

**MINNESOTA COLONIAL  
WATERBIRD NESTING  
SITE INVENTORY**



**1980**

**Minnesota  
Department of  
Natural  
Resources**

Minnesota Colonial Waterbird Nesting Site Inventory

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by

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Minnesota's colonial waterbirds include the Eared Grebe, Horned Grebe, Western Grebe, White Pelican, Double-crested Cormorant, Great Blue Heron, Little Blue Heron, Cattle Egret, Great Egret, Snowy Egret, Black-crowned Night Heron, Yellow-crowned Night Heron, Piping Plover, Herring Gull, Ring-billed Gull, Franklin's Gull, Forster's Tern, Common Tern and Caspian Tern. These birds are colonial nesters, nesting in close proximity to one another. Nests are in trees, over water or on the ground.

In recent years, the nongame program has accumulated data on location of heron colonies, both active and inactive, within the state.

This survey was initiated to identify all nesting areas of colonial birds in Minnesota, and concurrently, to obtain information on population size of the various species in Minnesota. The survey was conducted in 1978-1980. Any declines in colony size or productivity are noted, and attempts made to determine causes of these declines.

Continued monitoring of colonial bird nesting sites is necessary to assure that future changes in the population are recorded.

Colonial birds are vulnerable to pollution, timber harvest, disturbance by recreationists and photographers, housing development, industrial development and loss of habitat. In addition, colonial birds are top level carnivores. High levels of pesticides have been found in herons (Ohlendorf et al. 1978), cormorants (Anderson et al. 1969), and grebes (Faber and Hickey 1973). The extent of this contamination needs to be investigated to prevent population declines. Careful monitoring can be accomplished by an active inventory effort.

#### Methods

In 1977 the Minnesota Department of Natural Resources (MDNR) began a statewide cooperative inventory to determine the location and status of all

colonial waterbird nesting sites in the state. For the first 3 years, the survey was coordinated by the Nongame Supervisor. In 1980, a heron colony survey form was utilized which was developed in 1979 by the USFWS & MDNR. This colony survey form and cover letter are included in Appendix I. The purpose was twofold: to continue monitoring currently known colonies, and to solicit reports of new colonies. Volunteer observers including private citizens and members of the DNR, USFS, USFWS & NPS were utilized. Report forms were sent to the same person who reported on the colony in previous years. The observer's responsibilities were to accurately locate the site, give the legal description, determine number of nests and young if possible, assess ownership, to assess degree of disturbance, and to make observations concerning the habitat. The Nongame Program sent out 165 survey forms, and 78 were completed during the 1980 field season.

### Results

The total number of colonies increased from 260 active sites in 1979 to 301 sites in 1980 with the addition of 41 new sites. The number of active Great Blue Heron colonies increased from 123 to 151, with the addition of 28 new colonies.

Several unique colonies were located. The colony at Pigeon Lake in Meeker County contains 150 Great Blue Heron, 50 Great Egret and 200 Double-crested Cormorant pairs. A possible Horned Grebe nesting site was located at Roseau WMA in Lake of the Woods County. This would be the first colony of this species which has been located.

The Thief Lake WMA was found to contain colonies containing 1200 pairs of Black-crowned Night Herons, 250 Forster's Terns, 3200 Franklin's Gulls, 200 Eared Grebes and breeding Western Grebes. Most of the new sites reported were Great Blue Heron colonies. There were 4 new Double-crested Cormorant sites, 3 Red-necked Grebe sites one Forster's Tern site, and 1 Eared Grebe site.

Seven colonies were abandoned in 1980. Lake Johanna in Pope County, which was formerly known to contain 1500 nests of seven species, contained few nests in 1980. Reasons for this significant decline are unknown. Pig's Eye Rookery in Ramsey County showed a decline from 1100 in 1979 to 625 in 1980. In the Pelican Lake colony in Grant County there was a major July storm and 375 dead chicks were observed.

Declines in the numbers of nesting pairs occurred in 15 colonies. Increases in number of nesting pairs occurred in 14 colonies, while the number of nesting pairs in 11 colonies remained the same.

A summary of colony sites is presented in Appendix II. Table 1 contains a summary indexed by species and by DNR regions. The regions used in this analysis are shown in Figure 1.

The largest heronries, in order of decreasing size are: Long Lake in Kandiyohi Co. (1515), Cold Spring in Stearns Co. (1126), Pelican Lake in Grant Co. (1089), Pig's Eye Lake in Ramsey Co. (625), Shields Lake in Rice Co. (685), Lake Jefferson in LeSueur Co. (555) and Reno in Houston Co. (780).

Several large gull colonies occur in Minnesota. There are 5000 pairs of Franklin's Gulls nesting at the Agassiz NWR in Marshall Co. There are 3200 pairs of Franklin's Gulls nesting at the Thief Lake WMA. Large Herring Gull colonies are found on the islands along the north shore of Lake Superior. The only colonies of Ring-billed Gulls are in the Duluth Harbor (6010), Hennepin Island in Mille Lacs Co. (275) and Gull Island in Cass Co. (300).

#### Colony Threats

Four colonies are currently in jeopardy because private owners are offering them for sale, and one is threatened by industrial development.

The heron colony at Long Lake in Park Rapids is threatened by

Table 1. Regionalized summary of colonial waterbird nesting areas in Minnesota.

	Symbol	DNR REGION										Total
		1N	1S	2	3E	3W	4E	4W	4S	5	6	
Eared Grebe	EG	1	1	0	0	0	1	2	1,1,?	1	1	8,1,?
Red-necked Grebe	RNG	-	-	-	-	4	-	-	0	-	-	4
Horned Grebe	HOG	1										1
Western Grebe	WG	1	9	0	0	3	2(1)	6	1	1(1)	1	24(2)
White Pelican	WP	1	0	0	0	0	0	1	0	0	0	2
Double-crested Cormorant	DCC	3	5	0(1)	0	2(1)	0	5(1)	2	0	1,1,?	18(3),1,?
Great Blue Heron	GBH	13(5)	8	54(7)	14(1)	32(5)	3	7	1,1,?	9(1)	10(2)	151(20),1,?
Little Blue Heron	LBH	0	1(1)	0	0	0	0	1	0	0	0	2(1)
Cattle Egret	CE	0	1(1)	0	0	0	0	1	0	0	0	2(1)
Great Egret	GE	1	2(1)	0	1	3(1)	1	4	0	6	8	26(2)
Snowy Egret	SE	0	0(1)	0	0	0	0	1	0	0	0	1(1)
Black-crowned Night Heron	BNH	2	2(1)	0	1	1(1)	0(1)	3	4,1,?	0	4	17(3),1,?
Yellow-crowned Night Heron	YNH	0	0	0	0	0(1)	0	1	1,?	2(1)	1(1)	4(3),1,?
Herring Gull	HG	0	0	69(7)	1	0	0	0	0	0	0	70(7)
Ring-billed Gull	RG	0	0	4	2	1	0	0	0	0	0	7
Franklin's Gull	FG	1	0(1)	0(1)	0	1	0(1)	0(1)	0(1)	0	0	2(5)
Forster's Tern	FT	2	2	0	0	2(1)	1	0	4	0	3(2)	14(3)
Common Tern	CT	2	0(1)	5	2	1	0	0	0	0	0	10(1)
Caspian Tern	CaT	0	0	0	0	0(1)	0	0	0	0	0	1(1)
Piping Plover	PP	3	0	1	0	0	0	0	0	0	0	4
Total Colonies		30(3)	22(2)	129(12)	16(1)	45(9)	5(3)	16(2)	10(1)	12	16(5)	302(38),5,?

Key to Numbers: Active sites (inactive sites) sites with status unknown



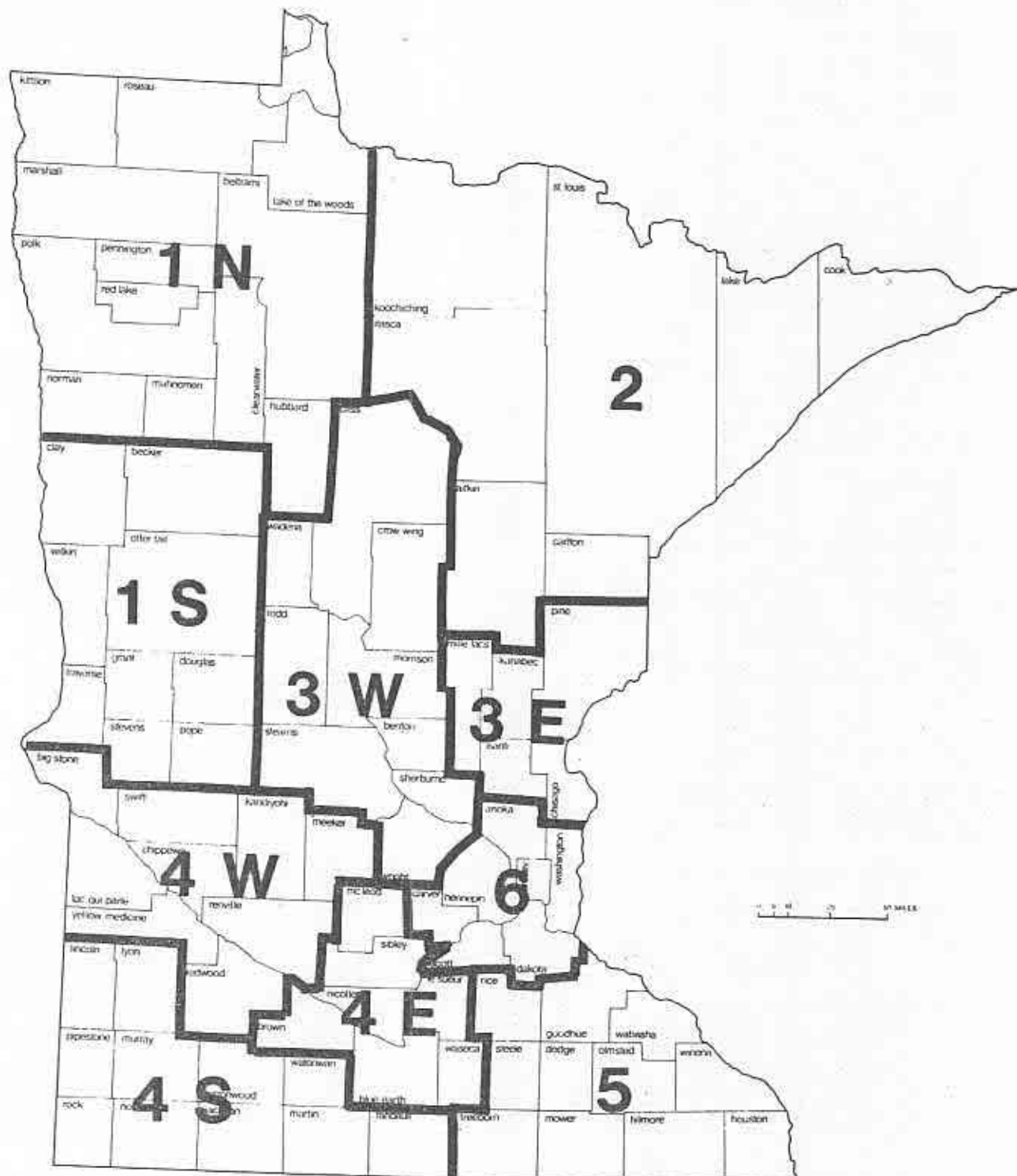


Figure 1. Regional breakdown used for nongame wildlife analysis.

commercial development. There are 150 Great Blue Heron nests in a jack pine stand which has been subdivided into 1 acre lots for development. Each lot sells for \$8,000-\$13,000 through "Wild View Estates." This colony is not being considered for purchase because the jack pines are so old that we anticipate their die off within the next few years.

Pine and Curry Islands in Lake of the Woods are the nesting site for 70% of the state's Piping Plovers (20 prs). This is the largest breeding population in the Great Lakes States. Since 1977, the DNR has been negotiating a land exchange with the owner of Curry Island. This exchange is underway and should be completed in 1981. When the land exchange is complete, Curry Island will be managed as Consolidated Conservation Area lands dedicated to wildlife management purposes. This area will be posted as a no-trespassing zone during the Piping Plover breeding season (April-August), but will be available for other uses during the remainder of the year. Pine Island (also a Piping Plover nesting area) is still privately owned. There may be possibilities for acquiring Pine Island also.

The Pelican Lake Heronry in Wright County is threatened with logging. The owner intends to clear the land for agricultural purposes.

