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ECOLOGY OF THE NEVADA TEST SITE I.
GEOGRAPHIC AND ECOLOGIC DISTRIBUTIONS OF THE VASCULAR FLORA
(ANNOTATED CHECKLIST)

By

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April 1965

LEGAL NOTICE

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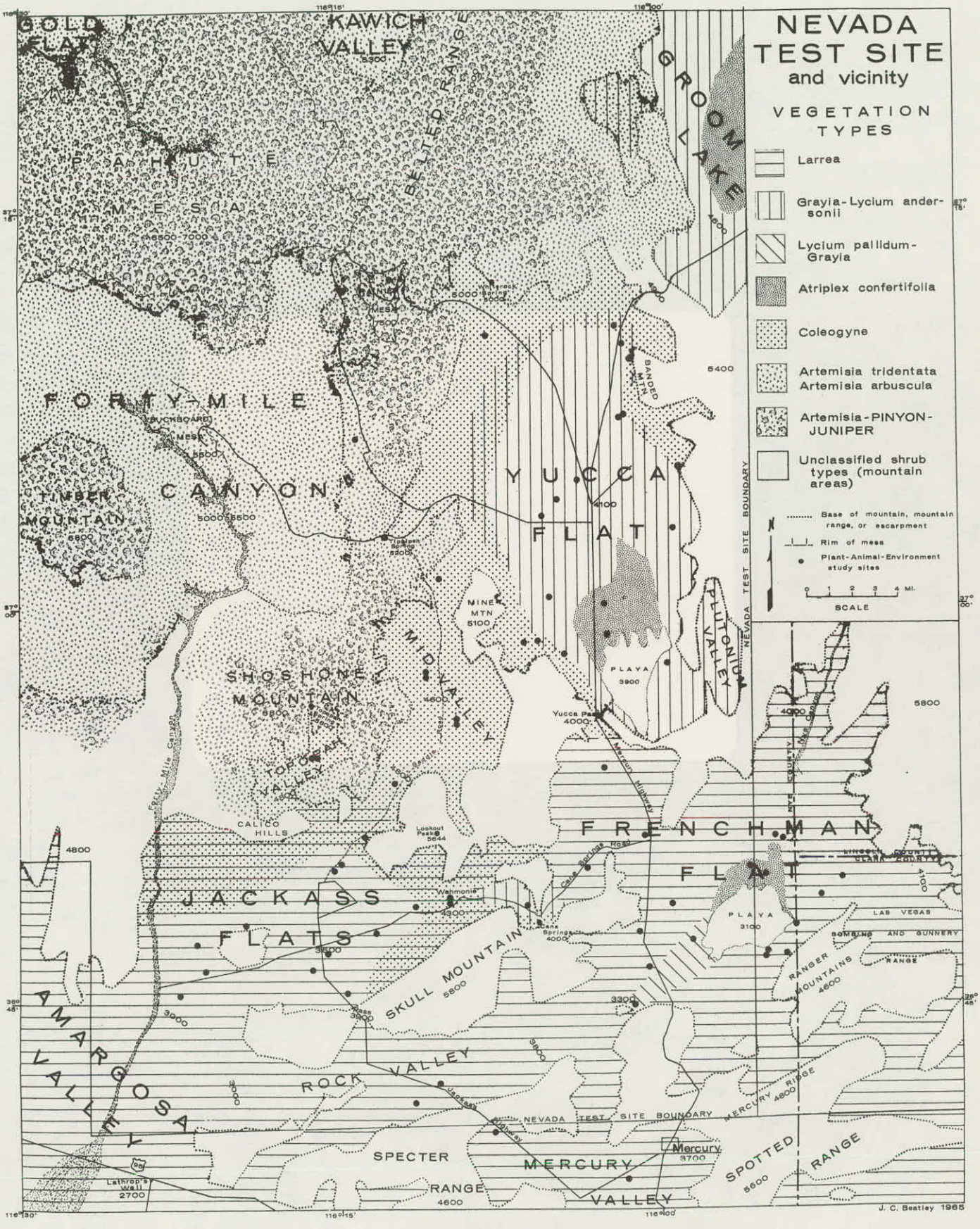
Figure 1. VEGETATION TYPES OF THE U. S. ATOMIC ENERGY COMMISSION'S NEVADA TEST SITE AND VICINITY.

Vegetation boundaries are semi-diagrammatic. Physiographic boundaries are approximate, based upon U. S. Geological Survey Nevada topographic quadrangles (15 minutes, scale 1:50,000): Silent Canyon, Wheelbarrow Peak, Groom Mine, Timber Mountain, Tippipah Spring, Papoose Lake, Topopah Spring, Cane Spring, Frenchman Lake, Lathrop Wells, Specter Range, and Mercury. Numbers refer to elevations (see text).


NEVADA TEST SITE and vicinity
VEGETATION TYPES
Larrea
Grayia-Lycium andersonii
Lycium pallidum-Grayia
Atriplex confertifolia
Coleogyne
Artemisia tridentata Artemisia arbuscula
Artemisia-PINYON-JUNIPER
Unclassified shrub types (mountain areas)
Base of mountain, mountain range, or escarpment
Rim of mesa
Plant-Animal-Environment study sites
0 1 2 3 4 MI.
SCALE
NEVADA TEST SITE BOUNDARY
GOLDEN FLAT
KAWICH VALLEY
BUTTED RANGE
GROOM LAKE
PAHUTE MESA
FORTY-MILE CANYON
BUCKBOARD MESA
TIMBER MOUNTAIN
YUCCA FLAT
BANDED MTN.
MINE MTN 5100
PLUTONIUM VALLEY
PLAYA 3900
SHOSHONE MOUNTAIN
MIDDLE MTN
TOPOPAH VALLEY
CALICO HILLS
Lookout Peak 5644
Yucca Pass 4000
Mercury Highway
FRENCHMAN FLAT
PLAYA 3100
Cane Springs Road
Wahmonie
JACKASS FLATS
SKULL MOUNTAIN 5600
Cane Springs 4000
LAS VEGAS BOMBING AND GUNNERY RANGE
RANGER MOUNTAINS 4600
AMARGOSA VALLEY
ROCK VALLEY
NEVADA TEST SITE BOUNDARY
MERCURY RIDGE 4800
Mercury 3700
SPECTER RANGE 4600
MERCURY VALLEY
SPOTTED RANGE 5600
Lathrop's Well 2700
J. C. Beatley 1965

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ECOLOGY OF THE NEVADA TEST SITE I. GEOGRAPHIC AND ECOLOGIC DISTRIBUTIONS OF THE VASCULAR FLORA (ANNOTATED CHECKLIST)

INTRODUCTION

Since the issuance of the first checklist of vascular plants of the Nevada Test Site[1], a number of changes in determinations have been made, and many additional collections have increased the number of species now known from the region and enable more clearly-defined geographic and ecologic distributions of many of the taxa. The present list is a revision of the first and an expanded effort to bring together what is known to date, from field and herbarium records, of the occurrence and distributions of the vascular species of this large reservation.

Plant Collections. Included in the present list are 527 taxa (of sub-generic rank), belonging to 67 families, 239 genera, and 488 species. All are represented by one or more specimens on file in the Nevada Test Site Herbarium, Mercury, Nevada, except for one for which the supporting specimens reside in another herbarium. Statements of relative abundance, vegetation types with which the taxa are associated, geographic distributions, and flowering times are based upon (1) the collections in the Test Site Herbarium, made during the period 1959-65; (2) record (voucher) specimens collected from study sites located in most regions of the Test Site, in each of the years 1962-64; and (3) field observations by the author from 1959-65. The major areas in which the vegetation types are represented and the locations of the study sites are indicated in Figure 1.

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[1] Beatley, Janice C. Vascular plants of the U. S. Atomic Energy Commission's Nevada Test Site, Nye County, Nevada. UCLA 508. 33 pp. 1962.

The most extensive and intensive collecting has been done on the bajadas of the major basins, especially in the vicinity of sites of ecological studies in progress during the past several years. Most collections from the mountain areas have been from Rainier Mesa because of its accessibility, and in the past year from the large Pahute Mesa following construction of a major road system penetrating most parts of this remote area. Only occasional collections have come from the canyons and mountain slopes, and in these areas it is believed there are probably many species as yet not reported from the region.

Collections have been from both undisturbed and disturbed sites. Although little effort has been made to collect specifically the drainage courses ("washes") of the bajadas, most of the species which occur either exclusively or primarily in this kind of habitat probably appear in the present list, since these are often associated also with other kinds of disturbed sites which have been collected rather intensively through the years.

Collections from Bald Mountain, a conspicuous peak on the east side of the basin of Groom Lake (Lincoln County), are included in the present list, although the mountain lies to the north of the present boundary of the Test Site. It is, however, within the Las Vegas Bombing and Gunnery Range, into which area collecting activities will be expanded in the future. Around 100 taxa in the Herbarium from Nye, Clark, and Lincoln Counties, and nearby California -- all outside the Test Site or Bombing and Gunnery Range boundaries or the near vicinity of these boundaries -- are not included in the current list.

Because the region encompassed by the Test Site apparently was rarely visited by collectors in pre-Test Site times, straddles a critical floristic boundary in southern Nevada, and is not adequately covered by any regional manual, there has been a particular need for the assistance of monographers for acquiring an understanding of the taxa represented. Much of the flora has been critically reviewed by systematists whose groups of special interest are represented among the collections. The cooperation of these reviewers, and their contributions to the present correct epithets for a large segment of the flora, are acknowledged with gratitude on behalf of all Test Site biologists for whom accuracy of species determinations is usually a requisite to all other kinds of field and experimental studies. The reviewers, and the groups reviewed to date, are the following:

Loran C. Anderson	-	*Chrysothamnus*
Rupert C. Barneby	-	*Astragalus*
Alva Day	-	*Gilia*
David B. Dunn	-	*Lupinus*
Donald W. Kyhos	-	*Chaenactis*
Mildred E. Mathias	-	UMBELLIFERAE[2]
Peter H. Raven	-	GRAMINEAE, COMPOSITAE, ONAGRACEAE, HYDROPHYLLACEAE, *Eriogonum*, and miscellaneous collections in numerous other groups
Reed C. Rollins	-	CRUCIFERAE
Henry J. Thompson	-	LOASACEAE
Delbert Wiens	-	*Phoradendron*
Ira L. Wiggins	-	*Sphaeralcea*[3]

[2] Except *Cymopterus ripleyi* var. *saniculoides*
[3] Except *S. ambigua*

In the groups not reviewed the determinations are the tentative ones of the author, at least some of which are subject to change since they are usually not based upon the monographic literature. Synonomy in most cases follows that of Munz and Keck[4], but for some taxa is that of Clokey[5], Tidestrom[6], treatments of certain groups in "Contributions toward a Flora of Nevada"[7], Kearney and Peebles[8], Hitchcock[9], or that of a monographer whose work is cited in connection with the group in the annotated list. Order of the taxa in the list is alphabetical except for the Divisions and Classes.

Phenology and Life Cycles. Unless otherwise noted, the taxa in the annotated list are perennials. The designation of winter annual or summer annual is based upon field records, supported by voucher specimens, of the species at the seedling stage during years when the time of germination was known. For those designated only as annuals, the season of germination in the Test Site region is not known with certainty. True biennials, i. e., plants with the life cycle spanning two growing seasons, are as yet unknown in the flora.

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4 Munz, Philip A. and David D. Keck. A California flora. Univ. of Calif. Press. 1681 pp. 1959.

5 Clokey, Ira W. Flora of the Charleston Mountains, Clark County, Nevada. Univ. of Calif. Press. 274 pp. 1951.

6 Tidestrom, Ivar. Flora of Utah and Nevada. Contr. U. S. Nat. Herb. 25. U. S. Govt. Printing Office, Washington. 1925.

7 Series of family treatments by various authors, under various dates. Multilithed. National Arboretum and Agric. Res. Serv., U. S. Dept. of Agric., Beltsville, Md.

8 Kearney, Thomas H. and Robert H. Peebles, and collaborators. Arizona flora. Univ. of Calif. Press. 1032 pp. 1951.

9 Hitchcock, A. S. Manual of the grasses of the United States. Second Ed., revised by Agnes Chase. U. S. Govt. Printing Office, Washington. 1051 pp. 1950.

Germination of winter annuals takes place following a heavy rain, or rain period of a few days' duration, which usually comes sometime during the months of October, November, or December, but under some circumstances may be a September rain. The seedlings, commonly in the form of rosettes, grow more or less during the winter months, and reach maturity during April or May, depending primarily upon the geographical area of the Test Site in which they occur. The growing season for this group of plants is therefore from five to eight months long. If a heavy rain fails to come by the end of December, winter annuals (the "desert wildflowers") are absent in the spring aspects of the vegetation. One hundred and fifteen native species, occurring on the Test Site within the elevational range of 3000-6000 feet, are known with certainty to be winter annuals, and around 30 other annual species probably also belong to this group. At the higher elevations most annual species are probably spring-germinating.

Vegetative parts of perennial species also usually appear in the autumn, and grow more or less during the winter months; flowering commonly occurs in April and May, continuing into June and July at the higher elevations. A few perennial species, chiefly Composites, regularly flower in September and October. A number of spring-flowering perennials may have a second flowering period in September and October following heavy rains in late summer, and occasional individuals of several species may be found in flower during any month of the year.

Summer annuals germinate following heavy, usually late-summer rains, and have completed their life cycles of several weeks' duration with the onset of sub-freezing temperatures in October or November. The summer annual flora consists of but seven species.

Species of seepage sites near the springs at the middle elevations are usually spring-germinating (if annuals) and summer-flowering, i. e., the growth regimes are unlike those of the desert species of the adjacent bajadas. Most introduced species are confined to water impoundments or other sites where soils are temporarily or continuously more moist than those of the region.

Floristic and Physiographic Regions. The Test Site (here including the Nuclear Rocket Development Station of Jackass Flats), located in southern Nye County of south-central Nevada, lies in its entirety within the Great Basin section of the Basin and Range Province of Fenneman[10]. Its southwestern boundary is around 12 miles from the boundary of Death Valley National Monument, and the massive mountains on the southern and western horizons are those of the Death Valley, California, region. The closest range in which the higher peaks are over 10,000 feet are the Spring (Charleston) Mountains which overlook the Test Site to the southeast. To the north and east are the several mountain ranges and intermontane valleys of the Las Vegas Bombing and Gunnery Range. The area included in Figure 1 is approximately 2000 square miles.

