CHAPTER X. MACFARLANE'S FOUR-O'CLOCK

A. Status of the Species

1. Listing History

Mirabilis macfarlanei (MacFarlane's Four-o'clock; MIMA) is endemic to canyon grassland habitats in portions of the Snake, Salmon, and Imnaha river canyons in west-central Idaho, and adjacent northeastern Oregon. MIMA was first recognized for consideration as an endangered or threatened species in a report to Congress by the Smithsonian Institution in 1975. Subsequently a Notice of Review was published in the Federal Register on July 1 of that same year (40 FR 27823). On October 26, 1979, the Service listed MIMA as endangered under the Act of 1973, as amended, and at the time of listing, only 3 populations of the plant were known to exist, with a total of 20 to 25 individual plants. The species was reported to be threatened by several factors, including trampling, collecting, livestock grazing, disease, and insect damage (Service 2000). Between 1985 and 1996, additional populations of the plant were discovered and some populations on Federal lands received active monitoring and conservation actions. As a result of those efforts, the species was downlisted from endangered to threatened in 1996 (Service 2007).

2. Description of the Species

MIMA is a perennial forb with a stout, deep-seated taproot, and freely branched, decumbent (of a plant, which lies on the ground with tips turned upwards) or ascending stems that form small to large clumps. The leaves are opposite, somewhat succulent, green above, and glaucescent (lightly coated with a fine bloom) below. The lower leaves are orbicular or ovate-deltoid in shape, becoming progressively smaller towards the tip of the stem. The inflorescence is comprised of a cluster of 4-7 flowers subtended (occurring below) by an involucre (a collection or rosette of bracts occurring below a flower cluster). The striking, 5-merous (having flower parts in 5), bright magenta-colored flowers are up to 25 millimeters (1 inch) long and 25 millimeters (1 inch) wide. They are funnel-form shaped with a widely expanding limb and exserted (projecting beyond the corolla) stamens (modified from Hitchcock et al. 1964).

3. Life History and Habitat Requirements

MIMA emerges from the ground by early April, blooms May through June, sets seed by mid-summer (June to July), then dies back to a large, tuberous root growing deep in the soil until the following spring. This species appears to reproduce mostly clonally, via the growth of underground rhizomes, which then send up new shoots producing new, but genetically identical, plants or ramets. This mode of reproduction may contribute more to population stability than through seedling recruitment (Kaye 1995, Barnes et al. 1997).

MIMA occurs in river canyon habitats characterized by regionally warm and dry conditions. Less than 30.5 centimeters (12 inches) of precipitation occurs mostly as rain during the winter and spring within the Snake, Salmon, and Imnaha river canyons in Oregon and Idaho (Yates 2007). Sites are normally dry and open, or with scattered shrubs. Individual plants can be found on all aspects, but most often occur on southeast to western exposures. Habitat and associated

species vary among populations. MIMA typically occurs in bunchgrass communities dominated by bluebunch wheatgrass (*Pseudoroegnaria spicata*) which may also include sand dropseed (*Sporobolus cryptandrus*), red three-awn (*Aristida longiseta*), Sandberg's bluegrass (*Poa secunda*) and other native graminoids. Other commonly associated species include *Penstemon eriantherus* var. *redactus* (fuzzy-tongue penstemon), *Phacelia heterophylla (*varileaf phacelia), *Achillea millefolium* (yarrow*), Oenothera cespitosa (*tufted evening primrose*), Astragalus inflexus (*bent milkvetch), *Rhus glabra (*smooth sumac), *Chrysothamnus nauseosus (*rabbitbrush*),* and *Celtis reticulata (*net-leaf hackberry). Non-native species include *Bromus tectorum (*cheatgrass), *Bromus mollis* (soft brome), *Alyssum alyssoides* (pale madwort), *Hypericum perforatum (*common St. Johnswort), *Centaurea solstialis* (yellow starthistle), *Chondrilla juncea* (rush skeletonweed), and *Convolvulus arvensis* (field bindweed).

