

STATUS OF THE ROSEATE TERN IN CANADA

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Abstract.—The Roseate Tern (*Sterna dougallii*) population in northeastern North America has decreased markedly over the last 100 yrs, and is presently around 3100 breeding pairs, of which 103-127 breed in Canada, almost exclusively in Nova Scotia. The number of Roseate Terns in eastern Canada has probably always been relatively small, but strong evidence suggests that the population has declined recently. Roseate Terns in Canada and the United States are still threatened by gulls and mainland predators on the breeding grounds, and human predators on the wintering grounds. The Roseate Terns' status in Canada is *Threatened*.

STATUS DE *STERNA DOUGALLII* EN CÁNADA

Sinopsis.—Durante los últimos 100 años las poblaciones de *Sterna dougallii* han ido mermando en número en el noreste de Norte América. La población se estima en unos 3100 pares de adultos de los cuales entre 103-127 se reproducen en Nova Scotia, Cánada. La población de estas aves en Cánada probablemente nunca ha sido numerosa, sin embargo, hay evidencia que sugiere que ultimamente la misma se ha reducido. Estas gaviotas todavía están amenazadas en los Estados Unidos y el Cánada por otras gaviotas y depredadores que se encuentran en sus áreas de anidamiento, y además por humanos en aquellas áreas en donde pasan el invierno. Se recomienda se considere el status del ave como amenazada en Cánada.

Our knowledge of population size and status of the Roseate Tern (*Sterna dougallii*) in eastern North America has increased dramatically since 1970, when a major effort to survey tern colonies in the northeastern United States and maritime Canada began. These data allow estimates of recent changes in population size and status in the three provinces where Roseate Terns breed in Canada. The present report reviews the breeding records and selected sight records of the Roseate Tern in eastern Canada.

The Roseate Tern is a marine species that breeds mostly on tropical and subtropical islands, with only a very restricted breeding range in temperate and boreal zones. Its distribution within the Americas is limited to the Atlantic coast from maritime Canada to Long Island, New York, and from the Florida Keys to the Lesser Antilles (Fig. 1). The present distribution is concentrated in Massachusetts owing to declines at the edges of the breeding range. It formerly bred abundantly in New Jersey, but only a few pairs do so today (Burger in Kress et al. 1983, Nisbet

