

Gypsum Wild Buckwheat
(*Eriogonum gypsophilum*)

5-Year Review:
Summary and Evaluation



U.S. Fish and Wildlife Service
New Mexico Ecological Services Field Office
Albuquerque, New Mexico
August 2022

5-YEAR REVIEW

Species reviewed: gypsum wild buckwheat (*Eriogonum gypsophilum*)

TABLE OF CONTENTS

1.0	GENERAL INFORMATION	2
1.1	Listing History.....	2
1.2	Methodology used to complete the review:	3
1.3	FR Notice citation announcing the species is under active review:.....	4
2.0	REVIEW ANALYSIS	4
2.1	Distinct Population Segment (DPS) policy (1996):.....	4
2.2	Updated Information and Current Species Status	5
2.2.1	Biology and Habitat:.....	5
2.2.2	Threats Analysis (threats, conservation measures, and regulatory mechanisms):....	7
2.3	Synthesis:	10
3.0	RESULTS	12
3.1	Recommended Classification:.....	12
3.2	New Recovery Priority Number:.....	12
3.3	Listing and Reclassification Priority Number:	12
4.0	RECOMMENDATIONS FOR FUTURE ACTIONS	13
5.0	REFERENCES	14

5-YEAR REVIEW

Gypsum Wild Buckwheat (*Eriogonum gypsophilum*)

1.0 GENERAL INFORMATION

1.1 Listing History

Species: gypsum wild-buckwheat (*Eriogonum gypsophilum*)

Date listed: January 19, 1981

FR citation(s): 46 FR 5730–5733

Classification: threatened species, with critical habitat

Critical habitat/4(d) rule/Experimental population designation/Similarity of appearance listing:

The critical habitat designated at the time of listing included the Seven Rivers Hills population in Eddy County, New Mexico (46 FR 5733). The written critical habitat description did not match the intended designation indicated on the map. On December 21, 1984, we republished the written critical habitat description (49 FR 49639); however, it still failed to correspond to the mapped area. The correct written description should read: T20S **R25E** Section 24: N½ NE¼, N½ S½ NE¼, NE¼ NW¼, N½ SE¼ NW¼; and T20S **R26E** Section 19: N½, N½ N½ SE¼; gypsum soils (bold text indicates changes from 46 FR 5733, see Figure 1.1).

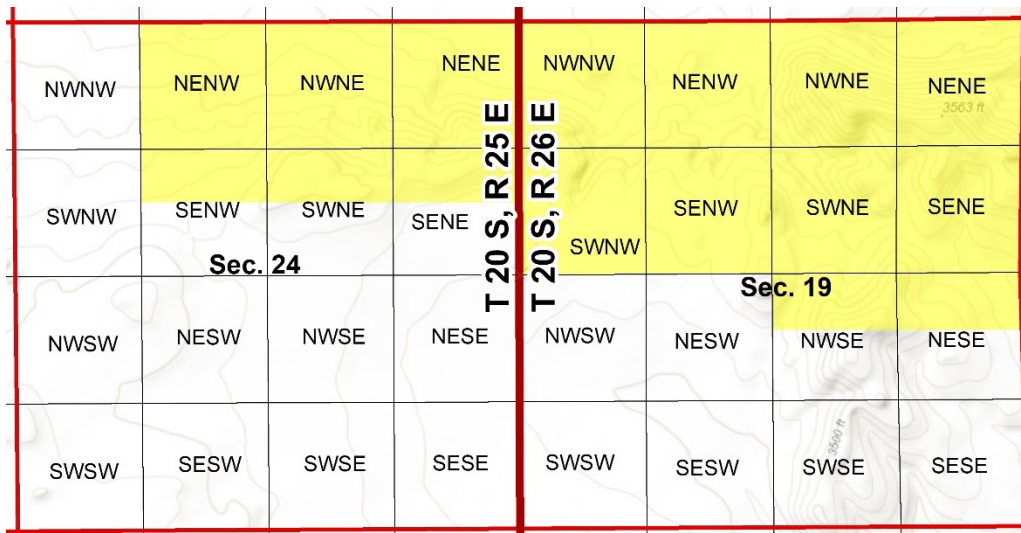


Figure 1.1. Gypsum wild buckwheat critical habitat boundaries with Public Land Survey System (PLSS) Township, Range, Section, and Quarter Quarter delineations.

