

OSTERHOUT MILKVETCH

(ASTRAGALUS OSTERHOUTII)

AND

PENLAND BEARDTONGUE

(PENSTEMON PENLANDII)

RECOVERY PLAN

1992



US FISH AND WILDLIFE SERVICE

REGION 6

OSTERHOUT MILKVETCH (Astragalus osterhoutii)

PENLAND BEARDTONGUE (Penstemon penlandii)

RECOVERY PLAN

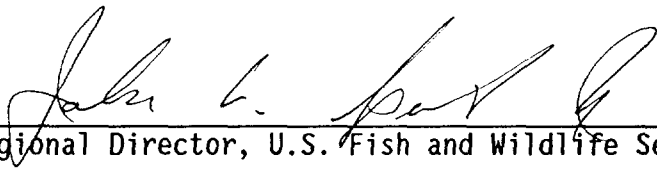
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Date:

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LITERATURE CITATIONS

Literature citations should read as follows:

U.S. Fish and Wildlife Service. 1992. Osterhout milkvetch and Penland beardtongue recovery plan. Denver, Colorado. 16 pp.

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Fish and Wildlife Reference Service
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ACKNOWLEDGEMENTS

The preparation of this recovery plan was greatly facilitated by research conducted by Dr. Jeffrey Karron for his dissertation, "A Comparison of the Pollination Biology, Breeding Systems, and Population Genetic Structure of Geographically Restricted and Widespread Species in the Genus Astragalus (Fabaceae)" (1987) and subsequent articles, and by Mr. Oliver Grah of Bio/West, Inc., who prepared the plant portion of the Biological Assessment for the Muddy Creek Reservoir Project (1987).

EXECUTIVE SUMMARY

Current Status: These endangered species are endemic to Middle Park near Kremmling in Grand County, Colorado. Penland beardtongue is only known from within 2 miles of the type locality with approximately 5,000 plants. The Osterhout milkvetch occurs in scattered colonies over a 15-mile range that overlaps the range of the Penland beardtongue. The total population size is approximately 25,000 to 50,000 individuals. Ninety percent of the Osterhout milkvetch occurs along Muddy Creek, the site of a proposed reservoir. Up to 60 percent of this major population could be adversely affected through either direct or indirect impacts. A biological opinion with conservation measures has been developed to address these impacts. These species occur on desert badlands with fragile soils that are very vulnerable to surface disturbance from various threats, including off-road vehicles, oil and gas drilling, and mining claims.

Habitat Requirements and Limiting Factors: The plants are probably glacial relics now naturally limited to the small existing area of suitable habitat (desert badlands) in Middle Park surrounded by high ranges of the Rocky Mountains. Range expansion is not natural or possible. Protection of small existing populations is vital.

Recovery Objective: Conservation of existing populations for the foreseeable future. Removal from the list of endangered and threatened species (recovery) is not considered feasible because of small natural populations, limited habitat, and persistent nature of potential threats.

Actions Needed:

1. Establish appropriate land management designations and develop and implement habitat management programs for known populations of both species on private and public lands.
2. Inventory any remaining unsurveyed suitable habitat.
3. Conduct life history/ecology research.
4. Monitor trend of existing populations.
5. Adjust management practices as necessary and indicated by a downward trend in populations or evidence of physical habitat degradation.

