FIELD INVESTIGATIONS OF *LEPTODACTYLON PUNGENS* SSP. *HAZELIAE* (HAZEL'S PRICKLY PHLOX) AND *MIRABILIS MACFARLANEI* (MACFARLANE'S FOUR-O-CLOCK), REGION 4 SENSITIVE SPECIES, ON THE PAYETTE NATIONAL FOREST,

WITH NOTES ON *ASTRAGALUS VALLARIS* (SNAKE CANYON MILKVETCH) AND *RUBUS BARTONIANUS* (BARTONBERRY)

by

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ABSTRACT

Field investigations of Leptodactylon pungens ssp. hazeliae (Hazel's prickly phlox) and Mirabilis macfarlanei (Macfarlane's four-o'clock) were carried out in the Hells Canyon portion of the Payette National Forest by the Idaho Department of Fish and Game's Natural Heritage Program. The investigation was a cooperative Challenge Cost-share project between the Department and the Payette National Forest.

I relocated the only known site of Hazel's prickly phlox on the Payette NF near Eagle Bar. No other populations were found on the Forest despite a thorough search of all suitable-appearing rock outcrop-habitat at low elevations in the canyon. Detailed information on habitat characteristics, abundance, and conservation status are reported. It is recommended that it be retained as a Category 2 candidate and a Region 4 Sensitive Species.

No Macfarlane's four-o'clock was found on the Payette NF. Although suitable-appearing habitat abounds in the canyon, the closest known population is about 35 miles downstream from he Forest boundary. It is recommended that it be retained as a Region 4 Sensitive Species.

In addition to the two species of primary interest, I encountered two additional rare plant species on the Payette NF, Astragalus vallaris (Snake Canyon milkvetch) and Rubus bartonianus (Bartonberry). The Snake Canyon milkvetch is a narrow endemic, found only at the southern end of Hells Canyon, and was found to be common (even abundant) in habitats that are not uncommon in the area. Snake Canyon milkvetch does not warrant Sensitive Species status. Bartonberry, also a narrow endemic to Hells Canyon, was found to be less common in habitats that are not as widespread. Bartonberry is a Sensitive Species in Regions 1 and 6, and should be added to the Sensitive Species List for Region 4. A short discussion concerning these species on the Payette NF is included.

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INTRODUCTION

The National Forest Management Act and Forest Service policy require that Forest Service land be managed to maintain populations of all existing native animal and plant species at or above the minimum viable population level. A minimum viable population consists of the number of individuals, adequately distributed throughout their range, necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

The Forest Service, along with other Federal and State agencies, has recognized the need for special planning considerations in order to protect the flora and fauna on the lands in public ownership. Species recognized by the Forest Service as needing such considerations are those that (1) are designated under the Endangered Species Act as endangered or threatened, (2) are under consideration for such designation, or (3) appear on a regional Forest Service sensitive species list.

Mirabilis macfarlanei (Macfarlane's four-o'clock) is federally listed as Endangered, and because potential habitat may occur on the Payette NF, it was placed on the Region 4 Sensitive Species List. The taxonomic status of Leptodactylon pungens ssp. hazeliae (Hazel's prickly phlox) was recently clarified. It is a narrow endemic, known from few populations in Hells Canyon. It will appear on the new Federal Register list of candidate plant taxa as a Category 2 candidate, and, therefore, also becomes a Region 4 Sensitive Species.

The primary objectives of this investigation were as follows:

1) Survey the one known Payette NF population of Leptodactylon pungens ssp. hazeliae and search potential habitats on the Payette for new populations.

2) Survey potential habitat for Mirabilis macfarlanei on the Payette NF.

3) Characterize habitat conditions for known populations.

4) Assess population trends and threats to existing populations and make management recommendations to the forests based on these assessments.

RESULTS

During early May 1989, I surveyed grassland and cliff habitats on the Payette NF in Hells Canyon for Macfarlane's four-o'clock and Hazel's prickly phlox. The area searched included the Hells Canyon-Seven Devils Scenic Area in Idaho, from the Payette NF boundary south of Kleinschmidt Grade to the boundary with the Nez Perce NF at the mouth of Deep Creek.

