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### Foreword

The initial descriptive phase of forest habitat type classification in the southwestern United States (Arizona, New Mexico, and southern Colorado) has been completed and published. To provide a foundation for future research into the biodiversity, structure, and dynamics of these forest communities, stand tables consolidating over 2,000 field plots, stratified by 11 different climax forest tree series, have been compiled. The data upon which the tables are based are made available in a computerized format, accessible by microcomputer. A suite of computer programs is also provided for manipulating the data base to meet individual research needs. An archive of noncomputerized information on stand structure, site productivity, soil analysis, plus descriptive materials such as photographs and maps has also been created. Both the data base (on floppy disks) and the archive are available for public use from the Rocky Mountain Forest and Range Experiment Station, 240 W. Prospect Road, Fort Collins, Colo. 80526.

To obtain the data base in electronic format, submit five 5 1/4-inch, high-density diskettes formatted for IBM PCAT compatible systems to the Station library. The data will be duplicated onto your disks, which will then be returned to you. Archived material can be viewed at the Station library.

# Consolidated Stand Tables and Biodiversity Data Base for Southwestern Forest Habitat Types

**Esteban Muldavin**  
Department of Biology, New Mexico State University  
**Frank Ronco, Jr., Principal Silviculturist (retired)**  
Rocky Mountain Forest and Range Experiment Station<sup>1</sup>  
and  
**Earl F. Aldon, Supervisory Research Forester**  
Rocky Mountain Forest and Range Experiment Station<sup>1</sup>

## Abstract

To provide a foundation for future research into the biodiversity, structure, and dynamics of southwestern forest communities, stand tables consolidating over 2,000 field plots, stratified by 11 different climax forest tree series, have been compiled. The data upon which the tables are based are made available in a computerized format, accessible by microcomputer. A suite of computer programs is also provided for manipulating the data base to meet individual research needs.

<sup>1</sup>Headquarters is in Fort Collins, in cooperation with Colorado State University.

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# Consolidated Stand Tables and Biodiversity Data Base for Southwestern Forest Habitat Types

Esteban Muldavin, Frank Ronco, Jr., and Earl F. Aldon

## INTRODUCTION

Forest community classifications using the habitat type concept of Daubenmire (1968) have been widely developed and implemented in the southwestern United States (Arizona, New Mexico, and southern Colorado). Layser and Schubert (1979) described eight climax forest tree series in the Southwest which formed a framework for subsequent habitat type classifications. Moir and Ludwig (1979) followed with a preliminary classification of habitat types within the spruce-fir and mixed conifer forests in Arizona and New Mexico. Also during the 1970's, Hanks et al. (1983) initiated a habitat type classification within the *Pinus ponderosa* Series in northern Arizona. In conjunction with the above work, Ronco et al.<sup>2</sup> prepared a comprehensive study plan for systematically developing habitat classifications for all tall coniferous forests from national forests and selected Indian Reservations in the Southwest (fig. 1). The goals of this study plan have now been met, resulting in eight published classifications that cover the entire region (table 1).

<sup>2</sup>Ronco, Frank, Jr., William H. Moir, and E. Lee Fitzhugh. 1978. *Forest habitat type classification for Arizona, New Mexico, and southwestern Colorado. USDA Forest Service Study Plan FS-1203.81 [Mimeo]. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.*

The completion of these classifications summarizes the initial descriptive phase of habitat type research in the Southwest and signals the next, more synthetic phase, where the focus will be on the detailed structure and dynamics of these communities. Areas of research envisioned in the synthetic phase include regional correlation studies, detailed analysis of dynamics and diversity in and among habitat types (particularly successional trends), productivity assessment, and regional floristic analysis. The habitat type classifications form the foundation for such research, but in order to do so, the quantitative and qualitative data upon which they are based must be made available. The habitat type data base is a storehouse of information about floristic diversity, environmental characteristics, stand productivity, and other descriptive information on forest communities of the Southwest. Our purpose here is to provide a comprehensive data base in an accessible and usable form for future research.

The concerted classification effort in the Southwest resulted in a large, more or less uniform data base of quantitative and qualitative information from approximately 2,000 field plots established during the development of the classifications. We are making available the actual plot data in a computerized format that is accessible with an IBM PC (or compatible) microcomputer.

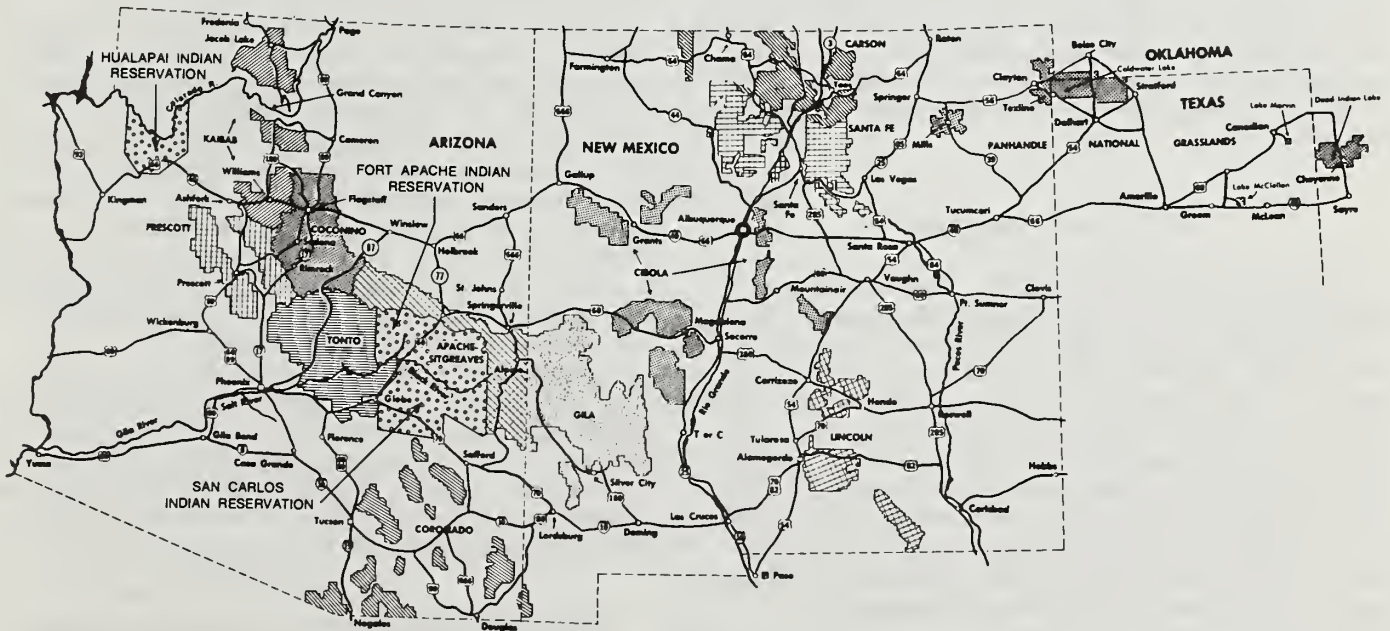


Figure 1.—National forests and Indian reservations of the Southwest covered in this study. Not shown are the San Juan, Rio Grande, and San Isabel National Forests of southern Colorado.

Table 1.—Series and habitat type classifications published in the southwest United States, with the geographic areas, national forests (N.F.), Indian reservations (I.R.), and, where appropriate, the forest zone covered.

Authors	Description
1. Layser and Schubert (1979)	Arizona and New Mexico, all forest zones (series only).
2. Moir and Ludwig (1979)	Arizona and New Mexico, spruce-fir and mixed conifer zones.
3. Hanks et al. (1983)	Northern Arizona, ponderosa pine zone (Kaibab N.F., Coconino N.F., Sitgreaves N.F. Apache N.F.).
4. Alexander et al. (1984b)	Northern Arizona, Douglas-fir zone (Kaibab N.F., Coconino N.F., Sitgreaves N.F., Apache N.F.).
5. Alexander et al. (1984a)	South-central New Mexico, all zones (Lincoln N.F.).
6. DeVelice et al. (1986)	Southern Colorado, northern New Mexico, all zones (Carson N.F., Santa Fe N.F., San Juan N.F., San Isabel N.F., Rio Grande N.F., and adjoining forested lands)*
7. Fitzhugh et al. (1988)	Southeastern New Mexico and west-central Arizona, all zones (Apache N.F.; Sitgreaves N.F.; Gila N.F., and Magdalena District, Cibola N.F.).
8. Alexander et al. (1988)	Central New Mexico, all zones (Cibola N.F., except Magdalena District).
9. Muldavin et al. (1989)	Southern, central and northwestern Arizona, all zones (Coronado N.F., Tonto N.F., Prescott N.F., San Carlos I.R., Ft. Apache I.R., and Hualapai I.R.).

\* Including NM land grants, Pueblo de Taos I.R., miscellaneous private lands, and Bandelier National Park.

Using the data base and associated programs, the researcher can print complete, consolidated stand and site characteristics tables of habitat types of the Southwest, organized by climax forest tree series, or create customized tables and data sets to suit individual research needs. Below we describe in detail the content and structure of the data base and how to manipulate it. We expect that the data base and associated tables will give a regional perspective to the nature of the classifications in the Southwest and provide a context for future research.

## DATA BASE CONTENT

The data base consists of 2,009 reconnaissance and analytic plots established throughout the region. Table 2 outlines the distribution of the plots by series and habitat type. There are 104 habitat types listed, stratified by 11 climax tree series. Assignment of individual plots to specific habitat types follows that given by investigators in their original publications. The most common habitat type names were used here, following closely the designations recommended by Ludwig and Moir.<sup>3</sup> Synonymous habitat names are given where appropriate. The data base contains information on 1,209 species from across the Southwest (appendix A).

<sup>3</sup>Ludwig, John A., and William H. Moir. 1984. *Comparison table of habitat type nomenclature* [Mimeo]. New Mexico State University, Las Cruces, New Mexico.

Over the course of the habitat typing project, field methods and data collection remained relatively uniform. The procedures have been outlined elsewhere (Daubenmire and Daubenmire 1968, Franklin et al. 1970, Moir and Ludwig 1983, Pfister and Arno 1980), and only an overview is provided here.

Plots were uniform in size (375 m<sup>2</sup>) and were established in representative stands of climax or near climax vegetation that had not been recently disturbed, wherever possible. Plot information included: density of tree species in 2-inch diameter breast height (d.b.h.) classes; estimated or sample percent cover of all shrubs, grasses, and forbs; site characteristics including slope, aspect, elevation, and topography; site index evaluation entailing the measurement of d.b.h., height, and age on up to three trees per plot; and descriptive comments concerning stand condition, landscape position, and ecotones between adjacent communities.

An example of a plot data sheet is shown in figure 2. Plots were staked and located on USGS topographic quadrangles and documented with up to three photographs. Several investigators also included soil profile descriptions, mistletoe ratings, and voucher specimens of plant species found. The bulk of this data was then coded for computer processing and subsequent analysis.

## COMPUTERIZED DATA BASE STRUCTURE

We have structured the computerized data base for maximum flexibility in access and manipulation to suit



Table 2.—Habitat types (HT) and phases (PH) of the southwest region listed by climax tree series. Habitat type names follow Ludwig and Moir<sup>1</sup> with synonymous names in parentheses. Abbreviations for habitat type names contain codes for the climax tree species and diagnostic undergrowth species separated by a slash (phase code names are also shown). The HT numbers correspond to the classification variables in the data base: SERIES (SER), HTNO (HT), and PHASE (PH). The total number of plots for each series, habitat type, and phase are also given. The references where descriptions of the types can be found are given by publication number corresponding to the numbers found in table 1.

Name	Abbreviation	Number			No. of plots	References
		SER	HT	PH		
<b>Pinus aristata Series</b>	<b>PIAR</b>	<b>01</b>	<b>00</b>	<b>00</b>	<b>12</b>	<b>1,6</b>
<i>Pinus aristata/Festuca thurberi</i> HT	PIAR/FETH	01	01		7	6
<i>Pinus aristata/Festuca arizonica</i> HT	PIAR/FEAR	03	01		4	6
<i>Pinus aristata/Ribes montigenum</i> HT (Scree)	PIAR/Scree	02	01		1	6
<b>Picea engelmannii Series</b>	<b>PIEN</b>	<b>02</b>	<b>00</b>	<b>00</b>	<b>115</b>	<b>1,6,8,9</b>
<i>Picea engelmannii/Geum rossii</i> HT	PIEN/GERO	12	01		1	2
<i>Picea engelmannii/Moss</i> HT	PIEN/Moss	03	01		6	2,7,8,9
<i>Picea engelmannii/Vaccinium myrtillus/</i> <i>Polemonium pulcherrimum</i> HT						
<i>Picea engelmannii</i> PH	PIEN/VAMY/POPU, PIEN	01	01		15	2,6
<i>Abies lasiocarpa</i> PH	PIEN/VAMY/POPU, ABLA	01	02		38	6
<i>Picea engelmannii/Vaccinium myrtillus</i> HT	PIEN/VAMY	02	01		3	7
<i>Picea engelmannii/Senecio cardamine</i> HT						
<i>Abies lasiocarpa</i> PH	PIEN/SECA, ABLA	05	01		8	7
<i>Abies concolor</i> PH	PIEN/SECA, ABCO	05	02		12	7
<i>Picea engelmannii/Acer glabrum</i> HT	PIEN/ACGL	06	01		6	2,5,9
<i>Picea engelmannii/Erigeron eximius</i> HT	PIEN/EREX	10	01		9	7,9
<i>Picea engelmannii/Carex foenea</i> HT	PIEN/CAFO	09	01		2	2,9
<i>Picea engelmannii/Elymus triticoides</i> HT	PIEN/ELTR	07	01		4	2,5
<i>Picea engelmannii/Saxifraga bronchialis</i> HT	PIEN/SABR	08	01		8	6
<i>Picea engelmannii/Heracleum spondylium</i> HT	PIEN/HESP	11	01		3	6
<b>Abies lasiocarpa Series</b>	<b>ABLA</b>	<b>03</b>	<b>00</b>	<b>00</b>	<b>264</b>	<b>1,6,9</b>
<i>Abies lasiocarpa/Mertensia ciliata</i> HT	ABLA/MECI	01	01		14	6
<i>Abies lasiocarpa/Moss</i> HT	ABLA/Moss	02	01		18	6,9
<i>Abies lasiocarpa/Vaccinium myrtillus</i> HT	ABLA/VAMY	03	01		80	2,6,7,8,9
<i>Abies lasiocarpa/Vaccinium myrtillus-</i> <i>Linnaea borealis</i> HT						
<i>Abies lasiocarpa/Vaccinium myrtillus-</i> <i>Rubus parviflorus</i> HT	ABLA/VAMY-LIBO	04	01		21	2,6
<i>Abies lasiocarpa/Rubus parviflorus</i> HT	ABLA/VAMY-RUPA	05	01		14	2,6,7,9
<i>Abies lasiocarpa/Rubus parviflorus</i> HT	ABLA/RUPA	06	01		17	2,6,7,9
<i>Abies lasiocarpa/Senecio sanguisorboides</i> HT	ABLA/SECA	08	01		9	2,5
<i>Abies lasiocarpa/Erigeron eximius</i> HT	ABLA/EREX	07	01		75	2,6,7,8,9
<i>Abies lasiocarpa/Acer glabrum</i> HT	ABLA/ACGL	12	01		3	8
<i>Abies lasiocarpa/Juniperus communis</i> HT	ABLA/JUCO	09	01		7	2
<i>Abies lasiocarpa/Lathyrus arizonicus</i> HT	ABLA/LAAR	10	01		3	2,7
<i>Abies lasiocarpa/Jamesia americana</i> HT	ABLA/JAAM	13	01		1	9
<i>Abies lasiocarpa/Saxifraga bronchialis</i> HT ( <i>Holodiscus dumosus</i> ; Scree)	ABLA/SABR	11	01		2	6,7
<b>Picea pungens Series</b>	<b>PIPU</b>	<b>04</b>	<b>00</b>	<b>00</b>	<b>113</b>	<b>1,2,5,6,7,8,9</b>
<i>Picea pungens/Linnaea borealis</i> HT	PIPU/LIBO	01	01		11	2,6
<i>Picea pungens/Senecio cardamine</i> HT	PIPU/SECA	03	01		4	2,7
<i>Picea pungens/Carex foenea</i> HT	PIPU/CAFO	06	01		25	2,5,6,7,8
<i>Picea pungens/Erigeron eximius</i> HT	PIPU/EREX	04	01		24	2,6,7,9
<i>Picea pungens/Fragaria ovalis</i> HT	PIPU/FROV	05	01		6	5
<i>Picea pungens-Pseudotsuga menziesii</i> HT <i>Valeriana capitata</i> PH	PIPU-PSME, VACA	13	01		2	2
<i>Picea pungens/Juniperus communis</i> HT	PIPU/JUCO	02	01		1	2,9
<i>Picea pungens/Arctostaphylos uva-ursi</i> HT	PIPU/ARUV	07	01		4	2,6
<i>Picea pungens/Festuca arizonica</i> HT	PIPU/FEAR	08	01		19	6,7
<i>Picea pungens/Swida sericea</i> HT ( <i>Cornus stolonifera</i> )	PIPU/SWSE	09	01		11	6,8
<i>Picea pungens/Poa pratensis</i> HT	PIPU/POPR	11	01		7	2,6
<b>Abies concolor Series</b>	<b>ABCO</b>	<b>05</b>	<b>00</b>	<b>00</b>	<b>361</b>	<b>1,2,5,6, 7,8,9</b>
<i>Abies concolor/Vaccinium myrtillus</i> HT	ABCO/VAMY	01	01		14	6,9
<i>Abies concolor/Erigeron eximius</i> HT	ABCO/EREX	03	01		32	6,7,9

Name	Abbreviation	Number			No. of plots	References
		SER	HT	PH		
<i>Abies concolor/Acer glabrum</i> HT						
<i>Acer glabrum</i> PH	ABCO/ACGL, ACGL	04	01	43	2,6,7,8,9	
Riparian PH	ABCO/ACGL, Riparian	04	02	3	8	
<i>Berberis repens</i> PH	ABCO/ACGL, BERE	04	03	5	2,8	
<i>Holodiscus dumosus</i> PH	ABCO/ACGL, HODU	04	04	17	2,5,8	
<i>Abies concolor/Carex foenea</i> HT	ABCO/CAFO	13	01	4	9	
<i>Abies concolor/Sparse</i> HT ( <i>Berberis repens</i> )	ABCO/Sparse	05	01	66	2,5,6,7,9	
<i>Abies concolor/Acer grandidentatum</i> HT						
<i>Acer grandidentatum</i> PH	ABCO/ACGR, ACGR	02	01	14	2,5,7,9	
<i>Holodiscus dumosus</i> PH	ABCO/ACGR, HODU	02	02	3	5	
<i>Abies concolor/Arctostaphylos uva-ursi</i> HT	ABCO/ARUV	06	01	7	6	
<i>Abies concolor/Quercus gambelii</i> HT						
<i>Quercus gambelii</i> PH	ABCO/QUGA, QUGA	07	01	75	2,5,6,7,8,9	
<i>Holodiscus dumosus</i> PH	ABCO/QUGA, HODU	07	02	7	5	
<i>Festuca arizonica</i> PH	ABCO/QUGA, FEAR	07	03	6	2,5	
<i>Muhlenbergia virescens</i> PH	ABCO/QUGA, MUVI	07	04	9	2,5,7,8	
<i>Muhlenbergia dubia</i> PH	ABCO/QUGA, MUDU	07	05	?	5	
<i>Abies concolor/Lathyrus arizonica</i> HT	ABCO/LAAR	14	01	2	2	
<i>Abies concolor/Festuca arizonica</i> HT						
<i>Festuca arizonica</i> PH	ABCO/FEAR, FEAR	09	01	20	6,7,8	
<i>Poa fendleriana</i> PH	ABCO/FEAR, POFE	09	02	3	7	
<i>Abies concolor/Muhlenbergia virescens</i> HT	ABCO/MUVI	08	01	8	4,7	
<i>Abies concolor/Robinia neomexicana</i> HT	ABCO/RONE	10	01	2	2,7	
<i>Abies concolor/Elymus triticoides</i> HT	ABCO/ELTR	11	01	4	5	
<i>Abies concolor/Jamesia americana</i> HT ( <i>Holodiscus dumosus</i> ; Scree)	ABCO/HODU	12	01	7	6,7	
<i>Abies concolor/Juglans major</i> HT	ABCO/JAMA	16	01	6	5,7,9	
<i>Abies concolor/Galium triflorum</i> HT	ABCO/GATR	15	01	4	6	
<b>Pinus flexilis Series</b>	<b>PIFL</b>	<b>06</b>	<b>00</b>	<b>00</b>	<b>4</b>	<b>1,6</b>
<i>Pinus flexilis/Arctostaphylos uva-ursi</i> HT	PIFL/ARUV		01	01	4	6
<b>Pseudotsuga menziesii Series</b>	<b>PSME</b>	<b>07</b>	<b>00</b>	<b>00</b>	<b>247</b>	<b>1,4,5,6,7,8,9</b>
<i>Pseudotsuga menziesii/Bromus ciliatus</i> HT	PSME/BRCI		01	01	10	7,8
<i>Pseudotsuga menziesii/Sparse</i> ( <i>Berberis repens</i> )	PSME/Sparse		02	02	20	4,9
<i>Pseudotsuga menziesii/Acer grandidentatum</i> HT	PSME/ACGR		13	01	2	9
<i>Pseudotsuga menziesii/Arctostaphylos uva-ursi</i> HT	PSME/ARUV		07	01	2	7
<i>Pseudotsuga menziesii/Quercus gambelii</i> HT						
<i>Quercus gambelii</i> PH	PSME/QUGA, QUGA		03	01	80	4,5,6,7,8,9
<i>Festuca arizonica</i> PH	PSME/QUGA, FEAR		03	02	14	6,7
<i>Muhlenbergia virescens</i> PH	PSME/QUGA, MUVI		03	03	11	4,7
<i>Holodiscus dumosus</i> PH	PSME/QUGA, HODU		03	04	6	5
<i>Pseudotsuga menziesii/Festuca arizonica</i> HT	PSME/FEAR		05	01	26	2,4,6,7,8
<i>Pseudotsuga menziesii/Muhlenbergia virescens</i> HT	PSME/MUVI		04	01	30	2,4,7,9
<i>Pseudotsuga menziesii/Muhlenbergia montana</i>	PSME/MUMO		06	01	13	7,8,9
<i>Pseudotsuga menziesii/Quercus rugosa</i> HT	PSME/QURU		10	01	6	9
<i>Pseudotsuga menziesii/Quercus hypoleucoides</i> HT	PSME/QUHY		08	01	12	2,8,9
<i>Pseudotsuga menziesii/Quercus arizonica</i> HT	PSME/QUAR		12	01	5	9
<i>Pseudotsuga menziesii/Holodiscus dumosus</i> HT (Scree)	PSME/HODU		09	01	5	6,7
<i>Pseudotsuga menziesii/Unclassified</i>	PSME/Unclassified		00	00	5	2
<b>Pinus ponderosa Series</b>	<b>PIPO</b>	<b>08</b>	<b>00</b>	<b>00</b>	<b>806</b>	<b>3,5,6,7,8,9</b>
<i>Pinus ponderosa/Arctostaphylos uva-ursi</i> HT	PIPO/ARUV		01	01	10	6
<i>Pinus ponderosa/Quercus gambelii</i> HT						
<i>Quercus gambelii</i> PH	PIPO/QUGA, QUGA		02	01	50	5,6,7,8,9
<i>Pinus edulis</i> PH	PIPO/QUGA, PIED		02	02	32	6,8,9
<i>Festuca arizonica</i> PH	PIPO/QUGA, FEAR		02	03	21	6
<i>Muhlenbergia longiligula</i> PH	PIPO/QUGA, MULO		02	05	8	7,9
<i>Schizachyrium scoparium</i> PH	PIPO/QUGA, SCSC		02	06	5	8
<i>Pinus ponderosa/Festuca arizonica</i> HT						
<i>Festuca arizonica</i> PH	PIPO/FEAR, FEAR		03	01	79	3,5,6,7,8,9
<i>Danthonia parryi</i> PH	PIPO/FEAR, DAPA		03	02	7	6
<i>Quercus gambelii</i> PH	PIPO/FEAR, QUGA		03	03	25	3,7,8,9
<i>Boutelous gracilis</i> PH	PIPO/FEAR, BOGR		03	04	45	3,6,7,8



Name	Abbreviation	Number			No. of plots	References
		SER	HT	PH		
<i>Pinus ponderosa</i> / <i>Muhlenbergia virescens</i> - <i>Festuca arizonica</i> HT						
<i>M. virescens</i> - <i>F. arizonica</i> PH	PIPO/MUVI-FEAR, MUVI-FEAR	04	01	52	3,7,8	
<i>Quercus gambelii</i> PH	PIPO/MUVI-FEAR, QUGA	04	02	27	3,7	
<i>Bouteloua gracilis</i> PH	PIPO/MUVI-FEAR, BOGR	04	03	13	3,7	
<i>Pinus ponderosa</i> / <i>Muhlenbergia virescens</i> HT						
<i>Muhlenbergia virescens</i> PH	PIPO/MUVI, MUVI	05	01	36	3,7,8,9	
<i>Quercus gambelii</i> PH	PIPO/MUVI, QUGA	05	02	34	3,7,8	
<i>Pinus ponderosa</i> / <i>Muhlenbergia montana</i> HT	PIPO/MUMO	06	01	36	3,6,7,8,9	
<i>Pinus ponderosa</i> / <i>Bouteloua gracilis</i> HT						
<i>Bouteloua gracilis</i> PH	PIPO/BOGR, BOGR	07	01	36	3,6,8,9	
<i>Schizachyrium scoparium</i> PH	PIPO/BOGR, SCSC	07	02	14	6	
<i>Pinus edulis</i> PH	PIPO/BOGR, PIED	07	03	20	3,7	
<i>Quercus gambelii</i> PH	PIPO/BOGR, QUGA	07	04	19	3	
<i>Andropogon halii</i> PH	PIPO/BOGR, ANHA	07	05	16	3	
<i>Artemisia tridentata</i> PH	PIPO/BOGR, ARTR	07	06	14	3,9	
<i>Pinus ponderosa</i> / <i>Poa longiligula</i> CT <sup>2</sup>	PIPO/POLO	22	01	15	3	
<i>Pinus ponderosa</i> / <i>Poa fendleriana</i> CT	PIPO/POFE	23	01	10	3	
<i>Pinus ponderosa</i> / <i>Quercus rugosa</i> HT	PIPO/QURU	12	01	11	9	
<i>Pinus ponderosa</i> / <i>Quercus hypoleucoides</i> HT	PIPO/QUHY	13	01	22	9	
<i>Pinus ponderosa</i> / <i>Quercus arizonica</i> HT						
<i>Quercus arizonica</i> PH	PIPO/QUAR, QUAR	14	01	29	9	
<i>Bouteloua gracilis</i> PH	PIPO/QUAR, BOGR	14	02	5	9	
<i>Pinus ponderosa</i> / <i>Quercus grisea</i> HT						
<i>Muhlenbergia longiligula</i> PH	PIPO/QUGR, MULO	25	03	9	7	
<i>Muhlenbergia montana</i> PH	PIPO/QUGR, MUMO	25	02	7	7	
<i>Pinus ponderosa</i> / <i>Quercus undulata</i> HT						
<i>Quercus undulata</i> PH	PIPO/QUUN, QUUN	08	01	16	5,6	
<i>Muhlenbergia dubia</i> PH	PIPO/QUUN, MUDU	08	02	8	5	
<i>Muhlenbergia longiligula</i> PH	PIPO/QUUN, MULO	08	03	2	5	
<i>Pinus ponderosa</i> / <i>Quercus emoryi</i> HT	PIPO/QUEM	15	01	19	9	
<i>Pinus ponderosa</i> / <i>Arctostaphylos pungens</i> HT						
<i>Arctostaphylos pungens</i> PH	PIPO/ARPU, ARPU	21	01	12	9	
<i>Quercus gambelii</i> PH	PIPO/ARPU, QUGA	21	02	13	3,7	
<i>Pinus ponderosa</i> / <i>Artemisia arbuscula</i> HT	PIPO/ARAR	10	01	6	6	
<i>Pinus ponderosa</i> / <i>Cowania mexicana</i> CT	PIPO/COME	24	01	1	3	
<i>Pinus ponderosa</i> / <i>Ribes inerme</i> HT (Rockland, Scree)	PIPO/RIIN	11	01	5	6,7,8	
<i>Pinus ponderosa</i> / <i>Cinder</i> Soils HT	PIPO/Cinder	27	01	4	8	
<i>Pinus ponderosa</i> / <i>Acer grandidentatum</i> HT	PIPO/ACGR	16	01	2	9	
<i>Pinus ponderosa</i> / <i>Juglans major</i> HT	PIPO/JUMA	17	01	5	9	
<i>Pinus ponderosa</i> / <i>Riparian</i>	PIPO/Riparian	26	01	1	8	
<i>Pinus ponderosa</i> / <i>Oryzopsis hymenoides</i> HT	PIPO/ORHY	09	01	1	6	
<i>Pinus ponderosa</i> / <i>Poa pratensis</i> HT	PIPO/POPR	18	01	3	6	
<i>Pinus ponderosa</i> / <i>Unclassified</i>	PIPO/Unclassified	00	00	1	3	
<b><i>Pinus engelmannii</i> Series</b>	<b>PINEN</b>	<b>09</b>	<b>00</b>	<b>00</b>	<b>10</b>	<b>9</b>
<i>Pinus engelmannii</i> / <i>Muhlenbergia longiligula</i> HT	PINEN/MULO	01	01	1	9	
<i>Pinus engelmannii</i> / <i>Quercus rugosa</i> HT	PINEN/QURU	02	01	1	9	
<i>Pinus engelmannii</i> / <i>Quercus hypoleucoides</i> HT	PINEN/QUHY	03	01	6	9	
<i>Pinus engelmannii</i> / <i>Quercus arizonica</i> HT	PINEN/QUAR	04	01	1	9	
<i>Pinus engelmannii</i> / <i>Quercus emoryi</i> HT	PINEN/QUEM	05	01	1	9	
<b><i>Pinus leiophylla</i> Series</b>	<b>PILE</b>	<b>10</b>	<b>00</b>	<b>00</b>	<b>37</b>	<b>1,9</b>
<i>Pinus leiophylla</i> / <i>Piptochaetium fimbriatum</i> HT	PILE/PIFI	05	01	7	9	
<i>Pinus leiophylla</i> / <i>Quercus hypoleucoides</i> HT	PILE/QUHY	01	01	9	9	
<i>Pinus leiophylla</i> / <i>Quercus arizonica</i> HT	PILE/QUAR	02	01	6	9	
<i>Pinus leiophylla</i> / <i>Quercus emoryi</i> HT	PILE/QUEM	03	01	6	9	
<i>Pinus leiophylla</i> / <i>Arctostaphylos pungens</i> HT	PILE/ARPU	04	01	8	9	
<i>Pinus leiophylla</i> / <i>Quercus toumeyii</i> HT	PILE/QUTO	06	01	1	9	
<b><i>Populus angustifolia</i> Series</b>	<b>POAN</b>	<b>11</b>	<b>00</b>	<b>00</b>	<b>9</b>	<b>7</b>

<sup>1</sup>Ludwig, John A., and William H. Moir. 1984. Comparison table of habitat type nomenclature [Mimeo], New Mexico State University, Las Cruces, New Mexico.

