

RECOVERIES OF WINTERING ROSEATE TERNS

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Between 1969 and 1977, 6566 Roseate Terns (*Sterna dougallii*) were banded on Great Gull Island, New York (41°N, 72°W). Most of the recoveries on the wintering ground during that 9-year period came from Guyana (Fig. 1). This concentration of records, a result of market hunting, gave me a unique opportunity to look at recovery rates of wintering Roseates from Great Gull Island.

METHODS

Most of the recoveries from Guyana that I have used in this paper were reported by Balram Pertab, a Guyanan who trapped birds for market. Pertab and his brother-in-law caught the terns at night on a beach near Whim Village where the young men lived (Hays, pers. comm.). The beach is high and provides a good roosting area no matter what the tide. The terns are caught by shining a kerosene light on the roosting birds and then throwing a shrimp net over the birds in the light. The live birds are taken to market the following day. Responding to a request by the U.S. Fish and Wildlife Service in 1970, Pertab and his brother-in-law released banded birds when they caught them and did not take them to market. Great Gull Island recovery records of Common Terns (*Sterna hirundo*) include a bird Pertab caught in 2 consecutive winters. In addition, Great Gull Island records of birds trapped as adults include 2 birds that Pertab handled in a previous winter.

Most of the Roseate Terns banded as young in this sample were banded at hatching on Great Gull Island. For those not banded at hatching, their ages at the time of banding on Great Gull Island were estimated in the field by measuring the length of the ninth primary. Assuming normal growth, the primary grows about 2.5 cm per week (Hays, pers. comm.).

RESULTS

Figure 1 shows the location of all recoveries on the wintering grounds excluding 6 Roseates recovered at sea, and 4 at unspecified places in Guyana. The Roseates are shown (Fig. 2) by month of recovery after banding, with the exception of 6 birds for which the recovery date was given as "fall" or "hunting season." In converting ages of the young and recovery time for adults from days to months for Figure 2 and Tables 2, 3, and 4, the figure is rounded off to the nearest month. Correspondence with Pertab indicates that the time he spent trapping was similar from 1969 through 1974 (Hays, pers. comm.). As he did less trapping between 1975 and 1977, I have omitted those years from Tables 2, 3, and 4.

Bent (1921) included most of coastal South America in the winter range of the Roseate Tern. More recently Meyer de Schauensee (1966, 1970) described a more restricted range in the Antilles and along the



FIGURE 1. Locations and numbers of recoveries of Roseate Terns on the wintering grounds in northern South America.

Caribbean coast east from Venezuela, with accidentals from Brazil. While most of the recoveries of Roseates banded on Great Gull Island were made in Guyana, the remainder, with one exception, were made within the range given by Meyer de Schauensee. This exception was a 74-day-old bird recovered on Gorgona Island, off the Pacific coast of Colombia (Hays 1971).

Between 1969 and 1977, volunteers on Great Gull Island trapped 1392 adults on nests, and banded 5174 young (Table 1). During the 9-year period 123 Roseate Terns from the sample banded through 1977 were recovered on the wintering ground. Of these, 106 (86.2%) were from Guyana: 77 (72.6%) banded as nestlings, and 29 (27.4%) banded as breeding adults.

The earliest recovery of a young Roseate from Guyana is a 47-day-old bird trapped on 5 August 1977 (Fig. 2). Both young and adult Roseate Terns begin to be recovered in Guyana in September, and peak in October and November. After this the recovery rate of Roseates banded as adults drops sharply, while the decrease in the number of birds less than 12 months old is more gradual.

TABLE 1. Recoveries of Roseate Terns on the wintering grounds showing concentrations of recoveries within Guyana.

Year banded	No. of young	Recovered in Guyana		Recovered outside Guyana		No. of adults	Recovered in Guyana		Recovered outside Guyana		Total recoveries
		N	% ¹	N	%		N	%	N	%	
1969	632	8	72.7	3	27.3	225	6	100.0	—	—	17
1970	422	8	80.0	2	20.0	237	3	75.0	1	25.0	14
1971	166	4	100.0	—	—	115	5	100.0	—	—	9
1972	229	4	80.0	1	20.0	466	10	100.0	—	—	15
1973	788	26	89.6	3	10.4	113	4	80.0	1	20.0	34
1974	806	13	81.2	3	18.8	136	1	100.0	—	—	17
1975	595	3	75.0	1	25.0	25	—	—	1	100.0	5
1976	795	3	100.0	—	—	36	—	—	1	100.0	4
1977	741	8	100.0	—	—	39	—	—	—	—	8
Total	5174	77	85.6	13	14.4	1392	29	87.9	4	12.1	123

¹ Percentages for young and adults are based on the total recovered from each year of banding.

DISCUSSION

The recoveries in Guyana of Roseates banded as nestlings between 1969 and 1974 form an interesting pattern (Table 2). There is a high recovery rate in the first 12 months after banding. There are virtually

TABLE 2. Known-age Roseate Terns recovered in Guyana 1 to 5 years after banding.

