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I. Purpose and Applicability

This User’s Guide is intended for Karner Blue Butterfly (KBB) HCP partners and their staff for the purpose of providing a simple, user-friendly approach to assist in decision making about routine management and maintenance activities that take place within the KBB High Potential Range (HPR). The User’s Guide is comprised of two main sections: the guidelines and the protocols. Guidelines are designed to be general and describe the kinds of activities that an entity group may conduct or that are frequently used in a specific type of land management. Protocols are specific and provide the detailed conservation measures for how partners should implement an activity.

The guidance provided hereafter is intended to be applied for use within the KBB HPR and should not be considered a substitute for other management protocols outside of this range. This User’s Guide applies to any Corridor, Construction, Conservation, Forestry, Recreation, Emergency, or Limited Partner management guideline and the associated management protocols. The attached flow chart provides a step-wise process that will help you determine the appropriate type of management to be conducted and the conditions under which certain management protocols may be used.
II. HCP Users Guide Flow Chart
III. Guidelines
I. Scope and Applicability

Partners in the Karner blue Butterfly (Kbb) Habitat Conservation Plan may be required to respond to emergency situations in areas of that are known to be occupied by Kbb or areas where the presence of Kbb is unknown.

This guideline applies only to emergency situations with the High Potential Range for the Kbb in Wisconsin.

II. General Recommendations/Requirements

a. In an emergency situation, repairs to infrastructure and safety of the public and work crews will take precedence.

b. Avoid lupine areas within the High Potential Range that are known to be occupied by Kbb or areas where the presence of Kbb is unknown, to the extent that these areas are known during an emergency response or identified to the greatest extent practicable.

c. Permanent take of Kbb occupied habitat resulting from emergency response will be recorded on the annual report for the year in which the emergency response situation occurred.

III. Specific Activities

a. Incidental take of Kbb due to emergency response is authorized by the Incidental Take Permit. If the emergency response results in take that is not permanent, no further action is required.

b. If emergency situation results in extreme damage to or complete removal of Kbb occupied habitat the partner will replace the habitat within 5 years (refer to the Restoration Protocol).

c. If emergency situation results in permanent take of occupied Kbb habitat consult with the DNR’s HCP Coordinator.

IV. Reference Documents

I. Scope and Applicability

Forest management activities will be conducted with consideration for the Karner blue butterfly Kbb and in a manner that will allow for continued beneficial disturbance management within the High Potential Range of the Kbb.

This guideline applies to all forest management activities that may occur within the High Potential Range of the Kbb. Forest management activities include planned vegetative manipulation practices that are conducted on lands owned or managed by HCP partners in the “shifting mosaic” and “management to feature and enhance” categories of participation in the HCP. More specifically, it includes most timber harvesting, site preparation and timber stand improvement activities that are routinely used to ensure healthy and productive forests from the time of stand establishment through the final harvest of mature timber.

This guideline does not apply to construction activities, emergency situations, corridor management practices, recreational management, or conservation management practices.

II. General Requirements

a. Pre-management surveys will be conducted prior to conducting forest management activities unless specifically detailed in a management protocol, in emergency situations, or in a specific conservation agreement (DNR’s Implementing Agreement (IA) or other partner’s Species and Habitat Conservation Agreement (SHCA)).

b. Kbb and Kbb habitat surveys will be conducted following approved HCP monitoring guidelines and protocols.

c. When Kbb are present, conservation measures described in approved HCP management guidelines and protocols will be followed.

d. In addition partners are required to follow any specific provisions in their conservation agreements (SHCAs or IA).

III. Specific Activities

See Forestry Management Guideline flow chart for process depiction

a. If burning activities are to be used for forest management refer to the Burning Protocol.

b. If mowing, brushing, or hand cutting, is to be used, refer to the Mowing and Brushing Protocol.
c. If pesticides are to be applied for forest management purposes, refer to the Pesticide Use Protocol.

d. When plowing snow on corridors refer to the Snow Plowing Protocol.

e. For intermediate stand management activities including but not limited to weeding, thinning, improvement cutting, sanitation cutting, release treatments and pruning, refer to the Timber Stand Improvement Protocol.

f. For general access to forest stands to conduct inspections, to collect data and information, to establish forest management activities, or for other non-disturbance management purposes, the following is applicable:

i. Avoid travel through lupine areas to the extent practicable.

ii. Pre-management surveys are not required


g. For routine maintenance and construction activities, e.g. new access roads, or improvement of existing roads that would result in short term take of occupied Kbb habitat that would temporarily remove or destroy all vegetation, but will be replaced within 5 years, follow the Construction Management Guideline.

h. For construction or other activities that result in permanent take of occupied Kbb habitat, consult with DNR’s HCP Coordinator as soon as possible to determine appropriate course of action.

i. For emergency situations that require immediate management action such as forest fire suppression activities or salvage cutting of damaged timber from windstorms, forest fires, flooding or insect and disease epidemics, refer to the Emergency Guideline.

IV. Reference Documents


Wisconsin DNR Silviculture Handbook 2431.5
Forestry Management Flow Chart

Forestry Management Guideline

- Construction Management Guideline
- What type of activity will you be conducting?
- Are Kbb Present?
- Conduct level 1 and level 2 (presence/Absence) survey
- Not Sure?
- Yes
- Proceed with activity, no further restrictions
- No

Management and Maintenance

- What type of Activity are you planning?
- Mowing or Vegetation Management
- Pesticide Application
- Stand Management
- Prescribed Burning
- Habitat Restoration
- Site Preparation
- Harvest

- Mowing and Brushing Protocol
- Pesticide Use Protocol
- Stand Management Protocol
- Prescribed Burning Protocol
- Restoration Protocol
- Site Prep Protocol
- Harvest Protocol

Key

- Document
- Decision
- Activity

See on-line version for current revision - 3 - dnr.wi.gov/topic/endangeredresources/karner
I. Scope and Applicability

Conservation management activities will be conducted with consideration for the Karner blue butterfly (Kbb) and in a manner that will allow for continued beneficial disturbance management within the High Potential Range of the Kbb.

This guideline applies to all conservation management activities that may occur within the High Potential Range of the Kbb. Conservation management activities include: routine, planned, and maintenance actions that may occur on State Wildlife & Fishery Areas, State Natural Areas (SNA’s), or other partner owned lands of similar type (see III. Specific Activities below).

This guideline does not apply to construction activities, emergency situations, forestry management practices, and recreational management or corridor management practices. These activities are addressed as separate guidelines, each with protocols that are specific to them.

II. General Requirements

   a. Pre-management surveys will be conducted prior to conducting management activities unless specifically detailed in a management protocol, emergency situations or in a specific conservation agreement (DNR’s Implementing Agreement (IA) or other partner’s Species and Habitat Conservation Agreement (SHCA)).
   
   b. Kbb and Kbb habitat surveys will be conducted following approved HCP monitoring guidelines and protocols.
   
   c. When Kbb are present, conservation measures described in approved HCP management guidelines and protocols will be followed.
   
   d. In addition partners are required to follow any specific provisions in their conservation agreements (SHCAs or IA).

III. Specific Activities

   See Conservation Management flow chart for process depiction

   a. If burning activities are to be used for conservation management the Burning Protocol will be implemented.

   b. If mowing, brushing, or hand cutting, is to be used, the Mowing and Brushing Protocol will be implemented.
c. If pesticides are to be applied for corridor management, the Pesticide Protocol will be implemented.

d. If chemicals are to be used, either as a site preparation or release measure for desirable woody vegetation, see the Pesticide Protocol for proper implementation.

e. When creating or restoring habitat, follow the Restoration Protocol.

f. For routine maintenance and construction activities that would result in short term take of occupied Kbb habitat that would temporarily remove all vegetation, but will be replaced within 5 years, follow the Construction Management Guideline.

g. For construction or other activities that result in permanent take of occupied Kbb habitat, consult with DNR’s HCP Coordinator as soon as possible to determine appropriate course of action.

IV. Referenced Documents


Conservation Management Flow Chart

Conservation Management Guideline

What type of activity will you be conducting?

Are Kbb Present?

Management and Maintenance

Not Sure?

Conduct level 1 and level 2 (presence/absence) survey

Proceed with activity, no further restrictions

No

Yes

What type of Activity are you planning?

Mowing or Vegetation Management

Pesticide Application

Prescribed Burning

Habitat Restoration

Mowing and Brushing Protocol

Pesticide Use Protocol

Prescribed Burning Protocol

Restoration Protocol

Construction Management Guideline

Key

Document

Decision

Activity

See on-line version for current revision - 3 - dnr.wi.gov/topic/endangeredresources/karner
I. Scope and Applicability

Construction activities implemented by HCP partners will be conducted with consideration for the Karner blue butterfly (Kbb) within the High Potential Range of the Kbb.

This guideline applies to routine maintenance, repair and construction activities that may occur within the High Potential Range of the Kbb. Construction is any action that involves grading, building, excavation, or other heavy disturbance activity and generally includes the short-term or permanent removal of vegetation from a site so that it can be used for building roads, structures, storage areas, parking lots, pipelines, power lines, or other commercial or infrastructure-related facilities and uses. It should be understood that construction activities on sites occupied by Kbb may result either in short-term removal of habitat or in permanent take if the occupied Kbb habitat can not be avoided through selective routing or siting of projects. Minor construction projects such as routine maintenance and repair are those activities required to prolong the life of existing facilities through scheduled maintenance and repair.

This guideline does not apply to forest management activities, vegetative corridor management practices, recreational management activities, conservation management practices, or to emergency situations. These activities are addressed as separate guidelines, each with protocols that are specific to them.

Note: This guideline only applies to HCP Partners. Those entities not enrolled as a Partner in the Wisconsin Statewide KBB Habitat Conservation Plan (HCP) need to contact the U.S. Fish and Wildlife Service (920) 866-1717 to determine permit needs prior to conducting any activities in occupied Kbb habitat.

II. General Requirements

a. Conduct pre-management surveys in lupine areas within the High Potential Range to determine if and where Kbb occur.

b. Avoid construction activities to the greatest extent practicable in Kbb occupied habitat.

c. Minimize the amount of Kbb occupied habitat that will be impacted by construction activities.
d. For routine maintenance, repairs or construction activities that would result in the short-term removal or destruction of Kbb occupied habitat (short-term take), which will be replaced within 5 years following the activity, pre-construction approvals may be required (refer to the section III below for specific direction).

e. For construction or other activities that result in permanent take of Kbb occupied habitat, consult with DNR’s HCP Coordinator as soon as possible to determine appropriate course of action.

f. In the event that habitat replacement or restoration is a required mitigation, the current, approved HCP Habitat Restoration Protocol will be followed unless otherwise stated or waived.

g. In the event that Kbb egg salvage is a required mitigation, the current, approved Karner Blue Butterfly Egg Salvage Protocol will be followed unless otherwise stated or waived.

III. Specific Activities and Requirements

[Refer to Construction Guideline flow chart on page 5 for a process depiction.]

a. Determine if project area is within the current Kbb High Potential Range (HPR) in WI (Refer to HPR map). If project area is not in HPR, stop here and proceed with project. There are no further restrictions. If project area is within HPR, continue.

b. Determine if Kbb potential habitat is present:
   Is there a valid Level 1 lupine presence/absence survey performed within the last 5 years? If not, perform Level 1 surveys.
   *If a minimum amount of lupine habitat is not present, retain surveys and proceed with the project. Stop here, otherwise continue.*

c. Determine if Kbb are present:
   If lupine is present, is there a valid Level 2 Kbb Presence/Absence survey within the last 5 years? If not, perform Level 2 surveys.
   *If Kbb are not present, retain surveys and proceed with the project and stop here; otherwise continue.*

d. If Kbb are present, determine if the Kbb occupied habitat can be avoided. 
   *If the Kbb occupied habitat can be avoided, document your findings and decision logic. Take measures to assure the Kbb occupied habitat will be avoided, proceed with the project and stop here. If Kbb occupied habitat can not be avoided continue.*

e. If Kbb occupied habitat can not be avoided, determine if the impacts to Kbb occupied habitat will result in permanent take of short-term take (See IV. Definitions).

f. *If project would result in permanent take consult with the DNR and FWS as soon as possible to decide on the best alternative form of compensatory
mitigation, e.g. mitigation on site, an alternate site in same subpopulation, a recovery property, or an alternate type of mitigation i.e. cash compensation by acreage cost formula to be used for recovery purposes. Stop here until type of mitigation is decided.

g. If project would result in short-term take, determine if anticipated impacts are major or minor. (See IV. Definitions for major construction project and minor construction project).

h. If the project would result in short-term take with major impacts (also permanent take) the project is a major construction project. For major construction projects, such as new construction activities, significant construction associated with existing facilities or permanent take, HCP Partners are required to prepare and submit a Habitat Replacement Plan to the DNR and FWS for review and pre-approval prior to beginning any activities related to the project, which would result incidental take. Pre-approval by DNR and FWS is required for permanent take and major construction projects in order to assess the risk of the proposed action.

i. For minor construction projects, such as routine maintenance and repair of existing facilities e.g. ditch repairs, utility pole replacements, culvert replacements, pipeline repairs, sign replacements (see list in VI. Definitions below), pre-approval by DNR and FWS is not required.

IMPORTANT: For minor construction projects, HCP Partners must meet the requirements detailed in the Minor Construction Project Protocol.

**IMPORTANT -- Permit coverage for Temporary Work Space:** In order to receive incidental take authority under the permit for Temporary Work Space, whether it is for a major or minor construction project, it is not necessary to amend a partner’s Species and Habitat Conservation Agreement (Appendix A. Lands Included). For major construction projects, incidental take coverage for Temporary Work Space can be requested by inclusion in the Habitat Replacement Plan. For minor construction projects, a habitat replacement plan and pre-approval are still not required, but the DNR’s HCP Coordinator must be notified of temporary work space where project impacts would result in incidental take prior to any activities resulting in take. (Refer to the Habitat Replacement Plan Template for Major Construction Projects and the Habitat Restoration Protocol.)

**IV. Definitions**

**Kbb Occupied Habitat** – Kbb occupied habitat is defined as areas of wild lupine that support Karner blue butterflies.
Major Construction Project – Major construction projects are those activities that will impact greater than 1/3 of the lupine in one Kbb occupied lupine area that is separated from other lupine areas by greater than 500 meters (a different subpopulation), and involve disturbance of occupied lupine that will be replaced or restored within five years (short-term take), OR projects that involve any amount of permanent take.

Minor Construction Project – Minor construction projects are those activities that will impact less than 1/3 of the lupine in one Kbb occupied lupine area that is separated from other lupine areas by greater than 500 meters (a different subpopulation). Projects that have been defined as minor include but are not limited to the following provided that the above criterion is met:

- Pipe/cable installation
- Repair of existing pipeline facilities
- Utility pole replacement or new pole installation
- Stump removal
- Fence and sign installation and repair
- Underground potholing for repair
- Culvert improvement or repair
- Ditch repairs
- Sign replacement
- Guardrail replacement

Permanent Take – is an impact to Karner blue butterfly occupied habitat, through land management or land use activities that does not allow for the restoration and reoccupation of the site for a minimum of five years.

Short-Term Take – is an impact to Karner blue butterfly occupied habitat, which results from land management or land use activities that cause habitat disturbance, which will be restored or replaced within five years of the disturbance. Short term take is conducted following approved conservation measures in the HCP in a manner to avoid and/or minimize harm to the Kbb (e.g. through appropriate timing of activities selective routing and siting of projects, etc.) and maintain, enhance, and/or restore Kbb habitat.

Temporary Work Space -- Temporary work spaces are rarely used, short term easements to accommodate the need for additional space during the duration of a construction project, most commonly utility or road construction. Partners such as utilities managers and WDOT seek short-term easements from adjacent landowners to be used as staging or work areas to unload and stage construction project materials and equipment, and sometimes for extra work space (elbow room).

V. Reference Documents

Construction Management Flow Chart
Habitat Replacement Plan Template for Major Construction Projects

Habitat Restoration Protocol

Karner Blue Butterfly Egg Salvage Protocol

Minor Construction Project Protocol
Construction Management Guideline

Conduct level 1 and level 2 (presence/absence) surveys

Are Kbb's Present?

- Not sure
  - Proceed with activity. No further restrictions required.

