

A TERN-BANDING PROJECT
AT THE DRY TORTUGAS
By James Richardson

The Dry Tortugas are a group of seven small coral islands located in the Gulf of Mexico approximately seventy miles west of Key West, Florida. The group is probably best known for the huge fort begun prior to the Civil War on Garden Key. Costing the phenomenal amount of about a dollar a brick to build, the fort was never fully completed and never used in war. It later served as a notorious military prison. The islands were declared a wildlife sanctuary by President Theodore Roosevelt in 1908 and are presently administered by the National Park Service as Fort Jefferson National Monument.

Less than a hundred yards from the fort across a narrow channel lies Bush Key. Only a few acres in extent, this small island harbors the only breeding colony of Sooty Terns (*Sterna fuscata fuscata*) and Brown Noddies (*Anous stolidus stolidus*) in the United States. Large areas around its perimeter are predominantly grassy or covered with a blanket of succulent plants and cactus. Dense bushes occupy the remainder, and two relatively small stands of tall mangroves grow in the marshy center. Estimated to contain a possible 100,000 Sooty Terns, the colony has utilized practically all available ground space for nesting with the exception of the thick mats of succulent plants which are left untouched. Though cleared spaces are preferred, the Sooty Terns also use the ground beneath the bushes for nesting territory, taking advantage of frequent openings for access to their nests. The Brown Noddies, on the other hand, constitute only a small part of the total colony. These birds build their bulky nests of seaweed, sticks, and shells, in the bushes, from one to six feet above the ground.

Tern banding at the Dry Tortugas began on a small scale in 1936 and was continued in 1937 and the following years by Mr. C. Russell Mason (present Executive Director of the Florida Audubon Society) and others from the Florida Audubon Society. When World War I brought the project to a close in 1941, about 3000 terns had been banded. Banding work was reinitiated in 1959 as a cooperative project of the National Park Service, The Florida Audubon Society, and the Florida State Museum.

The leaders of the July 1963 group which I accompanied were Dr. William B. Robertson, Jr., Park Biologist of Everglades National Park, and Mr. Mason. Dr. Oliver L. Austin, Jr., (widely known for his banding studies of Common, Roseate, and Arctic Terns on Cape Cod and now Curator of the Florida State Museum), Mr. Mason, and Dr. Robertson organized the present Tortugas project. Mr. Charles Preston of Sarasota, Florida, three

high school biology students, and I made up the remainder of the July 1963 group. In addition, Mr. Robert Hermes, well known Audubon Screen Tour lecturer, accompanied us to take a film of the project.

The first two weeks in July is the best time for banding young Sooty Terns. Practically all the young birds are fully feathered by this time and active on the ground, yet most of them are still unable to fly. Because of the large size of the chicks and because banding was confined to early morning and late afternoon, fatalities from heat and exhaustion were practically nonexistent.

The procedure for banding the young Sooties was to cut out several hundred birds from the flocks in the colony or on the beaches and group them to prevent escape to the nearby bushes. With easily portable rolls of low chicken wire and a number of stakes, pens were erected near the corralled birds with long leads running to each side. By driving a few birds at a time into the restraining pockets, large numbers were efficiently banded in a minimum of time. Needless to say, many were the frustrating and almost ludicrous times when a concentration of birds massed at one point along the fence, flattened the stakes, and rapidly dissipated into the bushes.

Soft bands were used with finger pressure alone to close them. May I insert here a vote for soft bands, at least in situations where terns or other colonial species must be handled in large numbers with time at a premium. Bands of Sooty Terns banded twenty-three years ago showed negligible wear and corrosion. The adults were caught with standard small bird mist nets and given the new hard bands.

Brown Noddy nests were more scattered and less nearly in phase than the Sooties, with many birds still incubating. Here, also, there was little danger from exposing unprotected eggs and young to the hot sun. So fearless were the adults that they rarely left their nests, even when closely approached. There was seldom more than an irritated glance to show that they were aware of the banding activity near them. The majority of the Noddies were caught in the nets. In addition, a start was made on this trip to study territorial behavior of the Noddies. When adults could be caught by hand directly off the nests, both parents and young were banded, and the nests were tagged for study in subsequent seasons.

The following table gives the number of terns banded over the years. The numbers of returns captured during the July 1963 trip are marked in parentheses beneath the corresponding number of birds banded in that year.

YEAR	NUMBERS OF INDIVIDUALS BANDED			
	SOOTY TERN		BROWN NODDY	
	Young	Adults	Young	Adults
1937-1941	8759 (10)	4015 (0)	14 (0)	232 (0)
1959	5500 (50)	1953 (13)	25 (2)	221 (5)
1960	10,127 (3)	7180 (74)	203 (7)	359 (6)
1961	10,978 (0)	7061 (91)	185 (2)	228 (4)
1962	8700 (0)	8189 (120)	179 (0)	242 (4)
1963	6600	7768	180	188

(Courtesy of Dr. Robertson)

Longevity records of over twenty-five years have now been recorded for Sooty Terns. Each year this record has tended to increase as the old birds continue to return to Bush Key.

