rossii</i>	Hoffman and Alexander 1976 Meuk and Henderson 1984 Radloff 1983
<i>Pinus contortai</i> <i>Berberis repens</i> C.T.	Mountains of northern Uteh (7,700-10,000)	Cool dry to well-drained	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>A. concolor</i>	Usually <i>P. tremuloides</i> . Mey elso contaln <i>A. lasiocerpe</i> <i>A. concolor</i>	<i>B. repens</i> <i>A. petula</i> <i>J. communis</i> <i>P. myrsinites</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>L. argenteus</i>	Mauk and Henderson 1984
<i>Pinus contortai</i> <i>Juniperus communis</i> H.T.(CO, SE WY);C.T.(ID,NW WY, UT)	Mountains of southeastern Idaho, northwestern and southeastern Wyoming, northern Utah, and central and north-central Colorado (8,000-10,500)	Cool dry	<i>P. contorta</i> climax (CO,SE WY) or seral to unknown ultimate climax (ID,NW WY). Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	Usually pure stands. Mey contaln <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>B. repens</i> <i>S. canadensis</i> <i>A. cordifolia</i> <i>Lupinus</i> spp.	Alexander et al. 1986 Hess and Alexander 1986 Komerkova et al. 1988 Mauk and Henderson 1984 Radloff 1983 Steele et al. 1983
<i>Pinus contortai</i> <i>Linneea borealis</i> C.T.	Mountains of Montena east of Continental Divide, and northwestern Wyoming (5,600-7,200)	Cool moist to well-drained	<i>P. contorte</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>L. borealis</i> <i>V. globulare</i> <i>V. scoparium</i> <i>C. rubescans</i> <i>A. cordifolia</i> <i>A. latifolia</i>	Pflster et al. 1977 Steele et al. 1983
<i>Pinus contortai</i> <i>Purshie tridentata</i> H.T.	Mountains of western Montana (<6,600)	Warm dry to well-drained	<i>P. contorte</i> climax or stable	Usually pure stands. Mey conteln <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>P. tridentata</i> <i>A. uva-ursi</i> <i>A. spicatum</i> <i>F. idahoensis</i> <i>C. rossii</i> <i>Epilobium angustifolium</i>	Pflster et al. 1977
<i>Pinus contortai</i> <i>Shepherdie canadensis</i> H.T. (CO,SE WY);C.T.(ID,NW WY)	Mounteins of southeastern Idaho (7,000-8,000), northwestern and southeastern Wyoming, and north-central Colorado (8,000-9,800)	Warm dry to well-drained	<i>P. contorte</i> climax (CO,SE WY) or seral to unknown ultimate climax (ID,NW WY). Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	Usually pure stands. May contain <i>A. lasiocarpe</i> <i>P. menziesii</i> <i>P. engelmennii</i> <i>P. tremuloides</i>	<i>S. canadensis</i> <i>A. uve-ursi</i> <i>J. communis</i> <i>L. borealis</i> <i>P. myrsinites</i> <i>R. woodsii</i> <i>V. scoparium</i> <i>A. cordifolia</i>	Alexander et al. 1986 Hess and Alexander 1986 Hess and Wasser 1982 Hoffman and Alexander 1980 Steele et al. 1983
<i>Pinus contortai</i> <i>Spiraea betulifolia</i> C.T.	Mountains of southeastern Idaho and northwestern Wyoming (7,000-8,000)	Warm dry	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>S. betulifolia</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>C. rubescens</i> <i>C. geyeri</i>	Steele et al. 1983
<i>Pinus contortai</i> <i>Veccinium caespitosum</i> C.T.	Mountains of south-central Montana, Idaho (5,000-7,500), and northern Utah (8,300-10,000)	Cool moist to well-drained	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocerpe</i> <i>P. menziesii</i> <i>P. engelmennii</i>	<i>V. caespitosum</i> <i>J. communis</i> <i>L. borealis</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>Festuca ovina</i>	Cooper et al. 1987 Mauk and Henderson 1984 Plister et al. 1977 Steele et al. 1981
<i>Pinus contortai</i> <i>Vaccinium globulare</i> C.T.	Mountains of southeastern Idaho, northwestern Wyoming, and northern Utah (7,500-9,000)	Cool well-drained	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>V. globulare</i> <i>L. utahensis</i> <i>V. scoparium</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Pinus contortel</i> <i>Vaccinium myrtillius</i> H.T.	Front Range, Colorado (8,500-10,000)	Cool dry	<i>P. contorta</i> climax	<i>P. tremuloides</i>	<i>V. myrtillius</i> <i>L. borealis</i> <i>P. myrsinites</i> <i>C. geyeri</i>	Radloff 1983
<i>Pinus contortai</i> <i>Vaccinium scopertum</i> H.T. (CO,SE WY);C.T.(ID,UT,NW WY)	Mountains of Montana, Idaho, northwestern Wyoming (7,000-8,500), northern Utah, southeastern Wyoming, and western and central Colorado (8,500-10,500)	Cool dry	<i>P. contorta</i> climex (CO,SE WY) or seral to unknown ultimate climax (ID,NW WY. UT). Probably <i>A. lasiocarpa</i> <i>A. grandis</i> <i>P. menziesii</i>	Usually pure siands. May contain <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. engelmennii</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>L. occidentalis</i> <i>T. heterophylla</i>	<i>V. scoparium</i> <i>A. uva-ursi</i> <i>B. repens</i> <i>L. borealis</i> <i>J. communis</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>C. rossii</i> <i>A. cordifolia</i> <i>L. argenteus</i>	Alexander et al. 1986 Cooper et el. 1987 Hess and Alexander 1986 Hoffman and Alexander 1980 Komarkova et al. 1988 Mauk and Henderson 1984 Pflster et al. 1977 Steele et al. 1981, 1983
<i>Pinus contortai</i> <i>Calemagrostis canadensis</i> C.T.	Mountains of northern Utah (8,800-9,800)	Cool moist	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmennii</i> <i>P. tremuloides</i>	<i>C. canadensis</i> <i>J. communis</i> <i>P. nervosa</i> <i>A. cordifolia</i>	Mauk and Henderson 1984
<i>Pinus contortel</i> <i>Calemagrostis rubescens</i> C.T.	Mountains of Montana, Idaho, northeastern Utah, and northwestern Wyoming (6,000-8,000)	Cool dry	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpe</i> <i>P. menziesii</i>	Usually pure stands. May contain <i>A. lasiocerpe</i> <i>P. menziesii</i> <i>P. engolmannii</i> <i>L. occidentalis</i>	<i>C. rubescens</i> <i>A. uva-ursi</i> <i>S. albus</i> <i>V. scoparium</i> <i>C. geyeri</i> <i>A. cordifolle</i>	Pflster el al. 1977 Steele et al. 1983
<i>Pinus contortai</i> <i>Fastuca idahoensis</i> H.T.	Mountains of central Ideho (5,000-9,000)	Warm dry to well-drained	<i>P. contorta</i> climax. <i>P. albicaulis</i> minor climex	<i>P. elbicaulis</i> <i>P. manziesii</i>	<i>F. idahoensis</i> <i>C. rossii</i> <i>Artemisia</i> spp. <i>Penstemon</i> spp.	Steele et al. 1981
<i>Pinus contortel</i> <i>Carex geyeri</i> H.T.(CO,SE WY); C.T.(ID,NW WY)	Mounteins of central Idaho, northwestern Wyoming (8,000-9,000), south-eastern Wyoming, and north-central Colorado (7,500-10,000)	Cool dry	<i>P. contorta</i> climex (CO) or seral to unknown ultimate climax (ID,WY). Probably <i>A. lasiocarpe</i> <i>P. menziesii</i>	Usually pure stends. May contain <i>A. lasiocerpe</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>R. woodsii</i> <i>S. oreophilus</i> <i>A. cordifolle</i> <i>Fragaria</i> spp. <i>L. argenteus</i>	Alexander et el. 1986 Hess and Alexander 1986 Hess and Wesser 1982 Komerkova et al. 1988 Steele et al. 1981, 1983

