

MEAD HUNT

Designing the future

ORIGINAL

January 19, 2006

Ms. Magalle R. Salas, Secretary
Federal Energy Regulatory Commission
ATTN: OEP/DHAC
888 First Street, N.E.
Washington, DC 20426

FILED THE
OFFICE OF THE
SECRETARY
2006 JAN 23 P 3 59
REGULATORY COMMISSION

Subject: Articles 402 and 405, Order Issuing Subsequent License –
Minor Project Issued August 31, 2005
Middle Appleton Dam Hydroelectric Project; FERC Project No. 7264
Appleton, Wisconsin

016
-017

Dear Ms. Salas:

On behalf of the Fox River Paper Company and N.E.W. Hydro, Inc., we are hereby filing one original and eight copies of the *Bald Eagle Management and Protection Plan* and *Invasive Species Monitoring Plan* for the Middle Appleton Dam Hydroelectric Project. The plans are being submitted in accordance with Articles 402 and 405 of the above-mentioned subsequent license.

Copies have been sent to those entities that were consulted on matters related to this filing. Proof of service is also included.

Thank you for your time and consideration in this matter. If you have any questions, please contact me.

Respectfully submitted,

MEAD & HUNT, Inc.

Arie DeWaal
Project Manager

Enclosures

cc: See attached list

Certificate of Service

I hereby certify that I, on behalf of the Fox River Paper Company and N.E.W. Hydro, Inc., have this day served the foregoing documents upon each person designated on the attached distribution list.

Dated this 19th day of January, 2006.



Arie DeWaal
MEAD & HUNT, Inc.

Distribution List

Middle Appleton Dam Hydroelectric Licensing

FERC Project No. 7264

Articles 402 and 405

Ms. Magalie R. Salas, Secretary

Office of the Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Ms. Peggy Harding

Regional Engineer
Federal Energy Regulatory Commission
Chicago Regional Office
Federal Building
230 South Dearborn Street, Room 3130
Chicago, IL 60604

Mr. Mark Holey

Field Supervisor
U.S. Department of the Interior
Fish & Wildlife Service
Green Bay Field Office
2661 Scott Tower Drive
New Franken, WI 54229-9565

Mr. Bob Martini

Statewide Rivers and FERC Coordinator
State of Wisconsin
Department of Natural Resources
107 Sutcliffe Avenue
Rhineland, WI 54501

Mr. John Rom, Manager

Engineering and Maintenance
Fox River Paper Company
430 East South Island Street
P.O. Box 2215
Appleton, WI 54913-2215

Mr. Chuck Alsberg

N.E.W. Hydro, Inc.
116 State Street
P.O. Box 167
Neshkoro, WI 54960

ORIGINAL

**Bald Eagle
Management
and Protection
Plan**
(final)

2006 JAN 23 4: 00
FILED
OFFICE OF THE
SECRETARY
FEDERAL ENERGY
REGULATORY COMMISSION

**Middle Appleton Dam
Hydroelectric Project
FERC Project No. 7264**

**Lower Fox River
Outagamie County, Wisconsin**

Report prepared for



and

N.E.W. Hydro, Inc.

Report prepared by



January 2006

Table of Contents

	Page
1. Introduction	1
2. Habitat and Population.....	2
3. Management/Protection Measures.....	3

FILED
OFFICE OF THE
SECRETARY
2006 JAN 23 P 4: 00
REGULATORY COMMISSION



Appendices

- A Article 402
- B Bald Eagle Perch Tree Locations
- C *Bald Eagles in Wisconsin - A Management Guide for Landowners*
- D *Management Guidelines for Breeding Areas of the Northern States Bald Eagle Recovery Plan*
- E *Bald Eagle Winter Management Guidelines*
- F *Bald Eagle Management Guidelines (FWS)*
- G Correspondence

Section No. 1
Introduction

1. Introduction

This *Bald Eagle Management and Protection Plan* for the Middle Appleton Dam Hydroelectric Project has been prepared in response to Article 402 of the Federal Energy Regulatory Commission's August 31, 2005, *Order Issuing Subsequent License – Minor Project*.

A copy of Article 402 is contained in Appendix A.

The bald eagle (*Haliaeetus leucocephalus*) is a federally listed threatened species and state-listed special concern species. In July of 1999 the U.S. Fish & Wildlife Service (FWS) proposed delisting the bald eagle, but in July of 2000 indefinitely delayed the action due to concerns over habitat protection. Past counts conducted by the Wisconsin Department of Natural Resources (WDNR) have shown an expanding bald eagle population in the Upper Midwest.

The Middle Appleton Dam Hydroelectric Project *Bald Eagle Management and Protection Plan* is designed to cooperate with appropriate resource agencies and riparian landowners to protect, and where possible, enhance habitat for the bald eagle. As indicated in the maps shown in Appendix B, the Middle Appleton Dam Hydroelectric Project area is very limited.

The Fox River Paper Company does own several buildings in the area, including those housing six of the seven hydroelectric units. The N.E.W. Hydro, Inc. leases space in a building owned by the Alexander Company, Inc. The leased space houses the seventh hydroelectric unit.

In addition, the Fox River Paper Company owns portions of land on the southern edge of the Middle Appleton Dam tailwater area and north of the project's west canal. The city of Appleton owns a strip of land located between the Fox River and Fox River Paper Company lands on the southern edge of the Middle Appleton Dam tailwater. These lands were given to the city by Fox River Paper as a part of a public trail development.

Section No. 2
Habitat and Population

2. Habitat and Population

The Middle Appleton Dam and project area lie within the corporate limits of the city of Appleton. The project is located within a highly urbanized area with the land use near the project being predominantly industrial along this stretch of the Lower Fox River. The project is actually located in the heavily industrialized area known as the "flats."

There is little in terms of vegetation located along the north shore of the Lower Fox River both upstream and downstream of the project dam (Middle Appleton Dam), as well as on the south shore of the Lower Fox River upstream of the project dam. The south shore of the Lower Fox River downstream of the project dam contains a narrow band of trees along the shoreline.

As a result, there are a limited number of perching/loafing trees available and there are only a few trees that eagles prefer to perch on along this reach of the river. Appendix B shows the location of the bald eagle perch trees. These trees are currently located on lands owned by the city of Appleton (below the project dam) and WE Energies (above the project dam) and it is unlikely that eagles would attempt to nest in the project area due to disturbance factors and a lack of super-canopy trees.

Suitable foraging habitat for eagles exists within the project area throughout the year. Bald eagles have been observed foraging, primarily during the winter, in open water below the Middle Appleton Dam.

Winter eagle surveys of the Fox River have been conducted by the WDNR on an annual basis. Recent surveys (2003-2005) have resulted in one eagle in both 2003 and 2004 and no eagles in 2005 being observed in the project area. More eagles were observed near the 1,000 Islands Conservancy Area located downstream of the Middle Appleton Dam Hydroelectric Project in the city of Kaukauna.

Section No. 3
Management Protection Measures

3. Management/Protection Measures

As mentioned previously, existing perching/loafing trees shown in Appendix B are located on lands owned by WE Energies and the city of Appleton. Therefore, in order to protect existing perch trees and wintering habitat from incompatible uses, the Fox River Paper Company and N.E.W. Hydro, Inc. will inform the appropriate riparian landowners and the resource agencies of the importance of these trees and provide copies of this plan. Appendices C through F of this plan include federal and state management guidelines, such as *Bald Eagles in Wisconsin - A Management Guide for Landowners* (Eckstein, 1990); *Management Guidelines for Breeding Areas of the Northern States Bald Eagle Recovery Plan* (Grier, 1983); *Bald Eagle Winter Management Guidelines* (Martell, 1992); and *Bald Eagle Management Guidelines* (FWS).

The Fox River Paper Company and N.E.W. Hydro, Inc. are unaware of effective methods to reduce or prevent bald eagle use of the open water tailwater area if contaminant problems develop as a result of wintering bald eagles feeding in the project tailwater. The Fox River Paper Company and N.E.W. Hydro, Inc. will cooperate with efforts by state and federal resource agencies to implement such measures, should the need arise.

If the resource agencies identify and inform the Fox River Paper Company and N.E.W. Hydro, Inc. of potential adverse impacts to eagles or their habitat as a result of project operation or activities on project lands or waters, the Fox River Paper Company and N.E.W. Hydro, Inc. will, within 30 days, forward such notification to the Commission.

The Fox River Paper Company and N.E.W. Hydro, Inc. will review the provisions of this plan every 5 years. If deemed necessary, revisions will be made and appropriate resource agencies will be consulted.

Within 45 days of acceptance of this plan by the Commission, copies will be distributed to appropriate riparian landowners and resource agencies informing them of the existence and importance of bald eagle roost trees on their property. The Fox River Paper Company and N.E.W. Hydro, Inc. will cooperate with management/protection measures if implemented by the private landowners and resources agencies.

Appendix A. Article 402

Article 402. Bald Eagle Management and Protection Plan. Within six months of license issuance, the licensee shall file for Commission approval a plan to protect bald eagle and their habitat at the project. The plan shall be prepared after consultation with the Wisconsin Department of Natural Resources (Wisconsin DNR) and the U.S. Fish and Wildlife Service (FWS).

The plan shall be consistent with the bald eagle management guidelines of the Wisconsin DNR and the FWS and shall include, at a minimum, the following:

1. reasonable measures to prevent bald eagles from using the winter, open-water project tail waters if a contaminant (i.e., polychlorinated biphenyls and other pollutants, such as mercury and lead) problem develops in bald eagles feeding in the tail waters;
2. guidelines for managing vegetation and ground disturbing activities;
3. a provision for review, consultation, and revision of the plan as needed every five years through the license period.

The license shall include with the bald eagle management and protection plan documentation of agency consultation, including copies of agency comments and recommendations on the plan, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and make recommendations, before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified that the plan is approved. Upon approval, the licensee shall implement the plan according to the approved schedule, including any changes required by the Commission. *

Appendix B. Bald Eagle Perch Tree Locations

LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

For Large-Format(s):

Accession No.: 20060126-0272

Security/Availability:

- PUBLIC
- NIP
- CEII
- NON-PUBLIC/PRIVILEGED

File Date: Jan 23, 06 Docket No.: P 7264

Parent Accession No.: 20060126-0271

Set No.: 1 of 1

Number of page(s) in set: _____

Appendix C. *Bald Eagles in Wisconsin – A Management Guide for Landowners*

September 1990

BALD EAGLES IN WISCONSIN

A Management Guide for Landowners



Department of Natural Resources
Bureau of Endangered Resources

MANAGING YOUR LAND

Why is management necessary?

For the bald eagle population to survive and recover to its former abundance, eagles need adequate habitat--places to nest and raise their young, undisturbed feeding areas, and suitable roost sites. But the eagle's habitat is being threatened. The increase in the number of people in rural Wisconsin during the last 30 years has increased the demand for housing, highways, industry, timber, and recreation. This increase in disturbance and loss of habitat will reduce the amount and quality of habitat available for the comeback of the bald eagle unless management plans are developed that consider the eagle's needs.

Where to begin?

In the following section we have listed general guidelines for managing your land to protect bald eagles. Since each nest, roost, and feeding site has unique qualities, we recommend you contact your local wildlife manager for specific recommendations.

Department of Natural Resources wildlife managers annually conduct an aerial survey of all eagle nests.

Management of nest sites.

Protection zones

Some activities close to a bald eagle nest may disturb the eagles when they are building their nests, sitting on eggs, and raising their young. Other activities may change the habitat around the nest so that the eagles do not return to the nest the following year. On the following pages are recommendations for establishing Protection Zones around nest sites on your property. Three different Protection Zones are recommended for each nest site, and suggestions for ways you can avoid disturbing the eagles are listed. These Protection Zones should be established for nests currently being used and for alternate nest sites that have been used in the past three years.

