BALD EAGLE HABITAT MANAGEMENT GUIDELINES

ONTARIO MINISTRY OF NATURAL RESOURCES

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1.0 Preface

The Bald Eagle (*Haliaeetus leucocephalus alascanus*) is an endangered species in Ontario. The species and its habitat are protected by Ontario's *Endangered Species Act, R.S.O. 1980*.

The purpose of these guidelines is to provide criteria for the protection and maintenance of Bald Eagle breeding habitat and for the protection of Bald Eagles from human disturbance during the breeding season.

Most of the following information and guidelines have been taken from the Northern States Bald Eagle Recovery Plan (Grier et al. 1983). Direct excerpts from Grier et al. (1983) are enclosed in quotation marks. We gratefully acknowledge receiving Dr. Grier's permission to use direct excerpts from the recovery plan. We also acknowledge Dr. R. James of the Royal Ontario Museum for his help with revising and updating some of the information and guidelines in Grier et al. (1983).

In the interest of being concise, references to the literature have been omitted from the text. However, a list of references concerning management guidelines and effects of human disturbance on Bald Eagles is provided in Section 5.0.

2.0 Background

Bald Eagles (*Haliaeetus leucocephalis*) reach sexual maturity at four (4) to six (6) years of age but may be considerably older when they first breed. The species is long-lived; individuals may live up to thirty (30) years under natural conditions but few are likely to reach that age. Mortality of immature eagles is thought to be relatively high. Many birds probably do not reach sexual maturity but birds that survive their first year or two are thought to have a much higher survival rate.

Clutch size is generally two (2) eggs and ranges from one (1) to three (3) eggs. Successful pairs of Bald Eagles usually raise one (1), two (2), or occasionally three (3) young per nesting attempt. The complete breeding cycle from the time of arrival or initial activity at a nest to the period of fledgling dependency is about six (6) months. Most Ontario Bald Eagles move south in the fall probably in response to changes in weather conditions and prey availability.

In Ontario, nesting Bald Eagles are associated almost exclusively with lakes and rivers. Their diet consists mainly of fish. They require large continuous areas of mixed or deciduous woods around the shores of large rivers or lakes. Islands in lakes are

preferred nesting sites because they often have not been logged or burned and consequently, may have many large trees suitable for nests. Bald Eagles prefer woods with about 30% to 50% canopy cover. They usually select tall living trees, often the tallest available, for nests. Eagles place nests below tree tops to provide shade. These trees generally protrude above the rest of the forest canopy and offer a clear approach from all directions. In southern Ontario Bald Eagles use almost any tree species for nesting. They prefer to nest in white pines in northern Ontario and beyond the range of white pines, eagles use trembling aspen almost exclusively. Bald Eagles also require tall, dead, partially dead or living trees near the nest for perching.

"Eagle tolerance of human presence is highly variable, both seasonally and among 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."

"Four (4) periods of sensitivity to disturbance can be identified for nesting areas. These are as follows."

i "**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 (1) month prior to egg laying through the incubation period." (In northern Ontario the most critical period is from about mid-March to late May) (In southern Ontario it is from about March to mid-May)

ii "**Moderately critical period**. This includes approximately one (1) month prior to the above period and about four (4) 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, [they vary in] the time [at which] 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 (1) 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." (In northern Ontario the moderately critical period is from about mid-February to

mid-March, and in June) (In southern Ontario this period is in February, and from mid-May to mid-June)

iii "**Low critical period**. This period extends from the time chicks are about one (1) month of age until approximately six (6) 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." (In northern Ontario the low critical period is from about the end of June to the end of August) (In southern Ontario it is from about mid-June to mid-August)

iv **Not critical period**. In the period between breeding seasons (September to February), when the eagles are absent, "... one need be concerned only with activities that alter the habitat in ways that would make it unsuitable for future nesting."

3.0 Management of Breeding Habitat

3.1 Regional Management

The points below apply to larger geographic units where several pairs of eagles may be nesting. They apply particularly to areas of northern Ontario.

