

CLAY-LOVING WILD-BUCKWHEAT
Eriogonum pelinophilum Reveal

RECOVERY PLAN

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This is the completed Clay-loving Wild-buckwheat Recovery Plan. It has been approved by the U.S. Fish and Wildlife Service. It does not necessarily represent official positions or approvals of cooperating agencies and does not necessarily represent the views of all individuals who played a role in preparing this plan. This plan is subject to modification as dictated by new findings, changes in species status, and completion of tasks described in the plan. Goals and objectives will be attained and funds expended contingent upon appropriations, priorities, and other constraints.

Acknowledgments should be as follows:

The Clay-loving Wild-buckwheat Recovery Plan, dated November 10, 1988, prepared by the U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement Office, Grand Junction, Colorado.

Literature Citations should read as follows:

U.S. Fish and Wildlife Service. 1988. Clay-loving Wild-buckwheat Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado. 15 pp.

Additional copies may be purchased from:

Fish and Wildlife Reference Service
6011 Executive Boulevard
Rockville, Maryland 20852
301/770-3000

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1-800-582-3421

The fee for the plan varies depending on the number of pages of the plan.



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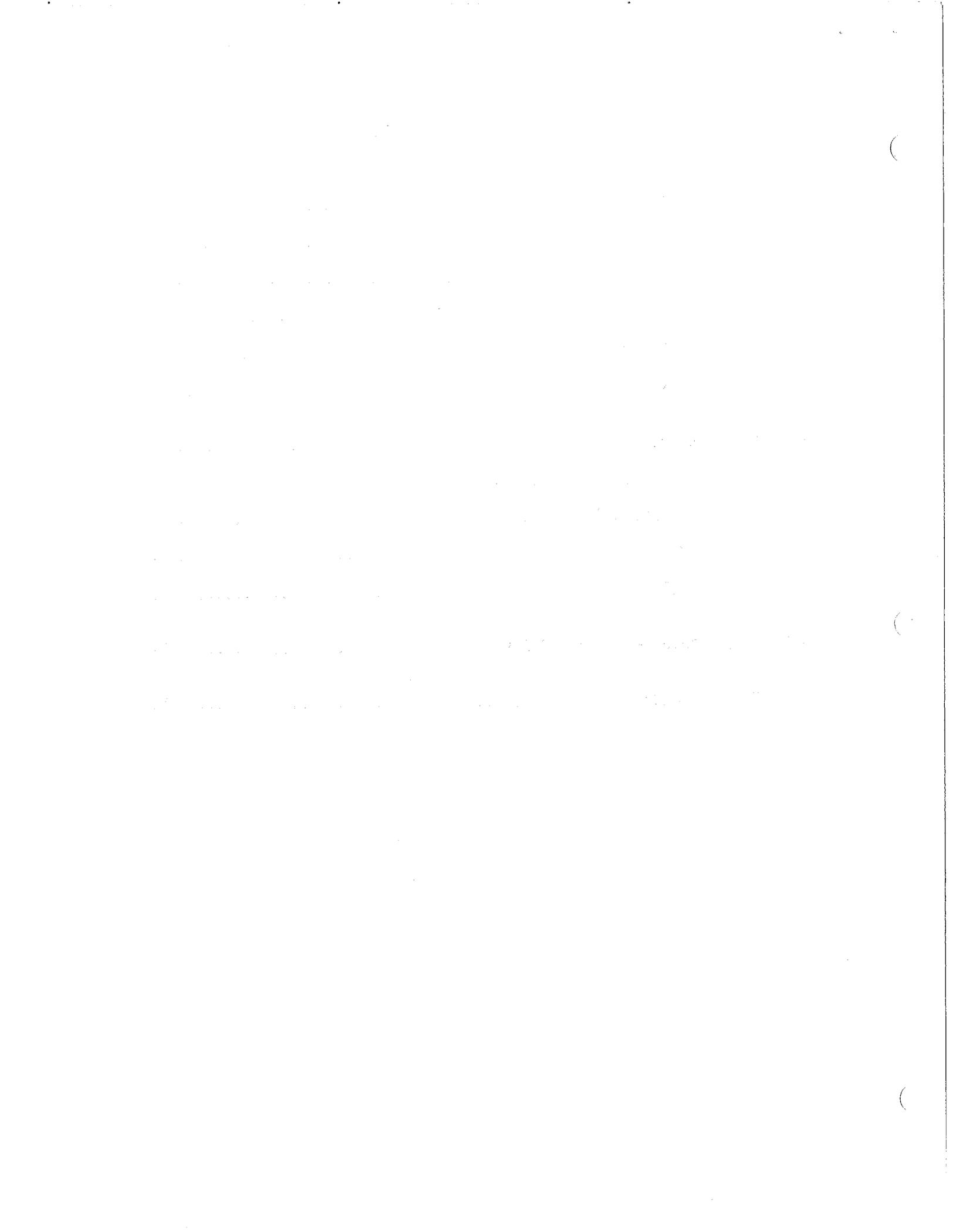
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PART I

