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VEGETATION STUDIES

NATIONAL TRAINING CENTER

FORT IRWIN, CALIFORNIA

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SUMMARY

During the spring of 1992, the Pacific Northwest National Laboratory (PNNL) conducted surveys of the Avawatz and Granite mountains springs for the National Training Center (NTC) to evaluate the occurrence of sensitive plant species in these areas. PNNL also conducted a survey of the eastern outwash of the Paradise Range for the occurrence of Lane Mountain milk vetch (*Astragalus jaegerianus*). In spring of 1993, PNNL conducted an additional study of Lane Mountain milk vetch on the NTC to determine habitat characteristics for this plant and to develop a method for predicting its potential occurrence, based on simple habitat attributes. The results of these studies are itemized below:

1) A total of 184 plant species were found near the Ava-watz springs, with Alkali mariposa (*Calochortus striatus*) the only sensitive plant found.
2) A total of 133 plant species were found near the Granite springs, with no sensitive species among them.
3) A total of 34 Lane Mountain milk vetch plants were found on the eastern outwash of the Paradise Range. These occurred in four groups, two of which were previously undocumented.
4) Lane Mountain milk vetch was not found to associate with particular species of shrubs, and six of the 34 individualswere found growing independent of shrub association.
5) Lane Mountain milk vetch habitat was rare in the overall landscape.
6) Lane Mountain milk vetch habitat was characterized by Nevada jointfir (*Ephedra nevadensis*) and Cooper goldenbush (*Ericameria cooperi*) as the dominant or codominant shrubs.
7) The highest average density of shrubs occurred in Lane Mountain milk vetch habitat, although there was broad overlap in shrub density with adjacent areas lacking Lane Mountain milk vetch.
8) No differences in soil hue were found between Lane Mountain milk vetch habitat and the general landscape; however, Lane Mountain milk vetch soils were darker and more intensely colored than the other soils.
9) Soils beneath Lane Mountain milk vetch plants were shallower than elsewhere, and were composed of coarser (granular) material both at the surface and over a 10-cm depth.
10) No differences in soil pH or percentage organic matter were found between Lane Mountain milk vetch soils and elsewhere.
11) Lane Mountain milk vetch soils were lower in phosphorus and higher in nitrate than elsewhere; no differences in potassium were found.
12) Mycorrhizal spores were found in slightly higher frequency in Lane Mountain milk vetch soils than elsewhere.
13) A binary discriminant function separating Lane Mountain milk vetch habitat from the rest was developed using Mormon tea, Cooper goldenbush, white burrobush (*Ambrosia dumosa*), and creosote bush (*Larrea tridentata*) percentage cover and the soil penetrability index. This function correctly classified 89% of Lane Mountain milk vetch sites and 83% of the sites that did not contain this species. The utility of this function should be evaluated against an independent Lane Mountain milk vetch location and a broader NTC data set. The final discriminant function should be incorporated into the NTC Geographical Information System to predict potential sites where intensive field surveys should be instigated prior to off-road maneuvers.

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INTRODUCTION

The U. S. Army's National Training Center (NTC) at Fort Irwin, California, contains a diversity of Mojave Desert plant communities resulting from various soil conditions and topography. The botanical resources of the upper elevations of the NTC, particularly in the Avawatz and Granite mountains, are of particular interest to the operations of the NTC because these ranges have not been botanically characterized. The ranges contain small natural springs that are widely separated from each other, and which may contain sensitive flora and fauna.

The NTC also contains part of the known range of the Lane Mountain milkvetch (*Astragalus jaegerianus*), which is known from only a few localities in the Paradise Range, San Bernardino County, in the Mojave Desert. The plant was first collected by Edmund Jaeger on April 16, 1939. It was described by Munz (1941) from a type locality near Barstow, California, approximately 19 km (12 mi) south of Goldstone. Both Munz (1941) and Barneby (1964) described the habitat as being low desert shrubs growing on granite sand and gravel at an elevation of 914 to 1158 m (3000 to 3800 ft). The distribution has been estimated at approximately 2072 ha (80 mi^2) (Barneby 1964). The Lane Mountain milkvetch has recently been proposed by the U.S. Fish and Wildlife Service as endangered as a result of its limited range and vulnerability to offroad vehicle traffic and other military training exercises (USFWS 1992).

Ripley and Barneby (Barneby 1964) collected Lane Mountain milkvetch in 1941 in the same places as Munz and Jaeger; this was the last information of record until 1985 when a small population was discovered on the NTC (Bagley 1986). Later, Bagley discovered two other populations in the same general area (Bagley 1989).

The locations of the populations discovered by Bagley and other pertinent information are summarized below:

- T13N, R2E, Sec 19 and 30; about 3.2 km (2 mi) north of the Paradise Range and 1320 m to 1640 m (1/4 to 1/2 mi) east of the Fort Irwin Boundary. Population size of 87 plants within a less than 1-ha area, 1005 to 1036 m (3300 to 3400 ft) above mean sea level (AMSL) (Bagley's Population A4).

- T13N, R1E, Sec 13, 14, and 15; about 4.8 km (3 mi) north of the Paradise Range, just west of the Fort Irwin Boundary. Plants in seven scattered groups. Population size of 30 plants distributed across a square kilometer, 1097 to 1173 m (3600 to 3850 ft) AMSL (Bagley's Population A5).

- T13N, R1E, Sec 28, 29, 32, and 33 and T12N , R1E, Sec 5; about 4.8 km (3 mi) northwest of the Paradise Range, 800 to 1100 m (0.5 to 0.7 mi) west of the roadway. Plants in six scattered groups. Twelve plants within a square km, 960 to 990 m (3150 to 3250 ft) AMSL (Bagley's Population A6).

In the spring of 1992, the NTC contracted the Pacific Northwest National Laboratory (PNNL) to conduct a biological survey of the springs in the Avawatz and Granite mountains. The objective was to develop a list of plant species occurring at these springs, particularly to identify species that were protected by federal or California regulations. PNL also surveyed the area of the NTC where the Lane Mountain milkvetch was known to occur, the eastern outwash plain of the Paradise Mountains, to enumerate the population in the area and to define survey coordinates for each plant found.

In the spring of 1993, PNNL conducted a second field survey of the Lane Mountain milkvetch to better characterize the habitat associations of this plant. This characterization provides a quantitative description of the habitat that is in turn valuable in identifying other areas of the NTC and adjacent Mojave Desert where this plant could likely occur.

In summary, the objectives of these studies are:

1) to provide a species list of plants occurring in the vicinity of springs in the Avawatz and Granite mountains

2) to document the occurrence of plant species protected under California or federal regulations in the Avawatz and Granite mountain springs

3) to describe and map the occurrence of Lane Mountain milkvetch in the vicinity of the Paradise Range on the NTC

4) to describe the habitat of the Lane Mountain milkvetch

5) to develop a classification algorithm that allows prediction of the occurrence of Lane Mountain milkvetch on the basis of habitat variables.

METHODS

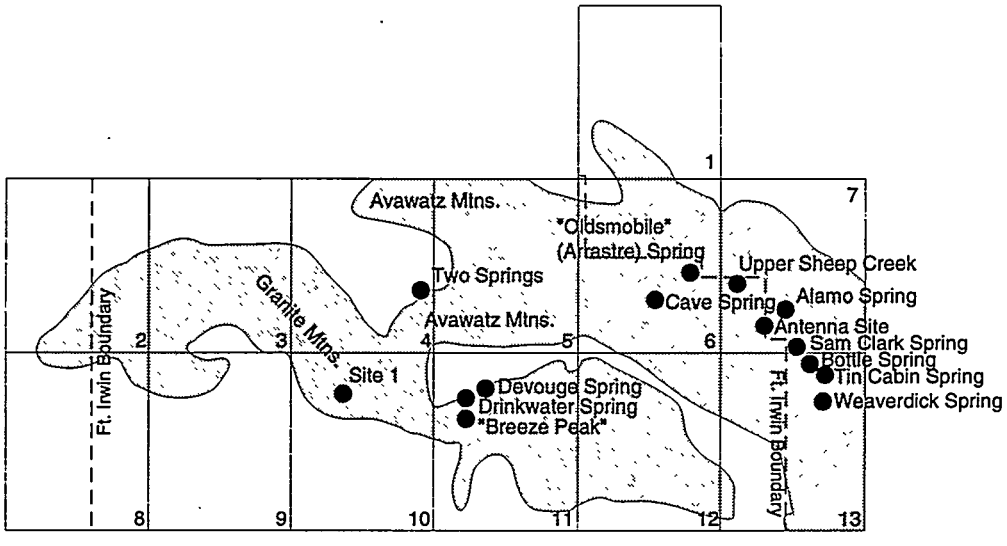
The methods used to perform the surveys and the quantitative habitat analyses are described below by task element.

Avawatz and Granite Springs Surveys

The springs and vicinity were surveyed in April and May 1992. Springs were identified from U.S. Geological Survey maps (Figure 1) and reached by helicopter transporting staff and equipment. Species were listed for each spring site, and voucher specimens of all species were obtained. These specimens were used to make final identifications where necessary by Dr. Robert Carr of the Biology Department, Eastern Washington State University, Cheney, Washington, who also retains the voucher specimens. The listing of plant species considered to be sensitive, rare, threatened, or endangered that could occur in the surveyed area according to the State of California Department of Fish and Game and U.S. Fish and Wildlife Service are listed in Appendix A.

Lane Mountain Milkvetch Survey

The eastern outwash plain of the Paradise Mountain range was surveyed by PNL staff conducting



USGS 7.5 Minute Quadrangle Maps

1. Old Ibex Pass
2. West of Leach Spring
3. Leach Spring
4. Leach Lake
5. East of Leach Lake
6. Avawatz Pass
7. Sheep Creek Spring
8. West of Nelson Lake
9. Nelson Lake
10. West of Drinkwater Lake
11. Drinkwater Lake
12. Red Pass Lake NW
13. Red Pass Lake NE

FIGURE 1. Locations of Springs Surveys in the Avawatz and Granite Mountains

pedestrian searches during April 1992. Two general kinds of surveys were conducted: sweeps and intensive surveys. Sweeps were made with crew members walking parallel lines toward fixed objects on a distant horizon. These sweeps were made through areas of "unlikely" habitats as a test to see if Lane Mountain milkvetch could be found in such habitats. Distances between individual transects ranged from about 50 to 100 m. More intensive surveys included individuals walking within and searching "likely" habitats. Distances between individual transects varied, generally between 15 and 40 m.

All Lane Mountain milkvetch plants found were enumerated. Latitude and longitude for each plant or group of plants were determined using a Garmin Geographic Positioning System, which has an average error of 37 m (120 ft). Estimated positional errors were recorded where possible.

Lane Mountain Milkvetch Habitat Characterization

Characterization of Lane Mountain milkvetch habitat was based on field studies conducted in April 1993. Three types of sampling strata were defined before field work: the immediate vicinity (within 10 m) of Lane Mountain milkvetch plants (hereafter termed "At ASJA" in tables and figures), the nearby habitat (termed "Nearby"), and the landscape (termed "Landscape"). Eighteen sampling locations were identified in each stratum.

Eighteen of the Lane Mountain milkvetch plants that had been located in the previous year's survey, or in the vicinity of previously found plants, were selected at random for characterization. From these plants, random compass angles and distances between 20 and 100 m were defined before field work, with one such location defined for each sampled Lane Mountain milkvetch plant. These samples constituted the data set defining the nearby habitat. Sampling locations for the landscape habitat were defined by locating six transects within the area previously surveyed for the occurrence of Lane Mountain milkvetch. Three sampling locations were identified on each transect by randomly generating distances between 100 and 1000 m. These numbers constituted the distances between sampling locations, with the first sampling location defined by the first distance from the origin of the transect. Variables sampled at each sampling location were:

1) distance to nearest shrub
2) identity of nearest shrub
3) distance to second-nearest shrub
4) identity of second-nearest shrub
5) distance to third-nearest shrub
6) identity of third-nearest shrub
7) habitat descriptions for the area around the sampling location
8) shrub density (by species) in the area around the sampling location
9) shrub cover (by species) in the area around the sampling location
10) soil penetrometer index at the sampling location
11) soil color at the sampling location
12) surface soil particle size profile at the sampling location
13) soil physical (particle size) and chemical properties (total nitrogen, phosphorus, potassium, pH, and total organic matter
14) number of mycorrhizal spores in soil at the sampling location.

Distances were obtained by measurement. Habitat descriptions were obtained using the relevé method (Bonham 1989). Shrub density and cover were obtained by line intercept along a 20-m tape centered over the sampling location. The tape was oriented at right angles to the slope. Soil color of the soil surface was characterized using a Munsell Chart. Surface particle size distribution was estimated visually. Soil characteristics were defined using laboratory methods from a soil sample collected from the top 10 cm at each sampling location. Particle size distributions were defined hygroscopically. Total nitrogen was estimated from Kjeldahl digestion. All chemical analyses followed U.S. Department of Agriculture Soil Conservation Service protocols (USDA 1984).

Additional soil characterization of sampling locations at Lane Mountain milkvetch plants and nearby habitat was performed *in situ* by Mr. Vern Burlingame of the U.S. Soil Conservation Service.

RESULTS AND DISCUSSION

Results for the separate field surveys are described sequentially below by task element.

Avawatz and Granite Spring Surveys

A total of 184 vascular plant species were collected in the sampling of the Avawatz Mountain springs, of which 64 were identified to species (Appendix B). Alkali mariposa (*Calochortus striatus*), a federal category 2 candidate for listing, was the only sensitive plant found in the Avawatz survey. It was collected at the Antenna Site in the Avawatz (Number 6 in Figure 1).

A total of 133 vascular plant species were collected in the sampling of the Granite Mountain springs, with 61 of the collections identified to species (Appendix B). No sensitive species were identified in this collection.

Lane Mountain Milkvetch Survey

The area surveyed for the occurrence of Lane Mountain milkvetch in 1992 is shown in Figure 2, along with the locations of the plants found. The plants found at each location are shown in Table 1, along with the coordinates and shrub species in which the milkvetch plant was intertwined.

In all, 34 individual plants were found, which were distributed in four groups (Figure 2). Two of these populations apparently were not previously known. Six of the 34 individuals were found growing without benefit of a shrub; the remainder were intertwined within the crowns of various shrub species (Table 2).

Lane Mountain Milkvetch Habitat Characterization

Plant Associations

All of the 18 milkvetch plants in the habitat characterization phase of the study were found growing in the crowns of eight species of shrubs (Table 3). The most common associations were with white bursage (*Ambrosia dumosa*) and Nevada jointfir (*Ephedra nevadensis*). No milkvetch plants were found in Anderson's wolfberry (*Lycium andersonii*), neakstem four o'clock (*Mirabilis bigelovii*), goldenhills (*Encelia farinosa*), or Mexican bladdersage (*Salazaria mexicana*), although all species were present in the immediate vicinity (i.e., were included in the closest three shrubs). Three of the 34 plants found in the 1992 survey were found in association with these latter three species. Five of the six white burrobush containing milkvetch in the 1993 samples were dead.

Although the sample size is too small to allow statistical comparisons of association between Lane Mountain milkvetch and all shrub species, there were no large differences between the number of milkvetch growing in a particular species and the number of shrubs of that species in the vicinity. When the frequency of occurrence of Lane Mountain milkvetch is separated into its two most common associations (white burrobush and Nevada jointfir) and other species, and the frequencies are compared with those available in the total sample of three shrubs nearest the milkvetch, no significant association is found ($\chi^2 = 4.218$, df = 2, P = 0.12). The contingency coefficient for this association, a measure comparable to a correlation coefficient, is very low (0.27). These results suggest that Lane Mountain milkvetch does not exhibit a strong association with any particular shrub, but occurs in a more-or-less random selection of the shrubs in its vicinity.