I relocated and inventoried the only known site of Hazel's prickly phlox near Eagle Bar. No other populations were found on the Payette NF despite a thorough search of all suitable-appearing rock outcrop-habitat at low elevations in the canyon. The plant was in full flower during my inventory and is distinctive and, using binoculars, is easy to spot hanging from exposed, vertical cliff-faces. No Macfarlane's four-o'clock was found on the Payette NF, despite the fact that suitable-appearing habitat abounds in the canyon.

Following is a detailed discussion of each species, including information on its taxonomy and identification, range and habitat, conservation status, and recommendations concerning its status in Idaho, to the U.S. Fish and Wildlife Service, Regional Forester, and Payette NF.

In addition to the two species of primary interest, I encountered two additional rare plant species worthy of mention, Astragalus vallaris (Snake Canyon milkvetch) and Rubus bartonianus (Bartonberry). The Snake Canyon milkvetch is a narrow endemic to the southern end of Hells Canyon, and was found to be common (even abundant) in habitats that are not uncommon in the area. Bartonberry, also a narrow endemic to Hells Canyon, was found to be less common in habitats that are not as widespread. A brief discussion of my encounters and recommendations for each species is included at the end of the report.

Leptodactylon pungens (Torr.) Rydb. ssp. hazeliae (Peck) Meinke

CURRENT STATUS USFS Region 4 Sensitive Species (Payette NF)
USFWS - C2
Idaho Native Plant Society - None
Heritage Rank - G5T1 S1

TAXONOMY

Family: Polemoniaceae (Phlox)

Common Name(s): Hazel's prickly phlox, Hazel's shrubby gilia

Synonyms: Leptodactylon hazelae Peck
Leptodactylon pungens ssp. hookeri (Dougl. ex Hook.) Wherry forma hazelae (Peck) Wherry

Citation: Meinke, Madrono 35:105-111. 1988

Technical Description: A slender dwarf shrub, freely branched from the base, spreading or nearly prostrate, glandular-puberulent, 1-2 dm high; leaves alternate, numerous, long-persistent, 5-7-parted into very narrowly linear-subulate, straight divisions, the longest 9-12 mm long; flowers 1-3 at the ends of the branches; calyx 10-11 mm long, the unequal lobes much shorter than the tube; corolla 2-2.5 cm long, the tube purplish, 14-16 mm long, narrowly funnelform at the throat, the limb creamy white, the narrowly obovate lobes somewhat erose; style less than half as long as the corolla-tube, cleft nearly half-way (Peck 1941; Meinke 1988).

Nontechnical Description: Hazel's prickly phlox is a sprawling, multibranched, perennial from a woody base. The leaves are deeply divided into 5 to 7 linear segments that are relatively lax (not stiff). One to three, large white flowers occur at the ends of the long branches and are open during the day. The flower tubes are somewhat purplish and the spreading lobes creamy white. See Appendix 1 for a line drawing of Hazel's prickly phlox and Appendix 4 for slides of its habit and habitat.

Distinguishing Features and Similar Species: No other Leptodactylon taxa are known to be sympatric with Hazel's prickly phlox. In fact, I have never seen another Leptodactylon at low elevations of the Snake River, lower Clearwater River or lower Salmon River canyons. Other Leptodactylon pungens taxa are common in the sagebrush-steppe region of southern and central Idaho, but do not appear to enter these canyons, which are predominantly grasslands, lacking sagebrush. Below is a conspectus (modified from Meinke 1988) comparing Leptodactylon pungens (excluding ssp. hazeliae) with L. pungens spp. hazeliae.

Characteristic	L. pungens	L. pungens ssp. hazeliae
Habitat	Alluvial, colluvial, bedrock; steep to gentle slope	Near vertical to overhanging rock rock outcrops
Habit	Usually erect, flowering stems woody	Sprawling to mounded, flowering stems herbaceous
Leaf insertion	All alternate, or lower opposite and upper alternate	Lower leaves alternate and upper opposite
Leaflets	1-1.8 mm broad, stiff, linear-lanceolate or subulate	0.2-0.6 broad, soft-filiform
Calyx	6-11 mm long, the lobes equal or nearly so	8-13 mm long, the lobes slightly unequal
Number of perianth parts	5	5 (-6)
Number of flowers per inflorescence	(3-) 5-9 (-15)	1-3 (-5)
Stem, leaf, and calyx pubescence	Densely glandular-tomentose, pubescent, or glabrate	Finely stipitate-glandular

DISTRIBUTION

Range: Hazel's prickly phlox is known from four populations in Idaho and two in Oregon. The Oregon sites and three of the Idaho populations occur in Hells Canyon, while one Idaho site is in the lower Salmon River Canyon. The Idaho locations are summarized as follows:

Hells Canyon

(1) Suicide Point, along Snake River, Hells Canyon NRA (Nez Perce NF administered by Wallowa-Whitman NF).

