

COLONIAL WATERBIRDS

in

MINNESOTA

An update of their
distribution and abundance

Nongame Wildlife Program
Minnesota Department of Natural Resources
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Preface

This summary of colonial waterbirds in Minnesota has been compiled to provide a broad overview of the status of these birds in the state. It is intended for biologists and those concerned with the populations of colonial waterbirds in Minnesota. It is not intended to provide absolute population estimates of the various species, but to provide information on relative abundances and general distribution.

The data base from which this report was compiled is a result of many years of fieldwork aimed at monitoring Minnesota's waterbird colonies. Maintained by the Nongame Wildlife Program of the Minnesota Department of Natural Resources, this data base has been assembled through the efforts of many dedicated volunteers throughout the state, as well as by state and federal personnel. At the time of writing, records on 513 waterbird colonies were being maintained. With the exceptions of Herring Gulls (which apart from the north shore colonies, several nest in remote areas) and grebes and Forster's Terns (for which nesting is often difficult to document), coverage of waterbird colonies in the state has been fairly thorough.

This thoroughness of coverage has enabled a relatively complete picture of Minnesota's colonial waterbirds to be drawn and this report to be written. At the same time, however, the survey's limitations must be recognized. Even with the annual efforts of the many contributors to the survey, it is not possible to cover each colony every year. Some colonies, therefore, have been surveyed less consistently or less recently than others, and the data in this summary are only as up-to-date as the most recent information in the data base.

These are some points to keep in mind while reading through this report. Overall, however, the colonial waterbird survey has been a success and has contributed a great deal to our understanding of the populations of these birds in Minnesota. It is hoped that future years will expand our understanding still further.

Acknowledgements

The efforts of a great many diligent surveyors are gratefully appreciated. Without their help our understanding of Minnesota's colonial waterbirds would be sorely lacking. This report is based upon the work of these people, including biologists from the Superior and Chippewa National Forests, Voyageurs National Park, the U.S. Fish and Wildlife Service, and the Minnesota Department of Natural Resources, as well as many private individuals. Regional nongame specialists Katie Hirsch, Jack Mooty, Pam Perry, and John Schladweiler conducted extensive surveys throughout the state. Mary Miller of the Nongame Wildlife Program proved invaluable in managing the colonial waterbird data base, and David Guertin wrote the text. Jan Green and Lee Pfannmuller reviewed the materials and provided editorial assistance.

Introduction

In 1977 the Nongame Wildlife Program of the Minnesota Department of Natural Resources began keeping records on colonial waterbird populations in the state. These birds, consisting of herons, cormorants, pelicans, grebes, gulls, and terns, are of particular interest because of their visibility and their vulnerability to habitat loss. Most of Minnesota's colonial waterbirds are large, attractive birds that are conspicuous both individually and in their gregarious nesting habits. Their colonial nature, however, also contributes to their vulnerability; habitat alterations affecting a relatively small area can potentially affect a large segment of the colonial waterbird population. For these reasons, population monitoring continues.

Survey Methods and Data System

Reports of colony activity are contributed to the Nongame Wildlife Program by volunteers and by state and federal personnel throughout the state. Systematic surveys are conducted on several managed areas, including National Forests, National Wildlife Refuges, and State Parks. Nongame Program staff also conduct more widespread surveys in some regions of the state. While some colonies are easily surveyed annually by a single observer, others are covered less consistently; they are either not surveyed every year or are surveyed by different observers. The reports that are submitted also vary considerably; they may document the number of adult birds present, the number of occupied nests, or the total number of nests. Each of these figures may differ within a single colony. The large number of colonies in the state and the inaccessibility of many of them are partly responsible for some of these problems.

For the purposes of this report, a colony was considered active if nesting activity was documented in 1981, 1982, or 1983; therefore, the report summarizes activity over a 3 year period. Colonies listed as inactive are those where no birds were found during the most recent survey. If the last survey year for a colony was 1980 or earlier and if the colony was not known to be inactive, the status was considered unknown. For each colony, the most recent accurate figure was used so the dates of the last accurate observation vary among the colonies. Where nesting data are available for 1984, they have been included in addenda to the species accounts for those species with three or fewer breeding locations in the state. These records are not included in the tables and figures. Since the criteria used here for determining colony size and activity are different from those of the last previous colonial waterbird report (Henderson and Hirsch 1980), caution should be used in making population comparisons between the two reports.

Mixed species heronries (including those containing Double-crested Cormorants) were counted as single colonies; all other species were considered to inhabit separate colonies. For example, in this report a lake containing a mixed species heronry, Western Grebes, and Eared Grebes would be recorded as supporting three separate colonies.

Red-necked Grebes, Herring Gulls, Caspian Terns, and Piping Plovers are not included in the table summaries. Although Red-necked Grebes are not true colonial nesters, some records are maintained. Efforts to conduct a systematic statewide survey of Red-necked Grebes however, have not been made. Herring Gulls have also not been adequately surveyed with the exception of those colonies along the North Shore, and Caspian Terns have nested only irregularly and in very low numbers.

Because of the rarity and national significance of Piping Plovers, data on these birds have been maintained separately from the other colonial nesters. Piping Plovers nest at Lake of the Woods and at the Duluth Harbor. In 1983, 22 nests were found at Lake of the Woods (20 in the area of Pine and Curry Island and one each at Zippel Bay and Rocky Point) (Cuthbert and Wiens 1984) and five nests (two of which may have been renesting attempts) at the Duluth Harbor (Metropolitan Interstate Committee 1983). Seventeen of the Lake of the Woods nests, and only one Duluth nest, fledged young.

