

# **MINNESOTA COLONIAL WATERBIRD NESTING SITE INVENTORY**

**1978**



**Minnesota  
Department of  
Natural  
Resources**

## ACKNOWLEDGMENTS

This inventory is the result of voluntary efforts by people from across the state who have contributed their unique knowledge of particular colonial bird sites to the Department of Natural Resources. At least 92 persons have provided the data which is summarized in this report. Their names are listed in the Appendix. Each person's contribution to this program is greatly appreciated.

Minnesota Colonial Waterbird  
Nesting Site Inventory  
1978

by Carol Henderson  
Nongame Wildlife Supervisor  
Department of Natural Resources

Colonial nesting waterbirds comprise a fascinating portion of Minnesota's avifauna. These species, which nest in high densities either in trees, over water, or on the ground, include the eared 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 enhance the value of our wetlands, and their feeding activities are enjoyable to observe. Their presence is an indication that Minnesotans are maintaining a quality environment.

Because of the high density of the nests in colonial nesting areas, these birds are of great interest to birders, vacationers, biologists, and environmental planners. Colonies are also very vulnerable to disturbance. Curious, but well-meaning, people can scare birds away from their nests for long periods, and the embryos of eggs can die from overheating by the sun. Fledglings can also be killed by unnecessary disturbances. Some people have bulldozed colonies or harvested timber from nest trees. The extent of these problems needs to be investigated to prevent additional losses from occurring.

The Minnesota Department of Natural Resources has initiated a project to determine the location and status of colonial waterbird nesting sites. This inventory will help insure the continued abundance of colonial birds and encourage their future management and preservation.

The initial phase of this program is to locate colonial nesting sites and record the location, size, ownership, and species composition of each.

In future years a system will be devised for an annual check of colony sites. This will probably be a voluntary effort with professional fieldmen and private citizens contributing information.

Colony research will be conducted as appropriate, and university research on colonial birds will be encouraged. Periodic pesticides analyses will be conducted to determine the levels of pesticides.

Colony information is still being received, but preliminary data has been compiled. These results are tentative and subject to future revisions.

#### SPECIES OVERVIEW

A total of 239 colony sites have been identified, and 219 of these locations were apparently active in 1978. Most of these, 116, were used by great blue herons.

Several species of wading birds were found nesting exclusively in great blue heron colonies, including snowy egrets, little blue herons, cattle egrets, and great egrets. Double-crested cormorants, black-crowned night herons, yellow-crowned night herons, great horned owls, mallard ducks, and common grackles were also found nesting in these colonies.

Double-crested cormorants nested at 11 places in Minnesota, and black-crowned night herons are known to nest in 14 locations. White pelicans nest in only two spots. Great egrets were found in 17 heronries.

Herring gulls and Forster's terns nested in 52 and 9 sites, respectively. Common terns nested in ten locations. Ring-billed gulls nested in seven colonies. Piping plovers were found nesting only at Duluth, and Caspian terns are not known to have nested in Minnesota this year.

This year was the year of the grebe. An abundance of water in 1978 seems to have contributed to a great increase in western grebe numbers and colony locations. Over 150 pairs may have nested on Marsh Lake. Five new lakes were colonized, bringing the state total to 21 colony locations. Eared grebes returned to Salt Lake in 1978, and at the Agassiz National Wildlife Refuge a post-breeding season count of 200 was made on August 13. This is the greatest number known to have nested in Minnesota in recent years.

These results are summarized in the Appendix. Table 1 contains a tally of all sites by nongame regions and by species. Regions used for analysis of wildlife distribution are given in Figure 1.

#### Largest Colonies

The largest heronries in Minnesota are at Pelican Lake in Grant County, Marsh Lake in Big Stone County, Lake Johanna in Pope County, Cold Spring in Stearns County, Big Stone National Wildlife Refuge in Big Stone County, Sioux Lake in Meeker County, and Pig's Eye Lake in Ramsey County. Other very large heronries include Turtle River in Beltrami County, Kirk Lake in Clearwater County, Black Duck Lake in St. Louis County, Reno in Houston County, and Hokah in Houston County.

The largest Franklin's gull colony is at the Agassiz National Wildlife Refuge, and several large herring gull colonies exceeding 200 pairs are found on islands along the north shore of Lake Superior.

#### Population Trends

Population declines at several large colonies and abandonment of the Elm Creek colony in Hennepin County give cause for concern in Minnesota colonies of wading birds. Dr. David Thompson has documented heron population declines along the Mississippi River south of Minnesota. It is unknown whether these current changes are short term phenomena related to dynamic water level conditions or if they are induced by environmental pollutants and land development activities. Funds will be sought for standard annual monitoring of selected colony sites.

#### Colony Threats

Two heronries are currently in jeopardy because private owners are offering them for sale, and one is threatened by industrial development. The most severe



Table 1. Regionalized Summary of Colonial Water Bird Nesting Areas in Minnesota.

	Symbol	IN	IS	2	3E	DNR REGION					4S	5	6	Total
						3W	4E	4W	4S					
Eared Grebe	EG	1	1	0	0	0	1	2	0	0	0	0	4	
Red-Necked Grebe	RNG	-	-	-	-	1	-	-	0	-	-	-	1	
Western Grebe	WG	1	7(1)	0	0	2	2(1)	6	1	2	0	0	21(1)	
White Pelican	WP	1	0	0	0	0	0	1	(?)	0	0	0	2	
Double-Crested Cormorant	DCC	3	2	0(1)	0	2	0	4(1)	0	0	0	0	11(2)	
Great Blue Heron	GBH	8(1)	7	46(1)	10	22(2)	3	6	0	7(1)	7(2)	0	116(7)	
Little Blue Heron	LBH	0	2	0	0	0	0	1	0	0	0	0	3	
Cattle Egret	CE	0	2	0	0	0	0	1	0	0	0	0	3	
Great Egret	GE	1	2	0	0	1(1)	1	2(1)	0	5	5	0	17(2)	
Snowy Egret	SE	0	1	0	0	0	0	1	0	0	0	0	2	
Black-Crowned Night Heron	BNH	1	3	0	1	1(1)	1(1)	3(1)	2(1)	0	2	2	14(4)	
Yellow-Crowned Night Heron	YNH	0	0	0	0	0(1)	0	1	(1)	(1)	2	0	4(3)	
Herring Gull	HG	0	0	51	1	0	0	0	0	0	0	0	52	
Ring-Billed Gull	RG	0	0	4	2	1	0	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	0	2(4)	
Forster's Tern	FT	2	1	1	0	2(1)	1	0	1	0	2(1)	0	9(2)	
Common Tern	CT	1	1	5	2	1	0	0	0	0	0	0	10	
Caspian Tern	CaT	0	0	0	0	(1)	0	0	0	0	0	0	0(1)	
Piping Plover	pp	0(1)	0	1	0	0	0	0	0	0	0	0	1(1)	
Total Sites		17	17	105	12	35	8	16	4	12	13		239	
Active Sites		15	15	103	12	31	5	14	4	10	10		219	



problem is at Long Lake near Park Rapids. There are about 150 great blue heron nests in a lakeshore area which has been subdivided into one acre lots for development. A new road penetrates the colony site. Pelican Lake in Wright County is also for sale.

The Pig's Eye Heronry is the largest and most important heronry in the metropolitan region of Minnesota. Unfortunately, the City of St. Paul seems to view this site more as a potential industrial development site than as a natural area. The City is currently considering plans to expand airport airspace over the heronry, place barge slips along the Mississippi River adjacent to the colony, and develop more sewage plant facilities adjacent to Pig's Eye Lake. Without designation of sanctuary status for the heronry site and a reasonable "no development buffer zone" adjacent to the heronry, it is likely that the City will be responsible for the elimination of this heronry within a few years.

#### Colony Land Ownership

The ownership of great blue heron colonies is a critical factor affecting the management and preservation of these extremely sensitive areas. This is not a wildlife resource from which any private economic gain can be achieved, and the survival of privately-owned heronries depends largely on the benevolence of the owners.

On Long Lake near Willmar is a heronry on an island owned by about 16 people. It has been successfully preserved so far, but if even one owner decided to begin building a home, it would jeopardize the colony.

Public ownership of heronries provides the most flexibility in being able to post these areas during the nesting season and protect the surrounding habitat from improper land use.

The land ownership is known for 71 of the 115 great blue heron colonies. Thirty are federally owned. This includes ownership by the Forest Service (17), U.S. Fish and Wildlife Service (5), Bureau of Land Management (1), and National Park Service (6). Nineteen are state-owned. This includes ownership in state forests (14), state parks (1), wildlife management areas (3), and scientific and natural areas (1).

Eight heronries are known to be owned by county governments. Four are on tax-forfeit lands and 4 are in county park systems.

Two heronries are owned by The Nature Conservancy. One is at Cold Spring and one is at Pelican Lake in Grant County. The Pelican Lake heronry was just optioned in late 1978 and represents one of the outstanding wildlife conservation achievements that have occurred in Minnesota in 1978. One heronry is owned by the City of St. Paul at Pig's Eye Lake.

Thirteen of the 71 heronries are known to be privately owned. Most of the remaining 44 heronries are probably either privately owned or are on county tax-forfeit land.

## GREBES

### Eared Grebe

Eared grebes are colonial nesting birds which are known to have nested in five locations -- Agassiz NWR in Marshall County, Frog Lake in Stevens County, Swan Lake in Nicollet County, and Salt Lake in Lac qui Parle County. An unprecedented count of 200 eared grebes was made at Agassiz NWR on August 13, 1978. This count included adults and young. This colony is the largest known in Minnesota. Eight pairs were seen at Salt Lake in 1971 and 4 pairs were seen there in 1978. It is difficult to assess the status of this bird because it is relatively inconspicuous and does not occur in large colonies. The nesting sites are shown in Figure 2.

### Red-necked Grebe

The red-necked grebe is not traditionally considered a colonial nesting water-bird. However, it has been included in this analysis because of a unique situation that was discovered by Area Wildlife Manager Dennis Hanson at Lake Edward in Crow Wing County. A special survey on July 3 and 5 of 1978 revealed a total of 75 adults and 38 young-of-the-year. Since there were about 35 pairs nesting on the lake, it is possible the grebes may have been nesting in a colonial manner. There are usually no more than 3 or 4 red-necked grebes nesting on each suitable lake of northern Minnesota. Lake Edward covers 2,844 acres and has a hardstem bulrush (Scirpus acutus) edge in certain locations.

The entire nesting range of red-necked grebes in Minnesota is portrayed on Figure 3 and represents summer sightings of that species by Department of Natural Resources Personnel since 1949.

### Western Grebe

The western grebe continued its colonization efforts in Minnesota in 1978 and is now more abundant than at any other time in recent history. This year it was found breeding in 21 locations in western, central, and southern Minnesota. Five new colonies were found, including three large ones -- Marsh Lake in Big Stone and Lac qui Parle Counties, Long Lake in Kandiyohi County, and Lake Reno in Douglas and Pope Counties. Many western grebes were also seen at Lake Minnewaska by Dan Orr, but it is not known if they nested there.

The Marsh Lake area included perhaps five nesting areas and probably totaled over 150 pairs. Up to 100 pairs nested at Long Lake, and at least 50 pairs nested at Lake Reno. The other large concentrations were at Big Stone National Wildlife Refuge (50 pairs), Lake Christina (287 grebes counted in August), Pelican Lake in Grant County (160 grebes counted in August), and Pelican Lake in Wright County (100 pairs estimated). Twelve sites for which counts are available totaled about 600 pairs in 1978. The total number of nesting pairs in Minnesota could easily have exceeded 800.

Western grebe nesting locations are shown in Figure 4. The Orwell Reservoir site was not used in 1978 because of untimely water level manipulation by the Corps of Engineers. The Sunburg Lake area also had few grebes present this year.



