

	Title: Prescribed Burning Protocol	
	Date: April 4, 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 prescribed burning activities. This protocol applies to sites known to be occupied by Kbb, and to lupine sites within the Kbb High Potential Range (HPR) where Kbb presence is not known. Managers implementing this protocol should incorporate their knowledge of Kbb occurrences, lupine distribution and metapopulation function when conducting prescribed burns. Managers are also encouraged to incorporate their own personal knowledge and expertise to the greatest extent practicable when planning prescribed burns. If prescribed burning is conducted for the purpose of recovering or improving Kbb populations or their habitat, then prescribed burning is allowed:

If the protocol outlined below is not feasible, or multiple listed species occur in a management unit please contact the Division of Forestry, Karner Blue Butterfly (KBB) Habitat Conservation Plan (HCP) Program at 608-261-6451. Staff from the Karner Blue HCP Program will work with DNR research staff, and species experts to develop an acceptable protocol for a specific site.

II. Conservation Measures: Required

- a.** Avoid take (no permit required)
 - i.** Do not burn lupine areas that are known to be occupied by Kbb, or lupine areas where the presence of Kbb is unknown.
 - ii.** When burning on extensive sites with scattered Kbb populations, avoid those lupine areas that are occupied.

- b.** Minimizing take and promoting Kbb habitat

1. If the management area is part of a large-scale barrens landscape, occupied lands are under single ownership, metapopulation management is occurring, and corridors connect occupied areas,

OR

2. If the management area is part of a large-scale barrens landscape, occupied lands are under multiple ownership, corridors connect occupied areas, and a signed management agreement(s) has been made between all parties,

OR

3. If the management area is not part of a large-scale barrens landscape, but habitat is comprised of high quality vegetation, and a refugia has been established for two consecutive years,

AND

- a. Burning occurs in the Spring or Fall,

then entire burn units may be burned,
 - i. As long as 2/3 of the lupine area within the metapopulation management area remains unburned for two consecutive years and refugia are located within dispersal distance of the burned area.
 - ii. There are no ITP issues for other species. If ITP issues exist, contact the BER for assistance developing an alternative protocol.
 - b. Burning occurs in early to mid-Summer (*see definition*),

then follow all requirements associated with Spring and Fall burning under *Ia.* above with the addition of,
 - i. 1/3 of the unit supporting nectar species remains unburned.
4. If habitat is comprised of high quality remnant vegetation, but less than 2/3 of the lupine has remained unburned for two consecutive years,

AND

- a. burning occurs in either the Spring or Fall,

then up to 1/3 of the lupine area may be burned as long as,
 - i. existing unburned lupine and the balance of previously burned lupine equals 2/3 of total lupine patch remains unburned for at least two consecutive growing seasons and refugia are located within dispersal distance of burned area.
 - ii. There are no ITP issues for other species. If so, contact the BER for assistance developing an alternative protocol.
- b. burning occurs in early to mid-Summer (*see definition*),

then follow steps outlined under *4a.* (above) with the addition of,

- i. 1/3 of the unit supporting nectar species remains unburned.

5. If the habitat is highly degraded or is a restoration,

AND

lupine is present,

then up to 3/4 of the lupine area may be burned as long as

- i. 1/4 of the lupine area remains unburned for at least two consecutive growing seasons and refugia are located within dispersal distance of burned area.
- ii. There are no ITP issues for other species. If ITP issues exist, contact the BER for assistance developing an alternative protocol.

Recommendations – to supplement Conservation Measures

- A. Burn units: The number and/or size of burn units should be site specific and depend largely on what is practical for the specific property conditions. Under most circumstances, preexisting burn units are dictated by natural boundaries such as roads, ditches, dikes, and flowages. Subdividing existing units into subunits is not recommended, as it is often impossible due to numerous wetlands within sites, cost, and the potential for establishment of invasive species. When developing new burn units, managers should use their professional judgment to decide when to use natural breaks and when to develop mowed, blacklined, or rotovated breaks.
- B. Burn Planning: Entire populations of Kbb's should never be burned at one time. Under circumstances in which an entire property can be considered a contiguous block of Kbb habitat, entire burn units or 33% of the lupine on the property can be burned in any given year.

