	Title: **Pesticide Use Protocol**	
	Date: **September 6, 2007**	Revision: 01

I. Purpose and Applicability

This protocol is intended to avoid and minimize take of the Karner blue butterfly (Kbb) that is incidental to pesticide use activities. This protocol applies to sites within the Kbb High Potential Range known to be occupied by Kbb, and to lupine sites where Kbb presence or absence is not known.

II. Conservation Measures

a. Avoid take (no permit required)

- **i.** Do not apply pesticides on lupine patches that are known to be occupied by Kbb, or in lupine areas where the presence of Kbb is unknown.
- **ii.** When applying pesticides on extensive sites with scattered Kbb populations, avoid those lupine sites that are occupied.

b. Pesticide Use

REQUIRED ACTIONS:

Site management and herbicide application should be practiced in accordance with HCP strategies or with Partner species and habitat conservation agreements (SHCAs). Users should follow ***all pesticide label directions*** (even if differ from the requirements below) and warnings and Wisconsin Pesticide Law (ATCP 29 and others), with special care to avoid off-target applications and drift, runoff, leaching, and dripping. Apply under wind directions as detailed below. **See also the product recommendations on the attached table A**.

PRE-MANAGEMENT CONSIDERATIONS:

Conduct lupine and Kbb pre-management surveys as prescribed in the HCP or Partner SHCAs. Mark or document observed populations and patches of lupine and Kbb's.

MONITORING/REPORTING REQUIREMENTS:

Document lupine/Kbb survey results; pesticide use, dosage and timing, application methods, and buffer widths (if applicable); and weather at the time of application (temperature, wind speed, and wind direction) for reporting purposes and for future use in adaptive management.

Inside Kbb habitat, active season: (April 15 – August 31**) 1. Make spot applications only (on basal bark, cut stems, and foliage) with hand-operated equipment only, using only pesticide-certified, or pesticide-experienced personnel, or personnel under the direction of a pesticide-certified supervisor. The operator shall be trained to identify Kbb's and lupine and must avoid trampling lupine plants. Heavy equipment shall not be used inside the habitat.	**Inside Kbb habitat, non-active season**: (September 1** - April 14) ***PREFERRED TREATMENT TIMING*** 1. Make aerial applications as needed. 2. Make spot and ground applications using only pesticide certified, or pesticide experienced personnel, or personnel under the direction of a pesticide certified supervisor.
Near Kbb habitat, active season: (April 15 – August 31**) 1. Make aerial applications only when the wind is not blowing towards the habitat, and allow the following non-chemical buffers*: 66 feet (20 meters) between the occupied site and the treatment site. The non-chemical buffer* width may be reduced where an adequate barrier to Kbb dispersal exists such as a forested area, or a tree/hedgerow at least 33 feet high x 33 feet wide (10 meters x 10 meters) between the occupied habitat and the treatment area. 2. Make wick and other ground equipment applications only when the wind is not blowing towards the habitat and allow a 6 foot (2 meter) non-chemical buffer between the habitat and the treatment area. 3. Avoid broadcast applications within the distance likely to carry the chemical to the closest edge of the occupied habitat when the wind is blowing towards the occupied habitat. Use a lateral drift table, found in training manuals for commercial pesticide applicators, to calculate this distance. For example, applying 100 micron droplets from 100 feet during a 10 mph wind requires a non-chemical buffer* of 1460 feet (445 meters) next to the occupied habitat. At a wind speed of 3 mph, the same situation would require a non-chemical buffer of 440 feet(134 meters). The use of drift-control products and methods may allow calculation of a smaller buffer*. All calculations must be done by a certified applicator and the rationale for any substantial adjustments documented. 4. Make spot applications with hand-held equipment as needed. Check label for possible wind restrictions.	**Near Kbb habitat, non-active season**: (September 1** - April 14) ***PREFERRED TREATMENT TIMING*** 1. Make aerial, ground and spot applications during this time if possible. Minimize impact to nearby nectar plants where possible. *** Non-chemical buffers: Use larger buffers than given above if required on the product label.** **** Timing: Applications may be made anytime after August 15 if mature lupines have senesced and the Kbb second flight period has passed. For flight information call Karner Blue Hotline 1-877-4KARNER (52-7637).**

RECOMMENDED ACTIONS:

Implementation of these guidelines will further protect the Kbb from potential pesticide injury.