Table A1.—Continued.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Pinus contorta</i> <i>Carex rossii</i> H.T.(UT,SE WY); C.T.(NW WY)	Mountains of northern Utah, and northwestern and southeastern Wyoming (8,500-10,000)	Cool dry	<i>P. contorta</i> climax (SE WY,UT) or seral to unknown ultimate climax (NW WY). Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	May be pure stands. Usually contain <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. rossii</i> <i>P. nervosa</i> <i>L. argenteus</i> <i>Pyrola</i> spp. <i>Sedum lanceolatum</i> <i>Salidago multiradiata</i>	Alexander et al. 1986 Mauk and Henderson 1984 Steele et al. 1983
<i>Pinus contorta</i> <i>Arnica cordifolia</i> C.T.	Mountains of southeastern Idaho and northwestern Wyoming (6,000-9,000)	Cool dry	<i>P. contorta</i> seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	Usually pure stands. May contain <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. flexilis</i>	<i>A. cordifolia</i> <i>A. racemosa</i> <i>A. miser</i> <i>P. secunda</i>	Steele et al. 1983
<i>Pinus contorta</i> <i>Xerophyllum tenax</i> C.T.	Mountains of northern Idaho (6,000-8,000)	Cool dry	<i>P. contorta</i> seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>X. tenax</i> <i>V. globulare</i> <i>V. scoparium</i>	Cooper et al. 1987
Pinus aristata series						
<i>Pinus aristata</i> <i>Juniperus communis</i> H.T.	Mountains of south-central Colorado (9,500-10,000)	Cool dry	<i>P. aristata</i> climax or co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>Artemisia</i> spp. <i>M. montana</i> <i>P. tendleriana</i>	Komarkova et al. 1988
<i>Pinus aristata</i> <i>Ribes montigenum</i> H.T. (Scree forest)	Mountains of northern New Mexico and southern Colorado (11,000-11,500)	Cool dry	<i>P. aristata</i> climax	Usually pure stands. May contain <i>P. engelmannii</i>	<i>R. montigenum</i> <i>S. bronchialis</i>	DeVelice et al. 1986
<i>Pinus aristata</i> <i>Festuca arizonica</i> H.T.	Mountains of northern New Mexico, and southern and western Colorado (8,600-10,000)	Warm dry	<i>P. aristata</i> climax or co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>R. cereum</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>M. montana</i> <i>A. frigida</i>	DeVelice et al. 1986 Komarkova et al. 1988
<i>Pinus aristata</i> <i>Festuca thurberi</i> H.T.	Mountains of northern New Mexico and southern and western Colorado (10,000-11,800)	Cool dry	<i>P. aristata</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>F. thurberi</i> <i>R. montigenum</i> <i>A. cordifolia</i> <i>Polemonium pulcherrimum</i> (<i>P. delicatum</i>) <i>S. bronchialis</i>	DeVelice et al. 1986 Komarkova et al. 1988
<i>Pinus aristata</i> <i>Trifolium dasyphyllum</i> H.T.	Mountains of north-central Colorado (11,400-11,600)	Cool dry	<i>P. aristata</i> climax. <i>P. engelmannii</i> minor climax	<i>P. engelmannii</i>	<i>T. dasyphyllum</i> <i>C. foenea</i> <i>A. lanulosa</i> <i>Penstemon whippleanus</i> <i>P. pulcherrimum</i> (<i>P. delicatum</i>)	Hess and Alexander 1986
Picea glauca series						
<i>Picea glauca</i> <i>Linnaea borealis</i> H.T.	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (5,800-6,500)	Cool well-drained	<i>P. glauca</i> climax	<i>P. ponderosa</i> <i>P. tremuloides</i> <i>B. papyrifera</i>	<i>L. borealis</i> <i>J. communis</i> <i>Rosa acicularis</i> <i>O. asperifolia</i> <i>F. ovais</i> (<i>F. virginiana</i>)	Hoffman and Alexander 1987
<i>Picea glauca</i> <i>Vaccinium scoparium</i> H.T.	Black Hills and Bear Lodge Mountains, South Dakota and eastern Wyoming (5,700-6,700)	Cool well-drained	<i>P. glauca</i> climax	<i>P. ponderosa</i> <i>P. tremuloides</i> <i>B. papyrifera</i>	<i>V. scoparium</i> <i>B. repens</i> <i>J. communis</i> <i>S. betullifolia</i> <i>F. ovais</i> (<i>F. virginiana</i>) <i>G. boreale</i>	Hoffman and Alexander 1987
Picea engelmannii series						
<i>Picea engelmannii</i> <i>Acer glabrum</i> H.T.	Mountains of south-central Arizona and southern New Mexico (8,500-9,500)	Cool moist	<i>P. engelmannii</i> climax. <i>A. lasiocarpa</i> <i>P. engelmannii</i> minor climaxes	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>B. ciliatus</i> <i>L. porteri</i> <i>S. stallata</i> <i>V. canadensis</i>	Alexander et al. 1984a DeVelice and Ludwig 1983 Moir and Ludwig 1979
<i>Picea engelmannii</i> <i>Juniperus communis</i> H.T.	Mountains of northwestern Wyoming (7,400-10,300)	Cool dry	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>J. communis</i> <i>A. cordifolia</i> <i>Frasera speciosa</i> <i>S. multiradiata</i>	Steele et al. 1983
<i>Picea engelmannii</i> <i>Linnaea borealis</i> H.T.	Mountains of Montana east of Continental Divide (4,200-7,800), and northwestern Wyoming (8,200-8,200)	Cool well-drained	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. contorta</i>	<i>L. borealis</i> <i>J. communis</i> <i>S. albus</i> <i>V. globulara</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>P. secunda</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> <i>Physocarpus malvaceus</i> H.T.	Mountains of south-central Montana, southeastern Idaho, and northwestern Wyoming (5,900-7,200)	Cool moist	<i>P. engelmannii</i> climax. <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>P. malvaceus</i> <i>S. betullifolia</i> <i>S. albus</i> <i>G. triflorum</i> <i>Thalictrum</i> spp.	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> <i>Ribes montigenum</i> H.T.	Mountains of northwestern Wyoming (8,400-9,700) and southern Utah (10,000-11,400)	Cool dry	<i>P. engelmannii</i> climax	<i>P. contorta</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>R. montigenum</i> <i>F. ovina</i> <i>A. caerulea</i> <i>A. latifolia</i> <i>A. miser</i> <i>Sibbaldia procumbens</i>	Pfister 1972 Steele et al. 1983 Youngblood and Meuk 1985
<i>Picea engelmannii</i> <i>Salix pseudolapponum</i> H.T. (<i>P. engelmannii</i> <i>Abies lasiocarpa</i> <i>S. pseudolapponum</i> H.T.)	Mountains of northern and central Colorado (11,200-11,800)	Cool moist	<i>P. engelmannii</i> climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. pseudolapponum</i> <i>V. scoparium</i> <i>G. rossii</i> <i>P. pulcherrimum</i> (<i>P. delicatum</i>)	Hess and Alexander 1986 Hess and Wesser 1982
<i>Picea engelmannii</i> <i>Vaccinium caespitosum</i> H.T.	Mountains of northwestern Montana (3,100-5,300) and northern Utah (9,300-11,000)	Cool moist to well-drained	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>R. montigenum</i> <i>V. scoparium</i> <i>C. rubescens</i>	Mauk and Henderson 1984 Pfister et al. 1977
<i>Picea engelmannii</i> <i>Vaccinium myrtillicus</i> H.T. [<i>P. engelmannii</i> / <i>V. myrtillicus</i> - <i>Polemonium pulcherrimum</i> H.T.] [<i>P. engelmannii</i> <i>Vaccinium scoparium</i> - <i>P. delicatum</i> H.T.] <i>P. engelmannii</i> phase <i>Abies lasiocarpa</i> phase	Mountains of northern and southwestern New Mexico, and southern and central Colorado (9,400-11,900)	Cool dry to well-drained	<i>P. engelmannii</i> climax. <i>A. lasiocarpa</i> co-climax, minor climax or absent	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. pungens</i> <i>P. aristata</i> <i>P. tremuloides</i>	<i>V. myrtillicus</i> <i>J. americana</i> <i>J. communis</i> <i>Rosa</i> spp. <i>V. scoparium</i> <i>P. pulcherrimum</i> (<i>P. delicatum</i>) <i>Senecio amplexens</i>	DeVelice et al. 1986 Filzhugh et al. 1987 Moir and Ludwig 1979 Radloff 1983

Table A1.—Continued.

	Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
38	<i>Picea engelmannii</i> <i>Vaccinium scoparium</i> H.T.	Mountains of northwestern Wyoming (8,800-10,800), north-central Wyoming (6,600-8,600), and northern Utah (9,600-11,200)	Cool dry	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> may be minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>C. rossii</i> <i>A. cordifolia</i> <i>Antennaria</i> spp. <i>F. ovalls</i> (<i>F. virginiana</i>) <i>Lupinus</i> spp.	Hollman and Alexander 1976 Mauk and Handerson 1984 Steele et al. 1983
	<i>Picea engelmannii</i> <i>Elymus triticoides</i> H.T.	Mountains of southern New Mexico (9,000-9,900)	Cool dry to well-drained	<i>P. engelmannii</i> climax or co-climax with <i>A. lasiocarpa</i> , <i>P. menziesii</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. aristata</i> <i>P. tremuloides</i>	<i>E. triticoides</i> <i>A. glabrum</i> <i>H. dumosus</i> <i>J. americana</i> <i>Ribes</i> spp.	Alexander et al. 1984a Moir and Ludwig 1979
	<i>Picea engelmannii</i> <i>Carex disperma</i> H.T.	Mountains of central and southern Idaho, and northwestern Wyoming (6,000-8,000)	Cool moist	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. contorta</i>	<i>C. disperma</i> <i>Actaea rubra</i> <i>G. triflorum</i> <i>G. richardsonii</i> <i>Saxifraga arguta</i> <i>S. triangularis</i>	Steate et al. 1981, 1983
	<i>Picea engelmannii</i> <i>Cerex foanea</i> H.T.	Mountains of south-central Arizona (10,000-10,500)	Cool to well-drained	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. foanae</i> <i>B. ciliatus</i> <i>P. pratensis</i>	DeVelice and Ludwig 1983 Moir and Ludwig 1979
	<i>Picea engelmannii</i> <i>Arnica cordifolia</i> H.T.	Mountains of northwestern Wyoming (7,500-10,000)	Cool dry to well-drained	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>F. idahoensis</i> <i>H. kingii</i> <i>C. rossii</i> <i>A. misar</i> <i>F. speciosa</i> <i>Sanacio streptanthifolius</i>	Steele et al. 1983
	<i>Picea engelmannii</i> <i>Calthe leptosapale</i> H.T.	Mountains of Utah (10,000-11,000), north-western Wyoming, and southeastern Idaho (8,200-9,500)	Cool moist	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>C. leptosapale</i> <i>Deschampsia caespitosa</i> <i>Arnica</i> spp. <i>Pedicularis</i> spp. <i>Phleum alpinum</i> <i>Trollis laxus</i> <i>S. triangularis</i>	Mauk and Henderson 1984 Steele et al. 1983
	<i>Picea engelmannii</i> <i>Giltonia uniflora</i> H.T. <i>C. uniflora</i> (typic) phase <i>Vaccinium caespitosum</i> phase	Mountains of northwestern Montana (3,000-4,000)	Warm moist to well-drained	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>Cornus canadensis</i> <i>V. caespitosum</i> <i>A. nudicaulis</i>	Pilister et al. 1977
	<i>Picea engelmannii</i> <i>Equisetum arvense</i> H.T.	Mountains of Montana, central Idaho (2,900-6,800), north-western Wyoming, and northern Utah (6,000-9,000)	Warm to cool wet	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. contorta</i>	<i>E. arvense</i> <i>C. canadensis</i> <i>Luzula pervillora</i> <i>Equisetum scirpoides</i> <i>S. triangularis</i> <i>S. amplexifolius</i>	Mauk and Henderson 1984 Pilister et al. 1977 Steele et al. 1981, 1983
	<i>Picea engelmannii</i> <i>Erigeron eximius</i> H.T.	Mountains of eastern Arizona	Cool well-drained	<i>P. engelmannii</i> climax or	<i>P. menziesii</i> <i>P. pungens</i>	<i>E. eximius</i> (<i>E. superbus</i>)	Fitzhugh et al. 1987
	(<i>P. pungens</i> - <i>P. engelmannii</i> <i>E. superbus</i> H.T.)	and southwestern New Mexico (8,500-9,500)		co-climax with <i>P. menziesii</i> <i>P. pungens</i> , <i>A. concolor</i> minor climax	<i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>B. ciliatus</i> <i>G. richardsonii</i> <i>L. arizonicus</i> <i>S. stellata</i> <i>V. canadensis</i>	Moir and Ludwig 1979
39	<i>Picea engelmannii</i> <i>Galium triflorum</i> H.T.	Mountains of south-central Montana, central Idaho, and north-western Wyoming (6,000-8,500)	Cool moist	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. contorta</i>	<i>G. triflorum</i> <i>C. canadensis</i> <i>A. rubra</i> <i>S. triangularis</i> <i>S. stellata</i> <i>S. amplexifolius</i>	Pilister et al. 1977 Steele et al. 1981, 1983
	<i>Picea engelmannii</i> <i>Geum rossii</i> H.T.	Mountains of north-central Arizona (11,200-11,800)	Cool dry	<i>P. engelmannii</i> climax	<i>P. tremuloides</i>	<i>G. rossii</i> <i>Festuca brachyphylla</i> <i>P. pulcherrimum</i> (<i>P. daltatum</i>)	Moir and Ludwig 1979
	<i>Picea engelmannii</i> <i>Heracleum sphondylium</i> H.T. (Riparian forest)	Mountains of northern New Mexico and southern Colorado (8,800-9,200)	Cool moist	<i>P. engelmannii</i> climax	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>H. sphondylium</i> (<i>H. lenatum</i>) <i>Lonicera involucrata</i> <i>B. ciliata</i> <i>E. eximius</i> <i>G. richardsonii</i> <i>M. ciliata</i> <i>V. canadensis</i>	DeVelice et al. 1986
	<i>Picea engelmannii</i> <i>Hypnum revolutum</i> H.T.	Mountains of central and southeastern Idaho (7,100-8,300), and north-western Wyoming (7,700-10,500)	Cool moist to well-drained	<i>P. engelmannii</i> climax or co-climax with <i>P. menziesii</i> (ID)	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>H. revolutum</i> <i>Cladonia limbrata</i> <i>Discranowlesia crispula</i> <i>Peltigera rafascens</i> <i>S. amplexifolius</i> <i>S. triangularis</i>	Steele et al. 1981, 1983
	<i>Picea engelmannii</i> <i>Saxifraga bronchialis</i> H.T. (Scree forest)	Mountains of northern New Mexico and southern Colorado (11,200-11,800)	Cool dry	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> minor climax	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>S. bronchialis</i> <i>J. communis</i> <i>C. rossii</i>	DeVelice et al. 1986
	<i>Picea engelmannii</i> <i>Senecio cardamine</i> H.T. (<i>P. pungens</i> - <i>P. engelmannii</i> <i>S. cardamina</i> H.T.) <i>Abies concolor</i> phase <i>Abies lasiocarpa</i> phase	Mountains of eastern Arizona and southwestern New Mexico (8,500-9,400)	Cool moist	<i>P. engelmannii</i> climax or co-climax with <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiliformis</i>	<i>S. cardamine</i> <i>B. ciliatus</i> <i>G. richardsonii</i> <i>F. ovalls</i> (<i>F. virginiana</i>) <i>P. aquilinum</i>	Fitzhugh et al. 1987 Moir and Ludwig 1979
	<i>Picea engelmannii</i> <i>Sanecio streptanthifolius</i> H.T. <i>P. engelmannii</i> phase <i>Pseudotsuga menziesii</i> phase	Mountains of central and southwestern Montana (8,900-8,800)	Cool dry to well-drained	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. flexilis</i>	<i>S. streptanthifolius</i> <i>J. communis</i> <i>A. cordifolia</i> <i>O. chilensis</i> <i>P. secunda</i>	Pilister et al. 1977
	<i>Picea engelmannii</i> <i>Smilacina stellata</i> H.T.	Mountains of Montana east of Continental Divide (4,400-7,400)	Warm moist	<i>P. engelmannii</i> climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i>	<i>S. stellata</i> <i>S. oraophilus</i> <i>G. richardsonii</i> <i>S. racemosa</i> <i>T. occidentalis</i>	Pilister et al. 1977
	<i>Picea engelmannii</i> <i>Trifolium dasyphyllum</i> H.T.	Mountains of north-central Colorado (10,800-11,300)	Cold moist	<i>P. engelmannii</i> climax	<i>A. lasiocarpa</i> <i>P. aristata</i>	<i>T. dasyphyllum</i> <i>Trisetum spicatum</i> <i>Pyrola minor</i> <i>Trifolium parryi</i>	Hass and Alexander 1986
	<i>Picea engelmannii</i> Moss spp. H.T.	Mountains of southwestern New Mexico and eastern Arizona; Front Range, Colorado (9,500-11,000)	Cool dry to well-drained	<i>P. engelmannii</i> climax, <i>A. lasiocarpa</i> co-climax, minor climax or absent	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. strobiliformis</i> <i>P. aristata</i> <i>P. tremuloides</i>	Moss spp. <i>Rosa</i> spp. <i>Ribes</i> spp. <i>Vaccinium</i> spp. <i>L. arizonicus</i>	Alexander et al. 1987 Fitzhugh et al. 1987 Moir and Ludwig 1979 Radloff 1983