"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 twelve (12) percent of the sites per year. ... Thus, the conservation and management of nesting **habitat** is far more important than the identification and preservation of specific nest sites..."[1]

"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:"

i "**Distribution of habitat modification**. Large contiguous areas of habitat should remain suitable, not just small, specific sites where nests currently are located."

ii "**Upper limit to habitat modification**. Limits on habitat modification(timber

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1 This does not imply that the preservation of nest sites is unimportant.

harvesting, recreational developments, subdivisions, etc.) 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."

iii **Rate of development**. Development (if it is to occur) should only be allowed to approach the upper limit **slowly**, over a period of years. Sudden, large-scale development should be prevented if possible."

iv **Seasonal timing of human activity**. Construction and related activities should be confined to the low or non-critical periods ..." of any given year.

v "**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 favourably disposed toward the birds, if not proud and quite protective. They may be careful not to disturb the eagle and may help prevent disturbance or destruction by other persons. Such attitudes should be encouraged through education and law enforcement."

3.2 Site-Specific Management

The following points apply to specific breeding areas, and are particularly relevant in southern Ontario.

3.2.1 Essential Habitat

"Essential habitats are locations that biologists consider necessary for continued survival and recovery of a species. The species requirements ... are used here to identify essential habitat. These requirements include, but are not limited to:"

1. "space for individual and population growth and normal behaviour,
2. food, water, air, light, minerals or other nutritional or physiological requirements,
3. cover or shelter,
4. sites for breeding, reproduction, rearing of offspring, and
5. protection from disturbance."

"Breeding habitat, including all potential and occupied breeding areas, alternate (nests)[2] .., and infrequently used areas should be considered essential habitat. General guidelines for delineations at each area are as follows:"

1. "Essential habitat at each nest site is considered generally to encompass a minimum of 640 acres (260 hectares), including aquatic and terrestrial habitat used for foraging and essential features of air, water, land and solitude necessary for the breeding pair at the site. Where sufficient information exists to show that 640 acres (260 hectares) probably are not sufficient, a larger area should be considered essential; likewise, **if it can be documented** clearly, less than 640 acres (260 hectares) may suffice ..."

2. "The configuration of essential habitat at each site may vary, but should correspond to legal land lines or survey descriptions to facilitate ..." management. "The actual nest structure(s) does (do) not need to be at the centre of the area, nor must the area be in any particular configuration (e.g., square)."

3. "In areas of high nesting density, a larger single unit of essential habitat may be more appropriate than several smaller ones."

4. "Essential habitat should be contiguous unless feeding areas or other essential habitat components are relatively far removed from the nesting area."

5. "Essential habitat designations associated with breeding areas that become abandoned should remain in effect, provided the sites remain suitable for reoccupation. If the breeding areas are rendered permanently unsuitable the essential habitat designation may be removed."

"Site-specific management plans should be tailored to the size and configuration of essential habitats and should address such factors

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2 Alternate nests - "Bald Eagles frequently re-use nest structures ... often for periods of many years. Quite often eagles will build and use a new nest near a previous nest. Sometimes several nest structures will accumulate in such a manner in a particular area, although only one would be used for a nesting attempt during any given nesting season. There may be as many as seven nest structures associated with a single pair of Bald Eagles. These groups of nests are generally identifiable by their closeness to each other and distance from the nearest nests of other pairs, but occasionally, ... in areas with high eagle nesting density, the distribution of nests is less clear and the groupings of nests are not as distinct. In such situations the number of paris present and the "ownership" of individual nest structures will emerge from the pattern of simultaneous occupancy and use of nests over several years."

as the prey base, habitat used for foraging and any other features necessary for maintaining habitat suitability."

3.2.2 Disturbance buffer Zones for Nest Trees

Within the essential habitat, management plans should identify buffer zones around nests within which human activities and habitat alterations are restricted. "If buffer zones are used they should be established around all nest sites within a breeding area regardless of ... activity status since alternate nests often are used as feeding platforms and roosting sites." "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 be restricted only during the nesting season, or critical periods" described in section 2.0.

A. Primary Zone

1. "**Size**: the boundary of this zone should be 330 feet (five [5] chains) (100 meters) from the nest."

2. "**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, aside from boats passing through the area, 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."

B. Secondary Zone

1. "**Size**: this zone should extend 660 feet (ten [10] chains) (200 meters) from the nest."

2. "**Restrictions**: land-use activities that result in significant changes in the landscape, such as clearcutting, land clearing, (road construction, pipeline development, hydro rights-of-way) or (any) major construction, should be prohibited.[3]

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3 This is not a complete list of major construction of development activities.

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."

C. Tertiary Zone

1. "**Size**: this is the least restrictive zone. It should extend one-quarter mile (20 chains) (400 meters) from the nest, but may extend up to one-half mile (40 chains) (800 meters) 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."

2. "**Restrictions**: some activities are permissible in this zone except during the most critical period." Activities that result in significant changes in the landscape, such as construction and clearcutting , should be prohibited. "Each breeding area management plan may identify specific hazards that require additional constraints."