Proposed listing rules:

82 FR 1657–1665, Endangered and Threatened Wildlife and Plants; Removing *Eriogonum gypsophilum* From the Federal List of Endangered and Threatened Plants, January 6, 2017

1.2 Methodology used to complete the review:

The U.S. Fish and Wildlife Service (Service) most recently evaluated the biology and status of gypsum wild buckwheat as part of a status review published on January 6, 2017. We examined whether new information was available and whether that new information would alter or affect analyses and conclusions made in the previous status review. Data for this current review were solicited from interested parties through a Federal Register notice announcing the review on May 5, 2021 (86 FR 23976–23978). We also contacted Tribes and Pueblos (Mescalero Apache Tribe, Wichita and Affiliated Tribes, Apache Tribe of Oklahoma, Comanche Nation, Fort Sill Apache Tribe of Oklahoma, Kiowa Tribe, Tonkawa Tribe of Oklahoma, Lipan Apache Tribe, and Ysleta del Sur Pueblo), federal agencies (Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, National Park Service, and U.S. Army Corps of Engineers), state agencies (New Mexico Energy, Minerals, and Natural Resources Department, New Mexico Department of Game and Fish, New Mexico State Land Office, Texas Parks and Wildlife, Texas General Land Office, Texas Comptroller of Public Accounts), universities (The University of Texas at El Paso, University of New Mexico), species experts, NGOs (CEHMM, Independent Petroleum Association of New Mexico, National Fish and Wildlife Federation, Natural Heritage New Mexico, New Mexico Association of Conservation Districts, New Mexico Oil and Gas Association, NM Cattle Growers' Association, Native Plant Society of New Mexico, New Mexico Rare Plants Discussion Group, High Point Soil and Water Conservation District, The Nature Conservancy), and private landowners in suitable habitat to request any data or information we should consider in our review. Additionally, we conducted a literature search and a review of information in our files.

In accordance with section 4(c)(2) of Endangered Species Act of 1973, as amended (the Act), the purpose of a 5-year review is to assess each threatened species and endangered species to determine whether its status has changed and it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The U.S. Fish and Wildlife Service (Service) evaluated the biology and status of the gypsum wild buckwheat in a Species Status Assessment (SSA) to inform this 5-year review.

A team of Service biologists from the New Mexico Ecological Services Field Office (NMESFO) and the Headquarters Ecological Services Program (HQ-ESP) developed the SSA report (USFWS 2022, entire). The SSA report represents an evaluation of the best available scientific information, including an assessment of the species' needs, factors influencing its viability, its current condition, and its future viability. We developed four future scenarios of environmental and management conditions to discuss the viability of the species in the future, which were then evaluated by a Service Recommendation Team. Independent peer reviewers and partner representatives reviewed the SSA report before we

used it as the scientific basis to support our 5-year review decision-making process. The final review and recommendations were prepared by a team of NMESFO biologists.

1.3 FR Notice citation announcing the species is under active review:

86 FR 23976–23978, Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews of 23 Species in the Southwest, May 5, 2021

2.0 REVIEW ANALYSIS

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of “endangered species” or “threatened species.” The Act defines an “endangered species” as a species that is “in danger of extinction throughout all or a significant portion of its range” and a “threatened species” as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” due to the five threat factors described in section 4(a)(1) of the ESA:

- Factor A. Present or threatened damage to, modification of, or destruction of, a species’ habitat
- Factor B. Overuse of the species for commercial, recreational, scientific, or educational purposes
- Factor C. Disease or predation
- Factor D. Inadequacy of existing protection
- Factor E. Other natural or manmade factors that affect the species’ continued existence

The identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In assessing whether a species meets either definition, we must evaluate all identified threats by considering the expected response of the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Service recommends whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

2.1 Distinct Population Segment (DPS) policy (1996):

Not applicable; only a vertebrate can be listed as a DPS under the Act (61 FR 4722).

