

	Title: Karner Blue Butterfly Egg Salvage Protocol	
	Date: February 17, 2010	Revision: 02

I. Purpose and Applicability

This protocol is intended for use by HCP partners as a possible minimization tool in association with major construction projects resulting in complete removal or destruction of Karner blue butterfly (Kbb) occupied habitat. The purpose is to salvage Karner blue butterfly eggs along with habitat components by moving eggs from lupine areas to be impacted to other lupine areas, which will not be impacted by the project. Egg salvage is best done during the dormant season in early spring when new lupine plants are just beginning to emerge. At this time of year lupine plants can be identified and fewer larvae will have emerged. This protocol is described for egg salvage at this time of the year.

This protocol applies to sites within the Kbb High Potential Range (HPR) where Kbb presence is known. This protocol does not apply to non-HCP partners. The protocol is based on information provided by Cynthia Lane (2004).

II. Conservation Measures

a. Project planning

- i. For initial salvage assessment and for setting up the treatment area, avoid driving or walking across lupine patches to the greatest extent practicable.
- ii. Conduct pre-management surveys in and adjacent to the proposed project impact areas to determine if lupine and Kbb populations exist and to assess potential refugia sites. Refer to the **Monitoring Protocols** for specific information.
- iii. If egg salvage is intended, describe in the mitigation plan, when and how existing Karner blue eggs will be collected and removed from the impact area to a refugia. See **Construction Guidelines** for specific information and to determine if egg salvage is an appropriate tool for the project's mitigation plan.

b. Egg Collection

- i. To salvage the majority of Karner eggs, collect the dried lupine stems, stems and leaves of other plant species and duff within 6" of each lupine stem. Depending on the thickness of the duff, collect the duff either to the soil level or down 1 inch. This is best done by hand. Carefully pick or scoop up the plants and up to 1 inch of duff in a way that does not pick up any topsoil.

- c. Egg relocation and deposit within refugia
 - i. Carefully place collected plant material (with eggs) on a tarp or in a container to avoid loss of eggs on the way to the refugia.
 - ii. Deposit the eggs at the refugia site by spreading the plant debris (containing eggs) as close as possible around the emerging lupine plants. Be careful not to damage or cover the new plants.

III. Special Activities

- 1) Utilization of available native seeds from project site: If practicable, collect lupine and nectar plant seeds from the construction site prior to construction activities and use to help restore KBB habitat in the mitigation area
- 2) For construction, mitigation, and habitat restoration refer to the Construction Guideline.
- 3) For evaluating projects refer to Project Evaluation Worksheet

IV. Background

The Karner Blue Butterfly Habitat Conservation Plan recognizes that certain construction projects and repairs may completely remove or destroy Kbb habitat in ways that by the act itself does not inherently result in a benefit to the habitat. In major projects where a significant portion of occupied habitat at a significant population site may be destroyed, which may jeopardize the success of the population or seriously impair the local population's ability to rebound, moving eggs to a nearby lupine area within dispersal distance may be an appropriate mitigation strategy.

KBB eggs are likely to be on the lower stems of lupine plants and the duff under and near the lupine plants. Female Karners lay their eggs mostly on the lower lupine stems. Therefore, the eggs are likely on remaining standing lupine stems and on the upper surface of the duff. Karners are known to crawl down a bit into the duff in some cases.

Karner eggs can be salvaged from the construction site and deposited at a suitable alternate lupine site. This could be done by carefully lifting up the lupine plants and scooping up nearby duff in a way that does not pick up much if any topsoil. It is not necessary to collect materials from areas that have no lupine. This will minimize the volume of material to be salvaged and deposited around the lupine in the refugia. Move the plants and duff to the refugia areas and gently lay them alongside, but not on top of the lupine plants. If a suitable refugia is not present adjacent to the project impact area, other alternative strategies are to move the salvaged lupine and eggs to an alternate refugia area in the vicinity of the project area or create and establish viable lupine habitat as a refugia area prior to taking the occupied habitat. If the population is small or not in a location or

circumstance, which will allow for ongoing management, consider moving the KBBs to an alternate site, e.g. a larger more secure site or a recovery site.

V. Definitions

Refugia: Areas of Kbb occupied lupine which are protected from project impacts in order to: 1) preserve a source Kbb population for future recolonization of restored habitat, and/or 2) provide a depository for Kbb eggs, larvae and/or pupae salvaged from lupine plants and the surrounding duff, that would otherwise be lost to project construction activities.

VI. Reference Documents

Karner Blue Butterfly Habitat Conservation Plan, *March 2000*, Chapter 2.C.d. Transportation Management and Chapter 2.C.e. Utility ROW Management.

Cynthia Lane, Ecological Strategies, LLC, pers. comm., 2004