Vegetative Habitat Descriptions

Habitat classifications based on dominant and subdominant shrub cover differed significantly among the three sampling strata. The two most common shrub habitats over all three sampling strata were white burrobush/creosote bush (*Larrea tridentata*) and creosote bush/white burrobush (the dominant species in terms of estimated cover is named first), which characterized 21 of the 54 sampled sites (Table 4). These communities were dominant in the Landscape samples, but did not occur at all in association with Lane Mountain milkvetch. Instead, the Lane Mountain milkvetch was found most often in communities in which Nevada jointfir was either the dominant or subdominant shrub (16 of 18 locations). This species did not occur as the dominant shrub in any Landscape or Nearby samples, although it was a subdominant in two Nearby locations and in one Landscape location. The occurrence of Nevada jointfir among the three sampling strata was significantly different from random ($\chi^2 = 34.268$, df = 2, P < 0.0001). White burrobush was the dominant or codominant shrub in 16 of 18 locations in the Landscape data set and in

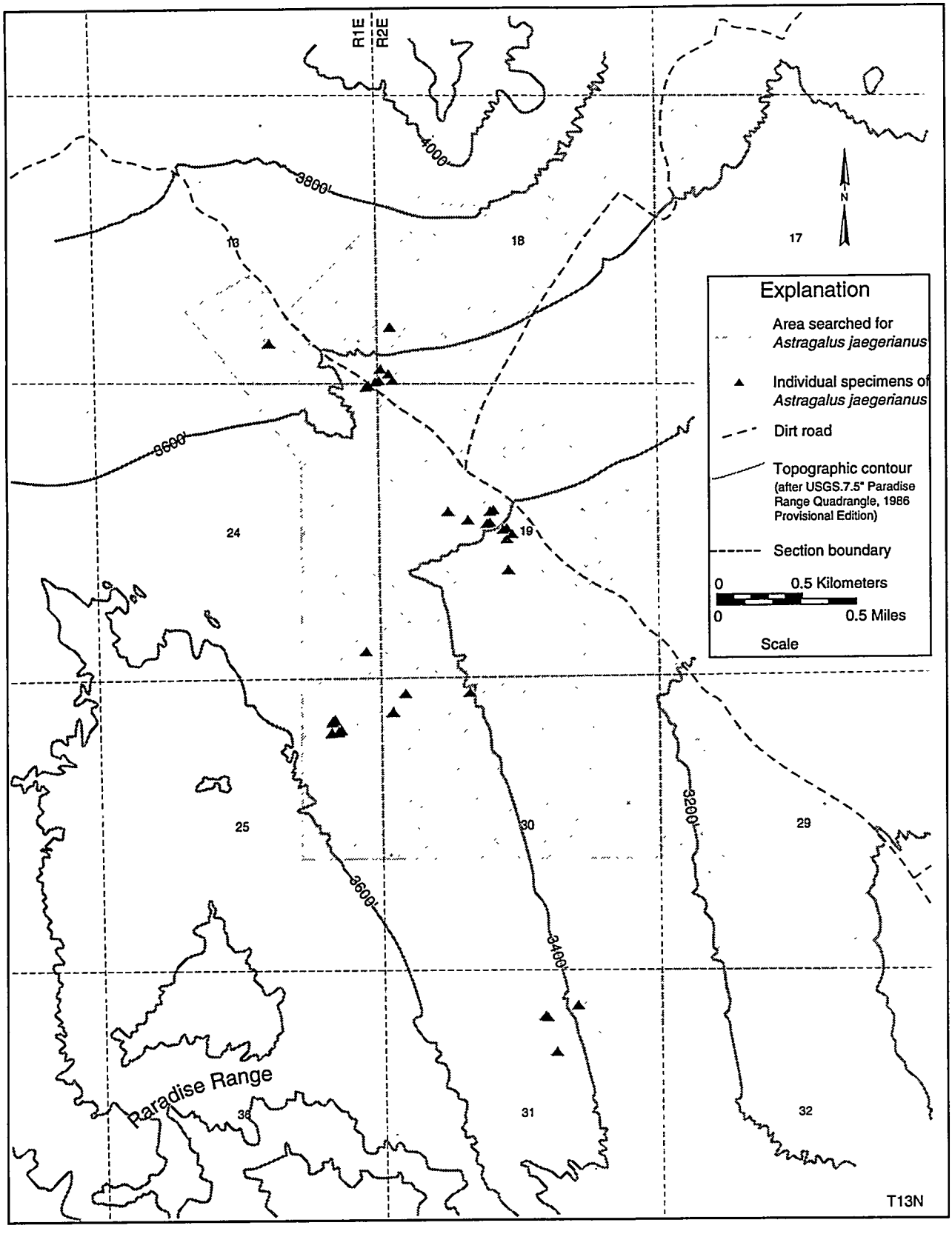


FIGURE 2. Area Surveyed for Lane Mountain Milkvetch in April 1992 and Locations of Plants Found

TABLE 1. Lane Mountain Milkvetch Plants Found During the April 1992 Survey of the Paradise Range Outwash Plain.

Reference Number	Date Observed	Latitude	Longitude	Elevation (m)	Host Plant	Comments
WP002a	04/14/92	35 12'25"	116 48'42"		Bare ground	Small plant.
WP002b	04/14/92	35 12'25"	116 48'42"		Bare ground	Small plant.
WP003	04/14/92	35 12'17"	116 48'37"		*Ambrosia dumosa*	
WP004a	04/14/92	35 12'23"	116 48'38"		*Ambrosia dumosa*, dead	
WP004b	04/14/92	35 12'23"	116 48'38"		*Ambrosia dumosa*	
WP005	04/14/92	35 12'21"	116 48'37"		*Thamnosma montana*	
WP006	04/14/92	35 12'22"	116 48'36"		*Ambrosia dumosa*, dead	
WP007	04/14/92	35 12'26"	116 48'39"		*Ericameria cooperi*	
WP008	04/14/92	35 12'26"	116 48'39"		*Ambrosia dumosa*, dead	
WP009	04/15/92	35 12'34"	116 48'49"		*Ambrosia dumosa*	
WP010	04/15/92	35 12'32"	116 48'44"		Bare ground	
WP013	04/16/92	35 11'55"	116 48'43"	3590	Bare ground	
WP014	04/16/92	35 11'50"	116 49'03"	3721	*Ambrosia dumosa/ Ericameria cooperi*	
WP015	04/16/92	35 11'54"	116 49'01"		*Grayia spinosa*	
WP016a	04/16/92	35 11'48"	116 49'14"		*Salazaria mexicana*	Large, very robust plant.
WP016b	04/16/92	35 11'48"	116 49'14"		*Thamnosma montana*	Large, very robust plant.
WP017	04/16/92	35 11'50"	116 49'14"		Bare ground	Small plant.
WP018	04/16/92	35 11'48"	116 49'13"		*Ambrosia dumosa*	Large plant.
WP019	04/16/92	35 11'48"	116 49'13"		*Ambrosia dumosa*, dead	Large plant.
WP020	04/16/92	35 11'50"	116 49'14"		*Ambrosia dumosa*	Large plant.
WP021	04/16/92	35 12'02"	116 49'08"		*Ambrosia dumosa*	380 mm tall, 260 mm wide. Pods 20-30 mm long.
WP022	04/16/92	35 12'59"	116 49'29"		*Ericameria cooperi*	270 mm tall, 220 mm wide. Pods 11-28 mm long.
WP023a	04/17/92	35 12'53"	116 49'05"	3626	*Ephedra nevadensis*	340 mm tall, 500 mm wide. Mature pods 28 mm long.
WP023b	04/17/92	35 12'53"	116 49'05"	3626	*Eriogonum fasciculatum*	290 mm tall, 90 mm wide.
WP024	04/17/92	35 12'53"	116 49'01"	3459	*Encelia farinosa*	290 mm tall, 450 mm wide.
WP025	04/17/92	35 12'54"	116 49'02"		*Ephedra nevadensis*	235 mm tall, 220 mm wide.
WP026	04/17/92	35 12'55"	116 49'03"		*Ephedra nevadensis*	330 mm tall, 280 mm wide. Mature pods 20-23 mm long.
No #	04/17/92	35 13'01 "	116 49'02"		*Ericameria cooperi*, dead	410 mm tall, 430 mm wide. Robust.
WP027a	04/17/92	35 12'52"	116 49'07"		*Eriogonum fasciculatum*	300 mm tall, 520 mm wide.
WP027b	04/17/92	35 12'52"	116 49'07"		*Salazaria mexicana*	370 mm tall, 550 mm wide.
WP027c	04/18/92	35 10'58"	116 48'19"		Bare ground	240 mm tall, 100 mm wide.
WP028a	04/18/92	35 10'56"	116 48'27"	3377	*Eriogonum fasciculatum*	480 mm tall, 440 mm wide. Many pods.
WP028	04/18/92	35 10'56"	116 48'27"	3377	*Ambrosia dumosa*	300 mm tall, 260 mm wide.
WP029	04/18/92	35 10'50"	116 48'25"		*Mirabilis bigelovii*	500 mm tall, 400 mm wide. Robust plant.

TABLE 2. Summary of Lane Mountain Milkvetch Plant Associations

Host Species	Number
None - Bare Ground	6
Ambrosia dumosa - live	7
A. dumosa - dead	4
Eriogonum fasciculatum	3
Ericameria cooperi- live	2
Ericameria cooperi- dead	1
Ephedra nevadensis	3
Salazaria mexicana	2
Thamnosma montana	2
A. dumosa/ Ericameria cooperi	1
Encelia farinosa	1
Grayia spinosa	1
Mirabilis bigelovii	1

TABLE 3. Number of Shrub Species Nearest Sampled Lane Mountain Milkvetch Plants

	Count		
Species	Host	2nd Nearest	3rd Nearest
Ambrosia dumosa	7	1	6
Krascheninnikovia lanata	1	2	0
Ephedra nevadensis	4	2	1
Encelia farinosa	0	0	1
Eriogonum fasciculatum	2	2	3
Ericameria cooperi	1	2	3
Hymenoclea salsola	1	1	0
Lycium andersonii	0	0	1
Mirabilis bigelovii	1	4	0
Salazaria mexicana	0	3	3
Thamnosma montana	1	1	0

12 of 18 locations in the Nearby data set, but only in 5 of 18 locations where Lane Mountain milkvetch was found ($\chi^2 = 48.761$, df = 2, $P < 0.0001$). Similarly, creosote bush was dominant or subdominant in 15 of 18 locations in the Landscape samples and 9 Nearby locations, but in only 2 locations where Lane Mountain milkvetch was found, and then never as the dominant shrub ($\chi^2 = 67.602$, df = 2, $P < 0.0001$). Cooper goldenbush (*Ericameria cooperi*) was dominant or codominant in six locations in both the milkvetch and Nearby Location samples, but not at all in the Landscape samples ($\chi^2 = 75.316$, df = 2, $P < 0.0001$).

Correspondence analysis among the habitat data set showed significant and strong differences among the three sampling strata ($\chi^2 = 73.543$, df = 34, $P < 0.0001$). Table 5 shows the correspondence factor scores for the individual habitat types and the three sampling strata. Habitats at the milkvetch sampling locations were strongly characterized by Nevada jointfir and Cooper goldenbush. Landscape habitats showed only a single case of overlap with the milkvetch habitats (Figure 3), indicating the relative rarity of the milkvetch habitat in the landscape. The Nearby habitats were intermediate, showing a mixture of the species characterizing the other two groups.

Density of shrubs differed significantly among the three sampling strata (Kruskal-Wallis $\chi^2 = 14.2$, df = 2, $P = 0.0008$), although there was a great deal of overlap among the data (Figure 4). Generally, shrub density in the immediate area of the Lane Mountain milkvetch plants (mean = 9.6 plants/20 m) was greater than in the Nearby habitats

TABLE 4. Frequency of Different Relevé Habitats (Dominant 2 Shrubs) in Each Sampling Stratum.

Habitat Code[a]	At Milkvetch	Landscape	Nearby Random	Total
AMDU/ACSP	0	1	0	1
AMDU/EPNE	2	1	0	2
AMDU/ERFA	0	0	1	1
AMDU/ERCO	1	0	3	4
AMDU/LATR	0	9	4	13
AMDU/LYAN	0	1	0	1
ENFA/EPNE	1	0	0	1
EPNE/AMDU	2	0	0	2
EPNE/ERFA	1	0	0	1
EPNE/LATR	1	0	0	1
ERFA/EPNE	5	0	2	7
ERFA/ERCO	0	0	2	2
ERCO/EPNE	4	0	0	4
ERCO/LATR	1	0	0	1
HYSA/LATR	0	1	0	1
LATR/AMDU	0	4	4	8
LATR	0	1	0	1
LATR/GRSP	0	0	1	1
SAME/ERCO	0	0	1	1
TOTAL	18	18	18	54

[a] dominant two species, by cover: AMDU = *Ambrosia dumosa*, ACSP = *Acamptopappus sphaerocephalus*, ENFA = *Encelia farinosa*, EPNE = *Ephedra nevadensis*, ERFA = *Eriogonum fasciculatum*, GRSP = *Grayia spinosa*, ERCO = *Ericameria cooperi*, HYSA = *Hymenoclea salsola*, LATR = *Larrea tridentata*, LYAN = *Lycium andersonii*, SAME = *Salazaria mexicana*.

TABLE 5. Correspondence Analysis Scores for Habitat Types and Sampling Strata

LOCATION	Factor 1	Factor 2
At ASJA	1.2247	-0.161
Landscape	-0.8124	-0.6588
Nearby Random	-0.4122	0.81981
HABITAT[a]	**Factor 1**	**Factor 2**
AMDU/ACSP	-0.9219	-1.0724
AMDU/EPNE	0.6192	-0.5323
AMDU/ERFA	-0.4678	1.3346
AMDU/ERCO	-0.0034	0.9354
AMDU/LATR	-0.7822	-0.3318
AMDU/LYAN	-0.9219	-1.0724
ENFA/EPNE	1.3897	-0.2622
EPNE/AMDU	1.3897	-0.2622
EPNE/ERFA	1.3897	-0.2622
EPNE/LATR	1.3897	-0.2622
ERFA/EPNE	0.8590	0.1940
ERFA/ERCO	-0.4678	1.3346
ERCO/EPNE	1.3897	-0.2622
ERCO/LATR	1.3897	-0.2622
HYSA/LATR	-0.9219	-1.0724
LATR/AMDU	-0.6948	0.1311
LATR/ERCI	-0.9219	-1.0724
LATR/GRSP	-0.4678	1.3346
SAME/ERCO	-0.4678	1.3346

[a]Habitat code as in Table 4.

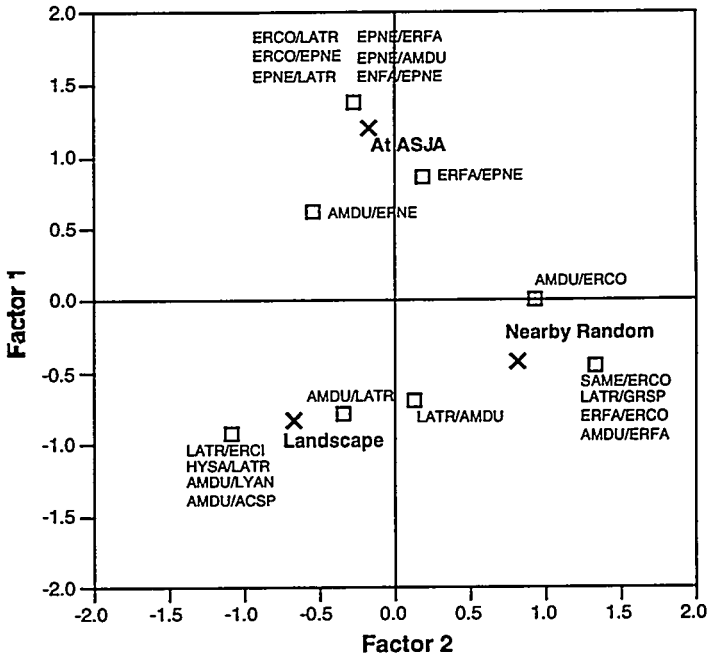


FIGURE 3. Plot of Sampling Strata and Habitat Types in Correspondence Space (see Table 4 for axis factors)

(8.8 plants/20 m), which were in turn greater than in the overall Landscape (6.0 plants/20 m).

Surface Soils

Soil color properties differed significantly among the three sampling strata ($\chi^2 = 50.53$, df = 20, $P < 0.0002$). All but one soil was classed in the 10 Yellow-Red (YR) scale of the Munsell classification, a color class indicating primarily yellow hues; one location beneath a Lane Mountain milkvetch plant was somewhat redder than the rest (in the 7.5 YR group) (Table 6). There were therefore no major differences among sites in soil hue. There were, however, differences in value and chromicity. Soils in the Landscape data set were predominantly in the 6/3 to 6/4 and 7/3 to 7/4 range, whereas soils beneath Lane Mountain milkvetch were in the 7/2 to 7/3 and 8/2 to 8/3 range. The numerator in these classifications indicates value (larger numbers are lighter); the denominator denotes color saturation, with higher numbers indicating more intense color than lower numbers. Thus soils under Lane Mountain milkvetch were somewhat darker and more intensely colored than were soils in the

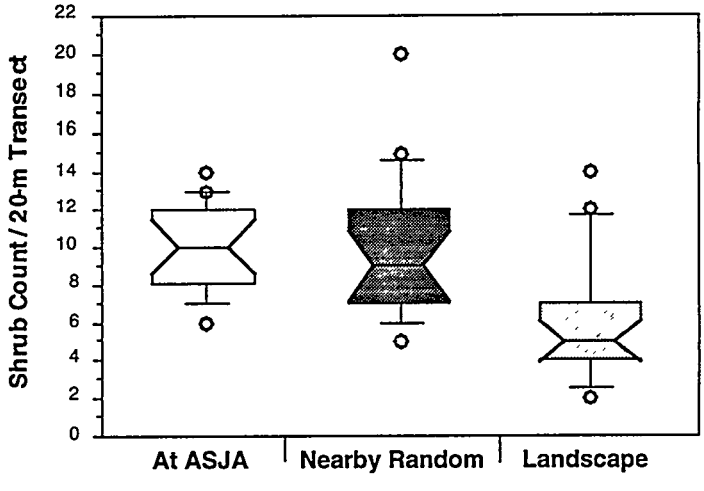


FIGURE 4. Box Plot of Shrub Density per 20-m Transect in the Three Sampling Strata. Notch indicates 95% confidence interval on the median.

