U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: ***Astragalus sabulosus*, *A. vehiculus*, and *A. iselyi***

COMMON NAME: **Cisco, stage station, and Isely's milkvetches**

LEAD REGION: **R6**

DATE INFORMATION CURRENT AS OF: **September 15, 2022**

STATUS/ACTION

__**X**__ Species assessment - determined either we do not have sufficient information on threats or the information on the threats does not support a proposal to list the species and, therefore, it was not elevated to Candidate status

___ Listed species petitioned for uplisting for which we have made a warranted-but-precluded finding for uplisting (this is part of the annual resubmitted petition finding)

___ Candidate that received funding for a proposed listing determination; assessment not updated

___ New candidate

___ Continuing candidate

___ Listing priority number change
Former LPN: ___
New LPN: ___

___ Candidate removal: Former LPN: ___
___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
___ F – Range is no longer a U.S. territory.
___ I – Insufficient information exists on taxonomy, or biological vulnerability and threats, to support listing.
___ M – Taxon mistakenly included in past notice of review.
___ N – Taxon does not meet the Act's definition of "species."
___ X – Taxon believed to be extinct.

Date when the species first became a Candidate (as currently defined):

Petition Information:
__x_ Non-petitioned: **stage station milkvetch**
_x__ Petitioned; Date petition received: **__Cisco and Isely's milkvetches; July 30, 2007**
90-day substantial finding FR publication date: **August 18, 2009; correction on September 14, 2009**
12-month warranted but precluded finding FR publication date:

PREVIOUS FEDERAL ACTIONS:

We identified Cisco milkvetch as a Category 2 candidate species in our December 15, 1980, Review of Plant Taxa for Listing as Endangered or Threatened Species (45 FR 82480). Category 2 candidates were defined as taxa for which we had information indicating that listing was probably appropriate, but for which sufficient information was not available to biologically support a proposed rule. We again identified Cisco milkvetch as a Category 2 candidate species in our September 27, 1985, Review of Plant Taxa for Listing as Endangered or Threatened Species (50 FR 39526 39584). Category 2 candidates were defined as taxa for which we had information that listing was possibly appropriate, but conclusive data on biological vulnerability and threats were not available to support a proposed rule. In the 1993 Review of Plant Taxa for Listing as Endangered or Threatened Species (58 FR 51144 51190), it was identified as a Category 2 species, then in the 1996 Review of Plant and Animal Taxa That Are Candidates for Listing as Endangered or Threatened Species (61 FR 7596), we discontinued the designation of Category 2 species as candidates; therefore, after that time Category 2 species were no longer candidate species.

We identified Isely's milkvetch as endangered in our June 16, 1976, FR Notice for Endangered and Threatened Wildlife and Plants (41 FR 24523). We later identified Isely's milkvetch as a Category 1 candidate species in our December 15, 1980, Review of Plant Taxa for Listing as Endangered or Threatened Species (45 FR 82480). Category 1 candidates were defined as taxa for which we had sufficient information on hand to support the biological appropriateness of listing, but for which final rules were delayed due to the large number of such species and because of the need to gather data concerning the environmental and economic impacts of listings and designations of Critical habitats. In the 1985 Review of Plant Taxa for Listing as Endangered or Threatened Species (50 FR 39526 39584), it was identified as a Category 3c species, defined as more abundant or widespread than previously believed and/or not subject to any identifiable threat, making it no longer considered a candidate species.

On July 30, 2007, we received a petition dated July 24, 2007, from Forest Guardians (now WildEarth Guardians) to list 206 species in the mountain-prairie region of the United States, including Cisco milkvetch and Isely's milkvetch, as endangered or threatened species under the Act. We completed a 90-day finding on August 18, 2009 (74 FR 41649 41662; correction on

September 14, 2009, 74 FR 46965 46966), in which we announced our finding that the petition contained substantial information that listing may be warranted for numerous species, including Cisco milkvetch and Isely's milkvetch. This document constitutes our 12-month finding on the July 30, 2007, petition to list Cisco milkvetch and Isely's milkvetch under the Act.

Stage station milkvetch: There are no previous Federal Actions, because stage station milkvetch was only recently identified as being a separate species from Cisco milkvetch (see discussion below).

ANIMAL/PLANT GROUP AND FAMILY:
Cisco milkvetch, Stage station milkvetch, Isely's milkvetch: Flowering plants, Fabaceae family

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE:

- Cisco milkvetch: Grand County, Utah
- Stage station milkvetch: Grand County, Utah
- Isely's milkvetch: Grand and San Juan Counties, Utah

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

- Cisco milkvetch: Grand County, Utah
- Stage station milkvetch: Grand County, Utah
- Isely's milkvetch: Grand and San Juan Counties, Utah

LAND OWNERSHIP

- Cisco milkvetch: Bureau of Land Management (BLM), the Utah School and Institutional Trust Lands Administration (SITLA), the Utah Department of Transportation, and private
- Stage station milkvetch: BLM, SITLA, Utah Department of Natural Resources, and private
- Isely's milkvetch: BLM, the Manti La-Sal National Forest, SITLA, and private

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BIOLOGICAL INFORMATION

To assess the viability of Cisco milkvetch, stage station milkvetch, and Isely's milkvetch, we conducted a species status assessment (SSA) using the three conservation biology principles of resiliency, redundancy, and representation (collectively the "3 Rs"). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years, variation in demographic rates), redundancy supports

the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate change, disease). A species with a high degree of resiliency, representation, and redundancy is better able to adapt to novel changes and to tolerate environmental stochasticity and catastrophes. In general, species viability will increase with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing each species' viability.

We used the SSA framework to assemble the best scientific and commercial data available for these species. The SSA framework consists of three sequential stages. During the first stage, we evaluate the species' needs. The next stage involves an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how each species arrived at its current condition (i.e., how threats and conservation actions have influenced the species). The final stage of the SSA framework involves assessing each species' plausible range of future responses to positive and negative environmental and anthropogenic influences. The SSA framework uses the best available information to characterize viability as the ability of a species to sustain populations in the wild over time and is used to inform our regulatory decision.

Species Description

Cisco milkvetch, stage station milkvetch, and Isely's milkvetch are all relatively short-lived (3–5 years) perennial plant species in the pea family Fabaceae. These species are similar in appearance and are best differentiated by flower size and color.

Cisco milkvetch is a short-lived, clump-forming perennial with relatively large (2.7–3.4 cm [1.06–1.34 in]), pale yellowish-white flowers and red stems (Figure 1). The flowers are the largest within the *Astragalus* genus in Utah (Welsh 1998, p. 52). The inflorescence consists of four to 10 flowers. Plants are 13–38 cm (5.1–15 in) in height. Leaves are 3–10.5 cm (1.2–4.1 in) in length with five to 11 leaflets that are 0.6–3.5 cm (0.2–1.4 in) in length and 0.3–1.7 cm (0.1–0.7 in) wide. Fruits are inflated and 2.0–4.8 cm (0.8–1.9 in) in length.

Figure 1. Cisco milkvetch in flower. Photo credit: Dan Winkler, U.S. Geological Survey.

Stage station milkvetch is a short-lived perennial with red stems and pinkish to whitish flowers that fade to yellowish whitish (Welsh et al. 2015, p. 432; Figure 2). It can be distinguished from Cisco milkvetch by its flower color and smaller flowers (2.3–2.7 cm [0.9–1.06 in]). The inflorescence consists of four to 10 flowers. Plants are 13–38 cm (5.1–15 in) in height. Leaves are 3–10.5 cm (1.2–4.1 in) in length with five to 11 leaflets that are 0.6–3.5 cm (0.2–1.4 in) in length and 0.3–1.7 cm (0.1–0.7 in) wide. Fruits are inflated and 2.8–4.5 cm (1.1–1.8 in) in length.

Figure 2. Stage station milkvetch in flower. Photo credit: M. A. Franklin.

Isely's milkvetch is a short-lived perennial with red stems and yellowish-white flowers (Figure

3). Flowers are more whitish than Cisco and stage station milkvetch and considerably smaller, measuring 1.7–1.9 cm (0.67–0.75 in) in length. Leaves are 3.2–8.5 cm (1.3–3.3 in) in length with five to 11 leaflets that are 0.7–2.3 cm (0.3–0.9 in) in length (Welsh 1974, p. 305). Fruits are inflated and 2.5–3.2 cm (0.98–1.26 in) in length.

Figure 3. Isely's milkvetch in flower. Photo credit: M. A. Franklin.

Taxonomy

Cisco milkvetch, stage station milkvetch, and Isely's milkvetch all belong to the *Preussiani* taxonomic section within the genus *Astragalus*. Cisco milkvetch was first collected on May 2, 1890 at Cisco, Utah and described in 1891 by Marcus E. Jones (Jones 1891, pp. 239–240). Stage station milkvetch was first collected in 1913 by Marcus E. Jones approximately 26 kilometers (km) (16 miles) northwest of Moab, Utah near Courthouse Rock (Welsh 1998, p. 53), with historical collections describing it as a distinct variety of Cisco milkvetch. In the most recent treatment of Utah flora (Welsh et al. 2015, p. 432), the stage station variety of Cisco milkvetch was elevated to the species level. The current accepted taxonomy for stage station milkvetch is *Astragalus vehiculus* S.L. Welsh. Isely's milkvetch was first collected by Per Axel Rydberg in July 1911 in the La Sal Mountains in San Juan County, Utah (Welsh 1974, p. 307). Stanley Welsh described Isely's milkvetch as a separate species in 1974 (Welsh 1974, p. 307). The current accepted taxonomy for Isely's milkvetch is *Astragalus iselyi* S. L. Welsh (1974).

Recent genomic analyses revealed that Cisco, stage station, and Isely's milkvetch represent three closely related but distinct taxa that diverged nearly simultaneously from a common ancestor (Jones et al. 2021, p. 1415). Further, Jones et al. (2021) found evidence of extremely low gene flow among the three taxa (p. 1415). The authors suggested that these taxa could

either be considered three separate species or three varieties under a single species, although more detailed studies are needed (Jones et al. 2021, p. 1417). Other genetic studies within *Astragalus* suggest that either scenario may be acceptable (Massatti et al. 2018, p. 1709). For the purposes of the SSA report (Service 2022), we considered these taxa to be three separate species: Cisco milkvetch (*A. sabulosus*), stage station milkvetch (*A. vehiculus*), and Isely's milkvetch (*A. iselyi*).

Habitat/Life History

Due to similarities in life history, ecology, and resource needs of Cisco milkvetch, stage station milkvetch, and Isely's milkvetch, the habitat and life history information applies to all three milkvetch species unless otherwise noted. Key resource needs for each life stage are shown in Table 1 and described below.

Table 1. Resource needs and corresponding resource functions by life stage for individual Cisco, stage station, and Isely's milkvetch. H=Habitat, N=Nutrition, R=Reproduction.

Life Stage	Resource Need	Resource Function
seed (germination)	suitable soil conditions	H
	open, sparsely vegetated areas with little competition from other plants	H, N
	suitable microsites	H, N
	sufficient spring/fall precipitation	N
seedling (emergence)	suitable soil conditions	H
	open, sparsely vegetated areas with little competition from other plants	H, N
	suitable microsites	H, N
	sufficient summer precipitation	N
	sufficient spring/fall precipitation	N
	sufficient winter precipitation	N
first year/vegetative plant	suitable soil conditions	H
	open, sparsely vegetated areas with little competition from other plants	H, N
	suitable microsites	H, N
	sufficient fall precipitation	N
	sufficient winter precipitation	N
	sufficient spring precipitation	N, R
flowering plant	suitable soil conditions	H
	open, sparsely vegetated areas with little competition from other plants	H, N
	suitable microsites	H, N
	sufficient spring precipitation	N, R
	Pollinators	R
fruit set	sufficient spring precipitation	N, R
	Pollinators	R

Individual plants appear to be relatively short-lived, living approximately 3–5 years (Wellard and Wheeler 2021a, p. 5). Plants reproduce by seed, and seed germination may occur in either the spring or fall (Atwood 2003, p. 13). Several *Astragalus* species exhibit adult plant dormancy where no aboveground plant structures are present, typically in response to severe drought conditions (Baskin and Baskin 1974, p. 11; Breinholt et al. 2009, p. 661; DePrenger-Levin et al. 2013, p. 265), and these species may exhibit similar dormancy (Wellard and Wheeler 2021b, p. 6).

Flowering in Cisco and stage station milkvetch generally occurs from late March–May, whereas flowering for Isely's milkvetch generally occurs from March–early May (Welsh et al. 2015, p. 416). Plants of all three species apparently begin flowering in their second year (Wellard and

Wheeler 2021a, p. 5). Fruit set can occur as early as late April but typically occurs in late May to mid-June (Wellard and Wheeler 2021a, p. 5). Fruits remain on the plant and split open to deposit seeds at the base of the parent plant, typically in early to mid-June (Atwood 2003, p. 12). Although seed dispersal is somewhat limited, some seeds may disperse away from the base of the parent plant via water and gravity (Atwood 2003, p. 12; Franklin 2003, p. 2). The aboveground portion of the plant dies back after flowering and fruiting each year, a process known as senescence. Plants are dormant during the winter months.