FOR BALD EAGLES

Timber harvest

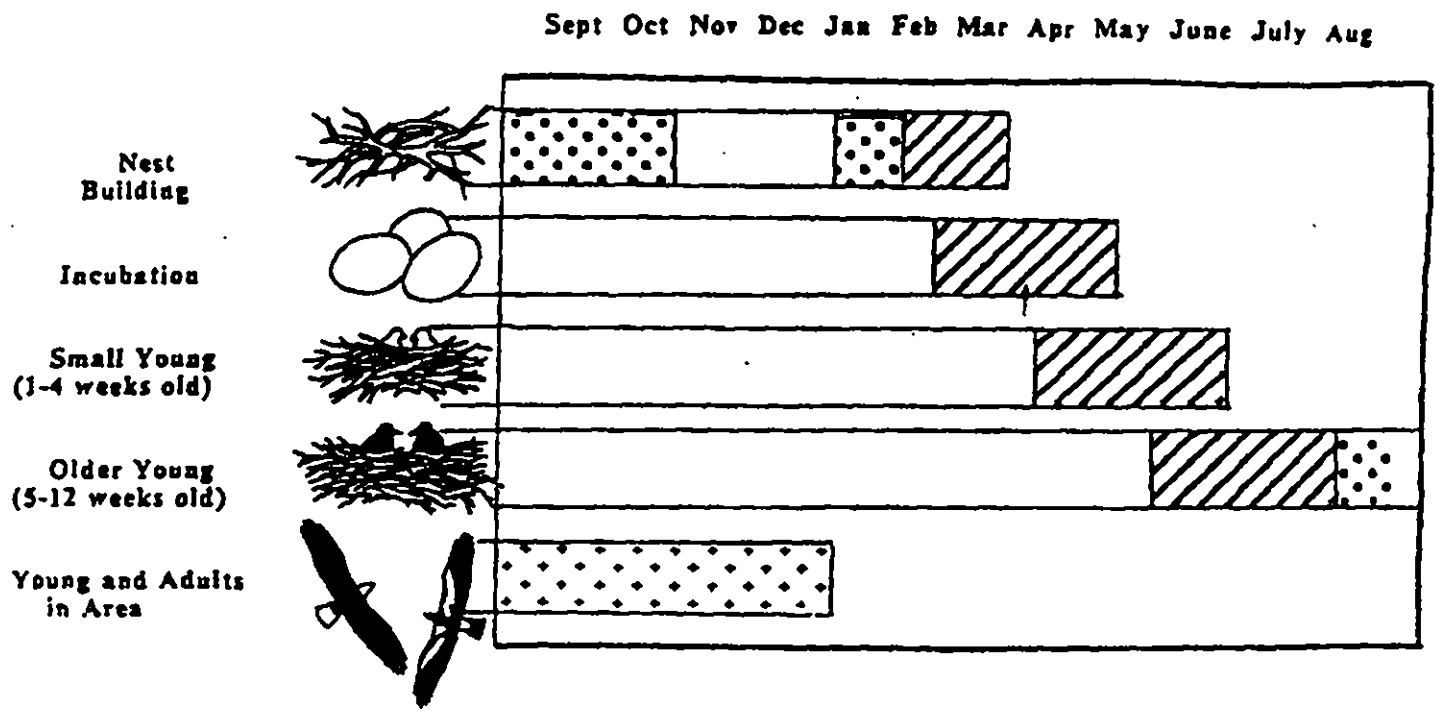
If timber is harvested on your property, the method used--clearcut, seed-tree cut, shelterwood cut, or selective thinning--will have an effect on existing eagle habitat and will create or eliminate eagle habitat for the future. It is essential that some of the tallest mature trees remain standing to provide nest trees for the future. Your state wildlife manager and state forester can work with you to develop a sound management plan.

Farming




Some pairs of eagles are more tolerant of human activity than others and nest close to agricultural fields and roads. A pair of eagles may become used to a tractor working in a field close to the nest or may tolerate occasional traffic along a nearby lane; however, the eagles may be disturbed during the critical part of the nesting season (March 15 to June 15) if activity changes--cars beginning to stop within sight of the nest or a sudden increase in the amount of activity in the field near the nest.



BALD EAGLE NESTING IN WISCONSIN



How sensitive are the eagles to disturbance by people?

-  Most sensitive to disturbance
-  Still sensitive to disturbance
-  Least sensitive to disturbance

PROTECTION ZONES

Zone 1

In Zone 1 eagles are most sensitive to disturbance, and the greatest degree of protection is necessary. The boundary of this zone should be a minimum of 330 feet from the nest.

Recommendations:

1. Year-round
These habitat changes should be prevented:
 - Timber cutting of any kind
 - Land clearing
 - Building, road, or trail construction
2. April 1 to July 15
 - People should not be allowed in this zone.
3. July 16 to August 15
 - Activity should be kept to a minimum.

Zone 2

In Zone 2 the eagles are still sensitive to disturbance during the nesting season (April 1 to July 15) but less likely to be affected at other times of the year. The boundary of this zone should be a minimum of 660 feet from the nest.

Recommendations

1. Year-round
 - Human activity should be kept to a minimum. Consult a wildlife manager.
2. April 1 to July 15
 - Human activity should be kept to a minimum. Consult a wildlife manager.
3. July 16 to August 15
These activities are possible:
 - Hunting
 - Fishing
 - Hiking
 - Farming
4. August 16 to February 15
These activities are possible:
 - Timber stand management
 - Maintenance of existing buildings and roads

Zone 3

Most activities are possible in Zone 3 outside of the breeding season. However, the management of this zone should include the protection of any bald eagle roosts or feeding sites in the area. The boundary of this zone should be a minimum of one-quarter mile from the nest.

Recommendations

- Activities in this zone that are within sight of the eagles on the nest may need to be conducted outside the breeding season. Consult a wildlife manager.

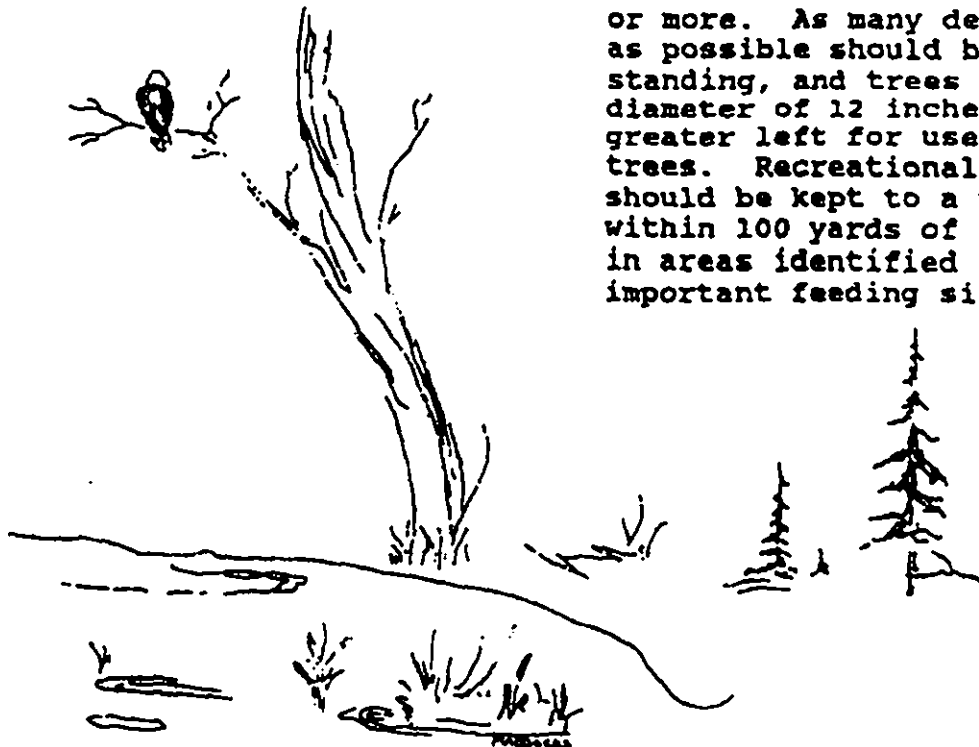
Management of roost and feeding sites.

Protection zones

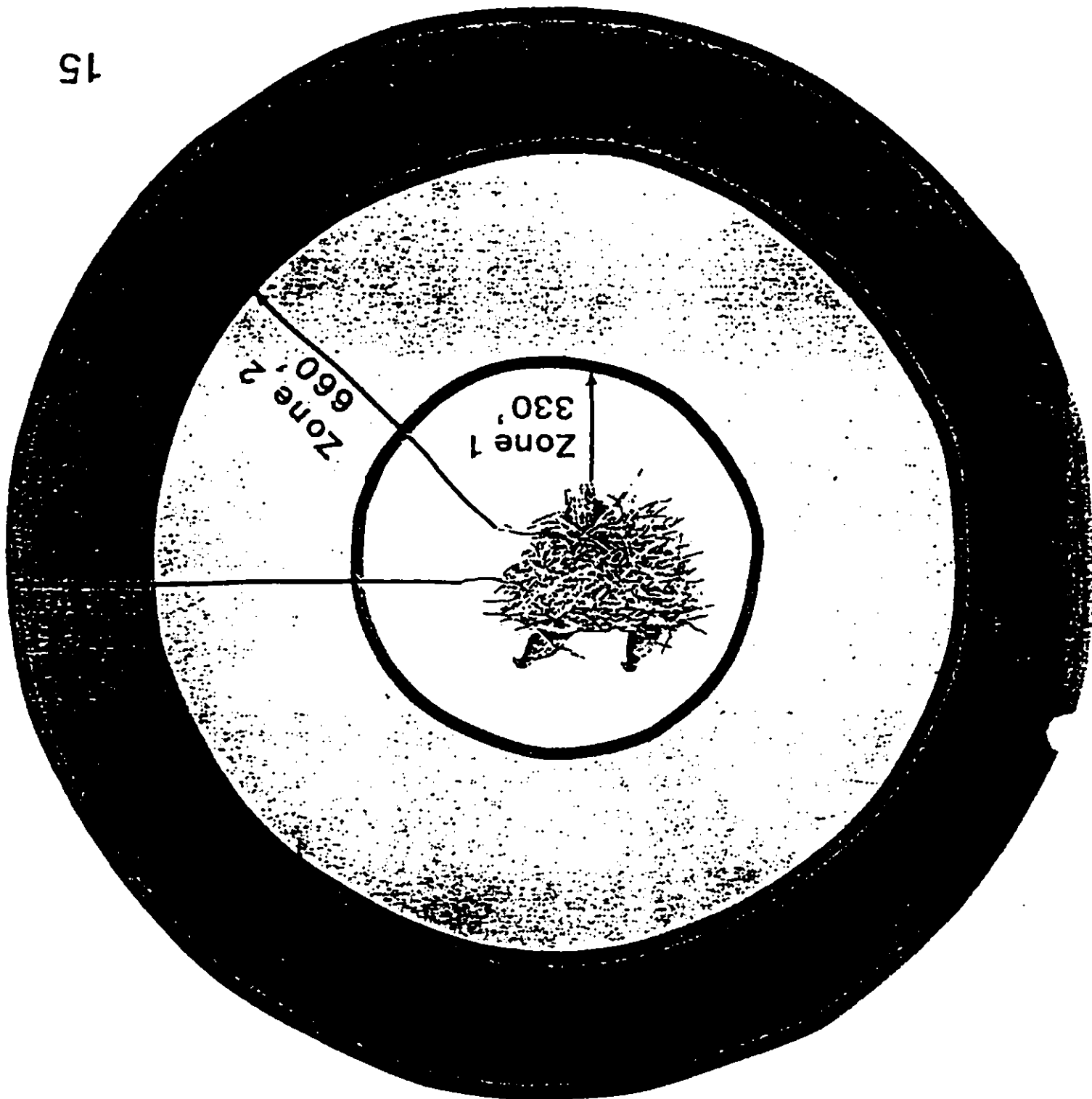
The mature live trees and dead trees necessary for perches and protection from the wind should be maintained in a zone 100 yards wide around each roost. This area should be closed to timber cutting and land clearing. Human activities within sight of the eagles should be restricted within 200 yards of the roost.