- Yes
  - Can you avoid Impacts to Kbb Habitat area?
    - Yes
      - * Document decision and actions.
      - * Assure avoidance measures.
      - * Proceed with activity.
      - * No further restrictions required.
    - No
      - Will potential impacts result in permanent or short-term take? (See Guideline for definitions)

Short-term Incidental Take

Permanent Take

Will project have minor or major impacts?

- Minor Project
  - Pre-approval is not required. Follow Minor Construction Project Protocol
    - Minor Construction Project Protocol

- Major Project
  - Consult with HCP Coordinator ASAP. Pre-approval is required.
    - Consult with HCP Replacement Plan Template & Instructions
      - Habitat Restoration Protocol
      - KBB Egg Salvage Protocol
      - Activity details must be recorded and submitted on the annual report
      - * Assure avoidance measures.
      - * Proceed with activity.
      - * No further restrictions required.
    - Habitat restoration on a recovery property
    - Habitat restoration on partner land
    - Mitigation other than habitat restoration
      - Coordinate with FWS and state or federal recovery program staff
      - Habitat Replacement Plan Template & Instructions
        - Habitat Restoration Protocol
        - KBB Egg Salvage Protocol

* Document decision and actions.
* Assure avoidance measures.
* Proceed with activity.
* No further restrictions required.
I. Scope and Applicability

Corridor management activities will be conducted with consideration of the Karner blue butterfly (Kbb) and in a manner that will allow for continued beneficial disturbance management within the High Potential Range of the Kbb.

This guideline is applicable to all corridor management activities that may occur within the High Potential Range of the Kbb. Corridor management activities include routine, planned, and maintenance activities that may occur on utility rights-of-way, roadsides, logging roads, recreation trails and other linear features.

This guideline does not apply to construction activities, emergency situations, forestry management practices, and recreational management or conservation management practices.

II. General Requirements

a. Pre-management surveys will be conducted prior to conducting management activities unless specifically detailed in a management protocol, emergency situations or in a specific conservation agreement (DNR’s Implementing Agreement (IA) or other partner’s Species and Habitat Conservation Agreement (SHCA)).

b. Kbb and Kbb habitat surveys will be conducted following approved HCP monitoring guidelines and protocols.

c. When Kbb are present, conservation measures described in approved HCP management guidelines and protocols will be followed.

d. In addition, partners are required to follow any specific provisions in their conservation agreements (SHCAs or IA).

III. Specific Activities

See Corridor Management flow chart for process depiction

a. If burning activities are to be used for corridor management the Burning Protocol will be implemented.

b. If mowing, brushing, or hand cutting, is to be used, the Mowing and Brushing Protocol will be implemented.

c. If cable plowing will be used the Cable Plowing Protocol will be implemented.

d. If pesticides are to be applied for corridor management, the Pesticide Protocol will be implemented.
e. If plowing snow on corridors the Snow Plowing Protocol will be implemented.
f. If doing recreation trail or woods trail maintenance including grading, bulldozing, ditching, widening, re-routing of trails, etc., refer to Construction Management Guideline.
g. For facility and equipment inspections the following is applicable:
   i. All lupine areas will be avoided to the greatest extent practicable.
   ii. Pre-management surveys are not required.
h. For routine maintenance and construction activities that would result in short term take of occupied Kbb habitat that would temporarily remove all vegetation, but will be replaced within 5 years, follow the Construction Management Guideline.
i. For construction or other activities that result in permanent take of occupied Kbb habitat, consult with DNR’s HCP Coordinator as soon as possible to determine appropriate course of action.

IV. Referenced Documents


Corridor Management Flow Chart

Corridor Management Guideline

Construction Management Guideline

Construction

What type of activity will you be conducting?

Management and Maintenance

Conduct level 1 and level 2 (presence/absence) survey

Are Kbb Present?

Not Sure?

Proceed with activity, no further restrictions

Yes

What type of Activity are you planning?

Mowing or Vegetation Management

Cable Plowing

Pesticide Application

Snow Plowing

Habitat Restoration

Mowing and Brushing Protocol

Cable Plowing Protocol

Pesticide Use Protocol

Snow Plowing Protocol

Restoration Protocol

Key

Document

Decision

Activity

See on-line version for current revision - 3 -

dnr.wi.gov/topic/endangeredresources/karner
I. Scope and Applicability

Recreation management activities will be conducted with consideration for the Karner blue butterfly (Kbb) and in a manner that will allow for continued beneficial disturbance management within the High Probability Range of the Kbb.

This guideline is applicable to all recreation management activities that may occur within the high probability range of the Kbb. Recreation management activities include routine, planned, and maintenance activities that may occur on State Parks, Forests, Wildlife and Fishery Areas or other properties maintained for recreational purposes.

This guideline does not apply to construction activities, emergency situations, forestry management practices, and conservation management or corridor management practices. These activities are addressed as separate guidelines, each with protocols that are specific to them.

II. General Recommendations/Requirements

a. Avoid conducting activities in lupine areas within the high probability range known to be occupied by Kbb’s or areas where the presence of KBB is unknown.

b. Pre-management surveys will be conducted prior to conducting conservation management activities unless specifically detailed in a Management Protocol, emergency situations or in a specific Species and Habitat Conservation Agreement.

c. Post-management surveys for lupine and Kbb presence/absence will be conducted. For survey methodology and requirements see KBB Survey Protocol.

d. Compensatory mitigation is not required for conservation management activities. See the Mitigation Protocol for more information.

III. Specific Activities

See Recreation Management flow chart for process depiction

a. If burning activities are to be used for conservation management the Burning Protocol will be implemented.

b. If mowing, brushing, or hand cutting, is to be used, the Mowing and Brushing Protocol will be implemented.
c. If pesticides are to be applied for corridor management, the Pesticide Protocol will be implemented.

d. If chemicals are to be used, either as a site preparation or release measure for desirable woody vegetation, see the Pesticide Protocol for proper implementation.

e. For routine maintenance activities that may involve short-term or temporary-take, consult with DNR to determine appropriate actions.

IV. Referenced Documents


Recreation Management Flow Chart

Recreation Management Guideline

Construction Management Guideline

What type of activity will you be conducting?

Management and Maintenance

Are Kbb Present?

Not Sure?

Yes

No

Proceed with activity, no further restrictions

Conduct level 1 and level 2 (presence/Absence) survey

What type of Activity are you planning?

Mowing or Vegetation Management

Prescribed Burning

Pesticide Application

Snow Plowing

Habitat Restoration

Mowing and Brushing Protocol

Prescribed Burn Protocol

Pesticide Use Protocol

Snow Plowing Protocol

Restoration Protocol

Key

Document

Decision

Activity

See on-line version for current revision

dnr.wi.gov/topic/endangeredresources/Karner

-3-
I. Scope and Applicability

Limited partner activities will be conducted with consideration of the Karner blue butterfly (Kbb) and in a manner that will allow for continued beneficial disturbance management within the High Potential Range of the Kbb.

This guideline is applicable to all Limited Partner activities that may occur within the High Potential Range of the Kbb. Limited Partner activities include routine, planned, emergency and maintenance activities that may occur on partner lands, easements, or public rights-of-way.

This guideline does not apply to forestry management practices, recreational management or conservation management practices.

II. General Recommendations/Requirements

a. Pre-management Lupine surveys will be conducted prior to management activities unless specifically detailed in a Management Protocol, emergency situations or in a specific Species and Habitat Conservation Agreement.

b. In those areas where Lupine is identified, these lupine areas will be treated as if they are occupied, unless approved presence/absence surveys are conducted. In these areas specific management protocols will be implemented. See section III for these protocols.

c. Post-Management Surveys are not required for limited partners.

d. Limited partners will maintain records of the surveys conducted and management actions taken. These activities will be summarized on the annual report form.

e. Compensatory mitigation is not required for corridor maintenance activities. Compensatory mitigation may be required for some construction activities. See the Mitigation Protocol for more information.
III. Specific Activities

See Limited Partner Guideline flow chart for process depiction

a. If burning activities are to be used for corridor management the Burning Protocol will be implemented.

b. If mowing, brushing, or hand cutting, is to be used, the Mowing and Brushing Protocol will be implemented.

c. If cable plowing will be implemented the Cable Plowing Protocol will be implemented.

d. If pesticides are to be applied for corridor management, the Pesticide Protocol will be implemented.

e. If plowing snow on corridors the Snow Plowing Protocol will be implemented.

f. For facility and equipment inspections the following is applicable:
   i. All lupine areas will be avoided to the greatest extent practicable.
   ii. Pre-management surveys are not required.

g. For other activities that involve short-term take consult with DNR to determine appropriate actions.

IV. Referenced Documents


Limited Partner Flow

Limited Partner Guideline

Construction Management Guideline

What type of activity will you be conducting?

Is Lupine present?

Not Sure?

Yes

What type of Activity are you planning?

Mowing or Vegetation Management

Pesticide Application

Snow Plowing

Habitat Restoration

Mowing and Brushing Protocol

Pesticide Use Protocol

Snow Plowing Protocol

Restoration Protocol

Key

Document

Decision

Activity

See on-line version for current revision -3-  
dnr.wi.gov/topic/endangeredresources/karner/access
IV. Protocols, Management
I. Purpose and Applicability

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

Note: Cable plowing activities on private residential and business property is exempt from this protocol. (See additional discussion in part III below.)

II. Conservation Measures

a. Avoid Take

i. Lupine areas that are known to be occupied by Kbb, or in areas where the presence of the Kbb is likely to occur (e.g., in lupine patches near occupied habitat) will be avoided to the greatest extent practicable (In the event that complete avoidance is not possible or practicable, refer to b.ii below).

b. Minimize Take

i. Pre-management surveys for lupine and Kbb presence or absence will be done on pre-planned cable plowing sites whenever practicable.

ii. Cable plowing will be done so that the minimum amount of occupied habitat is impacted by the tractor or plow. Measures that can be taken to minimize and avoid harm include clearly marking the boundaries of lupine areas with flagging or other means, avoiding the more dense lupine areas with the cable plow, and operating and parking transport vehicles and equipment in areas that do not support lupine.

iii. If pre-management surveys were not able to be conducted, post-management surveys for lupine and Kbb presence/absence will be conducted no later than the following flight season.

c. Emergency

i. In emergency situations lupine areas will be avoided to the greatest extent practicable.

ii. Post-management surveys for lupine and Kbb presence/absence will be conducted no later than the following flight season.
III. Definitions/Background

a. Cable Plowing
Cable plows are commonly used by electrical utilities for installing underground electrical distribution cables along rights-of-way and to homes and businesses between transformers and electrical meters.

b. Note on Applicability:

i. If initiated by the HCP partner: When a HCP partner is installing cable on a project they initiate, e.g., cable replacement projects, or new installations, the partner will implement the conservation measures noted above.

ii. If requested by a private landowner in the HCP’s voluntary category: Residential and business underground cable installations occur almost exclusively on privately owned land and are installed under a contractual arrangement with the utility. When a HCP partner is installing underground cable under contract with (and at the request of) a private landowner who meets the criteria to be included in the “voluntary participation category” and is therefore exempt from these requirements, then the partner is not required to apply these guidelines. It is still recommended that avoidance or measures to minimize impacts are taken when lupine habitat is known or site is suspected to be occupied by KBB. The HCP partner can consider this as an opportunity to extend outreach and educate the landowner. (Refer to HCP Chapter 2.F. to determine if a private landowner is in the “voluntary category”. If at all unsure, contact the HCP Coordinator).

iii. If requested by a private landowner in the HCP’s regulated category: For all other non-voluntary (regulated) landowners, i.e. residential and commercial developers requesting installation, the landowner or developer is responsible to consult with the U.S. Fish and Wildlife Service if any of their project development activities (e.g., roads, buildings, electrical service, etc.) could result in the take of the Kbb. To the extent practicable, the HCP partner will advise the contracting private landowner (developer) as early as possible in the planning phase whether their project site supports (if known), or has a likelihood to support Kbb. The HCP partner may further advise the developer that if project activities could result in take of the butterflies that the U.S. Fish and Wildlife Service should be consulted. Projects that may result in take of the Kbb shall not
c. Recommendations & Suggestions When Approaching Developers and Other Regulated Entities:

When advising developers of their potential to take Kbb’s, use whatever tools and data that are available and reasonably reflect the potential for Kbb presence and that will appropriately caution the developer of their risk of unauthorized take. Possible tools could be: (a) surveys at nearby sites, (b) observed presence of wild lupine on or near the cable insertion site, (c) the KBB Probability Model, (d) your suspicions based on Kbb ecology, i.e. dispersal distance from other known sites (Kbb’s are known to disperse about 2 miles over open landscapes), etc.

Be mindful that as an HCP partner you do not speak on behalf of the FWS or with any regulatory authority, in fact or implied. Advise your client/customer (e.g. the developer) in the spirit of sound and responsible business practices and customer concern, while demonstrating your own company’s concern for the welfare of the Karner blue butterfly and for “doing the right thing”. If appropriate, suggest that the developer contact the USFWS-Green Bay Field Office for permitting options and information or the DNR’s HCP Coordinator for additional HCP information.

IV. Referenced Documents

(reserved)
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 may be done during the dormant season in early spring when new lupine plants are just beginning to emerge or in late summer when the second flight is over.

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.

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. Eggs may be collected at the refugia site the following year or later to support Karner recolonization of the project area.

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.

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


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

   Robert Hess, WDNR, Karner blue Recovery Coordinator, pers. comm., 2014

   Ralph Grundel, USGS, pers. comm., 2014

   Kathleen O’Brien, New York Department of Environmental Conservation, pers. comm., 2014
I. Purpose and Applicability

This Habitat Replacement Plan (Plan) Template is for use by HCP partners implementing a major construction, repair, or maintenance project that will result in short-term take or permanent take of Karner blues. HCP partners will use this template to develop a project specific habitat replacement plan. The following instructions will provide guidance for using this template.

Note: This guideline only applies to HCP Partners. Those entities not enrolled as a Partner in the Wisconsin Statewide KBB Habitat Conservation Plan (HCP) need to contact the U.S. Fish and Wildlife Service (920) 866-1717 to determine permit needs prior to conducting any activities in occupied Kbb habitat.

II. Project Description and Impact Assessment

1) Project Location and Description

Important -- To receive permit coverage for Temporary Work Space include description in this section and on associated maps.

a) Project name – The project name should be a unique identifier. The project name will be included in future annual reports, monitoring forms and other records associated with the project.

b) Address/location – The address should be the street address or fire number of the project location, if the project location is not associated with an address, specific description of the location should be provided (e.g. ½ mile southwest of the intersection of 5th Ave. and Co. Hwy BB).

c) County, Town-Range-Section – The county, township, range and section of the project location.

d) Project Description and Purpose – This section includes a brief description and map of the project area. The description should include the purpose of the project, expected outcome and the process by which the project activities will be implemented.
2) Project Impacts
   a) Is the project area occupied by Karner blue butterflies? Provide a summary of Level 1 (lupine) surveys, and Kbb Level 2 survey results (see A Guide to Monitoring for the WI KBB HCP for current protocol). Provide dates and results of surveys conducted within the five years prior to the project.

   b) Describe all Kbb occupied habitat in the project area. Kbb occupied habitat should include occupied lupine areas (natal area): all lupine plants within 500 meters of each other, and the intervening habitat including nectar plants. The description should include general site characteristics such as soils, canopy cover, land use, and other characteristics that may apply. Lupine density should be measured as described in the Level 1 Survey Form, and the dominant first and second fight nectar plants should also be listed by abundance, as well as invasive nuisance plants, and other dominant plant species.

   c) Next, assess if sufficient nectar plants exist within the Kbb occupied lupine areas. If nectar (either 1st or 2nd brood nectar) is absent or sparse, then determine the total habitat area (see IV. Definitions) needed by the Kbb subpopulation by extending the occupied habitat by 200 meters out from the perimeter of the lupine area. If nectar plants are present within 200 meters, then add it to the measurable potential impact area to be included when calculating the amount of acres to be mitigated (Note: Consider avoidance of extended nectar areas in calculating impact.).

   d) What is the percentage of the Kbb subpopulation’s total habitat (lupine) to be impacted in relationship to the total size of the occupied lupine/nectar habitat? NOTE: Include extended nectar areas in calculation where applicable. The total area of Kbb occupied lupine to be impacted should be documented in acres. If possible, describe the total amount of lupine in and near the project site, and the area of lupine to be impacted. For example if the lupine is locally abundant within a contiguous 10 acre site and 1 acre will be impacted by the project report that 10% of the total lupine area will be impacted. If the total lupine area is not available for survey, e.g. additional contiguous habitat exists on the farm land adjacent to the ROW, report that the lupine area extends beyond the impact area, but estimates are not available for quantification.

