

## THE STATUS OF CAPE COD TERNS IN 1932<sup>1</sup>

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THIS past spring and summer we have endeavored to obtain a comprehensive knowledge of the Common, Roseate, and Arctic Terns which for many years have made Cape Cod their breeding ground; to locate and survey all their nesting sites; to estimate the number of adults present; to determine by comparison with data obtained previously what changes have taken place in the colonies; to band as many adults and chicks as time afforded opportunity as a basis for future study; to decide what measures will avail to afford greater protection to these much harried species and encourage their return subsequently in greater numbers. This article deals with these undertakings alone. By the quadrat method, by trapping, and by observation from portable blinds information has been obtained which amplifies somewhat and corrects in part what had been known and written of the life-histories of these species. Another member of the station's staff is reporting on this phase of our work. A short bibliography is appended for orientating any one desiring locality descriptions or authority for statements made as premises for deductions.

Topographical changes made by nature's agencies in the long-used nesting sites of the larger colonies, destruction by predatory birds and mammals, molestation by the increased resident and summer populations, and the restrictions inevitable to advancing civilization have made ecological changes which this year have taxed sorely the adaptability of the Terns. It has been pathetic to observe the persistence of these birds in responding unintelligently to their greatest biological urge by relaying clutches when their first eggs and chicks had been destroyed, and it is evident that terns display far less protective reaction to experienced and possibly recurring dangers than do such a species as Starlings. Only one of the previously studied colonies has approximated its former numbers and raised its usual quota of young.

Unless the more desirable nesting conditions are restored by making necessary changes and giving adequate protection to the breeding birds, the colonies on Cape Cod will dwindle progressively. By their insistence in the Cape Cod areas on breeding only on islands or sandy peninsulas which are islands at

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flood tide, the terns have attempted to utilize almost all the possible locations on Cape Cod, these being limited to the larger bays and off-shore islands. Adults captured and banded while incubating early in the year on islands, have been re-trapped while re-nesting in localities which are a part of the mainland, safer sites not being available. The inexplicable tendency of terns to return to the locality of their birth or former nesting, results in their illogical acceptance of altered conditions which increase jeopardy. Vegetation overgrown beyond the extent requisite to adequate shelter from the elements limits the number of nests possible in a given area, affords a retreat for predators, and, by restricting the vision of adults, curtails maximum feeding of their chicks by increasing the time spent in locating them. Islands denuded of vegetation by storms entail increased mortality of chicks by exposure to rain, cold, and, especially, excessive heat. Blindness which results in the death of many chicks appears to follow lack of shelter from the cutting sand driven across spits by frequent high winds. One afternoon chicks were found almost completely buried by gale-driven sand. The greatest concentration of nests is not on the fields of dried thatch deposited by spring tides along the beaches and not on the barren spaces, but in areas sparsely grown with beach-grass or scattered plants, especially if nesting material is close at hand. An isolated bush of dusty miller is usually surrounded by nests very close to one another, and its dense spreading branches are found to cover a considerable number of hiding young.

An adequate food-supply appears to be in proximity to all the rookeries and it is unusual to find terns fishing at any great distance from known nests. When the preferred sand-eels decrease, large schools of small fishes substitute generously. In 1930 minnows of several species comprised the greater part of the dietary of the Tern Island colony.

The immaculately clean terns find great enjoyment in fresh-water bathing. Close to Tern Island is a lake in which at all times may be found flocks of birds fluttering and preening contentedly. Similar ponds are near the other large rookeries.

These are but a few of the many desiderata requisite to making Cape Cod a favorite summer residence for terns. It is thought that the former large colonies can be restored if the adverse conditions can be eliminated or at least minimized, and further, that islands close by be made attractive to the thousands which a few years ago bred on the now uninhabited and birdless islands in Pleasant Bay. At least there will be no almost total annihilation of the hatched chicks such as occurred

this year on one large island. Since terns are unequal to safeguarding their own security or that of their young, it behooves conservationists to act for them.

There are but five large tern colonies on Cape Cod—Tern Island at Chatham, Pamet Island at Truro, Billingsgate Island and Jeremy's Point in Massachusetts Bay, and Egg Island in Lewis Bay. The last alone has been equal to accomplishing the normal increase of successfully reared chicks. Billingsgate appears to have matured a small percentage of its expected quota. It is believed that almost none of the comparatively few young hatched on the other sites have survived to fly away with their parents. The apparent etiology of these occurrences will be offered.

