

Recovery Plan for El Segundo Blue Butterfly (*Euphilotes battoides allyni*)
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Original Approved: September 28, 1998
Original Prepared by: USFWS, Portland OR

RECOVERY PLAN AMENDMENT

We identified best available information needed to amend recovery criteria for El Segundo blue butterfly (*Euphilotes battoides allyni*) since the recovery plan was completed in 1998. In this modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria, and describe the rationale supporting the recovery plan modification. The modification is shown as an addendum that supplements the recovery plan, superseding all outdated applicable sections of the recovery plan (e.g. distribution maps and recovery criteria).

For
U.S. Fish and Wildlife Service
Region 8
Carlsbad, California

October 2019

Approved: 
Acting Regional Director, U.S. Fish and Wildlife Service
Pacific Southwest Region

Date: 12/10/19

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

We relied on information in the last approved 5-year Review (USFWS 2008), peer-reviewed publications, survey and monitoring reports, and expert personal communications (e.g. Longcore 2012, pers. comm.) to develop recovery criteria. This amendment was prepared in the Carlsbad Fish and Wildlife Office by Alison Williams-Anderson (Ph.D. Entomologist). The draft amendment underwent external review by State agencies and other governmental and non-governmental partners, peer review, and public review prior to preparation of the final amendment (Appendix A).

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, “objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list.” Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) have also affirmed the need to frame recovery criteria in terms of threats assessed under the five threat factors (ESA 4(a)(1)).

Recovery Criteria

See previous version of downlisting criteria in recovery plan (USFWS 1998, pp. iii, iv, and 25; [El Segundo Blue Butterfly Recovery Plan \(1998\)](#)).

Synthesis

Though habitat loss is no longer an ongoing threat to the subspecies today, suitable habitat is extremely limited due to historical loss of habitat from development. In addition, habitat modification resulting from invasive nonnative plant species is a rangewide threat. The lack of permanent conservation and long-term management assurances at significant occupied areas such as the Los Angeles Airport Preserve, and the lack of protection of habitats such as Scattergood Dune (Figure 3) and privately owned lands in Santa Barbara County, still pose threats to subspecies’ survival. In sum, the El Segundo blue butterfly remains in danger of extinction due to its limited range and a lack of adequate protections and management (habitat modification), although the probability of extinction has decreased significantly.

Several El Segundo blue butterfly recovery issues have been resolved, and a new one has arisen, because of relevant new information since approval of the recovery plan (USFWS 1998). We now understand more about the ability of the butterfly to disperse and colonize restored habitats. Here we discuss these new findings and how they inform our view on the adequacy of the criteria presented in the original recovery plan.

When El Segundo blue butterflies were discovered at Point Vicente Bluff Cove on the Palos Verdes Peninsula (Figure 3), it was necessary to establish their distinctness from the very similar *Euphilotes bernardino* (Palos Verdes bernardino blue butterfly; USFWS 1998, p. 2). In 2006 and 2014, Pratt (pers. comm.) discussed evidence of the taxonomic distinctness of blue butterflies in the Point Vicente area, based primarily on evidence presented in Pratt and Stouthammer 2008 (pp. 395–399, and 404). Pratt (2014, pers. comm.) stated “When I compare the two species...at

nearby locations on Palos Verdes Peninsula I get a Nei Distance [estimate of average genetic distance using allozymes] of 0.1, which positively demonstrates that they are acting like [distinct] species on the peninsula.” “[They also] ...differ by the distal shift in the centers of the row of spots proximal to the spots bordering the orange aurora in the El Segundo blue...Larvae differ in branched setae around the first abdominal spiracle and the edges of the honey gland...The bernardino larvae have lost these setae, which presumably are responsible for ant associations.” (Pratt 2006, pers. comm.). Therefore, we now consider individuals in the Palos Verdes Peninsula occupied areas to be El Segundo blue butterfly, and included this consideration in developing amended recovery criteria.

