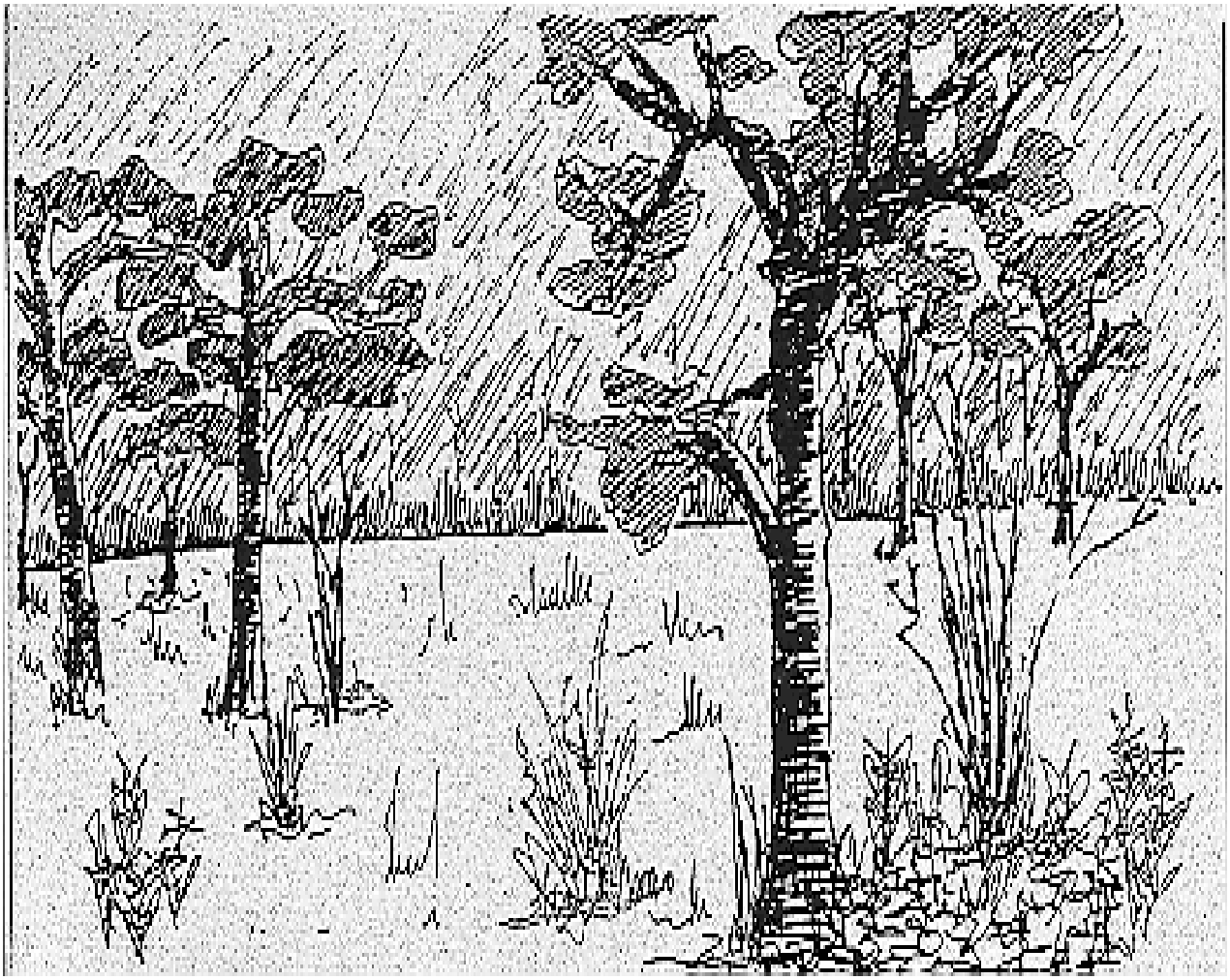
FIRE MANAGEMENT PLAN (Final)

NECEDAH NATIONAL WILDLIFE REFUGE
ENVIRONMENTAL ASSESSMENT
JUNEAU AND WOOD COUNTIES, WISCONSIN



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
GREAT LAKES - BIG RIVERS REGION
March, 2002

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Chapter 1 - PURPOSE AND NEED FOR ACTION

1.1. PURPOSE

The purpose of this Environmental Assessment (EA) is to evaluate and publicly disclose the possible environmental consequences that implementation of the Necedah National Wildlife Refuge Fire Management Plan (FMP) could have on the quality of the physical, biological, and human environment, as required by the National Environmental Policy Act of 1969.

1.2. NEED

U.S. Department of the Interior (DOI) policy states that refuge lands with vegetation capable of sustaining fire will develop a Fire Management Plan (910 DM 1.4B). Additionally, the Fish and Wildlife Service's Fire Management Handbook (621 FW 1.4-6) states that "all Refuges with vegetation that can sustain fire must have a Fire Management Plan."

There is a need at the Refuge to manage wildland fire and prescribed fire for the protection of life, property, and resources while perpetuating natural processes. The Fire Management Plan for the Refuge has been developed to provide direction and continuity in establishing operation procedures to guide all fire management activities

The Necedah National Wildlife Refuge was established with the goal of protecting migratory birds, endangered species, and biological diversity. The Refuge achieves these goals by restoring and maintaining key habitats which include savannas, sedge meadows, and grasslands. All of these habitats require prescribed burning to control succession.

This Environmental Assessment addresses the various fire management methods through which DOI and Service policy can be carried out, consistent with Agency direction and analyses for the foreseeable impacts associated with an integrated fire management program. Therefore, this EA will provide the National Environmental Policy Act compliance for the use of prescribed fire on the Refuge as well as future activities associated with fire prevention, detection, and suppression.

1.3. BACKGROUND INFORMATION

The history of the Refuge dates back to the early 1930s when the U.S. Government acquired 114,964 acres of land in Juneau, Wood, Monroe, and Jackson counties, Wisconsin, to assist farmers living within the area and to develop the area for wildlife. The Refuge was established in 1939 as a refuge and breeding ground for migratory birds and for use as an inviolate sanctuary for migratory birds. It is located in central Wisconsin, about 180 miles southeast of Minneapolis, Minnesota, 150 miles northwest of Milwaukee, Wisconsin, and about four miles west of Necedah, Wisconsin (Figure 1).

1.4. PROPOSED ACTION

The Service's proposed action in this EA is to develop and implement a Fire Management Plan for the Necedah National Wildlife Refuge that best achieves the purpose of the Refuge, contributes to the mission of the National Wildlife Refuge System, is consistent with principles of sound fish and wildlife management, available science, legal mandates, and other Service policies, guidelines, and planning documents.

Future fire management of the Refuge aims to restore and preserve biological integrity, diversity, and environmental health of the Refuge for the benefit of threatened, endangered, and candidate species, waterfowl and other migratory birds, and native biological diversity. In addition, Refuge staff will be leaders in building mutually-beneficial relationships with the public and their conservation partners, and will facilitate, to the extent possible, high quality wildlife-dependent environmental education, interpretation, and recreation experiences that further the public's understanding and appreciation for the Refuge and National Wildlife Refuge System.

1.5. DECISION FRAMEWORK

In compliance with the National Environmental Policy Act of 1969, the Regional Director for the Great Lakes-Big Rivers Region of the Service will use this EA and attached FMP to select one of four alternative actions and will also decide whether this action will have significant environmental impacts requiring that an Environmental Impact Statement be developed or if a Finding of No Significant Impact can be issued.

