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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R8-ES-2022-0083; FF09E21000 FXES1111090FEDR 234]

RIN 1018–BF84

Endangered and Threatened Wildlife and Plants; Endangered Species Status for Lassics Lupine and Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine endangered species status under the Endangered Species Act of 1973 (Act), as amended, for the Lassics lupine (*Lupinus constancei*), a plant species native to northern California. We also designate critical habitat for the species. In total, approximately 512 acres (207 hectares) in Humboldt and Trinity Counties, California, fall within the boundaries of the critical habitat designation. This rule extends the protections of the Act to this species and its designated critical habitat.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule is available on the internet at *https://www.regulations.gov* and on the Service's website at *https://www.fws.gov/species/lassics-lupine-lupinus-constancei*. Comments and materials we received are available for public inspection at *https://www.regulations.gov* at Docket No. FWS-R8-ES-2022-0083.

Availability of supporting materials: Supporting materials we used in preparing this rule, such as the species status assessment report, are available on the Service's website at *https://www.fws.gov/species/lassics-lupine-lupinus-constancei*, at

https://www.regulations.gov at Docket No. FWS-R8-ES-2022-0083, or both. For the critical habitat designation, the coordinates or plot points or both from which the maps are generated are included in the decision file for this critical habitat designation and are available at the same locations.

FOR FURTHER INFORMATION CONTACT: Tanya Sommer, Field Supervisor, Arcata Fish and Wildlife Office, 1655 Heindon Road, Arcata, CA 95521; telephone 707–822–7201. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become endangered within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the Lassics lupine meets the definition of an endangered species; therefore, we are listing it as such and finalizing a designation of its critical habitat. Both listing a species as an endangered or threatened species and designating critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 et seq.).

What this document does. This rule lists the Lassics lupine as an endangered species, and designates critical habitat for the species, under the Act.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five 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. We have determined that the Lassics lupine is endangered primarily due to woody vegetation encroachment, pre-dispersal seed predation, fire, and reduced soil moisture due to drought associated with ongoing climate change.

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

Previous Federal Actions

Please refer to the October 6, 2022, proposed rule (87 FR 60612) for a detailed description of previous Federal actions concerning the Lassics lupine.

Peer Review

A species status assessment (SSA) team prepared an SSA report for the Lassics

lupine. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing and recovery actions under the Act (16 U.S.C. 1531 et seq.), we solicited independent scientific review of the information contained in the SSA report. As discussed in the proposed rule (87 FR 60612; October 6, 2022), we sent the SSA report to four independent peer reviewers and received four responses. The peer reviews can be found at *https://www.regulations.gov* and *https://www.fws.gov/species/lassics-lupine-lupinus-constancei*. In preparing the proposed rule, we incorporated the results of these reviews, as appropriate, into the SSA report, which serves as the foundation for the proposed rule and this final rule. A summary of the peer review comments and our responses can be found under **Summary of Comments and Recommendations**, below.

Summary of Changes from the Proposed Rule

Since the October 6, 2022, proposed rule was published, additional monitoring data were collected and analyzed. We incorporated these population surveys into the SSA report and added the new information to this final rule. To assess the current condition of the two populations of Lassics lupine, we now use the most recent 7 years of data (instead of 5 years of data). Numbers in two of four analysis units increased in 2021 relative to 2020, while two of four analysis units declined in 2022 relative to 2021. Overall, the average number of plants rangewide declined from 1,000 to 800 between 2020 and 2022 (Carothers 2022, entire). Under **Available Conservation Measures**, below, we both (1) clarify which types of vegetation management would not result in a

violation of section 9, and (2) remove mention of herbicide use, given that we conclude that herbicide use could impact the species.

We have otherwise made minor editorial corrections, but no substantive changes, to the October 6, 2022, proposed rule (87 FR 60612) in this final rule.

Summary of Comments and Recommendations

In the proposed rule published on October 6, 2022 (87 FR 60612), we requested that all interested parties submit written comments on the proposal by December 5, 2022. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in the Times-Standard. We did not receive any requests for a public hearing. All substantive information we received during the comment period has either been incorporated directly into this final determination or is addressed below.

Peer Reviewer Comments

As discussed in **Peer Review**, above, we received comments from four peer reviewers on the draft SSA report. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the information contained in the SSA report. The peer reviewers generally concurred with our methods and conclusions with two exceptions (addressed below in our response to comments). They also offered suggestions and clarifications to improve our descriptions of the species' ecology and threats, and our assessments of current and future conditions. We incorporated all feedback we received from the peer reviewers to improve the accuracy and readability of the final SSA report. Peer reviewer comments are addressed in the following summary and were incorporated into the SSA report as appropriate.

(1) Comment: Two reviewers thought that our categories describing canopy cover were not accurate and did not capture the nuance of individual needs between sites.

Our response: We revised the description for each condition category to better reflect this nuance. Some sites need higher canopy cover to protect from higher amounts of solar insolation, while other sites need less canopy cover based on localized orographic shade. Instead of categorizing canopy cover as qualitative, we instead use a more quantitative description suggested by one peer reviewer.

(2) Comment: One reviewer thought our future scenario assessments might be overly optimistic given recent mild weather conditions and changes to canopy cover that might not have been fully realized in current population trends. Another reviewer indicated that given what we know about the correlation of climate and demographic rates, there would be lower population growth rates, meaning we were overly optimistic in our characterization of future scenarios.

Our response: We considered these comments and revisited our future scenario analysis. We changed the future condition categories to better reflect the plausible future conditions. This resulted in all four population conditions for future scenario 1 being lower than in the previous version (for example, the condition of the Red Lassic decreased from low to very low).

(3) Comment: One reviewer asked why we had not included a future scenario that includes representative concentration pathway (RCP) 8.5 and caging continued at current levels. This reviewer also requested more information in general on how we selected our scenarios.

Our response: The future scenarios are meant to capture the range of plausible future conditions, bounded by the most optimistic plausible scenario and the most pessimistic plausible scenario, with the idea being that all plausible future conditions would be captured in that range. The scenarios we selected for the SSA report meet those criteria. The combination of RCP 8.5 and current caging levels is captured in the range of future scenarios chosen.

Comments from Tribes, States, and Federal Agencies

We did not receive any comments during the October 6, 2022, proposed rule's comment period from Tribes or from State or Federal agencies.

Public Comments

We received six public comments during the October 6, 2022, proposed rule's comment period; five of these are directly related to the proposed rule. All five of the comments related to the proposed rule support our proposed listing and critical habitat designation for the Lassics lupine. We reviewed all comments we received for substantive issues and new information regarding the proposed rule. None of the comments we received include new information concerning the listing of, or the critical habitat designation for, the Lassics lupine. Because none of the public comments we received provide any new or substantial information or poses questions to be addressed, they do not warrant an explicit response in this rule.

I. Final Listing Determination

Background

A thorough review of the taxonomy, life history, and ecology of the Lassics lupine (*Lupinus constancei*) is presented in the SSA report (version 1.2; Service 2023, pp. 11–18).

The following species description is largely paraphrased from the original species description and the Jepson Manual, 2nd edition (Nelson and Nelson 1983, entire; Baldwin et al. 2012, pp. 772–775). Lassics lupine is a tap-rooted, herbaceous perennial that grows to a height of less than 15 centimeters (cm) (6 inches (in)) from a short, slightly woody stem. The leaves and stem are covered in relatively long, shaggy hairs, and the plant is cespitose (growing close to the ground). Like other plants in the genus *Lupinus*, the leaves are palmately compound and generally clustered around the base.

Like other flowers of the family Fabaceae (legumes), the flowers of Lassics lupine are pea-like and composed of five unique petals. The flowers are pink and white with some variation between the individual petals. The flowers are arranged in a dense inflorescence called a raceme, meaning individuals flowers emerge on short stalks (pedicel) along a central axis. Mature plants can produce up to 20 or more inflorescences (clusters of flowers), but they typically produce fewer. Lassics lupine flowers develop into a fruit called a legume that splits in two halves (pods) that produce between one and five seeds, with an average of two seeds per fruit (Kurkjian 2012b, p. 5).

Lassics lupine reproduction occurs entirely through seed, and like many members of the legume family, they exhibit seed dormancy, meaning there is a physical barrier that prevents moisture from entering seeds (i.e., an impermeable seed coat) (Guerrant 2007, p. 13). This seed coat prevents germination and allows the plant to form a persistent seed bank. This seed coat appears relatively robust upon inspection, and germination trials suggest that scarification (intentionally damaging the seed coat) is necessary for germination to occur in laboratory conditions (Guerrant 2007, p. 14). This suggests that abrasion or other damage to the seed coat is necessary for germination in natural conditions.

It is unknown exactly when the majority of Lassics lupine seeds typically germinate, but it is thought to occur shortly after snow has melted (which is typically between March and May) and temperatures begin to rise. Plants can flower and produce seed within their second year but more often, they take several years to reproduce (California Department of Fish and Wildlife (CDFW) 2018, p. 13; Kurkjian 2012b, entire). Lassics lupine typically blooms from June to July but can start producing flowers as early as May (Baldwin et al. 2012, p. 772).

Lassics lupine may be capable of self-pollination, based on evidence of partial fruit development in flowers that were experimentally hand-pollinated and excluded from

pollinator visits (Crawford and Ross 2003, p. 3). However, Lassics lupine is also visited at high rates by three bee species: yellow-faced bumblebee (*Bombus vosnesenskii*), black-tailed bumblebee (*Bombus melanopygus*), and a mason bee species (*Osmia* spp.) (Crawford and Ross 2003, p. 2). All three of the bee species appear to be capable pollinators given that they are large enough to trigger the mechanism that releases pollen from the individual flowers, but no pollination experiments have taken place to quantify the rate or efficacy of these pollinator species (Crawford and Ross 2003, p. 3).

Lassics lupine is documented to occur between 1,700–1,800 meters (m) (5,600–5,800 feet (ft)) in elevation around Mount Lassic and Red Lassic on the border of Humboldt and Trinity Counties, California. The species is currently described in two elemental occurrences, or populations, as delineated by the California Natural Diversity Database (CNDDB). CNDDB considers populations to be spatially explicit if they are separated by a 0.4-kilometer (km) (0.25-mile (mi)) interval.

Lassics lupine occurs on or in the vicinity of serpentine soils in the Lassics Mountains, mainly on barren slopes with very shallow soil and low organic matter, or less commonly, near edges of Jeffrey pine (*Pinus jeffreyi*) forests. Most plants occur in areas with little to no tree overstory and can occur on flat or steep slopes with high proportions of gravel or cobble on the surface.

