

DEBEQUE PHACELIA
(Phacelia submutica)

**5-Year Status Review:
Summary and Evaluation**



Photo Credit: Creed Clayton, U.S. Fish and Wildlife Services



U.S. Fish and Wildlife Service
Mountain-Prairie Region
Denver, Colorado
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U.S. FISH AND WILDLIFE SERVICE
5-YEAR STATUS REVIEW for
DEBEQUE PHACELIA
(*Phacelia submutica*)

Species Reviewed: DeBeque phacelia (*Phacelia submutica*)

- **Federal Register Notice of Listing Determination:** July 27, 2011. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Ipomopsis polyantha* (Pagosa Skyrocket) and Threatened Status for *Penstemon debilis* (Parachute Beardtongue) and *Phacelia submutica* (DeBeque phacelia) (76 FR 45054)
- August 13, 2012. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Ipomopsis polyantha* (Pagosa Skyrocket), *Penstemon debilis* (Parachute Beardtongue), and *Phacelia submutica* (DeBeque phacelia) (77 FR 48368).

Lead Region: U.S. Fish and Wildlife Service Region 6, Ecological Services Colorado Field Office, Nicole Alt, Colorado Ecological Services Supervisor, nicole_alt@fws.gov.

Classification: Threatened

Methodology used to complete this review: In accordance with section 4(c)(2) of the Endangered Species Act of 1973 (16 U.S.C Section 1531 *et seq.*), as amended (Act), the purpose of a 5-year status review is to assess each threatened 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. Status reviews are to be completed in accordance with Sections 4(a) and 4(b) of the Act (16 U.S.C. Section 1533(c)). We solicited data for this 5-year status review through a *Federal Register* notice announcing this review (86 FR 2442–2443), and the associated Species Status Assessment (SSA) report, from interested parties through data call letters to partners and species experts requesting data and information relevant to completing the associated SSA; we sent these letters on June 16 and 17, 2020. We reviewed all information that we received and incorporated information relevant to our analysis in our SSA report, including summaries of demographic monitoring; information about habitat conditions and threats; and details about conservation actions by the Bureau of Land Management (BLM), and Colorado Natural Heritage Program (CNHP) (Service 2022, entire). We did not consider or incorporate comments that were outside the scope of our SSA or 5-year status review, such as comments related to our authorities under the Act.

DeBeque phacelia, the subject of our SSA report and this 5-year status review, is currently listed as threatened under the Act.

CHAPTER 1: REVIEW ANALYSIS

1.1 Overview of the Species Status Assessment Process

The SSA report provides the U.S. Fish and Wildlife Service’s (Service) comprehensive biological status review of DeBeque phacelia’s current and future viability, or the “ability of a species to sustain populations in the wild over time” (Service 2016, p. 21; Service 2022, entire). The SSA report includes information about the resource needs of the species and analyses of current and future conditions. The SSA, therefore, provides the scientific analysis for the 5-year status review. Scientific experts contributed to our analysis, and the draft SSA report was reviewed by partners and peer reviewers. We incorporated the results of peer and partner review into our SSA report. The SSA report is available online on the Service’s DeBeque phacelia webpage (<https://www.fws.gov/species/debeque-phacelia-phacelia-submutica>) or at <https://ecos.fws.gov/ecp/species/4639>. The following discussion presents a summary of the results and conclusions of the SSA report (Service 2022, entire).

For the SSA, we defined viability as the ability of DeBeque phacelia to sustain populations in natural ecosystems over a biologically meaningful timeframe, which, in this case, we defined as to the year 2050. We selected this timeframe because it is short enough for us to realistically predict changes in climate conditions, species’ stressors, and land management, yet long enough to be biologically meaningful to the species and to begin to understand the response of ecosystems to those changes (Service 2022, p. 35).

To assess the viability of DeBeque phacelia, we used the three conservation biology principles of resiliency, redundancy, and representation, collectively known as the 3 Rs (Shaffer and Stein 2000, pp. 307–310; Wolf et al. 2015, entire; Smith et al. 2018, entire). A more detailed description of the 3Rs can be found in the SSA (Service 2022, p. 2). In short:

- Resiliency is the ability for populations to persist in the face of stochastic events, or for populations to recover from years with low reproduction or reduced survival, and is associated with population size, growth rate, and the quality and quantity of habitats;
- Redundancy is the ability for the species to withstand catastrophic events, for which adaptation is unlikely, and is associated with the number and distribution of populations; and
- Representation is the ability of a species to adapt to changes in the environment and is associated with its diversity, whether ecological, genetic, behavioral, or morphological.

The 3 Rs are independent concepts but can be correlated. For instance, if a population’s size increases—thus, directly increasing the resiliency of the population—it is better able to withstand not only stochastic, but also catastrophic events. This population size increase therefore indirectly increases the redundancy of the species. Likewise, if the resiliency of one or more populations declines, the species’ redundancy will likely decline commensurately.

To discern the nuances in conditions that occur across the range of the species and in the stressors that are influencing these conditions, we analyzed the resiliency, redundancy, and representation of DeBeque phacelia in five representative Analytical Units (AUs) (Figure 1).

Boundaries for these AUs incorporate all known suitable and occupied habitat and are delineated by natural geological features (e.g., soil type) and a generalization of management boundaries. We use these AUs as representative units in this SSA since the best available science does not identify populations for this species. All known plant occurrences are located within the boundaries of the five AUs.

For our analysis, we identified DeBeque phacelia's ecological requirements for survival and reproduction at the individual, AU, and species levels, and described the factors, both positive and negative, that influence the viability of DeBeque phacelia, currently and into the future. We then evaluated the species' current levels of resiliency, redundancy, and representation, and projected plausible changes to these 3 Rs into the future; considered together, the current and future levels of resiliency, redundancy, and representation characterize the viability of DeBeque phacelia (Service 2022, pp. 20–50).