Table A1.—Continued.

	Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
40	Abies lasiocarpa series						
	Abies lasiocarpa/ Acer glabrum H.T. A. glabrum (typic) phase Pachistima myrsinites phase (ID,WY)	Mountains of central and southern Idaho (5,000-8,000), northern and central Utah, northwestern Wyoming (6,000- 10,000), and southwestern New Mexico (9,700-10,000)	Warm moist	A. lasiocarpa climax. P. engelmannii may be minor climax	P. engelmannii P. menziesii P. contorta A. concolor A. grandis P. pungens P. flexilis P. tremuloides	A. glabrum B. repens P. myrsinites B. ciliatus A. cordifolia O. chilensis T. fendleri T. occidentalis	Alexander et al. 1987 Mauk and Henderson 1984 Steele et al. 1981, 1983 Youngblood and Mauk 1985
	Abies lasiocarpa/ Alnus sinuata H.T.	Mountains of northern Montana and central Idaho (5,000-7,500)	Cool moist	A. lasiocarpa climax	P. engelmannii P. menziesii P. contorta P. albicaulis L. occidentalis	A. sinuata V. globulare V. scoparium P. secunda X. tenax	Pfister et al. 1977 Steele et al. 1981
	Abies lasiocarpa/ Berberis repens H.T. B. repens (typic) phase Picea engelmannii phase (UT) Pseudotsuga menziesii phase (UT) Pinus flexilis phase (UT) Juniperus communis phase (UT) Ribes montigenum phase (UT) Carex geyeri phase (UT)	Mountains of Utah (6,000- 10,800), north- western Wyoming, and southeastern Idaho (6,600-9,000)	Warm to cool well- drained	A. lasiocarpa climax. P. engelmannii minor climax	P. engelmannii P. contorta P. pungens P. menziesii A. concolor A. grandis P. flexilis P. tremuloides	B. repens J. communis P. myrsinites R. montigenum R. woodsii S. oreophilus C. geyseri C. rossii	Mauk and Henderson 1984 Pfister 1972 Steele et al. 1983 Youngblood and Mauk 1985
	Abies lasiocarpa/ Clematis pseudoalpina H.T.	Mountains of Montana east of Continental Divide (6,000-8,000)	Warm dry	A. lasiocarpa climax	P. engelmannii P. menziesii P. contorta P. albicaulis P. flexilis	C. pseudoalpina C. tenuiloba A. cordifolia G. borealis Valeriana dioica	Pfister et al. 1977
	Abies lasiocarpa/ Holodiscus dumosus H.T. (Scree forest)	Mountains of southwestern New Mexico (9,500-10,500)	Cool dry	A. lasiocarpa climax or co-climax with P. strobiliformis P. menziesii, P. engelmannii minor climax	P. strobiliformis P. menziesii P. engelmannii P. tremuloides	H. dumosus J. communis S. oreophilus B. ciliatus G. richardsonii H. parryi	Fitzhugh et al. 1987
	Abies lasiocarpa/ Jamesia americana H.T. (Scree forest)	Mountains of south-central Arizona (8,700-9,100)	Cool dry	A. lasiocarpa climax	P. menziesii	J. americana Ribes pinetorum Sambucus melanocarpa S. oreophilus	Muldavin et al. 1986
	Abies lasiocarpa/ Juniperus communis H.T. [A. lasiocarpa- Picea engelmannii J. communis H.T.]	Mountains of central Idaho, northwestern Wyoming (7,500- 9,500), Utah, northern Arizona, southwestern New Mexico, and south-central Colorado (8,500-10,500)	Warm to cold dry	A. lasiocarpa climax or co-climax with P. engelmannii	P. engelmannii P. menziesii P. contorta A. concolor P. pungens (UT) P. longaeva (UT) P. flexilis P. tremuloides	J. communis A. uva-ursi R. woodsii S. canadensis S. oreophilus Poa spp. A. cordifolia P. secunda	Komarkova et al. 1988 Mauk and Henderson 1984 Moir and Ludwig 1979 Steele et al. 1981, 1983 Youngblood and Mauk 1985
	Abies lasiocarpa/ Linnaea borealis H.T. L. borealis (typic) phase Vaccinium scoparium phase Xerophyllum tenax phase (MT)	Mountains of Montana, central and southeastern Idaho (5,000- 7,500), and northwestern Wyoming (7,000-8,500)	Cool moist to well- drained	A. lasiocarpa climax or co-climax with P. engelmannii	P. engelmannii P. menziesii P. contorta P. ponderosa P. monticola L. occidentalis P. tremuloides	L. borealis S. canadensis V. scoparium C. rubescens A. cordifolia T. occidentalis X. tenax	Pfister et al. 1977 Steele et al. 1981, 1983
	Abies lasiocarpa/ Manziesia ferruginea H.T. M. ferruginea (typic) phase Vaccinium scoparium phase (ID) Luzula hitchcockii phase (ID) Coptis occidentalis phase (ID) Xerophyllum tenax phase (ID)	Mountains of eastern Washington, Montana, Idaho, and northwestern Wyoming (5,000-7,500)	Cool moist	A. lasiocarpa climax	P. engelmannii P. menziesii P. contorta P. monticola P. albicaulis L. occidentalis T. mertensiana	M. ferruginea Ladum glandulosum Rhododendron albiflorum V. globulare V. scoparium L. hitchcockii C. occidentalis X. tenax	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
	Abies lasiocarpa/ Oplopanax horridum H.T.	Mountains of northern Montana (4,000-5,000)	Cool moist wet	A. lasiocarpa co-climax with P. engelmannii	P. engelmannii P. menziesii P. monticola L. occidentalis	O. horridum T. brevifolia C. uniflora Tiaralia trifoliata	Pfister et al. 1977
	Abies lasiocarpa/ Pachistima myrsinites H.T. [A. lasiocarpa- Picea engelmannii P. myrsinites H.T.(CO)]	Mountains of northern Idaho and eastern Washington (4,700-5,800), and central Colorado (9,000-9,500)	Cool to well- drained	A. lasiocarpa climax or co-climax with P. engelmannii	P. engelmannii P. menziesii P. contorta P. monticola L. occidentalis P. tremuloides	P. myrsinites V. scoparium C. geyseri A. cordifolia C. uniflora Erigeron spp. G. triflorum	Daubenmire and Daubenmire 1968 Hess and Wasser 1982
	Abies lasiocarpa/ Physocarpus malvaceus H.T.	Mountains of southeastern Idaho, northwestern Wyoming, and northern and central Utah (6,000-9,500)	Warm moist to well- drained	A. lasiocarpa climax	P. engelmannii P. menziesii A. concolor A. grandis P. tremuloides	P. malvaceus A. alnitolia S. betulifolia Sorbus scopulina S. albus	Mauk and Henderson 1984 Steele et al. 1983 Youngblood and Mauk 1985
	Abies lasiocarpa/ Ribes montigenum H.T. R. montigenum (typic) phase Pinus albicaulis phase (ID,WY) Pinus contorta phase (UT) Trisetum spicatum phase (UT) Martensia erizonice phase (UT) Thalictrum fendleri phase (UT)	Mountains of southern Montana, Idaho, Utah, and northwestern Wyoming (8,000-11,000)	Cool dry	A. lasiocarpa climax or co-climax with P. engelmannii	P. engelmannii P. menziesii P. contorta P. albicaulis P. tremuloides	R. montigenum T. spicatum C. rossii A. microphylla A. latifolia M. arizonica O. chilensis T. fendleri	Mauk and Henderson 1984 Pfister 1972 Pfister et al. 1977 Steele et al. 1981, 1983 Youngblood and Mauk 1985
	Abies lasiocarpa/ Rubus parviflorus H.T.	Mountains of northern and south- western New Mexico, and southwestern Colorado (8,500-10,500)	Warm moist	A. lasiocarpa co-climax with P. engelmannii	P. engelmannii P. menziesii A. concolor P. strobiliformis P. tremuloides	R. parviflorus A. glabrum P. myrsinites V. myrtillicus B. ciliatus E. eximius (E. superbus) G. richardsonii	DeVellece et al. 1986 Fitzhugh et al. 1987 Moir and Ludwig 1979
	Abies lasiocarpa/ Selix glauca H.T. [A. lasiocarpa- Picea engelmannii S. glauca H.T.]	High mountains of south-central Colorado (11,000-11,800)	Cold wet	A. lasiocarpa co-climax with P. engelmannii	P. engelmannii	S. glauca V. myrtillicus Carex spp. Acomastylis rossii P. pulcherrimum (P. delicatum)	Komarkova et al. 1988
	Abies lasiocarpa/ Shepherdia canadensis H.T.	Bighorn Mountains, north-central Wyoming (8,000-8,500)	Warm dry	A. lasiocarpa co-climax with P. engelmannii	P. engelmannii P. menziesii P. contorta	S. canadensis B. repens S. betulifolia V. scoparium A. cordifolia	Hotfman and Alexander 1976