## PELICANS AND CORMORANTS

### White Pelican

The largest colonial nesting waterbird in Minnesota is the white pelican. Large ones may weigh 16 pounds and have a wingspread approaching eight feet. They first began nesting in the state in 1968 on Marsh Lake in Big Stone County. The last previous nesting record was in Grant County in 1878. In 1973, another colony was discovered near Angle Inlet in Lake of the Woods County. These two places contain about 465 and 100 pairs, respectively. The Marsh Lake Colony produced about 475 young in 1976, 500 young in 1977, and about 1000 young in 1978. Two pelican eggs were observed on a point of land on Long Lake in Kandiyohi County where nearly 300 nonbreeding pelicans were present all summer. It is not felt that any nesting was attempted there, but it is possible that the site could be colonized in the future as Marsh Lake was in 1968. Pelicans were reported to nest at Heron Lake in Jackson County in 1971 and 1972, but this is a disputed record, and no recent nesting has been observed.

The 1978 nesting pair total for Minnesota is estimated at 565.

The Marsh Lake Colony is on the Lac qui Parle Wildlife Management Area and is protected by designation as a "Refuge - No Trespassing Area".

Pelican nesting sites are shown in Figure 5.

### Double-Crested Cormorant

Double-crested cormorants were known to nest in eleven locations in 1978. Six of these locations for which nest counts are available totaled 1,175 nests. The total number of nesting pairs in Minnesota could conservatively be estimated at 1,500. The largest concentrations are at Marsh Lake (345 nests), Lake Johanna (300 nests), Big Stone NWR (220 nests), Long Lake (200 nests), and Pelican Lake (no count available).

No new colony sites were discovered in 1978. Figure 6 shows the location of the cormorant colonies.

## HERONS

### Great Blue Heron

The most abundant colonial wading bird is the great blue heron, with 116 active colonies. There were 96 colonies known in 1977, but the increase in 1978 is probably more the result of better reporting than an increase in colony locations. These sites are shown by township in Figure 7. The greatest number is concentrated in northeastern Minnesota.

Thirty-eight heronries for which counts were available in 1978 totaled 2,378 nesting pairs, or an average of 63 nesting pairs per colony. If this average value is applied to all 116 heronries, the statewide total could be 7,308 nesting pairs in 1978.

Of more significance, however, is the varying size of great blue heron colonies which were counted either in 1977 or 1978 (Table 2). For colonies where counts were made in both years, the 1978 count was used. Forty-eight percent of the colonies contained 25 or fewer nests. Fifteen percent of the colonies contained from 26 to 50 nests. Fifteen percent contained 51 to 100 nests, fifteen percent contained from 101 to 300 nests, and six percent contained more than 300 great blue heron nests.

Table 2. Size of great blue heron colonies in Minnesota, based on counts made in 1977 and 1978.

<u>Size Range (Nest Count)</u>	<u>Number of Colonies in that category</u>	<u>Percent of Total</u>
0- 25	38	48
26- 50	12	15
51- 75	10	12
76-100	2	3
101-200	6	8
201-300	6	8
301-400	2	3
401-500	0	
501-600	2	3
600 or more	1	1
Total	79	101

Twenty-three of the great blue heron colonies include other colonial species, including the great egret, black-crowned night heron, yellow-crowned night heron, double-crested cormorant, little blue heron, cattle egret, and snowy egret. The habitat created by a heronry of great blue herons is critical to the survival of great egrets, little blue herons, cattle egrets, and snowy egrets in Minnesota. These four species are only known to nest in association with great blue herons in this state. Mixed colonies are circled on Figure 7. They are notably absent from the forested northern one-third of the state. The only exception is a heronry near Hillman in Kanabec County where black-crowned night herons nest with great blues.

All mixed colonies should be given high priority for public land acquisition or preservation efforts because of the crucial role they play in providing habitat for our uncommon wading birds.

The current inventory is felt to be nearly complete for western and southern Minnesota, but many small "beaver pond" type colonies probably remain to be discovered in the forested northeast.

#### Great Egret

Great egrets are known to nest only in the 17 great blue heron colonies shown in Figure 8. The discovery of a nest of a great egret in the Agassiz National Wildlife Refuge in Marshall is a significant northward extension of the known nesting range of this species in Minnesota. Great egrets were seen in that heronry in 1977, but nesting was not confirmed then.

Nest counts for great egrets are spotty, and it is difficult to assess any trends for this species. Eight counts of heronries in 1977 and 1978 resulted in a tally of 445 nesting pairs, so it is possible that the total statewide population is approximately 1,000 nesting pairs.

The largest colonies of great egrets include Pelican Lake in Grant County, Reno and Hokah on the Mississippi River, the Vermillion River mouth, and Pig's Eye Lake.

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

The heronries at Lake Johanna, Pelican Lake in Grant County, and the Big Stone National Wildlife Refuge are of particular significance because they are utilized by several uncommon species -- the little blue heron, snowy egret, cattle egret, and Louisiana heron. The Louisiana heron has not yet been known to nest in Minnesota, but since they were present at Lake Johanna in the last couple years, nesting is a possibility. Cattle egrets had a big year at the Big Stone National Wildlife Refuge. On July 31, 1978, 29 adults, 2 juveniles, and 23 young were seen. There were possibly 15 pairs present. One nest was seen at Lake Johanna, and sporadic sightings of cattle egrets occurred from the Twin Cities area northwestward to Roseau County. Big Stone NWR also had the largest number of snowy egrets in 1978. On July 31, 1978, there were 12 adults, 7 juveniles, and 30 young observed. No snowy egrets are known to nest at Pelican Lake. They are present at Lake Johanna. Little blue herons were also uncommon, with only 2 adults and 1 young seen at Big Stone on July 31.

The species distributions are shown in Figures 9, 10, and 11.

#### Black-Crowned Night Heron

The relatively adaptable black-crowned night heron is reported from at least 14 sites. These are shown in Figure 12. Eleven sites occur in multiple species heronries, and three are single-species colonies. The largest concentrations occur at Pelican Lake, Lake Johanna, Big Stone NWR, Swan Lake in Nicollet County, Shields Lake in Rice County, and Pig's Eye Lake in Ramsey County.

Some colonies are found in farm groves -- including those near Butterfield in Watonwan County and Lismore in Nobles County. Other sites are reported from south-western Minnesota, but are only active during wet years when wetlands provide favorable feeding areas. Eight colonies with recent nest counts averaged 100 nests per colony. The number of nesting pairs in the state would vary considerably from one year to another, depending on water conditions.

#### Yellow-Crowned Night Heron

Yellow-crowned night herons are at the northwestern periphery of their range in Minnesota. This year they were only recorded at four locations -- Pig's Eye Lake in Ramsey County, Big Stone NWR, Hokah on the Mississippi River, and at the Maplewood Nature Center in St. Paul. They probably nested at the Big Stone NWR. The usual site at LaCrescent was not used this year.

Current nesting sites are shown in Figure 13.

## GULLS AND TERNS

Three species of gulls and three species of colonial-nesting terns occur in Minnesota, including the herring gull, ring-billed gull, Franklin's gull, Forster's tern, common tern, and Caspian tern.

### Herring Gull

Herring gulls nest primarily on islands along the north shore of Lake Superior. They also nest inland on the larger lakes of northeastern Minnesota and on Spirit Island in Mille Lacs Lake. They are known from a total of 52 locations which are shown in Figure 14.

### Ring-billed Gull

Ring-billed gulls are found nesting only at 4 places (in Duluth, Spirit and Hennepin Islands in Mille Lacs Lake, and at Gull Island in Leech Lake). The 1978 nest counts for these areas totaled 3,187 nests, excluding Gull Island. Nesting locations are shown in Figure 15.

### Franklin's Gull

In contrast to the herring gulls and ring-billed gulls of northeastern Minnesota, the Franklin's gull is more commonly associated with the wetlands and lakes of western Minnesota. Six nesting sites are known to have been used in the recent past. The largest site is on the Agassiz National Wildlife Refuge in Marshall County. These sites are shown in Figure 16. A pre-nesting season count of 5,000 Franklin's gulls was made at the Agassiz National Wildlife Refuge in 1978.

### Forster's Tern

Forster's terns are characteristic of the state's smaller lakes and wetlands. Recent nesting records exist for nine places in central and western Minnesota. Most of the locations shown in Figure 17 are small colonies, but nests numbering in the hundreds have been reported from Heron Lake in Jackson County and Clearwater Lake in Wright County.

### Common Tern

Common terns nest at ten locations, including Spirit and Hennepin Islands in Mille Lacs Lake, Gull Island in Leech Lake, and the Duluth harbor. Other sites occur in Becker, Lake of the Woods, and Itasca Counties. The three main colonies of 500 to 1000 nests each are found on Lake of the Woods, Leech Lake, and Mille Lacs Lake. Nesting sites are shown in Figure 18.

### Caspian Tern

The Caspian tern is only known to have nested on Gull Island in Leech Lake in Cass County in 1969. Two nests were found. This location is indicated in Figure 19.



Piping Plover

This is not a colonial bird in the proper sense of the word. It is included here because it is of sufficient interest to warrant recording its presence. Three nests of the piping plover were found in the Duluth harbor in 1978. This bird is very rare in Minnesota. Five nests were found at Duluth in 1977. Another possible nesting area is on undisturbed beaches of Lake of the Woods. Nesting locations are shown in Figure 20.



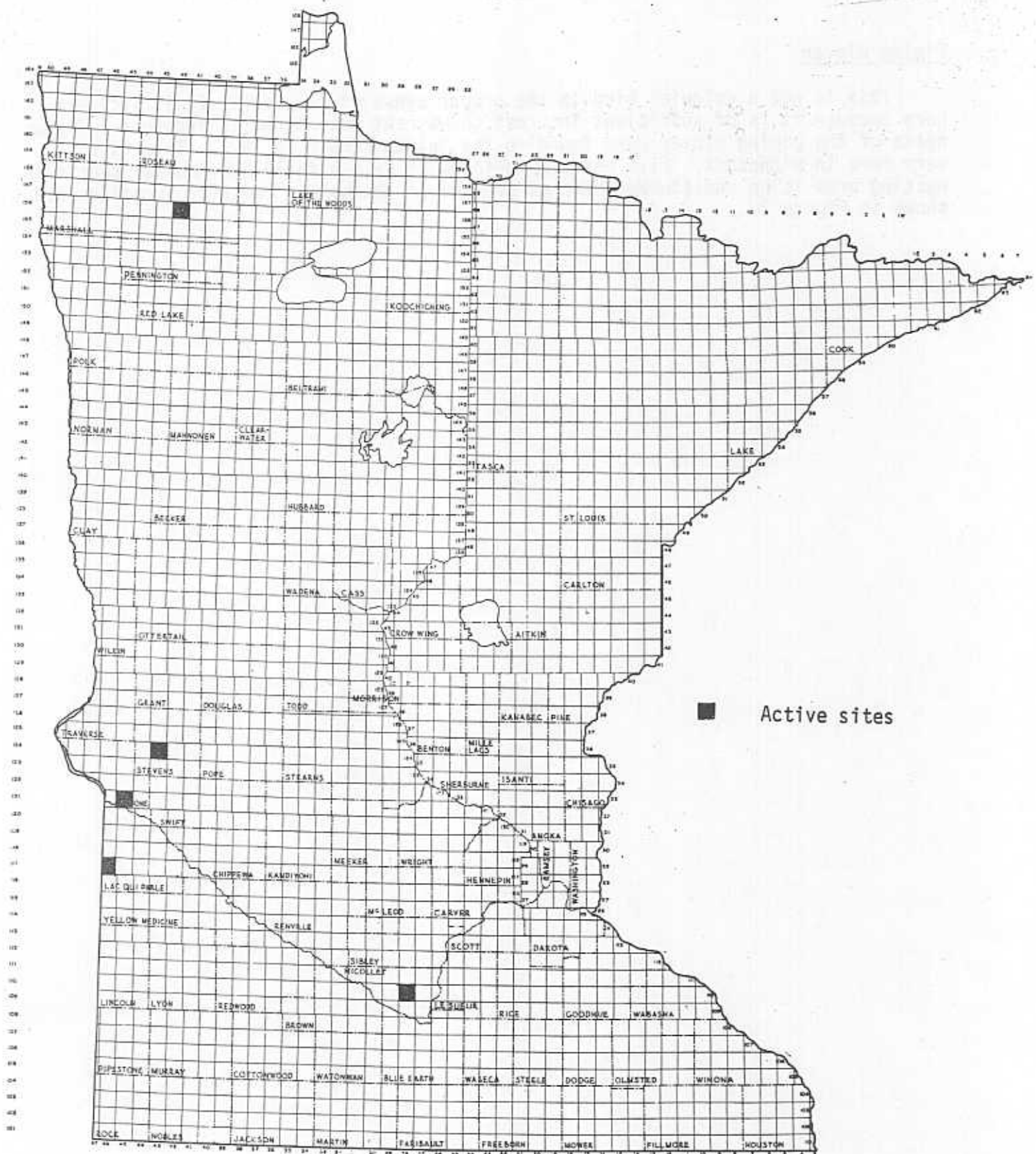


Figure 2. Distribution of Eared Grebe (*Podiceps caspicus*) colonies in Minnesota.