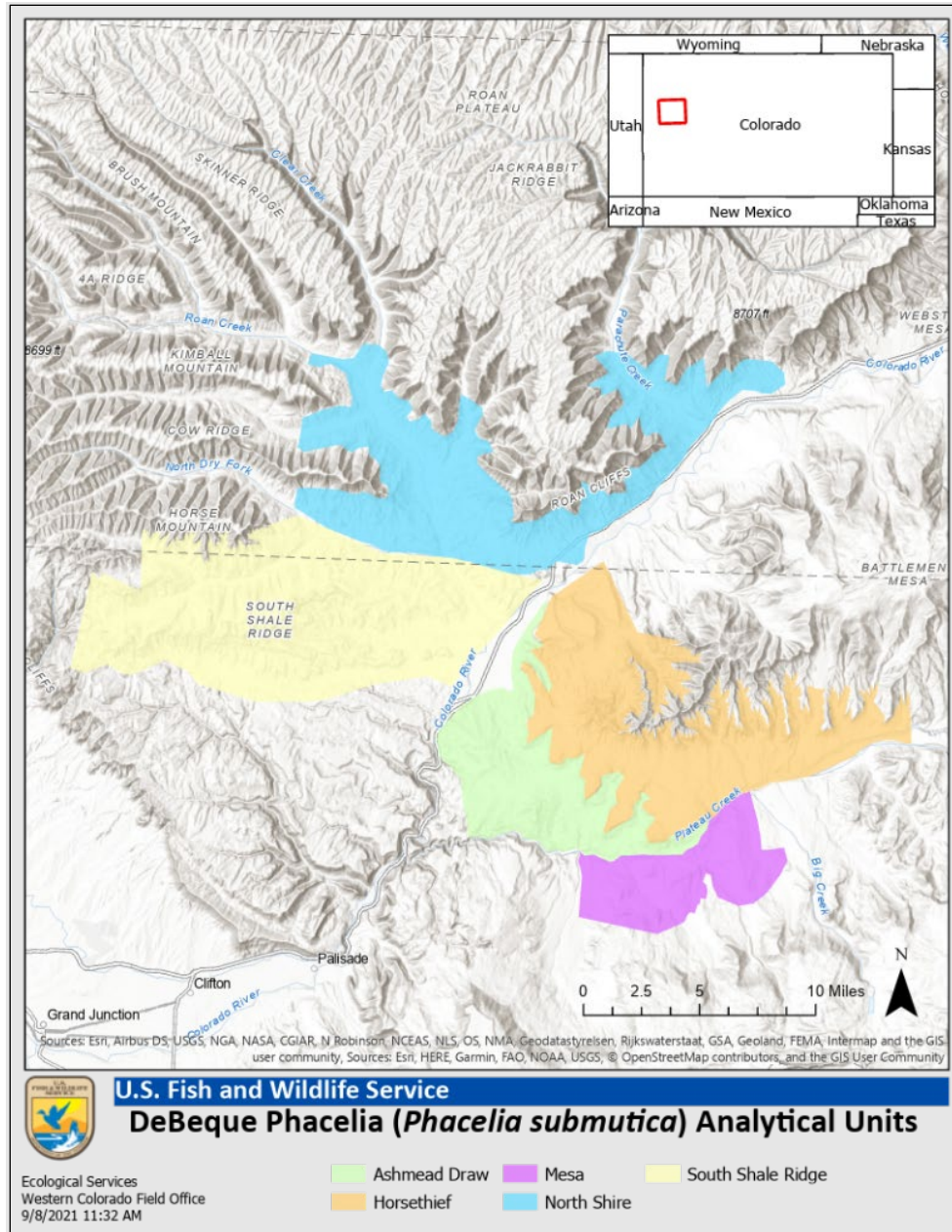


Figure 1. The five AU boundaries used to analyze DeBeque phacelia resiliency, redundancy, and representation. The five AUs are: yellow – South Shale Ridge; blue – North Shire; purple – Mesa; orange – Horsethief; green – Ashmead Draw. All AUs are located in the southern Piceance Basin near the town of DeBeque – reflected in the map insert, upper right corner, in Mesa and Garfield Counties of western Colorado.

1.2 Summary of Species Status Assessment for DeBeque phacelia

1.2.1 Summary of Life History, Ecology, Range, and Distribution

Our SSA report provides our full account of the life history, ecology, range, and historical and current distribution for DeBeque phacelia (Service 2022, pp. 4–12), which we summarize here. DeBeque phacelia is a rare annual plant with very specific soil type, soil feature, soil structure, and soil development requirements. The plant occurs on colorful clay soils, derived from Atwell Gulch and Shire members of the Eocene and Paleocene Wasatch Formation (Figure 2; Donnell 1969, pp. M13–M14; O’Kane 1987, p. 10). These expansive clay soils are located primarily on moderately steep slopes (ranging from zero to 42 degrees), benches, and ridge tops



Figure 2. Photo of DeBeque phacelia habitat.
Photo credit: Schupp (Service 2013, p. 1)

adjacent to valley floors in areas surrounding the town of DeBeque in Mesa and Garfield Counties, Colorado (Figure 1). On these slopes and soils, DeBeque phacelia usually grows only on unique areas that show a different texture, color, and crack pattern than the surrounding soils (76 FR 45054, July 27, 2011, p. 45069).

Additionally, known populations of DeBeque phacelia do not occur outside elevations ranging between 5,026 and 6,424 feet (ft) (1,532 and 1,958 meters [m]) (Langton 2021a, pers. comm.).

Recent findings suggest that DeBeque phacelia habitat contains a well-developed soil structure. Well-developed soils have a distinct crust on the surface (A Horizon), that may serve to contain moisture in the subsoil (B Horizon). The subsoil below the surface is defined by distinct blocks of soil (approximately 1.97 inches (in), 5 centimeters (cm) in length) with air pockets between them (i.e., soil peds). Soil peds are often fragile when moist, but hard and resistant to breakage when completely dry. The substrate below the subsurface (C Horizon) consists of unaltered parent material, which contains unconsolidated shale. Plants are rooted in and limited to growth within the B Horizon, which must hold the required nutrients and moisture for the species’ germination, growth, and reproduction, as well as the conditions required to maintain a seed bank (Langton 2015, p. 86, Langton 2021b, pers. comm.; WestWater 2018, Appendix A). Throughout the SSA and this 5-year status review, we refer to well-developed soil structure as soils with “functional integrity.”

The growing season for DeBeque phacelia is April through June, with seeds germinating late in March (Langton 2015, p. 66). Upon drying, cracks form in the shrink-swell clay soils the plant prefers. Seeds plant themselves by falling into the cracks, which close when wetted, thus covering the seeds (O’Kane 1988, p. 20). In 2011, a field study showed that fruits, which occur from mid-May to late June, yield an average of six seeds (Langton 2015, p. 26). DeBeque phacelia seeds do not have the required mechanisms to facilitate horizontal dispersal; therefore,

seeds scatter directly beneath the mother plant, known as gravity dispersal, between July and September (Langton 2015, entire; Service 2022, p. 9).

