

A STRATEGY FOR MONITORING
COLONIAL WATERBIRD SPECIES
IN MINNESOTA

Submitted to the
Nongame Wildlife Program
Minnesota Department of Natural Resources

December 1985

Janet C. Green

A STRATEGY FOR MONITORING
COLONIAL WATERBIRD SPECIES
IN MINNESOTA

Introduction

Waterbirds that nest in colonies are particularly vulnerable to human-induced stresses, varying from sporadic disturbance to complete destruction of the nesting habitat, that can result in unusual population declines. They also experience other environmental events like storms, fluctuating lake levels, and predation that have detrimental effects on colony productivity. In order to monitor population changes, an ongoing survey of these species, their breeding numbers and the condition of the sites that they occupy should be conducted by the Nongame Program of the Department of Natural Resources.

Since there are seventeen species of colonial waterbirds (grebes, pelican, cormorant, herons, gulls and terns - see appendix A for list) and over 650 known nesting sites in the state, it is obvious that they cannot all be visited, never mind accurately censused, every year given the level of staff and financial resources available at this time. Therefore, a strategy for assessing species numbers and sites is presented here that builds on present DNR activities both in the field and in the central office where research and inter- and intra-agency coordination occurs.

The information that went into developing these recommendations came from two main sources: 1) the updated database on colonial waterbirds, which completely incorporates historical information as well as recent field surveys, and 2) the prioritization process that resulted in the state list of species as endangered, threatened or of special concern ("state listed species").

The monitoring strategy that is presented here mixed both the species and the colony-site approach to surveying population trends in these birds. The recommendations are divided into three parts: 1) species and their site-specific populations, with the state listed species so designated, 2) coordination with other agencies, and 3) suggestions for improving the accuracy and completeness of the colonial waterbird database. The tasks that comprise the monitoring scheme are organized primarily by species and are assigned to either the field staff, the central office staff or to an outside research contract.

Species Recommendations

Horned Grebe (special concern)

A special study, in cooperation with federal refuge staff, should be undertaken to determine the breeding population on the Roseau River WMA, Agassiz NWR, and Tamarac NWR. The first two areas are the only known breeding sites in the state and the last area is a suspected breeding site. Conducted through a research contract.

Eared Grebe and Western Grebe

An estimation of numbers nesting on lakes in southwestern Minnesota should be done in conjunction with the Forster's Tern survey on those same lakes (research contract). The same year that the southwest area survey is conducted an information alert should be distributed to Minnesota Ornithologists' Union members and to DNR and USF&WS field staff for incidental nesting information throughout the state. This will give a single year assessment of distribution and population estimates for these species.

American White Pelican (special concern)

1) Marsh Lake population (two sites) - Since other researchers are not generating consistent and useable data, DNR field staff should make two visits to these colonies to assess first, the population level (early in the nesting cycle) and second, the success of nesting (later in the nesting cycle). These visits should not be designed to obtain actual productivity figures, which would be too time consuming and are not necessary because the population seems secure, but rather just to monitor in a general fashion the effect of weather, lake levels, etc. on nesting success.

2) Lake of the Woods population - One census should be conducted every three years as part of a wider census of all colonial waterbirds in the Lake of the Woods archipelago. Consideration should be given to using an aerial census with photo counts. Conducted by DNR field staff.

Double-crested Cormorant

No special recommendations are made for this species. Minor colonies should come into the database through incidental information contributed by DNR staff, MOU members and others - the same fragmented data gathering that exists now. Major colonies are surveyed if they occur in mixed species colonies (see under Great Blue Heron). The population of this species is increasing and it is secure as a breeding species in the state.

Great Blue Heron and Great Egret

The important heron colonies listed below, many of them of mixed species including Double-crested Cormorant and Black-crowned Night Heron, should be checked every 1-2 years to see if they are still active and should be censused every 3-5 years by field staff. Ownership by The Nature Conservancy (TNC) and by the U. S. Fish and Wildlife Service (USF&WS) is indicated where known; previous monitoring by the U. S. Forest Service (USFS) is also indicated.

(003) Thief Lake WMA, Marshall Co. (Black-crowned Night Heron)

(004) Agassiz NWR, Marshall Co. (USF&WS)

(008) Kebekona Lake, Hubbard Co.