2.2 Updated Information and Current Species Status

2.2.1 Biology and Habitat:

Gypsum wild buckwheat is a woody-stemmed perennial plant in the knotweed family (Polygonaceae). It is a rare, endemic, edaphic specialist (gypsophile) that is known only from four populations in Eddy County, New Mexico. Gypsum wild buckwheat depends on broad, gently to moderately sloping, slightly erosional escarpments or hills of hypergypsic soils that are slightly alkaline, loose, and contain adequate soil moisture—possibly including hydrated gypsum (water of crystallization)—and soil nutrients for survival and recruitment (Service 2022, p. 24). Recruitment of new gypsum wild buckwheat plants is through seed production, and the species doesn't reproduce clonally, even though new shoots may arise from the ground through sprouting from subterranean stems (Service 2022, pp. 35–36). Reproduction is primarily through outcrossing, and pollination is supported by a suite of generalist insect pollinators (Service 2022, p. 33). While seed production is reliable even during times of drought, seed fecundity is low (Service 2022, pp. 34–35). Seed production and quality likely depend on available soil moisture. Seed longevity is low, and this genus doesn't form a persistent seedbank in the wild (Service 2022, p. 35). Gypsum wild buckwheat seedling establishment occurs whenever infrequent climatic episodes suitable for seed germination and seedling establishment occur during the growing season (Service 2022, p. 37). Once established, gypsum wild buckwheat longevity is estimated at 22 to 99 years (Service 2022, p. 32). Causes of mortality include direct crushing, dislocation, climatic stress (such as intensive or prolonged freezing or deficient soil moisture), vegetative competition, blading/digging, soil compaction, chronic defoliation, and hazardous materials exposure (Service 2022, pp. 39–40).

Gypsum wild buckwheat is represented by populations at Seven Rivers Hills, Black River, Ben Slaughter Draw, and Hay Hollow, which comprise the species' 60.8 kilometer (km) (37.8 miles (mi)) range (Service 2022, pp. 21–22). Three of these populations have good demographic resiliency, and three of these populations have good habitat resiliency (Service 2022, p. 103). The two populations with both good demographic and habitat resiliency are 60.8 km (37.8 mi) apart, providing gypsum wild buckwheat with a capacity to survive some, but not all, types of catastrophic events with potential to occur within its range (Service 2022, pp. 22, 103). For example, gypsum wild buckwheat has sufficient redundancy to avoid range-wide impacts from inadvertent hazardous materials releases, highly localized surface impacts, or wildfire but not prolonged drought or post-tropical cyclones. All populations currently exhibit sufficient abundance to support evolutionary processes, persist through natural environmental variation, and recovery from periodic disturbances (Service 2022, pp. 41, 45). Recent data indicates that seedling recruitment is not compensating for mortality, and most populations have a declining population growth rate and skewed size class structure (see Table 2.1) (Service 2022, pp. 47, 49–50, 95). However, these results are from only two transition-year sets—spanning 3 drought years (from 2018 to 2020)—and are likely not representative of the species at biologically meaningful

timescales. Ten or more consecutive transition year sets may be needed to draw inferences about population growth rates or variations in size class structure for species with pulsed recruitment, which may be the norm for plant species in arid environments. Population density is significantly lower in the Ben Slaughter Draw population than in the Hay Hollow, Black River, and Seven Rivers Hills populations for unknown reasons (Bureau of Land Management (BLM) 2020a, p. 63). Plants in the Black River population prematurely senesce during the growing season in response to persistent herbicide stress, and plants in the Seven Rivers Hills population prematurely senesce for unknown reasons (BLM 2020b, no page number).