Table A1.—Continuad.

	Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal underground spectas	Authority
42	<i>Abies lasiocarpa</i> <i>Spiraea betulifolia</i> H.T.	Mountains of central and southeastern Idaho, and northwestern Wyoming (5,500-7,500)	Warm dry	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>S. betulifolia</i> <i>A. alnifolia</i> <i>B. rapens</i> <i>P. myrsinites</i> <i>C. rubescens</i>	Steele et al. 1981, 1983
	<i>Abies lasiocarpa</i> <i>Symphoricarpos albus</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming (5,700-7,600)	Warm well- drained	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>A. alnifolia</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Steele et al. 1983
	<i>Abies lasiocarpa</i> <i>Vaccinium caespitosum</i> H.T. <i>V. caespitosum</i> (typic) phase <i>Picea engelmannii</i> phase (UT)	Mountains of south-central Montana, Idaho (5,000-7,500), and northern and central Utah (8,500-10,000)	Cool moist to well- drained	<i>A. lasiocarpa</i> climax. <i>P. engelmannii</i> may be minor climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>P. myrsinites</i> <i>Ribes</i> spp. <i>V. scoparium</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Cooper et al. 1987 Mauk and Henderson 1984 Pflister et al. 1977 Steele et al. 1981 Youngblood and Mauk 1985
	<i>Abies lasiocarpa</i> <i>Vaccinium globulare</i> H.T. <i>V. globulare</i> (typic) phase <i>Pachistima myrsinites</i> phase (ID,WY) <i>Vaccinium scoparium</i> phase (ID,WY)	Mountains of south-central Montana and Idaho (5,000- 8,700), northern Utah, and north- western Wyoming (7,000-9,500)	Cool moist to well- drained	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>V. globulare</i> <i>L. utahensis</i> <i>P. myrsinites</i> <i>R. montigenum</i> <i>S. oreophilus</i> <i>V. scoparium</i>	Cooper et al. 1987 Mauk and Henderson 1984 Pflister et al. 1977 Steele et al. 1981, 1983 Youngblood and Mauk 1985
	<i>Abies lasiocarpa</i> <i>Vaccinium myrtillicus</i> H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>V. myrtillicus</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillicus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillicus</i> - <i>Rubus parviflorus</i> H.T.] [<i>A. lasiocarpa</i> <i>Vaccinium scoparium</i> - <i>L. borealis</i> H.T.] [<i>A. lasiocarpa</i> <i>V. scoparium</i> H.T.] <i>V. myrtillicus</i> (typic) phase <i>P. engelmannii</i> phase (NM) <i>R. parviflorus</i> phase (AZ,NM)	Mountains of eastern and south-central Arizona, northern and southwestern New Mexico, southern and western Colorado (9,000- 11,000), and central Utah (10,000-10,600)	Cool dry to well- drained	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. contorta</i> (CO) <i>P. strobiliformis</i> <i>P. flexilis</i> <i>P. aristata</i> <i>P. tremuloides</i>	<i>V. myrtillicus</i> <i>L. borealis</i> <i>P. myrsinites</i> <i>Ramischia secunda</i> <i>R. montigenum</i> <i>R. parviflorus</i> <i>V. scoparium</i> <i>B. ciliatus</i> <i>E. eximius</i> (<i>E. superbus</i>) <i>O. chilensis</i> <i>P. racemosa</i>	Alexander et al. 1987 DeVetice et al. 1986 DeVetice and Ludwig 1983 Fitzhugh et al. 1987 Hoffman 1988 Komarkova et al. 1988 Moir and Ludwig 1979 Youngblood and Mauk 1985
	<i>Abies lasiocarpa</i> <i>Vaccinium scoparium</i> H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> <i>V. scoparium</i> H.T. [<i>P. engelmannii</i> <i>V. scoparium</i> H.T.] <i>V. scoparium</i> (typic) phase <i>Pinus albicaulis</i> phase (ID,WY) <i>Calamagrostis rubescens</i> phase (ID,MT,WY)	Mountains of Montana and Idaho (5,000- 10,000) south to Arizona and New Mexico (8,000-11,000)	Cool dry	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>V. scoparium</i> <i>L. borealis</i> <i>P. myrsinites</i> <i>V. myrtillicus</i> <i>C. rubescens</i> <i>C. geeyeri</i> <i>A. cordifolia</i> <i>A. latifolia</i> <i>E. eximius</i> (<i>E. superbus</i>) <i>Phyllodoce empetriflormis</i>	Alexander et al. 1986 Cooper et al. 1987 Daubenmire and Daubenmire 1968 Hess and Alexander 1986 Hess and Wasser 1982 Hoffman 1988 Hoffman and
	<i>Carex geeyeri</i> phase (MT) <i>Arnica latifolia</i> phase (MT) <i>Thalictrum occidentale</i> phase (MT)					<i>T. occidentale</i> <i>Valeriana stichensis</i> <i>Viola</i> spp.	Alexander 1976, 1980, 1983 Komarkova et al. 1988 Mauk and Henderson 1984 Moir and Ludwig 1979 Pflister 1972 Pflister et al. 1977 Steele et al. 1981, 1983
	<i>Abies lasiocarpa</i> - <i>Pinus albicaulis</i> <i>Vaccinium scoparium</i> H.T.	Mountains of Montana east of Continental Divide (7,000-9,000)	Cool dry	<i>A. lasiocarpa</i> co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>V. scoparium</i> <i>C. rossii</i> <i>A. latifolia</i> <i>X. tenax</i> <i>Hieracium gracile</i>	Pflister et al. 1977
	<i>Abies lasiocarpa</i> <i>Calamagrostis canadensis</i> H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> <i>C. canadensis</i> H.T. [<i>P. engelmannii</i> <i>C. canadensis</i> H.T.] <i>C. canadensis</i> (typic) phase <i>Vaccinium caespitosum</i> phase (ID,MT) <i>Galium triflorum</i> phase (MT) <i>Ledum glandulosum</i> phase (ID) <i>Ligusticum canbyi</i> phase (ID)	Mountains of central Montana, Idaho, northwestern Wyoming (5,000- 9,000), northern Utah, and northern and central Colorado (8,000-10,500)	Cool wet	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> (ID) <i>P. contorta</i> <i>P. pungens</i> (UT) <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. canadensis</i> <i>L. glandulosum</i> <i>Vaccinium</i> spp. <i>Carex</i> spp. <i>E. arvense</i> <i>G. triflorum</i> <i>L. canbyi</i> <i>S. arguta</i> <i>S. triangularis</i>	Cooper et al. 1987 Hess and Alexander 1986 Komarkova et al. 1988 Mauk and Henderson 1984 Pflister et al. 1977 Steele et al. 1981, 1983
43	<i>Abies lasiocarpa</i> <i>Calamagrostis rubescens</i> H.T. <i>C. rubescens</i> (typic) phase <i>Pachistima myrsinites</i> phase (ID,WY)	Mountains of Montana east of Continental Divide, Idaho, northern Utah, and northwestern Wyoming (6,000-9,000)	Cool dry	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>B. rapens</i> <i>P. myrsinites</i> <i>C. geeyeri</i> <i>A. cordifolia</i> <i>O. chilensis</i> <i>T. occidentale</i> <i>Viola adunca</i>	Cooper et al. 1987 Mauk and Henderson 1984 Pflister et al. 1977 Steele et al. 1981, 1983
	<i>Abies lasiocarpa</i> <i>Luzula hitchcockii</i> H.T. <i>L. hitchcockii</i> (typic) phase <i>Menziasia ferruginea</i> phase (MT) <i>Vaccinium scoparium</i> phase (ID,MT)	Mountains of Montana west of Continental Divide, Idaho, and western Wyoming (6,000-8,000)	Cool well- drained	<i>A. lasiocarpa</i> climax. <i>P. engelmannii</i> <i>Larix lyallii</i> minor climaxes	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>L. lyallii</i> (MT)	<i>L. hitchcockii</i> <i>M. ferruginea</i> <i>V. scoparium</i> <i>A. cordifolia</i> <i>A. latifolia</i> <i>X. tenax</i>	Cooper et al. 1987 Pflister et al. 1977 Steele et al. 1981, 1983
	<i>Abies lasiocarpa</i> <i>Carex geeyeri</i> H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> <i>C. geeyeri</i> H.T. <i>C. geeyeri</i> (typic) phase <i>Pseudotsuga menziesii</i> phase (ID,MT) <i>Artemisia tridentata</i> phase (ID)	Mountains of central Montana, central Idaho, southern Utah (6,500-9,500), Wyoming, and Colorado (8,500-11,000)	Cool dry	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i> . <i>P. albicaulis</i> minor climax	<i>P. engelmannii</i> <i>P. menziesii</i> (MT,ID) <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. geeyeri</i> <i>A. tridentata</i> <i>B. rapens</i> <i>R. woodsii</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>Lathyrus lanszwerii</i> <i>L. argenteus</i> <i>O. chilensis</i> <i>S. stellata</i>	Alexander et al. 1986 Hess and Alexander 1986 Hess and Wasser 1982 Hoffman 1988 Hoffman and Alexander 1976, 1983 Komarkova et al. 1988 Pflister et al. 1977 Steele et al. 1981, 1983 Youngblood and Mauk 1985

