

the Chewink which others have said sounds like the words "Drink-your-tea", the last word prolonged with several *e*'s. I have often admired their courage, as I have never known a day in summer too hot for them to sing their song all through the day.

This past season I have used exclusively a home-made pull-string trap, having three in use and at times four. Two were set on the ground, and two were off the ground four and five feet. I did not notice that any choice was shown for either location. All traps were tended or tripped from the windows of my house. I used what is commonly called in grain stores "scratch feed", and at times the intermediate grade called "intermediate chick feed". Chewinks seemed to be very fond of the ingredients with the exception of the wheat.

In submitting these notes it should be stated that the time spent by me in banding work is of necessity very limited, a fact which explains my failure to discuss other obvious aspects of the large number of Chewinks nesting about my station and generally on the eastern part of this island.

Heath Hen Reservation, Martha's Vineyard, Massachusetts.

## NOTES ON THE DEVELOPMENT OF YOUNG COMMON AND ROSEATE TERNS

BY CHARLES B. FLOYD

DURING the past three years my work among the Common and Roseate Terns (*Sterna hirundo* and *dougalli*) on Tern Island, Chatham, Massachusetts, has had to do with their breeding-habits and the banding of large numbers of the young. This year (1927) a study was made which included matters of feather-growth and the weight of developing young from the time they emerged from the shell until it was impossible to find them. All plumage-changes were noted at the time of each weighing, which took place every morning as near the same hour as possible. It was particularly difficult to secure the young for observation and weighing after they were a week old or even less, for in many instances they desert the nest within twenty-four hours of their birth and can be found only after a diligent search among the beach grass. If, therefore, they were rediscovered daily, it was a matter of good fortune, for no satisfactory plan was found by which they could be

confined or restrained which would not alarm the parent birds or cause them to desert the nest. The inclination to wander increased as the young developed, and after the first week I spent from two to three hours each morning on hands and knees searching for them, carefully examining many young Terns banded during previous days.

Nests of Roseates were mingled with the Common, and the young of both species rested under tussocks of grass or huddled in nesting-hollows in the sand.

An adjustable scale, sensitive to grams, was used in weighing the young birds studied in detail, and colored bands were used for their ready identification. When weighing a young Tern the bird was placed in a small box resting on the scale pan or platform, one end of which was open, the cover being securely fastened. Under these conditions it remained quite motionless. Ten bands, size three, were used, colored as follows: Three red, three blue, three green, and one yellow.

The red bands were placed on young Common Terns, the only occupants of the nests. Each bird had just hatched, and each weighed ten grams. The nests they occupied were in the open and were surrounded by other nests. Near by was a nest containing a bird doubtless hatched the previous day and one just hatched and drying in the sun, together with an egg. They weighed as follows:

Oldest bird (one day old)	20 grams
Smallest bird (just hatched)	10 "
Weight of egg	10 "

In addition to the systematic weighing of the three Common Terns that received the colored bands, ten in nearby nests, just hatched, were found to average ten grams.

The background color of the upper parts of the young Common Terns while in the downy state varied from buff to a deeper yellow, with varying shades of brown or blackish, producing a mottled effect. The legs and feet differ with individual birds from pale yellowish pink to deep salmon. The claws are black and the bills are light pink at the base, shading to black near the tip, with a small white spot at the extreme end of the upper mandible, presumably the mark left by the discarded "egg tooth".

The eyes of newly hatched birds are open, but the birds do not appear to see very well, taking little notice of what goes on about them. When they hatched on a hot day under a burning sun, or upon a cold day with a strong chilling wind, many of them, upon drying, left the nest and crawled to the

shade of the tall grass or under anything at hand that afforded shelter. They made no outcry when handled. The empty shells were removed at once by the parent birds.

The second morning the marked nests, which had contained three young Terns wearing red colored bands, were again visited, but to my great disappointment no birds with colored bands could be found. With the assistance of a helper, the ground was carefully searched within a radius of thirty feet from the nests, and though it was comparatively open, the young Terns were not found at this time or during many subsequent visits, excepting one, number 404753, which was recovered on July 11th, nine days later. This bird, weighing sixty-eight grams, was thirty feet from the nest. It was not seen again. The banded young, in this instance, however, in the neighboring nests were still present. Considering the age of the lost young birds (only twenty-four hours old) and their lack of strength, it seems very improbable that they could have crawled away and hidden so effectively. Rather, it seems reasonable to believe that the parent birds, alarmed at our long stay about their nests, carried them to another part of the island.

