

Black Tern Sightings in Minnesota: 1990 - 1995

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U.S. Fish and Wildlife Service, Region 3 Nongame Bird Program

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Abstract

A compilation of black tern (*Chlidonias niger*) observations reported from Minnesota during the period of 1990 - 1995, including responses to a 1991 poster survey, yielded information about 454 unique locations where the species was sighted, including 63 locations where nesting was confirmed. These results provide a qualitative description of the current distribution of this species in the state. Black terns were observed in 71 of the state's 87 counties, and the species appears to remain well-distributed throughout the range of appropriate habitat in Minnesota. The relative paucity of observations throughout the state's prairie and prairie-forest transition regions, however, are a reminder of the deterioration and loss of wetland habitat that has followed the conversion of this land to agriculture and other uses.

Introduction

The black tern (*Chlidonias niger*) is a semicolonial bird that breeds in shallow freshwater marshes with emergent vegetation from the northern United States through central Canada, with the core of the population found in Alberta, Saskatchewan, Manitoba, North and South Dakota, and Minnesota (Dunn and Agro 1995). Data from the National Biological Service's Breeding Bird Survey (BBS) indicate that the species' North American and Upper Midwest populations experienced declines during the period of 1966-1979, although these declines may have subsided since then (Sauer 1996, Table 1). Concern over the status of the black tern has resulted in the species being included as a Migratory Nongame Bird of Management Concern by the U.S. Fish and Wildlife Service (USFWS 1995). In addition, the black tern has been designated as Endangered in Ohio, Indiana, and Illinois, and of Special Concern in Iowa and Wisconsin (Hands et.al. 1989). Within Minnesota, black terns have always been common and widely distributed (Eliason 1989), but BBS data again suggest a population decline during the period of 1966-1979, with apparent stabilization since then (Sauer 1996, Table 1).

While Minnesota's population of black terns is likely the largest in the north central United States, and may well be the largest in the entire United States, evidence of past declines from BBS data analyses indicates that the future of the state's population may not be secure. Recognizing the need to gather baseline information on the distribution of black terns within the state, in 1991 the Minnesota Department of Natural Resources' Nongame Wildlife Program (NWP) initiated a qualitative survey of sightings of the species.

Methods and Materials

In early 1991, NWP research staff implemented a "wanted poster" strategy to gather information on the current distribution of black terns in Minnesota. Previously, this tool had been used very effectively in the state to obtain reports on a wide variety of bird, reptile, and mammal species. These successes demonstrated that a widely distributed poster requesting observations from the public would serve as an inexpensive and effective way to determine the current range of the species, provide baseline information for qualitatively monitoring changes in its summer distribution, and identify portions of the state that might be the focus of a more quantitative (and more costly) monitoring program for the species in the future.

NWP staff developed and printed 1,000 copies of a poster with simple descriptive information, an original line drawing, a brief explanation of the survey, and instructions for reporting sightings (Figure 1). In late May, 1991, the poster (along with a cover letter asking that the poster be posted in a prominent place) was mailed to public locations throughout the state, including state parks, DNR field offices, state cooperative extension offices, federal agency offices (e.g., U.S. Fish and Wildlife Service, U.S. Forest Service, Soil Conservation Service), nature centers, and libraries. A press release was used to generate media attention. NWP staff also developed a data form (Figure 2) that was distributed to those DNR personnel likely to receive reports in response to the poster. In some cases, reports were followed up with a field visit to obtain additional information (e.g., to verify nesting activity).

In 1996, NWP staff compiled all reports of black tern observations for Minnesota received by the DNR since 1990. Thus, the results presented here include sightings reported in direct response to the poster distribution, as well as sightings received prior and subsequent to the poster survey.

In compiling observations, distinction was made between those reporting confirmed black tern nesting activity and those reporting black tern sightings, but without confirmation of nesting. For this purpose, reports were considered to confirm nesting if the observer reported seeing either an occupied nest or fledglings. Particularly valuable unpublished sources of recent breeding observations for Minnesota included Faber (1990, 1992), Moen (1991), Brewer (1992), Kautz (1992), and Maxson (1994).