Date of Recovery: Unknown

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I. INTRODUCTION

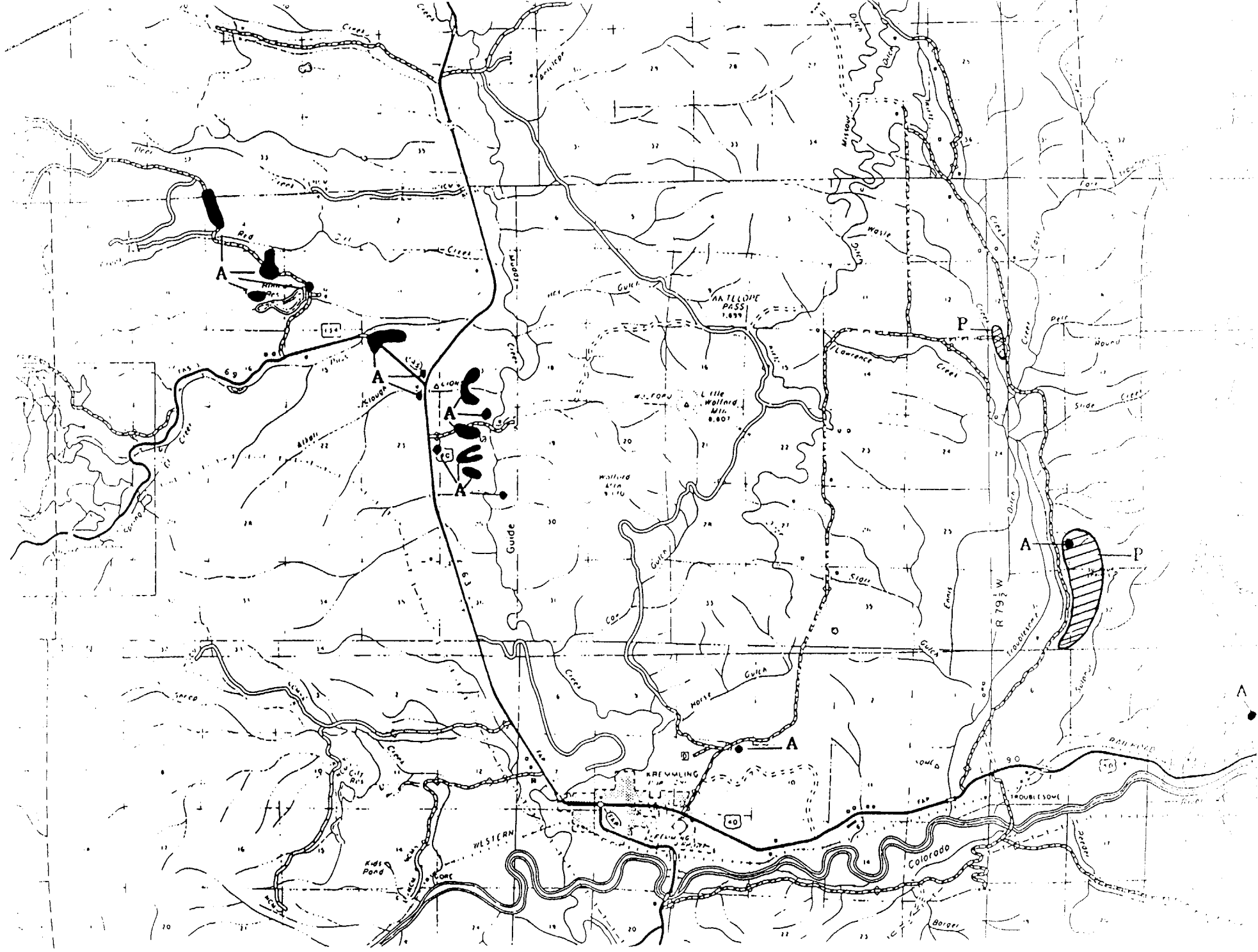
A. Description

The Osterhout milkvetch and Penland beardtongue were listed as endangered on July 13, 1989 (54 FR 29658). Astragalus osterhoutii Jones was described in 1923 by Marcus Jones (in Barneby 1964) from material first collected by George Osterhout in 1905 and 1906 at "Sulphur Springs" in Grand County. Astragalus osterhoutii, a member of the pea family (Fabaceae), is a tall rush-like plant with linear leaflets and several bright green stems up to 100 centimeters (40 inches) tall. There are 12-25 large white flowers, 2.4 centimeters (1.0 inch) long, per inflorescence (flowering stalk), and stipitate pendulous pods, 4.5 centimeters (1.8 inches) long. It has a recovery priority number of 5C which indicates a high degree of threat and low recovery potential but with conflict from a development project. It has a higher recovery priority number than Penstemon penlandii because of the potential impacts from the proposed Muddy Creek Reservoir.

Penstemon penlandii was independently discovered in July 1986 by David Johnson of Western Resource Development Company and John Anderson, then a botanist with the U.S. Fish and Wildlife Service (Service), on visits to the Osterhout milkvetch site along Troublesome Creek near Sulphur Springs. It was described the same year by Dr. William Weber of the University of Colorado (Weber 1986). Penstemon penlandii, a member of the snapdragon family (Scrophulariaceae), is a short plant with linear leaves and several clumped, pubescent stems up to 25 centimeters (10.0 inches) tall. There are 5-15 bright bicolored flowers with blue lobes and a violet throat, 1.2-1.5 centimeters (0.5-0.6 inches) long, per inflorescence; the fruits are small brown capsules. It has a recovery priority number of 17 which indicates a low degree of threat and low recovery potential.