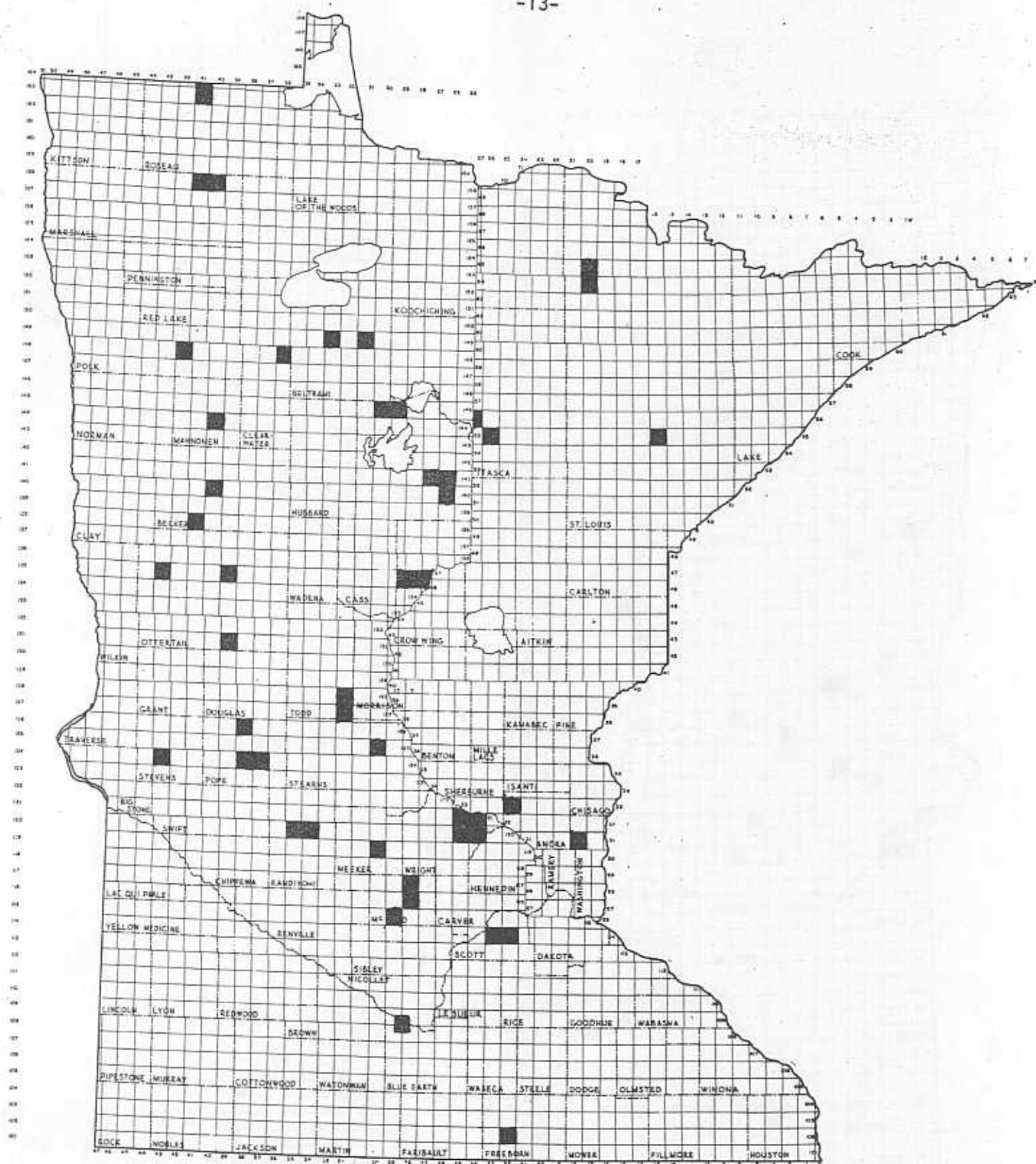


Figure 3. Distribution of summer sightings of the red-necked grebe (*Colymbus grisegena*) in Minnesota.

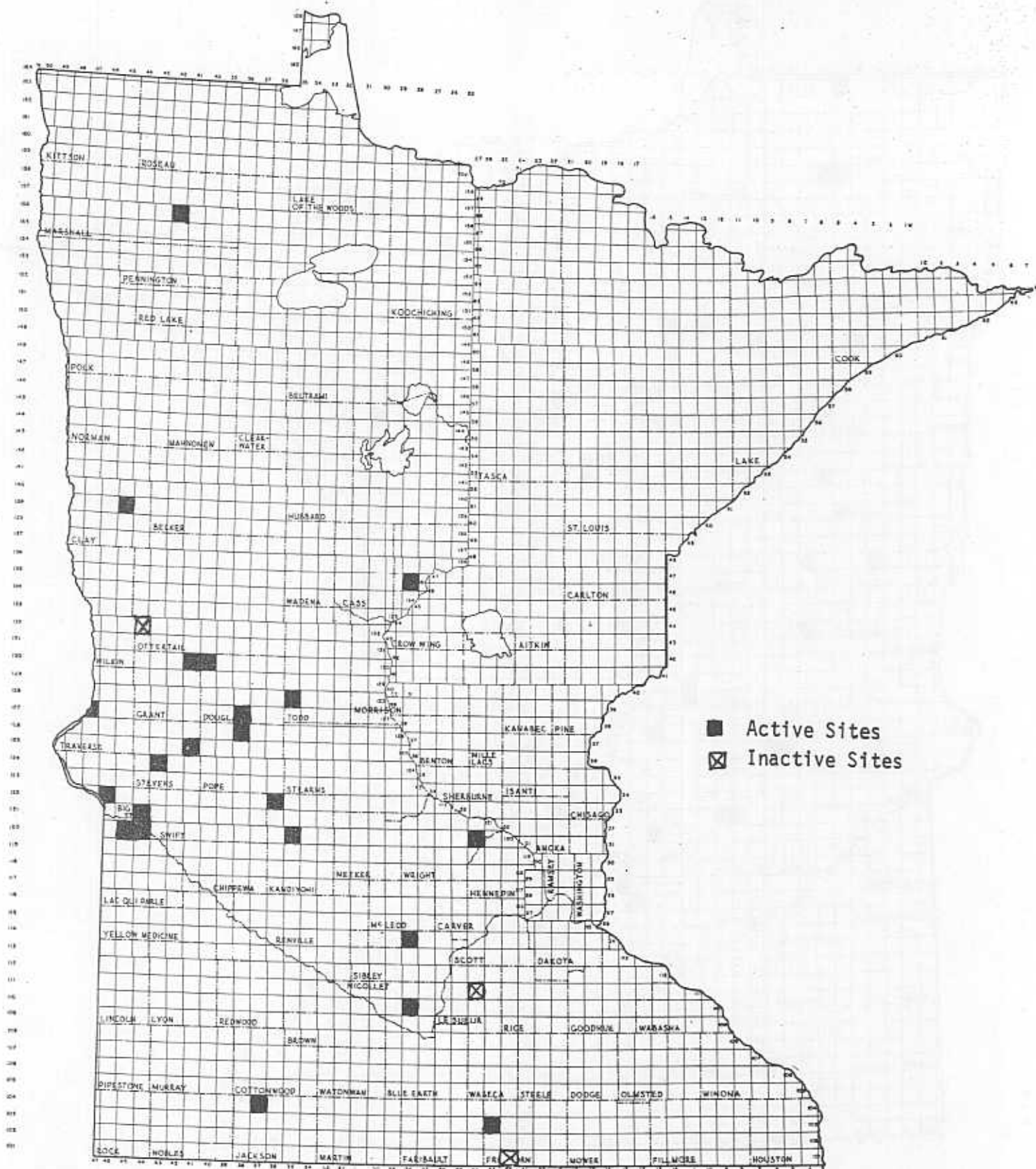


Figure 4. Distribution of Western Grebe (*Aechmophorus occidentalis*) colonies in Minnesota.

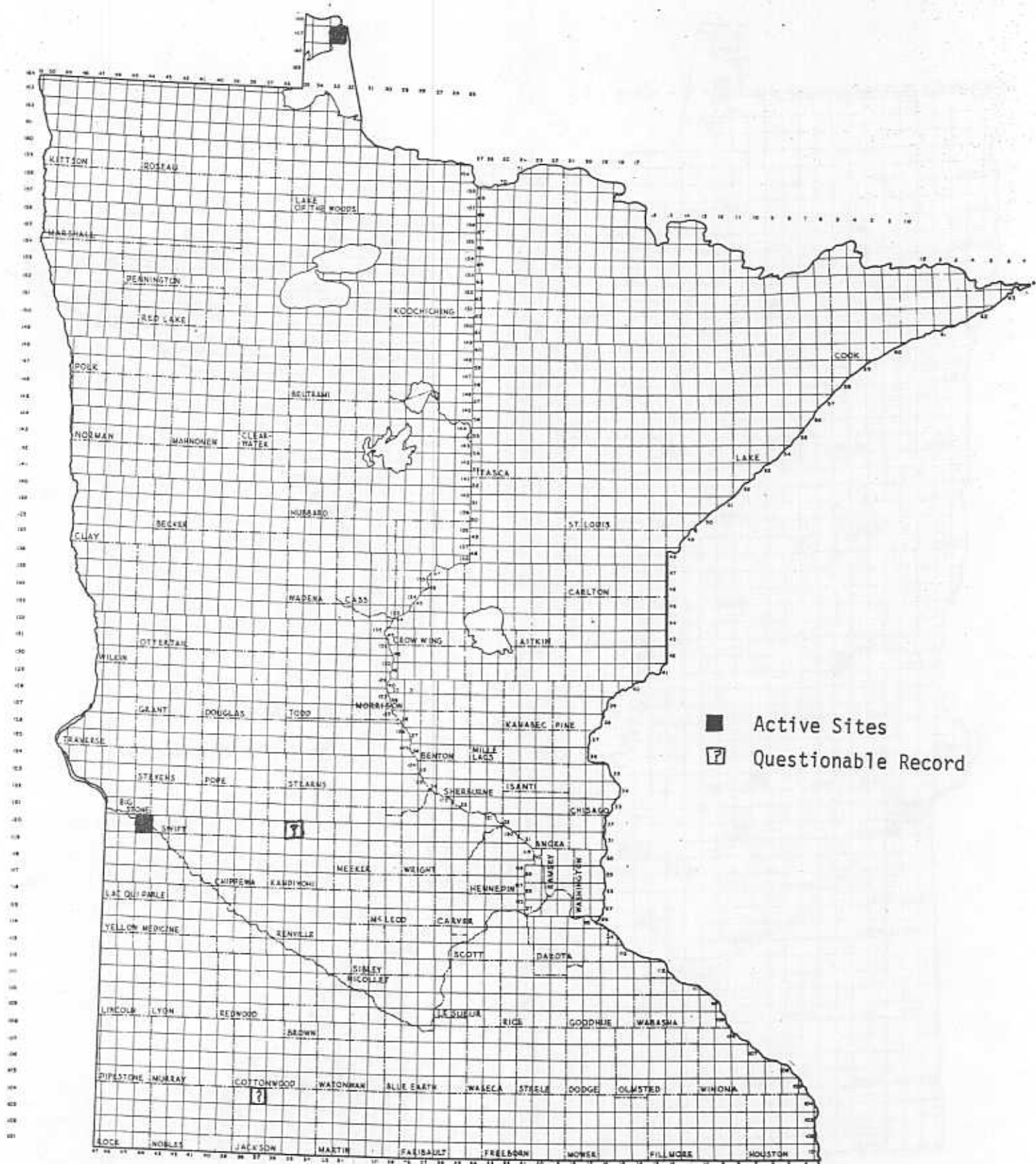


Figure 5. Distribution of White Pelican (*Pelecanus erythrorhynchos*) colonies in Minnesota.