On July 4th, three blue bands, numbered 404755, 404759, and 404760, were placed on the tarsi of three more Common Terns. Numbers 404755 and 404760 occupied the same nest in the open sand, and 404759 was found some five feet away with one unhatched egg. The first two birds weighed ten grams each, and the third twelve grams. The same day three green bands were placed on Roseate Terns, each bird occupying a separate nest placed about twenty feet apart in the long grass. The numbers were 404756, 404757, and 404758. A fourth band, numbered 404752, colored yellow, was used on a fourth Roseate that nested in the open sand on the east side of the island just above high-water mark, a very exposed location. These young Roseates were fresh from the egg and weighed as follows:

404756—18 grams
404757—24 “
404758—20 “
404752—16 “

The variation in weight of these four birds may perhaps have been due to the fact that the two heaviest had been recently fed, while the two lightest ones may have been empty. It was, however, impossible to determine this with certainty.

The downy plumage of the young Roseates is much less mottled than that of the Common, being grayish-black above and white below. The tarsi, bill, and toes are black. A small white spot occurs at the end of the upper mandible. Roseate Tern number 404756 was found dead in the nest the day after it was banded (July 3d). It appeared not to have been fed. The tall wooden nest-marker was blown over and rested about two feet above the nest on the grass, and perhaps this frightened the parent birds and kept them away.

It will be noted upon examining the table of weights that the young gained from four to ten grams daily. The amount of food that they were able to receive at one time was enormous. One fish, (species unknown), fed whole to a Common Tern not over four days old, weighed three grams and measured two and one half inches in length. A sand lance fed to a Common Tern approximately one week old was six inches in length—so long that when swallowed the tail protruded well beyond the bill of the Tern. A fish fed to another Common Tern of the same age measured three and three quarters inches. In so far as I was able to determine, the parents fed by regurgitation for the first two days, and after that time small fish or lance were fed whole to the young and were eagerly swallowed by them.

During the four years that I have banded young Common and Roseate Terns on this island (having banded over 12,000), I have found only one bird that was not normal. This bird was a pure albino with pink tarsi, bill, and eyes. No parasites were found on the young or in the nests.

An extraordinary sight was noted on July 14th. Two Common Terns approximately two-thirds' grown were found attempting to devour young birds of their own kind that had just hatched. The older birds had succeeded in swallowing the younger to the extent of their heads and necks and lay stretched out on the sand with the bodies of the baby Terns extending in front of them. It seemed impossible to believe that so much of the small birds could be absorbed by the larger, yet the bill, head, and neck were well within their gullets, and at our approach the birds ran ahead in the sand with the dead baby Terns dangling from their bills.

The details of fairly successful weighings of three Common Terns and two Roseate Terns follow:

COMMON TERN

BLUE BAND No. 404755

Nest in Open Sand—No. 404760 in Same Nest

July	4—	Weight	10	grams.
July	5—	“	14	“
July	6—	“	16	“
July	7—	“	24	“

Found one foot from nest behind wooden marker, in shade.  
Quills in wing beginning to show blue on under side.  
Rectrices scarcely visible; can be felt.

July	8—	Weight	26	grams.
July	9—	“	36	“
July	10—	No weight taken; severe storm.		
July	11—	Weight	46	grams.
		White spot gone from tip of mandible.		
July	12—	Weight	53	grams.
		Bird back in nest.		
July	13—	Could not be found.		
July	14—	“ “ “ “		
July	15—	Weight	58	grams.
		Rectrices quite distinct.		
July	16—	Not found again.		

COMMON TERN

BLUE BAND No. 404760

Nest in Open Sand—No. 404755 in Same Nest

July	4—	Weight	10	grams.
July	5—	“	14	“
July	6—	“	16	“
July	7—	“	23	“

Found one foot from nest behind wooden marker, in shade.  
Plumage changes same as No. 404755.

July	8—	Weight	25	grams.
July	9—	“	38	“
July	10—	No weight taken; severe storm.		
July	11—	Weight	39	grams.
		Bird 20 feet from nest. White spot gone from tip of mandible.		
July	12—	Could not be found.		
July	13—	“ “ “ “		
July	14—	“ “ “ “		
July	15—	Found dead 300 yards from nest.		