Shoreline

Land within 30 yards of the shoreline should be protected from timber cuts of one acre or more. As many dead trees as possible should be left standing, and trees with a diameter of 12 inches or greater left for use as perch trees. Recreational boating should be kept to a minimum within 100 yards of the shore in areas identified as important feeding sites.



ZONES OF PROTECTION
FOR WISCONSIN
BALD EAGLE NESTS



**Appendix D. *Management Guidelines for Breeding Areas of the
Northern States Bald Eagle Recovery Plan***



**NORTHERN
STATES
BALD
EAGLE
RECOVERY
PLAN**

This is the completed Bald Eagle (Northern States) Recovery Plan. It has been approved by the U.S. Fish and Wildlife Service. It does not necessarily represent official positions or approvals of cooperating agencies and it does not necessarily represent the views of all recovery team members, who played the key role in preparing this plan. This plan is subject to modification as indicated by new findings and changes in species status and completion of tasks described in the plans. Goals and objectives will be attained and funds expended contingent upon appropriations, priorities, and other budgetary constraints.

Additional copies may be obtained from:

Fish and Wildlife Reference Service
3840 York Street, Unit 1
Denver, Colorado 80205
Telephone: 303/571-4656

Approved:

J. Eugene Abster

Director, U.S. Fish and Wildlife Service
Acting

Date:

July 29, 1983

NORTHERN STATES BALD EAGLE RECOVERY PLAN

Prepared by the

Northern States Bald Eagle Recovery Team

James W. Grier, Leader, Zoology Department, North Dakota State University, Fargo, ND 58105

James B. Elder, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, MN 55111

Francis J. Gramlich, U.S. Fish and Wildlife Service, P.O. Box 800, Augusta, ME 04330

Nancy F. Green, Bureau of Land Management (240), 18th and C Streets N.W., Washington, D.C. 20240.

Joel V. Kussman, National Park Service, Denver Service Center, Denver, CO 80225

John E. Mathisen, U.S. Forest Service, Chippewa National Forest, Cass Lake, MN 56633

James P. Mattsson, U.S. Fish and Wildlife Service, Agassiz National Wildlife Refuge, Middle River, MN 56737

Appendix E

MANAGEMENT GUIDELINES FOR BREEDING AREAS

The purpose of these guidelines is to provide minimum criteria for protecting bald eagles at their breeding areas from human disturbance and to preserve and enhance important habitat features of these areas. The criteria are based on a synthesis of existing guidelines in present use by the U.S. Forest Service (Eastern Region), U. S. Fish and Wildlife Service, and the views of eagle researchers.

Although eagles often use particular nests for many years, they frequently move to different sites. Turnover of existing nests, from losses to wind, changes by the eagles, and other natural factors may be as much as 12% of the sites per year. Eagle "real estate" is much less fixed than for humans. Thus, the conservation and management of nesting habitat is far more important than the identification and preservation of specific nest sites or even breeding areas.

Eagle tolerance of human presence is highly variable, both seasonally and among different individuals or pairs of eagles. Some bald eagles nest and accept people, boaters, hikers, cabins, roads, and other human presence in very close proximity, possibly as a result of habituation. On the other hand, some may be extremely intolerant and be disturbed readily. This variability must be recognized in both research and management. Management should be conservative and assume that intolerant birds may be present now or in the future. We should be especially conservative in areas with low populations.

All nesting eagles are disturbed more easily at some times of the nesting season than at others. Four periods of sensitivity to disturbance can be identified for nesting areas. These are as follows.

1. Most critical period. Prior to egg laying bald eagles engage in courtship activities and nest building. During this and the incubation periods they are most intolerant of external disturbances and may readily abandon the area. The most critical period for disturbances therefore extends from approximately one month prior to egg laying through the incubation period.
2. Moderately critical period. This includes approximately one month prior to the above period and about four weeks after hatching. Prior to the nesting season individual pairs of eagles vary considerably in time of return to the nest site or, if permanent residents, the time they begin to come into physiological condition for breeding and become sensitive to

disturbance. After hatching the chicks are quite vulnerable to inclement weather and need frequent brooding and feeding. Disturbance can keep adults from nests and, depending on the weather and length of time involved, may cause weakening or death of chicks. The adults are quite protective of the nest site as long as one or more healthy chicks are present. Thus, disturbance at this time is less critical, although still potentially detrimental, than during the pre-laying and incubation period.

3. Low critical period. This period extends from the time chicks are about one month of age until approximately six weeks after fledging. During this time adults are still quite attached to nesting areas but tolerate moderate amounts of human presence. Restriction should be decided on a case by case basis.
4. Not critical period. The existence of this period depends on whether adults are permanent residents in their nesting areas. In most regions adults leave the vicinity for a few weeks or months each year. During the time they are gone one need be concerned only with activities that alter the habitat in ways that would make it unsuitable for future nesting.

The timing of these periods depends on geographic location. Eagles tend to breed earlier farther south or in coastal locations. Establishment of critical periods in management planning will therefore depend on the timing of nesting in each area.

Management of nesting areas will depend on the amount of suitable habitat, numbers of pairs present, extent of the areas used by nesting eagles, and present land uses. Plans should be prepared for each breeding area and planning should encompass larger units when habitat is suitable and many nesting pairs are present. In planning for a large region, particularly if major changes in land use or development are anticipated, the following major items should be addressed:

1. Distribution of habitat modification. Large contiguous areas of habitat should remain suitable, not just small, specific sites where nests currently are located.
2. Upper limit to habitat modification. Limits on habitat modification should be clearly established in advance, and unplanned development should be discouraged or prohibited. Limits set in advance are generally more acceptable to persons desiring further development; the process permits reasonable negotiation and compromise and limits are easier to enforce.
3. Rate of development. Development should only be allowed to approach the upper limit slowly, over a period of years. Sudden, large-scale development should be prevented if possible.
4. Seasonal timing of human activity. Construction and related activities should be confined to the low or non-critical periods of the year described above.

5. Human attitudes toward eagles in the area. Much human-eagle interaction depends on the predominant attitude of human residents of each area. Residents and visitors of some areas are very favorably disposed toward the birds, if not proud and quite protective. They may be careful not to disturb the birds and may help prevent disturbance or destruction by other persons. Such attitudes should be encouraged through education and law enforcement. Illegal shooting of eagles, especially young birds of the year still in the vicinity of nests during the fall hunting season, should be severely penalized.

The above guidelines pertain to larger geographic units where several eagles may be nesting. The following pertain to specific breeding areas.

SITE-SPECIFIC MANAGEMENT PLANS

A. Basic information and essential habitat. Site-specific management plans should be tailored to the size and configuration of essential habitats, and should address such factors as the prey base, habitat used for foraging, and any other features necessary for maintaining habitat suitability. In addition, management plans should clearly specify restrictions on human activities and habitat alterations in establishing buffer zones around nests (see next point in outline). For basic information forms, see end of this appendix.

B. Disturbance Buffer Zones for Nest Trees. Each nest within a breeding area will be protected by three zones that become less restrictive to human activity as the distance from the nest increases. Some activities need to be restricted only during the nesting season, or critical periods. Guidelines for zones, based on those developed by the U. S. Forest Service in the Eastern Region and used in several parts of the United States, are described below. If buffer zones are used they should be established around all nest sites within a breeding area regardless of their activity status, since alternate nests often are used as feeding platforms and roosting sites.

1. Primary Zone

- a) Size: The boundary of this zone should be 330 feet (5 chains) from the nest.
- b) Restrictions: All land use except actions necessary to protect or improve the nest site should be prohibited in this zone. Human entry and low-level aircraft operations should be prohibited during the most critical and moderately critical periods, unless performed in connection with eagle research or management by qualified individuals. Motorized access into this zone should be prohibited. Restrictions on human entry

at other times should be addressed in the breeding area management plan, considering the types, extents, and durations of proposed or likely activities.

2. Secondary zone

- a) Size: This zone should extend 660 feet (10 chains) from the nest.
- b) Restrictions: Land-use activities that result in significant changes in the landscape, such as clearcutting, land clearing, or major construction, should be prohibited. Actions such as thinning tree stands or maintenance of existing improvements can be permitted, but not during the most critical and moderately critical periods. Human entry and low-level aircraft operations should be prohibited during the most critical period unless performed in connection with necessary eagle research and management by qualified individuals. Roads and trails in this zone should be obliterated, or at least closed during the most and moderately critical periods. Restrictions on human entry at other times should be addressed in the breeding area management plan, considering the types, extents, and durations of proposed or likely activities.

3. Tertiary Zone

- a) Size: This is the least restrictive zone. It should extend one-quarter mile (20 chains) from the nest, but may extend up to one-half mile (40 chains) if topography and vegetation permit a direct line of sight from the nest to potential activities at that distance. The configuration of this zone, therefore, may be variable. 1320 ft.
- b) Restrictions: Some activities are permissible in this zone except during the most critical period. Each breeding area management plan may identify specific hazards that require additional constraints.

C. Other Management Guidelines.

1. Abandoned Nest Trees

- a) When a tree containing an eagle nest has blown down or has been damaged so it can no longer support a nest, remove all buffer zones. The breeding area management plan itself, however, should remain in effect or be revised, such as by removing buffer zones until a new nest is established.
- b) When a nest structure disappears but the nest tree remains the buffer zones should remain in effect through at least the following three breeding seasons. If the nest is not rebuilt, remove the zoning but still consider the area as essential habitat and protect it accordingly.

- c) When a nest is classified as a remnant, that is, one that has been unoccupied for five consecutive years, and is not being maintained by eagles, retain only the primary zone.

Roosting and Potential Nest Trees.

- a) Three or more super-canopy trees (preferably dead or with dead tops) should be identified and preserved within one-quarter mile of each nest as roosting and perching sites.
- b) In areas identified as potential nesting habitat, there should be at least four to six over-mature trees of species favored by bald eagles for every 320 acres within 1320 feet of a river or lake larger than 40 acres. These trees should be taller than surrounding trees or at the edge of the forest stand, and there should be clear flight paths to them.
- c) Artificial nest structures may be provided where suitable nest sites are unavailable in occupied or potential habitat. Structures may be placed in trees containing dilapidated nests; in trees without existing nests, but which otherwise appear suitable; or in man-made structures such as powerlines or tripods. Nest platforms should be approximately five to six feet in length and width (25-36 square feet) and be made to last for several years. Roosting structures may be erected using powerpoles with several horizontal perches near the upper end.

3. Prey Base Management

- a) Fisheries management should strive to maintain a prey base consistent with eagle food habits.
- b) In some breeding areas, particularly in the west, mammals form a portion of the diet of bald eagles. Land management in these areas should maintain an adequate prey base in terrestrial habitats.
- c) Feeding of eagles may be considered a valid management tool in areas where natural prey are highly contaminated or temporarily unavailable for some reason. This management option rarely will be used.
- d) In some regions, commercial and sport fishermen may be providing an important but unrecognized (by people) food source for eagles by dumping rough fish. Many commercial fishermen are also suffering from reduced catches of game fish and quotas imposed for the purpose of managing fisheries. Subsidization perhaps in the form of monetary or tax incentives might benefit eagles, fishermen, and possibly the fisheries.