The Test Site presently consists of all or parts of four major drainage basins, in two of which (Frenchman and Yucca Flats) surface drainage waters accumulate at the low point of the basin, the playa. In the other two (Jackass Flats and Forty-Mile Canyon) the surface drainage ultimately empties into the Amargosa River to the southwest of the Test Site, and thence into Death Valley. The minor valleys

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[10] Fenneman, Nevin M. Physiography of western United States. McGraw-Hill Book Co., Inc., New York. 534 pp. 1931.

include Mercury Valley and Rock Valley, tributaries to the Amargosa Valley; Topopah Valley, tributary to Jackass Flats; Mid Valley, whose drainage is confluent with that of Frenchman Flat; and Plutonium Valley, which opens into southeastern Yucca Flat.

The valley floors (bajadas) are more or less rimmed (and separated) by abruptly-rising mountain ranges, consisting in most areas of igneous rocks, or combinations of igneous and sedimentary rocks, which are complex in origin, chemical and physical composition, and weathering form and products.[11] The mountain ranges occupy around one-half of the area. Mountains which are largely or entirely limestones and dolomites are those of the Spotted and Specter Ranges in the vicinity of the southern boundary of the Test Site, Banded Mountain of northeastern Yucca Flat, the foothills of the Belted Range of western Yucca Flat, and the northeast-facing hills of southwestern Yucca Flat. Such ranges, consisting entirely or primarily of sedimentary materials, weather to sharp-angled rock masses, irregular in outline, in contrast with the weathering form of the tuffs, basalt, and other volcanic types, of which the mountains in most areas of the Test Site are composed and in which weathering has resulted in relatively rounded rock masses, smooth in outline, and often steep-sided and flat-topped (mesas).

Elevations range from around 3000 feet in extreme western Jackass Flats to 7679 feet on Rainier Mesa; other ridges and peaks in the Belted Range which are at elevations over 8000 feet are north of the Test Site boundary. Bald Mountain, in the Timpahute Range to the northeast, rises to an elevation of 9,380 feet. Elevations indicated in Figure 1 are

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[11] Johnson, Mike S. and Donald E. Hibbard. Geology of the Atomic Energy Commission Nevada Proving Grounds area, Nevada. Geol. Surv. Bull. 1021-K, pp. 333-384. U. S. Govt. Printing Office, Washington. 1957.

of two kinds: (1) The approximate elevation of the locality indicated, where more than one elevation for the basin floor is given; and (2) an average of the ridges, excluding the high peaks, for mountain ranges, mesas, or other physiographic area where a single elevation is given.

Following the classification of the North American deserts by Shreve[12], the Test Site straddles the northern edge of the Mojave desert and the southern boundary of the Great Basin desert. This is related to the gradient of increase in elevation of the bajadas of the basins from south to north (Figure 1), in accord with which there are rather marked climatic and vegetational differences between the southern (lower) and northern (higher) parts of the Test Site. Species of Jackass Flats, Rock Valley, Mercury Valley, and Frenchman Flat, across the southern half of the Test Site, are species of the Mojave desert, some of them restricted to the southern Nevada/Inyo County, California, region. These also are primarily the species of the bajadas of Yucca Flat, where the species are, however, significantly reduced in number. In the Forty-Mile Canyon area and the basins to the north of Pahute Mesa and Yucca Flat, where elevations of the basin floors are generally 5000 feet or higher, the flora is allied with that of the central and northern Nevada part of the Great Basin desert.

The distributions of many species -- especially the herbaceous species -- appear to be closely correlated with composition of the mountain masses from which the soil materials have been derived. Two ranges, the Specter Range bordering Rock Valley on the south and the Ranger Mountains bounding Frenchman Flat on the southeast, and the

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[12] Shreve, Forrest. The desert vegetation of North America. Bot. Rev. 8: 195-246. 1942.

bajadas below them, are the most distinct and the richest floristic areas of the Test Site; a number of species appear to be restricted to the highly calcareous soils of these areas, and other species to these and the soils of the areas in Yucca Flat also consisting predominantly of calcareous materials. Because of the clearly-defined distribution patterns, especially in Frenchman Flat but also in the other basins, the parts of the basins in which the species are known to occur are indicated for many in the annotated list.

Vegetation Types. The vegetation types recognized in Figure 1, and to which the taxa are assigned in the annotated list, represent the principal shrub and woodland types which would be apparent and recognizable to nearly any observer of the landscape. The classification is a very broad one, and each of the types consists of plant associations, or is in itself an association, recognized as being more or less well-defined and widespread, to one or more of which the species of the region will ultimately be further assigned. The major associations and areas of their occurrence are the following:

I. The vegetation in which Larrea is a dominant species is here considered to consist of six associations which differ in certain fundamental respects: (1) Larrea, in which essentially no other shrub species occur, as in southwestern Frenchman and central Jackass Flats; (2) Larrea-Franseria, especially in Mercury, western Jackass, and sandy areas of northern and eastern Frenchman; (3) Larrea-Atriplex confertifolia, on the gravelly bajadas of southern Frenchman where soils are derived from calcareous rocks; (4) Larrea-Dalea fremontii, on the east slope of Frenchman; (5) Larrea-Lycium pallidum-Grayia, of southern

Jackass and the bajadas below the Skull Mountain range in the Rock Valley, Mercury, and southwestern Frenchman drainages; and (6) the most widespread association, Larrea-Grayia-Lycium andersonii, occurring especially in western Mercury, northern and eastern Jackass, northern and western Frenchman, and locally in central-western, northeastern, and central-eastern Yucca.

A number of other associations are recognized which are mostly variations of these six kinds and differ from the basic types in the addition of usually one other dominant species (and usually also other species, as well). Examples are the addition of Menodora (and certain herbaceous species) to the Larrea-Franseria below the Calico Hills in northwestern Jackass Flats; Lycium shockleyi to the Larrea-Atriplex of the bajadas extending from the playa of Frenchman Flat to the base of the Ranger Mountains; and the arborescent yuccas, Yucca schidigera to the Larrea-Franseria of much of Mercury Valley and southern Frenchman, and Yucca brevifolia to the Larrea-Grayia-Lycium andersonii of northern and eastern Jackass and northern Frenchman.

Areas where the dominants (and associated shrub and herbaceous species) of two or more associations occur together are usually interpreted as being vegetationally and environmentally transitional. Well-defined vegetation of this kind occurs on parts of the north-facing bajada below the Specter Range in Rock Valley, and on the bajada below the east end of the Skull Mountain range in Frenchman, where Larrea shares dominance with Franseria (from the Larrea-Franseria association), and with Lycium andersonii, Lycium pallidum, and Grayia (from the Larrea-Grayia-Lycium andersonii and Larrea-Lycium pallidum-Grayia associations).

Larrea, as a species, reaches its northern limits in the Test Site region on the north slope of Jackass Flats and in northeastern Yucca Flat, in both areas at around 4500 feet elevation. In Yucca basin, except as noted above, it is restricted to local areas on the upper bajadas (not indicated in Figure 1), where it is associated with Coleogyne communities beginning at around 4000 feet. The Larrea communities of the bajadas of southeastern Frenchman and the north-facing slope of Rock Valley, where soils are derived from calcareous rocks of the Ranger Mountains and the Specter Range, are those with the greatest floristic diversity in the region.

Grayia-Lycium andersonii communities, which occupy so much of the low-gradient basin floor of Yucca Flat, are closely related to the Larrea-Grayia-Lycium andersonii association in the basins to the south, but with Larrea and a number of other species no longer present. Certain species with affinities with the Great Basin desert to the north are, however, prominent in this type. The absence of Larrea and other species of Larrea-Grayia-Lycium andersonii, and the presence of species belonging to the Great Basin desert, are correlated with temperature inversion phenomena of the lower elevations of this basin. Other closely related associations include especially Grayia-Lycium-Tetradymia glabrata, in southeastern Yucca Flat including Plutonium Valley, and Grayia-Lycium-Eurotia, which occurs in a number of parts of the basin floor of Yucca Flat. Artemisia spinescens is often prominent and in some areas a dominant species. Yucca brevifolia on the whole attains its maximum size and abundance on the Test Site in the Grayia-Lycium communities of southwestern and especially southeastern Yucca Flat.

Lycium pallidum-Grayia, occupying much of the area extending west from the playa across southern Frenchman Flat, is a conspicuous landscape feature because it constitutes a broad and discrete band in which Larrea is absent in this basin. The association is interpreted as being the ecological equivalent in many respects of the Grayia-Lycium andersonii of Yucca Flat, in which the Lycium species is a different one whose occurrence is related to the Skull Mountain origin of the sandy materials in this trough. A number of local areas in this region of Frenchman Flat are occupied by Atriplex canescens communities, not indicated in Figure 1. The absence of Larrea and other species of the closely-related Larrea-Lycium pallidum-Grayia and other Larrea communities of the adjacent bajadas, as in the equivalent communities of Yucca Flat is correlated with the pattern of temperature inversions which occur at the lower elevations throughout all seasons of the year.

II. Atriplex confertifolia associations include Atriplex-Kochia and Atriplex-Eurotia north of Yucca playa, and essentially pure stands of Atriplex north of Frenchman playa. Within the last, as in the Lycium pallidum vegetation southwest of the playa, certain sandy sites are occupied by Atriplex canescens communities. A. confertifolia is also a dominant with Larrea or Coleogyne on bajadas or slopes of hills where bedrock is calcareous, as on the bajadas and in the foothills of northern Mercury, southern Frenchman, and southwestern Yucca Flat.

III. Coleogyne communities are most commonly either (1) those in which Coleogyne occurs in nearly pure stand, as in much of Mid Valley, Topopah Valley, and the upper bajadas and foothills of northwestern Yucca Flat, or (2) Coleogyne within which are scattered clumps of Grayia and Lycium andersonii, or these species and Larrea, as in northern Jackass,

southern Mid Valley, and on the upper bajadas of those parts of Yucca Flat where Coleogyne occurs. The latter is interpreted as being in reality two types (associations), growing in intricate mosaic, and the vegetation as a whole ecotonal. Coleogyne is always associated with stony soils, and occurs mostly at elevations of 4000-5000 feet. In the lower elevational communities, Yucca brevifolia may be a prominent species, and in those of the higher elevations, Yucca baccata. Coleogyne is essentially absent in the Forty-Mile Canyon drainage, where soils consist primarily of sands derived from the volcanic rocks of this region. The communities of which it is a dominant are interpreted as belonging strictly neither to the Mojave desert nor the Great Basin desert, but occupying a position of intermediacy between the Larrea and the Artemisia/Atriplex types which characterize the two desert regions.

IV. A mosaic of Artemisia tridentata and Artemisia arbuscula subsp. nova begins at around 5000 feet and continues to the highest elevations on the Test Site. Both species occur commonly in nearly pure stands. A. tridentata is associated with relatively deep sandy soils of valley bottoms, depressions, and the flatter terrain of the uplands, as on the tops of mesas. A. arbuscula occupies the shallow stony soils of the hill and mountain slopes and ridges. The boundaries between the two types are usually sharply-defined. A. tridentata-Grayia occupies much of the area of the central Forty-Mile Canyon drainage indicated in Figure 1 as Artemisia vegetation.

V. At around 6000 feet elevation the tree species, Juniperus osteosperma (Utah Juniper) and at slightly higher elevations Pinus monophylla (Pinyon Pine), enter the Artemisia communities, where they occur in open, discontinuous stands to the highest elevations of the Test Site. In some

areas Pinyon Pine occurs without Juniper, and in other areas the tree layer is a nearly pure stand of Juniper; an extreme example of the latter are the "Juniper Flats" of northern Pahute Mesa, where in addition to the near absence of Pinyon, the usual shrub and herbaceous layers of the Artemisia-Pinyon-Juniper are also essentially absent. Many large areas of Artemisia (especially A. tridentata on Pahute Mesa), without the tree species, occur within that indicated in Figure 1 as Artemisia-Pinyon-Juniper vegetation.

Vegetation types contiguous in position on the bajadas nearly always overlap to some extent, and in the region of overlap form transitional types. Among the largest areas of such ecotonal vegetation are the Larrea/Coleogyne of the north slope of Jackass Flats, and the Grayia-Lycium/Coleogyne on the upper bajadas of western Yucca Flat.

Unclassified types of Figure 1 are those in hill or mountain areas in which the vegetative cover has either not been evaluated, or consists of poorly-defined, heterogeneous assemblages primarily of the species of the nearby bajadas, but the species composition varying with the composition and degree of dissection of the bedrock, slope gradient and exposure, and to some degree elevation.

ANNOTATED LIST OF THE VASCULAR FLORA

PTEROPHYTA. Ferns

PTERIDACEAE

Cheilanthes parryi (D. C. Eat.) Domin.
Crevices in calcareous rock, hills of Rock Valley, n. Mercury, and e. Frenchman.

Pellaea mucronata (D. C. Eat.) D. C. Eat. var. *californica* (Lemmon) M. & J.
Cliff crevices, Topopah Spg.

Pityogramma triangularis (Kaulf.) Maxon var. *maxoni* Weath.
Cliff crevices, hills of n. Yucca.

CONIFEROPHYTA. Cone-bearing Plants

CUPRESSACEAE. Cypress Family

Juniperus osteosperma (Torr.) Little
Dominant species in Rainier Mesa, Pahute Mesa, and Shoshone Mtn. areas, and higher elevations to north of Test Site. Appears at slightly lower elevations than *Pinus monophylla*. May.

EPHEDRACEAE. Ephedra Family

Ephedra funerea Cov. & Mort.
Common on hill and mountain slopes of sw. Frenchman and nw. Mercury; local in *Coleogyne* of Cane Spgs. area. Apr-May.

Ephedra nevadensis Wats.
Widespread and common in *Larrea*, *Grayia-Lycium*, *Coleogyne*, and *Artemisia*, locally as a dominant shrub. All basins. Apr-May.

Ephedra torreyana Wats.
Abundant, with *Atriplex confertifolia*, upper bajadas and mountain slopes, se. Frenchman and ne. Mercury. Apr-May.

Ephedra viridis Cov.
Common in upper *Artemisia* and *Artemisia*-Pinyon-Juniper. Apr-May.