MIMA also grows in a community of *Glosseopetalon spinecens* var. *aridum* (greenbush), *Cercocarpus ledifolius* (curl-leaf mountain mahogany), bluebunch wheatgrass, and *Physaria oregana* (Oregon twinpod) on a steep southerly slope of sand, gravels, and scree derived from mudstone (Yates 2007). Two infrequent associates identified by Yates (2007) include *Orobanche fasciculata* (clustered broomrape) and *Asclepias cryptoceras* (pallid milkweed).

Individual plants may live for many years, but the size of crown growth and number of flowers produced annually varies according to temperature and precipitation (Kaye and Meinke 1992, Yates 2007). Due to this life cycle pattern, the time of year when activities are most likely to directly impact MIMA is during the spring and early summer, when the plants are actively growing, flowering, or fruiting. At one study site in Oregon, the vegetation associated with MIMA appeared to be influenced by aspect, soil development and topographic position, at least on a local scale (Kaye and Meinke 1992).

The habitat of MIMA stood-out in a multivariate analysis of the vegetation data as a community-type, dominated by *Agropyron spicatum* and other species on steep south-east facing slopes (Kaye 1992). Nearby sites without MIMA had a higher number of weedy annual species, and tended to occupy gentler slopes with deeper, more stable soils. Additionally, MIMA did not occur on adjacent north-facing slopes dominated by *Festuca idahoensis* (Idaho fescue) (Kaye and Meinke 1992).

It is difficult to determine the extent of a particular MIMA clone since different clones (genotypes) can overlap in distribution and vary greatly in size (Barnes et al. 1995). The root system of some MIMA clones extends beyond the presence of ramets by at least 1 to 3 meters (about 1 to 3 yards) (Service 2000). Conceivably, an extensive root system could allow populations to expand into adjacent areas. Such areas may contain suitable habitat, or habitat that, under appropriate circumstances, could be suitable for this species in the future.

4. Population Dynamics

Most MIMA populations, except perhaps the smallest, contain several genets. Each genet is a genetical individual, resulting from a single sexual fusion (zygote) and genetically distinct from all other genets. Vegetative spread has produced some colonies with intermixed lateral roots from different genets growing amongst one another. Other colonies have displayed less

interclonal mixing, with more or less separate genet clumps. Barnes (1996) hypothesized that the clonal habit of MIMA would increase the amount of inbreeding, but her studies at one population found a high degree of outcrossing; slightly more than half the seeds were cross-pollinated. Because most populations comprise several genotypes, recruitment by seed must be taking place although may be quite slow. This assumption is supported by monitoring (Kaye and Meinke 1992) that reported seedlings to be rare with poor survivorship – approximately 88 percent of seedlings died by their second year. Seed dispersal has not been studied, but apparently seeds fall to the ground and are transported by gravity and rain (Barnes 1996). Seed longevity and viability are unknown.

MIMA exhibits low genetic diversity among the populations, in part due to the clonal nature of the species, with observed differences increasing as the distance between the populations increases (Barnes et al. 1996). Additionally, populations within a given river canyon (e.g., Snake River) are more closely related to one another than to populations in other river canyons (e.g., Salmon or Imnaha). Currently, little gene flow is evident between the populations – thus isolation and small population size may be perpetuating low levels of genetic diversity observed in MIMA populations (Yates 2007). The greatest level of gene flow occurred between populations that were 0.5 kilometer (slightly more than 0.25 mile) apart (Barnes 1996).

Throughout much of the Pacific Northwest, native bunchgrasses (i.e., steppe) communities have been altered by the invasion of non-native annual grasses such as *Poa pratensis* (Kentucky bluegrass) and *Bromus tectorum* (cheatgrass). Disturbances such as fire and livestock grazing tend to favor the spread of *B. tectorum*, and eliminate native species such as *Agropyron spicatum* and *Festuca idahoensis* (Pellant 1996). Nearly all sites occupied by MIMA contain at least some *B. tectorum* (Mancuso and Shepherd 2008).

During the past two decades, the invasion of noxious weeds has increased within canyon grassland habitats in the Salmon and Snake River Canyons (Service 2000). *Centaurea solstialis* (yellow starthistle), *Linaria genistifolia* (toadflax), and *Centaurea maculosa* (spotted knapweed) have encroached on poor and fair quality grassland habitats, and have invaded high quality sites to a lesser extent. These three exotic species have invaded MIMA populations in the Salmon River drainage.