Table 2.1. Summary statistics for gypsum wild buckwheat populations. All = species range, SRH = Seven Rivers Hills population, BLK = Black River population, BEN = Ben Slaughter Draw population, and HAY = Hay Hollow population, Sub-EO = Sub-Element Occurrence (a substitute measure of a subpopulation when population genetic data is not available), ha = hectares, ac = acres, km = kilometers, mi = miles, NA = not applicable.

Analysis Unit	SRH	BLK	BEN	HAY	All
Individual Abundance	47,858	25,433	65,400	6,186	144,878
Estimated Adult Genet Abundance	30,193	16,046	41,261	3,903	91,403
Average Population Growth Rate	0.99	0.99	0.98	0.97	0.98
Sub-EO Count	55	55	80	3	NA
Estimated Occupied Area (ha (ac))	9.56 (23.62)	4.83 (11.94)	21.17 (52.31)	0.81 (2.53)	36.6 (90.4)
East/West Distance (km (mi))	3.0 (1.8)	1.9 (1.2)	3.7 (2.3)	0.3 (0.2)	12.1 (7.5)
North/South Distance (km (mi))	1.0 (0.6)	2.4 (1.5)	1.8 (1.1)	0.2 (0.1)	60.8 (37.8)
Nearest Neighbor Distance (km (mi))	45.3 (28.1)	13.7 (8.5)	4.0 (2.5)	4.0 (2.5)	NA

There are no known significant occupied habitat losses within gypsum wild buckwheat populations, and we assume that gypsum wild buckwheat is naturally rare. It is possible that this species is also evolutionarily young and that population abundance may be a function of time, where new-lineage species have a much shorter history of rare long-distance dispersal events (Service 2022, p. 82). While this species is only documented from Eddy County, New Mexico, potential habitat extends north into Chaves County, New Mexico and south into Culberson County, Texas. The existence of additional, undocumented populations in New Mexico and/or Texas is possible (Service 2022, pp. 21, 78).

2.2.2 Threats Analysis (threats, conservation measures, and regulatory mechanisms):

Gypsum wild buckwheat's current most significant stressors are physical and chemical habitat alteration, such as soil compaction, exposure to toxic substances, and inadequate seasonally appropriate soil moisture (Factors A, D, and E).

Gypsum wild buckwheat's hypergypsic soils are vulnerable to erosion and compaction, and its habitat is easily rendered locally unsuitable in places where natural or human-caused surface disturbance has displaced or intensely compacted these soils (Service 2022, pp. 57–58). Mechanical decompaction techniques are not effective in hypergypsic soils, and natural recovery occurs over the course of 100 to 2,000 years, depending on the intensity of the disturbance (Service 2022, p. 58). These fine, semi-arid, mineral soils are also prone to more intense or prolonged adverse effects from soil contamination. The most common sources of soil contamination in gypsum wild buckwheat's range are brine spills and herbicide application, which can decrease soil stability, increase soil density, inhibit physiological functionality, and result in plant death (Service 2022, pp. 59–61).

Short term effects of habitat degradation include decreases in quantity and increases in fragmentation and edge effects of gypsum wild buckwheat habitats. Fragmentation and edge effects reduce the size and increase the isolation of occupied areas. Longer term effects are more difficult to observe but include increased isolation and limited pollinator and dispersal agent movement that decreases seed and pollen flow between occupied areas. Pollen limitation can decrease reproduction and—combined with decreased seed dispersal—increases stochastic vulnerability while decreasing genetic diversity. Increased stochastic vulnerability and decreased adaptive capacity make a species vulnerable to extinction under fluctuating or changing conditions (Service 2022, pp. 62–63).