Results

DNR staff compiled a total of 466 reports of black tern sightings generated between 1990 and 1995 by researchers, federal, state, and local agency personnel, and the general public in Minnesota. Of these, 403 (86%) were generated in response to the *Awanted@* poster appeal, and the remaining 63 (14%) were obtained from other sources or activities. Excluding 12 duplicate reports, 454 unique locations of black tern sightings were identified in these reports. These locations are distributed among 321 (12%) of Minnesota's 2594 townships (Figure 3), and fall within 71 (82%) of Minnesota's 87 counties (Figure 4). Among the reports compiled were 66 confirmed reports of nesting black terns, identifying 63 unique locations. These nesting locations were distributed among 66 (3%) of the state's townships and 35 (40%) of the state's counties (Figure 5).

Discussion

The *Awanted@* poster strategy employed in this project was successful in generating black tern sighting reports from around the state, and in educating the public and stimulating interest in the species. Although interpretation of the compiled reports is somewhat limited by a sampling bias (i.e., reports are more likely to be received from areas with more potential observers), the results do provide valuable information on the distribution of black terns in Minnesota. Considering that the vast majority of non-nesting observations were made during the late May to late July nesting season (J. Hines pers. obs.), and that black terns tend to forage near their nests (Cuthbert 1954), it is likely that many of the birds observed in the air were in the vicinity of nesting sites. Consequently, outside of areas subject to a strong sampling bias, the concentration (or lack thereof) of townships in which reports were located can be assumed to reflect the true relative abundance of nesting black terns.

For example, with the exception of a small concentration of general reports around the upper Minnesota River in Big Stone and Lac Qui Parle counties (Figure 3), the agricultural regions of southern and western Minnesota contain relatively few townships in which reports were located.

These regions have lost over 90% of the wetland area present prior to European settlement (Tester 1995), and little appropriate habitat for black terns remains. Similarly, few reports were received from the mostly forested northeastern portion of the state. In contrast, two concentrations of general reports (Figure 3; the band running through Becker, Ottertail, Douglas, Kandiyohi, and Meeker counties, and the cluster around Beltrami, Itasca, Cass, Aitkin, and Crow Wing counties) are clearly coincident with regions of abundant lakes and wetlands. On the other hand, the clustering of reports (both general and nesting) around the Twin Cities metropolitan area (Figures 3 and 5) probably reflects the sampling bias discussed above.

The effort necessary to confirm nesting at a location undoubtedly reduced the number of nesting reports received through this project=s opportunistic strategy of data acquisition. Consequently, it is not surprising that the compilation did not show concentrations of breeding records in those regions where general reports were clustered (Figures 3 and 5). However, it is likely that intensive surveys for black tern nests would be particularly fruitful in those areas with many general reports.

Prior to the compilation presented here, the best data on the breeding distribution of the black tern in Minnesota were provided by Janssen (1987). He reported that the summer range of the black tern is A... throughout most of the state where suitable marsh habitat exists. The exceptions are the northeast where it is not known to breed in large portions of the St. Louis and Koochiching counties; it does not occur in Lake and Cook counties...@. Our results compare favorably with this description. Janssen=s breeding range map (Figure 6) indicates that he had compiled documentation of black tern nesting for 30 counties since between 1970 and 1987. In contrast, we document nesting in 35 counties, of which 17 were among the 30 in Janssen=s map, and 18 were not included by Janssen (Figure 7). No clear pattern is discernable regarding the differences in breeding distribution reflected in these two data sets, although our data show fewer nesting records from counties in the agricultural region (southern and western Minnesota), and more in counties within the regions of more lakes and wetlands (northern and central Minnesota). More data are needed to determine if these differences are real.