<sup>2</sup>Classified as a community type by the authors.

PLOT \_\_\_\_\_ Crew \_\_\_\_\_ Date \_\_\_\_\_

UNDERSTORY			
Shrubs	%C	v	Herbs
Herbs	%C	v	
REMARKS:			

PLOT \_\_\_\_\_ photo \_\_\_\_\_

crew \_\_\_\_\_ date \_\_\_\_\_

state \_\_\_\_\_ phs. prv. \_\_\_\_\_

NF \_\_\_\_\_ RD \_\_\_\_\_

quad. \_\_\_\_\_ ser. \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ 1/4 \_\_\_\_\_ zone \_\_\_\_\_

Easting \_\_\_\_\_ Northing \_\_\_\_\_

local. \_\_\_\_\_

elev. \_\_\_\_\_ slope (%) \_\_\_\_\_ aspect \_\_\_\_\_

pos. \_\_\_\_\_ Par. Mat. \_\_\_\_\_

soil ser. \_\_\_\_\_ m. unit \_\_\_\_\_

soil dep. (dm) \_\_\_\_\_ ston. \_\_\_\_\_ rock. \_\_\_\_\_

Lit. \_\_\_\_\_ Soil \_\_\_\_\_ Rock \_\_\_\_\_ BA \_\_\_\_\_

HT/CT \_\_\_\_\_

REMARKS:

TREES	NUMBER BY DBH (INCH) CLASS											
	0 - 2		2 - 4	4 - 6	6 - 8	8 - 10	10 - 12	12 - 14	14 - 16	16 - 18	18 - 20	> 20
	< 4.5'	> 4.5'										
P												
P												
P												
P												
P												
P												
P												
TREE	DBH	Ht.	Core	REMARKS:								

PLOT \_\_\_\_\_ Crew \_\_\_\_\_ Date \_\_\_\_\_

**SOILS** (0 hors. on reverse)

Horizon \_\_\_\_\_ Depth \_\_\_\_\_ Texture \_\_\_\_\_

Struct. \_\_\_\_\_ Consist. \_\_\_\_\_ Color \_\_\_\_\_

Frag. \_\_\_\_\_ Roots \_\_\_\_\_ Bound. \_\_\_\_\_

---

Horizon \_\_\_\_\_ Depth \_\_\_\_\_ Texture \_\_\_\_\_

Struct. \_\_\_\_\_ Consist. \_\_\_\_\_ Color \_\_\_\_\_

Frag. \_\_\_\_\_ Roots \_\_\_\_\_ Bound. \_\_\_\_\_

---

Horizon \_\_\_\_\_ Depth \_\_\_\_\_ Texture \_\_\_\_\_

Struct. \_\_\_\_\_ Consist. \_\_\_\_\_ Color \_\_\_\_\_

Frag. \_\_\_\_\_ Roots \_\_\_\_\_ Bound. \_\_\_\_\_

---

Horizon \_\_\_\_\_ Depth \_\_\_\_\_ Texture \_\_\_\_\_

Struct. \_\_\_\_\_ Consist. \_\_\_\_\_ Color \_\_\_\_\_

Frag. \_\_\_\_\_ Roots \_\_\_\_\_ Bound. \_\_\_\_\_

Figure 2.—Examples of field data cards where separate cards are used for location/site characteristics, plant inventory, tree inventory, and soils.



various research needs. There are two major partitions to the data base: (1) source data files containing the actual vegetation and site characteristics data organized by climax tree series; and (2) the program and parameter files used to manipulate the source data. The entire data set is in ASCII format on 5 1/4-inch floppy disks, which are compatible with IBM MS-DOS, and is available upon request from the Rocky Mountain Forest and Range Experiment Station.<sup>4</sup> The data files can be read, edited, and subsetted by a microcomputer (given an appropriate FORTRAN compiler), and it may be possible, depending on the microcomputer hardware on hand, to analyze small data sets. The analysis of large data sets will probably require the larger capacity of a mini- or mainframe computer.

### Source Data Files

The format of the original data files was developed by John Ludwig<sup>5</sup> and provides for maximum flexibility in data entry and manipulation; at the same time it is compact, minimizing storage space requirements. Coded information includes species abundances and site and location information. The consolidated data files were constructed by merging the data sets from each study listed in table 1 and then re-sorting the plots by climax tree series, habitat type, and phase. For example, plots of the *Abies lasiocarpa/Vaccinium myrtillus* habitat type found in northern New Mexico and southern Colorado (DeVelice et al. 1986) were merged with all other plots from that habitat type found in southern New Mexico and Arizona (Alexander et al. 1988, Fitzhugh et al. 1988, Muldavin et al. 1989). Habitat types were then grouped into data files by series. Thus, all data are initially accessed by series and then manipulated to meet specific needs. The data files can be used with the programs provided to produce customized site characteristics tables similar to those in appendix C, or they can be subsetted for use in external programs.

### Vegetation Files

The vegetation data files contain the species abundance values by plot and are used to construct stand tables similar to those in appendix B, or they can be subsetted and reformatted for use in other external programs. The vegetation data files are listed in table 3.

Figure 3 provides an example of how the vegetation abundance values are coded in the files. Each plot is represented by one to many lines (cards, card images), depending on the number of species in the plot. The first line contains a unique plot identifier in columns 1–5. Column 1 contains the code of the principal investigator who established the plot (table 4). Column 2 is a general location identifier (table 5). Columns 3–5 con-

<sup>4</sup>Rocky Mountain Forest and Range Experiment Station, 240 W. Prospect Road, Fort Collins, Colo. 80526.

<sup>5</sup>Work performed while a professor at New Mexico State University, Las Cruces, New Mexico. Current address: Rangelands Research Center, Deniliquin, New South Wales 2710 Australia.

Table 3.—Vegetation source data files available on floppy disks. The first four letters of the filename give the series code (as in table 2) followed by VEG to indicate that they are vegetation files, plus the file extension .DAT to indicate that they contain source data.

Disk no.	File name	Data description	Size
1	PIPUVEG.DAT	<i>Picea pungens</i> Series	60 K
1	PIARVEG.DAT	<i>Pinus aristata</i> Series	5 K
1	PIENVEG.DAT	<i>Picea engelmannii</i> Series	41 K
1	PIFLVEG.DAT	<i>Pinus flexilis</i> Series	1 K
1	PILEVEG.DAT	<i>Pinus leiophylla</i> Series	16 K
1	PINENVEG.DAT	<i>Pinus engelmannii</i> Series	3 K
1	POANVEG.DAT	<i>Populus angustifolia</i>	1 K
2	PIPOVEG.DAT	<i>Pinus ponderosa</i> Series	294 K
3	ABCOVEG.DAT	<i>Abies concolor</i> Series	152 K
3	ABLAVEG.DAT	<i>Abies lasiocarpa</i> Series	98 K
3	PSMEVEG.DAT	<i>Pseudotsuga menziesii</i> Series	93 K

Table 4.—Principal investigator codes used in the data base plot identification codes.

Code	Principal investigator
A	Alexander, Billy G.
E	Muldavin, Esteban H.
F	Fitzhugh, E. Lee
D	DeVelice, Robert L.
L	Ludwig, John A.
M	Moir, William H.
W	White, Alan S.

tain a plot number which was assigned by the principal investigator. Columns 7–8 contain the number of species observations in the plot.

Following the number of species observations is a series of couplets consisting of species codes and associated abundance values. There are as many couplets as the number of species. The couplets are nine columns wide; the first six columns contain the alphanumeric species code, while the last three columns contain the numeric abundance value for that species. Tree species abundances are in stems per plot (375 m<sup>2</sup>), presented in three broad size classes. For example, young regeneration of *Pinus leiophylla* (<2 inches d.b.h.) is recorded as PILE1, advanced regeneration (2–10 inches d.b.h.) as PILE2, and mature trees (>10 inches d.b.h.) as PILE3. The shrub, grass, and herb species values are in percent cover. A [+0] abundance value indicates that the species was present in the stand, but not in the plot. There are a maximum of eight couplets to a line, and the couplets continue on succeeding lines until all the species indicated by the number species in columns 7–8 are represented. A complete list of species names and codes is presented in appendix A.

The last three "species" couplets of each plot are special classification variables: SERIES, HTNO, and PHASE. Values associated with these variables correspond to the identification numbers found in table 2 for the series, habitat type, and phase, respectively.

```

                                COLUMNS
0          1          2          3          4          5          6          7          8
1234567890123456789012345678901234567890123456789012345678901234567890
:
:
EK 34 37 PILE1  4 PILE2  4 PILE3  7 QUHY0 27 QUHY1 59 QUHY2 24 QUAR0 28 QUAR1  2
      QUAR2 12 JUDE1  3 JUDE2  1 ARAR2  3 ARAR3  1 QUHY 25 QUAR 10 YUBA  1
      GAWR.01 ARAR .1 RHAR.05 AGPAR.05 MULO .5 BRCT.01 EROR.01 SENE.01
      HEDE.01 CHFE .1 GAMI.05ASTRAG.01 HEHY .1GNAPHA.01 DALEA +0 UNID1.01
      UNID2.01 UNID3.01SERIES 10 HTNO 01 PHASE 01
EW109 38 PILE1 16 PILE2 19 PILE3  4 PIPO1 21 PIPO2 11 PIPO3  1PIPOT1 21PIPOT2 11
      PIPOT3  1 QUHY0 40 QUHY1  8 QUHY2 14 QUEMO  2 QUEM1  2 QUEM2  2 QUGRO  3
      QUHY 15 QUEM  6 JUDE .1 ARPR +0 OPPL.01 NOMI.01 CEFE .1 ARPU .1
      QUGR.01 CABJ .1 CAGE.01 HEHY.01 ARCA .2 SENE.01 SOSF.05 LINE.01
      IPAG +0 AGHE +0 SILI.01SERIES 10 HTNO 01 PHASE 01
DK 17 17 PILE1  6 PILE2  5 PILE3  7 QUHY1100 QUHY2 46 ARAR2  3 QUAR2  1 JUDE1  1
      PID1  3 QUHY 65 QURU .1 ARAR  6 QUAR  1 MULO  3SERIES 10 HTNO 01
      PHASE 01
      :          :          :          :          :          :          :          :
      :          :          :          :          :          :          :          :

```

Figure 3.—An example of the structure of a vegetation source data file. See text for details.

Table 5.—Location codes used in the data base plot identification codes.

Code	Location
C	Cibola National Forest, central New Mexico.
G	Gila National Forest, southwestern New Mexico, Apache National Forest, eastern Arizona.
H	Hualapai Indian Reservation, northwest Arizona.
K	Coronado National Forest, southeastern Arizona.
L	Lincoln National Forest, south-central New Mexico.
M	Mogollon Plateau, including the Coconino, Apache, Sitgreaves, and Kaibab National Forests of northern Arizona.
N	Northern New Mexico and southern Colorado, including the Santa Fe, Carson, San Isabel, San Juan, and Rio Grande National Forests.
P	Prescott National Forest, west-central Arizona.
S	San Carlos Indian Reservation, central Arizona.
T	Tonto National Forest, central Arizona.
W	Fort Apache Indian Reservation (White River), east-central Arizona.

### Site Characteristics Files

The structure of the site characteristics files is fundamentally different from the vegetation files. Data are coded in a fixed column format where each column or set of columns refers to a specific environmental variable. Figure 4 gives an example of the plot coding structure. There are two lines per plot. The first 5 columns of line 1 give the same unique plot identifier as outlined above under the vegetation files. The remaining columns have specific meanings, which are given in table 6. For example, elevation (in feet) can be found on line 2 in columns 42-46. The site characteristics files that are available are listed in table 7.

### Data Manipulation: Programs and Parameter Files

To manipulate the data base, a suite of programs and associated data definition parameter files is provided. Using these programs and parameter files, complete stand and site characteristics tables like those shown in appendixes B and C can be directly produced. Alternatively, programs and procedures are provided for sub-setting and restructuring the data base either to produce customized tables or to create new data sets for use in external programs.

The programs are based on algorithms developed by John Ludwig<sup>5</sup> that were written in ASCII FORTRAN VII for an IBM 370 mainframe. We have rewritten the pro-





Table 7.—Site characteristics source data files available on floppy disk.

File name	Data description	Size
PSMESITE.DAT	<i>Pseudotsuga menziesii</i> Series	38 K
ABCOSITE.DAT	<i>Abies concolor</i> Series	57 K
PIPUSITE.DAT	<i>Picea pungens</i> Series	16 K
PIENSITE.DAT	<i>Picea engelmannii</i> Series	17 K
ABLASITE.DAT	<i>Abies lasiocarpa</i> Series	40 K
PIARSITE.DAT	<i>Pinus aristata</i> Series	2 K
PIFLSITE.DAT	<i>Pinus flexilis</i> Series	1 K
PILESITE.DAT	<i>Pinus leiophylla</i> Series	6 K
PINENSIT.DAT	<i>Pinus engelmannii</i> Series	2 K
PIPOSITE.DAT	<i>Pinus ponderosa</i> Series	109 K
POANSITE.DAT	<i>Populus angustifolia</i> Series	1 K

grams in Microsoft FORTRAN to be compiled and run on an IBM PC compatible machine. We have provided both the source code and the already compiled, executable form of the programs on the floppy disks. The executable forms (.EXE) are available for immediate use. The programs request data file names and other information interactively. If your machine cannot handle interactive file information, the source code can be altered accordingly and recompiled (see examples given in the program documentations). A “readme” file should be present on the floppy disks provided which will contain any program updates or changes.

The programs available, their general purpose, and input requirements are listed in table 8. Basic input requires the above defined data files (.DAT files), and may

require data definition parameter files (.PAR files). These parameter files are specially structured to direct data entry in the programs and consist generally of data definition lines, a list of species codes of species desired for a particular analysis, and a corresponding list of plots. An example of a parameter file is given in figure 5. In columns 3–6 of the first line is the value “9999” to indicate the beginning of a series definition sequence. Columns 7–11 indicate the number of species codes in the species code list that follows. Columns 13–79 are reserved for a user-supplied title for the series and analysis. The second line contains the series number in columns 1–2, which corresponds to the series number found in table 2.

Following the series number line is a list of species codes, one to a line, with the code in columns 2–7. Codes for desired species must correspond to the species on the list in appendix A. There are as many species code lines as indicated by the number of species on line 1. The species are usually ordered as desired for output in a stand table (see “Creating a Stand Table” below). The order is irrelevant when the users intention is to subset a data set with the selection programs provided (see “Creating Data Subsets”).

After the species codes lines is a habitat type definition line where columns 2–6 indicate the number of plots from that habitat type to be input, and columns 13–79 are reserved for a user supplied title. Following the habitat type definition line is the habitat type number line, with the series number in columns 1–2, the habitat type number in columns 3–4, and the phase number in

Table 8.—Programs available on floppy disk for manipulating data files.

File name	Program purpose and input
SITETAB.FOR	Outputs site characteristics tables with a source site data file (.DAT file) and a data definition parameter file (.PAR file) as input.
VEGTAB.FOR	Outputs vegetation stand tables with a source vegetation data file (.DAT file), the SWSP.LIS file, and a data definition parameter file as input.
PAC.FOR	Condenses file definition parameter files (.PAR files).
UNPAC.FOR	Restores file definition parameter files (.PAR files) to an un-condensed format.
VEGSEL.FOR	Creates new vegetation source data sets based on the species and plots input with a file definition parameter file (.PAR file) and a vegetation data file (.DAT file).
SITSEL.FOR	Creates new site characteristics data files based on the plots entered in a data definition parameter file (.PAR file) and a source data file (.DAT file).
VEGMAT1.FOR	Restructures a vegetation data file (.DAT file) into matrix format with species in rows and plots in columns as defined by a data definition parameter file (.PAR file).
VEGMAT2.FOR	Restructures a vegetation data file (.DAT) into matrix format with plots in rows and species in columns as defined by the data definition parameter file (.PAR).
SPPSEL.FOR	Creates new source data files which contain a specified species.
VEGIN.SAS	SAS program to create vegetation (stand) system files from data files (.DAT) for statistical analysis.
SITEIN.SAS	SAS program to create site characteristics system files from site data files for statistical analysis.
CORTAB.FOR	Converts data files to Cornell Ecology Programs Series format.
SPPOBS.FOR	Determines the number of observations for selected species in a data set.





Table 9.—File definition parameter files available to create the stand tables in appendixes B and C.

File name	Data description	Size
ABLALIST.PAR	<i>Abies lasiocarpa</i> Series	6 K
ABCOLIST.PAR	<i>Abies concolor</i> Series	8 K
PIENLIST.PAR	<i>Picea engelmannii</i> Series	5 K
PIPULIST.PAR	<i>Picea pungens</i> Series	5 K
PSMELIST.PAR	<i>Pseudotsuga menziesii</i> Series	7 K
PIPOLIST.PAR	<i>Pinus ponderosa</i> Series	14 K
PIARLIST.PAR	<i>Pinus aristata</i> Series	1 K
PIFLLIST.PAR	<i>Pinus flexilis</i> Series	1 K
PINENLIS.PAR	<i>Pinus engelmannii</i> Series	2 K
PILELIST.PAR	<i>Pinus leiophylla</i> Series	3 K
POANLIST.PAR	<i>Populus angustifolia</i> Series	1 K
SWSPP.LIS	Species names, codes, and synonymy for all species in the database.	20 K

The program VEGMAT1.FOR takes the same input as above—a parameter file and vegetation data file—but creates an output file in matrix format with species in rows going down and plots in columns going across. VEGMAT2.FOR performs the same function, except that plots are in rows and species in columns.

The program VEGIN.SAS is a special program written in Statistical Analysis System (SAS) programming language (SAS Inc. 1986). The program makes it possible to input vegetation data files (.DAT files) and create SAS system files for statistical analysis. Cases in the system files are equivalent to plots and are identified by the same plot identification code as in the data file. Variables are species, identified by the species code. Correspondingly, SITEIN.SAS is an example of how to input site characteristics data into SAS to create a SAS site characteristics system file. These SAS programs require a large amount of disk space and memory for use with the larger data sets and are, thus, suited primarily for mini- or mainframe computers.

### Creating a Stand Table

The program VEGTAB.FOR creates vegetation stand tables similar to the one shown in appendix B. Input files required are: (1) a data definition parameter file (.PAR) with species codes and plot numbers in desired output order; (2) the SWSPP.LIS file containing the species list for the data base; and (3) the appropriate vegetation data file (.DAT) containing the plots listed in the above parameter file. The tables are 80 columns wide, with the first 30 columns reserved for the species name, followed by up to 50 columns containing the abundance values for each of 50 plots. Species abundance values are converted into one column scalars as shown in table 10. The tables can be customized by simply adding, deleting, or rearranging species code and plot lists in parameter files; but, remember to reset the number of species or number of plots on the data definition lines.

Table 10.—Scalar conversions of density (stems/375 m<sup>2</sup>) for tree species and percent cover for shrub, grass, and forb species. The scalar values are use in the output of stand tables by the program VEGTAB.FOR.

Density conversion		Percent cover conversion	
Scalar	Density (stems)	Scalar	Percent cover
+	= 1	P	= +0 (present)
1	= 2	+	= < 1
2	= 3–4	1	= 1–4
3	= 5–9	2	= 5–24.9
4	= 10–20	3	= 25–49.9
5	= 21–40	4	= 50–74.9
6	= 41–60	5	= 74–100
7	= 61–80		
8	= 81–99		
9	= > 100		

### Creating a Site Characteristics Table

Procedures for producing site tables are similar to creating a stand table. Using the program SITETAB.FOR, input the same data definition parameter file used for the vegetation stand table along with the corresponding site characteristics file (the SWSPP.LIS file is not required).

The program presently reads and outputs only selected site and location characteristics as shown in the tables in appendix C. If other variables are desired, the appropriate dimension, read, and write statements will need to be altered. See “Site Characteristics Files” and table 6 above for the variables available and their location in the data files. The program automatically converts elevation in feet to meters and performs a cosine transformation of the azimuth into a crude solar index where a value of 2.0 = northeast and 0.0 = southwest. The program is currently dimensioned for 1,000 plots.

### Creating Summary Stand Tables

Summary tables, similar in form to those found in the publications listed in table 1, can be produced using the program SUMTAB.FOR. Input is identical to that required to produce a normal stand table using VEGTAB.FOR described above. The program outputs a table of mean abundance values and percent constancy per habitat type for each species in the parameter file. A word of warning: SUMTAB.FOR requires considerable memory space to run large data sets (see program documentaion).

### Individual Species Information

The program SPPSEL.FOR is an interactive program that allows the user to input a particular species code(s) and vegetation data file. The program will then search the data for those plots containing the species and output a new data set of those plots along with a listing.



The program SPPOBS.FOR takes as input a vegetation data file (.DAT) and the species list (SWSP.LIS) and outputs the number of observations per species in the particular data file.

## NONCOMPUTERIZED DATA

Included in the data base is a wide variety of noncomputerized information which is on file at the library of the Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo. All original plot records, with associated photographs, are available. Plot records contain detailed stand structures, site index tree measurements, soil profile descriptions, and qualitative descriptions of the stands. Precise plot locations as shown on USGS quadrangles are also available. The original stand and site tables from the publications listed in table 1, along with hard copies of the data base provided here, are also archived in the Rocky Mountain Station library.

## THE SERIES STAND AND SITE TABLES

The primary analytic tools used to develop the classifications were table manipulation, cluster analysis, and ordination. The results of analysis are stand and site characteristics tables, where plots with similar species compositions and site characteristics are grouped together to define the habitat types. The habitat type classifications are then summarized by deriving, from the stand tables, the mean species abundance values and constancy (percent occurrence) per habitat type and then presenting them in the form of a summary table. Normally, only summary tables are published, not the stand tables. The process of summarization leads to information loss on the distribution of species in and among habitat types, and can gloss over anomalies and subpatterns in the data. Thus, the stand tables, rather than the summary tables, provide the best and most accurate picture of the classification structure. For this reason, we compiled new regional stand tables and site characteristics tables which contain all the plots from the data base stratified by climax forest tree series. To conserve space, only limited examples of these stand and site tables using the *Picea engelmannii* series are provided in appendixes B and C. The data base files currently available (tables 3, 7, and 9) are structured to create these consolidated stand tables directly using the programs provided (table 8). To output a complete set of regional consolidated stand and site tables, use these data files and the programs and follow the procedures outlined above in "Creating a Stand Table" and "Creating a Site Characteristics Table."

Plots in the stand tables are classified and ordered as they were by the original investigators, with habitat type numbers corresponding to those found in table 2. In a few cases, plots were either not classified or were misclassified by the respective investigators. Based on our knowledge of the regional distribution of habitat types,

we have attempted to place such plots into the most appropriate existing habitat type. The major series stand tables (*Pinus ponderosa*, *Pseudotsuga menziesii*, *Abies concolor*, *Picea pungens*, *Picea engelmannii*, and *Abies lasiocarpa*) contain all species that were observed in more than two stands<sup>6</sup> within a respective series. Tables of the minor series (*Pinus engelmannii*, *Pinus leiophylla*, *Pinus aristata*, and *Pinus flexilis*) have complete species lists. Elements identified only to the generic level were excluded from all tables as well. All genera and species present within each series are indicated on the species list in appendix A. For information on uncommon species not listed on the tables, refer to the procedures above on "Individual Species Information."

In the site characteristics tables (appendix C), plots are ordered as in the stand tables. We have included only the most important site and location characteristics on these tables. For a complete list of environmental information available see the above "Site Characteristics Files" section.

These tables represent the current status of habitat typing in the Southwest. We hope that future work, using these tables and the associated data base, will help clarify and more precisely delineate differences among forest communities of the region.

<sup>6</sup>The reader is reminded of habitat type terminology (e.g., Moir and Ludwig 1983) whereby a plot is a sampled portion of the larger homogeneous stand.

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## APPENDIX A

### Vascular Plant Species Found in Forest Habitat Types of the Southwest

Species names variously follow Kearny and Peebles (1951), Martin and Hutchins (1980-81), and Weber and Johnston (1979). Shown are: species names, with any relevant synonymy in parentheses; the number of total observations in the data base; and a presence/absence code for the series in which a species is found. A [+ ] indicates that the species is listed in the series stand tables. A [•] indicates no observation for that series.

Tree species are represented in the data by up to three size classes as follows:

Young regeneration (Yng regen): less than 2 inches d.b.h.