Landscape. Soils in the Nearby locations were intermediate between the Landscape and milkvetch soils.

Soil penetration indices among the three sampling locations differed significantly in mean values (Kruskal-Wallis $\chi^2 = 6.89$, df = 2, P = 0.032), but there was a great deal of overlap among the three data sets (Figure 5). Soils beneath milkvetch plants were somewhat more resistant to penetration (mean index = 12.6) than soils in the Landscape (mean index = 11.0) or Nearby locations (mean index = 10.2).

Surface soils differed significantly among the three sampling strata in terms of particle size (Multivariate Analysis of Variance, F = 5.14, df = 4,88, P = 0.0009). Soils beneath Lane Mountain milkvetch plants, with 69% of the surface comprising particles larger than coarse sand, were much coarser than soils in the Landscape in general, where 42.9% of the surface was covered by particles larger than coarse sand (Figure 6). The soils from the Nearby locations were intermediate, with 59.7% of the cover larger than coarse sand.

10 cm Soils Analysis

Soils from the top 10 cm at all sites were generally characterized by relatively high sand fractions.(Figure 7). Soils from the overall landscape were high in sand and low in silt and coarse fractions. In contrast, soils beneath most Lane Mountain milkvetch plants had much less sand, with a greater percentage of both coarse particles (>2 mm) and silt than did soils from the overall landscape. Soils from Nearby locations were much the same as those from beneath Lane Mountain milkvetch plants. The overall contrast among surface soils at the three types of sampling locations was significantly different from random (Multivariate Analysis of Variance: F = 3.69, df = 6,88, P = 0.0026).

Soils ranged in pH from approximately 6 to 8.5, with broad overlap among the three types of locations (Figure 8). Organic matter content varied from approximately 0.15% to 2%, with little difference among the three locations (Figure 8). The means of the three locations were not significantly different from each other for either pH or organic matter content (Multivariate Analysis of Variance: F = 0.70, df = 4,74, P = 0.59).

Surface soils differed significantly among the three locations in macronutrient content (Multivariate Analysis of Variance: F = 2.95, df = 6,78, P = 0.012). Soils beneath Lane Mountain milkvetch plants were lower in phosphorus content (mean = 5.4 ppm) than soils from the Landscape (mean = 8.3 ppm) or the nearby locations (mean = 6.2 ppm) (Figure 9). Nitrate content was higher, on average, in the Lane Mountain milkvetch soils than in the other samples (1.6 ppm versus 0.75 ppm in Landscape and 0.87 ppm in Nearby soils). Potassium concentrations were relatively high in all samples.

Mycorrhizal spores were found in five of the 18 samples from beneath Lane Mountain milkvetch plants and not at all in the Landscape soil samples ($\chi^2 = 5.8$, df = 1, P = 0.05). Spores were found in

TABLE 6. Munsell Soil Color at Sampling Locations at Fort Irwin.

	Count of Sampling Locations By Stratum			
Color	At ASJA	Landscape	Nearby Random	Total
10YR 2/3	0	0	1	1
10YR 5/3	0	1	0	1
10YR 6/3	1	6	1	8
10YR 6/4	0	4	0	4
10YR 7/2	5	0	4	9
10YR 7/3	2	4	4	10
10YR 7/4	0	3	0	3
10YR 8/1	1	0	0	1
10YR 8/2	4	0	3	7
10YR 8/3	4	0	4	8
7.5YR 7/4	1	0	0	1

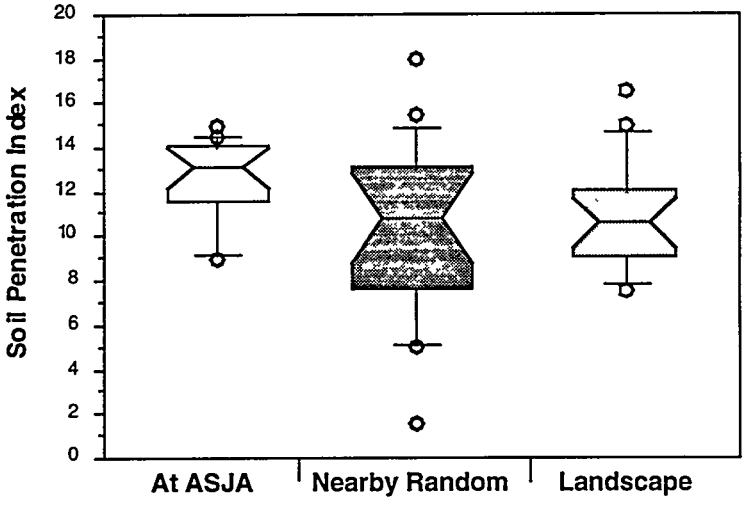


FIGURE 5. Box Plot of Penetrator Index Values at Soil Sampling Locations. Notch indicates 95% confidence interval on the median.

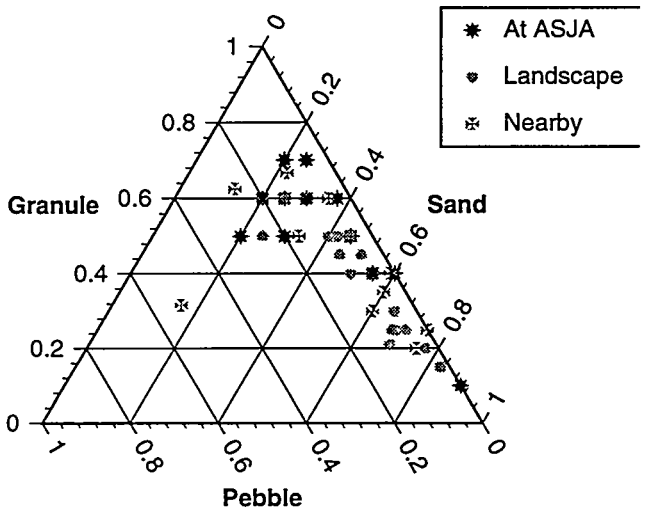


FIGURE 6. Surface Soil Particle Size Characterization at Soil Sampling Locations

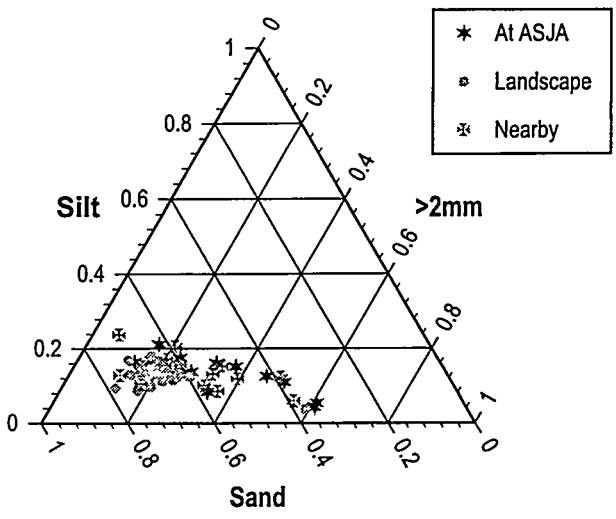


FIGURE 7. Particle Size Characterization in Surface 10 cm at Soil Sampling Locations

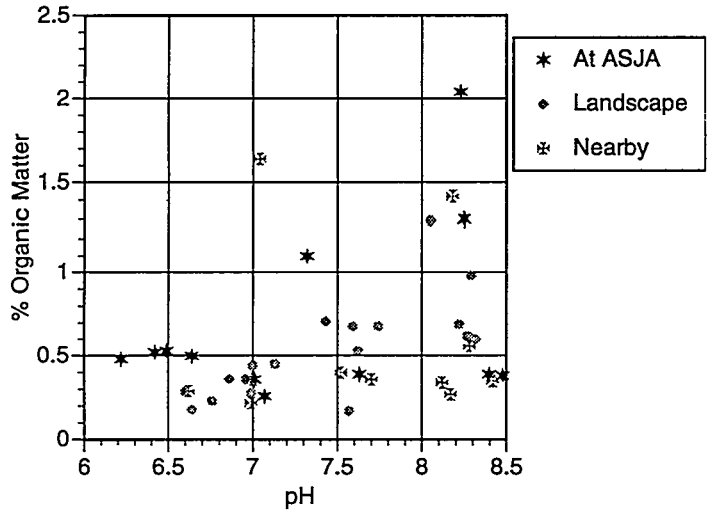


FIGURE 8. pH and Percentage Organic Matter in Surface 10 cm at Soil Sampling Locations

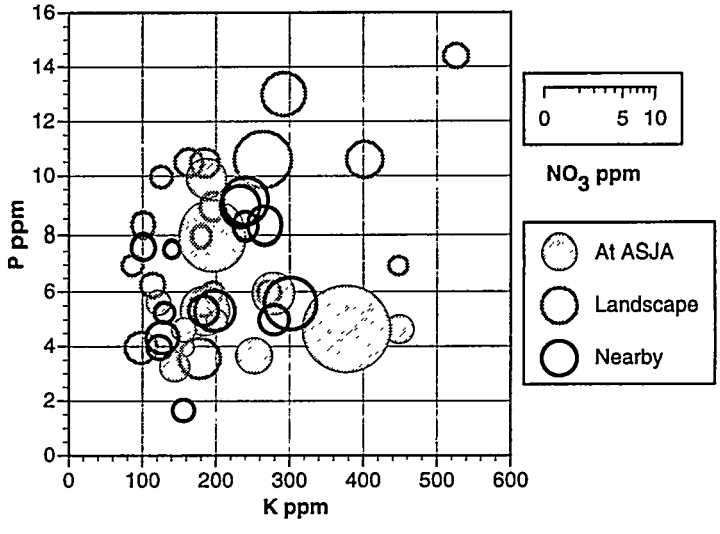


FIGURE 9. Macronutrient Content in Surface 10 cm at Soil Sampling Locations

two of the 18 samples from within 100 m of the sampled Lane Mountain milkvetch plants. The species were tentatively identified as belonging to the genus *Entrophospora*.

Discriminant Habitat Analysis

The analyses above demonstrate that Lane Mountain milkvetch is found in a relatively unique and rare subset of the overall landscape of the Lower Mojave Desert. This habitat is characterized by the shrub component of the plant community and by at least some elements of soil. Within this habitat, Lane Mountain milkvetch grows almost exclusively in shrubs. However, Lane Mountain milkvetch does not occur in association with a particular shrub species, but may be found in an apparently random subset of the shrubs in the habitat.

Because of its growth habit and rarity, Lane Mountain milkvetch plants are extraordinarily difficult to locate. Perhaps in consequence, this

plant is known from only a few locations. The ability to identify suitable habitat on the basis of measured values for a few, simply obtained parameters is an important step in developing an inventory of this species over the entire NTC and nearby desert areas. This objective may be approached using discriminant analysis.

Discriminant analysis develops a set of parameter weights that maximally separate data sets using maximum likelihood (Lachenbruch 1975). The resulting predicted classification can be compared to the actual classifications to obtain an overall error rate and to evaluate the usefulness of the classification. The shrub component of the classification should include the four species that best characterize the habitat differences among the three sampling strata: Nevada jointfir, Cooper goldenbush, creosote bush, and white burrobush. These species may be represented in the discrimination using their density or percentage cover. Surface soil conditions may be represented by color, penetrability, and/or surface particle size distribution. Combinations of these variables were used in two discriminant analyses to identify the best combination of variables that would maximize predictive capability.

The best discrimination with the least number of variables was obtained using percentage cover of the four shrub species listed along with the soil penetration index. The resulting discrimination formula separating Landscape from Lane Mountain milkvetch habitat is given in Table 7. The model correctly predicted 16 of 18 milkvetch locations, and 15 of 18 Landscape locations. The incorrect assignment of milkvetch locations as Landscape locations were two habitats classified in the field as white burrobush/Nevada jointfir and white burrobush/Cooper goldenbush where Nevada jointfir and Cooper goldenbush occurred in the species list but did not turn up, by chance, in the shrub cover transects. Similarly, the three sites in the Landscape set that were incorrectly classified as being in the milkvetch habitat were sites classified either as creosote bush/white burrobush or white burrobush/creosote bush, but no creosote bush turned up in the sampling transect, again by chance.

This set of difference equations was used to assign the eighteen Nearby sites into one of the two categories of milkvetch habitat or Landscape. Eight of the Nearby sites were classified as being milkvetch habitat, including one site where a milkvetch plant was found subsequent to the sampling. All habitats classified as being white burrobush/creosote bush or vice versa on the basis of the relevé were classified by the discriminant analysis as belonging to the Landscape set.

Inclusion of all three habitat types in the discriminant analysis produced the difference equations in Table 8. This discrimination incorrectly classifies 5 of the 18 milkvetch locations as Landscape or Nearby, i.e., is less powerful than the two-level classification in that regard. The discrimination did correctly assign 11 of the 18

TABLE 7. Discriminant Models and Posterior Classifications of Sampling Locations Based on Percentage Cover of Four Shrub Species and Soil Penetration Index for Milkvetch Sites versus Landscape Sites.

Milkvetch vs Landscape discrimination model:

Difference Equations:

$$D_{[0]} = 0.0239*AMDU^2 - 0.0009188*EPNE*AMDU + 0.154*EPNE^2 - 0.00333*ERCO*AMDU - 0.0155*ERCO*EPNE + 0.312*ERCO^2 + 0.00602*LATR*AMDU + 0.0241*LATR*EPNE + 0.0284*LATR*ERCO + 0.0286*LATR^2 + 0.0145*PENET*EPNE + 0.155*PENET*ERCO + 0.0232*PENET*LATR + 0.239*PENET^2$$

$$D_{[ASJA]} = D_{[0]} - 0.292*AMDU - 1.795*EPNE - 3.022*ERCO - 0.617*LATR - 6.56*PENET + 48.54$$

$$D_{[Landscape]} = D_{[0]} - 0.664*AMDU - 0.676*EPNE - 2.195*ERCO - 0.777*LATR - 5.651*PENET + 37.846$$

Posterior Classification:

Probability that sample belongs to group i = $\exp(-0.5*D_{[i]}) / \Sigma\exp(-0.5*D_{[i]})$

	Predicted Stratum	
Actual Stratum	At ASJA	Landscape
At ASJA	16	2
Landscape	3	15

TABLE 8. Discriminant Models and Posterior Classifications of Sampling Locations Based on Percentage Cover of Four Shrub Species and Soil Penetration Index for Milkvetch Sites versus Landscape Sites versus Nearby Sites.

Milkvetch vs. Landscape vs. Nearby discrimination model:

Difference Equations:

$D_{[0]} = 0.130*PENET^2 + 0.0140*AMDU*PENET + 0.0315*AMDU^2 - 0.0179*EPNE*PENET - 0.000350*EPNE*AMDU + 0.172*EPNE^2 + 0.0592*ERCO*PENET - 0.00128*HACE*AMDU - 0.0406*ERCO*EPNE + 0.297*ERCO^2 + 0.0391*LATR*PENET + 0.00937*LATR*AMDU + 0.0177*LATR*EPNE + 0.0349*LATR*ERCO + 0.0339*LATR^2$

$D_{[ASJA]} = D_{[0]} - 3.456*PENET - 0.333*AMDU - 1.070*EPNE - 1.689*ERCO - 0.844*LATR + 26.872$

$D_{[Nearby]} = D_{[0]} - 2.965*PENET - 0.428*AMDU - 0.544*EPNE - 1.716*ERCO - 0.861*LATR + 20.115$

$D_{[Landscape]} = D_{[0]} - 3.329*PENET - 0.831*AMDU + 0.080*EPNE - 1.195*ERCO - 1.071*LATR + 26.808$

Posterior Classification:

Probability that sample belongs to group i = $\exp(-0.5*D_{[i]}) / \Sigma\exp(-0.5*D_{[i]})$

	Predicted Stratum		
Actual Stratum	At ASJA	Nearby	Landscape
At ASJA	13	3	2
Nearby	5	2	11
Landscape	0	15	3

Nearby locations as being not quite Landscape or milkvetch sites, but it failed to assign as a milkvetch site the single Nearby location where milkvetch was found, but instead classified it as a Landscape site.