The Service and the Colorado Natural Areas Program (CNAP) funded research into the breeding system and seed ecology of DeBeque phacelia in 2011. Findings from this breeding system study concluded that DeBeque phacelia uses only self-fertilization for reproduction (Langton, 2015, p. 11). After reproduction, the parent plant produces a seed bank; seeds can remain dormant in the seed bank for at least six years (Langton 2015, p. 77). The environmental conditions required to break seed dormancy are currently unknown; however, it is likely that germination depends on the temperature after the first major storm event of the season, rather than total precipitation (Levine et al. 2008, p. 795; 76 FR 45054, July 27, 2011, p. 45069).

DeBeque phacelia is only known to occupy 568 acres (230 ha) in Colorado, primarily due to its limited dispersal capability and its specific microhabitat preferences. DeBeque phacelia occurs in 25 separate element occurrences (EOs) through this occupied range. Species EOs are defined by the Colorado Natural Heritage Program (CNHP). CNHP identifies EOs for each plant species they track; EOs are occupied or previously occupied habitat that contributes or potentially contributes to the persistence of the species at a location (CNHP 2020, p. 54). Acres of occupied DeBeque phacelia habitat were calculated using the CNHP 2020 EO shapefile and BLM data on known DeBeque phacelia occupied habitat. Thus, this acreage of occupied habitat differs from the 626 acres reflected in the 2011 listing rule, due to more recent data and an updated method of calculation (76 FR 45054, July 27, 2011, p. 45071).

1.2.2 Summary of Needs from the SSA

For DeBeque phacelia, a resilient population contains a sufficient number of individuals with adequate levels of survivorship and recruitment to maintain the population and bounce back after experiencing environmental stochasticity. The species' resource needs must be of sufficient quantity and quality necessary to support each AU. Resource needs of individual DeBeque phacelia plants include: low vegetative and canopy cover, soil functional integrity, and specific climatic conditions to sustain the plant through reproduction and replenish the seed bank (cool winters, warm springs, and adequate moisture to stimulate germination). At the species-level scale, the species needs: (1) a sufficient number and distribution of populations to withstand catastrophic events (redundancy), and (2) a range of genetic and environmental variation that allows the species to adapt to changing environmental conditions (representation). DeBeque phacelia redundancy is influenced by the number of highly resilient AUs across the landscape. More individuals across the range of DeBeque phacelia increase the species' ability to withstand catastrophic events and prevent population loss. DeBeque phacelia's self-fertilization strategy may limit representation for the species, in that it reduces the ways in which genetic variation can arise (Anderson and McGlaughlin 2020, entire).

1.2.3 Summary of Cause-and-Effects from SSA: Stressors and Conservation Efforts

In our SSA, we evaluated stressors and other actions that can positively or negatively affect DeBeque phacelia at the individual, AU, or species levels, either currently or into the future (Service 2022, pp. 20–25). A wide variety of stressors may influence the resiliency of DeBeque phacelia, either by directly affecting individuals or by reducing the quality and quantity of habitats.

Currently, stressors that could influence DeBeque phacelia include livestock use, invasive species, energy production, off-highway vehicle (OHV) recreational use, and the effects of global climate change (Service 2022, pp. 20–23). Utility and communication line improvements (utility ROWs) are referenced in the listing rule as one of the many factors that could influence species status; these activities could affect the plant by facilitating human access to sensitive habitat. However, utility ROWs do not currently present a direct species-level concern (Service 2022, p. 21).

Though we identified habitat fragmentation as a stressor in the listing rule, due to our new understanding of the plant’s reproductive strategy (i.e., self-fertilization), habitat fragmentation is less of a concern. This plant can continue to reproduce without connectivity between sites. However, uncertainty remains as to the role of pollinators and whether the plant can also reproduce sexually, which would necessitate connectivity.

Positive actions, in the form of conservation efforts, such as land protections and regulations, have reduced sources of habitat degradation and human-caused mortality, and multiple agencies, volunteers, and community members are committed to the conservation and preservation of DeBeque phacelia (Service 2022, pp. 24–25). Past and ongoing conservation actions include Bureau of Land Management (BLM) Area of Critical Environmental Concern (ACEC) designations, designation of CNAP protected areas, and various conservation projects funded by Federal grants. A BLM ACEC is a designation that highlights an area where special management attention is needed to protect important historical, cultural, and scenic values, protect fish and wildlife, or protect other natural resources.

The majority (approximately 86 percent) of occupied habitat is located on lands managed by the BLM, with the remaining 14 percent on private, State, and other Federal agency-managed lands (Service 2013, p. 4). Nine of the 25 DeBeque phacelia EOs occur within BLM ACECs. One of these ACECs (Pyramid Rock, located in the South Shale Ridge AU) is designated specifically for the preservation of habitat for plant species, including DeBeque phacelia. This area is fenced and closed to livestock use; motorized, mechanized, and equestrian use; and hiking (BLM 2015, p. 31). The remaining ACECs also benefit DeBeque phacelia in multiple ways, including not allowing any surface occupancy, mineral entry, or disposal of mineral materials; constraining OHV use to designated roads and trails; increasing instruction and signage about areas restricted from OHV use.

Overall, 359 acres (145 hectares) of occupied DeBeque phacelia habitat is located within an ACEC, which represents 63% of occupied DeBeque phacelia habitat (Table 1).

Table 1. Acres of DeBeque phacelia EOs located in BLM ACECs

EO Number	Analytical Unit	ACEC	Total Acres in EO	Acres of EO within ACEC
7168	South Shale Ridge AU	South Shale Ridge ACEC	1.9	1.9
9911	South Shale Ridge AU	South Shale Ridge ACEC	4.1	4.1
12231	South Shale Ridge AU	South Shale Ridge ACEC	1.1	1.1
5775	South Shale Ridge AU	South Shale Ridge ACEC	69.1	69.1
9209	South Shale Ridge AU	South Shale Ridge ACEC	2.1	2.1
4167	South Shale Ridge AU	South Shale Ridge ACEC	55.9	55.9
8029	South Shale Ridge AU	South Shale Ridge ACEC	13.6	2.0
8669	South Shale Ridge AU	Pyramid Rock ACEC	215.9	215.9
12237	North Shire AU	Mt Logan Foothills ACEC	7.0	7.0
Total Acres of Occupied Habitat in ACECs				359

The CNAP also implements conservation efforts for DeBeque phacelia (Wertsbaugh 2021, pers. comm.), including:

Pyramid Rock has a designation State Natural Area, which is a statewide program focused on recognition and protection of areas that contain at least one unique or high-quality natural feature such as threatened or endangered species. CNAP staff and volunteers monitor this area on a regular basis to locate and track DeBeque phacelia.