SITE-SPECIFIC MANAGEMENT PLANS

Outline for data file and breeding area management plans

Breeding Area No. and Name: _____

Nest No.(s): _____

Location: _____

Date: _____

By: _____

I. Breeding Area Characteristics

- A. General Description**
 - Nest Site Relationships
 - Overview of Habitat and Land Uses
- B. Feeding Areas (Known and/or Assumed)**
- C. Known or Potential Perch/Roost Trees**
- D. Potential Nest Sites Available**
- E. Land Ownership within Breeding Area**
 - Identify Acquisition Needs
- F. Post-nesting Use of Habitat**

II. Nest Site Characteristics (Each nest in territory)

- A. Tree Measurements (height, DBH, size); Nest Measurements**
- B. Condition of Nest Tree**
- C. Date Constructed**
- D. Timber Type, Size and Density**
- E. Distance to Water**
- F. Distance to Roads and Other Development**
- G. Accessibility**
- H. Relation of Nest Height to Surrounding Canopy**
- I. Precise Directions for Reaching Nest**

III. Pair Behavior and Biology

- A. Response to Human Intrusion, if Known
Analysis of Existing and Potential Disturbance Hazards**
- B. Summary of Nesting History**
- C. Research and Study Data Available**

IV. Management Constraints

- A. Roads and Trails to be Closed or Re-routed**
- B. Buffer Zone Configuration**
- C. Modification of Existing or Proposed Timber Sales, Roads, Recreation Development, etc.**
- D. Essential Habitat**

V. Special Hazards

e.g., Powerlines, Recreation Activity, etc.

Recommend low-level (500') aerial photographs taken in each cardinal direction with nest in the center; important features of the breeding area, including perch sites and alternate nest sites, can be shown. A map (recommend scale of 4" = 1 mile) should be a part of the plan showing all important aspects of the management plan contents.

**Example of form used by
U.S. Forest Service (Eastern Region)**

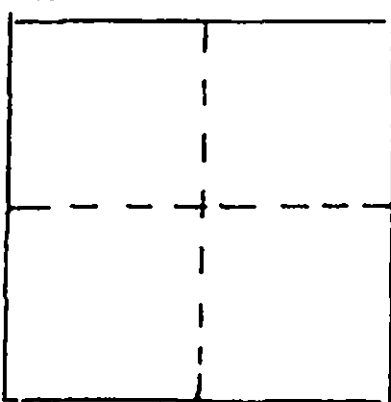
BALD EAGLE NEST RECORD			Territory Name _____	
			Nest Code _____	
			Prepared By _____	Date _____
State _____	County _____	Forest _____	District _____	Legal Description _____

LANDOWNERSHIP <input type="checkbox"/> National Forest <input type="checkbox"/> Other Fed. or State <input type="checkbox"/> County, City, etc. <input type="checkbox"/> Private	NEST TREE Species _____ DBH _____ Ht. _____ Condition of Tree _____ Remarks: _____	NEST Height _____ Apx. Size _____ Date Constructed _____ Accessibility: <input type="checkbox"/> D <input type="checkbox"/> M <input type="checkbox"/> E/ Visibility: _____
---	--	--

NEST HABITAT Timber type, size, & density _____ Distance to open water (.1 mi.) _____ mi. Dist. to lake-100 Ac. or larger (1.5 mi.) _____ mi. Dist. to major river (.5 mi.) _____ mi. Dist. to swamp (.1 mi.) _____ mi. T.S & D. _____ Nest trees available? _____ Apx. No. _____ Remarks: _____	DEVELOPMENT Distance to nearest main road (.1mi) _____ mi. Distance to woods (LUR) road (.1mi) _____ mi. Structural developments nearby _____ <input type="checkbox"/> Wild <input type="checkbox"/> Mod. developed <input type="checkbox"/> Well developed Timber cutting in area? _____ I.S.I. Planting, etc.? _____ Remarks: _____
--	---

FEEDING AREA: _____

MANAGEMENT CONSIDERATIONS AND REMARKS;

MAP Scale - 	DIRECTIONS TO REACH NEST _____ _____ _____
--	--

I/D-Difficult to reach; M-Moderately easy to reach; E-Easy to reach nest site.

SUGGESTED FORM FOR LETTER TO PRIVATE LANDOWNERS

(Modified from letter being used in the state of Maine)

Dear []:

You are one of the few fortunate individuals in the continental United States to have a bald eagle nest on your property. As you probably are aware, the bald eagle population declined for many years. Pesticides, shooting, trapping, and other human activities all have been involved. Another important factor is the loss of nesting habitat.

We are contacting you because of this last concern. As part of a coordinated effort by the [], U. S. Fish and Wildlife Service, [and ...] to manage bald eagles, we have developed management guidelines for every bald eagle nest known in the state.

The attached report deals specifically with the pair of eagles nesting on your property. It summarizes everything we know about the nest location, site characteristics, nearby areas used by the eagles, nesting history of the pair, and any other research data available (food habits, behavior, contaminant levels, etc.). The last section provides some guidelines to help maintain the integrity of the nest site and to maintain or improve the eagles' nesting success. We want to stress that these are only suggestions, not hard and fast rules or regulations.

Eagles exhibit a high degree of loyalty to a nest site over time. Occasionally a nest is not used for several years. This may be due to death of one or both adults, disturbance, or some other factor. Our data now indicate that these sites merit protection because eagles will return to nest in the same area, often in an old nest or rebuild in the same nest tree, after an absence of 10 or more years. Therefore, we have prepared guidelines for all nest sites which are currently suitable, even if unused for several years. We hope that these sites will be reoccupied as our eagle population recovers. Maintenance of good nesting habitat is the key to the bald eagle's future.

In addition to your help and cooperation in protecting these valuable eagle areas, we would appreciate receiving any further information, questions, and ideas that you may have. We welcome reports of feeding areas, perching areas on other properties, or nearby developments which threaten the nest site. Please contact us or your local state wildlife personnel:

Regional biologist: []

Conservation officer: []

Should you decide to sell or modify the nest site or adjacent property, please notify us first. Perhaps together we can work out a solution that will maintain the area as good eagle habitat. We hope this information has been of some help and that mutually we can benefit the bald eagles.

Thank you.

Sincerely, []

Appendix E. *Bald Eagle Winter Management Guidelines*

BALD EAGLE WINTER MANAGEMENT GUIDELINES



by

**Mark Martell
The Raptor Center
University of Minnesota
St. Paul, MN 55108**

August 1992

**Made possible by U. S. Fish and Wildlife Service,
USFWS Region 3 States, and
the Wisconsin Adopt an Eagle Nest Program**



INTRODUCTION

Bald Eagles (*Haliaeetus leucocephalus*) leave their northern nesting territories during mid to late fall as lakes and rivers freeze, shutting off their foraging areas. They congregate on wintering areas where food and night roost sites are available. Opportunistic feeders during the winter, eagles concentrate on major river systems below locks, dams, and power plants, or at other areas where there is open water allowing them to feed on fish or waterfowl. They are also found on upland fields where livestock carcasses, waterfowl, or game animals draw them away from major river systems.

The Bald Eagle's opportunistic behavior during winter results in feeding, resting, and roosting at many different kinds of sites. This provides a variety of management challenges and opportunities. Winter distribution of Bald Eagles reflects their ability to adapt to human caused changes in their environment. Nonetheless, continued increases in Bald Eagle numbers, or even the maintenance of current population levels, are threatened by increasing human encroachment on eagle habitat (Buchler et al. 1991) and potential contamination of food supplies.

Management of wintering Bald Eagles involves protecting three habitat components: foraging areas, daytime perching areas, and night roosts, as well as the eagles that use them. Protection needs to be provided from human disturbance, physical alterations to critical habitat, environmental contaminants, and loss of food resources.

These guidelines were prepared in response to a need recognized by the U. S. Fish and Wildlife Service Region 3 state endangered species coordinators. They are meant to provide a format for managing and protecting wintering Bald Eagles, particularly in Minnesota, Wisconsin, Iowa, Illinois, Missouri, Michigan, Indiana, and Ohio. Bald Eagles winter on major river systems as well as small streams, lakes, reservoirs, and inland sites in these states. The guidelines have been developed to take into account this variety of situations.

The guidelines are divided into 3 habitat components: feeding areas, daytime perching areas, and night roosts. For each component, suggestions for protection of the eagles using the area, maintenance of the habitat, and enhancement of areas for future use by wintering eagles are given. These guidelines are not, nor could they be, designed to cover all situations that may arise in managing eagles. Thus, managers are encouraged to adjust their strategies as experience and local situations dictate.

A variety of resources have been consulted in preparation of these guidelines. Whenever possible recommendations from the Northern States Bald Eagle Recovery Plan (Grier et al. 1983) were incorporated. A special thanks to the many biologists and managers who contributed advice and comments to earlier drafts. A bibliography listing the literature cited and other useful references, is included at the end of the document.

Buffer zone recommendations are presented in these guidelines as a major tool for the protection of wintering eagles. However, these recommendations are meant to be guidelines only. Management strategies, particularly restrictions on human access, must take into account human land use patterns and ownership as well as Bald Eagle behavior. Bald Eagles occur on both publicly managed land and private property. Restrictions that are enforceable on public land may only work as recommendations to private landowners.

There are many factors which seem to affect human disturbance of eagles (Stalmaster and Newman 1978). Eagles may be more sensitive to disturbance at night roosts than at other sites. Perched eagles do not tend to flush as quickly as birds on the ground. Automobiles and aircraft typically have less effect on eagles than pedestrians or boats. Eagles may also adapt to some types and levels of human activity. Reports of farmers and fishermen going about their daily activities close to perching or foraging eagles indicate a degree of tolerance on the part of some birds. Managers should consider these variations in eagle and human behavior when setting buffer zones.

FORAGING AREAS

More than any other factor, the availability of food determines if Bald Eagles will use an area for wintering. Eagles congregate where open water or other factors provide access to prey. As opportunistic foragers, Bald Eagles consume a wide variety of prey in their winter diet. They commonly feed on dead or dying fish and waterfowl, and scavenge on dead wildlife and domestic livestock. Gizzard shad (*Dorosoma cepedianum*) in particular, seem to be a major component of wintering eagles' diet, including those using the Mississippi River. Protection and enhancement of these food supplies is critical in maintaining wintering Bald Eagle populations.

PROTECTION - To protect eagles at foraging areas, buffer zones should be established where feasible, which extend a minimum of 1/4 mile (402m) from the edge of the foraging area (see Figure 1). Within this zone human traffic should be severely restricted or prohibited between Oct. 15 and March 15. Where this is impractical, human activity should be restricted between sunrise and 10:00 AM, the time eagles feed most heavily.

Eagles commonly feed on livestock carcasses set out by farmers and ranchers. These carcasses should not be placed where eagles may be exposed to harassment or shooting while feeding. Due to the danger of secondary poisoning, livestock carcasses treated with pesticides should not be placed in fields where eagles might feed on them.

Deer carcasses are also commonly utilized by wintering eagles. In areas of heavy eagle concentrations deer carcasses should be removed from roadsides to reduce eagle/vehicle collisions. Setting livestock and big game carcasses at least 150m from the nearest road (or out of sight of the road) should reduce the potential for human harassment and encourage both the more wary adult as well as immature birds to feed at these sites.

MAINTENANCE AND ENHANCEMENT - Wise fisheries and wildlife management to benefit fish, waterfowl, and game populations will have a positive impact upon wintering Bald Eagle populations. Protection and enhancement of wetland as well as upland habitats, and planting of food plots for waterfowl and other game animals will provide a food source for eagles. Siltation caused by projects such as logging, over-grazing, or road building may deplete preferred prey species and should be prevented. Loss of estuaries and backwaters or disturbance of waterfowl by people may disrupt eagle foraging patterns and force them to move to other areas. In some areas manipulation of water levels which cause fish strandings may be desirable to provide eagles access to fish.