III. Mitigation Planning
  1) Project Alternatives
     a) Project Alternatives – This section should provide an analysis of the alternatives considered for the project including those not selected and why not, and the proposed alternative. Describe why the proposed alternative is the best course of action to achieve the project objectives while minimizing impact to the Karner blue to the greatest extent practicable.

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2) Avoidance and Minimization
   a) Describe how project activities will be completed in a manner that will avoid or minimize impacts to the Karner blue – Describe how avoidance and minimization techniques will be implemented where feasible. Such measures as avoidance of unnecessary operation of equipment in areas supporting lupine (or dense areas of nectar plants) should be included in this description. Goals to strive for are to avoid impacting more than 1/3 of the lupine and to minimize disrupting dispersal of Kbbs between lupine areas. This section should provide enough detail to show that all appropriate and available avoidance and minimization techniques have been considered and implemented to the greatest extent practicable.

   b) Kbb egg salvage may be a required or recommended mitigation measure to minimize take and promote recolonization of the restored site if project impact is to a high quality site in a Biological Recovery Zone (BRZ), take is greater 1/3 of the occupied habitat in a given subpopulation, or is permanent take. If included in the Plan, follow the currently approved KBB Egg Salvage Protocol.

3) Habitat Replacement
   Note: Habitat replacement will be completed in accordance with the current approved KBB HCP Habitat Restoration Protocol.
   a) Define the habitat replacement area or an alternative mitigation – The area of land, in acres, that will be restored upon completion of the project.
      • For short-term take, this area should equal or exceed the amount of impacted occupied lupine habitat listed in 2.b. A minimum of 1:1 replacement ratio is required. A greater than 1:1 replacement ratio is recommended to offset Karner blue losses that may occur while the replacement habitat is becoming established. If the area to be replaced is under risk of loss due to landowner activities (e.g., agriculture activities or grazing), or the replacement habitat is likely to be threatened by invasive nuisance plants that are difficult to control, alternative mitigation measures or locations may be proposed.
      • For permanent take, the habitat replacement area should be at least 3 times the area taken. A minimum of 3:1 replacement ratio is required. A greater than the 3:1 ratio is recommended to offset the permanent loss of part or all of an established population.

   b) Define schedule – Describe the general schedule of project and habitat replacement activities. It is recognized that schedules shift throughout the planning and implementation of the project. Any changes in schedule should be documented, the previous schedule updated, and the DNR notified. To the extent that a change in schedule affects any avoidance and minimization techniques, the plan should be updated accordingly. In addition to the original
plan, these updates should be included as an amendment to the document with dates showing when edits and changes were made.

IV. Monitoring

1) Monitoring Requirements

a) **Required measures of success for this project** – The *measures of success* for a habitat replacement plan will be specific to each project. The measures of success will describe the criteria and conditions that need to be met for the habitat restoration to be successful upon completion of the project.

The measures of success will depend on a variety of criteria, including location of the project relative to other known Karner blue populations, proximity of project to a Biological Recovery Zone (BRZ), surrounding land use and dispersal opportunities and the relative quality of the site. The Partner should propose measures of success that are specific to the project. The final measures of success for a project will be agreed upon by the Partner, the DNR and the FWS.

Recommended *measures of success* include:

- At least three first and three second flight nectar plant species will be present, and the combined total of nectar plants should commonly occur at each habitat replacement site.
- Lupine should be well established and commonly occur at each habitat replacement site.
- Kbb presence in previously unoccupied habitat where plan anticipates Kbb dispersal.

b) **Describe monitoring that will be completed** – The Partner should describe how this requirement will be met and the surveys that will be conducted. The minimum monitoring required is lupine and Karner presence/absence surveys for up to five years following construction project completion or until the agreed upon measures of success have been achieved. (Level 1: Lupine Presence/Absence Monitoring and Level 2: KBB Presence/Absence Monitoring -- *refer to A Guide to Monitoring for the WI KBB HCP for current protocol*. Refer to Appendix A of this documents for the *Post-restoration Tracking Report Instructions*).

Record the percentage of the replacement site that is vegetated and whether or not lupine and the seeded nectar plants are established throughout the habitat restoration area. Indicate the qualitative abundance of lupine and combined nectar species on each site (e.g., sparse, common, abundant), as well as the number and species of nectar plants present in both the first and second flight periods. If the seeding is not successful within two full growing seasons, e.g. there are large gaps in the vegetation, lupine has not established well, or there are not three first and three second flight nectar species present, implement remedial actions.
If nuisance plants have invaded the replacement site to the point that the measures of success cannot be achieved, document the invasive species and describe the situation. Evaluate and consider what measures to control them if any are feasible and will lead to achieving the measures of success (contact the DNR for advice on nuisance plant control). Take photos annually from fixed photo points of representative sites during the first and second flight periods and include them in your report to document the status of your habitat replacement plan.

c) **Describe any additional remedial actions taken** - This section should describe remedial actions taken on habitat replacement sites where the measures of success criteria are not being met. Examples of remedial actions include reseeding, treatment to remove encroaching vegetation or invasive species or other actions appropriate to meet the measures of success.

d) **Date restoration considered complete** – This section provides documentation of when the habitat restoration is considered complete and the project can be closed out with respect to these HCP requirements. After this point, the area returns to routine HCP management with consideration for Karner blues. This section should list the appropriate survey form or other supporting documentation that will be attached to this plan, which demonstrates that the measures of success have been met. The successful completion of the restoration activity will result in no further monitoring being required related to this project. Records of the project and associated activities must be maintained as described in section V. (below) of this protocol.

V. **Recordkeeping and Reporting**

1) **Records** – This section describes the records that must be maintained for this project. These records should be specific where prescribed (e.g. Level 1/Level 2 survey forms and Post-restoration Tracking Report Instructions). For other records, it is up to the Partner to determine the form of documentation that will be maintained. At a minimum this documentation must include all items listed in the Plan, and also be a complete record of the project. The purpose of these records is for use during audits to determine if the project was completed in conformance with the HCP requirements.

More specifically, the following records should be maintained for this project for the life of the USFWS Incidental Take Permit #TE010064-x:

- The Habitat Replacement Plan and subsequent amendments
- Pre-project Level 1 and Level 2 Survey Forms
- Map(s) with location of project area
- Documentation of conformance with this Habitat Replacement Plan. This could include photographs of avoidance and minimization techniques, inspection forms, pictures of the replacement habitat from representative...
photo points taken annually during the required monitoring period, or other method as appropriate to the project.

- Monitoring records for all subsequent years of post-project monitoring.

2) **Annual Reports** – Annual reports are required during and following construction and habitat restoration and in subsequent years for up to five consecutive years once restoration activities have begun or until the measures of success have been achieved. The first annual report submitted after the project begins should report the construction project activities and if restoration has begun, include restoration activities and any planned restoration activities. In the second year the annual report should include any restoration action take at the project site and the results of post-restoration monitoring. Continue monitoring and any necessary remedial action for up to five years or until the replacement site meets the measures of success. When the measures of success have been achieved, provide the documentation to support this, along with the statement that you have met your replacement habitat requirements and consider the habitat replacement plan complete and that therefore, no further activities will be conducted.

Submit a Plan report with your HCP annual report. Refer to *Post-Reclamation Tracking Report Instructions* and *Annual Report Form* for more complete, specific and current information requirements.

When you determine the measures of success have been achieved, include this finding in your annual report and request concurrence of the DNR. No further reports are required after this time unless otherwise agreed upon.

If the measures of success have not been achieved within 5 years after restoration has begun, consult with the HCP Coordinator.

VI. **Definitions**

**Compensatory Mitigation** is a required measure to compensate for the loss of Kbb habitat resulting from permanent take of that habitat. The minimum compensation is 3:1 (3 acres restored for each acre taken).

**Dispersal Distance (Kbb adults)**

- **200 meters:** When designing mitigation plans, if nectar plants are sparse within the occupied lupine site (subpopulation), the site boundary should be expanded by 200 meters. Several Kbb dispersal studies have found that Kbb movements within sites (subpopulations) are relatively low and short with nearly all movements less than 100 to 200 meters from their home lupine patch (KBB Recovery Plan, 2003, p. 25 and Appendix G, Table G1). Therefore for the purposes of these guidelines 200 meters will be used as a guide for site expansion to incorporate nectar plants.

- **500 meters:** When designing mitigation plans, Kbb sites (subpopulations) that are

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greater than 500 meters apart should be considered as separate Kbb sites or subpopulations. Dispersal of Kbb between sites (subpopulations) varies depending on the nature of the habitat, especially canopy cover between habitat sites. For the purposes of these guidelines, 500 meters will be used as the separation distance between Kbb subpopulations (sites). This is based on a study by Fuller (1998) who found that Kbb on a power line corridor (mostly open corridor with scattered clumps of shrubs) rarely dispersed to habitat patches greater than 500 meters from their natal (home) lupine patch (KBB Recovery Plan, 2003, p. 27 and Appendix G, Table G1).

**Habitat Replacement** is a term unique to this HCP that describes a conservation measure employed by HCP Partners to restore habitat that is significantly damaged, destroyed or removed as a result of short term take related to a construction or maintenance project. Habitat replacement occurs on the same site and usually the same area as was impacted during a construction or maintenance project. The minimum replacement ratio is 1:1.

**Habitat Replacement Plan** describes the events or activities that caused (will cause) habitat loss, the Kbb and vegetation status, impacts or projected impacts, measures to avoid and minimize impacts, remediation measures to the impact area to restore the habitat and the monitoring to be performed to assess the success of the restoration (this definition applies to this *Habitat Replacement Plan Template For Major Construction Projects*).

**Habitat Restoration** is the act of implementing processes and protocols to replace habitat lost to natural succession, acts of nature or human activities by restoring the land to vegetation conditions suitable for Kbb occupation. Habitat restoration can be applied to mitigate a construction project (habitat replacement), compensate for permanent take (compensatory mitigation) or as a proactive measure to create Kbb habitat, i.e. as a recovery strategy (Refer to the KBB HCP Habitat Restoration Protocol).

**Habitat Restoration Site** is a specific site where the Kbb seed mix (containing lupine) is continuously applied to restore habitat.

**Major Construction Project** – Major construction projects are those short term take activities that will impact greater than 1/3 of the lupine in one occupied lupine area that is separated from other lupine areas by greater than 500 meters (a different subpopulation) that will be restored within 5 years, or permanent take activities that involve loss of occupied lupine habitat that will not be replaced or restored within five years.

**Minor Construction Project** – Minor construction projects are those activities that will impact less than 1/3 of the lupine in one occupied lupine area that is separated from other lupine areas by greater than 500 meters (a different subpopulation). Examples of

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projects that have been defined as minor include the following provided that the above criterion is met.

- Small diameter pipe line installation
- Repair of existing pipeline facilities
- Utility pole replacements
- Stump removal
- Fence and sign installation and repair
- Underground potholing for repair
- Culvert improvement or repair
- Ditch repairs
- Sign replacement
- Guard rail replacement

Natal area – The area of lupine where eggs are laid and subsequently hatched.

Occupied Habitat (Kbb) – Kbb occupied habitat is defined as areas of wild lupine that support Karner blue butterflies.

Occupied Habitat (Kbb) plus adjacent nectar (A.K.A. the total habitat area) - Occupied habitat is the lupine area supporting Kbb, but the total habitat area utilized by Kbb may include adjacent nectar areas when nectar within the lupine area is insufficient. This “total habitat” area includes Kbb occupied lupine (natal area), all lupine plants within 500 meters of each other, and the intervening habitat including nectar plants. If nectar plants are sparse or missing within the lupine area, then include nectar areas adjacent to and within 200 meters of the lupine area.

Permanent Take – is an impact to the Karner blue butterfly habitat, through land management or land use activities that does not allow for the restoration and reoccupation of the site for a minimum of five years.

Short-Term Take – is an impact to occupied Karner blue butterfly habitat, which results from land management or land use activities that cause habitat disturbance, which will be restored or replaced within five years of the disturbance. Short term take is conducted following approved conservation measures in the HCP in a manner to avoid and/or minimize harm to the Kbb (e.g. through appropriate timing of activities selective routing and siting of projects, etc.) and maintain, enhance, and/or restore Kbb habitat.

Temporary Work Space -- Temporary work spaces are rarely used, short term easements to accommodate the need for additional space during the duration of a construction project, most commonly utility or road construction. Partners such as utilities managers and WDOT seek short-term easements from adjacent landowners to be used as staging or work areas to unload and stage construction project materials and equipment, and sometimes for extra work space (elbow room).
VII. Reference Documents

KBB Egg Salvage Protocol
KBB HCP Habitat Restoration Protocol
Biological Recovery Zone (BRZ) maps
Post-Reclamation Tracking Report Instructions
HCP Annual Report Form
A Guide to Conducting Monitoring for the Wisconsin Karner Blue Butterfly Habitat Conservation Plan

VIII. Appendix A – Post-Reclamation Tracking Report Instructions

The purpose of this report is to document the status of your restoration project. In a narrative and table form, report on the progress of all components and commitments in your Habitat Replacement Plan (Plan).

If restoration of all acres is not completed, describe the reasons why it is not completed and state when the remaining acres will be completed. Also state whether the amount and location of restoration is consistent with your Plan. If adjustments were a positive change or increase in acres, describe the changes and reasons. If the deviations from the Plan resulted in a shortfall, describe the reasons for the adjustments and what will be done to compensate, if anything.

The following information should be included in your report:

1) Location of restoration site(s) and the date restoration was completed:
   • include map showing location of restoration site(s)

2) Status of vegetative cover – Include the following information:
   • Percent of restoration area vegetated, percent unvegetated and percent dominated by nuisance plants
   • Percent of vegetated areas that support lupine and nectar plants
   • Density of lupine and nectar plants (qualitative estimate e.g. scarce, common, abundant)

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• The number of 1st and 2nd flight nectar plant species established, and the names of the nectar plants

3) If remedial actions were taken, describe remediation e.g.:
   • Reseeded unvegetated areas (provide seed mix and location of areas reseeded and date of reseeding)
   • Describe control of nuisance plants, which pose a threat to Kbb habitat; describe control measures, e.g. removed by hand pulling, mowing, herbiciding (provide date(s) of treatment)

4) If remedial action has not been taken, but is necessary, describe remedial actions planned:
   • e.g., reseeding or control of nuisance plants (see above); (provide projected date(s) of planned remediation)

5) Attach post-restoration surveys as defined in your Plan and any additional surveys (if applicable) that may be required or requested by the DNR and the FWS during the approval of and included in your Plan.

6) Photo documentation of restored sites should be done to help document success of your Plan. Include photos taken at fixed photo points of representative sites during both first and second flights. Take photos annually until restoration is successful. Submit photos (identified with location and date of photo) with this report.

Submit this report and all applicable surveys and photos with your annual report.
Revision 03: Included Appendices A & B (previously separate document).

I. Purpose and Applicability

This protocol is intended for barrens restorations or prairie plantings within the high potential range of the Karner blue butterfly (Kbb) (*Lycaeides melissa samuelis*). It is also intended for the replacement of occupied Kbb habitat that is destroyed as a result of corridor management or other development projects being implemented by parties regulated under terms the HCP. This protocol is meant for use on public or private lands with the potential to support the Karner blue butterfly.

This document and other associated documents mentioned below are available on the Karner Blue Butterfly website. If a document is not listed on the website, contact the Karner Blue HCP Coordinator at (608) 261-6451 for assistance.