INTRODUCTION

History

Based on a 1958 collection by Harold Gentry, Reveal (1971) determined that a new species of Eriogonum occurred in western Colorado. Repeated searches were required before he rediscovered it in 1972. Reveal (1973) then described Eriogonum pelinophilum in 1973. At the time of listing as an endangered species on July 13, 1984 (49 FR 28565), E. pelinophilum was only known from the population at the type locality, which was estimated to be 120 acres in size and to contain 10,000 individuals. Surveys that summer by Dr. Elizabeth Neese for the Colorado Natural Heritage Inventory, and in 1985 by Betsy Neely for The Nature Conservancy, and Steve O'Kane, Jr., of the Colorado Natural Areas Program, disclosed additional occurrences on the adobe hills between the communities of Delta and Montrose, Colorado (see Figure 1). Six meta-populations consisting of a total of 20 sites are now known. Four of the sites are on land administered by the Bureau of Land Management (Bureau), and the remainder are on private land. The total population estimated for the species is between 45,000-50,000 individuals existing on a total land area of 450 to 500 acres.

Description

The clay-loving wild-buckwheat is a low, rounded subshrub 5-10 cm (4 inches) high and 8-15 cm (6 inches) across, with woody stems at the base and herbaceous stems above. The short linear leaves (5-12 mm long and 1-2 mm wide) are dark green above and densely woolly below. Clusters of small white to cream flowers are found at the ends of the herbaceous branches. E. pelinophilum differs from the similar E. clavellatum in that the former is an herbaceous perennial 5-10 cm high and has floccose to glabrous stems and involucre 3.0-3.5 mm long, while the latter is a subshrub 10 to 20 cm high and has glabrous stems and involucre 4.0-4.5 mm long (Weber 1987).

Past and Present Distribution

The area inhabited by the clay-loving wild-buckwheat has a hopscotch pattern of agriculture (mainly irrigated hay meadows), residential development, and the remaining adobes. Consequently, the habitat of E. pelinophilum has been fragmented, and several of the occurrences on private land are less than 10 acres in size with only 300 plants or less. These remnant sites may no longer be viable for recovery, especially if they are surrounded by agricultural fields and residential developments. Although only four sites are on Bureau land, these larger rangeland sites contain nearly half of the total population. One large Bureau site located 5 km (3 miles) southeast of Montrose, the Wacker Ranch/South Canal site, contains a third of the total numbers. However, while several new sites have been discovered since the final listing, approximately half of the total numbers are contained at only the two largest sites, the type locality and Wacker Ranch/South Canal.