Artificial feeding programs for management purposes have been used with White-tailed Sea Eagles (*Haliaeetus albicilla*) in Europe and with small populations of Bald Eagles in the United States. Although the use of domestic or wildlife carcasses in an artificial feeding program may, on a limited basis, benefit groups of wintering eagles, these programs can be very expensive and are unlikely to be effective management tools in the Upper Midwest. If an artificial feeding program is used, care must be taken not to use food contaminated with lead shot, pesticides, or other environmental contaminants. Furthermore, the placement of food must not expose eagles to harassment or danger from humans or other scavengers or predators (see comments under Protection).



DAYTIME PERCHING AREAS

Bald Eagles tend to perch near their foraging areas during the day. Many species of trees are used for perching, with large spreading trees or snags favored. Eagles will use these perches to hunt from, eat in, and rest on. Along rivers, trees that are within 100 ft. (33 m) of shore seem to be preferred. Some locations, such as trees on the heads of islands, will be used consistently.


PROTECTION - A buffer zone of 1/8 to 1/4 mile (250m - 400m) should be established around regularly used daytime perching areas. Restrictions on human activity within these zones should be in effect between Oct. 15 to March 15. Daytime perching areas are often associated with foraging areas and the same buffer zones may be applicable to both areas.

MAINTENANCE - Do not allow cutting of trees with a diameter at breast height (dbh) of > 12 in. (1.08 m) within 100 ft. (33 m) of river banks or other foraging areas. Desirable perch trees, where they are limited, can be protected from beavers by circling the base of the tree with wire mesh (approx. 3 ft. high). Activities which have the potential to kill trees or impede foraging, such as livestock grazing, dumping of dredge spoils, or parking of barges, should not be permitted in eagle foraging or perching areas.

ENHANCEMENT - Silvicultural practices, such as planting of new trees or thinning of existing stands, which encourages the growth of large trees (such as cottonwoods) along riverbanks will provide for future perch sites. Cottonwoods and soft maples which grow quickly and can tolerate flood plain conditions are good choices for most areas. Artificial perches can be constructed near prey concentrations which may facilitate eagle use of an area. However, managers should be cautioned that artificial perches have had very limited success in attracting eagle use.



Figure 1

Roost Site 

Roost Set-back zone - - -

Feeding and Perching Areas 

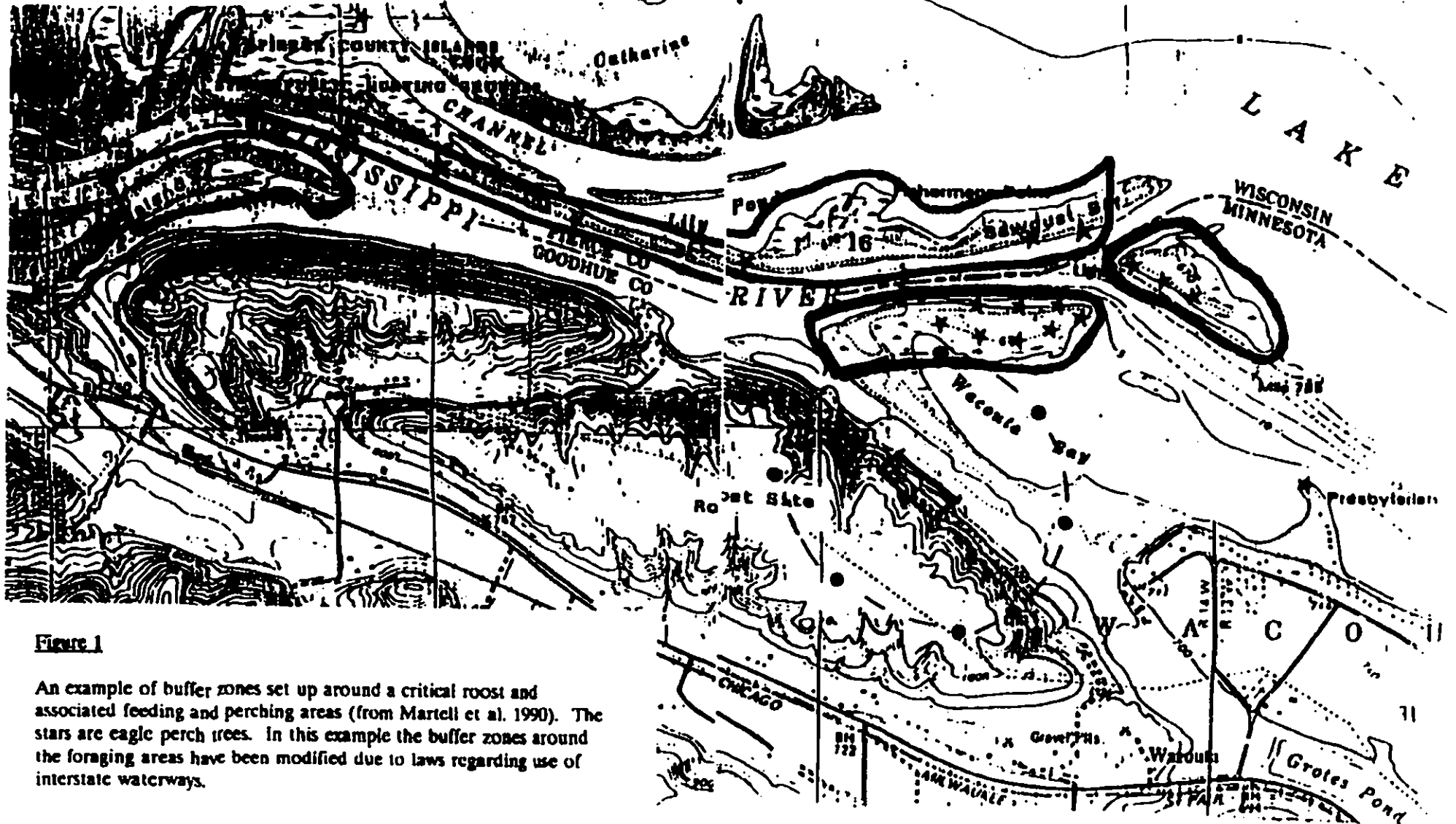


Figure 1

An example of buffer zones set up around a critical roost and associated feeding and perching areas (from Martell et al. 1990). The stars are eagle perch trees. In this example the buffer zones around the foraging areas have been modified due to laws regarding use of interstate waterways.

NIGHT ROOSTS

At night Bald Eagles roost singly or communally in trees that may be located next to, or some distance from, foraging areas. These roosts may also be utilized during the day, particularly during inclement weather. Night roosts are thought to provide protection from harsh weather, serve as "information centers" assisting in food location, and may play a role in mate location. Bald Eagles seem to prefer large stout trees with horizontal, and easily accessible branches for night roosting. Roost trees are typically situated in an area sheltered from strong winds such as a bluff face, woodlot, side valley, or river bottom. An opening around the roost, probably to facilitate access, is common.

Due to the wide variety of locations in which eagles roost, individual roosts should be classified as either "critical" or "secondary". For the purpose of management and protection, critical roosts are top priority. However, secondary roosts also provide important Bald Eagle habitat and should be protected whenever possible.

CRITICAL ROOSTS - roosts deemed most important to the success of wintering eagle populations. These roosts meet one or more of the following criteria (adapted from the Northern States Bald Eagle Recovery Plan):

- used >14 nights per season by eagles from local breeding territories;
- used >14 nights per season by >15 eagles per night; or
- has been documented as active for more than 5 years

SECONDARY ROOSTS - roosts that do not meet the above criteria. Secondary roosts may form at temporary foraging areas such as fish die-offs or farm fields and can be used by a single bird or large numbers of eagles. A secondary roost may also be a single tree used occasionally by one or more birds. Although not as important as critical roosts, secondary roosts do provide valuable habitat for wintering eagles.

PROTECTION - Bald Eagles are very sensitive to disturbances at night roosts. The location of critical roosts should be kept confidential and buffer zone restrictions should be strictly enforced. Buffer zones of at least 1/4 mile (402m) should be established around the edges of all critical roosts. Managers at individual sites may want to adjust buffer zones to accommodate local topography, weather conditions, and eagle tolerance. No human activity should be allowed in these zones from Oct. 15 to March 15 (these dates may vary with latitude). This includes daytime hours since eagles are known to use roosts during the day. From March 16 to Oct. 14 human activity may be allowed if it does not damage or destroy the trees in the roost. Where practical, consideration should be given to fencing and posting land which contains critical eagle roost areas.

No logging, road building, or development should be allowed at any time, except for management purposes, within critical roost buffer zones. Even trees that are not used for roosting are important and may play a role as wind breaks or provide a buffer from disturbance. The silviculture practices recommended below should only be done between April 1 and September 30 to prevent disturbance to eagles.

Buffer zones of 1/4 mile (402m) around secondary roosts are also desirable. Restrictions can be limited to only those nights when eagles are present.

MAINTENANCE - Silvicultural systems of thinning that encourage regeneration and growth of desirable trees should be used near roost sites. Adequate groves of unharvested trees should be maintained to provide a secure roost near thinned areas.

ENHANCEMENT - Silviculture practices should result in the growth of large diameter trees with maximum crown accessibility in multi-layered (canopy) stands. Stands should be >3.5ha in size and be situated to provide maximum protection from prevailing winds. Planting of conifers in these stands, particularly in northern climates, will increase thermal protection for roosting eagles and should be encouraged.

GENERAL HAZARDS TO EAGLES

Besides the loss of critical habitat and disturbance other threats to wintering eagles need to be considered in management plans. These threats can cause injury and mortality to wintering eagles and include leg-hold traps, shooting, vehicle collisions, and contaminant poisoning.

Leg-hold trapping poses a serious threat to Bald Eagles in many areas of their wintering range. Caught as non-target species, eagles can suffer the loss of single digits or whole legs. Secondary injuries to wing tips, and frostbite to wings and feet are also threats. Open bait sets should not be allowed in any area where there are wintering or nesting eagles.

Powerlines and power transmission structures pose potential risks to eagles through collisions or electrocution. However, few mortalities caused by powerlines have been documented for Bald Eagles (Martell and Redig 1991, Olendorff pers. com.) Nonetheless, power poles near eagle perching areas should be constructed or modified following the guidelines set forth in "Suggested practices for raptor protection on power lines" (Olendorff et al. 1981).

Roads and bridges pose the hazard of eagle-vehicle collisions. New road or bridge construction should be routed at least 0.5 mile (800m) from critical roosts and major foraging areas. Roads, bridges, or powerlines that intersect travel pathways between roosts and foraging areas are a particular threat.

Eagles often leave roosts around sunrise and return at sunset. These times of poor light conditions may increase the possibility of collisions.

Shooting has historically been a significant cause of Bald Eagle mortality. Even today many eagles are shot, and the threat to wintering birds which tend to concentrate in large groups is especially great. Shooting of Bald Eagles is a violation of federal and state laws, and full enforcement of these regulations is critical to the eagles' survival.

Additionally, management and public education to deter shooting are important components in protecting birds. Enforcement of buffer zone restrictions around roosts and foraging areas, especially during hunting seasons, will reduce the exposure of eagles to people with firearms. Further restrictions on public lands may be advised if particular management areas attract large numbers of feeding or roosting birds. Public education about the value of eagles, and the laws protecting them, should raise public awareness of this issue and reduce this cause of eagle mortality.

Contaminants and poisons, particularly organochlorine, organophosphorus and carbamate insecticides, lead, mercury, and other heavy metals have been shown to be the cause of mortality and lowered reproductive potential in eagles. Ingestion of even small amounts of these contaminants by eagles on the wintering grounds may interfere with normal reproduction.

Farm runoff and industrial pollution need to be monitored carefully near eagle wintering areas. Actions should be taken that prevent the release of these contaminants into the environment.