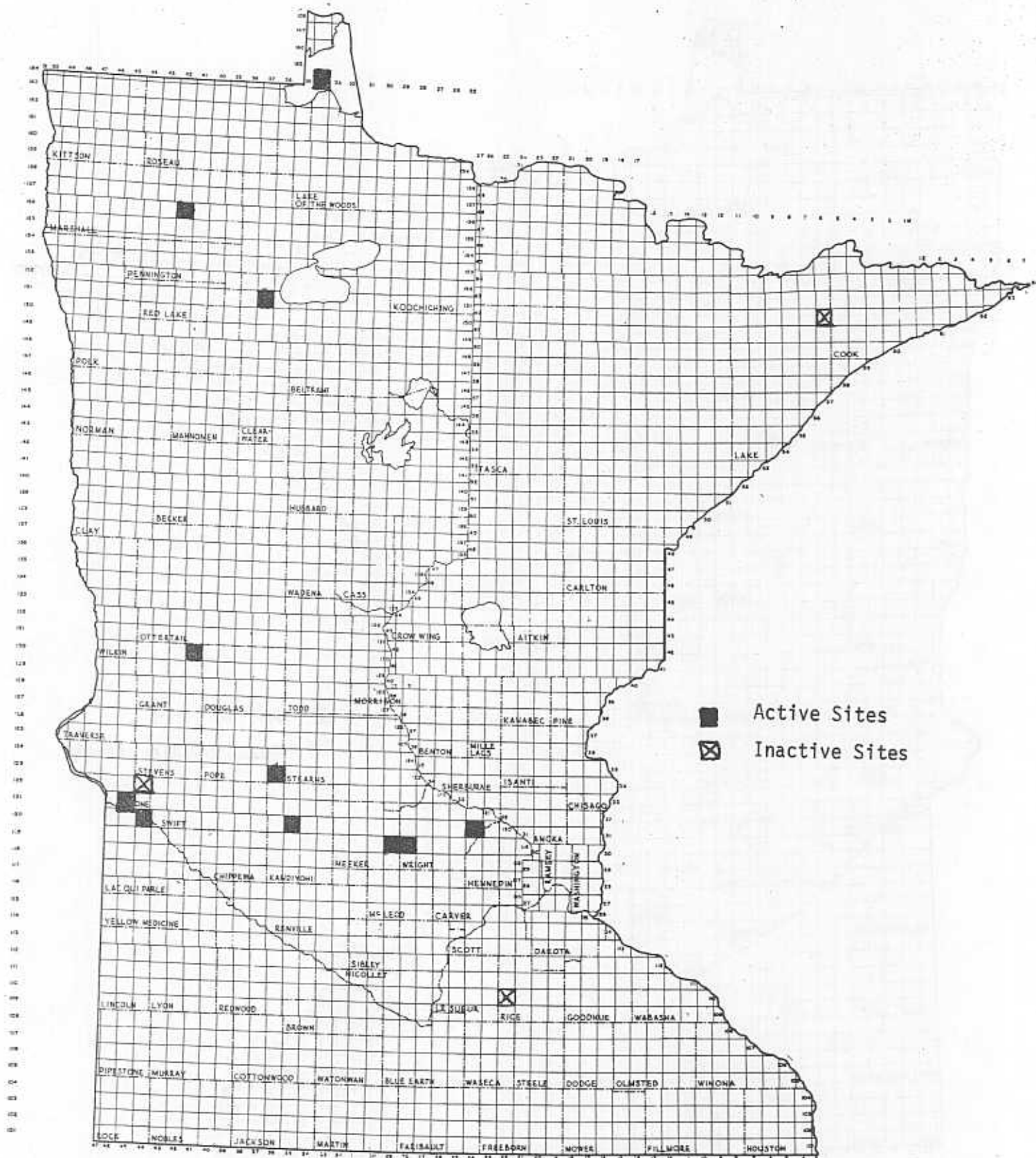


Figure 6. Distribution of Double-Crested Cormorant (Phalacrocorax auritus) colonies in Minnesota.



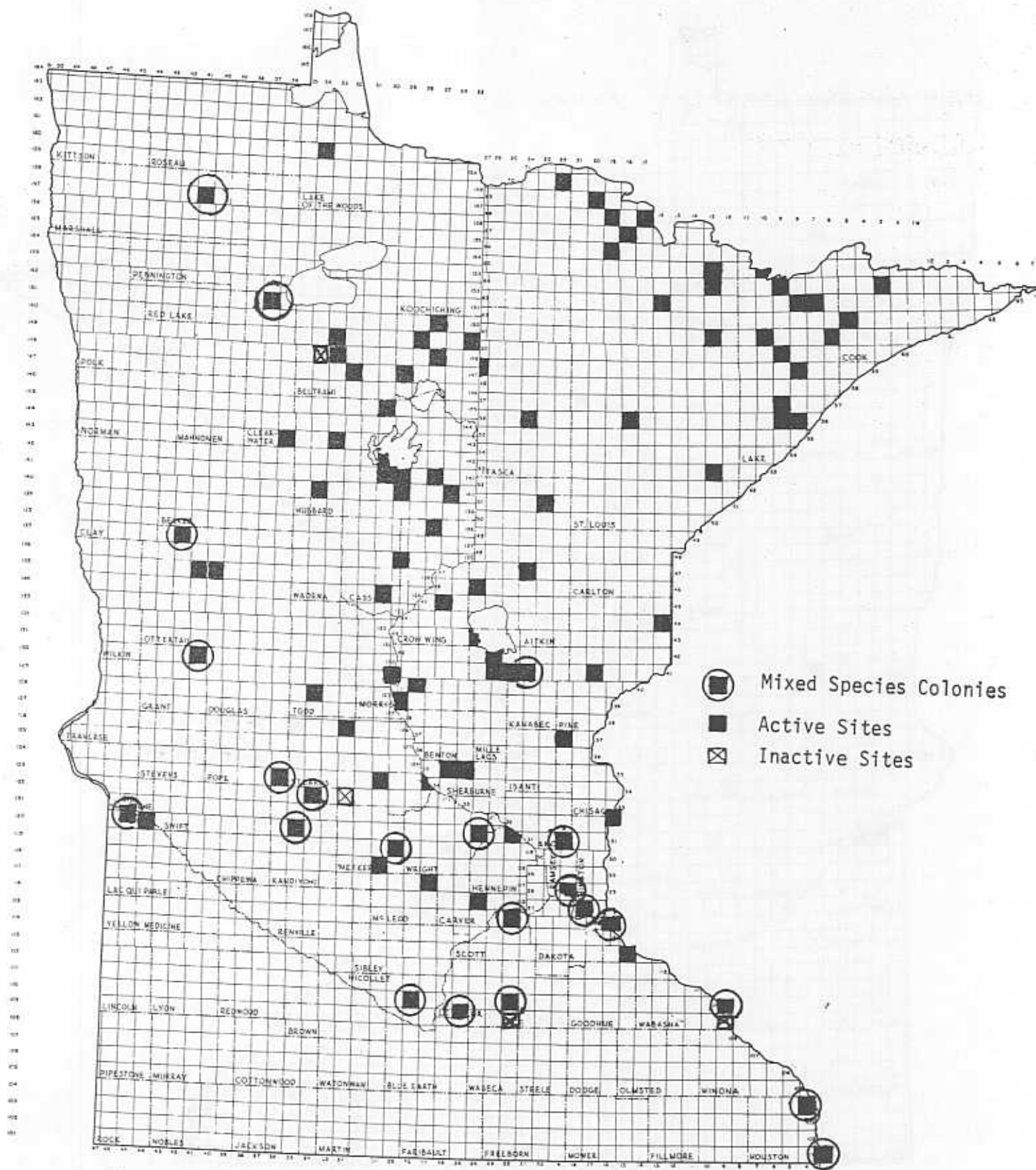


Figure 7. Distribution of Great Blue Heron (*Ardea herodias*) colonies in Minnesota.

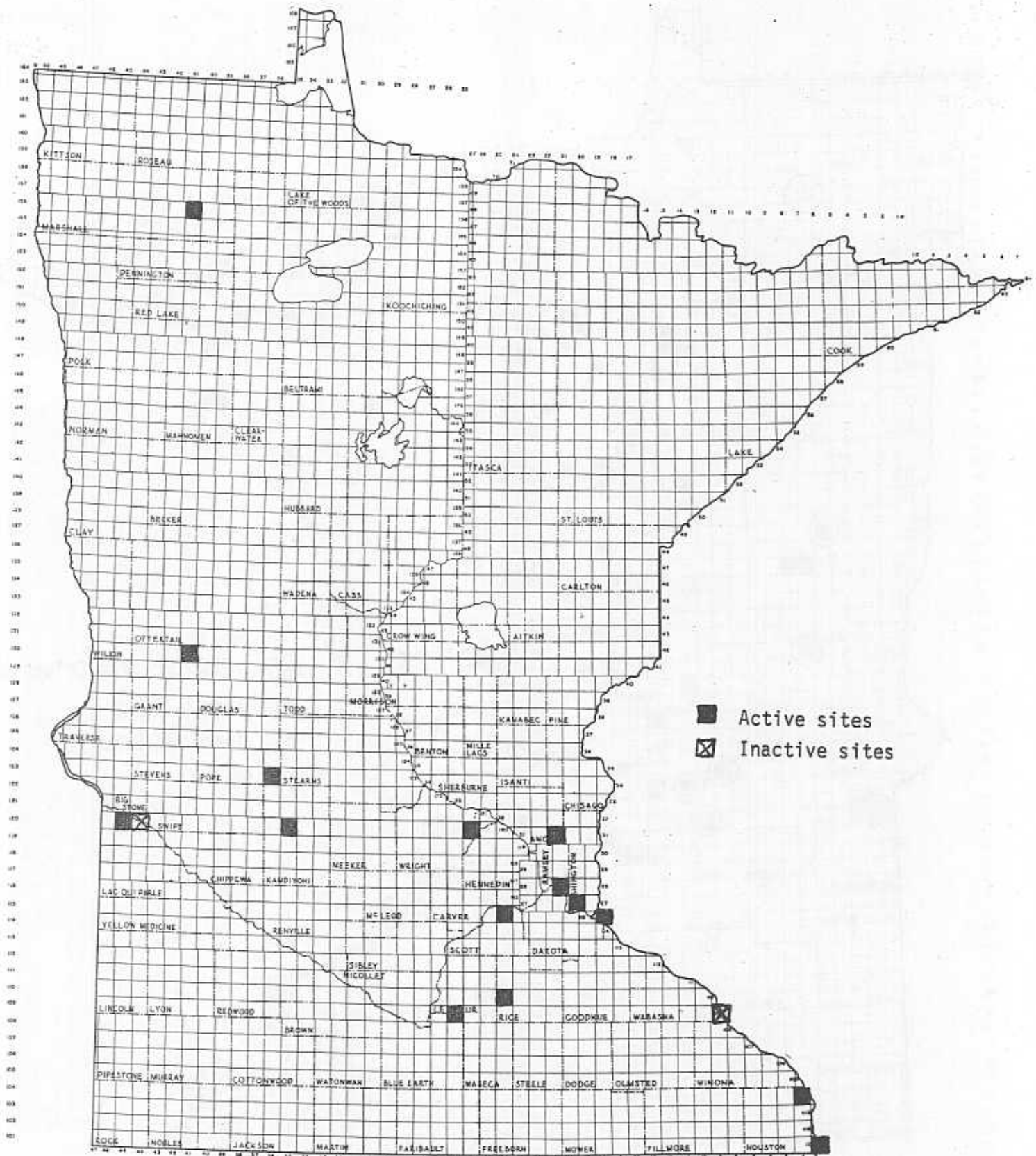


Figure 8. Distribution of Great Egret (*Casmerodius albus*) colonies in Minnesota.