Results

There are currently 233 active waterbird colonies identified in Minnesota (Tables 1, 2, 3). The majority (136) of these colonies are heronries, 127 of which contain Great Blue Herons (Tables 2, 3). Twenty-six are mixed species heronries, which may also include Double-crested Cormorants.

For most species, small colonies (50 or fewer nests) are most common (Table 2). Exceptions are White Pelicans, Double-crested Cormorants, Ring-billed Gulls, and Franklin's Gulls. Waterbird colonies are distributed throughout the entire state (Table 3). The large number of colonies in Region 2 (northeast) reflects the abundance of small Great Blue Heron colonies in that part of the state. Species composition in other regions of the state is more evenly distributed (Tables 1, 3).

Species Accounts

Horned Grebe

Two localities in Minnesota, the Roseau Wildlife Management Area (WMA) in Roseau County and Agassiz National Wildlife Refuge in Marshall County, are reported as breeding locations for this species (Fig. 1). Nesting is probable at these sites but not confirmed. Fourteen birds were seen at Roseau WMA in 1983.

Eared Grebe

This species is reported from 14 colony locations, most of which are in the western half of the state (Fig. 2). There are several additional locations, not included here, where breeding is presumed but not confirmed. Only two of the colonies comprise more than 50 nests or pairs each (Table 2). The largest colony, at Agassiz National Wildlife Refuge in Marshall County, contained over 100 pairs in 1983.

In 1980, only eight breeding locations were reported for the state. The increase in numbers since then may reflect new discoveries of existing small colonies more than an actual increase in the grebe population. Two colonies have not been surveyed since 1980, and their status is unknown.

Western Grebe

Twenty-nine active Western Grebe colonies are known in Minnesota, 25 of which comprise 50 or fewer nests or pairs (Table 2). This species breeds mainly in the western half of the state (Fig. 3). Four colonies have not been surveyed recently enough to determine their present status. The largest known concentration of this species in Minnesota is on Lake Osakis in Todd County, where an estimate of over 200 nesting pairs was reported in 1981.

White Pelican

White Pelicans nest in three colonies in Minnesota; one is on Lake of the Woods and two are on Marsh Lake in Big Stone County (Fig. 4). Crowduck Island in Lake of the Woods contains a colony of about 50 nests. This colony has been present at least since 1973. Colonies to the east in the Canadian portion of Lake of the Woods have been active since 1959.

Pelicans began nesting on an island in Marsh Lake, Big Stone County, in 1968. This colony had expanded to about 1,000 nests by 1983, and 400-450 additional pairs began nesting on a peninsula 1/2 mile northeast of the island. For monitoring purposes, these are considered two separate colonies.

Addendum: In 1984, the Marsh Lake peninsula colony had expanded to over 1,200 nests while the island colony had decreased considerably from 1983. Both colonies were later flooded by high water, resulting in extremely low reproductive success (Grewe, personal communication).

Double-crested Cormorant

Double-crested Cormorants nest in 26 colonies in Minnesota, 11 of which are associated with Great Blue Heron colonies. Their distribution is concentrated in the western and central regions of the state, with colonies also reported from Lake of the Woods (seven colonies), St. Louis (two colonies), and Faribault (one colony) Counties (Fig. 5). Several colonies appear to be increasing in size, and a particularly marked increase has occurred in recent years at Pigeon Lake in Meeker County. The largest colony, at Crowduck Island in Lake of the Woods, contained 1,024 nests in 1982.

Great Blue Heron

Great Blue Herons are Minnesota's most widely distributed colonial waterbird. They have been documented nesting in 127 colonies throughout the state, except for the extreme northwest and southwest corners (Fig. 6). Twenty-eight additional colonies have not been surveyed since 1980, and their present status is unknown (Table 4). Seventy-seven former colonies are presently inactive (Fig. 7).

Of the 127 active colonies, 25 are mixed species colonies (Fig. 8). With one exception, a Great Egret/Black-crowned Night Heron colony in Hennepin County, the three egret species and Little Blue Herons always nest in association with Great Blue Herons in Minnesota. Double-crested Cormorants and Black-crowned Night Herons are also commonly found nesting with Great Blue Herons, but they nest in single-species colonies as well. Great Blue Herons are usually found in small colonies in the northeast, while larger, mixed species colonies are more common in the southern and western parts of the state (Table 4). The largest known colony in Minnesota is at Long Lake, Kandiyohi County, where an estimated 1,186 nests were occupied in 1981.

Little Blue Heron

This species reaches the northern limit of its range in Minnesota. Breeding has been reported at three locations in the state: Egret Island (Pelican Lake) in Grant County, Lake Johanna in Pope County, and Big Stone National Wildlife Refuge in Lac Qui Parle County (Fig. 9). In 1981, one nest was reported at Lake Johanna (there was a maximum of eight in 1972) and two at Big Stone NWR. Breeding has not been confirmed at Egret Island. All three sites are large, mixed species heronries.

Addendum: In 1984, no Little Blue Herons were seen during surveys of the above three locations, although their presence may simply have gone undetected in these large colonies.

Cattle Egret, Snowy Egret

The large, mixed species heronry at Big Stone National Wildlife Refuge, Lac Qui Parle County, is the only known breeding location for these species in Minnesota (Fig. 10, 11). In 1981 an estimated 12 Cattle Egrets and two Snowy Egrets were reported there. (1980 counts found 32 nests and 12 nests, respectively). Cattle Egrets may also still breed at Lake Johanna, Pope County, but the latest record for that location is from 1978, when one nest was found.

