

Supplemental Finding for the Recovery Plan for the Lotis Blue Butterfly

Original Approved: 1985

Original Prepared by: Dr. Richard A. Arnold, Entomologist; and U.S. Fish and Wildlife Office, Sacramento, California.

[\[Lotus Blue Butterfly Recovery Plan\]](#)

**For
U.S. Fish and Wildlife Service
Pacific Southwest Region
Sacramento, California**

October 2019

Approved: _____



Acting Paul Souza, Regional Director, Pacific Southwest Region
U.S. Fish and Wildlife Service

Date: _____

12/10/19

BACKGROUND INFORMATION

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.” It is possible that for some species, however, delisting cannot be foreseen at the time a recovery plan is written. In some rare cases, the best available information is so seriously limited that it is not practicable to identify delisting criteria. This would be an unusual case, such as one in which the species’ threats are not understood well enough to identify priorities and appropriate mitigation. For example, the natural habitat may have been so reduced for an endangered species that captive propagation and active management is necessary for the life of a reasonable recovery plan. In another example, the population of a long-lived, slow growing species may be so depleted that possible recovery may be beyond the life of a reasonable recovery plan.

A 2006 Government Accountability Office (GAO) audit of the NMFS’ and FWS’ endangered species recovery programs recommended that the Secretaries of the Departments of Commerce and the Interior direct their staff to ensure that all new and revised recovery plans have either recovery criteria evidencing consideration of all five delisting factors or a statement regarding why it is impracticable to do so (GAO 2006). Since the 2006 GAO audit, we have updated our recovery planning and implementation guidance (NMFS and FWS 2010), and new plans have included determinations regarding the feasibility or possibility of incorporating delisting criteria related to each of the five factors, as recommended by the GAO. Active recovery plans remain, however, that lack delisting criteria and contain either an incomplete determination regarding the practicability of incorporating delisting criteria, or are silent about the absence of delisting criteria in the recovery plan. In this document, we provide our finding on why it remains impracticable to incorporate delisting criteria for lotis blue butterfly in the Recovery Plan for the Lotis Blue Butterfly (*Lycaeides idas (=argyrognomon) lotis*). Please note that the Recovery Plan (1985) for this species had the species name incorrect as “Lotus” on the front cover, but rather should be as provided here as the Lotis Blue Butterfly Recovery Plan.

METHODOLOGY USED TO COMPLETE THE FINDING

This supplemental finding was conducted by the Arcata Fish and Wildlife Office (AFWO) staff using information from the 1985 Recovery Plan (USFWS 1985), 2007 and 2011 5-year Reviews (USFWS 2008, 2011), relevant scientific literature, and other documents available in the AFWO files.

FINDING

The lotis blue butterfly was federally-listed as an endangered species under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*; Act) in 1976 (41 FR 22041). The primary objective of the Lotis Blue Butterfly Recovery Plan (1985) was to ‘recover’ the species, through an interim goal of preserving and protecting the two hectares of known lotis blue population (colony); establishing three new, viable “self-sustaining” populations, each on at least two hectares of suitable habitat; and establishing permanent protections and management (USFWS 1985, p. 19; Schultz and Hammond 2003, p. 1374). As an interim goal, the Recovery

Plan suggested development of management strategies, which are based on life history of the species and monitoring of habitat containing plant species that are essential food for both larval and adult stages of lotis blue butterflies. Additionally the Recovery Plan recommended improving landowner and public awareness, thereby potentially reducing overutilization related to commercial, recreational, scientific, and educational purposes. The Recovery Plan does not contain formal threats-based recovery criteria, but rather a step-down outline for objectives to minimize the further decline of the lotis blue and degradation to its habitat (USFWS 1985, pp. 15-18). Unfortunately the threats outline in the Recovery Plan was limited.

The lotis blue is a member of the butterfly (Lepidoptera) family Lycaenidae, which is commonly referenced as the blues, coppers, and hairstreaks. Recent taxonomic rearrangements of the taxa in the genus *Lycaeides* suggest that the lotis blue might be a subspecies of *L. anna* rather than of *L. idas* (Arnold 2019a). The lotis blue butterfly has historically been referenced from several coastal localities in wet meadows and sphagnum-willow bogs in northern California, primarily in Mendocino County. However, reports of the butterfly's potential occurrence are also noted in Sonoma and northern Marin counties (Tilden 1965), but these reports were not substantiated by any specimens in entomological collections (Arnold 2017). Collection records have vague location details and the more contemporary analyses of records suggest that mislabeling has occurred which further limits our assessment of this species (Arnold 1991, 2019a). A limited number of adult butterflies have been recorded at its only confirmed location, beneath the Elk-Fort Bragg utility transmission line right-of-way (operated and maintained by Pacific Gas & Electric Company), near Mendocino, California between 1977 and 1983. However, no individuals have been recorded since 1983 despite focal surveys occurring (Arnold 1991, 2008, 2013; Pratt 2003, 2004, 2005; Arnold 2019a, 2019b; unpublished reports on file).

The lotis blue butterfly is believed to be imperiled due to loss of habitat through destruction or modification. However, much of that habitat conversion has been due to changing land use practices such as logging, suppression of fire, and habitat-type conversion due to commercial and residential development, use of herbicides and pesticides, and other changes that have reduced or altered natural disturbance regimes (deer herbivory, encroachment by non-native vegetation). Threats from these habitat-based factors may continue to affect the persistence of the species (USFWS 1985; USFWS 2008), but their magnitude and intensity is difficult to assess without detection of the species. Given the species' extremely restricted distribution and its presumed small population size, this subspecies is considered one of the most imperiled species of butterflies in North America (Scott 1986).