3.2.3 Other Management Guidelines

3.2.3.1 Abandoned Nest Trees

i "When a tree supporting 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."

ii "When a nest structure disappears but the nest tree remains the buffer zones should remain in effect through at least the following three (3) breeding seasons. If the

nest is not rebuilt, remove the zoning but still consider the area as essential habitat and protect it accordingly."

iii "When a nest is classified as a remnant, that is, one that has been unoccupied for five (5) consecutive years, and is not being maintained..." or used in any way by eagles, "...retain only the primary zone."

3.2.3.2 Roosting and Potential Nest Trees

i "Three or more super-canopy trees[4] (preferably dead or with dead tops) should be identified and preserved within one-quarter mile (400 meters) of each nest as roosting and perching sites."

ii In essential habitat, leave five (5) to ten (10) percent of all trees exceeding twenty-five (25) cm DBH, particularly trembling aspen and white pine, for future nest trees. In areas identified as potential nesting habitat, there should be at least four (4) to six (6) over-mature trees of species favoured by Bald Eagles..." such as white pine and trembling aspen, " ... for every 320 acres (130 hectares) within 1320 feet (400 meters) of a river or lake larger than forty (40) acres (sixteen [16] hectares). 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."

3.2.3.3 Prey Base Management

i "Fisheries management should strive to maintain a prey base consistent with eagle food habits", in areas with concentrations of nesting Bald Eagles.

ii "In some regions, commercial and sport fishermen may be providing an important but recognized (by people) food source for eagles by dumping rough fish."

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4 Supercanopy trees - trees that rise above the canopy.

4.0 Record-Keeping

Records such as those suggested in Appendix I may be useful for the preparation of management plans for breeding areas and nest sites. Eventually, the data should be computerized. These guidelines will be updated to include information on data forms and software being developed for computer storage of data on Bald Eagle breeding areas, nest sites, productivity, etc. in northwestern Ontario, when this information becomes available.

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Appendix I Bald Eagle Breeding Area Record

(Adapted From Grier et al. 1983)
Confidential

Breeding area no. and name _____

No. of nests in breeding area _____

Prepared by _____

MNR District _____ Date _____

MNR District(s) Topographic map name and no.	County/R.M./District Township(s) Concession(s) Lots	Crown Land _____ Private Land_____ Owner name, address, telephone _____ _____ _____
Breeding Area Characteristics General description (include nest site relationships, overview of habitat and land uses): Feeding areas (known, assumed): Perch/roost trees (known, potential): Potential nest sites available: Post-nesting use of habitat:		
Management Considerations for Breeding Area		

Attach Topographic Map Showing Outline Of Breeding Area
Attach record for each nest in breeding area, including alternate nests

Bald Eagle Nest Record

Nest no. _____

Breeding area no. and name _____

Prepared by _____

MNR District_____ Date _____

Nest Tree	Nest
Species _____ DBH _____ Height _____ Condition of tree _____ _____ Remarks _____	Height _____ Approx. size _____ Date constructed _____ Accessibility D_____ M_____ E_____* Visibility _____ Relation of nest height to surrounding canopy _____ Remarks _____

MNR District(s)	County/R.M./District	Crown Land _____ Private Land _____
Topographic map name and no.	Township Concession Lots	Owner name, address, telephone _____ _____ _____

Nest Habitat

Timber type, size, density_____
_____
Distance to open water _____km
Distance to lake, 40 ha or larger _____km
Distance to major river _____km
Distance to swamp_____km
Nest trees available?_____ Approx. no_____
Remarks _____

*D-difficult to reach: M-moderately easy to reach; E-easy to reach.

Development

Distance to nearest main road _____km
Timber cutting in area? _____
Distance to logging road _____km
Structural developments nearby _____
_____
Wild _____ Moderately developed _____ Well developed _____
Remarks _____

Feeding Area:

Management Considerations

Buffer zone configuration:

Essential habitat:

Critical periods:

Roads and trails to be closed or re-routed:

Modification of existing or proposed developments:

Special hazards (e.g., powerlines, recreational activity):

Pair Behaviour and Biology

Response to human intrusion, if known;

Summary of nesting history:

Research and study data:

Recommend low-level (150m) aerial photographs taken in each cardinal direction with nest in the centre; important features of the area, including perch sites and alternate nest sites, can be shown. Aerial surveys should be conducted by qualified individuals (see section 3.2.2).