Chapter 2 - DESCRIPTION OF ALTERNATIVES

2.1. ELEMENTS COMMON TO ALL ALTERNATIVES

The following considerations apply to all future actions, regardless of the specific goals, objectives, strategies, and projects that will be used in pursuit of the vision for the Refuge.

2.2 *Archaeological and Cultural Values*

Archaeological and cultural resources are important parts of our Nation's natural heritage. The Service is committed to protecting valuable records of human interactions with each other and the landscape. This is done in conjunction with its more widely recognized mission of protecting fish, wildlife, and plant resources.

To date, archeological investigations have only addressed 2 percent of land within the Refuge. Surveys and other sources have identified 27 prehistoric and historic sites within the Refuge. Prehistoric mounds, including effigy mounds, have been reported near the Refuge, many of them near the Yellow River.

Aboriginal Americans may have interest in the Refuge area in terms of traditional cultural properties and sacred sites, as well as claims to human remains, funerary objects, and other cultural items. Modern tribes with possible prehistoric and historic connections to the Refuge area include the Menominee, the Winnebago or Ho-Chunk, the Potawatomi, the Sauk and Fox, the Kickapoo, the Miami, and Mascouten.

The Refuge Manager will provide a description of projects on the Refuge to the Regional Historic Preservation Officer, who will analyze the undertakings for potential effect on historic properties. The Regional Historic Preservation Officer will enter into consultation with the State Historic Preservation Officer and other parties as appropriate. No undertakings will proceed until the Section 106 process is completed. As such, the Refuge Manager will notify the Regional Historic Preservation Officer early in the planning for all projects or activities potentially affecting archaeological and cultural resources on Refuge land.

In regard to prescribed burning, existing burn breaks including roads and ditches are used to contain the fires. The use of existing breaks reduces the potential for archeological impacts are no ground disturbance occurs. In the case of wild fire suppression, a "fire plow" is used to contain wild fires only if there is a threat to human life, structures, and/or significant natural resources.

2.3 Wild Fire Prevention and Detection

Although fire may have historically played a role in the development of habitats on Necedah National Wildlife Refuge, human ignited fires and natural ignitions burning

without a prescription are likely to result in unwanted damage to cultural and/or natural resources. In order to prevent wildfire, an educational program will be utilized to reduce the threat of human caused fires. Ongoing monitoring will be conducted by refuge staff, visitors, and cooperators to detect fire ignitions.

2.4 *Wild Fire Suppression*

All wild fire suppression efforts will be directed toward safeguarding life while protecting the Refuge's resources and property from harm. Mutual aid resources responding from Cooperating Agencies will report to the Incident Commander to receive their duty assignment.

2.5 *Endangered Species*

There are four federally-listed species that utilize the Necedah National Wildlife Refuge; the bald eagle *(Haliaeetus leucocephalus)*, eastern timber wolf (also referred to as gray wolf) *(Canis lupus)*, whooping crane *(Grus americana),* and the Karner blue butterfly (KBB) *(Lycaeides melissa samuelis)*. One candidate species is currently present as well, the eastern massasauga rattlesnake *(Sistrurus catenatus catenatus).* All activities on National Wildlife Refuges that may affect federally-listed species require an intra-Service section 7 consultation pursuant to the Endangered Species Act as amended in 1973 (ESA). Candidate species are also covered in these consultations. An intra-Service section 7 consultation has been completed (Attachment 1) for Alternative A (No Action, Preferred Alternative) which entails implementation of the Fire Management Plan. This consultation is discussed further under Alternative A (2.6.2, Threatened, Endangered, and Candidate Species). If another alternative is selected, an intra-Service section 7 consultation would be required to assess the impact of that alternative on the five species noted above.

2.6. DESCRIPTION OF ALTERNATIVES

2.6.1 Alternatives Considered but Eliminated for Detailed Study

The following alternative was considered early in the planning. For various reasons this alternative was not considered as viable options for meeting the proposed goals of the Refuge's Fire Management Plan.

Livestock Grazing Only:

This alternative would involve the use of livestock alone to manage objectives for restoring, enhancing, and maintaining upland and wetland communities. No prescribed fire activities would be undertaken on upland or wetland communities

Analysis indicated that grazing has only limited application in the restoration of ecosystem functions in plant communities native to the Refuge. Grazing cannot reduce years of accumulated litter and organic material. Grazing by large hoofed herbivores can introduce and spread exotic plant species, expose mineral soils increasing erosion, and increase nutrient loading in Refuge wetlands. Economically speaking, the demand to implement grazing does not exist, since the vegetation on the Refuge is considered too "rank" or of such low quality by farmers and ranchers under livestock nutritional standards. Grazing may, however, be used in combination with other management tools to achieve habitat management objectives on the Refuge.

2.6.2 **Alternative A** - ***Full wildfire suppression and use of prescribed fire to achieve resource objectives (No Action, Preferred)***

Under Alternative A, management direction at the Refuge would proceed in accordance with the existing Fire Management Plan. This alternative provides for the implementation of the Refuge's Fire Management Plan (see plan for details) use of prescribed fire on the Refuge to restore, enhance, and maintain upland and wetland communities. This is considered the "No Action" alternative since prescribed fire and fire suppression are current and ongoing activities.

Service Trust Resources

Threatened, Endangered, and Candidate Species

Under this alternative, the Refuge would continue managing habitat for four federally-listed species and one candidate species (eastern massasauga rattlesnake). Habitat would be managed to support one large viable population of KBBs on Refuge land, provide feeding and nesting habitat for the whooping cranes and bald eagles, and to maintain habitat for the eastern timber wolf and eastern massasauga rattlesnake.

An intra-Service section 7 consultation has been completed for implementation of the Fire Management Plan (Attachment 1). The consultation evaluated the impacts of prescribed burning and fire suppression on the five species noted above and identified conservation measures to protect or minimize harm to these species. These conservation measures have been incorporated into the Fire Management Plan. The conservation measures are consistent with those in the revised March 21, 2002, Biological Opinion (BO) completed for Necedah National Wildlife Refuge's Comprehensive Conservation Plan (CCP). Refer to Attachment 1 for a review of the conservation measures that will be taken for the species noted above when implementing the Fire Management Plan.
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The intra-Service section 7 consultation found that, with implementation of conservation measures, prescribed burning and fire suppression activities 1) either had no effect, or would not adversely affect the gray wolf, whooping crane, or bald eagle, 2) would not jeopardize the eastern massasauga rattlesnake, and 3) would adversely affect the KBB. The adverse effects to the KBB are due to the loss of some individual KBB eggs, larvae, and adults that result during prescribed burning and that may result from fire suppression activities. However, these losses will be offset by the maintenance of savanna habitat on the Refuge which the KBB is dependent upon. Implementation of the Fire Management Plan, as noted above, is anticipated to promote the recovery of one large viable population of Karner blue butterflies on the Refuge. Because the revised March 21, 2002, BO fully analyzed the impacts of prescribed fire and fire suppression on the KBB, and the intra-Service section 7 consultation (Attachment 1) is consistent with that BO, no further formal consultation is necessary for the Fire Management Plan.