In summary, the most effective methods for predicting the occurrence of habitat where Lane Mountain milkvetch would be expected are the relevé, where Nevada jointfir is the dominant or codominant shrub in terms of cover, or the more quantitative binary discrimination equations using the four key shrub species and the soil penetration index. A significant advantage of the discriminant equations is that they assign a probability value to the classification into either group.

MANAGEMENT IMPLICATIONS AND RECOMMENDATIONS

Only one plant species listed or candidate for protection by the California or federal governments was identified in the Avawatz and Granite mountain surveys. Although a number of plants that were collected remain to be keyed to species level, none of these are protected because the entire collection was examined for the protected species listed in Appendix A. The collection is currently being maintained at the Eastern Washington University herbarium; however, it may be transferred to the NTC or another herbarium at the request of the NTC. Whatever the decision regarding the disposition of these samples, we recommend that a single overall NTC herbarium be maintained for reference by NTC biological staff and others working on the NTC or nearby. For greatest utility, this herbarium should be located at or near the NTC, if possible.

Lane Mountain milkvetch was found growing in association with shrubs more often than not; however, many plants were found alone. This latter observation was noted by Bagley (1989), who stated that the plant was "usually found growing up, through, and entangled in low bushes" (pg. 29); however there has been no quantification of this previous to the present report. Furthermore, the present report is the first to document that Lane Mountain milkvetch does not require the association of a particular species of shrub to establish and grow: instead, the milkvetch was found in association with most of the shrub species in the general habitat in proportions consistent with the abundance of the shrub. The potential for a specific commensal relationship is therefore not likely.

The generalized shrub association may provide protection from grazing, access to light, and enhanced soil nutrients (typical beneath desert shrubs [e.g., Doescher et al. 1984]), but no specific benefits from a particular shrub. Enhanced average nitrate concentrations were found in the Lane Mountain milkvetch soils in contrast to the other sampling locations, although the range of concentrations among all three sites overlapped considerably. In contrast, phosphorus levels were somewhat depleted in Lane Mountain milkvetch soils relative to the other soils. Also, mycorrhizal spores were found more often in milkvetch soils than in the landscape, and the genus of fungus found is particularly suited for phosphorus uptake. The specific influence, if any, of mycorrhizae on milkvetch growth, and whether any relationship exists between shrub species and mycorrhizal infections remains to be explored.

Some shrub species may be unsuitable as milkvetch habitat due to growth form. Milk vetch was not found in creosote bush, although this plant was a common component of the habitat. Creosote bush has an open, tall growth form that may provide insufficient support for Lane Mountain milkvetch.

The distribution of the four clumps of Lane Mountain milkvetch discovered during the 1992 survey was well characterized by a simplistic description of habitat based on cover of four species of shrub and a measure of soil depth (the penetrometer index). Bagley (1989) noted that all plants he found were located in rocky areas with shallow soils comprising decomposed, whitish granite. He did not discover plants on the more pinkish soils or those with finer textures. Bagley also reported that his populations occurred in areas with a diverse mix of shrubs, with creosote bush and white burrobush not being too important. Most of his observations were supported quantitatively by those presented here.

The present study did not confirm Bagley's observation regarding soil color differences, i.e. white versus pink granite. Milk vetch plants were found in soils no different in hue from randomly selected sites without milkvetch. However, the milkvetch soils were more intensely colored and darker than randomly located samples in the nearby area or the overall landscape.

The association of Lane Mountain milkvetch with habitats dominated by Nevada jointfir has not been previously reported. This association is quite robust, accounting for 16 of 18 locations where the milkvetch was found. The discriminant analysis based in large part on the percentage cover of this shrub provides a simple, yet powerful method for classifying any habitat with regard to the potential presence of Lane Mountain milkvetch on the basis of the probability of its occurrence. The percentage cover index from line transect data can readily be obtained either in the field or from mid- to low-level aerial photographs of an area to be characterized. Such an analysis could be performed using a Geographic Information System, with the resultant classification probabilities displayed visually.

The robustness of this discrimination should be evaluated against an independent set of data obtained from Lane Mountain milkvetch locations outside the NTC, as well as with a broader set of habitat data from the NTC. The final discriminant classification may be used by the NTC in the future to screen areas planned for training exercises or other field activity to determine the potential for milkvetch to be present. Areas where the potential exists may then be examined carefully in the field before the planned disturbance. The difficulty in locating Lane Mountain milkvetch in the field would otherwise preclude accurate and efficient determination of potential impacts.

The discriminant analysis also provides a means of identifying areas where Lane Mountain milkvetch might be found outside the NTC. Expanding the known range of the plant would be a significant step toward delisting the species. The resulting habitat classifications could also be used to identify areas where the plant might successfully be reintroduced. This would aid in the continued preservation of this admittedly rare species.

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Appendix A

Sensitive, Rare, Threatened, or Endangered Plant Species Potentially Occurring at Fort Irwin

The following species are listed in the Federal Register, Vol. 55, No. 35., February 21, 1990. These species have either been reported to occur or could possibly occur on Ft. Irwin.

Common name	Scientific name	Family	Federal Category[a]	Habitat[b]	Flowering period
Lane Mountain milk-vetch	Astragalus jaegerianus	Fabaceae	Proposed endangered	Low granite hills, 3000-3800 ft; Joshua Tree Woodland; known only from Coolgardie Mesa and about Goldstone.	April-June
Alkali mariposa	Calochortus striatus	Liliaceae	2	Alkaline meadows and springy places, 2500-4300 ft; Creosote Bush Scrub; Mojave Desert at north base of San Gabriel and San Bernardino Mts to Las Vegas, Nev.	Arpil-June
Tecopa bird's-beak	Cordylanthus tecopensis	Scrophulariaceae	2	Alkaline meadows, below 2500 ft; Creosote Bush Scrub; Tecopa Hot Springs, Saratoga Springs, etc, se. Inyo Co.; Nye Co., Nev.	Aug-Oct.
Desert cymopterus	Cymopterus deserticola	Apiaceae	1	Sandy or gravelly plains, 2500-3100 ft; Creosote Bush Scrub, Joshua Tree Woodland; Mojave Desert from east of Victorville to Kramer and Muroc.	April
Panamint Dudleya	Dudleya saxosa spp. saxosa	Crassulaceae	2	D. saxosa: Dry stony slopes, 3000-7000 ft; Creosote Bush Scrub to Pinyon-Juniper Woodland; Panamint Mnt, Inyo Co.	May-June spp. saxosa not in Munz
Barstow woolly-sunflower	Eriophyllum mohavense	Asteraceae	2	Sandy or rocky places, 2000-3600 ft; Creosote Bush; known only from within 30 mi of Barstow, Mojave Desert.	April-May

[a] 1 Candidates for possible addition to the List of Endangered and Threatened Plants. Taxa for which the Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Asterisk(*) denotes taxa that are possibly extinct.
2 Candidates for possible addition to the List of Endangered and Threatened Plants. Taxa for which there is some evidence of vulnerability , but for which there are not enough data to support listing proposals at this time.

[b] From Munz, Philip A. 1968 A California Flora. University of California Press, Berkeley and Los Angeles.

The following plants are compiled by the State of California, Department of Fish and Game. Region 5, Designated Endangered, Threatened or Rare Plants by County, January 1992. These species are listed for San Bernardino County. None of these species is likely to occur on Ft. Irwin because of habitat and/or range.

Common name	Scientific name	Family	Category[a]	Habitat[b]	Flowering period
Thread-leaved brodiaea	Brodiaea filifolia	Liliaceae	E, 1	In heavy clay soil, below 2000 ft.; coastal Sage Scrub, Chaparral; Glendora, San Bernardino Valley, Perris, Vista, San Clemente Island.	May-June
Slender-horned spineflower	Centrostegia leptoceras	Polygonaceae	E, FE	Sandy places; Coastal Sage Scrub; San Fernando Valley to San Bernardino Valley and Elsimore.	April-June
Santa Ana River woollystar	Eriastrum densifolium ssp. sanctorum	Polemoniaceae	E, FE	E. densifolium: Sandy places; Coastal Strand, Coastal Sage Scrub; San Barnardino Co.	May-June ssp. sanctorum not in Munz
Thorne's buckwheat	Eriogonum ericifolium var. thornei	Polygonaceae	E, 2	Pinyon juniper woodland, 5400 ft. New Yorks Mountains in eastern Mohave Desert.	July-August
Mohave tarplant	Hemizonia mohavensis	Asteraceae	E, 2	3000-4000 ft; Joshua Tree Woodland, Chaparral; Mojave River at Deep Creek; Mt. San Jacinto.	July-September
Nevin's barberry	Mahonia nevinii	Berberidaceae	E, 1	Coastal Sage scrub, Chaparral; San Fernando Valley and Arroyo Seco near Pasadena, in both of which places now largely extinct; San Timoteo Canyon near Redland.	March-April
Parish's checkerbloom	Sidalcea hickmanii spp. parishii	Malvaceae	R, 1	S. hickmanii: Dry ridges, 500-2700 ft.; Chaparral; Sieera Madre Mts.	June-July spp. parishii not in Munz
Bird-footed checkerbloom	Sidalcea pedata	Malvaceae	E, FE	Wet meadows, 6500-7500 ft.; Montane Coniferous Forests; San Bernardino Mts.	May-July
Slender-petaled thelypodium	Thelypodium stenopetalum	Brassicaceae	E, FE	Stony slopes, 6500-7000 ft; Yellow Pine Forests; Bear Valley, San Bernardino Mnts.	June-July

[a] E State designated status = Endangered
R State designated status = Rare
FE Federal status = Endangered
1 Candidates for possible addition to the federal List of Endangered and Threatened Plants. Taxa for which the Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Asterisk(*) denotes taxa that are possibly extinct.
2 Candidates for possible addition to the federal List of Endangered and Threatened Plants. Taxa for which there is some evidence of vulnerability , but for which there are not enough data to support listing proposals at this time.

[b] From Munz, Philip A. 1968 A California Flora. University of California Press, Berkeley and Los Angeles.

The following plants are listed as sensitive in Bagley, M. 1989. Sensitive Plant Species Survey on a Portion of the Proposed Fort Irwin NTC Expansion Area, San Bernardino County, California. Report prepared for Michael Brandman Associates, Inc. Santa Ana , California.

Common name	Scientific name	Family	Category[a]	Habitat[b]	Flowering period
Mojave-fishhook cactus	Sclerocatus polyancistrus	Cactaceae	3C, CNPS List 4	Gravelly mesas and slopes, 2000-6000 ft.; Creosote Bush Scrub, Joshua Tree Woodland; Mojave Desert from Red Rock Canyon and Inyo Co.east.; Nev.	April-June
Parish's phacelia	Phacelia parishii	Hydrophyllaceae	2, State candidate species, CNPS List 1	Rather alkaline places, 2000-6000 ft.; Creosote Bush Scrub, Joshua Tree Woodland.; Mojave Desert near Coyote Dry Lake	April-June
Indigo bush	Psorothamnus arborescens var arborescens	Fabaceae	3C, CNPS List 4	Low hills and mesas, 2000-2600 ft; Creosote Bush Scrub, Barstow region, Mojave Desert.	April-May

[a] 3C Taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat.
CNPS California Native Plant Society

[b] From Munz, Philip A. 1968 A California Flora. University of California Press, Berkeley and Los Angeles.

Appendix B

Avawatz and Granite Mountains Springs Survey Plant Species Observed

Avawatz Mountains Springs Plants

FAMILY	GENUS	SPECIES	COLL. #	LOCATION COORDINATE	REMARKS	ELEVATION	DATE
AGAVACEAE	*Nolina*	*bigelovii*	2616A	Weaverdick Spring	Northeast on ridge	2100'	52192
APOCYNACEAE	*Apocynum*		2635	Weaverdick Spring			52292
ASCLEPIADACEAE	*Asclepias*		2559	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
ASTERACEAE	*Artemisia*	*ludoviciana*	2471	Between N353195 X W1161913 and N353197 X 1161938	North in bottem of wet draw	ca 3750'	52092
ASTERACEAE	*Artemisia*		2571	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
ASTERACEAE	*Atrichoseris*	*platyphylla*	2578	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
ASTERACEAE	*Baccharis*	*sergiloides*	2487	Between N353195 X W1161913 and N353197 X 1161938	North facing slope - sticky in fruit	ca 3900'	52092
ASTERACEAE	*Brickellia*	*arguta*	2595	N353036 X W1161816-Sheep Spring Quad	West...shrub		52192
ASTERACEAE	*Brickellia*	*oblongifolia*	2539	Saddle at Microwave tower	Shrub-NE slope	ca 6000'+	52092
ASTERACEAE	*Calycoseris*	*parryi*	2557	Saddle at Microwave tower	North slope	ca 6000'+	52092
ASTERACEAE	*Calycoseris*	*parryi*	2632	Weaverdick Spring			52292
ASTERACEAE	*Chaenactis*	*carphoclinia*	2521	East of N353195 X W1161913	plus gall on Mentzelia albicaulis	ca 3850'	52092
ASTERACEAE	*Chaenactis*	*carphoclinia*	2614	N353317 X W1162188	Down wash	2100'	52192
ASTERACEAE	*Chaenactis*	*stevioides*	2545	Saddle at Microwave tower	NE slope	ca 6000'+	52092
ASTERACEAE	*Chaenactus*	*carphoclinia*	2602	Cave Springs site	West of spring on E facing slope		52192
ASTERACEAE	*Chicory type*		2558	Saddle at Microwave tower	North slope	ca 6000'+	52092
ASTERACEAE	*Cirsium*	*californicum*	2642	Weaverdick Spring	Disturbed areas near springs		52292
ASTERACEAE	*Cirsium*	*neomexicanum*	2483	Between N353195 X W1161913 and N353197 X 1161938	North in bottem of wet draw	ca 3750'	52092
ASTERACEAE	*Eriophyllum*	*ambiguum*	2468	Between N353195 X W1161913 and N353197 X 1161938	North facing slope	ca 3900'	52092
ASTERACEAE	*Eriophyllum*	*ambiguum*	2519	South of N353197 X W1161938		ca 3850'	52092
ASTERACEAE	*Lygodesmia*	*exigua*	2491	Between N353195 X W1161913 and N353197 X 1161938	North facing slope - low, branched	ca 3900'	52092
ASTERACEAE	*Machaeranthera*	*tortifolia*	2570	N353036 X W1161816-Sheep Spring Quad	West in E facing bluff-sandy talus		52192
ASTERACEAE	*Perityle*		2608	N353317 X W1162188		2270'	52192

ASTERACEAE	*Pleurocoronis*	*pluriseta*	2613	N353317 X W1162188	Down wash	2100'	52192
ASTERACEAE	*Rafinesquia*	*californica*	2475	Between N353195 X W1161913 and N353197 X 1161938	North facing slope	ca 3900'	52092
ASTERACEAE	*Senecio*	*douglasii*	2562	N353036 X W1161816-Sheep Spring Quad	West in.....?		52192
ASTERACEAE	*Solidago*	*confinis*	2644	Weaverdick Spring	Just above springs		52292
ASTERACEAE	*Stephanomeria*		2604	Cave Springs site	West of spring on E facing slope		52192
ASTERACEAE	*Tetradymia*	*argyraea*	2596	N353036 X W1161816-Sheep Spring Quad	West above draw		52192
BIGNONIACEAE	*Chilopsis*	*linearis*	2563	N353036 X W1161816-Sheep Spring Quad	West in draw-sandy gravelly soil		52192
BIGNONIACEAE	*Chilopsis*	*linearis*	2600	Cave Springs site	In sandy talus along road at springs		52192
BIGNONIACEAE	*Chilopsis*	*linearis*	2606	N353317 X W1162188	Pink color flr form	2270'	52192
BORAGINACEAE	*Cryptantha*	*barbigera*	2585A	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
BORAGINACEAE	*Cryptantha*	*confertiflora*	2489	Between N353195 X W1161913 and N353197 X 1161938	North facing slope near draw - yellow flrs	ca 3800'	52092
BORAGINACEAE	*Cryptantha*	*confertiflora*	2534	Saddle at Microwave tower	Yellow flrs-see 2489 --NE slope	ca 6000'+	52092
BORAGINACEAE	*Cryptantha*	*decipiens*	2581	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
BORAGINACEAE	*Cryptantha*	*decipiens*	2585	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
BORAGINACEAE	*Cryptantha*	*pterocarya*	2584	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
BORAGINACEAE	*Cryptantha*	*racemosa*	2560	N353036 X W1161816-Sheep Spring Quad	West in rocky outcrop near base of bluff		52192
BORAGINACEAE	*Cryptantha*	*racemosa*	2611	N353317 X W1162188	Down wash	2100'	52192
BORAGINACEAE	*Cryptantha*	*tumulosa*	2629	Weaverdick Spring			52292
BORAGINACEAE	*Cryptantha*	*tumulosa??*	2535	Saddle at Microwave tower	NE slope	ca 6000'+	52092
BORAGINACEAE	*Plagiobothrys*	*jonesii*	2646	Weaverdick Spring			52292
BORAGINACEAE			2586	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
CACTACEAE	*Opuntia*		2648	Weaverdick Spring	S facing slope west of springs		52292
CAMPANULACEAE	*Nemacladus*		2589	N353036 X W1161816-Sheep Spring Quad	West above draw		52192