Tebie A1.—Continuad.

Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Abies lasiocarpa</i> <i>Carex rossii</i> H.T.	Mountains of southeastern Idaho, northwestern Wyoming (7,500-8,000), and central and southern Utah (8,500-10,500)	Cool dry	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. rossii</i> <i>A. patula</i> <i>Ribes viscosissimum</i> <i>A. cordifolia</i> <i>A. engelmannii</i> <i>A. misar</i>	Steele et al. 1983 Youngblood and Mauk 1985
<i>Abies lasiocarpa</i> <i>Aconitum columbianum</i> H.T.	Mountains of central and southern Utah (7,400-10,000)	Cool moist	<i>A. lasiocarpa</i> climax. <i>P. engelmannii</i> minor climax	<i>P. engelmannii</i> <i>P. manziesii</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>A. columbianum</i> <i>R. montigenum</i> <i>B. ciliatus</i> <i>A. rubra</i> <i>A. cordifolia</i> <i>G. richardsonii</i> <i>O. chilensis</i>	Youngblood and Mauk 1985
<i>Abies lasiocarpa</i> <i>Actaea rubra</i> H.T.	Mountains of central Idaho, northern Utah, and northwestern Wyoming (6,000-8,000)	Warm moist	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. pungens</i> <i>P. manziesii</i> <i>P. contorta</i> <i>A. concolor</i> <i>A. grandis</i> <i>P. tremuloides</i>	<i>A. rubra</i> <i>B. repens</i> <i>L. utahensis</i> <i>R. parviflorus</i> <i>V. globulara</i> <i>O. chilensis</i> <i>T. landleri</i>	Mauk and Henderson 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> <i>Arnica cordifolia</i> H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> - <i>A. cordifolia</i> H.T.] <i>A. cordifolia</i> (typic) phase <i>P. engelmannii</i> phase (ID,NW WY) <i>Shepherdia canadensis</i> phase (ID,WY) <i>Astragalus miser</i> phase (ID, NW WY)	Mountains of Montana east of Continental Divide, central Idaho, northwestern and north-central Wyoming (7,000-9,500), and south-central and western Colorado (9,000-11,000)	Cool dry to well-drained	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>S. canadensis</i> <i>A. misar</i> <i>E. angustifolium</i> <i>F. ovalis</i> (<i>F. virginiana</i>) <i>P. secunda</i>	Hoffman and Alexander 1976 Komarkova et al. 1988 Pflister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> <i>Arnica latifolia</i> H.T.	Mountains of southeastern Idaho, northern Utah, and northwestern Wyoming (7,400-9,300)	Cool dry	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>A. latifolia</i> <i>P. myrsinites</i> <i>R. montigenum</i> <i>A. engelmannii</i> <i>P. racemosa</i> <i>P. secunda</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> <i>Caltha biflora</i> H.T.	Mountains of central Idaho (6,200-7,800)	Cool wet	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. contorta</i>	<i>C. biflora</i> <i>L. involucreta</i> <i>Dodecantheon jeffreyi</i> <i>Pedicularis bracteosa</i> <i>S. triangularis</i>	Steele et al. 1981
<i>Abies lasiocarpa</i> <i>Clintonia uniflora</i> H.T. <i>C. uniflora</i> (typic) phase <i>Menziesia terruginea</i> phase <i>Vaccinium caespitosum</i> phase (MT) <i>Aralia nudicaulis</i> phase (MT) <i>Xerophyllum tenax</i> phase	Mountains of northwestern Montana, and northern and central Idaho (3,500-6,000)	Warm moist to well-drained	<i>A. lasiocarpa</i> climax. Minor climaxes <i>A. grandis</i> <i>T. mertensiana</i>	<i>A. grandis</i> <i>T. mertensiana</i> <i>P. engelmannii</i> <i>P. manziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>M. terruginea</i> <i>P. myrsinites</i> <i>V. caespitosum</i> <i>V. globulare</i> <i>A. nudicaulis</i> <i>C. occidentalis</i> <i>X. tenax</i>	Cooper et al. 1987 Pflister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> <i>Coptis occidentalis</i> H.T.	Mountains of central Idaho (5,100-6,700)	Warm to well-drained	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. occidentalis</i> <i>M. terruginea</i> <i>V. globulare</i> <i>Anemona piperi</i> <i>X. tenax</i>	Steele et al. 1981
<i>Abies lasiocarpa</i> <i>Eriogon eximius</i> (<i>E. superbus</i>) H.T.	Mountains of southwestern Colorado, northern and southwestern New Mexico, and eastern Arizona (9,000-11,000)	Cool moist to well-drained	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. manziesii</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. flexilis</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>E. eximius</i> (<i>E. superbus</i>) <i>B. repens</i> <i>L. involucreta</i> <i>A. cordifolia</i> <i>G. richardsonii</i> <i>L. arizonicus</i>	Alexander et al. 1987 DeVellce et al. 1986 Fitzhugh et al. 1987 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> <i>Galium triflorum</i> H.T.	Mountains of northern Montana (5,000-7,700)	Warm moist	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>G. triflorum</i> <i>A. rubra</i> <i>S. triangularis</i> <i>S. amplexifolius</i>	Pflister et al. 1977
<i>Abies lasiocarpa</i> <i>Lathyrus arizonicus</i> H.T.	Mountains of north-central Arizona and southwestern New Mexico (9,500-10,500)	Cool dry	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. strobiliformis</i> <i>P. tremuloides</i>	<i>L. arizonicus</i> <i>A. glabrum</i> <i>S. oraophilus</i> <i>B. ciliatus</i> <i>G. richardsonii</i> <i>S. staliata</i> <i>V. americana</i>	Fitzhugh et al. 1987 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> <i>Martensia ciliata</i> H.T.	Mountains of northern New Mexico and southern Colorado (9,200-11,200)	Cool moist	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>M. ciliata</i> <i>Carex balla</i> <i>C. leptosapala</i> <i>Cardamine cordifolia</i> <i>M. pantandra</i> <i>O. tandleri</i>	DeVellce et al. 1986
<i>Abies lasiocarpa</i> <i>Osmorhiza chilensis</i> H.T. <i>O. chilensis</i> (typic) phase <i>Pachistima myrsinites</i> phase (ID)	Mountains of southeastern Idaho and northern Utah (6,500-8,800)	Warm moist to well-drained	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>B. repens</i> <i>P. myrsinites</i> <i>C. rossii</i> <i>O. depapurata</i> <i>T. tandleri</i>	Meuk and Henderson 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> <i>Pedicularis racemosa</i> H.T. <i>P. racemosa</i> (typic) phase <i>Pseudotsuga manziesii</i> phase (UT)	Mountains of southeastern Idaho, northwestern Wyoming, and northern Utah (7,000-9,500)	Warm dry to well-drained	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i> (CO)	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>P. myrsinites</i> <i>S. oraophilus</i> <i>A. cordifolia</i> <i>A. engelmannii</i> <i>L. lanszwertii</i> <i>P. secunda</i>	Mauk and Handerson 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> <i>Polemonium pulcherrimum</i> H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> - <i>P. pulcherrimum</i> H.T.]	Mountains of south-central Colorado (10,500-11,000)	Cool dry	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i>	<i>P. pulcherrimum</i> (<i>P. delicetum</i>) <i>Vaccinium</i> spp. <i>C. leptosapala</i> <i>Osmorhiza obtusa</i>	Komarkova et al. 1988
<i>Abies lasiocarpa</i> <i>Saxifrage bronchialis</i> H.T. (Scraa forest)	Mountains of northern New Mexico and southern Colorado (10,000-11,000)	Cool dry	<i>A. lasiocarpa</i> climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. strobiliformis</i>	<i>S. bronchialis</i> <i>J. communis</i> <i>R. montigenum</i> <i>K. cristata</i> (<i>K. macrantha</i>) <i>C. rossii</i> <i>F. ovalis</i> (<i>F. virginiana</i>)	DeVellce et al. 1986
<i>Abies lasiocarpa</i> <i>Senecio sanguisorboides</i> H.T. <i>S. sanguisorboides</i> (typic) phase <i>Pseudotsuga manziesii</i> phase	Mountains of southern New Mexico (>10,000)	Cool dry to well-drained	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. manziesii</i> <i>P. tremuloides</i>	<i>S. sanguisorboides</i> <i>R. montigenum</i> <i>Ribes wolfii</i> <i>E. eximius</i> (<i>E. superbus</i>)	Alexander et al. 1984a Moir and Ludwig 1979

Table A1.—Continued.