At the time of recovery plan (USFWS 1998) publication, it was not clear how likely restored habitats were to be naturally recolonized by nearby populations. At the time of the 2008 5-year review, select dune habitats at Dockweiler State Beach (adjacent to LAX Airport Preserve) and Redondo and Torrance County Beaches (adjacent to Malaga Cove) had been recently restored. During subsequent surveys in 2008, Osborne (2010, p. 2) reported observing approximately 45 butterflies at Dockweiler State Beach, 275 at Redondo County Beach, 250 at Torrance County Beach, and 3 at Malaga Cove. Osborne (2010, p. 4) concluded that the ongoing coastal dune restoration efforts were providing opportunities for the El Segundo blue butterfly to expand its occupied area and recolonize portions of historical habitat. In 2011 El Segundo blue butterfly were observed for the first time since 1985 in the Ballona Wetlands (approximately 1 mile (1.6 km) north of LAX Airport Preserve), where habitat restoration had begun in 2004 (Dalkey 2011, p. 11; Longcore 2012, pers. comm.). El Segundo blue butterfly also colonized *Eriogonum parvifolium* on the Palos Verdes Peninsula that had been newly installed in planters at the Point Vicente Interpretive Center Native Demonstration Garden (Dalkey 2011, p. 10). The Palos Verdes Peninsula Land Conservancy (Wolff 2019, pers. comm., p. 1) reports they are actively restoring habitat for the El Segundo blue butterfly and according to their triennial surveys, the El Segundo blue butterfly is present at four of their coastal reserves. They further stated that host plants have been planted in additional locations. For example, in the summer of 2019 summer El Segundo blue butterflies were observed for the first time at Alta Vicente Reserve where thousands of host plants were added the previous year, less than half a mile from the Point Vicente Interpretive Center. All of this supports the hypothesis that if restored habitat is within one mile of occupied habitat, it is likely to be naturally recolonized.

Populations of presumed El Segundo blue butterfly were also identified in seven areas of Santa Barbara County: northwest and northeast Vandenberg Air Force Base (VAFB); south VAFB; Burton Mesa Ecological Reserve; East Lompoc; Santa Rosa Park approximately 8 mi (13 km) southeast of the City of Lompoc; and in the vicinity of Drum Canyon approximately 8 mi (13 km) northeast of the City of Lompoc (MSRS and Arnold 2010, p. A-7; MSRS and Arnold 2011, Appendix A, Map A-4; Tetra Tech Inc. and Pratt 2012, p. 15; MSRS and Arnold 2013, Appendix A; Table 1; Figure 2). Surveys in apparently suitable habitats north of the known distribution in Santa Barbara County, and between the Santa Barbara and Los Angeles County distributions, including three areas in Ventura County, have all been negative (MSRS and Arnold 2011, pp. 7 and 8; G. Pratt pers. comm. 2012; Tetra Tech Inc. and Pratt 2012, pp. 11, 13, and 15; R. Arnold, pers. comm. 2014; Figure 1). The status of this new and disjunct distribution of *Euphilotes battoides* in Santa Barbara County is uncertain (Anderson 2014). Dr. Daniel Rubinoff at the University of Hawaii conducted a genetic study using nDNA gene sequencing that concluded Santa Barbara populations are not the El Segundo blue butterfly. The Santa Barbara distribution

comprises approximately half the subspecies' known range in this amendment. If the study is published in a peer reviewed journal, we will review the paper and determine if the recovery criteria should be revised.