Smaller groups have bred precariously on Hopkins and Rocky Islands in Nauset Inlet, also on one small, high islet in Pleasant Bay. The few pairs formerly nesting on an island near Cotuit did not return this spring. The frequent incursions of a dune-climbing sight-seeing bus disrupted the home life of the Monomoy Point flock. The storm that two winters ago leveled into a low, bare beach the dunes at the tip of Nauset Point, last summer compelled the birds customarily nesting there to establish a new home on the sandy yet heavily grassed banks off Nauset Inlet. This colony has returned. A portion of the Tern Island group with keener reactions than their clansmen, having lost either eggs or young, moved to North Point (formerly known as North Beach), a short distance to the eastward for their second attempt at reproduction, thus founding the youngest of our colonies. A few pairs may breed at undiscovered isolated points, but we have been unable to locate their nesting sites.

The elemental forces that inexorably are shoaling Massachusetts Bay determined long ago the obliteration of the tern colony of thousands that fifty years ago thrived on the outskirts of the forty dwellings, the schoolhouse, and the lighthouse supposedly firmly foundationed on Billingsgate Island. The assistance given them by the "mackerel gulls" in locating schools of desirable catch, induced the tenanting fishermen to afford these terns protection from plumage-hunters. Humans and birds thrived because the necessities of both were attained. As the surrounding deeps shallowed, thus increasing the eroding force of the winter seas, nesting sites and human dwellings disappeared together into the Bay with progressively increasing rapidity until, when I visited the island for the first time in 1929, there remained but the skeleton of one small house and the nests of at most fifteen hundred birds on the

two small parts into which the remaining land had been divided. Early in July that year, at the peak of the hatching season, the wanton vandalism of a party of picnickers, in a dire few hours, obliterated every procreative hope of the colony. With unreasoning courage, in 1930, a smaller aggregation returned to the home-site on the remaining half of the preceding summer's territory. A warden spent at least a part of each day there in an effort to maintain sanctuary, but each night he reported a dwindling of both eggs and chicks, and he believed sand-print evidence proved Black-crowned Night Herons and gulls to have been the new malefactors. A devastating storm, just before spring last year, offered the persistent birds only a sparsely grassed sand-bar for nesting. Four hundred and eighteen chicks were banded there in July, 1931, but the greater part of these perished a little later during a few days of alternating burning sunshine and torrential rains. This year's first visit to the locality, on June 16th, showed that the returned remnant of the colony, augmented by a few banded refugees from other harassed rookeries, had made 190 nests on the grassless sand-spit projecting but a few feet above high-water mark. The ensuing spring tides washed away more than half of these nests. Early in July visiting fishermen brought us sad tidings of the large number of dead chicks then strewn about the blistering, unshaded sand. At the time of our final visit, July 13th, there were six chicks just emerged from their shells, 492 recently laid eggs in new nests, but not one survivor of the 88 previously banded young could be found. It is expected that next May any returning birds will find land there at low tide alone. Only the lapse of many years, together with some unpredictable reversal of nature's ways, will suffice to rebuild Billingsgate Island, reestablish favorable ecological environment, and, perhaps, eventually re-create its pristine prosperous tern population.

Jeremy's Point, a peninsula less than a mile to the north of Billingsgate, for years has been the forlorn hope of another colony. Impelled by some urge as preposterous as it is inexplicable, not oriented by previously experienced calamities, the birds have reappeared here annually to the number of from one to three thousand, hopefully courted, mated, scratched out nests in the sand, and laid eggs at the usual rate. At exactly this period every year, skunks and cats have come out from the mainland to devastate by their feasting. Once a futile attempt was made to avert this catastrophe by building a wire fence across the base of the point. On June 16th, this year, not over fifty adults voiced their unmistakable cries of distress

over the Point, although several hundred typical nest-bowls, littered with broken egg-shells, demonstrated the usual endeavor to replace the normal annual death of adults. Numerous identified tracks bore evidence to the unfailing memory of the predators. As if to compensate for the obliteration of Billingsgate, the wind-driven seas of last winter cut a channel across Jeremy's Point at its neck, as yet bare enough at low tide to permit the crossing of the egg-eaters. However, it is the first dredging of a run which next winter's work should, with corresponding certainty, deepen sufficiently to convert the Point into a true island. Then, possibly, the Tern's persistence will be given safer opportunity for the accomplishment of its purpose. It is hoped that nature's unceasing effort to maintain, ultimately at least, ecological balances may be depended on to replace what some of its forces have obliterated.