When burn units are isolated and Kbb are incapable of dispersing to the site, unburned refugia (2/3 of lupine area) should be left within or excluded from the burn unit. Maintaining refugia will promote greater Kbb population survival and facilitate post-burn Kbb recolonization throughout the burn unit. The refugia may also be burned but over a longer timeframe, should be divided into more subunits, and have a Fire Return Interval (FRI) of 5-6 years. In lieu of more frequent fires at such isolated sites, consider use of mechanical management.

- C. Rotation: FRI's should be based on habitat management needs not on a fixed schedule. Factors such as habitat type, site condition, and site history, and the presence of invasive species should be considered when determining how often a site should be burned. Generally, occupied Kbb sites are burned once every 4-5 years, however, given the unpredictable nature of the variables described above, it is likely that no two burn units will have the same FRI.

Unsuitable Kbb Community/Habitat types i.e., wetlands, forest stands with $\geq 75\%$ canopy cover, and old fields, in which Kbb are unlikely to occur should not influence FRI's for Kbb occupied sites and may be burned at the land managers discretion to achieve the desired management objectives.

Site condition pertains to the successional changes of habitat as a result of the absence of land management activities leading to woody species encroachment and/or the presence of invasive species. Land managers that encounter these conditions may feel it necessary to conduct repeated annual burning (can be combined with brushing and herbiciding) to suppress woody plant encroachment and control the invasive species (*refer to protocols in II. 5a.*). Managers should be given the flexibility to use their professional experience to conduct intensive management practices to restore degraded areas. Once the desired goals are met, less intensive management practices can be implemented to maintain and perpetuate Kbb populations.

Highly disturbed areas that are/have been restored or mitigated may also require the flexible, intensive burn management as described above. Early restorations are often dominated by weed species and frequent burning is essential in promoting the establishment of native species.

[Rebuilding the population for Kbb appears to take at least 2 years post-fire, under favorable weather conditions. Population buildup for other invertebrate species that complete only 1 generation per year presumably will take longer.]

[Caution: Delay burning if populations decline severely due to weather or other factors (wildfires, flood, etc.)] Burn first the most degraded habitats supporting the fewest Kbb, as habitat needs permit.

- D. Burn Frequency: The optimal burn frequency per burn unit, with respect to the Kbb, is no greater than once every 4 years, to allow populations ample time to recover through recolonization from adjacent refugia. Burn frequencies of once every 5-10 years are preferred, unless woody succession or exotic invasion poses a more serious threat.

If sites are being burned more frequently than 4 years, consider alternatives such as mowing, brushing, and herbiciding. When feasible explore possibilities for excluding lupine areas which support the most Kbb from burns (e.g., by burning around them). Maintain refugia within units through appropriate mechanical

and/or herbicide management that leave significant portions of the population within a unit unharmed.

- E. Firebreaks: Utilize existing artificial or natural breaks such as trails, wetlands, or roads, as much as possible. If natural breaks cannot be used, mowed breaks are less intrusive and can be highly effective.

Avoid creating mineral breaks. While lupine may readily colonize the bare soil, so may other aggressive exotics. If mineral breaks are necessary to protect human safety, use rotovated or disked breaks rather than fire-plowed breaks. If construction of a mineral break destroys occupied Kbb habitat, refer to the *Construction Guideline*. Caution must be used to avoid spreading seeds of weedy plants via equipment.

- F. Monitor for potential invasion of aggressive exotic plants such as spotted knapweed or leafy spurge, and remove such invaders as soon as detected. Contact the WI DNR's Karner Blue Butterfly HCP Program, 608/266-6451 to receive a copy of the "Invasive Species Control Manual" for more information on control of weedy invaders. Be sure to follow pesticide use guidelines specific to the Karner blue butterfly. Pesticide Use Guidelines may be obtained from the Division of Forestry, Karner Blue Butterfly HCP Program (608) 266-1327.
- G. Type of Burn: If possible, conduct burns at varying intensity levels. Less intense burns may be more likely to result in fire skips resulting in patchy burns. The mosaic of burned and unburned areas throughout burn units expedites Kbb recovery throughout the site and is compatible with overall needs of the habitat. Kbb recolonization may also be promoted if large unburned lupine/barrens openings are left along the perimeter or corners of burn units.
- H. Timing of Burns: Fire is known to have different effects depending on when it occurs. To avoid selectively favoring some community components over others by repeated application of fire during the same time of year, vary the timing of prescribed burns to the extent weather permits.