PINACEAE. Pine Family

Abies concolor (Gord. & Glend.) Lindl.
Bald Mtn., Groom.

Pinus flexilis James
Bald Mtn., Groom.

Pinus monophylla Torr. & Frem.
Dominant species in Rainier Mesa, Pahute Mesa, Shoshone Mtn. areas, and higher elevations to north of Test Site. June-July.

ANTHOPHYTA. Flowering Plants

Monocotyledoneae

AGAVACEAE. Agave Family.

Agave utahensis Engelm. var. nevadensis Engelm. ex Greenm. & Roush
Local on canyon slopes, mountains of e. Frenchman, ne. Mercury. Apr-May.

Yucca baccata Torr.
Occasional to common locally. Upper Coleogyne and lower Artemisia-Pinyon-Juniper. May-June.

Yucca brevifolia Engelm. in Wats.
Occasional to common. Upper Larrea, Grayia-Lycium, lower Coleogyne. N. and e. Jackass; Mid Valley, esp. southern half; nw. Frenchman, absent or occasional individuals only in s. Frenchman; most parts of Yucca, esp. s. one-third; sw. Groom. Apr-May.

Yucca schidigera Roezl ex Ortgies
Common in Larrea of s. Frenchman and Mercury. Apr-May.

AMARYLLIDACEAE. Amaryllis Family

Allium nevadense Wats.
Occasional. Rock crevices in Coleogyne, hills of w. Yucca. Apr.

Androstephium breviflorum Wats.
Rare or local. Atriplex types, n. and se. Frenchman. Apr.

Brodiaea pulchella (Salisb.) Greene var. pauciflora (Torr.) Mort.
Often locally abundant. Larrea-Grayia-Lycium, Grayia-Lycium, Coleogyne, Artemisia, and Artemisia-Pinyon-Juniper. Apr-June.

CYPERACEAE. Sedge Family

Carex praegracilis Boott. (?)
Margin of Cane Spgs. pond. Fl. time unknown.

Eleocharis montevidensis Kunth var. parishii (Britton) V. Grant
Shallow water, Cane Spgs. pond. Apr-Sept.

GRAMINEAE. Grass Family

Agropyron desertorum (Fisch.) Schult.
Occasional in burned Coleogyne, Topopah. Introduced. June.

Agrostis semiverticillata (Forsk.) C. Chr.
Margin of Cane Spgs. pond. Introduced. May-Sept.

Aristida glauca (Nees) Walp.
Local on disturbed sites, and probably in washes, s. Frenchman and n. Yucca. May-Sept.

Avena sativa L.
Animal feeding site, s. Frenchman. Annual.

Bouteloua barbata Lag.
Common some years in Larrea-Atriplex types in se. Frenchman, and esp. in Grayia-Lycium and Coleogyne of n. Yucca. Summer annual. Aug-Nov.

Bouteloua gracilis (HBK.) Lag.
Locally common in Artemisia-Pinyon-Juniper of Mesas. Aug-Sept.

Bromus diandrus Roth
Local on seepage slope, Cane Spgs., and burned sites in Topopah. Introduced winter annual. Apr-May.

Bromus rubens L.
Common to abundant in Larrea/Coleogyne of n. Jackass; often abundant in Coleogyne, w. side of Yucca, Topopah, Mid Valley; occasional or absent in most Larrea and other types. Introduced winter annual. Apr-June.

Bromus tectorum L.
Common to abundant on disturbed sites, Artemisia and Artemisia-Pinyon-Juniper. Introduced winter annual. Apr-June.

Bromus trinii Desv.
Occasional in washes, Rock Valley and Mercury, and on burned sites in Topopah. Introduced winter annual. Apr-May.

Cynodon dactylon (L.) Pers.
Moist soil at Well 5-B, s. Frenchman. Introduced. Sept.

Distichlis spicata (L.) Greene var. stricta (Torr.) Beetle
Seepage slope, Cane Spgs. June-July.

Elymus cinereus Scribn. & Merr.
Local in Artemisia-Pinyon-Juniper, and on seepage slope, Cane Spgs. Apr-July.

Elymus triticoides Buckl.
Moist to wet soil, vicinity of Cane Spgs. pond. May-June.

Festuca octoflora Walt.
Winter annual. Apr-May.

var. hirtella Piper
Ne. Yucca.

var. octoflora
Occasional to abundant, Larrea of se. Frenchman, Mercury, Rock Valley, and n. and w. Jackass; locally common or occasional in Grayia-Lycium, Coleogyne, or Artemisia tridentata of other basins.

Festuca reflexa Buckl.
Occasional in washes, Topopah. Winter annual. Apr-May.

Hilaria jamesii (Torr.) Benth.
Common locally in Coleogyne of n. Yucca, Artemisia and Artemisia-Pinyon-Juniper of Forty-Mile Cyn. May-June, some years Sept-Oct.

Hilaria rigida (Thurb.) Benth. ex Scribn.
Common in Larrea associations of se. Frenchman. Apr-May, some years Sept-Oct.

Hordeum glaucum Steud.
Seepage site, near Cane Spgs. pond. Introduced annual. May.

Koeleria cristata (L.) Pers.
Common in Artemisia-Pinyon-Juniper. June-July.

Muhlenbergia porteri Scribn.
Local in disturbed Grayia-Lycium, nw. Yucca. May-June.

Munroa squarrosa (Nutt.) Torr.
Occasional on disturbed sites in Artemisia-Pinyon-Juniper. June-July.

Oryzopsis hymenoides (R. & S.) Ricker
Occasional to common in all vegetation types, all basins. Apr-June.

Oryzopsis hymenoides X Stipa thurberiana
Collections from n. slope of Jackass, Mid Valley, and w. Yucca, all from Coleogyne or transitional types.

Oryzopsis micrantha (Trin. & Rupr.) Thurb.
Uncommon or rare. Artemisia-Pinyon-Juniper of Mesas. June.

Poa fendleriana (Steud.) Vasey
Common in Artemisia-Pinyon-Juniper, but occasionally in Coleogyne or canyons at lower elevations. Apr-June.

Poa nevadensis Vasey ex Scribn.
Common in Artemisia-Pinyon-Juniper, occasionally in Coleogyne. May-June.

Polypogon australis Brongn.
Margin of Cane Spgs. pond. Introduced.[13] May-Sept.

Polypogon monspeliensis (L.) Desf.
Margin of Cane Spgs. pond, and Whiterock Spg. Introduced. May-Sept.

Schismus arabicus Nees
Disturbed sites, Mercury townsite. Introduced annual. Mar.

Sitanion hystrix (Nutt.) J. G. Smith
Often common in Grayia-Lycium, Coleogyne, Artemisia, and Artemisia-Pinyon-Juniper, occasionally in Larrea. All basins.

X Sitanion hansenii (Scribn.) J. G. Sm.
One collection, wash in Topopah. May.

Sporobolus flexuosus (Thurb.) Rydb.
Locally common in Larrea of cent., s. and e. Frenchman, and local in Coleogyne of e. Forty-Mile Cyn. May-June, some years Sept-Oct.

Stipa arida Jones
Locally common in Artemisia-Pinyon-Juniper. May-June.

Stipa comata Trin. & Rupr.
Common to abundant in Artemisia tridentata, esp. in e. Forty-Mile Cyn, and Artemisia-Pinyon-Juniper. May-June.

Stipa pinetorum Jones
Artemisia-Pinyon-Juniper, esp. cent. Rainier Mesa. May-July.

Stipa speciosa Trin. & Rupr.
Common in Grayia-Lycium, Coleogyne, and occasionally in Larrea and Artemisia. All basins. Apr-May.

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[13] Raven, Peter H. Polypogon australis Brongn. in Nevada. Leaf. West. Bot. 10: 117. 1964.

Stipa thurberiana Piper
Common. *Artemisia*-Pinyon-Juniper. May-June.

Tridens pulchellus (HBK.) Hitchc.
Occasional to common locally in *Larrea*, *Grayia*-*Lycium*, *Coleogyne*. In at least a few areas of all basins, but esp. in se. Frenchman. Apr-May, some years Sept-Oct.

JUNCACEAE. Rush Family

Juncus balticus Willd.
Local on seepage slopes, Cane Spgs., Topopah Spg. May-July.

LILIACEAE. Lily Family

Calochortus flexuosus Wats.
Common in *Coleogyne*, *Artemisia*, and *Artemisia*-Pinyon-Juniper, occasional in *Larrea*-*Grayia*-*Lycium* and *Grayia*-*Lycium*. All basins. Apr-July.

Fritillaria atropurpurea Nutt.
Locally common in *Artemisia*-Pinyon-Juniper. May-June.

Zygadenus venenosus Wats.
Local in *Artemisia*-Pinyon-Juniper. May-June.

POTAMOGETONACEAE

Potamogeton pectinatus L.
Cane Spgs. pond, with *Chara vulgaris* s. *vulgaris* L. (det. by R. D. Wood). Sept.

TYPHACEAE. Cat-tail Family

Typha domingensis Pers.
Shallow water, Cane Spgs. pond. June-July.

Typha latifolia L.
Seepage site, Whiterock Spg. June-July.

ZANNICHELLIACEAE

Zannichellia palustris L.
Well 5-B water impoundment, s. Frenchman. With *Chara globularis* Thuill. (det. by R. D. Wood). Fl. time unknown.

Dicotyledoneae

ACERACEAE. Maple Family

Acer negundo L.
Sprouts (1959) from trees planted on Frenchman playa.

AIZOACEAE

Mollugo verticillata L.
Common locally in undisturbed Larrea-Franseria, w. Jackass. Summer annual, apparently native. Sept-Oct.

AMARANTHACEAE. Amaranth Family

Amaranthus albus L.
Local on disturbed sites, esp. in Yucca and near Cane Spgs. pond. Introduced annual. Aug-Oct.

Amaranthus fimbriatus (Torr.) Benth.
Occasional to locally common. Coleogyne and Grayia-Lycium, esp. on disturbed sites. N. Jackass, Mid Valley, Topopah, nw. and sw. Yucca; Larrea, cent. Frenchman. Summer annual. Sept-Oct.

ANACARDIACEAE. Sumac Family

Rhus trilobata Nutt. ex T. & G. var. anisophylla (Greene) Jeps.
Occasional to common. Artemisia and Artemisia-Pinyon-Juniper. Apr, in advance of leaves.

APOCYNACEAE. Dogbane Family

Amsonia tomentosa Torr. & Frem.
Occasional in washes, se. Frenchman. Apr.

Apocynum sibericum Jacq.
Seepage site, Silent Canyon, n. Pahute Mesa. June-Aug.

ASCLEPIADACEAE. Milkweed Family

Asclepias erosa Torr.
Washes of s. Frenchman, but occasional individuals in washes of Cane Spgs. area, Rock Valley, and Mid-Valley. May-July.

BERBERIDACEAE. Barberry Family

Berberis fremontii Torr.
Artemisia-Pinyon-Juniper, Bald Mtn., Groom. June.

BORAGINACEAE. Borage Family

Amsinckia tessellata Gray
Common. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Apr-May.

Coldenia nuttallii Hook.
Locally common, sandy soils. W. Jackass, n. and e. Frenchman, e. Forty-Mile Cyn. Spring- or summer-germinating annual. June-Sept.

Coldenia plicata (Torr.) Cov.
Locally common, sandy soils. Sw. Frenchman. May-Oct.

Cryptantha barbigera (Gray) Greene
Occasional, Artemisia-Pinyon-Juniper of s. Pahute Mesa. Annual. June.

Cryptantha circumscissa (H. & A.) Jtn.
Abundant and widespread in Larrea, Grayia-Lycium, Coleogyne, and Artemisia tridentata. All basins. Winter annual. Apr-May.

Cryptantha confertiflora (Greene) Pays.
Occasional to common. Coleogyne, Artemisia, and esp. Artemisia-Pinyon-Juniper. Frenchman, Yucca, Forty-Mile Cyn. Apr-June.

Cryptantha decipiens (Jones) Heller
Common. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. Apr-May.

Cryptantha dumetorum (Greene ex Gray) Greene
Locally common. Larrea. S. Jackass, s. and cent. Frenchman, Rock Valley. Winter annual. Apr-May.

Cryptantha flavoculata (Nels.) Pays.
Common. Artemisia-Pinyon-Juniper. Apr-June.

Cryptantha gracilis Osterh.
Locally common, Artemisia-Pinyon-Juniper. Annual. May-June.

Cryptantha micrantha (Torr.) Jtn.
Occasional to common locally, sandy sites. Larrea, Grayia-Lycium, Artemisia tridentata, local in Coleogyne. Winter annual. Apr-May.

Cryptantha muricata (H. & A.) Nels.
Base of cliffs, s. of Topopah Spg. Annual. Apr-May.

Cryptantha nevadensis Nels. & Kenn.
Widespread and common. Larrea, Grayia-Lycium, Coleogyne. All basins. Winter annual. Apr-May.

Cryptantha pterocarya (Torr.) Greene
Widespread, common to abundant. All vegetation types, all basins. Winter annual. Apr-May.

Cryptantha simulans Greene
Locally common in Artemisia-Pinyon-Juniper. Annual. June.

Cryptantha utahensis (Gray) Greene
Local, esp. in washes in Larrea and Coleogyne. Mercury, Rock Valley, Topopah. Winter annual. Apr-May.

Cryptantha virginensis (Jones) Pays.
Esp. in washes and rock crevices in Larrea-Atriplex types, s. Frenchman, Rock Valley, and Mercury; Juniper flats, n. Pahute Mesa. Apr-June.

Cryptantha watsonii (Gray) Greene
Occasional in Artemisia-Pinyon-Juniper. Annual. May-June.

Lappula redowski (Hornem.) Greene var. desertorum (Greene) Jtn.
Locally common. Atriplex types near Frenchman playa, and Artemisia-Pinyon-Juniper. Winter annual. Apr-June.

Pectocarya heterocarpa (Jtn.) Jtn.
Locally common to abundant. Larrea, Mercury, Rock Valley, se. Frenchman. Winter annual. Mar-Apr.

Pectocarya platycarpa (M. & J.) M. & J.
Locally common to abundant. Larrea, Mercury, Rock Valley, s. Frenchman. Winter annual. Mar-Apr.