Successful seed germination and survival of seedlings for Cisco, stage station, and Isely's milkvetch depend upon the availability of suitable microsites although specific microsite characteristics required for germination and seedling establishment are unknown for these species. Individuals of all three milkvetch species occur on all topographic aspects in open, sparsely vegetated areas with little to no competition from other vegetation (Wellard and Wheeler 2021a, p. 13). Plants prefer upper slopes (Atwood 1995, entire; Atwood 2003, entire; Franklin 2003, entire), although individuals also occur in relatively high numbers on flatter terrain (Atwood 1995, p. 5). These species can apparently take advantage of available suitable habitats and often occupy disturbed areas, including road cuts, mining scars, and road margins (Franklin 2003, entire; Wellard and Wheeler 2021a, p. 13).

Sufficient precipitation in winter, spring, and fall to support adequate soil moisture is necessary for germination and seedling establishment, and sufficient spring and summer precipitation is necessary to support seedling survival, aboveground growth, flowering, and reproduction. These species exhibit wide annual fluctuations in abundance, and plants have been observed to thrive in years of above average precipitation and produce few or no plants in dry years (Atwood 2003, p. 11).

The breeding biology of Cisco, stage station, and Isely's milkvetch has not been studied, but may rely to some degree on pollinators. Specific pollinators for Cisco, stage station, and Isely's milkvetch are unknown, although other large-flowered *Astragalus* rely on large bee species for pollination (Green and Bohart 1975, p. 382; Karron 1987, p. 184; Geer et al. 1995, p. 22). Digger bee (*Anthophora* sp.; Wellard and Wheeler 2021a, p. 6) and Hunt's bumble bee (*Bombus huntii*) have been observed visiting flowers of Cisco and Isely's milkvetch (Cisco, stage station, and Isely's milkvetch SSA Team 2021a, p. 3), suggesting that pollinators may play an important role in reproduction and connectivity for these species.

All three milkvetch species have been observed growing only in selenium-rich soils, and these species take up and accumulate selenium in their tissues (Charboneau 2020, pp. 126–127). The degree to which these milkvetch species require soils high in selenium is not known, as no propagation studies for these species have been conducted.

Historical and Current Range/Distribution

Cisco, stage station, and Isely's milkvetch occur within Grand and San Juan Counties in

southeast Utah. They are considered narrow endemic plant species, meaning they have a narrow geographic range, highly specialized habitat requirements, and a small population size (Rabinowitz 1981, entire).

Cisco milkvetch: Cisco milkvetch is known from six populations in Grand County, Utah near the towns of Cisco and Thompson Springs (Figure 4). Despite additional searches throughout apparently suitable habitat, no other populations are known to occur (Wellard and Wheeler 2021a, p. 13). The six populations of Cisco milkvetch total 10,235 hectares (ha) (25,291 acres [ac]) and represent the known range for this species.

Populations of Cisco milkvetch have been visited irregularly over the past several decades. The most comprehensive surveys were conducted in 2012 (Fitts 2013, entire) and 2020 (Wellard and Wheeler 2021a, entire), although suitable habitat throughout each population was not systematically surveyed. Most populations have remained occupied since the earliest surveys in the 1970s and 1980s, although the Cisco population has not been surveyed since 1995 and current occupancy of Cisco milkvetch in this population is unknown (Franklin 1988, p. 4; Utah State University 2021).

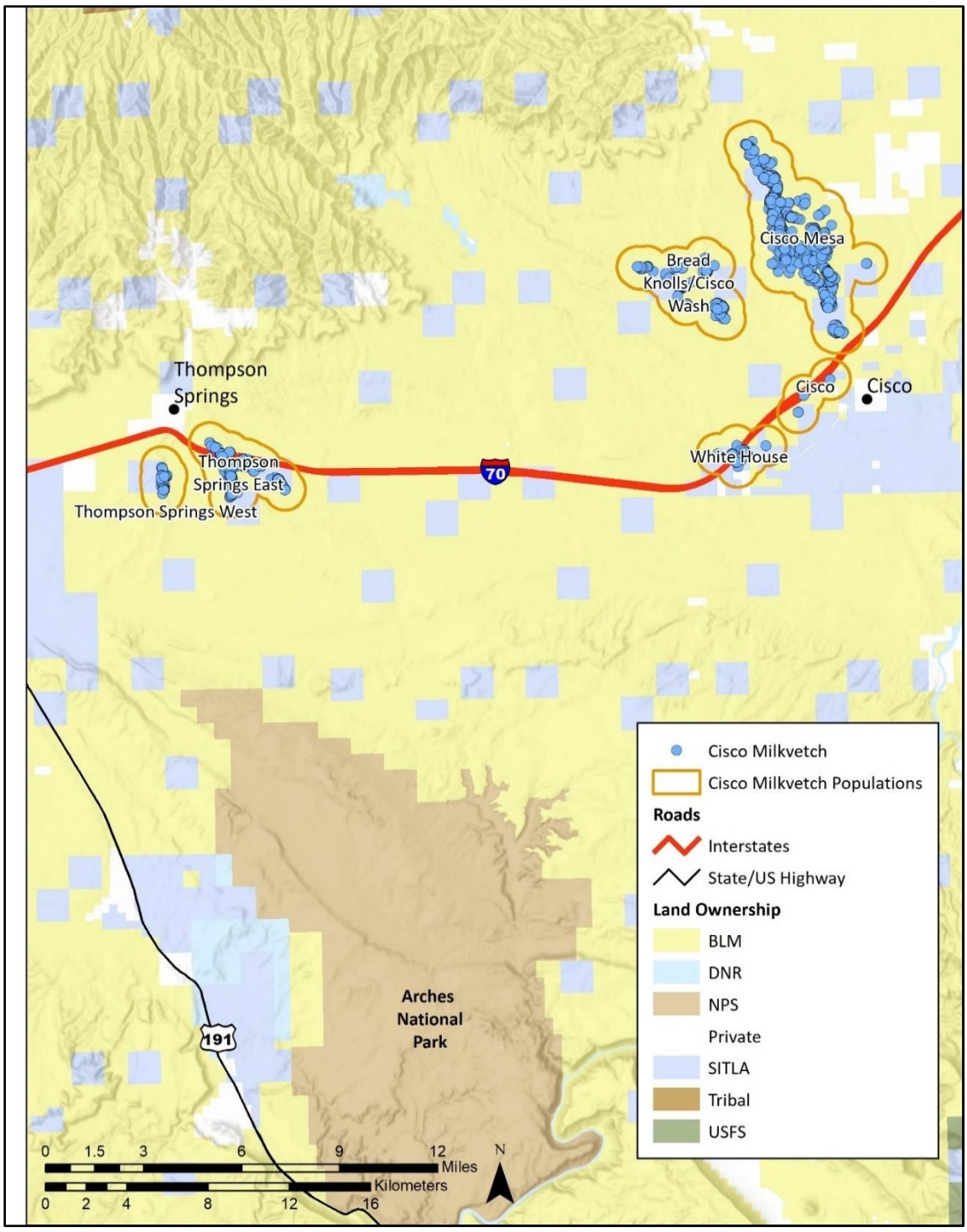

Figure 4. Cisco milkvetch populations in Grand County, Utah. Utah Department of Transportation lands occur within the Interstate 70 right-of-way.

Stage station milkvetch: Stage station milkvetch is known from a single population near Courthouse Rock in Grand County, Utah (Figure 5). Despite additional searches throughout apparently suitable habitat, no other populations are known to occur (Wellard and Wheeler

2021a, p. 13). The single known population of stage station milkvetch totals 1,178 ha (2,911 ac) and represents the known range for this species.

The single population of stage station milkvetch has been visited irregularly over the past several decades. The most recent comprehensive survey occurred in 2012, when 3,054 plants were recorded (Fitts 2013).

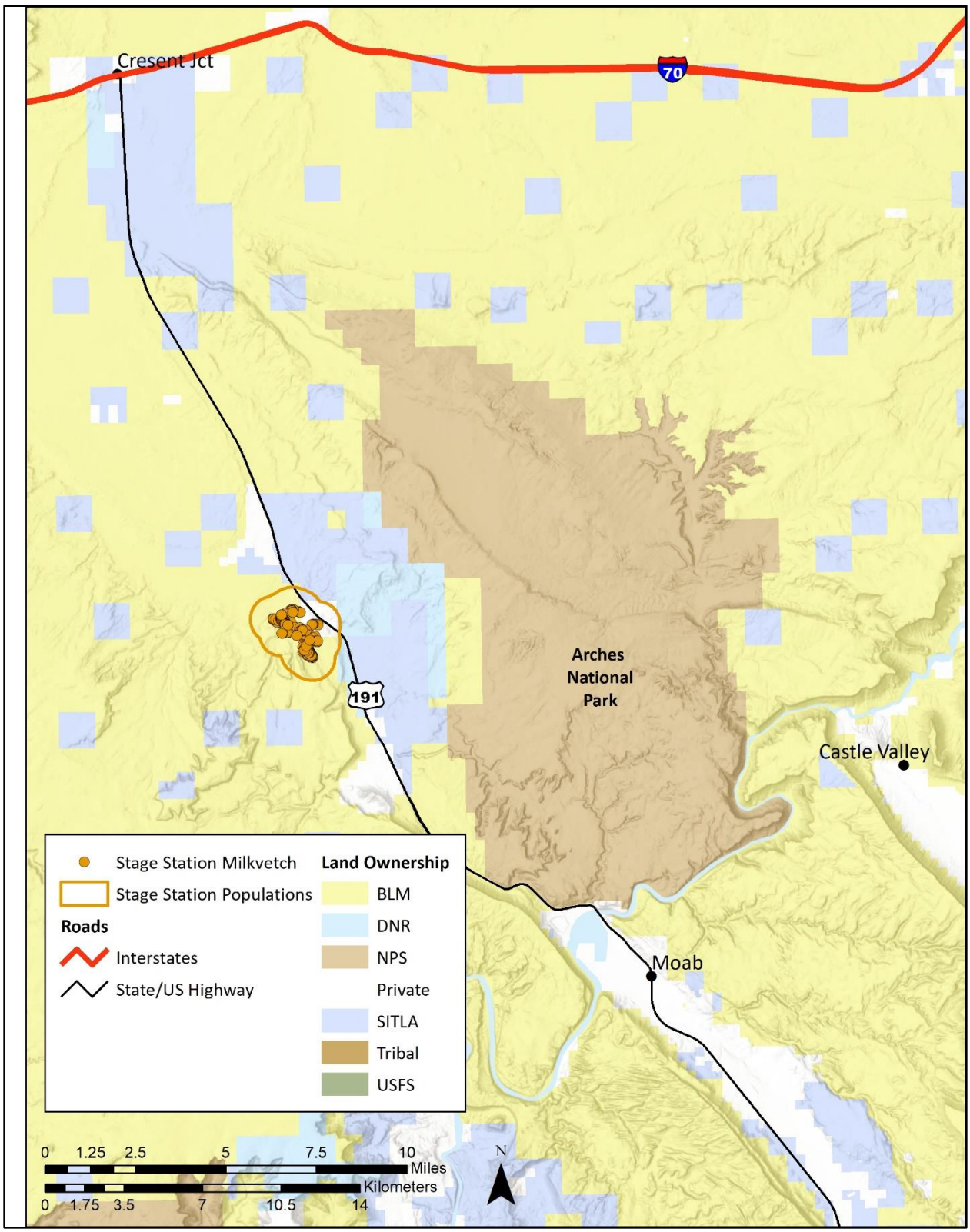

Figure 5. Stage station milkvetch population in Grand County, Utah.

Isely's milkvetch: Isely's milkvetch is known from four populations in Grand and San Juan Counties, Utah (Figure 6). Despite additional searches throughout apparently suitable habitat, no other populations are known to occur (Wellard and Wheeler 2021a, p. 13). The four populations of Isely's milkvetch total 7,368 ha (18,206 ac) and represent the known range for this species.

Populations of Isely's milkvetch have been visited irregularly over the past several decades. The most comprehensive surveys were conducted in 2012 (Fitts 2013, entire) and 2020 (Wellard and Wheeler 2021a, entire), although suitable habitat throughout the populations was not systematically surveyed. Current population areas have remained occupied since the earliest surveys in the 1980s.