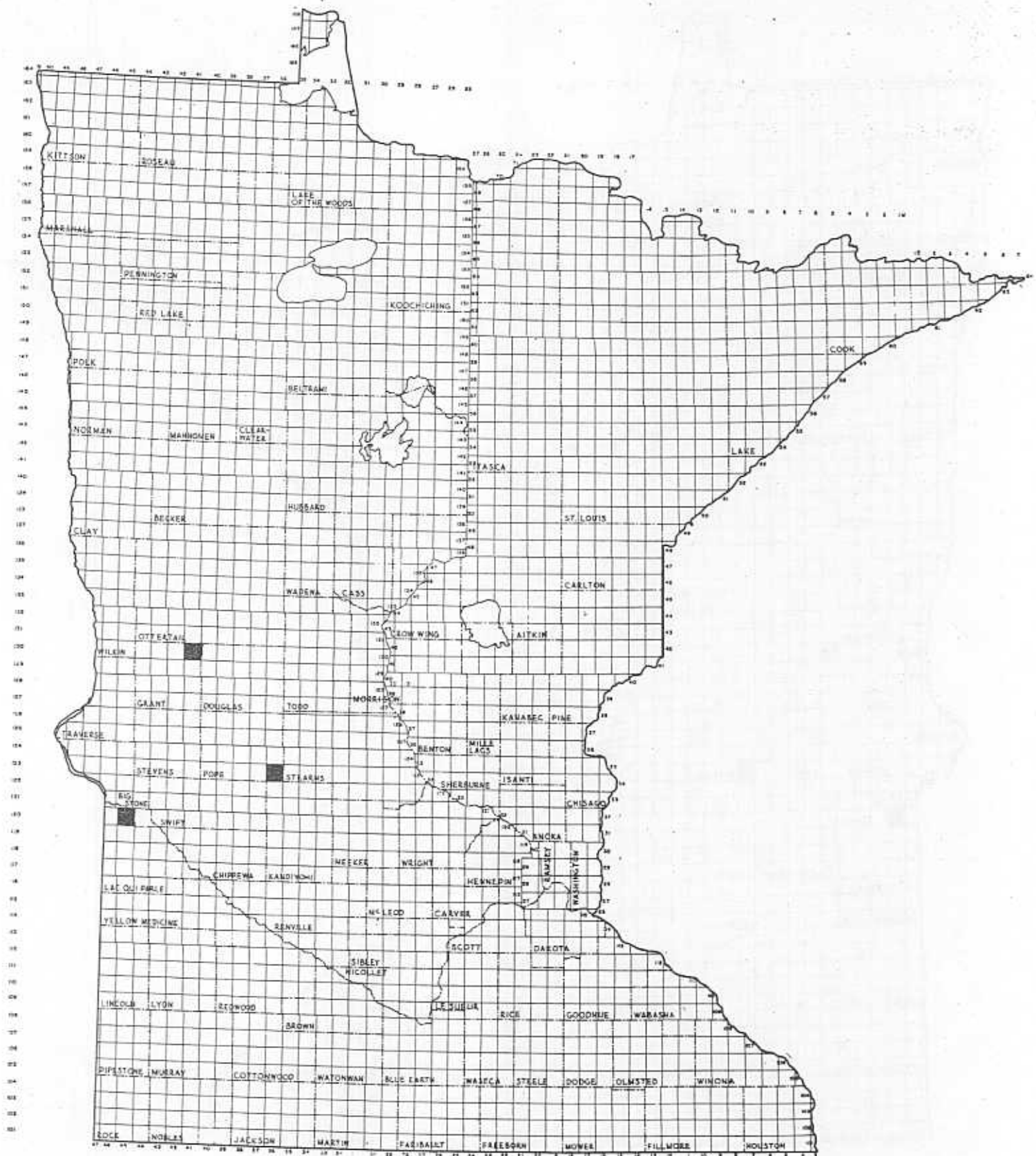


Figure 9. Distribution of Cattle Egret (*Bubulcus ibis*) colonies in Minnesota.

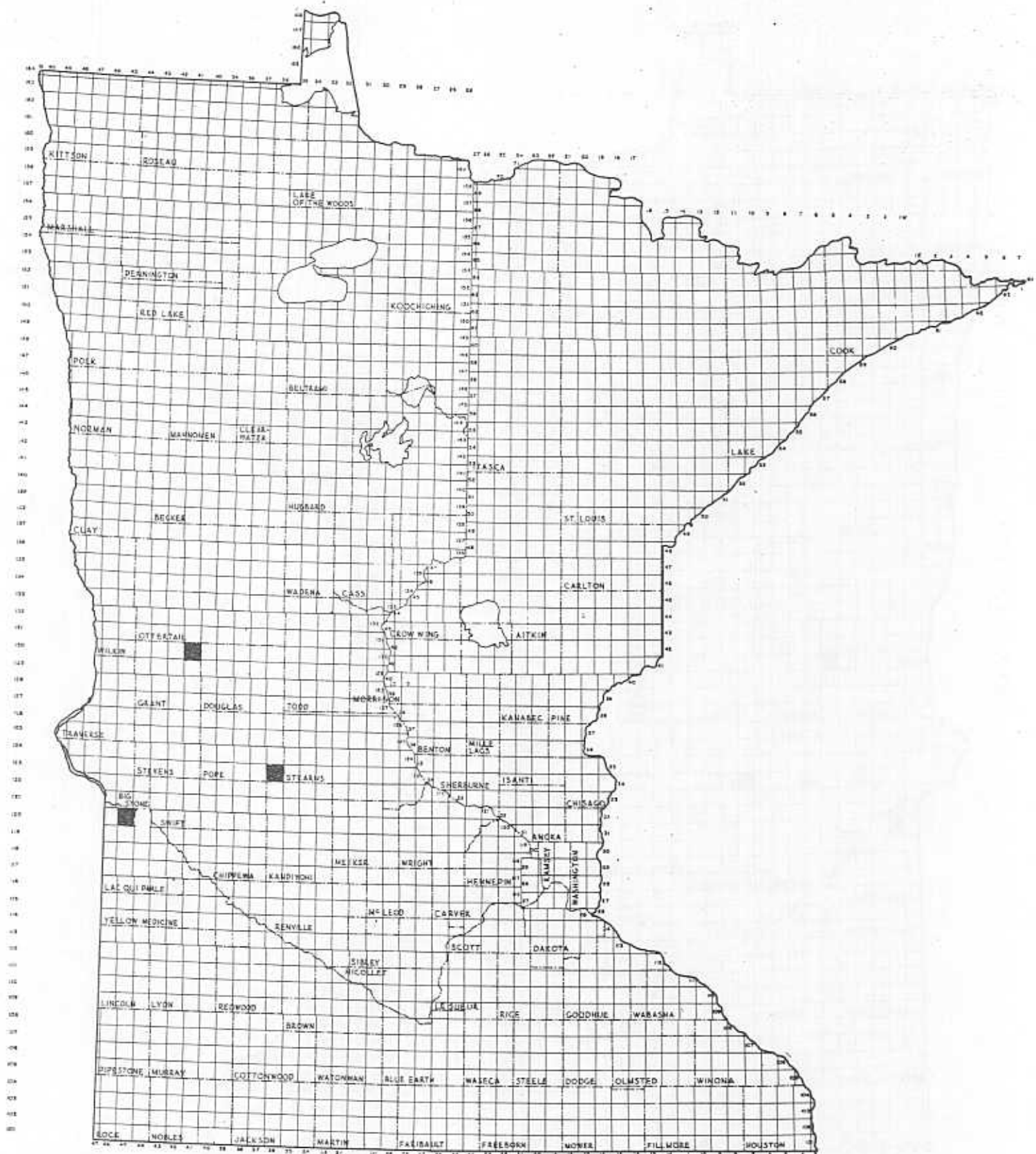


Figure 10. Distribution of Little Blue Heron (*Florida caerulea*) colonies in Minnesota.



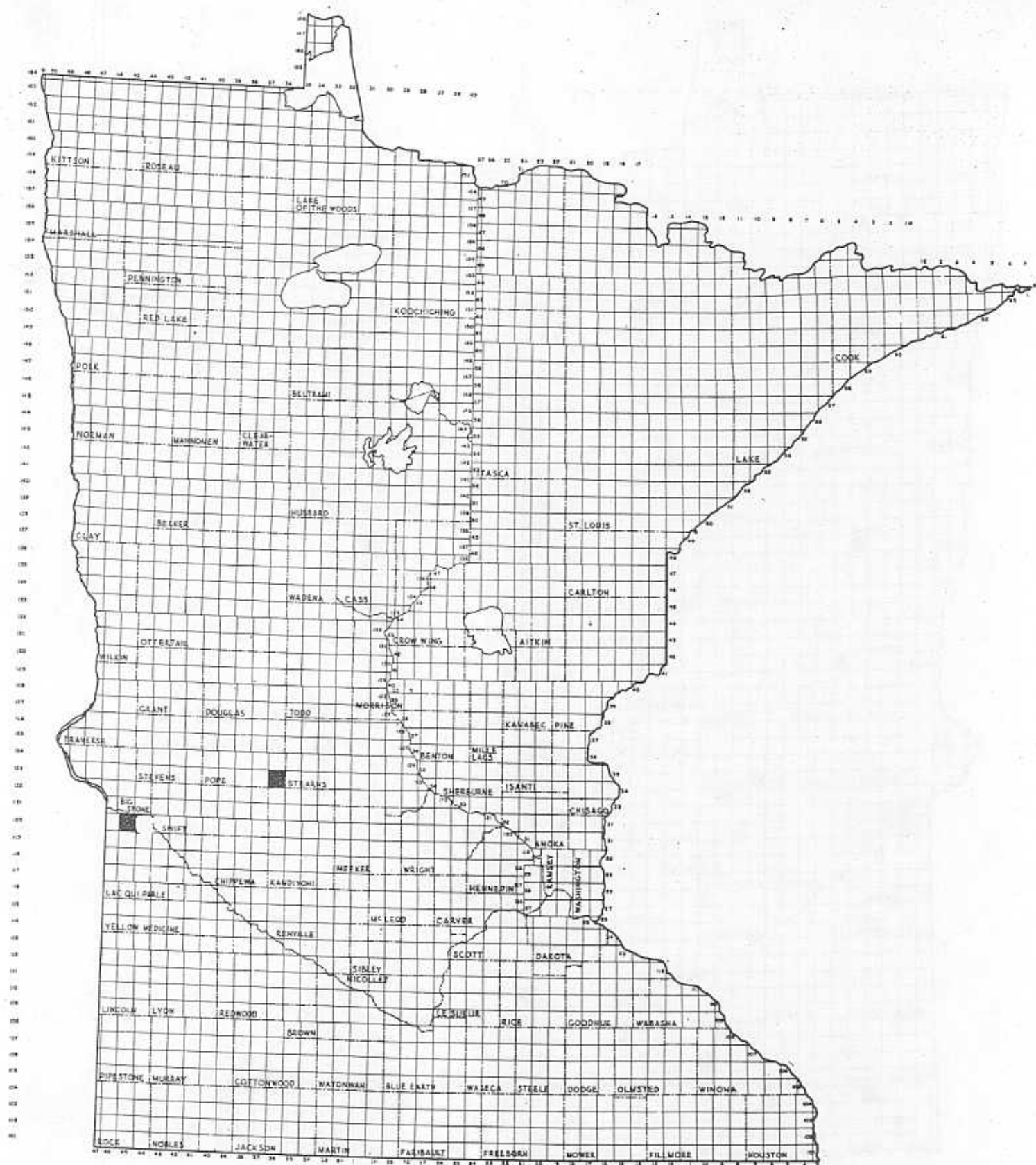


Figure 11. Distribution of Snowy Egret (*Leucophoyx thula*) colonies in Minnesota.