A primary requirement of the Recovery Plan and this supplementary finding is to gain sufficient information concerning the butterfly's basic biology, habitat requirements, and population demography to define management needs and the direction that recovery efforts should take. Based on our lack of knowledge of the distribution, life history, biology, and ecology of this species and the characteristics of the habitat necessary to sustain its essential life-history functions, we conclude that is impracticable to set recovery criteria for delisting at this time. The Lotis Blue Butterfly Recovery Plan lacks quantitative recovery criteria to delist the species due to the rarity of the species and the lack of information on the species. While additional outreach

and surveys have been done, developing delisting criteria is still not practicable due to the species' very low population levels and highly restricted distribution. Until extant populations are rediscovered, conservation needs cannot be adequately assessed. Given the time that has transpired since the species was last detected, the highest priorities are surveys for surviving populations and better understanding of the species' bog habitat (Xerces Society 2019).

In summary, we find that the development of measurable, objective criteria that describe recovery for the lotis blue butterfly is not practicable at this time given the lack of basic demographic and ecological information along with limited understanding of persistent threats and how to address them in the context of recovery. Accurate taxonomy, population demography, and habitat descriptors to inform species threat assessments and the design of effective conservation measures remain largely unavailable and prevent us from establishing quantifiable criteria needed to define recovery for the species.

LITERATURE CITED

- Arnold, RA. 1991. Biological Studies of the endangered Lotis Blue Butterfly for PG&E's Elk-Fort Bragg 60 kV Transmission Line. Prepared by Sally deBecker, Biologist, Pacific Gas and Electric Company Technical and Ecological Services, 3400 Crow Canyon, San Ramon, CA 94583. 39 pp. + appendices.
- Arnold, RA. 2008. Surveys for the endangered Lotis Blue Butterfly and Its Potential Larval Host Plants along PG&E's Philo-Fort Bragg Transmission Line in 2008. Report prepared for Mary Boland, Pacific Gas and Electric Company by Dr. RA Arnold, Entomological Consulting Services, Ltd. July 2008. 5pp.
- Arnold, RA. 2013. Surveys for the endangered Lotis Blue Butterfly and Its Potential Larval Host Plants along PG&E's Philo-Fort Bragg Transmission Line in 2013. Report prepared for Mary Boland, Pacific Gas and Electric Company by Dr. RA Arnold, Entomological Consulting Services, Ltd. June 2013. 6pp. + appendices.
- Arnold, RA. 2017. Memo Re: 01-MEN-01, P.M. 51-77-42.33, EA 01-0C550/01120000300 Navarro Ridge Safety in Albion (Mendocino County), CA. Report on 2017 Surveys for Two Endangered Butterflies. Prepared for Caltrans, District 1.
- Arnold, RA. 2019a. Studies to Support the U.S. Fish and Wildlife Service's 5-year Review of the Endangered lotis Blue Butterfly, *Plebejus (Lycaeides) anna lotis* (Lepidoptera: Lycaenidae). Contract #D01 140F0119P0012 – Interim Report of Activities for the Period of September 2018 through March 2019.
- Arnold, RA. 2019b. Studies to Support the U.S. Fish and Wildlife Service's 5-year Review of the Endangered lotis Blue Butterfly, *Plebejus (Lycaeides) anna lotis* (Lepidoptera: Lycaenidae). Contract #D01 140F0119P0012 – Interim Report of Activities for the Period of April through June 2019.
- Pratt, GF. 2003. Report to U.S. Fish and Wildlife Service. 2003 Survey for the Lotis Blue. Submitted by Gordon F. Pratt, Entomology Department, University of California Riverside, CA 92521.
- Pratt, GF. 2004. Report to U.S. Fish and Wildlife Service. 2004 Survey for the Lotis Blue. Entomology Department, University of California, Riverside. Report to U.S. Fish and Wildlife Service, Arcata, California. Contract No. 101812M579.
- Pratt, GF. 2005. Unpublished field notes (on file). Dated 5 June 2005 through 10 June 2005.
- Schultz, CB, Hammond PC. 2003. Using Population Viability Analysis to Develop Recovery Criteria for Endangered Insects: Case Study of the Fender's Blue Butterfly. *Conservation Biology* 17: 1372-1385.
- Scott, JA. 1986. The Butterflies of North America – A natural History and Field Guide. Stanford University Press, Stanford, California.

- Tilden, JW. 1965. Butterflies of the San Francisco Bay Region. University of California Press, Berkeley, California.
- USFWS. [U.S. Fish and Wildlife Service]. 1985. Recovery Plan for the Lotis Blue Butterfly. Portland, Oregon. Department of the Interior. 46 pp.
- USFWS. [U.S. Fish and Wildlife Service]. 2008. Lotis blue butterfly (*Lycaeides argyrognomon lotis*) 5-year review: summary and evaluation – December 2007. Arcata Fish and Wildlife Office. Department of the Interior. 10 pp.
- USFWS. [U.S. Fish and Wildlife Service]. 2011. Lotis blue butterfly (*Lycaeides argyrognomon lotis*) 5-year review: summary and evaluation. Arcata Fish and Wildlife Office. Department of the Interior. 14 pp.
- Xerces Society 2019. Species profile for Blues: lotis blue (*Lycaeides idas lotis*). Available online at <https://xerces.org/lotis-blue/>. Accessed 5 September 2019.