5. Historic and Current Distribution

Mirabilis macfarlanei was named for Ed Macfarlane, a boatman on the Snake River, who pointed out the plant on the Oregon side of the river to Lincoln Constance and Reed Rollins in 1936. These botanists described the species later that year, and records indicate that MIMA was again collected in the Hells Canyon area in 1939. In 1947, the Skookumchuck population (Idaho) was discovered by the botanist R.J. Davis. Futile searches for MIMA from 1947 to the mid-1970s led botanists to consider the possibility the species may be extinct. However, in May 1977, a small colony was found along the Snake River near the Cottonwood Landing on the Oregon side of the river. In 1979, the Skookumchuck population was relocated to BLM lands (Johnson 1995), and in 1980 a large colony was discovered on BLM and private lands in the Long Gulch area. Between 1983 and 1987 nine additional populations were located (within the

Salmon, Snake, and Imnaha river canyons), which brought the total number of extant populations to 12 occurring over approximately 70 acres (Service 2000).

MIMA is narrowly endemic to portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho (Figure 14). The species global range is approximately 46 kilometers (28.5 miles) by 28.5 kilometers (17.5 miles). Populations in Oregon contain an estimated 3,500 ramets and cover about 36 hectares (90 acres) within 4 Element Occurrences (EOs) (Kaye 1992, page 9). An estimated 3,000-4,000 ramets occur in Idaho within nine EOs. Two Idaho populations contain more than 1,000 ramets, while seven have fewer than 100. Most sites throughout the species range are less than an acre in size, ranging from a few square meters to about 2.8 hectares (7 acres). In addition, the populations of M. macfarlanei in the three major drainages of the Snake, Salmon, and Imnaha rivers are disjunct (separated) from each other (Barnes et al. 1995).

Figure 20. Distribution of MIMA in portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho.

There are 13 known Element Occurrences (EOs) of MIMA: nine in Idaho (Table 39) and four in Oregon (Table 40) (Colket et al. 2007; Sue Vrilakas, Oregon Natural Heritage Information Center, 2007, personal communication). One Hells Canyon EO is quite large, with hundreds of plants growing in eight distinct patches. Of the four EOs in Oregon, three are on Federal lands within the Hells Canyon National Recreation Area (NRA). The fourth EO is privately owned within the NRA. In Idaho, the majority of MIMA occurrences are located at least partly on BLM administered lands; the remainder occurring on private property. Table 39 data lists the EOs currently known for MIMA, area of population, number of plants, land ownership, and river canyon location (Service 2007).

Table 39. Mirabilis macfarlanei Element Occurrences in Idaho.

Element Occurrence (1)	**USGS 7.5 Topographic Quadrangle** (2)	**Area acres (hectare)**	**Number of Ramets**	**Land Ownership**	**River Canyon**
Skookumchuck EO #1	Slate Ck	144 square yards (120 square meters)	4 ramets	BLM	Salmon
Long Gulch EO #2	Lucile	>7 acres (2 ha)	866-1,266 ramets	Private and BLM	Salmon
Horseshoe Bend EO #3	Slate Ck	1,750 square feet (162 square meters)	300-400 ramets	BLM	Salmon
Slicker Bar EO #4	Slate Ck.	5,625 square feet (522 square meters)	244 ramets	Private	Salmon
Giants Nose EO #5	White Bird	11,250 square feet (1,045 square meters)	380 ramets	Private	Salmon
Lower Pittsburg Landing EO #6	Grave Point	Unknown	250 genets	Forest Service	Snake
Lucile Caves EO #7	Lucile	100 square yards within a 15 acre fenced area	~196 ramets	BLM	Salmon
Rhett Creek EO #8	Slate Creek	Unknown	640 ramets in 2 subpopulations	BLM	Salmon
Box Canyon EO #9	Lucile	0.2 acre (0.1 ha)	>800 ramets	BLM	Salmon

[1] EOs are separate if they are > 1 kilometers apart. Separation distances between EO features are measured pairwise and edge-to-edge after accounting for locational uncertainty.
[2] The global distribution of Mirabilis macfarlanei is Idaho County (Idaho) and Wallowa County (Oregon) in portions of the Snake, Salmon, and Imnaha river canyons. The species range is approximately 46 by 29 kilometers.