II. Conservation Measures

a. Avoid Take

   i. Lupine areas that are known to be occupied by Kbb’s or lupine areas where the presence of Kbb’s are not known will be avoided to the greatest extent practicable (if applicable).

b. Minimize Take

   i. Pre-management surveys will be done on all restoration sites.
   ii. The restoration treatment area will be set up to minimize the amount of occupied habitat that is impacted by the treatment.
   iii. Slash and cut trees will not be piled on Kbb occupied lupine sites.
   iv. Restoration activities on private residential and non-regulated properties are exempt from this protocol.
   v. If Kbb is present or adjacent to the treatment site, post-management surveys are required to document cause/effect for HCP partners with “management to feature and enhance” commitments, OR as required in specific SHCA’s. Refer to the Monitoring Protocol for specific information.

III. Special Activities

1. For construction or maintenance and repair that results in short-term or permanent take of Kbb, refer to the Construction Guideline.

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2. For chemical treatments associated with restoration activities, refer to the Pesticide Use Protocol.

3. For prescribed burn treatments associated with restoration activities, refer to the Prescribed Burning Protocol

4. For mowing or brushing activities associated with restoration activities, refer to the Mowing and Brushing Protocol.

5. For mechanical soil disturbance treatments associated with restoration activities, refer to the Mechanical Site Preparation Protocol.

IV. Required Procedures

Seed Collecting and Purchased Seed

A. Permission is required to collect seeds on either public or private lands. Contact the Wisconsin DNR, Bureau of Endangered Resources, (608) 266-8916 for seed collecting guidelines and for permit information on Department of Natural Resources (DNR) owned lands. *Note: seed collecting on DNR lands by the general public is prohibited, but non-profit, government agencies, and schools can obtain seed collecting permits for DNR lands. A permit to collect on private lands must be secured in writing and be in possession at all times. If lupine seed or other material is collected from an occupied Karner blue butterfly site, trampling of lupine will be minimized and lupine plant material including seed pods will be checked for Karner blue butterfly eggs or larvae and other rare lupine obligates such as the frosted elfin butterfly (Incisalia irus). If present, these immature life stages will be left on site. Incidental take of Karner blue butterflies by HCP partners while seed collecting is covered under the incidental take permit issued for implementation of the Wisconsin Karner Blue Butterfly Statewide HCP and therefore no separate federal incidental take permit is required as long as the conservation measures noted above are followed. However, if seed collecting is done off partner lands, other authorizations or permits may be required. Contact the U.S. Fish and Wildlife Service's Green Bay Field Office (920-866-1717) for questions pertaining to federal permit requirements for seed collecting.

B. Never harvest more than 25% of available seed from lupine or other native species. Seeds from Threatened and Endangered species cannot be collected without a permit for Threatened and Endangered species. Please contact the Bureau of Endangered Resources, (608) 267-0281 for T/E permit information.

C. Seed mixes must contain at least one grass species and six forb species; three first flight nectar plants and three second flight nectar plants. Refer to Appendix A for sample seed mixes, and a detailed list of nectar plants and their flight period

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association(s). If you need assistance with planning or developing a seed mix, contact the Karner Blue HCP Coordinator at (608) 261-6451.

D. Native seed may be obtained from local nurseries, or the state seed program for “public” (government agencies or projects where DNR has an interest) projects. Local genotype seed is preferred; if possible do not plant seed obtained from an area more than 100 miles from the planting site. Purchased seed should be tested by the supplier and given a pure live seed (PLS) rating. Information on species availability, cost, and ordering from the state seed program may be obtained from the Bureau of Endangered Resources (608) 266-8916. Contact the Karner Blue Butterfly Program, (608) 261-6451 for a list of native plant nurseries and restoration consultants.

Types of Karner Blue Butterfly Habitat Restoration

Habitat Replacement

Habitat Replacement restorations are conducted in response to construction, maintenance, management and repair activities and are meant to replace habitat lost as a result of these activities. These restorations are designed to provide the basic components (nectar plant requirements) of suitable Kbb habitat; and are not necessarily intended to restore optimal quality barrens flora.

Feature and Enhance

In restorations intended to feature and enhance Kbb’s, the creation of quality barrens and prairie habitat should also be considered. Restorations of this type not only benefit Kbb’s, but also a broad range of associated barrens species. This type of restoration, like habitat replacement, is expected to meet basic nectar plant requirements for the Kbb. However, planting a diverse seed mix is strongly encouraged to provide as much benefit as possible to other barrens species.

V. Recommended Procedures

Site Preparation

Site preparation is easiest when the area to be planted has been cropped for several years. In the last year of cropping, soybeans should be planted since soybean fields have a light crop residue. This provides an ideal surface for either drilling or broadcast seeding. Fields planted in corn are more difficult to plant because corn residue is heavy, and deteriorates slowly. Plowing or disking is encouraged to incorporate corn stubble into the soil for more rapid deterioration.

Hayfields are more difficult to convert to barrens vegetation than row-crop fields. To do a successful conversion, hayfield sites should be row-cropped for three consecutive years with soybeans being the final crop. The combination of cultivation

See on-line version for current revision - 3 - https://dnr.wi.gov/topic/endangeredresources/karner
and herbicide application works best to eliminate weeds rather than applying either treatment alone.

If cropping is not an option, then one or two herbicide applications during the summer before planting can be effective. The first application should be made in May followed by the second application in July or August. Following herbiciding, no-till drills work best for planting through the heavy sod. Fall plantings on hayfields with poor site preparation are often unsuccessful.

If the planting site is an old field and contains a mix of native and non-native species, have the site inspected by a barrens expert to determine the appropriate course of action. Generally, the drier to soil type the easier it is to plant native vegetation without intensive site preparation.

If the planting site does not meet any of the above criteria, but has some type of herbaceous vegetative cover, two herbicide applications during the summer would be the most effective way to prepare the site (see above).

**Planting**

*Season*

The most effective planting time is during the fall from late September through October. Lupine seeds and those from many other native species germinate best if they are exposed to a cold, damp period (stratification). Fall planting also helps to incorporate seed into the soil as a result of the freeze-thaw cycles and helps reduce seed desiccation, especially on sandy soils. On sand, fall plantings are preferred over spring plantings since seedlings develop faster and develop deeper root systems before soil conditions dry out. Spring plantings work well for warm-season grass establishment and for a few forbs such as wild bergamot, and black-eyed susan. Many conservative forb (see definitions) species are difficult to establish in conjunction with spring plantings.

*Application*

There are many ways to apply seed mixes and all are acceptable. On small sites, seed can be spread by hand, or with hand operated bag spreaders. For larger scale restorations two common methods are typically used: broadcast seeding and seed drills. Broadcast seeding is more versatile and can be used in either spring or fall. Spring plantings using broadcast seeders require soil compaction (cultipacker) to establish good seed to soil contact. Most broadcast seeders can apply partially cleaned seed, can be transported in a pickup truck, and can be used during any season. The seeder can be calibrated to spread ~3-14 pounds of seed per acre and can plant about 25 acres a day. Bare ground (disked corn or harvested beans) is preferred, but is not essential for seed-to-soil contact when using broadcast seeders. Broadcast
seeders can be used to overseed lupine or any other species into previously planted prairie if minimal soil disturbance is desired.

Seed drills are not as versatile as broadcast seeders. Seed drills are generally used only for spring plantings. Fall plantings often result in poor seed germination, as seed is drilled too deep into the soil. No-till drills clog easily and require fully cleaned seed. No-till drills can be operated over any planting surface including corn stubble and (herbicided) cool season grass fields.

VI. Follow-up Management

Mowing

Typically, most mowing occurs during the first growing season. There are many types of mowing implements, some common types include: flail, sickle-bar, and rotary mowers. No matter what implement is used; deck height should be set to cut at no less than six inches. During the first growing season, plantings may need to be mowed up to three times throughout the growing season to prevent weedy species from establishing and preventing prairie seeds from getting firmly established. During the second growing season, plantings usually require no mowing, but may be mowed if it is determined that the prairie plants are not dense enough to compete against weedy vegetation. By the third growing season, plantings should be dense enough to be burned. If mowing/brushing activities are to be used for restoration activities the Brushing and Mowing Protocol will be used.

Burning

Restored prairies should normally not be burned until the end of the third growing season. The season in which burns are conducted and the fire return intervals (FRI) are largely a function of management objectives. Spring burns are more common because the burn season is longer and because spring burns are excellent for increasing seed production and for controlling cool season grasses. For early plantings, a typical FRI (Fire Return Interval) might be annually for the first several years. Once the prairie vegetation is well established then the FRI may be adjusted to a frequency that will maintain the integrity of the planting. If the planting is adjacent to lands where T/E (Threatened or Endangered) species might occur, restorations should be surveyed for the occurrence of any such species. If any T/E species are found, consult with the DNR’s Bureau of Endangered Resources for appropriate incidental take protocol information before conducting any additional burning. If burning is not a feasible option, then mowing (see above) may be substituted as an acceptable alternative. If burning activities are to be used for restoration activities the Prescribed Burn Protocol will be used.

Chemical Application

See on-line version for current revision - 5 - https://dnr.wi.gov/topic/endangeredresources/karner
Herbicides may be applied independently or in conjunction with mowing or burning to control unwanted vegetation. Small patches of invasive species and can be controlled with backpack sprayers using spot treatments. Large-scale infestations may require boom-spraying equipment. Small boom sprayers can be mounted on an ATV. If Kbb’s have been identified on site, please refer to the Karner Blue Butterfly Pesticide Use Protocol for more detailed guidance and information. This protocol can be obtained from the Wisconsin DNR, Division of Forestry, Karner Blue Butterfly Program (608) 261-6451. If pesticides are to be used for restoration activities the Pesticide Use Protocol will be used.

VII. Definitions/Background

Conservative Forbs: Prairie or barrens wildflowers that are indicative of high quality plant communities. These species are some of the first to disappear in the absence of natural processes, i.e., fire or heavy disturbances such as grazing or cultivating.

Mowing and Brushing: For the purpose of this protocol mowing and brushing includes the use of mowers, trimmers, choppers, and other mechanized equipment or hand tools to control woody vegetation, forbs and grasses as a vegetative maintenance practice.

Pesticide Application: For the purpose of this protocol pesticide application includes the use of any DATCP approved chemical used to control both woody and herbaceous vegetation as a vegetative maintenance practice. Pesticides can be applied with hand held sprayers, or boom sprayers mounted on any type of vehicle.

Broadcast Seeder: An implement for applying seed to the surface of a planting site. It consists of a hopper to hold the seed. Beneath the hopper is rotating disk. Seed is metered onto the rotating disk, which throws the seed in a circular pattern away from the device. Small broadcast seeders can be carried by a person and powered by a hand crank. Larger ones are normally mounted on the rear of an ATV, a tractor, or a pickup truck and are powered by electricity or by a power take-off shaft.

Seed Drill: A farm implement that is towed behind a tractor. It consists of one or more wide bins to hold seed. A metering system drops seeds into tubes that lead to paired sets of discs spaced closely together beneath the seed bins. The disks penetrate the soil and open a slit into which the seeds drop. The slit in the soil closes behind the disks covering the seed.

No-till Drill: A heavy duty seed drill that exerts downward force on the seeding disks, allowing penetration through sod, corn stubble, and other debris on the ground. These drills are normally used after herbicide applications to eliminate grasses and unwanted forbs from competing with the planting. Several makes of
no-till drills are modified to accept “fluffy” prairie and barrens seeds. Currently those makes are Truax, Tye, and certain models of Brillion no-till drills.

VIII. Reference Documents

Karner Blue Butterfly Habitat Conservation Plan, Chapter 2 and Appendix F
March, 2000

Wildlife Management Guidelines for the Karner Blue Butterfly (DNR) May, 2000
### Restoration Protocol - Appendix A: Seed Mixes for Kbb Habitat Restoration

#### Habitat Replacement seed mix

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>oz./acre</th>
<th>seeds/oz.</th>
<th>seeds/sqft</th>
<th>total oz.</th>
<th>% pop.</th>
<th>Flight Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forbs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><em>Anemone cylindrica</em></td>
<td>Thimbleweed</td>
<td>2</td>
<td>20938</td>
<td>0.96134</td>
<td>2</td>
<td>11.17</td>
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<tr>
<td><em>Euphorbia corollata</em></td>
<td>Flowering Spurge</td>
<td>2</td>
<td>10000</td>
<td>0.45914</td>
<td>2</td>
<td>5.34</td>
<td>1</td>
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<tr>
<td><em>Lupinus perennis</em></td>
<td>Wild Lupine</td>
<td>9</td>
<td>1000</td>
<td>0.20661</td>
<td>9</td>
<td>2.40</td>
<td>1</td>
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<tr>
<td><em>Zizia aurea</em></td>
<td>Golden Alexander's</td>
<td>4</td>
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<td>1</td>
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<td><strong>second flight</strong></td>
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<td><em>Amorpha canascens</em></td>
<td>Lead Plant</td>
<td>4</td>
<td>17000</td>
<td>1.56107</td>
<td>4</td>
<td>18.14</td>
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<tr>
<td><em>Liatris aspera</em></td>
<td>Rough Blazing Star</td>
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<td>13000</td>
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<td>6</td>
<td>20.81</td>
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<tr>
<td><em>Rudbeckia hirta</em></td>
<td>Black-Eyed Susan</td>
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<td>1</td>
<td>29.34</td>
<td>2</td>
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</table>

|             |             |          |           |            |     |       |               |
| 28.0        | 8.61        | 28       | 100.00    |             |     |       |               |
| lbs. =       |             | 1.8      |           |             |     |       |               |

<table>
<thead>
<tr>
<th><strong>Grasses</strong></th>
<th>lbs./acre</th>
<th>seeds/oz.</th>
<th>seeds/sqft</th>
<th>total lbs.</th>
<th>% pop.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8800</td>
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<td>2</td>
<td>100.00</td>
</tr>
<tr>
<td><em>Sorghastrum nutans</em></td>
<td>8516</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
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</tbody>
</table>

|             |          |           |            |           |        |        |               |
| 2           | 6.46      | 2         | 100        |           |        |        |               |
| total lbs.  | =         | 3.8       |            |           |        |        |               |

| **Other Suitable Species** |           |           |            |           |        |        |               |
|---------------------------|-----------|-----------|------------|-----------|--------|        |               |
| *Dalea purpurea*          | Purple Prairie Clover | 20000    | 0.00000    | 0         | 0.00   | 2      |
| *Comandra umbellata*      | Bastard Toadflax | 90000    | 0.00000    | 0         | 0.00   | 1      |
| *Oenothera biennis*       | Evening Primrose | 80000    | 0.00000    | 0         | 0.00   | 2      |
| *Tradescantia ohiensis*   | Spiderwort | 80000    | 0.00000    | 0         | 0.00   | 2      |
| *Lithospermum canescens*  | Hoary Puccoon | 0.00000  | 0.00000    | 0         | 0.00   | 1 & 2  |
| *Viola pedata*            | Birds Foot Violet | 25000    | 0.00000    | 0         | 0.00   | 1      |
# Feature and Enhance Seed Mix

**Acres to be planted:** 10

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>oz./acre</th>
<th>seeds/oz.</th>
<th>seeds/sqft</th>
<th>total oz.</th>
<th>% pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forbs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amorpha canescens</td>
<td>Lead Plant</td>
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<td>0.19513</td>
<td>5</td>
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<td>Anemone cylindrica</td>
<td>Thimbleweed</td>
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<td>0.34</td>
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<td>Lyre-Leaved Sandcress</td>
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<td>Arenaria serpyllifolia</td>
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<td>Asclepius verticillata</td>
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<td>0.04706</td>
<td>2</td>
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<td>Asclepius syriaca</td>
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<td>0.00000</td>
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<td>Asclepius tuberosa</td>
<td>Butterflyweed</td>
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<td>Aster o lentiangiensi</td>
<td>Sky-blue Aster</td>
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<td>Two Flowered Cynthia</td>
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<td>Species</td>
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<td>lbs/acre</td>
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<td>% pop.</td>
</tr>
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</table>
The pressure to allow seed collecting from prairies and other communities stems from the lack of other remnant areas with local genotypes where seed can be collected. This shortage leads many agencies, private landowners, natural landscapers, and nursery operators to give up the idea of native plant establishment or to import easily available, less expensive, but genetically inappropriate seed. The long-term solution to this problem is to have enough acres of restored areas of local ecotypes to allow those who wish to acquire seed to do so.