Addendum: In 1984, six Cattle Egrets were seen nesting at Lake Johanna, and three Cattle Egret nests were found at Long Lake in Kandiyohi County. This is a new breeding location for this species.

Great Egret

Great Egrets nest in 22 colonies in Minnesota, 17 of which contain 50 or fewer nests. They are distributed mainly in the central and southeast portions of the state, though colonies are found as far north as Marshall and Becker Counties in the west (Fig. 12). With one exception (the Great Egret/Black-crowned Night Heron colony at Lake of the Isles in Hennepin County), this species always nests in association with Great Blue Herons in Minnesota. The two largest concentrations of Great Egrets in Minnesota are the colonies at Long Lake, Kandiyohi County (860 nests in 1981) and Egret Island (Pelican Lake), Grant County (743 nests in 1981). Twelve former colonies are now inactive and three others have not been surveyed recently enough to determine their present status.

Black-crowned Night Heron

This species has been found nesting in 17 colonies in Minnesota, all in the southern half of the state except for two colonies in Marshall County at the Agassiz National Wildlife Refuge and at the Thief Lake Wildlife Management Area (Fig. 13). Ten of these are mixed species colonies, all but one occurring in association with Great Blue Herons. The largest Black-crowned Night Heron colony in the state is the mixed species heronry at Pig's Eye Lake in Ramsey County, where several hundred nests of this species are found.

Yellow-crowned Night Heron

Yellow-crowned Night Herons reach the northern limit of their range in southern Minnesota and nest here only sporadically. This species has bred in small single-species colonies in Houston and Ramsey Counties. In 1981 and 1982, a single nest was active in Aitkin County, which is usually far north for this species.

Ring-billed Gull

Seven breeding colonies of Ring-billed Gulls are known in Minnesota. There are two each at Mille Lacs Lake, Lake of the Woods, and the Duluth Harbor, and one at Leech Lake (Fig. 14). The largest colony in the state is at the Duluth Port Terminal, where 11,216 birds were counted in 1983. This colony has undergone a rapid expansion from an initial count of 468 birds in 1977. The site is slated for industrial development, however, and the colony may be displaced soon. The colonies at Leech Lake, Mille Lacs Lake, and Lake of the Woods appear to be stable or increasing.

Franklin's Gull

In the past three years, this species has occurred intermittently at five colony locations in the western half of Minnesota (Fig. 15). The largest and most consistent colony is at Agassiz National Wildlife Refuge in Marshall County, where about 35,000 pairs nested in 1983. (Reproductive success was relatively low in 1983, however). Another large colony in Marshall County, at the Thief Lake Wildlife Management Area, was active until 1981, but was abandoned during the 1982 nesting period, presumably because of water level fluctuations. No nesting took place in 1983. Water level fluctuations are also a problem for Franklin's Gulls at Heron Lake in Jackson County, where a very large colony formerly existed. In recent years this site has been repeatedly flooded during wet periods, although large groups of gulls still show up in some years and attempt to nest. The two other colonies each comprise less than 50 nests and are located in Todd and Marshall Counties.

Common Tern

Nine Common Tern colonies are known in Minnesota. Four of these are in the Duluth Harbor area, two on Lake of the Woods, two on Mille Lacs Lake, and one on Leech Lake (Fig. 16). The largest colonies occur on Gull Island in Leech Lake and Fourblock Island in Lake of the Woods. At Leech Lake, 375 pairs were observed in 1983. This is approximately twice as many as the previous year's count, and approaches the numbers of the late 1970's. In 1979, Ring-billed Gulls were reported taking over the colony. The Fourblock Island

colony comprised 232 nests in 1981, but was probably flooded in 1983. A third large colony, at the Duluth Port Terminal, contained 244 adults in 1983 (Metropolitan Interstate Committee 1983). Reproductive success in the harbor is extremely low, however; only 19 chicks reached fledging age in 1983. This site is slated for expanded industrial development and the colony may be displaced soon. Attempts are currently underway to attract the colony to a more secure location.

Five of the remaining six colonies contain less than 60 birds each. The Spirit Island and Hennepin Island sites in Mille Lacs Lake both appear to be experiencing a decline. No nests were found on Hennepin Island in 1983.

Forster's Tern

Forster's Tern colonies are known from 15 locations in Minnesota, mostly in the western half of the state (Fig. 17). Ten of these comprise fewer than 50 nests. The largest colony is on Lake Osakis in Todd County, where an estimated 1,000 pairs nested in 1981. Six more colonies have not been surveyed since 1980 and their present status is unknown.

Literature Cited

- Cuthbert, F. J. and T. Wiens. 1984. Status and breeding biology of the piping plover in Lake of the Woods County, Minnesota. Unpubl. rep. to Minn. Dep. Nat. Resour., Nongame Program. 13pp.
- Henderson, C. L. and K. V. Hirsch. 1980. Minnesota colonial waterbird nesting site inventory, 1980. Minn. Dep. Nat. Resour., Nongame Program. 65pp.
- Metropolitan Interstate Committee. 1983. St. Louis River estuary colonial bird program. Unpubl. rep. to Minn. Dep. Nat. Resour., Nongame Program. 31pp.