Avawatz Mountains Springs Plants

CARYOPHYLLACEAE	*Arenaria*		2473	Between N353195 X W1161913 and N353197 X 1161938	North in draw	ca 3750'	52092
CARYOPHYLLACEAE	*Arenaria*		2630	Weaverdick Spring			52292
CARYOPHYLLACEAE			2476	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw - "yellow flrs"	ca 3750'	52092
CHENOPODIACEAE	*Atriplex*		2605	Cave Springs site	West of spring on E facing slope		52192
CHENOPODIACEAE	*Atriplex*		2637	Weaverdick Spring			52292
CHENOPODIACEAE	*Atriplex*		2511	South of N353197 X W1161938		ca 3850'	52092
CHENOPODIACEAE	*Chenopodium*		2636	Weaverdick Spring			52292
CONVOLVULACEAE	*Cuscuta*		2634	Weaverdick Spring	On Dyssodia		52292
CRUCIFERAE	*Arabis*		2592	Saddle at microwave tower			52192
CRUCIFERAE	*Descurainia*		2502	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
CRUCIFERAE	*Draba*		2497	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
CRUCIFERAE	*Lepidium*		2488	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw - shrub	ca 3750'	52092
CRUCIFERAE	*Lepidium*		2580	N353036 X W1161816-Sheep Spring Quad	West near base of bluff		52192
CRUCIFERAE	*Stanleya*		2536	Saddle at Microwave tower	NE slope	ca 6000'+	52092
CRUCIFERAE			2537	Saddle at Microwave tower	Under Juniperus on SW slope	ca 6000'+	52092
CRUCIFERAE			2615	N353317 X W1162188	Short distance down wash	2100'	52192
CRUCIFERAE??			2574	N353036 X W1161816-Sheep Spring Quad	West in.....?		52192
CUCURBITACEAE	*Cucurbita*	*palmata*	2647	Weaverdick Spring	In draw E of springs		52292
CUPRESSACEAE	*Juniperus*	*occidentalis*	2506	South of N353197 X W1161938	most closely keys to J. osteosperma	ca 3850'	52092
CUPRESSACEAE	*Juniperus*	*occidentalis*	2528	East of N353195 X W1161913	most closely keys to J. osteosperma	ca 3750'	52092
CYPERACEAE	*Cyperus*		2620	Weaverdick Spring	In wet areas near springs		52292
CYPERACEAE	*Eleocharis*		2627	Weaverdick Spring	Wet areas near springs		52292
CYPERACEAE	*Juncus*	*cooperi*	2623	Weaverdick Spring	Wet areas near springs		52292

CYPERACEAE	*Juncus*	*textilis*	2624	Weaverdick Spring	Wet areas near springs		52292
CYPERACEAE	*Juncus*	*textilis*	2640	Weaverdick Spring	At springs		52292
CYPERACEAE	*Scirpus*		2639	Weaverdick Spring	At springs		52292
EQUISETACEAE	*Equisetum*	*laevigatum*	2641	Weaverdick Spring	At springs		52292
EUPHORBIACEAE	*Euphorbia*		2633	Weaverdick Spring	Sandy areas above draw		52292
GRAMINEAE	*Erioneuron*		2601	Cave Springs site	West of spring on E facing slope		52192
GRAMINEAE	*Hilaria*		2609	N353317 X W1162188		2270'	52192
GRAMINEAE	*Oryzopsis*		2533	Saddle at Microwave tower	NE slope	ca 6000'+	52092
GRAMINEAE	*Phragmites*	*australis*	2573	N353036 X W1161816-Sheep Spring Quad	West in draw near spring		52192
GRAMINEAE	*Setaria*		2621	Weaverdick Spring	Near wet areas of springs and draw		52292
GRAMINEAE	*Setaria*		2645	Weaverdick Spring	Common near springs		52292
GRAMINEAE	*Stipa*		2526	East of N353195 X W1161913		ca 3850'	52092
GRAMINEAE			2529	East of N353195 X W1161913		ca 3750'	52092
GRAMINEAE			2531	Saddle at Microwave tower	NE slope	ca 6000'+	52092
GRAMINEAE			2619	Weaverdick Spring			52292
GRAMINEAE			2626	Weaverdick Spring			52292
GRAMINEAE			2649				
GRAMINEAE			2650				
HYDROPHYLLACEAE	*Emmenathe*	*penduliflora*	2643	Weaverdick Spring			52292
HYDROPHYLLACEAE	*Nama*		2625	Weaverdick Spring			52292
HYDROPHYLLACEAE	*Phacelia*	*perityloides*	2577	N353036 X W1161816-Sheep Spring Quad	West in E facing bluff-base of cliffs		52192
HYDROPHYLLACEAE	*Phacelia*		2477A	Between N353195 X W1161913 and N353197 X 1161938	North facing slope	ca 3900'	52092
HYDROPHYLLACEAE	*Phacelia*		2477	Between N353195 X W1161913 and N353197 X 1161938	North facing slope	ca 3900'	52092

HYDROPHYLLACEAE	*Phacelia*		2548	Saddle at Microwave tower	"yellow throat"- North slope	ca 6000'+	52092
HYDROPHYLLACEAE	*Phacelia*		2593	N353036 X W1161816-Sheep Spring Quad	West at base of bluff-in sandy talus		52192
HYDROPHYLLACEAE			2517	South of N353197 X W1161938		ca 3850'	52092
INNOM			2500	Between N353195 X W1161913 and N353197 X 1161938	North in draw	ca 3750'	52092
INNOM			2509	South of N353197 X W1161938	1 ft. shrub	ca 3850'	52092
Innom			2538	Saddle at Microwave tower	Dichotomus flowering shrub-NE slope	ca 6000'+	52092
Innom			2547	Saddle at Microwave tower	North slope	ca 6000'+	52092
Innom			2551	Saddle at Microwave tower	North slope	ca 6000'+	52092
Innom			2631	Weaverdick Spring	Shrub		52292
INNOM-CRUCIFERAE			2510	South of N353197 X W1161938	1 1/2 ft shrub - ESE slope	ca 3850'	52092
LABIATAE	*Salvia*		2520	East of N353195 X W1161913		ca 3850'	52092
LABIATAE	*Salvia?*		2565	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
LABIATAE			2474	Between N353195 X W1161913 and N353197 X 1161938	North - low on north facing slope	ca 3800'	52092
LABIATAE			2616	Weaverdick Spring			52292
LABIATAE??			2579	N353036 X W1161816-Sheep Spring Quad	West.....? shrub		52192
LEGUMINOSAE	*Astragalus*		2478	Between N353195 X W1161913 and N353197 X 1161938	North facing slope-above bottem of draw	ca 3800'	52092
LEGUMINOSAE	*Astragalus*		2482	Between N353195 X W1161913 and N353197 X 1161938	North facing slope-above draw	ca 3800'	52092
LEGUMINOSAE	*Astragalus*		2532	Saddle at Microwave tower	NE slope	ca 6000'+	52092
LEGUMINOSAE	*Astragalus*		2543	Saddle at Microwave tower	SW slope - Hairy pods	ca 6000'+	52092
LEGUMINOSAE	*Astragalus*		2552	Saddle at Microwave tower	North slope	ca 6000'+	52092
LEGUMINOSAE	*Astragalus*		2569	N353036 X W1161816-Sheep Spring Quad	West in E facing bluff-sandy talus		52192
LEGUMINOSAE	*Astragalus*		2582	N353036 X W1161816-Sheep Spring Quad	West near base of bluff-sandy talus		52192
LEGUMINOSAE	*Astragalus/Cymo*		2495	Between N353195 X W1161913 and N353197 X 1161938	North in dry area in draw - lvs only	ca 3750'	52092

LEGUMINOSAE	*Cymopteris*	*aboriginum*	2546	Saddle at Microwave tower	North slope	ca 6000'+	52092
LEGUMINOSAE	*Cymopteris*	*aboriginum*	2553	Saddle at Microwave tower	North slope	ca 6000'+	52092
LEGUMINOSAE	*Dalea*		2525	East of N353195 X W1161913		ca 3850'	52092
LEGUMINOSAE	*Lupinus*		2505	South of N353197 X W1161938		ca 3850'	52092
LEGUMINOSAE	*Lupinus*		2564	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
LEGUMINOSAE	*Prosopis*		2527	East of N353195 X W1161913		ca 3850'	52092
LEGUMINOSAE	*Prosopis*		2558A	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
LILIACEAE	*Calochortus*	*kennedyi*	2530	Saddle at Microwave tower	Top of ridge-common	ca 6000'+	52092
LOASACEAE	*Eucnide*	*urens*	2568	N353036 X W1161816-Sheep Spring Quad	West in E facing bluff-base of large rocks		52192
LOASACEAE	*Eucnide*	*urens*	2610	N353317 X W1162188	Densely covered with syrphid flies & aphids	2270'	52192
LOASACEAE	*Mentzelia*		2549	Saddle at Microwave tower	North slope	ca 6000'+	52092
LOASACEAE	*Mentzelia*		2572	N353036 X W1161816-Sheep Spring Quad	West in E facing bluff-base of cliffs		52192
MALVACEAE	*Sphaeralcea*	*ambigua*	2516	South of N353197 X W1161938		ca 3850'	52092
NYCTAGINACEAE	*Mirabilus*	*bigelovii*	2515	South of N353197 X W1161938	Long tube	ca 3850'	52092
NYCTAGINACEAE	*Mirabilus*	*bigelovii*	2524	East of N353195 X W1161913		ca 3850'	52092
ONAGRACEAE	*Camissonia*	*boothii*	2501	Between N353195 X W1161913 and N353197 X 1161938	North in bottem of wet draw	ca 3750'	52092
ONAGRACEAE	*Camissonia*	*brevipes*	2628	Weaverdick Spring			52292
ONAGRACEAE	*Oenothera*	*caespitosa*	2481	Between N353195 X W1161913 and N353197 X 1161938	In bottem of wet draw	ca 3750'	52092
ORCHIDACEAE	*Epipactis*	*gigantea*	2504	N353197 X W1161938-Spring site	6-8 plants growing under cottonwood	3760'	52092
ORCHIDACEAE	*Epipactis*	*gigantea*	2638	Weaverdick Spring	Abundant at springs		52292
PAPAVERACEAE	*Eschscholzia*	*minutiflora*	2523	East of N353195 X W1161913		ca 3850'	52092
POLEMONIACEAE	*Gilia*	*"ochroleuca type"*	2576	N353036 X W1161816-Sheep Spring Quad	West.....?		52192
POLEMONIACEAE	*Gilia*	*"ochroleuca type"*	2590	N353036 X W1161816-Sheep Spring Quad	West above draw		52192

POLEMONIACEAE	*Gilia*		2518	South of N353197 X W1161938		ca 3850'	52092
POLEMONIACEAE	*Gilia*		2541	Saddle at Microwave tower	NE slope	ca 6000'+	52092
POLEMONIACEAE	*Gilia*		2554	Saddle at Microwave tower	North slope	ca 6000'+	52092
POLEMONIACEAE	*Langloisia*	*punctata*	2513	South of N353197 X W1161938		ca 3850'	52092
POLYGONACEAE	*Chorizanthe*	*rigida*	2603	Cave Springs site	West of spring on E facing slope		52192
POLYGONACEAE	*Eriogonum*	*inflatum*	2492	Between N353195 X W1161913 and N353197 X 1161938	North facing slope - white flrs	ca 3900'	52092
POLYGONACEAE	*Eriogonum*		2507	South of N353197 X W1161938	Perianth-White-pink stripes "strictum" like	ca 3850'	52092
POLYGONACEAE	*Eriogonum*		2540	Saddle at Microwave tower	NE slope	ca 6000'+	52092
POLYGONACEAE	*Eriogonum*		2555	Saddle at Microwave tower	North slope	ca 6000'+	52092
POLYGONACEAE	*Eriogonum*		2556	Saddle at Microwave tower	North slope	ca 6000'+	52092
POLYGONACEAE	*Eriogonum*		2566	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
POLYGONACEAE	*Eriogonum*		2597	N353036 X W1161816-Sheep Spring Quad	West above draw--plus 1 plt of Eriophyllum		52192
POLYGONACEAE	*Eriogonum*		2612	N353317 X W1162188	Down wash	2100'	52192
POLYGONACEAE	*Eriogonum*		2542	Saddle at Microwave tower	NE slope	ca 6000'+	52092
POLYGONACEAE	*Rumex*		2479	Between N353195 X W1161913 and N353197 X 1161938	Dried up plants in bottem of wet draw	ca 3750'	52092
POLYGONACEAE	*Rumex*		2493	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
POLYGONACEAE	*Rumex*		2503	Between N353195 X W1161913 and N353197 X 1161938	North in draw	ca 3750'	52092
POLYGONACEAE	*Rumex*		2591	Saddle at microwave tower			52192
PORTULACACEAE	*Montia*		2494	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
PTERIDACEAE	*Notholaena*	*parryi*	2587	N353036 X W1161816-Sheep Spring Quad	West near base of bluff-in shade of rocks		52192
ROSACEAE	*Coleogyne*	*ramosissima*	2550	Saddle at Microwave tower	North slope	ca 6000'+	52092
ROSACEAE	*Prunus*		2486	Between N353195 X W1161913 and N353197 X 1161938	North above wet draw-Taller/lighter bark, less branched	ca 3780'	52092
ROSACEAE	*Prunus*		2486	Between N353195 X W1161913 and N353197 X 1161938	North above wet draw-Shorter/morebranched, darker bark	ca 3780'	52092

ROSACEAE	*Prunus*		2583	N353036 X W1161816-Sheep Spring Quad	West in Draw-in fruit		52192
RUBIACEAE	*Galium*	*matthewsii*	2469	Between N353195 X W1161913 and N353197 X 1161938	North facing slope-"open bush form"	ca 3900'	52092
RUBIACEAE	*Galium*	*matthewsii*	2470	Between N353195 X W1161913 and N353197 X 1161938	North facing slope - "Dense bush form"	ca 3900'	52092
RUBIACEAE	*Galium*	*trifidum??*	2598	N353036 X W1161816-Sheep Spring Quad	West in seep along east base of bluff		52192
SALICACEAE	*Populus*	*fremontii*	2512	N353197 X W1161938-Spring site	ca 30' branched tree	3760'	52092
SALICACEAE	*Salix*	*exiqua??*	2561	N353036 X W1161816-Sheep Spring Quad	West in draw near springs		52192
SAURURACEAE	*Anemopsis*	*californica*	2617	Weaverdick Spring	Common in wet areas of spring		52292
SCROPHULARIACEAE	*Castilleja*		2472	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
SCROPHULARIACEAE	*Mimulus*	*bigelovii*	2480	Between N353195 X W1161913 and N353197 X 1161938	North facing slope	ca 3900'	52092
SCROPHULARIACEAE	*Mimulus*	*bigelovii*	2484	Between N353195 X W1161913 and N353197 X 1161938	North facing slope	ca 3900'	52092
SCROPHULARIACEAE	*Mimulus*	*bigelovii*	2599	N353036 X W1161816-Sheep Spring Quad	West in draw--includes albino form		52192
SCROPHULARIACEAE	*Mimulus*		2594	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
SCROPHULARIACEAE	*Mohavea*	*breviflora*	2607	N353317 X W1162188	Lesser Mohavea?	2270'	52192
SCROPHULARIACEAE	*Penstemon*		2467	Between N353195 X W1161913 and N353197 X 1161938	North facing slope near bottem of draw	ca 3750'	52092
SCROPHULARIACEAE	*Penstemon*		2544	Saddle at Microwave tower	NE slope	ca 6000'+	52092
SCROPHULARIACEAE	*Penstemon*		2567	N353036 X W1161816-Sheep Spring Quad	West in draw		52192
SCROPHULARIACEAE	*Veronica*		2498	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
SCROPHULARIACEAE	*Veronica*		2499	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
SCROPHULARIACEAE			2496	Between N353195 X W1161913 and N353197 X 1161938	North in wet draw	ca 3750'	52092
SCROPHULARIACEAE			2514	South of N353197 X W1161938		ca 3850'	52092
SCROPHULARIACEAE			2575	N353036 X W1161816-Sheep Spring Quad	West in.....?		52192
SOLANACEAE	*Solanum*		2588	N353036 X W1161816-Sheep Spring Quad	West.....? a Scroph vine....???		52192
SOLANACEAE			2522	East of N353195 X W1161913		ca 3850'	52092