Another Long Lake colony, in Kandiyohi County, is under private ownership with eight different owners.

Hopefully, the threat to some of these colonies can be averted.

The Pig's Eye colony is one of the largest in Minnesota. Efforts are still being made by the Port Authority to increase barge fleeting facilities and barge traffic in the vicinity of the colony. Dredge spoils from channel enlargement would be used to fill adjacent wetlands in order to enlarge Red Rock Industrial Park. Both developments could conceivably disturb the colony. However, colonial birds in this colony have nested for



years in the vicinity of heavy industrial activity. Unfortunately, there are few data indicating the effects of industrial disturbances on heron colonies. Reasons for colony abandonment are still speculative at best.

Human presence with accompanying noise, motion and smells affects colonial birds in negative ways (Manuwal 1978). Gull predation following human disturbance has been documented in cormorant colonies (Kury and Gochfield 1975, Ellison and Cleary 1978). Human presence has also been known to cause reduction in productivity of gull colonies (Hunt 1972, and Robert and Ralph 1975).

#### Colony Acquisition and Management

**Acquisition** - In 1980, plans to purchase a 1300 acre tract of land including Howard Lake, Mud Lake and the Howard Lake rookery in Anoka Co. were initiated. The land will be optioned by The Nature Conservancy, then purchased with funds from the Nongame Wildlife Checkoff and Game and Fish Funds. This area will be designated as the Lamprey-Pass Wildlife Management Area. Uri Lamprey was the original owner of the land and used it as a duck club. The heronry will be managed as a sanctuary during the breeding season.

**Easements** - or leases between private individual landowners and the DNR serve as an effective and inexpensive management tool to protect colonies. This has been done in the Long Lake colony, near Willmar, Minnesota. This colony appears to be the largest colony in the state, with over 1500 nests.

**Registry Program** - Although not yet functioning, this new project of The Nature Conservancy will be a means by which ecologically significant areas can be officially recognized. Management is retained by the private landowner.

Habitat Manipulation - Building nesting platforms on poles for cormorants has worked very well in Wisconsin. Building floating nest platforms may be a successful management technique for such species as grebes and Forster's Terns. Vegetation can be cleared from islands so that sites are more appealing to breeding birds. Water levels in marshes can be drawn down so that there are more emergent plants for marsh-nesting colonial birds.

Land Exchanges - Parts of Pine and Curry Islands are being obtained by the DNR in exchange for state land. These islands are the single most important breeding area in Minnesota for piping plovers.

Public Education - Lastly, appreciation for colonial birds can be encouraged by a public education program which teaches people how to identify colonial birds and view them without causing disturbance. This effort is underway; a mobile colonial bird exhibit is prepared. Leaflets describing Minnesota's colonial birds are also being written. These programs will teach people the value of our nongame resources and encourage concern and awareness.

#### Land Ownership

The land ownership of colonial bird nesting sites is an important factor in considering preservation and management. Private ownership can be either a boon or a detriment depending on the attitudes of the owners. If trees are cleared or disturbed the colony may be abandoned. If the private landowner exercises caution and consideration, colonies can benefit from the seclusion of private ownership.

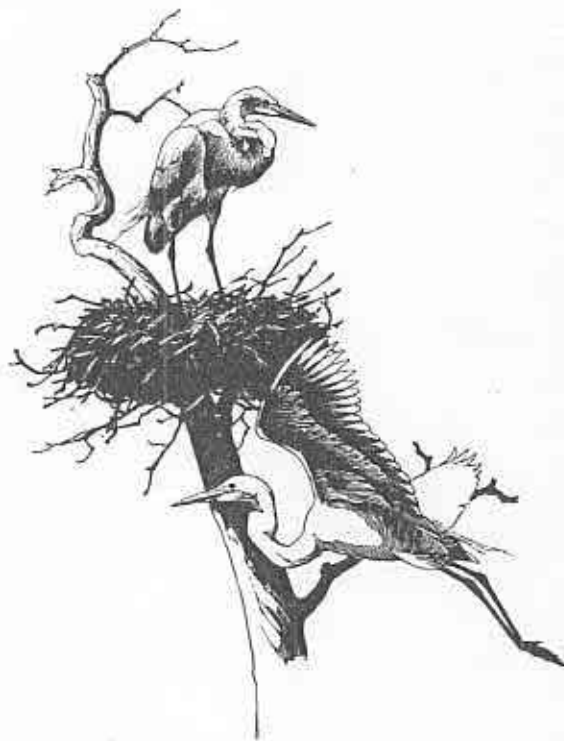
Public ownership is generally beneficial. Most agencies manage the sites for colonial birds. Both the state and The Nature Conservancy have purchased land specifically for colony preservation.

Land ownership is known for 198 sites, and unknown for 117 sites.

The land ownership information is presented in Table 2. Public ownership accounts for 74% of the colonies for which ownership is known. Public ownership is divided between Federal agencies, State agencies, County and City governments, The Nature Conservancy, foundations, and Indian-owned land.

Table 2. Land ownership of colonies.

	Unknown	Private	Federal 17.4%			State 10.4%				Cty.	City	Nature Cons.	Other
			USFWS	NPS	BLM	forest	park	WMA	SNA				
Number	(117)	(51)	(19)	(6)	(30)	(11)	(4)	(17)	(1)	(13)	(6)	(3)	(37)
Percent	37.1%	16.1%	6.0%	1.9%	9.5%	3.4%	1.2%	5.3%	.03%	4.1%	1.9%	.9%	11.7%



## ***Species Accounts***

### Eared Grebe

Eared Grebes nest in loose colonies. The nests are made of emergent vegetation and float on the water. Eared Grebes have been found at five locations. Breeding sites are at Agassiz NWR in Marshall Co., Frog Lake in Stevens Co., Swan Lake in Nicollet Co., Salt Lake in Lac qui Parle Co., and French Lake in Hennepin Co. Nesting sites are shown in Fig. 2.

This species has very few nest sites in Minnesota, and some of these are plagued by potential problems with water level fluctuation, habitat loss, and shoreline development. Only 2 of the sites are publicly owned.

### Horned Grebe

This small grebe is similar to the Eared Grebe and nests in marshy habitat. A possible but as of yet unverified colony was reported at Roseau WMA. This would be the first colony for this species in Minnesota; its range is primarily to the west.

### Red-necked Grebe

This species is not traditionally considered to be a colony nester. Red-necked grebes nest in marshy lake edges. In some instances, colonial-type breeding has been reported. Sight observations are shown in Figure 3. These do not necessarily represent colonies.

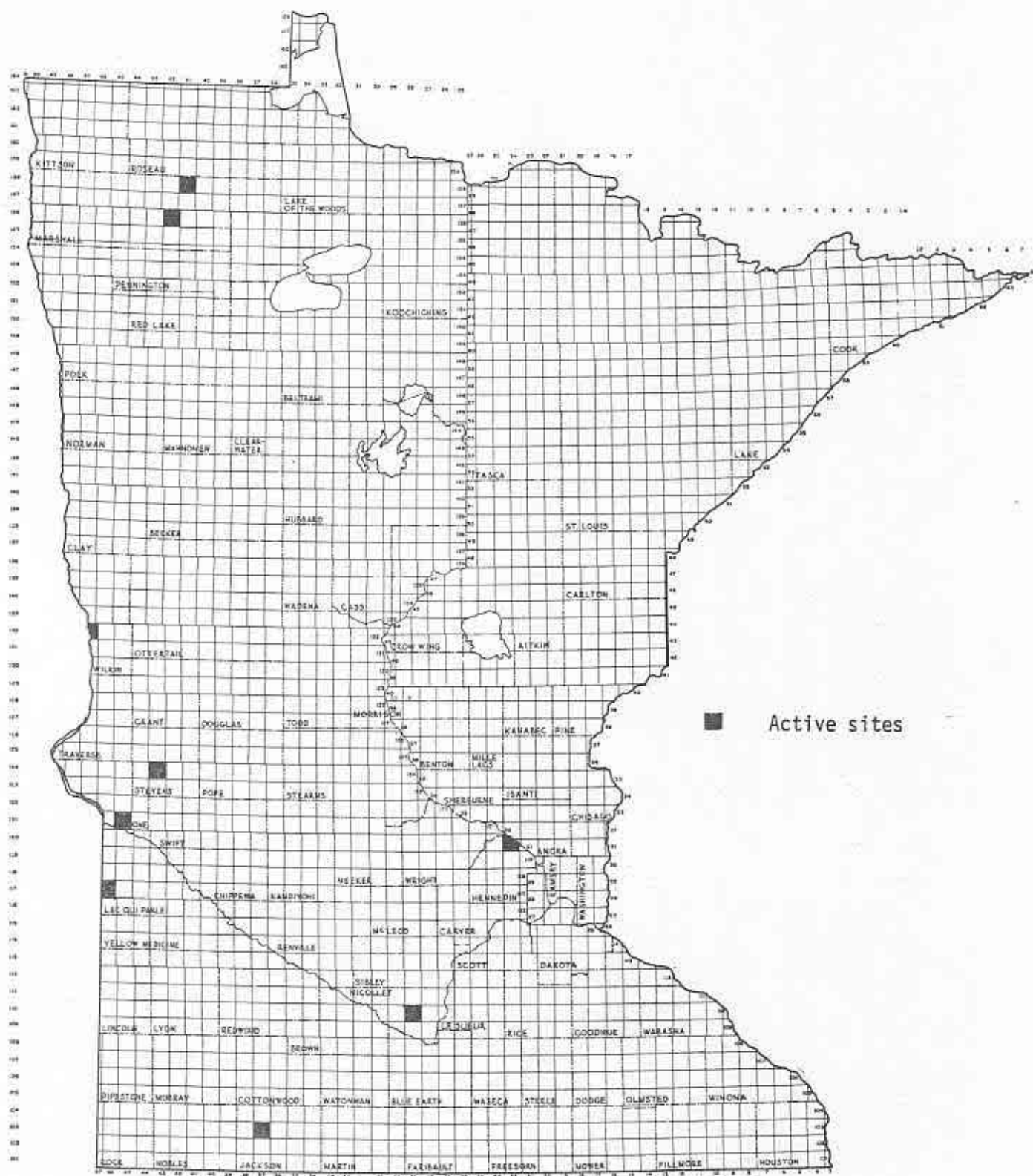


Figure 2 Distribution of Eared Grebe (Podiceps caspicus) colonies in Minnesota.