(010) Egret Island, Grant Co. (TNC)

(019) Insula Lake, Lake Co. (USFS)

(023) Black Duck Lake, St. Louis Co.

(028) Kego Lake, Crow Wing Co.

(033) Pelican Lake, Wright Co.

(037) Lake Jefferson, LeSueur Co.

(043) Lake Monongalia, Kandiyohi Co.

(052) Blue Lake, Scott Co.

(054) Mission Creek, Crow Wing Co.

(063) Pigeon Lake, Meeker Co.

(064) Root River Delta (Hokah #2), Houston Co.

(069) Minnesota Lake, Faribault Co.

(072) Long Lake #1, Hubbard Co.

(077) Big Fork River, Itasca Co. (USFS)

(081) Kirk Lake, Clearwater Co.

(083) Rice Lake, Anoka Co.

(087) Turtle River, Beltrami Co.

(090) Pig's Eye Lake, Ramsey Co.

(095) Howard Lake, Anoka Co.

(098) Cold Spring, Stearns Co.

(099) Lovell Lake, Stearns Co.

(101) Rush Lake, Chisago Co.

(115) Dead Lake, Ottertail Co.

(117) Lake Johanna, Pope Co.

(123) Vermilion Lake, St. Louis Co. (USFS)

(142) MacDougal Homestead (Royalton), Morrison Co. (TNC)

(147) Elk River Sherburne Co.

- (153) Big Stone NWR, Lac qui Parle Co. (USF&WS)
- (179) Kellog (Zumbro River), Wabasha Co.
- (182) Cannon River Bottoms, Goodhue Co.
- (186) Reno, Houston Co.
- (189) Vermillion River, Dakota Co.
- (199) Lake of the Isles, Hennepin Co. (Black-crowned Night Heron mostly)
- (206) Long Lake, Kandiyohi Co.
- (216) Sand Lake, Becker Co.
- (222) Pine Mt. Lake #2, Cass Co.
- (284) Fish Lake, Becker Co.
- (302) Birch Lake, St. Louis Co. (USFS)
- (326) Dark River Tailings Pond, St. Louis Co.
- (328) Nemadji Forest #2, Pine Co.
- (334) Fox Lake, Itasca Co.
- (336) Cohasset, Itasca Co.
- (378) Manganika Lake, St. Louis Co.
- (497) Fall Lake, Lake Co. (USFS)
- (498) Maddens #2, Cass Co.
- (593) Pelican River, Becker Co.
- (596) Bow-Dodge Lake, Becker Co.

These colonies were chosen because they are large (usually over 100 pair of Great Blue Herons) or persistent over a long period of time. As other large colonies are discovered they should be added to the list.

Snowy Egret, Little Blue Heron, Cattle Egret

These species are on the edge of their range in Minnesota and occasionally occur breeding with other herons in mixed species colonies. No special effort should be made to look for them but when they are found in surveys of major colonies, an attempt should be made to determine if they are actually nesting. A written report on species identification and nesting evidence should be requested by the central office staff as soon as a report that they have been seen is received. Documentation of identification as well as nesting attempt or breeding success is necessary for these rare species.

Black-crowned Night Heron

At this time no special surveys are recommended. Most large colonies will be covered when major mixed-species colonies are surveyed. Incidental information as it comes from field staff or birders should be put in the database. If new large, single-species colonies are discovered, they should be surveyed on the same schedule as the mixed-species colonies.

Yellow-crowned Night Heron

Any information about nesting, either written or verbal, that comes to the attention of central office staff should be followed promptly by a request for more details on both identification and nesting evidence.

Franklin's Gull

1) Marshall County population - Data should be gathered every year on the approximate size and general nesting success of the colony at Agassiz NWR and at Thief Lake WMA. A direct request every year to the refuge staff is necessary to make sure the information is forthcoming. Two letters are probably necessary - one before their work program is put together and another as a reminder before the nesting season begins. These could be combined with requests for information on Forster's Terns. Requests conducted by central office staff.

2) Lake Osakis population - One field check early in the breeding season for nesting presence and size estimate conducted by field staff.

3) Heron Lake population - One field check early in the breeding season for possible nesting presence and size estimate conducted by field staff.