Waterfowl and other Migratory Birds

The Refuge would continue to optimize habitat for waterfowl and other migratory birds including restoring rare habitats with prescribed fire. The status quo option will increase waterfowl use and production on the Refuge as well as production of grassland species of concern (e.g. dickcissel, upland sandpiper, grasshopper sparrow).

Native Biological Diversity

Under alternative 1, the Refuge would manage for increased biological diversity on Refuge land by restoring and managing additional savanna habitat with prescribed fire.

Habitat Management

Under this alternative, clear goals and objectives that incorporate the most current resource management information would be used to guide habitat management (prescribed fire) on the Refuge. Habitat management objectives were developed using soils information and historical survey data, or were developed in response to management objectives for a particular species or population. In all cases, the planning team used the best information available to identify land that could be restored, enhanced, or converted to some other use. As proposed in the FMP, up to 10,000 acres would be prescribed burned annually under this alternative resulting in the restoration of savannas, sedge meadows, and grasslands. Habitat restoration would result in the loss of 6,100 acres of mixed forest.

2.6.3 **Alternative B -** ***Full wildfire suppression, no use of prescribed fire, mechanical or chemical control to achieve resource objectives***

This alternative would involve a hands off strategy to management. Naturally caused fires (i.e. lightning) and man-made fires (i.e. trash burning, trains, etc.) will be suppressed in accordance with Service policy and under the authorities and statutes

pertaining managing wildland fire on lands or threatening lands under the jurisdiction of the Department of the Interior, or lands adjacent thereto. Only those actions mandated by policy or regulation, such as fire suppression and noxious weed control would be undertaken. No prescribed fire activities would be undertaken on upland or wetland communities. Management would focus on maintaining physical facilities only.

Service Trust Resources

Threatened, Endangered, and Candidate Species

As Karner blue butterflies require early successional habitat, succession would eventually degrade all Karner blue butterfly habitat on the Refuge. All other trust species requiring open landscapes including the eastern massasauga and whooping crane would suffer similarly. Species benefitting from a diversity of habitats including bald eagles and gray wolves would also suffer.

A separate intra-Service consultation would be required on the fire suppression activity if this alternative is chosen to assess impacts on the species noted above.

Waterfowl and other Migratory Birds

As all of the Refuge "puddle duck" production occurs within burn units, this production would be lost. Several grassland species of concern including bobolinks, Henslow's sparrows, dickcissel, and sedge wrens also nest within burned grasslands on the Refuge. Adoption of this alternative would negatively affect these species as well.

Native Biological Diversity

The open grasslands that are currently maintained would become closed-canopy forest thereby greatly reducing biological diversity on the Refuge.

Habitat Management

The Refuge would abandon all habitat management of burn units under this alternative.

2.6.4 Alternative C: *Full wildfire suppression, no use of prescribed fire, and use of mechanical management to achieve resource objectives (Haying/Mowing)*

This alternative involves the management of burn units through mowing and haying operations. Naturally caused fires (i.e. lightning) and man-made fires (i.e. trash burning, trains, etc.) will be suppressed in accordance with Service policy and under the authorities and statutes pertaining managing wildland fire on lands or threatening lands under the jurisdiction of the Department of the Interior, or lands adjacent thereto. No

prescribed fire activities would be undertaken on upland or wetland communities. Management would focus on managing upland and wetland habitats through mechanical methods only.

Service Trust Resources

Threatened, Endangered, and Candidate Species

As KBBs require early successional habitat, succession would eventually degrade most KBB habitat on the Refuge. However, under this alternative a few KBB populations would be preserved. The few remaining KBB sites would be degraded as leaf litter accumulations would be unfavorable for wild lupine (the KBB's only known larval food source). All other trust species requiring open landscapes including the eastern massasauga and whooping crane would suffer similarly. Species benefitting from a diversity of habitats including bald eagles and gray wolves would also suffer.

If this alternative were chosen, a separate intra-Service section 7 consultation would be needed to assess the impacts of fire suppression and mechanical management on the species noted above.

Waterfowl and other Migratory Birds

As all of the Refuge "puddle duck" production occurs within burn units, most of this production would be lost. Several grassland species of concern including bobolinks, Henslow's sparrows, dickcissels, and sedge wrens also nest within burned grasslands on the Refuge. Adoption of this alternative would negatively affect these species as well.

Native Biological Diversity

The open grasslands that are currently maintained would become closed-canopy forest thereby greatly reducing biological diversity on the Refuge.

Habitat Management

The Refuge would be able to maintain only a few sites as early successional habitat under this alternative.

2.6.5 Alternative D: *Full wildfire suppression, no use of prescribed fire, and use of chemical control to achieve resource management objectives (Herbicides)*

This alternative involves the management of burn units through herbiciding. Naturally caused fires (i.e. lightning) and man-made fires (i.e. trash burning, trains, etc.) will be suppressed in accordance with Service policy and under the authorities and statutes pertaining managing wildland fire on lands or threatening lands under the jurisdiction of the Department of the Interior, or lands adjacent thereto. No prescribed fire activities would be undertaken on upland or wetland communities. Management would focus on managing upland and wetland habitats through chemical methods only.

Service Trust Resources

Threatened, Endangered, and Candidate Species

As KBBs require early successional habitat, succession would eventually degrade most KBB habitat on the Refuge. However, under this alternative a few KBB populations would be preserved. The few remaining KBB sites would be degraded as leaf litter accumulations would be unfavorable for wild lupine (the KBB's only known larval food source). All other trust species requiring open landscapes including the eastern massasauga and whooping crane would suffer similarly. Species benefitting from a diversity of habitats including bald eagles and gray wolves would also suffer.

If this alternative were chosen, a separate intra-Service section 7 consultation would be needed to assess the impacts of fire suppression and chemical control on the species noted above.

Waterfowl and other Migratory Birds

As all of the Refuge "puddle duck" production occurs within burn units, most of this production would be lost. Several grassland species of concern including bobolinks, Henslow's sparrows, dickcissels, and sedge wrens also nest within burned grasslands on the Refuge. Adoption of this alternative would negatively affect these species as well.

Native Biological Diversity

The open grasslands that are currently maintained would become closed-canopy forest thereby greatly reducing biological diversity on the Refuge.

Habitat Management

The Refuge would be able to maintain only a few sites as early successional habitat under this alternative.

2.7 SUMMARY AND COMPARISON OF ALTERNATIVES

TABLE 1
Summary and Comparison of Alternatives

ACTION	**Alternative A - *Full wildfire suppression and use of prescribed fire to achieve resource objectives (No Action, Preferred)***	**Alternative B - *Full wildfire suppression, no use of prescribed fire, mechanical or chemical control to achieve resource objectives***	**Alternative C: *Full wildfire suppression, no use of prescribed fire, and use of mechanical management to achieve resource objectives (Haying/Mowing)***	**Alternative D: *Full wildfire suppression, no use of prescribed fire, and use of chemical control to achieve resource management objectives (Herbicides)***
- Threatened, Endangered, and Candidate Species	Would continue protecting all listed species and their habitats, including restoration and management of their habitats.	Would discontinue management of Karner blue butterfly, whooping crane, and eastern massasauga habitat.	Would continue protecting all listed species and their habitats, but habitat would be greatly reduced or degraded.	Would continue protecting all listed species and their habitats, but habitat would be greatly reduced or degraded.
- Waterfowl and other Mig. Birds	Would increase waterfowl and grassland/savanna species of concern use and production through additional habitat management.	All puddle duck production as well as grassland and savanna bird production would be lost.	Waterfowl production as well as grassland and savanna bird production would be greatly reduced.	Waterfowl production as well as grassland and savanna bird production would be greatly reduced.
- Biological Diversity	Would manage for increased biological diversity on the Refuge through maintenance and restoration of grasslands and savannas.	All of the diversity within early successional habitats would be lost.	Most of the diversity currently occurring within early successional habitats would be preserved on a few sites	Most of the diversity currently occurring within early successional habitats would be preserved on a few sites.
3. Habitat Management	Maintain open landscape land and restore an additional 6,100 acres. Coniferous, bloodleaf, and mixed forests would decrease by 6,100 acres.	All habitat management would cease. All open landscape land would convert to closed-canopy forest through succession.	Most open landscape land would convert to closed-canopy forest through succession. A few sites would be maintained as open.	Most open landscape land would convert to closed-canopy forest through succession. A few sites would be maintained as open.