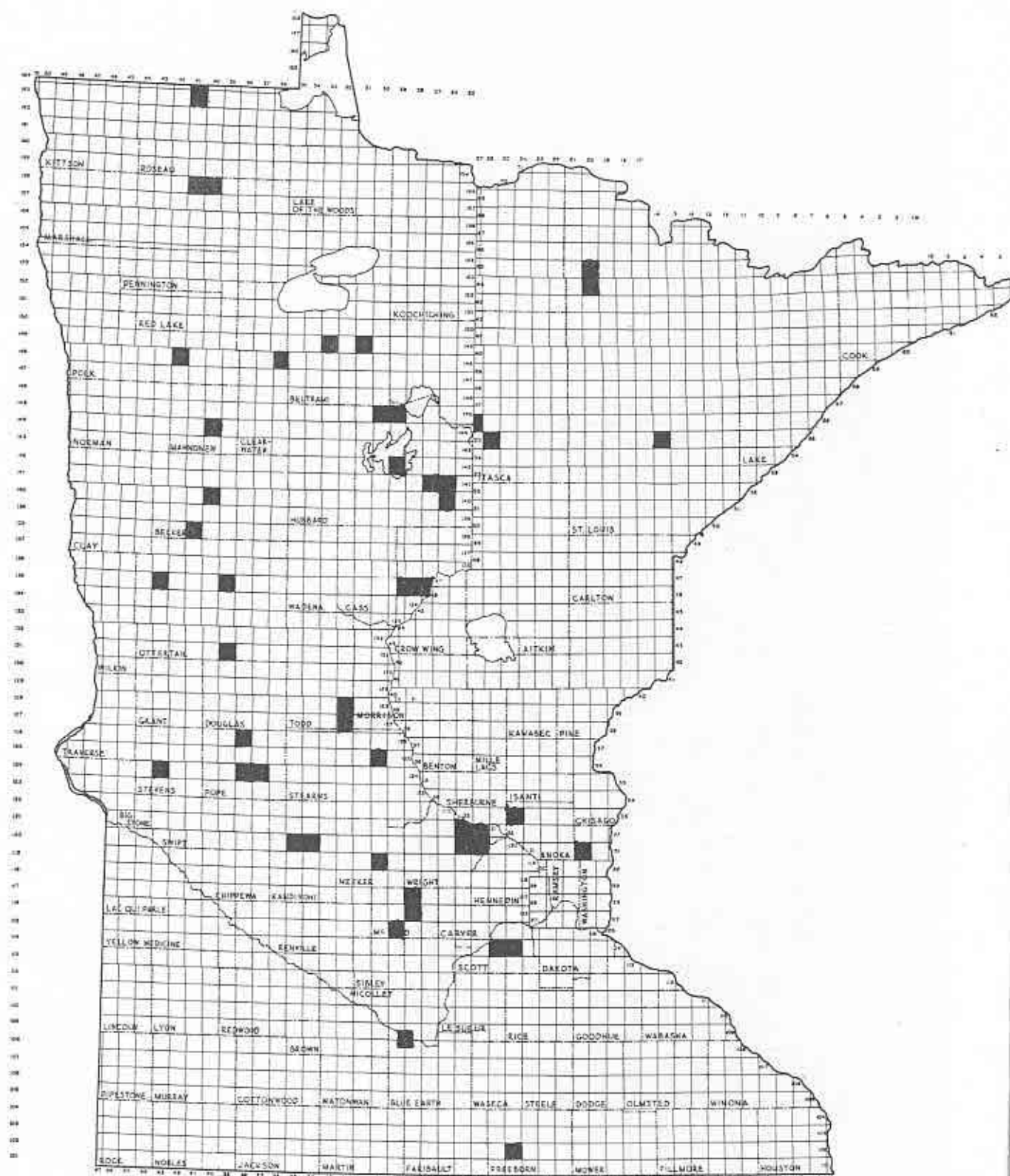


Figure 3. Distribution of summer sightings of the red-necked grebe (*Colymbus grisegena*) in Minnesota.



#### Western Grebe

This species is a marshland nester. Floating nests are in bullrushes, phragmites, and cattails. There are 24 locations known (Fig. 4). Nest sites are considered to be quite vulnerable to water level changes and disturbance. Of the five colonies which were surveyed in 1980, one had been abandoned, numbers of breeding birds had declined 61%, 70%, and 97% in three colonies, and numbers increased in one colony. The situation may be critical, and continued monitoring is necessary.

#### White Pelican

White Pelicans are impressive large birds with wing spans of nine feet, and weights up to 16 pounds. Pelicans nest on bare islands in lakes. The birds are gregarious and nests are often close together. Pelicans were absent from Minnesota for 90 years, but were found nesting on an island in Marsh Lake, Big Stone County in 1968 (Roberts, 1932). In 1973, another colony was discovered on a small island in Angle Inlet, Lake of the Woods, (Fig. 5). In 1980 there were 475 pairs breeding at Marsh Lake. The Angle Inlet colony is estimated at 100 pairs.

#### Double-crested Cormorant

Double-crested Cormorants are found nesting at 18 sites in Minnesota (Fig. 6). New colonies were located this year at Chatagua Lake in Ottertail Co., Big Cormorant Lake and Sand Lake in Becker Co., Pigeon Lake in Meeker Co., and Minnesota Lake in Faribault Co. The total population in the state may be over 2000 pairs. The situation for Double-crested Cormorants is improving, due to the ban of DDT and federal protection.

#### Great Blue Heron

Great Blue Herons are our most abundant colonial bird. There are 172 colonies containing Great Blue Herons in the state (Fig. 7). There were 4035 pairs of herons breeding in the 44 colonies surveyed, for an

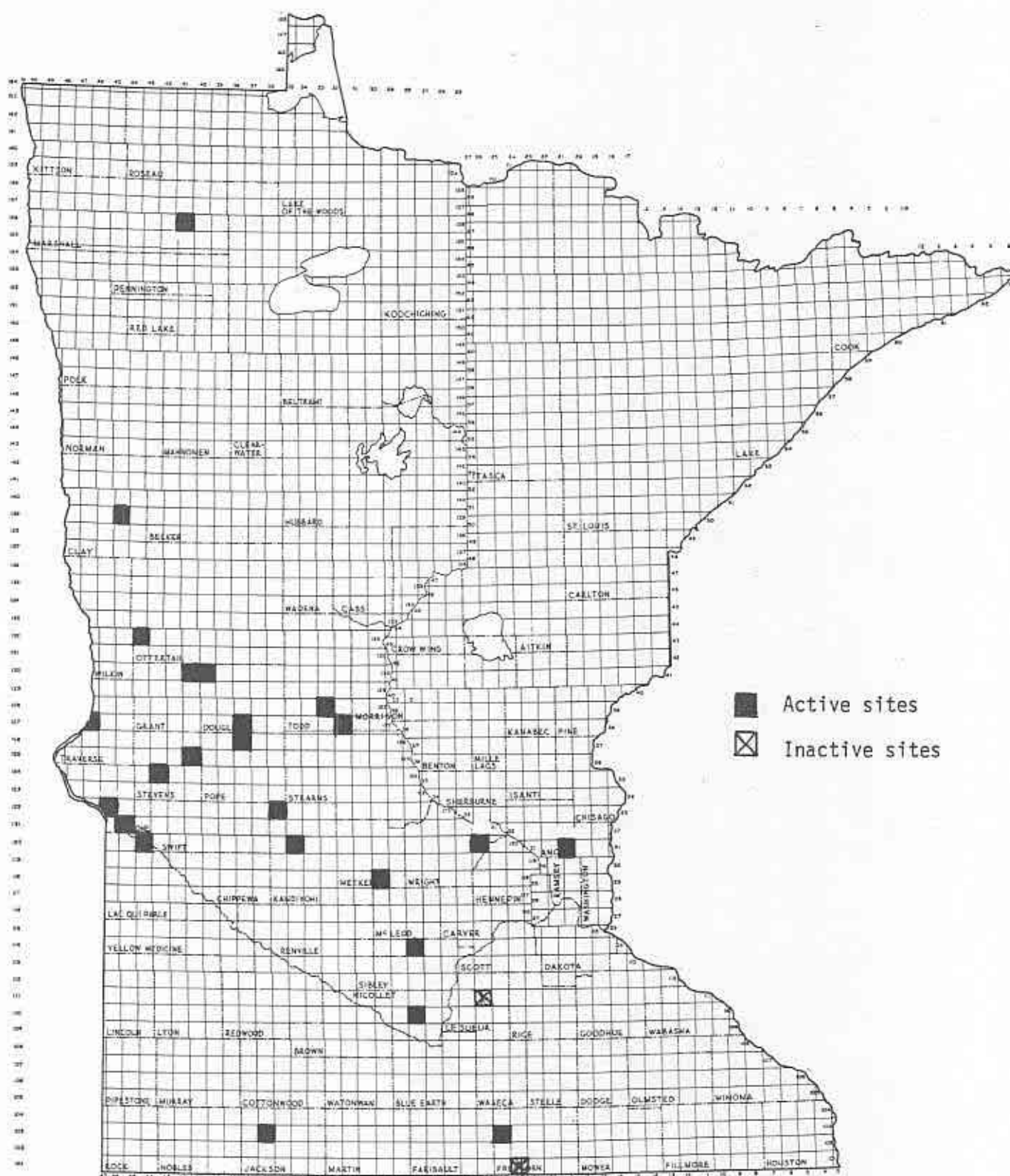


Figure 4. Distribution of Western Grebe (*Aechmophorus occidentalis*) colonies in Minnesota.

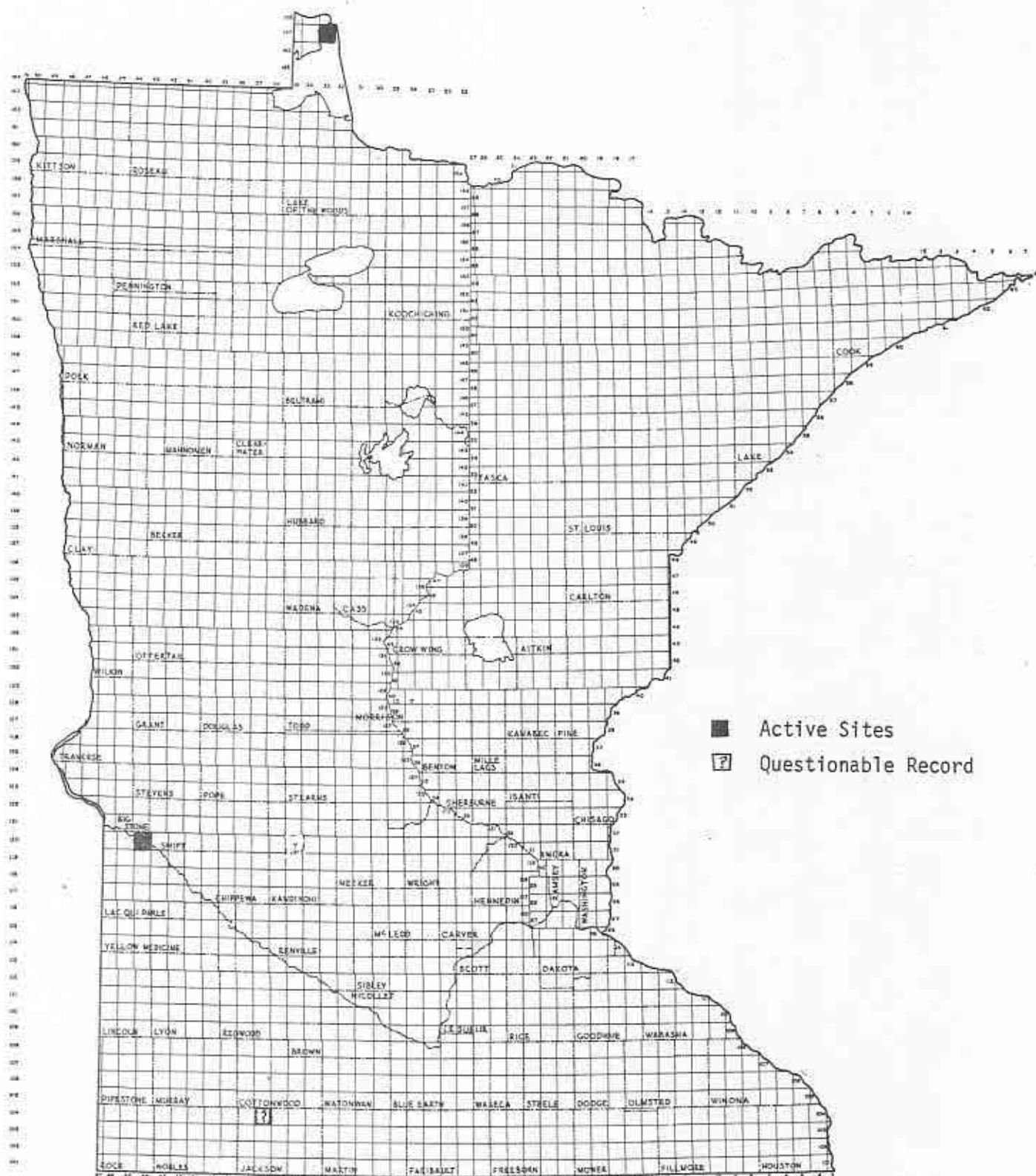


Figure 5. Distribution of White Pelican (*Pelecanus erythrorhynchos*) colonies in Minnesota.