The use of lead shot for any form of hunting in Bald Eagle wintering areas should be discontinued. Ingestion of lead shot by eagles while feeding on crippled or dead game will cause death and is thus a serious threat to Bald Eagles in wintering areas. Water drawdowns during winter that expose waterfowl, and thus eagles, to lead should be avoided.

Poisons set out for predator control, particularly in the western United States, have caused the death of eagles and other non-target animals. Use of these poisons in areas where eagles are known to feed should be made illegal, and restrictions strictly enforced.



LITERATURE CITED AND SELECTED BIBLIOGRAPHY

Buehler, D.A., T.J. Mersmann, J.D. Fraser, and J.K.D. Seeger. 1991. Effects of human activity on Bald Eagle distribution on the Northern Chesapeake Bay. *J. Wildl. Manage.* 55:282-290.

Dunstan, T.C. 1987. Preliminary management strategy and plans for Bald Eagles wintering on the Upper Mississippi River. Unpubl. Rept. Iowa Conservation Comm. Des Moines.

Fraser, J.D. 1985. The impact of human activities on Bald Eagle populations - A review. In: J.M. Gerrard and T.M. Ingram eds. *The Bald Eagle in Canada. Proceedings of Bald Eagle days 1983.* White Horse Plains Publ.

Gieck, C.M. 1986. Wisconsin Bald Eagle recovery plan. Wis. Endangered Resources Report 24. WI. Dept. of Nat. Res., Madison, WI.

Grier, J.W., J.B. Ecker, F.J. Gramlich, N.F. Green, J.V. Kussman, J.E. Mathisen, and J.P. Mattson. 1983. Northern states Bald Eagle recovery plan. U.S. Fish and Wildlife Service, Denver, CO.

Grubb, T.G., and C.E. Kennedy. 1982. Bald Eagle winter habitat on Southwestern national forests. USDA Forest Service, Res. Paper RM-237. Fort Collins, CO.

Grubb, T.G., and R.M. King. 1991. Assessing human disturbance of breeding Bald Eagles with classification tree models. *J. Wildl. Manage.* 55:500-511.

Keister, G.P., R.G. Anthony, and E.J. O'Neill. 1987. Use of communal roosts and foraging areas by Bald Eagles wintering in the Klamath Basin. *J. Wildl. Manage.* 51(2):415-420.

Knight, R.L. and S.K. Knight. 1984. Responses of wintering Bald Eagles to hoarding activity. *J. Wildl. Manage.* 48(3):999-1004.

Martell, M., J. Nibe, and J. Gall. 1990. A report on Bald Eagle use of the Wacousta Bay, (MN) area of the Mississippi River along with management recommendations. Unpubl. report to MN Dept. of Natural Resources Nongame Wildlife Program. 15pp.

— and P.T. Redig. 1991. Causes of injury and incidence of lead poisoning in Bald Eagles. Presented at 109th meeting American Ornithologists Union. Montreal.

McCarigal, K., R.G. Anthony, and F.B. Isaacs. 1991. Interactions of humans and Bald Eagles on the Columbia River estuary. *Wildl. Monographs* #115.

Oleandorf, R.R., A.D. Miller, and R.N. Lehman. 1981. Suggested practices for raptor protection on powerlines. *Raptor Research Rept. No. 4.* Raptor Research Fdn. Inc. St. Paul, MN.

Southern, W.E., and L.K. Southern. 1984. Bald Eagle management concerns and recommendations for the Mississippi River, locks and dams 14-15. In W.E. Southern and M.J. Sweet ed. *Proceedings Midwest workshop on Bald Eagle research and management.* Ill. Dept. of Conservation, Springfield, Ill.

Stalmaster, M.V. 1983. An energetics simulation model for managing wintering Bald Eagles. *J. Wildl. Manage.* 47(2):349-359.

Stalmaster, M.V. 1987. *The Bald Eagle.* Universe Books, New York 227 pp.

— and J.R. Newman. 1978. Behavioral responses of wintering Bald Eagles to human activity. *J. Wildl. Manage.* 42(3):506-513.

Sweenhof, K. 1978. Management of wintering Bald Eagles. U.S. Fish and Wildlife Service. Publ. FWS/OBS-78/79. 59 pp.

Watson, J.W., M.G. Garrott, and R.G. Anthony. 1991. Foraging ecology of Bald Eagles in the Columbia River estuary. *J. Wildl. Manage.* 55:429-499.

Appendix F. *Bald Eagle Management Guidelines (FWS)*

BALD EAGLE MANAGEMENT GUIDELINES

GENERAL: The purpose of these guidelines is to maintain the environmental conditions that are required for the survival of bald eagles. The emphasis will be on preventing human disturbance to eagles, particularly during the nesting season. The ultimate objective is to preserve at least present populations of eagles.

Thus, certain human activities which are likely to disturb eagles are specified in the following sections as recommended restrictions. Although these guidelines are based on available ecological information, one cannot predict with certainty the effects of a given amount of disturbance on a particular pair of eagles. Therefore, even strict adherence to these guidelines does not guarantee continued eagle use of an area. Whoever makes specific land use decisions will need to take into consideration variations in topography and the behavior of individual eagles, so that these general management guidelines can be tailored to suit local conditions.

For management purposes, the following guidelines are divided into sections on Nesting, Feeding and Roosting. Except as otherwise noted, the guidelines apply to both public and private lands.

1. NESTING. Bald eagles often use alternate nests in different years. The following guidelines apply equally to all nests used by any particular pair of eagles, even though a nest may not have been used for raising young for one or more years.

Eagle-nesting territories are here divided into primary and secondary management zones, within each of which certain human activities have been found to disturb the nesting process. Such disturbance is defined by the restrictions recommended for each zone.

a. Primary Zone: This is the most critical area immediately around the nest.

(1) Size: Except under unusual circumstances (e.g., where a particular pair of eagles is known to be tolerant of closer human activity), the boundary of the primary zone shall not be less than 330' (5 chains) from the nest. The size should be adjusted by the actual use of the area around the nest tree, to include frequently used perch trees. Where isolated groups of trees are likely to blow down, the primary zone should not be less than 20 acres, and the opinion of a qualified forester should be obtained in order to take measures to minimize that likelihood.

(2) Recommended Restrictions:

(a) The following human activities are likely to cause disturbance to eagles and, therefore, should not occur within the primary nesting zone at any time:

1. Major land uses such as logging, the development of new commercial and industrial sites, the building of new homes, road and other construction, and mining.
2. Use of chemicals toxic to eagles. These include DDT, other persistent organochlorine pesticides, PCB, mercury, and lead.

(b) In addition, certain human activities are likely to disturb eagles during the critical period. The critical period is the time between the arrival of adults at the nest site and three weeks after the fledging of any young. In the Upper Midwest, the critical period will usually fall between March 1 and July 31. During the first twelve weeks of the critical period, eagles are most vulnerable to disturbance.

The following human activities, therefore, unless performed in connection with eagle research and management by qualified individuals, should be restricted during the critical period:

1. Human entry into the primary nesting zone.
2. Low level aircraft operations.

However, if a pair of eagles chooses to establish a new nest in an area already receiving human use, the human activities occurring at that time can continue except the use of toxic-chemicals. Any expanded human activity should be avoided.

(3) Additional Management Recommendations:

- (a) On public land, close land and water access to nest. Post the boundary only if necessary to reduce travel near the nest. Signs should not mention eagles or eagle nesting.
- (b) On private land, the landowner might voluntarily agree to protect the primary zone; or, if the integrity of the zone cannot be otherwise preserved, the area should be acquired in fee, by easement, or by exchange--by either a private or public conservation agency. Easements should be for ten years and be renewable.

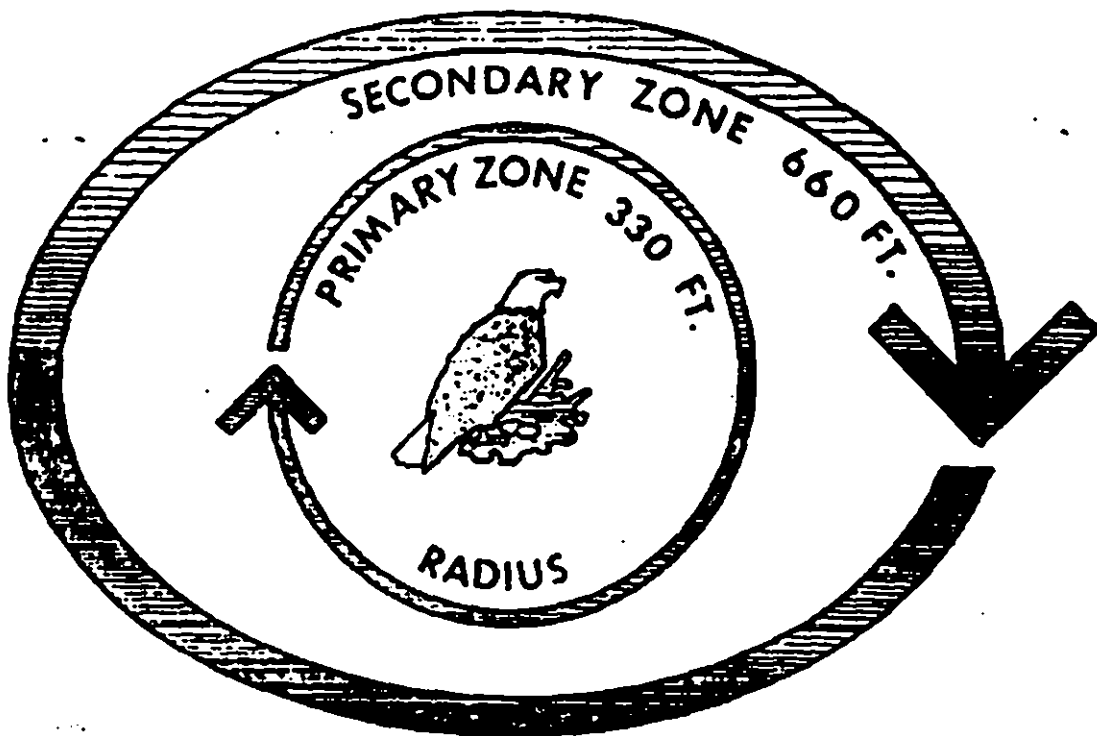
b. Secondary (Buffer) Zone: The purpose of this zone is to further minimize disturbance.

(1) Size: The size of the secondary zone will be determined by local topography and resulting visibility from the nest. It shall lie outside the primary zone and be approximately circular, with a minimum boundary of 660' (10 chains) from the nest. If disturbance would be clearly visible from the nest in a particular direction, the secondary zone should extend 1/4 mile (20 chains) in that direction.

(2) Recommended Restrictions:

- (a) Certain human activities of a permanent nature are likely to disturb eagles, and they should not, therefore, occur within the secondary zone at any time. These include the development of new commercial and industrial sites, the building of new homes, the building of new roads and trails facilitating access to the nest, and the use of chemicals toxic to eagles (see above).
- (b) Certain human activities have time-limited effects but are likely to disturb eagles when they are nesting. Therefore, human entry into the secondary zone should be avoided during the critical period. Examples of this kind of disturbance are logging (including selective cutting), mining, low level aircraft operations, use of firearms, camping, and picnicking.

If a pair of eagles chooses to establish a new nest in an area already receiving human use, the human activities occurring at that time can continue, except the use of toxic chemicals. Any expanded human activity should be avoided.