Pectocarya recurvata Jtn.
Locally common. Larrea, Mercury, Rock Valley. Winter annual. Mar-Apr.

Pectocarya setosa Gray
Occasional to locally common. Larrea, Coleogyne, Artemisia. Mercury, Rock Valley, n. Jackass, n. Topopah, n. Mid Valley, w. Frenchman, w. Yucca, e. Forty-Mile. Winter annual. Mar-May.

Plagiobothrys arizonicus (Gray) Greene ex Gray
Local in Coleogyne of w. Yucca, and Artemisia near Topopah Spg. Winter annual. Apr-May.

CACTACEAE. Cactus Family.

Echinocactus acanthodes Lem.
Occasional. With Atriplex confertifolia, slopes of limestone hills, n. Mercury. Fl. time unknown.

Echinocactus polycephalus Engelm. & Bigel.
Occasional. Larrea and Atriplex, bajadas and mountain slopes. N. Mercury, Rock Valley. May.

Echinocereus engelmannii (Parry) Reumpl.
Occasional to common. Larrea and Atriplex types, Rock Valley, Mercury, se. Frenchman. May.

Mamillaria deserti Engelm.
Occasional. Larrea and Coleogyne, Mercury, Rock Valley, and n. Jackass. May.

Opuntia basilaris Engelm. & Bigel.
Widespread, all vegetation types, all basins. May-June.

Opuntia echinocarpa Engelm. & Bigel.
Widespread, esp. in Larrea and Coleogyne. All basins. May-June.

Opuntia erinacea Engelm. & Bigel.

var. erinacea
Common. Artemisia-Pinyon-Juniper. June-July.

var. ursina (A. Weber) Parish
Locally common. Larrea-Atriplex, n. Mercury. May.

var. xanthostemma (K. Schum.) L. Benson
Artemisia-Pinyon-Juniper, e. Forty-Mile Cyn. June.

Opuntia ramosissima Engelm.
Common, esp. in Larrea-Atriplex types, Mercury and se. Frenchman. May.

CAMPANULACEAE. Bellflower Family

Nemacladus glanduliferus Jeps.
Locally common in Larrea, most parts of Frenchman. Winter annual. Apr-May.

Nemacladus sigmoideus Robbins
One collection, from Coleogyne, e. Yucca. Winter annual. May.

CAPPARIDACEAE. Caper Family.

Cleome lutea Hook.
Seepage sites, Cane Spgs. Apr-June.

CAPRIFOLIACEAE. Honeysuckle Family

Symphoricarpos longiflorus Gray
Locally common. Coleogyne, esp. in foothills of nw. and ne. Yucca, Artemisia of Forty-Mile Cyn., and Artemisia-Pinyon-Juniper. Apr-June.

Symphoricarpos parishii Rydb.
Occasional in Artemisia-Pinyon-Juniper. June-July.

CARYOPHYLLACEAE. Pink Family

Arenaria congesta Nutt. ex T. & G. var. subcongesta (Wats.) Wats.
Common in Artemisia-Pinyon-Juniper. Apr-June.

Arenaria macradenia Wats.

var. macradenia
Occasional. Rock ledges, e. Rock Valley, Topopah Spg. Apr-June.

var. parishiorum Rob.
Occasional. Washes and rock outcrops, Atriplex and Coleogyne, s. Frenchman, sw. Yucca. Apr-May.

Scopulophila rixfordii (Bdg.) M. & J.
Occasional. Rock outcrops, Rock Valley, se. Frenchman. Apr-May.

CELASTRACEAE. Staff-tree Family

Forsellesia nevadensis (Gray) Greene
Artemisia-Pinyon-Juniper, Silent Canyon, n. Pahute Mesa. Apr-May.

CHENOPODIACEAE. Goosefoot Family

Atriplex canescens (Pursh) Nutt.
Occasional to common, usually in sandy soils. All vegetation types except Artemisia-Pinyon-Juniper, all basins. Dominant shrub in local areas, esp. s. Frenchman. May-June.

Atriplex confertifolia (Torr. & Frem.) Wats.
Dominant shrub, esp. n. of Frenchman and Yucca playas, and on the bajadas and hills of s. Frenchman and sw. Yucca. Apr-May.

Atriplex hymenelytra (Torr.) Wats.
Occasional along disturbed roadsides, Rock Valley and s. Jackass. Time of flowering, if any, unknown.

Atriplex polycarpa (Torr.) Wats.
Washes, hills of s. Frenchman. Fl. time unknown.

Atriplex rosea L.
Occasional on disturbed sites, s. Frenchman. Introduced annual. May-June.

Chenopodium atrovirens Rydb.
Occasional to common locally. Larrea, Grayia-Lycium, Coleogyne. Jackass, Frenchman, Yucca. Apparently winter annual. Apr-June.

Chenopodium fremontii Wats.
Common in Artemisia-Pinyon-Juniper. Annual. Aug-Sept.

Chenopodium leptophyllum Nutt.
Common to abundant in Artemisia tridentata. Annual. Aug-Sept.

Eurotia lanata (Pursh) Moq.
Occasional to common. All vegetation types except Artemisia-Pinyon-Juniper. All basins. Sometimes a dominant shrub, locally in pure stands in Artemisia of w. Pahute Mesa. Apr-June.

Grayia spinosa (Hook.) Moq.
Dominant or associated shrub in all types except Artemisia-Pinyon-Juniper, all basins. Apr-May, not known ever to flower at any other season.

Halogeton glomeratus (Bieb.) C. A. Mey in Led.
Disturbed sites, vicinity of Frenchman playa. Introduced. Annual, probably germinating in spring and summer. Aug-Sept.

Kochia americana Wats.
Dominant shrub with Atriplex confertifolia, n. of Yucca playa; local in vicinity of Frenchman playa. May-June.

Salsola kali L. subsp. ruthenica (Iljin) Soó[14]
Spring- and summer-germinating annual. Confined to disturbed sites. Introduced. Aug-Oct.

var. ruthenica
Common in Yucca, including disturbed Artemisia-Pinyon-Juniper; vicinity of playa and roadsides in Frenchman; occasional locally along roadsides of Mercury, Rock Valley, and Jackass.

var. tenuifolia (Tausch) Aellen
With var. ruthenica.

Sarcobatus vermiculatus (Hook.) Torr.
On and near Groom playa, not known from basins to the south. May-June.

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14 Aellen, Paul. Chenopodiaceae [Salsola], in Hegi, Illustrierte Flora von Mitteleuropa. Bd. 3/2, Lfg. 4. pp. 739-746. Carl Hanser, Munich. 1961.

Suaeda torreyana Wats.
Seepage slope, Cane Spgs. May-June.

COMPOSITAE. Composite Family

Acamptopappus shockleyi Gray
Occasional to common. Larrea, Grayia-Lycium, Coleogyne/Larrea, all basins except Forty-Mile Cyn. Apr-May.

Agoseris glauca (Pursh) Greene
Occasional to common locally. Artemisia-Pinyon-Juniper. May-June.

Amphipappus fremontii T. & G.
Washes or rock ledges in limestone, Mercury and Rock Valley. Apr.

Anisocoma acaulis T. & G.
Common locally, sandy soils. Larrea, esp. in w. Jackass, and Artemisia tridentata of e. Forty-Mile Cyn. Winter annual. Mar-May.

Antennaria dimorpha (Nutt.) T. & G.
Occasional. Artemisia-Pinyon-Juniper. May-June.

Antennaria rosea Greene
Abundant locally, base of canyon wall, Silent Canyon, n. Pahute Mesa. Artemisia-Pinyon-Juniper. June-July.

Artemisia arbuscula Nutt. subsp. nova (A. Nels.) Ward
Dominant shrub, mountain slopes and mesas, in nearly pure stands or associated with Pinyon and Juniper. Aug-Sept.

Artemisia bigelovii Gray in Torr.
Local, with Atriplex confertifolia, slopes of limestone hills, ne. Mercury. Fl. time unknown.

Artemisia dracunculus L.
Base of canyon walls, Pahute Mesa. Aug-Sept.

Artemisia ludoviciana Nutt. subsp. incompta (Nutt.) Keck
Base of cliffs, Topopah Spg., Whiterock Spg., e. Forty-Mile Cyn. Sept-Oct.

Artemisia spinescens D. C. Eat.
Most common in Grayia-Lycium and related types in Yucca; occasional in Larrea in Mercury, Frenchman; Coleogyne, Mid Valley and Yucca; Atriplex types, sw. Yucca. Mar-Apr.

Artemisia tridentata Nutt.
Dominant shrub in sandy soils of valley bottoms and level terrain, e. Forty-Mile Cyn. and Mesas; local in Mid Valley, Topopah, hills of w. Yucca. Aug-Sept.

Atrichoseris platyphylla Gray
Occasional, esp. in washes. Larrea, Rock Valley, Mercury, and se. Frenchman. Winter annual. Apr-May.

Baileya multiradiata Harv. & Gray
Washes in Larrea, esp. Mercury and s. Frenchman; occasional in Grayia-Lycium, Yucca. Apr-May, but individuals may flower at any season.

Baileya pleniradiata Harv. & Gray
Sandy sites, often abundant. Larrea, Grayia-Lycium, Artemisia tridentata, all basins. Winter annual, or apparently sometimes short-lived perennial. Apr-May, with flowering often prolonged through summer into autumn.

Brickellia californica (T. & G.) Gray
Local, base of cliffs, Topopah Spg. Aug-Sept.

Brickellia desertorum Cov.
Collections from base of cliff, e. Forty-Mile Cyn., and disturbed roadside, Mercury. Aug-Sept.

Brickellia multiflora Kell.
One collection, hills of s. Frenchman. Sept.

Brickellia oblongifolia Nutt. var. linifolia (D. C. Eat.) Rob.
Local in washes in Coleogyne and Artemisia tridentata, s. Frenchman, w. Yucca, n. Forty-Mile Cyn. May-June.

Calycoseris parryi Gray
Common locally. Artemisia, n. Topopah; Coleogyne, n. Jackass. Winter annual. Apr-June.

Calycoseris wrightii Gray
Occasional to common locally. Larrea, Grayia-Lycium, Coleogyne, Artemisia tridentata. All basins. Winter annual. Apr-May.

Chaenactis carphoclinia Gray
Occasional, to dominant annual on calcareous soils. Larrea and Coleogyne, all basins except Forty-Mile Cyn. Winter annual. Apr-May.

Chaenactis douglasii (Hook.) H. & A.
Occasional to common. Artemisia-Pinyon-Juniper. Apr-Sept.

Chaenactis fremontii Gray
Dominant annual in cent. and s. Jackass, n. Rock Valley. Larrea. Apr-May.

Chaenactis macrantha D. C. Eat.
Locally common in Larrea, Grayia-Lycium, and Coleogyne. Mercury, Rock Valley, Frenchman, Jackass, and Yucca. Winter annual. Apr-May.

Chaenactis stevioides H. & A.
Dominant annual in most Larrea and Grayia-Lycium, often common in Coleogyne and Artemisia. All basins. Winter annual. Apr-May.

Chaenactis xantiana Gray
Occasional to common, esp. in sandy soils. Larrea, Grayia-Lycium, Atriplex, Artemisia. All basins. Winter annual. Apr-June.

Chaetadelpha wheeleri Gray
Occasional. Larrea, e. and cent. Frenchman. May.

Chrysopsis villosa (Pursh) Nutt.
Occasional. Cliffs and rock crevices, Artemisia-Pinyon-Juniper. Aug-Sept.

Chrysothamnus axillaris Keck
One collection, Penoyer Valley (n. of Groom).

Chrysothamnus gramineus Hall
No collections. Coll. by Percy Train, Aug., 1938, "Whiterock Springs, in the Belted Range near Nye-Lincoln Counties line".

Chrysothamnus nauseosus (Pall.) Britton

subsp. hololeucus (Gray) Hall & Clem.
Common. Artemisia and Artemisia-Pinyon-Juniper; occasional in Coleogyne, and in washes of s. Frenchman. Sept-Oct.

subsp. leiospermus (Gray) Hall & Clem.
Common in Artemisia and Artemisia-Pinyon-Juniper; occasional in Coleogyne, Yucca. Sept-Oct.

subsp. mohavensis (Greene) Hall & Clem.
Sandy soils. Artemisia tridentata, e. Forty-Mile Cyn. Sept-Oct.

Chrysothamnus paniculatus (Gray) Hall
Occasional in washes, Mercury, Rock Valley; dominant in parts of Nye Cyn wash of n. Frenchman. Sept-Oct.

Chrysothamnus parryi (Gray) Green subsp. nevadensis (Gray) Hall & Clem.
Occasional. Artemisia and Artemisia-Pinyon-Juniper. Sept-Oct.

Chrysothamnus teretifolius (Dur. & Hilg.) Hall
Locally common. Coleogyne, Mercury, Cane Spgs. area of Frenchman n. to Mid Valley, nw. Yucca, Topopah, Forty-Mile Cyn. Sept-Oct.

Chrysothamnus viscidiflorus (Hook.) Nutt.

subsp. elegans (Greene) Blake
One collection, Artemisia-Pinyon-Juniper, Rainier Mesa. Sept.

(Chrysothamnus viscidiflorus (Hook.) Nutt., cont'd)

subsp. puberulus (D. C. Eat.) Hall & Clem.
Common, esp. on disturbed sites. Artemisia and Artemisia-Pinyon-Juniper. July-Sept.

subsp. pumilus (Nutt.) Hall & Clem.
Occasional to common. Grayia-Lycium, Coleogyne, Artemisia. Frenchman, Topopah, Yucca, Mid Valley, Forty-Mile Cyn. Aug-Sept.

subsp. viscidiflorus
Common in Artemisia and Artemisia-Pinyon-Juniper. Sept-Oct.

Cirsium neomexicanum Gray
Occasional. Artemisia-Pinyon-Juniper. May-June.

Crepis intermedia Gray
Occasional to common. Artemisia-Pinyon-Juniper. May-June.

Crepis occidentalis Nutt.
Artemisia-Pinyon-Juniper near Topopah Spg. Apr-May.

Dyssodia cooperi Gray
Occasional. Larrea, Grayia-Lycium, Coleogyne. Jackass, w. Frenchman, Yucca. Apr-May.

Encelia virginensis A. Nels. var. virginensis
Occasional to common. Larrea, Grayia-Lycium, Coleogyne. Mercury, Jackass, Frenchman, Yucca. Apr-May, Sept-Oct.