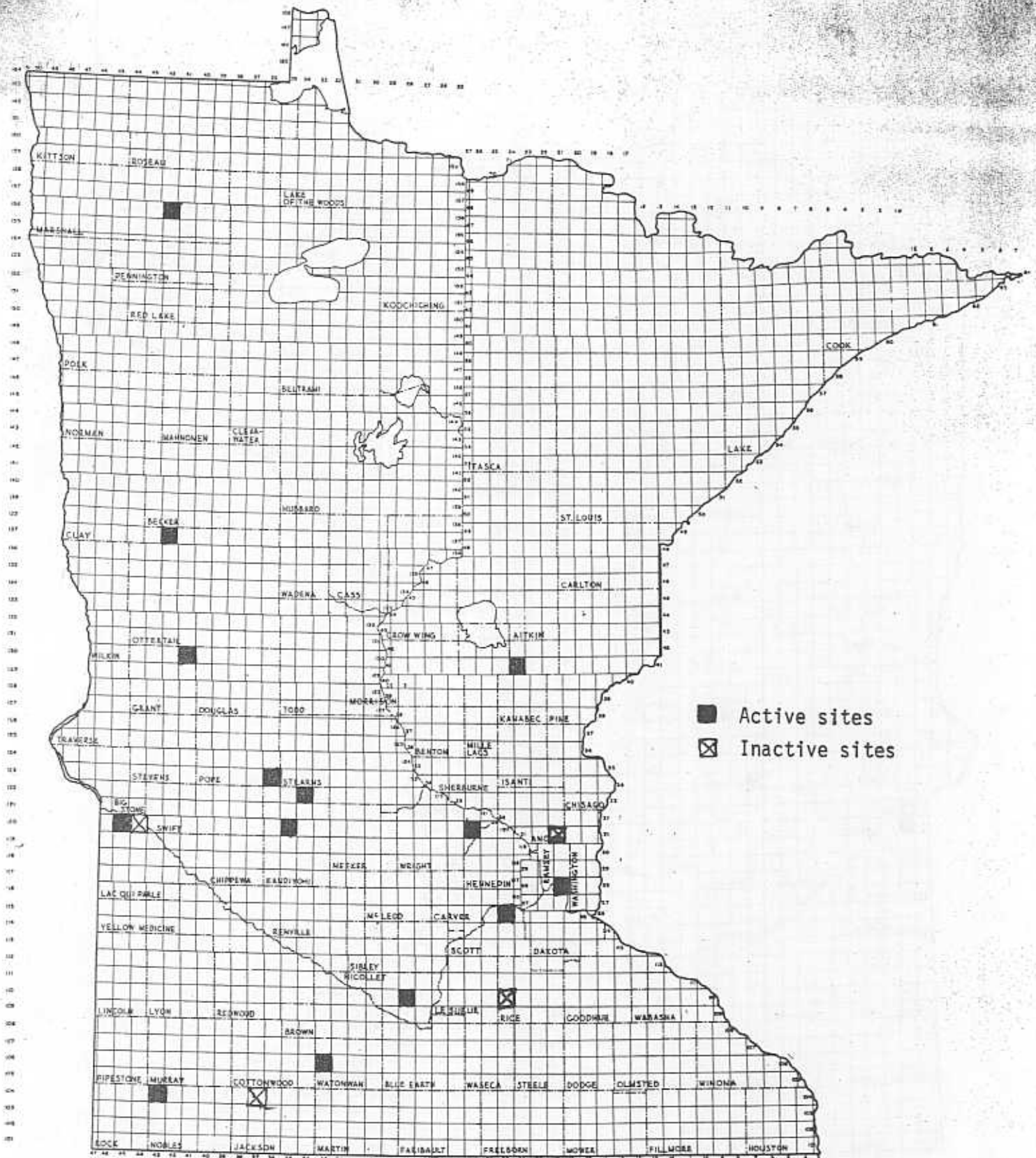


Figure 12. Distribution of Black-Crowned Night Heron (Nycticorax nycticorax) colonies in Minnesota.

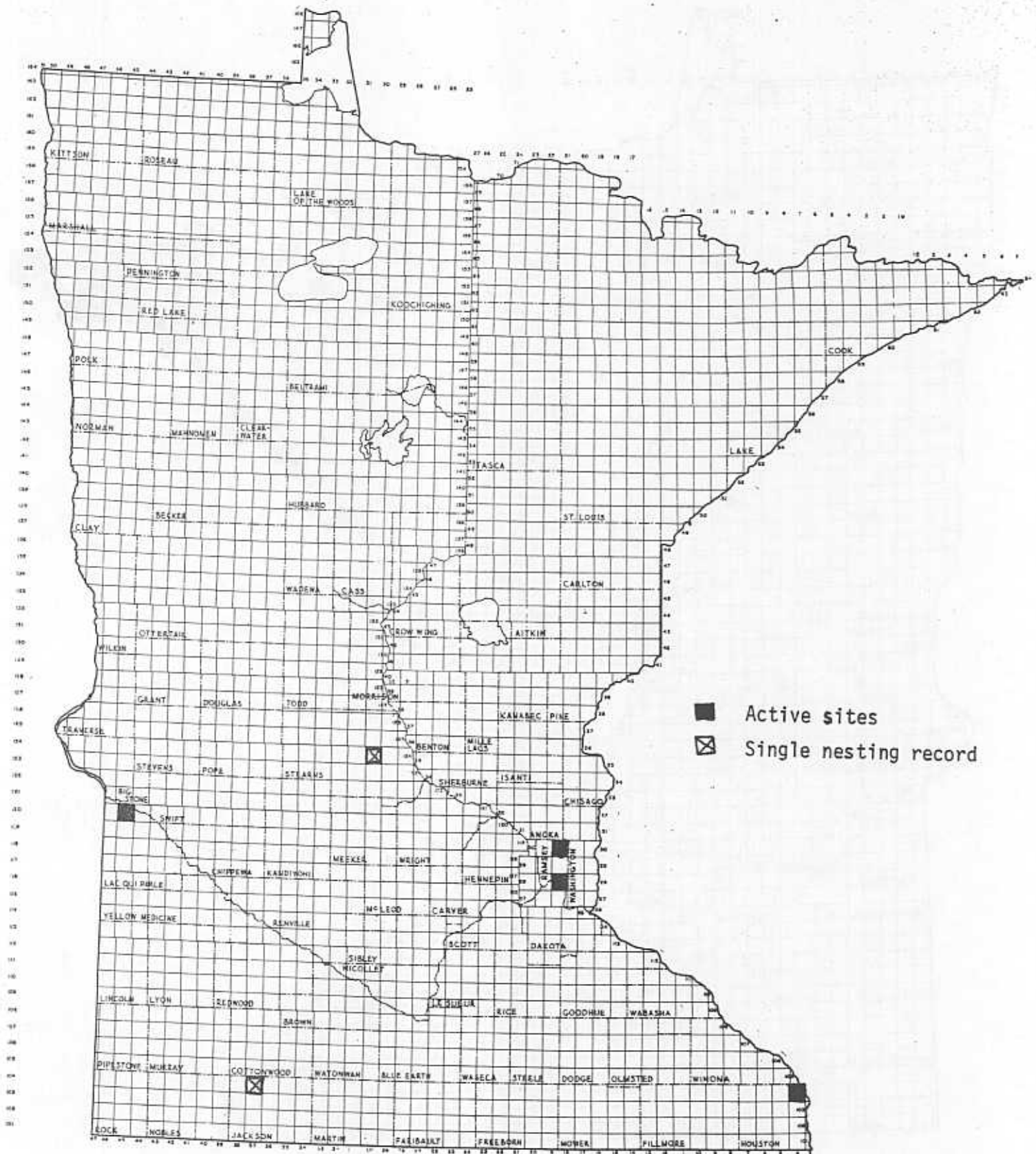


Figure 13. Distribution of Yellow-Crowned Night Heron (*Nyctanassa violacea*) colonies in Minnesota.

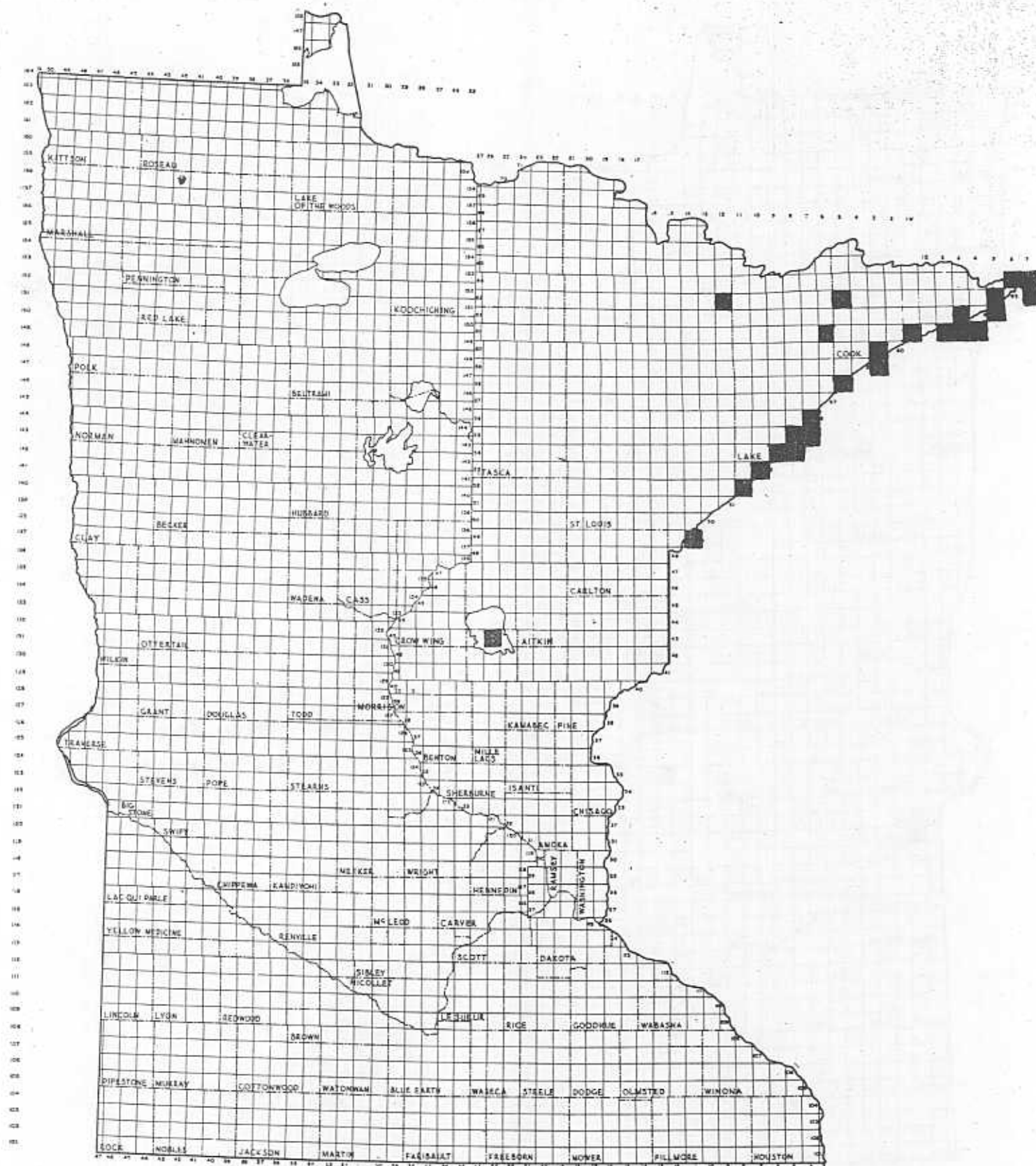


Figure 14. Distribution of Herring Gull (*Larus argentatus*) colonies in Minnesota.