Two populations comprise the total of Lassics lupine occurrences: the Red Lassic and Mount Lassic populations (see figure 1, below). Over the previous 7 years of monitoring, the Red Lassic population has ranged in size from 0 to 320 individuals, and the Mount Lassic population has ranged in size from 59 to 504 individuals. Rangewide totals of adult plants have ranged from fewer than 200 to approximately 1,000 individuals over the previous 7 years of monitoring which includes plants in both populations as well as plants outside of those two populations.

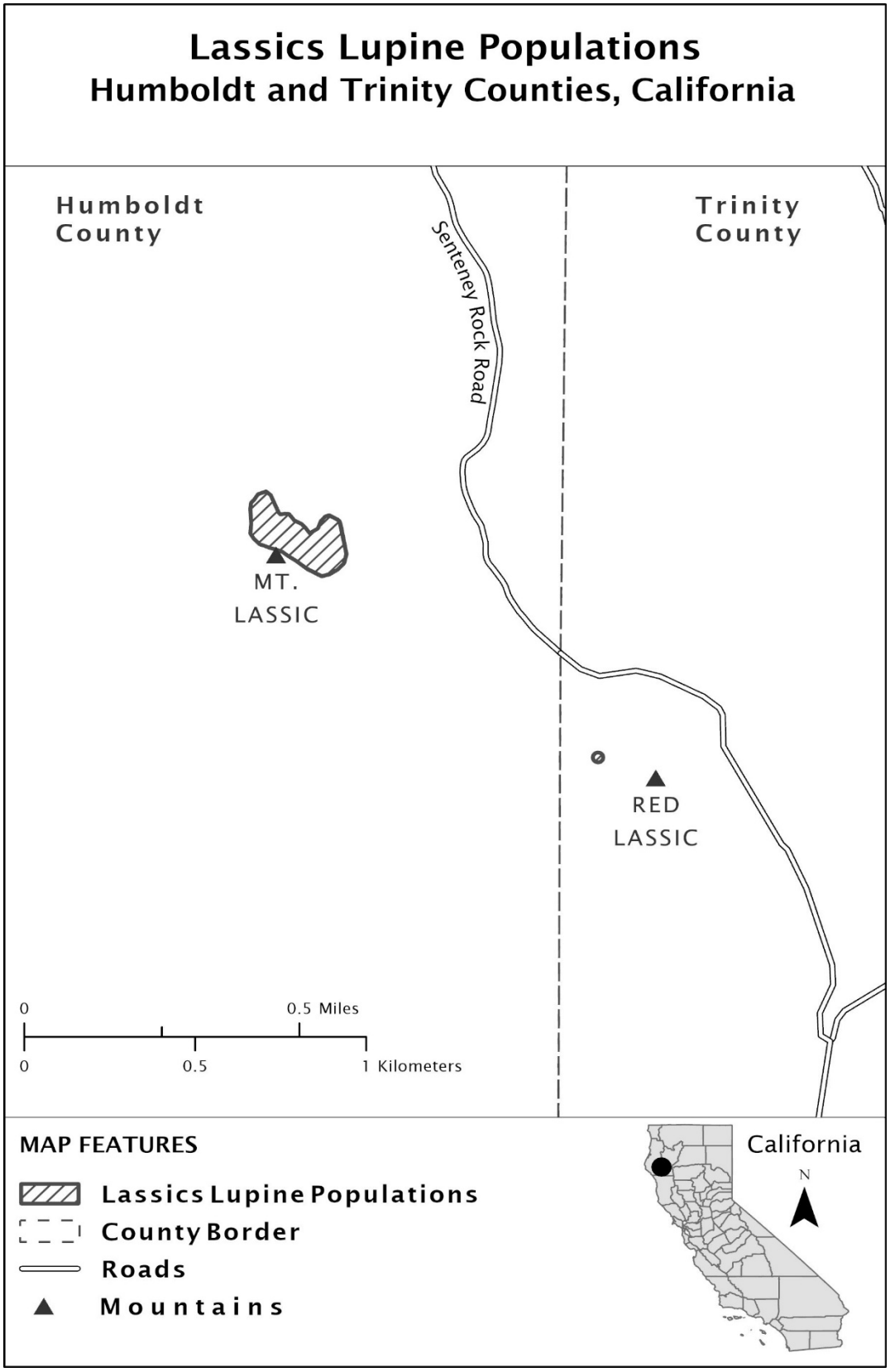


Figure 1. Lassics lupine populations on Mount Lassic and Red Lassic.

Regulatory and Analytical Framework

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 endangered and threatened species. In 2019, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). On the same day, the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019).

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.

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 expected response by the species and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The 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.

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 the Services 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 of time 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.

It is not always possible or necessary to define the foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be listed as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies.

To assess Lassics lupine viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–

310). Briefly, resiliency is the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); redundancy is the ability of the species to withstand catastrophic events (for example, droughts, large pollution events); and representation is the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate conditions, pathogen). 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 the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time which we then used to inform our regulatory decision.

The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS-R8-ES-2022-0083 on *https://www.regulations.gov* and at *https://www.fws.gov/species/lassics-lupine-lupinus-constancei*.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

Individual Needs

Individual Lassics lupines occur on gravelly, shallow serpentine or clastic soils that are relatively free of competing vegetation. It is unknown if soil microbes are necessary for germination of seeds, but increased germination success and plant vigor has been described in trials with native soil (presumably populated with soil microbes) from the Lassics (Guerrant 2007, pp. 14–15). Cross-pollination between Lassics lupine individuals is dependent on pollination by bees (Crawford and Ross 2003, entire).

Plants need a sufficient amount of sunlight and moisture. A sufficient amount of insolation (the amount of solar radiation reaching a given area) is necessary for Lassics lupine to reproduce, with increased vigor being documented in areas with higher insolation. However, too much insolation leads to decreased soil moisture. Plants typically occur either on north aspects, which provide orographic shading (when an obstacle, in this case a mountain peak, blocks solar radiation for at least part of day based on aspect), or on south aspects with some shading from nearby trees. Available soil moisture throughout the growing season is important for Lassics lupine to reproduce and to avoid desiccation.

In summary, individual Lassics lupine plants require native, shallow serpentine or clastic soils; a suitable range of solar insolation; sufficient moisture throughout the growing season; and access to pollinators (Service 2023, table 3.2).

Population Needs

To be adequately resilient, populations of Lassics lupine need sufficient numbers of reproductive individuals so that they are able to withstand stochastic events (expected

levels of variation in environmental or demographic characteristics). For example, populations must be large enough to withstand annual variation in moisture levels that may cause mortality to some individuals. A minimum viable population (MVP) has not yet been calculated for Lassics lupine. However, we do know that the current population sizes are too small to withstand current rates of seed predation without significant management efforts, based on negative population growth rates and high probabilities of quasi-extinction (a population collapse that is predicted to occur when the population size reaches some given lower density, defined as 10 or fewer adult plants for the Lassics lupine) across all sites without significant management efforts (Kurkjian et al. 2017, entire).

In the SSA report, we estimated MVP for Lassics lupine by comparison to surrogate species (species with similar life histories). Based on our analysis (Service 2023, table 3.1), we suggest an estimated MVP in the intermediate range (250 to 1,500 individuals) would be a sufficient number to withstand stochastic events. This provisional MVP range will be revised in the future if accumulated data allow a more precise calculation.

Sufficient annual seed production and seedling establishment is necessary to offset mortality of mature Lassics lupine plants within a population. Because large individuals produce more seed (Kurkjian 2012a, entire), their loss could have detrimental effects on the overall population. Sensitivity analyses across all sites demonstrated that survival and growth of reproductive plants had the most influence on population growth rate, followed by vegetative plants and seeds, and then seedlings (Kurkjian et al. 2017, p 867). Cross-pollination between Lassics lupine individuals presumably contributes to genetic exchange within and between populations and subpopulations, and is dependent on sufficient abundance and diversity of pollinators (Crawford and Ross 2003, entire).

Gravelly or rocky habitat that is relatively free of forest encroachment and other vegetative competition is important for population persistence. Historically, these serpentine barrens were shaped by geologic forces and presumably kept free of forest and shrub encroachment by fire, perhaps both natural and anthropogenic. With a reduced fire frequency compared to historical levels, this habitat is susceptible to encroachment by native successional species such as Jeffrey pine, incense cedar (*Calocedrus decurrens*), and pinemat manzanita (*Arctostaphylos nevadensis*) (Carothers 2008, entire). Lassics lupine requires relatively open canopy and limited competition from other plants for the limited moisture available during the growing season (Imper 2012, p. 142).

Species Needs

In order for the Lassics lupine to sustain itself in the wild over time, it should have a sufficient number (redundancy) of secure, sustainable populations (resiliency) that are well-distributed throughout its geographic range and throughout the variety of ecological settings in which the species is known to exist (representation). Suitable habitat must be available, and the number and distribution of adequately resilient populations must be sufficient for the species to withstand catastrophic events.

The historical extent and distribution of Lassics lupine is not precisely known. The species was possibly more abundant and more widespread in the past, although historical population boundaries are unknown. A comparison of soils from areas occupied by Lassics lupine to nearby areas that appear similar, but are not occupied, indicated that there are few sites that meet the species' specific soil requirements (Imper 2012, p. 27). This suggests that the distribution was not significantly more widespread than it is now, although vegetation encroachment has affected areas adjacent to and edges of the extant populations and there has been retraction of population boundaries of up to 20–30 percent in recent years (Service 2023, figure 4.2; Imper and Elkins 2016, pp. 16–18). Given the specialized adaptations to the harsh environment it occupies currently, it is unlikely that

Lassics lupine ever occurred in a diverse range of ecological requirements, and the current distribution is likely a reflection of complex geological processes that shaped the Lassics Range. Additionally, it is unclear whether the species maintains sufficient genetic variability to persist under changing environmental conditions.

Threats

In this final rule, we discuss those threats in detail that could meaningfully impact the status of the species, including six threats analyzed in the SSA report for the Lassics lupine (Service 2023, entire): vegetation encroachment (Factor A), seed predation and herbivory (Factor C), fire (Factor A), climate change effects (Factor E), and invasive species (Factor A). We also evaluate existing regulatory mechanisms (Factor D) and ongoing conservation measures.

In the SSA, we also considered the following threats: overutilization due to commercial, recreational, educational, and scientific use (Factor B); disease (Factor C); and recreation (Factor E). We concluded that, as indicated by the best available scientific and commercial information, these threats are currently having little to no impact on the Lassics lupine, and thus their overall effect now and into the future is expected to be minimal. Therefore, we will not present summary analyses of those threats in this document, but we considered them in our overall assessment of impacts to the species. For full descriptions of all threats and how they impact the species, please see the SSA report (Service 2023, pp. 22–33).