Chapter 3 - AFFECTED ENVIRONMENT

3.1 DESCRIPTION OF THE PHYSICAL ENVIRONMENT

As of 1994, the Refuge consisted of roughly 43,700 acres of pine, oak, and aspen forests, grasslands and savannas, wetlands, and open water areas.

Refuge forest communities (upland) include northern mesic forest (white and red pine, bigtooth aspen, trembling aspen, red maple) and mixed wet-mesic forest (jack pine, northern pin oak, red maple, trembling aspen, paper birch). Refuge forests provide excellent habitat for many neo-tropical migratory birds such as the scarlet tanager, eastern wood-pewee, and ovenbird. Currently upland forests on the Refuge comprise roughly 16,500 acres.

Refuge grasslands, savannas, fallow fields, and shrublands comprise open landscapes on the Refuge. Refuge grasslands include prairies, fallow fields, and meadows. Tree cover on the grasslands ranges from little to none. Plant cover is a mixture of sedges, grasses, and forbs that attract nesting bobolinks, vesper sparrows, grasshopper sparrows, and upland sandpipers. Some common grassland species on the Refuge include big bluestem, little bluestem, Kentucky bluegrass, and a wide variety of other grasses, sedges and forbs. Blackberry and spirea are scattered in grassland areas as well. Willow-dogwood communities are invading old farm fields and wet meadows in places where disturbance is rare. Refuge grasslands provide important nesting habitat for many migratory birds including ducks, geese, and Sandhill cranes, and also serve as grazing sites for white-tailed deer.

Refuge savannas include northern pin oak, jack pine, warm season grasses, upland sedges, blueberry, goldenrod, and wild lupine. These savanna areas are also known as barrens, because fire and tree diseases such as oak wilt are more common in the droughty, sandy soils. These disturbances keep the trees small and scattered. Oak savanna has been defined as having at least one tree per acre, but less than 50 percent cover. Wisconsin historically had over 4 million acres of barren habitat covering 12 percent of the state. Today less than 0.14 percent remains. Refuge savannas support massasauga rattlesnakes, phlox moths, Blandings turtles, Karner blue butterflies, and more than 110 species of birds. Currently, open landscape lands on the Refuge comprise roughly 3,700 acres.

Refuge wetlands include forested, non-forested, and open water wetlands. The majority of these occur within pools, streams, and ditches. Wetland plant species include pondweeds, spike rushes, elodea, coontail, milfoils, and duckweeds. Some Refuge pools are drawn down for part of the year to promote the production of high energy waterfowl foods such as millet, smartweed, chufa, beggar ticks, pigweed, sedges, and spikerush. Ditches and streams also provide additional wetland habitat, although to a lesser extent than Refuge pools.

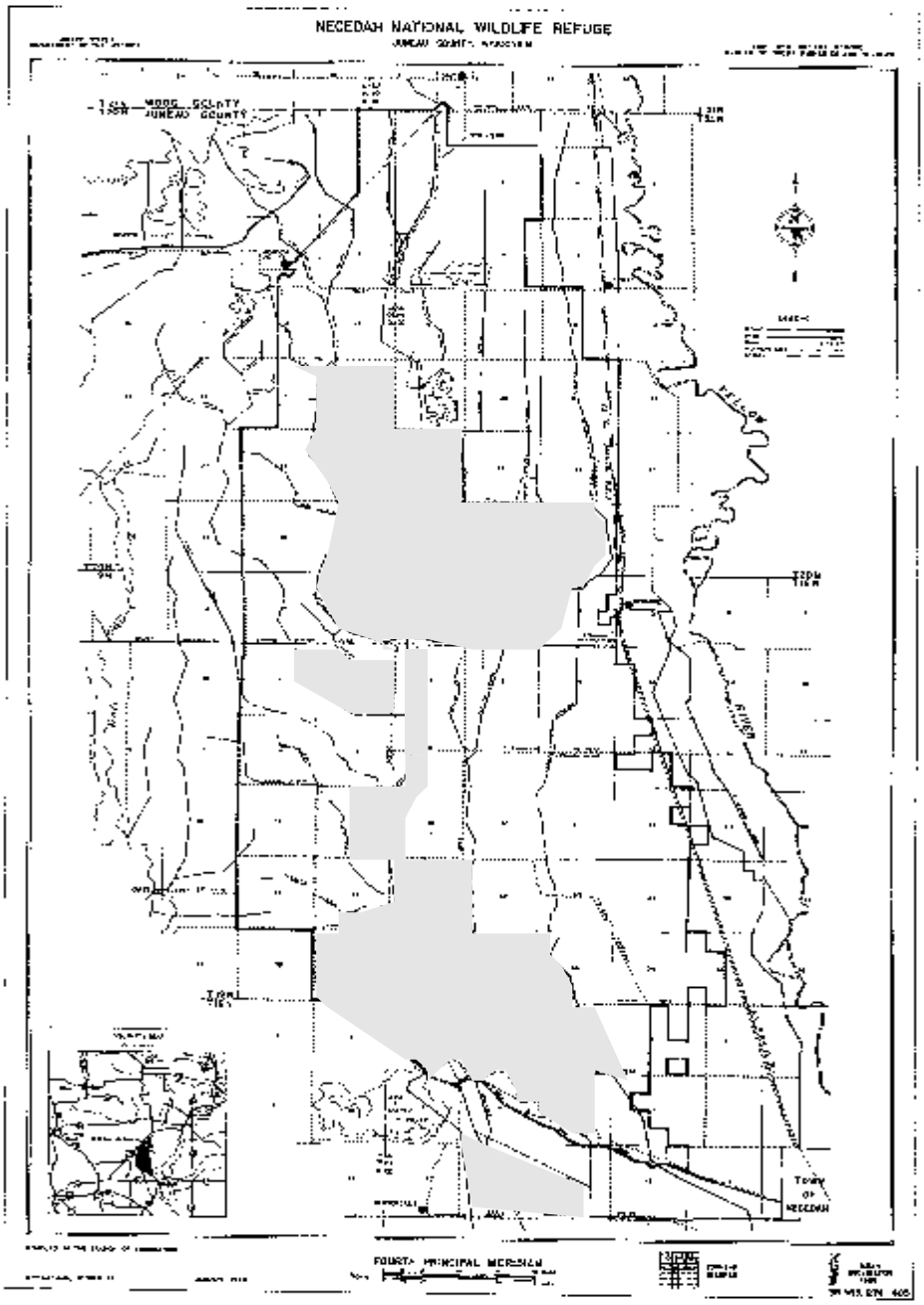
Wet meadows and marsh edges consist of bur-reed, smartweeds, beggar's ticks, bulrushes, blue-joint grass, and reed canary grass. Open sedge meadows comprise mixed sedges with invading jack pine, willow, and hardhack. Sedge meadows on the Refuge are home to northern harriers, sedge wrens, and sora rails.

