

Special Management Practices for Heron Colonies

Introduction

Heronries are nesting colonies of herons that are frequently located in areas isolated from human disturbance, e.g. swamps, marshes, beaver ponds, and woodlots adjacent to water bodies or on islands. In Nova Scotia, 70% of all heronries, including the larger and more viable heronries are on islands where they are isolated from human and mammal contact. The mainland colonies tend to be smaller and more transitory. Well-established heronries may be occupied for decades or even centuries due to habitat conditions which favor reproductive success. Nova Scotia has numerous colonies of the Great Blue Heron but only two known colonies for the Black-crowned Night Heron; and often nest in association with both Double-crested and Great Cormorants.

Heronries are especially vulnerable to disturbance and habitat alteration during the breeding season (March to August) when large numbers of birds are concentrated in a colony. Herons tend to desert nests and entire colonies if disturbed during periods of pair forming (late March), nest construction (early April) or early egg laying (mid to late April). Herons continue to be sensitive to disturbance following hatch (June) until the young fledge (early August). In some instances colony locations have even been deserted following destruction or alteration of the habitat during the non-nesting season. Herons may relocate after deserting a colony but consequences of disturbance may persist and include fragmentation of breeding populations, total reproductive failure in colonies, reduced number of breeding pairs, reduced reproductive output per pair and ultimately this can affect the stability of the entire regional population (Bowman & Siderius, 1984).

Special Management Practices

Heronries are unpredictable in their response to disruption of a colony and the severity of the response does not always correspond to the magnitude of the disturbance (seemingly innocuous activities can produce serious results). The most important factors to consider when assessing potential effects are the timing of the disturbance in relation to critical periods of the nesting season and the degree to which the birds are able to adjust to human activities (degree of exposure-induced habituation). Herons are especially sensitive to humans or mammals moving beneath their nesting trees. When conducting surveys or inventories, individuals should avoid walking into heronries, especially under nesting trees (indicated by the ring of white guano around the base of the tree). Should they find themselves within a heronry, one should quietly and quickly leave by the same route they entered.

Density of vegetation within and surrounding the colony can influence the impact of disturbances. The removal of vegetation near a colony can open paths into the heronry that would not only enable intrusion by humans and predators, but would result in an increased number of exposed nests. Maintaining the vegetation, including trees and shrubs, around a colony provides alternate nest sites and a buffer against disturbance.

Given the varying sensitivity of herons in different colonies, it is difficult to establish the

precise distance that will best serve as a buffer zone. Their response to disturbance varies with factors including geographic location, size of colony, species present, degree of habituation to disturbance. As a general rule, herons should be considered very sensitive to disturbance and the most generous buffer possible should be established for the heronries, allowing the potential to increase the buffer zone if the colony size increases. Furthermore, heronries are not stationary and frequently move across an area as the immediate trees exposed to guano die. This in turn necessitates a dynamic buffer system that can be modified as the heronry moves.

A primary and secondary zoning system, or buffers, for heron and associated species in nesting colonies is based primarily on Ontario recommendations by Bowman & Siderius (1984) and updated by Naylor and Watt (2004).

A *Primary Zone* with no timber harvest or removal/alteration of trees and ground vegetation at any time of the year extends at least 150 m out from the nests on the edge of a small colony (<30 nests) and increase to a minimum 300 m for larger colonies. Entry into this buffer zone should only be done only during the least sensitive parts of the breeding period (May to August) and only by persons conducting yearly censuses or researches approved by Nova Scotia Department of Natural Resources. Low-flying aircraft should be prohibited during the breeding season (mid-March to mid-August). The use of all terrain vehicles and snowmobiles should be prohibited at all times as these create trails through the vegetation. During the non-nesting season, habitat management activities to enhance the site or those that do not interfere with the nesting habitat (such as erecting duck boxes outside the colony) may be permitted in addition to non-invasive recreational activities such as hiking.

A *Secondary Zone* extends up to 1 km from the peripheral nests of the colony. Activities such as road construction, forest harvesting and site-preparation, and any major construction should be prohibited in this buffer zone during the nesting season (mid-March to mid-August). Selection cuts, shelterwood harvest, regeneration, or first removal cuts, and other partial harvests within the secondary zones must retain a relatively uniform minimum residual canopy closure of 30% comprised of dominant and codominant trees and be conducted outside the critical breeding season if the colony is occupied.

For heronries located on islands, all efforts should be made to leave the islands undisturbed. Even if heronries have been abandoned for a period of time, conditions may become suitable for them to be reoccupied.

References

Bowman, I., and J. Siderius. 1984. Management guidelines for the protection of heronries in Ontario. Nongame Program, Wildlife Branch, Ontario Ministry of Natural Resources.

Burger, J. Coastal landscapes, coastal colonies, and seabirds. *Reviews in Aquatic Sciences*. 4(1): 23-43.

- Carney, K. M., and W. J. Sydeman. 1999. A review of human disturbance effects on nesting colonial waterbirds. *Waterbirds*. 22(1): 68-79.
- Erwin, R. M. 1996. Dependence of waterbirds and shorebirds on shallow-water habitats in the mid-Atlantic coastal region: An ecological profile and management recommendations. *Estuaries*. 19(2A): 213-219.
- Gibbs, J. P., and L. K. Kinkel. 1997. Determinants of the size and location of great blue heron colonies. *Colonial Waterbirds: Journal of the Colonial Waterbirds Society*. 20(1): 1-7.
- Hickie, J. 1985. Habitat management guidelines for waterfowl in Ontario for use in timber management. Ontario Ministry of Natural Resources. MRN# 51606, ISBN 0-7794-2355-0.
- James, R. D. 1985. Habitat management guidelines for birds of Ontario wetlands including marshes, swamps and fens or bogs of various types. Ontario Ministry of Natural Resources. MRN# 51603, ISBN 0-7794-2349-6.
- Naylor, B., and R. Watt." Review of the Forest Management Guidelines for Bald Eagles, Ospreys, and Great Blue Herons in Ontario". Draft Document.2004
- Parsons, K. C., and J. Burger. 1982. Human disturbance and nesting behavior in black-crowned night herons. *Condor*. 84: 184-187.
- Prince, H. H., P. I. Padding and R. W. Knapton. 1992. Waterfowl use of the Laurentian Great Lakes. *Journals of Great Lakes Research*. 18(4): 673 - 699.
- Rodgers, J. A., and H. T. Smith. 1995. Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology*. 9(1): 89-99.
- Skagen, S. K., P. M. Cynthia and E. Muths. 2001. The interplay of habitat change, human disturbance and species interactions in a waterbird colony. *The American Midland Naturalist*. 145: 18-28.
- Quinney, T. E. 1983. Comparison of great blue heron, *Ardea herodias*, reproduction at Boot Island and other Nova Scotia colonies. *The Canadian Field-Naturalist*. 97(3): 275-278.
- Vos, D. K., R. A. Ryder and W. D. Graul. 1985. Response of breeding great blue herons to human disturbance in northcentral Colorado. *Colonial Waterbirds*. 8(1): 13-22.