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Habitat type or community type	Location and elevation (feet)	Site	Successional status	Tree associates	Principal undergrowth species	Authority
<i>Abies lasiocarpa</i> <i>Senecio triangularis</i> H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> <i>S. triangularis</i> H.T.]	Mountains of central and western Colorado (9,500-11,000)	Cool wet stream bottoms	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	<i>S. triangularis</i> <i>A. cordifolia</i> <i>C. leptosepala</i> <i>E. arvense</i> <i>M. ciliata</i> <i>Streptopus</i> spp.	Hess and Alexander 1986 Komarkova et al. 1988
<i>Abies lasiocarpa</i> <i>Streptopus amplexifolius</i> H.T. <i>S. amplexifolius</i> (typic) phase <i>Menziesia ferruginea</i> phase (ID) <i>Ligusticum canbyi</i> phase (ID)	Mountains of Idaho and northern Utah (3,500-8,000)	Warm moist to wet	<i>A. lasiocarpa</i> climax. <i>P. engelmannii</i> minor climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. contorta</i> <i>P. monticola</i>	<i>S. amplexifolius</i> <i>M. ferruginea</i> <i>Ribes leucostre</i> <i>L. canbyi</i> <i>S. triangularis</i>	Cooper et al. 1987 Meek and Henderson 1984 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> <i>Thalictrum occidentale</i> H.T.	Mountains of southeastern Idaho and northwestern Wyoming (7,600-8,900)	Warm well-drained	<i>A. lasiocarpa</i> climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>T. occidentale</i> <i>A. cordifolia</i> <i>G. richardsonii</i> <i>O. chilensis</i> <i>P. racemosa</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> <i>Xerophyllum tenax</i> H.T. <i>X. tenax</i> (typic) phase <i>Vaccinium globulare</i> phase (ID,MT) <i>Vaccinium scoparium</i> phase (ID,MT) <i>Luzula hitchcockii</i> phase (MT) <i>Coptis occidentalis</i> phase (ID)	Mountains of eastern Washington, Idaho, Montana, and northwestern Wyoming (5,000-8,500)	Cool dry	<i>A. lasiocarpa</i> climax. <i>A. grandis</i> minor climax in some phases	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>P. albicaulis</i> <i>P. ponderosa</i> (MT) <i>A. grandis</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>V. globulare</i> <i>V. membranaceum</i> <i>V. scoparium</i> <i>L. hitchcockii</i> <i>C. geyseri</i> <i>C. occidentalis</i> <i>T. occidentalis</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Pflister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> Moss spp. H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> Moss H.T.]	Mountains of southeastern Wyoming, southcentral Colorado (8,500-10,500), northern New Mexico, and southcentral Arizona (9,500-11,500)	Cool dry to well-drained	<i>A. lasiocarpa</i> co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> (NM) <i>P. contorta</i> (CO) <i>P. aristata</i> <i>P. flexilis</i> <i>P. tremuloides</i>	Moss spp. <i>A. glabrum</i> <i>J. communis</i> <i>Rosa</i> spp. <i>V. caespitosum</i> <i>V. myrtilloides</i>	Alexander et al. 1986 DeVeille et al. 1986 DeVeille and Ludwig 1983 Komarkova et al. 1988
<i>Abies lasiocarpa</i> - <i>Pinus albicaulis</i> H.T.	Mountains of northern Idaho and eastern Washington (>6,000)	Cool dry	<i>A. lasiocarpa</i> co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i>	<i>V. scoparium</i> <i>Luzula glabrata</i> <i>C. geyseri</i> <i>X. tenax</i>	Daubenmire and Daubenmire 1968
Tsuga mertensiana series						
<i>Tsuga mertensiana</i> <i>Menziesia ferruginea</i> H.T. <i>M. ferruginea</i> (typic) phase <i>Luzula hitchcockii</i> phase (ID) <i>Xerophyllum tenax</i> phase (ID)	Mountains of Montana, northern Idaho, and eastern Washington (5,000-6,500)	Cool moist	<i>T. mertensiana</i> climax or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>P. albicaulis</i> <i>L. occidentalis</i>	<i>M. ferruginea</i> <i>R. elbii</i> <i>V. globulare</i> <i>V. scoparium</i> <i>L. hitchcockii</i> <i>P. secunda</i> <i>X. tenax</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Pflister et al. 1977
<i>Tsuga mertensiana</i> <i>Luzula hitchcockii</i> H.T. <i>L. hitchcockii</i> (typic) phase <i>Menziesia ferruginea</i> phase (MT) <i>Vaccinium scoparium</i> phase (MT)	Mountains of Montana west of Continental Divide, and northern Idaho (6,000-6,500)	Cool well-drained	<i>T. mertensiana</i> co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>L. hitchcockii</i> <i>M. ferruginea</i> <i>V. scoparium</i> <i>A. latifolia</i> <i>X. tenax</i>	Cooper et al. 1987 Pflister et al. 1977
<i>Tsuga mertensiana</i> <i>Clintonia uniflora</i> H.T. <i>C. uniflora</i> (typic) phase <i>Menziesia ferruginea</i> phase <i>Xerophyllum tenax</i> phase	Mountains of northern Idaho (4,800-5,700)	Warm moist	<i>T. mertensiana</i> climax. <i>A. lasiocarpa</i> may be minor climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. contorta</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>C. occidentalis</i> <i>P. secunda</i> <i>T. trifoliata</i> <i>V. orbiculata</i> <i>X. tenax</i>	Cooper et al. 1987
<i>Tsuga mertensiana</i> <i>Streptopus amplexifolius</i> H.T. <i>S. amplexifolius</i> (typic) phase <i>Menziesia ferruginea</i> phase <i>Luzula hitchcockii</i> phase	Mountains of northern Idaho (5,000-6,000)	Warm moist	<i>T. mertensiana</i> climax. <i>A. lasiocarpa</i> may be minor climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>S. amplexifolius</i> <i>M. ferruginea</i> <i>L. hitchcockii</i> <i>S. triangularis</i> <i>T. carolinensis</i>	Cooper et al. 1987