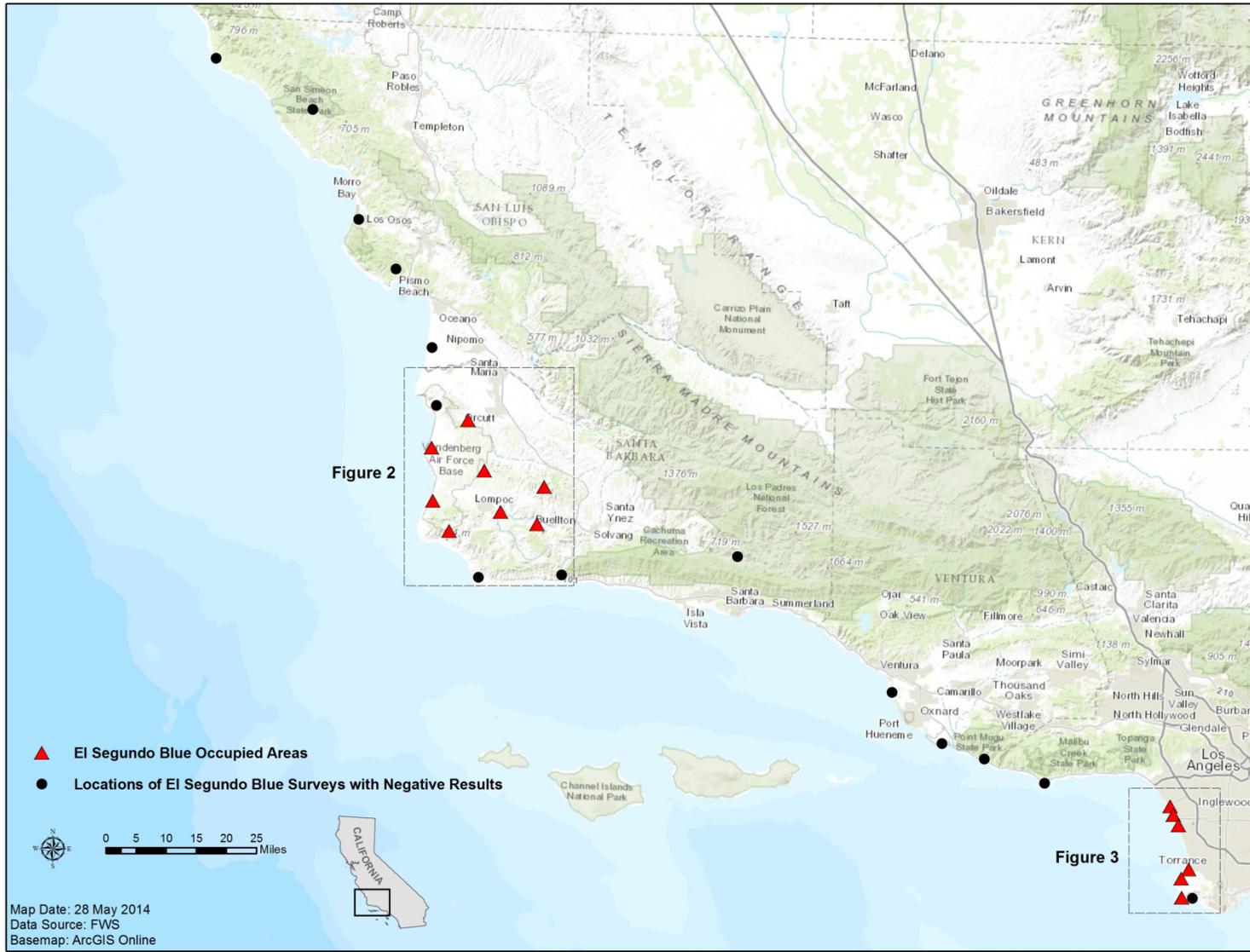


Figure 1. Area considered to be the range of the El Segundo blue butterfly (*Euphilotes battoides allyni*) in 2017.