TAMARICACEAE	*Tamarix*	*ramosissima*	2622	Weaverdick Spring	In sandy draw		52292
UMBELLIFERAE	*Cymopteris*	*aboriginum*	2490	Between N353195 X W1161913 and N353197 X 1161938	North-dry rocky area in draw	ca 3750'	52092
VISCACEAE	*Arceuthobium*	*californicum*	2618	Weaverdick Spring	on Mesquite		52292
VISCACEAE	*Phorodendron*	*bolleanum*	2508	South of N353197 X W1161938	On Juniperus	ca 3850'	52092

Granite Mountains Springs Plants

FAMILY	GENUS	SPECIES	COLL. #	LOCATION COORDINATE	REMARKS	ELEVATION	DATE
AMARYLLIDACEAE	*Dichelostemma*	*pulchella*	2402	N352930 X W1164221-S. of Gary Owen	Top of Granite Mt (Breese)	5183'	51892
ASTERACEAE	*Acamptopappus*	*sphaerocephalus*	2351	N352930 X W1164221	Gravelly outwash near road	3580'	51792
ASTERACEAE	*Amphipappus*	*fremontii*	2464	ca. 2 mi S of Two Spgs; bombed out saddle	North facing slope	2300'	51992
ASTERACEAE	*Brickelia*	*arguta*	2405	Near Drinkwater Spgs-S30-T16N-R4E	Deltoid lvd-to 5 dm.	ca.3400'	51892
ASTERACEAE	*Brickelia*	*oblongifolia*	2408	Near Drinkwater Spgs-S30-T16N-R4E	Shrub to 3 dm.	ca.3400'	51892
ASTERACEAE	*Calycoseris*	*parryi*	2465	ca. 2 mi S of Two Spgs; bombed out saddle	North facing slope-yellow ligules	2300'	51992
ASTERACEAE	*Chaenactis*	*fremontii*	2383	N352930 X W1164221-S. of Gary Owen	Top of Granite Mt (Breese)	5183'	51892
ASTERACEAE	*Chaenactis*	*fremontii*	2406	Near Drinkwater Spgs-S30-T16N-R4E	Sandy Flat near S. Base of Breese Mt.	ca.3400'	51892
ASTERACEAE	*Coreopsis*	*bigelovii*	2385	N352930 X W1164221-S. of Gary Owen	South Slope Granite Mts(Breese)	5183'	51892
ASTERACEAE	*Dyssodia*	*cooperi*	2347	N352930 X W1164221	gravelly outwash in draw-500 yds s.-malodorous	3580'	51792
ASTERACEAE	*Encelia*	*virginensis*	2344	800 yds ESE of N352930 X W1164221	Rocky northwest slope	3700'	51792
ASTERACEAE	*Eriophyllum*	*ambiguum*	2356	800 yds ESE of N352930 X W1164221	nw facing rocky slope, in sandy wash	3700'	51792
ASTERACEAE	*Eriophyllum*	*ambiguum*	2401	N352930 X W1164221-S. of Gary Owen	South Slope Granite Mts(Breese)	5183'	51892
ASTERACEAE	*Haplopappus*	*cooperi*	2359	800 yds ESE of N352930 X W1164221	north facing ridge face	3700'	51792
ASTERACEAE	*Haplopappus*	*cooperi*	2396	N352930 X W1164221-S. of Gary Owen	South Slope Granite Mts(Breese)	5183'	51892
ASTERACEAE	*Haplopappus*	*linearifolius*	2397	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
ASTERACEAE	*Hymenoclea*	*salsola*	2337	800 yds ESE of N352930 X W1164221	Rocky outcrop	3700'	51792
ASTERACEAE	*Lygodesmia*	*exigua*	2371	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
ASTERACEAE	*Machaeranthera*	*tortifolia*	2343	800 yds ESE of N352930 X W1164221	Common - Scattered in sandy talus	3700'	51792
ASTERACEAE	*Malacothrix*	*glabrata??*	2416	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
ASTERACEAE	*Microseros*		2394	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
ASTERACEAE	*Monoptilon*	*bellioides*	2373	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
ASTERACEAE	*Pluchea*	*sericea*	2429	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992

ASTERACEAE	*Rafinesquia*	*neomexicana*	2466	ca. 2 mi S of Two Spgs; bombed out saddle	North facing slope-white ligules	2300'	51992
ASTERACEAE	*Rafinesquia*		2404	N352930 X W1164221-S. of Gary Owen	Top of Granite Mt (Breese)	5183'	51892
ASTERACEAE	*Stephanomeria*	*parryi*	2340	800 yds ESE of N352930 X W1164221	northwest facing rocky slope	3700'	51792
ASTERACEAE	*Stephanomeria*	*pauciflora*	2363	800 yds ESE of N352930 X W1164221	nw facing rocky slope -shrub	3700'	51792
ASTERACEAE	*Stephanomeria*	*pauciflora*	2428	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
ASTERACEAE	*Viguiera*	*reticulata*	2459	ca. 2 mi S of Two Spgs; bombed out saddle	open west facing slope	2300'	51992
BORAGINACEAE	*Cryptantha*	*angustifolia*	2427	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
BORAGINACEAE	*Cryptantha*	*muricata*	2399	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
BORAGINACEAE	*Cryptantha*	*pterocarya*	2398	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
BORAGINACEAE	*Cryptantha*	*utahensis*	2387	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts (Breese)	5183	51892
BORAGINACEAE	*Cryptantha*	*utahensis (?)*	2349	800 yds ESE of N352930 X W1164221	Northwest facing rocky slope	3700'	51792
BORAGINACEAE	*Pectocarya*	*setosa*	2384	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
BORAGINACEAE			2419	Near Drinkwater Spgs-S30-T16N-R4E	"yellowish foliage"	ca.3400'	51892
CAPPARIDACEAE	*Cleome*		2413	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
CAPPARIDACEAE	*Cleome*		2436	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CARYOPHYLLACEAE	*Arenaria*		2382	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
CARYOPHYLLACEAE	*Areanaria*		2409	Near Drinkwater Spgs-S30-T16N-R4E	Near spgs	ca.3400'	51892
CARYOPHYLLACEAE	*Arenaria*		2377	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
CARYOPHYLLACEAE			2455	ca. 2 mi S of Two Spgs; bombed out saddle	Near base of large rocks	2300'	51992
CHENOPODIACEAE	*Atriplex*	*hymenelytra*	2425	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs	2240'	51992
CHENOPODIACEAE	*Atriplex*		2450	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CHENOPODIACEAE	*Chenopodium*		2435	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CHENOPODIACEAE			2442	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992

CHENOPODIACEAE			2452	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CRUCIFERAE	*Arabis*		2395	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
CRUCIFERAE	*Descurainia*		2422	DeVouge spring	Just north of Breese Mt	ca.3400'	51892
CRUCIFERAE	*Lepidium*		2410	Near Drinkwater Spgs-S30-T16N-R4E	Near spgs-small shrub	ca.3400'	51892
CRUCIFERAE	*Lepidium*		2411	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
CYPERACEAE	*Eleocharis*	*parishii*	2447	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CYPERACEAE	*Eleocharis*		2441	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CYPERACEAE	*Juncus*	*textilis*	2431	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
CYPERACEAE	*Juncus*	*textilis*	2440	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
EPHEDRACEAE	*Ephedra*	*californica*	2430	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
EPHEDRACEAE	*Ephedra*	*viridis*	2405A	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
EUPHORBIACEAE	*Euphorbia*		2358	N352930 X W1164221	Common in flat along road	3580'	51792
GRAMINEAE	*Distichlis*		2446	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
GRAMINEAE	*Hilaria*	*rigida*	2367	N352930 X W1164221-S. of Gary Owen	sandy/gravelly flat near road	3580'	51792
GRAMINEAE	*Hordeae*		2445	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
GRAMINEAE	*Hordeae?*		2400	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
GRAMINEAE	*Setaria*		2448	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
GRAMINEAE			2433	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
GRAMINEAE			2443	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
GRAMINEAE			2453	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
HYDROPHYLLACEAE	*Nama*		2374	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
HYDROPHYLLACEAE	*Phacelia*	*distans?*	2386	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
HYDROPHYLLACEAE	*Phacelia*		2342	800 yds ESE of N352930 X W1164221	"yellowthroats"?	3700'	51792

HYDROPHYLLACEAE	*Phacelia*		2426	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
HYDROPHYLLACEAE	*Phacelia*		2460	ca. 2 mi S of Two Spgs; bombed out saddle	Open west-facing slope	2300'	51992
HYDROPHYLLACEAE	*Phacelia*		2417	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
innom			2457	ca. 2 mi S of Two Spgs; bombed out saddle	In heavy shade-base of rocks	2300'	51992
KRAMERIACEAE	*Krameria*	*parvifolia*	2338	800 yds ESE of N352930 X W1164221	Rocky outcrop above draw	3700'	51792
LABIATAE	*Salvia*	*columbar*	2412	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
LEGUMINOSAE	*Astragalus*		2350	N352930 X W1164221	Gravelly outwash - flat near road	3580'	51792
LEGUMINOSAE	*Astragalus*		2379	N352930 X W1164221-S. of Gary Owen	Top of Granite Mt (Breese)-low plt-hairy pod	5183'	51892
LEGUMINOSAE	*Astragalus*		2463	ca. 2 mi S of Two Spgs; bombed out saddle	Open west-facing slope	2300'	51992
LEGUMINOSAE	*Cassia*		2454	ca 1 mi W of N353274 X W1163822	1 mi W of Two Spgs on flat-gravelly area	2220'	51992
LEGUMINOSAE	*Dalea*		2432	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
LEGUMINOSAE	*Dalea*		2461	ca. 2 mi S of Two Spgs; bombed out saddle	Open west-facing slope	2300'	51992
LEGUMINOSAE	*Lotus*		2368	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
LEGUMINOSAE	*Lupinus*		2370	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
LEGUMINOSAE	*Prosopis*		2437	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
LENNOACEAE	*Pholisma*	*arenarium*	2414	Near Drinkwater Spgs-S30-T16N-R4E	Sandy/gravelly bottems between Drinkwater and DeVouge spgs	ca.3400'	51892
LILIACEAE	*Calochortus*	*striatus*	2434	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
LOASACEAE	*Mentzelia*		2403	N352930 X W1164221-S. of Gary Owen	Top of Granite Mt (Breese)	5183'	51892
LOBELIACEAE	*Nemacladus?*		2369	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
MALVACEAE	*Sphaeralcea*	*ambigua*	2345	N352930 X W1164221	Sandy flat along road - 500 yds south of coordina.	3580'	51792
NYCTAGINACEAE	*Mirabilis*	*bigelovii*	2381	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
NYCTAGINACEAE	*Mirabilus*	*bigelovii ?*	2361	800 yds ESE of N352930 X W1164221	nw facing rocky slope	3700'	51792
ONAGRACEAE	*Camassonia*	*brevipes*	2423	N352510 X W1163393-Benchmark 39741	Drinkwater Lk Quad-ca 1 1/2 mi ne Breese Mt	3500'	51892

ONAGRACEAE	*Camissonia*	*boothii*	2348	N352930 X W1164221	Gravelly outwash-bottem of draw-500 yds s.	3580'	51792
ONAGRACEAE	*Camissonia*	*brevipes*	2364	800 yds ESE of N352930 X W1164221	nw facing rocky slope	3700'	51792
PAPAVERACEAE	*Eschscholzia*	*minutiflora*	2352	N352930 X W1164221	Gravelly sandy flat	3580'	51792
PAPAVERACEAE	*Eschscholzia*	*minutiflora*	2456	ca. 2 mi S of Two Spgs; bombed out saddle	Base of rocks	2300'	51992
PAPAVERACEAE	*INNOM*		2420A	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
POLEMONIACEAE	*Eriastrum*	*eremicum*	2391	N352930 X W1164221-S. of Gary Owen	Top of Granite Mt (Breese)	5183'	51892
POLEMONIACEAE	*Gilia*		2355	800 yds ESE of N352930 X W1164221	nw facing rocky slope	3700'	51792
POLEMONIACEAE	*Gilia*		2380	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
POLEMONIACEAE	*Langloisia*	*matthewsii*	2336	N352930 X W1164221	Sandy gravelly outwash	3580'	51792
POLEMONIACEAE	*Langloisia*	*matthewsii*	2462	ca. 2 mi S of Two Spgs; bombed out saddle	Open west-facing slope	2300'	51992
POLEMONIACEAE	*Langloisia*	*punctata*	2376	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
POLEMONIACEAE	*Linanthus*	*demissus*	2378	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road-L. arenicola??		51792
POLYGONACEAE	*Chorizanthe*	*brevicornu ?*	2365	800 yds ESE of N352930 X W1164221	nw facing rocky slope	3700'	51792
POLYGONACEAE	*Chorizanthe*		2375	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792
POLYGONACEAE	*Eriogonum*	*fasiculatum ?*	2360	800 yds ESE of N352930 X W1164221	nw facing slope	3700'	51792
POLYGONACEAE	*Eriogonum*		2353	800 yds ESE of N352930 X W1164221	nw facing rocky slope - sm yellow flowers	3700'	51792
POLYGONACEAE	*Eriogonum*		2366	N352930 X W1164221-S. of Gary Owen	Sandy-gravelly flat along road	3580'	51792
POLYGONACEAE	*Eriogonum*		2389	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
POLYGONACEAE	*Eriogonum*		2390	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
POLYGONACEAE	*Eriogonum*		2392	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
POLYGONACEAE	*Eriogonum*		2393	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
POLYGONACEAE	*Eriogonum*		2418	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
POLYGONACEAE	*Eriogonum*		2424	N352510 X W1163393-Benchmark 39741	Drinkwater Lk Quad-ca 1 1/2 mi ne Breese Mt	3500'	51892

Granite Mountains Springs Plants

POLYGONACEAE	*Oxytheca*	*perfoliata*	2354	800 yds ESE of N352930 X W1164221	nw facing rocky slope	3700'	51792
POLYGONACEAE	*Rumex*		2415	Near Drinkwater Spgs-S30-T16N-R4E		ca.3400'	51892
POLYGONACEAE	*Rumex*		2438	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
RANUNCULACEAE	*Delphinium*		2339	800 yds ESE of N352930 X W1164221	Rocky north facing slope- Baby blue flowers	3700'	51792
RESEDACEAE	*Oligomeris*	*linifolia*	2451	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
ROSACEAE	*Coleogyne*	*ramosissima*	2357	800 yds ESE of N352930 X W1164221	north facing ridge - ca 5 dm tall	3700'	51792
ROSACEAE	*Prunus*	*fasiculata*	2420	Near Drinkwater Spgs-S30-T16N-R4E	A few plants in draw below spgs	ca.3400'	51892
RUBIACEAE	*Galium*	*stellatum*	2346	800 yds ESE of N352930 X W1164221	Bushy-low (>2 dm)-prickly frt-nw face rocky slope	3700'	51792
SALICACEAE	*Salix*	*gooddingii*	2444	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
SAURURACEAE	*Anemopsis*	*californica*	2439	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
SCROPHULARIACEAE	*Castilleja*		2407	Near Drinkwater Spgs-S30-T16N-R4E	At spgs	ca.3400'	51892
SCROPHULARIACEAE	*Mimulus*	*bigelovia*	2341	N352930 X W1164221	Gravelly outwash in draw - 500 yds s. of coor.	3580'	51792
SOLANACEAE	*Lyceum*	*cooperi*	2362	800 yds ESE of N352930 X W1164221	nw facing rocky slope	3700'	51792
SOLANACEAE			2458	ca. 2 mi S of Two Spgs; bombed out saddle	Base of large rocks	2300'	51992
TYPHACEAE	*Typha*		2421	DeVouge spring	Just north of Breese Mt	ca.3400'	51892
UMBELLIFERAE	*Lomatium - ??*		2388	N352930 X W1164221-S. of Gary Owen	North Slope Granite mts(Breese)	5183'	51892
VERBENACEAE	*Verbena*		2449	N353274 X W1163822	Two Spgs-NE of Ft. Irwin Hqtrs.	2240'	51992
ZYGOPHYLLACEAE	*Larrea*	*tridentata*	2372	N352930 X W1164221-S. of Gary Owen	Flat gravelly/rocky area along road		51792