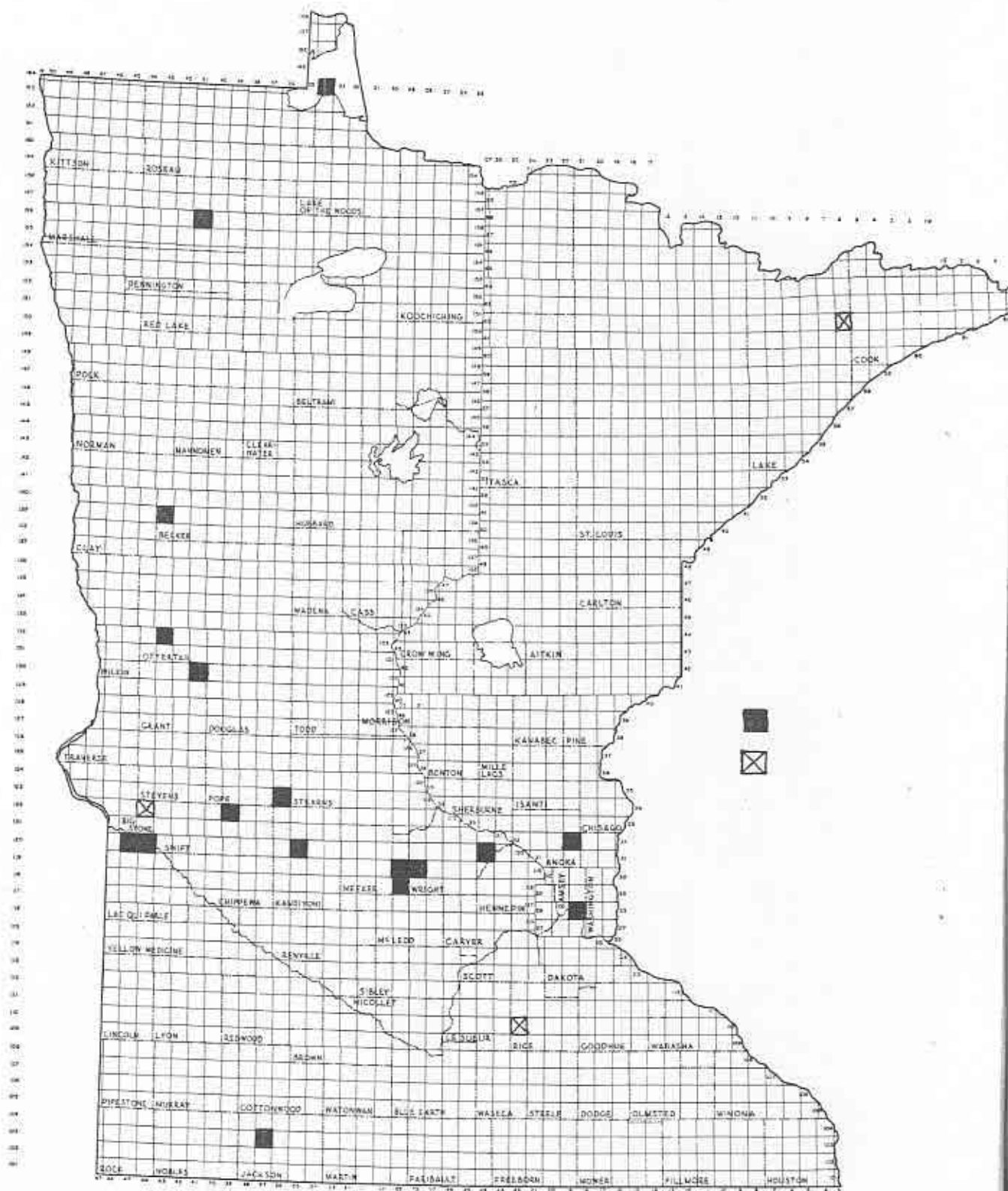


Figure 6. Distribution of Double-crested Cormorant (Phalacrocorax auritus) colonies in Minnesota.

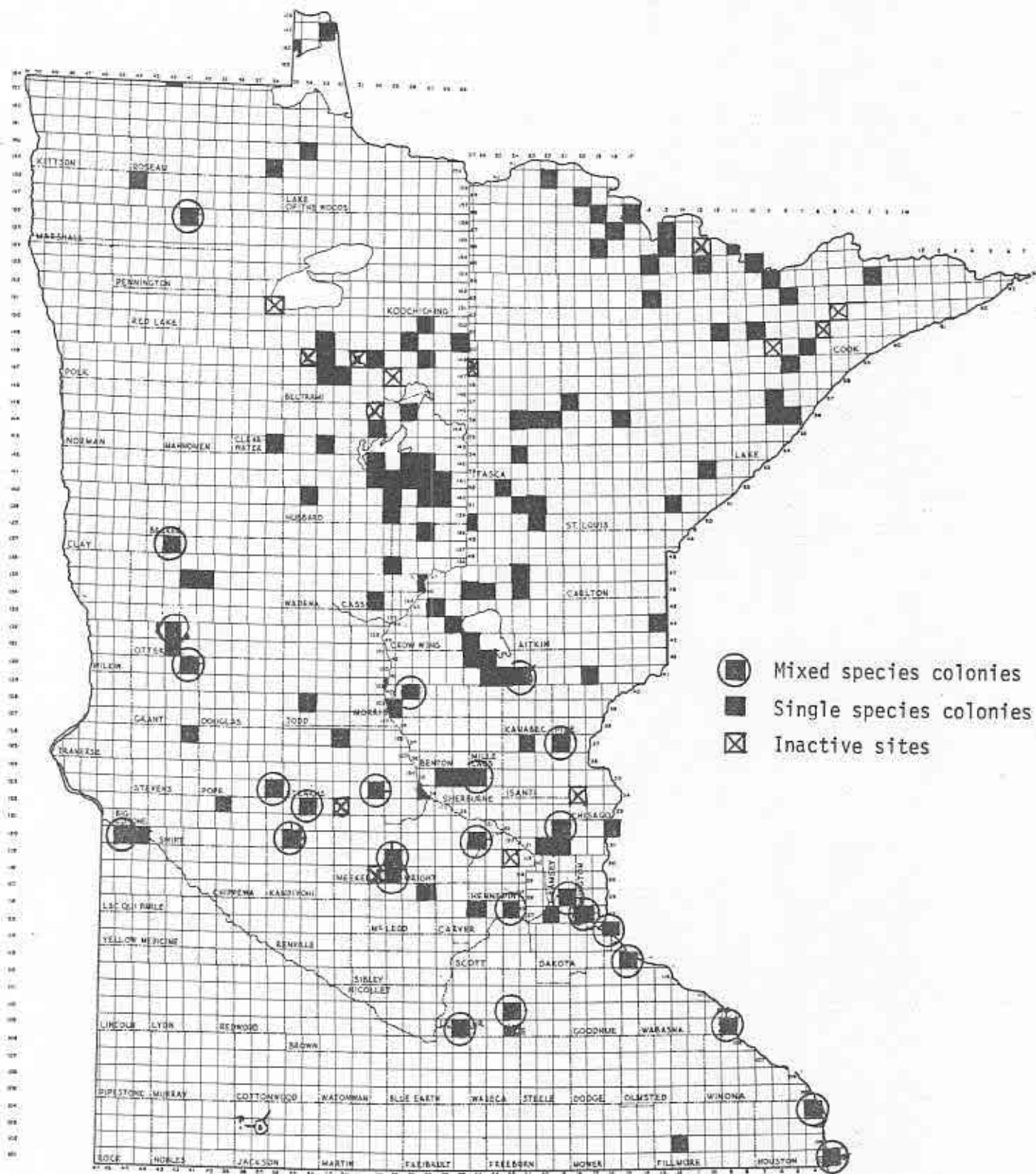


Figure 7. Distribution of Great Blue Heron (*Ardea herodias*) colonies in Minnesota.



average of 92 pairs per colony. In 1979 there were 6250 pairs in 52 colonies for an average of 125 pairs per colony. Size distribution of colonies is shown in Table 3.

Many heron colonies include other species, like the Great Egret, Black-crowned Night Heron, Yellow-crowned Night Heron, Double-crested Cormorant, Little Blue Heron, Cattle Egret and Snowy Egret. Four of these species nest only in association with Great Blue Herons. The mixed species composition of the colonies is an important consideration. These combinations are listed in Table 4.

Mixed species colonies (Fig. 7) should be given priority for acquisition and protection because those colonies with a high bird species diversity are few. They play a critical role in the survival of some colonial wading birds.

#### Great Egret

In 1980, Great Egrets were reported from 14 colonies which were checked. In comparison, they were found in 23 colonies in 1979. Great Egrets construct stick nests in trees, always with other wading birds. Three of the colonies new in 1980 had Great Egrets; Fossan Lake in Ottertail Co., Pigeon Lake in Meeker Co. (50), and Willow Lake in Ramsey Co. (Fig. 8). Counts were made in 9 colonies; 350 pairs were counted for an average of 38.8 pairs/colony. In 1979 there were 816 egrets in 11 sites for an average of 74 pairs/colony. The large number of egrets which previously nested at Lake Johanna has declined. There may be a decline occurring in the number of nesting pairs of this species. This situation should be investigated further.

#### Cattle Egret, Little Blue Heron and Snowy Egret

The Little Blue Heron, Snowy Egret and Cattle Egret are very uncommon breeding species in Minnesota. Little Blue Herons and Cattle Egrets have



Table 3. Size of Great Blue Heron colonies in Minnesota, based on 1980 counts.

Number of breeding pairs	Number of colonies in this category
0-50	23
50-100	7
100-150	4
150-200	1
200-250	2
250-300	-
300-350	1
350-400	2
400-450	-
450-500	2
>500	-

Table 4. Combinations of species present in mixed species heron colonies

Species Combination *	Number of colonies
GBH-GE	16
GBH-GE-BNH	3
GBH-GE-BNH-DCC	1
GBH-GE-BNH-DCC-YNH	1
GBH-GE-BNH-DCC-YNH-LBH-CE-SE	1
GBH-DCC	2
GBH-BNH	3
GBH-GE-BNH-DCC-LBH-CE	1

\*Key

GBH = great blue heron  
 GE = great egret  
 BNH = black-crowned night heron  
 DCC = double-crested cormorant  
 YNH = yellow-crowned night heron  
 LBH = little blue heron  
 CE = cattle egret  
 SE = snowy egret

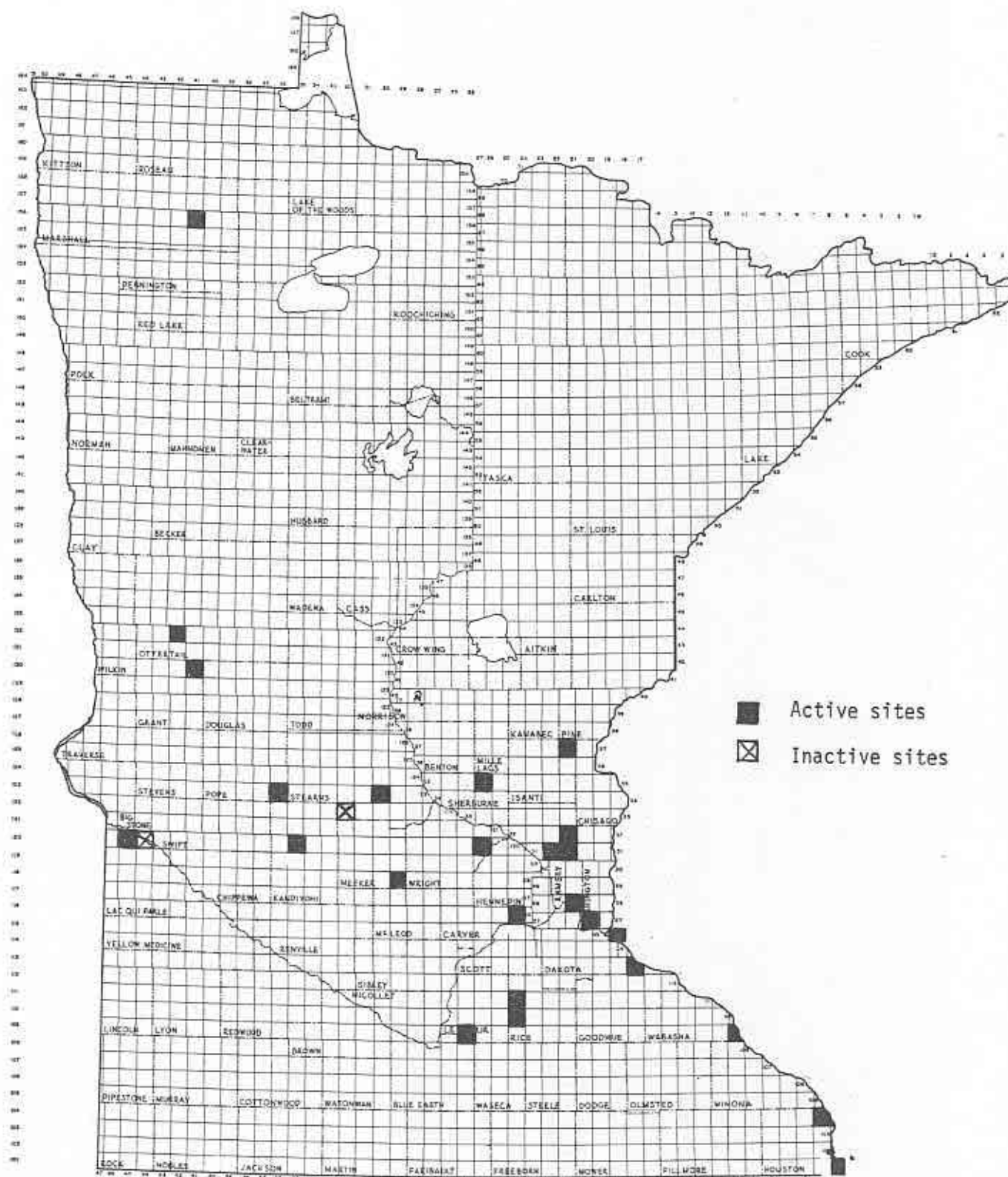


Figure 8. Distribution of Great Egret (*Casmerodius albus*) colonies in Minnesota.

nested at Pelican Lake for the past several years. Little Blue Herons, Cattle Egrets and Snowy Egrets have nested at the Big Stone National Wildlife Refuge. (Fig. 9, 10 & 11). Unfortunately they have recently disappeared from Lake Johanna. Minnesota is the northernmost limit of their range.