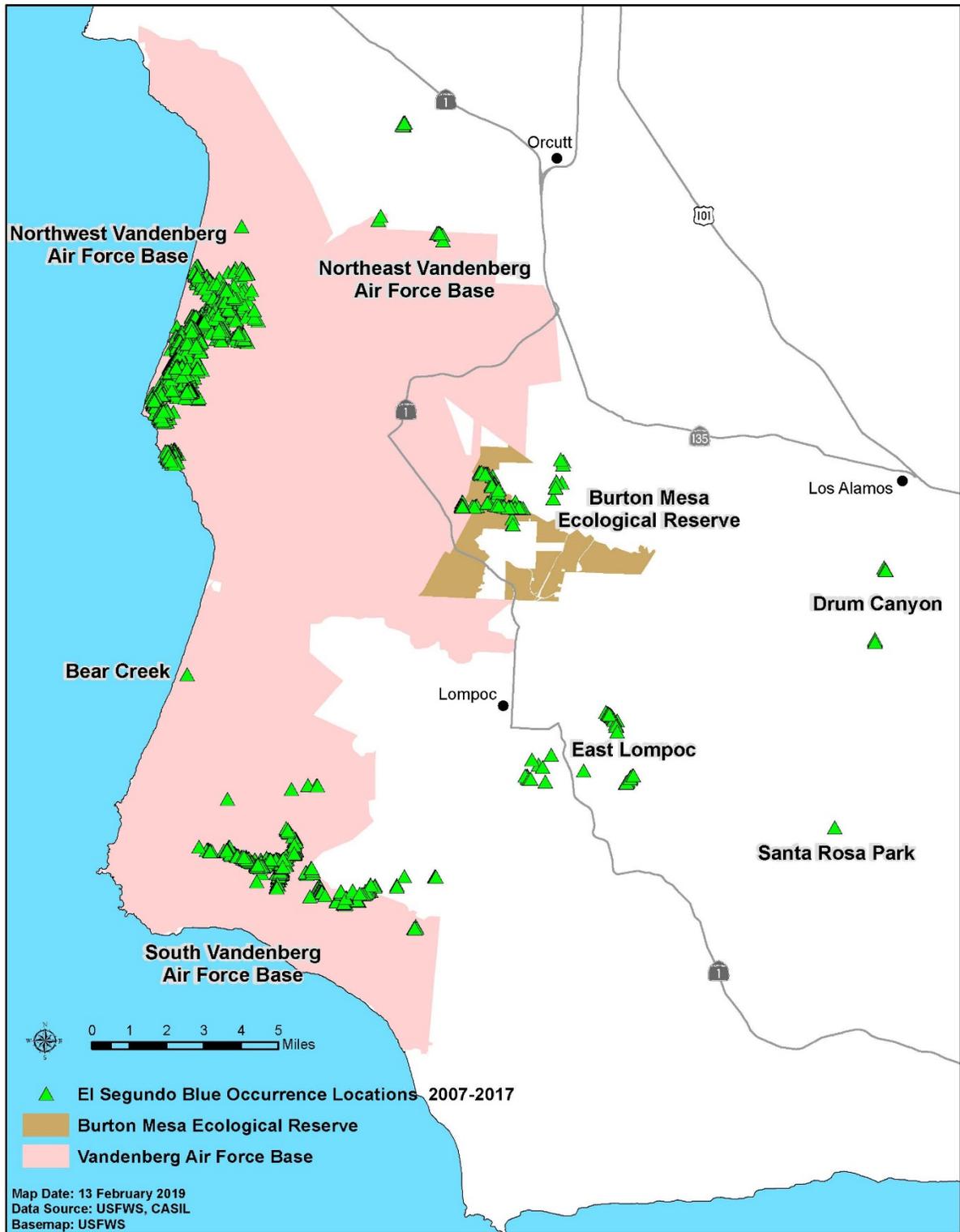


Figure 2. Area considered to be the distribution of El Segundo blue butterfly in Santa Barbara County from 2007 to 2017.