B. Distribution

Both species are endemic to Middle Park, a high elevation sagebrush park at 7,500 feet, surrounded by various ranges of the Rocky Mountains, in Grand County, Colorado (Figure 1). They occur within 6 miles to the north and east of the town of Kremmling. The Penland beardtongue is the rarer, being only known along Troublesome Creek. There are approximately 5,500 individuals. The Osterhout milkvetch occurs in scattered colonies over a 15-mile range, which includes the range of Penstemon penlandii, from 3 miles east of Troublesome Creek to a few miles west of Muddy Creek. There are an estimated 25,000-50,000 individuals with approximately 90 percent of the total population in the vicinity of Muddy Creek. A majority of both species occurs on Federal land administered by the Bureau of Land Management, but significant colonies of both species occur on private land.



A=Astragalus osterhoutii
 P=Penstemon denlandii

Figure 1

The Osterhout milkvetch and Penland beardtongue are both naturally rare species with limited ranges. In addition, they are both disjunct 150 miles from their nearest relatives, which occur in southwestern Wyoming and northwestern Colorado. These species are likely remnants of a previous extension of the Wyoming flora southward during glacial periods. As such, they are naturally restricted to the small area of suitable habitat still available to them in Middle Park. Expansion and migration to possibly suitable habitats elsewhere is blocked by the high mountains surrounding Middle Park.

C. Habitat/Life History

The Osterhout milkvetch and Penland beardtongue are restricted to badlands of the Upper Cretaceous Niobrara and Pierre Shales and of late Tertiary (Miocene Troublesome Formation) siltstone sediments. The Penland beardtongue is only known from the latter formation. The badlands where these species grow are characterized by an open grassy vegetation with scattered shrubs of big sagebrush, rabbitbrushes, bitterbrush, horsebrush, winterfat, snowberry, and/or mountain mahogany. Common perennials include lupine and wild-buckwheat. Although neither species has close relatives in Middle Park, there are several other species present in these genera: Astragalus pattersonii, A. bisulcatus, Penstemon cyathophorus, and P. strictus. These Astragalii all have a tall growth form, but Astragalus osterhoutii is distinguished from Astragalus pattersonii by its long, pendulous fruits, from Astragalus bisulcatus by its large, white flowers, and from both by its lime-green, linear leaflets. Penstemon penlandii can be recognized by its linear, revolute green leaves, pubescent stems, and intermediate height. Where shrubs, particularly big sagebrush, have increased in density, resulting in a more closed shrubland vegetation type, the Osterhout milkvetch and Penland beardtongue are reduced in density. Osterhout milkvetch shows evidence of light grazing and can be found on old road cuts and fills, indicating some tolerance for disturbance (Bio/West 1987).

Research on the pollination biology, breeding system, and population genetic structure of A. osterhoutii in comparison to widespread, related species have been conducted by Karron as part of a doctoral dissertation (Karron 1987a). He found that Astragalus osterhoutii shared generalist pollinators (polylectic bees) with the common Astragalus pattersonii, rather than its own specialist species of pollinator, but it apparently had less pollinator visits (Karron 1987b). As expected for rare plant species, Astragalus osterhoutii, although an outcrosser, is still more self-compatible than widespread congenes, evidenced by higher fruit set (Karron 1989). Rare plant species are also hypothesized to usually be lower in genetic polymorphism. Karron et al. (1988) found this to be true for Astragalus osterhoutii. There are also genetic differences between populations of Astragalus osterhoutii at Muddy Creek and Troublesome Creek (Karron 1988).

Penstemon penlandii has not had this degree of research (few rare plants have) and little is known about its pollination biology, breeding systems, and population genetic structure. However, preliminary studies by V. Tepedino (Bee Systematics and Biology Lab, pers. comm., 1992) indicate that the species must be visited by animals to reproduce sexually. Penstemon penlandii is visited by several native bee species including one ~~undescribed species~~ and the first known occurrence west of the Great Plains of a rare Penstemon specialist.