Table 1. Number of known active waterbird colonies in each county and region. Figures in parentheses refer to number of mixed species colonies.

| County | Hérons | DCC | Grebes | Gulls | Terns | Total ¹ |
|-------------------|--------|-------|--------|-------|-------|--------------------|
| Beltrami | 2 (0) | | | | | 2 |
| Clearwater | 1 (0) | 1 (0) | | | 1 | 3 |
| Hubbard | 2 (0) | | | | | 2 |
| Kittson | | | | | | 0 |
| Lake of the Woods | | 7 (0) | | 2 | | 12* |
| Mahnomen | | | | | | 0 |
| Marshall | 4 (1) | 1 (0) | 5 | 3 | 2 | 15 (1) |
| Norman | | | | | | 0 |
| Pennington | | | | | | 0 |
| Polk | | | 1 | | | 1 |
| Red Lake | | | | | | 0 |
| Roseau | | | 1 | | | 1 |
| Region IN | 9 (1) | 9 (0) | 7 | 5 | 5 | 36 (1)* |

* Including 1 white pelican colony not listed in this table

Continued

Table 1. Continued.

| County | Hérons | DCC | Grebes | Gulls | Terns | Total |
|------------|--------|-------|--------|-------|-------|--------|
| Becker | 3 (1) | 2 (1) | | | | 4 (1) |
| Clay | | | | | | 0 |
| Douglas | | | 1 | | 1 | 2 |
| Grant | 1 (1) | 1 (1) | 1 | | 1 | 3 (1) |
| Otter Tail | 3 (1) | 1 (0) | 1 | | | 5 (1) |
| Pope | 1 (1) | 1 (1) | 1 | | 1 | 3 (1) |
| Stevens | 1 (0) | | 6 | | 1 | 8 |
| Traverse | | | | | | 0 |
| Wilkin | | | 1 | | | 1 |
| Region 1S | 9 (4) | 5 (3) | 11 | 0 | 4 | 26 (4) |

Continued

Table 1. Continued.

| County | Hérons | DCC | Grebes | Gulls | Terns | Total |
|-------------|--------|-------|--------|-------|-------|--------|
| Aitkin | 11 (0) | | | | | 11 |
| Carlton | | | | | | 0 |
| Cook | 3 (0) | | | | | 3 |
| Itasca | 12 (0) | | | | | 12 |
| Koochiching | 3 (0) | | | | | 3 |
| Lake | 6 (0) | | | | | 6 |
| St. Louis | 21 (1) | 2 (1) | | 2 | 4 | 28 (1) |
| Region 2 | 56 (1) | 2 (1) | 0 | 2 | 4 | 63 (1) |
| Chisago | 1 (1) | | | | | 1 (1) |
| Isanti | | | | | | 0 |
| Kanabec | | | | | | 0 |
| Mille Lacs | 1 (0) | | | 2 | 2 | 5 |
| Pine | 1 (0) | | | | | 1 |
| Region 3E | 3 (1) | 0 | 0 | 2 | 2 | 7 (1) |
| Continued | | | | | | |

Table 1. Continued.

| County | Herons | DCC | Grebes | Gulls | Terns | Total |
|------------|--------|-------|--------|-------|-------|--------|
| Benton | | | | | | 0 |
| Cass | 12 (0) | | | 1 | 1 | 14 |
| Crow Wing | 3 (0) | | | | | 3 |
| Morrison | 1 (0) | | | | | 1 |
| Sherburne | 1 (1) | | | | | 1 (1) |
| Stearns. | 2 (1) | | | | | 2 (1) |
| Todd | 2 (0) | | 1 | 1 | 1 | 5 |
| Wadena | | | | | | 0 |
| Wright | 5 (2) | 1 (0) | 1 | | | 7 (2) |
| Region 3W | 26 (4) | 1 (0) | 2 | 2 | 2 | 33 (4) |
| Blue Earth | | | | | | 0 |
| Brown | | | | | | 0 |
| Le Sueur | 1 (1) | | | | | 1 (1) |
| McLeod | 1 (0) | 1 (0) | | | | 2 |
| Nicollet | 1 (0) | | 2 | | 1 | 4 |
| Sibley | 1 (1) | | 1 | | | 2 (1) |
| Waseca | | | | | | 0 |
| Region 4E | 4 (2) | 1 (0) | 3 | 0 | 1 | 9 (2) |
| Continued | | | | | | |

Table 1. Continued.

| County | Hérons | DCC | Grebes | Gulls | Terns | Total |
|-----------------|--------|-------|--------|-------|-------|---------|
| Big Stone | 2 (0) | 1 (0) | 10 | | 1 | 16* |
| Chippewa | | | | | | 0 |
| Kandiyohi | 2 (1) | 1 (1) | 2 | | | 4 (1) |
| Lac Qui Parle | 1 (1) | 1 (1) | | | | 1 (1) |
| Meeker | 2 (1) | 1 (1) | | | | 2 (1) |
| Redwood | | | | | | 0 |
| Renville | | | 1 | | | 1 |
| Swift | 1 (1) | 1 (1) | | | | 1 (1) |
| Yellow Medicine | | | | | | 0 |
| Region 4W | 8 (4) | 5 (4) | 13 | 0 | 1 | 25 (4)* |

* Including 2 white pelican colonies (Marsh Lake) not listed in this table

Continued

Table 1. Continued.

| County | Herons | DCC | Grebes | Gulls | Terns | Total |
|------------|--------|-------|--------|-------|-------|--------|
| Cottonwood | | | | | | 0 |
| Faribault | 2 (1) | 1 (1) | | | | 2 (1) |
| Jackson | 1 (1) | | 3 | 1 | | 5 (1) |
| Lincoln | | | | | | 0 |
| Lyon | 1 (0) | | | | | 1 |
| Martin | | | 2 | | | 2 |
| Murray | | | 2 | | | 2 |
| Nobles | 2 (0) | | | | | 2 |
| Pipestone | | | | | | 0 |
| Rock | | | | | | 0 |
| Watonwan | 2 (0) | | | | | 2 |
| Region 4S | 8 (2) | 1 (1) | 7 | 1 | 0 | 16 (2) |