Advanced regeneration (Adv regen): 2 to 10 inches d.b.h.  
Mature: greater than 10 inches d.b.h.

Series numbers (No.) correspond to the following climax forest series:

- |                               |                                   |
|-------------------------------|-----------------------------------|
| 01 = <i>Pinus aristata</i>    | 07 = <i>Pseudotsuga menziesii</i> |
| 02 = <i>Picea engelmannii</i> | 08 = <i>Pinus ponderosa</i>       |
| 03 = <i>Abies lasiocarpa</i>  | 09 = <i>Pinus engelmannii</i>     |
| 04 = <i>Picea pungens</i>     | 10 = <i>Pinus leiophylla</i>      |
| 05 = <i>Abies concolor</i>    | 11 = <i>Populus angustifolia</i>  |
| 06 = <i>Pinus flexilis</i>    |                                   |



SPECIES NAME		SPECIES CODE	NO OF OBS	SERIES NO.											
				0	0	0	0	0	0	0	0	0	1	1	
----- TREES -----				TREE											
<i>Abies concolor</i>	Yng regen	ABCO1	573	.	+	+	+	+	+	+	+	+	.	.	+
	Adv regen	ABCO2	512	.	+	+	+	+	+	+	+	+	.	.	+
	Mature	ABCO3	374	+	+	+	+	+	.	+	+	.	.	.	+
<i>Abies lasiocarpa</i>	Yng regen	ABLA1	375	+	+	+	+	+	+	.	.	.	.	.	.
	Adv regen	ABLA2	339	+	+	+	+	+	.	+	.	.	.	.	.
	Mature	ABLA3	272	.	+	+	+	+	.	+	.	.	.	.	.
<i>Acer glabrum</i>	Yng regen	ACGL1	35	.	+	+	+	+	.	.	.	.	.	.	.
	Adv regen	ACGL2	21	.	+	+	.	+	.	.	.	.	.	.	.
	Mature	ACGL3	2	.	.	.	.	.	+	.	.	.	.	.	.
<i>Acer grandidentatum</i>	Yng regen	ACGR1	13	.	.	.	.	.	+	.	+	+	.	.	.
	Adv regen	ACGR2	10	.	.	.	.	.	+	.	+	+	.	.	.
	Mature	ACGR3	3	.	.	.	.	.	+	.	.	.	.	.	.
<i>Acer negundo</i>	Yng regen	ACNE1	8	.	.	.	.	.	+	.	.	+	.	.	.
	Adv regen	ACNE2	8	.	.	.	.	.	+	.	.	+	.	.	.
	Mature	ACNE3	5	.	.	.	.	.	+	.	.	+	.	.	.
<i>Alnus spp.</i>	Yng regen	ALNUS1	5	.	+	.	+	.	.	.	.	.	.	.	.
<i>Alnus oblongifolia</i>	Yng regen	ALOB1	2	.	.	.	.	.	+	.	.	.	.	.	+
	Adv regen	ALOB2	3	.	.	.	.	.	.	.	.	.	.	.	+
	Mature	ALOB3	7	.	.	.	.	.	.	.	.	.	+	.	+
<i>Alnus tenuifolia</i>	Yng regen	ALTE1	5	.	+	+	+	.	.	.	.	.	.	.	.
	Adv regen	ALTE2	5	.	+	+	+	.	.	.	.	.	.	.	.
<i>Arbutus arizonica</i>	Yng regen	ARAR1	4	.	.	.	.	.	.	.	.	.	+	+	.
	Adv regen	ARAR2	14	.	.	.	.	.	.	.	.	.	+	+	+
	Mature	ARAR3	4	.	.	.	.	.	.	.	.	.	+	.	+
<i>Arbutus xalapensis</i>	Yng regen	ARXA1	1	.	.	.	.	.	.	.	.	.	.	+	.
	Adv regen	ARXA2	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Forestiera neomexicana</i>	Yng regen	FONE1	1	.	.	.	.	.	.	.	.	.	.	+	.
	Adv regen	FONE2	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Fraxinus anomala</i>	Yng regen	FRAN1	1	.	.	.	.	.	+	.	.	.	.	.	.
	Adv regen	FRAX2	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Fraxinus pennsylvanica</i>	Yng regen	FRPE1	16	.	.	.	.	.	+	.	+	+	.	.	.
	Adv regen	FRPE2	7	.	.	.	.	.	+	.	+	+	.	.	.
<i>Juglans major</i>	Yng regen	JUMA1	18	.	.	.	.	.	+	.	+	+	.	.	.
	Adv regen	JUMA2	10	.	.	.	.	.	+	.	+	.	+	.	+
	Mature	JUMA3	5	.	.	.	.	.	+	.	.	+	.	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1	1	
----- TREES -----			TREE	1	2	3	4	5	6	7	8	9	0	1
<i>Juniperus deppeana</i>	Yng regen	JUDE1	359	.	.	.	.	.	+	.	+	+	+	+
	Adv regen	JUDE2	226	.	.	.	.	.	+	.	+	+	+	+
	Mature	JUDE3	117	.	.	.	.	.	+	.	+	+	+	.
<i>Juniperus monosperma</i> (Incl: <i>J. erythrocarpa</i> )	Yng regen	JUMO1	71	.	.	.	.	.	+	.	+	+	.	.
	Adv regen	JUMO2	39	.	.	.	.	.	.	.	.	.	+	+
	Mature	JUMO3	7	.	.	.	.	.	.	.	.	.	+	.
<i>Juniperus osteosperma</i> ( <i>J. utahensis</i> )	Yng regen	JUOS1	31	.	.	.	.	.	+	.	.	+	.	.
	Adv regen	JUOS2	24	.	.	.	.	.	+	.	.	.	+	.
	Mature	JUOS3	5	.	.	.	.	.	.	.	.	.	+	.
<i>Juniperus scopulorum</i>	Yng regen	JUSC1	135	.	.	.	.	+	+	.	+	+	.	+
	Adv regen	JUSC2	102	.	.	.	.	+	+	.	+	+	.	+
	Mature	JUSC3	23	.	.	.	.	.	.	.	.	.	+	.
<i>Picea engelmannii</i>	Yng regen	PIEN1	412	+	+	+	+	+	+	+	+	.	.	.
	Adv regen	PIEN2	413	+	+	+	+	+	+	+	.	.	.	.
	Mature	PIEN3	377	+	+	+	+	+	+	+	.	.	.	.
<i>Picea pungens</i>	Yng regen	PIPU1	177	.	+	+	+	+	.	.	+	+	.	.
	Adv regen	PIPU2	175	.	+	+	+	+	.	.	+	+	.	.
	Mature	PIPU3	136	.	+	+	+	+	.	.	+	+	.	.
<i>Pinus aristata</i>	Yng regen	PIAR1	19	+	.	+	.	.	.	.	+	+	.	.
	Adv regen	PIAR2	18	+	+	+	.	.	.	.	+	+	.	.
	Mature	PIAR3	16	+	+	+	.	.	.	.	.	.	.	.
<i>Pinus contorta</i>	Yng regen	PICO1	3	.	.	+	.	.	.	.	.	.	.	.
	Adv regen	PICO2	5	.	.	+	.	.	.	.	.	.	.	.
	Mature	PICO3	3	.	.	+	.	.	.	.	.	.	.	.
<i>Pinus discolor</i>	Yng regen	PIDI1	59	.	.	.	.	.	+	.	+	+	+	.
	Adv regen	PIDI2	29	.	.	.	.	.	.	.	.	.	+	+
<i>Pinus edulis</i>	Yng regen	PIED1	362	.	.	.	.	.	+	.	+	+	+	+
	Adv regen	PIED2	165	+	.	+	.	.	.	.	+	+	+	+
	Mature	PIED3	15	.	.	.	.	.	.	.	.	.	+	+
<i>Pinus flexilis</i> (Incl: <i>X P. strobiformis</i> )	Yng regen	PIFL1	102	+	+	+	+	+	+	+	.	.	.	.
	Adv regen	PIFL2	77	.	.	+	+	+	+	+	.	.	.	.
	Mature	PIFL3	49	+	+	+	+	+	+	+	.	.	.	.
<i>Pinus leiophylla</i>	Yng regen	PILE1	47	.	.	.	.	.	.	.	.	.	+	+
	Adv regen	PILE2	49	.	.	.	.	.	.	.	.	.	+	+
	Mature	PILE3	48	.	.	.	.	.	.	.	.	.	+	+

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.													
			0	0	0	0	0	0	0	0	1	1	1			
----- TREES -----			TREE													
<i>Pinus monophylla</i>																
	Yng regen	PIMO1	2	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Pinus engelmannii</i> ( <i>P. latifolia</i> )																
	Yng regen	PINEN1	13	.	.	.	.	.	.	.	.	.	.	.	.	.
	Adv regen	PINEN2	11	.	.	.	.	.	.	.	.	.	.	.	.	.
	Mature	PINEN3	17	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Pinus ponderosa</i> (Incl: <i>P. arizonica</i> )																
	Yng regen	PIPO1	1054	.	+	.	+	+	.	+	+	.	+	+	.	+
	Adv regen	PIPO2	1067	.	+	+	+	+	+	+	+	+	+	+	+	+
	Mature	PIPO3	1242	.	+	+	+	+	.	+	+	.	+	+	.	+
<i>Pinus strobiformis</i>																
	Yng regen	PIST1	423	.	+	+	+	+	.	+	+	.	+	+	.	+
	Adv regen	PIST2	342	.	+	+	+	+	.	+	+	.	+	+	.	+
	Mature	PIST3	226	.	+	+	+	+	.	+	+	.	+	+	.	+
<i>Platanus wrightii</i>																
	Yng regen	PLWR1	1	.	.	.	.	.	.	.	.	.	.	.	.	.
	Adv regen	PLWR2	1	.	.	.	.	.	.	.	.	.	.	.	.	.
	Mature	PLWR3	3	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Populus angustifolia</i>																
	Yng regen	POAN1	12	.	+	.	+	+	.	+	+	.	+	+	.	+
	Adv regen	POAN2	13	.	+	.	+	+	.	+	+	.	+	+	.	+
	Mature	POAN3	21	.	+	+	+	+	.	+	+	.	+	+	.	+
<i>Populus tremuloides</i>																
	Yng regen	POTR1	163	.	+	+	+	+	.	+	+	.	+	+	.	+
	Adv regen	POTR2	284	.	+	+	+	+	.	+	+	.	+	+	.	+
	Mature	POTR3	218	.	+	+	+	+	.	+	+	.	+	+	.	+
<i>Prunus serotina</i> (ssp. <i>virens</i> ; <i>P. virens</i> )																
	Yng regen	PRSE1	6	.	.	.	.	.	.	.	.	.	.	.	.	.
	Adv regen	PRSE2	3	.	.	.	.	.	.	.	.	.	.	.	.	.
	Mature	PRSE3	1	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Pseudotsuga menziesii</i>																
	Yng regen	PSME1	926	.	+	+	+	+	.	+	+	.	+	+	.	+
	Adv regen	PSME2	876	.	+	+	+	+	.	+	+	.	+	+	.	+
	Mature	PSME3	795	.	+	+	+	+	.	+	+	.	+	+	.	+
<i>Quercus arizonica</i> (Incl: X <i>Q. grisea</i> )																
	Yng regen	QUAR1	73	.	.	.	.	.	.	.	.	.	.	.	.	.
	Adv regen	QUAR2	113	.	.	.	.	.	.	.	.	.	.	.	.	.
	Mature	QUAR3	56	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Quercus chrysolepis</i> ( <i>Q. wilcoxii</i> ; <i>Q. palmeri</i> )																
	Yng regen	QUCH1	5	.	.	.	.	.	.	.	.	.	.	.	.	.
	Adv regen	QUCH2	2	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Quercus emoryi</i>																
	Yng regen	QUEM1	52	.	.	.	.	.	.	.	.	.	.	.	.	.
	Adv regen	QUEM2	54	.	.	.	.	.	.	.	.	.	.	.	.	.
	Mature	QUEM3	15	.	.	.	.	.	.	.	.	.	.	.	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0 1	0 2	0 3	0 4	0 5	0 6	0 7	0 8	0 9	0 1		
<b>TREES</b>			<b>TREE</b>											
<i>Quercus gambelii</i>	Yng regen	QUGA1	354	.	.	.	+	+	.	+	+	.	+	+
	Adv regen	QUGA2	370	.	.	.	+	+	.	+	+	+	+	+
	Mature	QUGA3	123	.	.	.	.	+	.	+	+	.	+	.
<i>Quercus grisea</i>	Yng regen	QUGR1	20	.	.	.	.	.	.	.	.	.	+	+
	Adv regen	QUGR2	19	.	.	.	.	.	.	.	.	.	+	+
	Mature	QUGR3	10	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus hypoleucoides</i>	Yng regen	QUHY1	75	.	.	.	.	.	.	.	.	.	+	+
	Adv regen	QUHY2	70	.	.	.	.	.	.	.	.	.	+	+
	Mature	QUHY3	12	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus muhlenbergia</i>	Yng regen	QUMU1	2	.	.	.	.	.	.	.	.	.	+	.
	Adv regen	QUMU2	3	.	.	.	.	.	.	.	.	.	+	.
<i>Quercus rugosa</i> ( <i>Q. reticulata</i> )	Yng regen	QURU1	26	.	.	.	.	.	.	.	.	.	+	+
	Adv regen	QURU2	29	.	.	.	.	.	.	.	.	.	+	+
	Mature	QURU3	1	.	.	.	.	.	.	.	.	.	+	.
<i>Robinia neomexicana</i>	Yng regen	RONE1	7	.	.	.	.	.	.	.	.	.	+	.
<i>Salix scouleriana</i>	Yng regen	SASC1	11	.	+	+	+	+	.	.	.	.	.	.
	Adv regen	SASC2	8	.	+	+	+	+	.	.	.	.	.	.
	Mature	SASC3	1	.	.	.	.	.	.	.	.	.	.	.
<b>SHRUBS</b>			<b>SHRUBS</b>											
<i>Acer glabrum</i>		ACGL	241	.	+	+	+	+	.	+	+	.	.	+
<i>Acer grandidentatum</i>		ACGR	42	.	.	.	.	.	.	.	.	.	+	+
<i>Acer negundo</i>		ACNE	17	.	.	.	.	.	.	.	.	.	+	+
<i>Agave spp.</i>		AGAVE	6	.	.	.	.	.	.	.	.	.	+	+
<i>Agave chrysantha</i>		AGCR	1	.	.	.	.	.	.	.	.	.	+	.
<i>Agave palmeri</i>		AGPAL	6	.	.	.	.	.	.	.	.	.	+	+
<i>Agave parryi</i>		AGPAR	30	.	.	.	.	.	.	.	.	.	+	+
<i>Alnus spp.</i>		ALNUS	7	.	.	.	.	.	.	.	.	.	+	.
<i>Alnus oblongifolia</i>		ALOB	11	.	.	.	.	.	.	.	.	.	+	+
<i>Alnus tenuifolia</i>		ALTE	13	.	+	+	+	+	.	.	.	.	.	+
<i>Amelanchier alnifolia</i>		AMAL	117	.	+	+	+	+	.	.	.	.	.	.
<i>Amelanchier goldmannii</i>		AMGO	1	.	.	.	.	.	.	.	.	.	.	.
<i>Amelanchier utahensis</i> (Incl: <i>A. oreophila</i> ; <i>A. mormonica</i> )		AMUT	45	.	+	+	+	+	.	.	.	.	.	.
<i>Amorpha canescens</i>		AMCA	15	.	.	.	.	.	.	.	.	.	+	+
<i>Amorpha fruticosa</i>		AMFR	4	.	.	.	.	.	.	.	.	.	+	+
<i>Arbutus arizonica</i>		ARBAR	9	.	.	.	.	.	.	.	.	.	+	.
<i>Arctostaphylos pringlei</i>		ARPR	32	.	.	.	.	.	.	.	.	.	+	+
<i>Arctostaphylos pungens</i>		ARPU	64	.	.	.	.	.	.	.	.	.	+	+
<i>Arctostaphylos uva-ursi</i>		ARUV	99	.	.	+	+	+	+	+	.	.	.	.
<i>Artemisia arbuscula</i>		ARARB	6	.	.	.	.	.	.	.	.	.	+	.
<i>Artemisia tridentata</i>		ARTR	27	.	.	.	.	.	.	.	.	.	+	.
<i>Baccharis thesioides</i>		BATH	6	.	.	.	.	.	.	.	.	.	+	+
<i>Berberis fendleri</i>		BEFE	23	.	.	.	+	+	.	.	.	.	+	.



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	0	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- SHRUBS -----			SHRUBS										
<i>Berberis fremontii</i> ( <i>Mahonia fremontii</i> )	MAFR	1	.	.	.	.	+	.	.	.	.	.	.
<i>Berberis haematocarpa</i> ( <i>Mahonia haematocarpa</i> )	MAHA	1	.	.	.	.	.	.	.	.	.	+	.
<i>Berberis repens</i> ( <i>Mahonia repens</i> )	BERE	370	.	+	+	+	+	.	+	+	.	.	.
<i>Bouvadia glaberrima</i>	BOGL	2	.	.	.	.	.	.	.	.	.	+	+
<i>Brickellia californica</i>	BRICA	2	.	.	.	.	.	.	.	.	.	+	.
<i>Carpochaete bigelovii</i>	CABI	15	.	.	.	.	.	.	.	.	.	+	+
<i>Ceanothus fendleri</i>	CEFE	350	.	.	.	+	+	.	+	+	+	+	+
<i>Ceanothus greggii</i>	CEGR	6	.	.	.	.	.	.	.	.	.	+	+
<i>Cercocarpus montanus</i>	CEMO	204	.	.	.	.	.	+	.	+	+	+	+
<i>Chimaphila umbellata</i>	CHUM	58	.	+	+	+	+	.	+	.	.	.	+
<i>Chrysothamnus</i> spp.	CHRYSO	3	.	.	.	.	.	.	.	.	.	+	.
<i>Chrysothamnus depressus</i>	CHDE	10	.	.	.	.	.	.	.	.	.	+	.
<i>Chrysothamnus greenii</i>	CHGR	3	.	.	.	.	.	.	.	.	.	+	+
<i>Chrysothamnus nauseosus</i>	CHNA	44	.	.	.	.	.	.	.	.	.	+	+
<i>Chrysothamnus viscidiflorus</i>	CHVI	52	.	.	.	.	.	+	.	+	+	.	.
<i>Clematis columbiana</i> ( <i>C. pseudoalpina</i> )	CLCO	225	+	+	+	+	+	.	+	+	.	.	.
<i>Clematis hirsutissima</i>	CLHI	10	.	.	.	.	.	.	.	.	.	+	+
<i>Clematis ligusticifolia</i>	LLI	39	.	.	.	+	+	.	+	+	.	.	+
<i>Cowania mexicana</i>	COWME	6	.	.	.	.	.	.	.	.	.	+	.
<i>Dalea formosa</i>	DAFO	1	.	.	.	.	.	.	.	.	.	+	.
<i>Dalea leporina</i>	DALE	2	.	.	.	.	.	.	.	.	.	+	+
<i>Dalea wislizeni</i>	DAWI	2	.	.	.	.	.	.	.	.	.	.	+
<i>Dasyliion wheeleri</i>	DAWH	1	.	.	.	.	.	.	.	.	.	.	+
<i>Fallugia paradoxa</i>	FAPA	15	.	.	.	.	.	.	.	.	.	+	+
<i>Fendlera rupicola</i>	FE RU	25	.	.	.	.	.	+	.	+	+	.	+
<i>Forestiera neomexicana</i>	FC NE	5	.	.	.	.	.	.	.	.	.	+	.
<i>Fraxinus</i> spp.	FRAXIN	1	.	.	.	.	.	.	.	.	.	+	.
<i>Fraxinus anomala</i>	FRAN	2	.	.	.	.	.	+	.	.	+	.	.
<i>Fraxinus pennsylvanica</i>	FRPE	21	.	.	.	.	.	+	.	+	+	.	+
<i>Fraxinus velutina</i>	FRVE	16	.	.	.	.	.	+	.	+	+	.	+
<i>Garrya flavescens</i>	GAFL	3	.	.	.	.	.	.	.	.	.	+	.
<i>Garrya wrightii</i>	GAWR	86	.	.	.	.	.	.	+	.	+	+	+
<i>Gaultheria humifusa</i>	GAHU	1	.	.	+	.	.	.	.	.	.	.	.
<i>Gutierrezia microcephala</i> (Incl: <i>G. lucida</i> )	GULU	13	.	.	.	.	.	.	.	.	.	+	.
<i>Gutierrezia sarothrae</i> ( <i>Xanthocephalum sarothrae</i> )	GUSA	75	.	.	.	.	.	.	.	.	.	+	+
<i>Holodiscus dumosus</i>	HODU	183	+	+	+	+	+	+	+	+	.	.	+
<i>Hymenoxys acaulis</i>	HYAC	44	+	.	.	.	.	+	.	+	+	.	.
<i>Hymenoxys richardsonii</i>	HYRI	130	.	.	.	.	.	+	.	+	+	.	.
<i>Hymenoxys rusbyi</i>	HYRU	3	.	.	.	.	.	.	.	.	.	+	.
<i>Jamesia americana</i>	JAAM	90	.	+	+	+	+	+	+	+	.	.	+
<i>Juglans major</i>	JUMA	33	.	.	.	.	.	+	.	+	+	+	+
<i>Juniperus communis</i>	JUCO	255	+	+	+	+	+	+	+	+	.	.	.
<i>Juniperus deppeana</i>	JUDE	93	.	.	.	.	.	+	.	+	+	+	+
<i>Juniperus osteosperma</i>	JUOS	9	.	.	.	.	.	+	.	.	+	.	.
<i>Juniperus scopulorum</i>	JUSC	11	.	.	.	.	.	+	+	.	+	.	.
<i>Linnaea borealis</i>	LIBO	56	.	+	+	+	+	.	.	.	.	.	.
<i>Lonicera</i> spp.	LONICE	12	.	.	.	.	.	+	+	.	+	.	.
<i>Lonicera albiflora</i>	LOAL	9	.	.	.	.	.	+	.	+	+	.	.
<i>Lonicera arizonica</i>	LOAR	110	.	+	+	+	+	.	+	+	+	+	+

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1	1	
----- SHRUBS -----			SHRUBS											
<i>Lonicera involucrata</i>	LOIN	182	.	+	+	+	+	.	+	.	.	.	.	.
<i>Lonicera utahensis</i>	LOUT	94	.	+	+	+	+	.	+	+	.	.	.	.
<i>Lycium</i> spp.	LYCIUM	2	.	.	.	.	+	.	.	+	.	.	.	.
<i>Mimosa biuncifera</i>	MIBI	5	.	.	.	.	.	.	.	.	.	.	+	+
<i>Mimosa grahamii</i>	MIGR	2	.	.	.	.	.	.	.	.	.	.	+	+
<i>Nolina microcarpa</i>	NOMI	50	.	.	.	.	.	.	.	.	.	.	+	+
<i>Nolina texana</i>	NOTE	1	.	.	.	.	.	.	.	.	.	.	+	+
<i>Opuntia</i> spp.	OPUNTI	75	.	.	.	.	.	.	.	.	.	.	+	+
<i>Opuntia engelmannii</i> ( <i>Opuntia phaeacantha</i> )	OPEN	18	.	.	.	.	.	.	.	.	.	.	+	+
<i>Opuntia imbricata</i>	OPIM	3	.	.	.	.	.	.	.	.	.	.	+	.
<i>Opuntia plumbea</i>	OPPL	26	.	.	.	.	.	.	.	.	.	.	+	+
<i>Opuntia polyacantha</i>	OPPO	24	.	.	.	.	.	.	.	.	.	.	+	+
<i>Opuntia spinosior</i>	OPSP	8	.	.	.	.	.	.	.	.	.	.	+	+
<i>Opuntia whipplei</i>	OPWH	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Pachistima myrsinites</i>	PAMY	293	+	+	+	+	+	+	+	+	.	.	.	.
<i>Parthenocissus inserta</i>	PAIN	6	.	.	.	.	.	.	+	.	.	.	.	+
<i>Philadelphus</i> spp.	PHILA	6	.	.	.	.	.	.	+	+	.	.	.	+
<i>Philadelphus microphyllus</i>	PHMI	5	.	.	.	.	.	.	+	.	.	.	.	.
<i>Physocarpus monogynus</i>	PHMO	76	+	+	+	+	+	.	+	+	.	.	.	+
<i>Pinus edulis</i> - shrubs	PIED	4	.	.	.	.	.	.	+	.	.	.	.	.
<i>Platanus wrightii</i>	PLWR	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Poliomintha incana</i>	POINC	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Populus angustifolia</i>	POAN	2	.	.	.	.	.	.	+	.	.	.	.	.
<i>Populus tremuloides</i> - shrubs	POTR	374	+	+	+	+	+	+	+	+	.	.	.	.
<i>Potentilla fruticosa</i> ( <i>Pentaphylloides floribunda</i> )	PEFL	17	+	+	.	+	+	.	+	+	.	.	.	.
<i>Prunus</i> spp.	PRUNUS	7	.	.	.	.	.	.	+	.	+	+	.	+
<i>Prunus emarginata</i>	PREM	10	.	+	.	.	.	.	+	.	+	.	.	.
<i>Prunus serotina</i> ssp. <i>virens</i> ( <i>P. virens</i> )	PRSE	28	.	.	+	+	+	.	+	+	.	+	.	.
<i>Prunus virginiana</i>	PRVI	116	.	+	+	+	+	.	+	+	.	.	.	+
<i>Ptelea trifoliata</i>	PTTR	23	.	.	.	.	.	.	+	.	+	+	+	+
<i>Purshia tridentata</i>	PUTR	12	.	.	.	.	.	.	.	.	+	+	.	.
<i>Quercus arizonica</i>	QUAR	133	.	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus chrysolepis</i> ( <i>Q. palmeri</i> ; <i>Q. willcoxii</i> )	QUCH	20	.	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus emoryi</i>	QUEM	86	.	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus gambelii</i>	QUGA	933	.	+	+	+	+	.	+	+	+	+	+	+
<i>Quercus grisea</i>	QUGR	87	.	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus hypoleucoides</i>	QUHY	124	.	.	.	.	.	.	+	.	+	+	+	+
<i>Quercus muhlenbergii</i>	QUMU	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Quercus rugosa</i>	QURU	80	.	.	.	.	.	.	+	.	+	+	+	+
<i>Quercus toumeyii</i>	QUTO	6	.	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus turbinella</i>	QUTU	24	.	.	.	.	.	.	.	.	.	.	+	+
<i>Quercus undulata</i> ( <i>Q. gambelii</i> x <i>Q. grisea</i> )	QUUN	67	.	.	.	.	.	.	+	.	+	.	.	.
<i>Rhamnus betulaeifolia</i>	RHBE	51	.	.	.	.	.	.	+	.	+	+	+	+
<i>Rhamnus californica</i>	RHCA	4	.	.	.	.	.	.	.	.	.	.	+	.
<i>Rhamnus crocea</i>	RHCR	14	.	.	.	.	.	.	.	.	.	.	+	.
<i>Rhus</i> spp.	RHUS	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Rhus aromatica</i> ( <i>R. trilobata</i> )	RHAR	120	.	.	.	.	.	.	+	.	+	+	+	+
<i>Rhus choriophylla</i>	RHCH	5	.	.	.	.	.	.	.	.	.	.	+	.
<i>Rhus glabra</i>	RHGL	5	.	.	.	.	.	.	+	.	.	.	+	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- SHRUBS -----													
Ribes spp.	RIBES	85	.	+	+	+	+	.	+	+	.	.	+
Ribes aureum	RIAU	2	.	.	.	.	.	.	+	.	.	.	.
Ribes cereum	RICE	107	+	+	+	+	+	.	+	+	.	.	.
Ribes inerme	RIIN	56	+	+	.	+	+	.	+	+	.	.	.
Ribes lacustre	RILA	1	.	.	+	.	.	.	.	.	.	.	.
Ribes leptanthum	RILE	9	.	.	+	.	.	.	+	.	.	.	.
Ribes montigenum	RIMO	148	+	+	+	+	+	.	+	.	.	.	.
Ribes pinetorum	RIPI	77	.	+	+	+	+	.	+	+	.	.	.
Ribes viscosissimum	RIVI	1	.	.	.	.	.	.	+	.	.	.	.
Ribes wolfii	RIWO	93	.	+	+	+	+	.	+	.	.	.	.
Robinia neomexicana	RONE	290	.	+	+	+	+	.	+	+	+	+	+
Rosa spp.	ROSA	391	+	+	+	+	+	+	+	+	.	.	+
Rosa woodsii (R. fendleri; R. arizonica)	ROWO	62	+	+	.	+	+	.	+	+	.	.	.
Rubus spp.	RUBUS	1	.	.	+	.	.	.	.	.	.	.	.
Rubus arizonensis	RUAR	2	.	.	.	.	.	.	.	.	.	.	+
Rubus deliciosus	RUDE	5	.	.	.	.	.	.	+	+	.	.	.
Rubus idaeus var. strigosus (R. strigosus)	RUID	115	+	+	+	+	+	.	+	+	.	.	+
Rubus leucodermis	RULE	7	.	.	+	+	+	.	+	.	.	.	.
Rubus neomexicanus	RUNE	17	.	+	+	+	+	.	+	+	.	.	+
Rubus parviflorus	RUPA	214	.	+	+	+	+	.	.	.	.	.	.
Salix spp.	SALIX	40	.	+	+	+	+	.	.	.	.	.	+
Salix bebbiana (S. depressa)	SADE	2	.	.	.	.	.	.	+	.	.	.	.
Salix pseudocordata (S. myrtilifolia)	SAPS	1	.	.	.	.	.	.	.	.	.	.	+
Salix scouleriana	SASC	104	.	+	+	+	+	+	+	.	.	.	.
Salix subcoerulea (S. drummondiana)	SASU	2	.	+	.	.	.	.	.	.	.	.	+
Sambucus spp.	SAMBUC	36	.	+	+	+	+	.	+	+	.	.	.
Sambucus glauca	SAGL	12	.	.	+	+	+	.	+	.	.	.	.
Sambucus melancarpa	SAME	3	.	.	+	.	.	.	.	.	.	.	.
Sambucus racemosa	SARA	34	+	+	+	+	.	.	+	.	.	.	.
Selloa glutinosa	SEGL	3	.	.	.	.	.	.	.	.	.	.	+
Shepherdia canadensis	SHCA	94	.	+	+	+	+	.	+	+	.	.	.
Sorbus spp.	SORBUS	23	.	+	+	.	.	.	.	.	.	.	.
Sorbus dumosa	SODU	15	.	+	+	.	.	.	.	.	.	.	.
Sorbus scopulina	SOSC	9	.	+	+	+	+	.	.	.	.	.	.
Swida sericea (Cornus stolonifera)	COST	48	.	+	+	+	+	.	+	+	.	.	.
Symphoricarpos oreophilus	SYOR	438	+	+	+	+	+	+	+	+	.	.	+
Symphoricarpos palmeri	SYPAL	1	.	.	.	.	.	.	.	.	.	.	+
Symphoricarpos parishii	SYPAR	1	.	.	.	.	.	.	.	.	.	.	+
Symphoricarpos rotundifolius	SYRO	6	.	.	.	.	.	.	+	+	.	.	.
Toxicodendron rydbergii (Rhus radicans)	TORY	46	.	.	.	.	.	.	+	+	.	.	+
Vaccinium myrtilus (V. oreophilum; V. caespitosum)	VAMY	282	+	+	+	+	+	.	+	.	.	.	.
Vitis arizonica	VIAR	37	.	.	.	.	.	.	+	+	+	+	+
Yucca spp.	YUCCA	8	.	.	.	.	.	.	.	.	.	.	+
Yucca angustissima	YUAN	2	.	.	.	.	.	.	+	.	.	.	.
Yucca baccata	YUBA	66	.	.	.	.	.	.	+	+	.	.	+
Yucca glauca	YUGL	28	.	.	.	.	.	.	.	.	.	.	+
Yucca schottii	YUSC	44	.	.	.	.	.	.	.	.	.	.	+