We note that, by using the SSA framework (Service 2016, entire) to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, 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. To assess the current and future condition of the species, we undertake an iterative analysis that encompasses and

incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and 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.

Vegetation Encroachment

Lassics lupine's density and vigor are highest in areas with sufficient insolation and when relatively free of competition for light and water (Imper 2012, p. 140). Since the 1930s, forest and chaparral vegetation communities in the range of the Lassics lupine have expanded in both distribution and density (Carothers 2017, entire; Service 2023, figures 4.1 and 4.2). On the north slope of Mount Lassic, Jeffrey pine and incense cedar have expanded; on the south slope of Mount Lassic, chaparral has matured and become more dense (Carothers 2017, p. 2). Increased distribution of the forest and chaparral communities in the areas surrounding Lassics lupine populations over the last 90 years may be due to fire suppression (Carothers 2017, entire). Based on suitable soil types and aspect, the north slope of Mount Lassic may have supported Lassics lupine in the past, connecting the three subpopulations that currently make up the Mount Lassic population.

The effects of vegetation encroachment on Lassics lupine populations are twofold. There is a subsequent increase in canopy cover and leaf litter, which reduces habitat suitability. There is also an increase in seed predators, which decreases fecundity. With an increase in the distribution and density of trees on the north slope of Mount Lassic, there is a subsequent increase in canopy cover and reduced insolation. Available soil moisture has been shown to decrease more rapidly in forested areas in the spring and summer (Imper 2012, p. 140). Additionally, these areas are now covered in a dense layer of leaf litter and forest duff, which may suppress the germination of Lassics lupine seeds

and increase the risk of catastrophic fire by providing fuel in otherwise barren areas that likely burned at low severity in the past (Carothers 2017, p. 4; Imper 2012, pp. 139–140).

Overall, vegetation encroachment influences fecundity, habitat quality, and survival throughout the range of the species and especially on the edges of the Mount Lassic population. Ultimately, vegetation encroachment has a strong influence on the amount of available habitat and limits current population sizes of the Lassics lupine. We expect that vegetation encroachment on occupied Lassics lupine habitat will continue to increase into the future.

Seed Predation and Herbivory

Seed predation by small mammals is one of the most influential threats to Lassics lupine (Crawford and Ross 2003, p. 4; Kurkjian et al. 2017, p. 862). This threat has been observed and documented at significant levels since monitoring began in 2001. Pre-dispersal seed predation (removal of seeds while they are still attached to the plant, resulting in seed mortality) was first observed at high rates, with 72 percent of observed inflorescences suffering from almost complete predation (n=67; Crawford and Ross 2003, p. 3). Seed predation has been shown to have severe impacts on small or rare plant populations, including Lassics lupine (Dangremond et al. 2010, p. 2261; Kurkjian et al. 2017, entire). Since 2005, monitoring of small mammal populations has been conducted annually. Several species have been identified as Lassics lupine seed consumers, primarily deer mice (*Peromyscus* spp.), chipmunks (*Tamias* spp.), and the California ground squirrel (*Otospermophilus beecheyi*).

For other species, increased risk of seed predation has been demonstrated to be higher in areas close to vegetation (Myster and Pickett 1993, p. 384; Notman et al. 1996, p. 224; McCormick and Meiners 2000, p. 11; Dangremond et al. 2010, entire). Over the past 20 years, research on Lassics lupine habitat has demonstrated that small mammal seed predators are most abundant in the chaparral habitat, followed by bare serpentine

habitat, with the lowest abundance documented in the forest habitat (CDFW 2018, appendix B). There is a high probability of movement between the chaparral and serpentine communities and an intermediate probability of movement between the forest and serpentine communities (Cate 2016, pp. 36–40). The proximity of vegetated communities to the serpentine barrens likely provides shelter and food for seed predators, and there is an increased likelihood that seeds adjacent to chaparral habitats will be subject to increased pre-dispersal seed predation (Kurkjian 2011, pp. 2–3). Studies of seed production in 2010 and 2011 estimated that only 2 to 5 percent of Lassics lupine seed escaped predation (Kurkjian 2012a, pp. 14–15).

A population viability analysis (PVA) has shown that pre-dispersal seed predation has the potential to drive Lassics lupine to extinction (Kurkjian 2012b, entire; Kurkjian et al. 2017, entire). Without factoring in the potential effects of other threats or catastrophic events, the PVA estimates that the probability of quasi-extinction (defined as 10 or fewer adult plants) in the next 50 years is between 68 and 100 percent and is very likely to occur within the first 20 years. If all reproductive plants are caged, preventing seed predation, the probability of quasi-extinction is reduced to between 0.0 and 1.8 percent over the next 50 years (Kurkjian et al. 2017, pp. 867–868). This research demonstrates the significant influence that pre-dispersal seed predation has on the species and emphasizes the importance of caging reproductive plants until seed predation can be addressed by other means. Post-fire small mammal monitoring and seed surrogate trials suggest that pre-dispersal seed predation risk decreased in the first 2 years following the 2015 Lassics Fire, as small mammal density declined in some areas. This effect appeared to be transient.

After observations of unusually high pre-dispersal seed predation rates, Six Rivers National Forest and Service staff made the decision to start caging reproductive Lassics lupine plants in 2003. Cages are generally deployed in May or June around accessible

adult plants. Cages are constructed of various types of wire mesh and are designed to allow pollinators to access flowers, while simultaneously preventing seed predators and herbivores from accessing adult plants. Cages are removed after seeds are released and before winter snow prevents access to the site. Caging has occurred at various levels, and after severe population declines in 2015, it was expanded to include a majority of reproductive individuals. This expanded caging effort has been credited with the positive overall population trends since 2016 (Service 2023, figure 5.3).

Herbivory of flowers and vegetation has also been observed during annual demographic monitoring and on cameras placed near plants to document the suite of predators; in some instances, herbivores consume entire plants or excavate the plant to a sufficient depth to cause death (CDFW 2018, p. 24). While the observation of these events has been rare, so are the opportunities to observe such events. In some years, there has been documentation of 1 to 3 plants per year being removed entirely through herbivory. Given the frequency of observed herbivory, the overall impact to populations is unknown.

In summary, seed predation is affecting the reproduction of the Lassics lupine across its range, which in turn influences population size and viability. This is having species-level effects and is mitigated by annual efforts to cage individual Lassics lupine plants to prevent small mammal seed predators from accessing mature fruits (see *Conservation Efforts and Regulatory Mechanisms*, below, for more information). Seed predation, likely influenced by vegetation encroachment, is a significant influence on Lassics lupine viability and may increase into the future as vegetation encroachment increases. However, the effects of seed predation are being reduced due to ongoing conservation efforts.

Fire

Historical fire return intervals in the Lassics Range are unknown but have been estimated to be approximately every 12.7 years across the Mad River Ranger District of Six Rivers National Forest (Carothers 2017, p. 4) and every 20 years across the range of Jeffrey pine, although they may be longer for relatively open stands with reduced fuels, such as serpentine barrens similar to where Lassics lupine populations occur (Munnecke 2005, p. 2). There is little recorded information regarding fire history prior to the 1900s, although prior to 1865, local Tribes in the general area used fire with some regularity to manage the understory (Carothers 2017, p. 4).

A total of 18 fires have been recorded in the Lassics Botanical and Geologic Area between 1940 and 2014, with 71 percent under 5 acres (ac) (2 hectares (ha)) in size (Carothers 2017, p. 5). Most of these were caused by lightning and were largely fought by small crews using hand tools. A thorough analysis of historical and current fire regimes on National Forest lands in California demonstrated a significant decline in fire frequency in northwestern California since 1908 (Safford and Van de Water 2014, entire). Fire return intervals are estimated to have declined by 70 to 80 percent within the Lassics Botanical and Geologic Area (Carothers 2017, p. 7). These results indicate that fire intervals are shorter, and fire is less frequent in the Lassics Range than it was prior to fire suppression.

The Lassics Fire, which was caused by lightning and centered on Mount Lassic, burned roughly 18,500 ac (7,490 ha) in August 2015. The fire burned at high severity through the chaparral on the south side of Mount Lassic and through the entire Red Lassic population. The forested area on the north side of Mount Lassic burned at mixed severity, and areas dominated by serpentine barrens burned at low severity. The Lassics Fire caused direct mortality of many individuals, killing all individuals at Red Lassic, and a portion of individuals at Mount Lassic. Additionally, at Red Lassic, the fire killed the Jeffrey pine, which appear critical to survival of Lassics lupine individuals there for the

shade they provide (Imper 2012, pp. 138–139). As of 2019, these trees were still standing and providing some shade but are at risk of falling over, which would reduce shade and potentially cause direct mortality of plants beneath them. The fire did not burn at a high enough severity to reduce the density or distribution of Jeffrey pine in the forested area north of Mount Lassic. The chaparral area on the south side of Mount Lassic burned at high severity and reduced the canopy cover of these species temporarily; however, those areas have since resprouted and the vegetation is returning rapidly, along with an invasive grass that is known to follow fire.

In 2016, the year following the fire, there was a substantial flush of Lassics lupine seedlings observed across all sites. Given the mortality of all adults in the Lassic Fire at Red Lassic, we know that all the seedlings at Red Lassic were the result of germination from the soil seed bank. Seed bank germination also contributed significantly to the population at Mount Lassic, where the fire effects were patchier. It is unknown what effect this level of germination had on the number of seeds remaining in the soil seed bank.

In summary, future fires could have both positive and negative effects on Lassics lupine individuals and populations, depending on severity. Fires that eliminate or reduce encroaching vegetation could have positive effects due to a reduced abundance of small mammal seed predators and increased habitat suitability where insolation and available soil moisture are limited. Mixed and high severity fires have the potential to kill vegetative and adult plants and potentially reduce the seed bank. Fire is a significant influence on the viability of the Lassics lupine.

Climate Change

Observed changes in the climate system indicate that the surface of the earth is getting warmer, and the amounts of snow and ice have diminished (International Panel on Climate Change (IPCC) 2014, p. 2). These changes have been occurring for decades, and

the last three decades have been successively warmer than any prior decade since 1850 (IPCC 2014, p. 2). The Fifth Assessment Report of the IPCC reported with very high confidence that some ecosystems are significantly vulnerable to climate-related extremes such as droughts and wildfires (IPCC 2014, p. 8). Average annual temperatures in California have risen by approximately 2 degrees Fahrenheit (°F) in the last 100 years (Frankson et al. 2017, p. 4). Projections indicate that warming trends in the western United States will continue and likely increase while projections of future precipitation are less conclusive (Dettinger et al. 2015, p. 2088). Even if precipitation increases in the future, as many models indicate, temperature rises will decrease snowpack duration and increase the rate of soil moisture loss during dry spells, further reducing the water available in the soil (Kim et al. 2002, pp. 5–7; Frankson et al. 2017, p. 4). This is expected to increase not only the frequency and duration of droughts but also the frequency and severity of wildfires (Frankson et al. 2017, p. 4).