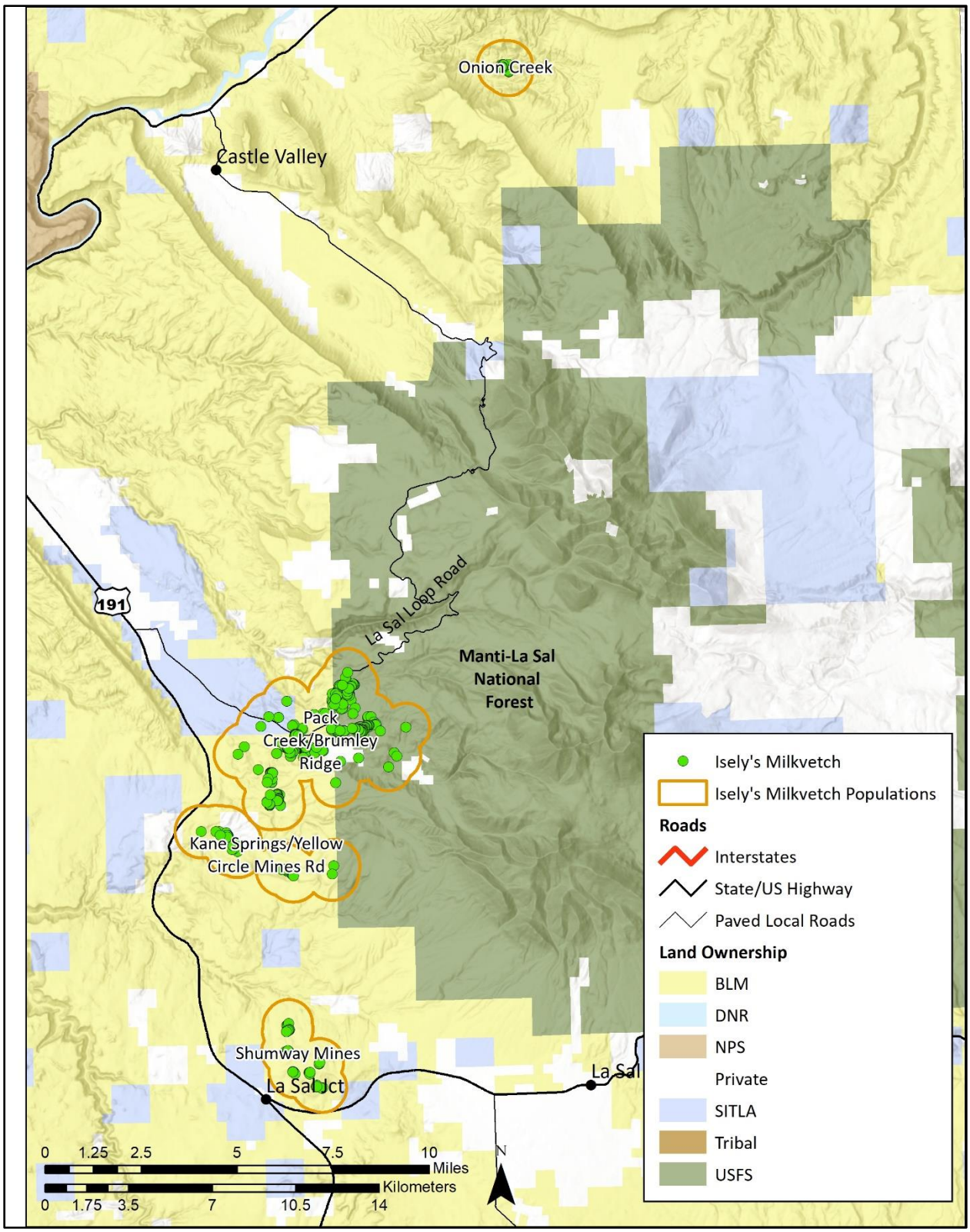

Figure 4. Isely's milkvetch populations in Grand and San Juan Counties, Utah.

Population Needs

Population resiliency of Cisco, stage station, and Isely's milkvetch is dependent upon several demographic factors, including seed germination, seedling establishment and survival, seed viability, a sufficient seed bank, adult survival, proportion of reproductive adults, and reproductive output (i.e., number of seeds). Precipitation may have the greatest influence on plant abundance and maintenance of populations, as seed germination, seedling establishment and survival, flowering, and reproductive output can vary greatly depending upon the amount of seasonal precipitation (Franklin 1988, p. 6; Atwood 1995, p. 2; Atwood 2003, pp. 10–11, 13).

We delineated units of analysis for each species based on the Element Occurrence Data Standard used by the national network of Natural Heritage Programs (NatureServe 2020, p. 1) to identify the species' element occurrences (EOs). An EO is an area of land in which the species is, or was present (NatureServe 2020, p. 1). Observations of the species are grouped together within the same EO if they are separated by no more than 2 (km) (1.24 miles; NatureServe 2020, p. 6). In the few instances where the distance between observations slightly exceeded 2 km (1.24 miles), we combined these EOs into a single unit for this analysis. We refer to these units of analysis as populations in this report, although we recognize that there is likely genetic exchange among some of these units. We used these boundaries to calculate the area of each population for each species, recognizing that population areas include small areas of unsuitable habitat. For more detail on our methods on delineating populations, see the SSA (Service 2022, p. 29).

Although field surveys of these species have occurred, systematic inventories throughout suitable habitat for these species have not been conducted. Field surveys of Cisco milkvetch, which also included surveys of what is now known to be stage station milkvetch, were conducted in 1988 (Franklin 1988, entire), 1995 (Atwood 1995, entire), and 1997–1998 (Franklin 1999, entire). Surveys for stage station milkvetch also occurred in 2003 (Atwood 2003, entire). Surveys for Isely's milkvetch occurred in 1982 (Hreha 1982, entire) and 2001–2002 (Franklin 2003, entire). Surveys for all three milkvetch species occurred in 2012 (Fitts 2013, entire) and in 2020 (Wellard and Wheeler 2021a, entire). However, the number of plant occurrences over time cannot be compared because data were collected with different sampling methods, and the number of plants present each year is highly variable depending upon environmental conditions, notably the amount of precipitation (Franklin 1988, p. 6; Atwood 1995, p. 2; Atwood 2003, p. 13).

No regular monitoring of populations has been conducted, and we are unable to evaluate population trends for these species. In the spring of 1998, a monitoring plot was established at the White House population of Cisco milkvetch, and a second plot was established within the stage station milkvetch population (Franklin 1999, entire). The plots were surveyed at the time of establishment and were not revisited until spring of 2021 (Wellard and Wheeler 2021b, entire). This second survey yielded far fewer plant occurrences than the previous 1998 survey.

A total of 8 plants were counted in the White House population of Cisco milkvetch and one plant was counted in the stage station milkvetch population, compared to 77 and 32 plants observed in 1998, respectively (Wellard and Wheeler 2021b, pp. 5–6). The previous summer of 2020 was the driest summer on record for Utah, which likely contributed to this reduction in plants located within the monitoring plots (Wellard and Wheeler 2021b, p. 6).

Species Needs

The ecological needs of Cisco, stage station, and Isely's milkvetch at the species' level include having a sufficient number and distribution of healthy populations as well as the genetic, phenotypic, and ecological diversity to ensure that each species can withstand annual variation in its environment (resiliency), catastrophes (redundancy), and novel biological and physical changes in its environment (representation). Healthy populations of each species distributed throughout suitable habitats within its range allow for each species to withstand stochastic disturbances and natural variation. Multiple, healthy populations of each species also guard against population losses due to catastrophic events and help maintain adaptive capacity across populations. The ability of each species to withstand novel changes in its environment is influenced by its adaptive capacity, which is a function of its ecological, morphological, physiological, and genetic variation.

SUMMARY OF BIOLOGICAL INFORMATION

Cisco milkvetch, stage station milkvetch, and Isely's milkvetch are perennial flowering plants found in southeast Utah in Grand and San Juan counties. As narrow endemics, there have likely always been relatively few populations of these species within a narrow range. Based on the best available information, the current distribution of the species is similar to its historical distribution. Although estimates of population abundance or trends are largely absent throughout the range, we used available occurrence data and information on habitat to inform our assessment of population status.

Cisco milkvetch, stage station milkvetch, and Isely's milkvetch appear to be narrowly restricted to specific environmental conditions, including open, sparsely vegetated areas with little competition from other plants, and have only been observed growing in selenium-rich soils. Although these species require sufficient seasonal precipitation for seed germination, seedling emergence, vegetative plant growth, flowering, and fruit set, specific suitable microsite characteristics are also unknown.

FACTORS INFLUENCING THE STATUS

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened

species, and designating critical habitat for threatened and endangered 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 any species is 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 individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

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 (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). 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 statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response 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 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 Secretary determines 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 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR parts 17 and 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020 and 84 FR 44752; August 27, 2019).

However, on July 5, 2022, the U.S. District Court for the Northern District of California vacated the 2019 regulations (Center for Biological Diversity v. Haaland, No. 4:19-cv-05206-JST, Doc. 168 (N.D. Cal. July 5, 2022) (CBD v. Haaland)), reinstating the regulations that were in effect before the effective date of the 2019 regulations as the law governing species classification and critical habitat decisions. Subsequently, on September 21, 2022, the U.S. Circuit Court of Appeals for the Ninth Circuit stayed the district court's July 5, 2022, order vacating the 2019 regulations until a pending motion for reconsideration before the district court is resolved (In re: Cattlemen's Ass'n, No. 22-70194). The effect of the stay is that the 2019 regulations are the governing law as of September 21, 2022.

Due to the continued uncertainty resulting from the ongoing litigation, we undertook an analysis of whether our determination would be different if we were to apply the pre-2019 regulations. That analysis, which we described in a separate memo in the decisional file and posted on https://www.regulations.gov, concluded that we would have reached the same determination if we had applied the pre-2019 regulations because both before and after the 2019 regulations, the standard for whether a species warrants listing has been, and will continue to be, whether the species meets the definition of an endangered species or a threatened species. Further, we concluded that our determination of the foreseeable future would be the same under the 2019 regulations as under the pre-2019 regulations.

THREATS

The following sections include summaries of the primary threats affecting Cisco, stage station, and Isely's milkvetch at the population or species level. Our evaluation of each threat and its expected effects on each species also takes into consideration existing regulatory mechanisms or conservation efforts. Protection, management, and conservation measures that may improve the species' viability are also summarized below. Threats apply to all three milkvetch species unless otherwise noted. We incorporated all of the stressors described in this section into an influence diagram that models the cumulative effects of stressors on the habitat and demographic factors influencing the resiliency of Cisco, stage station, and Isely's milkvetch populations (Figure 7). For a full description of the threats and species' response see the SSA report (Service 2022, pp. 37–61). We considered the potential for all five factors described in the Act to be threats to the species; however, because the best available information did not show that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) was a potential threat, we did not evaluate these threats in the SSA as threats to the species.

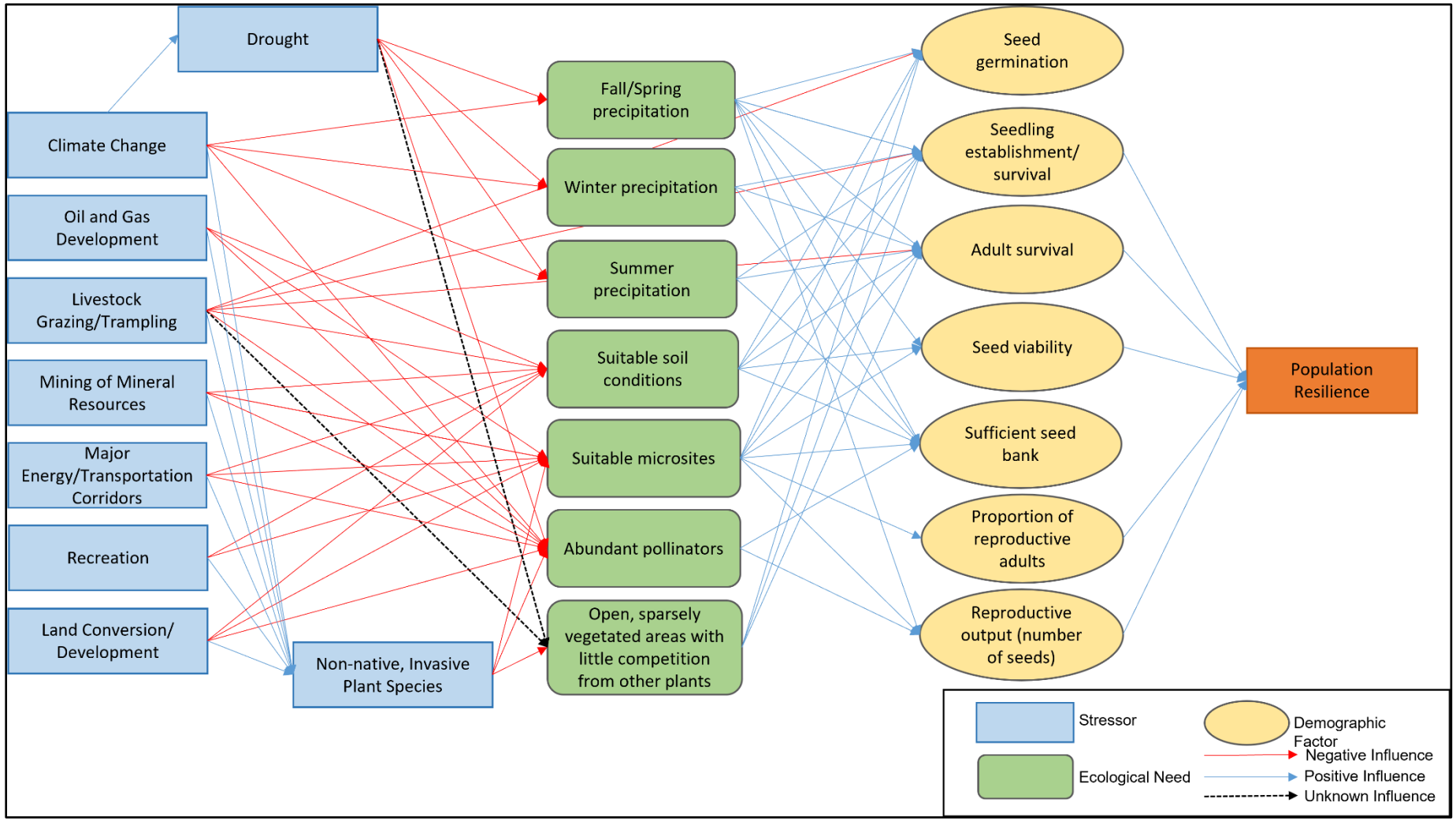

Figure 7. An influence diagram modeling how stressors can affect the resiliency of Cisco, stage station, and Isely's milkvetch. Stressors (blue boxes) may decrease the availability (represented by red arrows) of habitat factors (green boxes) needed by Cisco, stage station, and Isely's milkvetch. The habitat factors positively influence (represented by blue arrows) demographic factors (represented by gold ovals), which then influence population resiliency.