Continued

Table 1. Continued

| County | Herons | DCC | Grebes | Gulls | Terns | Total |
|----------|--------|-----|--------|-------|-------|-------|
| Dodge | | | | | | 0 |
| Fillmore | | | | | | 0 |
| Freeborn | 1 (0) | | 1 | | | 2 |
| Goodhue | 1 (1) | | | | | 1 (1) |
| Houston | 1 (1) | | | | | 1 (1) |
| Mower | | | | | | 0 |
| Olmsted | | | | | | 0 |
| Rice | | | | | | 0 |
| Steele | | | | | | 0 |
| Wabasha | 1 (0) | | | | | 1 |
| Winona | | | | | | 0 |
| Region 5 | 4 (2) | 0 | 1 | 0 | 0 | 5 (2) |

Continued

Table 1. Continued.

| County | Hérons | DCC | Grebes | Gulls | Terns | Total |
|------------|----------|---------|--------|-------|-------|-----------|
| Anoka | 2 (1) | 1 (1) | 1 | | | 3 (1) |
| Carver | 1 (0) | | | | | 1 |
| Dakota | 2 (1) | 1 (1) | | | | 2 (1) |
| Hennepin | 1 (1) | | | | 1 | 2 (1) |
| Ramsey | 1 (1) | | | | | 1 (1) |
| Scott | 1 (1) | | | | 2 | 3 (1) |
| Washington | 1 (0) | | | | | 1 |
| Region 6 | 9 (5) | 2 (2) | 1 | 0 | 3 | 13 (5) |
| TOTAL | 136 (26) | 26 (11) | 45 | 12 | 22 | 233 (26)* |

* Including 3 white pelican colonies not listed in this table.

1 Double-crested cormorants occurring in heron colonies are not counted in totals as separate colonies.

Table 2. Colony size distribution for each colonial waterbird species. Figures in parentheses refer to number of mixed species colonies. All Little Blue Heron and all egret colonies are mixed species colonies.

| Species | Size of colony (nests or pairs) | | | | | | | | Active size unknown | Inactive | 1 Status unknown | Total active colonies |
|-------------------|---------------------------------|--------|---------|---------|---------|---------|----------|-------|---------------------|----------|------------------|-----------------------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | |
| Horned Grebe | 2 | | | | | | | | | | | 2 |
| Eared Grebe | 12 | 2 | | | | | | | 2 | 2 | | 14 |
| Western Grebe | 25 | 2 | 1 | 1 | | | | | 8 | 4 | | 29 |
| White Pelican | | 1 | | | | 1 | 1 | | | | | 3 |
| D-C Cormorant | 9 (4) | | 11 (3) | | 2 (2) | | 2 (2) | 1 | 1 | 8 (5) | 5 (3) | 26(11) |
| Great Blue Heron | 75(10) | 20 (3) | 13 (2) | 9 (5) | 3 (3) | | 2 (1) | 1 (1) | 4 | 77(12) | 28 (6) | 127(25) |
| Little Blue Heron | 3 | | | | | | | | | | | 3 |
| Cattle Egret | 1 | | | | | | | | | 1 | | 1 |
| Great Egret | 17 | 2 | 1 | | | | 2 | | 12 | 3 | | 22 |
| Snowy Egret | 1 | | | | | | | | | | | 1 |
| B-C Night Heron | 7 (3) | 3 (3) | 3 (1) | 2 (1) | | | 2 (2) | | 7 (4) | 6 (2) | | 17(10) |
| Y-C Night Heron | 1 | | | | | | | | 3 | 2 | | 1 |
| Ring-billed Gull | | | | 3 | | | 1 | 3 | 1 | 1 | | 7 |
| Franklin's Gull | 2 | | | | | | 1 | 2 | 3 | | | 5 |
| Common Tern | 6 | | 1 | 1 | 1 | | | | 1 | 1 | | 9 |
| Forster's Tern | 10 | 2 | 1 | | | | 1 | | 1 | 8 | 6 | 15 |
| Total | | | | | | | | | | | | 233(26) ³ |

¹ For mixed species colonies that are abandoned by only some of the species, a colony is considered inactive for the species that left but not for the species remaining.

² Colonies whose status is considered unknown are those not surveyed since 1980.

³ Each mixed species colony is counted only once in determining total number of active colonies (233); this number is therefore less than sum of figures in last column.

Table 3. Number of known active colonies of each colonial species summarized by region. Figures in parentheses refer to number of mixed species colonies.

