

	Title: Timber Stand Improvement Protocol	
	Date: September 6, 2007	Revision: 01

I. Purpose and Applicability

This protocol is intended for use by HCP partners with forest management responsibilities. The purpose is to avoid and minimize take of the Karner blue butterfly (Kbb) incidental to timber stand improvement (TSI) activities that occur after the stand has achieved crown closure but prior to the final harvest. This protocol applies to sites within the Kbb High Potential Range where Kbb presence is known, and to lupine sites within the Kbb High Potential Range where Kbb presence or absence is not known.

II. Conservation Measures

a. Initial Assessment

- i.** For initial stand assessment and for setting up the treatment area, avoid driving or walking across lupine patches to the greatest extent practicable. Pre-management surveys are not required for initial assessment of the stand.
- ii.** Identify openings within the stand and on the perimeter of the stand that might support lupine, nectar plants, and Kbb.
- iii.** Conduct pre-management surveys on openings identified in initial assessment to determine if lupine and Kbb populations exist. Refer to the Monitoring Protocol for specific information.
- iv.** If Kbb-occupied lupine patches are found, follow the appropriate course of action (Avoid Take or Minimize Take) below.
- v.** If Kbb is not present on the site there are no restrictions or requirements.

- b.** To avoid take do not conduct TSI activities on sites within the forest stand where Kbb presence is known, or on lupine sites where Kbb presence or absence is not known.

- c. To minimize take follow the steps listed below.
 - i. Set up the treatment area up to minimize the amount of occupied habitat that is impacted to the greatest extent practicable.
 - ii. If access roads, trails, or landing areas are to be used without any improvement or maintenance disturbance, avoid lupine to the greatest extent practicable. Otherwise, see Special Activities, below.
 - iii. TSI treatments on private residential and non-regulated properties are exempt from this protocol.
 - iv. Post management surveys are needed only if the partner has agreed to participate in cause-effect surveys, or if it is required as part of the partner's SHCA. Refer to the Monitoring Protocol for specific information.

III. Special Activities

- 1) For construction and improvement of roads, trails, and landings, refer to the Construction Guideline.
- 2) For mowing or clearing brush from roads, trails, and landings, refer to the Mowing and Brushing Protocol.
- 3) For intermediate stand treatments that are commercial thinning operations, refer to the Timber Harvesting Protocol.
- 4) For the use of pesticides to control vegetation or insects during the intermediate stand stage, refer to the Pesticide Use Protocol.
- 5) For soil and vegetation disturbance activities prior to the final harvest to promote advance regeneration on the forest floor, refer to the Site Preparation Protocol

IV. Background

The Karner Blue Butterfly Habitat Conservation Plan recognizes that forest stands from establishment to approximately 15 year of age are potential habitat for Kbb, given suitable soil and other habitat conditions. After 15 years most fully-stocked forest stands have developed sufficient crown closure to significantly reduce the frequency of shade-intolerant vegetation, including lupine and nectar plants needed to sustain Kbb populations. From the point of crown closure in a sapling stand until the final harvest of the stand, the persistence of suitable habitat for Kbb is unlikely.

During the period of tree growth and development, the late sapling stage until maturity, intermediate treatments are often used to enhance stand composition, structure, growth, health, quality, and the production of specific benefits desired by the landowner or property manager. These tend to be non-commercial treatments, and are commonly known as timber stand improvement, or TSI. TSI practices include, thinning and improvement cuts, salvage cuts, sanitation cuts, tree release treatments, and pruning.

With full crown closure the presence of lupine and nectar plants sufficient to support Kbb is unlikely. However, natural openings are common within intermediate-aged stands, as well as on the perimeters of those stands. It is possible that lupine, nectar plants, and Kbb, could persist in those openings, and on the perimeter of those stands. Therefore, an initial stand assessment is necessary to identify potential lupine and Kbb sites both within the stand and around the stand.

VI. Reference Documents

Karner Blue Butterfly Habitat Conservation Plan, Appendix F. *March 2000.*

Karner Blue Butterfly Conservation Protocols for Forest Management by HCP Partners, Appendix F. *Zastrow et al. April 27, 1998.*

Wisconsin DNR Silviculture Handbook 2431.5