Recreation

Recreational activities within the range of Cisco, stage station, and Isely's milkvetch include off-highway vehicle use, camping, mountain biking, hiking, and recreational shooting, and recreational use and population growth are projected to increase substantially within the range of these species in the future. Recreation on BLM-managed lands is addressed in the most recent resource management plan (RMP) for the Moab planning area (BLM 2008b). The most recent land and resource management plan for the Manti-La Sal National Forest was completed in 1986 (USDA Forest Service 1986). Over five million visitors visit the Moab area annually (Podmore 2021), up from over two million visitors in 2008 (BLM 2008b, p. 29). Additionally, populations in Grand and San Juan Counties are projected to increase by 52 percent and 47 percent by 2065, respectively (Perlich et al. 2017, p. 4). We discuss individual recreational activities within the range of the three milkvetch species in the following sections.

Off-Highway Vehicle Use

Off-highway vehicle (OHV) use is a current threat that is likely to increase within the ranges of Cisco, stage station, and Isely's milkvetches. OHV use is one of the fastest growing outdoor recreation activities in the United States (Kil et al. 2012, p. 365), and the number of registered OHVs in Utah increased by 233% from 1998 to 2006 (Burr et al. 2008, p. 1). The best available information indicates that OHV use may eliminate and degrade habitat for Cisco, stage station, and Isely's milkvetch and have localized effects on individual plants. Currently, OHV use occurs primarily on designated routes throughout the ranges of Cisco, stage station, and Isely's milkvetch. It is unknown how much actual habitat for these species has been lost, as individual plants still occur within these routes. Additionally, off-road travel by OHVs can have direct effects on individual plants via crushing and trampling and indirect effects via soil compaction, reduced water infiltration, damage to soil crusts, increased dust, and spread of invasive plant species (Ouren et al. 2007, p. 5).

Mountain Biking

The best available information indicates that mountain biking activities have localized effects on individual plants. No designated mountain bike trails occur within Cisco, stage station, and Isely's milkvetch populations, although bikes can travel along other unpaved designated routes through these areas. Several unauthorized trails created by mountain bikers on the Manti-La Sal National Forest within suitable habitat for Isely's milkvetch have since been closed and rehabilitated, and no unauthorized trails are known to occur in occupied habitat (Smith, 2022, pers. comm.). We do not have any information to indicate that loss of individual milkvetch plants has occurred due to the creation of designated trails. Additionally, on lands managed by the BLM and the U.S. Department of Agriculture Forest Service (USFS), mechanized travel (e.g., mountain biking) is limited to designated trails and managed routes to protect resources (Cisco, stage station, and Isely's milkvetch SSA Team 2021b, p. 5).

Camping

The best available information indicates that camping has localized effects on individual plants across all three species. Camping within the ranges of Cisco, stage station, and Isely's milkvetch occurs on lands managed by the BLM and USFS within established campgrounds and as dispersed camping outside of designated camping areas. On BLM-managed lands, dispersed camping is allowed where not specifically restricted (BLM 2008b, p. 81).

- Cisco milkvetch: Within Cisco milkvetch populations, no established campgrounds and little to no dispersed camping occur (Cisco, stage station, and Isely's milkvetch SSA Team 2021b, p. 5).
- Stage station milkvetch: Within the stage station milkvetch population, camping is restricted to the Courthouse Rock Campground, approximately 0.9 ha (2.3 ac) in size (BLM 2008b, p. 90). It is unknown if any individuals of stage station milkvetch were lost with the creation of the campground or to what degree foot traffic associated with the campground occurs within occupied habitat.
- Isely's milkvetch: Within the range of Isely's milkvetch, there are no established campgrounds and most camping occurs as dispersed camping. Dispersed camping occurs off of the La Sal Mountain Loop Road, and occasional vehicle use away from designated routes has been observed, which can be particularly damaging in the spring when soils are wet (Cisco, stage station, and Isely's milkvetch SSA Team 2021b, p. 4). An established group picnic site occurs within the Pack Creek/Brumley Ridge population of Isely's milkvetch, although use is light (USDA Forest Service 2021).

Livestock Grazing

Historically, livestock grazing likely had substantial negative effects on the habitats of these milkvetch species. The best available information indicates that current levels of livestock grazing have individual-level effects to milkvetch plants and localized effects on milkvetch habitats but do not result in population-level effects. Given the trend in declining livestock numbers within the range of these three milkvetch species, we do not expect livestock grazing to increase substantially in the future.

Mining of Mineral Resources

Utah has abundant mineral resources and was one of the top 10 states for mineral production value over the past decade (Mills and Rupke 2020, p. 2). Historical mining of mineral resources, particularly uranium and vanadium, has negatively affected habitats for Isely's milkvetch. The best available information indicates mining has had individual-level effects. Additional information regarding historical and current mining of uranium, vanadium, potash, and lithium) within Cisco, stage station, and Isely's milkvetch populations is described, below.

Uranium and Vanadium Mining

Vanadium and uranium co-occur in southeastern Utah (Johnson and Thordarson 1966, p. 4; Mills and Rupke 2020, p. 33), and vanadium was often a byproduct of earlier uranium mining (Fischer 1942, p. 364). Uranium was actively mined throughout the Colorado Plateau from the early 1950s through the late 1970s (Mills and Rupke 2020, pp. 31–32). The last uranium mines in Utah closed in 1990 due to declining prices (BLM 2005a, p. 55).

No uranium/vanadium mining occurred within the known range of Cisco and stage station milkvetch, but past producing mines occur throughout Isely's milkvetch populations with the exception of the Onion Creek population. These mining operations left surface disturbance, roads, and waste rock piles. It is unknown if any Isely's milkvetch individuals were lost due to uranium mining operations. This species may have some level of disturbance tolerance, as individual plants have been observed growing within and along old mining roads, suggesting that these mines were located in areas occupied by Isely's milkvetch.

No active mining occurs today within the range of any of the three milkvetch species, and it is unlikely that old mines will reopen and or there will be future exploration. The likelihood for occurrence of undiscovered uranium is rated following Hansen (1991, p. 96) as having low or moderate potential within all populations of Isely's milkvetch except for the Onion Creek population. The uranium district near La Sal, Utah just outside of the known Isely's milkvetch range is rated as having high potential. Multiple uranium mines are currently permitted near La Sal, Utah, just outside of known Isely's milkvetch habitat, but no active mining is occurring, as these mines remain on standby until the return of more favorable economic conditions. Uranium deposits within Grand and San Juan Counties are of a lower grade and are considered subeconomic (i.e., too costly to extract given the nature of the deposits; Pals, 2021, pers. comm.). Utah's uranium mines will likely remain subeconomic until prices surpass $50 per pound (Boden et al. 2016, p. 17).

Potash

Potash deposits in the Paradox Basin occur within the range of all three milkvetch species. An active potash mine occurs approximately 12 km (7.5 miles) southwest of Moab, Utah and approximately 21 km (13 miles) south of stage station and 23 km (14 miles) west of the Kane Springs/Yellow Circle Mines Road and Pack Creek/Brumley Ridge populations of Isely's milkvetch. Although no potash mining has occurred within the known range of the three milkvetch species, further potash exploration within the Paradox Basin may be possible in the future, given the extensive potash resources in the area (Mills and Rupke 2020, p. 17). Stage station milkvetch occurs within an area of moderate to high development potential for potash; Cisco and Isely's milkvetch populations are not located within potential potash development areas (BLM 2014, p. 45).

Lithium

Interest in lithium exploration in the brines of the Paradox Basin includes a recent assessment of lithium resources in the area of the existing potash mine southwest of Moab (Mills and Rupke 2020, p. 29). Current technology and cost make lithium extraction from these brines cost prohibitive (Mill and Rupke 2020, p. 30). No lithium mining has occurred within the range of the three milkvetch species.

Oil and Gas Development

Oil and gas development has occurred throughout Grand County, Utah for over a century (BLM 2005b, p. 6), with historical and current oil and gas leases within areas of Cisco and Isely's milkvetch populations.

- Cisco milkvetch: Historically, oil and gas development has negatively affected Cisco milkvetch populations. Currently, active oil and gas wells occur within four of six Cisco milkvetch populations, and active oil and gas leases occur within all six Cisco milkvetch populations. BLM oil and gas leases comprise 3,764.2 ha (9,301.6 ac) or 36.8 percent of the total Cisco milkvetch population areas, and SITLA lease offerings total 952.7 ha (2,354.2 ac) or 9.3 percent of the total Cisco milkvetch population areas.
- Stage station milkvetch: No active oil and gas leases occur within the stage station milkvetch population,
- Isely's milkvetch: Active oil and gas leases occur on BLM lands within two of four Isely's milkvetch populations. Oil and gas leases comprise 873 ha (2,156.9 ac) or 50.8 percent of the Kane Springs/Yellow Circle Mines Road population and 1,115 ha (2,755.3 ac) or 97.2 percent of the Shumway Mines population of Isely's milkvetch. No oil and gas leases occur on USFS lands within Isely's milkvetch populations.

When leased parcels include potential habitat for Cisco or Isely's milkvetch, the BLM includes a lease notice containing avoidance and minimization measures. Lease notices are attached to leases at the time of issuance to alert the lessee that certain natural resource values exist on the lease area that may be required to be addressed in any lease operations (BLM 1996, p. 36).

Major Energy and Transportation Corridors

Two major transportation corridors and one large energy corridor run through the ranges of Cisco, stage station, and Isely's milkvetch. These major transportation and energy corridors have had both individual and population-level effects to all three milkvetch species. Additionally, future population growth may necessitate increases in infrastructure, which may further negative effects on habitats and populations for these species.

- Cisco milkvetch: Interstate 70 traverses east-west through four of the six Cisco milkvetch

populations (Cisco, White House, Cisco Mesa, and Thompson Springs East). A railroad also bisects the White House population and runs through the northern edge of the Thompson Springs East population. Cisco milkvetch individuals occur in the highway median, along the interstate and railway, and within an interstate rest area. Three populations likely experienced some habitat losses as a result of interstate construction in the 1970s (Atwood 1995, pp. 8, 20).

- Stage station milkvetch: U.S. Highway 191 is primarily a two-lane highway that travels through the eastern edge of the stage station milkvetch population. All known plant occurrences are located on bluffs above the highway over 250 meters (820 feet) to the west. Addition of a north-bound passing lane is planned in the vicinity of the stage station population (Fehr and Peers 2021, p. 32). Portions of the highway have been widened from two- to four-lanes to the south around Moab, Utah, with additional highway widening possible in the future.
- Isely's milkvetch: U.S. Highway 191 also traverses the western edge of the Kane Springs/Yellow Circle Mines Road population of Isely's milkvetch, where all known occurrences are located over 850 meters (2,789 feet) east of the highway.

Within transportation corridors, on-going maintenance activities, such as mowing and weed control, may negatively affect individual milkvetch plants. Additionally, individual plants may be crushed by maintenance vehicles and equipment.

In January 2009, the BLM designated energy corridors that are preferred locations for future oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on federal lands. A designated energy corridor runs through the stage station milkvetch population and through all populations of Isely's milkvetch except Onion Creek. Existing disturbances are co-located within this corridor, including three electricity transmission lines, an underground oil pipeline, a railroad, and a two-lane highway (U.S. Highway 191). This infrastructure existed at the time the corridor was designated (White et al. 2016, Appendix C). Losses of stage station and Isely's milkvetch likely occurred during construction of this infrastructure, although the extent of loss of individuals and potential habitat is unknown.