The ability of colonial birds to survive ceaseless and diversified persecution has been demonstrated at Pamet Point, which is an island only at flood tide. Here, according to observing residents, the Tern population formerly equalled those of Pleasant Bay and Tern Island. A gradual reversion from insular to mainland conditions, increasing its accessibility to human and four-footed disturbers, determined a progressive shrinking of the nesting population. In June, 1929, the greater part of approximately five hundred adults had nested on the leveled tops of the moderately grassed dunes. But swarms of ants, at the moment of the first pipping, swarmed into the shells to devour the chicks before they could emerge. An immediate resort to tobacco dust and ant powder rescued a small percentage of the hatch. In 1930, a slightly larger group of terns nested preferably amid the thatch and litter on the beach. The total possible banding of 192 chicks inspired our placing a warden on the island during July to make recounts and discover the factors determining the colony's failure. At once it was found that large numbers of well-rounded rats were living in the accumulated débris, boldly, even during daylight hours, killing and feasting on older chicks and adults. In seven days eight large black snakes were killed, autopsies demonstrating their appreciation of a young tern diet. Each morning exhibited fresh tracks made during the nocturnal visitation of cats from the houses of the summer residents close by. Every clear day, several clans of visitors came to dig clams on the inside mud-flat, bathe from the outer beach, and picnic on the dunes. Their uncontrolled children molested the chicks and investigated the degree of incubation of the eggs, while the accompanying dogs harried the young and barked at resent-

ing parent birds. The warden's protests provoked either mirth or abuse, for Cape Cod convention includes no respect for the sanctity of any man's real property. Additional depredation was committed by owls, which twice left identifying pellets. To complete the ruin, an early spring tide washed away all chicks and eggs that had survived on the beach. The former adverse conditions continuing in 1931, only 125 chicks were banded, in spite of careful searching by organized parties. This spring the flock returned to face the same total of insuperable odds. On June 10th five hundred cheated birds were flying, protestingly, high over the amazingly few nests, which contained a mere handful of whole eggs. The wildness of these birds and the manner in which a great number of shells had been broken indicated human robbery. Not far away live some Portuguese and Finns who are suspected of not having been Americanized from their native custom of egging. While the protective reactions of terns are almost negative to long-drawn-out persecution, no matter what the season aggregation may be, whole colonies will move to a new site after one sudden overwhelming cataclysm. History tells of this having been done by the Chatham, Hyannis, Nauset, and former Harwich colonies when their rookeries had been washed away completely by a storm-driven, unusually high tide.

At Hopkins Island, exuberant vegetation is the only determined handicap, yet, anomalously, it appears from estimates and a greater number of nests that the adult population has actually increased this year. The formerly low oak, rose, and bayberry bushes have proliferated into a dense, high thicket covering the sides and a greater part of the top of the island. Encroaching outwardly from the base, the thicket has restricted the littoral conditions essential to the nesting of the Arctic Terns that had constituted a high percentage of the colony and which this year is definitely smaller. A thick mat of tangled poison-ivy, rose bushes, and blackberry vines has replaced practically all of the former meadow on the flat summit. The perfect cover afforded the young, while it makes their banding a patience-trying task, may explain why the birds are less quarrelsome there than elsewhere, as it does, also, our having ringed more chicks there this year than last.

The almost constant passing of noisy motor-boats with their raucous passengers is converting Rocky Island into a natural tombstone for its erstwhile prosperous and contented, although small colony. Not more than fifty adults circle constantly high in the air, having learned grievously the folly of swooping down at the heads of intruders in characteristic tern manner.

Twenty nests, one dead adult, four living and three dead chicks epitomize our findings June 23d.

Four years ago, Nauset Point, then a series of low, beach-grassed dunes, harbored several hundred birds, unmolested in spite of their direct accessibility from the mainland. The gales and eroding seas of the following winter leveled the dunes into a low, bare bar. In May, accompanied by twenty pairs of Least Terns, the colony returned to lay eggs in unlined nests on the drifting sand. The inevitable, inexorable June high tide, in a few hours, washed into the Atlantic the birds' total accomplishment. Last year four, and this year six, indomitable pairs have nested there, to an identical undoing. It is thought that, in the process of evolution, a species alters its habits to secure adjustment to regularly recurring, periodic conditions. Probably by reason of their recognized low adaptability, an insufficient number of generations of terns have been bred to develop instinctive reactions to the folly of nesting within reach of the monthly recurring spring tides.