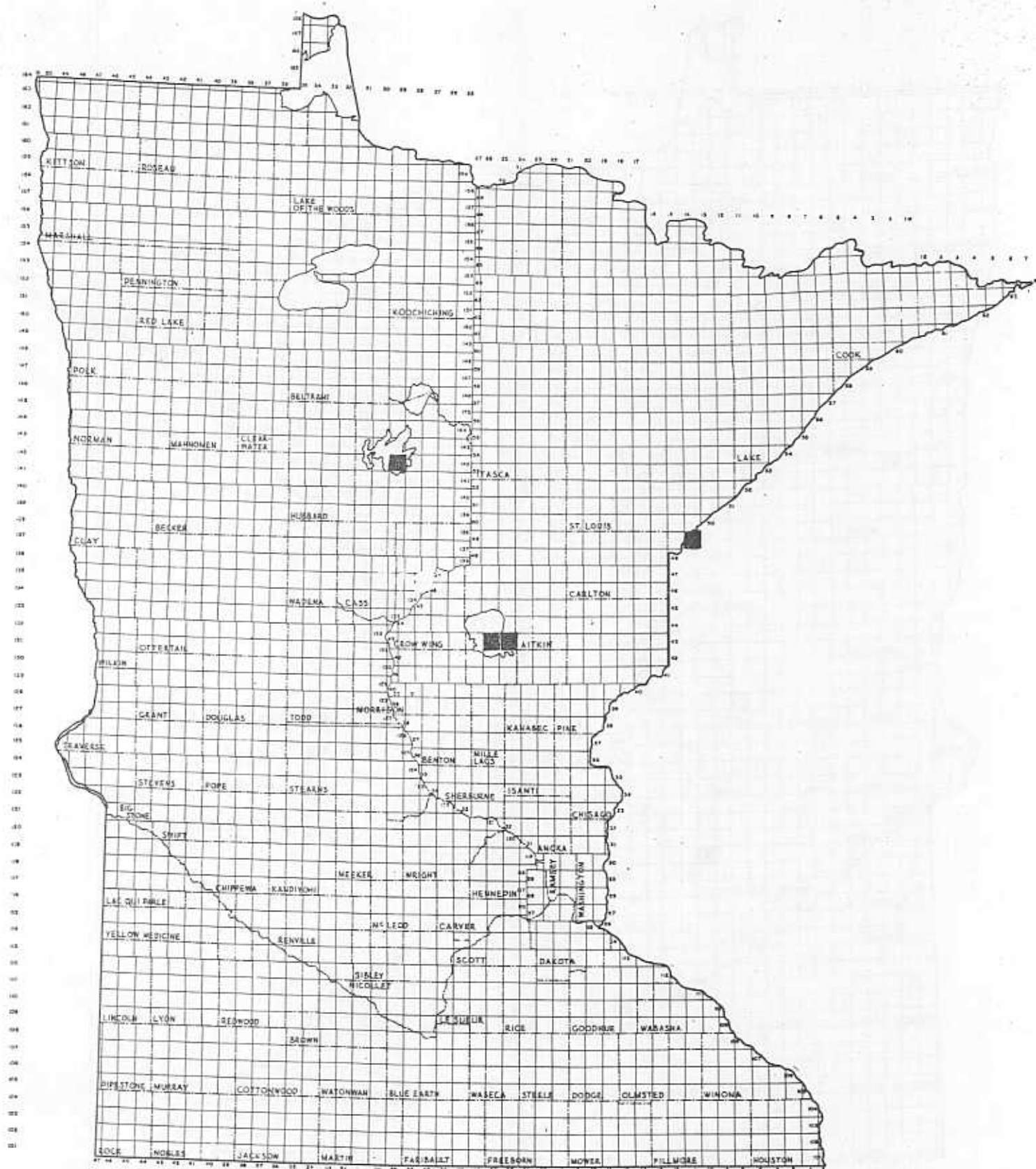


Figure 15. Distribution of Ring-billed Gull (*Larus delawarensis*) colonies in Minnesota.



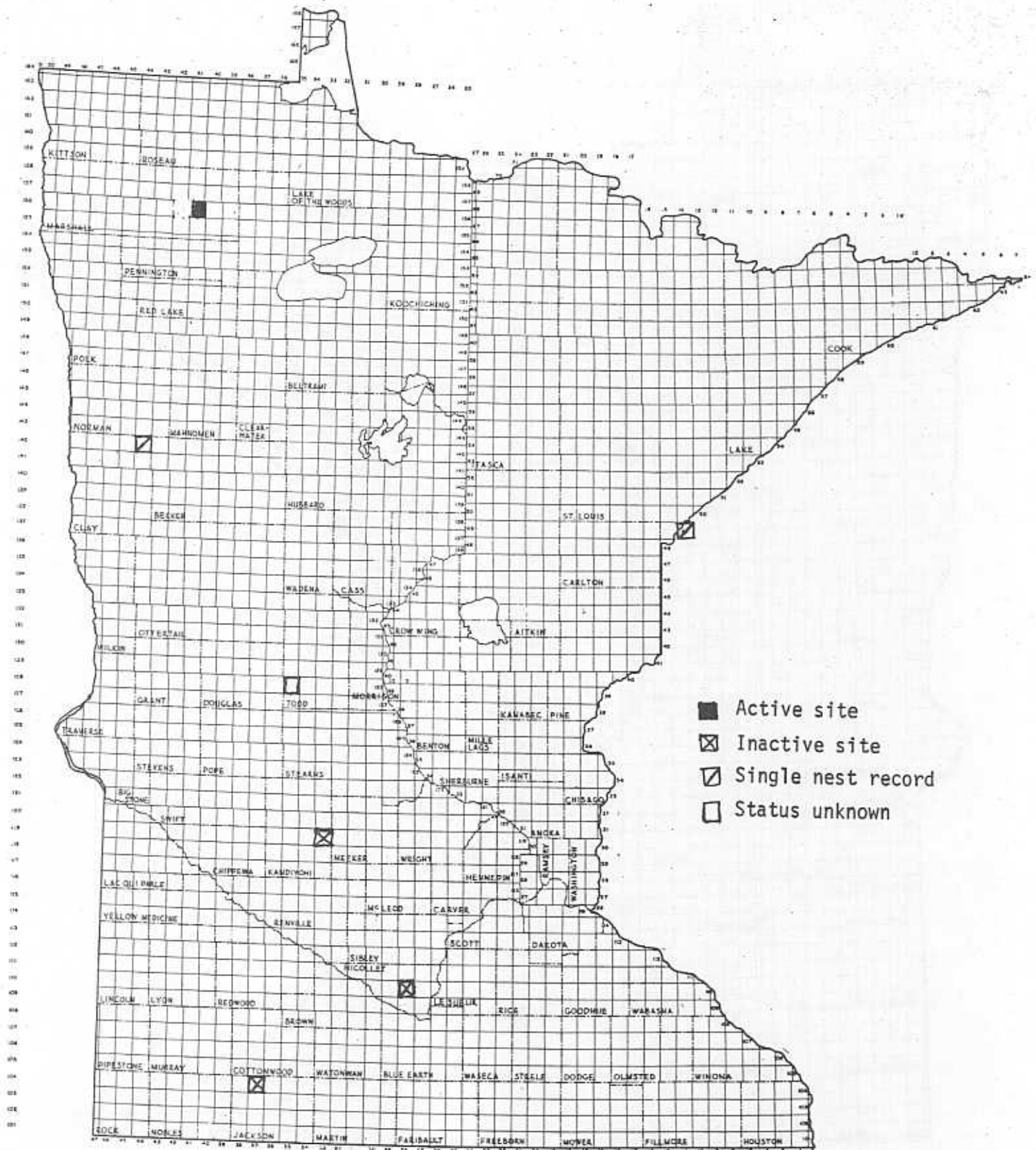


Figure 16. Distribution of Franklin's Gull (*Larus pipixcan*) colonies in Minnesota.

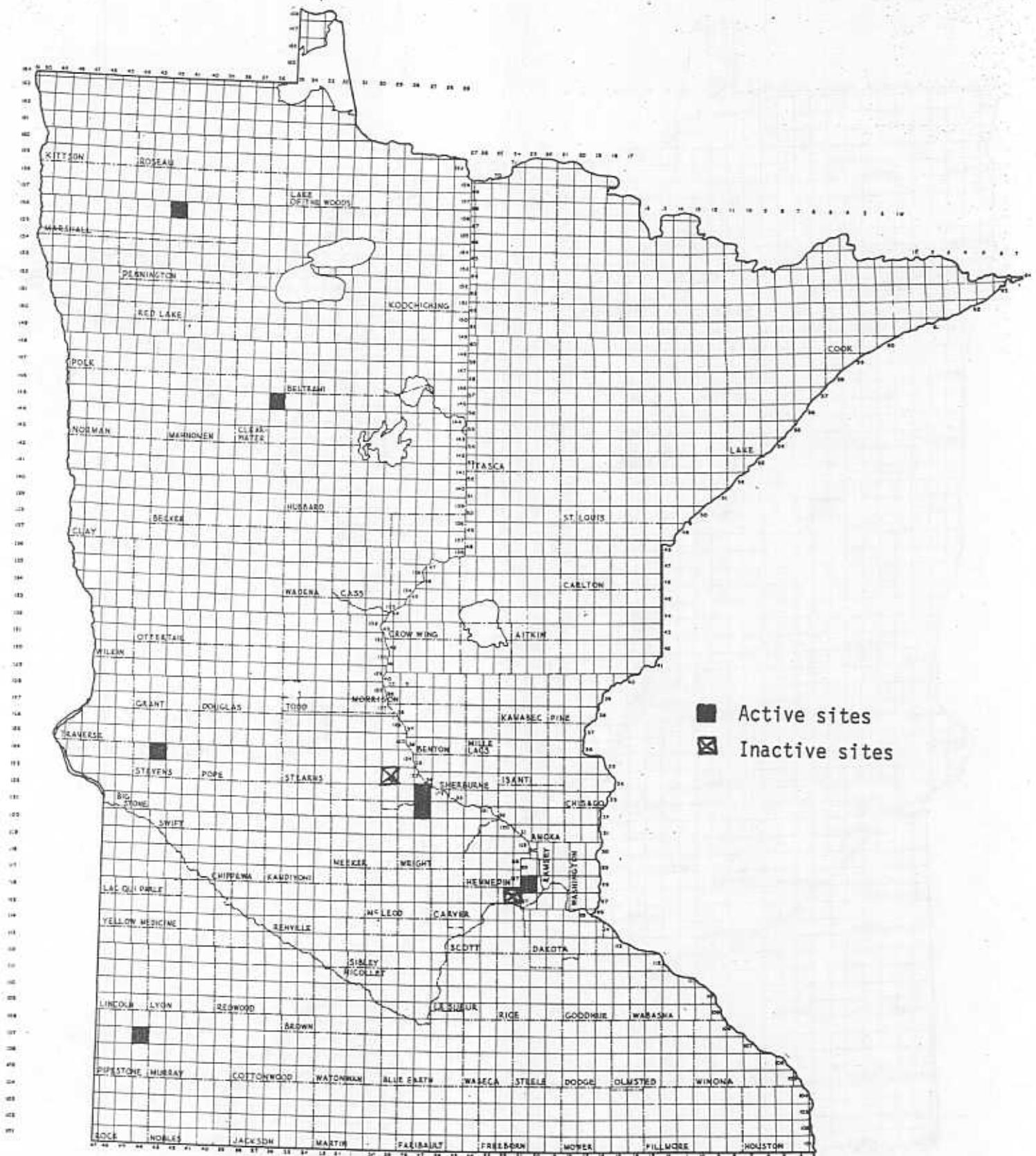


Figure 17. Distribution of Forster's Tern (*Sterna forsteri*) colonies in Minnesota.