Non-native, Invasive Plant Species

Non-native, invasive plant species, particularly African mustard and cheatgrass, have been observed throughout habitats for these species. Although non-native, invasive plant species are present, they are likely limited to some extent by the high selenium content of soils where these milkvetch species occur (Statwick 2016, p. 108). Given potential increases in surface disturbances associated with the previously discussed stressors, the cover of invasive plants in these milkvetch populations may also increase given the strong relationship between anthropogenic disturbances and invasion by non-native plant species (Meyer et al. 2021, p. 103). Additionally, changes in precipitation regime and growing season length associated with climate change have the potential to increase the vulnerability of these milkvetch habitats to

non-native plant invasion.

Land Development and Conversion

To date, land development within populations of the three milkvetch species has been low. The potential for land development within Cisco, stage station, and Isely's milkvetch populations exists on private lands as well as some SITLA-managed lands. SITLA selects lands from its land portfolio with the potential for high-value real estate development, prioritizing lands near towns or major transportation corridors (Erler, 2021, pers. comm.). Southern portions of the Spanish Valley in San Juan County, Utah are developing rapidly, and some SITLA-owned lands are currently included in a residential and commercial development plan for the area. These lands include portions of the Pack Creek/Brumley Ridge population of Isely's milkvetch, although no occurrences of Isely's milkvetch have been observed in this development area.

Periodic Drought

Periodic droughts are common in Utah (Frankson et al. 2017, p. 3), and several periods of extreme or exceptional drought have occurred throughout the 21st century. In particular, 2002, 2012, and 2018 had several months of extreme or exceptional drought conditions (National Drought Mitigation Center 2021), with anecdotal observations of negative effects to plants across all three milkvetch species (Atwood 2003, p. 4; Fitts 2013, p. 3). Due to the lack of consistent population monitoring, we do not know how these species respond to prolonged drought conditions. Other *Astragalus* species exhibit reduced plant vigor, adult plant survival, and reproductive output during periods of severe drought (Van Buren and Harper 2003, p. 242), and we assume that Cisco, stage station, and Isely's milkvetch would exhibit a similar response; however, we lack information on the magnitude of their likely responses. The frequency and severity of prolonged drought is likely to increase with future changes in climate.

Climate Change

The annual mean temperature within the range of Cisco, stage station, and Isely's milkvetch has increased by 0.4°F per decade for the period 1979–2020 (Hegewisch and Abatzoglou 2021), and the early 21st century has been the warmest period on record in Utah (Frankson et al. 2017, p. 1). Precipitation is highly variable with periodic occurrences of extended wet and dry periods (Frankson et al. 2017, p. 3), and a warming climate will bring changes in precipitation amount, intensity, and timing (2019 Utah State Hazard Mitigation Plan, p. 286). Climate change can affect several needs of Cisco, stage station, and Isely's milkvetch related to seasonal precipitation. In general, climate change can also influence plant-pollinator interactions via changes in phenology and shifts in species distributions (Hegland et al. 2009, entire; Morton and Rafferty 2017, p. 1), which may also be the case for these milkvetches. Climate change is expected to have a substantial influence on the future conditions for Cisco, stage station, and Isely's milkvetch, as it is expected to increase the frequency and severity of prolonged drought,

as mentioned in the section above, and will affect the entirety of the species' ranges. Although we do not have information about the likely magnitude of these species' responses, the best available information indicates that these species have life history traits conducive to surviving periodic drought and hot summers similar to projected conditions resulting from climate change.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

Conservation measures considered in the SSA
When BLM parcels with potential habitat for Cisco or Isely's milkvetch are leased for oil and gas development, lessees must follow avoidance and minimization measures for Cisco and Isely's milkvetch (BLM 1996). BLM in coordination with the Service developed these measures to help ensure the activities carried out during oil and gas development avoid or minimize negative effects to these species. These measures include pre-project assessments and species surveys, 300 ft avoidance buffers between surface disturbance and avoidance areas (occupied habitat or suitable habitat when surveys are technically infeasible and otherwise hazardous), and strategies to avoid direct and indirect effects or to reduce effects when avoidance is not possible.

BLM and USFS policies direct for the conservation of sensitive species, which include but do not specifically target the three milkvetches, on BLM and USFS lands. The BLM Sensitive Species Policy contains specific protections for Threatened, Endangered, Proposed, Candidate, and Sensitive species (BLM 2008a). There are also provisions for sensitive species identified in the BLM Moab Field Office Resource Management Plan (BLM 2008b) and the USFS Manti-La Sal Forest Resource Management Plan (USDA Forest Service 1986).

Conservation measures contributed by a Conservation Agreement and Strategy
Upon completing a cursory review of threats to the three milkvetches as part of the SSA, we recognized the future condition of the species may lead to the species' meeting the definition of threatened species. To address on-going and future threats, we developed a Conservation Agreement and Strategy for the Cisco milkvetch, stage station milkvetch, and Isely's milkvetch (CAS) in close collaboration with the BLM, the USFS, the State of Utah Department of Natural Resources Division of Wildlife Resources (UDWR), SITLA, and the State of Utah Department of Transportation (UDOT). The CAS was finalized and signed in May 2022 by collaborating partners (BLM et al. 2022, entire).

The conservation actions in the CAS will help ensure the long-term maintenance of resiliency, redundancy, and representation of Cisco, stage station, and Isely's milkvetch within their historical ranges needed to ensure these species do not become in danger of extinction in the foreseeable future, provide a framework for future conservation efforts, identify conservation areas where the CAS applies, and reduce or minimize negative effects from activities occurring on the landscape to the species and their habitats. The primary purpose of the CAS is to

identify and commit to meeting the goals for long-term conservation of Cisco milkvetch, stage station milkvetch, and Isely's milkvetch. Long-term conservation of the three milkvetch species is directed by actions identified in the CAS and will be accomplished through proactive management of the species to maintain existing populations and habitat conditions as well as to develop a better understanding of the species' life history and biological requirements. The secondary purpose of the CAS is to establish a process for cooperation between the USFWS, BLM, USFS, UDWR, SITLA, and UDOT for conservation of the three milkvetches.

The CAS outlines conservation actions that will occur for the benefit of the three plant species in Utah over a thirty-year period from 2022 to 2052. The CAS expands upon the existing management actions and includes new conservation actions that will be consistently implemented by the signatories throughout the entire range of the three milkvetch species to conserve the species and to minimize negative effects from management practices utilized by the BLM, USFS, SITLA, and UDOT on their respectively managed lands. The CAS addresses threats from (1) recreation, (2) livestock grazing, (3) mining of mineral resources, (4) oil and gas development, (5) major energy and transportation corridors, (6) non-native, invasive plant species, and (6) land development. Although the CAS does not directly address effects to the species from climate change, it addresses other threats that climate change would otherwise worsen, thus reducing the synergistic effects of climate change for the three milkvetches. In addition to addressing the six stressors listed above, key conservation actions include the development and implementation of monitoring protocols to measure the effectiveness of conservation actions and the implementation of an adaptive management framework to allow for the development or adjustment of conservation actions to address changing conditions or new information.

We completed a thorough analysis of the CAS under our Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) (68 FR 15100). The PECE analysis is available online at https://www.regulations.gov, in the docket for this action. As a result of our review, we find that the 2022 CAS has a high level of certainty of future implementation and certainty of effectiveness and is considered as part of the basis for our listing determination for Cisco milkvetch, stage station milkvetch, and Isely's milkvetch (BLM et al. 2022, entire). We have determined that the measures will be implemented and effective at eliminating or reducing stressors to the three milkvetches because they will provide long-term protections to conserve populations and maintain or restore suitable habitat conditions. The CAS also has sufficient monitoring, adaptive management, and reporting requirements to ensure that all conservation actions are implemented as planned and are effective at substantially reducing stressors to the three milkvetches. Based on the implementation of previous actions from collaborating partners on the CAS, we have a high level of certainty that the conservation actions in the CAS will be implemented (for those measures not already begun), and that they will be sufficiently effective in preventing any further degradation of the status of the three milkvetches. However, we note that the CAS was not considered in our analysis of the species in the SSA report because it was finalized after the SSA.

CUMULATIVE EFFECTS

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on Cisco, stage station, and Isely's milkvetch, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species, and we have extended this approach when applying the CAS (discussed below) to our assessment of future conditions. Our assessment of the current and future conditions encompasses and incorporates the threats individually and cumulatively. Our current and future condition assessment is iterative because it accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and ongoing conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis. We then reassessed the future anticipated condition of the three species in light of the CAS, which was not incorporated in the SSA report.

CURRENT CONDITION

To assess the viability of Cisco, stage station, and Isely's milkvetches, we evaluated resiliency, redundancy, and representation across all populations of each species, with evaluation of redundancy and representation at the species level. We considered habitat and demographic needs at the individual, population, and species levels and described stressors influencing the viability of the three milkvetches. We evaluated the current resiliency of Cisco, stage station, and Isely's milkvetch populations using a subset of the species' needs to determine population condition (Table 2). Because information on these species is limited, we evaluated current resiliency using information that was available regarding two factors describing habitat quality: (1) to what degree habitat areas are open and sparsely vegetated and (2) soil conditions; and two demographic factors: (1) plant abundance and (2) area of occupied habitat. We developed a basis for assigning a risk category for each metric at the population level based on the available data and our understanding of each milkvetch's ecology. A full description of the resiliency metrics and risk categories for each metric can be found in the SSA report (Service 2022, pp. 62–64).

Table 2. Condition category table for Cisco, stage station, and Isely's milkvetch habitat factors (green columns) and demographic factors (tan columns). Factors that are in high condition are at less risk from stochastic events compared to those in lower condition categories, which are at greater risk from stochastic events.

Condition Category	Habitat Factors		Demographic Factors	
	Open, Sparsely Vegetated Areas	Suitable Soil Conditions	Plant Abundance	Area of Occupied Habitat
High	Open, sparsely vegetated areas are not limiting with very little to no competition from annual herbaceous invasive plants.	Suitable soil conditions are not limiting.	At least 1,000 plants	At least 809 hectares
Medium	Open, sparsely vegetated areas are somewhat limiting with low levels of competition from annual herbaceous invasive plants.	Suitable soil conditions are somewhat limiting.	500 to less than 1,000 plants	405–808 hectares
Low	Open, sparsely vegetated areas are very limiting with moderate levels of competition from annual herbaceous invasive plants.	Suitable soil conditions are limiting or absent.	Less than 500 plants	Less than 405 hectares

Cisco Milkvetch: We evaluated the six known populations of Cisco milkvetch. Cisco milkvetch is currently known to occupy five of the six populations. No observations of Cisco milkvetch have been recorded in the Cisco population since 1985, and no surveys have occurred within the Cisco population since 1995. Given that suitable habitat for Cisco milkvetch remains in this population, we assume that the Cisco population remains extant. Historical and current land uses, including construction and maintenance of Interstate 70 and oil and gas development, likely eliminated potentially suitable habitat for some populations. Of the six evaluated populations, one is in high condition, three are in medium condition, and two are in low condition (resiliency), including the Cisco population with no observations of occurrence since 1985 (Table 3, Figure 8). However, if the Cisco population is no longer occupied, then redundancy may have been reduced from historical conditions. As a narrow endemic, redundancy of Cisco milkvetch is, and has likely always been, inherently low. Additionally, as a narrow endemic, this species has an inherently limited distribution and habitat specificity (representation). The ecological amplitude of Cisco milkvetch occurs within a relatively narrow variety of vegetation communities (saltbush-dominated) and is associated almost exclusively with soils derived from the Mancos shale. Cisco milkvetch exhibits considerable within-taxa genetic diversity (Jones et al. 2021, p. 1412). Western populations (Thompson Springs West and Thompson Springs East) appear to be somewhat genetically distinct from eastern populations (Cisco, Cisco Mesa, Bread Knolls/Cisco Wash, and White House) (Massatti 2021, pers. comm.).

Table 3. Evaluation of current condition for Cisco, stage station, and Isely's milkvetch populations using condition categories. A score of 4.7 or greater = High Condition; 3.3 to 4.6 = Medium Condition; and < 3.3 = Low Condition. See Service (2022, pp. 62–64) for explanation on methodology, descriptions of condition categories, for calculating overall condition score.