In 1930, this Nauset group, augmented by discontented or sex-balancing recruits from other clans, formed a new colony on a sedge-grown mud-bank bordering Nauset inlet, a half-mile landward from its old home. This terrain differs so decidedly from any which Terns had been known to utilize that memory of a year-old catastrophe must have induced its reluctant acceptance. Unfortunately, its level is perilously little above the greatest high-water mark. Independence Day, there were 73 nests containing 143 eggs and 41 chicks (the clutch averages thus above the normal) with a suburban group of 11 nests and 25 eggs. No ascertained mishap depreciated the maximum success of this nesting. On June 28th this year, before the final egg-laying, the main colony had grown to 153 nests with 338 eggs and 22 chicks, while the suburb had increased to 226 nests, containing 507 eggs and 18 chicks. Any interpretation of these data should take cognizance of our having trapped here, early in July, an incubating adult which we had trapped and banded while similarly occupied at Tern Island late in May.

Each year, in May, several thousand Terns are observed resting in compact groups on the beaches of Monomoy Point. This has led to the erroneous inference that the entire group had selected this not entirely unsuitable location for its nesting site. A number of over-ardent or forgetful pairs are inveigled into remaining here to nest on the broad beach, but the great number divides into flocks that scatter out to the respective nesting areas that, before departing from the tropics, memory and instinct had made their destinations. Jutting out into the

Atlantic, Monomoy makes an ideal landfall. It were better the nesting birds had passed on, too, for increasing numbers of heedless sight-seers spy on their strutting courtship, crush their eggs, and disrupt the chicks' essential feeding schedule.

The mention of "mackerel gulls" to an interested older resident commonly elicits inquiry concerning specified islands in Pleasant Bay, where, he asserts, these birds have always congregated in numbers suggesting hyperbole. This summer, exploration of all these islands determined that human occupancy had driven the terns from all save Little Sipson. Here 70 adults asserted ownership of 38 eggs and one lone chick at least two weeks old.

Tern Island, supposedly the largest, most successful, and best protected of the Cape colonies had been selected for detailed and extensive study this last summer. We visited it almost daily from before the arrival of the first migrant until it was probable that not one more living chick would be found, at first hopefully endeavoring to avert threatened disaster and finally compelled by our undertaking to witness the grievous details of a great tragedy.

Well before the prompt coming of the vanguard on the anticipated day to preempt the choicest sites, experimental quadrats had been taped off and observation blinds erected. The island was explored thoroughly to ascertain the absence of predatory mammals, and red squill distributed generously for precaution's sake. Our first disappointment was finding that the winter storms had failed to comb out and thin the tangled mass of accumulated, dried beach-grass. The terns increased rapidly, but the daily aggregate was invariably much below that on the corresponding day of previous years. On May 3d a sudden large influx of terns encouraged the hope that the completion of an unexplained delayed migration would swell the total to its usual peak. Finally, our collective opinion admitted reluctantly that the adult census was uniformly one-third below that of last year. Observations and trapping elsewhere did not indicate the presence of an abnormally high percentage of banded members of the Tern Island flock. In mid-June, concurrent with other ominous events, a decided decrease was noted. This progressed geometrically, until on July 6th by a most liberal estimate, of the former ten thousand adults, there remained but a scant hundred and fifty chickless parents flying aimlessly over the deserted nesting ground or standing on the bordering sand-bars.

In the spring, courtship having ended and mating having been consummated, egg-laying proceeded at the usual rate to a



total commensurate with the size of the colony. There was increased concentration of nests in the more open spaces with a decrease of nests in the overgrown stretches. Very few were found in the grassed sector formerly occupied by the Roseates. About June 12th, coincident with the beginning of hatching, broken shells with missing contents were observed and eggs began to vanish mysteriously in the quadrats where eggs were being counted daily. From one select open tract practically all the eggs disappeared in a few days. Questioning the near-dwelling fishermen, whose pride in the colony equaled our own, eliminated egging. Then, in a compact group, close to some litter, we found eight violence-killed adults. The advent of rats was suspected, but neither burrows nor tracks could be found and the red squill bait remained untouched. A second planting of this usually effective poison was not eaten.