Ring-billed Gull

The Duluth-Superior colonies should be censused every 3 years to monitor the trends in population. Other colonies should be censused in conjunction with Common Tern surveys. Duluth-Superior census should be done by field staff.

Herring Gull

1) North Shore colonies - In order to monitor population trends the BLM census should be duplicated every 3-5 years. Rather than conducting a full census, a valid sampling technique should be devised. Both tasks can be carried out by a research contract.

2) Large inland lake colonies - Baseline population data should be gathered on colonies in acid sensitive areas: e. g. Basswood, Vermilion, Voyageurs National Park/Canadian border lakes. These large lakes do have large colonies (greater than a 2-20 pair) but they have never been censused. This should be carried out by DNR field staff in conjunction with federal agency staff (U. S. Forest Service and National Park Service).

Common Tern (special concern)

1) A detailed study of the productivity of the Mille Lacs Lake and Leech Lake colonies should be conducted with the goal of recommending management strategies (e. g. control of gulls) to ensure continuing viability of the colonies. This to be done through a research contract.

2) Lake of the Woods - This area should be monitored by a) an annual census of the Pine/Curray Island colony done in conjunction with any Piping Plover work there (coordination from central office staff), and b) a 2-3 year census of archipelago colonies done as part of a wider survey of all waterbird colonies on this lake (performed by field staff; aerial census techniques should be considered).

3) Management activities in the Duluth-Superior harbor should be continued to entice terns to a safe breeding location. This can be accomplished either by field staff or through a special contract.

Forster's Tern (special concern)

1) At the following large colony centers an annual census should be taken; it should be composed of two field surveys - one early for population number, one later for general nesting success:

Lake Osakis

Clearwater Lake, Wright Co. and Anoka County lakes

Wood Lake, Mother's Lake, and Minn. River Valley sloughs in metro area

Swan Lake and Middle Lake

Thief Lake

This survey can be done by field staff; aerial census techniques should be considered.

2) Suitable lakes in the southwestern quarter of the state (from Grant, Douglas and Kandiyohi counties south to Iowa border) should be surveyed at

2-3 year intervals to discover scattered nesting of small groups. Confirmation of nesting but not an actual count of nests is needed together with an estimate of the number of pairs. This can be done in conjunction with a grebe survey for the same area by either DNR field staff or through a research contract.

3) A yearly request for information (accompanied by the DNR survey form) should be made to the National Wildlife Refuge staff at Agassiz, Tamarac, Big Stone and Upper Mississippi River. This should be done by central office staff and done early enough so that the NWR staff can incorporate the field work into their work program. A follow-up contact should be made close to field season time and the information gathered should at least estimate the numbers present on the refuges and assess their nesting success in a general way (not actual productivity figures).

Other Agency Coordination

U. S. Fish and Wildlife Service

Both the Common Tern and the Great Blue Heron have been identified as Federal species of special emphasis in the second cycle of the Regional Resource Plan. Some effort should be made by DNR central office staff to see what is intended in terms of data gathering for these species. Some priority suggestions are a survey of Great Blue Heron colonies in the Upper Mississippi River NWR, monitoring the heron rookery at Big Stone NWR, and censusing and managing the Common Tern colonies at Mille Lacs Lake which are part of the Rice Lake NWR.

In order to get breeding information about Forster's Tern, Common Tern, Franklin's Gull and herons from refuge staff they need to plan for the field activity in their annual work plans. Requests for information with the use of DNR field survey forms should be made far enough in advance so this can be accomplished (for specific requests look under species discussed in the first section of this report).

U. S. Forest Service

This agency surveys the Great Blue Heron colonies on the Chippewa NF and the Superior NF at varying intervals. DNR central office staff should determine when these surveys are going to be done and distribute DNR field survey forms to be used in addition to federal forms for these surveys. Except for a few large colonies it is not necessary for DNR to monitor heron populations on these forests because the colonies are usually small and unstable over time. DNR field staff should work in cooperation with USFS staff to monitor the larger colonies that appear on the list of Great Blue Heron/mixed species colonies.

The Superior National Forest should be asked to cooperate in an inventory of Herring Gulls on large lakes in acid sensitive areas. The Chippewa National Forest should be asked to cooperate in a productivity study of the Common Tern colony on Leech Lake.