Enceliopsis nudicaulis (Gray) A. Nels.
Occasional. Larrea, s. Frenchman. May.

Erigeron divergens T. & G.
Occasional. Artemisia-Pinyon-Juniper. Apr-June.

Erigeron pumilus Nutt. subsp. concinnoides Cronq.
Common to occasional in Artemisia and Artemisia-Pinyon-Juniper, occasional in washes in Coleogyne of s. Frenchman, n. Jackass, and Topopah. Apr-July.

Eriophyllum pringlei Gray
Common. Larrea, Grayia-Lycium, Coleogyne, all basins. Winter annual. Apr-May.

Franseria acanthicarpa (Hook.) Cov.
Abundant beginning in 1962 on sands of e. Forty-Mile Cyn. and sw. Frenchman. Spring-germinating annual. Aug-Sept.

Franseria dumosa Gray
One of the dominant shrubs in Larrea associations of Mercury, Rock Valley, Jackass, and Frenchman; at n. limits of its range in Yucca, where it is restricted to local sites in the ne. part; absent in Topopah, Mid Valley, Forty-Mile Cyn. Apr-May, some years Aug-Oct.

Franseria eriocentra Gray
Locally common in washes of sw. Frenchman, w. Yucca. May.

Geraea canescens T. & G.
Occasional in Larrea, s. Jackass, n. Rock Valley. Winter annual. Apr-May.

Glyptopleura marginata D. C. Eat.
Occasional to locally common. Larrea, Grayia-Lycium, Coleogyne. Mercury, Rock Valley, Jackass, Frenchman, Yucca. Winter annual. Apr.

Glyptopleura setulosa Gray
Occasional. Larrea, cent. and n. Frenchman. Winter annual. Apr.

Gutierrezia microcephala (DC.) Gray
Common. Coleogyne, Artemisia, Artemisia-Pinyon-Juniper of Forty-Mile Cyn. and Yucca; washes of sw. Frenchman and vicinity of Cane Spgs. Sept-Oct.

Gutierrezia sarothrae (Pursh) Britt. & Rusby
Occasional to common. Artemisia and Artemisia-Pinyon-Juniper. Aug-Oct.

Haplopappus brickellioides Blake
One collection, hills of s. Frenchman. Fl. time unknown.

Haplopappus cooperi (Gray) Hall
Occasional to common locally. Larrea, Grayia-Lycium, Coleogyne, Artemisia, and Artemisia-Pinyon-Juniper. Jackass, Frenchman, Mid Valley, Yucca, Forty-Mile Cyn. Apr-May.

Haplopappus cuneatus Gray
One collection, cliffs near Topopah Spg. Fl. time unknown.

Haplopappus linearifolius DC.
Occasional, esp. in washes. N. Jackass, Topopah, s. Frenchman. Apr-May.

Haplopappus nanus (Nutt.) D. C. Eat.
Rock crevices and ledges, Artemisia-Pinyon-Juniper. Sept-Oct.

Hecastocleis shockleyi Gray
Canyon walls, limestone hills of e. Frenchman. May.

Hulsea vestita Gray
Occasional. Steep sandy slopes, Artemisia-Pinyon-Juniper. May-June.

Hymenoclea salsola T. & G.
Occasional to common locally, esp. in washes. Larrea, Grayia-Lycium, Coleogyne, Atriplex. All basins. Apr-May.

Hymenopappus filifolius Hook. var. megacephalus Turner
Locally common. Artemisia-Pinyon-Juniper. June-July.

Hymenoxys cooperi (Gray) Ckll.
Common locally. Artemisia-Pinyon-Juniper. May-June.

Laphamia megacephala Wats. subsp. intricata (Bdg.) Keck
One collection, hills of s. Frenchman. Fl. time unknown.

Leucelene ericoides (Torr.) Greene
Occasional, around rock outcrops in Artemisia; Juniper flats, n. Pahute Mesa. June.

Lygodesmia exigua Gray
Common in Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. May.

Lygodesmia spinosa Nutt.
Locally common. Artemisia-Pinyon-Juniper. July-Aug.

Machaeranthera leucanthemifolia (Greene) Greene
Common, esp. on disturbed or sandy sites, all vegetation types, all basins. Winter annual. April, and throughout the spring, summer and autumn.

Machaeranthera tortifolia (Gray) Cronq. & Keck
Occasional. Larrea, Grayia-Lycium, and esp. Coleogyne. All basins. Apr-May.

Malacothrix glabrata Gray
Common. Larrea, Grayia-Lycium, Artemisia tridentata, rarely Coleogyne. All basins. Winter annual. Apr-May.

Malacothrix sonchoides (Nutt.) T. & G.
Common on sandy sites. Larrea, Grayia-Lycium, Artemisia tridentata. All basins. Apr-May.

Microseris lindleyi (DC.) Gray
Occasional to common locally. Coleogyne, Artemisia and Artemisia-Pinyon-Juniper. Annual. Apr-June.

Monoptilon bellidiforme T. & G. ex Gray
Common. Larrea, Grayia-Lycium, Coleogyne, Atriplex. All basins. Winter annual. Mar-May.

Monoptilon bellioides (Gray) Hall
Larrea, Mercury and Rock Valley. Winter annual. Mar-Apr.

Pectis papposa Harv. & Gray ex Gray
Occasional or common locally. Larrea, Grayia-Lycium, Atriplex. Frenchman, Yucca, Groom. Summer annual. Sept-Oct.

Petradoria pumila (Nutt.) Greene
Common. Artemisia-Pinyon-Juniper. July-Aug.

Psathyrotes annua (Nutt.) Gray
Esp. in washes and on disturbed sites. Larrea, Grayia-Lycium, Coleogyne. Rock Valley, Jackass, Frenchman, and Yucca. Annual, probably spring-germinating. May-Aug.

Psilostrophe cooperi (Gray) Greene
Occasional in washes in Larrea, Mercury. Apr-May.

Rafinesquia neomexicana Gray
Occasional to common. Larrea, Grayia-Lycium, all basins except Forty-Mile Cyn. Winter annual. Apr-May.

Senecio integerrimus Nutt. var. exaltatus (Nutt.) Cronq.
Rare or occasional. Artemisia-Pinyon-Juniper. May.

Senecio multilobatus T. & G.
Common. Artemisia-Pinyon-Juniper. May-July.

Senecio spartioides T. & G.
Base of cliffs, Silent Canyon, n. Pahute Mesa. Artemisia-Pinyon-Juniper. Sept.

Senecio stygius Greene
Occasional. Artemisia and Artemisia-Pinyon-Juniper. Apr-June.

Sonchus oleraceus L.
Occasional, Mercury townsite. Introduced annual.

Stephanomeria exigua Nutt. var. pentachaeta (D. C. Eat.) Hall
Occasional to common. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. May-June.

Stephanomeria myrioclada D. C. Eat. in King
Occasional. Larrea, s. Frenchman. May-June.

Stephanomeria paniculata Nutt.
One collection, Artemisia tridentata, Forty-Mile Cyn. June.

Stephanomeria parryi Gray
Occasional. Larrea, Grayia-Lycium, Coleogyne. All basins except Forty-Mile Cyn. May-June.

Stephanomeria pauciflora (Torr.) Nutt.
Common. Larrea, s. and e. Frenchman. May-June.

Stylocline micropoides Gray
Common locally. Larrea, Grayia-Lycium, Coleogyne. Mercury, Rock Valley, n. Jackass, Topopah, Frenchman, and Yucca. Winter annual. Apr-May.

Syntrichopappus fremontii Gray
Common, esp. in Coleogyne and Artemisia tridentata, occasional in Larrea and other types. All basins. Winter annual. Apr-May.

Tetradymia axillaris A. Nels.
Occasional in Grayia-Lycium, Coleogyne, Artemisia, and sometimes Larrea. All basins. Apr-May.

Tetradymia canescens DC.
Common. Artemisia-Pinyon-Juniper. Aug-Sept.

Tetradymia glabrata Gray
Common in Grayia-Lycium, sometimes as a dominant; occasional in Coleogyne and Artemisia. Mid Valley, Yucca, and Forty-Mile Cyn. Apr-June.

Viguiera multiflora (Nutt.) Blake var. nevadensis (A. Nels.) Blake
Common. Grayia-Lycium, Coleogyne, Artemisia, and Artemisia-Pinyon-Juniper. N. Jackass, Topopah, Yucca, Forty-Mile Cyn. May-Oct.

CRUCIFERAE. Mustard Family

Arabis divaricarpa A. Nels. (?)
Bald Mtn., Groom. June.

Arabis glaucovalvula Jones
Occasional. Larrea, Grayia-Lycium. Frenchman, Yucca. Mar-Apr.

Arabis holboellii Hornem. var. pinetorum (Tides.) Roll.
Common. Artemisia-Pinyon-Juniper. Apr-May.

Arabis pendulina Greene
Bald Mtn., Groom. June.

Arabis pulchra Jones

var. munciensis Jones
Common. Coleogyne, Artemisia arbuscula, Artemisia-Pinyon-Juniper. Apr-May.

var. gracilis Jones (?)
One collection, Artemisia-Pinyon-Juniper, Rainier Mesa. June.

Brassica geniculata (Desf.) J. Ball
Local, disturbed sites. Mercury, Frenchman, Yucca. Introduced. Apr-May.

Caulanthus cooperi (Wats.) Pays.
Occasional to common, nearly always growing in shrubs. Larrea, Grayia-Lycium, all basins except Forty-Mile Cyn. Winter annual. Apr-May.

Caulanthus crassicaulis (Torr.) Wats.
Artemisia tridentata, Groom. June.

Descurainia pinnata (Walt.) Britton
Winter annual. Esp. on animal burrow mounds.

subsp. glabra (Woot. & Standl.) Detl.
Occasional to common. All Larrea associations and Coleogyne. All basins. Mar-May.

subsp. halictorum (Ckll.) Detl.
Common in Artemisia tridentata, occasional in Lycium pallidum-Grayia of s. Frenchman. May-June.

Descurainia sophia (L.) Webb
Local on moist sites, Frenchman. Introduced winter annual. Apr-May.

Lepidium flavum Torr.
One collection, wash, se. Rock Valley. Winter annual. Apr.

Lepidium fremontii Wats.
Occasional to common, esp. in washes. Larrea, Grayia-Lycium, Coleogyne. All basins. Mar-June.

Lepidium lasiocarpum Nutt.
Common. Larrea, Coleogyne, Grayia-Lycium, Artemisia. All basins. Winter annual. Mar-May.

Lepidium perfoliatum L.
Animal feeding site, s. Frenchman. Annual. May.

Lesquerella latifolia A. Nels.
Common. Artemisia-Pinyon-Juniper. May-June.

Lesquerella ludoviciana (Nutt.) Wats.
Occasional or locally common. Sands of e. Forty-Mile Cyn. Apr-June.

Physaria chambersii Roll.
Local in Artemisia-Pinyon-Juniper; common on Juniper flats, n. Pahute Mesa. Apr-May.

Sisymbrium altissimum L.
Local, usually on disturbed sites. Introduced winter annual. Mar-May.

Stanleya elata Jones
Occasional, slopes of hills or washes. Larrea, Grayia-Lycium, Coleogyne, Artemisia. Mercury, Frenchman, Yucca, Forty-Mile Cyn. May-June.

Stanleya pinnata (Pursh) Britton
Occasional to common. Larrea, Grayia-Lycium, Coleogyne, Artemisia, esp. abundant with Atriplex canescens in se. Frenchman on and near playa. Mercury, Frenchman, Yucca, Forty-Mile Cyn. Apr-June.

Streptanthella longirostris (Wats.) Rydb.
Common, esp. in sandy soils. Larrea, Grayia-Lycium, Artemisia tridentata. All basins. Winter annual. Mar-May.

Streptanthus cordatus Nutt.
Common. Artemisia-Pinyon-Juniper. May-June.

Thelypodium lasiophyllum (H. & A.) Greene (Caulanthus lasiophyllus (H. & A.) Pays.)
Occasional to common. Larrea, Grayia-Lycium, nearly always growing in shrubs. All basins except Forty-Mile Cyn. Mar-Apr.

Thelypodium sp.
Disturbed Artemisia-Pinyon-Juniper, Rainier Mesa. June-July.

Thysanocarpus curvipes Hook. var. eradiatus Jeps.
Near Topopah Spg. Annual. Apr-May.

Thysanocarpus laciniatus Nutt. ex T. & G. var. hitchcockii Munz
Local, base of limestone hill, se. Rock Valley. Annual. Apr.

CUSCUTACEAE. Dodder Family

Cuscuta nevadensis Johnston
Common in Rock Valley, parasitic esp. on Lycium andersonii and L. pallidum, but also on Grayia, Dalea fremontii, and others; occasional on same shrub species in other basins. Apr-May.

EUPHORBIACEAE. Spurge Family

Euphorbia albomarginata T. & G.
Common, often abundant esp. on disturbed sites, all vegetation types except Artemisia-Pinyon-Juniper. All basins. May-June, continuing through summer and autumn.

Euphorbia micromera Boiss.
Common to abundant, all vegetation types except Artemisia-Pinyon-Juniper. All basins. Summer annual. Aug-Nov.

Euphorbia polycarpa Benth.
Local in washes, s. Frenchman, Rock Valley. Apr-May.

Euphorbia serpyllifolia Pers.
Common locally. Coleogyne types, n. and w. Jackass, Topopah, Mid Valley, sw., w. and ne. Yucca; Artemisia, Forty-Mile Cyn. Summer annual. Aug-Nov.

Euphorbia setiloba Engelm.
Common locally. Larrea, Grayia-Lycium, Coleogyne. N. Jackass, Frenchman, Yucca. Summer annual. Aug-Oct.

FAGACEAE. Beech Family

Quercus gambelii Nutt.
Common. Artemisia-Pinyon-Juniper. May-June.

FUMARIACEAE. Fumatory Family

Corydalis aurea Willd. subsp. aurea
Bald Mtn., Groom. June.

GERANIACEAE. Geranium Family

Erodium cicutarium (L.) L'Her
Locally common on disturbed sites. All vegetation types except Artemisia-Pinyon-Juniper. All basins. Introduced winter annual. Mar-Apr., sometimes at other seasons.