#### Black-crowned Night Heron

In 1980, no new Black-crowned Night Heron nesting sites were located. There are 17 sites known for this species. Black-crowned Night Herons nest in both single species colonies and mixed colonies. Most nests are constructed of sticks and placed in the tops of trees, however in some circumstances these herons make nests over water in phragmites stands, or even on the ground. Their nesting habits are highly versatile. Colonies are located throughout the southern half of Minnesota (Fig. 12). Black-crowned Night Herons were surveyed in 9 colonies during 1980, and a total of 954 pairs were observed for an average of 106 pairs/colony. The total number of pairs in the state may be 2000. The number of Black-crowned Night Herons has declined at two colonies, Lake Johanna and Pig's Eye.

#### Yellow-crowned Night Heron

This species may also be at the northern periphery of its range in Minnesota, nesting at only a few locations (Fig. 13). In 1980 no data were received from the Big Stone NWR, or Hokah colonies. This species should be monitored carefully in order to document their continued presence in Minnesota.

#### Herring Gull

Herring Gulls are ground nesters; nests are constructed of vegetation, and they often nest in dense colonies with very small neighbor-neighbor distances. These birds nest primarily along the north shore of Lake

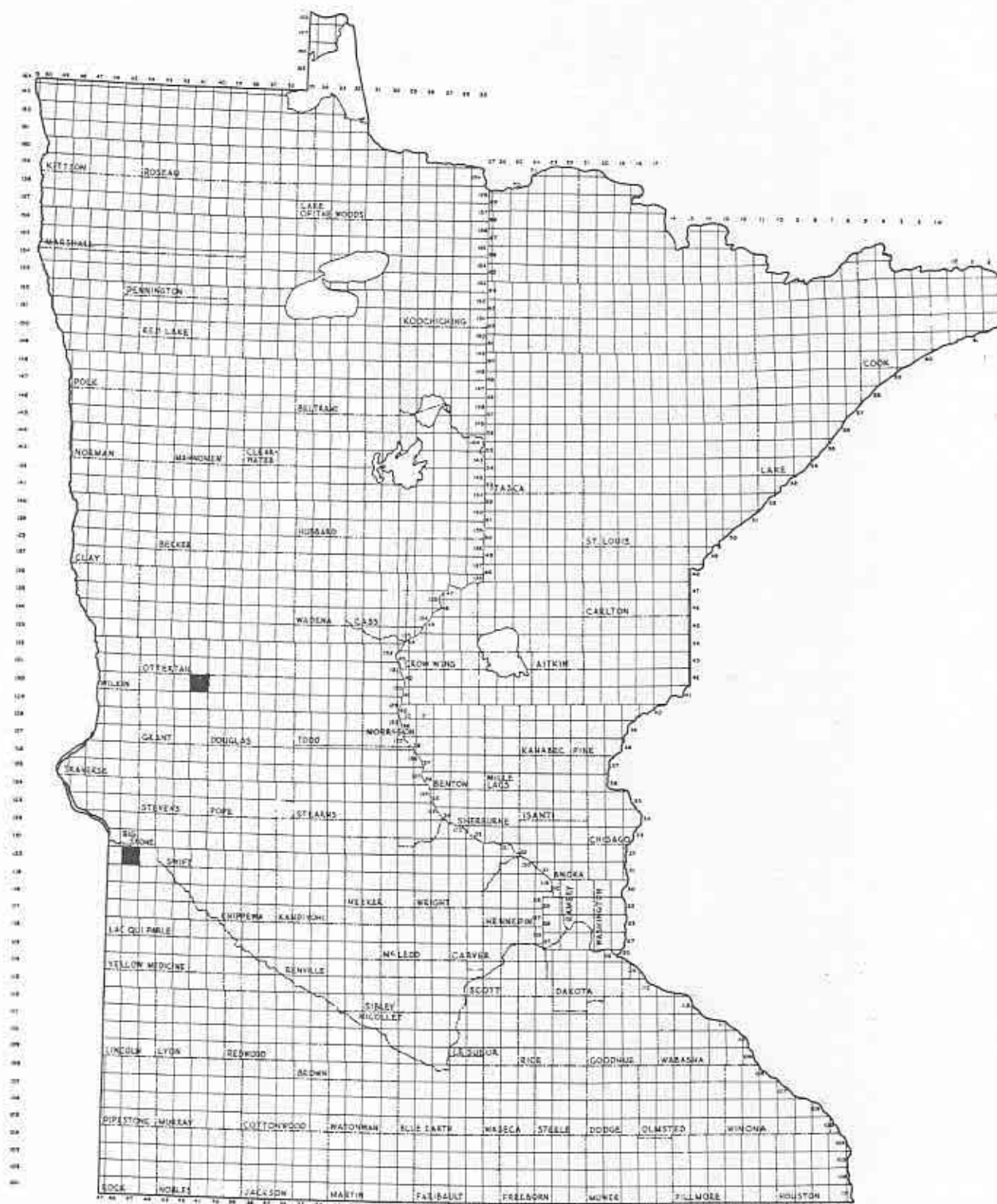


Figure 9. Distribution of Cattle Egret (*Bubulcus ibis*) colonies in Minnesota.

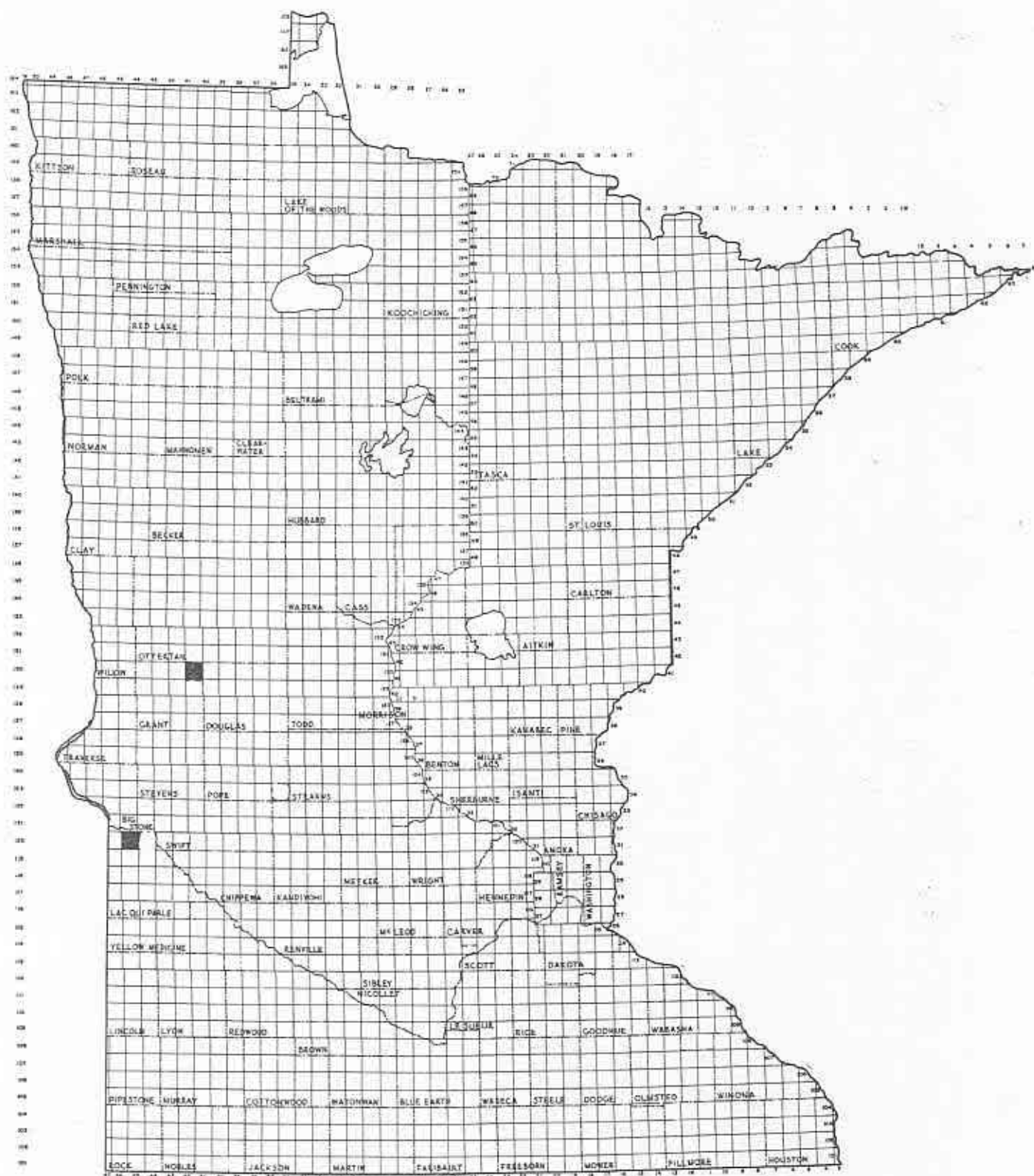


Figure 10. Distribution of Little Blue Heron (*Florida caerulea*) colonies in Minnesota.

Figure 11. Distribution of Snowy Egret (Leucophoyx thula) colonies in Minnesota.



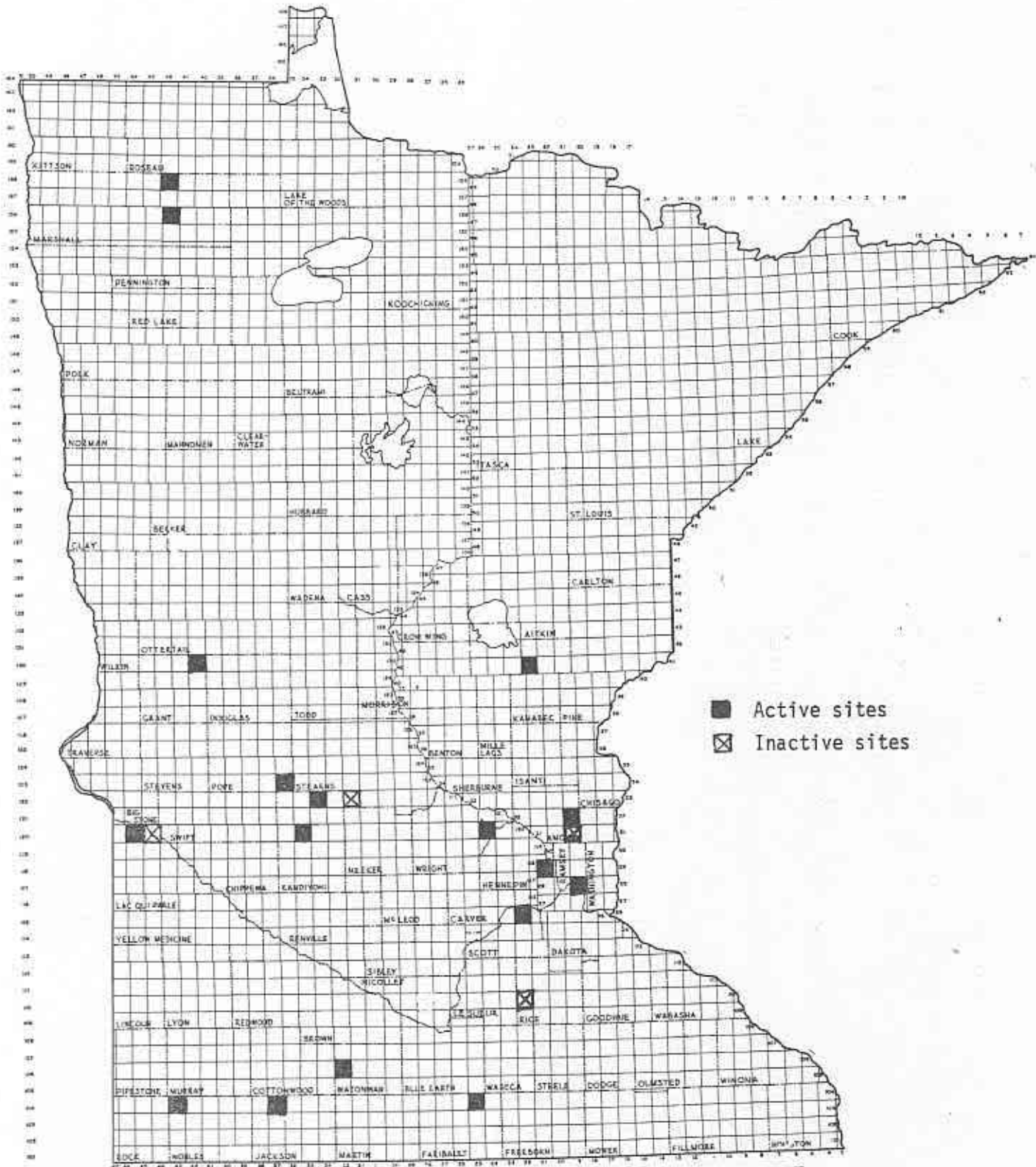


Figure 12. Distribution of Black-Crowned Night Heron (Nycticorax nycticorax) colonies in Minnesota.