The Service’s Section 6 grants, and matching dollars from CNAP, provide funding for CNHP to organize and collate data for threatened and endangered species into its BIOTICS database, including data on DeBeque phacelia.

CNAP and CNHP also contribute to various DeBeque phacelia research projects that investigate effective conservation strategies, the effects of oil and gas development, and seed biology.

1.2.4 Summary of Current Condition from the SSA

In our SSA report, we evaluate current condition by examining current levels of resiliency in the five DeBeque phacelia AUs, and implications for redundancy and representation. Here, we summarize our evaluation of current condition for each of the 3 Rs. Additional detail regarding our analysis is provided in the SSA report (Service 2022, pp. 25–34).

1.2.4.1 Summary of Current Resiliency

We evaluated the resiliency for each of the 25 EOs (and, thereby, five AUs) in terms of the habitat and demographic factors DeBeque phacelia needs (Service 2022, pp. 13–19, 25–34). Specially, we developed a categorical model to calibrate resiliency based on the range of habitat and demographic conditions in each EO (Table 2). Table 2 summarizes our understanding of what constitutes a resilient AU of DeBeque phacelia in relation to the resource needs of the species (Service 2022, pp. 25–31). We selected the habitat and demographic factors in Table 2 based on their importance to the species' resiliency and because we could evaluate them consistently across all five AUs. The categories we evaluated included: number of individual plants, vegetation and canopy cover, soil functional integrity, and water deficit. Water deficit is a proxy for drought and soil moisture and combines multiple climatic variables to represent the supply of water (precipitation) in relation to the demand for water (potential evapotranspiration). For a given area, water deficit equals potential evapotranspiration minus precipitation.

We then used this categorical model as a key to evaluate resiliency for each EO by systematically evaluating the current condition of each habitat and demographic factor in each EO. To calculate the overall resiliency of each EO, we took an average of the scores for each of these categories to calculate an average numerical score for each EO. Once all of the EOs had an established average score, we then calculated the average of all of the average EO scores contained within an AU to determine the overall score for the AU; we used thresholds to convert these numerical scores into high, moderate, or low resiliency classifications (Service 2022, p. 30). Our SSA provides additional information on the methodology used for calculating these scores, establishing thresholds, and evaluating resiliency (Service 2022, pp. 25–34).

Table 2. Condition Category Table illustrating the demographic and habitat factors used to categorize the resiliency (health) of DeBeque phacelia EOs and AUs. The Overall Average EO Score is calculated by weighting each metric equally and calculating the average score for the EO (if a high score in any category qualifies as a “3”, a moderate score qualifies as a “2,” and a low score qualifies as a “1”); the ranges of values presented in the “Overall Average EO and AU Resiliency Score” column provide threshold values for determining the overall resiliency category of each EO (i.e., high, moderate, or Low) based on the calculated average score of all metrics. Once all of the EOs had an established average score, we then calculated the average of all of the average EO scores contained within an AU to determine the overall score for the AU and its resiliency (according to the same thresholds in the “Overall Average EO and AU Resiliency Score”).

Condition Category Table					
Metric Rating and Resiliency Score	Demographics	Habitat Needs			Overall Average EO and AU Resiliency Score
	Number of Individual Plants in EO	Vegetation and Canopy Cover	Soil Functional Integrity	Spring Water Deficit	
High	More than 5000 plants	Less than 20% cover of other plants	Overall Disturbance Score = 3	Spring water deficit is within 1 standard deviation (SD) below historical average and 1/2 SD greater than historical average	2.34 - 3
Moderate	Between 500 and 4999 plants	Plant cover of other plants is between 20 and 50%	Overall Disturbance Score between 2.01 and 2.99	Spring water deficit is between 1 and 2 SDs below historical average or between 1/2 and 1 SD greater than historical average	1.67 - 2.33
Low	Fewer than 499 plants	Plant cover of other plants is greater than 50%	Overall Disturbance Score between 1 and 2	Spring water deficit is more than 2 SDs below historical average or more than 1 SD greater than historical average	1 - 1.66

Rangewide, long-term population trend data for DeBeque phacelia is currently unavailable; there are no long-term monitoring plots (Service 2013, p. 5). Many EOs of DeBeque phacelia are considered “historical” because they have not been visited in over 20 years (Handwerk 2020, pers. comm.); however, several sites were revisited and confirmed to be occupied in 2011 and 2012. The number of extant DeBeque phacelia individuals varies widely from year to year, depending on habitat and climate conditions (76 FR 45054, July 27, 2011). The 2011 high count estimate for the species was 68,371 individuals (76 FR 45054, July 27, 2011, p. 45068). The total estimated number of individuals in all of the EOs in our SSA analysis – 59,572 – differs from the 2011 high count estimate because we use more recent estimates of the number of individuals in each EO, and because the method of estimating the number of plants differs from the methods used in 2011 (Service 2022, pp. 78–79).

Table 3 summarizes our evaluation of current resiliency for each of the five AUs. When measured against the metrics outlined in Table 2, all AUs currently have moderate resiliency. This is due to favorable levels of vegetative cover and moderate levels of soil functional integrity in most EOs, but the relatively low number of individual plants in most EOs. There are also moderate levels of spring water deficit in all EOs, because conditions are currently slightly drier than they were historically. Thus, overall while many EOs have low numbers of individuals, the high to moderate levels of habitat quality in most EOs mean that all AUs currently have moderate resiliency.

Table 3. Summary of current resiliency of DeBeque phacelia based on current demographic and habitat conditions in the five AUs. A green shading with the letter “H” indicates a high score, orange with the letter “M” indicates moderate, and red with the letter “L” indicates low.