Year banded	Age (months)										Total recoveries
	1-12		13-24		25-36		37-48		49-60		
	N	% ¹	N	%	N	%	N	%	N	%	
1969	6	75.0	—	—	1	12.5	—	—	1	12.5	8
1970	4	50.0	—	—	1	12.5	2	25.0	1	12.5	8
1971	2	50.0	—	—	2	50.0	—	—	—	—	4
1972	2	50.0	—	—	2	50.0	—	—	—	—	4
1973	25	96.2	1	3.8	—	—	—	—	—	—	26
1974	11	84.6	—	—	2	15.4	—	—	—	—	13
Total	50	79.4	1	1.6	8	12.7	2	3.2	2	3.2	63

¹ Percentages are based on the total number of recoveries in Guyana per year.

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FIGURE 2. Recoveries of Roseate Terns on the wintering grounds by month. Numbers along the ordinal axis indicate the approximate age at recovery of birds banded as

	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY										
1																						
2			1	1	1																	
3			1	4	8																	
4			1	2	8	1	7	1														
5						11	1	4														
6							2	2														
7								6	1	2												
8									1	2												
9											3											
10											2											
11												2										
12-13																						
14			1																			
15				3	1																	
16				1	3			1														
17							1															
18								2	1													
19-20																						
21											1											
22-24																						
25			1																			
26																						
27				1	3	1																
28				1	1	1		1														
29					1	1		1														
30									1													
31-33																						
34												1										
35	1																					
36-39																						
40																						
41																						
42-43																						
44										1												
45-49																						
50																						
51				1	1	1																
52				1	1	1																
TOTAL	1	-	1	4	5	11	23	9	22	1	9	2	11	1	3	3	-	1	6	-	4	
	1	-	1	9	34	31	10	13	4	3	3	1	7	4								

juveniles, or the number of months elapsed since banding for birds banded as adults. In each "box" the number above the diagonal indicates the number of known-age birds recovered and the number below the diagonal indicates the number of unknown-age birds recovered.

TABLE 3. Roseate Terns banded as adults and recovered in Guyana 1 to 5 years after banding.

Year banded	Months after banding										Total recoveries
	1-12		13-24		25-36		37-48		49-60		
	N	% ¹	N	%	N	%	N	%	N	%	
1969	1	16.7	—	—	1	16.7	1	16.7	3	50.0	6
1970	1	33.3	—	—	—	—	1	33.3	1	33.3	3
1971	1	20.0	1	20.0	3	60.0	—	—	—	—	5
1972	1	10.0	8	80.0	1	10.0	—	—	—	—	10
1973	4	100.0	—	—	—	—	—	—	—	—	4
1974	1	100.0	—	—	—	—	—	—	—	—	1
Total	9	31.0	9	31.0	5	17.2	2	6.9	4	13.8	29

¹ Percentages are based on the total number of recoveries in Guyana per year.

no recoveries in the following 12 months. There is, however, an increase in recoveries in the interval from 25 to 36 months after banding, when the birds are 2 years old.

A possible explanation for this pattern is as follows. The high recovery rate in October and November, 2 to 5 months after banding, reflects the initial arrival of the young birds in Guyana. The decrease in recoveries beginning in December suggests that these birds may disperse on the wintering grounds. The recovery rate remains low until their 27th month, when they again begin to be caught in numbers. It seems possible that the increase in recoveries of birds 27 months old reflects the return to the wintering ground of the 2-year-olds that have moved north. We know that a few 2-year-olds breed (Donaldson 1971, Hays,

TABLE 4. Young and adult recoveries on the wintering grounds 1 to 5 years after banding.

Months after banding	Young				Adults			
	Recoveries in Guyana		Recoveries outside Guyana		Recoveries in Guyana		Recoveries outside Guyana	
	N	% ¹	N	%	N	%	N	%
1-12	50	79.4	8	66.7	9	31.0	—	—
13-24	1	1.6	2	16.7	9	31.0	1	50.0
25-36	8	12.7	—	—	5	17.2	1	50.0
37-48	2	3.2	2	16.7	2	6.9	—	—
49-60	2	3.2	—	—	4	13.8	—	—
Total	63		12		29		2	

¹ Percentages are based on the total number of recoveries of young and adult Roseate Terns from Guyana and those recovered outside Guyana.

pers. comm.). The pattern in Table 2 suggests that more 2-year-olds move north than our records of 2-year-olds breeding would indicate. Nisbet (1980) working independently with the Fish and Wildlife records of all recoveries of Roseate Terns, which include Great Gull Island data, found the same pattern.

Birds banded as adults (Tables 3 and 4) do not show the same recovery pattern as the birds banded as nestlings (Tables 2 and 4). Specifically they do not exhibit the pattern of virtually no recoveries in the second fall and winter after banding. This would be expected because the adults are migrating north each spring and returning to the wintering grounds each fall.

SUMMARY

From a sample of 6566 Roseate Terns banded over a 9-year period on Great Gull Island, New York, we received 123 recoveries from the wintering ground. Most of these were from the north coast of South America east from Venezuela to Brazil, with a concentration of records from Guyana. The records of known-age birds recovered in Guyana from this sample suggest that many individuals move north in their second year, a phenomenon which has not been apparent from the few records we have of 2-year-olds breeding.

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