D. Reasons for Listing

Astragalus osterhoutii and Penstemon penlandii are both naturally rare species. Penstemon penlandii is known only from one area, with two occurrences 2 miles apart along Troublesome Creek/Sulphur Gulch (which is also the easternmost area for Astragalus osterhoutii). The badlands on which Penstemon penlandii occurs are currently vulnerable to degradation from off-road vehicle use because of their fragile soils, steep topography, and arid environment. There are dirt roads running through the badlands which provide easy access for off-road vehicle use. Off-road vehicle damage and mineral exploration have occurred on the area. The resulting modification of the habitat could result in a reduction of the range for Penland beardtongue.

Astragalus osterhoutii has only one major population along Muddy Creek, with small scattered outlying colonies up to a distance of 8 miles away. The major population of Astragalus osterhoutii along Muddy Creek, on 132 acres and representing about 90 percent of the total for the species, is threatened by the proposed Muddy Creek Reservoir. With construction of the high dam proposal at 7,485 feet elevation, 18 acres or about 3 percent of the Muddy Creek population would be inundated. In addition, 80 acres, or 60 percent of the habitat of Astragalus osterhoutii, could be threatened by secondary impacts from recreational activities associated with the Muddy Creek Reservoir proposal.

During flood stages there would be a short-term rise of 8 to 10 feet in the reservoir level which would inundate an undetermined number of additional plants. Additional direct losses from reservoir construction could result from the raised water table through perennial soil saturation and from surface disturbance due to construction activities such as road building, creation of borrow pits, and heavy equipment movement (Bio/West 1988, Grah and Neese 1987). While direct inundation and bench sloughing would destroy habitat at the lower edges of the population, significant secondary impacts to the benches around the reservoir and along Alkali Slough and Pass Creek could occur with the building of recreation facilities and increased use of the area by people and off-road vehicles.

The presence of the reservoir would likely stimulate private development within the plant's range near the reservoir. These potential secondary impacts would be the same for either dam height and could cause destruction, modification, or reduction of Osterhout milkvetch habitat or range. Depending

upon the degree of future recreational usage, secondary impacts from the Muddy Creek Reservoir may be even greater to the Osterhout milkvetch than direct impacts from reservoir construction (Grah and Neese 1987).

Proposed mitigation plans to offset direct and secondary impacts of the reservoir construction and recreation include management of the habitat remaining around the reservoir to minimize effects to the milkvetch; designing public recreational facilities to minimize the impact on the species, including fencing the habitat; protection of off-site populations; plant surveys for avoidance of the milkvetch during construction; and a vegetative manipulation study to research the effects of shrub (sagebrush) encroachment on the plants' habitat (U.S. Fish and Wildlife Service 1990).

Mining claims exist along Muddy Creek where the Osterhout milkvetch occurs. Both species habitat is open to oil and gas leasing. Also, the density of Astragalus osterhoutii has been observed to be lower in big sagebrush stands than in the adjacent open benchlands where it normally grows. It may be that the past grazing history has caused an increase in big sagebrush density with a resultant increase in competition for soil moisture. The Osterhout milkvetch may then be outcompeted and populations reduced in numbers or lost entirely.

E. Conservation Measures

Both species fortunately already have received several conservation/recovery efforts. Protection of various colonies of each species through fee simple purchase or land exchange by the Bureau of Land Management (BLM), Colorado River Water Conservation District, and The Nature Conservancy as part of conservation efforts in association with the Muddy Creek Reservoir project are underway. Other projects to increase the available habitat and knowledge about these species may proceed concurrent with project construction and with funding from the Colorado River Water Conservation District.

Ms. Carol Dawson of the Denver Botanic Gardens has begun germination and propagation studies of both species. The Center for Plant Conservation has seeds of both species in storage which can serve as a source of plant material for germplasm, research, reintroduction, and conservation of these endangered plants in the wild. The pollination biology of Penstemon penlandii is currently being studied by the Bee Biology and Systematics Lab, an Agricultural Research Service facility located at Utah State University.

The life history studies conducted on Astragalus osterhoutii by Karron have been mentioned above. These life history studies indicate that Astragalus osterhoutii has the rare plant attributes of low pollinator visitation and low genetic polymorphism. Penstemon penlandii also requires animal pollinators for successful sexual reproduction. These inherent limiting factors point to the need for habitat protection for both plant species and their pollinators to maintain as large a natural population as possible. Therefore, the recovery actions will stress these aspects.