Current Condition Evaluation Table							
		DEMOGRAPHIC NEEDS	HABITAT NEEDS			OVERALL SCORE	
AU Name	EO Number	Number of Individual Plants in EO	Vegetation and Canopy Cover	Soil Functional Integrity	Spring Water Deficit	Overall EO Resiliency Score	Overall AU Resiliency Score
South Shale Ridge	9911/26	L	unknown	H	M	M	South Shale Ridge AU = MODERATE
	7168/28	L	unknown	H	M	M	
	12231/42	M	H	M	M	M	
	10034/2	M	L*	M	M	M	
	8669/7	M	H	H	M	H	
	4167/3	M	H	M	M	M	
	5775/11	M	H	M	M	M	
	9209/25	L	unknown	H	M	M	
	8029/17	H	H	M	M	H	
	7666/10	M	H	M	M	M	
12232/43	L	H	L	M	M		
North Shire	8935/15	unknown	unknown	M	M	M	North Shire AU = MODERATE
	15544/50	M	H	M	M	M	
	12236/45	L	H	M	M	M	
	12237/46	L	H	M	M	M	
Ashmead Draw	1322/30	L	M	M	M	M	Ashmead Draw AU = MODERATE
	2911/8	L	M	M	M	M	
	7667/9	M	H	M	M	M	
	15418/49	L	H	H	M	M	
Horsethief Mountain	1345/38	L	H	M	M	M	Horsethief Mountain AU = MODERATE
	6320/31	L	L	M	M	L	
	14550/48	M	H	M	M	M	
	10975/19	H	H	M	M	H	
	14549/47	H	H	M	M	H	
Mesa	17646/51	L	H	H	M	M	Mesa AU = MODERATE

1.2.4.2 Summary of Current Redundancy and Representation

Across its limited range DeBeque phacelia currently has multiple individuals occurring in 25 separate EOs spread across five AUs (Service 2022, pp. 4–5). Redundancy for narrow endemic species is inherently limited; however, DeBeque phacelia plants are distributed broadly across the range of the species in the five defined AUs, providing redundancy throughout its small geographic range (Service 2022, p. 33). DeBeque phacelia’s broad distribution and multiple moderately resilient AUs contribute to its current ability to withstand catastrophic events. However, the only plausible catastrophic event for this species is extreme drought, which would affect the species across its whole range. Currently, the moderate water deficit indicates that conditions are drier than they were historically, implying drought could be more prevalent across the species’ range today than it was historically.

There are low levels of genetic diversity within and among DeBeque phacelia populations (Anderson and McGlaughlin 2020, p. 2). Self-fertilization limits variability within species and makes this rare plant vulnerable to novel stressors (Anderson and McGlaughlin 2020, p. 47). This lack of genetic variability within and between populations may compromise the species’ ability to adapt to changing environmental conditions, which limits representation for the species (Service 2022, p. 33).

Stressors to DeBeque phacelia currently affect the resiliency of AUs (Service 2022, pp. 20–23). Stressors that have species-level impacts currently include invasive species, livestock movement, off-highway vehicle (OHV) recreational use, and climatic fluctuations. There are some current conservation measures in place to reduce the influence of stressors, including protected areas and management actions on BLM lands (see Table 1) and CNAP conservation activities; 63 percent of occupied habitat occurs within BLM ACECs, one of which provides specific protections to sensitive plants, including DeBeque phacelia (Service 2022, p. 24).

1.2.5 Summary of Future Condition from the SSA

In our SSA report, we forecasted the resiliency of the DeBeque phacelia AUs and the redundancy and representation of the species to the year 2050 using a range of plausible future scenarios (Service 2022, pp. 35–48). We selected this timeframe because it is short enough for us to realistically predict changes in climate conditions, species’ stressors, and land management, yet long enough to be biologically meaningful to the species and to begin to understand the response of ecosystems to those changes. We used future climate models downscaled to the range of the species, in combination with forecasted changes in the location and intensity of stressors, to develop three future scenarios and evaluate the condition of the species under each of those scenarios. Since many of the stressors that affect DeBeque phacelia occur on BLM lands, future scenarios were developed with input from the BLM about plausible changes in the location and intensity of stressors on BLM land.

1.2.7.a Summary of Future Scenarios

Given some level of uncertainty about the conditions that will actually be present in 2050, these scenarios represent optimistic, continuation, and pessimistic future conditions to capture the plausible range of future conditions the species may experience. By capturing a range of plausible future scenarios, we can assume that actual future conditions will likely fall somewhere within these projected scenarios. Therefore, our evaluation of future conditions presents a plausible range of expected species responses to these changing future conditions. The future scenarios we evaluated for DeBeque phacelia are detailed in the SSA (Service 2022, pp. 35–38), and included:

- Scenario 1 (“Optimistic”): Reduced stressors, increased conservation, and favorable warm and wet climate conditions.
- Scenario 2 (“Continuation of Current Conditions”): Continuation of the current land management conditions under a “moderately hot” climate. An increase in water deficit compared to the historical average means there is less water available.
- Scenario 3 (“Pessimistic”): Existing conservation practices are not expanded, livestock movement increases; OHV use increases; oil and gas production increases; invasive plants increase; and the climate is hot and dry. “Hot and dry” climate conditions lead to a higher water deficit, meaning there is less water available than the historical average.

While the metrics used to assess the current resiliency of DeBeque phacelia AUs are quantitative, we do not have a reliable way to quantitatively forecast these metrics into the future. Instead, future conditions are expressed qualitatively, using the results of our current condition analysis as the baseline. We also have little understanding of the species’ temperature, moisture, and disturbance limits, and thus we cannot reliably predict species’ response to these changed climate conditions and stressors; as such, under each future scenario, we kept the number of individuals the same as under current condition (i.e., we did not change the scores for the “Number of Individual Plants in EO” category). This could lead to over- or underestimation of resiliency, as we discuss more specifically under each future scenario below.

1.2.7.b Summary of Future Conditions by Scenario

Table 4 summarizes our evaluation of future resiliency for each AU; the SSA report provides additional detail on this analysis (Service 2022, pp. 38–46).

Table 4. . Current and Future Resiliency Summary showing the resiliency of each AU under each scenario. These evaluations of resiliency and scenarios are described in detail within the SSA.