HYDROPHYLLACEAE. Waterleaf Family

Eucrypta micrantha (Torr.) Heller
Local. Larrea. Se. Rock Valley, e. and sw. Frenchman. Winter annual. Apr.

Nama aretioides (H. & A.) Brand
Sands, nw. Jackass, e. Frenchman, and e. Forty-Mile Cyn. Winter annual. Apr-June.

Nama demissum Gray
Common. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. Apr-May.

Nama densum Lemmon
One collection, Artemisia-Pinyon-Juniper, s. Rainier Mesa. Annual. June.

Phacelia bicolor Torr. ex Wats.
Locally common on sands of e. Forty-Mile Cyn. Winter annual. May-June.

Phacelia crenulata Torr.
Esp. in washes in Larrea, Coleogyne, Grayia-Lycium, Artemisia. All basins. Winter annual. Apr-June.

Phacelia curvipes Torr. ex Wats.
Occasional. Artemisia-Pinyon-Juniper. Annual. May-June.

Phacelia fremontii Torr.
Common, often abundant. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. Apr-May.

Phacelia peirsoniana J. T. Howell
Occasional. Artemisia arbuscula and Artemisia-Pinyon-Juniper. Annual. June-July.

Phacelia vallis-mortae J. Voss
Common, almost always growing in shrubs. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. Apr-May.

Tricardia watsonii Torr. ex Wats.
Local in Coleogyne, Mine Mtn. area of w. Yucca. Apr-May.

KRAMERIACEAE. Krameria Family

Krameria parvifolia Benth.
Common associated shrub of esp. Larrea-Atriplex, but also other Larrea types which include Dalea fremontii as a dominant or associated species. Mercury, Rock Valley, Jackass, Frenchman. Apr-May, with individuals sometimes flowering in autumn.

LABIATAE. Mint Family

Salazaria mexicana Torr.
Washes in Larrea and Coleogyne. All basins except Forty-Mile Cyn. May.

Salvia columbariae Benth.
Washes in Coleogyne. Jackass, Topopah, Frenchman. Annual. Apr-May.

Salvia dorrii (Kell.) Abrams

subsp. dorrii
Artemisia-Pinyon-Juniper, tops of Mesas. May-June.

subsp. gilmanii (Epl.) Abrams
Apparently the more common variety. Washes in Grayia-Lycium and Coleogyne, n. Yucca; Coleogyne in hills of se. Rock Valley; Artemisia-Pinyon-Juniper, esp. e. Forty-Mile Cyn. May-June.

LEGUMINOSAE. Pea Family

Astragalus acutirostris Wats.
Occasional to common. Larrea, Coleogyne. Most of Jackass, Topopah, n. and w. Frenchman, w. side of Yucca. Winter annual. Apr-May.

Astragalus calycosus Torr.
Occasional to common locally. Artemisia-Pinyon-Juniper. May-June.

Astragalus casei Gray
Occasional. Artemisia, Topopah and hills of w. Yucca. Apr-May.

Astragalus didymocarpus H. & A. var. dispermus (Gray) Jeps.
Occasional to common locally. Larrea. Rock Valley, s. and w. Jackass. Winter annual. Apr.

Astragalus lentiginosus Dougl.

var. fremontii (Gray) Wats.
Common. All vegetation types, all basins; absent in n. and w. Jackass. Apr-May, disturbed-site plants flowering any month of the year.

var. variabilis Barneby
Common. Restricted to w. and n. Jackass, replacing var. fremontii in the vegetation in which Menodora spinescens is dominant. Apr-May.

Astragalus newberryi Gray
One collection, foothills of nw. Yucca. March.

Astragalus nyensis Barneby
One collection, Larrea-Lycium pallidum-Grayia of w.-cent. Jackass. Type locality, Frenchman Flat. Winter annual. Apr.

Astragalus oophorus Wats. var. oophorus
Bald Mtn., Groom. June.

Astragalus purshii Dougl. var. tinctus Jones
Occasional. Artemisia and Artemisia-Pinyon-Juniper. May-June.

Astragalus tidestromii (Rydb.) Clokey
Occasional to common. Larrea, Grayia-Lycium, Coleogyne, esp. where Atriplex confertifolia is dominant or associated. Mercury, Rock Valley, s. and se. Frenchman, n. Yucca. Apr-May, some years in autumn.

Dalea fremontii Torr.
Common as dominant or associated species in Larrea, esp. with Atriplex confertifolia and Krameria. Mercury, Rock Valley, Jackass, and esp. s. and e. Frenchman. May.

Dalea polyadenia Torr. ex Wats.
Locally common. S. Frenchman, esp. with Lycium pallidum; sands of e. Forty-Mile. June.

Lotus humistratus Greene
Occasional to common locally in Coleogyne, w. Yucca and Topopah. Winter annual. Apr-May.

Lupinus argenteus Pursh var. stenophyllus (Nutt. ex Rydb.) Davis
Common. Artemisia-Pinyon-Juniper, Mesas. May-June.

Lupinus argenteus/Lupinus caudatus Kell. complex
Artemisia and Artemisia-Pinyon-Juniper, Rainier and Pahute Mesas, and near Topopah Spg. May-June.

Lupinus flavoculatus Heller
Occasional to common. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. Apr-June.

Lupinus odoratus Heller var. pilosellus C. P. Sm.
N. Yucca. Winter annual. May.

Lupinus palmeri Wats.
One collection, Artemisia-Pinyon-Juniper, Rainier Mesa. May.

Lupinus palmeri X L. argenteus
One collection, Artemisia-Pinyon-Juniper, Shoshone Mtn. Apr.

Lupinus shockleyi Wats.
Sandy soil. Larrea, Grayia-Lycium. Rock Valley, w. Jackass, locally in sw., cent., and e. Frenchman, s. Yucca. Winter annual. Apr-May.

Medicago sativa L.
Animal feeding site, s. Frenchman.

Petalostemum searlsiae Gray
Local in washes in Coleogyne, nw. Yucca, and sands, e. Forty-Mile Cyn. May-June.

Prosopis juliflora (Sw.) DC.
Near abandoned water troughs, Cane Spgs. Small trees, probably planted. Apparently not reproducing.

Trifolium andersonii Gray
Around flat rock outcrops, Topopah Spg. Apr-May.

Trifolium monoense Green
Around flat rock outcrops, Artemisia-Pinyon-Juniper, s. Pahute Mesa. May-June.

LINACEAE

Linum perenne L. subsp. lewisii (Pursh) Hult.
Occasional to common. Artemisia and Artemisia-Pinyon-Juniper. Apr-July.

LOASACEAE

Eucnide urens (Gray) Parry
Washes in Larrea of Mercury, Rock Valley. May-June.

Mentzelia albicaulis Dougl. ex Hook.
Winter annual.

var. albicaulis
Apparently restricted to Larrea of w. Mercury and Rock Valley; most collections from disturbed soils. Mar-Apr.

var. gracilis (Rydb.) Darl.
Occasional to common. Artemisia tridentata and Artemisia-Pinyon-Juniper. May-June.

Mentzelia congesta (Nutt.) T. & G.
Locally common. Artemisia-Pinyon-Juniper. May.

Mentzelia gracilenta T. & G.
Occasional to abundant locally, burned Coleogyne and Artemisia of Topopah, Artemisia tridentata of e. Forty-Mile Cyn. Winter annual. May-June.

Mentzelia leucophylla Bdg.
Local in washes, upper bajadas, se. Frenchman. Apr-May.

Mentzelia multiflora (Nutt.) Gray
Washes, upper bajadas, se. Frenchman. Apr-May.

Mentzelia nitens Greene
Known only from sand dune, locally abundant, e. Forty-Mile Cyn. Probably winter annual. May-June.

Mentzelia veatchiana Kell.
Widespread and common, all vegetation types. All basins. Winter annual. Apr-June.

Petalonyx nitidus Wats.
Occasional in washes, e. Frenchman. May.

LOGANIACEAE. Logania Family

Buddleia utahensis Coville
Calcareous rock outcrops, hills of s. Rock Valley and e. Frenchman. May-June.

LORANTHACEAE. Mistletoe Family

Phoradendron juniperinum Engelm.
Common on Junipers, Artemisia-Pinyon-Juniper. Fl. time unknown.

MALVACEAE. Mallow Family

Malvastrum rotundifolium Gray
Occasional in Larrea, s.-cent. Jackass and sw. Frenchman. Winter annual. Apr-May.

Sphaeralcea ambigua Gray (including subsp. monticola and one or more other subsp.)
Occasional to abundant, all vegetation types except Artemisia-Pinyon-Juniper. All basins. May-June, but individuals flowering at other seasons, esp. autumn.

Sphaeralcea emoryi Torr.

var. emoryi
Coleogyne of n. Mid Valley; Artemisia-Pinyon-Juniper. June (?)-Sept.

var. arida (Rose) Kearney
Artemisia tridentata, n. Forty-Mile Cyn. June

var. variabilis (Ckll.) T. H. Kearney
Artemisia-Pinyon-Juniper, s. Pahute Mesa. June.

Sphaeralcea grossulariaefolia (H. & A.) Rydb. var. pedata (Torr.) T. H. Kearney
Coleogyne, Artemisia, and Artemisia-Pinyon-Juniper, all basins. June-July.

Sphaeralcea munroana (Dougl.) Spach
Common. Coleogyne, Artemisia tridentata. Yucca, Forty-Mile Cyn. June.

Sphaeralcea parvifolia A. Nels.
Common to abundant. Atriplex types, s. and se. Frenchman. May-June.

NYCTAGINACEAE. Four O'Clock Family

Abronia elliptica A. Nels.
Locally common. Artemisia-Pinyon-Juniper. May-July.

Abronia turbinata Torr.
Common to abundant, sandy soils. Larrea of w. Jackass, n. and e. Frenchman; Lycium pallidum-Grayia of s. Frenchman; Artemisia tridentata of e. Forty-Mile Cyn. Winter annual. Apr-May.

Allionia incarnata L.
Occasional to common. Larrea-Atriplex types, se. Frenchman. May, some years flowering abundantly Sept-Oct.

Mirabilis bigelovii Gray

var. bigelovii
Occasional. Esp. washes or disturbed sites, Artemisia tridentata. Topopah, Forty-Mile Cyn. May-June.

var. retrorsa (Heller) Munz
Occasional. All vegetation types except Artemisia-Pinyon-Juniper. All basins except Forty-Mile Cyn. Apr-May.

Mirabilis froebellii (Behr) Greene
Occasional. Around rock outcrops, Artemisia-Pinyon-Juniper; Juniper flats, n. Pahute Mesa. May-June.

Mirabilis pudica Barneby
Common. Larrea, Grayia-Lycium, Mercury, Frenchman, Yucca, and apparently either rare or absent in other basins. May.

Selinocarpus diffusus Gray
Larrea-Atriplex types, occasional in n. and common in s. and se. Frenchman. May-June.

OLEACEAE. Olive Family

Menodora spinescens Gray
Associated shrub in Larrea, Grayia-Lycium, Coleogyne of Mercury, Rock Valley, Frenchman, and Yucca; dominant shrub in Larrea and Coleogyne of n. and w. Jackass on bajada below Calico Hills. Apr-May.

ONAGRACEAE.[15] Evening-Primrose Family

Camissonia boothii (Dougl. ex Lehm.) Raven
Winter annuals.

subsp. condensata (Munz) Raven (Oenothera decorticans (H. & A.) Greene var. condensata Munz)
Coleogyne, n. Yucca. May.

subsp. desertorum (Munz) Raven (Oenothera decorticans (H. & A.) Greene var. desertorum Munz)
Occasional to common. Larrea, esp. Larrea-Atriplex types, and Grayia-Lycium. Rock Valley, s., cent. and n. Jackass, n., cent. and esp. s. Frenchman, w. and se. Yucca. Apr-May.

subsp. intermedia Munz & Raven (Oenothera allysoides H. & A. var. villosa Wats.)
Common locally. Washes, or steep sandy slopes. Artemisia, Forty-Mile Cyn. June.

Camissonia brevipes (A. Gray) Raven (Oenothera brevipes A. Gray)
Winter annuals.

subsp. brevipes
Occasional to common locally. Larrea, s. and e. Jackass, sw. to nw. Frenchman, w.-cent. Yucca. Apr-May.

subsp. pallidula (Munz) Raven (var. pallidula Munz)
Occasional to locally common. Larrea, e. Rock Valley, s. and se. Frenchman. Apr-May.

Camissonia claviformis (Torr. & Frem.) Raven subsp. integrior (Raven) Raven (Oenothera clavaeformis Torr. & Frem. subsp. clavaeformis)
Occasional to common. Washes, n., w. and sw. Frenchman; Coleogyne, n. and e. Yucca; Artemisia, Forty-Mile Cyn. Winter annual. Apr-June.

Camissonia claviformis (Torr. & Frem.) X C. munzii (Raven) Raven
One collection, n. Frenchman. Winter annual. May.

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[15] Raven, Peter H. The generic subdivision of Onagraceae, Tribe Onagreae. Brittonia 16: 276-288. 1964. Synonomy of the taxa of the Tribe Onagreae follows this recent treatment, with synonyms in parentheses.

Camissonia kernensis (Munz) Raven subsp. gilmanii (Munz) Raven (Oenothera dentata Cav. var. gilmanii Munz)
Occasional to common. Larrea, Grayia-Lycium, Coleogyne. Rock Valley, n. and cent. Jackass, n. and w. Frenchman, n. Yucca. Winter annual. Apr-May.

Camissonia heterochroma (S. Wats.) Raven subsp. monoensis (Munz) Raven (Oenothera heterochroma S. Wats. var. monoensis Munz)
One collection, steep rocky slope, e. Forty-Mile Cyn. Probably spring-germinating annual. June-July.

Camissonia megalantha (Munz) Raven (Oenothera megalantha (Munz) Raven)
Seepage slope, Cane Spgs. Type locality, species known only from this population. Spring-germinating annual. Sept-Oct., occasional individuals in June.

Camissonia munzii (Raven) Raven (Oenothera munzii Raven)
Common. Larrea and Coleogyne, esp. with associated Atriplex confertifolia. S. and se. Frenchman, Mercury, Rock Valley, disturbed sites s. Jackass. Winter annual. Apr-May, rarely Nov. on disturbed sites.