Species	Population	Open, Sparsely Vegetated Areas	Suitable Soil Conditions	Plant Abundance	Area of Occupied Habitat	Overall Current Condition Score	Overall Current Condition
Cisco Milkvetch	Bread Knolls/Cisco Wash	Medium	Medium	High	Medium	4.5	Medium
	Cisco Mesa	Medium	Medium	High	High	5	High
	Thompson Springs East	Medium	Medium	High	Medium	4.5	Medium
	Thompson Springs West	High	High	Low	Low	4	Medium
	White House	Medium	Low	Medium	Low	3	Low
	Cisco	Medium	Low	Unknown	Low	2.5	Low
Stage Station Milkvetch	Stage Station	Medium	Medium	High	Medium	4.5	Medium
Isely's Milkvetch	Kane Springs/Yellow Circle Mines Rd	Medium	Low	Medium	Medium	3.5	Medium
	Onion Creek	Medium	High	Medium	Low	4	Medium
	Pack Creek/Brumley Ridge	Medium	Medium	High	High	5	High
	Shumway Mines	Medium	Low	Low	Low	2.5	Low

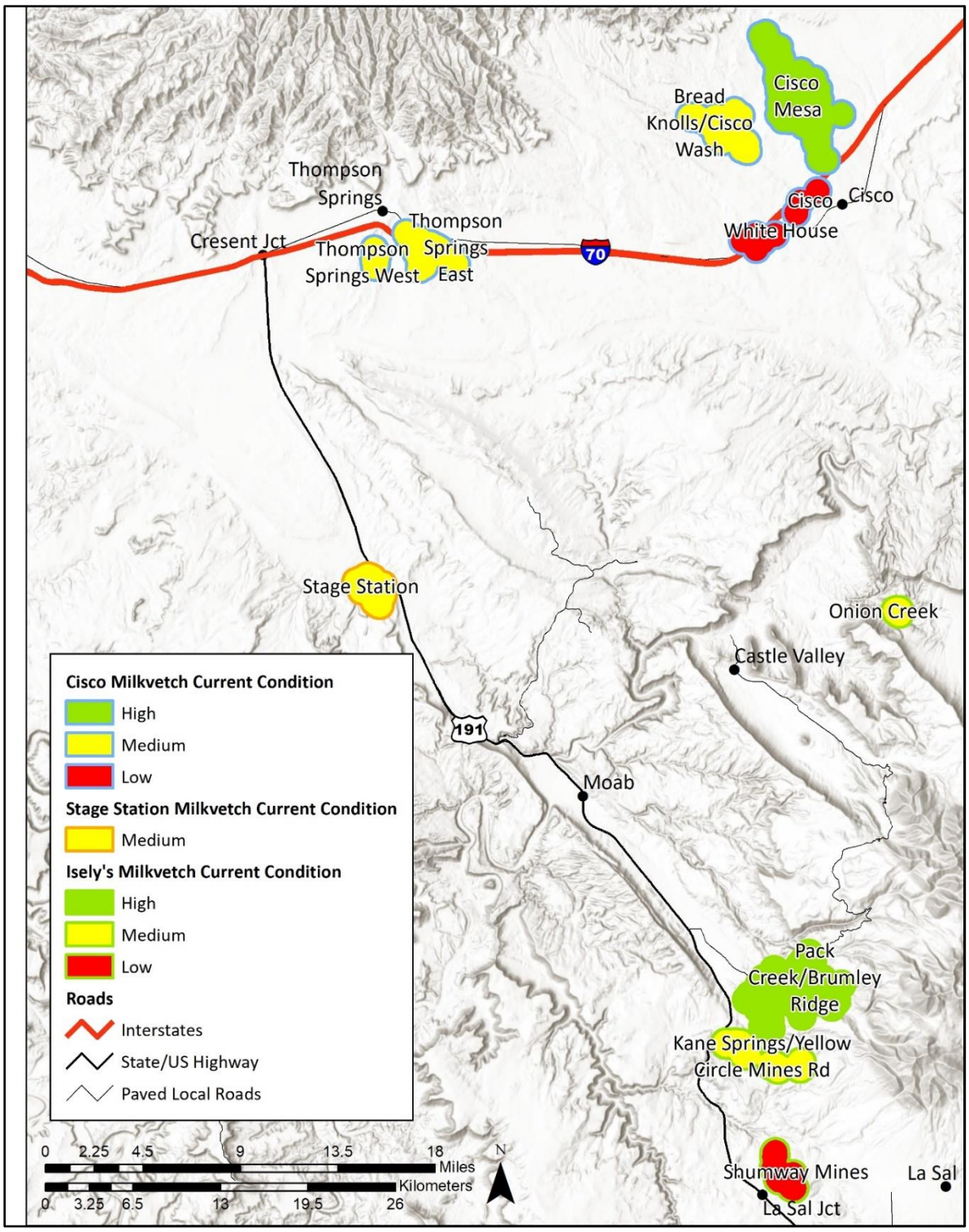

Figure 8. Summary of current condition of populations of Cisco, stage station, and Isely's milkvetch considered in Service (2022, pp. 62–64).

Stage Station Milkvetch: We evaluated the only known population of stage station milkvetch. Currently, the single population of stage station milkvetch is in medium condition (resiliency, Table 3, Figure 8). As a narrow endemic, redundancy of stage station milkvetch is, and has likely always been, inherently low. The best available information indicates that redundancy of stage station milkvetch is unchanged, as this species was restricted historically to this single location (Atwood 2003, p. 9). Additionally, as a narrow endemic, this species has an inherently limited distribution and habitat specificity (representation). Stage station milkvetch occurs within a relatively narrow variety of vegetation communities (saltbush-dominated vegetation communities) and occupies sites with higher sand content than Cisco and Isely's milkvetches (Jones et al. 2021, p. 1413). Stage station milkvetch exhibits considerable within-taxa genetic diversity (Jones et al. 2021, p. 1412); however, it displays genetic similarity throughout its population, indicating gene flow through time within the species.

Isely's Milkvetch: We evaluated the four known populations of Isely's milkvetch, which represent all historical occurrence locations (Hreha 1982, entire; Franklin 2003, entire). Currently, one population of Isely's milkvetch is in high condition, two are in medium condition, and one is in low condition (resiliency, Table 3, Figure 8). As a narrow endemic, redundancy of Isely's milkvetch is, and has likely always been, inherently low. Additionally, as a narrow endemic, this species has an inherently limited distribution and habitat specificity (representation). Isely's milkvetch has a broader ecological amplitude and occurs within a greater variety of vegetation communities than Cisco and stage station milkvetches and occurs on sites with more productive soils with higher organic content (Jones et al. 2021, 1416). Additionally, Isely's milkvetch occupies colder and wetter environments than Cisco and stage station milkvetch (Jones et al. 2021, p. 1413). The associated vegetation communities in which Isely's milkvetch occurs vary with elevation: it occurs within saltbush-dominated communities at lower elevations (Hreha 1982, p. 12) and pinyon pine/Utah juniper woodlands at higher elevations (Franklin 2003, p. 5). Although genetic data are lacking, the Onion Creek population of Isely's milkvetch is approximately 26 km (16 miles) from the nearest Isely's milkvetch population and may represent an unknown level of distinctiveness from the other populations. Isely's milkvetch exhibits considerable within-taxa genetic diversity (Jones et al. 2021, p. 1412); however, it displays genetic similarity within and across populations, indicating gene flow through time within the species.

FUTURE CONDITION

Based on our understanding of historical, current, and expected future conditions, we developed three plausible future scenarios. These scenarios represent the range of uncertainties regarding climate-related changes to temperature and precipitation trends, as well as uncertainties in future changes to other factors influencing these species by the year 2050. This timeframe enabled us to consider the threats/stressors acting on the species and to draw reliable conclusions on the species' response to those factors. The 2050 timeframe represents approximately 15 generations of each milkvetch species, and it is reasonable to

assess the effects of the stressors on these species out to 2050. Downscaled climate models available up to 2050 do not project substantial differences among emission scenarios, thus reasonably limiting the uncertainty in climate projections to plausible futures. Beyond this timeframe, climate models project considerable variation in conditions among different emissions scenarios, so it is difficult to predict both climate conditions and each species' likely response. Based on our analysis of potential stressors in the SSA report, we include recreation, mining of mineral resources, oil and gas development, land development and conversion, major energy and transportation corridors, non-native, invasive species, as well as the effects of drought and climate change in our evaluation of future conditions for these milkvetch species. We note that the CAS was not finalized at the time of this analysis, and thus its influence on these stressors was not considered in our future condition analysis in the SSA (the influence of the CAS is discussed separately in this document in Conservation Measures Planned or Implemented). The three scenarios in our SSA were: (1) Future Scenario 1: continuation of current stressors under the Warm and Near Historical Spring Precipitation climate scenario; (2) Future Scenario 2: a low to moderate increase in stressors under the Hot and Very Wet Spring climate scenario; and (3) Future Scenario 3: a substantial increase in stressors under the Hot and Very Dry Spring climate scenario (Table 4). The plausible future scenarios are described in detail in the SSA (Service 2022, pp. 69–77).

Table 4. Scenarios used to evaluate future condition for Cisco, stage station, and Isely's milkvetch.

Future Scenario	**Future Scenario 1: Continuation**	**Future Scenario 2: Low to Moderate Increase in Stressors**	**Future Scenario 3: Substantial Increase in Stressors**
Climate Scenario	Warm and Near Historical Spring Precipitation Climate Scenario	Hot and Very Wet Spring Climate Scenario	Hot and Very Dry Spring Climate Scenario
Other Drivers of Condition	• Recreation inside the species' habitats continues at its current rate (all species) • Oil and gas development inside the species' habitats continues at its current rate with no changes in surface use stipulations (all species) • Land development and conversion inside the	• Recreation inside the species' habitats experiences a low to moderate increase (all species) • Oil and gas development inside the species' habitats experiences a low to moderate increase with no reductions in surface use stipulations (all species)	• Recreation inside the species' habitats increases substantially (all species) • Oil and gas development inside the species' habitats increases substantially with a substantial reduction in surface use stipulations (all species) • Land development and conversion inside the

	species' habitats remains low (all species) • Mining of mineral resources inside the species' habitats remains subeconomic with no new mining/exploration (Stage station and Isely's) • Major energy and transportation corridors remain unchanged (all species) • Non-native, invasive plant species cover remains at current levels within the species' habitats (all species)	• Land development and conversion inside the species' habitats experiences a low to moderate increase (all species) • Mining of mineral resources inside the species' habitats experiences a low to moderate increase in economic value with some new mining/exploration (Stage station and Isely's) • Major energy and transportation corridors experience low to moderate expansion inside the species' habitats (all species) • Non-native, invasive plant species experience low to moderate increases in cover as a result of increases in surface-disturbing activities and climate change effects (all species)	species' habitats increases substantially (all species) • Mineral resources inside the species' habitats increase substantially in economic value with substantial new mining/exploration (Stage station and Isely's) • Major energy and transportation corridors experience substantial expansion inside the species' habitats (all species) • Non-native, invasive plant species increase substantially in cover as a result of the substantial increases in surface-disturbing activities and climate change effects (all species)

Under Scenario 1, which includes a warm and near historical spring precipitation Climate Scenario (Table 4), there are substantial increases in summer and winter precipitation falling as rain and increases in mean year-round maximum temperatures. Extreme drought could occur in five out of 10 years. Despite substantial increases in precipitation, the projected spring and summer water deficit is similar to historical conditions because these increases are offset by warmer temperatures and more frequent extreme drought conditions. Increased winter precipitation provides early growing season soil moisture to support spring seed germination and seedling establishment and survival, as well as adult survival. More frequent extreme drought conditions under this scenario may offset the benefits of increased precipitation in some years via reductions in adult plant survival and reproductive output, with potential decreases in plant abundance and seed bank persistence. Additionally, drought-related stress may reduce the integrity of the surrounding plant community.

Under Scenario 2, which includes a hot and very wet spring Climate Scenario (Table 4), there are substantial increases in precipitation and increases in spring and summer temperatures, with extreme drought potentially occurring in three out of 10 years. Spring warming increases the growing season by 2.5 months, and the last spring freeze date would occur over two months earlier. Higher temperatures offset some of the gains in spring and summer precipitation, resulting in a moderate increase in the spring water deficit. This increased water deficit may limit seed germination and seedling establishment and survival. Shifts to an earlier and longer growing season may affect flowering phenology, leading to a mismatch with potential pollinators, potentially reducing reproductive output.

Under Scenario 3, which includes a hot and dry Climate Scenario (Table 4), there are decreases in precipitation and increases in temperature throughout the spring, summer, and fall, with extreme drought potentially occurring in nine out of 10 years. These hot, dry conditions could reduce seed germination and seedling establishment and survival. Drought stress may reduce adult plant survival and reproductive output, leading to potential reductions in plant abundance and the inability to replenish the seed bank. Climate-induced stresses may also negatively affect the surrounding plant community, providing opportunities for increases in non-native, invasive plants and further reducing habitat quality (Winkler et al. 2019, p. 3130; Hoover et al. 2021, p. 3291).

In the SSA report, we assessed the future viability of each of the three milkvetch species in terms of resiliency, redundancy, and representation. For each scenario, we evaluated the anticipated condition of each population for each species using the same methodology and the same habitat and demographic factors that we used to evaluate current condition. The SSA report did not incorporate expected effects of conservation actions described in the CAS when assessing future condition; however, the conservation actions in the CAS were developed to address the stressors identified in the USFWS 90-day finding and SSA. The CAS describes future conservation actions and expected reductions in stressors, which operate under the same timeframe as the future scenarios in the SSA report.

The SSA and the CAS were both available for consideration during the Service's decision-making process for these species. In the following text in this section, we first summarize the analysis of future conditions for each species as presented in the SSA report, and then, for all three species, we present an overall assessment of future conditions considering both the SSA and the CAS.