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- GRAMINOIDS -----			GRASS										
<i>Agropyron</i> spp.	AGROPY	16	.	.	.	+	+	.	.	+	.	.	+
<i>Agropyron arizonicum</i>	AGAR	36	.	.	+	+	+	.	+	+	+	.	.
<i>Agropyron desertorum</i>	AGDE	4	.	.	.	.	.	.	.	.	+	.	+
<i>Agropyron elongatum</i>	AGEL	2	.	.	+	.	.	.	.	+	.	.	.
<i>Agropyron smithii</i>	AGSM	23	.	.	.	.	.	.	.	+	+	.	.
<i>Agropyron subsecundum</i>	AGSU	10	+	.	+	.	+	.	+	+	.	.	.
<i>Agropyron trachycaulum</i>	AGTR	26	+	+	+	+	.	+	+	.	.	.	.
<i>Agrostis</i> spp.	AGROST	12	.	+	+	+	+	.	.	+	.	.	.
<i>Agrostis alba</i> ( <i>A. gigantea</i> ; <i>A. stolonifera</i> )	AGGI	9	.	+	+	+	+	.	.	.	.	.	+
<i>Agrostis idahoensis</i>	AGID	1	.	+	.	.	.	.	.	.	.	.	.
<i>Agrostis scabra</i>	AGSC	29	.	+	+	+	+	.	+	+	.	.	.
<i>Agrostis semiverticillata</i>	AGSE	1	.	.	.	.	.	.	.	.	+	.	.
<i>Andropogon</i> spp.	ANDROP	25	.	.	.	.	.	.	.	+	+	.	+
<i>Andropogon gerardi</i>	ANGE	44	.	.	.	.	.	.	.	+	+	.	.
<i>Andropogon pseudorepens</i>	ANPS	1	.	.	.	.	.	.	.	+	.	.	.
<i>Aristida</i> spp.	ARISTI	8	.	.	.	.	.	.	.	+	+	.	+
<i>Aristida arizonica</i>	ARAR	107	.	.	.	.	.	.	.	+	+	+	+
<i>Aristida fendleriana</i>	ARFE	62	.	+	+	+	+	.	+	+	.	.	.
<i>Aristida longiseta</i>	ARLO	8	.	.	.	.	.	.	.	+	.	.	.
<i>Aristida orcuttiana</i>	AROR	51	.	.	.	.	.	.	.	+	+	+	+
<i>Aristida wrightii</i>	ARWR	1	.	.	.	.	.	.	.	+	.	.	.
<i>Blepharoneuron tricholepis</i>	BLTR	381	+	.	.	+	+	.	+	+	.	+	+
<i>Bouteloua barbatus</i>	BOBA	3	.	.	.	.	.	.	.	.	+	.	+
<i>Bouteloua curtipendula</i>	BOCU	79	.	.	.	.	.	.	.	+	+	.	+
<i>Bouteloua gracilis</i>	BOGR	323	.	.	.	.	.	+	.	+	+	.	+
<i>Bouteloua hirsuta</i>	BOHI	8	.	.	.	.	.	.	.	.	+	.	+
<i>Bromus</i> spp.	BROMUS	178	+	+	+	+	+	.	+	+	.	.	+
<i>Bromus carinatus</i>	BRCA	54	.	.	.	+	+	.	+	+	.	.	+
<i>Bromus ciliatus</i> (Incl: <i>Bromopsis</i> or <i>Bromus richardsonii</i> )	BRCI	909	+	+	+	+	+	+	+	+	+	.	+
<i>Bromus frondosa</i> ( <i>Bromopsis frondosus</i> )	BRFR	14	.	.	.	.	.	.	+	.	+	+	.
<i>Bromus inermis</i> ( <i>Bromopsis inermis</i> )	BRIN	2	.	.	.	+	.	.	.	.	+	.	.
<i>Bromus japonicus</i>	BRJA	1	.	.	.	.	.	.	.	.	.	.	+
<i>Bromus lanatipes</i> ( <i>Bromopsis lanatipes</i> )	BRLA	28	.	.	.	+	+	.	+	+	.	.	+
<i>Bromus orcuttianus</i>	BROR	1	.	.	.	.	.	.	.	.	+	.	.
<i>Bromus polyanthus</i>	BRPO	33	+	+	.	.	+	.	+	+	+	+	.
<i>Bromus anomalous</i> ( <i>Bromus porteri</i> )	BRPOR	19	+	+	+	+	.	.	+	+	.	.	.
<i>Bromus tectorum</i>	BRTE	24	.	.	.	.	.	.	.	.	+	.	.
<i>Bromus marginatus</i> ( <i>Ceratochloa marginata</i> )	CEMA	19	.	.	.	.	.	.	+	.	+	+	.
<i>Calamagrostis canadensis</i>	CACA	24	.	+	+	+	+	.	.	.	+	.	.
<i>Calamagrostis inexpansa</i>	CAIN	9	.	.	+	.	+	.	.	.	+	.	.
<i>Calamagrostis purpurascens</i>	CAPU	1	+	.	.	.	.	.	.	.	.	.	.
<i>Carex</i> spp.	CAREX	694	+	+	+	+	+	.	+	+	+	+	+
<i>Carex aurea</i>	CARAU	2	.	.	.	.	.	.	+	.	+	.	.
<i>Carex bella</i>	CABE	24	.	+	+	.	+	.	.	.	.	.	.
<i>Carex brevipes</i>	CABR	16	.	+	+	.	+	+	.	.	.	.	.
<i>Carex deweyana</i>	CADE	6	.	+	.	+	.	.	.	+	+	.	.
<i>Carex ebenea</i>	CAEB	2	.	+	.	.	.	.	.	.	.	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- GRAMINOIDS -----			GRASS										
<i>Carex elynoides</i>	CAELY	2	+	.	.	.	.	.	.	.	.	.	.
<i>Carex festivella</i>	CAFE	2	.	.	.	+	.	.	.	.	.	.	+
<i>Carex foenea</i>	CAFO	263	.	+	+	+	+	.	+	+	.	+	.
<i>Carex geophila</i>	CAGE	135	.	.	+	.	+	.	+	+	+	.	.
<i>Carex geyeri</i>	CAGEY	49	.	+	+	+	.	+	+	+	.	.	.
<i>Carex heliophila</i>	CAHE	31	.	.	.	+	.	.	+	+	.	.	.
<i>Carex hoodii</i>	CAHO	2	.	.	+	.	.	.	.	+	.	.	.
<i>Carex lanuginosa</i>	CALA	2	.	.	.	+	.	.	.	.	.	.	.
<i>Carex leucodonta</i>	CALE	17	.	+	+	.	.	.	.	+	.	.	.
<i>Carex microptera</i>	CAMI	15	.	+	+	+	.	.	+	.	.	.	.
<i>Carex montanae</i>	CAMO	35	.	.	.	.	.	+	.	.	+	.	.
<i>Carex nova</i>	CANO	1	+	.	.	.	.	.	.	.	.	.	.
<i>Carex norvegica</i> ssp. <i>stevenii</i> ( <i>C. media</i> )	CANOR	6	.	.	+	+	.	.	+	+	.	.	.
<i>Carex occidentalis</i>	CAOC	30	.	.	.	.	+	+	.	+	+	.	+
<i>Carex praegracilis</i>	CAPR	3	.	.	.	.	.	.	+	.	.	.	.
<i>Carex rossii</i>	CARO	548	+	+	+	+	+	+	+	+	+	.	+
<i>Carex rupestris</i>	CARU	1	+	.	.	.	.	.	.	.	.	.	.
<i>Carex scoparia</i>	CASC	1	.	.	.	.	.	.	+	.	.	.	.
<i>Carex scopulorum</i>	CASC2	1	.	.	+	.	.	.	.	.	.	.	.
<i>Carex stenophylla</i> ssp. <i>eleocharis</i> ( <i>C. eleocharis</i> )	CAST	1	.	.	.	.	.	.	.	.	.	+	.
<i>Carex utriculata</i> ( <i>C. rostrata</i> )	CAUT	2	.	.	.	.	.	+	.	.	.	.	.
<i>Carex vallicola</i>	CAVA	2	.	.	.	.	.	+	.	+	.	.	.
<i>Cyperus</i> spp.	CYPERU	9	.	.	.	.	.	.	.	+	+	.	+
<i>Cyperus fendlerianus</i>	CYFE	15	.	.	.	.	.	.	.	.	+	+	.
<i>Cyperus inflexus</i> ( <i>C. aristatus</i> )	CYIN	1	.	.	.	.	.	.	.	.	.	+	.
<i>Cyperus rusbyi</i>	CYRU	19	.	.	.	.	.	.	.	.	.	+	+
<i>Dactylis glomerata</i>	DAGL	11	.	.	.	.	.	.	.	.	.	+	+
<i>Danthonia</i> spp.	DANTHO	2	.	.	.	.	.	.	.	.	.	.	.
<i>Danthonia californica</i>	DACA	2	.	.	.	.	.	.	.	.	.	.	.
<i>Danthonia intermedia</i>	DAIN	5	.	.	.	.	.	.	.	.	.	.	.
<i>Danthonia parryi</i>	DAPA	38	+	.	.	.	.	.	.	.	.	.	.
<i>Deschampsia caespitosa</i>	DECA	14	.	+	+	+	.	.	.	.	.	+	.
<i>Dichanthelium lanuginosum</i> ( <i>Panicum huachucae</i> )	DILA	4	.	.	.	.	.	.	.	.	.	.	+
<i>Elymus</i> spp.	ELYMUS	7	.	.	.	.	.	.	.	.	.	.	+
<i>Elymus ambiguus</i>	ELAM	2	.	.	.	.	.	.	.	.	.	.	+
<i>Elymus canadensis</i>	ELCA	3	.	.	.	.	.	.	.	.	.	.	.
<i>Elymus glaucus</i>	ELGL	40	.	+	+	+	.	.	.	.	.	.	+
<i>Elymus triticoisdes</i>	ELTR	14	.	+	+	+	.	.	.	.	.	.	.
<i>Eragrostis</i> spp.	ERAGRO	2	.	.	.	.	.	.	.	.	.	.	+
<i>Eragrostis intermedia</i>	ERIN	3	.	.	.	.	.	.	.	.	.	.	+
<i>Festuca</i> spp.	FESTUC	6	.	+	+	.	.	.	.	.	.	.	.
<i>Festuca arizonica</i>	FEAR	512	+	+	+	+	+	+	+	+	.	.	.
<i>Festuca ovina</i> (incl: <i>F. brachyphylla</i> )	FEBR	23	.	+	+	.	.	.	.	.	.	.	.
<i>Festuca idahoensis</i>	FEID	3	.	+	+	.	.	.	.	.	.	.	.
<i>Festuca octoflora</i>	FEOC	1	.	.	.	.	.	.	.	.	.	.	+
<i>Festuca sororia</i>	FESO	65	.	+	+	+	.	.	.	.	.	.	.
<i>Festuca thurberi</i>	FETH	53	+	+	+	+	.	.	.	.	.	.	.
<i>Glyceria elata</i>	GLEL	5	.	.	.	.	.	.	.	.	.	.	+
<i>Glyceria grandis</i>	GLMA	1	.	.	.	.	.	.	.	.	.	.	+

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.												
			0	0	0	0	0	0	0	0	1	1	1		
----- GRAMINOIDS -----			GRASS												
<i>Glyceria striata</i>	GLST	8	.	.	.	+	+	.	.	.	.	.	.	.	+
<i>Hilaria jamesii</i>	HIJA	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Juncus arcticus</i> ( <i>J. balticus</i> )	JUAR	5	.	.	.	+	.	.	.	.	.	.	+	.	.
<i>Juncus drummondii</i>	JUDR	1	.	.	+	.	.	.	.	.	.	.	.	.	.
<i>Juncus interior</i>	JUIN	2	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Juncus longistylis</i>	JULO	3	.	.	.	+	.	.	.	.	.	.	.	.	+
<i>Juncus parryi</i>	JUPA	3	.	+	+	.	.	.	.	.	.	.	.	.	.
<i>Juncus saximontanus</i>	JUSA	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Koeleria pyramidata</i> ( <i>K. cristata</i> ; <i>K. macrantha</i> ; <i>K. nitida</i> )	KOPY	908	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Leucopoa kingii</i>	LEKI	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Luzula parviflora</i>	LUPA	92	.	+	+	+	+	.	.	+	+	.	.	.	.
<i>Luzula spicata</i>	LUSP	1	.	+	.	.	.	.	.	.	.	.	.	.	.
<i>Lycurus phleoides</i>	LYPH	26	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Melica porteri</i>	MEPO	16	.	+	.	+	+	.	.	+	.	.	.	.	+
<i>Muhlenbergia</i> spp.	MUHLEN	9	.	+	.	.	+	.	.	+	+	.	.	.	.
<i>Muhlenbergia dubia</i>	MUDU	17	.	.	.	.	.	+	.	+	+	.	.	.	.
<i>Muhlenbergia emersleyi</i>	MUEM	29	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Muhlenbergia fragilis</i>	MUFR	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Muhlenbergia glauca</i>	MUGL	2	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Muhlenbergia longiligula</i>	MULO	176	.	.	.	.	.	+	.	+	+	+	.	.	.
<i>Muhlenbergia minutissima</i>	MUMI	3	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Muhlenbergia montana</i>	MUMO	597	+	+	+	+	+	.	.	+	+	.	+	+	+
<i>Muhlenbergia monticola</i>	MUMO1	3	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Muhlenbergia pauciflora</i>	MUPA	11	.	.	.	.	.	.	.	+	.	.	+	+	.
<i>Muhlenbergia pungens</i>	MUPU	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Muhlenbergia racemosa</i>	MURA	4	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Muhlenbergia repens</i>	MURE	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Muhlenbergia rigens</i>	MURI	25	.	.	.	.	.	.	.	+	.	.	+	+	+
<i>Muhlenbergia virescens</i>	MUVI	376	.	+	+	+	+	.	.	+	+	.	+	+	+
<i>Muhlenbergia wrightii</i>	MUWR	16	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Oryzopsis</i> spp.	ORYZOP	12	.	.	.	+	+	+	.	.	.	.	.	.	.
<i>Oryzopsis asperifolia</i>	ORAS	51	.	+	+	+	+	.	.	.	.	.	.	.	.
<i>Oryzopsis hymenoides</i>	ORHY	16	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Oryzopsis micrantha</i>	ORMI	24	+	.	.	+	+	.	.	+	+	.	+	.	.
<i>Panicum bulbosum</i>	PABU	50	.	.	.	.	.	.	.	+	.	.	+	+	+
<i>Panicum</i> spp.	PANICU	3	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Panicum obtusum</i>	PAOB	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Panicum virgatum</i>	PAVI	3	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Phleum commutatum</i> ( <i>P. alpinum</i> )	PHCO	7	.	+	+	+	.	.	.	.	.	.	.	.	.
<i>Phleum pratensis</i>	PHPR	7	.	.	.	+	+	.	.	.	.	.	+	.	.
<i>Piptochaetium fimbriatum</i>	PIFI	41	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Poa</i> spp.	POA	19	.	+	+	+	+	.	.	.	.	.	+	.	.
<i>Poa alpina</i>	POALP	6	+	+	+	.	.	.	.	.	.	.	.	.	.
<i>Poa annua</i>	POANN	1	.	.	.	.	.	.	.	+	.	.	.	.	.
<i>Poa artica</i> ssp. <i>grayana</i>	POAR	1	.	+	.	.	.	.	.	.	.	.	.	.	.
<i>Poa compressa</i>	POCO	6	.	.	.	+	.	.	.	.	.	.	.	+	+
<i>Poa epilis</i>	POEP	1	.	+	.	.	.	.	.	.	.	.	.	.	.
<i>Poa fendleriana</i>	POFE	1166	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Poa fendleriana</i> ssp. <i>longiligula</i>	POLON	1	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Poa glauca</i> var. <i>rupicola</i> ( <i>P. rupicola</i> )	POGL	3	+	+	+	.	.	.	.	.	.	.	.	.	.
<i>Poa leptocoma</i>	POLE	15	.	+	+	+	.	.	.	.	.	.	.	+	.