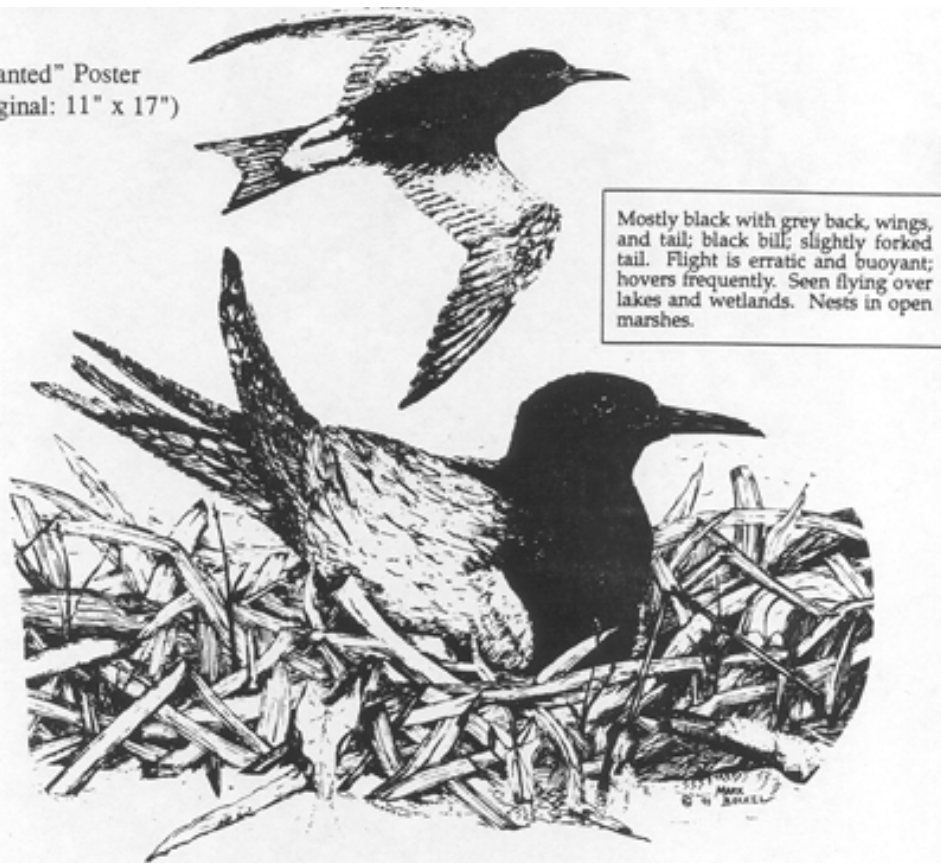
Black terns appear to remain well-distributed throughout those regions in Minnesota where appropriate habitat exists. Although BBS data (Table 1) indicate that the species experienced a significant decline within Minnesota, Upper Midwest, and North America during the period of 1966 - 1979, data from the period of 1980 - 1994 show no such decline. It may be that population levels of this species have stabilized, but continued monitoring will be necessary to verify this conclusion. Certainly, stabilization of Minnesota=s black tern population depends upon the protection and conservation of wetlands throughout the state.

If future BBS data indicate a renewed decline in black tern populations, it may be necessary to initiate a monitoring program for the species. Such a program could be based upon a stratified random sample of those areas of the state in which this report indicates that significant populations of black terns are likely to be found.

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Figure 1. "Wanted" Poster
(original: 11" x 17")



WANTED:

BLACK TERN SIGHTINGS

The Minnesota Department of Natural Resources' Nongame Wildlife Program is concerned about Minnesota's black tern population and is requesting information from the public on this species' distribution between June 1-July 15 (nesting season).

If you see black terns, please note the date, location of lake/wetland (distance from the nearest town or other conspicuous landmark), number of individuals observed, and their behavior. To report your sighting, call the Nongame Wildlife Specialist nearest to you:

Katie Haws, Bemidji:	218-755-2976
Jack Mooty, Grand Rapids:	218-327-4455
Pam Perry, Brainerd:	218-828-2228
John Schladweiler, New Ulm:	507-359-6033
Bonnie Brooks, Rochester:	507-285-7435
Joan Galli, St. Paul:	612-297-2277

or write with phone # and/or return address to:

Nongame Wildlife Program
Minnesota DNR
Box 7, 500 Lafayette Rd.
St. Paul, MN 55155-4007

Figure 2. Data Form
(original: two-sided)

FIELD VISIT

1991 Black Tern Survey

Please return form to:
MN DNR Nongame Wildlife Program
Box 7, 500 Lafayette Road
St. Paul, MN 55155-4007
(612) 297-2277

Field verification date _____ Name _____

Total number seen _____ Adults _____ Juveniles _____

Protected Water # _____

Lake # _____

Not Protected Water _____

Draw map below of the site along with description of habitat. Indicate the closest main road, developed areas, construction sites, etc. Also include location of black terns and nests, if known.