| Species | 1N | 1S | 2 | 3E | 3W | Region | | 4S | 5 | 6 | Entire State |
|--------------------------|--------|--------|--------|-------|--------|--------|-------------------|--------|-------|--------|--------------|
| | | | | | | 4E | 4W | | | | |
| Horned Grebe | 2 | | | | | | | | | | 2 |
| Eared Grebe | 3 | 4 | | | 0 | 1 | 3 | 2 | | 1 | 14 |
| Western Grebe | 2 | 7 | | | 2 | 2 | 10 | 5 | 1 | | 29 |
| White Pelican | 1 | | | | | | ¹ 2 | | | | 3 |
| D-C Cormorant | 9 | 5 (3) | 2 (1) | | 1 | 1 | 5 (4) | 1 (1) | | 2 (2) | 26 (11) |
| Great Blue Heron | 7 (1) | 9 (4) | 55 (1) | 3 (1) | 26 (4) | 3 (2) | 7 (4) | 5 (2) | 4 (2) | 8 (4) | 127 (25) |
| Little Blue Heron | | 2 | | | | | 1 | | | | 3 |
| Cattle Egret | | | | | | | 1 | | | | 1 |
| Great Egret | 1 | 4 | | 1 | 4 | 2 | 3 | 1 | 2 | 4 | 22 |
| Snowy Egret | | | | | | | 1 | | | | 1 |
| B-C Night Heron | 2 | 2 (2) | | | | 1 | 3 (2) | 5 (2) | | 4 (4) | 17 (10) |
| Y-C Night Heron | | | 1 | | | | | | | | 1 |
| Ring-billed Gull | 2 | | 2 | 2 | 1 | | | | | | 7 |
| Franklin's Gull | 3 | | | | 1 | | | 1 | | | 5 |
| Common Tern | 2 | | 4 | 2 | 1 | | | | | | 9 |
| Forster's Tern | 3 | 4 | | | 1 | 1 | 1 | | | 3 | 13 |
| Total Waterbird Colonies | 36 (1) | 26 (4) | 63 (1) | 7 (1) | 33 (4) | 9 (2) | 25 (4) | 16 (2) | 5 (2) | 13 (5) | 233 (26) |

¹ 2 white pelican colonies, Marsh Lake, Big Stone Co.

² Each mixed species colony is counted only once in determining totals; columns may therefore not add up to totals.

Table 4. Size distribution of Great Blue Heron colonies in each county and region. Figures in parentheses refer to number of mixed species colonies.

| County | Size of colony (GBH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|-------------------|-------------------------------------|--------|---------|---------|---------|---------|----------|-------|----------------------|----------|----------------|-----------------------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | |
| Beltrami | 1 | | | 1 | | | | | | 7 | | 2 |
| Clearwater | | | 1 | | | | | | | 1 (1) | 1 | 1 |
| Hubbard | | 1 | 1 | | | | | | | | | 2 |
| Kittson | | | | | | | | | | | | 0 |
| Lake of the Woods | | | | | | | | | | 5 | | 0 |
| Mahnomen | | | | | | | | | | | | 0 |
| Marshall | 1 | 1 (1) | | | | | | | | | | 2 (1) |
| Norman | | | | | | | | | | | | 0 |
| Pennington | | | | | | | | | | | | 0 |
| Polk | | | | | | | | | | | | 0 |
| Red Lake | | | | | | | | | | | | 0 |
| Roseau | | | | | | | | | | | | 0 |
| Region 1N | 2 | 2 (1) | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 13 (1) | 1 | 7 (1) |

Continued

Table 4. Continued.

| County | Size of colony (CMH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|------------|-------------------------------------|--------|---------|---------|---------|---------|----------|-------|----------------------------|----------|-------------------|-----------------------------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | |
| Becker | | 1 (1) | | 2 | | | | | 2 (1) | | 3 (1) | |
| Clay | | | | | | | | | 1 | | 0 | |
| Douglas | | | | | | | | | | | 0 | |
| Grant | | | | | | | 1 (1) | | | | 1 (1) | |
| Otter Tail | 2 | | | 1 (1) | | | | | 3 (1) | | 3 (1) | |
| Pope | | | | 1 (1) | | | | | | | 1 (1) | |
| Stevens | | 1 | | | | | | | | | 1 | |
| Traverse | | | | | | | | | 1 (1) | | 0 | |
| Wilkin | | | | | | | | | | | 0 | |
| Region 1S | 2 | 2 (1) | 0 | 4 (2) | 0 | 0 | 1 (1) | 0 | 0 | 7 (3) | 0 | 9 (4) |

Continued

Table 4. Continued.

| County | Size of colony (GBH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|-------------|-------------------------------------|--------|---------|---------|---------|---------|----------|-------|----------------------------|----------|-------------------|-----------------------------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | |
| Aitkin | 9 | 1 | | | | | | | 2 (1) | | | 10 |
| Carlton | | | | | | | | | | | | 0 |
| Cook | 3 | | | | | | | | 1 | | | 3 |
| Itasca | 8 | 2 | 2 | | | | | | 6 | | | 12 |
| Koochiching | 3 | | | | | | | | | | | 3 |
| Lake | 4 | 1 | | | | | | | 1 | 4 | 4 (1) | 6 |
| St. Louis | 14 (1) | 2 | 1 | 1 | | | | | 3 | 7 | 2 | 21 (1) |
| Region 2 | 41 (1) | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 4 | 20 (1) | 6 (1) | 55 (1) |
| Chisago | | | | | 1 (1) | | | | | 1 | | 1 (1) |
| Isanti | | | | | | | | | | 1 | | 0 |
| Kanabec | | | | | | | | | | | 1 (1) | 0 |
| Mille Lacs | | | 1 | | | | | | | 2 | 5 | 1 |
| Pine | 1 | | | | | | | | | | 4 | 1 |
| Region 3E | 1 | 0 | 1 | 0 | 1 (1) | 0 | 0 | 0 | 0 | 4 | 10 (1) | 3 (1) |
| Continued | | | | | | | | | | | | |

Continued

Table 4. Continued.