- Choose the management methods and the herbicides that allow for a maximum stand of lupine and Kbb nectaring plants over time while controlling the undesired species.
- Use Integrated Vegetation Management and non-pesticide alternatives (e.g. mowing, controlled grazing, etc) where feasible.

- Develop initial test plots for the use of planned herbicides away from Kbb occupied sites.
- Initiate seed collecting for replacement.
- Reseed lupine, nectar plants, and other native species if these species are accidentally destroyed during site management.
- Replace ecologically invasive non-native vegetation with appropriate native vegetation such as lupine and nectar plants after treating a site.
- Consider monitoring the groundwater if using soil mobile products on a large scale.
- In key areas, or when the effect of herbicide use is uncertain, minimize lupine mortality by leaving some areas untreated.
- Near Kbb occupied habitat throughout the year, leave a 660 foot (200 meter) buffer between the habitat and the treatment area in addition to the requirement that application be made only when the wind is blowing from the habitat towards the treatment area. The 200 meter buffer will protect nectar plants growing within habitat areas used by Kbb's. The majority of butterflies range up to 200 meters from their home lupine patch.

Herbicides used (or likely to be used) in Karner blue butterfly-occupied habitat: see Attachment A.

Use of Fungicides, Insecticides, etc. Pesticide application plans for fungicides and insecticides must be submitted to the Wisconsin Department of Agriculture, Trade and Consumer Protection, the Wisconsin Department of Natural Resources, and the U.S. Fish and Wildlife Service for review and approval. Use of *Bacillus thuringiensis var.kurstaki* (B.t.k.) shall be as outlined in Chapter II. H, Volume 1 of the HCP, p.178.

* Use larger buffers if the product label requires ** Applications may be made anytime after August 15 if mature lupines have senesced **and** the second Kbb flight period has passed .

Note: **In all situations (i.e. IN or NEAR Kbb habitat and all other situations in Wisconsin), and according to Wisconsin Pesticide Law (ATCP 29), pesticide certification is required if you make pesticide applications "for hire" or if you use an "RUP" (restricted use) pesticide (pesticide label statement – refer to label). If you have questions regarding pesticide use, call DATCP at 608-224-4548.**

Attachment A: Herbicides used (or likely to be used) in or near Karner blue butterfly-occupied habitat

Kbb-HCP Pesticide Guidance Ad Hoc Committee: Dick Berry, Gary Birch, Dave Hall, Kit Hart, Ursula Petersen - coordinator, Shawn Puzen, Tim Wilder. Reviews by HCP Partners, UW-Agron. and USFWS.

Note 1: These herbicides must be used according to their label and as noted in the "Requirements" section in this Pesticide Use Guidance.
Note 2: Herbicides, by product name or active ingredient, not found in this table, must be approved by DATCP, DNR, and FWS prior to use.

Product (active ingredient)	**Concerns**	**Benefits and recommendations**
Accord (glyphosate)	NON-SELECTIVE	Use after mature lupine senescence.
Accord/Garlon	NONSELECTIVE	Does not appear to impact lupine and Kbb after senescence. May remove heavy sedge and woody vegetation (Sucoff). May affect Kbb eggs. Use after senescence and seed maturity.
Arsenal (imazapyr)	Moderate to HIGH SOIL MOBILITY and HALF-LIFE; NONSELECTIVE	Controls clover. Avoid use.
Escort (metsulfuron methyl)	MODERATE MOBILITY; NON-SELECTIVE;	Use timing as a conservation tool.
Garlon 3a (triclopyr amine)	HIGH SOIL MOBILITY	Spares clovers and alfalfa, not vetch. Takes Canada thistle, not other noxious weeds. Use minimum amount; may be better for lupine habitat than Garlon 4 but consider the soil mobility aspect on non-target vegetation
Garlon 4 (triclopyr ester)	TOXIC TO AQUATICS	Spares weedy grasses, nutsedge. Takes Canada thistle and clovers, not alfalfa or vetch. Use for spot application.
Karmex (diuron)	MOD. MOBILITY; LONG HALF LIFE; NONSELECTIVE	Avoid drift and runoff to adjacent land. Use minimum necessary.
Oust (sulfometuron methyl)	Low to MODERATE SOIL MOBILITY	Kills sedges, grasses. Spares legumes, probably including lupines, also composites, others. Probably ok for broadcasting in lupine sites. Reseed associates if necessary.
Plateau (imazapic)	LONG-LIVED; HIGH SOIL MOBILITY IN SAND; COOL SEASON GRASS INJURY	Spares some warm season grasses, legumes, selected composites. Controls leafy spurge, Canada thistle. Use minimally, only spot application if possible.
Rodeo (glyphosate)	NON-SELECTIVE	Labeled for aquatic sites.
Roundup (glyphosate)	NON-SELECTIVE	See Accord.
Solution (2,4-D)	BROADLEAF WEEDS	Low drift formulation. Spares grasses. Contain within rail bed and 8' to each side of track center.
Tordon (picloram)	HIGHLY MOBILE IN SANDY SOILS; LONG-LIVED	Controls noxious species. Spares grasses. Use only for leafy spurge, minimally, only by spot application. Monitor adjacent vegetation.
Transline (clopyralid)	HIGH SOIL MOBILITY; LONG-LIVED; KILLS LEGUMES, COMPOSITES; TOXIC TO BEES	Spares cool-season grasses. Use alternatives if possible. Monitor sites for lupine and Kbb. Use sparingly and only for Canada Thistle, Spotted Knapweed.
Vantage (sethoxydim)	VERY SOLUBLE	Relatively short-lived. Spares legumes and composites.
Velpar (hexazinone)	Moderate to LONG HALF-LIFE, HIGHLY SOLUBLE, KILLS LARCH, SOME GRASSES	Spares some legumes. Pine release treatments. Avoid broadcast applications in known habitat.