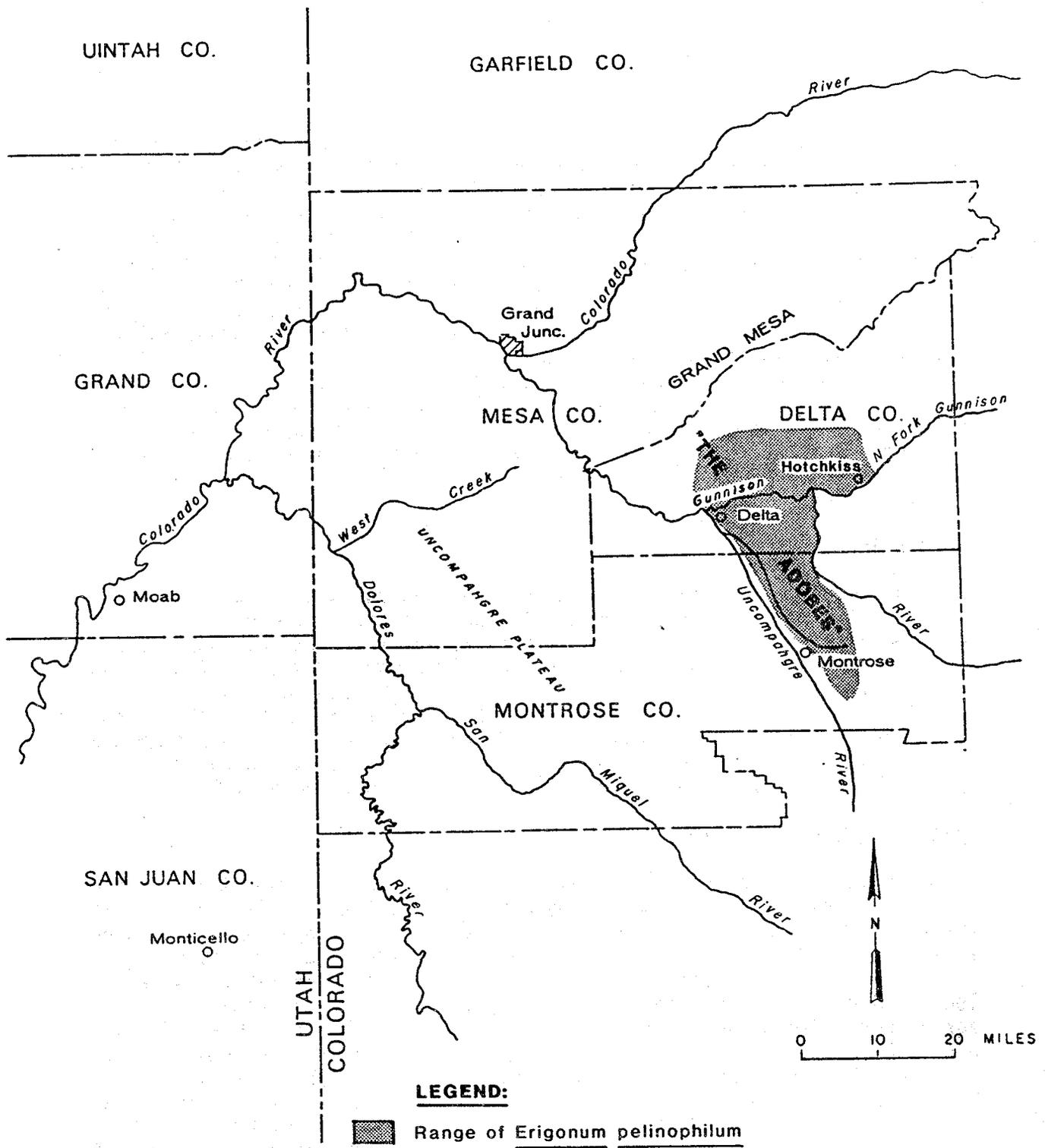


Figure 1. GEOGRAPHY OF AREA CONTAINING CLAY-LOVING WILD-BUCKWHEAT

Habitat

The type locality is on the gray adobe badlands of Mancos Shale between the communities of Delta and Hotchkiss. Here, E. pelinophilum grows on a whitish strata in low, rolling hills at 5,270 feet in a salt desert shrub community with Atriplex confertifolia (shadscale) and Atriplex corrugata (mat saltbush).

With the discovery of several additional sites of E. pelinophilum, its edaphic habitat and vegetative community type are better understood. The clay-loving wild-buckwheat grows in a mixed desert shrub community with shadscale, black sage (Artemisia nova), bud sage (Artemisia spinescens), and woody aster (Xylorhiza venusta). Penstemon retrorsus, a Federal candidate species, occurs at several of the sites. Another Federal candidate species, Lomatium concinnum, also occurs on the adobes. Between Delta and Montrose, the Mancos Shale forms a ring on the east side of the valley along the base of the rim of the Black Canyon of the Gunnison. Alluvial soils, where most of the agriculture occurs, are located farther out in the valley along the floodplains of Loutsenhizer Arroyo and the Uncompahgre River. The clay-loving wild-buckwheat's habitat generally occurs in a band along the toe slopes of Mancos Shale hills between steep barren slopes of residual soil above and broad flatlands with mat saltbush below. This more or less concentric banding of soil microhabitats is apparently the result of a similar degree of erosion and distance of transport of material from the receding residual shale hills (Potter et al. 1985a). There is a correlation between the often abrupt ecotone across a few meters from shadscale, a common associate of E. pelinophilum, to mat saltbush and dramatically higher soil sulfate level from less than 100 ppm upwards to 1,650 ppm (Potter et al. 1985b). Sodium level also increases across this ecotone. While the adobes form an extensive band between Delta and Montrose, the clay-loving wild-buckwheat evidently only occurs within a specific microhabitat in the adobes.