Bottomland forested areas include jack pine, silver and red maple, green ash, northern pin and swamp white oak, river birch, and trembling aspen. Tamarack was historically present in these areas. Currently non-forested, forested, and open water wetlands comprise roughly 23,500 acres.

TABLE 2
Land Cover Types in the Refuge

Land Cover Type	Acres
Open Landscapes (grasslands, savanna, shrublands, old fields)	3,700 acres
Coniferous Forests	900 acres
Mixed Deciduous and Coniferous Forests	10,000 acres
Broad-leaf Deciduous Forests	5,600 acres
Emergent Wetlands and Wet Meadows	10,500 acres
Forested Wetlands	5,700 acres
Lowland Shrubs	5,500 acres
Open Water Areas	1,800 acres
TOTAL	**43,700 ACRES**

Figure 2. Areas Covered by Environmental Assessment for Necedah National Wildlife Refuge (January 2002)



3.2 DESCRIPTION OF THE BIOLOGICAL ENVIRONMENT

3.2.1 Threatened, Endangered, and Candidate Species

As stated in Chapter 2, Federally Threatened, Endangered, and Candidate threatened or endangered species that utilize the Refuge include the bald eagle, eastern timber wolf, and Karner blue butterfly. The Refuge also supports the eastern massasauga rattlesnake, which is a candidate for federal listing.

State-listed threatened or endangered species that use the Refuge include the bald eagle, red-shouldered hawk, Blanding's turtle, eastern massasauga rattlesnake, and trumpeter swan. The Refuge also supports several state-listed species of plants. These include the prairie fameflower, small skullcap, oval-leaved milkweed, spring beauty and wooly milkweed.

Bald Eagle

The bald eagle, America's national symbol, experienced a drastic decline throughout the country from the 1950s into the early 1970s. Bald eagles were listed as an endangered species in 1976. Due to successful conservation efforts, the bald eagle was recently upgrade to a threatened species. One occupied eagle nest currently occurs at the Refuge.

Eastern Timber Wolf

In 1973, the wolf was listed as a federal endangered species and as a state endangered species in the state of Wisconsin in 19755. Between 1979-1986, studies showed that four to six wolf packs (15-25 animals) roamed two areas of northern Wisconsin. Since this period, wolf packs continue to increase throughout Wisconsin. Currently there are at least 66 confirmed wolf packs (248-259 animals) territories in northwestern and central Wisconsin and 11 established wolf packs in the central Wisconsin forest complex. Territories of four packs, Suk Cearney, Yellow River, Dead Creek, and South Bluff, may extend onto the Refuge. The Suk Cearney pack's territory appears to be concentrated on the southern end of the Refuge. The bulk of the Yellow River Pack's territory covers the north end of the Refuge. Both packs use the Refuge for denning and rendezvous sites. For the most recent map of wolf pack distribution in Wisconsin, see the Wisconsin Department of Natural Resources website at: http://www.dnr.state.wi.us/org/land/er/publications/wolf_progress_reports/ 00wolfprogress /map99-00.gif.

Karner Blue Butterfly

Karner blue butterflies (KBB) have undoubtedly been long time residence of the Refuge property. Presently, KBBs are known to occur in 12 population complexes within the Refuge, which constitutes the world's largest remaining population of Karner blue butterflies. The KBB was listed as an endangered species in 1993.

Eastern Massasauga Rattlesnake

Eastern massasauga rattlesnakes have already disappeared from most of Wisconsin. Once widespread and plentiful in southern and western Wisconsin, the eastern massasauga has been reduced to just five populations in the state. One of those populations is located next to the Refuge in the Yellow River. The Yellow River was long considered Wisconsin's best massasauga population in terms of the species abundance. Evidence of this is found in bounty records which indicate that bounty was paid on more than 4,000 massasaugas between 1952 and 1972.

The Refuge is thought to harbor eastern massasauga rattlesnakes on its eastern edge, the side of the Refuge that borders the Yellow River. Two snakes were located on the Refuge during the 1990s and both were using sedge meadows east of Highway 80. One of the snakes, a male, had been fitted with a radio transmitter a year earlier on the Yellow River. During 1996 he made the trip from the bottoms of the Yellow River to the Refuge (over a mile one-way) and back. The other snake, a sub-adult, was found near the Refuge in 1993.

Whooping Crane

Whooping crane chicks were introduced at the Refuge in the summer of 2001 as part of a whooping crane reintroduction project to establish a migratory population in the eastern U.S. to contribute toward recovery of the species. The population has been designated as a non-essential population (NEP) in a rule making action finalized on June 26, 2001. The crane chicks are being reared in a pen situation and trained to follow ultra light aircraft in migration to a selected wintering site at Chassahowitzka National Wildlife Refuge. Annual whooping crane introduction, rearing, and release activities are expected to continue for a period of 10 years.

3.2.2 Waterfowl and Other Migratory Birds

For centuries, birds have descended upon the Refuge area during their annual migrations between Central and South America and their northern U.S., Canadian, and Arctic breeding grounds. In total, more than 230 different species of birds have been observed on the Refuge since its inception. The Refuge has long been considered an important migratory stopover area for mallards, blue-winged teal, ring-necks, and wood ducks. Other migrant species that utilize the Refuge during spring, summer, or fall include: Canada, snow, and white-fronted geese; sandhill cranes; woodcock; snipe; great blue herons; swans; egrets; dickcissels; warblers; brown thrashers; several different species of sparrows; meadowlarks; sora rails; black-crowned night herons; bobolinks; bitterns; red-headed woodpeckers; and red-tailed hawks; just to name a few. During migrations, three species of geese, 10 species of dabbling ducks, nine species of diving ducks, and trumpeter and tundra swans are commonly found in significant numbers on the Refuge. Waterfowl are most abundant in the fall, with fall counts of

ducks averaging around 20,000. Resident bird species include wild turkeys, ruffed grouse, sharp-tailed grouse, woodpeckers, and nuthatches.

3.2.3 Air Quality

Existing air quality at Necedah National Wildlife Refuge is within the national ambient air standards adopted in April, 1971. The state of Wisconsin has established Intrastate Air Quality Control Regions to monitor regional air quality. The national air standards have been adopted by the state. Secondary air standards regarding sulfur oxides, suspended particulate matter, carbon monoxide, carbon dioxide, nitrogen dioxide and hydrocarbons within the Refuge are all satisfied.

The entire Refuge has good air quality. The area is rural with no significant manufacturing emissions or land forms which create inversions. Winds are common and mixing occurs readily on most days. The Refuge's fire management activities resulting in the discharge of pollutants (smoke, carbon monoxide, particulate, and other pollutants from fires) are subject to and must comply with all applicable Federal, State, interstate, and local air pollution control requirements as specified by Section 118 of the Clean Air Act, as amended 1990.