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	
			1	2	3	4	5	6	7	8	9	0	1
<b>----- GRAMINOIDS -----</b>			<b>GRASS</b>										
<i>Poa nervosa</i> var. <i>tracyi</i>	PONE	4	.	.	+	.	+	.	.	+	.	.	.
<i>Poa nemoralis</i> var. <i>interior</i> ( <i>P. interior</i> )	PONEM	20	+	+	+	+	+	.	+	+	.	.	.
<i>Poa palustris</i>	POPA	8	.	.	.	+	.	.	+	.	.	.	+
<i>Poa pratensis</i>	POPR	126	.	+	+	+	+	.	+	+	.	.	+
<i>Poa reflexa</i>	PORE	13	.	+	+	+	.	.	.	.	.	.	.
<i>Poa tracyi</i> ( <i>P. occidentalis</i> )	POTRA	3	.	.	.	+	+	.	.	.	.	.	.
<i>Schizachne purpurascens</i>	SCPU	8	.	.	.	+	+	.	.	.	.	.	+
<i>Schizachyrium cirratum</i> ( <i>Andropogon cirratus</i> )	SCCI	26	.	.	.	.	.	.	.	.	.	+	+
<i>Schizachyrium hirtiflorum</i> ( <i>Andropogon hirtiflorus</i> )	SCHI	1	.	.	.	.	.	.	.	.	.	.	+
<i>Schizachyrium scoparium</i> ( <i>Andropogon scoparius</i> )	SCSC	170	.	.	.	+	+	.	+	+	.	.	.
<i>Schizachyrium scoparium</i> var. <i>frequens</i>	SCSCFR	1	.	.	.	.	.	.	.	.	.	.	+
<i>Schizachyrium scoparium</i> var. <i>neomexicanum</i>	SCSCNE	3	.	.	.	.	.	.	.	.	.	+	+
<i>Scirpus microcarpa</i>	SCMI	3	.	.	.	+	.	.	.	.	.	.	+
<i>Setaria</i> spp.	SETARI	1	.	.	.	.	.	.	.	.	.	+	.
<i>Setaria geniculata</i>	SEGE	5	.	.	.	.	.	.	.	.	.	+	.
<i>Setaria grisebachii</i>	SEGR	1	.	.	.	.	.	.	.	.	.	.	+
<i>Sitanion hystrix</i> ( <i>S. longiflorum</i> )	SIHY	958	+	+	+	+	+	.	+	+	.	+	+
<i>Sorghastrum avenaceum</i> ( <i>S. nutans</i> )	SOAV	16	.	.	.	.	.	.	.	.	.	+	+
<i>Sporobolus</i> spp.	SPOROB	2	.	.	.	.	.	.	.	.	.	+	.
<i>Sporobolus cryptandrus</i>	SPCR	8	.	.	.	.	.	.	.	.	.	+	.
<i>Sporobolus contractus</i>	SPCO	1	.	.	.	.	.	.	.	.	.	+	.
<i>Sporobolus giganteus</i>	SPGI	1	.	.	.	.	.	.	.	.	.	+	.
<i>Sporobolus interruptus</i>	SPIN	34	.	.	.	.	.	.	.	.	.	+	+
<i>Stipa</i> spp.	STIPA	34	.	.	.	+	+	.	+	+	.	.	.
<i>Stipa columbiana</i> ( <i>S. occidentalis</i> )	STCO	9	.	.	.	+	+	.	+	+	.	.	.
<i>Stipa comata</i>	STCOM	25	.	.	.	.	.	.	.	.	.	+	.
<i>Stipa lettermanii</i>	STLE	5	.	.	.	.	.	.	+	+	.	.	.
<i>Stipa neomexicana</i>	STNE	1	.	.	.	.	.	.	.	.	.	+	.
<i>Stipa pringlei</i>	STPR	104	.	.	.	+	+	.	+	+	.	+	+
<i>Stipa robusta</i>	STRO	1	.	.	.	.	.	.	.	.	.	+	.
<i>Trisetum spicatum</i>	TRSP	24	+	+	+	.	.	.	.	.	.	.	.
<i>Trisetum spicatum</i> ssp. <i>montanum</i> ( <i>T. montanum</i> )	TRSPMO	220	.	+	+	+	+	.	+	.	.	.	.
<i>Trisetum wolfii</i>	TRWOL	2	.	+	.	.	.	.	.	.	.	.	.
Unknown grass	UNGR	3	.	.	.	.	.	.	.	.	.	+	.
<b>----- FORBS -----</b>			<b>FORBS</b>										
<i>Abronia</i> spp.	ABRONI	2	.	.	.	.	.	.	.	.	.	.	+
<i>Achillea millefolium</i> ssp. <i>lanulosa</i> ( <i>A. lanulosa</i> )	ACMI	615	+	+	+	+	+	.	+	+	.	+	+
<i>Acomastylis rossii</i> ( <i>Geum rossii</i> )	ACRO	8	.	+	+	.	.	.	.	.	.	.	.
<i>Aconitum columbianum</i>	ACCO	15	.	+	+	+	.	.	.	.	.	.	.
<i>Actaea rubra</i> ssp. <i>arguta</i> ( <i>A. arguta</i> )	ACRU	96	.	+	+	+	+	.	.	.	.	.	+
<i>Agastache</i> sp.	AGASTA	2	.	.	.	.	.	.	+	.	.	+	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1	1	
----- FORBS -----			FORBS											
<i>Agastache pallidiflora</i>	AGPA	34	.	.	.	+	+	.	+	+	.	.	.	.
<i>Ageratina herbacea</i> ( <i>Eupatorium herbaceum</i> )	AGHE	81	.	+	+	+	+	.	+	+	+	+	.	.
<i>Agoseris</i> spp.	AGOSER	9	.	.	.	+	+	.	+	+	.	.	.	.
<i>Agoseris aurantiaca</i>	AGAU	14	.	+	+	+	+	.	+	.	.	.	.	.
<i>Agoseris glauca</i>	AGGL	24	.	.	+	.	+	.	+	+	.	.	.	.
<i>Agrimonia striata</i>	AGST	10	.	.	+	+	+	.	+	+	.	.	.	+
<i>Allium</i> spp.	ALLIUM	29	.	+	+	.	+	.	+	+	.	.	.	.
<i>Allium cernuum</i>	ALCE	154	+	.	+	+	.	+	+	.	.	.	.	.
<i>Allium geoyeri</i>	ALGE	9	+	+	+	.	.	.	.	.	+	.	.	.
<i>Allium gooddingii</i>	ALGO	2	.	.	.	.	.	+	.	.	.	.	.	.
<i>Allium kunthii</i>	ALKU	4	.	.	.	.	.	.	.	.	.	+	.	+
<i>Allium rhizomatum</i>	ALRH	4	.	.	.	.	.	.	.	.	.	+	.	.
<i>Amaranthus</i> spp.	AMARAN	3	.	.	.	.	.	.	.	.	.	.	+	.
<i>Ambrosia</i> spp.	AMBROS	5	.	.	.	.	.	.	.	.	.	.	+	.
<i>Ambrosia psilostachya</i>	AMPS	18	.	.	.	.	.	.	.	.	.	.	+	.
<i>Anaphalis margaritacea</i>	ANAMA	1	.	.	.	.	.	.	.	.	.	.	.	.
<i>Androsace occidentalis</i>	ANOC	10	.	+	.	+	+	.	+	.	.	.	.	.
<i>Androsace septentrionalis</i>	ANSE	66	+	.	+	+	+	.	+	+	.	.	.	.
<i>Anemone</i> spp.	ANEMON	1	.	.	.	.	.	.	.	.	.	.	.	.
<i>Anemone canadensis</i>	ANCA	1	.	.	.	.	.	+	.	.	.	.	.	.
<i>Angelica grayii</i>	ANGR	23	.	+	+	.	.	.	.	.	.	+	.	.
<i>Antennaria</i> spp.	ANTENN	98	+	+	+	+	.	.	+	+	.	.	.	.
<i>Antennaria arida</i>	ANAR	3	.	.	.	.	.	.	.	.	.	+	.	+
<i>Antennaria neglecta</i> ( <i>A. marginata</i> )	ANNE	164	.	.	.	+	+	.	+	+	.	.	.	.
<i>Antennaria parvifolia</i> ( <i>A. aprica</i> )	ANPA	249	.	+	+	+	+	.	+	+	.	+	.	.
<i>Antennaria rosulata</i>	ANRO	170	+	+	+	+	+	+	+	+	.	.	.	.
<i>Anthericum torreyi</i>	ANTO	16	.	.	.	+	.	.	.	.	+	+	.	+
<i>Apocynum</i> spp.	APOCYN	43	.	+	+	+	+	.	+	+	.	.	.	.
<i>Apocynum androsaemifolium</i>	APAN	30	.	.	+	+	+	.	+	+	.	.	.	.
<i>Apocynum cannabinum</i>	APCA	1	.	.	.	+	.	.	.	.	.	.	.	.
<i>Aquilegia</i> spp.	AQUILE	35	.	+	+	+	+	.	+	+	.	.	.	.
<i>Aquilegia triternata</i> ( <i>A. barnebyi</i> )	AQBA	20	.	+	+	+	+	.	+	.	.	.	.	.
<i>Aquilegia caerulea</i>	AQCA	55	+	+	+	.	.	.	.	.	.	.	.	.
<i>Aquilegia chrysantha</i>	AQCH	34	.	+	+	+	+	.	+	.	.	.	.	+
<i>Aquilegia elegantula</i>	AQEL	151	+	+	+	+	+	.	+	+	.	.	.	.
<i>Arabis</i> spp.	ARABIS	109	+	.	.	+	+	.	+	+	+	+	+	+
<i>Arabis fendleri</i>	ARAFE	83	.	+	+	+	+	+	+	+	.	.	.	.
<i>Arabis drummondii</i>	ARDRU	25	+	+	.	+	+	.	+	+	.	.	.	.
<i>Arabis pendulina</i>	ARPE	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Arabis tricornuta</i>	ARTRI	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Aralia</i> spp.	ARALIA	1	.	.	.	.	.	.	.	.	.	.	.	.
<i>Aralia nudicaulis</i>	ARNU	1	.	.	.	.	.	.	+	.	.	.	.	.
<i>Aralia racemosa</i>	ARRA	1	.	.	.	.	.	.	+	.	.	.	.	.
<i>Arctium minus</i>	ARMI	1	.	.	.	.	.	.	+	.	.	.	.	.
<i>Arenaria</i> spp.	ARENAR	49	.	+	+	+	+	.	+	+	.	.	.	.
<i>Arenaria eastwoodiae</i>	AREA	6	.	.	.	.	.	.	.	.	.	+	+	.
<i>Arenaria fendleri</i>	AREFE	48	+	+	+	+	+	+	+	+	.	.	.	.
<i>Arenaria lanuginosa</i> ( <i>A. confusa</i> )	ARLAN	46	+	+	+	+	+	.	+	+	.	.	.	.
<i>Arnica</i> spp.	ARNICA	17	.	+	+	+	.	.	.	.	.	.	.	.
<i>Arnica cordifolia</i>	ARCO	153	+	+	+	+	+	.	.	.	.	.	+	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1	1	
----- FORBS -----			FORBS											
<i>Arnica latifolia</i>	ARLA	30	.	.	.	+	+	.	+	+	.	.	.	.
<i>Arnica mollis</i>	ARMO	10	+	+	+	.	.	.	.	.	.	.	.	.
<i>Artemisia</i> spp.	ARTEMI	4	.	.	.	+	.	.	+	.	+	.	.	.
<i>Artemisia carruthii</i>	ARCA	209	+	.	+	+	+	.	+	+	.	+	+	+
<i>Artemisia campestris</i> ssp. <i>pacifica</i> ( <i>A. pacifica</i> )	ARCAM	26	+	.	.	.	.	.	+	+	.	.	.	.
<i>Artemisia dracunculoides</i>	ARDR	74	.	.	+	.	+	.	+	+	.	.	.	+
<i>Artemisia franserioides</i>	ARFR	257	+	+	+	+	+	+	+	+	.	.	.	.
<i>Artemisia frigida</i>	ARFRI	36	+	.	+	+	+	.	+	+	.	.	.	.
<i>Artemisia ludoviciana</i>	ARLU	415	+	.	.	+	+	.	+	+	+	+	+	+
<i>Artemisia parryi</i>	ARPAR	1	+	.	.	.	.	.	.	.	.	.	.	.
<i>Artemisia scopulorum</i>	ARSC	2	.	+	.	.	.	.	.	.	.	.	.	.
<i>Asclepias</i> spp.	ASCLEP	9	.	.	.	.	.	.	.	.	.	+	.	+
<i>Asclepias asperula</i> ( <i>A. capricornu</i> )	ASAS	6	.	.	.	.	.	.	.	.	.	+	.	.
<i>Asclepias brachystephana</i>	ASBR	8	.	.	.	.	.	.	.	.	.	.	+	.
<i>Asclepias involucrata</i>	ASIN	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Asclepias speciosa</i>	ASSP	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Asclepias tuberosa</i>	ASTU	5	.	.	.	.	.	.	.	.	.	.	+	+
<i>Asclepias viridiflora</i>	ASVI	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Asparagus officinalis</i>	ASOF	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Aster</i> spp.	ASTER	20	.	.	.	+	+	.	+	+	.	.	.	.
<i>Aster falcatus</i> ( <i>A. commutatus</i> )	ASCOM	24	.	.	.	.	.	.	.	.	.	.	+	+
<i>Aster exilis</i>	ASEX	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Aster foliaceus</i>	ASFO	5	.	.	.	+	.	.	+	+	.	.	.	.
<i>Aster glaucodes</i>	ASGL	7	.	.	.	.	+	.	+	+	.	.	.	.
<i>Aster laevis</i>	ASLA	6	.	.	.	+	+	.	+	+	.	.	.	.
<i>Aster praealtus</i>	ASPR	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus</i> spp.	ASTRAG	246	.	.	+	+	+	.	+	+	.	+	.	+
<i>Astragalus adsurgens</i>	ASAD	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus amphioxys</i>	ASAM	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus cobrensis</i>	ASCO	8	.	.	.	.	.	.	.	.	.	.	+	+
<i>Astragalus drummondii</i>	ASDR	6	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus egglestonii</i>	ASEG	6	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus flexuosus</i>	ASFL	8	.	.	.	+	.	.	+	.	.	.	.	.
<i>Astragalus gilensis</i>	ASGI	31	.	.	.	.	.	.	.	.	.	.	+	+
<i>Astragalus hallii</i>	ASHA	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus humistratus</i>	ASHU	33	.	.	.	+	+	.	+	+	.	.	.	.
<i>Astragalus lonchocarpus</i>	ASLO	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus mollisimus</i>	ASMO	7	.	.	.	.	.	.	.	.	.	.	+	+
<i>Astragalus parryi</i>	ASPA	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus pictiformis</i>	ASPI	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus recurvus</i>	ASRE	3	.	.	.	.	.	.	.	.	.	.	+	.
<i>Astragalus rusbyi</i>	ASRU	10	.	.	.	.	.	.	.	.	.	.	+	+
<i>Astragalus tephrodes</i>	ASTE	10	.	.	.	.	.	+	.	.	+	.	+	.
<i>Astragalus wingatanus</i>	ASWI	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Athyrium filix-femina</i>	ATFI	2	.	.	+	+	.	.	.	.	.	.	.	.
<i>Bahia dissecta</i>	BADI	131	.	.	.	.	.	+	.	+	+	+	+	+
<i>Balsamorhiza sagittata</i>	BASA	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Besseyia plantaginea</i>	BEPL	16	.	+	.	+	+	.	+	+	.	.	.	.
<i>Bidens</i> spp.	BIDENS	7	.	.	.	+	+	.	+	+	.	.	.	.
<i>Bidens bipinnata</i>	BIBI	5	.	+	+	.	.	.	+	+	.	.	.	.
<i>Bidens herterosperma</i>	BIHE	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Bidens lemmonii</i>	BILE	2	.	.	.	.	.	.	.	.	.	.	+	+



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- FORBS -----			FORBS										
<i>Bistorta bistortoides</i> ( <i>Polygonum bistortoides</i> )	BIBIS	12	.	+	+	+	.	.	.	.	.	.	.
<i>Bistorta vivipara</i> ( <i>Polygonum viviparum</i> )	BIVI	13	.	+	+	.	.	.	.	.	.	.	.
<i>Boerhaavia</i> spp.	BOERHA	1	.	.	.	.	.	.	.	.	.	.	+
<i>Brickellia</i> spp.	BRICKE	78	.	.	.	.	+	.	+	+	+	+	+
<i>Brickellia betonieaeifolia</i>	BRBE	12	.	.	.	.	+	.	+	+	.	.	.
<i>Brickellia brachyphylla</i>	BRBR	9	.	.	.	.	.	.	+	+	.	.	.
<i>Brickellia fendleri</i>	BRFE	6	.	.	.	.	+	+	.	.	.	.	.
<i>Brickellia grandiflora</i>	BRGR	95	+	+	.	+	+	.	+	+	.	.	.
<i>Brickellia lemmoni</i>	BRLE	6	.	.	.	.	.	.	.	.	.	.	+
<i>Brickellia microphylla</i> ( <i>B. scabra</i> )	BRMI	1	.	.	.	.	.	.	.	.	.	.	+
<i>Brickellia rusby</i>	BRRU	1	.	.	.	.	.	.	.	.	.	.	+
<i>Cacalia decomposita</i>	CACDE	4	.	.	.	.	.	.	.	.	.	.	+
<i>Calliandra humilis</i>	CAHU	78	.	.	.	.	.	.	.	+	+	.	+
<i>Calliandra reticulata</i>	CARE	22	.	.	.	.	.	.	.	.	.	.	+
<i>Calliandra schottii</i>	CALSC	3	.	.	.	.	.	.	.	.	.	.	+
<i>Calochortus</i> spp.	CALOCH	3	.	.	.	.	.	.	.	.	.	.	+
<i>Calochortus gunnisonii</i>	CAGU	8	.	.	+	.	.	.	.	.	.	.	+
<i>Calypso bulbosa</i>	CABU	26	.	+	+	.	.	.	.	.	.	.	.
<i>Campanula rotundifolia</i>	CAROT	196	+	+	+	+	.	.	.	.	.	.	+
<i>Cardamine cordifolia</i>	CACO	28	.	+	+	+	.	.	.	.	.	.	+
<i>Castilleja</i> spp.	CASTIL	137	.	+	+	+	.	.	.	.	.	.	.
<i>Castilleja austromontana</i>	CAAU	17	.	+	.	+	.	.	.	.	.	.	.
<i>Castilleja confusa</i>	CACON	4	.	.	.	.	.	.	.	.	.	.	+
<i>Castilleja integra</i>	CAINT	21	.	.	.	.	.	.	.	.	.	.	+
<i>Castilleja lineata</i>	CALI	10	.	.	.	.	.	.	.	.	.	.	+
<i>Castilleja linariaefolia</i>	CALI2	18	.	.	.	.	.	.	.	.	.	.	+
<i>Castilleja miniata</i>	CAMIN	33	+	+	+	+	.	.	.	.	.	.	.
<i>Castilleja occidentalis</i>	CASOC	2	+	+	.	.	.	.	.	.	.	.	.
<i>Castilleja rhexifolia</i>	CARH	6	.	+	+	.	.	.	.	.	.	.	.
<i>Castilleja sulphurea</i> ( <i>C. septentrionalis</i> )	CASU	2	+	.	.	.	.	.	.	.	.	.	.
<i>Cerastium</i> spp.	CERAST	7	.	+	.	+	.	.	.	.	.	.	.
<i>Cerastium arvense</i>	CEAR	5	+	.	.	.	.	.	.	.	.	.	.
<i>Cerastium nutans</i>	CENU	6	.	.	.	.	.	.	.	.	.	.	+
<i>Cerastium texanum</i>	CETE	1	.	.	.	.	.	.	.	.	.	.	+
<i>Chaenactis</i> spp.	CHAENA	2	.	.	.	.	.	.	.	.	.	.	+
<i>Chaenactis douglasii</i>	CHDO	6	.	.	.	.	.	.	.	.	.	.	+
<i>Chamaesyce fendleri</i> ( <i>Euphorbia fendleri</i> )	CHAFE	6	.	.	.	.	.	.	.	.	.	.	+
<i>Chamaesyce albomarginata</i> ( <i>Euphorbia albomarginata</i> )	CHAMAL	1	.	.	.	.	.	.	.	.	.	.	+
<i>Chamerion angustifolium</i> ( <i>Epilobium angustifolium</i> )	CHAN	198	+	+	+	+	.	.	.	.	.	.	.
<i>Chamaepericlymenum canadense</i> ( <i>Cornus canadensis</i> )	CHCA	2	.	.	.	.	.	.	.	.	.	.	+
<i>Chamaesaracha coronopus</i>	CHCO	1	.	.	.	.	.	.	.	.	.	.	+
<i>Chamaebatiaria millefolium</i>	CHMI	1	.	.	.	.	.	.	.	.	.	.	+
<i>Chaptalia alsophila</i>	CHALS	38	.	+	.	+	.	.	.	.	.	.	.
<i>Cheilanthes</i> spp.	CHEILA	8	.	.	.	.	.	.	.	.	.	.	+
<i>Cheilanthes fendleri</i>	CHFE	40	.	.	.	.	.	.	.	.	.	.	+
<i>Chenopodium</i> spp.	CHENOP	19	.	.	.	.	.	.	.	.	.	.	+
<i>Chenopodium aff album</i>	CHAL	53	.	.	.	.	.	.	.	.	.	.	+

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- FORBS -----													
<i>Chenopodium fremontii</i>	CHFR	8	.	.	.	+	+	.	+	+	.	+	.
<i>Chenopodium graveolens</i>	CHIN	15	.	.	.	.	.	.	.	+	+	.	.
<i>Chenopodium leptophyllum</i>	CHLE	1	.	.	.	.	.	.	.	.	+	.	.
<i>Chimaphila menziesii</i>	CHME	3	.	.	.	.	+	.	+	.	.	.	.
<i>Cicuta douglasii</i> ( <i>C. maculata</i> )	CIDO	4	.	.	.	+	+	.	.	.	.	.	+
<i>Circaea alpina</i>	CIAL	7	.	.	+	+	.	.	.	.	.	.	+
<i>Cirsium</i> spp.	CIRSIU	358	+	+	+	+	+	.	+	+	+	.	.
<i>Cirsium arizonicum</i>	CIAR	11	.	.	.	.	.	+	.	+	+	.	.
<i>Cirsium canescens</i>	CICA	6	.	.	.	.	.	.	.	+	+	.	.
<i>Cirsium calcareum</i> ( <i>C. pulchellum</i> )	CICAL	4	.	.	.	.	.	.	.	.	.	+	.
<i>Cirsium grahami</i>	CIGR	1	.	.	.	.	.	.	.	.	.	+	.
<i>Cirsium parryi</i>	CIPA	36	.	+	+	+	+	.	+	+	.	.	.
<i>Cirsium pallidum</i>	CIPAL	1	.	.	+	.	.	.	.	.	.	.	.
<i>Cirsium pulchellum</i>	CIPU	3	.	.	.	.	.	.	.	.	.	+	.
<i>Cirsium rothrockii</i>	CIRO	1	.	.	.	.	.	.	.	.	.	+	.
<i>Cirsium scopulorum</i>	CISC	2	+	+	.	.	.	.	.	.	.	.	.
<i>Cirsium undulatum</i>	CIUN	3	.	.	.	.	.	.	.	.	.	+	.
<i>Cirsium wheeleri</i>	CIWH	15	.	.	.	.	.	.	.	+	+	.	.
<i>Cirsium wrightii</i>	CIWR	11	.	.	.	+	.	.	.	.	+	.	.
<i>Clementsia rhodantha</i> ( <i>Sedum rhodanthum</i> )	CLRH	3	.	+	.	.	.	.	.	.	.	.	.
<i>Cologania</i> spp.	COLOGA	1	.	.	.	.	.	.	.	.	.	+	.
<i>Cologania longifolia</i> ( <i>C. angustifolia</i> )	COLO	110	.	.	.	.	.	.	+	.	+	+	+
<i>Cologania pulchella</i>	COPU	7	.	.	.	.	.	.	.	.	+	+	+
<i>Comandra umbellata</i> ssp. <i>pallida</i> ( <i>C. pallida</i> )	COUM	78	.	.	.	+	+	.	+	+	+	+	.
<i>Commelina</i> spp.	COMMEL	2	.	.	.	.	.	.	.	.	.	+	+
<i>Commelina dianthifolia</i>	CODI	35	.	.	.	.	.	+	.	+	+	+	.
<i>Commelina erecta</i>	COER	1	.	.	.	.	.	.	.	.	.	+	.
<i>Conioselinum scopulorum</i>	COSCO	1	.	.	.	.	.	+	.	.	.	.	.
<i>Conopholis mexicana</i>	COME	24	.	.	.	.	.	+	+	.	+	.	.
<i>Conyza canadensis</i>	CONCA	1	.	.	.	.	.	.	.	.	.	+	.
<i>Conyza schiedeana</i>	COSC	8	.	.	.	.	.	.	+	.	+	.	.
<i>Corallorhiza</i> spp.	CORALL	28	.	+	+	+	+	.	+	+	.	.	.
<i>Corallorhiza maculata</i>	COMA	100	.	+	+	+	+	.	+	+	.	.	+
<i>Corallorhiza striata</i>	COSTR	17	.	+	.	+	+	.	+	+	.	.	.
<i>Corallorhiza trifida</i>	COTR	2	.	.	+	.	.	.	.	.	.	.	.
<i>Corallorhiza wisteriana</i>	COWI	4	.	.	.	+	.	.	+	.	.	.	.
<i>Coreopsis lanceolata</i>	COLA	1	.	.	.	.	.	.	.	.	.	+	.
<i>Corydalis aurea</i>	COAU	1	.	.	+	.	.	.	.	.	.	.	.
<i>Corydalis caseana</i>	COCAS	2	.	+	+	.	.	.	.	.	.	.	.
<i>Cosmos</i> spp.	COSMOS	1	.	.	.	.	.	.	.	.	.	+	.
<i>Cosmos bipinnatus</i> ( <i>C. parviflorus</i> )	COBI	2	.	.	.	.	.	.	.	.	.	+	.
<i>Cosmos parviflora</i>	COPA	3	.	.	.	.	.	.	.	.	.	+	+
<i>Crepis</i> spp.	CREPIS	2	.	.	.	.	.	.	+	.	.	+	.
<i>Crotalaria pumila</i>	CRPU	1	.	.	.	.	.	.	.	.	.	+	.
<i>Cruciferae</i> spp.	CRUCIF	6	.	.	.	.	.	.	.	.	.	+	.
<i>Cryptogramma crispa</i>	CRCR	2	.	.	+	.	+	.	.	.	.	.	.
<i>Cryptantha jamesii</i>	CRJA	31	.	.	.	.	.	.	.	.	.	+	+
<i>Cryptantha thyrsoflora</i>	CRTH	3	.	.	.	.	.	.	.	.	.	+	+
<i>Crypthantha</i> sp.	CRYPTH	1	.	.	.	.	.	.	.	.	.	+	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.												
			0	0	0	0	0	0	0	0	1	1	1		
			1	2	3	4	5	6	7	8	9	0	1		
----- FORBS -----			FORBS												
<i>Cucurbita foetidissima</i>	CUFO	1	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Cynoglossum officinale</i>	CYNOGL	4	.	.	.	+	.	.	.	.	.	.	.	.	.
<i>Cypripedium calceolus</i>	CYCA	1	.	.	.	+	.	.	.	.	.	.	.	.	.
<i>Cystopteris fragilis</i>	CYFR	134	+	+	+	+	+	.	+	+	.	.	.	.	+
<i>Dalea</i> spp.	DALEA	3	.	.	.	.	.	.	.	.	.	.	+	.	+
<i>Dalea candida</i> ( <i>Petalostemon cadidimum</i> )	DACAN	16	.	+	.	+	.	.	.	.	.	.	+	.	.
<i>Dalea filiformis</i>	DAFI	3	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Dalea frutescens</i>	DAFR	1	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Dalea ordiae</i>	DAOR	2	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Dalea polygonoides</i>	DAPO	7	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Delphinium</i> spp.	DELPHI	3	.	.	.	+	+	.	.	.	.	.	+	.	.
<i>Delphinium barbeyi</i>	DEBA	31	.	+	+	.	.	.	.	.	.	.	+	.	+
<i>Descurainia</i> spp.	DESC	3	.	.	.	+	+	.	.	.	.	.	.	.	.
<i>Descurainia richardsonii</i>	DERI	12	+	.	.	+	+	.	.	.	.	.	+	+	.
<i>Desmodium</i> spp.	DESMOD	6	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Desmodium arizonicum</i>	DEAR	2	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Desmodium</i> cf. <i>cinerascens</i>	DECI	1	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Desmanthus cooleyi</i>	DECO	5	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Desmodium grahami</i>	DEGR	9	.	.	.	.	.	.	.	.	.	.	+	.	+
<i>Desmodium rosei</i>	DERO	12	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Disporum trachycarpum</i>	DITR	55	.	+	+	+	+	.	+	.	.	.	.	.	.
<i>Dithyrea wislizeni</i>	DIWI	1	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Dodecatheon ellisiae</i>	DOEL	2	.	.	.	+	+	.	.	.	.	.	.	.	.
<i>Dodecatheon pulchellum</i>	DOPU	1	.	.	.	+	.	.	.	.	.	.	.	.	.
<i>Draba</i> spp.	DRABA	57	+	+	+	+	+	.	+	+	.	.	+	.	+
<i>Draba asprella</i>	DRAS	24	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Draba aurea</i>	DRAU	32	+	+	+	+	+	.	+	+	.	.	.	.	.
<i>Draba helleriana</i>	DRHE	92	.	+	+	+	+	.	+	+	.	.	+	.	+
<i>Draba smithii</i>	DRSM	1	+	.	.	.	.	.	.	.	.	.	.	.	.
<i>Draba spectabilis</i>	DRSP	2	+	.	.	.	.	.	.	.	.	.	.	.	.
<i>Draba streptocarpa</i>	DRST	19	.	+	+	+	+	+	+	+	.	.	.	.	.
<i>Drymocallis fissa</i> ( <i>Potentilla fissa</i> )	DRFIS	10	+	.	.	.	.	.	.	.	.	.	+	+	+
<i>Drymaria tenella</i>	DRTE	3	.	.	.	+	.	.	.	.	.	.	+	.	+
<i>Dryopteris filix-mas</i>	DRFI	3	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Dugaldia hoopesii</i> ( <i>Helenium hoopsii</i> )	DUHO	117	.	+	+	+	+	.	+	+	.	.	.	.	.
<i>Echinocactus</i> spp.	ECHINC	4	.	.	.	.	.	.	.	.	.	.	+	.	+
<i>Echinocereus fendleri</i>	ECFE	1	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Echinocereus</i> spp.	ECHINO	44	.	.	.	.	.	.	+	.	+	+	.	+	.
<i>Echinocereus triglochidiatus</i>	ECTR	1	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Echinocereus viridiflorus</i>	ECVI	2	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Epilobium</i> spp.	EPILOB	19	.	.	.	+	+	+	.	.	.	.	+	.	.
<i>Epilobium adenocaulon</i>	EPAD	6	.	.	.	+	.	.	.	.	.	.	+	.	+
<i>Epilobium ciliatum</i> ( <i>E. glandulosum</i> )	EPCI	3	.	+	+	.	.	.	.	.	.	.	.	.	.
<i>Epilobium hornemannii</i>	EPHO	8	.	+	+	.	.	.	.	.	.	.	.	.	.
<i>Epilobium paniculatum</i>	EPPA	2	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Equisetum</i> spp.	EQUISE	13	.	.	.	.	.	.	+	.	.	.	.	.	+
<i>Equisetum arvense</i>	EQAR	18	.	+	+	+	+	.	.	.	.	.	+	.	+
<i>Equisetum hymale</i> ( <i>Hippochaete hymalis</i> )	HIHY	6	.	.	.	+	+	.	.	.	.	.	+	.	.
<i>Equisetum laevigatum</i> ( <i>Hippochaete laevigata</i> )	HILA	3	.	.	.	.	.	.	+	.	.	.	+	.	+