Threats

Occurring in a broad river valley setting, E. pelinophilum is impacted by agriculture and its secondary impacts from increased use of adjacent nonagricultural land for residential development, road networks, and off-road and all-terrain vehicles. Much of the actual agriculture of irrigated hay meadows and pastures occurs on the alluvial soils, but farming also encroaches onto the Mancos Shale and clay-loving wild-buckwheat habitat on the east side of the valley. However, the associated secondary impacts may have an equal or larger impact. Irrigation canals tend to follow the contour of the toe slopes, which is the microhabitat of E. pelinophilum. Farm houses and livestock pastures tend to be on low shale ridges of potential habitat between the irrigated fields or mat saltbush flatlands. Rural residential housing tracts are expanding onto sites of E. pelinophilum, particularly on the east side of Montrose. The close proximity of agricultural and residential development to the clay-loving wild-buckwheat and its microhabitat leads to subsequent impacts from road building and off-road and all-terrain vehicle use.

The sites on public land are not subject to farming or housing development, but, if they are adjacent to private land, they are still vulnerable to secondary impacts of right-of-way development and destruction from increased off-road and all-terrain vehicle use. Some of the Bureau sites are open to livestock grazing, but the effect of this use has not been studied. Livestock use appears to have little effect on E. pelinophilum if it is single-season use and at proper stocking rates. Season-long grazing, year-long grazing, high-density stocking, and use of sheep bed grounds are likely to impact the species. In general, grazing use on public land currently does not appear to be affecting the populations, but long-term studies are as yet inadequate to provide a definitive answer to this question.

Overall, the fragmentation of habitat into small units of possibly nonviable population size may be the most significant, although subtle, impact.

PART II

RECOVERY

Objective

Due to agricultural and residential development within its range, E. pelinophilum has a fragmented distribution pattern, and several of its sites are only 5 acres or less in size. Because of the mixture of public and private ownership, different strategies are needed for protection at individual sites. Minimum viable population modeling may be needed to determine whether the reduced sites containing E. pelinophilum may be too small to be viable and contribute significantly to recovery (Menges 1986).

The objective of this recovery plan is to secure a sufficient number of healthy populations (sites) in their natural habitat to warrant delisting. The initial goal will be to secure ten populations (sites) for downlisting and twenty populations for delisting. These criteria are to be evaluated for adequacy upon attainment prior to downlisting or delisting.

Stepdown Outline

1. Initiate scientific research on known and potential habitat and the biology of the species.
 11. Inventory all potential habitat.
 12. Monitor populations and habitat.
 13. Conduct minimum viable population modeling.
 14. Study feasibility of population augmentation, if desirable.
2. Remove threats to the clay-loving wild-buckwheat and secure populations and their ecosystems.
 21. Protect populations on land administered by the Bureau of Land Management.
 211. Develop a Bureau Habitat Management Plan.
 212. Establish Areas of Critical Environmental Concern and/or State Natural Areas on viable sites.
 213. Eliminate off-road and all-terrain vehicle use within populations.
 2131. Designate areas closed to off-road and all-terrain vehicles.
 2132. Conduct intensive management in problem areas.

214. Consider mineral withdrawals and no-surface-occupancy stipulations for leases.
215. Investigate the advantages of establishing critical habitat on Federal sites.
22. Protect populations on private land.
 221. Use Habitat Management Plan generated under 211 above as format for protecting private land.
 222. Establish State Registered and/or Designated Natural Areas through contact with private landowners by Colorado Natural Areas Program.
 223. Contact private landowners in an attempt to limit or eliminate off-road vehicle activity on and near sites.
23. Determine need for habitat acquisition exchange and conservation easements.
 231. Work with the Bureau and private landowners on a land exchange program to place viable populations under Federal jurisdiction.
 232. Work with private land conservation organizations and the Service on habitat acquisition and/or conservation easements for viable populations.
3. Develop public awareness and appreciation for the "adobes" habitat on which the clay-loving wild-buckwheat grows.

Narrative

1. Initiate scientific research on known and potential habitat and the biology of the species.

As a basis for setting overall recovery goals, the status of all populations should be documented and monitored.