Hatching proceeded, and about one thousand chicks were banded within a few days. Immediately these began disappearing as inexplicably as did the eggs. The vanishing of the freshly emerged chicks increased, and possible bandings dropped to 80 a day, then to 33, and finally the last living chicks found were 11 on June 30th. (In 1931, 2050 chicks were banded after July 1st.) Subsequently, the island was searched repeatedly, but not one clump of grass sheltered a hiding infant, not one well-grown juvenile could be found on the beaches or in the water where our photographs show them congregated in thousands at this same time on previous years. Last year, after a late storm, nearly five hundred bands were removed from dead chicks in two days; this summer only 87 were salvaged from a total banding of 1754. In 1931, 6130 bands were affixed to living young aside from the several hundred reapplied after removal from those deceased; this year, the number of unbanded corpses aggregated less than one hundred. From our quadrat in the heavy grass the last egg and chick had disappeared in thirty-one days after the first laying. The complete encircling of another quadrat with an eighteen inch wire fence, its bottom buried in the sand, neither lessened nor explained what was happening.

Consequent to the defeat of its endeavor, the preponderance of the colony departed promptly, while the persisting few began a rapid but ill-omened laying of uniformly smaller second clutches. This was not done on the former usual sites, but on the expanses of drifted thatch near the water-line and in the dense green water-grass at the northern tip of the island, where inundation by the next high tide was inevitable. Strangely, almost two hundred fresh eggs were found in our three re-

maintaining small quadrats and nowhere else in duplicating terrain on the plateau of the island. Frustration was the sad end of this brave but forlorn effort, which merely encouraged the destructive agencies in continued vandalism. A few days sufficed to accomplish the destruction of the quadrat eggs.

The increasing incidence of dead adults subsequent to discovery, in June, of the first group, especially close to accumulated débris, forced a third search for quadruped predators. Traps hidden in the mouths of freshly made burrows immediately captured four huge, corpulent rats, and a fifth was seen racing to a matted-grass refuge. Thus orientated we combed the island, exposing many newly dug rat-holes hidden by bunches of tangled grass, and discovered the characteristic method of egg-opening. These rats had been bred beneath fish-houses on the mainland shore and in the near-by town dump. Hunger, engendered by a scarcity of fish offal and an early burning of refuse, had inspired migration to the island's bountiful feast. Game Warden Mecarta had seen one rat ferried across on a raft of drifting thatch.

Finis was affixed to this pathetic chapter of Tern Island's history on June 14th, when not even one dazed adult, not a solitary harassed chick, not a single fertile egg was found there to recall memory of May's inspiring and optimistic picture.

Twenty years ago an enormous number of terns bred in peace, as had their forebears, on North Point, then a long, half-mile wide stretch of grassy dunes and beach located a short distance oceanward from the then birdless Tern Island. Twelve years ago, a winter with unusually violent gales and an undermining surf leveled, shortened, and narrowed this site into a flat sand-spit which succeeding milder seasons undulated slightly and vegetated sparsely. The returned homeless colony evidently sensed the inviting suitability of close-by Tern Island, for immediately it founded the rookery which has continued there in progressive prosperity until this summer. Accounts of several duplicate movings of the Cape's Tern colonies have been gleaned from older local observers.

When, in June last, the bulk of Tern Island's thwarted tenants sought safer environment for its second attempt, subconscious instinct evolved from ancestral experiences may have been a factor in the selection of North Point. Shortly they began brooding the contents of over a thousand nests containing two or three eggs. Then, for the possible purpose of teaching by experienced misfortune, the Fates permitted no surcease in the chastisement of this colony. Whenever birds left their nests to fish, the strong prevailing southwest winds buried the eggs beneath drifted sand.

On July 3d, the owner and the pilot of an airplane (whom we succeeded in having apprehended and fined) seven times in rapid succession landed their craft in the center of the colony, crushing eggs, killing newly hatched chicks, and terrifying the adults. On the 13th, after a single day's absence, our approach foretold the final climax of the whole tragedy by the winging from the Point of less than one hundred birds. Only two score widely separated unviolated nests had survived; the sand was fouled with a litter of broken egg-shells and their former contents, and there were no chicks to band. Approaching many of the former nest-sites were the tracks of Black-crowned Night Herons, which had come to scavenge the remains. The only ascertained clues to the cause of this disaster, unless it was the result of the ecologically sound resort of some species to unusual food by reason of a shortage of its customary supply, were the tracks of people and also those of an enormous dog.