(3) Additional Management Recommendations:

- (a) On public land, close land and water access to nest. Post boundary only if necessary to reduce travel near the nest. Signs should not mention eagles or eagle nesting.
 - (b) On private land, the owner might voluntarily agree to protect the secondary zone; or if the integrity of the zone cannot be otherwise preserved, it should be acquired by easement or by exchange, by either a private or public conservation agency. Easements should be for ten years and be renewable.
- c. Potential Nest Sites: A small but significant percentage of a bald eagle population nests in new habitat every year. Therefore, to satisfy the future nesting needs of bald eagles, it is essential to preserve suitable habitat in addition to that which is being presently used. Therefore, the following guidelines are recommended:
- (1) In potential or traditional eagle nesting habitat, where no nest now exists, for every 320 acres less than 1/4 mile from a river, or lake larger than 40 acres, leave 4 to 6 over-mature trees in the stand with an open view of and clear flight path to the water, in an area free of human disturbance. These should be the largest trees in the stand and preferably have dead or broken tops. In addition, 4 to 6 mature (80 year old) trees should be left to provide nesting sites over the long-term (50 to 100 years).
 - (2) Old Nests: Since eagles have been known to reoccupy a nest unused for several years, do not remove old nest trees, even though they have been seemingly abandoned.

2. FEEDING. The objective of this section is to allow eagles access to and use of feeding areas by instituting measures to eliminate or minimize human disturbances which prevent eagles from using such feeding areas. The following measures should be instituted by public land-managing agencies and are recommended for use on private lands:

- a. Eliminate the use of chemicals toxic to eagles in the watersheds of lakes and rivers where eagles feed. These include DDT and other persistent organochlorine pesticides, PCB, mercury, and lead.
- b. Prohibit clear-cut logging within 200' of the shoreline of such feeding waters.
- c. Discourage the construction of buildings within 1/4 mile of the shoreline of feeding waters.
- d. Maintain, restore if necessary, or manage fish populations or other primary food supplies to sustain eagles.
- e. Limit fishing, recreational boating, water-skiing, and other human disturbance if adversely affecting eagle use of the feeding water.
- f. Along rivers where water flow is controllable, maintain flow rates which will not cause the loss of shoreline roost or perch trees through shoreline erosion.



1. ROOSTING.

- a. Within 1/4 mile (20 chains) of existing nests, outside the primary and secondary zones save 3 to 5 old-growth trees for potential roost and perch trees during the breeding season.
- b. Any winter eagle roosting concentration should be brought to the attention of the landowner or land-managing agency, the U.S. Fish and Wildlife Service or State Wildlife Department, so that a public or private conservation agency can preserve the roost, by purchase, easement, or land exchange if necessary, subject to the availability of funds. There should be no logging within a communal roosting area. There should be no other human activity during the period of eagle use until specific management recommendations have been made.
- c. Along rivers where water flow is controllable, maintain flow rates which will not cause the loss of shoreline roost or perch trees through shoreline erosion.

LEGAL CONSIDERATIONS: The preceding guidelines are advisory. The law on this subject is set forth in the Act for the "Protection of Bald and Golden Eagles" (16 USC 668-668d) and the regulations that have been derived therefrom (Title 50, Code of Federal Regulations). The Act states in part that no person "shall take...any bald eagle...or any golden eagle, alive or dead, or any part, nest, or egg thereof..." (16 USC 668). The Act further states that "take" includes also pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb..." (16 USC 668c). Whoever violates any part of the Act could, under certain conditions, be fined up to \$10,000 and imprisoned for two years.

Compliance with or disregard for these guidelines does not, of itself, show compliance with or violation of the Act or derived regulations. It is advisable that Law Enforcement, U. S. Fish and Wildlife Service, Minneapolis, Minnesota, be contacted if there is any question about an activity to be conducted in the vicinity of an eagle nest, or the nest of any other large bird. The mailing address is: Federal Building, Fort Snelling, Twin Cities, MN 55111, telephone Area Code 612-725-3530.

These guidelines are a modified version of guidelines previously issued by the Portland Regional Office of the Fish and Wildlife Service.



U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Appendix G. Correspondence

MEAD HUNT

Designing the future

November 17, 2005

Ms. Janet Smith
Field Supervisor
U.S. Department of the Interior
Fish & Wildlife Service
Green Bay Field Office
2661 Scott Tower Drive
New Franken, WI 54229-9565

Mr. Bob Martini
Statewide Rivers and FERC Coordinator
State of Wisconsin
Department of Natural Resources
107 Sutcliffe Avenue
Rhineland, WI 54501

Subject: Article 402, *Order Issuing Subsequent License – Minor Project*, Issued August 31, 2005
Middle Appleton Dam Hydroelectric Project
FERC Project No. 7264
Lower Fox River; Outagamie County, Wisconsin

In accordance with Article 402 of the *Subsequent License – Minor Project* for the Middle Appleton Dam Hydroelectric Project, we are hereby submitting a "draft" copy of the *Bald Eagle Management and Protection Plan*. We would appreciate receiving your comments on this plan within 30 days.

Thank you very much for your time and cooperation in this matter. If you have any questions, please contact me.

Sincerely,

MEAD & HUNT, Inc.



Arie DeWaal
Project Manager

Enclosure

cc: Mr. John Rom, Fox River Paper Company
Mr. Chuck Alsberg; N.E.W. Hydro, Inc.

At the time of this filing, no comments were received from the resource agencies.

ORIGINAL

Invasive Species Monitoring Plan (final)

Middle Appleton Dam Hydroelectric Project FERC Project No. 7264

Lower Fox River
Outagamie County, Wisconsin

Report prepared for



FEDERAL ENERGY
REGULATORY COMMISSION

2006 JAN 23 P 3:59

FILED
OFFICE OF THE
SECRETARY

and

N.E.W. Hydro, Inc.

Report prepared by



January 2006

Table of Contents

	Page
1. Introduction.....	1
2. Middle Appleton Dam Project Area Description.....	2
3. Identification of Invasive Species	3
A. Purple Loosestrife	3
B. Eurasian Watermilfoil	3
C. Zebra Mussels	3
4. Monitoring	4
A. Purple Loosestrife and Eurasian Watermilfoil	4
B. Zebra Mussels	4
5. Measures to Increase Public Awareness of Invasive Species. 5	
6. Management Practices the Licensee Will Implement to Prevent the Spread of Invasive Species.....	6
7. Reporting	7
8. Control Measures.....	8
A. Purple Loosestrife	8
B. Eurasian Watermilfoil	8
C. Zebra Mussels	9
D. Procedures for Obtaining Technical Assistance	9

Appendices

- A Article 405
- B Project Location Map
- C Project Area Map
- D Documentation of Agency Consultation

FILED
OFFICE OF THE
SECRETARY
2006 JAN 23 P 3:59
FEDERAL ENERGY
REGULATORY COMMISSION

Section No. 1
Introduction

1. Introduction

On October 31, 2005, the Federal Energy Regulatory Commission (FERC) granted an *Order Issuing Subsequent License – Minor Project* to the Fox River Paper Company and N.E.W. Hydro, Inc., for the Middle Appleton Dam Hydroelectric Project, FERC Project No. 7264, located on the Lower Fox River in Outagamie County, Wisconsin. The Order includes License Articles specifying actions the Fox River Paper Company and N.E.W. Hydro, Inc., must take to comply with terms and conditions of the license. This *Invasive Species Monitoring Plan* has been prepared in accordance with the requirements of License Article 405, which requires the Fox River Paper Company and N.E.W. Hydro, Inc., to develop a plan to monitor purple loosestrife, Eurasian watermilfoil, and zebra mussels, in project waters. A copy of License Article 405 is included as Appendix A.

Section No. 2
Middle Appleton Dam
Project Area Description

2. Middle Appleton Dam Project Area Description

The Middle Appleton Dam Hydroelectric Project is located on the Lower Fox River in the city of Appleton in east-central Wisconsin. Approximately 31 miles downstream from the project, the Lower Fox River empties into the south end of Green Bay, a large bay located along the northwest portion of Lake Michigan. A map is included as Appendix B to illustrate the project's location in the Lower Fox River drainage basin.

The Middle Appleton Dam Project lies within the corporate limits of the city of Appleton in south-central Outagamie County. The project's 35.5-acre impoundment extends upstream to the south-southwest for approximately .5 mile, where the next dam is located. The dam is located between Appleton Lock Nos. 3 and 4. As measured along a straight line, the Middle Appleton Dam is located 32 miles south of Green Bay, Wisconsin; 88 miles north of Milwaukee, Wisconsin; and 91 miles southeast of Wausau, Wisconsin.

The project's dam is one of 13 dams on the Lower Fox River. Five dams are located upstream from the project and seven are located downstream. The next dam downstream lies about .75 miles away. Associated with these dams are 18 lock structures.

The project is located within a highly urbanized area with the land near the project being predominantly industrial along this stretch of the Lower Fox River. The project is actually located in the heavily industrialized area known as the "flats."

Vegetation in the project area is sparse and confined to some of the shoreline areas. No occurrences of invasive species within the project area have been noted in the past.

Section No. 3
Identification of Invasive Species

3. Identification of Invasive Species

As mentioned previously, no occurrences of innovative species within the project area have been noted in the past. There have been no formal survey efforts conducted within the project area.

A. Purple Loosestrife

Purple loosestrife (*Lythrum salicaria*) is a perennial wetland plant found in wet and moist habitats such as marshes, streams, and riverbanks. Its vivid purple bloom makes it readily seen in late summer. It tolerates changes in soil moisture and temperature, and once established, tends to predominate over other plant life. As a result, its presence can significantly reduce diversity of native vegetation and associated wetland species. This plant usually invades wetlands by germinating in riparian mud flats or wet soil areas and can persist in seed banks for many years after invasion. The seeds can be easily transported on flood waters and invade downstream areas.

B. Eurasian Watermilfoil

Eurasian watermilfoil (*Myriophyllum spicatum*) is an invasive plant that tends to out-compete native aquatic plants, including native watermilfoils. Accidentally introduced to North America from Europe, it is now found in the majority of inland lakes in Wisconsin. Unlike many other plants, Eurasian watermilfoil reproduces vegetatively by producing shoot fragments and runners, rather than relying on seed for reproduction. Plant fragments and runners, which may remain viable for weeks if kept moist, can be carried downstream by water currents or inadvertently picked up and transported by boaters.

Eurasian watermilfoil can be difficult to differentiate from native watermilfoil species, as both have slender stems with feathery leaves. However, a Eurasian watermilfoil typically has 12 to 21 pairs of leaflets, while the native northern watermilfoil usually has 5 to 9 pairs. Another identifying characteristic of the Eurasian variety is its tendency to form dense mats of vegetation that crowd out other species. These dense stands threaten the integrity of diverse aquatic communities.

C. Zebra Mussels

The zebra mussel (*Dreissena polymorpha*) is a small, non-native mussel originally found in Russia. In 1988, this animal was transported to North America in the ballast water of a transatlantic freighter and colonized parts of Lake St. Clair. In less than 10 years, zebra mussels have spread to all five Great Lakes and into the Mississippi, Tennessee, Hudson, and Ohio River Basins. Many inland waters in Wisconsin are now infested with zebra mussels. Zebra mussels are very successful invaders because they live and feed in many different aquatic habitats, breed prolifically (each female produces 1 million eggs per year), and have both a planktonic larval stage and an attached adult stage. Young zebra mussels are planktonic. They can seriously impair the diversity of benthic aquatic habitats and also impose high maintenance costs on intake and water supply structures.

**Section No. 4
Monitoring****4. Monitoring****A. Purple Loosestrife and Eurasian Watermilfoil**

The Fox River Paper Company and N.E.W. Hydro, Inc. will conduct periodic monitoring to document the occurrence of purple loosestrife and Eurasian watermilfoil in project waters. The project area to be surveyed is included in Appendix C. The plan to monitor purple loosestrife and Eurasian watermilfoil in project waters and shoreline areas is outlined below.

Monitoring will be conducted on an annual basis through year 2008 and every 2 years thereafter during even-numbered years. Monitoring will be conducted between the third full week of July and the end of the first full week in August. Under typical weather conditions, purple loosestrife plants are in full flower and easily viewed during this period, while submerged aquatic plant such as milfoil reach their maximum density. The timing of monitoring will be adjusted as dictated by bloom status, and will be coordinated with resource agencies.