11. Inventory all potential habitat.

A systematic inventory of the entire adobe ecosystem between Delta, Paonia, Crawford, and Montrose should be conducted.

12. Monitor populations and habitat.

Selected populations, especially those threatened by significant actual and/or potential impacts, need to be monitored for trend. Then, the degree of management needed for recovery can be correlated to the degree of trend (negative or positive).

13. Conduct minimum viable population modeling.

The habitat of E. pelinophilum has been fragmented, resulting in several remnant populations. These small populations may already be susceptible to extinction through environmental stochasticity (random events) even with protection. To determine which populations are still large enough to remain viable and contribute to recovery, minimum viable population modeling will be necessary.

14. Study feasibility of population augmentation, if desirable.

For those remaining populations found to be below the minimum viable population size, augmentation may be desirable for recovery. This determination should be based on the importance of a population's location within the species' range (in contributing to a more continuous distribution and gene flow), its current density, the amount of available surrounding acreage, and the land status.

2. Remove threats to the clay-loving wild-buckwheat and secure populations and their ecosystems.

For species recovery, populations need to be secured from threats which are primarily surface-disturbing activities. This involves protection from both continuous disturbances (e.g., off-road vehicles and all-terrain vehicles) as well as one-time disturbances (e.g., pipelines).

21. Protect populations on land administered by the Bureau of Land Management.

Federal regulations such as Section 7 of the Endangered Species Act are applicable on land administered by the Bureau and should be enforced.

211. Develop a Bureau Habitat Management Plan.

The Bureau is currently preparing their Draft Resource Management Plan for the Uncompahgre Resource Area, which encompasses the entire range of E. pelinophilum. They are proposing Areas of Critical Environmental Concern, which include portions of the Wacker Ranch/South Canal and La Sal Road sites. A Bureau Habitat Management Plan should be written for E. pelinophilum to incorporate recovery actions and goals into the Bureau's planning process.

212. Establish Areas of Critical Environmental Concern and/or State Natural Areas on viable sites.

To ensure future population viability, priority management for E. pelinophilum through special land use designations, such as Areas of Critical Environmental Concern and State Registered and Designated Natural Areas, should be established.

213. Eliminate off-road and all-terrain vehicle use within populations.

Continuous surface-disturbing impacts such as off-road and all-terrain vehicles are the most damaging.

2131. Designate areas closed to off-road and all-terrain vehicles.

The use of off-road and all-terrain vehicles should be officially eliminated from sites containing viable populations on land administered by the Bureau through the designation of off-road vehicle closure areas. The larger Bureau sites have been closed. Enforcement is the next step.

2132. Conduct intensive management in problem areas.

Problem areas receiving intensive off-road and all-terrain vehicle use, such as sites near communities and residential developments, will need fencing and patrolling of areas closed to off-road vehicle use. If necessary, a Bureau ranger with law enforcement capabilities should be hired.

214. Consider mineral withdrawals and no-surface-occupancy stipulations for leases.

The degree of surface disturbance from mining and energy use and its impacts to the species need to be investigated by the Bureau. The Bureau should utilize mineral withdrawals and no-surface-occupancy designations on leases they issue in order to protect sites harboring E. pelinophilum. Mineral withdrawals are called for on the Research Natural Area sites in the Resource Management Plan.

215. Investigate the advantages of establishing critical habitat on Federal sites.

Determine whether any population, but especially the Fairview Research Natural Area, will benefit from critical habitat designation.

22. Protect populations on private land.

Applicable recovery strategies described above for Federal land should be considered for private land.

221. Use Habitat Management Plan generated under 211 above as format for protecting private land.

Use of the Bureau's Habitat Management Plan will provide consistency for recovery and eliminate duplication of paperwork and effort.

222. Establish State Registered and/or Designated Natural Areas through contact with private landowners by Colorado Natural Areas Program.

The State of Colorado is involved in the management of E. pelinophilum sites on both public and private lands through the registration and designation of State Natural Areas. Section 9 protection is not applicable on private land and these sites are, therefore, inherently more vulnerable.*

223. Contact private landowners in an attempt to limit or eliminate off-road vehicle activity on and near sites.

Adjacent landowners, particularly in subdivisions built on or next to the adobes, should be contacted and informed of the need to limit off-road vehicle activity.

* Postscript: The Endangered Species Act Amendments of 1988 now provide limited protection to listed plants on private land.