Appendix C

Lane Mountain Milk Vetch Habitat Survey Data

Lane Mountain Milk Vetch Habitat Data

ID	LOCATION	ACSP_C	AMDU_C	AMDU (dead)_C	CELA_C	CHsp_C	ENFA_C	EPCA_C	EPNE_C	ERFA_C	ERFA (dead)_C	GRSP_C	HACO_C	HACO (dead)_C	HYSA_C	KRPA_C	LATR_C
93001	At ASJA	0	2.35	0	0	0	0	0	6	1.05	0	0	0	0	0	0	0
93002	At ASJA	0	4	0	0	0	0	0	7.85	0	0	0	2.4	0	1.65	0	0
93003	At ASJA	0	4.65	0	1.4	1.85	0	0	0	2.5	0	3.75	1.5	0	2.5	0	9.5
93004	At ASJA	0	7.6	0	0	0	0	0	6.65	0	0	0	0	0	0	0	2.7
93005	At ASJA	0	0	2	0	0	0	0	5.85	0	0	4.25	1.8	0	0	0	6.5
93006	At ASJA	0	5.8	1.5	0.95	0	0	0	3	0	0	0	6.5	0	0	0	10
93007	At ASJA	0	1.25	0	0	0	0	0	0	5.7	1.8	0	0	0	0	8.55	10.25
93008	At ASJA	0	0	0	0	0	1.4	0	0	9.35	0	0	0	0	0	0	6.25
93009	At ASJA	0	0.5	0	0	0	1.65	0	8.8	4.1	0	0	0.4	0	0	5.85	0
93010	At ASJA	0	0	0	0	0	8.2	0	3.4	11.15	0	0	0	0	0	0	0
93011	At ASJA	0	1.1	0	0	0	3.2	0	0	8.6	0	0	0	0	0	0	0
93012	At ASJA	0	0	0	0	0	2.95	0	0.8	3.1	0	0	0.5	0	0	5.8	0
93013	At ASJA	0	1.7	0	0	0	0	0	0	2.15	0	0	3.3	2.75	1.7	0	0
93014	At ASJA	0	1.9	0	0	0	0	0	11.8	2.75	0	0	0	0	6.9	0	0
93015	At ASJA	0	1.55	0	0	0	0	0	4.9	1.85	0	0	5.5	0	0	0	0
93016	At ASJA	0	2.5	1.6	0	0	0	0	7	0	0	0	6.8	0	2.7	0	0
93017	At ASJA	0.65	1.25	2.65	1.75	0	0	0	2.4	0	0	3.05	1.4	0	0	0	9.5
93018	At ASJA	0	1.5	0	0	0	0	0	0	3.9	0	0	0	0	1	0	0
93019R	Landscape	0	37.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93020R	Landscape	0	13.5	0	0	0	0	5	0	0	0	0	0	0	0	0	6.25
93021R	Landscape	0	18.1	0	0	0	0	0	0	0	0	0	0	0	0	0	18.05
93022R	Landscape	0	11.55	1.65	0	0	0	0	0	0	0	0	0	0	0	0	25.45
93023R	Landscape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.25
93024R	Landscape	0	3.05	0	0	0	0	0	0	0	0	0	0	0	7.2	0	4.6
93025R	Landscape	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93026R	Landscape	0	9.7	1.8	0	0	0	0	0	0	0	0	0	0	0	0	8.1
93027R	Landscape	0	15	0	0	0	0	0	0	0	0	0	5.15	0	0	0	0
93028R	Landscape	0	8.45	0	0	0	0	0	0	0	0	0	0	0	0	0	4.65
93029R	Landscape	0	5.85	3.75	0	0	0	0	0	0	0	0	0	0	0	0	10.65
93030R	Landscape	0	8.05	0	0	0	0	0	0	0	0	0	0	0	0	0	15.6
93031R	Landscape	0	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	16.95
93032R	Landscape	0	5.4	0	0	0	0	0	0	0	0	0	0	0	0	0	10.35
93033R	Landscape	0	4.9	0	0	0	0	0	0	0	0	0	1.05	0	0	0	0
93034R	Landscape	0	1	0	0	0	0	0	0	0	0	0	2.3	0	0	0	0
93035R	Landscape	7	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93036R	Landscape	0	3.1	0	0	0	0	0	0	2.4	0	0	0	0	0	3.8	11.15
93001R	Nearby Random	0	0	0	0	0	0	0	7.5	1	0	3.5	0	0	0	0	6.5
93002R	Nearby Random	0	4	0	0	0	0	0	0	2	0	0	0	0	0	0	4.3
93003R	Nearby Random	0	6.3	1.75	0	0	0	0	3.25	0	0	0	0	0	0	0	5
93004R	Nearby Random	0	3.85	6.95	0	0	0	0	1	0	0	0	0	0	0	0	6.25
93005R	Nearby Random	0	7.95	0	0	0	0	0	1	1.3	0	0	1.3	0	0	0	0
93006R	Nearby Random	0	7.35	1.75	1	0	0	0	3.1	0	0	0	0	0	0	0	9.5
93007R	Nearby Random	0	6.75	1.45	0	0	0	0	4.1	3.95	0	0	4.8	0	0	0	0
93008R	Nearby Random	0	0	0	0	0	0	0	3.5	4.65	3.45	0	3.9	0	0	0	0
93009R	Nearby Random	0	0	0	0	0	7.65	0	0	9.65	0	0	1.5	0	0	0	0
93010R	Nearby Random	0	12.5	0	0	0	0	0	2.95	4.4	0	0	2.1	0	0	4.85	0
93011R	Nearby Random	0	0	0	0	0	0.75	0	2.5	2.95	1.5	0	0	0	0	3.8	1.7
93012R	Nearby Random	0	5.25	0	0	0	2.55	0	0	2.6	0	0	0	0	0	2.4	7.4
93013R	Nearby Random	0	0	0	0	0	0	0	1.2	0	0	1.35	2.55	0	0	0	10.6
93014R	Nearby Random	0	0.85	5.7	0	0	0	0	4.45	1.15	0	2.6	3.2	0	0	0	11
93015R	Nearby Random	0	4.2	0	0	0	0	0	0	0	0	0	3.1	0	0	0	18.1
93016R	Nearby Random	1.95	2.8	0	0	0	0	0	0	0	0	3.45	0	0	0	0	6.65
93017R	Nearby Random	0	2.65	0	0	0	0	0	2.7	3.4	0	0	5.45	0	0	0	0
93018R	Nearby Random	0	5.05	0	0	0	0	0	0	0	0	0.55	3.35	0	0	0	0

Lane Mountain Milk Vetch Habitat Data

ID	LYAN_C	MIBI_C	SAME_C	TEAX_C	THMO_C	ACSP_D	AMDU_D	AMDU (dead)_D	CELA_D	CHsp_D	ENFA_D	EPCA_D	EPNE_D	ERFA_D	ERFA (dead)_D	GRSP_D	HACO_D
93001	3.5	0	0	0	0	0	2	0	0	0	0	0	2	1	0	0	0
93002	0.5	0	5.35	0	0	0	2	0	0	0	0	0	3	0	0	0	2
93003	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2	2
93004	0	0	0	0	0	0	4	0	0	0	0	0	2	0	0	0	0
93005	4 25	0	0	0	0	0	0	1	0	0	0	0	3	0	0	1	1
93006	0	0	0	2	0	0	4	1	1	0	0	0	2	0	0	0	2
93007	1.3	0	3.7	0	0	0	1	0	0	0	0	0	0	2	1	0	0
93008	0	0	4.3	0	0	0	0	0	0	0	1	0	0	3	0	0	0
93009	0	1.45	0	0	0.9	0	1	0	0	0	1	0	4	3	0	0	1
93010	0	0	0	0	0	0	0	0	0	0	2	0	1	6	0	0	0
93011	0	3.55	0	0	0	0	1	0	0	0	2	0	0	3	0	0	0
93012	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	1
93013	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	2
93014	0	1.1	0	0	1.25	0	3	0	0	0	0	0	3	2	0	0	0
93015	0	0	0	0	5.5	0	1	0	0	0	0	0	1	2	0	0	5
93016	0	0	6.2	0	1.95	0	2	1	0	0	0	0	2	0	0	0	2
93017	0	0	2.7	0	1	1	1	1	1	0	0	0	2	0	0	2	1
93018	0	0	0	0	6.3	0	2	0	0	0	0	0	0	3	0	0	0
93019R	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0
93020R	0	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0	0
93021R	1.5	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0
93022R	0	0	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0
93023R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93024R	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
93025R	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0
93026R	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0
93027R	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	3
93028R	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
93029R	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
93030R	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
93031R	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
93032R	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
93033R	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1
93034R	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
93035R	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0
93036R	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
93001R	0	0	1.85	0	3	0	0	0	0	0	0	0	2	1	0	1	0
93002R	0	0	0	0	0	0	4	0	0	0	0	0	0	1	0	0	0
93003R	3.4	0	0	0	0	0	4	1	0	0	0	0	1	0	0	0	0
93004R	5.6	0	0	0	0	0	2	6	0	0	0	0	1	0	0	0	0
93005R	0	0	0	0	0	0	5	0	0	0	0	0	1	1	0	0	1
93006R	0	0	0	0	0	0	4	1	1	0	0	0	2	0	0	0	0
93007R	0	1.95	0	0	3.4	0	4	1	0	0	0	0	3	1	0	0	3
93008R	0	0.95	0	0	0	0	0	0	0	0	0	0	2	3	2	0	2
93009R	0	0.55	1.9	0	0	0	0	0	0	0	3	0	0	7	0	0	1
93010R	0	1.15	0	0	0	0	10	0	0	0	0	0	1	3	0	0	2
93011R	0	0	2.05	0	2.9	0	0	0	0	0	1	0	2	1	1	0	0
93012R	0	0	0	0	0	0	2	0	0	0	1	0	0	1	0	0	0
93013R	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
93014R	0	0	0	0	0.9	0	1	2	0	0	0	0	1	1	0	1	1
93015R	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
93016R	2	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	0
93017R	1.75	0	11.4	0	1.5	0	1	0	0	0	0	0	2	2	0	0	1
93018R	0	2.05	0	0	0	0	3	0	0	0	0	0	0	0	0	1	2

Lane Mountain Milk Vetch Habitat Data

ID	HACO (dead)_D	HYSA_D	KRPA_D	LATR_D	LYAN_D	MIBI_D	SAME_D	TEAX_D	THMO_D	NORTH	WEST	EPE	S0	S0D	S1	S1D	S2	S2D
93001	0	0	0	0	1	0	0	0	0	35°12'48"	116°48'47"	80'	AMDU	0	ERFA	25	ERFA	50
93002	0	1	0	0	1	0	2	0	0	SAME AS (001)			AMDU	0	CELA	136	AMDU	35
93003	0	1	0	1	0	0	0	0	0	35°12'47"	116°48'71"	231'	AMDU	0	CELA	136	AMDU	158
93004	0	0	0	1	0	0	0	0	0	35°12'41"	116°48'71"	124'	AMDU	0	EPNE	13	ERFA	42
93005	0	0	0	1	3	0	0	0	0	35°12'37"	116°48'65"	121'	AMDU	0	EPNE	28	LYAR	100
93006	0	0	0	1	0	0	0	1	0	SAME AS (005)			CELA	0	THMO	60	AMDU	90
93007	0	0	3	1	1	0	3	0	0	35°12'88"	116°49'08"	129'	MAAB	0	MIBI	10	HALI	47
93008	0	0	0	1	0	0	2	0	0	35°12'88"	116°49'06"	100'	ERFA	0	SAME	70	SAME	69
93009	0	0	2	0	0	1	0	0	1	35°13'00"	116°49'26"	310'	EPNE	0	SAME	5	SAME	48
93010	0	0	0	0	0	0	0	0	0	35°12'93	116°49'05"	80'	ERFA	0	MIBI	37	ENFA	130
93011	0	0	0	0	0	2	0	0	0	35°12'90"	116°49'06"	113'	EPNE	0	MIBI	27	AMDU	104
93012	0	0	2	0	0	0	0	0	0	w/in 9 m of 11			EPNE	0	ERFA	62	AMDU	78
93013	1	1	0	0	0	0	0	0	0	35°11'93"	116°49'14"	153'	AMDU	0	MIBI	21	AMDU	64
93014	0	2	0	0	0	1	0	0	2	15 m S of 013			HYSA	0	HYSA	74	ERFA	102
93015	0	0	0	0	0	0	0	0	3	27 m SW of 014			EPNE	0	CELA	10	HALI	18
93016	0	2	0	0	0	0	1	0	1	35°11'81"	116°49'93"	124'	THMO	16	HALI	51	SAME	102
93017	0	0	0	2	0	0	1	0	1	8 m S of 016			AMDU	0	HALI	62	EPNE	117
93018	0	1	0	0	0	0	0	0	2	25 m SE of 017			HALI	0	SAME	5	HALI	67
93019R	0	0	0	0	0	0	0	0	0	493 m	T1		AMDU	14	AMDU	104	AMDU	107
93020R	0	0	0	1	0	0	0	0	0	153 m	T1		AMDU	45	AMDU	118	AMDU	146
93021R	0	0	0	3	1	0	0	0	0	622 m	T1		AMDU	58	AMDU	100	AMDU	94
93022R	0	0	0	4	0	0	0	0	0	831 m	T2		AMDU	20	AMDU	29	AMDU	46
93023R	0	0	0	2	0	0	0	0	0	338 m	T2		LATR	79	LATR	137	AMDU	175
93024R	0	3	0	1	0	0	0	0	0	908 m	T2		HYSA	115	HYSA	160	LATR	208
93025R	0	0	0	0	0	0	0	0	0	542 m	T3		AMDU	140	AMDU	149	AMDU	190
93026R	0	0	0	1	0	0	0	0	0	354 m	T3		AMDU	91	AMDU	134	AMDU	145
93027R	0	0	0	0	0	0	0	0	0	506 m	T3		AMDU	23	AMDU	43	AMDU	58
93028R	0	0	0	1	0	0	0	0	0	715 m	T4		AMDU	50	AMDU	52	AMDU	121
93029R	0	0	0	1	0	0	0	0	0	132 m	T4		AMDU	52	AMDU	87	AMDU	82
93030R	0	0	0	2	0	0	0	0	0	234 m	T4		AMDU	92	AMDU	108	AMDU	152
93031R	0	0	0	3	0	0	0	0	0	762 m	T5		ACSP	53	ACSP	64	ACSP	98
93032R	0	0	0	2	0	0	0	0	0	462 m	T5		AMDU	19	AMDU	22	AMDU	60
93033R	0	0	0	0	0	0	0	0	0	102 m	T5		AMDU	20	AMDU	29	AMDU	76
93034R	0	0	0	0	0	0	0	0	0	499 m	T5		LATR	69	LATR	71	AMDU	104
93035R	0	0	0	0	0	0	0	0	0	264 m	T5		LATR	184	AMDU	146	LATR	204
93036R	0	0	1	1	0	0	0	0	0	471 m	T5		HACO	17	EPNE	127	AMDU	162
93001R	0	0	0	1	0	0	1	0	1				ERFA	24	ERFA	76	SAME	130
93002R	0	0	0	1	0	0	0	0	0				AMDU	90	ERFA	100	PSAR	105
93003R	0	0	0	1	2	0	0	0	0				AMDU	55	AMDU	70	AMDU	80
93004R	0	0	0	1	2	0	0	0	0				AMDU	50	AMDU	80	AMDU	77
93005R	0	0	0	0	0	0	0	0	0				EPNE	80	AMDU	80	EPNE	110
93006R	0	0	0	2	0	0	0	0	0	35°12'40"	116°48'72"	40'	AMDU	60	LATR	70	AMDU	103
93007R	0	0	0	0	0	2	0	0	1				AMDU	14	HALI	50	EPNE	49
93008R	0	0	0	0	0	1	0	0	0				ERFA	38	HALI	72	HALI	87
93009R	0	0	0	0	0	1	2	0	0	195°	32 m		ERFA	56	KRPA	30	KRPA	89
93010R	0	0	3	0	0	1	0	0	0	22°	68 m		HALI	28	MIBI	77	HALI	92
93011R	0	0	1	1	0	0	1	0	1	160°	23 m		ERFA	19	ERFA	69	THMO	112
93012R	0	0	1	1	0	0	0	0	0	150°	65 m		KRPA	122	AMDU	176	CELA	180
93013R	0	0	0	2	0	0	0	0	0	40°	51 m		LYAN	15	THMO	94	AMDU	50
93014R	0	0	0	1	0	0	0	0	1	248°	26 m		HALI	47	ERFA	53	ENFA	150
93015R	0	0	0	2	0	0	0	0	0	230°	65 m		HALI	80	AMDU	141	GRSP	160
93016R	0	0	0	1	2	0	0	0	0	38°	73 m		HYSA	31	HALI	72	MIBI	114
93017R	0	0	0	0	1	0	5	0	1	150°	35 m		THMO	67	MIBI	74	HALI	115
93018R	0	0	0	0	0	1	0	0	0	310°	35 m		HALI	91	HALI	202	HALI	207