(2) Downstream from mouth of Granite Creek, along Snake River, Hells Canyon NRA (Nez Perce NF administered by Wallowa-Whitman NF).

(3) Outcrop upstream from Eagle Bar; along Hells Canyon Reservoir, Payette NF.

Salmon River Canyon

(1) Above Riggins Cemetery, private land

I found no additional populations of Hazel's prickly phlox on the Payette NF in Hells Canyon. This is despite a thorough inventory of a large proportion of available habitat in the area (see Appendix 3). I performed the inventory during early May when the plant was in full flower. At this stage of phenology, the large sprawling or mounded plants are covered with a mass of bright white flowers. In addition, the vertical habitat makes it easy to inventory a large amount of otherwise inaccessible area with binoculars.

The population near Eagle Bar consists of about 300 individuals, widely scattered on the large rock outcrop for about 0.75 mile along the

reservoir. The population does not extend more than 300 feet (vertical) above the elevation of the dam pool. All age classes were represented in the population, as evidenced by the wide range of size classes of individuals present; size of the mounds ranged from 5 inches across up to 2 feet across. See Appendix 2 for an overview of the distribution of Hazel's prickly phlox in Idaho and the location of the population near Eagle Bar.

Habitat and Associated Species: As stated previously, Hazel's prickly phlox on the Payette NF occurs on near vertical to overhanging, westerly-facing rock outcrops adjacent to the road along Hells Canyon Reservoir. On the rock outcrop, it is rooted in vertical cracks and on a few ledges. An occasional plant was observed in colluvium at the base of the cliffs. It was never observed on ledges or in colluvium where there was any appreciable accumulation of organic matter from Selaginella or mosses. Associated species in this habitat include Glossopetalon nevadense, Amelanchier alnifolia, Lomatium serpentinum, Sedum leibergii, Penstemon triphyllus, Arabis microphylla, Agropyron spicatum, and Stephanomeria tenuifolia. The rock outcrop is an exposed section of metamorphosed volcanics of the Seven Devils Group.

CONSERVATION STATUS

Conservation Status - Idaho: Johnson and Mattson (1978), Department of Forest Resources, University of Idaho, conducted a rare plant inventory of the Snake River corridor of the Hells Canyon National Recreation Area, in which they searched for Hazel's prickly phlox, among others. At that time, it was still known either by its synonyms L. hazelae (Peck 1941) or L. pungens ssp. hookeri forma hazelae or was not segregated from other L. pungens races (Cronquist 1959). They determined that Leptodactylon in Hells Canyon should be considered "rare" until its taxonomic position could be clarified. Bob Meinke (1988) did just that, demonstrating that there are numerous unambiguous characters separating the Snake River plants from other populations of L. pungens.

Because only six sites are known for the taxon, it was recommended for federal category 2 candidate status at the annual Idaho rare plant meeting in 1989 (Idaho Native Plant Society 1989). It will appear as such when the updated list of candidates is published in the Federal Register soon. Because it will be a candidate, it automatically becomes a Region 4 Sensitive Species (USDA Forest Service 1988), and probably also Sensitive in Regions 1 and 6.

Because Hazel's prickly phlox is a Category 2 candidate, no Idaho Native Plant Society category applies (Idaho Native Plant Society 1989).

The Idaho Natural Heritage Program currently ranks Hazel's prickly phlox as G5T1 S1 (G5 = Leptodactylon pungens is demonstrably secure; T1 = ssp. hazeliae is critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; S1 = ssp. hazeliae is critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction).

Conservation Status - Elsewhere:

OREGON - Hazel's prickly phlox is on the Oregon Natural Heritage Data Base's List 1, which includes taxa which are endangered or threatened throughout their range or which are presumed extinct. These species need active protection measures to insure their survival (Oregon Natural Heritage Data Base 1989).