23. Determine need for habitat acquisition exchange and conservation easements.

Realty actions may be necessary to bring significant sites into Federal ownership, management, and protection and to ensure implementation of the mandates of Section 7 of the Endangered Species Act.

231. Work with the Bureau and private landowners on a land exchange program to place viable populations under Federal jurisdiction.

Because of the intermingled Federal and private ownership between Delta and Montrose, land exchanges may be strategic in the recovery of E. pelinophilum.

232. Work with private land conservation organizations and the Service on habitat acquisition and/or conservation easements for viable populations.

Private conservation organizations provide another avenue for the protection of clay-loving wild-buckwheat sites by obtaining conservation easements, offering tax incentives, implementing land acquisition, and other conservation strategies. In lieu of land exchanges, the Service and private conservation organizations can work together to establish conservation easements and/or acquisition of habitat to secure populations on private land.

3. Develop public awareness and appreciation for the "adobes" habitat on which the clay-loving wild-buckwheat grows.

The clay-loving wild-buckwheat is part of the adobe ecosystem, which also includes candidate plant species. Black-footed ferret sightings have been reported from the adobes near Hotchkiss. Recovery of the clay-loving wild-buckwheat must be based on management of the entire adobe ecosystem. Educational programs should stress the fragility and uniqueness of this desert ecosystem rather than emphasizing only one element of it, such as the clay-loving wild-buckwheat.

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PART III
IMPLEMENTATION SCHEDULE

Definition of Priorities

- Priority 1: All actions that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
- Priority 2: All actions 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 actions necessary to provide for full recovery (or reclassification) of the species.

Abbreviations Used in Implementation Schedule

FWS	U.S. Fish and Wildlife Service
SE	Division of Endangered Species and Environmental Contaminants, U.S. Fish and Wildlife Service
LE	Law Enforcement, U.S. Fish and Wildlife Service
RE	Division of Realty, U.S. Fish and Wildlife Service
BLM	Bureau of Land Management
CNAP	Colorado Natural Areas Program
TNC	The Nature Conservancy
ACEC	Areas of Critical Environmental Concern
HMP	Habitat Management Plan

General Categories for Implementation Schedule

Information Gathering - I or R (research)

1. Population status
2. Habitat status
3. Habitat requirements
4. Management techniques
5. Taxonomic studies
6. Demographic studies
7. Propagation
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contaminant
13. Reintroduction
14. Other information

Management - M

1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation control
6. Disease control
7. Other management

Acquisition - A

1. Lease
2. Easement
3. Management agreement
4. Exchange
5. Withdrawal
6. Fee title
7. Other

Other - O

1. Information and education
2. Law enforcement
3. Regulations
4. Administration

PART III - IMPLEMENTATION SCHEDULE
Clay-loving Wild-buckwheat

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY			FISCAL YEAR COSTS (EST.)			COMMENTS/NOTES
					REGION	PROGRAM	OTHER	FY-01	FY-02	FY-03	
I14	Inventory potential habitat	11	1	3 years	6	SE	BLM	2,000	2,000	2,000	in house
I6	Monitor populations	12	2	ongoing			CNAP	2,000	2,000	2,000	in house
R1	Conduct minimum viable population modeling	13	1	4 years	6	SE		5,000	5,000	5,000	
M2	Population Augmentation	14	2								
M7	Develop HMP	211	2	1 year			BLM	1,000			in house
M3	Establish ACEC's & State Natural Areas	212	1	2 years			BLM CNAP	1,000	1,000		in house
M5	Eliminate off-road & all terrain vehicle use	213	1	ongoing	6	LE	BLM	2,000	2,000	2,000	in house
A5	Mineral withdrawals	214	3	ongoing			BLM	1,000	1,000	1,000	in house
I2	Critical habitat	215	3	1 year	6	SE		1,000			
M7	Use HMP for private land	221	2	2 years	6	SE		1,000	1,000		
A3	Establish State Natural Areas	222	2	2 years			CNAP	2,000	2,000		in house
O1	Contact private landowners	223	3	ongoing			CNAP	1,000	1,000	1,000	
A4	Land exchange	231	2	ongoing	6	RE	BLM	2,000	2,000	2,000	in house
A7	Land acquisition & easement	232	2	ongoing	6	RE	TNC	2,000	2,000	2,000	in house
O1	Public education	3	2	2 years	6	SE		5,000	5,000		Develop AV program for schools

APPENDIX

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