Snowmelt date, summer precipitation, and late summer temperatures all appear to be affecting the distribution, mortality, reproduction, and recruitment of Lassics lupine (Imper 2012, entire). Survival of Lassics lupine tends to be lower in years when snowpack melts early, particularly if it is not followed by summer rain (Imper 2012, p. 143). The average snow fall is projected to decrease with rising temperatures, reducing water storage in the snowpack (Frankson et al. 2017, p. 4). Desiccation is a common form of death for this plant that lives in shallow soils on exposed mountaintops. Low rainfall and high temperatures in the summer have detrimental effects at a population level.

Climate data collected since 2005 at the Zenia Forest Service Guard Station, roughly 15 km (9.5 mi) southeast of the Lassics and 460–520 m (1,500–1,700 ft) lower in elevation, show that annual average temperatures have been increasing (California Data Exchange Center 2021, unpaginated). This increase in annual temperature has the potential to negatively influence Lassics lupine by reducing the amount and duration of

snowpack in the winter as well as increasing mortality due to desiccation during the summer.

When extreme weather events occur, the entire species is affected due to its limited geographic range. Climate change increases the likelihood of such extreme events now and into the future. Additionally, because Lassics lupine already occurs on the highest peaks in the area, there is no habitat at higher elevations available for Lassics lupine to move into as climatic conditions at lower elevations become unsuitable, nor are there additional populations spread throughout the landscape to help the species recover from these events.

Climate change is influencing individual survival and overall population sizes rangewide. Climate change, through increasing temperatures and reduced snowpack, is a significant influence on the viability of Lassics lupine.

Invasive Species

Cheatgrass (*Bromus tectorum*) is a highly invasive species that occurs throughout most of North America and is most prominent and invasive in the Rockies, Cascades, and Sierra Nevada mountain ranges (Zouhar 2003, unpaginated). It is well-adapted to frequent fires, often emerging as a strong competitor in a post-fire environment and can increase the frequency of fires by creating a highly flammable environment (Zouhar 2003, unpaginated). Another way cheatgrass alters the environment is by adding nitrogen and creating a positive feedback loop that promotes dominance of cheatgrass (Stark and Norton 2015, p. 799). Additionally, input of nitrogen into serpentine ecosystems can alter the ability of the native plant community to resist invasion (Going et al. 2009, p. 846).

Serpentine soils are more resistant to invasion by nonnative plant species than the communities found in adjacent matrix soils (Going et al. 2009, p. 843); however, nonnative plant species can become more prevalent on small patches of serpentine, particularly where patches of serpentine are small or fragmented (Harrison et al. 2001, p.

45). Thus, the presence of cheatgrass could make the Lassics lupine population at Mount Lassic more vulnerable to secondary invasions.

Previously, nonnative, invasive plants have not been reported as a threat to Lassics lupine in monitoring reports provided by the U.S. Forest Service (USFS) (Carothers 2019 and Carothers 2020, entire), the petition to list (Imper et al. 2016, entire), or the status review conducted by CDFW (2018, entire). However, field observations made by Service staff indicate that cheatgrass is present adjacent to the Mount Lassic population and the invasion has increased in recent years (Service 2023, figure 4.4; Hutchinson 2020, field observation). Dense stands of cheatgrass were also noted in 2019 and 2020, in the vicinity of the Mount Lassic population, but not within the population itself (Hutchinson 2020, field observation). Other *Bromus* spp. have been documented on serpentine soils, with an increased prevalence along edges of small patches of serpentine (Harrison et al. 2001, p. 45).

In general, nonnative, invasive plant species compete with native species for resources such as sunlight, water, and nutrients. While there is no evidence that cheatgrass is currently competing with Lassics lupine for these basic resource needs, the presence of this highly invasive species near the largest population is a concern because it could increase the frequency of fires in the area, add nitrogen to the soils, and increase the likelihood of invasion by other nonnative species. Currently, invasive species (particularly cheatgrass) are increasing in the areas adjacent to the Mount Lassic population and could influence fire severity but are not currently impacting Lassics lupine's viability. However, the impact of invasive species could increase in the future.

Conservation Efforts and Regulatory Mechanisms

The Lassics lupine was listed as endangered in 2019 by the California Fish and Game Commission (CFGC 2019, entire). State listing of the Lassics lupine ensures, among other things, that individuals conducting research that involves handling of the

plant or plant material, including seeds, must be authorized under the California Fish and Game Code at section 2081(a). Additionally, projects that might impact the plant must be evaluated for significance under the California Environmental Quality Act. The California Native Plant Society (CNPS) categorizes this species as a California Rare Plant with a rank of 1B.1, meaning that it is rare, threatened, or endangered in California and elsewhere, and is seriously endangered in California. It has a State rank of S1, defined as critically imperiled or at very high risk of extinction due to extreme rarity, and a global rank of G1, meaning critically imperiled (CNPS 2021, unpaginated).

Both the Red Lassic and Mount Lassic populations are within the Lassics Botanical and Geologic Area of Six Rivers National Forest. Management of unique botanical features is directed by the Special Interest Management Strategy with a goal of managing for rare species and the natural processes that support them (U.S. Department of Agriculture (USDA) 1998, entire). Additionally, the Mount Lassic population, and 2,833 ha (7,000 ac) of the Mount Lassic Range, is within the Mount Lassic Wilderness Area, part of the Northern California Coastal Wild Heritage Wilderness Act of 2006 (Pub. L. 109–362, October 17, 2006, 120 Stat. 2064). Designation as wilderness affords protection from most direct anthropogenic threats except from trampling from foot traffic and illegal off-highway vehicle (OHV) use. Additionally, Lassics lupine is designated a sensitive species by the Six Rivers National Forest, meaning that management decisions made by the Forest will not result in a trend towards Federal listing or loss of viability (USDA 1997, entire).

A conservation strategy has been signed by the Six Rivers National Forest and is focused on Lassics lupine monitoring and research, as well as potential conservation actions for the species. This strategy does not currently include a commitment to allocate funds for conservation actions, but does outline goals and objectives, documents studies and management efforts to date, and identifies key actions that should be initiated or

continued. Management efforts proposed in the strategy include continued caging of reproductive plants, continued monitoring, investigating the role of fire in population viability, continued seed banking and propagation efforts, and experimental prescribed burning (USDA 2020a, entire). Caging of reproductive plants currently requires a substantial commitment of time from Service staff, Six Rivers National Forest staff, and volunteers. Changes in staff and available resources mean that implementation has fluctuated in the past and this could continue into the future.

Attempts to augment the populations or establish populations in nearby areas with similar soil types have been largely unsuccessful. Additionally, seed is banked in two locations: 74 seeds have been deposited at the Berry Botanic Garden in Portland, Oregon, and 439 seeds have been deposited at the National Laboratory for Genetic Resource Preservation (NLGRP) in Fort Collins, Colorado. The conservation strategy and the Six Rivers National Forest will prioritize augmenting the collection at NLGRP (USDA 2020b, p. 1).

Species Condition

To assess the current condition of the Lassics lupine, we used recent monitoring data and results from the recent PVA (Kurkjian et al. 2017, entire) to score the current condition of each analysis unit based on our assessment of habitat and demographic variables. For each analysis unit, we assess habitat quantity, habitat quality, and abundance of Lassics lupine.

Habitat variables were categorized using largely qualitative information while demographic variables were analyzed quantitatively, which corresponds with the best available information for each variable. Each variable in an analysis unit was assigned a current condition of high, moderate, or low (Service 2023, table 5.1). The average score was then used to rate the overall current condition of each analysis unit. When a score fell between two condition categories, the overall current condition was assigned consistent

with the condition of the majority of the parameters. In other words, if two of the three parameters were low and one was moderate, the overall condition was rated as low. A population that is in low condition is one where resources are in overall low condition. A similar definition applies to moderate and high conditions.

Habitat quantity is a description of the relative size of available habitat based on both available soil type information and the amount of habitat available compared to historical conditions. This information was qualitatively scored based on the most recently available site observations. Because Lassics lupine has likely always been narrowly restricted, we chose not to assess the total area occupied by each analysis unit but rather to look at the relative size of each analysis unit. Furthermore, because Lassics lupine is highly influenced by vegetation encroachment (habitat that supports pre-dispersal seed predators), we also considered the amount of habitat available currently compared with historical habitat availability based on aerial photographs.

Habitat quality is a description of the solar insolation, influenced by aspect and canopy cover, for each analysis unit. Because solar insolation directly influences available soil moisture, and both influence the survival and vigor of Lassics lupine individuals and populations, we used solar insolation as a surrogate to describe habitat quality. The Lassics lupine demonstrates higher fecundity and vigor in areas with a suitable range of solar insolation. Areas with suitable solar insolation are defined as either occurring on the north aspect of a slope (most areas in the Mount Lassic population) or are located nearby within moderately open canopy Jeffrey pine forests where trees provide some shade. Suboptimal areas are those with either slightly too much shading or slightly too little shading, and unsuitable areas are those without any shading from either orographic cover or adjacent trees. Areas within a suitable range of solar insolation conditions were defined as “high” condition, areas within a suboptimal range of solar

insolation as “moderate” condition, and unsuitable areas as “low” condition. This information was also qualitatively scored based on recent site observations.

Abundance is often used as a metric to assess the overall status of plant species. Abundance data represent the total number of adult vegetative and reproductive plants present in each analysis unit. Abundance categories were defined as “low” (fewer than 100 plants), “moderate” (100 to 500 plants), and “high” (more than 500 plants). These rating categories were derived using the estimated overall MVP adapted from Pavlik (1996, p. 137). Rather than use abundance data from one year, we report a range of years that reflects the range observed from data collected during annual monitoring from 2015–2022 by Six Rivers National Forest staff and volunteers (see chapter 5 of the SSA report for more details). We considered that abundance is significantly higher than it would be without the current practice of caging a large portion of adult plants each year. Caging has occurred at some level since approximately 2003, with the percentage of caged plants increasing gradually over time; current caging levels vary from 60–100 percent, varying between population and year.

We assessed the two populations (Red Lassic and Mount Lassic) as delineated by CNDDB, which defines populations as groups of individual plants that are separated by approximately 0.4 km (0.25 mi). We then further considered three subpopulations of the Mount Lassic population for a total of four analysis units, three of which are subpopulations of Mount Lassic (i.e., Saddle, Terrace, and Forest) and one of which is the Red Lassic population. There are also Lassics lupine plants outside of the transects we analyzed. These individuals largely occur on steep slopes that are not accessible to surveyors without causing significant erosion or damage to plants and surveys are generally conducted with binoculars in order to avoid disturbing the soil.