Inadequate seasonally appropriate soil moisture is typically caused by drought and may be exacerbated by hydrological alteration (Factors A and E). Climate change projections for gypsum wild buckwheat's range predict increased temperatures (+2–5 °C (+4–9 °F)), and relatively unchanged precipitation (+3.8 to -6.6 millimeters (mm) (+0.15 to -0.26 inches (in))) through 2099 under representative concentration pathway

(RCP) scenarios 4.5 and 8.5, respectively. These changes would increase evaporation and drought, adversely affecting survival and recruitment of gypsum wild buckwheat plants. Gypsum wild buckwheat's tolerance of desiccation and ability to go dormant in response to soil moisture stress provides some resilience to climate change, but increases in the intensity, frequency, and/or duration of drought would likely stress this adaptive capacity. Increased drought may also lead to increased predation (Factor C) resulting from reduced availability of alternative preferred forage for herbivores. It is unknown if gypsum wild buckwheat's ability to obtain scarce nutrients and its strategies for surviving drought and herbivory can support self-sustaining wild populations through climate change (Service 2022, pp. 63–65).

Gypsum wild buckwheat occurs in a multiple use landscape. Seismic prospecting; solid mineral prospecting, exploration, and mining; fluid mineral prospecting, drilling, and production; infrastructure development; ranching; recreation; and reclamation and restoration are all activities with potential to significantly displace gypsum wild buckwheat plants and degrade gypsum wild buckwheat occupied and suitable habitats (Factors A, E, and possibly C). BLM management decisions have a significant capacity to affect the status of this species, as the majority of gypsum wild buckwheat habitat exists within federally managed surface and above federally managed minerals and is managed for multiple use by the BLM (Factor D). The majority of gypsum wild buckwheat's habitat is leased for and/or open to these land uses and their associated activities under BLM Carlsbad Field Office's existing resource management plan, as amended (BLM 1988, entire; BLM 1997, entire). Risk of exposure to these threats is high because the Permian Basin, where gypsum wild buckwheat lives, is an actively developing oil field (Service 2022, pp. 65–66, 105).

Some of the leased areas, however, are protected by special designations and associated lease stipulations (Factor D). While listed, 67% of population areas are protected from on-lease oil and gas development, and 40% of population areas are protected from all major sources of surface disturbance. However, if gypsum wild buckwheat did not maintain its listed status under the Act, protections for this species could fall to 12% of population areas. Remaining protections would be those provided by co-occurrence with special designations for other sensitive resources. If delisted under current regulatory frameworks, existing lease stipulations that protect gypsum wild buckwheat as a federally threatened species with critical habitat could be subject to waivers, exceptions, or modifications (Service 2022, pp. 70–72).

Discretionary conservation measures (including project clearance surveys, environmental review of potential impacts, and avoidance distances for surface disturbing activities) currently account for a significant proportion of gypsum wild buckwheat protections (77% of population areas are protected by discretionary conservation measures versus 40% of population areas by special land use designations). Since federal listing under the Act, gypsum wild buckwheat populations have been managed for conservation and expansion primarily through local stakeholder initiative and discretionary programs, practices, and funding. The comprehensive suite

of discretionary conservation actions has been effective at minimizing risks from threats and maintaining the status of this species. However, discretionary conservation is vulnerable to rollbacks as budgets and/or administrative priorities change. They are also vulnerable to staff attrition and turn-over. If the species were delisted, continuation of these conservation actions would be uncertain in the absence of formalized administrative direction to retain them (Factor D) (Service 2022, p. 69).

A new draft BLM Resource Management Plan for the Carlsbad Field Office’s planning area (here referred to as the new Carlsbad Resource Management Plan, or new CRMP) that would convert existing standards and processes developed via discretionary authority into regulatory mechanisms is currently pending finalization (Factor D). Land use plan protections are important because they trigger National Environmental Policy Act (NEPA) environmental review requirements. During the NEPA process, proposed projects are reviewed for legal compliance, including land use plan conformance. If impacts can’t be sufficiently mitigated, requested land use authorizations can be denied for land use plan nonconformance. Additionally, since the new CRMP includes a specific objective for gypsum wild buckwheat conservation, regardless of its federal listing status, existing lease stipulations could not be waived, excepted, or modified under the new CRMP (Factor D) (Service 2022, pp. 69, 74, 79–81).