Seed collecting influences a natural community by removal of seeds and chaff and by physical disturbance of the site. The seed crop is part of the community and participates in a variety of roles. The notion of seed going to waste is a misconception that follows from disregard for the roles of seed in food chains, soil nutrient dynamics, seed banks, and other ecological processes. The effects of repeated seed harvest on, for example, associated organisms, soil seed banks, and the ability of the community to heal after natural or cultural disturbances is largely unknown.

Concern about potential adverse effects and the need to protect natural areas for the prime purposes of safeguarding biodiversity and its dynamics and providing for research and teaching are reflected in the recommendations that follow. At the same time, the recommendations address the important role genetic pools in natural areas can play in increasing biodiversity in Wisconsin.

1. Permitting Recommendations

Present law (NR 45.04) and (NR 45.13) prohibits the collection of plants and plant parts, including seeds, from Department land and State Natural Areas without a permit. This document is established to govern the issuing of permits by the Bureau of Endangered Resources.

Endangered and threatened species are protected by an additional permitting process (Permit for Endangered and Threatened Species.) In general, seed of such species can be collected only as part of a recovery effort.
a. Seed collecting will be by permit only.

b. Permits may be issued for restoration projects undertaken by a government agency or non-profit organization.

c. Commercial native plant nurseries and individuals may be permitted to harvest seeds for stock plants of known regional genetic source not otherwise available for seed and plant production purposes. These stock plants must be established in Wisconsin production beds and should be sold only for use within the plan’s genotypic region.

d. Permits may be issued to collect rare species for seed bank storage or a specific recovery program.

2. Permit Criteria: Staff Consideration.

a. Collecting will be permitted only where target species are known to be abundant.

   NOTE: Consideration should be given to the relative abundance of a given species and will take into account the production and average longevity of that species.

b. Never harvest more than 10 to 25 percent of available seed. This will depend on the species, its relative abundance, and the amount of seed normally produced by that species.

   NOTE: Consideration should also be given to the relative importance of seeds to the reproduction and average longevity of a given species. Limits on short-lived, non-vegetative spreading species should be much more conservative than those on long-lived, rhizomatous species.

c. Seeds from species on Wisconsin’s Endangered and Threatened Species List cannot be collected without a Permit for Endangered and Threatened Species. Requests to harvest species of special concern will be treated on a case-by-case basis.

d. After three to five (species dependent) years of collecting the same species, the permittee should collect from their restoration efforts and not from Department land.

3. Permit Criteria: Instructions to Harvesters
a. In requesting a permit the applicant must identify the purpose of the project, list the species and desired quantity by site, cite acreage to be planted, name those who will do the actual collecting, and describe the collection methods to be used.

b. Harvesters should collect from as many sites as possible within a given ecoregion to disperse the impact and get better genetic representation. An exception to this general guideline is the restoration of an area adjacent to an existing remnant. In this case all seed should be collected from the adjacent remnant.

c. Harvesters must check to be certain the seed is mature and should not collect immature seed.

d. Harvesters must disperse the collecting effort throughout the designated area.

e. Hand harvesting and hand tools, e.g., shears and box combs, are acceptable harvest methods. Larger mechanical devices are prohibited. Other tools will be evaluated on a case-by-case basis.

f. The permittee is required to submit a report detailing the amount of seed collected by species and a map showing where each species was collected within the area.

g. The permittee, except for nurseries, should allow collecting by others on their restorations where possible.
Seed Collecting on DNR Land
Application & Permit
Form 170CHE39 (R 11/06)


Applicant Information

Applicant Name

Company Name

Street Address

Telephone Number

Mail Address

Property Information

Name(s) of property and county where collection will take place and specific location(s) on that property.

Objectives.

collecting methods, if using any tools or equipment other than those allowed by law.

List species and amount of seed (lbs./oz.) to be collected from each area. Attach additional sheets if necessary.

Disposal and use of Permit

Beginning Date

Ending Date

Certification

I certify that the above information and attachments are accurate and complete to the best of my knowledge.

Applicant's Signature

Date Signed
Seed Collecting on DNR Land Application & Permit

CONDITIONS ON WHICH THIS PERMIT IS ISSUED

1. All collections shall be used for establishing nursery beds or for restorations by government agencies, nonprofit organizations, or schools.

2. Collecting shall be conducted in a way that preserves the area's features. In order to avoid attracting attention, all collecting must be done away from roads and trails unless specified otherwise in the permit. It may be necessary to limit the amount and species collected.

3. The permit holder must notify the land manager(s) before beginning permitted activities.

4. This permit does not apply to plant species protected or regulated by state or federal law. To collect protected or regulated plants or animals, you must obtain the appropriate permits from the Department of Natural Resources and/or the U.S. Fish and Wildlife Service.

5. The permit holder shall provide the Department with amounts of clean seed collected by March 1. Address: Native Plant Seed Program Coordinator, Bureau of Endangered Resources, Department of Natural Resources, 101 S. Webster, Madison, Wisconsin 53702.

6. The permit holder or others authorized by the permit must carry the approved permit while collecting seed.

7. The Department of Natural Resources is not responsible for the safety of personnel or their equipment while collecting seed.

8. The Administrator, Land Managing Agency, may terminate this permit upon the permit holder's breach of any or all the terms and conditions contained herein.

9. The permit holder must abide by the Guidelines for Collecting Seed on Department of Natural Resources Lands, attached.

Permission is granted for the applicant to collect seed on Department land according to the conditions specified on pages 1 and 2 and according to the following reservations: (include project duration)

APPROVED

Administrator, Land Managing Agency

Date
I. Scope and Applicability

The following protocol is intended to determine the viable presence or absence of wild lupine (*Lupinus perennis*), the only known host plant of the Karner blue butterfly (*Lycaeides melissa samuelis*) larvae on road rights-of-way managed by HCP Limited Partners’ on land included under the federal Incidental Take Permit TE 010064-5.

The following protocol is taken from the original issue from 02-25-2004, with only minor changes, which do not alter the survey methodology. The most up to date revision can always be found in the Habitat Conservation Plan User’s Guide on the DNR webpage (http://dnr.wi.gov/forestry/karner/hcp-userguide.htm).

**Purpose:** To find and map the location of wild lupine (*Lupinus perennis*) patches to identify the potential location of the Karner blue butterfly (*Lycaeides melissa samuelis*) in order to apply appropriate conservation measures.

**Forms:** There are no specific forms for this survey method; however the use of existing, current road maps is a most useful format for documenting lupine.

II. Protocol

**Where to Survey**
A site is eligible for sampling presence of habitat if it meets the following criteria:

1. The site is within the High Potential Range (HPR) of the Karner blue butterfly (see Karner Blue HPR map dnr.wi.gov/topic/endangeredresources/karner/access).

2. The site is on lands included by an HCP partner in their Species and Habitat Conservation Agreement.

**When to Survey**
It is recommended that surveys for wild lupine plants be conducted when the plants are flowering in your area (approximately May-June) as their distinctive flowers make them easy to identify at this time. When wild lupine is not flowering, surveys can be performed by looking for the plant’s distinctive foliage (leaves) and seedpods in areas that are not overgrown by trees and shrubs. The "green up" period for wild lupine is approximately mid-April through the end of July. Surveying for wild lupine is not recommended after July 31st.
How to Survey
At a reasonable speed to observe and identify wild lupine in the flowering or non-flowering phase (whichever applies), drive all roads under your management responsibility with a vehicle that has a mileage meter that measures miles in 1/10th mile increments. Drive more open and semi-shaded areas of your roadways more slowly or walk select portions that are likely to contain lupine to insure identification of wild lupine areas. This may be necessary when lupine is not in bloom. Lupine grows well in partially shaded roadside areas as well as open areas. Observe where you find lupine plants. Determine the beginning and endpoints of a lupine area by the mileage meter readings that correspond to points on the map.

Mapping of lupine patches
On a map, which clearly identifies roads you manage (and if possible, shows township, range and section lines), and shows sufficient distance scales, mark ROW areas containing wild lupine with a blue highlighter (marker) that corresponds to your observations above.

Alternate method
Use a Geographic Positioning System (GPS) unit to mark coordinates relating to the beginning and endpoints of ROW areas containing wild lupine. Transfer this information onto a map.

Wild lupine identification
Information and photographic cards (called "Wild Cards") that can help you identify wild lupine can be obtained free of charge from the Wisconsin DNR's Karner Blue HCP Coordinator by calling (608) 261-6451.

III. Definitions
- **High Potential Range**: The high potential range is the region of the state containing all documented occurrences of the Karner blue butterfly, and extending 5 miles beyond documented Kbb occurrences to include areas with similar habitat, soils, and climate where the Karner blue butterfly is most likely to occur based on the Kbb probability model developed in 2006-2007. (See Karner Blue HPR map [dnr.wi.gov/topic/endangeredresources/karner/access](http://dnr.wi.gov/topic/endangeredresources/karner/access)).

IV. Referenced Documents
I. Purpose and Applicability
This protocol is intended to avoid or minimize take of the Karner blue butterfly (Kbb) incidental to mechanical site preparation activities. This protocol applies to sites that are occupied by Kbb, and to lupine sites within the Kbb High Potential Range where Kbb presence is not known.

II. Conservation Measures
a. To Avoid Take
   i. Avoid conducting activities on lupine sites within the High Potential Range that are occupied by Kbb.
   ii. Avoid lupine sites where the presence of Kbb is unknown.

b. To Minimize Take
   i. Conduct Pre-management surveys.
   ii. Implement Site preparation activities so that equipment disturbs Kbb-occupied habitat to the minimum extent practicable.
   iii. If Kbb is present, establish scattered refugia to maintain the population. Include enough nectar plant areas to sustain the population until disturbed portions of the site can provide viable habitat.
   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. Specific Activities
a. When using chemicals for site preparation, refer to the Pesticide Use Protocol.

b. When combining chemical and mechanical site preparation practices, refer both to this protocol and to the Pesticide Use Protocol. Adjust the timing of the practice accordingly.

c. When using prescribed fire for site preparation, refer to the Prescribed Burning Protocol.

d. If not satisfied with habitat conditions after treatment, refer to the Restoration Protocol.

See on-line version for current revision - 1 -  dnr.wi.gov/topic/endangeredresources/karner
IV. Description and Levels of Disturbance

Mechanical site preparation prepares a designated area of land for artificial or natural regeneration by using hand tools or power tools and implements to alter vegetative competition, expose mineral soil, and reduce logging residue and other woody debris. The extent of disturbance on the site has more effect on Kbb habitat than the intensity of the disturbance (see definitions below). Low disturbance site preparation applications affect less than 30 percent of the site. Medium disturbance applications affect 30 to 70 percent of the site. High disturbance applications affect more than 70 percent of the site.

A. Low Disturbance Practices

Since a low percentage of the surface area is affected by these applications, the floristic composition of vegetation immediately following site preparation is expected to be very similar to that preceding the activity, although vegetative height and biomass may be reduced. Examples of equipment that produces low disturbance include the following:

- Scalping with hand tools (shovel or mattock)
- Roller chopper – single drum
- Brush disk – single disk, one pass
- Patch scarifier

B. Medium Disturbance Practices

With medium levels of disturbance the effects on vegetation for the site will be more pronounced. Up to 70 percent of the site may require vegetative recolonization, which may differ from the original vegetative composition. Less than 30 percent of the site is expected to maintain the original vegetative composition. Equipment used in medium disturbance practices includes the following:

- Disk trencher
- Root rake – stumps and slash only
- Furrowing Plow – with undisturbed space between furrows
- Disk – tandem disk, one pass
- Roller chopper – tandem drum, one pass
C. High Disturbance Practices

These practices involve extensive removal of surface vegetation over most (>70%) of the site, drastically changing the structure and composition of the vegetation. Early successional species are expected to revegetate the site, primarily from seed origin. Late successional species may be able to recolonize the site through sprouting if viable roots are still present in the soil. Equipment used in high disturbance practices includes the following:

- Furrowing Plow – berms of adjacent furrows touch or overlap
- Root rake – removal of stumps and roots over the entire site
- Roller chopper – tandem drum, multiple passes
- Disk – tandem disk – multiple passes
- Bulldozer – removal of stumps and brush with a straight blade.

VI. Reference Documents


I. Purpose and Applicability

This protocol is for use by Wisconsin Karner Blue Butterfly Habitat Conservation (HCP) Plan partners when conducting Minor construction projects as defined under the HCP Construction Guideline.

**Note:** This guideline only applies to HCP Partners. Those entities not enrolled as a Partner in the Wisconsin Statewide KBB Habitat Conservation Plan (HCP) need to contact the U.S. Fish and Wildlife Service (920) 866-1717 to determine permit needs prior to conducting any activities in occupied Kbb habitat.

Please provide the documentation as appropriate to show conformance to these requirements. This documentation will be determined by and specific to each partner and project. The documentation shall be retained by the partner for the duration of the permit.

II. Conservation Measures

**Minor Project Requirements:**

1. Determine the Presence/Absence of Kbb and the extent of Kbb occupied lupine.
   a. This determination must be made using the Level 1/Level 2 survey methodology. If Kbb are not present, there are no further requirements for minor projects. Retain surveys.

2. To the extent practicable, implement avoidance and then minimization techniques in Kbb occupied lupine habitat.
   a. Evaluate and document potential project alternatives considered that would avoid impacts to Kbb occupied lupine habitat, e.g. routing and staging area alternatives that avoid Kbb occupied habitat areas; alternative methods, i.e. tunneling instead of trenching.
   b. If impacts to the occupied lupine habitat cannot be avoided, evaluate and document measures that can be taken to minimize impacts to the occupied lupine habitat, e.g. minimize driving and parking equipment and staging materials on Kbb occupied lupine patches as much as is practicable.

3. Habitat restoration may not be necessary for many minor construction projects where the habitat area impacted is expected to regenerate naturally.
   a. If impacts to Kbb occupied lupine habitat are such that natural regeneration of lupine is not expected (e.g., topsoil has been removed and cannot be replaced, and/or the plants have been significantly disturbed), the partner should replace or restore the impacted lupine area. At a minimum, partners should seed the disturbed area with a seed mix consisting of lupine and at least three first and three second flight nectar plants. If the
partner chooses to restore the impact area to a higher quality habitat, refer to the Kbb Habitat Restoration Protocol for enhancement options and restoration advice.

b. For ditch repair projects where lupine and other species may not be appropriate to the goals of the project (e.g. soil stabilization) it is not required to include lupine in the seed mix. If Kbb habitat restoration is not chosen, document and retain the reasoning for your decision.

4. If the impact area is restored to Kbb habitat, the project area should be surveyed annually in the growing season(s) following planting to determine if habitat restoration/replacement is successful.
   a. If the habitat restoration/replacement is not successful, remedial actions should be taken such as reseeding areas that are devoid of vegetation or where some seeded species were unsuccessful. Continue to monitor and perform remedial work for up to 5 years or until the habitat is successfully restored, whichever comes first. If restoration is not successful within 5 years, document known or suspected reason(s).

5. Report the project progress, results and any associated monitoring on the annual report.
   a. Upon successful habitat replacement, post-project monitoring and reporting are no longer necessary.

6. The partner is required to submit a project report on annual report and to retain records related to the above requirements for the life of the permit.

III. Definitions

Kbb Occupied Habitat: Kbb occupied habitat is defined as areas of wild lupine that support Karner blue butterflies.

Minor Construction Project – Minor construction projects are those activities that will impact less than 1/3 of the lupine in one occupied lupine area that is separated from other lupine areas by greater than 500 meters (a separate subpopulation). Minor projects are anticipated to result in a small amount of area disturbed. Projects that have been defined as minor include but are not limited to the following provided that the above criterion is met:

- Pipe/cable installation
- Repair of existing pipeline facilities
- Utility pole replacement or new pole installation
- Stump removal
- Fence and sign installation and repair
- Underground pitholing for repair
- Culvert improvement or repair
- Ditch repairs
- Sign replacement
- Guardrail replacement
I. Purpose and Applicability

This protocol is intended to avoid and minimize take of the Karner blue butterfly (Kbb) that is incidental to mowing and brushing activities. This protocol applies to sites known to be occupied by Kbb, and to lupine sites within the KBB High Potential Range where Kbb presence or absence is unknown.