Ownership: The only known population of Hazel's prickly phlox above Hells Canyon Dam occurs on the Payette NF, within the Hells Canyon-Seven Devils Scenic Area. The population is immediately adjacent to a private road owned by Idaho Power Company, which is used as access to Hells Canyon Dam. The Payette NF has surface management responsibility for the road right-of-way. A management agreement between Idaho Power and the Payette NF is renegotiated periodically.

Threats: The cliff habitat for Hazel's prickly phlox was probably greatly reduced when the pool behind Hells Canyon Dam was filled, since the cliff appears to extend below the pool surface. In addition, road construction further reduced habitat, by blasting a large amount of rock from the outcrop for the right-of-way. Several plants were observed on the blasted area of the outcrop, however, so the long-term impacts to the population are not as deleterious as flooding. Recovery/ reinvasion onto the blasted section of the outcrop appears slow.

Herbicide spraying in the road right-of-way represents a potential impact to the small population. The effect of past herbicidal treatments, if any, on the population is unknown.

Management Implications: During negotiation of the next management agreement with Idaho Power, the Payette NF should:

(1) call their attention to the population of Hazels' prickly phlox in the road right-of-way;

(2) ban the use of herbicides along this short stretch of the road; and

(3) greatly restrict further road widening within the population limits.

ASSESSMENT AND RECOMMENDATIONS

Summary: Hazel's prickly phlox is known from four sites in Idaho and two in Oregon. Only one site is known from the Payette NF, despite a thorough search of a majority of the suitable-appearing habitat on the Forest. The population is small, about 300 individuals, and is restricted to vertical rock outcrops along about a 0.75 mile stretch of the canyon. The population was probably greatly reduced by flooding of Hells Canyon Reservoir and road construction. Road widening and herbicide spraying represent the greatest potential threats to the remaining population.

Recommendation to the U.S. Fish and Wildlife Service: Hazel's prickly phlox is a rare species, endemic to restricted habitats in Hells Canyon of Oregon and Idaho. The one population observed during this

investigation on the Payette NF has been greatly reduced by flooding and road construction. Based on these data, I recommend that it remain as a category 2 candidate until a status inventory has been completed in the Hells Canyon National Recreation Area in Idaho and Oregon.

Recommendation to the Regional Forester - Intermountain Region: Because of its rarity and past reduction in habitat, and because it is a candidate, Hazel's prickly phlox should remain on the Region 4 Sensitive Species List.

Recommendations to Payette National Forest: One population of Hazel's prickly phlox is known from the Payette NF. It is doubtful that additional populations will be found on the Forest, as I conducted a relatively thorough inventory of suitable-appearing habitat. The population occurs within the road right-of-way maintained by Idaho Power Company as access to Hells Canyon Dam. The next renewal of the management agreement between Idaho Power and the Payette should include stringent protection measures (see Threats and Management Implications sections) to prevent further reduction of the Payette NF population.

Recommendation to Wallowa-Whitman National Forest: Four populations of Hazel's prickly phlox are known from the Hells Canyon NRA (two in Oregon and two in Idaho). A thorough status inventory should be conducted in the NRA as soon as practicable to determine the conservation status of the taxon there.

Mirabilis macfarlanei Constance and Rollins

CURRENT STATUS USFS Region 4 Sensitive Species
USFS Region 6 Sensitive Species
USFWS Listed Endangered
Idaho Native Plant Society - None
Heritage Rank - G1 S1

TAXONOMY

Family: Nyctaginaceae (Four-o'clock)

Common Name: Macfarlane's four-o'clock

Citation: Constance and Rollins, Proc. Biol. Soc. Wash. 49:148. 1936.

Technical Description: Stout perennial from a deep-seated root, forming large clumps as much as 10 dm tall, the branches several, decumbent or ascending, puberulent at least above; leaves opposite, rather fleshy, the blade ovate to nearly ovate-rotund, mostly (3) 4-7 cm long, often truncate or slightly cordate at base, the petiole mostly (2) 5-20 (30) mm long; flower clusters in the upper axils as well as terminal on stalks mostly about 1 cm long; involucres 4- to 7-flowered, greenish to purplish, broadly campanulate to semirotate, mostly 15-25 mm long, with broadly obtuse to slightly acute lobes about 1/3-1/2 as long as the tube; perianth bright rose-purple, broadly funnelform, 15-25 mm long; stamens 5, exerted basally expanded and slightly connate for about 0.5 mm; fruit ellipsoid, 6-9 mm long, grayish, glabrous, lightly 10-ribbed and rugose-tuberculate at least on the ribs (Hitchcock 1964).