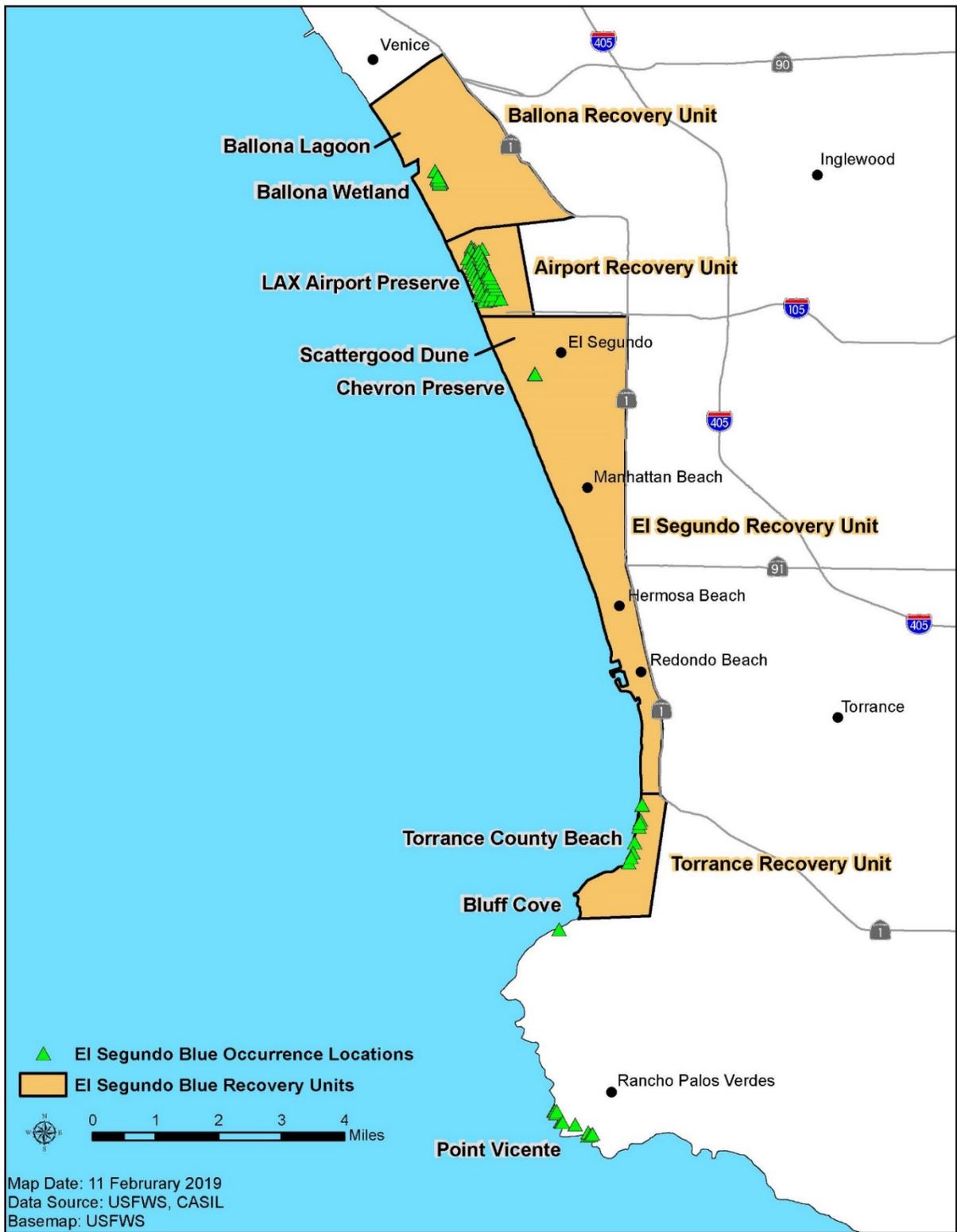


Figure 3. Known historical (and likely extant) distribution of El Segundo blue butterfly in Los Angeles County as of 2017.

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and the species may be delisted.

Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from an endangered species to a threatened species. The term “endangered species” means any species (species, sub-species, or Distinct Population Segment (DPS)) which is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.” Thus, while recovery plans provide important guidance to the U.S. Fish and Wildlife Service (Service), States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we would anticipate that an analysis of the species’ status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

We provide downlisting criteria for the El Segundo blue butterfly, which will supersede those included in the El Segundo blue butterfly (*Euphilotes battoides allyni*) recovery plan, and new delisting criteria, which were not included in the original plan, as follows:

Downlisting Recovery Criteria

Downlisting criteria remain unchanged from the El Segundo blue butterfly (*Euphilotes battoides allyni*) Recovery Plan (USFWS 1998, pp. iii, iv, and 25), with the exception of a minor edit to criterion 3.

- 1) At least one secure population in each of the four Recovery Units (RUs) – Ballona, Airport, El Segundo, and Torrance – are permanently protected to provide redundancy and maintain representation. The Airport Dunes (Napoleon Street and Waterview Street to the north, Vista del Mar to the west, Pershing Drive to the east, and Imperial Highway to the south) located in the Airport RU contains the largest population of the butterfly and

is the population most likely to survive disease, predators, parasites, and other perturbations. The Airport Dunes must be one of the protected populations.

- 2) Each of the four populations are managed to maintain coastal dune habitat dominated by local native species including coast buckwheat.
- 3) As determined by a scientifically credible monitoring plan, each of the four populations exhibits a statistically significant stable or upward trend (based on transect counts) for at least 8 years (approximately eight butterfly generations). Population management in each Recovery Unit ensures that the average discrete population growth rate (λ) is at or above 1.0, indicating a stable or increasing population.
- 4) A program is initiated to inform the public about the El Segundo blue butterfly and its habitat.

Delisting Recovery Criteria

- 1) Four secure populations - in addition to the four that meet downlisting criteria - are protected (total of eight). One of these additional populations must be south of the Torrance Recovery Unit on the coast of the Palos Verdes Peninsula. At least three of the additional four of populations must be in Santa Barbara County. These additional populations increase viability of the species through increased redundancy and representation.
- 2) Each of the eight populations is managed in perpetuity to maintain coastal dune habitat dominated by local native species including coast buckwheat. This criterion assures population resiliency and amelioration of the threat of habitat modification resulting from invasive nonnative plant species (Factor A).
- 3) As determined by a scientifically credible monitoring plan, each of the eight populations exhibits a statistically significant stable or increasing trend (based on transect counts) for at least 8 years (approximately eight butterfly generations). Management in each population distribution ensures that the average discrete population growth rate (λ) is at or above 1.0, indicating a stable or increasing (resilient) population. λ is not below 1.0 for more than one year prior to delisting, indicating growth rate fluctuations are natural and not due to population decline and the population is resilient. This criterion assures population resiliency and that the threat of limited range has been sufficiently ameliorated (Factor A).