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- FORBS -----			FORBS										
<i>Erigeron</i> spp.	ERIGER	292	+	+	+	+	+	.	+	+	.	.	+
<i>Erigeron canus</i>	ERCAN	1	.	.	.	.	.	.	.	.	.	.	+
<i>Erigeron concinnus</i>	ERCO	24	.	+	+	.	.	.	.	.	.	.	+
<i>Erigeron compositus</i>	ERCOM	2	+	+	.	.	.	.	.	.	.	.	.
<i>Erigeron coulteri</i>	ERCOU	14	.	+	+	.	.	.	.	.	.	.	.
<i>Erigeron divergens</i>	ERDI	114	.	.	.	.	+	.	+	+	.	.	+
<i>Erigeron elatior</i>	EREL	1	.	.	+	.	.	.	.	.	.	.	.
<i>Erigeron eximius</i> ( <i>E. superbus</i> )	EREX	427	+	+	+	+	+	.	+	+	.	.	.
<i>Erigeron flagellaris</i>	ERFL	233	+	+	.	+	+	.	+	+	.	.	+
<i>Erigeron formosissimus</i>	ERFO	110	.	+	.	+	+	.	+	+	.	.	.
<i>Erigeron caespitosus</i>	ERICA	1	.	.	.	.	.	.	.	.	.	.	+
<i>Erigeron macranthus</i>	ERMA	76	.	.	+	+	+	.	+	+	.	.	.
<i>Erigeron melanocephalus</i>	ERME	4	.	+	.	.	.	.	.	.	.	.	.
<i>Erigeron neomexicanus</i> ( <i>E. delphinifolius</i> )	ERNE	78	.	.	.	.	+	.	+	+	+	+	.
<i>Erigeron nudiflorus</i>	ERNU	44	.	.	.	.	.	.	.	.	.	.	+
<i>Erigeron oreophilus</i>	EROR	4	.	.	.	.	.	.	+	+	.	.	+
<i>Erigeron peregrinus</i>	ERPE	32	.	+	+	.	.	.	.	.	.	.	.
<i>Erigeron platyphyllus</i>	ERPL	89	.	+	.	+	.	.	+	+	.	.	.
<i>Erigeron rusbyi</i>	ERRU	10	.	.	.	.	+	.	+	+	.	.	.
<i>Erigeron speciosus</i> ( <i>E. macranthus</i> )	ERSP	44	.	+	+	+	+	.	+	+	.	.	.
<i>Erigeron subtrinervis</i>	ERSUB	95	+	.	+	+	+	.	+	+	.	.	.
<i>Erigeron vetensis</i>	ERVE	10	+	+	+	.	.	.	+	.	.	.	.
<i>Eriogonum</i> spp.	ERIOGO	66	.	.	.	+	+	.	+	+	.	.	.
<i>Eriogonum alatum</i>	ERAL	135	.	.	.	.	.	.	+	+	.	.	.
<i>Eriogonum annuum</i>	ERAN	1	.	.	.	.	.	.	.	.	.	.	+
<i>Eriogonum bakeri</i> ( <i>E. jamesii</i> var. <i>flavescens</i> )	ERBA	7	.	.	.	.	.	.	+	.	.	.	+
<i>Eriogonum hieracifolium</i>	ERHI	1	.	.	.	.	.	.	.	.	.	.	+
<i>Eriogonum jamesii</i>	ERJA	86	+	.	.	.	.	.	+	+	.	.	.
<i>Eriogonum microthecum</i>	ERMI	3	.	+	.	.	.	.	.	.	.	.	+
<i>Eriogonum pharnaceoides</i>	ERPH	4	.	.	.	.	.	.	.	.	.	.	+
<i>Eriogonum racemosum</i>	ERRA	199	.	.	.	.	+	+	.	+	+	.	.
<i>Eriogonum umbellatum</i>	ERUM	8	.	.	.	.	.	.	.	.	.	.	+
<i>Eriogonum wrightii</i>	ERWR	5	.	.	.	.	.	.	.	.	.	.	+
<i>Erysimum</i> spp.	ERYSIM	3	+	.	.	.	.	.	.	.	.	.	.
<i>Erysimum asperum</i>	ERAS	4	.	.	.	.	.	.	.	.	.	.	+
<i>Erysimum capitatum</i>	ERCA	83	+	.	+	+	.	.	+	+	.	.	.
<i>Erythronium grandiflorum</i>	ERGR	8	.	+	+	.	.	.	.	.	.	.	.
<i>Euphorbia</i> spp.	EUPHOR	42	.	.	.	+	+	.	+	+	.	.	+
<i>Euphorbia albomarginata</i>	EUAL	1	.	.	.	.	.	.	.	.	.	.	+
<i>Euphorbia brachycera</i>	EUBR	9	.	.	.	.	.	.	.	.	.	.	+
<i>Euphorbia chamaesula</i>	EUCH	9	.	.	.	.	.	.	.	.	.	.	+
<i>Euphorbia fendleri</i>	EUFE	3	.	.	.	.	.	.	.	.	.	.	+
<i>Euphorbia lurida</i>	EULU	86	.	.	.	.	.	.	+	+	.	.	.
<i>Euphorbia palmeri</i>	EUPA	17	.	.	.	.	.	.	+	+	.	.	.
<i>Euphorbia revoluta</i>	EURE	1	.	.	.	.	.	.	.	.	.	.	+
<i>Euphorbia robusta</i>	EURO	6	.	.	.	.	.	.	+	+	.	.	.
<i>Fragaria americana</i> ( <i>F. vesca</i> var. <i>bracteata</i> )	FRAM	322	+	+	+	+	.	.	+	+	.	.	+
<i>Fragaria ovalis</i> ( <i>F. virginiana</i> var. <i>glauca</i> )	FROV	578	+	+	+	+	+	+	+	+	.	.	+
<i>Frasera</i> spp.	FRASE	11	.	.	+	+	+	.	+	+	.	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.													
			0	0	0	0	0	0	0	0	1	1	1			
----- FORBS -----			FORBS													
<i>Frasera speciosa</i> ( <i>Swertia radiata</i> )	FRSP	99	.	+	+	+	+	+	+	+	+	.	.	+		
<i>Gaillardia</i> spp.	GAILLA	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gaillardia aristata</i>	GAAR	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gaillardia pinnatifida</i>	GAPI	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Galactia wrightii</i>	GALWR	3	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Galium</i> spp.	GALIUM	60	.	+	+	+	+	.	+	+	.	+	+	.	+	+
<i>Galium aparine</i>	GAAP	11	.	.	.	.	.	.	+	+	.	+	+	.	+	+
<i>Galium asperrimum</i>	GAAS	46	.	.	.	.	.	.	+	+	.	+	+	.	+	+
<i>Galium boreale</i>	GABO	117	+	+	+	+	+	.	+	+	.	+	+	.	+	+
<i>Galium fendleri</i>	GAFE	48	.	.	.	.	.	.	+	+	.	+	+	.	+	+
<i>Galium microphyllum</i>	GAMI	20	.	.	.	.	.	.	+	.	.	+	+	.	+	.
<i>Galium rothrockii</i>	GARO	6	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Galium tinctorium</i>	GATI	5	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Galium triflorum</i>	GATR	81	.	+	+	+	+	.	+	+	.	+	+	.	+	+
<i>Galium trifidum</i>	GATR2	45	.	.	+	+	+	.	+	+	.	+	+	.	+	.
<i>Galium wrightii</i>	GAWR1	3	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gaura</i> spp.	GAURA	2	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gaura hexandra</i> ( <i>G. gracilis</i> )	GAGR	13	.	.	.	.	.	.	.	.	.	.	.	+	.	+
<i>Gaura neomexicana</i>	GANE	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gayophytum diffusum</i> ssp. <i>parviflorum</i> ( <i>G. nuttans</i> )	GADI	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gayophytum ramossum</i>	GARA	4	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gentiana</i> spp.	GENTIA	9	.	+	+	+	.	.	.	.	.	.	.	+	.	.
<i>Gentiana bigelovii</i> ( <i>Pneumonanthe affinis</i> )	GEBI	6	.	.	.	.	.	.	+	.	.	+	.	.	.	.
<i>Gentiana parryi</i> ( <i>Pneumonanthe calycosa</i> )	PNCA	4	.	.	+	+	.	.	.	.	.	.	.	.	.	.
<i>Gentianella amarella</i>	GEAM	2	.	.	.	.	.	.	+	+	.	.	.	.	.	.
<i>Gentianella amarella</i> ssp. <i>acuta</i> ( <i>Gentiana strictiflora</i> )	GEAMAC	43	.	+	+	+	+	.	+	+	.	+	+	.	.	.
<i>Gentianella amarella</i> ssp. <i>heterosepala</i> ( <i>Gentiana heterosepala</i> )	GEAMHE	23	.	+	+	+	+	.	.	.	.	.	.	.	.	.
<i>Gentianella microcalyx</i> ( <i>Gentiana microcalyx</i> )	GEMI	2	.	.	.	.	.	.	.	.	.	.	.	.	+	+
<i>Geranium</i> spp.	GERANI	185	.	+	+	+	+	.	+	+	.	+	+	.	.	+
<i>Geranium caespitosum</i>	GECA	366	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Geranium ereophilum</i>	GEER	12	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Geranium richarsonii</i>	GERI	447	+	+	+	+	+	.	+	+	.	+	+	.	.	+
<i>Geum triflorum</i> ( <i>Erythrocoma triflora</i> )	ERTR	1	.	.	.	.	.	.	+	.	.	.	.	.	.	.
<i>Geum aleppicum</i> ssp. <i>strictum</i> ( <i>G. strictum</i> )	GEAL	7	.	.	+	+	.	.	.	.	.	.	.	.	.	+
<i>Geum macrophyllum</i>	GEMA	3	.	+	+	+	.	.	.	.	.	.	.	.	.	.
<i>Gilia</i> spp.	GILIA	59	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Gilia macombii</i>	GIMA	2	.	.	.	.	.	.	.	.	.	.	.	+	.	+
<i>Gilia multiflora</i>	GIMU	13	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Gilia pinnatifida</i> var. <i>calcareo</i>	GIPI	9	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Gilia polyantha</i>	GIPO	4	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Gnaphalium</i> spp.	GNAPHA	36	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Gnaphalium arizonicum</i>	GNAR	13	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Gnaphalium chilense</i>	GNCH	1	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Gnaphalium pringlei</i>	GNPR	3	.	.	.	.	.	.	.	.	.	.	.	+	.	+
<i>Gnaphalium viscosum</i> ( <i>G. macounii</i> )	GNVI	19	.	+	+	.	.	.	+	.	.	+	+	.	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1		
<b>FORBS</b>			<b>FORBS</b>											
<i>Gnaphalium wrightii</i>	GNWR	16	.	+	.	.	.	.	.	.	+	.	+	.
<i>Goodyera oblongifolia</i>	GOOB	256	.	+	+	+	+	.	+	.	.	.	.	.
<i>Goodyera repens</i>	GORE	29	.	+	+	+	+	.	.	.	.	.	.	.
<i>Grindelia</i> spp.	GRINDE	1	.	.	.	.	.	.	.	.	+	.	.	.
<i>Gutierrezia glutinosa</i>	GUGL	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Habenaria</i> spp.	HABENA	16	.	+	+	+	+	.	.	.	.	.	.	.
<i>Habenaria hyperborea</i> ( <i>Limorchis hyperborea</i> )	HAHY	2	.	+	+	.	.	.	.	.	.	.	.	.
<i>Habenaria saccata</i> ( <i>Limorchis saccata</i> )	HYSA	3	.	+	+	.	.	.	.	.	.	.	.	.
<i>Habenaria sparsiflora</i>	HASP	4	.	.	+	.	.	.	+	+	.	.	.	.
<i>Habenaria unalascensis</i> ( <i>Piperia unalascensis</i> )	PIUN	1	.	.	.	.	.	.	.	.	.	+	.	.
<i>Hackelia</i> spp.	HACKEL	4	.	.	.	+	+	.	.	+	.	.	.	.
<i>Hackelia floribunda</i>	HAFL	6	.	.	.	+	+	.	+	+	.	.	.	.
<i>Hackelia ursina</i>	HAUR	10	.	.	.	+	+	.	.	.	.	.	.	.
<i>Halenia recurva</i>	HARE	12	.	+	.	+	.	.	+	+	.	.	.	.
<i>Haploppappus</i> spp.	HAPLOP	2	.	.	.	.	.	.	.	.	+	+	.	.
<i>Harbouria trachypleura</i>	HATR	19	.	.	.	.	.	.	.	.	+	+	.	.
<i>Hedeoma</i> spp.	HEDEOM	18	.	.	.	.	.	+	.	+	+	.	.	.
<i>Hedeoma costatum</i>	HECO	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Hedeoma dentatum</i>	HEDE	7	.	.	.	.	.	.	.	.	.	.	+	+
<i>Hedeoma diffusum</i>	HEDI	3	.	.	.	.	.	.	.	+	.	.	+	.
<i>Hedeoma drummondii</i>	HEDR	8	.	.	.	.	.	.	.	.	.	.	+	.
<i>Hedeoma hyssopifolium</i>	HEHY	59	.	.	.	.	.	.	.	+	.	+	+	+
<i>Hedeoma oblongifolium</i>	HEOB	31	.	.	.	.	.	.	.	.	+	.	+	+
<i>Hedyotis acerosa</i>	HEAC	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hedyotis pygmaea</i> ( <i>Houstonia wrightii</i> )	HEPY	77	.	.	.	.	.	.	.	.	.	+	.	+
<i>Helianthus annuus</i>	HEAN	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heliopsis helianthoides</i> ( <i>H. scabra</i> )	HEHE	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Helianthella</i> spp.	HELIA1	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Helianthella parryi</i>	HEPA	59	.	.	.	.	.	.	.	.	.	.	.	+
<i>Helianthus</i> spp.	HELIA2	3	.	.	.	.	.	.	.	.	.	.	.	.
<i>Helianthella quinquenervis</i>	HEQU	20	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heracleum sphondylium</i> ( <i>H. lanatum</i> )	HESP	33	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heterotheca fulcrata</i> ( <i>Chrysopsis villosa</i> var. <i>fulcrata</i> )	HEFU	201	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heterotheca grandiflora</i>	HEGR	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heuchera</i> spp.	HEUCHE	48	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heuchera eastwoodiae</i>	HEEA	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heuchera novomexicana</i>	HENO	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heuchera rubescens</i>	HERU	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heuchera parvifolia</i>	HEUPA	37	.	.	.	.	.	.	.	.	.	.	.	+
<i>Heuchera versicolor</i>	HEVE	4	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hieracium</i> spp.	HIERAC	23	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hieracium carneum</i>	HICA	7	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hieracium fendleri</i>	HIFE	394	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hieracium geyeri</i>	HIGE	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hieracium gracile</i>	HIGR	9	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hieracium rusbyi</i>	HIRU	3	.	.	.	.	.	.	.	.	.	.	.	+
<i>Humulus lupulus</i>	HULU	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hydrophyllum fendleri</i> ( <i>H. occidentale</i> )	HYFE	17	.	.	.	.	.	.	.	.	.	.	.	+



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.														
			0	0	0	0	0	0	0	0	1	1	1				
----- FORBS -----			FORBS														
<i>Hymenopappus filifolius</i> ( <i>H. lugens</i> ; <i>H. parvulus</i> ; <i>H. pauciflora</i> )	HYFI	27	.	.	.	.	.	+	.	.	+	.	+	.			
<i>Hymenopappus mexicanus</i>	HYME	55	.	.	.	.	.	.	.	.	.	.	+	+	.	.	+
<i>Hymenopappus radiatus</i>	HYRA	23	+	+	.	+	+	.	+	+	.	.	.	.	.	.	.
<i>Hymenothrix wrightii</i>	HYWR	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hymenoxys</i> spp.	HYMENX	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Hymenoxys bigelovii</i>	HYBI	35	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Hymenoxys brandegii</i>	HYBR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hymenoxys cooperi</i>	HYCO	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hymenoxys grandiflora</i>	HYGR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hymenoxys ivesiana</i>	HYIV	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Hypericum formosum</i>	HYFO	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Ipomopsis aggregata</i> ( <i>Gilia aggregata</i> )	IPAG	234	+	.	+	+	+	.	+	.	+	.	+	+	.	+	+
<i>Ipomoea</i> spp.	IPOMOE	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Ipomoea costellata</i>	IPCO	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Ipomoea coccinea</i>	IPCOC	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Ipomoea hederacea</i>	IPHE	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Iris missouriensis</i>	IRMI	83	.	+	+	+	+	.	+	.	+	.	+	.	.	.	.
<i>Kochia</i> spp.	KOCHIA	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Eurotia lanata</i> ( <i>Krascheninnikova lanata</i> )	KRLA	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Kuhnia rosmarinifolia</i> ( <i>K. chlorolepis</i> )	KURO	26	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lactuca</i> spp.	LACTUC	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lactuca graminifolia</i>	LACGR	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lactuca serriola</i> ( <i>L. scariola</i> )	LASE	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lappula</i> spp.	LAPPUL	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lappula redowskii</i>	LARE	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lathyrus</i> spp.	LATHYR	40	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lathyrus arizonicus</i>	LAAR	569	+	+	+	+	+	.	+	.	+	.	+	.	+	.	+
<i>Lathyrus ariz. x graminifolius</i>	LAARGR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lathyrus eucosmus</i>	LAEU	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lathyrus graminifolius</i>	LAGR	117	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lathyrus leucanthus</i>	LALE	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Leonurus cardiaca</i>	LECA	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lepidium</i> spp.	LEPEDI	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lepidium densiflorum</i>	LEDE	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lepidium medium</i> ( <i>L. virginicum</i> )	LEME	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lepidium</i> spp.	LEPIDI	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Leptodactylon pungens</i>	LEPU	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lesquerella</i> spp.	LESQUE	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lesquerella alpina</i> ( <i>L. subumbellata</i> )	LEAL	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lesquerella fendleri</i>	LEFE	22	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lesquerella gordonii</i>	LEGO	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lesquerella intermedia</i>	LEIN	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lesquerella montana</i>	LESMO	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Leucelene arenosus</i>	LEAR	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Leucelene ericoides</i>	LEER	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Leucanthemum vulgare</i> ( <i>Chrysanthemum leucanthemum</i> )	LEVU	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Liatrus punctata</i>	LIPU	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.													
			0	0	0	0	0	0	0	0	1	1	1			
----- FORBS -----			FORBS													
<i>Ligularia amplexans</i> ( <i>Senecio amplexans</i> )	LIAM	39	.	+	+	.	.	.	.	.	.	.	.	.	.	.
<i>Ligularia bigelovii</i> ( <i>Senecio bigelovii</i> )	LIBI	52	.	+	+	+	+	.	+	.	.	.	.	.	.	.
<i>Ligusticum porteri</i>	LIPO	185	.	+	+	+	+	.	+	.	.	.	.	.	.	+
<i>Ligularia pudica</i> ( <i>Senecio pudicus</i> )	LIPUD	2	+	+	.	.	.	.	.	.	.	.	.	.	.	.
<i>Linanthus nuttallii</i> ( <i>Linanthastrum nuttallii</i> )	LINU	17	.	.	.	+	+	.	.	+	.	.	.	.	.	.
<i>Linum</i> spp.	LINUM	19	.	.	.	.	.	+	.	+	+	.	.	.	.	.
<i>Linum aristatum</i>	LIAR	11	.	.	.	.	.	+	.	.	+	.	.	.	.	.
<i>Linum lewisii</i>	LILE	22	.	.	.	.	.	+	.	+	+	.	.	.	.	.
<i>Linum neomexicanum</i>	LINE	27	.	.	.	.	.	.	.	.	+	+	.	+	.	.
<i>Listera cordata</i>	LICO	21	.	+	+	.	.	.	.	.	.	.	.	.	.	.
<i>Lithospermum</i> spp.	LITHOS	1	.	.	.	.	.	.	.	.	.	.	+	.	.	.
<i>Lithospermum cobrense</i>	LICOB	6	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Lithospermum incisum</i>	LIIN	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Lithospermum multiflorum</i>	LIMU	447	+	+	+	+	+	.	+	+	+	+	.	+	+	+
<i>Lobelia anatina</i>	LOAN	2	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Lotus</i> spp.	LOTUS	27	.	.	+	+	+	.	.	.	.	.	.	+	.	.
<i>Lotus oroboides</i>	LOOR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Lotus utahensis</i>	LOUTA	11	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Lotus wrightii</i>	LOWR	402	.	.	.	.	.	.	+	.	+	+	.	+	.	.
<i>Lotus wrightii</i> x <i>rigidus</i> ( <i>L. nummularis</i> )	LOWRRI	2	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Lupinus</i> spp.	LUPINU	56	.	+	+	+	+	.	+	+	.	.	.	.	.	.
<i>Lupinus argenteus</i>	LUAR	69	.	.	.	+	+	.	+	+	.	.	.	.	.	.
<i>Lupinus blumeri</i>	LUBL	6	.	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Lupinus hillii</i>	LUHI	39	.	.	.	.	.	.	.	.	+	+	.	.	.	.
<i>Lupinus kingii</i>	LUKI	33	.	.	.	.	.	.	+	.	.	+	.	.	.	.
<i>Lupinus neomexicanus</i>	LUNE	6	.	.	.	.	.	.	+	.	+	+	.	.	.	+
<i>Lupinus palmeri</i>	LUPAL	3	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Lupinus pulsillus</i>	LUPU	4	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Lupinus sierra-blancae</i>	LUSB	2	.	.	.	.	.	.	+	.	.	.	.	.	.	.
<i>Machaeranthera bigelovii</i> ( <i>Aster pattersonii</i> ; <i>A. bigelovii</i> )	ASBI	5	.	.	.	.	.	.	.	.	+	+	.	.	.	.
<i>Machaeranthera pinnatifida</i> ( <i>Haplopappus spinulosus</i> )	MAPI	9	.	.	.	.	.	+	.	.	+	+	.	.	.	.
<i>Macromeria viridiflora</i>	MAVI	12	.	.	.	+	.	.	+	.	+	+	.	.	.	.
<i>Malaxis ehrenbergii</i>	MAEH	7	.	.	.	.	.	.	+	.	+	.	.	.	.	.
<i>Malaxis soulei</i>	MASO	55	.	.	.	+	.	.	+	.	+	+	.	+	.	.
<i>Mammillaria</i> spp. ( <i>Coryphantha</i> spp. [in part])	MAMMIL	24	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Mammillaria arizonica</i>	MAAR	1	.	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Mariscus schweinitzii</i> ( <i>Cyperus schweinitzii</i> )	MASC	2	.	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Medicago lupulina</i>	MEDLU	1	.	.	.	.	.	+	.	.	.	.	.	.	.	.
<i>Melampodium cinereum</i>	MECI	4	.	.	.	+	.	.	.	.	.	.	.	+	.	.
<i>Melilotus alba</i>	MEAL	3	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Melilotus officinalis</i>	MEOF	6	.	.	.	.	.	.	+	+	.	.	+	.	.	.
<i>Mentha arvensis</i>	MEAR	8	.	.	.	+	+	+	.	.	.	.	.	.	.	.
<i>Mentzelia pumila</i>	MEPU	3	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Mertensia</i> spp.	MERTEN	9	.	+	+	.	.	.	+	.	.	.	+	.	.	.
<i>Mertensia ciliata</i>	MECIL	96	+	+	+	+	.	.	.	.	.	.	.	.	.	.
<i>Mertensia franciscana</i>	MEFR	81	.	+	+	+	+	.	+	.	.	.	+	.	.	+

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	
<b>FORBS</b>			<b>FORBS</b>										
<i>Mertensia lanceolata</i>	MELA	36	+	+	+	+	+	.	+	+	.	.	.
<i>Mertensia viridus</i>	MEVI	3	+	+	.	.	.	.	.	.	.	.	.
<i>Mimulus</i> spp.	MIMULU	1	.	.	.	.	.	.	.	.	.	+	.
<i>Mimulus guttatus</i>	MIGU	7	.	+	+	+	.	.	.	.	.	.	+
<i>Mirabilis multiflora</i>	MIMU	2	.	.	.	.	.	+	.	.	.	.	.
<i>Mirabilis oxybaphoides</i>	MIOX	7	.	.	.	.	.	+	.	+	+	.	.
<i>Mirabilia</i> spp.	MIRABI	1	.	.	.	.	.	.	.	.	.	+	.
<i>Mitella pentandra</i>	MIPE	24	.	+	+	.	.	.	.	.	.	.	.
<i>Moehringia macrophylla</i> ( <i>Arenaria macrophylla</i> )	MOMA	7	.	.	+	.	.	.	.	+	.	.	.
<i>Monarda</i> spp.	MONARD	5	.	.	.	.	.	.	.	.	.	+	+
<i>Monarda austromontana</i>	MOAU	1	.	.	.	.	.	.	.	.	.	+	.
<i>Monarda fistulosa</i> var. <i>menthaefolia</i>	MOFI	24	.	.	.	+	+	.	.	+	.	.	+
<i>Monarda pectinata</i>	MOPE	5	.	.	.	.	.	.	.	.	.	+	+
<i>Monardella odoratissima</i>	MOOD	1	.	.	.	.	.	.	.	.	.	+	.
<i>Moneses uniflora</i> ( <i>Pyrola uniflora</i> )	MOUN	85	.	+	+	+	.	.	.	.	.	.	.
<i>Monotropa latisquama</i> ( <i>M. hypotitys</i> )	MOLA	29	.	+	+	+	+	.	.	+	+	.	.
<i>Myosotis scorpioides</i>	MYSC	6	.	.	.	.	.	+	.	+	+	.	.
<i>Oenothera</i> spp.	OENOTH	12	.	.	.	.	.	+	+	+	.	.	+
<i>Oenothera caespitosa</i>	OECA	10	.	.	.	.	.	+	.	+	+	.	.
<i>Oenothera coronopifolia</i>	OECA	10	.	.	.	.	.	+	.	+	+	.	.
<i>Oenothera coronopifolia</i>	OECA	10	.	.	.	.	.	+	.	+	+	.	.
<i>Oenothera hookeri</i>	OEHO	5	.	.	+	.	.	.	.	+	+	.	+
<i>Oenothera pubescens</i> ( <i>O. laciniata</i> )	OEPU	10	.	.	.	.	.	.	.	+	+	.	+
<i>Oenothera rosea</i>	OERO	1	.	.	.	.	.	.	.	.	.	+	.
<i>Oenothera villosa</i> ( <i>O. strigosa</i> )	OEVI	1	.	.	.	.	.	.	.	.	.	+	.
<i>Oreoxis alpina</i>	ORAL	8	.	+	.	.	+	.	.	.	.	.	.
<i>Oreoxis bakeri</i>	ORBA	3	.	+	+	.	.	.	.	.	.	.	.
<i>Oreochrysum parryi</i> ( <i>Haplopappus parryi</i> ; <i>Solidago parryi</i> )	ORPA	459	+	+	+	+	+	+	+	+	+	.	.
<i>Orobanche cooperi</i> ( <i>O. ludoviciana</i> var. <i>cooperi</i> )	ORCO	4	.	.	.	.	+	+	.	.	.	+	.
<i>Orobanche fasciculata</i>	ORFA	1	.	.	.	.	.	.	.	.	.	+	.
<i>Orobanche multiflora</i>	ORMU	16	.	.	.	.	.	+	.	+	+	.	.
<i>Orobanche</i> sp.	OROBAN	1	.	.	.	.	.	.	.	.	.	+	.
<i>Orthocarpus luteus</i>	ORLU	3	.	.	.	.	.	+	.	.	.	+	.
<i>Orthocarpus purpureo-albus</i>	ORPU	4	.	.	.	.	.	.	.	.	.	+	.
<i>Osmorhiza chilensis</i>	OSCH	9	.	.	.	.	.	+	.	+	+	.	.
<i>Osmorhiza depauperata</i> ( <i>O. obtusa</i> )	OSDE	302	+	+	+	+	+	+	+	+	+	.	+
<i>Oxalis</i> spp.	OXALIS	14	.	.	.	+	+	+	.	.	.	+	.
<i>Oxalis decaphylla</i> ( <i>O. grayi</i> )	OXDE	5	.	.	.	.	.	.	.	.	.	+	+
<i>Oxalis metcalfei</i> ( <i>O. alpina</i> )	OXME	98	.	+	+	+	+	.	.	+	+	.	+
<i>Oxalis violacea</i>	OXVI	5	.	.	.	.	.	+	.	+	.	.	.
<i>Oxybaphus</i> spp.	OXYBAP	5	.	.	.	.	.	.	.	.	.	+	+
<i>Oxybaphus comatus</i> ( <i>Mirabilis comatus</i> )	OXCO	8	.	.	.	.	.	+	.	+	+	.	.
<i>Oxybaphus linearis</i> ( <i>Mirabilis linearis</i> )	OXLI	28	.	.	.	.	.	.	.	.	.	+	+
<i>Oxybaphus pumilis</i> ( <i>Mirabilis pulmilia</i> )	OXPU	2	.	.	.	.	.	.	.	.	.	+	.