The entire shoreline of the Middle Appleton Dam impoundment will be visually surveyed by an individual who is familiar with the ecology and anatomy of purple loosestrife and Eurasian watermilfoil. A shallow-draft boat or canoe will be used, supplemented by pedestrian surveys if necessary. Occurrences of purple loosestrife and Eurasian watermilfoil will be marked on maps in the field using indelible markers. Eurasian milfoil plants will be examined for signs of weevil damage and observations will be recorded.

The area and percent cover of each purple loosestrife stand identified will be determined, and average plant density will be estimated. Sampling and measurement methodology may differ according to specific stand characteristics, but will be sufficiently rigorous to document the character of each stand.

For Eurasian watermilfoil occurrences, the following will be determined: stand perimeter, relative mat density, and average mat thickness. Where milfoil is observed, a determination will be made as to species, using a dip net or rake to obtain samples, if required, for closer examination.

B. Zebra Mussels

Inspections of hard surfaces that are normally submerged will be conducted during any drawdown of the impoundment and inspections of construction equipment from other infested waters of the state will be required on all contractor work specifications for the project. In addition, project structures (dam, gates, trashracks, etc.) will also be inspected.

Drawdowns for maintenance occur on an intermittent basis. During these periods, inspections for the presence of zebra mussels will be conducted and documented. Inspections of the project structures will be done on a monthly basis. If the presence of zebra mussel colonies is confirmed, zebra mussel monitoring at the project will be discontinued.

Section No. 5
Measures to Increase
Public Awareness of Invasive Species

5. Measures to Increase Public Awareness of Invasive Species

The most effective method for avoiding the development of uncontrolled future populations of purple loosestrife, Eurasian watermilfoil, and zebra mussels is to prevent their introduction into new lakes, streams, and rivers. To increase public awareness of this danger, the Fox River Paper Company and N.E.W. Hydro, Inc. will make available information on invasive species as provided by the Wisconsin Department of Natural Resources (WDNR) available for public distribution at City Hall. Specifically, the information will be given to the *City of Appleton Parks and Recreation Department*.

Section No. 6
Management Practices the Licensee
Will Implement to Prevent the Spread
of Invasive Species

6. Management Practices the Licensee Will Implement to Prevent the Spread of Invasive Species

The Fox River Paper Company and N.E.W. Hydro, Inc. will take precautions to prevent the spread of purple loosestrife and Eurasian watermilfoil through transport of plant fragments on any equipment used during the course of any activities associated with the operation and maintenance of the Middle Appleton Dam Hydroelectric Project. Equipment used for project purposes, including boats, motors, trailers, and diving equipment, will be inspected and rinsed or otherwise cleaned as necessary in upland locations away from project waters to remove fragments of purple loosestrife or Eurasian watermilfoil. The Fox River Paper Company and N.E.W. Hydro, Inc. will inspect, and steam clean as needed, any equipment brought into project waters by the Fox River Paper Company and N.E.W. Hydro, Inc. or their contractor that may have been exposed to invasive species.

Section No. 7
Reporting

7. Reporting

The results of monitoring will be transmitted to the U.S. Fish and Wildlife Service (FWS) and the WDNR within 45 days of the survey date. The report will include an evaluation of species present, trends in density, relative abundance, and in overall occurrence within the project area. Survey results will be mapped at sufficient scale to provide adequate resolution.

The FWS and WDNR will be notified within 30 days of the observance of any zebra mussels within the project area.

8. Control Measures

A. Purple Loosestrife

A variety of methods have been tried to control the spread of purple loosestrife, including hand-pulling, burning, cultivation, applying chemical agents, and biological controls. To have a reasonable chance of effectiveness, a control program would have to be an ongoing process. One-time control measures would have only a temporary effect due to new plants constantly springing up from the extensive seed bank.

Younger purple loosestrife plants (1 to 2 years old) can be hand-pulled, but should not be pulled after flowering to avoid scattering of seed. Isolated older plants, especially those in deep organic soils, can be dug out or "teased" loose with a hand cultivator. However, great care must be exercised to avoid release of fragments, which can form new roots; removed plants must be bagged and removed from the area to prevent fragment release. Plant removal is a labor-intensive control method that is cost-effective only on very small infestations of limited area.

Chemical control typically involves the spot or sprayer application of glyphosate herbicides. Glyphosate is available under the trade names Roundup and Rodeo, but only Rodeo is registered for use over open water. Glyphosate application is most effective when plants have just begun flowering in early July. Glyphosate is non-selective so care should be taken not to let it come in contact with non-target species. Significant disadvantages to chemical control include cost, possible effects on non-target species, and the need for repeated applications.

Biological control agents include leaf-feeding beetles (*Galerucella spp.*) that are highly host-specific. Beetle releases have reduced loosestrife occurrence by over 80 percent in just a few years in at least one Upper Midwest impoundment. Feeding by these insects at high densities can defoliate mature plants, cause seedling mortality, and destroy or prevent the formation of flower spikes. Leaf-eating beetles are believed to have the capability to establish viable populations within several years of release. If biological control is undertaken, it is recommended that a minimum of 2,000 leaf feeding beetles be released into the affected area.

B. Eurasian Watermilfoil

Many methods have been tried in the United States to contain or eliminate Eurasian watermilfoil. The control methods can be classified as chemical, physical, or biological.

Chemical control typically is based on the use of fluridone, a broad spectrum aquatic herbicide, or 2, 4-Dichlorophenoxyacetic acid (2, 4-D), a chemical used to control weeds in lawns. Chemical concentration must be carefully controlled to prevent negative impacts on native species. If chemical treatment is necessary, the WDNR recommends 2, 4-D application in early spring before littoral zone temperatures reach 60 degrees F. Treatment with 2, 4-D is recommended again in the fall after the native plants have died back. The chemical should be sprayed 15 to 20 feet around the bed to help kill

Section No. 8 Control Measures

runners and smaller plants not visible from the boat. The WDNR further notes that follow-up treatment or hand-pulling may be necessary.

Physical control may be attempted using mechanical harvesters, underwater rototillers, and cultivators; however, the plant quickly re-grows and the creation of numerous fragments can actually enhance its spread. Harvesting may be used to open up small high-use areas such as boat launches and marinas, but is not recommended for the entire impoundment because control is temporary. Other methods include water drawdown to desiccate watermilfoil plants, and the use of physical barriers. The latter are covers placed over the colony to prevent fragmentation spread, and are practical only for small infestations.

Biological control methods are still in the research and development stage. The most promising agent for long-term suppression appears to be a native weevil (*Euhrychiopsis lecontei*), which appears to be widespread across North America. This is a host-specific species, which appears to prefer Eurasian watermilfoil to the native northern watermilfoil. Adults live underwater and lay eggs on the watermilfoil. Emergent larvae then feed on the plants, suppressing its growth and reducing its root biomass.

The effectiveness of this weevil in suppressing population has been mixed, with good results at some sites and poor results at others. Further, weevils will suppress Eurasian watermilfoil, but will not eliminate it. It is most useful for long-term control of lower priority sites, over large areas where other management actions are less effective, while alternative methods are more suitable where rapid control is needed. If weevils are stocked, a sufficient number of weevils should be released to achieve a density of 10 per square meter within the treatment area. However, the University of Minnesota Fisheries, Wildlife and Conservation Biology does not advocate moving weevils, because a particular strain may not be native to the receiving water body.

C. Zebra Mussels

Currently, no methods exist for widespread control of zebra mussels present in the natural environment. If suitable zebra mussel control methods are developed by the agencies, the Fox River Paper Company and N.E.W. Hydro, Inc. will cooperate with the agencies to control zebra mussels in the project waters. The Fox River Paper Company and N.E.W. Hydro, Inc. will inspect and steam clean as needed, any equipment brought into project waters by the Fox River Paper Company and N.E.W. Hydro, Inc. or their contractor that may have been exposed to invasive species.

D. Procedures for Obtaining Technical Assistance

Control measures identified to date have the potential for negative impacts on aquatic communities and non-invasive species. The use of chemical and biological agents, in particular, should not be initiated in the absence of technical assistance from appropriate resource agencies. Any plans for implementation of control measures to be conducted by the Fox River Paper Company and N.E.W. Hydro, Inc. will be determined in consultation with the WDNR and the FWS as appropriate. The need for control measures will be evaluated based on a determination of whether the nuisance species are becoming more

Section No. 8
Control Measures

abundant or increasing in dominance, and on the availability of suitable control measures. The Fox River Paper Company and N.E.W. Hydro, Inc. will utilize control methods outlined in this plan or other suitable methods that may be available at a future date.

Appendix A. Article 405

Article 405. Invasive Species. Within six months of issuance of this order, the licensee shall file for Commission approval a plan to monitor project waters for invasive species, such as purple loosestrife (*Lythrum salicaria*), Eurasian water-milfoil (*Myriophyllum spicatum*), and zebra mussels (*Dreissena polymorpha*) at the project. The plan shall be prepared after consultation with the Wisconsin Department of Natural Resources (Wisconsin DNR) and the U.S. Fish and Wildlife Service (FWS). The plan shall include, but not be limited to, the following: (1) a description of the monitoring method; (2) frequency of monitoring; (3) a schedule for filing monitoring reports with Wisconsin DNR, FWS, and the Commission; and (4) a description of and implementation schedule for providing public information about the species.

The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations on the plan after it has been developed and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

If at any time during the term of the license, the Wisconsin DNR and FWS demonstrate invasive species are significantly affecting fish and wildlife populations at the project and that control measures are needed, and the Commission agrees with those determinations, the Commission reserves authority to require the licensee to cooperate with the Wisconsin DNR and FWS to undertake reasonable measures to control or eliminate the invasive species in project area.

Appendix B. Project Location Map

LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

For Large-Format(s):
Accession No.: 20060126-0273

Security/Availability:
 PUBLIC
 NIP
 CEII
 NON-PUBLIC/PRIVILEGED

File Date: 1/23/06 Docket No.: P7264

Parent Accession No.: 20060126-0271

Set No.: 1 of 1

Number of page(s) in set: 1

Appendix C. Project Area Map

LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

For Large-Format(s):

Accession No.: 20060126-0274

Security/Availability:

- PUBLIC
- NIP
- CEII
- NON-PUBLIC/PRIVILEGED

File Date: 1/23/06 Docket No.: P7264

Parent Accession No.: 20060126-0271

Set No.: 1 of 1

Number of page(s) in set: 1

Appendix D. Documentation of Agency Consultation



November 17, 2005

Ms. Janet Smith
Field Supervisor
U.S. Department of the Interior
Fish & Wildlife Service
Green Bay Field Office
2661 Scott Tower Drive
New Franken, WI 54229-9565

Mr. Bob Martini
Statewide Rivers and FERC Coordinator
State of Wisconsin
Department of Natural Resources
107 Sutcliffe Avenue
Rhinelander, WI 54501

Subject: Article 405, Order Issuing Subsequent License – Minor Project, Issued August 31, 2005
Middle Appleton Dam Hydroelectric Project
FERC Project No. 7264
Lower Fox River, Outagamie County, Wisconsin

In accordance with Article 405 of the *Subsequent License – Minor Project* for the Middle Appleton Dam Hydroelectric Project, we are hereby submitting a "draft" copy of the *Invasive Species Monitoring Plan*. We would appreciate receiving your comments on this plan within 30 days.

Thank you very much for your time and cooperation in this matter. If you have any questions, please contact me.

Sincerely,

MEAD & HUNT, Inc.

A handwritten signature in cursive script that reads "Arie DeWaal".

Arie DeWaal
Project Manager

Enclosure

cc: Mr. John Rom, Fox River Paper Company
Mr. Chuck Alsberg; N.E.W. Hydro, Inc.

At the time of this filing, no comments were received from the resource agencies.