CURRENT AND FUTURE RESILIENCY				
AU Name	Current Condition	Future Optimistic Scenario	Future Continuation Current Scenario	Future Pessimistic Scenario
South Shale Ridge	Moderate	High	Moderate	Low
North Shire	Moderate	High	Moderate	Low
Ashmead Draw	Moderate	High	Moderate	Low
Horsethief Mountain	Moderate	High	Moderate	Low
Mesa	Moderate	High	Moderate	Low

Optimistic Scenario: The reduction in severity and extent of stressors, increased conservation, and favorable climate conditions in the optimistic scenario lead to improved habitat condition for each AU in the future under this scenario, as compared to current condition. Thus, in the optimistic scenario, the overall resiliency of all DeBeque phacelia AUs increases to high, though some EOs are in moderate condition, primarily due to these EOs still having small population sizes and lower habitat conditions (i.e., low or moderate vegetative cover and soil functional integrity scores). The warm and wet climate conditions in this scenario also raise the score for water deficit to “high” for every EO, further improving the overall condition of each EO and AU under this scenario. We did not change the scores for the “number of individuals” metric for any of the future condition analyses due to uncertainties regarding species response to changes in stressors and habitat condition. Thus, the condition scores for each EO in this scenario are likely an underestimation of future condition because we did not increase the scores for the number of individuals category as a result of the improving conditions of stressors and conservation efforts, even though these improved conditions would likely increase the number of individuals in each EO (Service 2022, pp. 38–40).

Under this optimistic scenario, because we kept the number of individuals constant in our future projections, redundancy stays the same as under current condition (i.e., the number and distribution of individuals does not change). However, if the improved habitat conditions we project under this scenario were to increase the number of individuals in each EO or broaden the distribution of EOs, redundancy could increase under this scenario; moreover, given that the only plausible catastrophic event for this species is extreme drought, the warmer and wetter climate conditions under this scenario (and consequently high score for water deficit) reduce the likelihood of such a catastrophic event affecting the species in the future. Currently, there is little genetic variability within and between DeBeque phacelia AUs (Anderson and McGlaughlin 2020, p. 2) to facilitate adaptation to changing environmental conditions caused by climate change and other factors, which limits representation for the species; genetic variability is unlikely to improve in the future under this scenario due to the plant's self-fertilization reproductive strategy; therefore, representation is likely to stay the same as under current condition under this optimistic scenario.

Continuation Scenario: In the continuation scenario, all five AUs have moderate resiliency, which matches the condition of the AUs under current condition. However, the resiliency of each AU under this scenario differs from current condition in important ways. For example, the score for spring water deficit under current condition is moderate for each EO; however, each EO has a low score for spring water deficit in the continuation scenario. The lower score for spring water deficit in the continuation scenario, which results from moderately hot climate conditions, is more representative of a middle-of-the-road climate model compared to optimistic and pessimistic projected climate extremes, rather than a true "continuation" of the current climate conditions. This low water deficit means there will be considerably less water available for DeBeque phacelia plants in the future under this scenario. Therefore, of the 25 EOs within the 5 AUs, there are six EOs with low resiliency and no EOs with high resiliency under the continuation scenario, compared to only one EO with low resiliency and four EOs with high resiliency under current conditions. In summary, there are changes in individual EO resiliency under this scenario, but the overall resiliency of all AUs under both current conditions and this continuation future scenario are the same because these individual changes in EO resiliency were not large enough to push any of the AUs into a different overall resiliency category.

As discussed under the optimistic scenario above, we did not change the scores for the number of individuals for any of the future condition analyses. This adds uncertainty to the overall resiliency scores in this scenario, as they may be an over or an underestimation of actual resiliency, since they do not take into account how changing climate or habitat conditions could influence the number of individuals in each EO in the future.

Because we kept the number of individuals constant in our future projections, redundancy would stay the same as under current condition under this continuation scenario since the number and distribution of individuals does not change; redundancy may also decrease relative to current condition, given the increased likelihood of drought under this scenario due to the drier conditions. Moreover, due to its self-fertilization mechanism, limited genetic diversity, and very specific edaphic preferences, this species has limited ability to respond to habitat changes (representation). Genetic variability (and representation) is also unlikely to improve under this continuation scenario (Service 2022, pp. 42–43).

Pessimistic Scenario: The conditions in this scenario could have negative effects on DeBeque phacelia in the future. In this pessimistic scenario, the hot and dry conditions may negatively influence survivorship and recruitment of individuals. In addition to destroying DeBeque phacelia plants and seed banks, increased development and livestock movement could have negative impacts on the amount and quality of available habitat, thereby leading to a reduction in survivorship, recruitment, connectivity, and overall population sizes of DeBeque phacelia. We kept the number of individuals the same as under current condition in our analysis, which could lead to an overestimation of species' condition under this scenario, because we are not accounting for how these resultant declines in survivorship and recruitment could decrease the number of individuals in each EO (Service 2022, pp. 45–46).

Under this pessimistic scenario, all AUs have low resiliency, due to the worsened habitat and climate conditions. Resiliency scores under this scenario likely overestimate potential population health, given that they include the same scores for number of individuals as current condition, even when the climate and management components of this future scenario would likely reduce the number of individuals on the landscape (Service 2022, pp. 45–46).

Because we kept the number of individuals constant in our future projections, redundancy would stay the same as under current condition under this pessimistic scenario. However, if the worsened habitat conditions we project were to decrease the number of individuals in each EO or lead to a contraction of the distribution of EOs, redundancy could decrease under this scenario. Moreover, the extremely dry conditions under this scenario, could increase the likelihood of catastrophic drought across the range, further decreasing redundancy in the future.

For this species, its narrow endemic status, limited geographic range, small number of individuals in each population, high habitat specificity, limited dispersal ability, self-fertilization, and low genetic diversity (Anderson and McGlaughlin 2020, p. 2), limit its ability to adapt to future change (e.g., limit representation), and representation is unlikely to improve relative to current conditions in the future under this scenario.

CHAPTER 2: STATUS RECOMMENDATION

2.1 Standard for Review

Section 4 of the Act (16 U.S.C. Section 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 an “endangered species” or a “threatened species” because of any of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on DeBeque phacelia, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals, as well as those that affect individuals through alteration of their habitat or required resources. The term “threat” may encompass—either together or separately—the source of the action or condition, or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the Act's 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 effects of the threats and the expected response of the species—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 listable entity 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.

In our status recommendation, we correlate the threats acting on DeBeque phacelia to the factors in section 4(a)(1) of the Act. We summarize our 5-year status review for DeBeque phacelia below.

2.2 Summary of Analysis

The biological information we reviewed and analyzed as the basis for our findings is documented in the SSA report (Service 2022, entire), a summary of which is provided above. The projections for the future condition of DeBeque phacelia are based on our expectations of the potential stressors that may affect the species. When we listed DeBeque phacelia as threatened on July 27, 2011, the Service identified the following threats: human-caused modifications from oil and natural gas exploration and production with associated expansion of pipelines, roads and utilities; development within the Westside Energy Corridor (Factor A); increased access to habitat by ORV's (now referred to as OHVs) (Factor A); soil and seed disturbance by livestock and wildlife

(Factor A); habitat fragmentation (Factor A);) and potential seed bank depletion by prolonged drought (Factor E) (76 FR 45054, July 27, 2011).