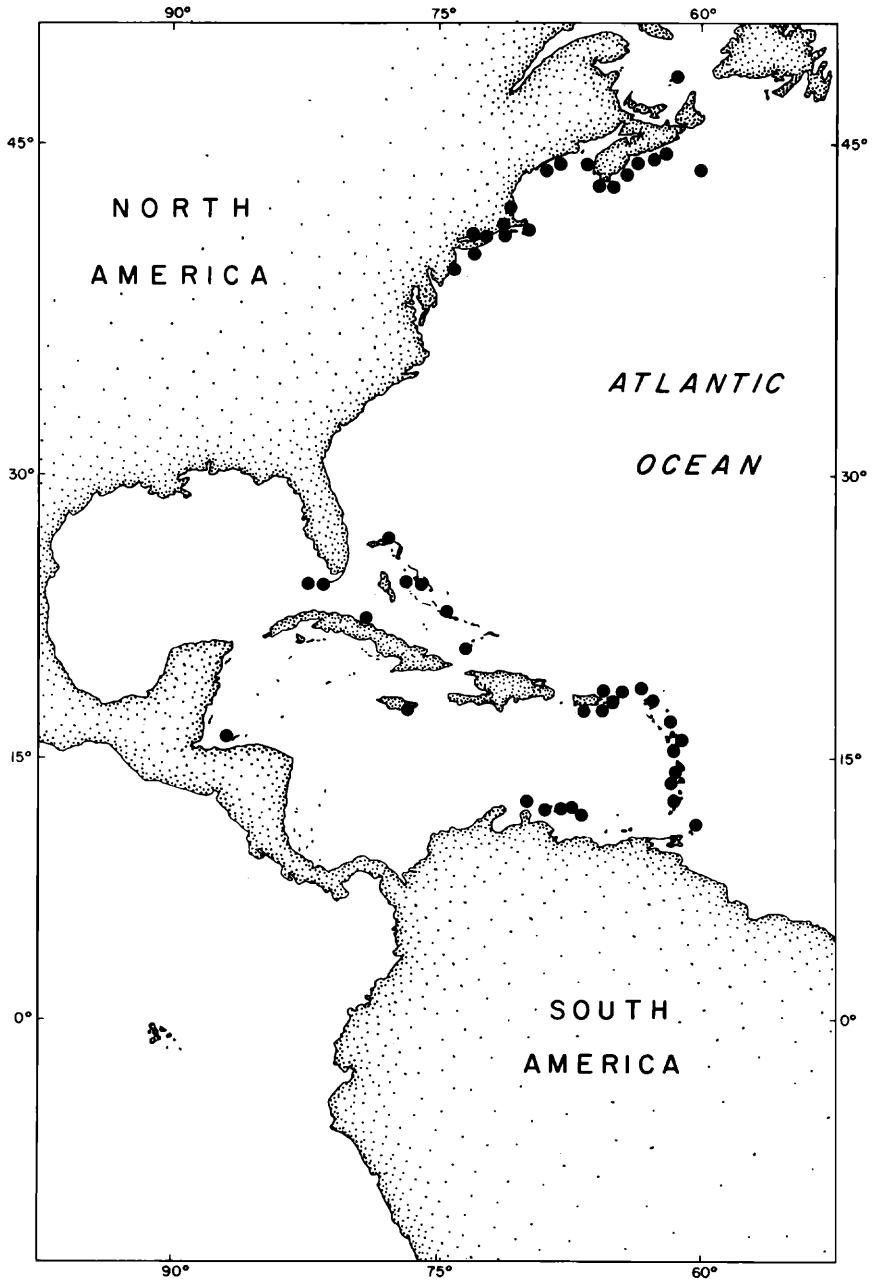


FIGURE 1. The current breeding distribution of the Roseate Tern in eastern North America and the Caribbean (after Nisbet 1980, Kress et al. 1983, Clapp and Buckley 1984, van Halewyn and Norton 1984, Sprunt 1984, this study).

1980). There was a single nesting record in North Carolina in 1973 (Soots and Parnell 1975). The Roseate Tern formerly bred also in Maryland, Virginia (Nisbet 1980), and in Bermuda (Reid 1884), where it now occurs only as a rare migrant (Wingate 1959).

Breeding populations of Roseate Terns in Massachusetts have decreased, from 7500–8000 pairs in 1941, to 4800 pairs in 1952, where they remained until 1972, then rapidly dropped to a low of 2600 pairs in 1978 (Nisbet 1980). Numbers are now around 3100 pairs (Kress et al. 1983). Roseate Terns have never been common in eastern Canada. Tufts (1962) summarized the status of the Roseate Tern as rare and declining. Recently, there has been more effort to locate and census Roseate Terns in eastern Canada.

Most Roseate Terns breeding in northeastern North America migrate to their wintering grounds during September. They spend the winter along the north shore of South America, especially northeastern Guyana, south to Brazil (Nisbet 1984).

RESULTS

Quebec.—The only location in Quebec where Roseate Terns have been recorded and suspected to breed is the Magdalen Islands, about 100 km north of Prince Edward Island, in the Gulf of St. Lawrence. Breeding is unconfirmed. Based on several sightings of adult Roseate Terns flying within two Common (*Sterna hirundo*) and Arctic tern (*S. paradisaea*) colonies, up to 16 pairs were reported possibly breeding there in 1972 (Finch 1972, A. D. Smith unpubl. CWS report, Chapdelaine in Kress et al. 1983, Nisbett 1980). In 1973, six adults were seen, and three nests were tentatively identified as those of Roseate Terns (N. David, pers. comm.). The putative breeding population on the Magdalen Islands has probably bred annually since at least 1972, but only in very small numbers (<5 pairs).