Table 40. Mirabilis macfarlanei Element Occurrences (Oregon)

Element Occurrence	USGS 7.5 Topographic Quadrangle	Area Occupied	Number of Ramets	Ownership	River Canyon
Tryon Bar / Snake River EO #1	Lord Flat	50 acres (20 hectare)	~ 3,000 ramets	Forest Service	Snake River
Buck Creek EO #2	Haas Hollow	1.0 acre (0.4 hectare)	~ 200 ramets	Private	Imnaha
Fall Creek EO #3	Haas Hollow	5.0 acres (2 hectare)	~ 351 ramets	Forest Service, some private	Imnaha
Pleasant Valley EO #5	Grave Point	0.1 acre (406 square meters)	~ 38 ramets	Forest Service	Snake River

6. Conservation Needs

MIMA is known to occur in two counties in west-central Idaho and northeastern Oregon. The State Conservation ranking maintained by the Idaho Conservation Data Center is the same as the Global rank. In addition to its federal designation as threatened, MIMA is also listed as Endangered by the state of Oregon. Endangered species here means: "Any native plant species determined by the department to be in danger of extinction throughout any significant portion of its range (ORS 564.100)."

In 1985, the Service developed a recovery plan for the species (Service 1985). In summary, this plan called for the following actions in order to achieve recovery: 1) conduct additional field surveys; 2) protect MIMA sites and develop management plans; 3) conduct baseline studies to identify limiting factors and determine threats; 4) establish new colonies; and 5) maintain a propagule bank.

In 2000, the Service developed a revised recovery plan (Service 2000). In summary, the revised recovery plan called for the following actions: 1) protection of occupied habitat and implementation of actions to eliminate or control threats; 2) monitor population trends; 3) conduct research; 4) conduct surveys in potential habitat areas; 5) establish propagule banks; 6) if warranted, establish new populations where MIMA has been extirpated; and 7) validate and revise recovery objectives as needed.

In August 2007, the Service completed a Recovery Needs Assessment (RNA) for MIMA (Service 2007). This RNA summarized all the recovery and conservation actions initiated and/or completed to date, and identified six actions that would be needed for recovery and delisting to occur. These include: 1) establishing a technical working group to provide guidance on identifying and prioritizing remaining recovery actions; 2) develop recovery task implementation agreements with the USFS and BLM for the control of non-native invasive plant species; 3) develop and implement a range-wide [population and habitat] monitoring strategy; 4) identify

and implement site-specific fence construction; 5) develop and implement studies to assess general life history and ecological needs, and genetic studies; and 6) develop, if possible, a population viability analysis for MIMA.

7. Critical Habitat

Critical habitat has not been designated for MIMA; therefore no critical habitat will be affected by this action.

B. Environmental Baseline

At the time when MIMA was reclassified from endangered to threatened on March 15, 1996, the Service identified the following threats to the species: habitat destruction (related to wildfires and altered fire regime), non-native weeds, commercial collection, wildlife and domestic livestock grazing, trampling, insect predation, and inadequate protection of plants on private lands. Additionally, factors that may affect MIMA do not act independently, but rather interact synergistically, and should be regarded holistically instead of as separate pieces.

MIMA EO#6 is found within the Big Canyon Roadless Area and is managed by the Forest Service. Under the MIRR, three subpopulations of this EO fall within the BCR theme and another six subpopulations fall within the BCR-CPZ theme.

1. Status of the Species in the Action Area

The West Creek site (EO#6) is a large population of approximately 250 clones located adjacent to the Big Canyon Road (FS Road #1805). The West Creek site is in the Pittsburg Grazing Allotment, which became vacant in 2003. Up to this time, cattle had grazed this pasture through March of each year. Most of the MIMA had been fenced in 1998 to exclude grazing by cattle. The population lies on a steep north-facing slope and had been impacted by cattle before it was fenced. It is probably not being impacted by the nearby road or Hells Canyon visitors. The West Creek site also contains a large patch of *Dipsacus sylvestris* (teasel), an exotic weedy plant that may be impacting MIMA plants. Yellow star-thistle, an aggressive weed is known to occur within ¼ mile and poses a threat to this site.