The Service previously recommended (in 2007) delisting gypsum wild buckwheat once a mechanism to institutionalize the current protections for gypsum wild buckwheat in perpetuity was established (Service 2007, pp. 19, 21) and (in 2017) under the assumption that the new CRMP will provide protections for all gypsum wild buckwheat populations (Service 2017, p. 20). If adopted and implemented, the gypsum wild buckwheat conservation actions proposed in the new CRMP could provide protections for all populations and alleviate the future threat of mineral and energy development (Factor D) (Service 2017, p. 20; Service 2022, p. 69, 74, 138–139).

The new CRMP currently proposes to designate a Seven Rivers Hills Area of Critical Environmental Concern (ACEC) that would be managed to prevent new surface disturbance from all potential sources, including emerging sources such as renewable energy development. If designated, this ACEC would increase the total area of protection for this population from 129 hectares (ha) (540 acres (ac)) to 416 ha (1,027 ac) (BLM 2018, p. 2-71). Additionally, consistent with the recovery plan’s intent to protect “most of the known plants and their habitat” (USFWS 1984, p. 12), all known and any newly discovered gypsum wild buckwheat occupied habitat plus a 300 m (984 ft) buffer, regardless of gypsum wild buckwheat’s federal listing status, would be managed with the same level of protections (BLM 2018a, pp. 2-8, 2-9). These designations directly address the 5-year review’s identified need to “institutionalize the current protections for gypsum wild buckwheat in perpetuity” (Service 2007, p. 21). If adopted and implemented, the proposed conservation measures in this plan could protect up to 82% of gypsum wild buckwheat population areas from all significant sources of compaction and contamination (Factor D).

2.3 Synthesis:

Gypsum wild buckwheat remains represented by few (4), small (1–21 ha (3–52 ac)), isolated (by 4.0–71.3 km (2.5–45.3 mi)) populations (see Table 2.1) (Service 2022, pp. 22, 42). These populations are not securely stable (they have average population growth rates below 1.00, and only Seven Rivers Hills currently has good viability) and are unable to rescue one another in the event of catastrophic decline (Service 2022, pp. 50, 103). Note, however, that current population growth rate results are from only two transition-year sets while ten or more consecutive transition year sets may be needed to draw inferences about population growth rates for species with pulsed recruitment.

We evaluated gypsum wild buckwheat's future viability through 2099 under four scenarios capturing a range of plausible increases and reductions from current conservation norms under decreased and increased development pressure and greenhouse gas concentrations, respectively. The highest increased conservation scenario represents future conditions with finalization and implementation of the conservation measures proposed in the new CRMP. The lowest decreased conservation scenario represents future conditions with only incidental protections for gypsum wild buckwheat plants and habitat (Service 2022, pp. 104–114).

If protections are relaxed or discontinued (Factor D), surface disturbance impacts (Factor A) will further encroach upon, and endanger, populations. Without protections, stressors such as surface disturbance and soil contamination (Factor A) could lead to poor habitat resiliency (18–29% surface disturbance and 10–64% herbicide exposure) and critically low population densities (< 0.15 [0.04–0.14] individuals per square meter, or as low as 1 individual per 25 square meters) within the foreseeable future (Service 2022, pp. 134, B12–B23). All populations are projected to experience decreased species viability within 20 years post-delisting in the absence of protections, and natural habitat recovery could take 100 to 2,000 years, depending on disturbance intensity (Service 2022, pp. 58, 139).