U. S. Dept. of the Interior, Voyageurs National Park

Every year a formal request by the central office staff should be made for any nesting data that the Park Service has on the Kabetogama gull/tern site, Great Blue Heron rookeries, and the Herring Gull-cormorant colonies along the border. The border gull colonies are all in Canada right along the U. S. border and since there is no management agency locally on the Canadian side, the Park Service treats them as part of the park's resources. These colonies should be incorporated into any study of gull colony numbers on large lakes in acid sensitive areas.

The Nature Conservancy, Minnesota Field Office

Several of the heron rookeries listed under Great Blue Heron belong to this organization and they should be contacted when any field survey is made and field data should be sent to them for their files.

Cornell University, Laboratory of Ornithology

Cornell has special forms for their Colonial Bird Register which gathers much the same information as does the DNR Colonial Bird Survey form. DNR field staff should be encouraged to fill out both forms and send them into the DNR central office so that the Cornell forms can be forwarded to the Laboratory of Ornithology.

Survey and Inventory Suggestions

Other species - Red-necked Grebe, Green Heron, Black Tern

These species are semi-colonial in nesting habits, sometimes nesting together with only a few pairs and sometimes nesting in larger congregations. At some time they should be incorporated into the database on colonial waterbirds, but since the information gathered so far is so fragmentary, updating the database at this time should not be attempted. In another year or so DNR field staff should be encouraged to turn in information on Red-necked Grebes and Black Terns at the same time that other surveys are conducted for other species. Green Herons, although they can be colonial, are too scattered in their nesting sites to adequately survey or monitor so incorporating this species into the database should not be attempted at all.

Colonial Bird Survey Form

A new form to be used in Minnesota has been designed, and is included here as an attachment.

Training for field surveys

Some training, either through a workshop or through an information manual, should be given to field personnel in the DNR so that consistent census/survey techniques are utilized and the purpose of the level of monitoring is understood.

Aerial census

The use of photographs taken from the air should be considered as a census technique for counting birds that nest in open sites - pelicans, gulls and terns. See attached paper from The Prairie Naturalist (1982), "White Pelican Populations at Chase Lake, North Dakota, Evaluated by Aerial Photography."

Feedback to maintain interest

So that survey personnel, whether they are DNR staff, volunteers or other agency staff, maintain an interest in the ongoing monitoring effort for colonial waterbirds, some feedback in the form of a yearly progress report should be started. It does not have to be elaborate or incorporate any analysis. A computer print-out of the yearly entries would be enough if it just listed site, species and number.

Lake surveys for all species

Certain lakes in the state are noted for their populations of colonial species and thorough surveys should be made there for baseline data. These surveys could be done by DNR field staff but probably need to be more than just one day in length. These lakes should be resurveyed on a regular basis, every 3-5 years. For open colonies of white species, aerial photography could be used as a census technique. Suggested lakes are:

Thief Lake, Marshall County

Upper Rice Lake, Clearwater County

Lake Osakis, Todd County

Heron Lake, Jackson County

Swan Lake/Middle Lake, Nicollet County

Lake of the Woods, Lake of the Woods County

New colonies

In order to find out about new colonies and to gather incidental information about small colonies that are not regularly surveyed, a yearly request should be sent to other DNR field staff (wildlife, forestry) together with a form on which to record information about any colony they come across in their field work. Forms should be sent to M. O. U. cooperators as well.

Colonial Waterbirds
Minnesota DNR Database

- *Horned Grebe (Podiceps auritus)
- Eared Grebe (Podiceps nigricollis)
- Western Grebe (Aechmophorus occidentalis)
- *American White Pelican (Pelecanus erythrorhynchos)
- Double-crested Cormorant (Phalacrocorax auritus)
- Great Blue Heron (Ardea herodias)
- Great Egret (Casmerodius albus)
- Snowy Egret (Egretta thula)
- Little Blue Heron (Egretta caerulea)
- Cattle Egret (Bubulcus ibis)
- Black-crowned Night Heron (Nycticorax nycticorax)
- Yellow-crowned Night Heron (Nycticorax violaceus)
- Franklin's Gull (Larus pipixcan)
- Ring-billed Gull (Larus delawarensis)
- Herring Gull (Larus argentatus)
- *Common Tern (Sterna hirundo)
- *Forster's Tern (Sterna forsteri)

* - state listed (special concern)