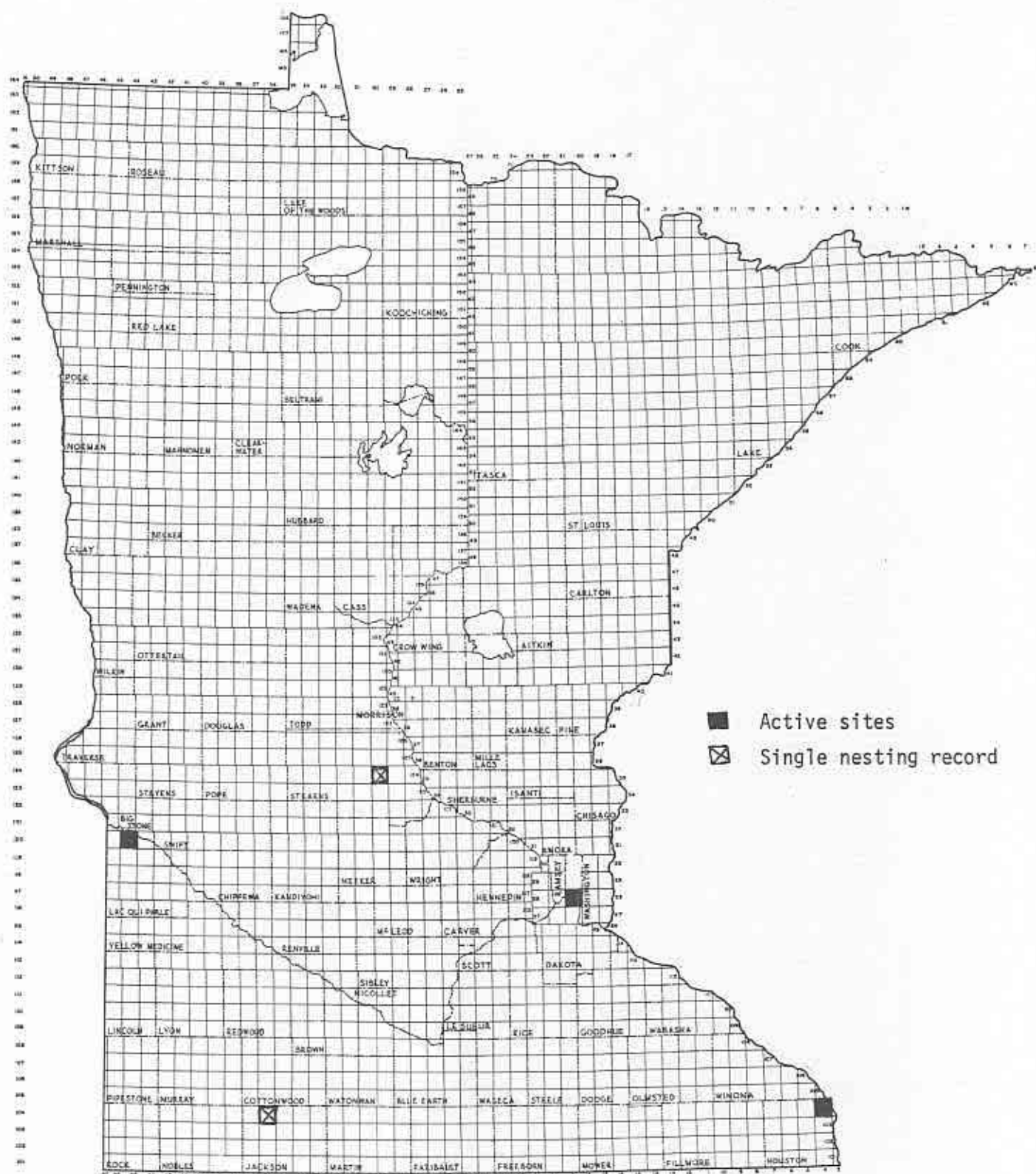


Figure 13. Distribution of Yellow-Crowned Night Heron (*Nyctanassa violacea*) colonies in Minnesota.

Superior. No new colonies were located this year. There are several inland colonies on larger lakes like Leech Lake. There are 64 Herring Gull colonies in Minnesota with an average colony size of 103 pairs. The largest colony, with 939 pairs, is at Gull Island in Lake Superior. Other large colonies are located inland at Pancake, Knife and Encampment Islands (Fig. 14). The total Minnesota population probably exceeds 7000 pairs. Gull numbers throughout the U.S. are increasing and populations seem to be stable or increasing in Minnesota.

#### Ring-billed Gull

These birds also make ground nests on islands. Their nesting sites are not nearly as widely distributed as those of the Herring Gull, and they are restricted to four locations; Duluth Harbor (2), Mille Lacs Lake and Leech Lake (Fig. 15). These colonies were not surveyed in 1980, but the Minnesota population may be 3000 pairs. This population seems to be stable or increasing. Each of the colonies, however, should be protected since there are so few colony sites for the species.

#### Franklin's Gull

The Franklin's Gull nests in marshes rather than on rocky islands as do the previous two species. There are two nesting sites in Minnesota; 5000 pairs nest at Agassiz NWR, and this year 3200 were discovered to be nesting at Thief Lake WMA, in Marshall Co. (Fig. 16). The Minnesota population may number over 8000 birds. Both these nesting sites are in public ownership, however water level manipulation may be detrimental to these birds. Care must be taken not to drastically change water levels during the breeding season.

#### Forster's Tern

Forster's Terns nest in lakes with emergent vegetation. Their nests are made among bullrushes, cattails or on muskrat houses, and are usually constructed of marsh vegetation. Two new sites were located

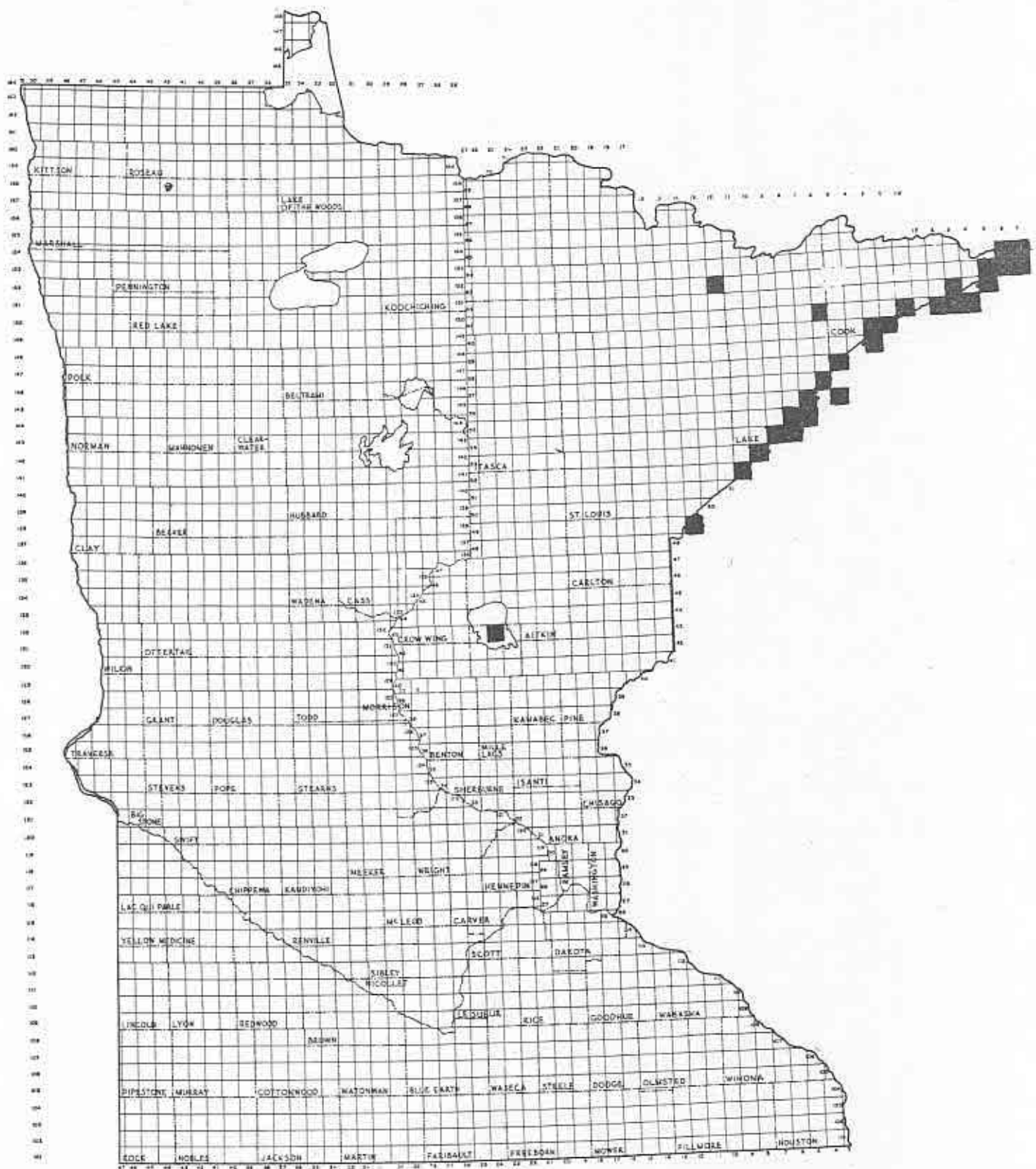


Figure 14. Distribution of Herring Gull (*Larus argentatus*) colonies in Minnesota.