III. Referenced Documents

ATCP 29. Pesticide Use and Control. Agriculture, Trade and Consumer Protection. Register, May 1998, No. 509; www.legis.state.wi.us/rsb/code/atcp/atcp.html.

DATCP's Endangered Species Habitat Program
http://www.datcp.state.wi.us/arm/environment/plants/endangered-species/guidelines.jsp

EXTOXNET (Extension Toxicology Network). Cooperative Extension, Cornell University, Michigan State University, Oregon State University, and University of California - Davis. 1994; http://extoxnet.orst.edu/pips/ghindex.html .

Farm Chemicals Handbook 2006. Meister Publishing Company, Willoughby, Ohio.

Hall, David and Tom Shockley. Herbicides for Forest Management 1999 (updated annually). Cooperative Extension UWEX No. 76.

Herbicide Handbook 1994. 1997. Weed Science Society of America, Champaign Illinois.

Lane, Cynthia. Forest Management Guidelines. Feb. 1997. Prepared for WDNR and USFWS.

Montgomery, J.H. 1993. Agrochemicals Desk Reference. Lewis Publishers.

Nekoosa Papers Inc. Integrating Conservation of the KBB into Industrial Forest Management.

Petersen, Ursula C. Herbicide Use and Alternate Management of Rights-of-Way in Wisconsin. 1999. WI DATCP.

Product Label Information.

Sucoff, Ed. Effect of Exposing Eggs to Herbicides on the Development of Karner Blue Butterfly. March 1, 1998. UMN, Dept. of Forestry.

Sucoff, Ed. Effect of Three Herbicides on The Vegetative Growth and Flowering of Wild Lupine. Final Report 2nd Year Observations. Dec. 31, 1997. U.MN., Forestry Dept.

Weaver-Boos Consultants, Inc. The Strategic Management Plan for Linear Corridors in Areas Inhabited by the Karner Blue Butterfly *(Lycaeides melissa samuelis* Nabokov). Prepared for the Linear Corridor Partners Wisconsin HCP Team.

Wisconsin DNR and Kbb-HCP Partner Species and Habitat Conservation Agreements. 1999. The Partners are: Alliant Energy, American Transmission Company, ANR Pipeline Co., Burnett County Forest, Clark County, Consolidated Papers Inc., Eau Claire County, Jackson County, Johnson Timber Company (includes Bayside Timber Company, Futurewood Corp. and Magnum Timber Corp.), Juneau County Land, Forestry and Parks, Lakehead Pipeline Company-Limited Partnership, Monroe County, Northern States Power

Company, The Nature Conservancy, Northwestern Wisconsin Electric Company, Polk-Burnett Electric Cooperative, Thilmany Division - International Paper Company, The Timber Company/Georgia Pacific/Nekoosa Papers, Washburn County, Wausau-Mosinee Paper Corporation, Wisconsin Department of Agriculture, Trade and Consumer Protection, Wisconsin Department of Transportation, Wisconsin Gas Company, Wisconsin Public Service Corporation, Wisconsin River Power Company, and Wood County.