<i>Tsuga mertensiana</i> <i>Xerophyllum tenax</i> H.T. <i>X. tenax</i> phase <i>Vaccinium scoparium</i> phase (ID) <i>Luzula hitchcockii</i> phase (ID)	Mountains of northern Idaho and northwestern Montana (5,000-6,500)	Cool dry	<i>T. mertensiana</i> climax or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. monticola</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>V. globulare</i> <i>V. membranaceum</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>L. hitchcockii</i> <i>C. geyseri</i>	Cooper et al. 1987 Daubenmire and Daubenmire 1968 Pflister et al. 1977
Pinus albicaulis series						
<i>Pinus albicaulis</i> <i>Juniperus communis</i> H.T. <i>J. communis</i> (typic) phase <i>Shepherdia canadensis</i> phase	Mountains of southeastern Idaho and northwestern Wyoming (8,000-9,800)	Cool dry	<i>P. albicaulis</i> co-climax with <i>P. contorta</i>	<i>P. contorta</i> <i>P. flexilis</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. canadensis</i> <i>A. cordifolia</i> <i>A. miser</i>	Steele et al. 1983
<i>Pinus albicaulis</i> <i>Vaccinium scoparium</i> H.T.	Mountains of Montana and northwestern Wyoming (8,500-10,500)	Cool dry	<i>P. albicaulis</i> co-climax with <i>P. contorta</i> . <i>A. lasiocarpa</i> <i>P. engelmannii</i> minor climaxes	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>V. scoparium</i> <i>P. nervosa</i> <i>C. rossii</i> <i>A. cordifolia</i>	Pflister et al. 1977 Steele et al. 1983
<i>Pinus albicaulis</i> <i>Carex geyseri</i> H.T.	Mountains of Montana and northwestern Wyoming (7,500-9,500)	Cool dry	<i>P. albicaulis</i> co-climax with <i>P. contorta</i>	<i>P. contorta</i>	<i>C. geyseri</i> <i>F. idahoensis</i> <i>S. occidentalis</i> <i>T. spicatum</i> <i>A. millefolium</i> <i>S. multiretiata</i>	Pflister et al. 1977 Steele et al. 1983
<i>Pinus albicaulis</i> <i>Carex rossii</i> H.T. <i>C. rossii</i> (typic) phase <i>Pinus contorta</i> phase	Mountains of northwestern Wyoming (6,500-10,500)	Cool dry	<i>P. albicaulis</i> climax or co-climax with <i>P. contorta</i> . <i>A. lasiocarpa</i> <i>P. engelmannii</i> minor climaxes	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. flexilis</i>	<i>C. rossii</i> <i>P. nervosa</i> <i>A. cordifolia</i> <i>E. angustifolium</i> <i>L. argenteus</i>	Steele et al. 1983
<i>Pinus albicaulis</i> <i>Festuca idahoensis</i> H.T.	Mountains of Montana, southeastern Idaho, and northwestern Wyoming (9,500-10,000)	Cool dry	<i>P. albicaulis</i> climax	Usually pure stands	<i>F. idahoensis</i> <i>O. asperifolia</i> <i>A. microphylla</i> <i>A. miser</i> <i>L. argenteus</i>	Pflister et al. 1977 Steele et al. 1983
<i>Pinus albicaulis</i> - <i>Abies lasiocarpa</i> H.T.	Mountains of Montana and northern Idaho (>8,000)	Cool dry	<i>P. albicaulis</i> co-climax with <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>V. scoparium</i> <i>A. latifolia</i> <i>H. gracile</i> <i>X. tenax</i>	Cooper et al. 1987 Pflister et al. 1977
Larix lyallii series						
<i>Larix lyallii</i> - <i>Abies lasiocarpa</i> H.T.	Mountains of Montana west of Continental Divide, and northern Idaho (>8,500)	Cool dry	<i>L. lyallii</i> co-climax with <i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i>	<i>P. empetrifolmis</i> <i>V. scoparium</i> <i>L. hitchcockii</i> <i>A. latifolia</i>	Cooper et al. 1987 Pflister et al. 1977

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Alexander, Robert R. 1988. Forest vegetation in the Rocky Mountain and Intermountain regions: habitat types and community types. Gen. Tech. Rep. RM-162. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 47 p.

Habitat types and community types and their phases for the major forest tree species in the Rocky Mountain and Intermountain regions are tabulated. Included are the name(s), general location, elevation, relative site, successional status, principal tree and undergrowth associates, and the authority.

Keywords: Forest vegetation, classification, habitat type, community type

on

Rocky
Mountains

Southwest

Great
Plains

U.S. Department of Agriculture
Forest Service

Rocky Mountain Forest and Range Experiment Station

The Rocky Mountain Station is one of eight regional experiment stations, plus the Forest Products Laboratory and the Washington Office Staff, that make up the Forest Service research organization.

RESEARCH FOCUS

Research programs at the Rocky Mountain Station are coordinated with area universities and with other institutions. Many studies are conducted on a cooperative basis to accelerate solutions to problems involving range, water, wildlife and fish habitat, human and community development, timber, recreation, protection, and multiresource evaluation.

RESEARCH LOCATIONS

Research Work Units of the Rocky Mountain Station are operated in cooperation with universities in the following cities:

Albuquerque, New Mexico
Flagstaff, Arizona
Fort Collins, Colorado *
Laramie, Wyoming
Lincoln, Nebraska
Rapid City, South Dakota
Tempe, Arizona

* Station Headquarters: 240 W. Prospect St., Fort Collins, CO 80526