Projected Future Condition of Cisco Milkvetch in the SSA: In Scenario 1, we projected that resiliency for all six populations of Cisco milkvetch will be maintained at current levels with one population in high condition, three in medium condition, and two in low condition (Table 5). All six current populations and their current levels of genetic and ecological diversity are projected to be maintained under Scenario 1. Thus, redundancy and representation are projected to be maintained at current levels. Under Scenario 2, we projected reductions in resiliency for two populations, resulting in three populations in medium condition and three in low condition. Despite reductions in resiliency, the six current populations will be maintained and continue to provide current levels of redundancy and representation. In Scenario 3, reductions in resiliency from current levels are projected across all populations. We projected one population in medium condition, three in low condition, and the possible extirpation two populations (Cisco and White House) due to the potential loss of occupied habitat in the White House population and the potential loss of suitable habitat in the Cisco population. The loss of these two populations may reduce redundancy. Representation is projected to be maintained at current levels despite the possible loss of two populations. The best available information does not suggest that those populations provide unique genetic or ecological diversity from the four populations projected to remain under Future Scenario 3.

Table 5. Summary of overall condition scores for current condition and under three future scenarios by year 2050 for each population of Cisco, stage station, and Isely's milkvetch. See text for explanation on methodology for calculation of overall condition scores.

Species	Population	Overall Current Condition	Future Scenario 1: Continuation	Future Scenario 2: Low to Moderate Increase in Stressors	Future Scenario 3: Substantial Increase in Stressors
Cisco Milkvetch	Bread Knolls/Cisco Wash	Medium	Medium	Medium	Low
	Cisco Mesa	High	High	Medium	Medium
	Thompson Springs East	Medium	Medium	Medium	Low
	Thompson Springs West	Medium	Medium	Low	Low
	White House	Low	Low	Low	Extirpated
	Cisco	Low	Low	Low	Extirpated
Stage Station Milkvetch	Stage Station	Medium	Medium	Medium	Low
Isely's Milkvetch	Kane Springs/Yellow Circle Mines Rd	Medium	Medium	Low	Low
	Onion Creek	Medium	Medium	Medium	Low
	Pack Creek/Brumley Ridge	High	High	Medium	Low
	Shumway Mines	Low	Low	Low	Low

Projected Future Condition of Stage Station Milkvetch in the SSA: In Scenarios 1 and 2, we anticipate that resiliency of the single population of stage station milkvetch will be maintained in medium condition (Table 5). In both of these scenarios, redundancy and representation would also remain unchanged from current levels. In Scenario 3, we projected that resiliency of the single population of stage station milkvetch will drop from medium to low condition. We projected the low levels of redundancy and representation inherent with a narrow range endemic to be maintained under all three future scenarios, with the single population continuing to exhibit relatively low levels of genetic and ecological diversity.

Projected Future Condition of Isely's Milkvetch in the SSA: Isely's milkvetch currently has four populations, and we projected that all four populations will persist under all three future scenarios. Resiliency for Isely's milkvetch is projected to be maintained under Future Scenario 1. In Scenario 2, we projected reductions in resiliency for two populations, resulting in two

populations in medium condition and two in low condition (Table 5). In Scenario 3, we projected reductions in resiliency from current conditions for three populations, resulting in all four populations in low condition. Current levels of redundancy and representation are projected to be maintained under all three future scenarios.

Projected Future Conditions for Cisco, Stage Station, and Isely's Milkvetch Accounting for the CAS:

Based on our PECE analysis of the CAS for all three milkvetches, the conservation actions in the CAS are expected to greatly reduce stressors; restore, enhance, or preserve habitats; and address research needs. These actions will help minimize or reduce the effects from recreation, oil and gas development, land development and conversion, mining of mineral resources, major energy and transportation corridors, and non-native, invasive plant species cover that were projected in the future scenarios in the SSA. Although livestock grazing was not identified as a stressor contributing to overall species viability in the SSA, it is addressed by conservation actions in the CAS to mitigate or reduce potential increases in negative effects to the three milkvetches.

The individual conservation actions implemented as part of the CAS will support mitigation or reduction of stressors that would likely be intensified by climate change; however, the conservation actions in the CAS will not directly address effects from climate change. In our overall assessment considering both the SSA report and the CAS, we continue to apply the three climate scenarios described as part of the future scenarios in the SSA. We consider climate change to have a high likelihood of affecting all three milkvetches but with relatively large variability in the plausible range of climate effects beyond 2050. All other stressors are projected to affect populations differently with relatively localized effects.

We expect the conservation actions in the CAS will mitigate current levels or reduce future negative effects from recreation, livestock grazing, land development and conversion, major energy and transportation corridors, and non-native, invasive plant species cover relative to current conditions for all three milkvetch species as well as oil and gas development for Cisco milkvetch and mining of mineral resources for stage station and Isely's milkvetch. For all three milkvetches, these actions should result in stressors that are not climate-related having similar levels to those described in Scenario 1 of the SSA. The “hot and very wet spring” and “hot and dry” climate scenarios in Scenarios 2 and 3 would be expected to negatively affect the three milkvetches as described earlier in this section. Although scenario 3 may also negatively affect the surrounding plant community and provide opportunities for increases in non-native, invasive plants, conservation actions in the CAS address non-native, invasive plants and would reduce the extent that climate change may exacerbate degradation of habitat quality by non-native, invasive plants. However, reductions in resiliency, redundancy, and representation from stressors that are not climate-related would be unlikely to occur at the levels described in Scenario 2, and improbable to occur at levels described in Scenario 3 in the SSA. Overall,

considering the uncertainty in the future climate conditions and the species' response to them, and that the implementation of the CAS will minimize the increase of non-climate-related stressors, we expect that resiliency, redundancy, and representation will be maintained near current levels for all six populations of Cisco milkvetch, one population of stage station milkvetch, and four populations of Isely's milkvetch.

FINDING

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 is an "endangered species" or a "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 any species is an "endangered species" or a "threatened species" because of any one or a combination 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 individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We considered the foreseeable future for Cisco, stage station, and Isely's milkvetches to be approximately the year 2050. The SSA's analysis of future scenarios extended to the year 2050 and was based on the best available information for threats and the species' response. We used downscaled climate models that incorporate the range of uncertainty associated with future climate projections (Rangwala et al. 2021, p. 9) and represent a range of plausible climate futures. Before 2050, differences in climate change projections across the different emission scenarios that are incorporated into downscaled models are not substantial. Beyond 2050, climate change projections within the species' ranges diverge considerably, such that predicting the effects of climate change and the species' responses becomes speculative. In examining climate change, we considered its effect on water availability, temperature, and timing across the range of Cisco milkvetch. The 2050 timeframe also represents approximately 15 generations of this species, and it is reasonable to assess the effects of the stressors in addition to climate change out to 2050. The CAS lends itself to assessment out to 2050, as it outlines

active conservation actions that will occur for the benefit of Cisco, stage station, and Isely's milkvetches over a thirty-year period from 2022 to 2052. We have no ability to project conservation efforts after the CAS has expired, and we lack downscaled reliable projections of climate conditions and the magnitude of the species' responses to them. This timeframe enabled us to consider the threats/stressors acting on the species and to draw reliable conclusions on the species' response to those factors.

Cisco Milkvetch

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we determined that the factors affecting Cisco milkvetch and its habitat are recreation, oil and gas development, land development and conversion, major energy and transportation corridors (Factor A); nonnative, invasive species cover (Factors A and E); the ongoing and future influence of climate change on drought frequency and duration (Factors A and E); and the combined effects of these factors. Furthermore, we considered the existing regulatory mechanisms (Factor D) and conservation measures and their effect on the identified threats and the status of the species. Of these, climate change, through its associated effects on water quantity and seasonality, is the primary factor currently influencing Cisco milkvetch throughout its range. The best available information did not show that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) or disease or predation (Factor C) were threats to the species.

We determined that the current distribution of Cisco milkvetch does not appear to have substantially changed from its known historical distribution despite existing within an altered system. Cisco milkvetch has maintained four of six populations with high (1) or moderate (3) resiliency. These populations have been maintained with some geographic separation, spanning roughly 38.6 km (24 miles) from east-to-west, supporting redundancy across the range. Despite being a narrow range endemic, relatively high within-species genetic diversity supports representation. Additionally, multiple, high and medium resiliency populations of Cisco milkvetch have withstood past development of major energy and transportation corridors; ongoing stressors of recreation, oil and gas development, land development and conversion, and the establishment of nonnative, invasive species; and more recently, prolonged extreme drought potentially attributed to climate change. Multiple, healthy populations of Cisco milkvetch also guard against population losses due to catastrophic events and help maintain adaptive capacity across populations. Thus, the stressors affecting Cisco milkvetch and its habitat appear to have little effect on the species' current viability. The SSA report describes some of the uncertainties in the species occurrence and response to threats; but, considering the available data and observed conditions, Cisco milkvetch's current risk of extinction is low. Thus, after assessing the best available information, we conclude that Cisco milkvetch is not in danger of extinction throughout all of its range.

Therefore, we proceed with determining whether Cisco milkvetch is likely to become endangered within the foreseeable future throughout all of its range. In considering the foreseeable future as it relates to the status of Cisco milkvetch, we considered the relevant risk factors (threats) to the species and whether we could draw reliable predictions about future exposure, timing, and scale of negative effects and the species' response to these effects. We considered whether we could reliably assess the risk posed by the threats to the species, recognizing that our ability to assess risk is limited by the variable quantity and quality of available data about effects to Cisco milkvetch and its response to those effects.

Given the expected implementation of the CAS, all extant populations of Cisco milkvetch are expected to be maintained in all future scenarios with current levels of resiliency, redundancy, and representation. Despite being a narrow range endemic, we expect the geographic spread of multiple populations across the range will continue to provide redundancy, and relatively high within-species genetic diversity and some genetic distinction between two populations at the western and four populations at the eastern sides of the range will continue to support representation. Climate change is projected to reduce moisture available to Cisco milkvetch and increase temperatures, with some uncertainty in the frequency, intensity, and duration of extreme heat and drought. However, this species is adapted to an environment where periodic drought and hot summers are common and appears to have life history traits conducive to surviving these harsh conditions. The conservation actions in the CAS will also reduce the potential of the cumulative interaction of climate change with other potential stressors, thus supporting resiliency in all climate scenarios presented in the SSA. The implementation of the CAS will support mitigation or reduction of increases in stressors from recreation, oil and gas development, land development and conversion, major energy and transportation corridors, and non-native, invasive species, as well as from livestock grazing and provide protections to Cisco milkvetch and its habitat, thereby maintaining its resilience to the projected negative effects of climate change. Considering the projected changes in climate under the three climate scenarios and the maintenance or improvement of other stressors addressed in the CAS, we projected that the overall condition of Cisco milkvetch populations will be maintained at or near their current conditions. After assessing the best available information, we conclude that Cisco milkvetch is not likely to become endangered within the foreseeable future throughout all of its range.

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. Having determined that Cisco milkvetch is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider

whether it may be in danger of extinction or likely to become so in the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species' range for which it is true that both (1) the portion is significant; and (2) the species is in danger of extinction now or likely to become so in the foreseeable future 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.

In undertaking this analysis for Cisco milkvetch, we took one of two approaches for each potential SPR, but did not apply both approaches for any potential SPR. In our first approach, we identified portions of the range that may be significant. If we decided a portion may indeed be significant, we then chose to address the status question. To examine status, we considered information pertaining to (a) individuals of the species, (b) the threats that the species faces, and (c) the resiliency condition of populations.

In our second approach, we identified portions of the range that potentially have a different status from the whole of the range. If we decided that portions of the range may have a different status from the whole of the range, we then evaluated these portions further for significance.

To identify portions of the range that may have a different status, we evaluated the range of the Cisco milkvetch to determine if the species is in danger of extinction now or likely to become so in the foreseeable future in any portion of its range. The range of a species can theoretically be divided into portions in an infinite number of ways. We focused our analysis on portions of the species' range that may meet the definition of an endangered species or a threatened species. For Cisco milkvetch, we considered whether the threats or their effects on the species are greater in any biologically meaningful portion of the species' range than in other portions such that the species is in danger of extinction now or likely to become so in the foreseeable future in that portion. We examined the following threats: recreation, oil and gas development, land development and conversion, major energy and transportation corridors, non-native, invasive plant species cover, and climate change, including cumulative effects.

We identified a portion with two populations (White House and Cisco) with potential to differ in status from the rest of the species. Both populations in this portion are intersected by the I-70 interstate and are in low condition, indicating little resiliency of this portion. Because of this difference in their current resiliency, this portion may potentially have a different status than the rest of the range. However, we then considered the potential significance of this portion. The two populations in this portion currently have relatively poor habitat quality, are in low condition, and have a relatively small geographic area relative to the entire range. Therefore, we concluded that these areas do not qualify as significant in supporting the continued viability

of the species. Based on our conclusions about the lack of significance of these areas, our overall conclusion is that these areas do not represent a significant portion of the range.