Lane Mountain Milk Vetch Habitat Data

ID	PENT.	COBBLE	PEBBLE	GRANULE	COLOR	HEIGHT	WEIGHT	LENGTH	HABITAT
93001	13 50				10YR 8/3	37	50	52	EPNE/AMDU
93002	13 00				10YR 8/3	35	30	24	EPNE/AMDU
93003	13 00				10YR 7/2	25	27	28	AMDU/EPNE
93004	13 50		20	60	10YR 7/2	45	31	22	AMDU/EPNE
93005	9 50		0	10	10YR 6/3	34	29	25	EPNE/LATR
93006	14 50		10	60	7 5YR 7/4	32	23	11	HACO/LATR
93007	15 00		30	50	10YR 8/2	22	9	6	ENFA/EPNE
93008	14 00		15	60	10YR 8/2	20	29	25	ERFA/EPNE
93009	13 00		10	70	10YR 8/2	32	20	9	ERFA/EPNE
93010	11 50		20	50	10YR 7/3	40	42	30	ERFA/EPNE
93011	14 00		20	50	10YR 7/2	33	37	31	ERFA/EPNE
93012	14 50		30	50	10YR 8/3	33	33	20	ERFA/EPNE
93013	9 00		5	40	10YR 7/3	21	24	15	AMDU/HACO
93014	13 00		5	50	10YR 8/1	32	40	27	EPNE/ERFA
93015	12 00		5	50	10YR 8/3	30	48	24	HACO/EPNE
93016	9		3	60	10YR 7/2	27	15	10	HACO/EPNE
93017	11 5		5	70	10YR 7/2	30	42	13	HACO/EPNE
93018	13 5		0	40	10YR 8/2	36	49	15	HACO/EPNE
93019R	10		5	30	10YR 6/4				AMDU/LATR
93020R	10 5		5	25	10YR 7/3				AMDU/LATR
93021R	12		5	25	10YR 7/4				AMDU/ACSP
93022R	11	5	10	20	10YR 6/3				AMDU/LATR
93023R	9		10	40	10YR 6/3				LATR/AMDU
93024R	13		25	50	10YR 7/4				HYSA/LATR
93025R	10.5		7	25	10YR 5/3				AMDU/LATR
93026R	11		5	30	10YR 6/3				AMDU/LATR
93027R	9		2	15	10YR 6/4				AMDU/LATR
93028R	7 5		5	25	10YR 6/3				AMDU/LATR
93029R	7 5		3	20	10YR 6/4				AMDU/LATR
93030R	10 5		8	25	10YR 6/3				LATR/AMDU
93031R	8.5		5	45	10YR 7/4				LATR/ERCI
93032R	14		15	60	10YR 7/3				AMDU/LYAN
93033R	15		8	50	10YR 6/3				AMDU/LATR
93034R	10 5		10	50	10YR 6/4				LATR/AMDU
93035R	16 5		5	50	10YR 7/3				LATR/AMDU
93036R	12		10	45	10YR 7/3				AMDU/EPNE
93001R	15.50				10YR 8/3				ERFA/EPNE
93002R	8 50		0	25	10YR 7/3				AMDU/HACO
93003R	8.00		5	60	10YR 8/2				AMDU/LATR
93004R	10 00	5	50	30	10YR 7/2				AMDU/LATR
93005R	7.50		15	60	10YR 7/2				AMDU/LATR
93006R	13 00		1	40	10YR 7/2				AMDU/LATR
93007R	12 00		20	60	10YR 8/3				AMDU/HACO
93008R	13 00	20	20	50					ERFA/HACO
93009R	13 50		20	60	10YR 8/2				ERFA/HACO
93010R	11 50		10	30	10YR 6/3				AMDU/ERFA
93011R	13 00	10	10	60	10YR 7/3				ERFA/EPNE
93012R	7 00		10	60	10YR 2/3				LATR/AMDU
93013R	1 50		5	20	10YR 7/3				LATR/AMDU
93014R	5 50		5	20	10YR 7/2				LATR/AMDU
93015R	5		5	40	10YR 8/3				LATR/AMDU
93016R	11 5		5	50	10YR 7/3				LATR/GRSP
93017R	18		5	50	10YR 8/2				SAME/HACO
93018R	10		5	35	10YR 8/3				AMDU/HACO

Lane Mountain Milk Vetch Soils Data

Stratum	>2mm	Sand	Silt	Clay	%Sand	%Silt	%Clay	VC	C
At ASJA	58.5	78	12.4	9.5	32.37	5.15	3.94	15.7	22.5
At ASJA	35.9	71	22.6	6.3	45.51	14.49	4.04	17.3	18.5
At ASJA	26.7	76.7	18.1	5.2	56.22	13.27	3.81	17.7	23.2
At ASJA	21.3	68.4	20.4	11.2	53.83	16.05	8.81	14.3	17.1
At ASJA	30.9	70.9	22.3	6.8	48.99	15.41	4.7	14.7	18
At ASJA	49.1	73.2	20.9	5.9	37.26	10.64	3	18.6	20.3
At ASJA	43.9	71	21.4	7.6	39.83	12.01	4.26	15.1	20.5
At ASJA	58.5	80.3	10.1	9.6	33.32	4.19	3.98	20.9	26
At ASJA	24.3	77.4	16.4	6.1	58.59	12.41	4.62	15.5	18.5
At ASJA	12.6	75.4	17.8	6.8	65.9	15.56	5.94	12.6	15.7
At ASJA	16.1	74.7	19.1	6.2	62.67	16.02	5.2	16.3	17.8
At ASJA	15.4	68	23.2	8.8	57.53	19.63	7.44	9.8	14.1
At ASJA	32.7	81.7	11.9	6.4	54.98	8.01	4.31	14.9	22.7
Landscape	19.9	84.6	11.7	3.7	67.76	9.37	2.96	17.8	24.9
Landscape	12.1	85.8	10.2	4	75.42	8.97	3.52	17.3	25.1
Landscape	17.4	86	10.2	3.8	71.04	8.43	3.14	20.2	28.3
Landscape	22.1	73	13.2	13.8	56.87	10.28	10.75	13	18.2
Landscape	15.9	79.5	15.5	4.9	66.86	13.04	4.12	19.4	26.6
Landscape	27.1	78.8	16.6	4.6	57.45	12.1	3.35	23.7	24.4
Landscape	13.7	81.2	14.5	4.3	70.08	12.51	3.71	13.4	23.8
Landscape	21.5	81.4	13.8	4.8	63.9	10.83	3.77	20.8	22.3
Landscape	11.1	75.3	17.9	6.8	66.94	15.91	6.05	12	19.1
Landscape	17.8	80.6	14.8	4.7	66.25	12.17	3.86	20.1	24
Landscape	15.3	72.5	20.1	7.4	61.41	17.02	6.27	10.8	16.1
Landscape	17.7	73.1	19	7.9	60.16	15.64	6.5	11.6	15.4
Landscape	18.4	81.9	12.8	5.4	66.83	10.44	4.41	17.5	26.7
Landscape	24.3	78	16.1	5.9	59.05	12.19	4.47	17	20.6
Landscape	19.1	78.3	15.6	6.1	63.34	12.62	4.93	15.6	21.9
Landscape	20.7	76.8	16.6	6.6	60.9	13.16	5.23	18.5	22.5
Landscape	17.5	77.1	16.7	6.2	63.61	13.78	5.12	15.1	20.5
Landscape	58	86.5	8.8	4.6	36.33	3.7	1.93	20.9	19.9
Nearby	22.7	72.5	18.8	8.7	56.04	14.53	6.73	17.1	18
Nearby	31.1	73.3	18	8.7	50.5	12.4	5.99	16.6	19.3
Nearby	31.7	81.8	14.3	3.8	55.87	9.77	2.6	22.6	24.3
Nearby	23.8	75.7	18.6	5.8	57.68	14.17	4.42	18	19.2
Nearby	17.1	82.9	12.1	5.1	68.72	10.03	4.23	16.7	23.6
Nearby	32.9	73.1	22.1	4.9	49.05	14.83	3.29	13.4	15.3
Nearby	19.5	68.4	24	7.7	55.06	19.32	6.2	12	14.8
Nearby	34.9	80.7	12.6	6.7	52.54	8.2	4.36	17.5	20.8
Nearby	43.8	61	19.5	19.5	34.28	10.96	10.96	9.2	15.1
Nearby	18.3	68.3	18.8	12.9	55.8	15.36	10.54	12.7	16.4
Nearby	37.2	73.2	17.8	9	45.97	11.18	5.65	14	20.8
Nearby	20	75.8	18.3	5.9	60.64	14.64	4.72	15	20
Nearby	5.6	68.7	23.4	7.9	64.85	22.09	7.46	6.5	11.9

Lane Mountain Milk Vetch Soils Data

Stratum	>2mm	Sand	Silt	Clay	%Sand	%Silt	%Clay	VC	C
Nearby	14.5	74.5	16.5	9	63.7	14.11	7.7	12.9	17.8
Nearby	11.1	80	13.6	6.4	71.12	12.09	5.69	16.7	20.2
Nearby	23.3	79.9	15.6	4.6	61.28	11.97	3.53	23.2	23.8
Nearby	53.6	81	12.6	6.4	37.58	5.85	2.97	24	26.7
Nearby	15.3	77.7	15.7	6.6	65.81	13.3	5.59	16.8	19.7

Lane Mountain Milk Vetch Soils Data

Stratum	M	F	VF	C. Silt	F. Silt	Textural Classification	K ppm	NO3 ppm
At ASJA	19	14.9	5.9	8.3	4.1	Coarse Sandy Loam	185	2.02
At ASJA	14.3	13.2	7.7	14.2	8.4	Coarse Sandy Loam	449	0.72
At ASJA	16.4	13	6.4	11.1	7	Loamy Coarse Sand	158	0.3
At ASJA	15.6	14.9	6.4	10.6	9.8	Coarse Sandy Loam	216	2.27
At ASJA	16.7	14	7.6	13.2	9.1	Coarse Sandy Loam	252	1.12
At ASJA	15.8	12.5	6	10.5	10.4	Coarse Sandy Loam	377	6.4
At ASJA	17.1	12.5	5.9	11.8	9.6	Coarse Sandy Loam	195	3.66
At ASJA	18.3	11.6	3.6	5.4	4.7	Loamy Coarse Sand	144	0.76
At ASJA	18.2	17.9	7.4	10.3	6.1	Loamy Coarse Sand	156	0.49
At ASJA	17.1	20.4	9.6	12.4	5.4	Coarse Sandy Loam	122	0.51
At ASJA	16.5	15.9	8.3	12.7	6.4	Coarse Sandy Loam	201	0.36
At ASJA	16	18.1	10	14.6	8.6	Medium Sandy Loam	278	1.51
At ASJA	21.4	16.5	6.2	7.4	4.5	Loamy Coarse Sand	187	1.34
Landscape	20.3	15.1	6.6	8	3.7	Loamy Coarse Sand	86.3	0.36
Landscape	23.4	14.9	5	6.5	3.7	Loamy Coarse Sand	101	0.41
Landscape	21.9	11.5	4.1	6.1	4.1	Loamy Coarse Sand	185	0.68
Landscape	18	16.8	7.1	7.9	5.3	Coarse Sandy Loam	178	1.36
Landscape	19	9.7	4.8	10	5.5	Loamy Coarse Sand	126	0.38
Landscape	15.7	10	5.1	10.3	6.3	Loamy Coarse Sand	180	0.3
Landscape	23.4	15	5.6	9.1	5.4	Loamy Coarse Sand	292	1.56
Landscape	19.3	13.4	5.6	8.6	5.2	Loamy Coarse Sand	163	0.64
Landscape	19.9	16.9	7.5	10.2	7.7	Coarse Sandy Loam	264	2.68
Landscape	19.3	12.1	5.1	8.4	6.4	Loamy Coarse Sand	526	0.49
Landscape	18.3	18.5	9	12.1	8	Coarse Sandy Loam	183	0.58
Landscape	17.8	19.2	9.1	12	7	Coarse Sandy Loam	196	0.56
Landscape	21.2	11.8	4.7	7.9	4.9	Loamy Coarse Sand	114	0.48
Landscape	19.2	14.2	6.9	10	6.1	Loamy Coarse Sand	447	0.3
Landscape	20	14.4	6.4	9.8	5.8	Loamy Coarse Sand	272	0.43
Landscape	18.4	12	5.4	9.5	7.1	Loamy Coarse Sand	402	1.08
Landscape	19.1	15.4	7	11.1	5.6	Loamy Coarse Sand	196	0.35
Landscape	23	17.6	5.1	5.8	3	Loamy Coarse Sand	98.3	0.83
Nearby	15.7	14.2	7.5	11.3	7.5	Coarse Sandy Loam		1.58
Nearby	16.3	13.8	7.3	11.3	6.7	Coarse Sandy Loam		1.12
Nearby	17.7	11.8	5.5	8.4	5.9	Loamy Coarse Sand		3.3
Nearby	16	15	7.5	10.9	7.7	Coarse Sandy Loam	240	0.5
Nearby	21.9	15.4	5.3	7.1	5	Loamy Coarse Sand	133	3.3
Nearby	15.5	18.7	10.1	14.2	7.9	Coarse Sandy Loam	156	0.4
Nearby	15.3	17.5	8.8	13.3	10.7	Coarse Sandy Loam	266	0.93
Nearby	19.2	18.4	4.8	6.1	6.5	Loamy Coarse Sand	127	0.87
Nearby	14.7	14.9	7.1	10	9.5	Medium Sandy Loam	301	2.24
Nearby	16	16.1	7	10.3	8.5	Coarse Sandy Loam	279	0.73
Nearby	18.1	14.4	5.9	9	8.8	Coarse Sandy Loam	183	0.71
Nearby	18.3	15.6	7	11.4	6.9	Coarse Sandy Loam	140	0.21
Nearby	16	22.4	11.9	15.4	8	Medium Sandy Loam	233	1.26

Lane Mountain Milk Vetch Soils Data

Stratum	M	F	VF	C. Silt	F. Silt	Textural Classification	K ppm	NO3 ppm
Nearby	17.1	18.4	8.2	10.4	6.1	Coarse Sandy Loam	123	0.48
Nearby	18.4	17.6	7.1	8.3	5.3	Loamy Coarse Sand	101	0.46
Nearby	16.3	11	5.6	10	5.6	Loamy Coarse Sand	130	0.34
Nearby	17.5	9.7	3.1	5	7.6	Loamy Coarse Sand	198	1.33
Nearby	19	15.6	6.7	9	6.7	Loamy Coarse Sand	240	1.71

Lane Mountain Milk Vetch Soils Data

Stratum	P ppm	pH	OM %
At ASJA	5.31	6.64	0.5
At ASJA	4.63	8.4	0.39
At ASJA	3.97	8.48	0.38
At ASJA		8.23	2.04
At ASJA	3.66		1.3
At ASJA	4.63	8.25	1.3
At ASJA	7.94	7.32	1.1
At ASJA	3.25	7.01	0.36
At ASJA	4.62	6.49	0.53
At ASJA	5.61	6.42	0.52
At ASJA	4.99	7.07	0.26
At ASJA	5.95	7.63	0.39
At ASJA	9.92	6.22	0.48
Landscape	6.98	6.64	0.18
Landscape	8.32	6.6	0.29
Landscape	10.48	7.74	0.68
Landscape	3.57	6.96	0.36
Landscape	9.97	7.13	0.45
Landscape	7.96	8.32	0.6
Landscape	13	8.22	0.69
Landscape	10.5	7	0.44
Landscape	10.6	7.62	0.53
Landscape	14.4	8.29	0.98
Landscape	5.61	6.76	0.23
Landscape	8.91	6.99	0.28
Landscape	6.25	6.86	0.36
Landscape	6.96	7.59	0.68
Landscape	5.98	7.43	0.71
Landscape	10.6	8.05	1.29
Landscape	5.99	8.27	0.62
Landscape	3.96	7.57	0.17
Nearby			
Nearby			
Nearby			
Nearby	8.28	8.42	0.35
Nearby			0.98
Nearby	1.66		1.02
Nearby	8.31	7.52	0.4
Nearby	4.33	7.7	0.36
Nearby	5.58		0.6
Nearby	4.99	6.99	0.22
Nearby	5.32	7	0.36
Nearby	7.55	8.12	0.34
Nearby	8.94	8.18	1.42

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