II. Conservation Measures

Mowing

a. To avoid take
   i. Do not mow in lupine areas that are known to be occupied by Kbb, or in lupine areas where the presence of Kbb is unknown. When mowing on extensive sites with scattered Kbb populations, avoid those lupine areas that are occupied by Kbb.
   ii. Mow in winter over frozen ground and snow cover at a blade height of at least 6 inches above ground unless the senesced herbaceous vegetation containing lupine is under the snow layer and only the target, woody vegetation protrudes above the snow. In this case mowing down to the snow level is acceptable.
   iii. Mow between September 1 and April 15 with a side-mounted sickle bar or rotary mower where the tractor is operated from the roadside or outside the occupied habitat.

b. To minimize take and promote Karner blue butterfly and habitat
   i. Mow lupine areas where Kbb occur only between September 1 and April 1 (required).
   ii. If practicable, avoid mowing until October 1 or the first hard frost to allow late-season flowering plants to set seed for reproduction. For added benefit to Kbb, apply this measure to nectar areas within 200 meters of the lupine area.
   iii. Do not mow lupine areas where Kbb occur more than once per year. (required)
   iv. Avoid mowing annually those lupine areas where Kbb occur unless safety considerations require it. Three to five years between mowing treatments is preferred.
   v. Set blade height at a minimum of 6 inches (8 inches is better) above the ground to minimize impacts to Kbb eggs. This mowing
practice reduces egg mortality and leaves the lower stems of lupine plants where eggs are laid at the site of new perennial lupine plant available for newly hatching larva. The blade height may be lowered to 4 inches if needed to simulate fire or grazing, or to reduce litter or thatch buildup.

vi. Let clipped vegetation lay where it falls when mowing in lupine areas where Kbb occur. The clippings may contain KBB eggs. (required)

vii. Use light-weight or low-ground pressure equipment when possible to minimize impact on vegetation and KBB eggs.

Tree and Brush Removal

c. To avoid take

i. Do not cut or mow brush and trees in lupine areas that are known to be occupied by KBB, or in lupine areas where Kbb presence is not known.

ii. When cutting brush and trees on extensive sites with scattered KBB populations, avoid those lupine sites that are occupied.

d. To minimize take and promote KBB habitat when doing tree and brush removal

i. From September 1 to April 15 (preferred operating period)

1. Restrict brushing with heavy equipment, e.g. brush hogs, flail choppers, and hydroaxes, etc. to this time period. (required)

2. To the greatest extent practicable, restrict brushing with heavy equipment, e.g. brush hogs to the winter when the ground is frozen and/or covered with snow (preferably at least 3-4 inches) to decrease egg mortality.

3. Tree and brush cutting or mowing on occupied sites during this time period should be done with hand tools or hand-operated power tools (chain or brush saw) if at all possible.

4. Avoid trampling lupine plants or dragging brush across occupied sites or piling brush on occupied sites.

5. If brush is to be chipped, spread the chips so that lupine plants are not covered.

6. For brushing with rotary mowers, choppers, or flail choppers, the minimum cutting/chopping height should be 6 inches (8 inches is better).

7. Brushing from July through early August may be considered for occasional use to control woody vegetation. Do not brush the entire occupied lupine areas, or isolated occupied sites during this period.

8. For all brushing activities:
Avoid driving transport equipment and operating mowing equipment in major lupine and nectar areas to the greatest extent practicable.

ii. Anytime throughout the Year
   1. Trimming by hand may occur at any time.
   2. Avoid dragging brush through lupine patches.
   3. Avoid trampling or other impacts to lupine to the greatest extent practicable.
   4. Avoid operating and parking vehicles and heavy equipment in lupine areas to the greatest extent practicable.

e. In Emergency Situations
   i. Avoid lupine areas to the greatest extent practicable.
   ii. If Kbb presence/absence was unknown at the time of the emergency activity, perform post-management surveys for lupine and KBB presence/absence in the following flight season.

III. Reference Documents

Forest Management Guidelines (Lane) 1997
The Strategic Management Plan for Linear Corridors in Areas Inhabited by the Karner Blue Butterfly (Weaver Boos Consultants, Inc.)
Karner Blue Butterfly Habitat Conservation Plan, March, 2000
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.
**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.

See on-line version for current revision - 2 - [dnr.wi.gov/topic/endangeredresources/karner](dnr.wi.gov/topic/endangeredresources/karner)
- 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.

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

See on-line version for current revision - dnr.wi.gov/topic/endangeredresources/karner
III. Referenced Documents


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](http://extoxnet.orst.edu/pips/ghindex.html).


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.


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.
Karner Blue Butterfly HCP
Management Protocol

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,
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 1a. 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 ≥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 rotoverted 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


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

KBB Prescribed Burn Protocol

Required Conservation Measures

Is management area under single/multiple Ownership?

- multiple
- single

Is management area part of a large-scale barrens landscape?

- Yes
- No

Is habitat highly disturbed or a restoration?

- No
- Yes

In management area comprised of high quality remnant vegetation?

- Yes
- No

Do you have a management agreement signed by all land owners?

- Yes
- No

≥ 1/3 of lupine patch unburned for 3 consecutive years.

< 1/3 of lupine patch unburned for 3 consecutive years

≥ 1/3 of lupine unburned

< 1/3 of lupine unburned

What season do you want to burn in?

- growing
- dormant

≥ 1/3 of lupine unburned

- 1/3 of the lupine patch may be burned, if:
- 2/3 of the lupine remains unburned for 3 consecutive years.
- 1/3 of unit supporting nectar species remains unburned or sufficient nectar is available within unburned lupine area.

< 1/3 of lupine unburned

- 1/3 of the lupine patch may be burned, if:
- 2/3 of the lupine remains unburned for 3 consecutive years.

Growing

- 1/3 of the lupine patch may be burned, if:
- 2/3 of the lupine remains unburned for 3 consecutive years.
- existing unburned lupine and 2/3 of previously burned lupine remains unburned for 3 consecutive years.
- 1/3 of unit supporting nectar species remains unburned or sufficient nectar is available within unburned lupine area.

Dormant

- 1/3 of the lupine patch may be burned, if:
- existing unburned lupine remains unburned for 3 consecutive years.
I. Purpose and Applicability

This protocol is intended to avoid and minimize take of the Karner blue butterfly (Kbb) that is incidental to snow plowing activities, specifically “winging operations” along road rights-of-way. Winging operations (the manipulation of snow beyond highway shoulders) should define the shoulder pivot point.

Important: 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 unknown.

II. Conservation Measures

1) To avoid take
   i. Do not wing plow beyond the traveled way.
   ii. When wing plowing beyond the traveled way, do so at a sufficient height to avoid displacing shoulder gravel onto the sodded (vegetated/duff) area on the right-of-way and to avoid damage to the sod (vegetation/duff) under the snow.

2) To minimize take and of Karner blue butterfly and habitat
   i. When wing plowing beyond the traveled way, take care to not displace shoulder gravel onto the sodded (vegetated) area or cause damage to the sod (vegetation) under the snow. It is understood that all ROW surfaces are not completely level and smooth. If it is not practicable to raise the wing plow high enough to assure complete avoidance of all contact with the gravel and sod, and some impacts result, minimize disturbance to the greatest extent practicable.

III. Definitions/Background

Snowplowing/snow removal: For the purpose of this protocol snowplowing and snow removal includes the use of plows, blades and wing plows mounted on front end loaders, graders and other mechanized equipment to wing, bench and otherwise remove snow from the traveled way and road shoulder.

See on-line version for current revision - 1 -  dnr.wi.gov/topic/endangeredresources/karner
Definition and diagram of terms used:

Traveled Way lane, driving surface
Shoulder paved or unpaved portion of the roadtop – able to accommodate vehicles between traveled way and inslope
Pivot Point transition area between shoulder and inslope
Inslope non-drivable bank between shoulder and ditch bottom
ROW The land over which a public road legally passes, normally described in terms of distance from the centerline of the road.

Center Line
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<thead>
<tr>
<th>Traveled way</th>
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<th>Pivot point</th>
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IV. Referenced Documents

I. Purpose and Applicability

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

II. Conservation Measures

a. To avoid take do not operate in lupine areas that are known to be occupied by Kbb or in lupine areas where Kbb presence is not known, to the greatest extent practicable.

b. To minimize take follow these measures to the greatest extent practicable.
   i. Conduct pre-management surveys on pre-planned timber harvest sites. (Required)
   ii. Do not concentrate slash piles on Kbb-occupied lupine sites. Slash should be dispersed, not piled.
   iii. Leave scattered occupied sites undisturbed as refugia for existing Kbb populations whenever practicable.
   iv. Leave scattered pockets of trees to provide shaded resting areas for Kbb on occupied sites.
   v. Timber harvesting activities on private residential and non-regulated properties are exempt from this protocol.
   vi. 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 abandonment of access roads, trails, and landings associated with timber harvesting refer to the Construction Guideline.
2. For emergency salvage cutting or sanitation cutting operations resulting from forest fires, windstorms, or other natural disasters, refer to the Emergency Guideline.
IV. Background

“Tree harvesting operations that remove canopy and disturb soil can have beneficial effects on lupine and Karner blue. …In general, many of the methods for removing and suppressing tree and shrub canopy can have a net positive effect on lupine and the Karner blue and should be timed and carried out in ways that minimize harm to the butterfly and its food resources (lupine and nectar plants).” (Karner Blue Butterfly Recovery Plan, September 2003).

“Based on the timber type and management goal or objective, a forest land manager may apply a variety of harvesting methods. The variables of the land, vegetation type, goals of land/forest management, and opportunities to 1) minimize adverse effects on the occupied habitat and species, and 2) promote habitat continuation or enhancement vary greatly with each stand. …In addition, forest partners intend to apply harvesting strategies to land currently not occupied but having the potential for occupation because of the proximity to occupied habitat which serves to replace habitat lost through active management or natural loss, even though they have no legal obligation to mitigate or replace habitat lost naturally (e.g. succession of competing vegetation).” (Karner Blue Butterfly Habitat Conservation Plan, Appendix F. March 2000).

V. Reference Documents


Wisconsin DNR Silviculture Handbook 2431.5
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


Wisconsin DNR Silviculture Handbook 2431.5
V. HCP Monitoring Manual
A GUIDE TO CONDUCTING MONITORING
FOR THE WISCONSIN KARNER BLUE BUTTERFLY
HABITAT CONSERVATION PLAN

Revision Date: October 22, 2014
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   C. LEVEL 2 PROTOCOL: KBB PRESENCE OR ABSENCE MONITORING
   
   D. CAUSE AND EFFECT (C-E) LEVEL 1 MONITORING PROTOCOL
I. INTRODUCTION

In 2005-06 a KBB probability model was developed that predicts the likely locations of the Karner blue butterfly in Wisconsin. This model formed the basis for an adaptive management effort to reassess the overall monitoring strategy during the winter of 2004 and spring of 2005. In 2006 the focus of monitoring was provisionally changed while the monitoring strategy, especially the sampling strategy was being refined and a final, streamlined set of guidelines and protocols were being developed and ultimately put in place in 2008. Earlier versions of the Habitat Conservation Plan (HCP) monitoring guidance was wholly contained under this title as a single, continuous document. The monitoring guidance has been reorganized into individual guidelines and protocols effective beginning in 2007. The survey methods for Levels 1 and 2 have not significantly changed; only their formatting. Relative abundance surveys are no longer required, so the Level 3 protocol has been removed.

II. INFORMATION SOURCES

Contacts

Karner Blue HCP Coordinator
Wisconsin DNR, NH/6
101 S. Webster St.
P.O. Box 7921
Madison, WI 53707-7921
Phone: (608) 220-6209
https://dnr.wi.gov/topic/endangeredresources/karner

HCP project management
HCP partner annual reports
Monitoring training

U.S. Fish and Wildlife Service
Green Bay Field Office
2661 Scott Tower Dr.
New Franken, WI 54229
Phone: (920) 866-1710
http://www.fws.gov/midwest/GreenBay/

Endangered Species Act regulatory issues
Karner blue butterfly information
Incidental take

Landowner Incentive Program (LIP)
Wisconsin DNR
Conservation Biologist
(608) 267-9789
http://dnr.wi.gov/topic/EndangeredResources/LIP.html

private landowner issues (non-HCP partners)
habitat restoration consulting and funding

Partners for Fish and Wildlife
U.S. Fish & Wildlife Service
(608) 221-1206
wiscinplpo@fws.gov
http://www.fws.gov/midwest/partners/

private landowner issues (non-HCP partners)
habitat restoration consulting and funding

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**WEBSITES**

Karner Blue Butterfly HCP  
dnr.wi.gov/topic/endangeredresources/karner/access

Karner Blue Butterfly Emergence Model  
dnr.wi.gov/topic/endangeredresources/karner/access

Conservation and Monitoring Protocols and Guidelines  
dnr.wi.gov/topic/endangeredresources/karner/access

General Information  
dnr.wi.gov/topic/endangeredresources/karner/

For Kids  
http://dnr.wi.gov/org/caer/ce/eeek/critter/insect/karner.htm
I. Scope and Applicability

Monitoring is a critical component of adaptive management in the statewide Wisconsin Karner Blue Butterfly HCP. This guideline outlines and describes the monitoring strategy and monitoring activities performed by HCP Partners on HCP Partners’ land included under the federal Incidental Take Permit TE 010064-6.

Monitoring activities will always be conducted with consideration for the Karner blue butterfly (Kbb) and in a manner that will allow for continued beneficial disturbance management within the High Potential Range of the Kbb. (http://dnr.wi.gov/topic/ForestPlanning/documents/rangemap.pdf)

Monitoring will be used to determine both the success of the partners in meeting their individual conservation agreement goals and of the HCP at meeting its statewide conservation goals.

This guideline applies to all monitoring activities that may occur within the High Potential Range of the Kbb in Wisconsin. Monitoring activities include monitoring required as a condition of the permit to assess the affects of conservation measures applied in concert with partners’ management and maintenance activities that routinely occur on State Wildlife & Fishery Areas, State Forests, State Natural Areas, road right-of-ways, utility and gas corridors and other partner owned lands of similar type. Conservation measures for these activities are addressed in separate guidelines, each with protocols that are specific to them.

This guideline does not apply to Recovery Monitoring. A monitoring tool to estimate population sizes, called Distance Sampling is currently being used for Recovery Monitoring and is addressed elsewhere.

II. The HCP and Adaptive Management

The HCP applies adaptive management to address conservation within the context of a working landscape. This adaptive management approach offers partners in the HCP the flexibility needed to meet their respective goals. Monitoring is essential to the HCP adaptive management process, and ultimately to document the need for the dynamic landscape necessary to maintain viable populations of Karner blue butterflies.
III. Objectives of Monitoring

The purpose of monitoring is to provide an economical and biologically sound means of detecting (1) the presence of Karner blue butterfly (Kbb) habitat and (2) the presence of Kbb occupied sites. The results of these surveys allow HCP partners to determine if and where Kbb are present and inform them when to apply conservation measures included in HCP management protocols. Information collected through monitoring will also be used to assess the efficacy of the HCP and to inform adaptive management decisions. Cause and Effect Monitoring will assess the affects of management activities on Kbb, Kbb populations and Kbb habitat, which will be used to direct continuous improvement of conservation measures in HCP management protocols.

IV. Components of Monitoring

**Level 1 Monitoring:** Sampling for the presence of habitat. For habitat surveys, the presence or absence of wild lupine is determined and its abundance broadly quantified (see Lupine Presence/Absence Monitoring Protocol - Level 1). On sites where the presence of habitat has been established, lupine surveys need to be repeated after several years in response to habitat changes brought about by disturbance management activities or natural succession.

**Level 2 Monitoring:** Sampling for the presence of the Karner blue butterfly. Sites where lupine is present are subsequently surveyed to determine the presence or absence of Karner blue butterflies (see Karner Blue Butterfly Presence/Absence Monitoring Protocol – Level 2).

**Cause and Effect (C-E) Level 1 Monitoring:** To assess the vegetative response related to a variety of important habitat components of the Karner blue butterfly (*Lycaeides melissa samuelis*), including wild lupine (*Lupinus perennis*), which result from selected management activities and conservation measures in order to inform the adaptive management process. C-E studies can be selected to (1) validate the anticipated and desired affects of a management practice or conservation measure, (2) study a new or proposed management activity or conservation measure, or (3) study multiple conservation measures for an activity to compare the results and improve the efficiencies of the activity and/or effectiveness of the conservation measure.