Additional comments:

Topo map # _____

Lake/Wetland _____

County _____

Observer _____

Address _____

Phone # _____

Location:

Lake/Wetland name _____ County _____

Legal description: T _____ R _____ Sec _____ Lake/Wetland size _____ acres

Direction to site from nearest town: _____

Public access: Yes No

Do your observations refer to: Entire Lake/Wetland _____ Portion of Lake/Wetland _____

How often did you observe terns on this lake/wetland?

1. Only on one or two days? (indicated dates) _____
2. Several days? (indicate month(s)) _____
3. Most weekends during the summer? _____
4. All summer? (indicate initial and last date seen) _____

Adults:

Number of adults observed? _____

Frequency of observation in the same area _____

Adults observed: (circle) feeding only _____ nesting observed _____ nesting assumed _____

Nests:

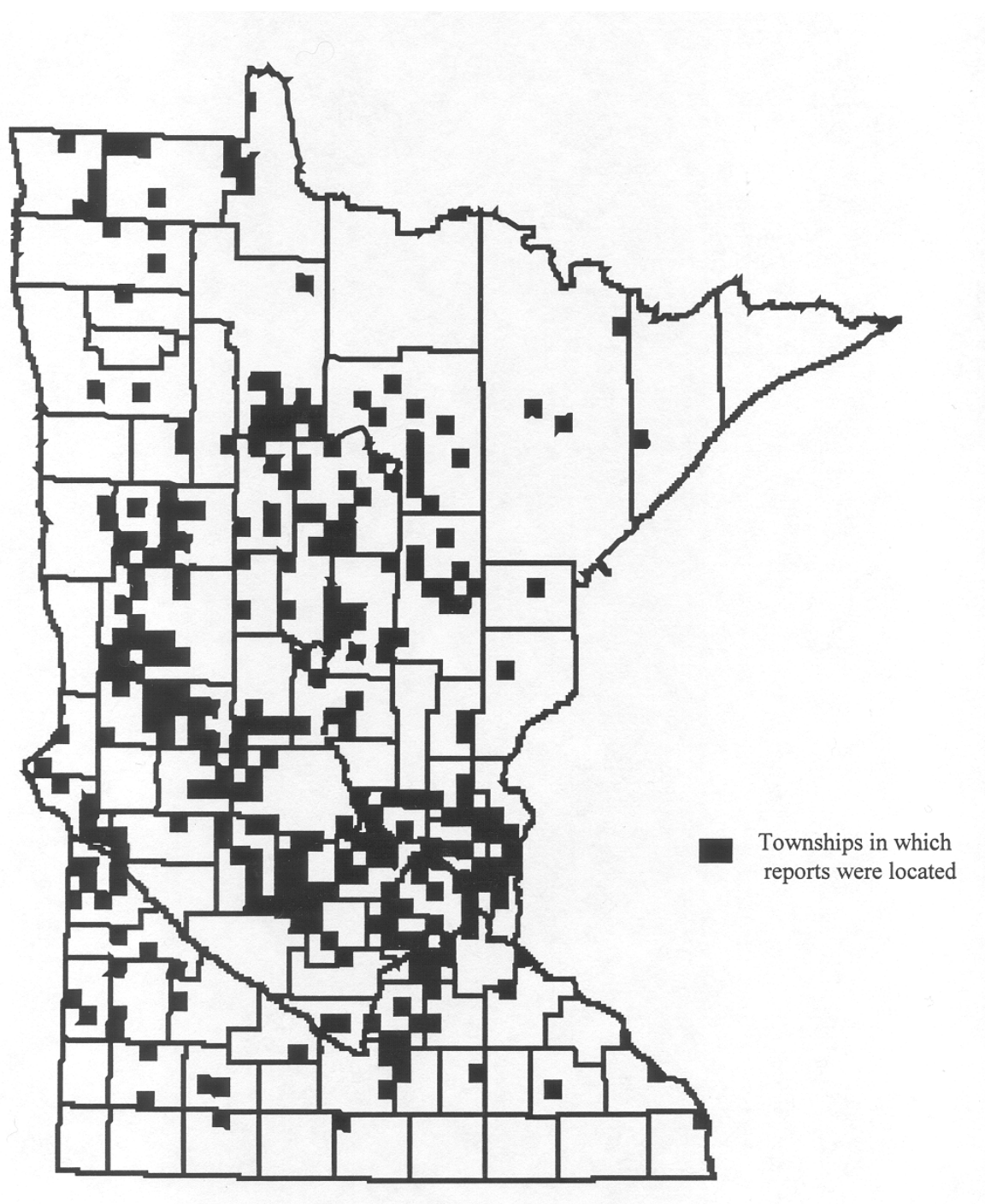
Number of nests observed (if any)? _____