New Brunswick.—The Roseate Tern is listed as hypothetical for mainland New Brunswick (Squires 1976) and as a rare visitor in the Grand Manan Archipelago (Pettingill 1939). At Machias Seal Island, in the mouth of the Bay of Fundy, the Roseate Tern is an uncommon summer visitor. Pettingill (1939) reported details of two sightings on or near Machias Seal Island in the 1930s. Later, two adults were seen by J. Hatch in 1968 (Drury 1973–1974). Since then, Roseate Terns have been recorded in the Grand Manan Channel in August 1970 (Squires 1976), at Machias Seal Island during the summer of 1971 (D. H. Baldwin, unpubl. report to CFN), and again in 1979 when a single pair was discovered breeding by R. Newell (A. D. Smith, unpubl. CWS report). This represented the first confirmed (but unsuccessful) breeding record in New Brunswick. Breeding was not detected in 1980 or 1981, but in 1982 one pair bred, laying two eggs which produced one fledgling (S. Daniel, pers. comm.). No Roseate Terns were found breeding in 1983, 1984, or 1985 (CWS files).

Nova Scotia.—Roseate Terns were first reported breeding in Nova

TABLE 1. Recent counts and changes in numbers of Roseate Terns at breeding sites in Nova Scotia. Site numbers correspond to those appearing on Figure 2. Sites active in 1982-1985 are underlined, and totalled at end of table.

Site no.	Breeding site	Year	Details	Source
1	Thrum Cap Islet (Guysborough Co.)	1906 1971 1982 1971	large colony absent <u>2 pairs</u> ca. 10 pairs	Tufts 1962 A. R. Lock, unpubl. CWS report A. R. Lock et al., unpubl. CWS report A. R. Lock, unpubl. CWS report
2	Islet between Culf & Low is. (Halifax Co.)	1966	10-12 pairs	N.S.B.S.N. ^a 1966
3	Islet off Necum Teuch (Halifax Co.)	1967 1969	ca. 30 pairs ca. 15 adults	N.S.B.S.N. 1967 C. E. Tull, pers. comm.
4	Island off Quoddy (Halifax Co.)	1962	ca. 75 nests	A. D. Smith, unpubl. CWS report
5	Hardwood I. (Halifax Co.)	1978 1982	7 adults absent	A. D. Smith, unpubl. CWS report A. R. Lock et al., unpubl. CWS report
6	West Western I. (Halifax Co.)	1978	12 adults	A. D. Smith, unpubl. CWS report
7	Island near Spry Pt. (Halifax Co.)	1971	small numbers	A. R. Lock, unpubl. CWS report
8	Fishermen's Beach (Halifax Co.)	1982 1983	7 pairs absent	A. R. Lock et al., unpubl. CWS report I. R. Kirkham, pers. observ.
9	Sambro I. (Halifax Co.)	1982	<u>3 pairs</u>	A. R. Lock et al., unpubl. CWS report

TABLE 1. Continued.

Site no.	Breeding site	Year	Details	Source
10	<u>Wedge I.</u> (Halifax Co.)	1970 1979 1982 1983 1985 1973	ca. 45 pairs ca. 6 pairs 10-15 pairs ca. 4 pairs 12 adults a few pairs	A. R. Lock, unpubl. CWS report N.S.B.S.N. 1979 A. R. Lock et al., unpubl. CWS report E. L. Mills, pers. comm. I. A. McLaren, pers. comm. N.S.B.S.N. 1973
11	Island off 2nd Pen. (Lunenburg Co.)			
12	Hobson's Nose I. (Lunenburg Co.)	1971	ca. 12 pairs	A. R. Lock, unpubl. CWS report
13	<u>Westhaver I.</u> (Lunenburg Co.)	1982	<u>8 pairs</u>	A. R. Lock et al., unpubl. CWS report
14	Indian I. (Lunenburg Co.)	1930 1937 1938 1966	ca. 125 pairs ca. 20 adults absent, only gulls present 2-3 pairs	Tufts 1962 Tufts 1962 Tufts 1962 N.S.B.S.N. 1966
15	Near Port L'Hebert (Shelburne Co.)	1973	maybe 1 nest	N.S.B.S.N. 1973
16	Cape Sable (Shelburne Co.)			
17	<u>Mud I.</u> (Shelburne Co.)	1982	<u>2 pairs</u>	A. R. Lock et al., unpubl. CWS report