2. Factors affecting the Species in the Action Area

Grassland habitat in good ecological condition appears to be important for the long-term survival of MIMA. Livestock grazing, invasion by non-native plant species and uncharacteristically large or frequent fires are likely the greatest threats to MIMA (Service 2007). Other identified threats include off-road vehicle impacts, herbicide use, pedestrian trampling, and road and trail construction. Suitable but unoccupied habitat appears to have a higher density of non-native plant species than nearby MIMA locations (Kaye and Meinke 1992). All known populations of MIMA in the Hells Canyon National Recreation Area occur in grassland plant communities below 3,000 feet elevation.

Invasive Non-native Plant Species

The invasion of non-native plant species continues to be a major threat to MIMA. Invasive non-native plants alter various attributes of ecosystems including geomorphology, fire regime, hydrology, microclimate, nutrient cycle, and productivity (Pyke and Novak 1994). Additionally, the invasive non-native plants can negatively affect native plants, including MIMA through competitive exclusion, niche displacement, competition for pollinators, and changes in insect predation (Monsen 1994). Non-native plants that co-occur with MIMA at most EOs include: *Bromus tectorum* (cheatgrass), *Hypericum perforatum* (St. John's wort), *Convolvulus arvensis* (field bindweed), *Linaria genistifolia* ssp. *dalmatica* (Dalmation toadflax), and *Centaurea solsitialis* (yellow starthistle) (Mancuso and Shepherd 2008, Yates 2007, Colket et al. 2006). Currently, at least ten of the thirteen EOs for MIMA have *B. tectorum* and other non-native plants documented (Colket et al. 2006, Vrilakas, *in litt.* 2007, Mancuso and Shepherd 2008, Yates 2007).

In summary, the threat of non-native weed invasions into MIMA sites could adversely impact the species and its recovery. There are many negative ecological impacts associated with noxious weeds which include, but not limited to: displacement of native plants, reduced biodiversity, altered normal ecological processes (e.g., nutrient cycling, water cycling, etc.), a decrease in wildlife habitat value, and increased soil erosion and stream sedimentation potential.

Wildfires

The effects of wildfire on the habitat of MIMA encompass several categories, most of which are interrelated and often difficult to isolate from each other and equates to the loss of habitat for MIMA and other native species (Billings 1994). For example, the invasion and establishment on non-native annual grasses and forbs following wildfire increases the amount and continuity of fine fuels across the landscape, which in turn increases the likelihood of frequent and intense wildfires in habitats that support MIMA.

Organisms adapt to disturbances such as historical wildfire regimes (fire frequency, intensity, and seasonality) with which they have evolved (Landres et al. 1999), and different rare species respond differently to wildfires (Hessel and Spackman 1995). In general, fire regimes within forest and steppe habitats in the western United States have been highly disrupted (Whisenant 1990). In some instances, fire suppression has allowed grasslands to be invaded by trees (Lesica and Martin 2003). At the same time, in many grassland and shrub habitats fire frequencies have increased due to the expansion and invasion of annual non-native grasses (Whisenant 1990). These invasive annual non-native grasses fill gaps that would naturally occur between native vegetation, dramatically increasing the ability of wildfire to spread. Several MIMA EOs have been burned since 1990 (in Idaho EO#1, EO#2, EO#7; in Oregon EO#5) and almost all of the EOs have become infested with non-native plants such as *Bromus tectorum* and *Centaurea solsitialis*, making them more vulnerable to wildfires (Mancuso and Shepherd 2008, Colket et al. 2006).

Wildfires that occur during summer and fall months when MIMA plants are dormant may have minimal direct effects on this species since the underground rhizomes will be largely insulated

from fire (Service 2000). However, fires may result in adverse changes in the ecological conditions of sites and lead to the subsequent invasion of exotic species. Burning may also result in concentrations of ungulates grazing within the burned areas, which might cause increased trampling of MIMA plants. The primary concern from wildfires appears to be during the active growing period (April through June) when the above ground plants would be susceptible to fire kill or injury (Service 2000). Finally, while there is information that there is higher seed set in MIMA plants with larger inflorescence displays than those of with a smaller display (Barnes 1996) there is no information available about seed production and set in a post-wildfire setting.

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the species in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR. To minimize duplication, these potential effects are not reiterated in their entirety below but are addressed relative to the proposed MIRR. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the rule versus an analysis of the on-the-ground activities, and therefore has no direct effects.