Rationale for Amended Recovery Criteria

Delisting criteria address the biodiversity principles of representation, resiliency, and redundancy (Schaffer and Stein 2000) as these concepts relate to abundance, distribution, diversity, etc. and are required to ensure species' viability. Representation involves conserving the breadth of the genetic makeup of the species to conserve its adaptive capabilities. Resiliency involves ensuring that each population is sufficiently large to withstand stochastic events. Redundancy involves ensuring a sufficient number of populations to provide a margin of safety for the species to withstand catastrophic events.

Based on past monitoring data at the LAX population prior to the recent drought (Arnold 2014, Table 8), 8 years is the amount of time needed to capture the maximum natural amount of variation in population numbers for this species.

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APPENDIX A – SUMMARY OF PUBLIC, PARTNER, AND PEER REVIEW COMMENTS RECEIVED

Summary of Public Comments

We published a notice of availability in the *Federal Register* on August 6, 2019 (84 FR 38288-38291) to announce that the draft recovery plan amendment was available for public review, and to solicit comments by the scientific community, State and Federal agencies, Tribal governments, and other interested parties on the general information base, assumptions, and conclusions presented in the draft revision. An electronic version of the draft amendment was posted on the Service's Species Profile website ([El Segundo Blue Butterfly Draft Recovery Plan Addendum](#)). We also developed and implemented an outreach plan that included (1) publishing a news release on our national webpage ([USFWS News](#)) on August 5, 2019; (2) sending specific notifications to Congressional contacts in Districts 24 and 33, and (3) sending specific notifications to key stakeholders in conservation and recovery efforts. These outreach efforts were conducted in advance of the *Federal Register* publication to ensure that we provided adequate notification to all potentially interested audiences of the opportunity to review and comment on the draft amendment.

We received no comments from the public and two comments from our partners during the public comment period, in addition to comments received in response to our partner review process. Our responses to all partner comments are discussed below.

Summary of Peer and Partner Review Comments

We solicited peer and partner review between the draft and final amendment in accordance with the requirements of the Act from State and Federal agencies, key conservation partners, and scientific experts familiar with El Segundo blue butterfly biology and ecology. Criteria used for selecting peer reviewers included their demonstrated expertise and specialized knowledge related to El Segundo blue butterfly. Peer reviewers qualifications are in the decision file and the administrative record for this recovery plan amendment.

In total, we solicited review and comment from five peer reviewers and five partner agencies. We received comments from three peer reviewers, and four partner reviewers. Peer reviewers that responded included representatives from San Diego State University, University of California at Riverside, and University of California at Los Angeles. Partner reviewers that responded included representatives from one Federal agency (Department of the Air Force; Vandenberg Air Force Base), one State agency (California Department of Fish and Wildlife), one non-profit organization (Palos Verdes Land Conservancy), and one local government (City of Los Angeles; Los Angeles World Airports). In general, the draft recovery plan revision was well-received by the peer and partner reviewers and garnered positive comments. One reviewer provided additional specific information in the form of a document on parasitism; we thank the reviewers for these data and we have added information where appropriate.

We considered all substantive comments, and to the extent appropriate, we incorporated the applicable information or suggested changes into the final recovery plan amendment. Below, we provide a summary of specific comments received from peer and partner reviewers with our

responses; however, we addressed many of the reviewers' specific critiques and incorporated their suggestions as changes to the final amendment. Such comments did not warrant an explicit response, and as such, are not addressed here. We appreciate the input from all commenters, which helped us to consider and incorporate the best available scientific and commercial information during development and approval of the final amendment.

Peer Review:

Peer Review Comment (1): The reviewer was not convinced the blue butterflies in Santa Barbara County are El Segundo blue butterflies without further evidence, but the draft recovery plan amendment authors are clear in stating that this conclusion is awaiting confirmation.