In our SSA, we evaluated these stressors and additional stressors that were identified after the time of listing, such as invasive and introduced species and utility and communications lines. Utility ROWs are referenced in the listing, but are not considered to have a present, direct species-level concern. Other considerations such as habitat fragmentation, which was identified in the listing, but due to our new understanding the plant's reproductive strategy (i.e., self-fertilization), habitat fragmentation is less of a concern. This plant can continue to reproduce without connectivity between sites. However, uncertainty remains as to the role of pollinators and whether the plant can benefit from outcrossing, which would necessitate connectivity. Stressors that can present AU-level effects that we analyzed in our SSA report include livestock use (Factor A), invasive species (Factor A), oil and gas development (Factor A), OHV recreational use (Factor A), and the effects of global climate change (Factor E) (Service 2022, pp. 20–23).

We also evaluated a variety of conservation efforts and regulatory mechanisms across the AUs that either reduce or ameliorate stressors, or improve the condition of habitat or demographics. Approximately 63 percent of DeBeque phacelia occupied habitat is within an ACEC (Factor D), which limits or excludes the authorization of certain land uses (e.g., OHV use, oil and gas development) (Service 2022, p. 24). The protections provided by these management designations are not contingent upon the species' Federally listed status.

We note that by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have analyzed individual effects of stressors and conservation efforts on DeBeque phacelia, as well as their potential cumulative effects (Service 2022, entire). We incorporate the cumulative effects into our analysis when we characterize the current and future condition of DeBeque phacelia. Our current and future condition assessment is iterative because it accumulates and evaluates the effects of all the factors that may be influencing DeBeque phacelia, including negative influences from stressors and positive influences from conservation efforts. We evaluate potential effects from these influences consistently across the same subset of habitat and demographic needs for DeBeque phacelia both currently and into the future. Because the SSA framework considers not just the presence of the factors, but also the degree to which they collectively influence risk to the entire listed entity, our assessment integrates the cumulative effects of the five factors and replaces a standalone cumulative effects analysis.

2.3 Application of Analysis to the Status Recommendation

The SSA describes the current and future viability of DeBeque phacelia in terms of the 3 Rs, which characterize risk to DeBeque phacelia in the context of stochasticity (resiliency), catastrophes (redundancy), and long-term environmental change (representation) (Service 2022, entire). This analysis forms the basis for our recommendation under the Act. Because of uncertainties regarding the future, we evaluated future condition for three plausible future scenarios designed to capture the relevant uncertainties regarding future conservation efforts. The fundamental question before the Service is whether the projections of extinction risk, described in the SSA report in terms of the resiliency, redundancy, and representation of DeBeque phacelia, under a range of future scenarios, indicate that the listed entity meets the

definition of an endangered or threatened species under the Act. Theoretically, if the abundance (resiliency), distribution (redundancy), and diversity (representation) of DeBeque phacelia decreases, thereby decreasing overall viability, the extinction risk of DeBeque phacelia would correspondingly increase; likewise, the opposite would be true.

As described below, we first evaluate whether DeBeque phacelia is in danger of extinction throughout its range now. We then evaluate whether DeBeque phacelia is likely to become in danger of extinction throughout its range in the foreseeable future. We finally consider whether DeBeque phacelia is in danger of extinction in a significant portion of its range.

2.3.1 Evaluation of Status: In Danger of Extinction Throughout its Range

Under the Act, an endangered species is any listable entity that is “in danger of extinction throughout all or a significant portion of its range” (16 U.S.C. Section 1532(6)). For this 5-year status review, we evaluate the best available scientific information about the species’ current levels of demographic and habitat factors (these are described in the SSA report in terms of current resiliency, redundancy, and representation) to describe the current viability of DeBeque phacelia (Service 2022, entire). We compare our evaluation of the species’ current risk of extinction against the definition of an endangered species.

Currently, eighty-four percent of EOs are in moderate or low condition, and all five AUs have moderate levels of resiliency. This is due to favorable levels of vegetative cover in most EOs, and moderate levels of soil functional integrity in most EOs, but the relatively low number of individual plants in most EOs. Currently, there are also moderate levels of spring water deficit in all EOs, because conditions are currently slightly drier than they were historically (a higher water deficit than historical conditions). Thus, while many EOs have low numbers of individuals, most have high to moderate levels of habitat quality, which leads to moderate resiliency in all AUs.

Across its limited range DeBeque phacelia currently has multiple individuals occurring in 25 separate EOs spread across five AUs (Service 2022, pp. 4–5). Redundancy for narrow endemic species is inherently limited; however, DeBeque phacelia plants are distributed broadly across the range of the species in the five defined AUs, providing redundancy throughout its small geographic range, especially given that the only plausible catastrophic event is prolonged extreme drought (Service 2022, p. 33). DeBeque phacelia’s broad distribution and multiple moderately resilient AUs contribute to its ability to withstand catastrophic events.

Additionally, BLM’s ACECs reduce the influence of the stressors of OHV use and oil and gas development in 63 percent of the species’ currently occupied range; approximately 359 acres of occupied DeBeque phacelia habitat and nine of the 25 DeBeque phacelia EOs occur within BLM ACECs. A BLM ACEC is a designation that highlights an area where special management attention is needed to protect important historical, cultural, and scenic values, protect fish and wildlife, or protect other natural resources. One of the eight EOs in the South Shale Ridge AU is located in the Pyramid Rock ACEC, which is intended specifically for the preservation of habitat for plant species, including DeBeque phacelia. This area is fenced and closed to livestock use; motorized, mechanized, and equestrian use; and hiking (BLM 2015, p. 31). It is unlikely that any of the ACEC designations will be withdrawn in the foreseeable future. These regulatory

mechanisms have lessened the influence of OHV use and oil and gas development on the species within these ACECs, further contributing to the species' moderate levels of resiliency.

Given the currently moderate level of resiliency in the five DeBeque phacelia AUs and the reduction in current stressors from OHV use and oil and gas development as a result of the ACECs, we find that DeBeque phacelia currently has sufficient ability to withstand stochastic and catastrophic events. Therefore, we conclude that DeBeque phacelia is not currently in danger of extinction throughout all of its range.