The MIMA site (EO#6) is found within the Big Canyon Roadless Area and is managed by the Wallowa-Whitman Forest. Under MIRR, three subpopulations of this EO fall within the BCR theme and another six subpopulations fall within the BCR-CPZ theme. Of the 14,000 acres in the Big Canyon Roadless Area under the BCR theme, 4,600 acres are estimated to be within the BCR-CPZ theme. This theme allows for some temporary road construction and re-construction, and timber cutting in areas of significant risk from wildfire. The USFS has fenced the known plant sub-populations to protect them from livestock grazing and other impacts. Because MIMA is associated with open, steep canyon grasslands, direct impacts to this MIMA EO and its habitat are highly unlikely to occur from timber cutting or road construction under MIRR.

The MIRR will not affect EO#6 on USFS lands, which will continue to be monitored by the USFS. The Hells Canyon National Recreation Area Comprehensive Management Plan (Appendix C, pages 88-94) provide specific protective management direction for this species that would be incorporated into any project that would occur within the watershed or within extant or potential habitat for MIMA. Additionally, mitigations and/or avoidance measures as per USFS Manual direction would be incorporated into any fuels or wildland fire use project that may occur within the watershed or potential habitat of MIMA. Prescribed burn plans are required to identify sensitive resources in the area and measures to protect these resources whenever possible in the event of escaped fire are considered. However, given that precise locations of future projects allowable within this theme area, it cannot be discounted that the potential for adverse effects to undiscovered populations or potential habitat could occur for this species.

D. Cumulative Effects

The vast majority of occurrences of MIMA are on BLM properties, lands within the Hells Canyon National Recreation Area, or on private lands. Only EO#6 is on Forest Service lands. The primary threats to the species include non-native plant invasion, uncharacteristic wildfires, as well as livestock grazing. These risk factors have been analyzed and previously undergone consultation in other project and land use management plans and decisions. This decision will not make a difference in these factors.

E. Conclusion

The Service has reviewed the current status of MIMA, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the species continued existence.

F. Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying these species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed plants, the malicious damage of endangered plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of State criminal trespass law.

1. Amount or Extent of the Take – No incidental take is exempted herein as a result of the Forest Service adopting the MIRR, although specific actions developed in accordance with the MIRR and associated management plans (e.g. Hells Canyon NRA Comprehensive Management Plan) may cause effects that constitute take. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of management plans will serve as the

basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the listed species in accordance with 50 CFR 402.14i.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – As there is not take exemption under 7(o) of the Act in this Opinion, the Service is not providing Reasonable and Prudent Measures or Terms and Conditions.

G. Conservation Recommendations

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities intended to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the Forest Service implement the following conservation measures.

1. In cooperation with BLM, State Natural Heritage programs in Idaho and Oregon, Service, and others:
   a) Cooperate to develop consistent interagency inventory and monitoring methods.
   b) Cooperate to identify and map populations and suitable habitats. Participate in surveys within suitable habitats, and map new populations as found.
   c) Following current monitoring protocols, cooperate in monitoring MIMA population trends and habitat conditions.
   d) Cooperate in the management of high priority habitat areas and populations to promote species recovery.
   e) Participate in research essential to recovery of the species. Cooperate in determining specific limiting factors in terms of habitat needs and characteristics. Cooperate in population viability analyses to ensure that recovery criteria objectives are being met.
   f) Support seed banks in a long-term seed storage facility.
   g) Working with other agencies, compile a general list of Best Management Practices (BMP) that would apply to all programs, to the extent that such a list would assist with consultation and species recovery. The intent of implementing BMPs is to avoid/minimize negative effects.
   h) Support the establishment and maintenance of new populations in suitable MIMA habitat. The goal of these activities is to maintain or enhance viable populations.

2. Ensure that ongoing Federal actions support or do not preclude species recovery.

3. Ensure that new Federal actions support or do not preclude species recovery.

4. Promote restoration of suitable habitat following fire, fire rehabilitation, restoration treatments, or other major disturbances.

5. Ensure that fire suppression efforts will be conducted, as possible, to protect MIMA habitat. Place a high priority on protecting suitable habitat.