TABLE 1. Continued.

Site no.	Breeding site	Year	Details	Source
18	Noddy I. (Shelburne Co.)	1906 1971	large colony absent	Tufts 1962 A. R. Lock, unpubl. CWS report
19	The Brothers (Yarmouth Co.)	1982	<u>55-60 pairs</u>	A. R. Lock et al., unpubl. CWS report
20	Tusket Is. (Yarmouth Co.)	1956	a few pairs	Henry & Henry 1957; Tufts 1962; I. C. T. Nisbet, pers. comm.
		1970	present	A. R. Lock, unpubl. CWS report
		1983a	<u>15-20 pairs</u>	N.S.B. 1984
		1983b	<u>5-7 pairs</u>	C. R. K. Allen, pers. comm.
21	Green I. (Yarmouth Co.)	1970	2 adults	N.S.B.S.N. 1970
		1982	absent	A. R. Lock et al., unpubl. CWS report
22	Peters I. (Digby Co.)	1981	1-2 adults	R. & R. Denton, pers. comm.
		1982	<u>1 pair</u>	Kirkham 1983
23	Sable I.	1971	130 pairs	A. R. Lock, unpubl. CWS report
		1976	ca. 16 birds	H. Ross, pers. comm.
		1979	<u>10-15 pairs</u>	I. A. McLaren, pers. comm.
		1982	<u>2-4 pairs</u>	I. R. Kirkham & I. A. McLaren, unpubl. observ.
		1985	<u>10-20 pairs</u>	A. R. Lock, pers. comm.

^a Nova Scotia Bird Society Newsletter.

Scotia on Sable Island in the late 1800s (Dwight 1895). Even though precise estimates of bird numbers do not exist for the population on Sable Island, it seems clear that numbers have declined since the turn of the century. Apparently a further decline occurred between 1971 and 1976; since that time the number of breeding Roseate Terns has fluctuated only slightly.

The history of Roseate Terns elsewhere in Nova Scotia is unclear owing to the scarcity of estimates of their numbers. Details of known numbers and recent changes of Roseate Terns breeding in coastal Nova Scotia are presented in Table 1.

The vast majority of past and present Roseate Tern colonies are situated along the Atlantic coast of Nova Scotia between Sheet Harbour and Yarmouth (Fig. 2). With one exception (see Kirkham 1983), Roseate Terns have not been recorded breeding on the Nova Scotian shore of the Bay of Fundy, or on Cape Breton Island (Godfrey 1958, Tufts 1962, A. R. Lock, unpubl. CWS report, A. D. Smith, unpubl. CWS report, A. R. Lock et al., unpubl. CWS report; see also Fig. 2). A total of 23 sites in Nova Scotia have been confirmed as breeding locations for Roseate Terns at one time or another. During a survey of these and other sites between 1982 and 1985, Roseate Terns were found breeding at eight sites, two of which were new (Table 1). Doubtless not all Roseate Tern breeding sites in Nova Scotia have been found, but it seems likely that those comprising the bulk of the population have been discovered and censused. Consequently, the present size of the Roseate Tern population in Nova Scotia is estimated as between 102 and 122 breeding pairs (Table 1).