Camissonia parvula (Nutt. ex Torr. & Gray) Raven (Oenothera contorta Dougl. ex Hook.)
One collection, Artemisia-Pinyon-Juniper, Rainier Mesa. Annual. June.

Camissonia refracta (S. Wats.) Raven (Oenothera refracta S. Wats.)
Occasional. Washes, calcareous rock, Rock Valley, se. Frenchman. Winter annual. Apr-May.

Camissonia walkeri (A. Nels.) Raven subsp. tortilis (Jeps.) Raven (Oenothera walkeri (A. Nels.) Raven subsp. tortilis (Jeps.) Raven)
Washes, calcareous rock, se. Frenchman. Probably winter annual. Apr-May.

Epilobium adenocaulon Hauskn. var. parishii (Trel.) Munz
Seepage site, Whiterock Spg. May.

Gaura coccinea Nutt.
Occasional. Washes, Mercury, s. and e. Frenchman. May.

Gayophytum ramosissimum T. & G.
Locally common. Artemisia-Pinyon-Juniper. Annual. June.

Oenothera caespitosa Nutt.

var. longiflora (Heller) Munz
Occasional. Artemisia-Pinyon-Juniper. Topopah Spg., Rainier Mesa. May-June.

var. marginata (Nutt.) Munz
Hills of n. Mercury and s. Frenchman; washes, n. Frenchman; Artemisia-Pinyon-Juniper, near Topopah Spg. and base of e. slope of Rainier Mesa. Apr-May.

Oenothera californica S. Wats. subsp. avita Klein
Locally common in sandy soils. Lycium pallidum-Grayia, s. Frenchman; Artemisia-Pinyon-Juniper, e. Forty-Mile Cyn. May-June.

Oenothera deltoides Torr. & Frem.
Winter annual, or sometimes apparently short-lived perennial.

subsp. ambigua (S. Wats.) Klein
One collection, Larrea, sandy soil, e. Frenchman. Apr.

subsp. deltoides
Locally common. Larrea. Sandy soils, w. and cent. Jackass, n. and e. Frenchman. Apr.

Oenothera pallida Lindl.
Abundant on sand dune, e. Forty-Mile Cyn. May-June.

Oenothera primiveris Gray
Locally common. Larrea, Mercury, Rock Valley, and Frenchman, esp. e. slope; Coleogyne, Mid Valley. Apr-May.

OROBANCHACEAE. Broom-rape Family

Orobanche californica Cham. & Schlecht.
Locally common in sandy and stony soils. Artemisia, Artemisia-Pinyon-Juniper, e. Forty-Mile Cyn. Root attachments with Artemisia arbuscula and apparently also other shrub species. June.

Orobanche grayana G. Beck
One collection, Artemisia tridentata, Pahute Mesa. Aug.

Orobanche ludoviciana Nutt.
One collection, Larrea, Rock Valley. May.

PAPAVERACEAE. Poppy Family

Arctomecon merriamii Cov.
Occasional. Coleogyne-Atriplex, hills of n. Mercury.

Argemone corymbosa Greene
Occasional. Larrea, s. Frenchman. Apr-May.

Argemone munita Dur. & Hilg. subsp. rotundata (Rydb.) G. Ownbey
Occasional. Artemisia-Pinyon-Juniper. July-Aug.

Eschscholzia glyptosperma Greene
Occasional to locally common. Larrea, Grayia-Lycium, Coleogyne. All basins except Forty-Mile Cyn. Winter annual. Mar-May.

Eschscholzia minutiflora Wats.
Occasional to locally common, esp. in washes. Larrea, Coleogyne, Artemisia. Frenchman, Topopah, Mid Valley, Yucca, Forty-Mile. Winter annual. Apr-May.

PLANTAGINACEAE. Plantain Family

Plantago insularis Eastw. var. fastigiata (Morris) Jeps.
Common to abundant locally. Larrea. Mercury, Rock Valley, ne. Frenchman. Winter annual. Apr-May.

Plantago purshii R. & S.
Common to abundant locally. Coleogyne, nw. Yucca; Artemisia arbuscula, Forty-Mile Cyn.; Topopah Spg. Winter annual. May-June.

POLEMONIACEAE. Phlox Family

Eriastrum eremicum (Jeps.) Mason
Common, esp. in sandy soils. All vegetation types, all basins. Winter annual. May-July.

Eriastrum sparsiflorum (Eastw.) Mason
Common locally. Artemisia-Pinyon-Juniper. Annual. June.

Eriastrum sp.
Occasional. Coleogyne, w. Yucca. May.

Gilia aliquanta A. & V. Grant
Common locally. Coleogyne, Mid-Valley; Artemisia, w. Yucca, e. Forty-Mile Cyn. Winter annual. Apr-May.

Gilia brecciarum Jones subsp. brecciarum
Common locally. Coleogyne, nw. Yucca, Mid Valley; Artemisia, and esp. Artemisia-Pinyon-Juniper. Winter annual. May-June.

Gilia campanulata Gray
Common locally, esp. in sandy soils. Larrea, Grayia-Lycium, Lycium pallidum, Atriplex confertifolia and A. canescens. Jackass, Frenchman, Yucca. Winter annual. Apr-May.

Gilia cana (Jones) Heller
Winter annual. Apr-May.

subsp. speciformis A. & V. Grant
Common. Larrea. E. Rock Valley, cent. and e. Jackass, w. and s. Frenchman; distribution following closely soils derived from Skull Mtn. rocks.

subsp. triceps (Brand) A. & V. Grant
Widespread, most common of the genus in Larrea, Grayia-Lycium, and Coleogyne. All basins except Forty-Mile Cyn.

subsp. speciformis X subsp. triceps
Occasional, s. Frenchman.

Gilia clokeyi Mason
Common. Larrea, esp. with Atriplex confertifolia. Calcareous soils, Rock Valley, s., se. and n. Frenchman, sw. Yucca. Winter annual, apparently germinating in only certain years. Apr.

Gilia filiformis Parry
Common locally. Washes, se. Frenchman. Winter annual. Apr.

Gilia hutchinsifolia Rydb.
Wash in Lycium pallidum, s. Frenchman; base of canyon wall, Artemisia-Pinyon-Juniper, Silent Canyon, n. Pahute Mesa. Annual. May-June.

Gilia leptomeria Gray
Common locally, sandy soils. Larrea. W. Jackass, s. and e. Frenchman. Winter annual. Apr.

Gilia malior Day & Grant
Common locally. Coleogyne, n. and w. Yucca, Topopah, Mid Valley. Winter annual. Apr-May.

Gilia minor A. & V. Grant
One collection, base of limestone hill, e. Rock Valley. Winter annual. Apr.

Gilia modocensis Eastw.
Occasional. Artemisia-Pinyon-Juniper. Annual. May.

Gilia ophthalmoides Brand
Occasional to common. Coleogyne of w. Yucca; Artemisia, Artemisia-Pinyon-Juniper. Winter annual. May-June.

Gilia scopulorum Jones
Occasional. Washes, calcareous soils, Rock Valley and se. Frenchman. Winter annual. Apr.

Gilia sinuata Dougl. ex Benth.
Common. Grayia-Lycium, Coleogyne, Artemisia, occasionally Larrea. Jackass, Frenchman, Mid Valley, Yucca, Forty-Mile Cyn. Winter annual. Apr-May.

Gilia stellata Heller
Common locally. Larrea, sw. and n. Frenchman. Winter annual, apparently germinating in only certain years. Apr.

Gilia transmontana (Mason & A. Grant) A. & V. Grant
Occasional to common locally. Larrea, Coleogyne. Mercury, s. Rock Valley, n. Jackass; ne., e., and sw. Yucca; n., w., cent. and esp. se. Frenchman. Winter annual. Mar-May.

Gilia sp. (near G. hutchinsifolia; magenta-flowered)
Occasional to locally common, sands of e. Forty-Mile Cyn. Artemisia tridentata and Artemisia-Pinyon-Juniper. Annual. May-June.

Ipomopsis congesta (Hook.) V. Grant
Common. Artemisia-Pinyon-Juniper. May-June.

Ipomopsis polycladon (Torr.) V. Grant
Common. Larrea, Grayia-Lycium, Coleogyne. All basins except Forty-Mile Cyn. Winter annual. Apr-May.

Langloisia mathewsii (Gray) Greene
Occasional to common locally, sandy soils. Larrea. Rock Valley, w. Jackass, sw. Frenchman. Winter annual. Apr.

Langloisia schottii (Torr.) Greene
Common to abundant locally. Larrea, Grayia-Lycium, Coleogyne, Atriplex. Mercury, Rock Valley, Jackass, s., cent-w. and n. Frenchman, ne. Yucca. Winter annual. Apr-May.

Langloisia setosissima (T. & G.) Greene
Common to abundant locally. Larrea and Coleogyne, esp. with Atriplex confertifolia. Mercury, Rock Valley, n. Jackass; nw., w.-cent., s. and se. Frenchman; w., sw. and s. Yucca. Winter annual. Apr-May.

Leptodactylon pungens (Torr.) Rydb.

subsp. hallii (Parish) Mason
Occasional to common. Artemisia-Pinyon-Juniper. June-July.

subsp. pulchriflorum (Brand) Mason
Occasional to common. Artemisia, Artemisia-Pinyon-Juniper. May-July.

Linanthus bigelovii (Gray) Greene
Common locally. Larrea, Coleogyne. All basins, except Forty-Mile Cyn. Winter annual. Apr.

Linanthus demissus (Gray) Greene
Common locally. Larrea. Mercury, Rock Valley, cent. and s. Frenchman. Winter annual. Apr.

Linanthus dichotomus Benth.
Common locally. Coleogyne, Artemisia. Jackass, Mid Valley, Yucca, Forty-Mile Cyn. Winter annual. Apr.

Linanthus jonesii (Gray) Greene
Common locally. Larrea, cent. Frenchman; Coleogyne, sw. Yucca. Winter annual. Apr.

Linanthus nuttallii (Gray) Greene ex Mlkn.
Common. Artemisia-Pinyon-Juniper. June-July.

Microsteris gracilis (Dougl. ex Hook.) Greene subsp. humilus (Greene) V. Grant
Occasional. Artemisia, Artemisia-Pinyon-Juniper. Annual. May.

Navarretia breweri (Gray) Greene
Common locally. Artemisia-Pinyon-Juniper. Annual. May-June.

Phlox hoodii Richards subsp. lanata (Piper) Munz
Common locally. Artemisia arbuscula, Kawich. June.

Phlox stansburyi (Torr.) Heller
Common locally. Grayia-Lycium, Coleogyne, Artemisia, esp. Artemisia-Pinyon-Juniper. N. Jackass, w. Frenchman, Yucca, Mid Valley, Forty-Mile Cyn. Apr-June.

POLYGALACEAE. Milkwort Family

Polygala subspinosa Wats.

var. heterorhyncha Barneby
Common locally. Larrea, e. Rock Valley; Larrea, Lycium pallidum-Grayia, Atriplex, s. and cent. Frenchman; Grayia-Lycium, se. Yucca. Apr-May.

var. subspinosa
Common locally. Juniper flats, n. Pahute Mesa. June.

POLYGONACEAE. Buckwheat Family

Chorizanthe brevicornu Torr.
Occasional to common. Larrea, Larrea/Coleogyne, Grayia-Lycium. Mercury, Rock Valley, n., w., and cent. Jackass, n., w., and s. Frenchman, cent.-w. and sw. Yucca. Winter annual. Apr-May.

Chorizanthe rigida (Torr.) T. & G.
Occasional to abundant locally. Larrea and Coleogyne esp. with Atriplex confertifolia, Grayia-Lycium, Artemisia. Mercury, Rock Valley, Jackass, Topopah, esp. s. and e. Frenchman, s. Yucca, e. Forty-Mile Cyn. Winter annual. Apr-May.

Chorizanthe thurberi (Gray) Wats.
Common locally. Larrea, Grayia-Lycium, esp. Coleogyne, Artemisia, Artemisia-Pinyon-Juniper. Jackass, Frenchman, Topopah, Mid Valley, Yucca, Forty-Mile Cyn. Winter annual. May-June.

Chorizanthe watsonii T. & G.
Occasional to common locally. Coleogyne, Artemisia arbuscula. N. Jackass, Topopah, Mid Valley, w. and ne. Yucca, Forty-Mile Cyn. Winter annual, apparently germinating in only certain years. Apr-May.

Eriogonum baileyi Wats.
Occasional, esp. in sandy soils. Artemisia, Artemisia-Pinyon-Juniper. Annual. Aug-Oct.

Eriogonum caespitosum Nutt.
Common. Often the dominant ground cover species, Artemisia-Pinyon-Juniper. May-June.

Eriogonum cernuum Nutt. subsp. tenue (Torr. & Gray) Stokes
Occasional. Artemisia-Pinyon-Juniper, Rainier Mesa. Annual. Aug-Sept.

Eriogonum deflexum Torr.
Winter annual.

var. brachypodum (T. & G.) Munz
Occasional, on disturbed sites and probably also in washes. Mercury, Rock Valley, cent. and s. Frenchman. June-Sept.

var. deflexum
Abundant, esp. on disturbed sites and in sandy soils of Lycium pallidum-Grayia and Atriplex canescens, s. Frenchman; occasional in Larrea, Jackass, and Grayia-Lycium and Atriplex types, Yucca. May-Sept.

Eriogonum esmeraldense Wats.
Common locally. Artemisia-Pinyon-Juniper, s. Rainier Mesa. Annual. June-July.

Eriogonum fasciculatum Benth.

subsp. polifolium (Benth.) S. Stokes
Occasional. Washes, in upper Larrea, Grayia-Lycium, Coleogyne. Rock Valley, Jackass, w. Frenchman, Yucca. May.

subsp. revolutum (Goodd.) Stokes
With subsp. polifolium. Jackass, w. Frenchman. May.

Eriogonum heermannii Dur. & Hilg. subsp. heermannii
Occasional. Coleogyne-Atriplex, hills of s. Frenchman and n. Mercury. June-July.

Eriogonum inflatum Torr. & Frem.
Occasional to common locally. Larrea and Coleogyne, esp. with Atriplex confertifolia. Mercury, Rock Valley, Jackass, sw. Yucca, and esp. common in se. Frenchman. Apr-May.