It is interesting to note from the chart that, with the exception of three returns from 1960 young, the Sooty Tern does not seem to return to the colony until it is four years old. Returns captured in the following years will provide a check on this.

Tropical hurricanes bring a large proportion of the recoveries for the Tortugas Sooty Terns. The September 1960 Hurricane "Donna" was responsible for two recoveries from Alabama, one from interior central Florida, one from Brunswick, Georgia, one from Hampton, Virginia, and one from Shinnecock Bay, Long Island, New York. Some recoveries of interest from the September 1961 hurricane that hit Texas were from the Gulf Coast of the Florida Panhandle, northern Mississippi, south-central Arkansas, Veracruz, Mexico (probable), and four from Texas.

A number of non-storm foreign recoveries have been reported from the Gulf Coast after the close of the nesting season. One young bird was captured at St. Marks, Florida, one month after it had been banded, but



Left - Looking across the channel to Garden Key



Above - Bush Key

Right - An adult Sooty Tern



Right - C. Russell Mason removing an adult Sooty Tern from the nets

Middle - Driving young Sooty Terns to the banding corral

Below left - Banding the young Sooty Terns at the corral



most of these recoveries were of adult birds. This may imply a northward movement of adults shortly after nesting.

Other foreign recoveries that cannot be directly attributed to storms have been recorded as follows: five from Mexico which includes three from Vera Cruz, one from Tamaulipas, and one uncertain; one from Puerto Barrios, Guatemala; one near Habana, Cuba; one from the island of Grenada in the Lesser Antilles; one from British Guiana; one each from Liberia and Ghana; two from Nigeria; and two recoveries at sea off the coast of West Africa. It seems evident that the Sooty Terns spread throughout the Caribbean Sea and southern Gulf of Mexico during the months following the nesting season. They are not seen around the Tortugas during the winter months. Subsequent recoveries may demonstrate regular transatlantic movement.

Mortality in the Sooty Tern colony proved difficult to determine because of the problem of covering the entire area carefully. On the July trip, 3353 unhatched eggs and 2956 dead chicks were counted on the island, giving a total of 6309 dead prospective Sooty Terns. Almost all the chicks had died at a few days of age. Using Dr. Robertson's rough estimate of a 100,000 breeding birds in the colony, and doubling the mortality number to take care of inadequate coverage, breeding success might be guessed at 75%. Though exact data are not available, the mortality of the Brown Noddy is certainly much lower. Large predacious land crabs and ghost crabs abound on the island, and several dead rats were found. It was discovered on our July trip that one entire section had been deserted by the birds after they had begun nesting in late May. A number of the eggs were found with evident punctures.

The above value for breeding success suggests that the present colony is growing. It has also been noted over the past twenty years that the birds have first been heard over the colony at night on an average of February 21st. However, Sooties have been landing to rest on the island in recent years at increasingly early dates (April 7, 1961; April 6, 1962; April 3, 1963). This, plus fewer hands available for the banding, explains why a smaller number of young Sooty Terns was banded in July, 1963, than in previous years. The date of the trip has not advanced to keep pace with the change in the tern's nesting cycle. A number of young were flying on our arrival and not available for banding. Perhaps increasing pressure to get available nesting territory in the growing colony has caused the Sooty Terns to start their nesting at earlier dates.

In the past four years, the Black Noddy (*Anous tenuirostris*) has been seen each year at the Dry Tortugas. These records are unique for the United States, since this otherwise circumtropical species is missing from the Gulf of Mexico and most of the Caribbean area. Dr. Robertson banded

two in 1962 on Bush Key. Neither of the two birds seen on the July 1963 trip was banded, and one of them may have been immature. It is suspected that a few breed on Bush Key, but no nest has been found.

The figures and data in this article have been graciously supplied by Dr. Robertson. For those who are interested in this fascinating project, he has a detailed paper now being published on the history of the Dry Tortugas tern colonies. It contains a thorough discussion of the arrival and departure of the birds and a record of the population over the years. A second paper is forthcoming on a preliminary analysis of Sooty Tern movement based on band recoveries.

For those who do not mind quantities of sun, the strong smells of a ternery, collecting regurgitated fish for future analysis, sharing a few minor expenses, hard work, and somewhat primitive living conditions in the fort, Dr. Robertson extends an invitation to any experienced bander to join one of the trips on a first come-first served basis. Two short trips are made each year; one in May and one in July. It is an exciting and interesting trip. The tropical islands and surrounding waters are beautiful, and the opportunity to study this uniquely accessible colony of sea birds is hard to equal.

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An adult Brown Noddy Tern (white forehead) with her young on the nest



A young Brown Noddy Tern on the nest