Response: Yes, the results of the genetic study by Dr. Daniel Rubinoff appear to confirm that the blue butterflies found in Santa Barbara County are not El Segundo blue butterflies. When Dr. Rubinoff's results are published in a peer-reviewed journal, we will reassess the recovery criteria for the El Segundo blue butterfly as needed.

Peer Review Comment (2): The reviewer asked if delisting depends on whether or not the blue butterflies in Santa Barbara County are in fact El Segundo blue butterflies? The delisting criteria cannot be met otherwise. Four or more populations occurring in Los Angeles County alone are not likely to meet the criteria of redundancy very well, and delisting would be appropriate.

Response: That is correct, delisting criteria in this recovery plan amendment assume blue butterflies in Santa Barbara County are El Segundo blue butterflies. As stated in response to comment one above, Dr. Daniel Rubinoff's study appears to confirm that the blue butterflies found in Santa Barbara County are not El Segundo blue butterflies. When Dr. Rubinoff's results are published in a peer-reviewed journal we will reassess the recovery criteria as needed.

Peer Review Comment (3): One reviewer agreed the Service assembled and considered the best available scientific and commercial information relevant to this species. They expressed the opinion that it was unfortunate no relevant peer reviewed taxonomic information has published since the mid-1990's, so the Service was limited to unreviewed survey reports, and email from interested parties. The reviewer stated that El Segundo blue researchers should be "encouraged (required in the future?)" to publish their results in peer-reviewed publications prior to acceptance by the Service.

Response: We agree that in the future taxonomic determination of a population that could compose over half the known range of a listed species and is relatively distant geographically, should be evaluated and based on peer reviewed literature. Results of the genetic study by Dr. Daniel Rubinoff appear to confirm that the blue butterflies found in Santa Barbara County are not El Segundo blue butterflies. Therefore, as stated above in response to comment one, when Dr. Rubinoff's results are published in a peer reviewed journal we will revisit the recovery criteria as needed.

Peer Review Comment (4): Two peer reviewers addressed the assumption that adult observations in restored habitat are a valid measure of colonization. One soundly endorsed it, the other said the assumption should be made with caution because the dispersal ability of these butterflies is not well understood.

Response: We thank the reviewers for their comments. We believe because of the relatively isolated nature of remaining habitat patches in Los Angeles County it is likely that adult detection is a valid indicator of restored habitat recolonization.

Peer Review Comment (5): One reviewer expressed concern that there were no specific provisions for the impact of global climate change in the draft amendment. They stated we know much more about this phenomenon now than in 1998, when the recovery plan was originally developed, and they would have expected some level of niche modeling that incorporates movement of habitat northward with warming, as well as loss of habitat with potential rising ocean levels. This is especially critical for delisting considerations.

Response: We agree that impacts of climate change should be considered prior to delisting. While this recovery plan addendum does not address changes in habitat quality and distribution due to climate change, the scientific knowledge is reflected in the body of peer-reviewed literature as the reviewer indicated, and would be considered prior to downlisting or delisting. There are no published El Segundo blue butterfly-specific niche models, and it is beyond the scope of this amendment to create such a model. We will reassess impacts from a changing climate the next time we conduct a species status assessment. However, given the isolation of currently occupied habitats within the Los Angeles County distribution, and the lack of suitable coastal dune habitats to the north, any adaptive measures may occur within the current distribution.

Peer Review Comment (6): Two peer reviewers addressed the change from the 1998 recovery plan requiring a stable or increasing trend from 10 years to 8 years. One reviewer soundly endorsed 8 years, the other said “Arnold (2014, cited in [draft recovery plan amendment]) does not appear to provide sufficient data to support the claim made in the amendment that ‘Eight years is the amount of time needed to capture the maximum natural amount of variation,’ especially with the increasing frequency of extreme weather events we are seeing now. It seems that ... seeing each of the eight populations exhibit a statistically significant stable or increasing trend for at least 10 years would better limit the likelihood of delisting during or just before a drought-induced decline.”

Response: We understand the second peer reviewer’s concern; however, we believe that because there are multiple populations, the effective period during which a drought could affect populations is greater than 8 years. It is highly unlikely that stable or increasing population growth trends would be realized in all populations simultaneously within the same 8 year period. That is, some populations will have maintained this state for longer than others before all have demonstrated these trends for at least 8 years. Therefore, it is to be expected that one or more populations would have exhibited such trends for 10 or more years and would have reflected drought-induced decline by the time the last population reaches the 8 year “mark.”