COMMON TERN

BLUE BAND No. 404759

Nest in Open Sand—Single Egg in Nest

July	4—	Weight	12	grams.
July	5—	“	20	“
July	6—	“	24	“
July	7—	“	28	“

Plumage changes same as No. 404755.

July	8—	Weight	37	grams.
		Found several feet from nest behind wooden marker, in shade.		

- July 9—Weight 49 grams.  
 Egg in nest hatched this morning. Weight 11 grams.  
 Banded with yellow band No. 404761.
- July 10—No weight taken; severe storm.
- July 11—Could not be found.
- July 12—Weight 69 grams.
- July 13—Not found again.

ROSEATE TERN  
 GREEN BAND No. 404757

- Born July 5—Weight 24 grams.  
 (An egg in nest that did not hatch.)
- July 6—Weight 30 grams.  
 Found a foot out of nest beneath a clump of grass.
- July 7—Weight 38 grams.  
 Plumage changes same as Common Tern No. 404755.
- July 8—Weight 39 grams.  
 Apparently no food in crop.  
 Down disappearing at bend of wing and from a spot on back.  
 Blue of quills just showing.
- July 9—Weight 50 grams.
- July 10—No weight taken; heavy storm.
- July 11—Weight 60 grams.  
 Found under a long board lying in the tall grass, six feet from nest. Down gone from under wings, also from top of head and about eyes. Quills show blue. Patch of down gone from back.
- July 12—Could not be found.

ROSEATE TERN  
 GREEN BAND No. 404758

Nest in Thick Beach Grass—No Other Occupant

- July 5—Weight 20 grams.
- July 6— " 26 "  
 Found just out of nest under long grass.
- July 7—Weight 36 grams.  
 Plumage changes same as No. 404755.
- July 8—Weight 40 grams.  
 Plumage changes same as No. 404757.
- July 9—Weight 44 grams.
- July 10—No weight taken; severe storm.
- July 11—Weight 58 grams.  
 Found 15 feet from nest. Plumage changes same as No. 404757.
- July 12—Weight 59 grams.  
 White spot on bill gone.
- July 13—Could not be found.
- July 14— " " " "
- July 15—Weight 73 grams.  
 Primaries and secondaries showing.
- July 16—Not found again.

In addition to the above, Common Tern No. 404761 weighed eleven grams when born and nineteen grams two days after-

ward; and Roseate Tern No. 404752 weighed sixteen grams the day of birth.

The following columns give the individual and average weights of thirty-six full-grown young Common Terns and seven full-grown young Roseate Terns:

COMMON TERN		ROSEATE TERN
WEIGHTS OF FULL-GROWN YOUNG		WEIGHTS OF FULL-GROWN YOUNG
<i>Grams</i>	<i>Grams</i>	<i>Grams</i>
1 — 116	19 — 90	1 — 88
2 — 104	20 — 100	2 — 90
3 — 114	21 — 98	3 — 92
4 — 114	22 — 110	4 — 96
5 — 102	23 — 96	5 — 100
6 — 102	24 — 110	6 — 96
7 — 106	25 — 106	7 — 95
8 — 108	27 — 104	
9 — 106	28 — 99	
10 — 102	29 — 99	
11 — 110	30 — 96	
12 — 102	31 — 112	
13 — 108	32 — 110	
14 — 98	33 — 100	
15 — 110	34 — 97	
16 <sup>1</sup> — 70	35 — 102	
17 — 110	36 — 90	
18 — 90		

Av. weight 92.4 grams

Av. weight 100.29 grams

Auburndale, Massachusetts.

## NOTES ON PURPLE FINCHES

BY M. J. MAGEE

I READ with a great deal of interest the article on the Eastern Purple Finch by Mr. and Mrs. Whittle in the last *Bulletin* (July, 1927). I think we are more in accord than the note on page 64 might indicate. I should have explained what I meant by "young male or female". On my cards if I feel pretty sure it is a bird of the year, I marked "young," and all other dull-colored birds I record as "young males or females". A "young male" means a male that has not acquired the crimson plumage and in some cases such a bird might be up to two years of age. A "female" might be of any age. No. 58864, referred to in the article, was banded May 12, 1923. September 4th it repeated, still in the dull plumage.

<sup>1</sup>Seemed very thin, omitted in averaging weights.