Roads, both heavily and lightly traveled, bound many of the Refuge but do not border any of the burn units (see FMP). Individual residences and the villages of Necedah and Sprague or often more than 5 miles from the burn units and are therefore not impacted by smoke from prescribed fire and wildfire. Sensitive areas including residences, trails and roads are identified during the planning stages of a prescribed fire. The management of smoke is then incorporated into the individual prescribed fire plan to assure that smoke is well dissipated prior to its reaching any smoke sensitive areas of concern. Although the majority of fuels are fine and generate low volumes of smoke for short duration, smoke from prescribed fires can at times cause poor visibility within half mile of the source. Smoke dispersal then is a consideration in determining whether or not a prescribed burn is within prescription.

Informing the public prior to actual burning will reduce any adverse impact of smoke on surrounding ownerships. Smoke effect will be mitigated by burning with wind and atmospheric conditions to lift smoke and dissipate most ground level smoke. Burn day observations will be made through weather station information, the Daily Weather Forecast from NOAA and on site weather data collected with the use of a standard fire weather kit.

Burning will be conducted in accordance with the Wisconsin Department of Natural Resources (DNR). Refuge personnel also take special care to notify neighbors, fire departments, and local law enforcement agencies on burn day. These actions are specific requirements of individual burn plans.

Smoke from prescribed fires and wildland fires is a recognized health concern for firefighters. Prescribed burn bosses and wildfire incident commanders must plan to minimize exposure to heavy smoke.

Chapter 4 - ENVIRONMENTAL CONSEQUENCES

4.I. Environmental Consequences Related to Natural Resource Concerns

4.1.1 Alternative A - *Full wildfire suppression and use of prescribed fire to achieve resource objectives (No Action, Preferred)*

Habitat Impacts:

Plant species responses to fire are never totally negative or totally positive, there are always some species harmed, some benefitted, and some unaffected by a give fire. The regional effect of fire on vegetation is influenced by a variety of factors, including precipitation patterns before and after a fire, pre-fire vegetative composition, topography, and season of burning. Drier conditions, such as those in southern and western Wisconsin contribute to lower fuel moisture and therefore high fireline intensity, resulting in more severe fires. In the case of vegetation and habitats periodic fire sets back the stage of succession wherever it is applied. Degraded areas (those areas where fire suppression has been practiced) are more likely to suffer greater amounts of fire damage than un-degraded areas, as degraded areas have lower initial humidity levels, greater amounts of litter and ground cover, and smaller size tree. Thus periodic rejuvenation is needed for the healthy ecosystem.

Alternative A provides the Refuge with the ability to maintain early succession habitats such as savannas, sedge meadows, and grasslands that dramatically increase diversity on the Refuge and in the Region.

Impacts on Wildlife:

The effects of fire on wildlife include both direct and indirect effects. The deleterious effects of prescribed fire on wildlife can include destruction of nesting sites and possible killing of birds, reptiles, or mammals trapped in the fire. Those animals with limited dispersal abilities (e.g. turtles), and narrow tolerance ranges with regards to temperature and humidity (e.g., insects, amphibians) will suffer the greatest negative effects. These negative effects are generally short duration. The young and the old or ill animals would be affected more strongly than healthy adults. The major effects on wildlife are indirect and pertain to changes in food and cover. Prescribed fires can increase the edge effect and amount of browse material, thereby improving conditions for deer and other wildlife. Quail and turkey favor food species and semi-open or open conditions that can be created and maintained by burning. Prescribed burning can improve habitat for marshland birds and animals by increasing food production and availability. Different successional stages benefit some wildlife species over others and most species will be effected only for a short period of time

immediately following the application of fire. Different habitat types in different successional stages provide for a greater diversity of wildlife species.

Threatened, Endangered and Candidate Species:

Refuge habitats currently supporting Karner blue butterfly (KBB) populations would be maintained with prescribed fire under this alternative. Also, potential habitats would be restored under this alternative which could potentially increase likelihood of the species recovery and delisting.

Whooping cranes and eastern massasaugas will benifit from habitat work under this alternative as both require open, early successional habitats. Timber wolves will also benefit from the habitat work as it will diversify the prey base.

Cultural Resources:

Preparation for prescribed fires such as constructing fire lines are subject to Section 106 of the National Historic Preservation Act. The procedures in the Notice dated December 8, 1999, "Historic Preservation Responsibilities," apply to the planning and preparation for conducting prescribed fires.

Efforts to control wildland fires (including prescribed fires that get out of control) are also subject to Section 106 of the National Historic Preservation Act. We will meet our obligations under this act in the following ways:

When the land covered by a wildfire has been inventoried to identify cultural resources, and the cultural resources have been evaluated for significance according to the criteria for the National Register of Historic Places, the Fire Management Officer will direct ground disturbing fire suppression efforts around (will avoid impacting) historic properties. Nevertheless, evidence of a previously undetected cultural resource may be encountered. The project leader shall immediately notify the Regional Historic Preservation Officer (RHPO). The RHPO will take immediate steps to have the cultural resource evaluated and protected, as appropriate, to the extent required by law and policy. This may require arranging for a qualified professional to visit and evaluate the site's importance and recommend a course of action. An evaluation and decision on the disposition of the cultural resource should be made within 48 hours of the discovery unless the project's schedule allows greater flexibility.

When the land covered by a wildfire has *not* been inventoried for cultural resources and wildfire suppression activities do result in ground disturbing activities, we will take the following action. Soon after fire control, the project leader will contact the RHPO to arrange for an archeologist to investigate the disturbed areas to determine if sites were affected.

Refuge operations and maintenance funds (subactivity 1261) will pay the cost of these activities unless the action is an emergency archeological and historic

property survey in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment. Emergency archeological and historic property surveys in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment, and archeological, historic structure, cultural landscape, and traditional cultural property resource stabilization and rehabilitation can be funded with emergency rehabilitation funding (subactivity 9262). This situation applies to all alternatives.

Public Perceptions:

In general, the public has been slow to accept fire as a legitimate management tool for many reasons. One of the most significant reasons is because of the past message of fire suppression from those responsible for ecosystem management. Through outreach and education in recent years prescribed fire is becoming more and more accepted by the general public as a habitat management tool even in spite of situations such as those that occurred at Los Alamos.

4.1.2 Alternative B - *Full wildfire suppression, no use of prescribed fire, mechanical or chemical control to achieve resource objectives*

Habitat Impacts:

Discontinuation of prescribed fire activities on this Refuge would drastically alter current habitats. The greatest effect of fire suppression on biological diversity is not on the diversity within a particular habitat, but on the diversity of habitats across a landscape. Landscapes with high diversity resulting from fire perpetuate high species diversity by providing opportunities for the establishment and maintenance of early successional species and communities. Removing prescribed fire as a management tool may create a hazardous fuel loadings as witnessed in other parts of the country. Typically wildfire events in these areas of abnormally high fuel loadings cause adverse impacts to sensitive plant communities. Tactical operations (i.e. dozers, plows, etc.) associated with wildfire suppression can also cause adverse impacts to sensitive plant communities.