II. RECOVERY

A. Objective and Criteria

The objective of this recovery plan is protection and conservation of the Astragalus osterhoutii and Penstemon penlandii populations and habitat. Their removal from the list of endangered and threatened species is not considered feasible in the foreseeable future given the species very small natural populations, limited habitat, and the persistent nature of potential threats. Maintaining these species as endangered on the list of endangered and threatened species will ensure that these species and their habitat will receive the recognition and protection necessary to ensure their long-term survival. The following criteria should ensure the continued existence of the species and the maintenance of its habitat:

1. Land management designations are established and habitat management programs are developed and implemented for all known populations of Astragalus osterhoutii and Penstemon penlandii.
2. Both species are protected from detrimental environmental impacts through fulfillment of informal and formal consultation responsibilities under Section 7 and protection regulations under Section 9 of the Endangered Species Act.
3. Factors required to establish and maintain minimum viable populations of each species are identified and minimum viable populations are documented as being maintained.

The above objectives and criteria are subject to change as more information becomes available. Because the potential for recovery of these species in the foreseeable future is uncertain, no recovery date can be established.

All recovery tasks listed below refer to both species.

B. Narrative Outline for Recovery Actions Addressing Threats

1. Inventory any remaining potential habitat

Identifying and surveying potential habitat is important for both species, but especially so for Penstemon penlandii due to its very limited known distribution. The best way to ensure this species long-term viability would be to discover more populations and ensure their protection and management.

Most populations of Penstemon penlandii occur on private lands. The discovery of additional populations of this species on public lands would decrease the species vulnerability and help ensure its long-term viability. Surveys for this species on public lands are a high priority need.

2. Protect existing habitat

Because of the limited amount of habitat, it is important that known habitats be impacted as little as possible. Various strategies are needed for the different threats and landownerships.

2.1 Rank habitat

In order to develop and implement ecologically sound and cost effective management designations and programs, habitat of the two species should be ranked according to criteria such as: number of plants or percent of population on the site, ownership, type of management needed to improve or maintain population or habitat at desired levels, costs of management designation or practice, and other factors identified as critical by ecology/population biology studies.

2.2 Protect habitat on Federal land

The presence of these plants on BLM land offers the opportunity for various management strategies through interagency cooperation.

2.21 Develop Coordinated Resource Management Plan. The Service, the Colorado Natural Areas Program, The Nature Conservancy, and other interested parties should work with the BLM through their integrated resource management planning process to develop a conservation plan for these plants and their habitats.

2.22 Establish Areas of Critical Environmental Concern. The BLM's Areas of Critical Environmental Concern designation is designed to provide priority management for special environmental values on selected areas. This designation should be considered by the BLM and the Service to protect populations on BLM land. This is a priority 1 task because habitat protection is essential to the continued existence of the species. This will require an amendment to the Kremmling Resource Area Resource Management Plan.

2.23 Assign No Surface Occupancy Stipulations. No Surface Occupancy Stipulations (NSO) for oil and gas drilling and associated activities will eliminate surface disturbance to the habitat. The BLM's Colorado Oil and Gas Leasing Draft Environmental Impact Statement, which includes the Kremmling Resource Area where these plants occur, has identified where NSO's will be established. The Resource

Management Plan has designated that NSO's will be placed on all new leases and on any lease renewals for areas where these species occur.

Because oil and gas leases are issued for a 10-year period, NSO's cannot be added to existing leases. The BLM reviews existing leases when an onsite inspection takes place and will consult with the Service when any activity may affect the two species. When the existing leases expire and are subject to renewal, the NSO's can be added at that time. Any activity conducted on NSO's that may affect the plants will require Section 7 consultation with the Service.

2.24 Review mining claims. Mining claims exist on the plants' habitat. Because annual maintenance work is required to keep them current, surface disturbance is a possibility even without actual mining development. The BLM will review and coordinate mining activities on existing and future claims to ensure the protection of these two plant species. The BLM should evaluate the status of mining claims and, if they are not current, the area could be considered for mineral withdrawal. Alternatively, the claim could be purchased from the owners and then retired.

2.25 Assign off-road vehicle designations. Because of the fragile nature of these species habitat, off-road vehicle use can severely damage it. Habitat areas should be designated off limits to off-road vehicles as part of the conservation plan developed through the integrated resource management planning process. This is a priority 1 task because habitat protection is essential to the continued existence of the species.