Total population size.—In a summary of Roseate Tern breeding records in Canada, A. D. Smith (unpubl. CWS report) estimated the size of the population to have been around 315 pairs between 1962 and 1978, with virtually all the birds breeding in Nova Scotia. However, because Roseates, like many other tern species, often relocate their breeding sites, that estimate could include individuals that bred at one site one year and at another site later during the 17-yr period. Our conservative estimate of between 102 and 122 pairs (Table 1) for the total population in Nova Scotia is probably more realistic, as well as up-to-date. If some estimates were low and some colonies were not found, there may be as many as 140 pairs, as A. R. Lock et al. (unpubl. CWS report) have estimated, or even slightly more. We do not know the absolute size of the total population, but it seems certain that the error associated with the present estimates for Nova Scotia is greater than the total number breeding elsewhere in Canada: 1–5 pairs in Quebec. In summary, the total size of the breeding population of Roseate Terns in Canada is between 103 and 127 pairs, or 3–4% of the total population in northeastern North America.

DISCUSSION

Predation and human exploitation have been the most important factors limiting the distribution and abundance of Roseate Terns in eastern Canada and the United States (Nisbet 1973, 1981). Other limiting factors

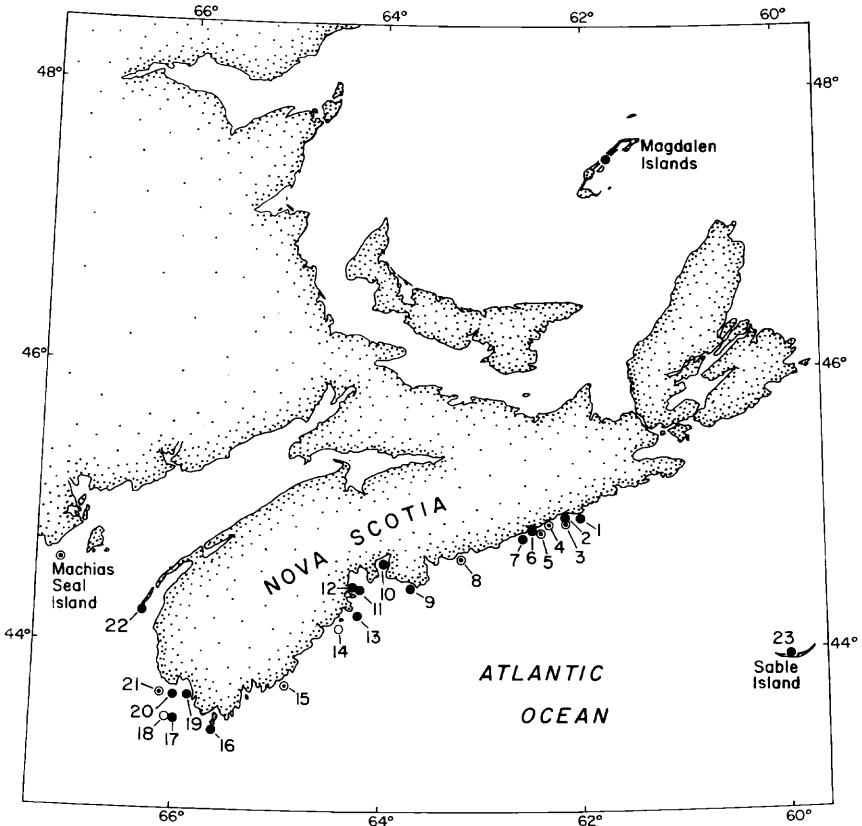


FIGURE 2. The locations of Roseate Tern breeding stations in eastern Canada showing: ●, sites occupied at the time of the most recent census from 1970 onward; ⊙, recently extinct sites or those occupied at the time of the most recent census prior to 1970; and ○, extinct sites. Numbered sites correspond to those given in Table 1.

include the loss of breeding habitat through encroachment by *Larus* gulls and the effects of toxic chemicals on reproduction (Nisbet 1980, 1981).