Chicks observed? Yes No

Report taken by _____

Date _____

Figure 3. Distribution of black tern sighting reports, by township



A map of Minnesota with its 87 counties outlined. Each county is labeled with its name and the number of electoral votes it is entitled to. The numbers are as follows:

- KITTSOP: 8
- ROSEAU: 11
- MARSHALL: 4
- POLK: 2
- PENNINGTON: 2
- RED LAKE: 2
- CLEARWATER: 1
- NORMAN: 2
- MAHONOMEN: 2
- CLAY: 2
- BECKER: 16
- WILKIN: 2
- OTTERTAIL: 26
- GRANT: 7
- DOUGLAS: 15
- STEVENS: 5
- POPE: 5
- TRaverse: 2
- BIG STONE: 7
- SWIFT: 3
- CHIPPEWA: 18
- LAC QUI PARLE: 10
- YELLOW MEDICINE: 5
- LINCOLN: 2
- LYON: 3
- REDWOOD: 1
- BROWN: 1
- PIPESTONE: 3
- MURRAY: 3
- COTTONWOOD: 2
- WATONWAN: 1
- BLUE EARTH: 5
- WASECA: 2
- STEELE: 2
- DODGE: 1
- OLMSTED: 1
- WINONA: 3
- ROCK: 2
- NOBLES: 1
- JACKSON: 1
- MARTIN: 1
- FARIBAULT: 1
- FREEBORN: 2
- MOWER: 2
- FILLMORE: 2
- HOUSTON: 2
- LAKE OF THE WOODS: 1
- BELTRAMI: 1
- KOOCHICHING: 1
- ITASCA: 15
- ST. LOUIS: 3
- LAKE: 2
- COOK: 2
- HUBBARD: 8
- CASS: 21
- AITKIN: 12
- CROW WING: 17
- KANABEC: 3
- MORRISON: 12
- BENTON: 8
- MILLE LACS: 6
- ISANTI: 3
- ANOKA: 10
- WASHINGTON: 10
- SHERBURNE: 8
- WRIGHT: 12
- McLEOD: 5
- CARVER: 6
- SIBLEY: 2
- NICOLLET: 4
- LESUEUR: 5
- RICE: 2
- GOODHUE: 2
- WABASHA: 2