2.3 Protect habitat on private land

Significant colonies of both species exist on private land. Habitat protection can be achieved through a variety of methods including fee simple purchase of key areas, conservation easements, and voluntary protection agreements. Possible partners include private conservation groups such as The Nature Conservancy or State or Federal government agencies.

The majority of known populations of Penstemon penlandii occur on private lands. Measures to protect this species on private lands need to be vigorously pursued. Acquisition of certain private properties is being actively pursued primarily by The Nature Conservancy and the BLM. Further land acquisition needs of this species, and possibly of Astragalus osterhoutii, will be evaluated in the future.

2.4 Establish State Natural Resource Areas

Habitats on either public or private lands should be evaluated for designation as State Natural Areas through the Colorado Natural Areas Program.

3. Protect pollinators

Successful reproduction and maintenance of genetic diversity requires sufficient numbers and types of pollinators.

3.1 Protect pollinator habitat

Research has indicated that some of the pollinators live in rodent holes, and that pollinator numbers are down where rodent holes are trampled as a result of livestock grazing or other surface disturbance. Also, many pollinators visit more than one species of plant. Habitat management programs developed for the two plant species should incorporate practices compatible with pollinator life history requirements.

3.2 Protect pollinators

Through consultation under Section 7 of the Endangered Species Act, participation in the integrated resource management planning process, and communication with county officials and private landowners, ensure that habitat management practices such as spraying for grasshoppers or herbicide treatment of problem plants are not detrimental to pollinators of the two plant species.

4. Conduct life history/ecology studies

In order to understand how to establish and maintain minimum viable populations of each species, additional population biology and ecology studies are necessary.

4.1 Conduct soil analysis

The species usually occurs on badlands, but these outcrops are of several different geologic strata. Soil analyses of these various strata might reveal any common soil requirements and/or tolerances.

4.2 Conduct plant community analysis and characterization

Studies should be conducted to characterize the composition, cover, or other relevant community attributes of associated vegetation. Then relative densities of the two plant species can be related to these plant community attributes. From this information, plant community management objectives and methods can be developed.

4.3 Conduct population biology studies

Studies should be conducted on the reproductive biology, demographics, and other population biology parameters of the two plant species in order to determine limiting factors and develop minimum viable population models. These models will guide habitat and pollinator management and monitoring activities.

4.4 Monitor populations

Plant populations should be frequently monitored using appropriate methods until results of the plant community analyses and population biology studies are available. These results should then be used to develop monitoring objectives and methods.

4.5 Develop propagation and transplanting protocols

Studies should be conducted to develop protocols for propagation and transplanting of each species. These protocols would be useful for mitigation planning and maintenance of genetic stock in botanic gardens, plant conservation centers, and similar facilities. The Center for Plant Conservation through the Denver Botanic Gardens serves as a source of genetic reserve for the two taxa and as a source for reintroduction material.

5. Future actions

The necessity of these actions will be determined by the results of the studies described above.

5.1 Management of surface disturbance

If populations are found to be declining and/or habitat is being degraded from surface disturbance despite the implementation of the above actions, signing, fencing, herding, or some form of patrolling may be necessary to protect those populations.

5.2 Management of plant communities

The results of the plant community analysis should be used to develop appropriate management activities that maintain or enhance the habitat and biological setting of the two plant species. This may include activities such as reducing shrub densities.

5.3 Restoration of disturbed habitats

Results of studies conducted under Task 4 should be used to develop habitat restoration and enhancement practices, which can be implemented if damage to existing habitats and populations occurs.

C. Literature Cited/References

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III. IMPLEMENTATION SCHEDULE

The Implementation Schedule that follows outlines actions and estimated costs for the recovery program. It is a guide for meeting the objective discussed in Part II of this plan. This schedule indicates task priorities, task numbers, task descriptions, duration of tasks, the responsible agencies, and lastly, estimated costs. These actions, when accomplished, should bring about the recovery of the species and protect its habitat. It should be noted that the estimated monetary needs for all parties involved in recovery are identified and, therefore, Part III reflects the total estimated financial requirements for the recovery of this species.

Priorities in column one of the following implementation schedule are assigned as follows:

- Priority 1: An action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
- Priority 2: An action that must be taken to prevent a significant decline in species population/habitat quality or some other significant negative impact short of extinction.
- Priority 3: All other actions necessary to meet the recovery objective.