**Habitat Evaluation**

Further habitat evaluation beyond the elements required for Levels 1 and 2 monitoring is not generally a required component of the monitoring program. Exceptions are:

- When required to assess the success of habitat reclamation as part of a construction project,
- When required to demonstrate the success of a mitigation plan following permanent take.
- Whenever useful to inform adaptive management decisions, i.e. to assess habitat alterations as a result of management or as a component of research.
V. Training

All persons collecting field data for monitoring under the WI KBB HCP must have attended a training session offered by the Wisconsin DNR. Depending on partners’ needs, one or more training sessions are held each spring, during the first Karner blue butterfly flight period (late May-early June). The training covers survey protocol procedures, lupine and Karner blue butterfly identification, issues of variability in habitat, habitat elements, Karner blue butterfly behavior, etc. It is mandatory for previously certified field personnel to undergo refresher training at least once every 5 years.

VI. General Requirements and Recommendations

**Required:**

a. Those who perform monitoring for WI KBB HCP purposes and under the authority of the associated Incidental Take Permit will successfully complete a monitoring training session provided by the DNR’s HCP program and taught by qualified, authorized trainers.

b. Certification to perform monitoring protocols under the permit is valid for 5 years after which time a refresher course will be required.

c. Kbb and Kbb habitat surveys will be conducted following approved HCP monitoring protocols.

d. In addition partners are required to follow any specific provisions in their conservation agreements (SHCAs or IA).

**Recommended:**

e. It is recommended that non-required surveying at the discretion of the partner follow HCP approved protocols and documentation procedures.

VII. Specific Activities

a. If surveying for the presence or absence of Kbb habitat, follow the Level 1 - Lupine Presence/Absence Monitoring Protocol.

b. If surveying for the presence or absence of the Karner blue butterfly, follow the Level 2 - KBB Presence/Absence Monitoring Protocol.

c. If surveying to assess the Cause & Effect relationship of HCP management activities, follow the C-E Level 1 Monitoring Protocol.

VIII. Definitions

- **Adaptive management**: For the WI Karner Blue HCP, adaptive management is defined as a formal, structured approach to dealing with uncertainty in natural resources management, using the experience of management and the results of research as an on-going feedback loop for continuous improvement. Adaptive approaches to management recognize that the answers
to all management questions are not known and that the information necessary to formulate answers is often unavailable. Adaptive management also includes, by definition, a commitment to change management practices when determined appropriate.

- **High Potential Range:** The high potential range is the region of the state containing all documented occurrences of the Karner blue butterfly, and extending 5 miles beyond documented occurrences to include areas with similar habitat, soils, and climate where the Karner blue butterfly is most likely to occur based on the Kbb probability model developed in 2006-2007.

**IX. Referenced Documents**

- Karner Blue Habitat Conservation Plan User’s Guide  
  [dnr.wi.gov/topic/endangeredresources/karner/access](http://dnr.wi.gov/topic/endangeredresources/karner/access)
- Karner Blue High Potential Range Map in Wisconsin “Karner Blue Butterfly Habitat Conservation Plan High Potential Range - Regulatory Range” map  
I. Scope and Applicability

The following protocol is intended to determine the viable presence or absence of wild lupine (*Lupinus perennis*), the only known host plant of the Karner blue butterfly (*Lycaeides melissa samuelis*) larvae on HCP Partners’ land included under the federal Incidental Take Permit TE 010064-5.

The following protocol is taken from the original Wildlife Management Guidelines for the Karner Blue Butterfly, Appendix II, Wisconsin DNR Karner Blue Technical Team as revised with information from the Biological sub-team (A.K.A. BioTeam) of the Wisconsin Statewide Habitat Conservation Plan for the Karner Blue Butterfly, May, 1998 Revision. The original protocol was developed by the HCP Monitoring sub-team in 1993. In 2005 the monitoring form was modified to include parameters for assessing the results of habitat reclamation following activities that result in complete habitat removal and other habitat restoration. This protocol has been reformatted from “A Guide to Conducting Monitoring for the Wisconsin Karner Blue Butterfly Habitat Conservation Plan” (prior to 2007) and made consistent with HCP streamlining strategies developed in 2006-2007. The most up to date revision can always be found in the Habitat Conservation Plan User’s Guide on the DNR webpage (dnr.wi.gov/topic/endangeredresources/karner/access).

Purpose: To find and map wild lupine (*Lupinus perennis*) patches to expedite future Karner blue butterfly (*Lycaeides melissa samuelis*) surveys.

Forms: A standardized Level 1: Lupine Presence/Absence survey form is used for recording all Level 1 monitoring information. A blank form can be copied from the DNR’s Karner Blue webpage. Always use the current form as forms may change as a result of adaptive management.

II. Protocol

Where to Survey

A site is eligible for sampling presence of habitat if it meets the following criteria:

1. The site is within the High Potential Range (HPR) of the Karner blue butterfly (see Karner Blue HPR map http://dnr.wi.gov/topic/ForestPlanning/documents/rangemap.pdf).
2. The site meets the definition of potential habitat. Potential habitat includes sites on dry, sandy soils with dominant overstory vegetation of an age and/or character that could support Karner blue butterfly habitat.

3. The site is on lands included by an HCP partner in their Species and Habitat Conservation Agreement or Implementing Agreement.

Additional information describing sites eligible for Level 1 monitoring:

- Sites include forest stands and upland openings or existing corridors.
- If forested, the site supports trees 0-15 years of age. Exception: If forested and less than 15 years of age, dense stems of a regenerating stand may cause crown closure at an early age precluding the site from consideration for sampling.
- If non-forested, the site may be an upland opening or existing corridor such as a fuel break or woods road.

Since partners with larger holdings will not likely be able to survey all of their lands because of logistical constraints, the following information describes areas that should be considered of low potential/priority for Level 1 surveys, but are still theoretically considered valid sites if they meet the three criteria listed above:

- Wetlands or other areas flooded for most of the growing season
- Forests with dense canopy (>75%), which could be determined by aerial photo interpretation of forest stands with a continuous canopy >75%, categorized as pole or saw timber sized stands having 3-prime density class (lupine may occur here, especially if the area is adjacent to a lupine patch, but it may not flower and therefore may be difficult to detect)
- Sites on non-sandy soils
- Cultivated or otherwise developed areas supporting no native vegetation

When to Survey

- In places where lupine flowers early (sunny areas), survey from late May to mid-June
- In places where lupine flowers rarely or not at all (usually more shaded areas), surveys can be conducted from late May through July
• Open and sunny places should be surveyed earlier in the season because lupine flowers and senesces earlier there
• Areas with more shading and canopy cover can be surveyed later because lupine flowers and senesces later in these locations (except during hot and droughty summers)
• Lupine surveys should not be conducted after July 31st.

How to Survey

Surveys for lupine can be conducted in a number of ways. The following are suggested methods to use. The method you choose will normally depend upon the resources available (number of personnel), and the size and landscape characteristics of the area to be surveyed.

OPTION 1: Surveyors walk a site spaced such that all areas between the surveyors can be seen by at least one surveyor. Thus, each surveyor walks a "strip transect," (also called straight-line transect) so named because a strip or corridor of habitat is surveyed by each surveyor. The distance between surveyors will depend upon visibility of lupine (flowering or not), density of vegetation, and the slope of the site.

OPTION 2: Surveyors walk a site spaced a pre-determined distance apart (e.g. 50 feet, 100 feet, etc). Each surveyor will be conducting a strip transect. Depending upon the distance between surveyors and density of vegetation, not all areas will be observed by a surveyor (i.e. only a percentage of the site will be surveyed). The distance between surveyors will depend upon the size of area to be surveyed and the time available.

OPTION 3: Random Walk Survey for a specified time (e.g. 10 minutes) that produces a description of what was found and the estimated % coverage of habitat.

Important: To minimize harm to Kbb, avoid trampling lupine to the greatest extent practicable. Kbb may be present in any or all life forms.

Mapping Lupine Patches

Boundaries of lupine patches should be mapped as accurately as possible. This will assist future KBB surveyors at the site.

When mapping lupine, it may be useful to characterize each site by relative abundance and pattern of lupine distribution. Options for such characterization are listed below:

Relative Abundance estimate
- Dominant: the dominant ground layer vegetation
- Locally Abundant: abundant in patches
- Infrequent: infrequently encountered
- Rare: very few plants seen

Pattern of Lupine Distribution
The area of lupine coverage should be estimated. It is important to know if lupine is abundant in a one acre area versus a 10 acre area.

### III. Definitions

- **High Potential Range:** The high potential range is the region of the state containing all documented occurrences of the Karner blue butterfly, and extending 5 miles beyond documented Kbb occurrences to include areas with similar habitat, soils, and climate where the Karner blue butterfly is most likely to occur based on the Kbb probability model developed in 2006-2007. (See Karner Blue HPR map [dnr.wi.gov/topic/endangeredresources/karner/access](dnr.wi.gov/topic/endangeredresources/karner/access)).

### IV. Referenced Documents

- Karner Blue Habitat Conservation Plan User’s Guide [dnr.wi.gov/topic/endangeredresources/karner/access](dnr.wi.gov/topic/endangeredresources/karner/access)
- Karner Blue High Potential Range Map in Wisconsin, 2008”
I. Scope and Applicability

The following protocol is intended to determine if the Karner blue butterfly (*Lycaeides melissa samuelis*) is present on HCP Partners’ land included under the federal Incidental Take Permit TE 010064-6. A determination of absence does not mean that Karner blue butterflies are absolutely not there. Kbb may be present at such low levels not to be observable under this protocol. This protocol is acceptable to the FWS and is approved under the federal Incidental Take Permit TE 010064-6.

The following protocol is originally taken from Wildlife Management Guidelines for the Karner Blue Butterfly, Appendix III, Wisconsin DNR Karner Blue Technical Team as revised with information from the Biological sub-team (A.K.A. BioTeam) of the Wisconsin Statewide Habitat Conservation Plan for the Karner Blue Butterfly, May, 1998 Revision and January, 1999 Revision. The protocol was originally developed by the HCP Monitoring sub-team for the 1995 field season. This protocol has been reformatted from “A Guide to Conducting Monitoring for the Wisconsin Karner Blue Butterfly Habitat Conservation Plan” (prior to 2007) and made consistent with HCP streamlining strategies developed in 2006-2007. The most up to date revision can always be found in the Habitat Conservation Plan User’s Guide on the DNR webpage (http://dnr.wi.gov/topic/ForestPlanning/hcpGuide.html).

Purpose: To determine if Karner blue butterflies (Kbb) occupy a particular habitat area (lupine and surrounding nectar plants). The following are suggested minimum requirements for conducting Karner blue butterfly (*Lycaeides melissa samuelis*) presence or absence surveys. For the purpose of this survey, absence means that no Kbb were detected at a particular site.

Forms: A standardized Level 2: Karner Blue Butterfly Presence/Absence form is used for recording all Level 2 monitoring information. A blank form can be copied from the DNR’s Karner Blue webpage. Always use the current form as forms may change as a result of adaptive management.

II. Protocol

Where to Survey

A site is eligible for Level 2 monitoring if it meets the following criteria:
1. The site meets the criteria listed for Level I Monitoring:
   - The site is within the High Potential Range (HPR) of the Karner blue butterfly (see Karner Blue HPR map [dnr.wi.gov/topic/endangeredresources/karner/access](http://dnr.wi.gov/topic/endangeredresources/karner/access)).
   - The site meets the definition of potential habitat. Potential habitat includes sites on dry, sandy soils with dominant overstory vegetation of an age and/or character that could support Karner blue butterfly habitat.
   - The site is on lands included by an HCP partner in their Species and Habitat Conservation Agreement or Implementing Agreement (see [Level 1 – Lupine Presence and Absence Monitoring Protocol](https://www.wildlife.wi.gov/monitoring/lupine) for additional information describing sites eligible for Level 1 monitoring), and

2. The presence of lupine has been confirmed on the site within the last five years using the Level I Monitoring Protocol, and

3. The site has at least 25 lupine plants or clumps of lupine, at a density of 50 lupine plants per acre (or 25 lupine plants per 200 m of linear distance for linear sites).

**When to Survey**

- Surveys for Karner blue butterflies can be conducted during both the first and second Karner blue butterfly flight periods. The first flight period normally begins in late May and ends in mid to late June. The second flight period normally begins in mid July and ends in mid to late August.

- Timing of flight periods can vary by as much as 2-3 weeks from year to year and from site to site.

- The length of flight periods may also vary from year to year (two to five weeks in length).

- If resources do not allow you to conduct surveys during both flights, priority should be placed on conducting surveys during the second flight period (see “Determination of NO KBB" listed below).

- Only one survey is needed if you detect Kbb during the first survey. If you do not detect Kbb during the first survey, you should conduct a second survey. If you do not detect Kbb during the second survey, you should conduct a third survey. IMPORTANT: The second and third surveys must be conducted during the second flight period. Surveys during the second flight period should be spaced so that there is at least a 3 day interval between site visits.

- Conduct surveys during optimal time and weather conditions as listed below:
  - between 8:00 a.m. and 6:00 p.m.
- when temperatures are above 60°F
- when temperatures are between 60°F and 70°F, conduct surveys only under mostly sunny skies with calm to light wind
- when temperatures are above 70°F, there are no restrictions on cloud cover
- when winds are 18 mph or less
- Do not survey under drizzly or rainy conditions.

How to Survey

- Individuals conducting surveys must attend training in survey techniques and identifying Kbb offered by the Wisconsin DNR (see Monitoring Guideline, “Training”).

- The Kbb habitat area (lupine and associated nectar species) should be identified ahead of time when possible.

- If a site is being surveyed for Level 2 Monitoring only, the surveyor(s) should walk the entire habitat area at a leisurely pace until all likely locations of Kbb concentration areas are surveyed OR surveyors may cover the area by walking transects to look for the butterflies. The purpose of the survey is fulfilled when at least one Kbb is observed (during either the first or second flight period).

- Butterflies observed outside the site boundary that can be positively identified as Karners from within the site should be counted for that site.

**Important:** To minimize harm to Kbb, avoid trampling lupine to the greatest extent practicable. Kbb may be present in any or all life forms.

Intensity of Survey

Approximately 10 minutes of effort per survey are recommended for each acre of habitat (i.e. lupine patches and important nectar plants within 50 meters of the lupine patch) to determine Kbb presence/absence. If a Kbb is quickly spotted, it is not necessary to spend 10 minutes per acre of habitat. Surveying for a longer period of time is encouraged (but not mandatory) if Kbb are not found during the first 10 minutes of survey effort per acre of habitat.

Determination of No KBB

The determination that no Kbb are present at a site can be made once you have surveyed the site (without documenting any Kbb) three times during one year. No more than one of the surveys may have been conducted during the first flight period. Surveys should be spaced so that there is a 3-7 day interval between surveys. Again, once one Kbb is observed, the purpose of the survey is fulfilled and additional surveys are not required.

General Information

The "Determination of No KBB" is based primarily on surveys during the second flight period, since Kbb numbers are usually greater during this flight period.

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Kbb flight periods vary within the year from site to site depending on the site's phenology (i.e. "fast" sites and "slow" sites). Flight periods normally occur earlier on sunny, open sites and later on shady sites. Spacing of the surveys is necessary to ensure that at least one survey is conducted during the peak of the main (second) flight period. A 3-7 day range is used because the duration and amount of suitable survey weather varies among years.

The Karner Blue Butterfly Emergence Model is used to determine when Karner blue adults may be present. Land managers familiar with the sites to be surveyed should consider variations between sites in the area to decide which sites may be “fast” or “slow”, and plan survey work accordingly. (For Kbb emergence predictions see [dnr.wi.gov/topic/endangeredresources/karner/access](dnr.wi.gov/topic/endangeredresources/karner/access))

III. Definitions

- **High Potential Range:** The high potential range is the region of the state containing all documented occurrences of the Karner blue butterfly, and extending 5 miles beyond documented occurrences to include areas with similar habitat, soils, and climate where the Karner blue butterfly is most likely to occur based on the Kbb probability model developed in 2006-2007. (See Karner Blue HPR map [dnr.wi.gov/topic/endangeredresources/karner/access](dnr.wi.gov/topic/endangeredresources/karner/access)).