Effects from climate change (Factor E) remain uncertain. Drought will continue to be a threat, but the species response to increased drought frequency, severity, and/or duration are unknown. Chronic effects of climate change could be positive, such as reduced competition. Alternately, they could be negative, such as decreased recruitment frequency, increased herbivory, or decreased survival. Acute effects of climate change could include catastrophic post-tropical cyclones and/or flood scouring that could affect all populations (Service 2022, pp. 63–65).

Risks from threats of drought (Factors A and E), development (Factor A), and surface disturbing activities (Factor A) persist. Profitable oil and gas extraction within the Permian Basin has been projected to continue for 49 years from 2018 (Service 2022, p. 105), renewable energy development is currently a national priority (The White House, n.d., no page number), and gypsum mining could become profitable as mining technologies evolve and/or as alternate gypsum sources are exhausted (Factor A) (Knight 1993, pp. 42–44). BLM currently controls threats to this species, but these controls aren't guaranteed to persist

post-delisting without current management practices being formalized within a signed new CRMP (Factor D). All populations are primarily managed by a multiple use agency, and implementation of current conservation actions are contingent upon sufficient budgets and administrative priorities being maintained post-delisting. Identifying and implementing protections for gypsum wild buckwheat would not be ensured in the absence of legal requirements for project review of potential impacts (Factor D). The new CRMP could provide the basis for these protections but has been pending finalization since 2019.

Existing levels of conservation effort are adequate to sustain current conditions or to support a low rate of decline but retain some level of species viability. Therefore, gypsum wild buckwheat is not currently in danger of extinction throughout all or a significant portion of its range. Demographic resiliency and habitat resiliency are subject to decline with relaxed conservation efforts. Continued conservation actions that avoid compaction, erosion, and contamination within and around suitable habitats are essential to sustain species viability into the future. With the current intensity of stressors and current extent of protections— independent of federal listing status—habitat resiliency declines, but demographic resiliency is maintained in good condition. With an increased intensity of stressors and decreased extent of protections, both demographic and habitat resiliency decline. However, with a decreased intensity of stressors and increased extent of protections, demographic resiliency is maintained in good condition and habitat resiliency is restored to good condition (Service 2022, pp. 131, 134, 139).

After reviewing the best available scientific information, we conclude that gypsum wild buckwheat remains a threatened species. Gypsum wild buckwheat is likely to become endangered within the foreseeable future throughout its range because formalized protections only cover 40% of population areas and aren't guaranteed to persist beyond five years post-delisting (Service 2022, pp. 72, 74) (Factor D); discretionary protections (which currently cover 77% of population areas) are not formalized (Factor D); and without protections, the majority (88%) of gypsum wild buckwheat population areas are exposed to risks of habitat displacement, habitat degradation, and demographic decline (Factors A, E, and possibly C) (Service 2022, pp. 72, 131, 134, 139). The status of gypsum wild buckwheat relative to these factors should be reviewed when workloads permit, following finalization of the CRMP.

3.0 RESULTS

3.1 Recommended Classification:

Downlist to Threatened

Uplist to Endangered

Delist (*Indicate reasons for delisting per 50 CFR 424.11*):

The species is extinct.

The species does not meet the definition of an endangered species or a threatened species (i.e., is recovered, or new information on status and threats indicate species does not meet definitions).

The listed entity does not meet the statutory definition of a species.

No change is needed

3.2 New Recovery Priority Number:

No Change Recommended (14)

Brief Rationale:

A Recovery Priority Number of 14 indicates a low degree of threat and high recovery potential (48 FR 43104)

3.3 Listing and Reclassification Priority Number: Not Applicable

Reclassification (from Threatened to Endangered) Priority Number: ____

Reclassification (from Endangered to Threatened) Priority Number: ____

Delisting (Removal from list regardless of current classification) Priority Number: ____

Brief Rationale:

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

Direct Conservation Actions

- Maintain and extend barricades that block motor vehicle access to occupied areas. Close vehicle access to populations and to linear features intersecting populations.
- Increase avoidance distances to 300 m for all potentially adverse land use or treatment activities. Maintain avoidance distances over time and across land jurisdictions.
- Expand the Hay Hollow population to increase occupied extent and area. For example, establish subpopulations of plants from at least 50 Hay Hollow-sourced maternal lines in suitable soils on the adjacent escarpments north and south of the current Hay Hollow population.
- Discover and/or introduce populations that increase gypsum wild buckwheat's range extent and diversity of associated vegetation types, geological units, and climate zones.