I cannot offer satisfactory explanation for many of the details of these occurrences nor even suggest adequate major causes, although our station's assumption of guardianship over the Cape's Terns spurred us to our maximum effort. Possibly better informed or more experienced readers can offer an interpretation. By means of carefully made autopsies on all the dead adults found, also on a sufficiently large number of dead chicks, the possibility of disease being a factor of epidemic magnitude was eliminated absolutely. Similarly, starvation resulting from a curtailment of the usual food-supply was ruled out, this condition being substantiated by repeated observations of the fishing habits of these terns in comparison with those of preceding seasons. The rat invasion, as on unforgettable former occasions worked great havoc, but it cannot account for the wholesale vanishing of hundreds of chicks as if by legerdemain. Digging out burrows to their last ramification did not reveal the presence of one feather, bone, or egg-shell. Although we raised, in captivity, two Great Horned Owl chicks, hatched this spring near Tern Island, this species was not sufficiently abundant to have been any more a factor there than it was at Egg Island, where we found freshly regurgitated pellets, but where the damage done by it was negligible. Provincetown's enormous flock of resident Herring Gulls, consequent to the curtailment of their food-supply this spring by the waning fish industry, scattered widely over the Cape's shoreline. Augmented to unprecedented thousands by immigrants and accompanied by hundreds of recently recruited Laughing Gulls, they rendezvoused in such evident amity with the terns on the rookery beaches that they must not be suspected of having developed predatory habits. Their tracks

were never seen in vandalized areas. Unilluminating were our night vigils in the colonies prompted by rumors of Night Heron marauding, nor was incriminating evidence found by scutinizing regurgitated stomach-contents in Chatham's large heronry. Our aggregate tern census has remained too constant to warrant considering this a recurring cyclic variation of ecological origin. The influx of Gulls, the decreasing number of Night Herons, and radical changes in the numbers of other species, together with many important and apparently permanent alterations of environmental conditions, suggest the possible beginning of a realignment of Cape Cod's avian population with an ultimate crowding-out of the terns.

Lovely little Egg Island, aesthetically exquisite as any vaunted coral isle, serenely and protectingly nestled in the center of the southern corner of Lewis Bay, and ecologically ideal for Terns, fosters the Cape's most prosperous colony, which numbers over five thousand adults. Formerly occupied, abandoned, and then refounded ten years ago, evidently by exiles from Monomoy Point, it has utilized its unique and essential environment through progressive achievements to this year's inspiring success. No disaster originating in the elements, no known persecution by humans, no appreciable molestation by predators halted the raising of 5433 banded chicks into flying juveniles. Only 132 dead chicks were found; not a dozen unhatched eggs were counted on our last visit.

Man's protracted machinations almost approximate the uncommon and short but cataclysmic elements in the inhibition of tern procreation. It can not be expected that uninterested residents will sacrifice even one small financial gain to the accomplishment of a sanctuary for terns, nor that the increasing hordes of tourists and summer visitors will forego satisfying their idle curiosity by inevitably destructive and disrupting trespasses into these bird-nurseries. An egg-fight on North Cape or Monomoy is counted the gala event of a summer by the boys of one near-by camp. Intellectuals from Chatham resented being rebuked for bringing their spaniels to Tern Island. Adequate wardenship affords the only possible remedy, but only where conditions are absolutely insular; elsewhere the certain nocturnal invasion of quadruped predators will nullify all custodial endeavors.

A successful Tern colony is such an ideal open-air laboratory for the investigation of the biological principles underlying bird life, so much moral uplift and satisfaction of any inborn appreciation of beauty is consequent to daily close contact with the dainty "sea-swallows," that our station is committed without

reservation to its maximum effort for the preservation of these species. Next May the returning colony of migration-wearied birds will find Tern Island restored to a reduplication in detail of its original environmental desirability.

TERNs BANDED IN 1931 AND 1932

	ADULTS						CHICKS					
	hirundo		dougalli		para-disaea		hirundo		dougalli		para-disaea	
	1931	1932	1931	1932	1931	1932	1931	1932	1931	1932	1931	1932
Tern Island	77	704	2	1		2	5085	1716	1045	38		
Egg Island		53		1			1721	4220	55	1205		
Billingsgate		52					418	118				
Jeremy's Point		0						0				
Pamet River	31	9			4	3	125	5				
Hopkins Island	9	1					122	161				2
Rocky Island		0					46	4				
Nauset Inlet		126					41	168				
North Point		286				1		255				1
Little Sipson								1				
TOTALS	117	1231	2	2	4	6	7552	6588	1100	1243		3

	Total Banded			Returns
	Adults	Chicks Total		
1931	123	8562=8775	1931	18
1932	1239	7834=9073	1932	62
	1362	16486		

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