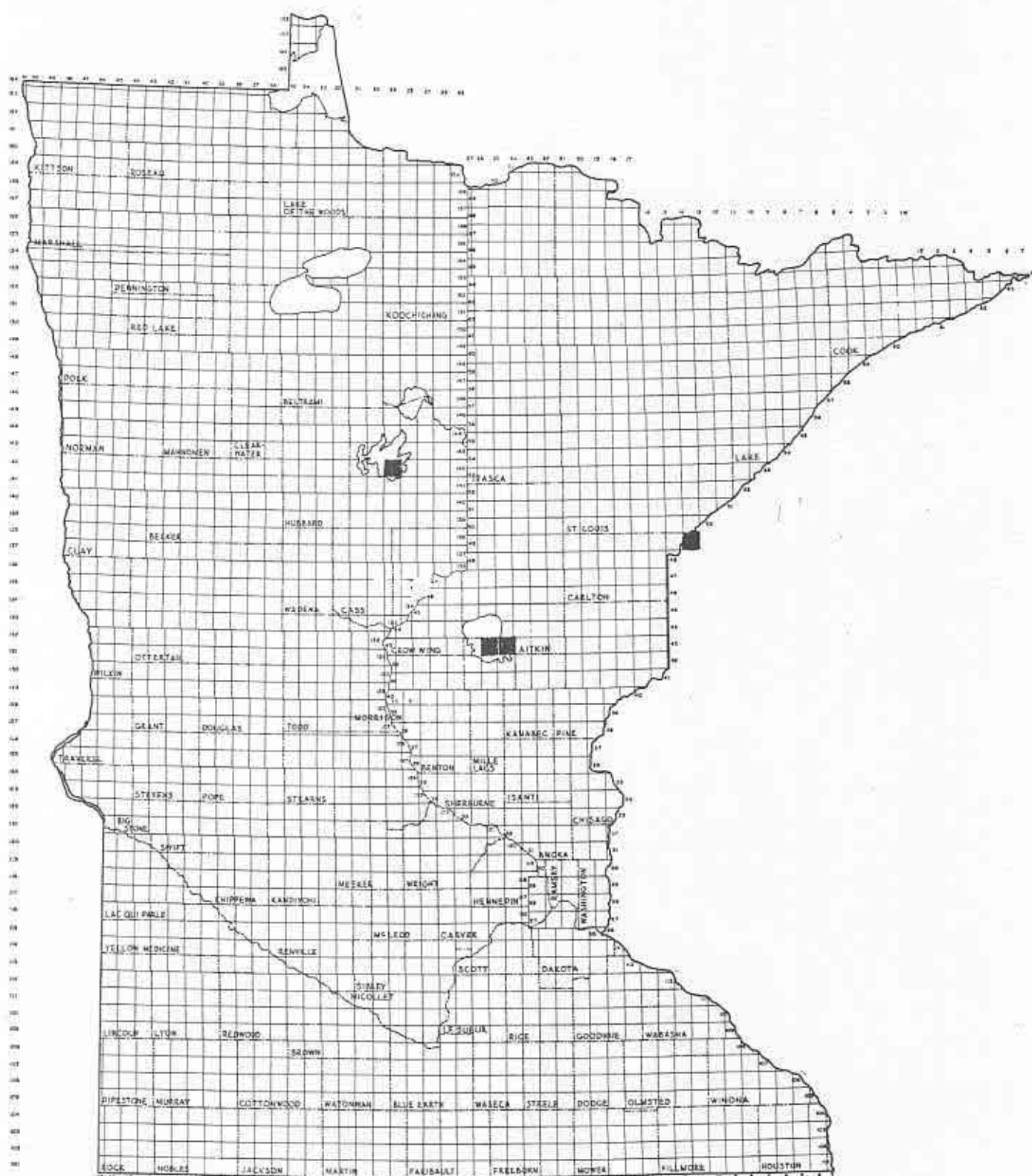


Figure 15. Distribution of Ring-billed Gull (*Larus delawarensis*) colonies in Minnesota.



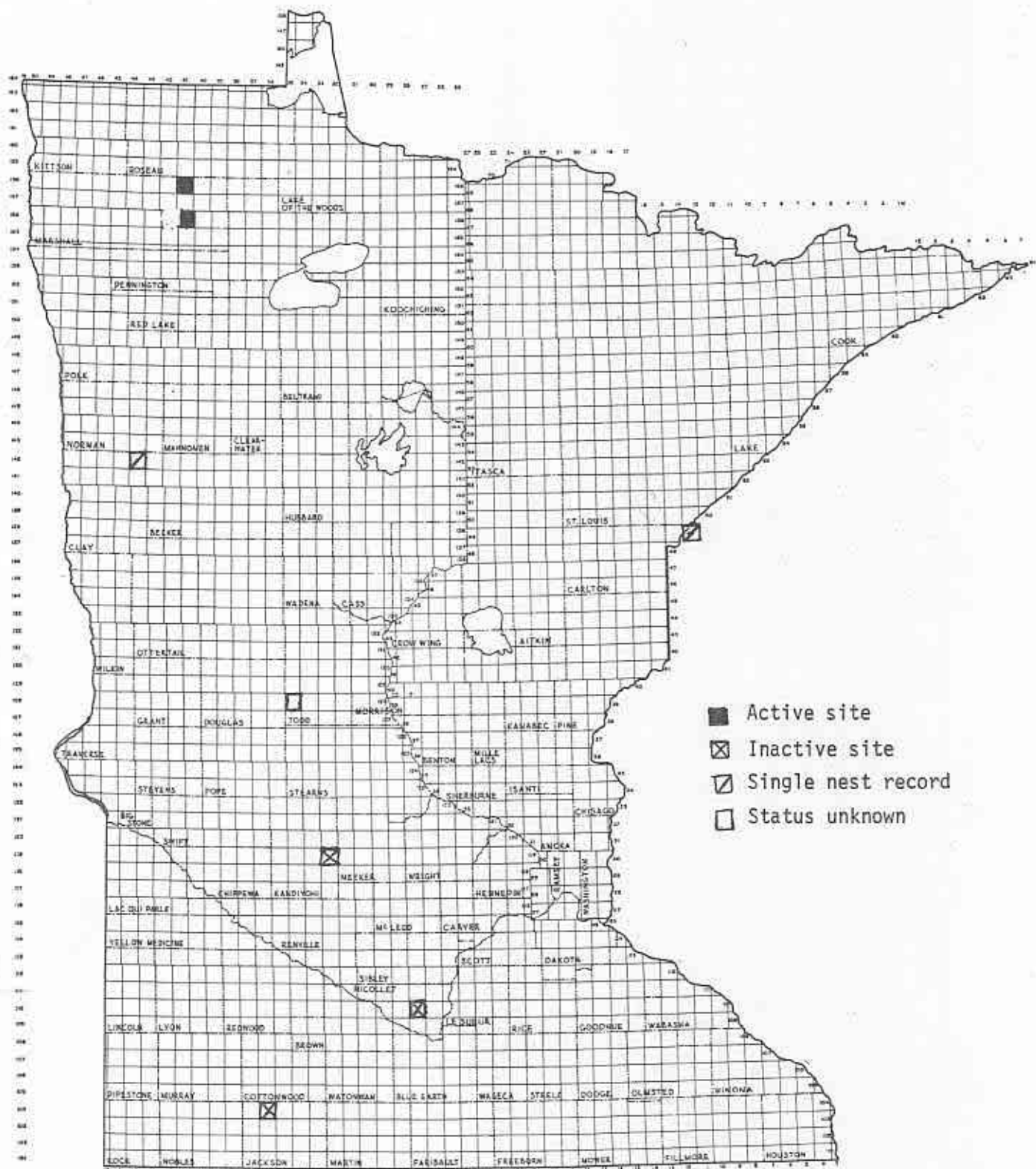


Figure 16. Distribution of Franklin's Gull (*Larus pipixcan*) colonies in Minnesota.



in 1980; one in Ottertail Slough in Otter Tail County, and one in Upper Rice Lake, Clearwater County (Fig. 17). This brings the total known breeding sites to 14. Forster's Terns were censused at 3 sites during 1980: 50-75 pairs were nesting at Coon Creek WMA in Lyon Co., and none were seen at Baldwin Lake or Forsham Lakes in Anoka Co. The Forster's Tern is an endangered species Wisconsin and Illinois, and care should be taken to closely monitor breeding success and colonies in Minnesota. The Forster's Tern is at the edge of its breeding range in Minnesota.

#### Common Tern

There are 10 nesting sites known for the Common Tern in Minnesota. No new colonies were located in 1980 (Fig. 18). The largest colonies are on Spirit and Hennepin Islands in Lake Mille Lacs, Gull Island in Leech Lake, Duluth Harbor and Pine and Curry Island in Lake of the Woods. Colonies should be carefully monitored. This species is endangered in Illinois, Michigan, Ohio and Wisconsin, and Minnesota may have the largest breeding population remaining in any of these states. The Minnesota population is estimated at 2000 pairs. The average colony size is 212 pairs.

#### Caspian Tern

This species nested on Gull Island in 1969 (Fig. 19). However, this is the only verified nesting in Minnesota. The range of the Caspian Tern is expanding in the U.S., however, and perhaps the breeding range of this species will expand.

#### Piping Plover

There are four known nesting sites of the Piping Plover in Minnesota (Fig. 20). In 1980, 10 pairs nested on Pine/Curry Islands, a decrease of 20 pairs when compared with 1979. Four pairs were found nesting in Agassiz NWR in Marshall Co. in 1980. The statewide population is probably less than 50 pairs.

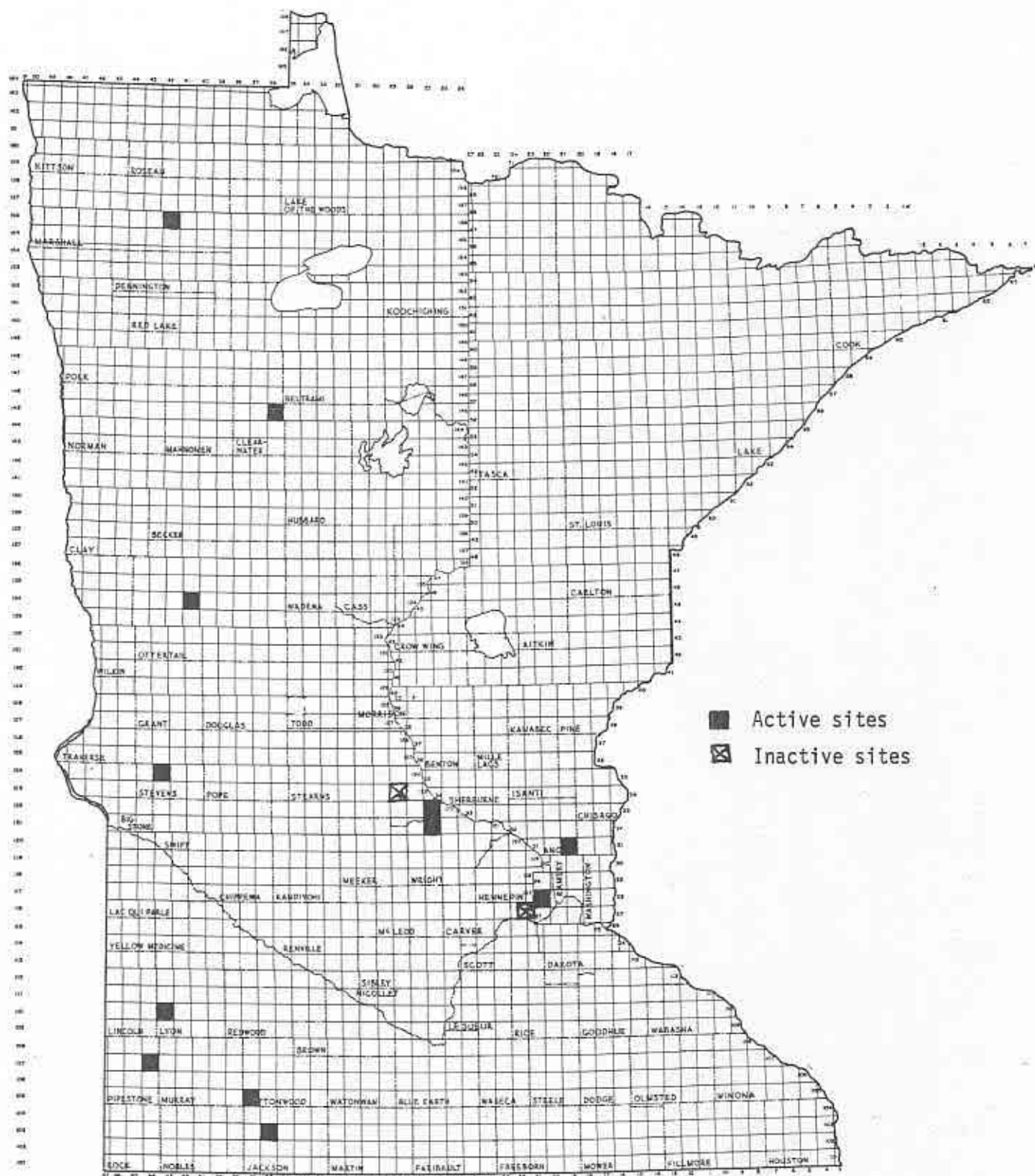


Figure 17. Distribution of Forster's Tern (*Sterna forsteri*) colonies in Minnesota.