Impacts on Wildlife:

Wildlife populations would be influenced indirectly by the impacts of the discontinuation of prescribed burning activities on associated vegetative communities. Species dependent on fire influenced ecosystems would decline and be replaced by species more tolerant of conditions created when fire is removed as an ecological process. Overall species diversity would also decline. Inadvertent destruction of wildlife habitat and disruption of resident wildlife populations could occur as a result of activities associated with fire suppression activities. Similar to habitat impacts, wildlife, threatened and endangered

species, and/or other natural and cultural resources can be negatively impacted by the removal of prescribed fire as a management option. Fuel loadings can reach dangerous levels without periodic removal supporting wildfire conditions that can lead to catastrophic losses.

Threatened and Endangered Species:

Many of the Threatened and Endangered species of Wisconsin are directly or indirectly dependant on fire. Refuge habitats capable of supporting populations of endangered species, but that do not currently do so, (i.e. grasslands with wild lupine, *Lupinus perennis*, within Karner Blue Butterfly, *Lycaeides melissa samuelis* habitat range) would decline leading to reduced likelihood of recovery and delisting. All current KBB sites would be degraded and lost to succession under this alternative.

Cultural Resources:

Known cultural resources would receive protection from all types of fire under this alternative.

Public Perceptions:

The view of un-managed lands in the rural Wisconsin is that of a "wasteland", an eyesore that could be put to better use producing crops or forage for cattle. With a hands-off approach to management this perception would be intensified as incidences of noxious weeds and invading brush further degrade these areas.

4.1.3 Alternative C: *Full wildfire suppression, no use of prescribed fire, and use of mechanical management to achieve resource objectives (Haying/Mowing)*

Habitat Impacts:

Discontinuation of prescribed fire activities on this Refuge would drastically alter current habitats. The greatest effect of fire suppression on biological diversity is not on the diversity within a particular habitat, but on the diversity of habitats across a landscape. Landscapes with high diversity resulting from fire perpetuate high species diversity by providing opportunities for the establishment and maintenance of early successional species and communities. Removing prescribed fire as a management tool may create a hazardous fuel loadings as witnessed in other parts of the country. Typically wildfire events in these areas of abnormally high fuel loadings cause a threat to life and property, particularly in the urban interface, as well as become a financial burden. Tactical operations (i.e. dozers, plows, etc.) for wildfire suppression cause adverse impacts to sensitive plant communities.

Mowing removes the herbage much like grazing, although without the selectivity. It is not a natural form of ecological management as is grazing and fire, but does trigger some of the same responses. The greatest loss of nutrients occurs by mowing if the herbage is removed as is often the case. Mowing/haying is not a tool that can be easily utilized on all habitat types (i.e. forests, wetlands). Elimination of management on these habitats would lead to a further degradation.

Impacts to Wildlife:

The effects of mowing/haying on wildlife are similar to those of fire. Mowing hay drastically alters the structure of the vegetation, which affects species differently depending on their habitat preferences. Mowing hay also can cause nest losses as well as mortality of fledglings and adults. If mowing is frequent, many birds may not be able to complete their nesting cycles.

Threatened, Endangered and Candidate Species:

Mowing/haying could also damage plants through crushing by tractor and/or mower tires. Improper application of mowing or haying in habitats that have the *potential* for supporting certain endangered species but do not currently do so could lead to accidental alteration of the habitat making it unsuitable. Most existing KBB sites would be degraded and lost to succession under this alternative.

Cultural Resources:

See *Cultural Resources* section of Alternative A.

Public Perception:

Mowing and particularly haying are generally accepted as management tools in Wisconsin's rural landscape. Much of Wisconsin's rural income is derived through dairy farming. Dairy cattle require high quality feed to produce large quantities of milk and by July 15, after much of the upland nesting has been completed, the forage produced on the Refuge is of such low quality for dairy cattle that the demand would be nominal. Additionally, ant hills, stumps, etc. deter many farmers from cutting grasslands even as bedding for fear of damaging expensive equipment.

4.1.4 Alternative D: *Full wildfire suppression, no use of prescribed fire, and use of chemical control to achieve resource management objectives (Herbicides)*

Habitat Impacts:

Discontinuation of prescribed fire activities on this Refuge would drastically alter current habitats. The greatest effect of fire suppression on biological diversity is not on the diversity within a particular habitat, but on the diversity of habitats across a landscape. Landscapes with high diversity resulting from fire perpetuate high species diversity by providing opportunities for the establishment and maintenance of early successional species and communities. Removing prescribed fire as a management tool may create a hazardous fuel loadings as witnessed in other parts of the country. Typically wildfire events in these areas of abnormally high fuel loadings cause a threat to life and property, particularly in the urban interface, as well as become a financial burden. Tactical operations (i.e. dozers, plows, etc.) for wildfire suppression cause adverse impacts to sensitive plant communities.

Herbicides are selective or non-selective. Selective herbicides set back or kill monocots or dicots (depending on the type of herbicide) through various methods. Non-selective herbicides are designed to be toxic to a wide variety of plants both monocot and dicot. Both selective and non-selective herbicides will kill or negatively impact a wide variety of vegetation, both wanted and unwanted. On habitats where this alternative would be applied, this alternative would result in a general decrease in diversity through the promotion of plant species resistant to the chemical(s) while removing those species that are susceptible. Reliance on a chemical only strategy would also increase the chances of producing chemically resistant species from those that once were susceptible making future control difficult and costly. Herbicides may also be toxic to wetland environments. Herbicides often enter waterways and wetlands through surface runoff and accumulate in the sediment phase of wetlands, where their fate is poorly understood. Generally the U.S. Fish and Wildlife Service is restricted in its use of herbicides to only those that are “Moderately”, “Slightly” and “Practically Non-Toxic” to aquatic systems.

Wildlife Impacts:

By their very nature, most herbicides pose some risk of harm to humans, animals or the environment because they are designed to kill or adversely affect living organisms. Herbicides' effects on wildlife may be lethal, sublethal, acute, chronic, habitat related, or there may be no effect. In general the risk a herbicide poses to wildlife is related to the herbicide type, its toxicity, the proximity of the application to wildlife habitat, the dose, application rate, number of applications, the persistence of the herbicide in the environment, and its ability to concentrate in the wildlife food chain. These factors interact with food habits and behavior of individual wildlife species to produce a response. Application of herbicides can affect birds by reducing the availability of seeds. Herbicides and insecticides reduce the abundance and diversity of litter- and foliage-dwelling arthropods. Herbicides also can cause acute or sublethal effects on birds. Herbicides entering wetlands in runoff, as well as through atmospheric deposition, may bioaccumulate in fish and other aquatic organisms.

Threatened, Endangered and Candidate Species:

A 1988 review of a sample of the Nation's endangered and threatened species indicated that about 20 percent were listed, in part, because of herbicide use. Improper use of herbicides in habitats that have the *potential* for supporting certain endangered species but do not currently do so could lead to accidental alteration of the habitat making it unsuitable. Most KBB sites would be degraded and lost to succesion under this alternative.

Cultural Resources:

See *Cultural Resources* section of Alternative A..

Public Perception:

The use of herbicides has become a public issue due to contamination of water supplies, effects on the environment, and real or perceived negative effects on animals and humans. All herbicide applications on the Refuge are completed by licensed and certified Commercial Herbicide Applicators following label directions.