Figure 5. Distribution of confirmed black tern nesting reports, by township

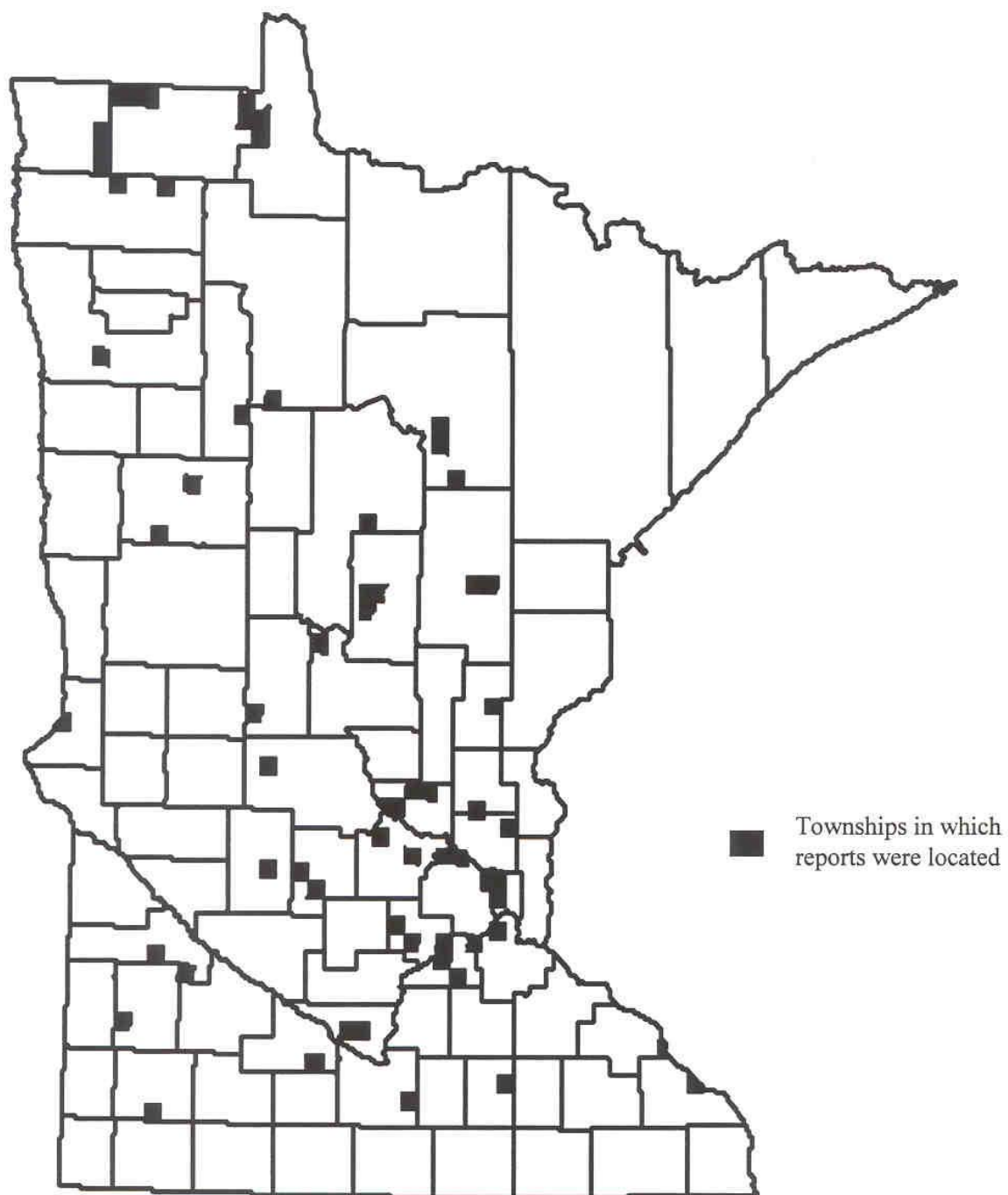


Figure 6. Breeding range of black terns in Minnesota (from Janssen 1987)
(shaded area indicates approximate breeding range; dots indicate counties with confirmed breeding records for the period 1970-1987)