The results of our analysis are presented in table 1 below, and additional detail on populations, analysis units, and individuals outside those units is available in the SSA report (Service 2023, pp. 36–39)

TABLE 1. Current condition data for each analysis unit with overall current condition summarized.

	Habitat quantity	Habitat quality	Abundance range (mean)	Overall Current Condition
Red Lassic	Relatively small, reduced from historical amounts	Unsuitable (south aspect without tree cover)	0–320 (129)	**Low**
Saddle	Relatively moderately-sized, but reduced from historical amounts	Suitable solar insolation	14–284 (184)	**Moderate**
Terrace	Relatively small, reduced from historical amounts	Suitable solar insolation	33–135 (79)	**Low**
Forest	Relatively small, reduced from historical amounts	Suboptimal (north aspect combined with moderate canopy)	12–85 (48)	**Low**

Having assessed the current condition of the two known populations, we now consider the resiliency, redundancy, and representation of the Lassics lupine. In total, two of the three subpopulations of the Mount Lassic population are considered in low overall current condition, and one is in moderate overall current condition. As described above, our abundance metric spans a range of years and demonstrates fluctuations in numbers of flowering plants. Also, as described above under *Species Needs*, current population sizes are too small to withstand current rates of seed predation without significant management efforts. Most species' populations fluctuate naturally, responding to various factors such as weather events, disease, and predation. These factors have a relatively minor impact on species with large, stable local populations and a wide and continuous distribution. However, populations that are small, isolated by habitat loss or fragmentation, or impacted by other factors are more vulnerable to extirpation by natural, randomly

occurring events (such as predation or stochastic weather events), and to genetic effects that impact small populations (Purvis et al. 2000, p. 1949). Small populations are less able to recover from random variation in their population dynamics and environment (Shaffer and Stein 2000, pp. 308–310), such as fluctuations in recruitment (demographic stochasticity), variations in rainfall (environmental stochasticity), or changes in the frequency of wildfires.

While some analysis units have high to moderate habitat quality, the overall current conditions are driven by small population sizes and a limited amount of available habitat. The Red Lassics population is also in overall low current condition. Resiliency is low for both populations.

With regard to redundancy, there are currently close to 800 Lassics lupine adult plants existing in two populations in a roughly 1-square-kilometer area. One of the populations is in overall low condition while the other population is comprised of three subpopulations of which two are in low condition and one is in moderate condition. When considering the overall condition of the Mount Lassic population (the three subpopulations plus plants outside of the transects), it is still in overall low condition. Our analysis of redundancy concludes that both populations are in low resiliency and a single catastrophic event could heavily impact both populations even though the populations are well-distributed throughout the species' historical range. Thus, species redundancy is reduced from the historical condition.

With regard to representation, as a narrow endemic, the Lassics lupine is highly specialized and restricted to its ecological niche. Suitable habitat is narrowly distributed on mountaintops and is becoming increasingly limited due to encroachment of forest and chaparral vegetation. Both populations share similar features, with the differences being largely related to the aspect on which each is positioned and amounts of canopy cover and corresponding isolation and soil moisture. Both populations are susceptible to seed

predation and vegetation encroachment. The best available data do not indicate any potential genetic differentiation across the range of the species, and representation units correspond with our analysis units, which generally align with different ecological settings. Although populations and subpopulations of the species remain extant across each of the ecological settings, resiliency is low for both populations.

Representation is not only gauged by ecological and genetic diversity, but also by the species' ability to colonize new areas. Currently, populations of Lassics lupine are small and isolated by tracts of unsuitable habitat. The lack of connectivity between populations and overall small size may result in reduced gene flow and genetic diversity, rendering the species less able to adapt to novel conditions. Further, the lack of available and unoccupied suitable habitat leaves less opportunity for an adaptable species to exploit new resources outside of the area it currently occupies. Thus, while ecological diversity is generally low for this highly specialized species, the limited availability of unoccupied habitat in suitable condition also likely limits the potential for this species to adapt to environmental changes.

As mentioned previously, quantitative data on habitat condition could be misleading for a narrow endemic, so we relied on qualitative assessments relative to historical availability of habitat and the expert opinion of those familiar with the populations as the best scientific data available. Detailed genetic information is not available for this species, nor do we know the minimum number of individuals that would be required to sustain a population, or the minimum number of populations required to sustain the species. Nonetheless, the evidence that does exist points to a species that is heavily impacted by variable weather patterns and by high rates of seed predation, likely exacerbated by vegetation encroachment.

Future Condition

As part of the SSA, we also developed three future condition scenarios to capture the range of uncertainties regarding future threats and the projected responses by the Lassics lupine. Our scenarios examined possible future impacts of seed predation, climate change, and fire. Because we determined that the current condition of the Lassics lupine was consistent with an endangered species (see **Determination of Lassics Lupine's Status**, below), we are not presenting the results of the future scenarios in this final rule. Please refer to the SSA report (Service 2023, pp. 42–50) for the full analysis of future scenarios.

Determination of Lassics Lupine's Status

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

Status Throughout All of Its Range

In this final rule, we present summary evaluations of six threats analyzed in the SSA report for the Lassics lupine (Service 2023, entire): vegetation encroachment (Factor A), seed predation and herbivory (Factor C), fire (Factor A), climate change effects

(Factor E), and invasive species (Factor A). We also evaluate existing regulatory mechanisms (Factor D) and ongoing conservation measures.

In the SSA, we also considered the following additional threats: overutilization due to commercial, recreational, educational, and scientific use (Factor B); disease (Factor C); and recreation (Factor E). We concluded that, as indicated by the best available scientific and commercial information, these threats are currently having little to no impact on the Lassics lupine, and thus their overall effect now and into the future is expected to be minimal. However, we consider them in our determination of status for the Lassics lupine, because although these minor threats may have low impacts on their own, combined with impacts of other threats, they could further reduce the already low number of Lassics lupine plants.

For full descriptions of all threats and how they impact the species, please see the SSA report (Service 2023, pp. 22–33).

Based on historical records, it appears that the Lassics lupine has always had a limited range. However, in recent decades, the species has experienced a reduction of its range. As woody vegetation encroachment (Factor A) has affected occupied Lassics lupine habitat, the population of small mammals has increased, resulting in pre-dispersal seed predation (Factor C) that has affected up to 95 percent of flowering plants. Ongoing efforts to cage all adult plants have greatly reduced the magnitude of pre-dispersal seed predation, and our assessment of population abundance and habitat quality for the species from recent surveys indicates that the Lassics lupine population size is relatively stable. While population levels are currently stable, given the high rates of seed predation documented prior to caging (up to 95 percent of seeds consumed pre-dispersal), they would not be stable without the annual effort of caging individual plants. Caging is not guaranteed to continue and requires significant investment of time and resources twice per year to implement. Additionally, habitat quantity and quality are reduced compared to

historical levels with the remaining populations being small in size and occupying a small area. The current abundance and recruitment levels are sustained only through management actions, specifically caging of a large proportion of reproductive individuals.

In recent years, fire (Factor A) impacted the Red Lassic population, killing both individual Lassics lupine plants and the overstory that was providing necessary shade to the species. Any future mixed- or high-severity fire could provide further loss of adult Lassics lupine plants and damage the habitat features necessary for their survival. Additionally, earlier snowmelt date, reduced summer precipitation, and higher summer temperatures associated with climate change (Factor E) have resulted in a loss of soil moisture in the shallow soils where the Lassics lupine is found. Further, invasive species (Factor A) are encroaching near Lassics lupine populations, although the magnitude of this threat is currently low.

Under the current condition, the Lassics lupine remains distributed throughout its historical range, but resiliency is low for both populations and across all ecological settings. Overall current condition is ranked as low in three of the four analysis units. Although representation is maintained at current levels throughout the range, population resiliency and species redundancy are both low, especially as compared to historical conditions. The current small size of Lassics lupine populations makes the species less able to withstand the threats that are currently impacting the species.

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the Lassics lupine is currently facing high-magnitude threats from vegetation encroachment, pre-dispersal seed predation, fire, and reduced soil moisture associated with ongoing effects of climate change. Although ongoing management actions are helping to reduce the magnitude of seed predation, the majority of Lassics lupine individuals are concentrated in a single

population that has a reduced ability to withstand both catastrophic events and normal year-to-year fluctuations in environmental and demographic conditions. These threats are impacting the species now. Thus, after assessing the best available information, we determine that the Lassics lupine is in danger of extinction 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. We have determined that the Lassics lupine is in danger of extinction throughout all of its range and accordingly did not undertake an analysis of any significant portions of its range. Because the Lassics lupine warrants listing as endangered throughout all of its range, our determination does not conflict with the decision in *Center for Biological Diversity* v. *Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020), because that decision related to significant portion of the range analyses for species that warrant listing as threatened, not endangered, throughout all of their range.

Determination of Status

Our review of the best available scientific and commercial information indicates that the Lassics lupine meets the Act's definition of an endangered species. Therefore, we are listing the Lassics lupine as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition as a listed species, planning and implementation of recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls

for recovery actions to be carried out for listed species. The protection required by Federal agencies, including the Service, and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (*https://www.fws.gov/program/endangered-species*), or from our Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Once this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of California will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Lassics lupine. Information on our grant programs that are available to aid species recovery can be found at: *https://www.fws.gov/service/financial-assistance*.

Please let us know if you are interested in participating in recovery efforts for the Lassics lupine. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action

may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us.

Federal agency actions within the species' habitat that may require consultation as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the USFS (Six Rivers National Forest).

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. The prohibitions of section 9(a)(2) of the Act, codified at 50 CFR 17.61, make it illegal for any person subject to the jurisdiction of the United States to import or export; remove and reduce to possession from areas under Federal jurisdiction; maliciously damage or destroy on any such area; remove, cut, dig up, or damage or destroy on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce an endangered plant. Certain exceptions apply to employees of the Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered plants under certain circumstances. Regulations governing permits for endangered plants are codified at 50 CFR 17.62. With regard to endangered plants, a permit may be issued for scientific purposes or for enhancing the propagation or survival of the species. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify, to the extent known at the time a species is listed, specific activities

that will not be considered likely to result in violation of section 9 of the Act. To the extent possible, activities that will be considered likely to result in violation will also be identified in as specific a manner as possible. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. As discussed above, certain activities that are prohibited under section 9 may be permitted under section 10 of the Act. In addition, to the extent currently known, the following activities will not be considered likely to result in violation of section 9 of the Act:

(1) Vegetation management practices, such as hand-pulling invasive species and trail maintenance outside the populations that are carried out in accordance with any existing regulations and best management practices;

(2) Research activities that are carried out in accordance with any existing regulations and permit requirements;

(3) Vehicle use on existing roads in compliance with the Six Rivers National Forest land management plan; and

(4) Recreational use (e.g., hiking and walking) with minimal ground disturbance on existing designated trails.