For Cisco milkvetch, we also identified two portions with potential to be considered significant. Upon further examination, we decided that these portions may be significant because each portion comprises a large proportion of the species small range. One cluster of four populations comprises the entire eastern part of the range and the other cluster of two populations comprises the entire western part of the range. Having identified that these portions may be significant, we then evaluated whether either portion could have a different status than the species as a whole. More individuals have been observed during recent surveys in the eastern cluster than in the western cluster; however, the abundance of individuals in populations of both clusters supported resiliency of at least medium condition in our current condition analysis. When considering how the CAS is expected to reduce stressors in the future, populations in both portions of the range face similar threats and have similar responses now and are expected to in the foreseeable future. Based on the similar current resiliency and the similarity of threats that are likely in the future, we concluded neither of these portions has a different status than the species as a whole. Thus, our overall conclusion is that these portions do not represent a significant portion of the range.

Therefore, we find that Cisco milkvetch is not in danger of extinction now or likely to become so in the foreseeable future in any significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors v. U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy's definition of "significant" that those court decisions held to be invalid.

Stage Station Milkvetch

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we determined that the factors affecting stage station milkvetch and its habitat are recreation, mining of mineral resources, land development and conversion, major energy and transportation corridors (Factor A); nonnative, invasive species cover (Factors A and E); the ongoing and future influence of climate change on drought frequency and duration (Factors A and E); and the combined effects of these factors. Furthermore, we considered the existing regulatory mechanisms (Factor D) and conservation measures and their effect on the identified threats and the status of the species. Of these, climate change, through its associated effects on water quantity and seasonality, is the primary factor currently influencing stage station milkvetch throughout its range. The best available information did not show that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) or disease or predation (Factor C) were threats to the species.

We determined that the current distribution of stage station milkvetch does not appear to have substantially changed from its known historical distribution despite existing within an altered system. Stage station milkvetch has maintained one population with moderate resiliency. Despite being a narrow range endemic with a relatively small population size, the distribution of plants and the current condition of the population indicate that it has not changed from its historical condition and there are no imminent threats to its viability. The only known population of stage station milkvetch has withstood past development of major energy and transportation corridors; ongoing stressors of recreation, mining of mineral resources, land development and conversion, and the establishment of nonnative, invasive species; and more recently, prolonged extreme drought potentially attributed to climate change. Thus, the stressors affecting stage station milkvetch and its habitat appear to have little effect on the species' current viability. The SSA report describes some of the uncertainties in the species occurrence and response to threats; but, considering the available data and observed conditions, stage station milkvetch's current risk of extinction is low. Thus, after assessing the best available information, we conclude that stage station milkvetch is not in danger of extinction throughout all of its range.

Therefore, we proceed with determining whether stage station milkvetch is likely to become endangered within the foreseeable future throughout all of its range. In considering the foreseeable future as it relates to the status of stage station milkvetch, we considered the relevant risk factors (threats) to the species and whether we could draw reliable predictions about future exposure, timing, and scale of negative effects and the species' response to these effects. We considered whether we could reliably assess the risk posed by the threats to the species, recognizing that our ability to assess risk is limited by the variable quantity and quality of available data about effects to stage station milkvetch and its response to those effects.

Given the expected implementation of the CAS, the single known extant population of stage station milkvetch is expected to be maintained in all future scenarios with current levels of resiliency, redundancy, and representation. As a narrow range endemic, redundancy is inherently low, but relatively high within-species genetic diversity will continue to support representation. Additionally, the continued moderate resiliency of this species while experiencing multiple stressors, such as transmission line development, shows that it may be able to withstand stressors in the future. Climate change is projected to reduce moisture available to stage station milkvetch and increase temperatures, with some uncertainty in the frequency, intensity, and duration of extreme heat and drought. However, this species is adapted to an environment where periodic drought and hot summers are common and appears to have life history traits conducive to surviving these harsh conditions. The conservation actions to be implemented in the CAS will also reduce the potential of the cumulative interaction of climate change with other potential stressors, thus supporting resiliency in all climate scenarios presented in the SSA. The implementation of the CAS will support mitigation or reduction of increases in stressors from recreation, mining of mineral resources, land

development and conversion, major energy and transportation corridors, and non-native, invasive species, as well as from livestock grazing and provide protections to stage station milkvetch and its habitat, thereby maintaining its resilience to the projected negative effects of climate change. Considering the projected changes in climate under the three climate scenarios and the maintenance or improvement of other stressors addressed in the CAS, we projected that the overall condition of the stage station milkvetch population will be maintained at or near its current conditions. After assessing the best available information, we conclude that stage station milkvetch is not likely to become endangered within the foreseeable future throughout all of its range.

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. Having determined that stage station milkvetch is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction or likely to become so in the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species' range for which it is true that both (1) the portion is significant; and (2) the species is in danger of extinction now or likely to become so in the foreseeable future 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.

We evaluated the range of the stage station milkvetch to determine if the species is in danger of extinction now or likely to become so in the foreseeable future in any portion of its range. The stage station milkvetch is a narrow endemic that functions as a single, contiguous population and occurs within a very small area. The only known population of stage station milkvetch totals 1,178 ha (2,911 ac) within Grand County, Utah. Thus, there is no biologically meaningful way to break this limited range into portions, and the threats that the species faces affect the species comparably throughout its entire range. This means that no portions of the species' range have a different biological status from its range-wide biological status. Therefore, we conclude that there are no portions of the species' range that warrant further consideration, and the species is not in danger of extinction or likely to become so in the foreseeable future in any significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d. 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy's definition of "significant" that those court decisions held to be invalid.

Isely's Milkvetch

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we determined that the factors affecting Isely's milkvetch and its habitat are recreation, mining of mineral resources, land development and conversion, major energy and transportation corridors (Factor A); nonnative, invasive species cover (Factors A and E); the ongoing and future influence of climate change on drought frequency and duration (Factors A and E); and the combined effects of these factors. Furthermore, we considered the existing regulatory mechanisms (Factor D) and conservation measures and their effect on the identified threats and the status of the species. Of these, climate change, through its associated effects on water quantity and seasonality, is the primary factor currently influencing Isely's milkvetch throughout its range. The best available information did not show that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) or disease or predation (Factor C) were threats to the species.

We determined that the current distribution of Isely's milkvetch does not appear to have substantially changed from its known historical distribution despite existing within an altered system. Isely's milkvetch has maintained three of four populations with high (1) or moderate (2) resiliency and supporting a moderate to high abundance of individuals. These populations have been maintained with some geographic separation, with one population in the north (Onion Creek) approximately 26 km (16 miles) from the nearest population to the south, supporting redundancy across the range. Despite being a narrow range endemic, the northern population (Onion Creek) also may represent an unknown level of distinctiveness from the other populations, and relatively high within-species genetic diversity supports representation. Additionally, Isely's milkvetch spans a greater elevational and habitat extent than other nearby narrow range endemic milkvetches (Cisco and stage station milkvetches), indicating potential adaptive capacity of Isely's milkvetch and supporting representation for the species. Current threats, other than climate change, appear to be acting on more of an individual level than a population level. Additionally, multiple, medium resiliency populations of Isely's milkvetch have withstood past development of major energy and transportation corridors; ongoing stressors of recreation, mining of mineral resources, land development and conversion, and the establishment of nonnative, invasive species; and more recently, prolonged extreme drought potentially attributed to climate change. Multiple, healthy populations of Isely's milkvetch also guard against population losses due to catastrophic events and help maintain adaptive capacity across populations. Thus, the stressors affecting Isely's milkvetch and its habitat appear to have little effect on the species' current viability. The SSA report describes some of the uncertainties in the species occurrence and response to threats; but, considering the available data and observed conditions, Isely's milkvetch's current risk of extinction is low. Thus, after assessing the best available information, we conclude that Isely's milkvetch is not in danger of extinction throughout all of its range.

Therefore, we proceed with determining whether Isely's milkvetch is likely to become endangered within the foreseeable future throughout all of its range. In considering the foreseeable future as it relates to the status of Isely's milkvetch, we considered the relevant risk factors (threats) to the species and whether we could draw reliable predictions about future exposure, timing, and scale of negative effects and the species' response to these effects. We considered whether we could reliably assess the risk posed by the threats to the species, recognizing that our ability to assess risk is limited by the variable quantity and quality of available data about effects to Isely's milkvetch and its response to those effects.

All extant populations of Isely's milkvetch are expected to be maintained in all future scenarios with current levels of resiliency, redundancy, and representation. Despite being a narrow range endemic, we expect the geographic spread of multiple populations across the range will continue to provide redundancy. Relatively high within-species genetic diversity and some genetic distinction between one population in the northern and three populations in the southern parts of the range will continue to support representation, as will the species' ability to occupy habitats with a diversity of characteristics and across a relatively wide elevational range. Of the stressors considered when projecting the viability of Isely's milkvetch into the foreseeable future, specifically, pressures from mining and land development could increase in response to economic fluctuations. However, the conservation actions implemented as part of the CAS will reduce the potential of these and the other stressors considered to have negative effects across the species and limit their ability to reduce the viability of Isely's milkvetch in the foreseeable future. Climate change is projected to reduce moisture available to Isely's milkvetch and increase temperatures, with some uncertainty in the frequency, intensity, and duration of extreme heat and drought. However, this species is adapted to an environment where periodic drought and hot summers are common and appears to have life history traits conducive to surviving these harsh conditions. The conservation actions to be implemented in the CAS will also reduce the potential of the cumulative interaction of climate change with other potential stressors, thus supporting resiliency in all climate scenarios in all climate scenarios presented in the SSA. The implementation of the CAS will support mitigation or reduction of increases in stressors from recreation, mining of mineral resources, land development and conversion, major energy and transportation corridors, and non-native, invasive species, as well as from livestock grazing and provide protections to Isely's milkvetch and its habitat, thereby maintaining its resilience to the projected negative effects of climate change. Considering the projected changes in climate under the three climate scenarios and the maintenance or improvement of other stressors addressed in the CAS, we projected that the overall condition of Isely's milkvetch populations will be maintained at or near their current conditions. After assessing the best available information, we conclude that Isely's milkvetch is not likely to become endangered within the foreseeable future throughout all of its range.

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. Having determined that Isely's milkvetch is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction or likely to become so in the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species' range for which it is true that both (1) the portion is significant; and (2) the species is in danger of extinction now or likely to become so in the foreseeable future 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.

In undertaking this analysis for Isely's milkvetch, we chose to address the status question first. We began by identifying portions of the range where the biological status of the species may be different from its biological status elsewhere in its range. For this purpose, we considered information pertaining to (a) individuals of the species, (b) the threats that the species faces, and (c) the resiliency condition of populations.

To identify portions of the range that may have a different status, we evaluated the range of the Isely's milkvetch to determine if the species is in danger of extinction now or likely to become so in the foreseeable future in any portion of its range. The range of a species can theoretically be divided into portions in an infinite number of ways. We focused our analysis on portions of the species' range that may meet the definition of an endangered species or a threatened species. For Isely's milkvetch, we considered whether the threats or their effects on the species are greater in any biologically meaningful portion of the species' range than in other portions such that the species is in danger of extinction now or likely to become so in the foreseeable future in that portion. We examined the following threats: recreation, mining of mineral resources, land development and conversion, major energy and transportation corridors, non-native, invasive plant species cover, and climate change, including cumulative effects.

We identified the Shumway Mines population as a portion with potential to have a different status than the rest of the range. We decided this portion may have a different status due to its lower resiliency relative to the whole of the range. After determining that this portion may have a different status, we evaluated this portion further for potential significance, and we found it to be not significant because the habitat in which this population occurs is not high quality and does not have any unique characteristics. Additionally, there is no habitat of high quality or value relative to the remaining portions of the range. Thus, our overall conclusion is that this portion does not represent a significant portion of the range.

Overall, we found no portion of the Isely's milkvetch range where threats are impacting individuals differently from how they are affecting the species elsewhere in its range, or where the condition of the species differs from its condition elsewhere in its range such that the status of the species in that portion does not differ from any other portion of the species' range.

Therefore, we find that Isely's milkvetch is not in danger of extinction now or likely to become so in the foreseeable future in any significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors v. U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy's definition of "significant" that those court decisions held to be invalid.

Determination of Status

Our review of the best available scientific and commercial information indicates that neither Cisco milkvetch, stage station milkvetch, nor Isely's milkvetch meets the definition of an endangered species or a threatened species in accordance with sections 3(6) and 3(20) of the Act. Therefore, we find that listing the Cisco milkvetch, stage station milkvetch, and Isely's milkvetch is not warranted at this time.

COORDINATION WITH STATES

While conducting the SSA for the Cisco, stage station, and Isely's milkvetches, we closely coordinated with the Utah Natural Heritage Programs and State of Utah wildlife and natural resource management agencies. As the only state within the range of these three species, the state of Utah was given the opportunity to provide data, participate in the SSA process, and review the draft SSA report and CAS. During the process we received information from Utah, including survey results, information on management, and protection of the species.

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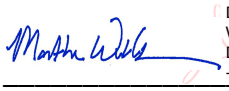
All SAFs supporting 12-month findings or candidate notices of review will be signed by the Director. SAFs should continue to be surnamed by Regional and Headquarters staff and leadership.



Martha Williams,
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