Nontechnical Description: Perennial herb from a stout, deep-seated root; stems freely branched, forming hemispheric clumps 2 to 4 feet in diameter; leaves opposite, lower orbicular or ovate-deltoid, the upper narrowly ovate, succulent, nearly sessile; perianth large, showy, magenta (Meinke 1982). See Appendix 1 for a detailed line drawing of Macfarlane's four-o'clock and Appendix 6 for slides of its habit and habitat.

Distinguishing Features and Similar Species: No other species of Mirabilis occur in Hells Canyon, and no member of the regional flora resembles Macfarlane's four-o'clock. This large plant is easily recognized by its large, green, succulent leaves that are oppositely arranged on the stem. The cluster of large, rose-purple flowers is unlike anything else in our flora.

DISTRIBUTION

Range: Macfarlane's four-o'clock is known from 12 populations in lower Hells Canyon and Salmon River Canyon of west-central Idaho and adjacent Oregon. It was placed on the Region 4 Sensitive Species List because suitable-appearing habitat occurs on the Payette NF in Hells Canyon. No suitable habitat occurs on the Payette NF in the Salmon River canyon; the Forest manages higher elevation land bordering the canyon. The closest Hells Canyon population to the Payette NF is approximately 35 river-miles downstream from the Forest boundary. See Appendix 2 for an overview of the distribution of Macfarlane's four-o'clock in Idaho.

I found no Macfarlane's four-o'clock on the Payette NF in 1989, despite a relatively thorough search of suitable-appearing habitat in the canyon. There remains, however, an extreme outside chance that it occurs on the Forest, since known populations in the Salmon and Snake canyons are widely disjunct from each other and it occurs in a wide variety of habitats. See Appendix 3 for areas unsuccessfully searched for Macfarlane's four-o'clock.

Habitat and Associated Species: Macfarlane's four-o'clock prefers steep relatively unstable slopes within grassland and shrubland communities. Aside from these generalities, however, the specific plant associations in which it occurs vary widely, from Bromus tectorum-dominated grasslands to Glossopetalon nevadense/ Agropyron spicatum shrublands and Celtis reticulata woodlands. In other words, it is not easy to predict the occurrence of Macfarlane's four-o'clock by habitat distribution. Habitats similar to these are common on the Hells Canyon-portion of the Payette NF, as they are elsewhere in the Snake and lower Salmon River canyons.

CONSERVATION STATUS

Conservation Status - Idaho: Macfarlane's four-o'clock has long been recognized as one of Idaho's rarest plants (Johnson 1977a; Johnson and Mattson 1978; Bingham 1979; Johnson 1981a; U.S. Fish and Wildlife Service 1985). It was Listed as endangered by the U.S. Fish and Wildlife Service in 1979 (Federal Register 44:61910, 26 October 1979). It is a Region 4 Sensitive Species List for the Payette NF (USDA Forest Service 1988)

Because Macfarlane's four-o'clock is a Listed species, no Idaho Native Plant Society category applies.

The Idaho Natural Heritage Program currently ranks Macfarlane's four-o'clock as G1 S1 (G1 = Critically imperiled globally because of rarity or because of other factors demonstrably making it very vulnerable to extirpation; S1 = Critically imperiled in Idaho because of rarity or because of other factors demonstrably making it very vulnerable to extirpation).

Conservation Status - Elsewhere:

OREGON - Macfarlane's four-o'clock is Listed as Endangered by the State of Oregon. It is also on the Oregon Natural Heritage Data Base's List 1, which includes taxa which are endangered or threatened throughout their range or which are presumed extinct. These species need active protection measures to insure their survival (Oregon Natural Heritage Data Base 1989).

Ownership: No populations of Macfarlane's four-o'clock are known from the Payette NF.

Threats: Not applicable, since no populations are known from the Payette NF.

Management Implications: Also not applicable, since no populations are

known from the Payette NF.

ASSESSMENT AND RECOMMENDATIONS

Summary: No Macfarlane's four-o'clock populations are known from the Payette NF and none are known to occur within 35 miles of the Forest. Suitable-appearing habitat, however, is abundant on the Payette in Hells Canyon.