During the 18th and 19th centuries there was significant exploitation of Roseate Terns, along with many other seabird species, by humans seeking eggs for food and the adults' feathers for the millinery trade. In both Dwight's (1895) and Saunders' (1902) accounts of the terns on Sable Island, they made reference to the collection of large numbers of eggs by the life-station keepers. Human exploitation largely ended early in this century when legislation (Migratory Bird Treaty [1916], Migratory Bird Convention Act [1918]) was introduced to protect migratory birds in North America. The collection of tern eggs in Nova Scotia still occurs today, albeit on a very small scale.

Roseate Terns, along with most other seabirds, increased in numbers

as a result of the protective legislation. However, by the late 1940s, Herring Gulls (*Larus argentatus*) and Great Black-backed Gulls (*L. marinus*) had increased so that they began to displace Roseate and Common terns from many traditional colonies throughout northeastern North America (Nisbet 1980, 1981). In Canada, the increase of Herring and Great Black-backed gulls has probably been the most important factor influencing Roseate Tern numbers this century, perhaps most evident at Sable Island where the gulls have virtually displaced the terns. In 1894, Dwight (1895) reported very large numbers of terns breeding on Sable Island, but no gulls. In 1921, terns were still nesting "everywhere" and *Larus* gulls were uncommon (T. Raddall in litt. to A. R. Lock, pers. comm.). By 1971, A. R. Lock (unpubl. CWS report) estimated that only about 2600 terns were nesting on Sable Island. Eleven years later there were 1100 terns, a further decrease of 58% (I. R. Kirkham and I. A. McLaren, unpubl. obs.). In 1984, 1800 adult terns were counted at colonies on Sable Island (A. R. Lock, pers. comm.). Predation and physical displacement by gulls are probably the major determinants of the reduction of terns on Sable Island and elsewhere in Nova Scotia (Lock in Kress et al. 1983, and unpubl. CWS reports).

Although predation and interference by *Larus* gulls at the breeding sites remain significant as factors limiting population size of Roseate Terns in Canada, the single most important factor may have been human predation in the wintering quarters in Guyana (Hamilton 1981, Nisbet 1981, 1984). Since 1968, about 1% of juveniles and 2% of adults banded at North American sites between 1965 and 1977 have been recovered in northeast Guyana, mostly by a single market trapper operating over a small area (Hamilton 1981, Nisbet 1984). The terns were captured on beaches at night (Hamilton 1981), and were rarely seen near the shore during the day (Nisbet 1984, P. Trull, pers. comm., see also Dunn 1981). However, the intensive trapping of Roseate Terns in Guyana does not account for the 30–40% decline in the North American breeding population recorded since the mid-1960s. Moreover, the commercial trapping of Roseate Terns in Guyana is reported to have stopped (Nisbet 1984, P. Trull, pers. comm.) and an extensive search by P. Trull in 1980 and 1982 failed to reveal any evidence of other intensive trapping along the coasts of Guyana and Suriname (Blokpoel et al. 1982, Nisbet 1984, P. Trull, pers. comm.).

Roseate Terns breeding in Britain overwinter in West Africa where they too are vulnerable to human predation. The recent decline of the British breeding population appears correlated with intensive trapping in Ghana (Dunn 1981, Dunn and Mead 1982, Hepburn 1986). This raises the question whether North American Roseate Terns are also being trapped on a large scale while in their wintering quarters, perhaps in areas not located by Trull or others? Thus, factors responsible for the rapid decline in numbers of Roseate Terns from the 1930s until 1978 remain unclear.

Buckley and Buckley (1981) recommended that Roseate Terns in north-

east North America be designated an *Endangered Species*. However, Roseate Tern numbers have stabilized since 1980 (Kress et al. 1983), and Nisbet (1980) recommended a classification of *Threatened*. In 1986, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) proposed (based on I. R. Kirkham and D. N. Nettleship, unpubl. rep. to COSEWIC 1985) that the Canadian population of Roseate Terns should be considered *Threatened*.

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