| County | Size of colony (CBH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies | |
|-----------|-------------------------------------|--------|---------|---------|---------|---------|----------|-------|----------------------------|----------|-------------------|-----------------------------|--------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | | |
| Benton | | | | | | | | | | | | 0 | |
| Cass | 7 | 4 | 1 | | | | | | 14 | 1 | | 12 | |
| Crow Wing | 1 | | 2 | | | | | | 3 | | | 3 | |
| Morrison | | 1 | | | | | | | 1 | 2 | | 1 | |
| Sherburne | 1 (1) | | | | | | | | 3 | | | 1 (1) | |
| Stearns | | | 1 (1) | | | | 1 | | 2 (1) | | | 2 (1) | |
| Todd | 2 | | | | | | | | | | | 2 | |
| Wadena | | | | | | | | | | | | 0 | |
| Wright | 4 (1) | | 1 (1) | | | | | | 1 | | | 5 (2) | |
| Region 3W | 15 (2) | 5 | 5 (2) | 0 | 0 | 0 | 1 | 0 | | 0 | 24 (1) | 3 | 26 (4) |

Continued

Table 4. Continued.

| County | Size of colony (CBH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|-----------------|-------------------------------------|--------|---------|---------|---------|---------|----------|-------|----------------------------|----------|-------------------|-----------------------------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | |
| Blue Earth | | | | | | | | | | | | 0 |
| Brown | | | | | | | | | | | | 0 |
| Le Sueur | | | | | 1 (1) | | | | | | | 1 (1) |
| McLeod | 1 | | | | | | | | | 1 | | 1 |
| Nicollet | | | | | | | | | 1 (1) | | | 0 |
| Sibley | 1 (1) | | | | | | | | | | | 1 (1) |
| Waseca | | | | | | | | | | | | 0 |
| Region 4E | 2 (1) | 0 | 0 | 0 | 1 (1) | 0 | 0 | 0 | 1 (1) | 1 | | 3 (2) |
| Big Stone | 1 | | | | | | | | | | | 1 |
| Chippewa | | | | | | | | | | | | 0 |
| Kandiyohi | | | 1 | | | | | 1 (1) | | | | 2 (1) |
| Lac Qui Parle | 1 (1) | | | | | | | | | | | 1 (1) |
| Meeker | 1 | 1 (1) | | | | | | | 1 (1) | 1 (1) | | 2 (1) |
| Redwood | | | | | | | | | | | | 0 |
| Renville | | | | | | | | | | | | 0 |
| Swift | 1 (1) | | | | | | | | | | | 1 (1) |
| Yellow Medicine | | | | | | | | | | | | 0 |
| Region 4W | 4 (2) | 1 (1) | 1 | 0 | 0 | 0 | 0 | 1 (1) | 0 | 1 (1) | 1 (1) | 7 (4) |

Table 4. Continued.

| County | Size of colony (CBH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|------------|-------------------------------------|--------|-------------|-------------|-------------|-------------|--------------|-------|----------------------------|----------|-------------------|-----------------------------|
| | 0-50 | 51-100 | 101- 200 | 201- 300 | 301- 400 | 401- 500 | 501- 1000 | >1000 | | | | |
| Cottonwood | | | | | | | | | | | | 0 |
| Faribault | 2 (1) | | | | | | | | | | | 2 (1) |
| Jackson | 1 (1) | | | | | | | | | | | 1 (1) |
| Lincoln | | | | | | | | | | | | 0 |
| Lyon | | | | | | | | | | | | 0 |
| Martin | | | | | | | | | | | | 0 |
| Murray | | | | | | | | | | | | 0 |
| Nobles | | | | | | | | | | | | 0 |
| Pipestone | | | | | | | | | | | | 0 |
| Rock | | | | | | | | | | | | 0 |
| Watowan | 2 | | | | | | | | | | | 2 |
| Region 4S | 5 (2) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 (2) |

Continued

Table 4. Continued.

| County | Size of colony (Gull nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|----------|--------------------------------------|--------|-------------|-------------|-------------|-------------|--------------|-------|----------------------------|----------|-------------------|-----------------------------|
| | 0-50 | 51-100 | 101- 200 | 201- 300 | 301- 400 | 401- 500 | 501- 1000 | >1000 | | | | |
| Dodge | | | | | | | | | | | | 0 |
| Fillmore | | | | | | | | | | | | 0 |
| Freeborn | 1 | | | | | | | | | | | 1 |
| Goodhue | | | | | 1 (1) | | | | 1 (1) | 2 | | 1 (1) |
| Houston | | | | 1 (1) | | | | | | 1 (1) | | 1 (1) |
| Mower | | | | | | | | | | | | 0 |
| Olmsted | | | | | | | | | | | | 0 |
| Rice | | | | | | | | | 1 | | | 0 |
| Steele | | | | | | | | | | | | 0 |
| Wabasha | 1 | | | | | | | | 1 (1) | | | 1 |
| Winona | | | | | | | | | 1 (1) | 2 (1) | | 0 |
| Region 5 | 0 | 2 | 0 | 1 (1) | 1 (1) | 0 | 0 | 0 | 0 | 4 (3) | 5 (2) | 4 (2) |

Continued

Table 4. Continued.