2.3.2 Evaluation of Status: Likely to Become Endangered Throughout its Range

Having found that DeBeque phacelia is not in danger of extinction throughout its range, we next evaluated whether the species is likely to become an endangered species within the foreseeable future throughout all of its range. Under the Act, a threatened species is any listable entity that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range” (16 U.S.C. Section 1532(20)). The key statutory difference between a threatened species and an endangered species is the timing of when a listable entity may be in danger of extinction, either now (endangered species) or in the foreseeable future (threatened species).

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” On July 5, 2022, the U.S. District Court for the Northern District of California vacated regulations that the Service (jointly with the National Marine Fisheries Service) had promulgated in 2019 (*Center for Biological Diversity v. Haaland*, No. 4:19-cv-05206-JST, Doc. 168 (*CBD v. Haaland*)). As a result of that vacatur, regulations that were in effect before those 2019 regulations now govern listing and critical habitat decisions.

Because the decision in *CBD v. Haaland* vacated our 2019 regulations regarding the foreseeable future, we refer to a 2009 Department of the Interior Solicitor's opinion entitled “The Meaning of ‘Foreseeable Future’ in Section 3(20) of the Endangered Species Act” (M-37021). That Solicitor's opinion states that the foreseeable future “must be rooted in the best available data that allow predictions into the future” and extends as far as those predictions are “sufficiently reliable to provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.” *Id.* at 13.

It is not always possible or necessary to define the foreseeable future as a particular number of years. In some instances, defining foreseeable future as a particular number of years may even be confusing, since the time period within which we can make reliable predictions—that is, the foreseeable future—may vary by threat. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

For the purposes of our analysis, we defined the foreseeable future to the year 2050. We selected this timeframe because it is short enough for us to realistically predict changes in climate conditions, species' stressors and land management, yet long enough to be biologically meaningful to the species and to begin to understand the response of ecosystems to those changes (Service 2022, p. 35).

To assist us in evaluating the status of DeBeque phacelia in the foreseeable future to the year 2050, we evaluated the future condition for the five AUs under three plausible future scenarios: an optimistic scenario, a continuation scenario, and a pessimistic scenario (Service 2022, pp. 36–38), as described above. Given some level of uncertainty about the conditions that will actually be present in 2050, these scenarios capture the plausible range of future conditions the species may experience. DeBeque phacelia could experience an increase in extinction risk under two of the three future scenarios.

As described above, the greatest factor contributing to the decline in resiliency under the pessimistic scenario is reduced habitat condition from the hotter, drier climatic conditions (Service 2022, pp. 45–46). Moreover, resiliency scores under this scenario likely overestimate potential population health, given that they include the same scores for number of individuals as current condition, even when the climate and management components of this future scenario would likely reduce the number of individuals on the landscape (Service 2022, pp. 45–46). Additionally, the drier conditions and, thereby, worsened habitat conditions for some EOs under the continuation future scenario also reduce future resiliency under this scenario. This decreased ability to withstand stochastic events under both the pessimistic scenario and the continuation scenario increases extinction risk for the species in the future. The drier conditions, and increased potential of drought, also increase the likelihood of potential catastrophic events in the future under these two scenarios (decreasing redundancy).

In addition to the species' potential loss of resiliency and redundancy in the future, its limited adaptive capacity will further reduce viability in the foreseeable future, especially as the climate changes. Recent genetic studies suggest that DeBeque phacelia's self-fertilization strategy limits its genetic diversity. There are low levels of genetic diversity within and among DeBeque phacelia populations (Anderson and McGlaughlin 2020, p. 2). Self-fertilization limits variability within species and makes this rare plant vulnerable to novel stressors (Anderson and McGlaughlin 2020, p. 47). This lack of genetic variability within and between populations may compromise the species' ability to adapt to changing environmental conditions (like the drier conditions predicted in the region).

Additionally, DeBeque phacelia is a soil specific obligate and is only known to occupy 568 acres because of its specific microhabitat preference (Service 2022, p. 14). It requires a very specific type of soil found on the Wasatch Formation, which displays different texture, color and crack patterns than the surrounding soils (i.e., "soil functional integrity") (Service 2022, p. 14). Additionally, it is also found only in certain elevation ranges and slopes (Service 2022, p. 14). Under the pessimistic future scenario, under which habitat condition, and especially soil functional integrity, declines, the species' specific habitat requirements may further reduce its ability to adapt to these future disruptions to habitat (Service 2022, p. 50).

With increasing prevalence of stressors in the pessimistic future scenario, resiliency decreases in relation to current condition, and representation is unlikely to improve. Under the plausible future conditions, two of the three future scenarios present worsened viability, and increased extinction risk, relative to current condition. Therefore, after assessing the best available information, we find that DeBeque phacelia remains in danger of extinction in the foreseeable future throughout all of its range.

2.3.3 Evaluation of Status Throughout a Significant Portion of its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Center for Biological Diversity*), vacated the aspect of the 2014 Significant Portion of its Range Policy that provided that the Services do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in *Center for Biological Diversity*, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e., endangered). In undertaking this analysis for DeBeque phacelia, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered.

For DeBeque phacelia, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the threats reflected in the SSA: livestock use, invasive and introduces species, recreation, energy production, communication/utility lines and climate change. We found no concentration of threats in any portion of the DeBeque phacelia range at a biologically meaningful scale. Thus, there are no portions of the species' range where the species has a different status from its rangewide status. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in *Desert Survivors v. Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d , 946, 959 (D. Ariz. 2017).

2.4 Summary of Evaluation and Recommendation

Our review of the best available scientific and commercial information indicates that DeBeque phacelia does not meet the definition of an endangered species, but does meet the definition of a threatened species in accordance with Section 3(6) and 3(20) of the Act. Therefore, with this 5-year status review, we recommend that DeBeque phacelia (*Phacelia submutica*) retain its status as a threatened species under the Act.

**U.S. FISH AND WILDLIFE SERVICE
5-YEAR STATUS REVIEW FOR
DEBEQUE PHACELIA
(*Phacelia submutica*)**

CURRENT CLASSIFICATION: Threatened

RECOMMENDATION RESULTING FROM THIS 5-YEAR STATUS REVIEW:

- Downlist to Threatened
- Uplist to Endangered
- Delist:
 - Extinction
 - Recovery
 - Original data for classification in error
- No change is needed

REGIONAL OFFICE APPROVAL:

Approved by: _____ Date: _____

Nicole Alt
Colorado Ecological Services Supervisor
U.S. Fish and Wildlife Service
Ecological Services, Denver, Colorado

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