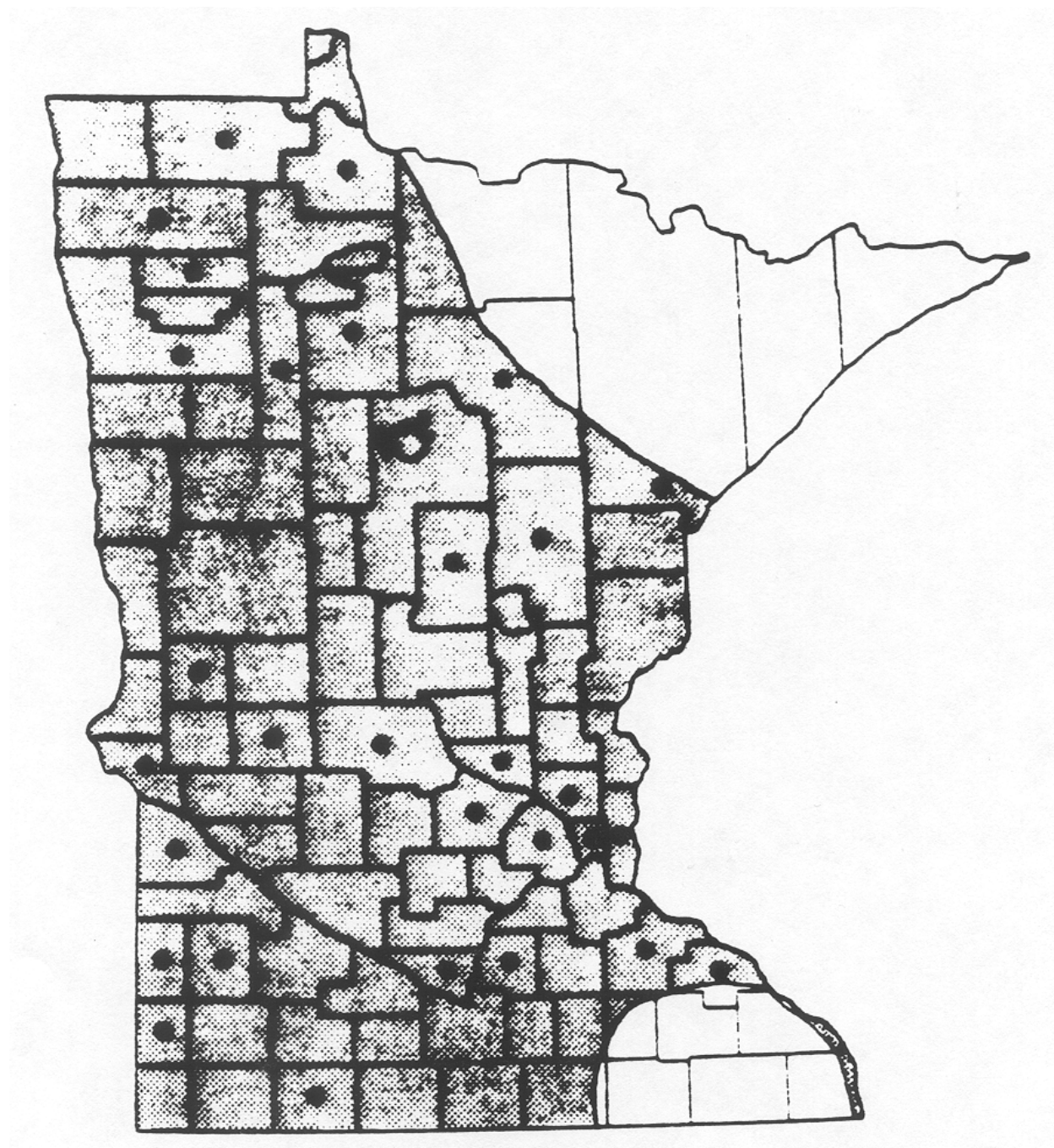


Figure 7. Comparison of county breeding records: 1970-1987 and 1990-1995

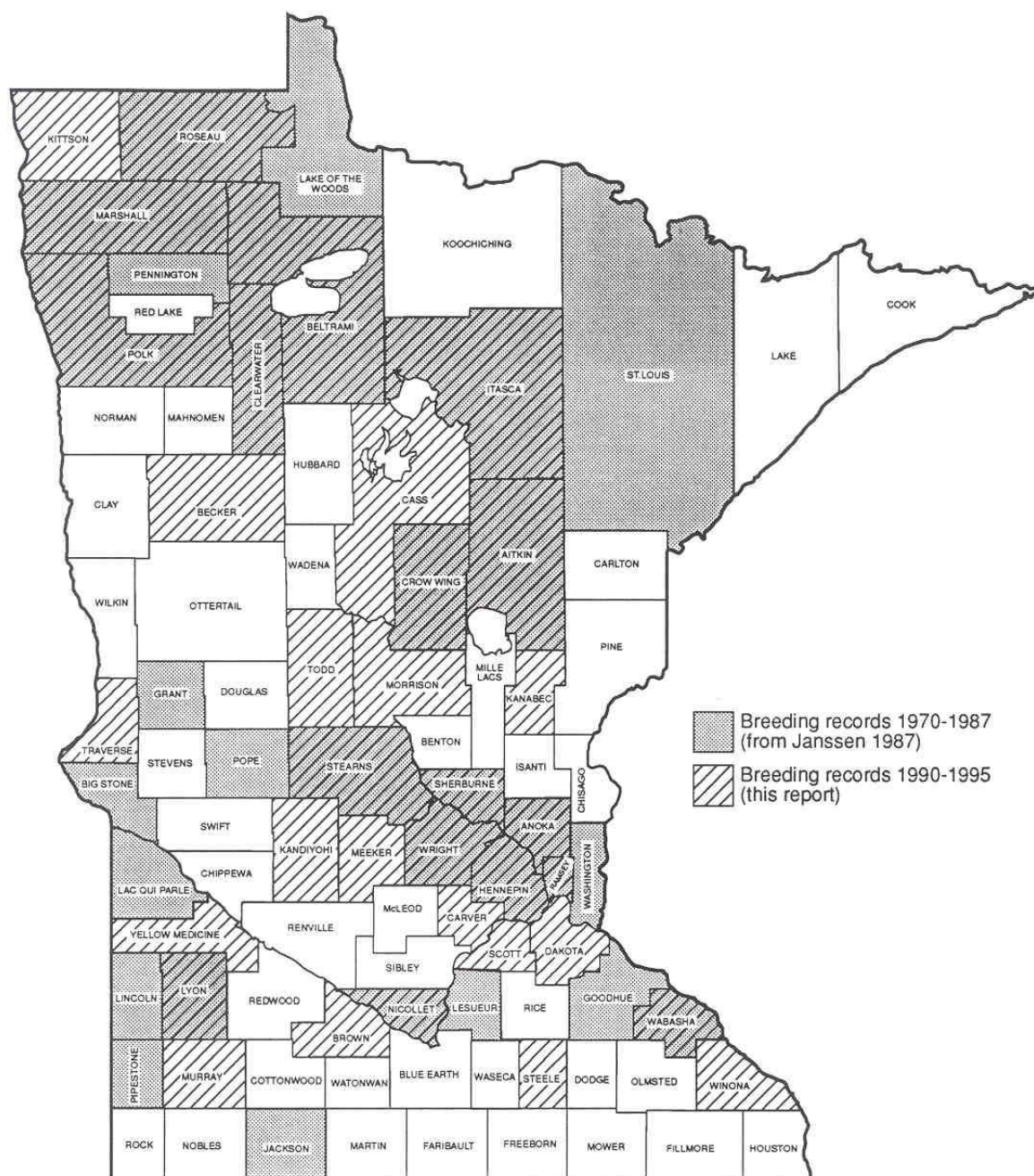


Table 1. Breeding Bird Survey data for the black tern in Minnesota (Sauer et.al. 1996)
 (statistical significance: ns= not significant; *=P<0.10; **=P<0.05; ***=P<0.01)

<u>Area of Analysis</u>	<u>Period of Analysis</u>		
	<u>1966 - 1994</u>	<u>1966 - 1979</u>	<u>1980 - 1994</u>
<u>Minnesota</u>			
change per year	-5.3%	-5.8%	-3.0%
number of routes	33	23	24
statistical significance	**	*	ns
<u>Upper Midwest</u>			
change per year	-5.4%	-5.0%	-1.7%
number of routes	68	54	40
statistical significance	***	**	ns
<u>U.S. and Canada</u>			
change per year	-2.1%	-7.6%	0.1%
number of routes	270	172	198
statistical significance	ns	***	ns