Recommendation to the Regional Forester: There is an extreme outside chance that Macfarlane's four-o'clock may yet be discovered on the Payette NF. Because of this, and the fact that it is listed, I recommend that it remain on the Region 4 Sensitive Species List.

Recommendation to Payette National Forest: No Macfarlane's four-o-clock populations are known to occur on the Forest. There is a remote possibility, however, that it may be discovered there. Field personnel should be made aware of the possibility and be trained in its identification. Sightings should be documented with photographs, and the U.S. Fish and Wildlife Service should be contacted immediately.

NOTES OF TWO OTHER RARE SPECIES ON THE PAYETTE NF

Two additional rare plant species were encountered during the course of my inventory for Hazel's prickly phlox and Macfarlane's four-o-clock, Astragalus vallaris (Snake Canyon milkvetch) and Rubus bartonianus (Bartonberry). Both are narrow endemics to the upper portion of Hells Canyon in Idaho and Oregon.

Astragalus vallaris (Snake Canyon milkvetch)

Snake Canyon milkvetch is a narrow endemic to the Snake River Canyon of Washington and Adams counties in Idaho and Baker and Wallowa counties in Oregon. Thirteen populations are known from Idaho. See Appendix 1 for a line drawing of Snake Canyon milkvetch and Appendix 4 for slides of its habit and habitat. See also Appendix 2 for an overview of its distribution in Idaho.
Within this narrow geographic range, however, it is abundant in habitats that are common. It occurs in steep, south- and west-facing Agropyron spicatum/Balsamorhiza sagittata grasslands where there is a moderate amount of downslope soil movement. Geologic substrates include both metavolcanics and basalts. Populations are more or less continuous in suitable habitat from the river level, at about 2000 feet, up the canyon slope to at least 5000 feet. It also occurs on disturbed habitats such as road cuts.

In 1989, I discovered three extensive populations on the Payette NF; two between Allison and Eckels creeks and one on that portion of the canyon face traversed by the Kleinschmidt Grade (see Appendix 2). I'm sure additional large populations will be found.

Although it is a narrow endemic, it is sufficiently abundant in common habitats to preclude its addition to the Region 4 Sensitive Species List. The Idaho BLM currently has Snake Canyon milkvetch on the Sensitive Species List, however, based on observations of several populations on various ownerships in the canyon, I do not think this status is warranted. Meinke (1978) reached similar conclusions for the Oregon populations. Because it is a narrow endemic, however, Snake Canyon milkvetch should be maintained on the Idaho Native Plant Society' Monitor List of rare plants in the state, at least until more populations are reported.

Rubus bartonianus (Bartonberry)

Bartonberry is another narrow endemic to Hells Canyon, occurring in Adams and Idaho counties, Idaho, and Wallowa County, Oregon. It has long been considered one of Idaho's rarest plants (Johnson 1977b, Johnson and Mattson 1978; Bingham 1979; Johnson 1981b). The southern extent of its distribution is on the Payette NF between Eckels Creek and Allison Creek. Two isolated populations occur between here and Kinney Creek, while it is almost continuously distributed from Kinney Creek downstream to the Forest boundary at the mouth of Deep Creek (see Appendix 2).

Bartonberry occurs in two distinct habitats on the Payette NF; in

riparian communities along small to moderate sized streams and in rockslides on lower canyon slopes. Most of the Idaho populations occur on metavolcanic substrates, although the two southern-most populations occur on moist limestone-derived parent material. It extends from the river level over 1500 feet up the canyon side at Eagle Bar.

No major threats were observed to the populations of Bartonberry on the Payette NF, although Johnson and Mattson (1978) state that some of the isolated populations in Hells Canyon NRA could be significantly impacted by recreational and trail maintenance activities. A large proportion of the individuals on the Payette NF were burned in the 1988 Eagle Bar Fire. I observed in May 1989, that most of the plants burned were resprouting from the base and had new shoots up to two feet long.

Because of its narrow range and potential threats to certain populations, Bartonberry is a Forest Service Sensitive Species in both Regions 1 (for the Nez Perce NF) and 6 (for the Wallowa-Whitman NF). Region 4 should follow their lead and place Bartonberry on their Sensitive Species List.