Eriogonum maculatum Heller
Widespread, occasional to common. Larrea, Grayia-Lycium, Coleogyne. All basins except Forty-Mile Cyn. Winter annual. Apr-May.

Eriogonum microthecum Nutt.
Common. Artemisia-Pinyon-Juniper. Highly variable species. July-Aug.

Eriogonum nidularium Cov.
Widespread, occasional to common. Larrea, Grayia-Lycium, Coleogyne, Artemisia. All basins. Winter annual. Apr-June.

Eriogonum nodosum Small var. kearneyi (Tidestr.) Stokes
Common to abundant. Sands, Artemisia tridentata, e. Forty-Mile Cyn. Aug-Sept.

Eriogonum ovalifolium Nutt.

subsp. purpureum (Nutt.) Nelson
Common. Artemisia, Artemisia-Pinyon-Juniper. May-June.

subsp. vineum (Small) S. Stokes
Occasional. Artemisia-Pinyon-Juniper. May-June.

Eriogonum pusillum T. & G.
Common locally. Larrea, Grayia-Lycium. S., w. and e. Jackass, n., sw., and w. Frenchman, ne. Yucca. Winter annual. Apr-May.

Eriogonum racemosum Nutt. var. racemosum
Occasional. Artemisia-Pinyon-Juniper. Aug-Sept.

Eriogonum reniforme Torr. & Frem.
Common to abundant. Larrea, Grayia-Lycium, Lycium pallidum-Grayia. Ne. Rock Valley, s. and cent. Jackass, w., sw. and cent.-w. Frenchman; except for nw. Frenchman, distribution parallels that of Lycium pallidum and soils derived from Skull Mtn. rocks. Winter annual. Apr-May.

Eriogonum saxatile Wats.
Occasional. Artemisia-Pinyon-Juniper. May-June.

Eriogonum sulcatum Wats.
Occasional. Coleogyne or Atriplex, hills of Rock Valley, se. Frenchman, sw. Yucca. June-July.

Eriogonum trichopes Torr. subsp. minus (Benth.) S. Stokes
Locally common or abundant. Larrea, esp. with Atriplex confertifolia, and Larrea/Coleogyne. Mercury, Rock Valley, se. and occasionally in n. and nw. Frenchman, ne. and sw. Yucca. Winter annual. May-June.

Eriogonum umbellatum Torr.

subsp. polyanthum (Benth.) S. Stokes
Canyon wall, Silent Canyon, n. Pahute Mesa. Artemisia-Pinyon-Juniper. June-July.

subsp. stellatum (Benth.) S. Stokes
Common, often locally abundant. Artemisia-Pinyon-Juniper. Aug.

Eriogonum wrightii Torr. ex Benth. subsp. trachygonum (Torr.) S. Stokes
One collection, lower Artemisia-Pinyon-Juniper, base of e. slope, Rainier Mesa. Sept.

Oxytheca perfoliata T. & G.
Widespread, occasional to common. Larrea, Grayia-Lycium, Coleogyne. All basins except Forty-Mile Cyn. Winter annual. Apr-May.

Rumex crispus L.
Moist to wet sites, Cane Spgs., Topopah Spr. Introduced. June-Aug.

Rumex salicifolius Weinm.
Moist to wet sites, Cane Spgs., Whiterock Spg. June-Aug.

PORTULACACEAE. Purslane Family

Lewisia rediviva Pursh var. minor (Rydb.) Munz
Common locally. Artemisia tridentata. Pahute Mesa, Kawich. June.

RANUNCULACEAE. Crowfoot Family

Anemone tuberosa Rydb.
Occasional. Canyons in hills, ne. Frenchman. Mar-Apr.

Anemone sp.
One collection, foothills, nw. Yucca. Mar.

Aquilegia shockleyi Eastw.
Locally common, base of cliffs, Silent Canyon, n. Pahute Mesa. Artemisia-Pinyon-Juniper. June-July.

Delphinium parishii Gray
Occasional to common. Larrea, Grayia-Lycium, Coleogyne, Artemisia, all basins. Apr-June.

Ranunculus andersonii Gray
Bald Mtn., Groom. June.

Ranunculus cymbalaria Pursh var. saxmontanus Fern.
Seepage site, base of Bald Mtn., Groom. June.

RHAMNACEAE. Buckthorn Family

Ceanothus greggii Gray var. vestitus (Greene) McMinn
Occasional. Artemisia-Pinyon-Juniper. Fl. time unknown.

ROSACEAE. Rose Family

Amelanchier utahensis Koehne
Occasional in Artemisia, common in Artemisia-Pinyon-Juniper. Apr-May.

Cercocarpus intricatus Wats.
Occasional. Canyons in hills, ne. Frenchman. Apr.

Cercocarpus ledifolius Nutt.
Occasional. Artemisia-Pinyon-Juniper. May.

Chamaebatiaria millefolium (Torr.) Max.
Wheelbarrow Peak, Belted Range, Groom. Aug.

Coleogyne ramosissima Torr.
Dominant shrub, often in nearly pure stands, of upper bajadas, Mercury, Rock Valley, Jackass, Frenchman, Yucca; basin floors of Topopah, Mid Valley; local areas in Forty Mile Cyn. Apr-May.

Cowania mexicana D. Don. var. stansburiana (Torr.) Jeps.
Occasional to common. Artemisia, Artemisia-Pinyon-Juniper. Sometimes attaining tree size on Pahute Mesa. May-June.

Fallugia paradoxa (D. Don.) Endl.
Apparently rare. Coleogyne/Artemisia, nw. Yucca. May.

Holodiscus microphyllus Rydb. var. sericeus Ley
Occasional. Canyon walls, Artemisia-Pinyon-Juniper. Pahute Mesa, Rainier Mesa, Bald Mtn. June-July.

Ivesia sabulosa (Jones) Keck
Common locally. Base of walls of Silent Canyon, n. Pahute Mesa, and around flat rock outcrops, s. Pahute Mesa. Artemisia-Pinyon-Juniper. July-Aug.

Peraphyllum ramosissimum Nutt.
All collections from same locality, Artemisia, Tippipah area of w. Yucca. Apr.

Petrophytum caespitosum (Nutt.) Rydb.
Occasional. Hills, e. Frenchman and sw. Yucca. Summer.

Potentilla biennis Greene
Common, Whiterock Spg. May-June.

Prunus fasciculata (Torr.) Gray
Washes in upper Larrea, Coleogyne, Artemisia, lower Artemisia-Pinyon-Juniper. All basins. Apr.

Purpusia saxosa Bdg.
Abundant, cliff crevices, Silent Canyon, n. Pahute Mesa. Artemisia-Pinyon-Juniper. June-Sept.

Purshia glandulosa Curran
Occasional. Coleogyne, Artemisia. W. Yucca, esp. in Tippipah area. Apr-May.

Purshia tridentata (Pursh) DC.
Common. Artemisia-Pinyon-Juniper. May-July.

RUBIACEAE. Madder Family

Galium aparine L.
Seepage site, Topopah Spg. Introduced annual. Fl. time unknown.

Galium sp.
Rock crevices, hills of ne. Frenchman. May.

RUTACEAE. Rue Family

Thamnosma montana Torr. & Frem.
Locally common. Larrea, Grayia-Lycium, Coleogyne. Mercury, Jackass, Mid Valley, w. Frenchman in Cane Spgs. area, bajadas and hills of s. Frenchman. Jan-May, most commonly Mar-Apr.

SALICACEAE. Willow Family

Salix exigua Nutt.
Common, banks and seepage area, Whiterock Spg. May.

Salix gooddingii Ball
One large tree, numerous small ones, seepage sites, Cane Spgs. Apr-May.

SAXIFRAGACEAE. Saxifrage Family

Lithophragma breviloba Rydb.
Locally common. Around rock outcrops, Artemisia-Pinyon-Juniper. Annual. May-June.

Ribes cereum Dougl.
Occasional. Artemisia-Pinyon-Juniper, wall of Silent Canyon, n. Pahute Mesa; Bald Mtn., Groom. June-July.

Ribes montigenum McClat.
Common. Artemisia-Pinyon-Juniper. May.

Ribes velutinum Greene
Bald Mtn., Groom. June.

SCROPHULARIACEAE. Figwort Family

Antirrhinum filipes Gray
Occasional. Esp. washes in Larrea, Coleogyne. Se. Rock Valley, se. Frenchman, sw. Yucca. Winter annual. Apr.

Castilleja chromosa A. Nels.
Occasional. Esp. in Coleogyne and Artemisia, infrequent in Larrea or other types. Mar-May.

Castilleja linariaefolia Benth. var. linariaefolia Benth.
Occasional to common locally. Artemisia-Pinyon-Juniper. July-Aug.

Collinsia parviflora Dougl. ex Lindl.
Occasional to common locally. Artemisia-Pinyon-Juniper. Annual. May-June.

Mimulus bigelovii (Gray) Gray
Annual. May-June.

var. bigelovii
Occasional to common locally. Artemisia-Pinyon-Juniper.

var. cuspidatus Grant
Washes, s. Rock Valley and s. Frenchman.

Mimulus guttatus Fisch. ex DC.
Wet to moist sites, Cane Spgs., Topopah Spg. Apr-May.

Mimulus parryi Gray
Common locally. Artemisia-Pinyon-Juniper. Annual. May-June.

Mimulus pilosus (Benth.) Wats.
Rock ledges, Topopah Spg. Annual. May.

Mimulus suksdorfii Gray
Occasional. Artemisia-Pinyon-Juniper. Annual. May-June.

Penstemon bridgesii Gray
Occasional. Artemisia-Pinyon-Juniper. July-Aug.

Penstemon calcareous Bdg.
Occasional to common locally. Artemisia-Pinyon-Juniper. May-June.

Penstemon floridus Bdg.
Occasional. Artemisia, Artemisia-Pinyon-Juniper. May-July.

Penstemon palmeri Gray
Occasional to common locally. Artemisia-Pinyon-Juniper; local population, 1959-63, on highway shoulder w. of Mercury townsite (destroyed by grading). May-July.

Penstemon rothrockii Gray
Occasional. Artemisia-Pinyon-Juniper. June-July.

Penstemon speciosus Dougl. ex Lindl.
Occasional to common locally. Artemisia-Pinyon-Juniper. June-July.

Penstemon spectabilis Thurb.
Occasional. Artemisia-Pinyon-Juniper. June.

Scrophularia californica Cham. & Schlecht. var. californica
Occasional. Rock ledges, Artemisia-Pinyon-Juniper. June-July.

Veronica americana (Raf.) Schw.
Shallow water, Cane Spgs. pond, and seepage area below ponds near base of e. slope of Rainier Mesa. July (?)-Oct.

Veronica anagallis-aquatica L.
Margin of Cane Spgs. pond. Introduced. Apr-May.

SOLANACEAE. Nightshade Family

Lycium andersonii Gray

var. andersonii
Dominant or associated shrub in Larrea, Grayia-Lycium, Coleogyne, occasional in other types. Most parts of all basins. Apr-May.

var. deserticola (C. L. Hitchc.) Jeps.
One plant known, in Larrea-Lycium pallidum, s. Jackass. Apr.

Lycium pallidum Miers
Dominant or associated shrub in Larrea. N. Mercury, Rock Valley, s., s.-cent. and w.-cent. Jackass, sw. and esp. in the band across s. Frenchman where it occurs with Grayia and without Larrea. Distribution apparently related to soils derived from Skull Mtn. rocks. Apr.

Lycium shockleyi Gray (L. rickardii C. H. Mull.)
Dominant shrub, with Atriplex confertifolia and Larrea. Restricted to the bajadas of se. Frenchman. Apr.

Nicotiana attenuata Torr.
Common, often abundant on disturbed sites, Artemisia-Pinyon-Juniper; occasional small populations on moist sites at lower elevations. Annual. June-July.

Nicotiana trygonophylla Dunal in A. DC.
Common locally. Larrea, n. Frenchman. Annual. Apr-May.

TAMARICACEAE. Tamarisk Family

Tamarix pentandra Pall.
Occasional. Wet sites, around or near Cane Spgs pond, and on Frenchman playa. Introduced. June-July.

UMBELLIFERAE. Carrot Family

Berula erecta (Huds.) Cov.
Shallow water, Cane Spgs. pond. July-Sept.

Cymopterus gilmanii Morton
Washes, upper bajadas, se. Frenchman. Apr-May.

Cymopterus globosus (Wats.) Wats.
Atriplex-Kochia, se. Yucca, and Coleogyne, nw. Yucca, where it is abundant during the occasional year in which it appears. Apr-May.

Cymopterus purpurascens (Gray) Jones
Common. Artemisia-Pinyon-Juniper. Apr-May.

Cymopterus ripleyi Barneby

var. ripleyi
Common. Artemisia tridentata, sands of e. Forty-Mile Cyn. May-June.

var. saniculoides Barneby
Occasional to common locally. Larrea-Grayia-Lycium, cent. and sw. Frenchman, se. Rock Valley; Grayia-Lycium, se. Yucca. Type locality, Frenchman Flat. Apr-May.

Cymopterus sp.
Occasional in Coleogyne, w. Yucca. Apr-May.

Lomatium macdougallii Coult. & Rose
Common. Artemisia-Pinyon-Juniper. Apr-June.

Lomatium nevadense (Wats.) Coult. & Rose
Common locally. Coleogyne, Mid Valley and w. Yucca; Artemisia arbuscula and Artemisia-Pinyon-Juniper of esp. e. Forty-Mile Cyn. Apr-May.

Pteryxia hendersonii (Coult. & Rose) Math. & Const. subsp. hendersonii
Rock crevices in Coleogyne, hills of w. Yucca. Apr.

Pteryxia petraea (Jones) Coult. & Rose
Rock crevices, canyons of hills, ne. Frenchman. Apr.

VERBENACEAE. Vervain Family

Verbena bracteata Lag. & Rodr.
Moist sites around margin of pond, Cane Spgs. May-Sept.

ZYGOPHYLLACEAE. Caltrop Family

Larrea divaricata Cav.
Dominant shrub on all or most of the bajadas of Mercury, Rock Valley, Jackass, and Frenchman; essentially restricted to upper bajadas of Yucca, where it is at its northern limits; absent in Topopah, Mid Valley, and Forty-Mile Cyn. May-June, sometimes scattered flowering in Sept-Oct.

Tribulus terrestris L.
Occasional, Mercury townsite. Introduced. Summer.

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