This list is intended to be illustrative and not exhaustive; additional activities that will not be considered likely to result in violation of section 9 of the Act may be identified during coordination with the local field office, and in some instances (e.g., with new information), the Service may conclude that one or more activities identified here will be considered likely to result in violation of section 9.

To the extent currently known, the following is a list of examples of activities that fall under the prohibitions set forth at 50 CFR 17.61 and that will be considered likely to result in violation of section 9 of the Act:

(1) Unauthorized collecting, handling, removing, possessing, selling, delivering, carrying, or transporting of the species, including transport across State lines and import or export across international boundaries; and

(2) Destruction or alteration of the species by unauthorized vegetation management, trail maintenance, or research activities.

This list is intended to be illustrative and not exhaustive; additional activities that will be considered likely to result in violation of section 9 of the Act may be identified during coordination with the local field office, and in some instances (e.g., with new or site-specific information), the Service may conclude that one or more activities identified here will not be considered likely to result in violation of section 9.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

II. Critical Habitat

Background

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, we designate a species' critical habitat concurrently with listing the species. Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation also does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical

habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would likely result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement "reasonable and prudent alternatives" to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the

use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans,

habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical or Biological Features Essential to the Conservation of the Species

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define "physical or biological features essential to the conservation of the species" as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or absence of a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

Geological Substrate and Soils

The Lassics lupine occurs on or in the vicinity of serpentine soils in the Lassics Mountains, mainly on barren slopes with very shallow soil and low organic matter, or less commonly, near edges of Jeffrey pine forests. Most plants occur on flat or steep slopes with high proportions of gravel or cobble on the surface. The Lassics Range occurs in the central Franciscan Belt of the California Coast Ranges. This area is characterized by moderately steep to very steep slopes and a complex assemblage of rocks primarily composed of the Franciscan Complex, the Coast Range Ophiolite, and the Great Valley Sequence (Kaplan 1984, p. 203; Krueger 1990, p. 1). The sources of these complexes range from oceanic crusts to underlying mantle that was forced to the surface by thrusts originating from great distances. The serpentine rocks are present due to extreme disruptions of faulting and folding (Alexander 2008, p. 1). These soil parent materials and the natural erosion on the landscape determine the soil features present today. Both fluvial erosion and mass wasting have been important geologic processes in the Lassics area (Alexander 2008, p. 1).

Lassics lupine occurs across four described soil units that are all characterized as either serpentine and/or clastic (composed of pieces of older rocks) sedimentary rocks (Alexander 2008, pp. 2–3). Serpentine soils in general are characterized by their

relatively high levels of magnesium and iron, while being simultaneously low in calcium, nitrogen, potassium, and phosphorus (Kruckeberg 1985, p. 18; Alexander 2011, p. 28). Additional soil analyses demonstrated that all soils supporting Lassics lupine are characterized by similar sand content (81 to 91 percent) and similar concentrations of heavy minerals and nutrients (specifically phosphorus, potassium, calcium, copper, iron, zinc, total carbon, total nitrogen, and extractable aluminum) when compared with nearby soils. Nearby soils that do not support Lassics lupine revealed lower sand content and slightly higher pH. Few additional sites meet the Lassics lupine soil requirements identified by these two investigations. Given the narrow range of suitable soils, it is unlikely that the species was significantly more widespread in the area historically (Imper 2012, pp. 1–28).

The Lassics lupine occurs in an area that typically experiences hot, dry summers and snow coverage for up to 7 months a year from late fall through spring. The soils are fast draining and generally infertile, as described above. The general inability for the surrounding soil to retain moisture and/or nutrients results in potentially increased impacts from climate variables such as rainfall, snowmelt, and soil temperature.

Both Lassics lupine populations occur at the top of the Little Van Duzen River watershed, which drains into the Van Duzen River, the Eel River, and then the Pacific Ocean. The primary sources of water for Lassics lupine plants are snowmelt and rainfall, some of which is available as groundwater after weather events.

Lassics lupine habitat is typically covered in snow for many winter months, with soil temperatures close to freezing and high moisture content. Demographic monitoring data suggest that earlier snowmelt dates are negatively correlated with survival of Lassics lupine plants that year, especially during years of lower summer rainfall (Imper 2012, pp. 142–143). The date of snowmelt is influenced by the amount and type of precipitation in the winter (rain versus snow) and temperatures. Increased snow cover later in the season

is assumed to provide greater water infiltration into the soils, therefore increasing the amount of available moisture to Lassics lupine plants and decreasing desiccation of overwintering plants.

Soil temperatures increase dramatically after snow has melted due to lack of cover and vary with aspect. These temperatures continue to increase into August. Soil moisture typically remains high in the weeks following snowmelt and then decreases gradually, with some spikes based on summer precipitation events. Areas occupied by Lassics lupine have both high light levels and high available soil moisture in August compared to unoccupied habitat nearby (Imper 2012, pp. 91–92). Most areas are located on a north aspect or have some tree cover, both of which decrease insolation and increase available soil moisture. Some areas occupied by Lassics lupine are adjacent to mature trees and experience lower soil temperatures due to shading and decreased insolation; these areas generally appear to be less suitable for Lassics lupine based on decreased reproductive vigor and growth rates. Most of these forested areas experience rapid decreases in available soil moisture earlier in the growing season, likely due to water demands of nearby trees (Imper 2012, pp. 91–92). The exception to this is the Red Lassic population, where there is a seasonally wet area perched above the population that allows for increased moisture to be available later in the season.

When it occurs, summer rainfall appears to be beneficial for Lassics lupine's survival, with lower mortality in years with more precipitation during the growing season (Imper 2012, pp. 142–143). In late summer, when available soil moisture is low and soil temperatures are high, there is the risk of desiccation of seedlings and mature plants. In years when summer rainfall is low and summer temperatures are high, there is increased mortality. The effects of these conditions are exacerbated by early or decreased snowmelt.

Therefore, suitable soils are generally fast-draining and include serpentine and clastic soils, with very shallow soil and low organic matter. These soils are also characterized as receiving sufficient snow and rain for seed germination and moisture for growing plants; containing relatively high levels of magnesium and iron, while being simultaneously low in calcium, nitrogen, potassium, and phosphorus; and having relatively high sand content.

Ecological Community

The area immediately surrounding Lassics lupine habitat is characterized by Jeffery pine and incense cedar forest, chaparral, and largely unvegetated serpentine barrens. The predominant canopy cover is provided by Jeffrey pine and incense cedar, with white fir (*Abies concolor)* being prevalent on nonserpentine forest soils of the Lassics (Alexander 2008, entire). The primary chaparral species are pinemat manzanita, mountain whitethorn (*Ceanothus cordulatus*), buckbrush (*Ceanothus cuneatus*), and various herbaceous species. Chaparral habitats occur primarily on the south-facing slopes and forest habitats on the north-facing slopes.

The majority of Lassics lupine plants occur on serpentine barrens around Mount Lassic with patchy, or no, tree and shrub cover. Several small herbs and geophytes, including other rare species, occur on these serpentine barrens and have been documented over the past few decades (for more detail see Nelson and Nelson 1983, entire; Cate 2016, pp. 7–8; Imper and Elkins 2016, p. 11). Some plants occur in closed-canopy Jeffrey pine-incense cedar forest farther downslope on the north aspect of Mount Lassic. Plants in this area show decreased vigor and growth, assumed to be attributed to reduced light and water and increased leaf litter (Imper 2012, p. 140). A third habitat setting, at Red Lassic, is dominated by Jeffrey pine and pinemat manzanita and occurs on a south to southeast aspect.

Most *Lupinus* species require outcrossing for effective fertilization of flowers. All *Lupinus* species have specialized pollination mechanisms that require animal pollinators to carry pollen from one individual to another. While the Lassics lupine may be capable of some level of self-pollination, it is also visited at high rates by three bee species: yellow-faced bumblebee, black-tailed bumblebee, and a mason bee species (*Osmia* spp.) (Crawford and Ross 2003, p. 2). All three of the bee species appear to be capable pollinators given that they are large enough to trigger the mechanism that releases pollen from the individual flowers (Crawford and Ross 2003, p. 3).

Successful transfer of pollen among Lassics lupine populations may be inhibited if populations are separated by distances greater than pollinators can travel and/or if a pollinator's nesting or foraging habitat and behavior is negatively affected (Cranmer et al. 2012, p. 562; Dorchin et al. 2013, entire). Flight distances are generally correlated with body size in bees; larger bees are able to fly farther than smaller bees (Gathmann and Tscharntke 2002, entire; Greenleaf et al. 2007, pp. 592–594). There is evidence to suggest that larger bees, which are able to fly longer distances, do not need their habitat to remain contiguous, but it is more important that the protected habitat is large enough to maintain floral diversity (Greenleaf et al. 2007, p. 594). While researchers have reported long foraging distance for solitary bees, the majority of individuals remain close to their nest; thus, foraging distance tends to be 1,640 ft (500 m) or less (Antoine and Forrest 2021, p. 152). The most common bee and wasp pollinators have a fixed location for their nest, and thus their nesting success is dependent on the availability of resources within their flight range (Xerces 2009, p. 14).

Many insect communities are known to be influenced not only by local habitat conditions, but also the surrounding landscape condition (Klein et al. 2004, p. 523; Xerces 2009, pp. 11–26; Tepedino et al. 2011, entire; Dorchin et al. 2013, entire; Inouye et al. 2015, pp. 119–121). In order for genetic exchange of Lassics lupine to occur,

pollinators must be able to move freely between populations. Alternative pollen and nectar sources (other plant species within the surrounding vegetation) are needed to support pollinators during times when Lassics lupine is not flowering. Conservation strategies that maintain plant-pollinator interactions, such as maintenance of diverse, herbicide-free nectar resources, would serve to attract a wide array of insects, including pollinators of Lassics lupine (Cranmer et al. 2012, p. 567). Therefore, Lassics lupine habitat must also support populations of bee species that, in turn, require abundant, diverse sources of pollen and nectar.