II. Definitions/Background

Early to mid-Summer – pertains to growing-season burning and the timeframe beginning after June 21st through August 15th.

Contiguous – "Contiguous" Kbb breeding habitat is the total extent of an area supporting wild lupine and nectar plants (even if patchy and scattered) that is occupied by the Kbb and uninterrupted by obvious barriers to adult butterfly dispersal (usually dense forest). Presume adults to be quite capable of dispersing at least 300 meters over open areas of suitable habitat, and so include such areas as "contiguous" (refer also to *dispersal distance* below)

Dispersal Corridor – A pathway in the landscape (e.g., roads and trails) that Kbb can follow during their dispersal from one area of suitable habitat to another. A dispersal corridor may include unoccupied suitable habitat. Dispersal corridors might be useful for connecting habitat sites that are separated by unsuitable habitat. Characteristics that might improve suitability as a dispersal corridor include: a linear aspect, dominated by grasses, substantial number of flowering nectar plants, essentially canopy-free at least down the middle, having a dense wall of trees or shrubs along the sides, and being sunny for a significant part of the day. Presence of lupine in corridors is not essential, but is highly recommended (KBB Recovery Plan, Appendix A).

Dispersal Distance – The distance a Kbb can traverse when moving from one area of suitable habitat to another. Generally, adults are quite capable of dispersing at least 300 meters over open areas. However, Kbb dispersal distances vary depending on the nature of the landscape. In general, the more open the landscape, the greater the dispersal distance. For a more detailed discussion on dispersal distance refer to the Kbb Recovery Plan, Appendix G (http://ecos.fws.gov/docs/recovery_plans/2003/030919.pdf).

Fire Return Interval (FRI) – The timeframe in which prescribed fire is returned to a landscape/unit that has been burned in the past.

Fixed Return Interval – As it relates to prescribed fire, A FRI (above) that occurs at a predetermined period of years. For example, a land manager may choose to burn a site once every three years regardless of whether the site requires a burn at this frequency. NOT RECOMMENDED!

Incidental Take – Take of a federally-listed species which occurs incidental to and is not the purpose of, the carrying out of an otherwise lawful activity.

Incidental Take Permit (ITP) – A permit issued by the USFWS, under Section 10 (a) (1) (B) of the ESA as amended in 1973, which allows the incidental take of an endangered species.

Unit – A defined management area (e.g., burn unit) incorporating a portion of or an entire occupied Kbb site.

Metapopulation – a population of populations; each individual population within a metapopulation is referred to as a local population or sub population.

Metapopulation Management – The management of large-scale properties or barrens landscapes that supports Kbb subpopulations. Metapopulation management requires that a conscious effort be made to coordinate management efforts on the landscape to ensure the perpetuation of the metapopulation and that those Kbb subpopulations are within dispersal distance of other Kbb subpopulations.

Take – As described by the Endangered Species Act, take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such activity.

Recolonization – The emigration of Kbb's from refugia to suitable habitat where populations have been reduced due to management activities or that are unoccupied.

Refugia – For larger landscape scale metapopulation management areas (composed of multiple management units), refugia are Kbb occupied unburned lupine area(s) that are adjacent to or within dispersal distance of the burned areas (*see dispersal distance definition*). Refugia must remain unburned for at least two growing seasons following a management activity to help facilitate Kbb repopulation of the burn unit.

Site – A spatially explicit, relatively homogeneous portion of land characterized by specific physical and chemical properties that affect ecosystem functions, and where a more or less homogeneous vegetative type may be expected to develop or persist.

Subpopulation (local population) – A self-reproducing population of Kbb's that is associated with a site / area (KBB Recovery Plan).

II. Reference Documents

Wisconsin Statewide Karner Blue Butterfly, Habitat Conservation Plan and Environmental Impact Statement. 2000. Wisconsin Department of Natural Resources, Madison, Wisconsin. 377pp.

Wildlife Management Guidelines for the Karner Blue Butterfly (DNR) May, 1998

The Strategic Management Plan for Linear Corridors in Areas Inhabited by the Karner Blue Butterfly (Weaver Boos Consultants, Inc.)

Forest Management Guidelines (Cynthia Lane) February, 1997

U.S. Fish and Wildlife Service. 2003. Final Recovery Plan for the Karner Blue Butterfly (*Lycaeides melissa samuelis*). U. S. Fish and Wildlife Service, Fort Snelling, Minnesota. 273 pp.