IV. Referenced Documents

- Karner Blue Habitat Conservation Plan User’s Guide ([dnr.wi.gov/topic/endangeredresources/karner/access](dnr.wi.gov/topic/endangeredresources/karner/access))
- Karner Blue High Potential Range Map in Wisconsin, 2008
I. Scope and Applicability

The following protocol is a version of the standard Level 1 Lupine Presence or Absence Monitoring Protocol, which has been modified specifically to study the Cause and Effect relationships of HCP partner’s management activities on Karner blue butterfly habitat or areas of potential habitat on HCP Partners’ land included under the federal Incidental Take Permit TE 010064-6.

The basic protocol is taken from the original Wildlife Management Guidelines for the Karner Blue Butterfly, Appendix II, Wisconsin DNR Karner Blue Technical Team as revised with information from the Biological sub-team (A.K.A. BioTeam) of the Wisconsin Statewide Habitat Conservation Plan for the Karner Blue Butterfly, May, 1998 Revision. The original protocol was developed by the HCP Monitoring sub-team in 1993. In 2005 the monitoring form was modified to include parameters for assessing the results of habitat reclamation following activities that result in complete habitat removal and other habitat restoration. This protocol has been reformatted from “A Guide to Conducting Monitoring for the Wisconsin Karner Blue Butterfly Habitat Conservation Plan” (prior to 2007) and made consistent with HCP streamlining strategies developed in 2006-2007. The most up to date revision can always be found in the Habitat Conservation Plan User’s Guide on the DNR webpage (dnr.wi.gov/topic/endangeredresources/karner/access).

Purpose: To assess the vegetative response related to a variety of important habitat components of the Karner blue butterfly (Lycaeides melissa samuelis), including wild lupine (Lupinus perennis), which result from selected management activities and conservation measures in order to inform the adaptive management process. C-E studies can be selected to (1) validate the anticipated and desired affects of a management practice or conservation measure, (2) study a new or proposed management activity or conservation measure, and (3) study multiple conservation measures for an activity to compare the results and improve the efficiencies of the activity and/or effectiveness of the conservation measure.

Forms: A standardized Level 1: Habitat Response to Management: Management Cause and Effect (C-E) Monitoring form is used for recording all Level 1 C-E monitoring information. A blank form can be copied from the DNR’s Karner Blue webpage. Always use the current form as forms may change as a result of adaptive management.
II. Protocol

Where to Survey

A site is eligible for a C-E study if it meets the following criteria:

4. The site is within the High Potential Range (HPR) (see Karner Blue HPR map dnr.wi.gov/topic/endangeredresources/karner/access).

5. The site meets the definition of potential habitat. Potential habitat includes sites on dry, sandy soils that could potentially support Karner blue butterfly habitat.

6. The site is on lands included by an HCP partner in their Species and Habitat Conservation Agreement or Implementing Agreement.

7. The site should support the objectives and design of the management activity or conservation measure(s) being studied.

When to Survey

- BEFORE (pre-management survey) and AFTER (post-management survey) the management activity and/or conservation measure being studied is applied

- Each pre-management and each post-management survey must be performed in both Kbb flight periods to reflect early and late flowering nectar plants and other conditions

- In places where lupine flowers early (sunny areas), survey from late May to mid-June (for first flight period visits)

- In places where lupine flowers rarely or not at all (usually more shaded areas), surveys can be conducted from late May through July.

- Open and sunny places should be surveyed earlier in the season because lupine flowers and senesces earlier there

- Areas with more shading and canopy cover can be surveyed later because lupine flowers and senesces later in these locations (except during hot and droughty summers).

- Lupine surveys should not be conducted after July 31st.

How to Survey

Surveys for lupine can be conducted in a number of ways. The following are suggested methods
to use. The method you choose will normally depend upon the resources available (number of personnel), and the size and landscape characteristics of the area to be surveyed.

**OPTION 1:** Surveyors walk a site spaced such that all areas between the surveyors can be seen by at least one surveyor. Thus, each surveyor walks a "strip transect," (also called straight-line transect) so named because a strip or corridor of habitat is surveyed by each surveyor. The distance between surveyors will depend upon visibility of lupine (flowering or not), density of vegetation, and the slope of the site.

**OPTION 2:** Surveyors walk a site spaced a pre-determined distance apart (e.g. 50 feet, 100 feet, etc). Each surveyor will be conducting a strip transect. Depending upon the distance between surveyors and density of vegetation, not all areas will be observed by a surveyor (i.e. only a percentage of the site will be surveyed). The distance between surveyors will depend upon the size of area to be surveyed and the time available.

**OPTION 3:** Random Walk Survey for a specified time (e.g. 5 minutes) that produces a description of what was found and the estimated % coverage of habitat.

| Important: To minimize harm to Kbb, avoid trampling lupine to the greatest extent practicable. Kbb may be present in any or all life forms. |

**Mapping Lupine Patches**

Boundaries of lupine patches should be mapped as accurately as possible. This will assist future KBB surveyors at the site.

When mapping lupine, it may be useful to characterize each site by relative abundance and pattern of lupine distribution. Options for such characterization are listed below:

**Relative Abundance estimate**
- Dominant: the dominant ground layer vegetation
- Locally Abundant: abundant in patches
- Infrequent: infrequently encountered
- Rare: very few plants seen

**Pattern of Lupine Distribution**
- Continuum from 1-4:
  
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<th>1</th>
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<td>scattered patches</td>
<td>uniform throughout</td>
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The area of lupine coverage should be estimated. It is important to know if lupine is abundant in a one acre area versus a 10 acre area.

**Assessing Nectar Plant Availability**
Estimate the collective availability of all nectar plants, which will be available in each Kbb flight period, e.g.:

General availability of nectar plants during 1st flight period (First flight periods are generally late May- June):
   ① Abundant - (50% or more coverage of nectar area)
   ② Common - (25-50% coverage)
   ③ Scarce - (<25% coverage)

General availability of nectar plants during 2nd flight period (Second flight periods are generally mid-July to mid-August):
   ① Abundant - (50% or more coverage of nectar area)
   ② Common - (25-50% coverage)
   ③ Scarce - (<25% coverage)

III. Definitions

- **High Potential Range**: The high potential range is the region of the state containing all documented occurrences of the Karner blue butterfly, and extending 5 miles beyond documented Kbb occurrences to include areas with similar habitat, soils, and climate where the Karner blue butterfly is most likely to occur based on the Kbb probability model developed in 2006-2007. (See Karner Blue HPR map dnr.wi.gov/topic/endangeredresources/karner/access).

IV. Referenced Documents

- Karner Blue Habitat Conservation Plan User's Guide (dnr.wi.gov/topic/endangeredresources/karner/access)
- Karner Blue High Potential Range Map in Wisconsin, 2008
VI. Glossary

Broadcast Seeder: An implement for applying seed to the surface of a planting site. It consists of a hopper to hold the seed. Beneath the hopper is rotating disk. Seed is metered onto the rotating disk, which throws the seed in a circular pattern away from the device. Small broadcast seeders can be carried by a person and powered by a hand crank. Larger seeders are normally mounted on the rear of an ATV, tractor, or a pickup truck and powered by electricity or by a power take-off shaft.

Brush Disk: A heavy duty implement with circular, concave steel cutters mounted in series on a rotating shaft and pulled across the site by a prime mover. The discs cut into the sod and turn it over, exposing mineral soil. Disks can have one or two gangs (shafts with mounted disks).

Brush Hog: A heavy duty rotary mower, usually pulled behind a rubber tired tractor, and capable of chopping large diameter brush and saplings up to several inches in diameter at ground level.

Bulldozer: A prime mover fitted with a front-mounted steel blade that can be raised or lowered. It is used to push or excavate dirt, stumps, rocks, trees, and other items or materials.

Cable Plowing: Cable plows are commonly used by electrical utilities for installing underground electrical distribution cables along rights-of-way and to homes and businesses between transformers and electrical meters.

Conservative Forbs: Prairie or barrens wildflowers that are indicative of high quality plant communities. These species are some of the first to disappear in the absence of natural processes, i.e., fire or heavy disturbances such as grazing or cultivating.

Construction: Any action that involves grading, building, excavation, or other heavy disturbance activity.

Contiguous: "Contiguous" Karner blue breeding habitat is the total extent of an area supporting wild lupine (even if patchy and scattered) that is occupied by the Karner blue 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".

Disk Trencher: An implement consisting of two large diameter concave, toothed steel disks mounted on opposite sides at the rear of a prime mover. As the prime mover proceeds across the site, the disks gouge the soil surface and create a continuous shallow furrow of mineral soil.
Dispersal Corridor: A pathway in the landscape that Karner blue butterflies follow during their movement 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).

Dispersal Distance: A pathway of no longer than 350 meters that Karner blue butterflies can traverse when dispersing from one area of suitable habitat to another.

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

Emergency Response: Any action taken to remedy a facility or property emergency situation, or other unforeseen occurrence.

Extent of Site Disturbance: The amount of the surface area (in percent) of the site that is impacted by a site preparation activity.

Final harvest: A final cutting trees from a forest stand that extracts salable trees.

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.

Flail Chopper: An implement mounted on the front of a prime mover with a horizontal spinning drum. Attached to the drum are hardened steel cutting hammers that shred woody debris upon contact.

Fuel Loading: A buildup of fuels, especially easily ignited, fast-burning fuels.

Furrowing Plow: An implement mounted to the front or rear of a tractor that can be raised or lowered to control plowing depth. The plow is V-shaped and rolls sod, roots and debris to both sides as it moves through the ground, leaving an exposed strip of mineral soil.
**Harvesting:** The process of gathering a timber crop. It includes felling, skidding/forwarding, on-site processing, and removal of products from the site.

**High Potential Range:** Land in High Probability Range that is within 5 miles of known Kbb occurrences. Also known as the regulatory range.

**High Probability Range:** Lands in the KBB Probability Model that fall into 50% and greater probability classes.

**Hydroaxe:** A very heavy duty rotary mower mounted on the front of a rubber-tired prime mover and powered by a hydraulic motor. Hydroaxe is a brand name of the Pettibone Corporation.

**Improvement Cutting:** The removal of less desirable trees of any species in a stand of poles or larger trees, primarily to improve composition and quality.

**Incidental Take:** Take of a federally-listed species which occurs incidental to, and is not the purpose of, otherwise legal activities.

**Incidental Take Permit (ITP):** A permit issued by the USFWS, under Section 10 of the ESA, which allows the incidental take of an endangered species.

**Intensity of site disturbance:** The level of impact to vegetation at the point of disturbance. (Virtually all site preparation practices have a high level of impact, in that vegetation is removed and mineral soil is exposed at the point of application).

**Intermediate Treatment:** Any treatment or tending designed to enhance growth, quality, vigor, and composition of the stand after establishment of regeneration and prior to final harvest.

**Metapopulation:** A population of subpopulations; each individual population within a metapopulation is referred to as a local population.

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

**Mowing and Brushing:** For the purpose of this protocol mowing and brushing includes the use of mowers, trimmers, choppers, and other mechanized equipment or hand tools to control woody vegetation, forbs and grasses as a vegetation management practice.

**No-till Drill:** A heavy duty seed drill that exerts downward force on the seeding disks, allowing penetration through sod, corn stubble, and other debris on the
ground. These drills are normally used after herbicide applications to eliminate grasses and unwanted forbs from competing with the planting. Several makes of no-till drills are modified to accept “fluffy” prairie and barrens seeds. Currently those makes are Truax, Tye, and certain models of Brillion no-till drills.

**Patch Scarifier:** A forestry implement that, when pulled across the landscape, gouges out patches of sod at periodic intervals, exposing mineral soil. These patches can be used as micro-sites for planting or seeding of trees or other vegetative species.

**Permanent take:** An impact to Karner blue butterfly habitat, through land management or land use activities, that precludes Karner blue butterfly occupation. Such long-term impact involves taking that does not allow for the restoration and reoccupation of the site for a minimum of five years. Activities or projects that may fall within the definition of permanent take include, but are not limited to:

- Construction or roadways or parking lots
- Construction of buildings or structures and associated facilities
- Other construction or development projects that cover or replace the habitat in a permanent manner (at least five years), such as an airport or a flowage; and
- Commercial or residential developments. [Note: This category does not include a permanent or second home or structure that are owned or built by the owner for his or her own use. This provision applies only to those housing developments approved after the date of permit issuance.]

**Pesticide Application:** For the purpose of this protocol pesticide application includes the use of any Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) approved chemical used to control both woody and herbaceous vegetation as a vegetative maintenance practice. Pesticides can be applied with hand held sprayers, or boom sprayers mounted on any type of vehicle.

**Pruning:** The removal, close to the branch collar or flush with the stem, of side branches and multiple leaders from a standing tree.

**Prime Mover:** A motorized tractor with either steel tracks or rubber tires.

**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:** Kbb occupied, unburned lupine (2/3 of total lupine on site) that is adjacent to or within 350 meters (≤ 200 meters is preferable) of the burn unit (see dispersal distance).

**Release:** A treatment designed to free young trees (not past the sapling stage) from undesirable, usually overtopping, competing vegetation.
Roller Chopper: A large diameter steel drum with horizontal steel blades set perpendicular to the circumference of the drum and parallel to each other. The drum is mounted within a steel frame and is pulled across the site by a motorized prime mover. As the drum rolls along the ground, the steel blades cut into the sod and chop brush and woody debris lying on the surface. Roller choppers often have a tandem arrangement, with two chopper drums mounted within the frame for more effective chopping in a single pass.

Root Rake: A front-mounted implement that attaches to a prime mover. The implement consists of a horizontal steel bar that can be raised and lowered. It is fitted with vertical teeth that can be lowered into the ground to “root out” stumps and brush. It can also be pushed along the surface to collect woody debris for deposit in piles.

Salvage Cutting: The removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost.

Sanitation Cutting: The removal of trees to improve stand health by stopping or reducing the actual or anticipated spread of insects or diseases.

Seed Drill: A farm implement that is towed behind a tractor. It consists of one or more wide bins to hold seed. A metering system drops seeds into tubes that lead to paired sets of discs spaced closely together beneath the seed bins. The disks penetrate the soil and open a slit into which the seeds drop. The slit in the soil closes behind the disks covering the seed.

Short-Term Incidental Take: An impact to occupied Karner blue butterfly habitat resulting from land management or land use activities, which provides habitat disturbance that renews declining habitat and/or creates new habitat to replace habitat lost to succession or as a result of management activity. Short-term take is conducted following approved conservation measures in the HCP in a manner to avoid and/or minimize harm to the Kbb (e.g. through appropriate timing of activities, selective routing and siting of projects, etc.) and maintain, enhance, and/or restore Kbb Habitat.

Old Definition: Short-term take is an impact to occupied Karner blue butterfly habitat resulting from land management or land use activities, which provides habitat disturbance that renews declining habitat and/or creates new habitat to replace habitat lost to succession or as a result of a management activity. Short-term take is conducted following approved conservation measures in the HCP in a manner to avoid and/or minimize harm to the KBB (e.g. through appropriate timing of activities, selective routing and siting of projects, etc.) and maintain, enhance, and/or restore KBB habitat. Such short-term impacts allow Kbb survival or the restoration and reoccupation of the site within five years.
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.

Site Preparation: Hand or mechanized manipulation of a site, designed to enhance the success of regeneration. Treatments may include bedding, burning, chemical spraying, chopping, disking, raking, and scarifying and are designed to modify the soil, litter, or vegetation and to create microclimate conditions conducive to the establishment and growth of desired species.

Subpopulation (local population): A self-reproducing population of Karner blue that is associated with a site / area (KBB Recovery Plan).

Thinning: A cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality.

Timber Harvest: The process of gathering a timber crop. It includes felling, skidding/forwarding, on-site-processing, and removal of products from the site.

Timber Stand Improvement (TSI): For the purposes of this user’s guide TSI means a non-commercial intermediate treatment made to improve stand composition, structure, condition, health and/or growth.

Take: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage.

Unit: A defined management area incorporating a portion of or the entire property of an occupied Kbb site.

Weeding: A release treatment in stands not past the sapling stage that eliminates or suppresses undesirable vegetation (including shrubs and herbs) regardless of crown position.