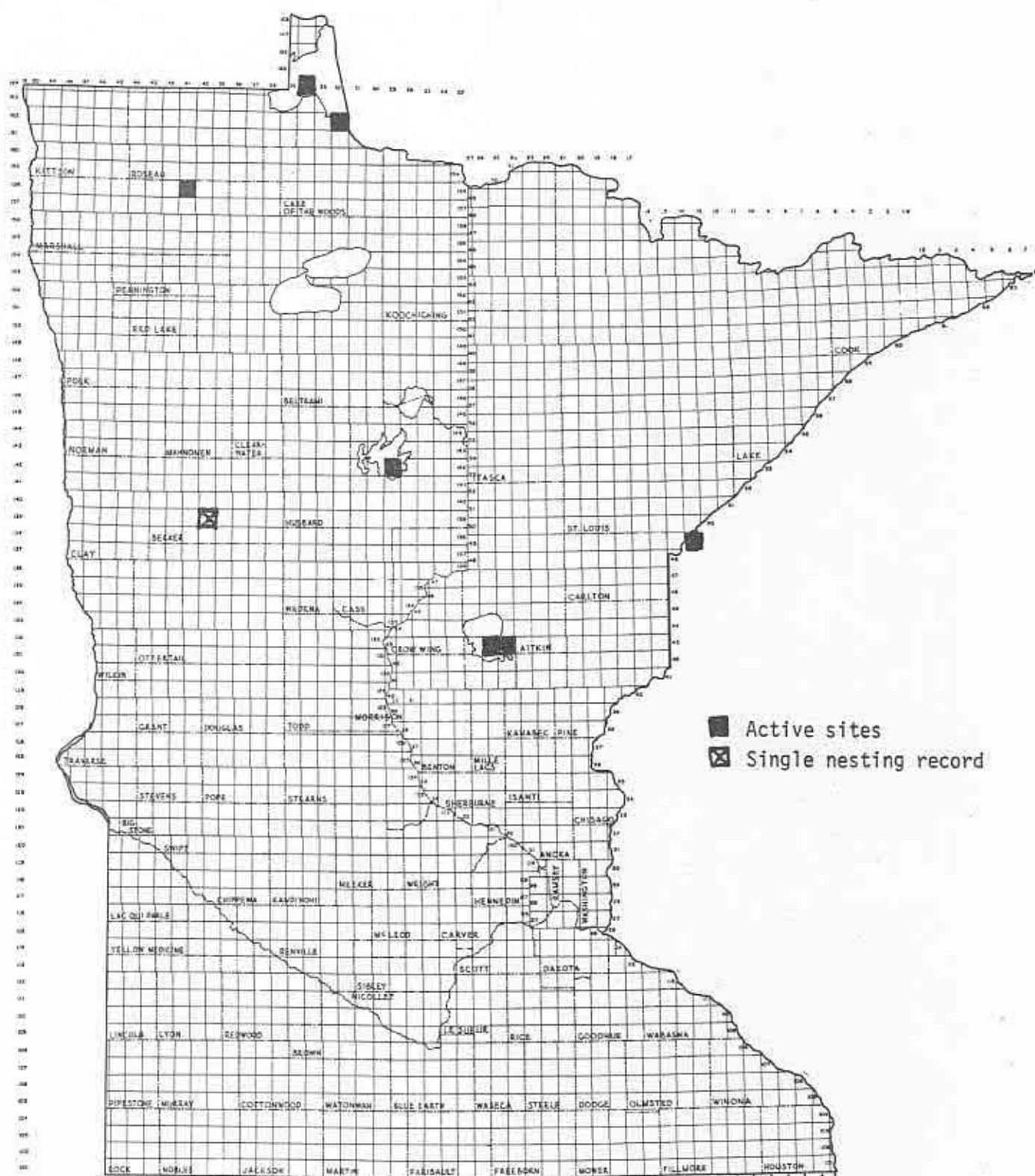


Figure 18. Distribution of Common Tern (*Sterna hirundo*) colonies in Minnesota.

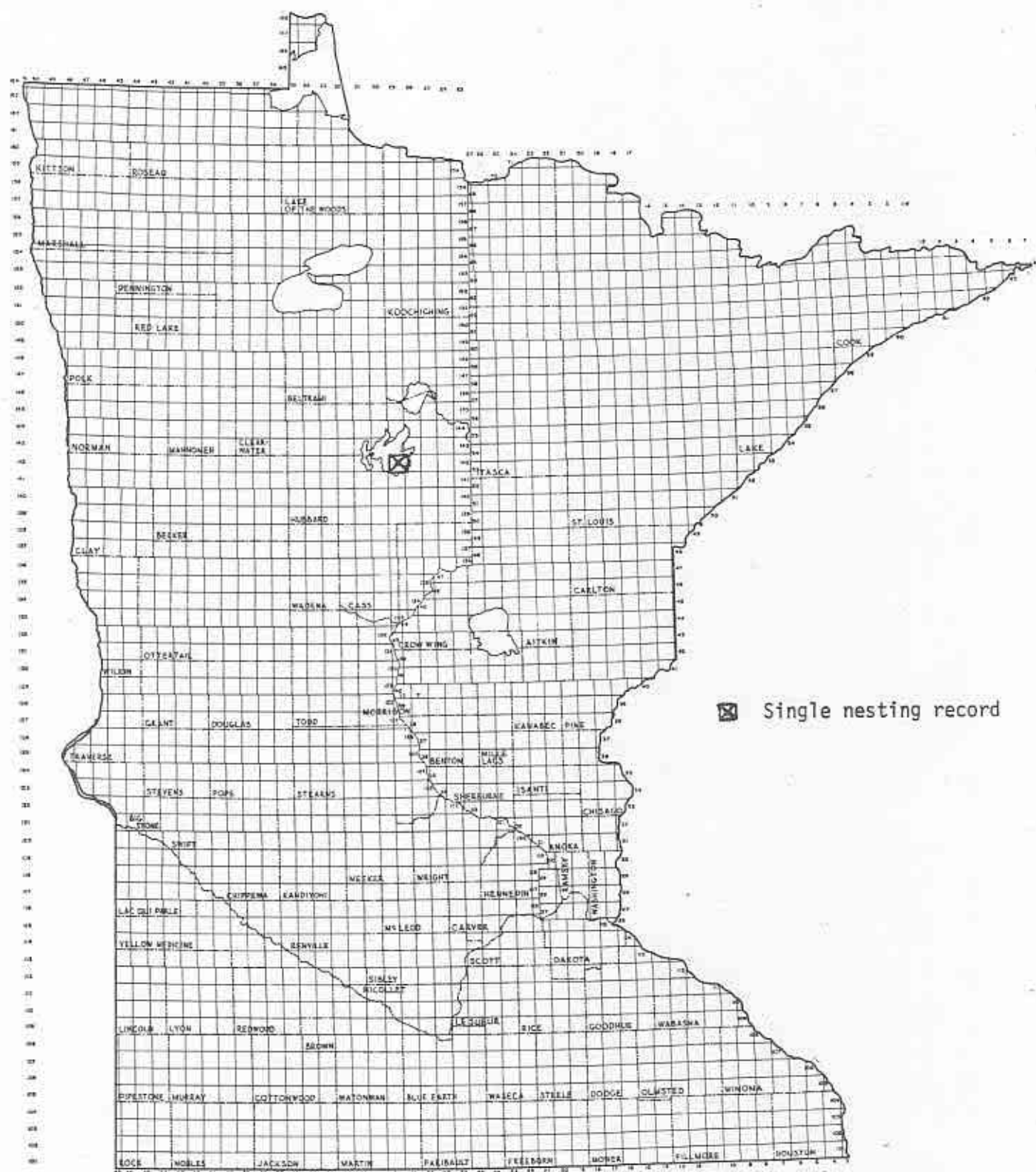


Figure 19. Distribution of Caspian Tern (*Hydroprogne caspia*) colonies in Minnesota.

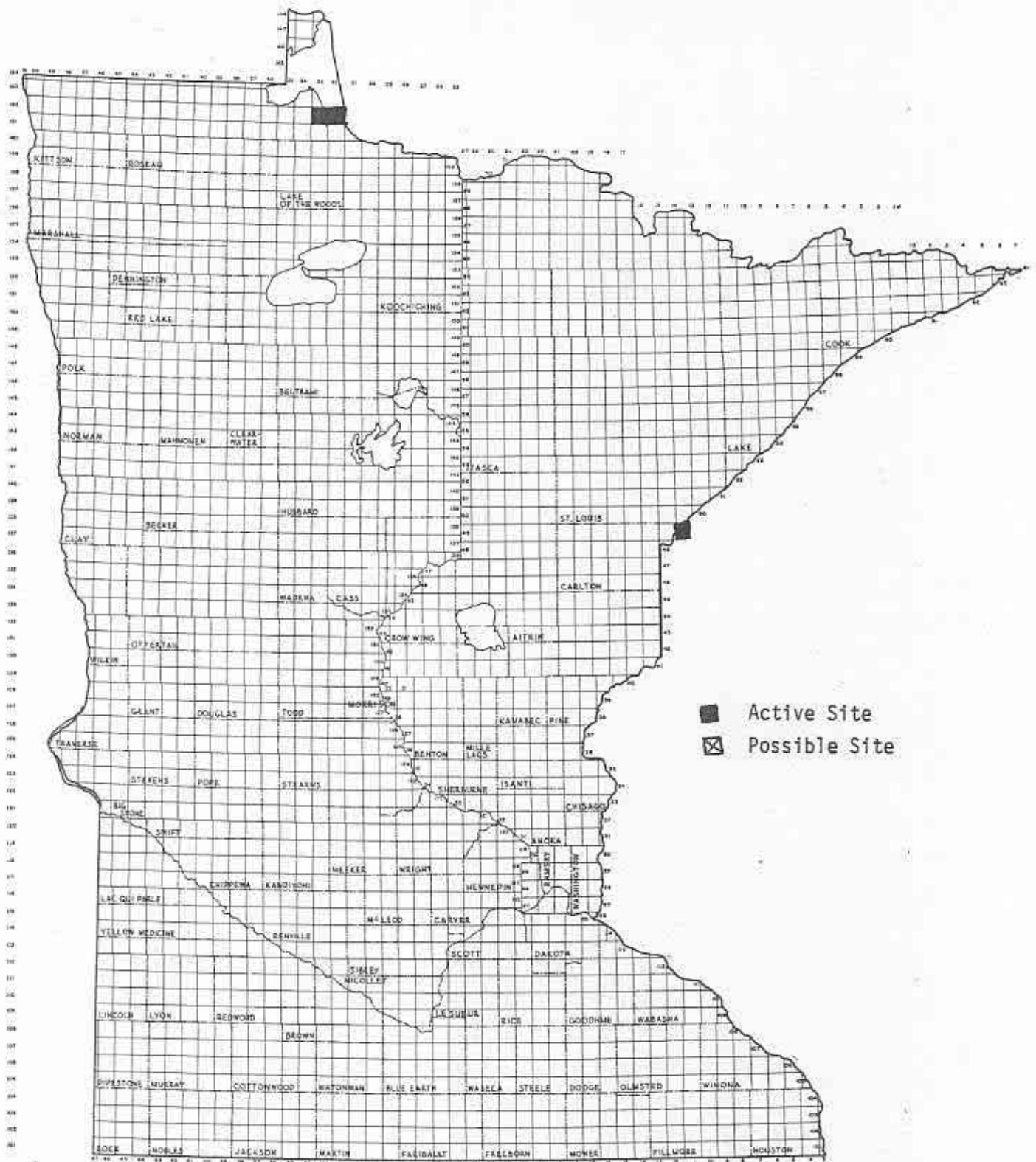


Figure 20. Distribution of Piping Plover (*Charadrius melodus*) colonies in Minnesota.

The Piping Plover is endangered in Illinois and Wisconsin and threatened in Michigan. The Great Lakes subpopulation is not faring well, and care must be taken to protect the major nest sites on Pine and Curry Islands in Lake of the Woods. Further inventory of potential sandy beach nesting areas in Lake of the Woods and other large northern lakes should be conducted to verify the Minnesota population.

#### Conclusions

Minnesota has a great variety of nesting colonial birds. This is due in part to the wetland habitat preservation programs of the DNR and the USFWS. These colonial birds depend on wetlands of types varying from large open lakes of thousands of acres to small 5-10 acre type 3 wetlands with little open water. Colonial birds depend on this lacustrine environment for food, for nesting materials, and nesting habitat. As far as we can ascertain, no colonial bird has yet been extirpated from Minnesota. An active colonial bird research and management project within the Nongame Program is essential if these species are to continue to grace our lakeshores. Colonial birds are and will continue to be a priority within the program.



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