4.2 Cumulative Impacts Related to Natural Resource Concerns

4.2.1 Alternative A - *Full wildfire suppression and use of prescribed fire to achieve resource objectives (No Action, Preferred)*

No cumulative loss of early successional habitats would result at Necedah NWR from implementation of this alternative. Forested landscapes on the Refuge would decrease by 6,100 acres from 18,200 to 12,100 acres. This alternative strives to maintain/restore 2,600, 3,500, and 3,500 acres of savanna, grassland and sedge meadow respectfully. Expansion of these rare habitats on the Refuge will have regional implication to diversity and rare species conservation. In regard to savannas, the habitat restoration work will have global implications as this habitat is threatened globally. The goal for habitat distribution on Refuge lands follows the philosophy of restoration to pre-settlement conditions. The decision to conduct the restoration activities was made during the Refuge's Comprehensive Conservation Planning (CCP) process and is discussed in the CCP Environmental Assessment.

4.2.2 Alternative B - *Full wildfire suppression, no use of prescribed fire, mechanical or chemical control to achieve resource objectives*

A significant increase in mature and contiguous forests would occur through time under this alternative. Benefits to interior forest migratory birds and animals would likely occur over time. The Refuge would lose all early successional and fire dependent habitats such as grasslands, savanna, and sedge meadows under this alternative. Loss of these habitats would result in the loss of Karner blue butterflies on the Refuge eliminating full recovery and down/delisting of the species as the Refuge is listed as a "recovery" site.

In Wisconsin, over 90% of the original grasslands have been lost to agricultural and urban development activities by humans. The remaining habitat serves an important role in maintaining populations of many grassland dependent bird species. Over 99% of the original oak savanna in the Midwest has been lost to development or agriculture, making oak savanna one of the rarest habitats in the Midwest. Suppression of fire on early successional habitats has resulted in a decrease in the biological diversity as these areas succeed to mature forest.

4.2.3 Alternative C: *Full wildfire suppression, no use of prescribed fire, and use of mechanical management to achieve resource objectives (Haying/Mowing)*

A significant increase in mature and contiguous forests would occur through time under this Alternative. Benefits to interior forest migratory birds and animals would likely occur over time. Significant cumulative loss of all early successional and fire dependent habitats on the Refuge such as grasslands, savanna, and sedge meadows would occur. Loss of these habitats would result in the loss of Karner blue butterflies on the Refuge eliminating full recovery and down/delisting of the species as the Refuge is listed as a "recovery" site.

In Wisconsin, over 90% of the original grasslands have been lost to agricultural and urban development activities by humans. The remaining habitat serves an important role in maintaining populations of many grassland dependent bird species. Over 99% of the original oak savanna in the Midwest has been lost to development or agriculture, making oak savanna one of the rarest habitats in the Midwest. Suppression of fire on early successional habitats has resulted in a decrease in the biological diversity as these areas succeed to mature forest.

4.2.4 Alternative D: *Full wildfire suppression, no use of prescribed fire, and use of chemical control to achieve resource management objectives (Herbicides)*

A significant increase in mature and contiguous forests would occur through time under this alternative. Benefits to interior forest migratory birds and animals would likely occur over time. Significant cumulative loss of all early successional and fire dependent habitats on the Refuge such as grasslands, savanna, and sedge meadows would occur. Loss of these habitats would result in the loss of Karner blue butterflies on the Refuge eliminating full recovery and down/delisting of the species as the Refuge is listed as a "recovery" site.

In Wisconsin, over 90% of the original grasslands have been lost to agricultural and urban development activities by humans. The remaining habitat serves an important role in maintaining populations of many grassland dependent bird species. Over 99% of the original oak savanna in the Midwest has been lost to development or agriculture, making oak savanna one of the rarest habitats in the Midwest. Suppression of fire on early successional habitats has resulted in a decrease in the biological diversity as these areas succeed to mature forest.

TABLE 3
Summary and Comparison of Alternatives

	Alternative A - ***Full wildfire suppression and use of prescribed fire to achieve resource objectives (No Action, Preferred)***	**Alternative B - *Full wildfire suppression, no use of prescribed fire, mechanical or chemical control to achieve resource objectives***	**Alternative C: *Full wildfire suppression, no use of prescribed fire, and use of mechanical management to achieve resource objectives (Haying/Mowing)***	**Alternative D: *Full wildfire suppression, no use of prescribed fire, and use of chemical control to achieve resource management objectives (Herbicides)***
Habitat Impacts	Refuge would maintain existing habitats and restore additional savannas, sedge, meadows, and grasslands resulting in the loss of 6,100 acres of mixed forest	All of the Refuges existing savannas, sedge meadows and grasslands would be lost under this alternative and no additional habitats would be restored	Most of the Refuges existing savannas, sedge meadows and grasslands would be lost under this alternative and no additional habitats would be restored	Most of the Refuges existing savannas, sedge meadows and grasslands would be lost under this alternative and no additional habitats would be restored
Impacts on Wildlife	Habitat work under this alternative would benefit nesting waterfowl as well as red-headed woodpeckers, vesper sparrows, and golden-winged warblers	The Refuge would lose all of its puddle duck production as well as nesting habitat for all grassland, savanna, and sedge meadow birds	The Refuge would lose most of its puddle duck production as well as nesting habitat for all grassland, savanna, and sedge meadow birds	The Refuge would lose most of its puddle duck production as well as nesting habitat for all grassland, savanna, and sedge meadow birds

TABLE 3
Summary and Comparison of Alternatives

Threatened and Endangered Species	Karner blue butterflies, timber wolves, whooping cranes, and eastern massasaugas would benefit from this alternative	This alternative would result in the loss of all Karner blue butterfly and eastern massasauga habitat and the degradation of timber wolf and whooping crane habitat	Would continue protecting all listed species and their habitats, but habitat would be greatly reduced or degraded.	Would continue protecting all listed species and their habitats, but habitat would be greatly reduced or degraded
Cultural Resources	Wild fire suppression activities pose a potential threat to cultural resources	Wild fire suppression activities pose a potential threat to cultural resources	Wild fire suppression activities pose a potential threat to cultural resources	Wild fire suppression activities pose a potential threat to cultural resources
Public Perception	Refuge would need to continue ongoing education activities to inform the public of the need to conduct prescribed burn activities	The Refuge would only conduct wild fire suppression activities which would be appreciated by the public	The Refuge would only conduct wild fire suppression activities which would be appreciated by the public	The Refuge would only conduct wild fire suppression activities which would be appreciated by the public

Chapter 5 - LIST OF PREPARERS

Richard King, Necedah National Wildlife Refuge

Tom Magnuson, Region 3, U.S. Fish and Wildlife Service

Chapter 6 - CONSULTATION WITH THE PUBLIC AND OTHERS

This Environmental Assessment (EA) was available for a 30-day public review in local libraries (Wood and Juneau County) and at the Refuge Headquarters. The 30-day comment period ended on March 15, 2002. A press release announcing availability of the document and encouraging comments was provided statewide to news media on February 12, 2002.

This Environmental Assessment was developed with the U.S. Fish and Wildlife Service's Green Bay Field Office through Section 7 Endangered Species Permit consultation. Therefore, this environmental assessment includes all the endangered/threatened species conservation strategies developed during the Section 7 consultation.

The public was made aware of the concepts in this environmental assessment prior to the 30-day comment period as it was originally attached to a larger environmental assessment for the Necedah National Wildlife Refuge's Comprehensive Conservation Plan (CCP). Therefore, the elements in this EA were first made available for public comment on October 12, 2001.

Chapter 7 - PUBLIC COMMENTS

No comments were received during the 30-day public comment period.