Research and Monitoring

- Expand long-term demographic monitoring across land jurisdictions. Maintain monitoring plots and continue demographic studies until the average transition matrix from 10–15 consecutive years of data demonstrates a stable or increasing population growth rate.
- Identify and document gypsum wild buckwheat seed germination and seedling establishment requirements.
- Identify and document specifications for suitable gypsum wild buckwheat soils (e.g., soil testing for percent gypsum, other nutrients, and soil microorganisms; soil depth probing; etc.).
- Proactively model, survey, and map suitable gypsum wild buckwheat soils.
- Identify and document techniques for restoring the gypsum wild buckwheat suitability of compacted, hypergypsic soils.

Building Community Support

- Install and maintain signs that support education about, and enforcement of, current and existing protective land use designations. Stay ahead of emerging adverse recreational use trends.
- Recruit and retain botanical expertise amongst agency environmental review and project management staff.

5.0 REFERENCES

- Bureau of Land Management (BLM). 1988. Carlsbad Resource Management Plan. September 1988. Carlsbad Resource Area, Carlsbad, New Mexico.
- Bureau of Land Management (BLM). 1997. Carlsbad Approved Resource Management Plan, Amendment and Record of Decision. October 1997. Carlsbad Resource Area, Carlsbad, New Mexico.
- Bureau of Land Management (BLM). 2018. Draft proposed resource management plan/final environmental impact statement: Biological assessment (vers. 8/3/2018). Carlsbad Field Office, Carlsbad, New Mexico. <https://eplanning.blm.gov/eplanning-ui/project/64444/570>, accessed June 23, 2021.
- Bureau of Land Management (BLM). 2020a. DTM_ERIGYP_2017: 2017–2020 data package (digital dataset). Carlsbad Field Office, Carlsbad, New Mexico.
- Bureau of Land Management (BLM). 2020b. MAP_ERIGYP_2019: 2019–2020 data package (digital dataset). Carlsbad Field Office, Carlsbad, New Mexico.
- Knight, P.J. 1993. A status review of gypsum wild buckwheat. Submitted to USFWS, Region 2, Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service (Service). 1984. Recovery plan for gypsum wild-buckwheat (*Eriogonum gypsophilum* Wooton & Standley). March 1984. U.S. Fish and Wildlife Service, Legacy Region 2, Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service (Service). 2007. Gypsum wild-buckwheat (*Eriogonum gypsophilum*) 5-year review: Summary and evaluation. New Mexico Ecological Services Field Office, Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service (Service). 2017. Gypsum wild-buckwheat (*Eriogonum gypsophilum*) 5-year review: Summary and evaluation. New Mexico Ecological Services Field Office, Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service (Service). 2022. Species status assessment of gypsum wild buckwheat (*Eriogonum gypsophilum* Wooton & Standl.). August 2022 (Version 1.0). U.S. Fish and Wildlife Service, Legacy Region 2, Albuquerque, New Mexico.
- The White House. n.d. The Biden-Harris administration immediate priorities. <https://www.whitehouse.gov/priorities/>, accessed August 19, 2022.

U.S. FISH AND WILDLIFE SERVICE

5-YEAR REVIEW of Gypsum Wild-Buckwheat

Current Classification: Threatened

Recommendation resulting from the 5-Year Review:

Downlist to Threatened

Uplist to Endangered

Delist

No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: Not applicable.

FIELD OFFICE APPROVAL:

Field Supervisor, Fish and Wildlife Service, New Mexico Ecological Services Field Office

Approve _____