Partner Review:

Partner Review Comment (1): One reviewer requested editing, or removal, of Delisting Recovery Criteria One and Two because they require three populations in Santa Barbara County be protected "in perpetuity," and none of the three populations outside Vandenberg Air Force Base that might satisfy Delisting Recovery Criterion One are in coastal dune habitat as indicated in Delisting Recovery Criterion Two. They stated that because military landholding agencies do not have the authority to dispose of real property rights, the Air Force cannot commit to permanently protecting coastal dune habitat in perpetuity. They pointed out that Vandenberg Air Force Base manages the habitat in a way that satisfies Endangered Species Act Section 7(a)(1) responsibility to promote the recovery of listed species, to the extent it does not interfere with our national defense mission.

Response: Military installations, including Vandenberg Air Force Base, are a vital conservation partner in California. We recognize military installations must be managed to support realistic military training, testing, and readiness. We acknowledge that implementation of Integrated Natural Resources Management Plans on military installations are a successful means of ensuring listed species conservation. Furthermore, as stated in response to peer reviewer comment one above, results of the genetic study by Dr. Rubinoff appear to confirm that the blue butterflies found in Santa Barbara County are not El Segundo blue butterflies. We will reassess the recovery criteria for the El Segundo blue butterfly, as needed, when Dr. Rubinoff's results are published in a peer reviewed journal.

Partner Review Comment (2): Dr. Rubinoff has completed a genomic nDNA study examining the taxonomic status of the Santa Barbara blue butterfly population. The reviewer believes this new genetic information will prove invaluable in finalizing the amendments to the recovery plan, and recommended delaying the Recovery Plan Amendments until after reviewing of results.

Response: We are finalizing this addendum with the best available science and will reassess the recovery criteria for the El Segundo blue butterfly, as needed, when Dr. Rubinoff's results are published in a peer-reviewed journal.

Partner Review Comment (3): The reviewer requested the Service provide some support for how we determined eight populations are needed for recovery. They hypothesized that given the amount of urbanization in El Segundo blue butterflies' range, these populations would still remain highly fragmented and be at risk of local extirpation. They stated it is unclear how achieving eight populations would warrant removal of the species from the Endangered Species list given these risks, and that long-term maintenance of habitat occupancy through augmentation and recolonization may be appropriate as the Service says is needed for Palos Verdes Blue butterfly recovery (*Glauchopsyche lygdamus palosverdensis*; 2019 Draft Recovery Plan Amendment).

Response: We believe eight populations are needed to increase the viability of the species through increased redundancy and representation. Furthermore, unlike the Palos Verdes blue butterfly, the El Segundo blue butterfly has demonstrated the ability to disperse and naturally recolonize habitats within the known historical distribution. However, if it is

determined that augmentation and recolonization is required for artificial maintenance of population resilience, these measures may need to be implemented for the species to warrant delisting.

Partner Review Comment (4): One reviewer noted the draft amendment states the LAX airport dunes “contain the largest population of the butterfly and is the population most likely to survive disease, predators, parasites, and other perturbations.” They questioned this is true, given there have been recent declines in this population. They also noted the amendment states “each of the four populations exhibits a statistically stable or upward trend...” They argued that may have been the case a few years ago at the LAX dunes, but the prolonged drought and invasive plant species have adversely affected the population since then.

Response: We believe it is clear the LAX dunes population has always had, and still has, the largest known population in both individual butterfly abundance and population distribution area within Los Angeles County. Note the LAX dunes population distribution also includes the adjacent Dockweiler State Beach occupied habitat (Figure 3). Therefore, we believe our conclusion that the LAX airport dunes contains the largest population, and is the one most likely to survive disease, predators, parasites, and other perturbations is appropriate. To clarify, this amendment does not conclude any populations currently exhibit a statistically stable or upward trend, rather it states this would need to be the case to achieve species recovery.

Partner Review Comment (5): The Palos Verdes Peninsula is not identified as a recovery unit for the El Segundo blue butterfly. What is the process required to establish a Recovery Unit?

Response: The Service establishes recovery units at their discretion, and this process was considered beyond the scope of this amendment. Please see Service policy documents for more information on recovery units and when establishment is considered useful ([Final ESA Section 7 Consultation Handbook, March 1998](#) and [Interim Recovery Planning Guidance for Threatened and Endangered Species](#)).