| County | Size of colony (GBH nests or pairs) | | | | | | | | Active, Size Unknown | Inactive | Status Unknown | Total Active Colonies |
|-------------|-------------------------------------|--------|---------|---------|---------|---------|----------|-------|----------------------------|----------|-------------------|-----------------------------|
| | 0-50 | 51-100 | 101-200 | 201-300 | 301-400 | 401-500 | 501-1000 | >1000 | | | | |
| Anoka | 1 | | | 1 (1) | | | | | | | | 2 (1) |
| Carver | | | 1 | | | | | | | 1 | | 1 |
| Dakota | 1 (1) | 1 | | | | | | | | | | 2 (1) |
| Hennepin | | | | | | | | | | 1 | | 0 |
| Ramsey | 1 (1) | | | | | | | | | | 1 (1) | 1 (1) |
| Scott | | | | 1 (1) | | | | | | | | 1 (1) |
| Washington | 1 | | | | | | | | | 1 (1) | | 1 |
| Region 6 | 3 (2) | 2 | 1 | 2 (2) | 0 | 0 | 0 | 0 | 0 | 3 (1) | 1 (1) | 8 (4) |
| State Total | 75(10) | 20 (3) | 13 (2) | 9 (5) | 3 (3) | 0 | 2 (1) | 1 (1) | 4 | 77(12) | 28 (6) | 127(25) |

Colonies whose status is considered unknown are those not surveyed since 1980.



Fig. 1. Number of Horned Grebe colonies by county.



Fig. 2. Number of Eared Grebe colonies by county.



Fig. 3. Number of Western Grebe colonies by county.



Fig. 4. Number of White Pelican colonies by county.

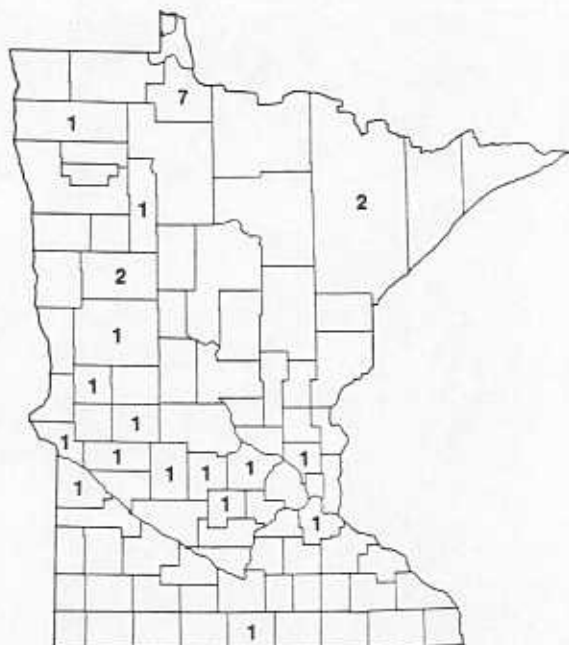


Fig. 5. Number of Double-crested Cormorant colonies by county.



Fig. 6. Number of active Great Blue Heron colonies by county.

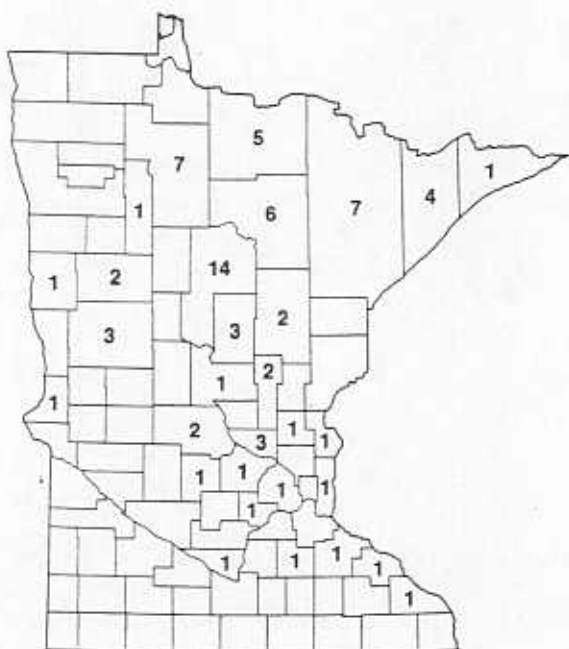


Fig. 7. Number of inactive Great Blue Heron colonies by county.



Fig. 8. Number of mixed species heronries (including Double-crested Cormorants) by county.



Fig. 9. Number of colonies/county supporting Little Blue Herons



Fig. 10. Number of colonies/county supporting Cattle Egrets



Fig. 11. Number of colonies/county supporting Snowy Egrets

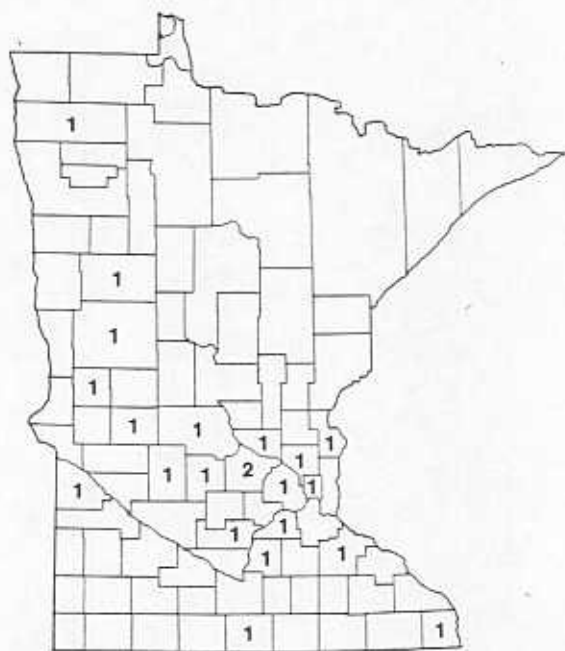


Fig. 12. Number of Great Egret colonies by county.



Fig. 13. Number of Black-crowned Night Heron colonies by county.