DISCUSSION AND OVERALL RECOMMENDATIONS

Need for Additional Data

Land managers and field personnel on the Payette NF should be informed of the possible occurrence of the Hazel's prickly phlox, Macfarlane's four-o'clock, Snake Canyon milkvetch, and Bartonberry in their areas. Possible sightings of Hazel's prickly phlox, Snake Canyon milkvetch, and Bartonberry should be documented by specimens (if size of the population warrants collecting). Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, ID 83843; 208/885-6798) for verification of their identity. Confirmed sightings of these species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Populations of Macfarlane's four-o'clock should only be documented with photographs and the location should be immediately reported to the Fish and Wildlife Service (4696 Overland Road, Boise, ID 83705; 208/334-1806).

Summary of Conservation Status Recommendations

Leptodactylon pungens ssp. *hazeliae*

- remain a Category 2 candidate
- remain on R4 Sensitive Species List

Mirabilis macfarlanei

- remain on R4 Sensitive Species List

Astragalus vallaris

- do not add to FS Sensitive Species List
- remove from Idaho BLM Sensitive Species List

Rubus bartonianus

- add to R4 Sensitive Species List

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Appendix 1

Line drawings of:
Leptodactylon pungens ssp. *hazeliae* (from Meinke 1988)
Mirabilis macfarlanei (from Hitchcock 1964)
Astragalus vallaris (from Hitchcock 1961a)
Rubus bartonianus (from Hitchcock 1961b)

Appendix 2

Distribution of *Leptodactylon pungens* ssp. *hazeliae*, *Mirabilis macfarlanei*, *Astragalus vallaris*, and *Rubus bartonianus* in Idaho

Map 1. Overview of the distribution of *Leptodactylon pungens* ssp. *hazeliae* in Idaho.

Map 2. Location of the *L. pungens* ssp. *hazeliae* population on the Payette NF. Portion of 1957 Cuprum 15' quadrangle.

Map 3. Overview of the distribution of *Mirabilis macfarlanei* in Idaho.

Map 4. Overview of the distribution of *Astragalus vallaris* in Idaho.

Map 5. Location of the *Astragalus vallaris* populations between Allison Creek and Eckels Creek on the Payette NF. Portion of 1957 Cuprum 15' quadrangle.

Map 6. Location of the *Astragalus vallaris* population along the Kleinschmidt Grade on the Payette NF. Portion of 1957 Homestead 15' quadrangle.

Map 7. Overview of the distribution of *Rubus bartonianus* in Idaho.

Map 8. Distribution of *Rubus bartonianus* on the Payette NF. Portion of 1957 Cuprum 15' quadrangle.

APPENDIX 3

Maps of areas unsuccessfully searched for *Leptodactylon pungens* ssp. *hazeliae* and *Mirabilis macfarlanei* on the Payette National Forest.

Map 1. Canyon slopes between Deep Creek and Hubble Creek. Portion of 1957 Cuprum 15' quadrangle.

Map 2. Canyon slopes between Hubble Creek and Forest boundary. Portion of 1957 Homestead 15' quadrangle.

APPENDIX 4

Slides of Leptodactylon pungens ssp. hazeliae, Mirabilis macfarlanei, Astragalus vallaris, and Rubus bartonianus and their habitats.

1. Leptodactylon pungens ssp. hazeliae - close-up. Note long, lax leaves and large flowers open during the day.

2. Leptodactylon pungens ssp. hazeliae - flowering plant hanging from vertical rock face. Plant is about 1.5 feet in diameter.

3. Leptodactylon pungens ssp. hazeliae - Habitat of only known Payette NF population along Hells Canyon Reservoir above Eagle Bar.

4. Mirabilis macfarlanei - whole plant in cheatgrass/rabbitbrush stand.

5. Astragalus vallaris - close-up of whole plant, about 1.5 feet tall. Note cream-yellow flowers and robust habit. The plant begins to flower before the leaves are fully expanded.

6. Astragalus vallaris - close-up of large thick pods, about 2 inches long.

7. Astragalus vallaris - habitat; occurs in bare-soil interstices of Balsamorhiza sagittata and Agropyron spicatum bunches.

8. Rubus bartonianus - close-up of branch with flowers. Note large white petals on branches without prickles.

9. Rubus bartonianus - habitat in talus. Note Rubus plant in flower in lower left.