Summary of Essential Physical or Biological Features

We derive the specific physical or biological features essential to the conservation of the Lassics lupine from studies of the species' habitat, ecology, and life history as described below. Additional information can be found in the SSA report (Service 2023, entire; available on *https://www.regulations.gov* under Docket No. FWS-R8-ES-2022-0083). We have determined that the following physical or biological features are essential to the conservation of the Lassics lupine:

(1) A plant community that consists of the following:

(a) Areas of open to sparse understory to ensure competition with Lassics lupine is inhibited. When sparse understory is present, the composition is predominantly native vegetation.

(b) Suitable solar insolation levels to support growth. These suitable levels can be achieved by the appropriate combination of canopy cover and aspect, with hotter and drier west-facing slopes needing moderate and more protective canopy cover compared to cooler north-facing slopes where there can be little to no canopy cover.

(c) A diversity and abundance of native plant species whose blooming times overlap to provide pollinator species with pollen and nectar sources for foraging throughout the seasons and to provide nesting and egg-laying sites; appropriate nest

materials; and sheltered, undisturbed habitat for hibernation and overwintering of pollinator species and insect visitors.

(2) Sufficient pollinators, particularly bees, for successful Lassics lupine reproduction and seed production.

(3) Suitable soils and hydrology that consist of the following:

(a) Open, relatively barren, upland sites categorized as receiving sufficient snow and rain for seed germination and moisture for growing plants.

(b) Soils that are generally fast-draining, including serpentine or clastic (composed of pieces of older rocks) soils, with very shallow soil and low organic matter.

(c) Soils characterized by their relatively high levels of magnesium and iron, while being simultaneously low in calcium, nitrogen, potassium, and phosphorus.

(d) Soils characterized by relatively high sand content.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: pre-dispersal seed predation, native woody vegetation encroachment, invasive species encroachment, and the ability to withstand drought due to climate change. Management activities that could ameliorate these threats include, but are not limited to: (1) Caging plants to reduce the threat of pre-dispersal seed predation; (2) habitat restoration activities that include the removal of woody vegetation; (3) removal of nonnative, invasive species; and (4) augmentation and reintroduction programs to expand Lassics lupine populations.

Criteria Used to Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. We are not designating any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of critical habitat.

We are designating one occupied critical habitat unit for the Lassics lupine. The one unit is comprised of approximately 512 ac (207 ha) of land in Humboldt and Trinity Counties, California, and is completely on lands under Federal (USFS) land ownership. The unit was determined using location information for Lassics lupine after extant population boundaries were collected in 2018 by Six Rivers National Forest staff around Mount Lassic with global positioning system (GPS) units. This dataset was provided to the Arcata Fish and Wildlife Office. This unit includes the physical footprint of where the plants currently occur, as well as their immediate surroundings out to 1,640 ft (500 m) in every direction from the periphery of each population. This area of surrounding habitat contains components of the physical and biological features (i.e., the pollinator community and its requisite native vegetative assembly), necessary to support the life-history needs of the Lassics lupine.

When determining critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological features necessary for the Lassics lupine. The scale of the maps we prepared under the parameters for publication

within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action will affect the physical or biological features in the adjacent critical habitat.

We are designating as critical habitat areas that we have determined are occupied at the time of listing (i.e., currently occupied) and that contain one or more of the physical or biological features that are essential to support life-history processes of the species. The critical habitat unit is designated based on all of the physical or biological features being present to support the Lassics lupine's life-history processes.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more-detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on *https://www.regulations.gov* at Docket No. FWS-R8-ES-2022-0083, and on our internet site at *https://www.fws.gov/species/lassics-lupine-lupinus-constancei*.

Final Critical Habitat Designation

We are designating one unit as critical habitat for the Lassics lupine. The critical habitat area we describe below constitutes our current best assessment of the area that meets the definition of critical habitat for the Lassics lupine. The area we designate as critical habitat is in the Mount Lassic area. Table 2 shows the critical habitat unit and its approximate area.

TABLE 2. Final critical habitat unit for the Lassics lupine.
[Area estimates reflect all land within critical habitat unit boundaries.]

Critical Habitat Unit	Land Ownership by Type	Size of Unit in Acres (Hectares)	Occupied?
Mount Lassic Unit	Federal (USFS)	512 (207)	Yes

We present a brief description of the unit and reasons it meets the definition of critical habitat for the Lassics lupine, below.

Mount Lassic Unit

The Mount Lassic Unit consists of 512 ac (207 ha) of USFS land. This unit is located on the border of Humboldt and Trinity Counties, California, surrounding Mount Lassic and Red Lassic peaks. All of this unit is on Federal land managed solely by the Six Rivers National Forest. This unit is currently occupied and contains two populations of Lassics lupine consisting of less than 4 ac (1.6 ha) total. This unit is essential to the recovery of Lassics lupine because it includes all the habitat that is occupied by Lassics lupine across the species' range. This unit currently has all the physical or biological features essential to the conservation of the species, including open to sparsely vegetated areas with low native plant cover and stature; nesting, egg-laying, and foraging habitat for pollinator species and insect visitors; and suitable soils with appropriate textures and chemistry. This unit faces threats from encroaching woody vegetation and high-severity fire and drought due to climate change. Cheatgrass occurs within and adjacent to this unit and has encroached within 100 ft of individual plants. Special management may be required to mitigate future impacts to Lassics lupine. It is likely that there is room for expansion of the species in this unit provided that woody vegetation management occurs to further limit pre-dispersal seed predation and improve the quality of solar insolation.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the

continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

Compliance with the requirements of section 7(a)(2) of the Act is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define "reasonable and prudent alternatives" (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Service Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinitiate consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action. The reinitiation requirement applies only to actions that remain subject to some discretionary Federal involvement or control. As provided in 50 CFR 402.16, the requirement to reinitiate consultations for new species listings or critical habitat designation does not apply to certain agency actions (e.g., land management plans issued by the Bureau of Land Management in certain circumstances).

Application of the "Adverse Modification" Standard

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate section 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation.

Activities that we may, during a consultation under section 7(a)(2) of the Act, consider likely to destroy or adversely modify critical habitat include, but are not limited to, wildfire operations and management within or adjacent to occupied areas. Such activities could include, but are not limited to, construction of new access roads, use of heavy equipment, and use of fire retardant. These activities could significantly reduce the species' population size and range, and could remove corridors for pollinator movement, seed dispersal, and population expansion or significantly fragment the landscape and decrease the resiliency and representation of the species throughout its range.

Exemptions

Application of Section 4(a)(3) of the Act

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no DoD lands of any kind within this critical habitat designation for the Lassics lupine.

Consideration of Impacts under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant

impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. Exclusion decisions are governed by the regulations at 50 CFR 424.19 and the Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act (2016 Policy; 81 FR 7226, February 11, 2016)—both of which were developed jointly with the National Marine Fisheries Service (NMFS). We also refer to a 2008 Department of the Interior Solicitor's opinion entitled, "The Secretary's Authority to Exclude Areas from a Critical Habitat Designation under Section 4(b)(2) of the Endangered Species Act" (M-37016). We explain each decision to exclude areas, as well as decisions not to exclude, to demonstrate that the decision is reasonable.

The Secretary may exclude any particular area if she determines that the benefits of such exclusion outweigh the benefits of including such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. In this final rule, we are not excluding any areas from critical habitat.

Exclusions Based on Economic Impacts

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts, we prepared an incremental effects memorandum (IEM) and screening analysis which, together with our narrative and interpretation of effects, we consider our economic analysis of the critical habitat designation and related factors (IEc 2022, entire). The analysis, dated March 16, 2022, was made available for public review from October 6, 2022, through December 5, 2022 (87 FR 60612; October

6, 2022). The economic analysis addressed probable economic impacts of critical habitat designation for the Lassics lupine. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Additional information relevant to the probable incremental economic impacts of critical habitat designation for the Lassics lupine is summarized below and available in the screening analysis for the Lassics lupine (IEc 2022, entire), available at *https://www.regulations.gov*.

As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the designation of critical habitat for the Lassics lupine, first we identified probable incremental economic impacts associated with the following categories of activities: fuels reduction, trail maintenance, invasive plant removal, habitat restoration, Forest Route 1S07 operation and maintenance, protective plant caging and population monitoring, prescribed fire, population management, and cattle exclusion. We considered each industry or category individually. Additionally, we considered whether the activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where the Lassics lupine is present, Federal agencies will be required to consult with the Service under section 7 of the Act on activities they fund, permit, or implement that may affect the species. Our consultations would include an evaluation of measures to avoid the destruction or adverse modification of critical habitat.

In our IEM, we attempted to clarify the distinction between the effects that would result from the species being listed and those attributable to the critical habitat

designation (i.e., difference between the jeopardy and adverse modification standards) for the Lassics lupine's critical habitat. Because the designation of critical habitat for the Lassics lupine is being adopted concurrently with the listing, it has been our experience that it is more difficult to discern which conservation efforts are attributable to the species being listed and those which will result solely from the designation of critical habitat. However, the following specific circumstances in this case help to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm to constitute jeopardy to the Lassics lupine would also likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this designation of critical habitat.

The critical habitat designation for the Lassics lupine consists of a single unit totaling 512 ac (207 ha). This unit is occupied and falls entirely within federally owned land within the boundary of the Six Rivers National Forest.

The screening analysis concluded that the anticipated number of consultations and associated costs will be small and will be limited to administrative efforts to consider adverse modification. This is because the single critical habitat unit is relatively small and because it occurs entirely on Federal lands, including a large portion of the unit that is in a designated wilderness area. The analysis predicts that there will be approximately 10 formal consultations over the next 10 years and will result in approximately $5,400 in incremental costs per year (IEc 2022, p. 10, exhibit 3). Few other additional costs are anticipated. Overall, the additional administrative burden is anticipated to fall well below the $200 million annual threshold.

As discussed above, we considered the economic impacts of the critical habitat designation, and the Secretary is not exercising her discretion to exclude any areas from this designation of critical habitat for the Lassics lupine based on economic impacts.

Exclusions Based on Impacts on National Security and Homeland Security

In preparing this rule, we determined that there are no lands within the designated critical habitat for the Lassics lupine that are owned or managed by the DoD or Department of Homeland Security, and, therefore, we anticipate no impact on national security or homeland security. We did not receive any additional information during the public comment period for the proposed designation regarding impacts of the designation on national security or homeland security that would support excluding any specific areas from the final critical habitat designation under the authority of section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security as discussed above. To identify other relevant impacts that may affect the exclusion analysis, we consider a number of factors, including whether there are permitted conservation plans covering the species in the area such as HCPs, safe harbor agreements (SHAs), or candidate conservation agreements with assurances (CCAAs), or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at whether Tribal conservation plans or partnerships, Tribal resources, or government-to-government relationships of the United States with Tribal entities may be affected by the designation. We also consider any State, local, social, or other impacts that might occur because of the designation.