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1		
			1	2	3	4	5	6	7	8	9	0	1	
----- FORBS -----			FORBS											
<i>Oxypolis fendleri</i>	OXFE	31	.	+	+	+	.	.	.	.	.	.	.	+
<i>Oxytropis</i> spp.	OXYTRO	4	.	.	.	.	+	.	.	+	.	.	.	.
<i>Oxytropis lambertii</i>	OXLA	68	.	.	.	+	+	.	+	+	+	+	.	.
<i>Oxytropis sericea</i>	OXSE	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Parnassia fimbriata</i>	PAFI	2	.	.	+	.	.	.	.	.	.	.	.	.
<i>Parthenocissus</i> spp.	PARTHE	3	.	.	.	.	.	+	.	.	.	.	.	+
<i>Pedicularis</i> spp.	PEDICU	19	.	.	+	.	+	.	+	.	.	.	.	.
<i>Pedicularis angustifolia</i> ( <i>P. angustissima</i> )	PEAN	11	.	.	+	+	.	.	.	.	.	.	.	.
<i>Pedicularis canadensis</i>	PECAN	2	.	.	+	.	+	.	.	.	.	.	.	.
<i>Pedicularis centranthera</i>	PECE	97	.	.	.	.	.	+	.	+	+	.	.	.
<i>Pedicularis bracteosa</i>	PEDBR	11	.	+	+	.	.	.	.	.	.	.	.	.
<i>Pedicularis grayi</i>	PEGR	65	.	+	+	+	+	.	+	.	.	.	.	.
<i>Pedicularis groenlandica</i>	PEGRO	1	.	+	.	.	.	.	.	.	.	.	.	.
<i>Pedicularis racemosa</i>	PERA	102	.	+	+	+	+	.	.	.	.	.	.	.
<i>Pelleae</i> spp.	PELLEA	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Pellaea atropurpurea</i>	PEAT	10	.	.	.	.	.	+	.	+	+	.	.	+
<i>Pellaea wrightiana</i>	PEWR	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Penstemon</i> spp.	PENSTE	257	.	+	+	+	+	.	+	+	+	.	.	.
<i>Penstemon barbatus</i>	PEBA	328	+	+	+	+	+	+	+	+	+	+	+	+
<i>Penstemon bridgesii</i>	PEBR	20	.	+	+	.	+	.	+	.	.	.	.	.
<i>Penstemon eatoni</i>	PEEA	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Penstemon griffinii</i> ( <i>P. oliganthus</i> )	PEGRI	34	.	+	.	.	+	.	+	+	.	.	.	.
<i>Penstemon linarioides</i>	PELI	104	.	.	.	.	.	+	.	+	+	.	.	.
<i>Penstemon pinifolius</i>	PEPI	12	.	.	.	.	.	.	+	.	+	+	.	.
<i>Penstemon pseudospectabilis</i>	PEPS	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Penstemon strictus</i>	PEST	1	.	.	.	.	.	+	.	.	.	.	.	.
<i>Penstemon virgatus</i>	PEVI	115	+	.	+	+	.	+	.	+	+	.	+	.
<i>Penstemon virgatus</i> var. <i>ariz.</i> ( <i>P. deaveri</i> )	PEVIAR	4	.	.	+	.	+	.	+	.	.	.	.	.
<i>Penstemon virens</i>	PENVI	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Penstemon whippleanus</i>	PEWH	30	+	+	+	+	+	.	+	+	.	.	.	+
<i>Perezia</i> spp.	PEREZI	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Pericome caudata</i>	PECAU	6	.	.	.	+	+	.	+	.	.	.	.	.
<i>Perityle ciliata</i>	PECI	3	.	.	.	.	.	.	.	.	.	.	+	+
<i>Petalostemon</i> spp.	PETALO	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Petalostemon pupureum</i> ( <i>Dalea purpurea</i> )	DAPU	8	.	.	.	.	.	.	.	.	.	.	.	+
<i>Petasites sagittata</i>	PESA	4	.	.	+	+	.	.	.	.	.	.	.	.
<i>Petrophytum caespitosum</i>	PETCA	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Phacelia</i> spp.	PHACEL	26	+	.	+	+	+	.	+	+	.	.	.	+
<i>Phacelia heterophylla</i>	PHHE	18	.	+	.	+	+	.	+	+	.	.	.	.
<i>Phacelia ivesiana</i>	PHIV	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Phacelia magellanica</i>	PHMA	7	.	+	.	+	+	.	+	.	.	.	.	.
<i>Phacelia neomexicana</i>	PHNE	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Phaseolus</i> spp.	PHASEO	13	.	.	.	.	.	.	.	.	.	.	+	+
<i>Phaseolus acutifolius</i>	PHAC	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Phaseolus angustissimus</i>	PHAN	2	.	.	.	.	.	.	.	.	.	.	+	+
<i>Phaseolus grayanus</i>	PHGR	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Phaseolus metcalfei</i>	PHME	9	.	.	.	.	.	.	.	.	.	.	+	+
<i>Phaseolus parvulus</i>	PHPA	7	.	.	.	.	.	.	.	.	.	.	+	+
<i>Phaseolus wrightii</i>	PHWR	11	.	.	.	.	.	.	.	.	.	.	+	+
<i>Phlox</i> spp.	PHLOX	63	.	.	.	.	.	.	.	.	.	.	+	+
<i>Phlox amabilis</i>	PHAM	2	.	.	.	.	.	.	.	.	.	.	+	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
			1	2	3	4	5	6	7	8	9	0	1
----- FORBS -----			FORBS										
<i>Phlox condensata</i> ( <i>P. caespitosa</i> )	PHCON	3	+	+	.	.	.	.	.	.	.	.	.
<i>Phlox nana</i>	PHNA	6	.	.	.	.	.	.	.	.	.	.	+
<i>Phlox woodhousei</i> ( <i>P. speciosa</i> ssp. <i>woodhousei</i> )	PHWO	5	.	.	.	.	.	.	.	.	.	.	+
<i>Physalis virginiana</i> var. <i>sonorae</i> ( <i>P. longiflora</i> )	PHVI	2	.	.	.	.	.	.	.	.	.	.	+
<i>Plantago</i> spp.	PLANTA	1	.	.	.	.	.	.	.	.	.	.	+
<i>Plantago major</i>	PLMA	2	.	.	.	+	.	.	.	.	.	.	+
<i>Plantago patagonica</i> ( <i>P. purshii</i> )	PLPA	12	.	.	.	.	.	.	.	.	.	.	+
<i>Plummera floribunda</i>	PLFL	7	.	.	.	.	.	.	.	.	.	.	+
<i>Polemonium</i> spp.	POLEMO	12	.	+	+	+	+	.	.	.	.	.	.
<i>Polemonium foliosissimum</i>	POFO	17	.	.	+	+	+	.	+	+	.	.	.
<i>Polemonium pulcherrimum</i>	POPU	81	+	+	+	.	.	.	.	.	.	.	.
<i>Polemonium viscosum</i>	POVI	8	+	.	+	.	.	+	+	.	.	.	.
<i>Polygala</i> spp.	POLYGA	1	.	.	.	.	.	.	.	.	.	.	+
<i>Polygala alba</i>	POAL	8	.	.	.	.	.	.	.	.	.	.	+
<i>Polygala obscura</i>	POOB	1	.	.	.	.	.	.	.	.	.	.	+
<i>Polygala longa</i>	POLO	45	.	.	.	.	.	+	.	.	.	+	+
<i>Polygonum</i> spp.	POLYGO	1	.	.	.	.	.	.	.	.	.	.	+
<i>Polygonum sawatchensis</i>	POSA	191	.	.	.	+	+	.	+	+	.	.	+
<i>Potentilla</i> spp.	POTENT	50	+	+	+	+	.	.	+	+	.	.	.
<i>Potentilla concinna</i>	POCON	3	.	+	.	.	.	.	.	.	.	.	+
<i>Potentilla crinita</i>	POCR	71	.	.	.	.	.	.	.	+	+	.	.
<i>Potentilla diversifolia</i>	PODI	7	.	+	+	.	.	.	.	.	.	.	.
<i>Potentilla gracilis</i> v <i>pulcher</i> ( <i>P. pulcherrima</i> )	POGR	86	+	+	+	+	.	.	+	+	.	.	.
<i>Potentilla hippiana</i>	POHI	124	+	+	+	+	.	.	+	+	.	.	.
<i>Potentilla norvegica</i>	PONO	2	.	.	.	.	.	.	.	.	.	.	+
<i>Potentilla pennsylvanica</i>	POPE	9	+	.	.	+	+	.	.	.	.	.	.
<i>Potentilla subviscosa</i>	POSU	15	.	+	+	.	.	.	.	.	.	.	.
<i>Potentilla anserina</i>	POTAN	1	.	.	.	.	.	.	.	.	.	.	.
<i>Potentilla thurberi</i>	POTH	20	.	+	.	+	+	.	.	.	.	.	.
<i>Primula ellisiae</i>	PREL	8	.	.	.	.	.	.	.	+	+	.	.
<i>Primula parryi</i>	PRPA	8	.	+	+	.	.	.	.	.	.	.	.
<i>Prunella vulgaris</i>	PRVU	23	.	+	+	+	+	.	.	.	.	.	+
<i>Pseudostellaria jamesiana</i> ( <i>Stellaria jamesiana</i> )	PSJA	66	+	+	+	+	.	.	+	+	.	.	.
<i>Pseudocymopterus montanus</i>	PSMO	842	+	+	+	+	.	.	+	+	+	+	+
<i>Psoralea tenuiflora</i>	PSTE	36	.	.	.	.	.	.	.	.	.	.	+
<i>Pterospora andromedea</i>	PTAND	54	.	+	+	+	.	.	+	+	.	.	.
<i>Pteridium aquilinum</i>	PTAQ	216	.	+	+	+	+	.	.	+	+	.	+
<i>Pulsatilla patens</i>	PUPA	35	+	.	.	+	+	.	.	+	+	.	.
<i>Pyrola</i> spp.	PYROLA	2	.	.	.	.	.	.	.	.	.	.	+
<i>Pyrola asarifolia</i>	PYAS	30	.	+	+	+	+	.	.	.	.	.	.
<i>Pyrola chlorantha</i> ( <i>P. virens</i> )	PYCH	155	.	+	+	+	+	.	.	+	+	.	+
<i>Pyrola minor</i>	PYMI	4	.	+	+	.	.	.	.	.	.	.	.
<i>Pyrola picta</i>	PYPI	40	.	+	+	+	+	.	.	+	+	.	+
<i>Ramischia secunda</i> ( <i>Orthilia secunda</i> ; <i>Pyrola secunda</i> )	ORSE	344	+	+	+	+	.	.	+	.	.	.	.
<i>Ranunculus</i> spp.	RANUNC	7	.	+	+	+	.	.	.	+	.	.	+
<i>Ranunculus aquatilis</i> ( <i>Batrachium trichophyllum</i> )	RAAQ	1	.	.	.	.	.	.	.	.	.	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1	1	
			1	2	3	4	5	6	7	8	9	0	1	1
----- FORBS -----			FORBS											
<i>Ranunculus alismaefolius</i>	RAAL	2	.	.	+	.	.	.	.	.	.	.	.	.
<i>Ranunculus cardiophyllus</i>	RACA	1	.	.	.	.	+	.	.	.	.	.	.	.
<i>Ranunculus eschscholtzii</i>	RAES	7	.	+	+	.	.	.	.	.	.	.	.	.
<i>Ranunculus hydrocharoides</i>	RAHY	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Ranunculus inamoenus</i>	RAIN	9	.	.	+	+	+	.	+	+	.	.	.	.
<i>Ranunculus macounii</i>	RAMA	2	.	.	.	+	.	.	.	.	.	.	.	.
<i>Ranunculus uncinatus</i>	RAUN	2	.	.	+	.	.	.	.	.	.	.	.	.
<i>Ratibida columnaris</i>	RACO	3	.	.	.	.	.	.	.	.	.	.	+	.
<i>Rhodiola integrifolia</i> ( <i>Sedum rosea</i> )	RHIN	14	+	+	+	.	.	.	.	+	.	.	.	.
<i>Rudbeckia hirta</i>	RUHI	6	.	.	.	.	+	.	.	.	.	.	+	.
<i>Rudbeckia laciniata</i>	RULA	21	.	.	+	+	+	.	.	.	.	.	+	.
<i>Acetosella vulgaris</i> ( <i>Rumex acetocella</i> )	ACVU	4	.	.	.	.	+	.	.	.	.	.	.	+
<i>Rumex crispus</i>	RUCR	2	.	.	.	.	+	.	.	.	.	.	.	+
<i>Rumex occidentalis</i>	RUOC	3	.	.	.	.	+	.	.	.	.	.	.	+
<i>Salsola kali</i>	SAKA	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Salvia arizonica</i>	SAAR	4	.	.	.	.	.	.	.	.	.	.	+	+
<i>Salvia davidsonii</i>	SADA	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Salvia lemmoni</i>	SALE	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Saxifraga bronchialis</i>	SABR	51	+	+	+	+	+	+	+	+	.	.	.	.
<i>Saxifraga eriophora</i>	SAER	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Saxifraga odontoloma</i>	SAOD	9	.	+	+	.	.	.	.	.	.	.	.	.
<i>Saxifraga rhomboidea</i>	SARH	9	+	+	.	.	.	.	.	.	.	.	.	.
<i>Saxifraga</i> spp.	SAXIFR	11	.	+	+	.	.	.	.	.	.	.	.	.
<i>Scrophularia parviflora</i>	SCPA	18	.	.	+	.	.	.	.	.	.	.	.	+
<i>Scutellaria</i> spp.	SCUTEL	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Sedum</i> spp.	SEDUM	30	.	.	+	+	+	+	.	.	.	.	.	.
<i>Sedum cockerellii</i>	SECO	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Sedum griffthsii</i>	SEDGR	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Sedum lanceolatum</i> ( <i>S. stenopetalum</i> )	SELA	27	+	+	+	.	.	.	.	.	.	.	.	.
<i>Senecio</i> spp.	SENECI	19	.	.	+	+	+	.	.	.	.	.	.	.
<i>Senecio actinella</i>	SEAC	43	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio arizonica</i>	SEAR	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio atratus</i>	SEAT	10	+	+	+	.	.	.	.	.	.	.	.	.
<i>Senecio cardamine</i>	SECA	43	.	+	+	+	+	.	.	.	.	.	.	.
<i>Senecio crocatus</i>	SECR	1	.	.	+	.	.	.	.	.	.	.	.	.
<i>Senecio cynthioides</i>	SECY1	25	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio dimorphophyllus</i>	SEDI	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio douglasii</i>	SEDO	1	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio eremophilus</i>	SEER	53	.	.	+	+	+	.	.	.	.	.	.	+
<i>Senecio fendleri</i>	SEFE	110	+	+	+	+	+	+	+	.	.	.	.	.
<i>Senecio hartianus</i>	SEHA	16	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio integerrimus</i>	SEIN	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio lemmoni</i>	SELE	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio macdougali</i> ( <i>S. eremophilus</i> var. <i>macdougali</i> )	SEMA	16	.	.	+	+	+	.	.	.	.	.	.	.
<i>Senecio multilobatus</i>	SEMU	71	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio neomexicanus</i>	SENE	563	+	+	+	+	+	.	.	.	.	.	.	+
<i>Senecio neomexicanus</i> var. <i>mut.</i> ( <i>S. mutabilis</i> )	SENEMU	19	.	.	+	+	+	.	.	.	.	.	.	.
<i>Senecio quaerens</i>	SEQU	8	.	.	.	.	.	.	.	.	.	.	.	+
<i>Senecio sanguisorboides</i>	SESA	27	.	+	+	+	+	.	.	.	.	.	.	.
<i>Senecio sacramentanus</i>	SESAC	14	.	.	.	.	.	.	.	.	.	.	.	.



SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.													
			0	0	0	0	0	0	0	0	0	1	1			
----- FORBS -----			FORBS													
<i>Senecio serra</i>	SESE	10	.	.	+	.	.	.	.	.	.	.	.	.	.	.
<i>Senecio spartioides</i>	SESP	3	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Senecio streptanthifolius</i> ( <i>S. cymbalarioides</i> )	SEST	28	.	+	+	+	+	.	.	.	.	.	.	.	.	.
<i>Senecio triangularis</i>	SETR	16	.	+	+	.	.	.	.	.	.	.	.	.	.	.
<i>Senecio wootoni</i>	SEWO	328	.	+	+	+	+	.	+	+	.	+	+	.	+	+
<i>Sibbaldia procumbers</i>	SIPR	14	.	+	+	.	.	.	.	.	.	.	.	.	.	.
<i>Sidalcea neomexicana</i>	SINE	8	.	.	.	+	+	.	.	+	.	.	.	.	.	.
<i>Silene</i> spp.	SILENE	14	.	+	.	+	+	.	+	.	.	.	.	.	.	.
<i>Silene acaulis</i>	SIAC	3	+	.	.	+	.	.	.	.	.	.	.	.	.	.
<i>Silene antirrhina</i>	SIAN	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Silene laciniata</i>	SILA	71	.	.	.	+	+	.	+	+	+	.	.	.	.	.
<i>Silene menziesii</i>	SIME	21	.	+	+	+	+	.	+	+	.	.	.	.	.	.
<i>Silene scouleri</i>	SISC	87	+	+	+	+	+	.	+	+	.	.	.	.	.	.
<i>Sisymbrium altissimum</i>	SIAL	10	.	.	.	.	.	.	.	.	.	.	+	+	.	+
<i>Sisyrinchium angustifolium</i> ( <i>S. demissum</i> )	SIANG	4	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Sisyrinchium arizonicum</i>	SIAR	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Sisymbrium</i> spp.	SISYMB	33	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Sisymbrium irio</i>	SIIR	7	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Smilacina racemosa</i>	SMRA	299	.	+	+	+	+	.	+	+	.	+	.	.	.	+
<i>Smilacina stellata</i>	SMST	318	+	+	+	+	+	.	+	+	.	+	.	.	.	+
<i>Solanum</i> spp.	SOLAN	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Solidago</i> spp.	SOLIDA	167	+	+	+	+	+	.	+	+	.	+	+	.	+	+
<i>Solidago altissima</i>	SOAL	5	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Solidago canadensis</i>	SOCA	4	.	.	.	+	+	.	.	+	.	.	.	.	.	.
<i>Solidago missouriensis</i>	SOMI	17	.	.	.	+	+	.	+	.	.	.	.	.	.	.
<i>Solidago miss. var. extraria</i>	SOMIEX	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Solidago sparsiflora</i>	SOSP	267	.	.	.	+	+	.	+	+	.	+	+	.	+	+
<i>Solidago spathulata</i> var. <i>nana</i>	SOSPNA	4	.	+	.	.	.	.	.	.	.	.	.	+	.	.
<i>Solidago spathulata</i> var. <i>neomexicana</i> ( <i>S. decumbens</i> )	SOSPNE	46	+	.	+	+	+	.	+	+	.	+	+	.	.	.
<i>Solidago wrightii</i>	SOWR	44	.	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Sonchus asper</i>	SOAS	1	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Sphaeralcea fendleri</i>	SPFE	5	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Sphaeralcea grossulariaefolia</i>	SPGR	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Sphaeralcea coccinea</i>	SPHAER	25	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Spiranthes parasitica</i>	SPPA	2	.	.	.	+	.	.	.	.	.	.	.	.	.	.
<i>Stachys coccinea</i>	STCOC	7	.	.	.	+	+	.	.	+	.	.	.	.	.	.
<i>Stachys palustris</i>	STPA	3	.	.	.	+	+	.	.	.	.	.	.	.	.	.
<i>Stellaria</i> spp.	STELLA	26	+	+	+	+	+	.	+	+	.	+	+	.	.	.
<i>Stellaria longipes</i> ( <i>S. laeta</i> )	STLA	17	.	+	+	+	+	.	.	.	.	.	.	+	.	.
<i>Stellaria longifolia</i>	STLO1	26	.	.	+	+	+	.	+	.	.	.	.	.	.	.
<i>Stellaria umbellata</i>	STUM	14	.	+	+	.	.	.	+	.	.	.	.	.	.	.
<i>Stephanomeria exigua</i>	STEX	2	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Stevia</i> spp.	STEVIA	13	.	.	.	.	.	.	.	.	.	.	.	+	+	.
<i>Stevia plummerae</i>	STPL	6	.	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Stevia serrata</i>	STSE	10	.	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Streptopus amplexifolius</i>	STAM	46	.	+	+	.	.	.	+	.	.	.	.	.	.	.
<i>Streptanthus</i> spp.	STREPT	2	.	+	.	.	.	.	.	.	.	.	.	+	.	.
<i>Swertia perennis</i>	SWPE	2	.	.	+	.	.	.	.	.	.	.	.	.	.	.
<i>Talinum</i> spp.	TALINU	1	.	.	.	.	.	.	.	.	.	.	.	+	.	.
<i>Taraxacum</i> spp.	TARAXA	44	.	+	+	+	+	.	+	+	.	+	+	.	.	+
<i>Taraxacum laevigatum</i>	TALA	3	.	.	.	+	.	.	.	.	.	.	.	+	.	.

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.										
			0	0	0	0	0	0	0	0	1	1	1
----- FORBS -----			FORBS										
<i>Taraxacum officinale</i>	TAOF	159	+	+	+	+	+	.	+	+	.	+	
<i>Tetradymia canescens</i>	TECA	4	.	.	.	.	.	.	.	.	.	+	
<i>Teucrium</i> spp.	TEUCRI	1	.	.	.	.	.	.	.	.	.	+	
<i>Thalictrum fendleri</i>	THFE	730	+	+	+	+	+	.	+	+	+	+	
<i>Thelypodopsis linearifolia</i> ( <i>Sisymbrium linarifolium</i> )	SILI	92	.	.	.	.	.	.	+	.	+	+	
<i>Thelypodium</i> spp.	THELYP	1	.	.	.	.	.	.	.	.	.	+	
<i>Thelypodium longifolium</i> ( <i>Pennelia longifolia</i> )	THLO	4	.	.	.	.	.	.	.	.	.	+	
<i>Thelypodium micanthum</i> ( <i>Pennelia micranthum</i> )	PEMI	7	.	.	.	.	.	.	+	.	.	+	
<i>Thelypodium wrightii</i>	THWR	2	.	.	.	.	.	.	+	.	.	+	
<i>Thelesperma filifolium</i>	THFI	2	.	.	.	.	.	.	.	.	.	+	
<i>Thelesperma megapotamicum</i>	THME	9	.	.	.	.	.	.	.	.	.	+	
<i>Thermopsis</i> spp.	THERMO	2	+	.	.	.	.	.	.	.	.	+	
<i>Thermopsis divaricarpa</i> ( <i>T. pinetorum</i> )	THDI	153	+	+	+	+	+	.	+	+	+	+	
<i>Thermopsis montana</i>	THMO	8	+	.	.	.	.	.	+	.	.	+	
<i>Thlaspi</i> spp.	THLASP	29	.	+	+	+	+	.	+	.	.	.	
<i>Thlaspi arvense</i>	THLAR	3	.	+	.	.	.	.	.	.	.	.	
<i>Thlaspi fendleri</i>	THLFE	2	.	.	.	.	.	.	.	.	.	+	
<i>Thlaspi montanum</i> ( <i>T. fendleri</i> )	THLMO	145	+	+	+	+	+	.	+	.	.	+	
<i>Townsendia</i> spp.	TOWNSE	3	.	.	.	.	.	.	.	.	.	+	
<i>Townsendia eximia</i>	TOEX	19	.	.	.	.	.	.	.	.	.	+	
<i>Townsendia exscapa</i>	TOEXS	4	.	.	.	.	.	.	.	.	.	+	
<i>Townsendia formosa</i>	TOFO	32	.	+	+	+	+	.	+	.	.	.	
<i>Tradescatia pinetorum</i>	TRAPI	20	.	.	.	.	.	.	.	.	.	+	
<i>Tradescantia occidentalis</i>	TROC	1	.	.	.	.	.	.	.	.	.	+	
<i>Tragopogon</i> spp.	TRAGOP	43	.	.	.	.	.	.	.	.	.	+	
<i>Tragopogon dubius</i>	TRADU	24	.	.	.	.	.	.	.	.	.	+	
<i>Tragopogon pratensis</i>	TRAPR	2	.	.	.	.	.	.	.	.	.	+	
<i>Tragia stylaris</i> ( <i>T. ramosa</i> )	TRST	41	.	.	.	.	.	.	+	.	+	+	
<i>Trautvetteria carolinensis</i> ( <i>T. grandis</i> )	TRCA	12	.	+	+	+	.	.	.	.	.	.	
<i>Trifolium</i> spp.	TRIFOL	28	.	+	+	+	+	.	+	.	.	.	
<i>Trifolium brandegei</i>	TRBR	4	.	+	.	.	.	.	.	.	.	.	
<i>Trifolium dasyphyllum</i>	TRDA	9	+	+	+	.	.	.	.	.	.	.	
<i>Trifolium dubium</i>	TRDU	19	.	.	.	.	.	.	.	.	.	+	
<i>Trifolium neurophyllum</i> ( <i>T. longipes</i> )	TRNE	6	.	.	.	.	.	.	.	.	.	+	
<i>Trifolium parryi</i>	TRPA	1	.	.	.	.	.	.	.	.	.	+	
<i>Trifolium rusbyi</i>	TRRU	2	.	.	.	.	.	.	.	.	.	+	
<i>Trifolium subcaulescens</i>	TRSU	1	.	.	.	.	.	.	.	.	.	+	
<i>Trifolium wormskjoldii</i>	TRWO	1	.	.	.	.	.	.	.	.	.	+	
<i>Trollis laxis</i>	TRLA	11	.	+	+	.	.	.	.	.	.	.	
<i>Urtica</i> spp.	URTICA	11	.	.	.	.	.	.	.	.	.	+	
<i>Valeriana</i> spp.	VALERI	24	.	+	+	.	.	.	.	.	.	.	
<i>Valeriana arizonica</i>	VAAR	3	.	.	.	.	.	.	.	.	.	+	
<i>Valeriana capitata</i> ssp. <i>acutiloba</i>	VACA	89	.	+	+	+	+	.	+	.	.	+	
<i>Valeriana edulis</i>	VAED	19	+	+	.	.	.	.	+	.	.	.	
<i>Veratrum californicum</i>	VECA	18	.	+	+	.	.	.	.	.	.	+	
<i>Verbena</i> spp.	VERBEN	3	.	.	.	.	.	.	.	.	.	+	
<i>Verbena ambrosiifolia</i>	VEAM	3	.	.	.	.	.	.	.	.	.	+	

SPECIES NAME	SPECIES CODE	NO OF OBS	SERIES NO.											
			0	0	0	0	0	0	0	0	1	1		
----- FORBS -----			FORBS											
<i>Verbena bipinnatifida</i>	VEBI	11	.	.	.	.	.	.	.	.	+	+	.	+
<i>Verbesina longifolia</i>	VELO	5	.	.	.	.	.	.	.	.	+	.	+	.
<i>Verbena macdougallii</i>	VEMA	5	.	.	.	.	.	.	.	.	+	+	.	.
<i>Verbena neomexicana</i>	VEVE	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Verbascum thapsus</i>	VETH	47	.	.	.	.	.	.	.	.	+	+	+	+
<i>Verbena wrightii</i>	VEWR	9	.	.	.	.	.	.	.	.	+	.	+	.
<i>Veronica spp.</i>	VERONI	4	.	.	.	.	.	.	.	.	+	+	.	.
<i>Veronica peregrina</i>	VEPE	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Veronica serpyllifolia</i>	VESE	2	.	.	.	.	.	.	.	.	.	+	+	.
<i>Veronica wormskjoldii</i>	VEWO	14	.	.	.	.	.	.	.	.	.	.	.	.
<i>Vicia spp.</i>	VICIA	19	.	.	.	.	.	.	.	.	.	.	+	+
<i>Vicia americana</i>	VIAM	505	.	.	.	.	.	.	.	.	.	.	+	+
<i>Vicia leucophaea</i>	VILE	10	.	.	.	.	.	.	.	.	.	.	+	+
<i>Vicia ludoviciana</i> var. <i>texana</i> ( <i>V. exigua</i> )	VILU	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Vicia pulchella</i>	VIPU	82	.	.	.	.	.	.	.	.	.	.	+	+
<i>Vicia villosa</i>	VIVI	1	.	.	.	.	.	.	.	.	.	.	+	.
<i>Viguiera spp.</i>	VIGUIE	64	.	.	.	.	.	.	.	.	.	.	+	+
<i>Viguiera annua</i>	VIAN	5	.	.	.	.	.	.	.	.	.	.	+	.
<i>Viguiera cordifolia</i>	VICO	7	.	.	.	.	.	.	.	.	.	.	+	+
<i>Viguiera dentata</i>	VIDE	2	.	.	.	.	.	.	.	.	.	.	.	+
<i>Viguiera multiflora</i> ( <i>Heliomeris multiflora</i> )	VIMU	116	.	.	.	.	.	.	.	.	.	.	+	+
<i>Viola spp.</i>	VIOLA	7	.	.	.	.	.	.	.	.	.	.	.	.
<i>Viola adunca</i>	VIAD	37	.	.	.	.	.	.	.	.	.	.	+	.
<i>Viola canadensis</i>	VICA	397	.	.	.	.	.	.	.	.	.	.	+	+
<i>Viola nephrophylla</i>	VINE	13	.	.	.	.	.	.	.	.	.	.	.	+
<i>Woodsia spp.</i>	WOODSI	26	.	.	.	.	.	.	.	.	.	.	+	+
<i>Woodsia mexicana</i>	WOME	6	.	.	.	.	.	.	.	.	.	.	+	.
<i>Woodsia oregana</i>	WOOR	2	.	.	.	.	.	.	.	.	.	.	+	.
<i>Wyethia amplexicaulis</i>	WYAM	4	.	.	.	.	.	.	.	.	.	.	+	.
<i>Wyethia arizonica</i>	WYAR	6	.	.	.	.	.	.	.	.	.	.	+	.
<i>Zygadenus spp.</i>	ZYGADE	51	.	.	.	.	.	.	.	.	.	.	+	+
<i>Zygadenus elegans</i> ( <i>Anticlea elegans</i> )	ZYEL	117	.	.	.	.	.	.	.	.	.	.	+	+
<i>Zygadenus virescens</i>	ZYVI	5	.	.	.	.	.	.	.	.	.	.	+	.