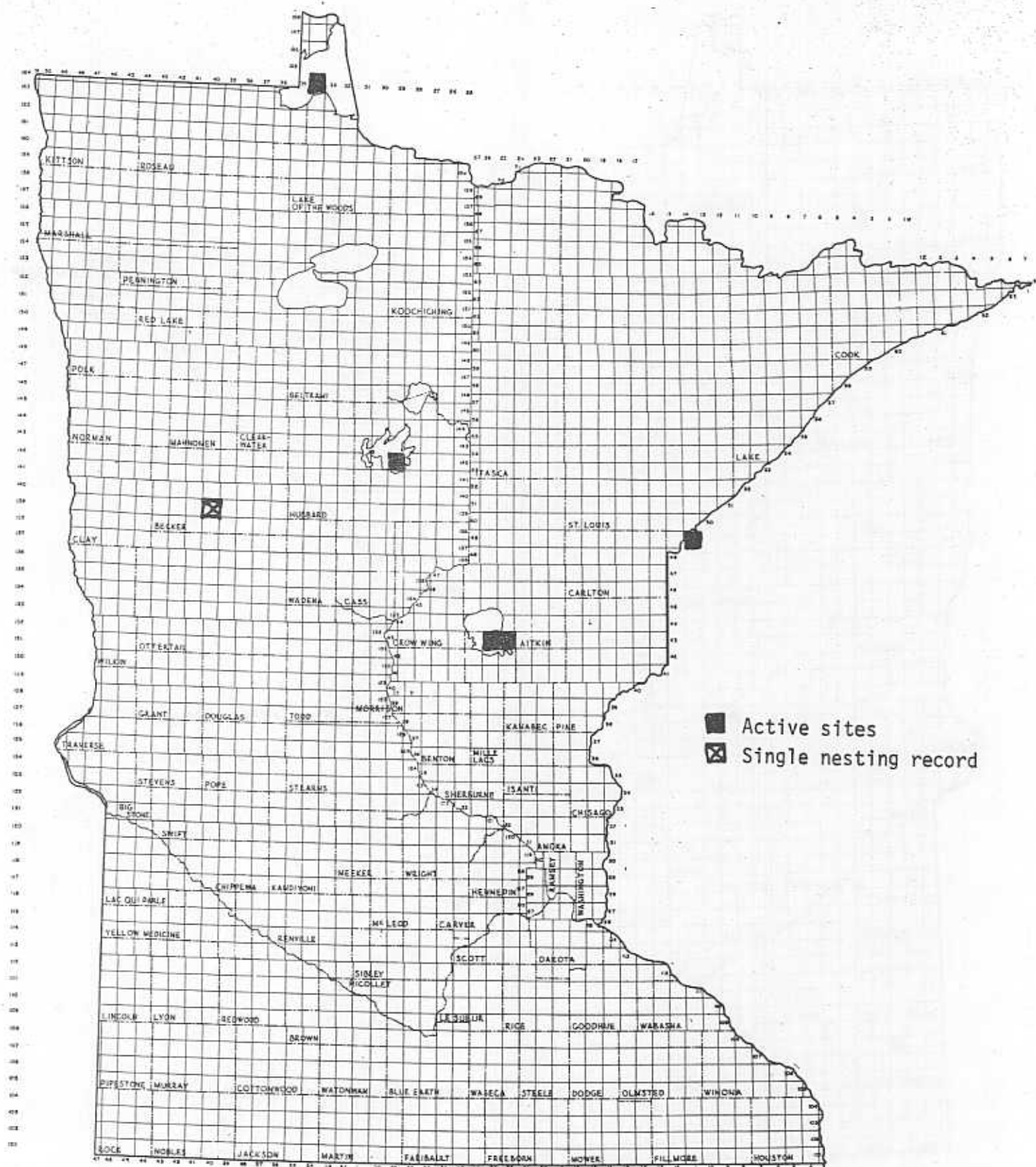


Figure 18. Distribution of Common Tern (*Sterna hirundo*) colonies in Minnesota.

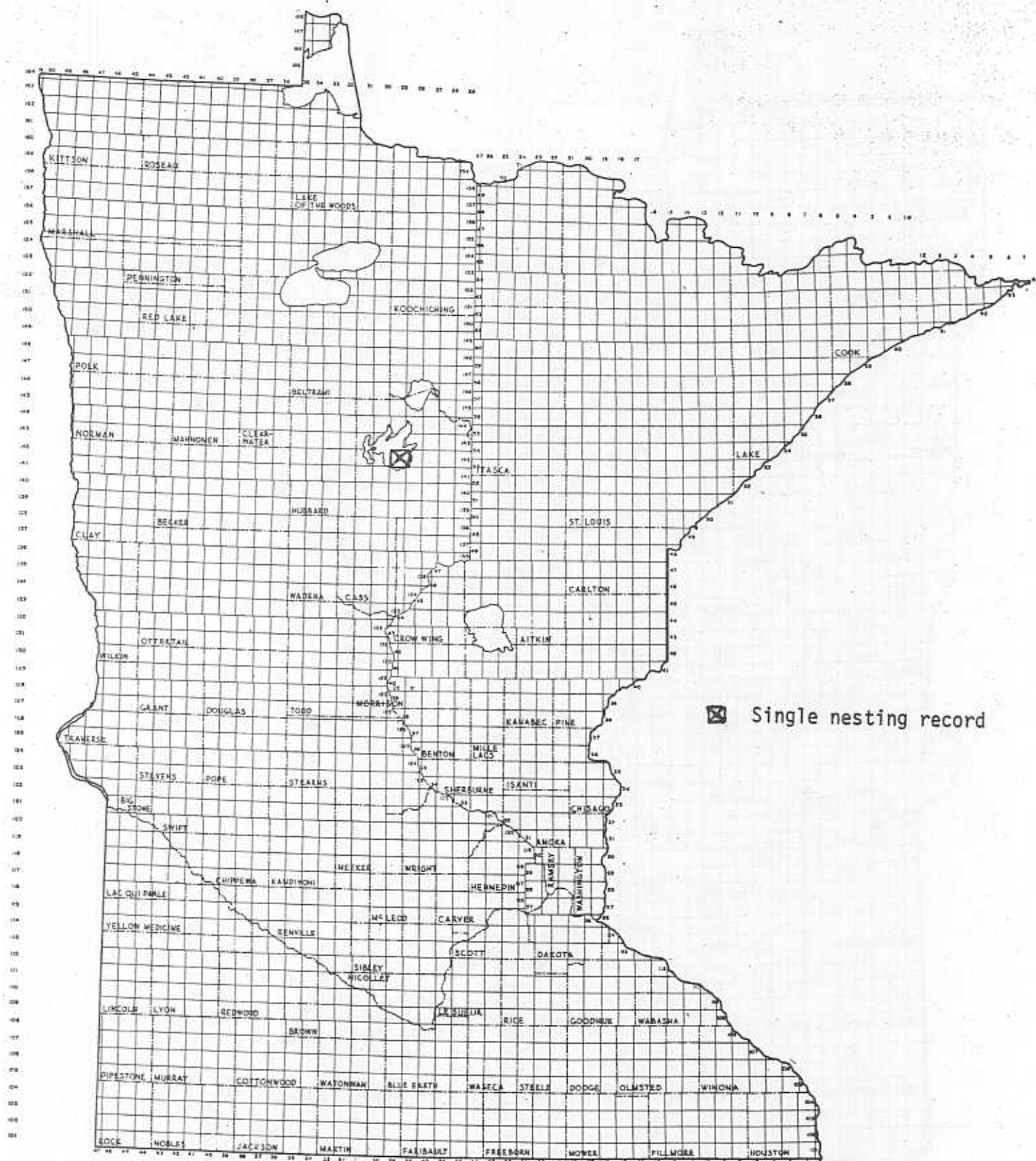


Figure 19. Distribution of Caspian Tern (*Hydroprogne caspia*) colonies in Minnesota.



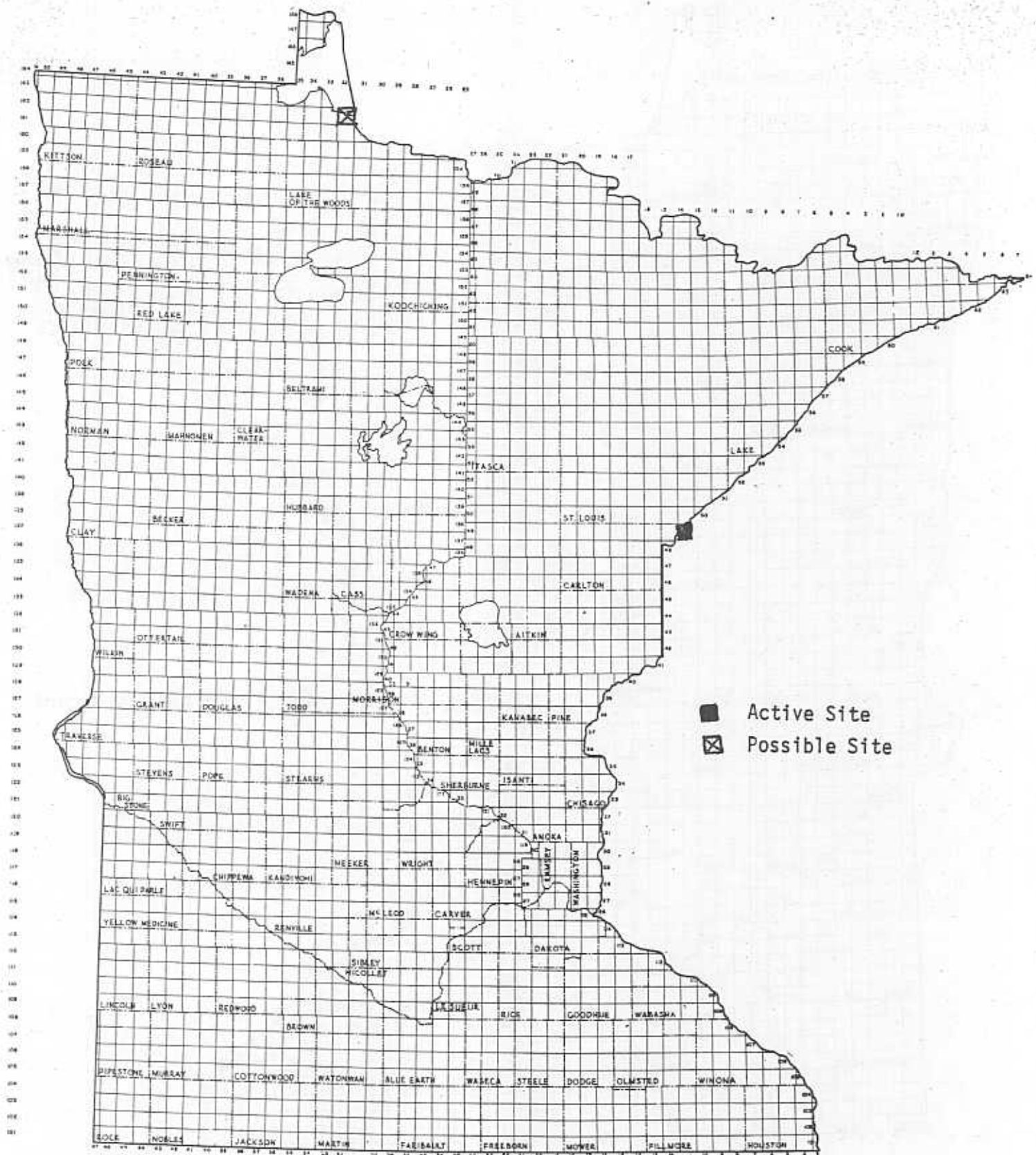


Figure 20. Distribution of Piping Plover (*Charadrius melodus*) colonies in Minnesota.