Key to Acronyms used in Implementation Schedule

ACEC	Areas of Critical Environmental Concern
CNAP	Colorado Natural Areas Program
CPC	Center for Plant Conservation
CRMP	Coordinated Resource Management Plan
FWE	Fish and Wildlife Enhancement, Fish and Wildlife Service
FWS	Fish and Wildlife Service
NSO	No Surface Occupancy
ORV	Off-road vehicle
TNC	The Nature Conservancy
BLM	Bureau of Land Management

PART III - IMPLEMENTATION SCHEDULE
OSTERHOUT MILKVETCH/PENLAND BEARDTONGUE

PRIORITY NUMBER	TASK NUMBER	TASK DESCRIPTION	TASK DURATION (years)	RESPONSIBLE AGENCY		COST ESTIMATES (x \$1,000)			COMMENTS
				FWS REGION	OTHER PROGRAM	FY-1	FY-2	FY-3	
1	1	Inventory habitat	0.25	6	FWE			1	Depending on source of funding
					CNAP	--	--	5	
1	222	Establish ACEC	0.5	6	FWE			--	
					BLM	7	0	0	
1	225	Assign ORV designations	1.0	6	FWE			1	
					BLM	2	--	--	
1	51	Manage surface disturbance	**	6	FWE			--	**To be determined
					BLM	--	--	--	
2	221	Develop CRMP	2.0	6	FWE			1	Joint planning effort with FWS, BLM, and others
					BLM	2	2	--	
2	223	Assign NSO	ongoing					--	
					BLM	0.5	0.5	0.5	
2	224	Review mining claims	ongoing					--	
					BLM	1	1	1	
2	23	Protect private land	2.0	6	FWE			--	Real estate costs for conservation are not determinable
					BLM	--	--	--	
					TNC	--	--	--	
					CNAP	--	--	--	
2	24	Establish State natural areas	2					2	
					CNAP	2	2	--	
2	31	Protect pollinator habitat	1	6	FWE			1	Real estate costs for conservation are not determinable
					BLM	2	--	--	
					TNC	--	--	--	
2	32	Protect pollinators	ongoing	6	FWE			1	
					BLM	1	1	1	
2	44	Monitor populations	ongoing	6	FWE			1	Joint effort with FWS, BLM, CNAP
					BLM	2	1	1	
					CNAP	2	1	1	
2	52	Manage plant communities	**	6	FWE			--	**To be determined
					BLM	--	--	--	

PRIORITY NUMBER	TASK NUMBER	TASK DESCRIPTION	TASK DURATION (years)	RESPONSIBLE AGENCY		COST ESTIMATES (x \$1,000)			COMMENTS
				FWS REGION	OTHER PROGRAM	FY-1	FY-2	FY-3	
3	21	Rank habitat	0.25	6	FWE	0.5	--	--	Joint effort with FWS, BLM, TNC, CNAP
					BLM	0.5	--	--	
					TNC	1	--	--	
					CNAP	1	--	--	
3	41	Conduct soil analysis	1.0	6	FWE	4	--	--	Includes \$2000 for laboratory analysis
3	42	Conduct plant community analysis	2.0	6	FWE	10	10	--	Joint effort with a research university for a Master's level research project
3	43	Conduct population biology studies	3.0	6	FWE	10	10	10	Joint effort with a research university for a Ph.D. level research project.
3	45	Research propagation and transplanting protocols	3	6	FWE	12	5	5	
					CPC	--	--	--	
3	53	Restore habitat	ongoing	6	FWE	--	--	--	Joint effort with researchers and habitat managers.
					BLM	--	--	--	
					CNAP	--	--	--	

APPENDIX

This recovery plan was made available to the public for comment as required by the 1988 amendments to the Endangered Species Act of 1973. The public comment period was announced in the Federal Register (56 FR 66450) on December 23, 1991, and closed on February 21, 1992. Over 115 press releases were sent to the print media located in Colorado.

During the public comment period, seven letters were received. The comments provided in these letters have been considered, and incorporated as appropriate. Comments addressing recovery tasks that are the responsibility of an agency other than the U.S. Fish and Wildlife Service have been sent to that agency as required by the 1988 amendments to the Endangered Species Act.