We are not excluding any areas from critical habitat. In preparing this final rule, we have determined that there are currently no HCPs or other management plans for the

Lassics lupine, and the designation does not include any Tribal lands or trust resources. We anticipate no impact on Tribal lands, partnerships, or HCPs from this final critical habitat designation. We did not receive any additional information during the public comment period for the proposed rule regarding other relevant impacts to support excluding any specific areas from the final critical habitat designation under the authority of section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy. Accordingly, the Secretary is not exercising her discretion to exclude any areas from this designation based on other relevant impacts.

Required Determinations

Regulatory Planning and Review—Executive Orders 12866, 13563, and 14094

Executive Order 14094 reaffirms the principles of E.O. 12866 and E.O. 13563 and states that regulatory analysis should facilitate agency efforts to develop regulations that serve the public interest, advance statutory objectives, and are consistent with E.O. 12866, E.O. 13563, and the Presidential Memorandum of January 20, 2021 (Modernizing Regulatory Review). Regulatory analysis, as practicable and appropriate, shall recognize distributive impacts and equity, to the extent permitted by law. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this final rule in a manner consistent with these requirements.

E.O. 12866, as reaffirmed by E.O. 13563 and E.O. 14094, provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB) will review all significant rules. OIRA has determined that this rule is not significant.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C.

801 et seq.), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

Under the RFA, as amended, and following recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does

not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, we certify that this critical habitat designation will not have a significant economic impact on a substantial number of small entities.

During the development of this final rule, we reviewed and evaluated all information submitted during the comment period on the October 6, 2022, proposed rule (87 FR 60612) that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this critical habitat designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare statements of energy effects "to the extent permitted by law" when undertaking actions identified as significant energy actions (66 FR 28355; May 22, 2001). E.O. 13211 defines a "significant energy action" as an action that (i) is a significant regulatory action under

E.O. 12866 (or any successor order, including most recently E.O. 14094 (88 FR 21879; Apr. 11, 2023)); and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy. This rule is not a significant regulatory action under E.O. 12866 or 14094. Therefore, this action is not a significant energy action, and there is no requirement to prepare a statement of energy effects for this action.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.), we make the following finding:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or Tribal governments" with two exceptions. It excludes "a condition of Federal assistance." It also excludes "a duty arising from participation in a voluntary Federal program," unless the regulation "relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or Tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that

"would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions are not likely to destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because only Federal lands are included in the designation. Therefore, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the Lassics lupine in a takings implications assessment. The Act does not authorize us to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of

critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for the Lassics lupine does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, this final rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary for the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) of the Act will be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule will not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this rule identifies the physical or biological features essential to the conservation of the species. The areas of designated critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

Regulations adopted pursuant to section 4(a) of the Act are exempt from the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) and do not require an environmental analysis under NEPA. We published a notice outlining our reasons for this

determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This includes listing, delisting, and reclassification rules, as well as critical habitat designations. In a line of cases starting with *Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), the courts have upheld this position.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes on a government-to-government basis. In accordance with Secretary's Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribal lands fall within the boundaries of the critical habitat designation for the Lassics lupine, so no Tribal lands will be affected by this designation.

References Cited

A complete list of references cited in this rulemaking is available on the internet at *https://www.regulations.gov* and upon request from the Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Arcata Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.12, in paragraph (h), amend the List of Endangered and Threatened Plants by adding an entry for "*Lupinus constancei*" in alphabetical order under FLOWERING PLANTS to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
* * * * * * *				
Lupinus constancei	Lassics lupine	Wherever found	E	88 FR [INSERT *FEDERAL REGISTER* PAGE WHERE THE DOCUMENT BEGINS], [INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]; 50 CFR 17.96(a).[CH]
* * * * * * *				

3. Amend § 17.96, in paragraph (a), by adding an entry for "Family Fabaceae: *Lupinus constancei* (Lassics lupine)" after the entry for "Family Fabaceae: *Astragalus pycnostachyus* var. *lanosissimus* (Ventura Marsh milk-vetch)", to read as follows:

§ 17.96 Critical habitat—plants.

(a) *Flowering plants*.

* * * * *

Family Fabaceae: *Lupinus constancei* (Lassics lupine)

(1) The critical habitat unit is depicted for Humboldt and Trinity Counties, California, on the map in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of the Lassics lupine consist of the following components:

(i) A plant community that consists of the following:

(A) Areas of open to sparse understory to ensure competition with Lassics lupine is inhibited. When sparse understory is present, the composition is predominantly native vegetation.

(B) Suitable solar insolation levels to support growth. These suitable levels can be achieved by the appropriate combination of canopy cover and aspect, with hotter and drier west-facing slopes needing moderate and more protective canopy cover compared to cooler north-facing slopes where there can be little to no canopy cover.

(C) A diversity and abundance of native plant species whose blooming times overlap to provide pollinator species with pollen and nectar sources for foraging throughout the seasons and to provide nesting and egg-laying sites; appropriate nest materials; and sheltered, undisturbed habitat for hibernation and overwintering of pollinator species and insect visitors.

(ii) Sufficient pollinators, particularly bees, for successful Lassics lupine reproduction and seed production.

(iii) Suitable soils and hydrology that consist of the following:

(A) Open, relatively barren, upland sites categorized as receiving sufficient snow and rain for seed germination and moisture for growing plants.

(B) Soils that are generally fast-draining, including serpentine or clastic (composed of pieces of older rocks) soils, with very shallow soil and low organic matter.

(C) Soils characterized by their relatively high levels of magnesium and iron, while being simultaneously low in calcium, nitrogen, potassium, and phosphorus.

(D) Soils characterized by relatively high sand content.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(4) Data layers defining the map unit were created based on surveys conducted with global positioning system (GPS) units collecting in WGS84 coordinates, and the critical habitat unit was then mapped using Universal Transverse Mercator (UTM) Zone 10N coordinates. The map in this entry, as modified by any accompanying regulatory text, establishes the boundaries of the critical habitat designation. The coordinates or plot points or both on which the map is based are available to the public at the Service's internet site at *https://www.fws.gov/office/arcata-fish-and-wildlife*, at *https://www.regulations.gov* at Docket No. FWS-R8-ES-2022-0083, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

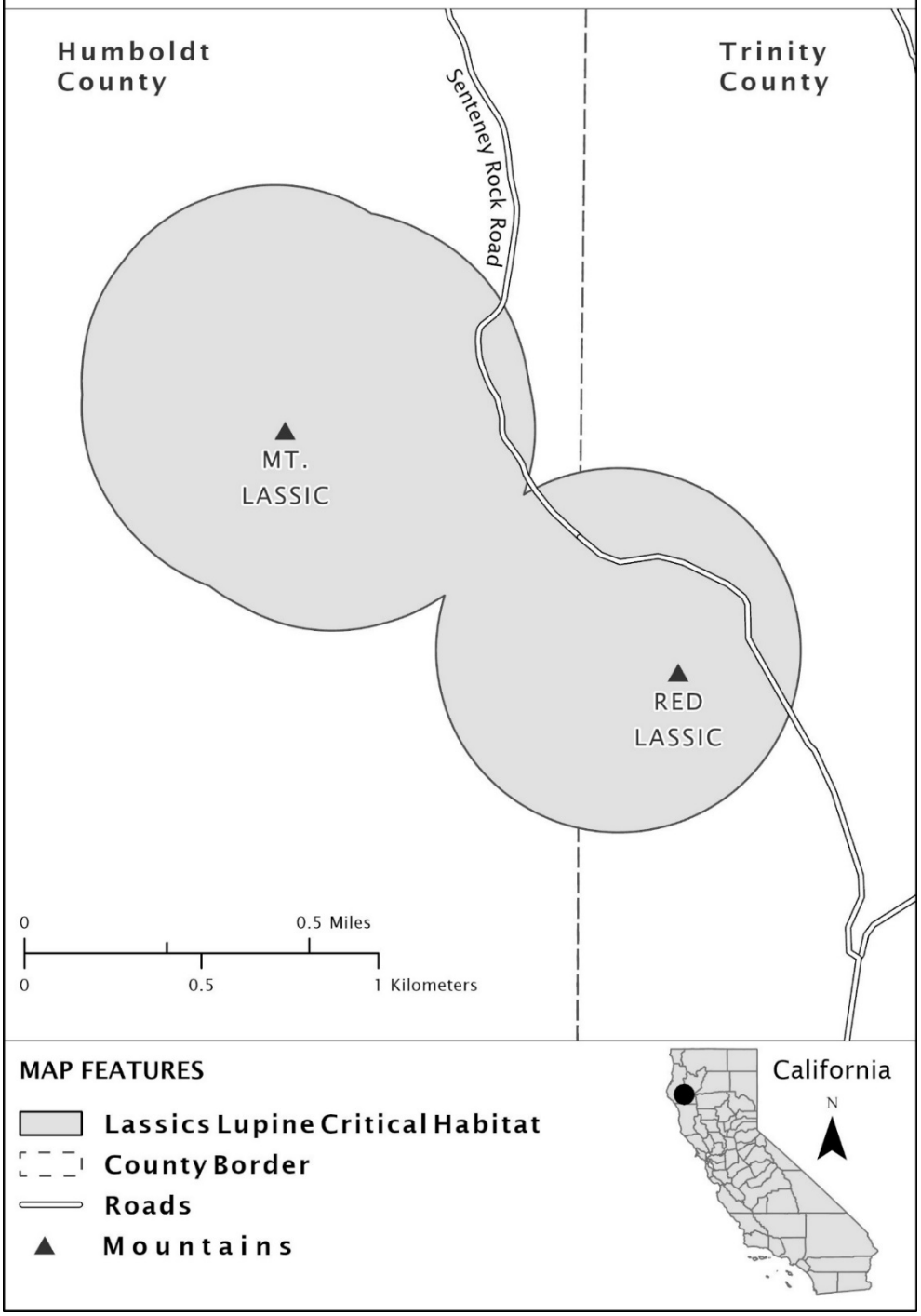
(5) Mount Lassic Unit, Humboldt and Trinity Counties, California.

(i) The Mount Lassic Unit consists of 512 acres (207 hectares) of land in Humboldt and Trinity Counties. The entirety of the unit falls within the boundary of the Six Rivers National Forest.

(ii) Map of the Mount Lassic Unit follows:

Figure 1 to Family Fabaceae: *Lupinus constancei* (Lassics lupine) paragraph (5)(ii)

Critical Habitat for The Lassics Lupine
Mount Lassic Unit
Humboldt and Trinity Counties, California



* * * * *

Janine Velasco,
Acting Director,
U.S. Fish and Wildlife Service.

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