## APPENDIX B

### Consolidated Series Stand Tables

There are 11 consolidated series stand tables for southwestern habitat types, one for each climax tree series. Below we provide an example of the tables using the *Picea engelmannii* series. To output the set of tables in their complete form, follow the instructions given in "Creating a Stand Table" using the parameter files as given on floppy disk. The complete set of tables is also archived at the Rocky Mountain Experiment Station library, 240 W. Prospect Road, Fort Collins, CO 80526.

At the beginning of each table is a list of habitat types included for that series and the associated habitat type and phase numbers. The tables are presented with plots going across the page and species observations going down. The first three lines are the habitat type and phase numbers (read vertically), corresponding to the above list of habitat types. Plots are identified by a five-digit code of the Principal Investigator responsible for the plot, the general Geographic Location, and the Plot Number assigned by the principal investigation (also read vertically).

The Principal Investigator codes are:

<u>Code</u>	<u>Principal investigator</u>
A	Alexander, Billy G.
E	Muldavin, Esteban H.
F	Fitzhugh, E. Lee
D	DeVelice, Robert L.
L	Ludwig, John A.
M	Moir, William H.
W	White, Alan S.

The Geographic Location codes are:

<u>Code</u>	<u>Location</u>
C	Cibola National Forest, central New Mexico.
G	Gila National Forest, southwestern New Mexico, Apache National Forest, eastern Arizona.

H	Hualapai Indian Reservation, northwest Arizona.
K	Coronado National Forest, southeastern Arizona.
L	Lincoln National Forest, south-central New Mexico.
M	Mogollon Plateau, including the Coconino, Apache-Sitgreaves, and Kaibab National Forests of northern Arizona.
N	Northern New Mexico and southern Colorado, including the Santa Fe, Carson, San Isabel, San Juan, and Rio Grande National Forests.
P	Prescott National Forest, west-central Arizona.
S	San Carlos Indian Reservation, central Arizona.
T	Tonto National Forest, central Arizona.
W	Fort Apache Indian Reservation (White River), east-central Arizona.

Density (stems per 375 m<sup>2</sup>) and percent cover values for species observations have been converted into 1-column scalars as follows:

<u>Density conversion</u>			<u>Percent cover conversion</u>		
<u>Table scalar</u>	<u>Data value</u>		<u>Table scalar</u>	<u>Data value</u>	
+	= 1	stem	P	= + 0	(present)
1	= 2	stems	+	= < 1	%
2	= 3-4	stems	1	= 1-4	%
3	= 5-9	stems	2	= 5-24.9	%
4	= 10-20	stems	3	= 25-49.9	%
5	= 21-40	stems	4	= 50-74.9	%
6	= 41-60	stems	5	= 75-100	%
7	= 61-80	stems			
8	= 81-99	stems			
9	= 100 or more				













## APPENDIX C

### Consolidated Series Site Characteristics Tables

There are 11 consolidated series site characteristics tables for southwestern habitat types, one for each climax tree series (tables C.1—C.11). Each series table contains subtables for each habitat type within the series. Each subtable gives the habitat type name and number and contains site information on individual plots with the habitat type. Plots are identified by a five-digit code of the Principal Investigator responsible for the plot, the general Geographic Location, and the Plot Number assigned by the principal investigator.

The Principal Investigator codes are:

Code	Principal investigator
A	Alexander, Billy G.
E	Muldavin, Esteban H.
F	Fitzhugh, E. Lee
D	DeVelice, Robert L.
L	Ludwig, John A.
M	Moir, William H.
W	White, Alan S.

The Geographic Location codes are:

Code	Location
C	Cibola National Forest, central New Mexico.
G	Gila National Forest, southwestern New Mexico, Apache National Forest, eastern Arizona.
H	Hualapai Indian Reservation, northwest Arizona.
K	Coronado National Forest, southeastern Arizona.
L	Lincoln National Forest, south-central New Mexico.
M	Mogollón Plateau, including the Coconino, Apache-Sitgreaves, and Kaibab National Forests of northern Arizona.

N	Northern New Mexico and southern Colorado, including the Santa Fe, Carson, San Isabel, San Juan, and Rio Grande National Forests.
P	Prescott National Forest, west-central Arizona.
S	San Carlos Indian Reservation, central Arizona.
T	Tonto National Forest, central Arizona.
W	Fort Apache Indian Reservation (White River), east-central Arizona.

Site characteristics, given as provided by the original principal investigators, include:

1. Geographic locale—the approximate location of the plot.
2. USGS topographic quadrangle along with township, range, section, and quarter section location, if given.
3. Elevation—meters and feet.
4. Percent slope.
5. Aspect—degrees azimuth, and a cosine conversion of azimuth where 2.0 = northeast (coolest) and 0.0 = southwest (warmest).
6. Land form code as follows:

0 = plateau	4 = lower slope
1 = ridge	5 = bench
2 = upper slope	6 = streamside
3 = midslope	7 = other

Two or more numbers together imply transitions.

7. Percent of plot that is exposed soil.
8. Percent of plot that is covered by rock.
9. Underlying geologic parent material (codes assigned by principal investigator).



TABLE C.2 -- SITE CHARACTERISTICS -- PICEA ENGELMANNII SERIES

PICEA ENGELMANNII/GEUM ROSSII HT  
 HT NUMBER: 12 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION (M)	SLOPE (FT) (%)	ASPECT DEG	COS	LAND FORM	% COVER SOIL	ROCK	PARENT MATERIAL
MM347	AZ	SAN FRAN MTNS	S FRAN AGASSIZ PK	HUMPHREY PEAK					3398	11150	55	350	1.57	2	0	40

PICEA ENGELMANNII/MOSS HT  
 HT NUMBER: 03 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION (M)	SLOPE (FT) (%)	ASPECT DEG	COS	LAND FORM	% COVER SOIL	ROCK	PARENT MATERIAL
FC937	NM	MNT. TAYLOR	MT TAYLOR	MNT TAYLOR	12N	7W	19	SE	3194	10480	20	322	1.12	12	0	0
AC 11	NM	MNT TAYLOR	LAMOSCA PEAK	SAN MATEO	12N	7W	20	NW	3267	10720	8	18	1.89	12	0	0
MC731	NM	SAN MATEO MTS	APACHE KID PEAK	BLUE MOUNTAIN	8S	6W	2		2974	9760	25	280	0.43	2	0	4
MC739	NM	SAN MATEO MTS	TEEPEE PEAK	BLUE MOUNTAIN	7S	6W	26		3038	9970	4	18	1.89	1	0	2
MC735	NM	SAN MATEO MTS	WEST BLUE MOUNTAIN	BLUE MOUNTAIN	7S	6W	34		3108	10200	45	0	1.71	2	0	1
EW101	AZ	WHITE MTS	MT WARREN						3243	10640	4	168	0.46	1	0	5

PICEA ENGELMANNII/VACC. MYRTILLUS/POLE. PULCHERRIMUM HT, PIEN PH  
 HT NUMBER: 01 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION (M)	SLOPE (FT) (%)	ASPECT DEG	COS	LAND FORM	% COVER SOIL	ROCK	PARENT MATERIAL
MN126	NM	SANGRE RANGE	GOLD HILL TRAIL	WHEELER PK.					3505	11500	5	10	1.82	1	0	0
LN178	CO	SPANISH PEAKS	1 MI W BEAR LAKE CG	TRINCHERA PEAK					3633	11920	48	105	1.50	2	0	1
MN150	NM	SANGRE RANGE	NO FISH LAKE BASIN	PECOS FALLS					3596	11800	72	20	1.91	2	0	20
MN151	NM	SANGRE RANGE	CHIMAYOSOS PEAK	PECOS FALLS					3596	11800	50	225	0.00	3	0	15
MN127	NM	SANGRE RANGE	GOLD HILL TRAIL	RED RIVER					3596	11800	20	103	1.53	2	0	0
LN 72	CO	SAN JUAN MTS	ELWOOD PASS SLOPES	ELWOOD PASS	37N	1E	34	SE	3590	11780	19	282	0.46	2	0	7
LN227	CO	SANGRE RANGE	LAKE COMO	TWIN PEAKS					3596	11800	10	10	1.82	3	0	3
MN168	NM	SANGRE RANGE	N FORK TESUQUE CR.	ASPEN BASIN					3627	11900	40	310	0.91	2	0	6
LN192	CO	WET MTS	CISNEROS CREEK	SAN ISABEL					3438	11280	32	245	0.06	3	0	35
LN193	CO	WET MTS	POLE CREEK TRAIL	SAN ISABEL					3383	11100	17	350	1.57	3	0	1
MN 31	NM	SANGRE RANGE	CERRO VISTA	CERRO VISTA					3413	11200	54	105	1.50	2	0	1

TABLE C.2 (CONTINUED) -- SITE CHARACTERISTICS -- PICEA ENGELMANNII SERIES

PICEA ENGELMANNII/VACC. MYRTILLUS/POLE. PULCHERRIMUM HT, PIEN PH (CONTINUED)

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION (M)	SLOPE (FT) (%)	ASPECT DEG	COS	LAND FORM	% COVER SOIL	ROCK	PARENT MATERIAL
LN224	CO	SANGRE RANGE	HUERFANO RIVER	BLANCA PEAK					3340	10960	35	105	1.50	4	1	10
LN248	CO	SAN JUAN MTS	SCHINZEL FLATS	ELWOOD PASS					3529	11580	13	350	1.57	3	0	0
LN191	CO	WET MTS	BLUE LAKES	SAN ISABEL					3450	11320	14	335	1.34	3	0	0
LN 53	CO	SAN JUAN MTS	GRAYBACK MT	SUMMITVILLE	37N	4E	10	NE	3572	11720	46	95	1.64	3	1	2

PICEA ENGELMANNII/VACC. MYRTILLUS/POLE. PULCHERRIMUM HT, ABLA PH  
 HT NUMBER: 02 PHASE NUMBER: 02

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION (M)	SLOPE (FT) (%)	ASPECT DEG	COS	LAND FORM	% COVER SOIL	ROCK	PARENT MATERIAL
MN 45	NM	SANGRE RANGE	SERPENT LAKE TRAIL	JICARITA PK					3520	11550	20	10	1.82	12	0	0
MN146	NM	SANGRE RANGE	NO FISH LAKE BASIN	PECOS FALLS					3535	11600	28	270	0.29	1	0	7
MN125	NM	SANGRE RANGE	GOLD HILL TRAIL	WHEELER PK.					3438	11280	38	82	1.80	2	0	1
LN215	CO	SANGRE RANGE	COMANCHE TRAIL	HORN PEAK					3352	11000	46	345	1.50	2	0	1
LN287	CO	SAN JUAN MTS	WOLF CREEK	WOLF CK PASS					3108	10200	42	355	1.64	3	0	1
MN145	NM	SANGRE RANGE	NO FISH LAKE BASIN	PECOS FALLS					3499	11480	37	165	0.50	3	0	7
MN148	NM	SANGRE RANGE	NO FISH LAKE BASIN	PECOS FALLS					3474	11400	28	345	1.50	2	0	2
LN263	CO	SAN JUAN MTS	TRUJILLO MEADOWS	CUMBRES					3255	10680	48	275	0.36	34	0	1
LN 54	CO	SAN JUAN MTS	W FORK PINOS CREEK	SUMMITVILLE	37N	4E	4	SE	3425	11240	16	10	1.82	3	0	7
MN149	NM	SANGRE RANGE	NO FISH LAKE BASIN	PECOS FALLS					3474	11400	30	315	1.00	2	0	7
LN244	CO	SAN JUAN MTS	S FORK ROCK CREEK	JASPER					3459	11350	39	75	1.87	3	0	5
LN250	CO	SAN JUAN MTS	PLATORO RESERVOIR	PLATORO					3124	10250	36	20	1.91	3	0	1
LN220	CO	SANGRE RANGE	SOUTH COLONY LAKES	CRESTONE PEAK					3560	11680	20	125	1.17	2	0	10
LN247	CO	SAN JUAN MTS	MORSETHIEF PARK	SUMMIT PEAK					3297	10820	23	240	0.03	4	0	1
LN177	CO	SPANISH PEAKS	N FORK PURGATOIRE R	TRINCHERA PEAK					3310	10860	30	55	1.98	3	0	0
LN127	CO	LA PLATA MTNS	SHRKTTOOTH TRAIL HD	LA PLATA	37N	11W	20	NW	3331	10930	25	15	1.87	3	0	0
LN 90	CO	SAN MIGUEL MTNS	SLP S OF MIDDLE PK	DOLORES PARK	41N	11W	6	SW	3389	11120	23	210	0.03	2	0	1
LN 76	CO	SAN JUAN MTS	PASS CK BELOW CAMPO	ELWOOD PASS	38N	2E	2	SW	3035	9960	55	1	1.72	4	0	0
LN 93	CO	SAN MIGUEL MTNS	W FK UP LTL FISH CK	GROUNDHOG MT	41N	12W	18	NE	3371	11060	40	20	1.91	2	0	7
LN163	CO	SAN JUAN MTS	W SPUR MILLER MT	LEMON RESV	37N	7W	22	SW	3304	10840	37	307	0.86	2	2	1
LN160	CO	SAN JUAN MTS	RUNLETT PARK	VALLECITO RESV	37N	6W	11	NW	3255	10680	40	326	1.19	3	0	1
LN168	CO	SAN JUAN MTS	CAMP CREEK	MT VIEW CREST	38N	8W	25	NE	3297	10820	65	342	1.45	3	0	1
LN115	CO	LA PLATA MTNS	LITTLE BEAR CK	ORPHAN BUTTE	38N	11W	20	SW	3285	10780	25	350	1.57	1	0	1
MN147	NM	SANGRE RANGE	NO FISH LAKE BASIN	PECOS FALLS					3474	11400	42	10	1.82	3	0	9
LN149	CO	RICO MTNS	BOLAM PASS	HERMOSA PK	40N	9W	19	SE	3176	10420	26	85	1.77	2	0	2
LN211	CO	SANGRE RANGE	MIDDLE TAYLOR CREEK	ELECTRIC PEAK					3291	10800	36	350	1.57	34	0	15
LN216	CO	SANGRE RANGE	COMANCHE LAKE	HORN PEAK					3480	11420	30	90	1.71	3	0	3
LN249	CO	SAN JUAN MTS	GLOBE CREEK	PLATORO					3139	10300	53	350	1.57	4	0	0
LN262	CO	SAN JUAN MTS	TRUJILLO MEADOWS	CUMBRES					3243	10640	48	35	1.98	4	0	0
LN 94	CO	SAN MIGUEL MTNS	BLACK MESA UP SLPs	GROUNDHOG MT	41N	12W	22	NW	3395	11140	23	335	1.34	2	0	1
LN136	CO	LA PLATA MTNS	HIELAND GULCH RV	LA PLATA	37N	11W	35	NE	3115	10220	25	245	0.06	4	0	1
LN111	CO	RICO MTNS	HIGHLINE TRAIL	HERMOSA PK	39N	10W	21	SW	3285	10780	50	285	0.50	2	0	1
LN147	CO	RICO MTNS	BOLAM PASS	HERMOSA PK	40N	9W	19	SE	3474	11400	13	60	1.97	2	0	1
LN125	CO	LA PLATA MTNS	BEAR CK	ORPHAN BUTTE	37N	11W	6	NW	3236	10620	78	340	1.42	23	1	1

TABLE C.2 (CONTINUEO) -- SITE CHARACTERISTICS -- PICEA ENGELMANNII SERIES

PICEA ENGELMANNII/VACC. MYRTILLUS/POLE. PULCHERRIMUM HT, ABLA PH (CONTINUEO)

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUAORANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE (%)	ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)		DEG	COS		SOIL	ROCK	
LN 52	CO	SAN JUAN MTS	NW OF FUCHS RESV	SUMMITVILLE	37N	4E	3	NE	3432	11260	43	295	0.66	34	T	1	RHY-AND
LN153	CO	SAN MIGUEL MTNS	MILL CK	SILVERTON	42N	8W	27	NE	3200	10500	53	335	1.34	4	0	T	QRT-SAN
LN116	CO	LA PLATA MTNS	UP ROUGH CANYON	ORPHAN BUTTE	38N	11W	16	SW	3425	11240	60	75	1.87	34	5	4	SANDSTN
LN121	CO	RICO MTNS	UPPER PRIEST GULCH	CLYDE LAKE	39N	12W	1	SW	3310	10860	61	115	1.34	3	I	1	SANOSTN

PICEA ENGELMANNII/VACCINIUM MYRTILLUS HT  
HT NUMBER: 02 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUAORANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE (%)	ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)		DEG	COS		SOIL	ROCK	
MC738	NM	SAN MATEO MTS	BLUE MOUNTAIN	BLUE MOUNTAIN	7S	6W	35		306	1004	3	235	0.02	0	6	0	7
MC736	NM	SAN MATEO MTS	CUB SPRING	BLUE MOUNTAIN	7S	6W	27		2865	9400	31	3	1.74	7	0	T	
MC733	NM	SAN MATEO MTS	BLUE MOUNTAIN	BLUE MOUNTAIN					3093	10150	60	47	2.00	2	0	1	

PICEA ENGELMANNII/SENECIO CARDAMINE HT, ABIES LASIOCARPA PH  
HT NUMBER: 05 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUAORANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE (%)	ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)		DEG	COS		SOIL	ROCK	
MG193	AZ	WHITE MTS	HANNAGAN CR						2779	9120	23	334	1.33	2	0	T	BASALT
MG246	AZ	WHITE MTS	KP CIENEGA						2804	9200	27	97	1.62	2	0	1	
YG184	AZ	WHITE MTS	E FORK THOMAS CR						2743	9000	2	50	2.00	1	T	0	BASALT
MG187	AZ	WHITE MTS	HANNAGAN CR						0	0	0	0	1.71	0	0	0	BASALT
MG189	AZ	WHITE MTS	RENO LO ROAD						2804	9200	15	88	1.73	12	0	0	BASALT
MG 8	AZ	WHITE MTS	E FORK THOMAS CR						2743	9000	8	365	1.77	4	0	3	BAS-CIN
MG178	AZ	WHITE MTS	HANNAGAN CR-PBAR TR						2651	8700	10	23	1.93	6	3	15	BASALT
MG 9	AZ	WHITE MTS	E FORK THOMAS CR						2758	9050	8	85	1.77	1	0	0	

TABLE C.2 (CONTINUEO) -- SITE CHARACTERISTICS -- PICEA ENGELMANNII SERIES

PICEA ENGELMANNII/SENECIO CAROAMINE HT, ABIES CONCOLOR PH  
HT NUMBER: 05 PHASE NUMBER: 02

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUAORANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE (%)	ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)		DEG	COS		SOIL	ROCK	
MG543	NM	MOGOLLON MTS	BEARWALLOW PARK	BEARWALLOW MTN					2767	9080	25	294	0.64	4	0	15	BASALT
MG198	AZ	WHITE MTS	W FORK THOMAS CR						2636	8650	52	330	1.26	4	0	3	BASALT
MG256	AZ	WHITE MTS	BEAR CR TRIBUTARY						2682	8800	42	51	1.99	4	0	1	
MG182	AZ	WHITE MTS	E FORK THOMAS CR						2743	9000	5	45	2.00	1	T	T	BASALT
MG253	AZ	WHITE MTS	BEAR CR					3N 28E	2590	8500	46	291	0.59	4	0	3	
MG199	AZ	WHITE MTS	W FORK THOMAS CR						2621	8600	10	55	1.98	6	3	4	BASALT
MG 3	AZ	WHITE MOUNTAINS	E FORK THOMAS CR						2590	8500	6	10	1.82	6	5	13	BASALT
MG573	NM	MOGOLLON MTS	TURKEY CREEK	BEARWALLOW MTN					2865	9400	25	359	1.69	3	1	1	BASALT
MG183	AZ	WHITE MTS	E FORK THOMAS CR						2743	9000	13	51	1.99	12	0	0	BASALT
MG186	AZ	WHITE MTS	E FORK THOMAS CR						2712	8900	8	55	1.98	1	0	0	BASALT
MG190	AZ	WHITE MTS	RENO LO ROAD						2804	9200	15	198	0.11	2	0	0	BASALT
MG181	AZ	WHITE MTS	E FORK THOMAS CR						2743	9000	5	15	1.87	1	0	2	BASALT

PICEA ENGELMANNII/ACER GLABRUM HT  
HT NUMBER: 06 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUAORANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE (%)	ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)		DEG	COS		SOIL	ROCK	
ML209	NM	SACRAMENTO MTS	HUBBELL CANYON	ALAMOGOROO					2804	9200	40	5	1.77	4	0	0	
ML208	NM	SACRAMENTO MTS	SACRAMENTO RIV CAN	ALAMOGORDDO					2712	8900	62	40	2.00	4	0	8	
MK406	AZ	CHIRICAHUA MTNS	CIMA CABIN	CHIRICAHUA PK					2773	9100	47	36	1.99	3	0	0	
OK 8	AZ	CHIRICAHUA MTNS	FLY PEAK	CHIRICAHUA PK.					2880	9450	30	5	1.77	3	0	T	RHYOLIT
OK 9	AZ	CHIRICAHUA MTNS	ROUND PARK	CHIRICAHUA PK.					2880	9450	32	55	1.98	3	T	T	RHYOLIT
DK 34	AZ	CHIRICAHUA MTNS	RASPBERRY RIDGE	CHIRICAHUA PK.					2804	9200	40	74	1.87	2	T	5	RHYOLIT



TABLE C.2 (CONTINUED) -- SITE CHARACTERISTICS -- PICEA ENGELMANNII SERIES

PICEA ENGELMANNII/ERIGERON EXIMIUS HT  
 HT NUMBER: 10 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE		ASPECT		LAND FORM	% COVER		PARENT MATERIAL	
									(M)	(FT)	(%)	DEG	COS	SOIL		ROCK			
PLOT E 99 NOT FOUND																			
MG540	NM	MOGOLLON MTS	QUAKING ASPEN CREEK	BEARWALLOW MTN					2755	9040	28	10	1.82		3	0	6		
MG577	NM	MOGOLLON MTS	1 MI S BEARWALLOW	BEARWALLOW MTN					2962	9720	28	56	1.98		2	0	3	BASALT	
MG659	NM	BLACK RANGE	MIMBRES RIVER	REEDS PEAK					2697	8850	48	355	1.64		4	2	1	RHYOLIT	
MG656	NM	BLACK RANGE	REEDS PEAK .4 MI N	REEDS PEAK					2962	9720	46	10	1.82		0	1	2		
MG 80	AZ	WHITE MOUNTAINS	BIG LAKE LOOKOUT						2758	9050	7	45	2.00		1	2	T	BASALT	
MG 81	AZ	WHITE MOUNTAINS	BIG LAKE LOOKOUT						2749	9020	13	210	0.03		1	0	T	BASALT	
MG262	AZ	WHITE MOUNTAINS	BURRO MOUNTAIN	BIG LAKE					2987	9800	16	196	0.13		3	T	T		
EW 94	AZ	WHITE MTS	RDY55 S FK SQUAM CK						2462	8080	20	320	1.09		4	T	T	BASALT	

PICEA ENGELMANNII/CAREX FOENEA HT  
 HT NUMBER: 09 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE		ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)	(%)	DEG	COS	SOIL		ROCK		
MK400	AZ	PINALENO MTNS	PLAIN VIEW PEAK	MT. GRAHAM					3108	10200	42	194	0.14		3	20	6	GRANITE
MK401	AZ	PINALENO MTNS	PLAIN VIEW PEAK						3108	10200	25	173	0.38		12	0	0	

PICEA ENGELMANNII/ELYMUS TRITICOIDES HT  
 HT NUMBER: 07 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE		ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)	(%)	DEG	COS	SOIL		ROCK		
ML236	NM	CAPITAN MTS	MITT-BAR TRAIL	NO60					0	0	35	66	1.93		12	0	35	
ML234	NM	CAPITAN MTS	FR56 .8MI PAST TR60						0	0	34	217	0.01		1	0	30	
ML232	NM	CAPITAN MTS	CAPITAN MTS						3017	9900	40	324	1.16		2	0	10	
ML231	NM	CAPITAN MTS	CAPITAN MTS						3017	9900	50	75	1.87		2	0	58	

TABLE C.2 (CONTINUED) -- SITE CHARACTERISTICS -- PICEA ENGELMANNII SERIES

PICEA ENGELMANNII/HERACLEUM SPONDYLTIUM HT  
 HT NUMBER: 11 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE		ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)	(%)	DEG	COS	SOIL		ROCK		
LN157	CO	NEEDLE MTNS	LIME CK CAMPGROUND	ENGINEER MT	39N	8W	4	SW	2761	9060	1	190	0.18		6	1	T	ALLUVIA
LN277	CO	SAN JUAN MTS	FISH CREEK	CHAMA PEAK					2712	8900	2	340	1.42		6	2	2	
LN 77	CO	SAN JUAN MTS	W FORK WOLF CK	WOLF CK PASS	37N	1W	7	SW	2502	8210	4	350	1.57		56	0	10	ALLUVIA

PICEA ENGELMANNII/SAXIFRAGA BRONCHIALIS HT  
 HT NUMBER: 08 PHASE NUMBER: 01

PLOT NO.	STATE	GEOGRAPHIC	LOCAL	USGS TOPOGRAPHIC QUADRANGLE	TWN	RNG	SEC	QTR	ELEVATION		SLOPE		ASPECT		LAND FORM	% COVER		PARENT MATERIAL
									(M)	(FT)	(%)	DEG	COS	SOIL		ROCK		
LN 91	CO	SAN MIGUEL MTNS	LITTLE FISH CK	GROUNDHOG MT	41N	12W	16	NW	3310	10860	55	159	0.59		3	10	68	GRN-QRT
LN100	CO	RICO MTNS	BARLOW LAKE TALUS	MT WILSON	40N	10W	9	NE	3041	9980	62	285	0.50		3	1	61	GRN-QRT
LN126	CO	LA PLATA MTNS	BARCO MT TALUS	LA PLATA	37N	11W	5	SW	3276	10750	2	350	1.57		3	0	84	GRANITE
LN128	CO	LA PLATA MTNS	SHRKTOOTH TRAIL HD	LA PLATA	37N	11W	20	NW	3337	10950	45	200	0.09		3	3	89	GRANITE
LN139	CO	LA PLATA MTNS	SLIDEROCK MT	MONUMENT HILL	36N	10W	2	NE	3200	10500	67	260	0.18		3	T	90	SANDSTN
LN196	CO	WET MTS	OPHIR CREEK	DEER PEAK					2980	9780	55	320	1.09		3	T	98	
LN228	CO	SANGRE RANGE	LAKE COMO	TWIN PEAKS					3596	11800	58	195	0.13		3	T	85	
LN235	CO	SANGRE RANGE	RASPBERRY CREEK	HOWARD					3093	10150	49	255	0.13		4	T	40	



Muldavin, Esteban; Ronco, Frank, Jr.; Aldon, Earl F. 1990. Consolidated stand tables and biodiversity data base for southwestern forest habitat types. Gen. Tech. Rep. RM-190. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 51 p.

To provide a foundation for future research into the biodiversity, structure, and dynamics of southwestern forest communities, stand tables consolidating over 2,000 field plots, stratified by 11 different climax forest tree series, have been compiled. The data upon which the tables are based are made available in a computerized format, accessible by microcomputer. A suite of computer programs is also provided for manipulating the data base to meet individual research needs.

**Keywords:** Habitat type, classification





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## 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.

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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.

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Flagstaff, Arizona  
Fort Collins, Colorado\*  
Laramie, Wyoming  
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