mediately disappeared. In doing this, we gained the impression that the bird was blinded but not attracted by the light, and it may have been a desire to keep the eggs or young covered that kept the bird from flying, for the same thing could not be done with adults resting on the beach. A more powerful light and one less diffused would have a more blinding effect and perhaps produce more satisfactory results.

In the air the Terns, old and young, were not attracted, but decidedly alarmed. The lights were set in the sand pointing upward and so arranged that they merged into one strong vertical ray. This proved to be no attraction, and when we trained the lights on flying birds they made off rapidly.

Our conclusion was that young Terns are attracted by a strong light, but the old birds are not and in reality are frightened. The adults can be secured on the nest, but not on the beach where they pass the night. Curiosity or fascination for the light is exhibited by the young alone, but taking them in this manner is not practical for banding.

The completion of this season's work brings the number of Terns banded on this island under the writer's direction to over seventeen thousand. As I have said, more time will be devoted next year to work with the adults through trapping.

Auburndale, Massachusetts.

HOW LONG DO PURPLE FINCHES LIVE?

BY M. J. MAGEE

THE following statistical study of my Purple Finch banding records at Sault Ste. Marie, Michigan, made during the spring, summer, and autumn, should be considered as a preliminary report, subject to revision as more data are obtained. A few more years of banding should give us fairly definite information, if all banders handling any number of Purple Finches will coöperate.

I do not believe the average life of Purple Finches, eliminating the mortality among the young birds before they are able to fly, is much, if any, over two years.

I have had this species feeding at my station every year since 1916 and have been banding them actively since 1922. All the birds were trapped within seventy-five feet of my dining-room window.

My banding records for seven years follow, showing number of Purple Finches banded, by years:

1922	254	1926	1084
1923	1092	1927	1441
1924	1043	1928	819 to June 30
1925	1510		

Statistical tables of Purple Finches banded and returning by years

TABLE 1

	Number Banded	*Returns by years* 1923	1924	1925	1926	1927	1928 to June 30
1922	254	33	19	5	3	2	1
1923	1092	..	71	41	22	13	1
1924	1043	..	..	87	44	26	8
1925	1510	..	..	..	122	62	27
1926	1084	..	..	..	..	122	28
1927	1441	..	..	..	..	..	89

TABLE 2

Number of individual Purple Finches returned to June 30, 1928

Banded in 1922	40	have returned	
1923	103	"	"
1924	112	"	"
1925	147	"	"
1926	130	"	"
1927	89	"	"
Total	621		

TABLE 3

	Back 1st year after banding	*Back 2d year after banding, but not 1st*	*Back 3d year after banding, but not 1st or 2d*	*Back 4th year after banding, but not 1st, 2d, or 3d*
Banded 1922	33	7		
1923	71	19	8	5
1924	87	22	3	
1925	122	22	3	
1926	122	8		
1927	89			

Average age of male and female returning birds

TABLE 4

	Males	*Females*	*Average age*
1922	1–8 years old	1–6 years old	Males 3 years, 2 mos.
	1–5 " "	1–4 " "	
	4–4 " "	5–3 " "	Females 2 years, 4 mos.
	9–3 " "	8–2 " "	
	5–2 " "	4–1 " "	Average for all 2 years, 9 mos.
	1–1 " "		

	Males	*Females*	*Average age*
1923	1–7 years old	5–5 years old	Males 3 years, 6 mos.
	1–6 " "	7–4 " "	
	6–5 " "	6–3 " "	Females 2 years, 6 mos.
	13–4 " "	10–2 " "	
	30–3 " "	14–1 " "	Average for all 3 years.
	10–2 " "		

	Males	*Females*	*Average age*
1924	2–6 years old	5–4 years old	Males 3 years
	4–5 " "	15–3 " "	
	12–4 " "	14–2 " "	Females 2 years
	21–3 " "	17–1 " "	
	19–2 " "		Average for all 2 years, 6 mos.
	3–1 " "		

TABLE 5

Purple Finch returns as to sex

Year banded	*In adult male plumage when banded*	*Banded as young male or female. In adult male plumage on last return*	*Banded as young male or female. No change in plumage at any return*	*Totals*
1922	11	10	19	40
1923	33	28	42	103
1924	18	43	51	112
1925	28	68	51	147
Totals	90	149	163	402

TABLE 6

Returns of older males and older females this year

	Adult males	*Adult females*
Banded 1922	1	0
" 1923	1	0
" 1924	5	3
" 1925	19	8
" 1926	16	11
Totals	42	22

Table No. 1 gives the returns by years, and they total 826, but as many birds return more than one year the number of individual birds is considerably less, as will be seen by table No. 2.

My records (see Table No. 3) show that very few birds return that were not back either the first or second year after banding.

Table No. 3 shows but nineteen back the third and fourth years after banding, fourteen the third year, and five the fourth year.

For ages of returns, I have compiled my data for 1922, 1923,

and 1924, which are given under Table No. 4. The data for 1925, 1926, and 1927 will best be considered at a later date when more returns will be in.

Table No. 4 is reasonably accurate, but not exact. The age of an adult bird when banded cannot be told; we only know it cannot be less than the number of years stated. The age of males is more accurately known than that of females for two reasons: An adult male banded in the spring must be at least nearly two years old, while an adult female banded in the spring may be less than one year old. Then young of the year and adult females trapped late in the fall on returning the following spring must be put down as one year old, and these are all listed under "Females," while some of the young are of course males that do not repeat in the fall or return in some following year. Possibly the average age for males should be reduced a little, and the average age for females increased slightly. Thus far my returns seem to indicate a longer life for the males than for the females.

In Table No. 5 the returns for the years 1926 and 1927 have not been used as there should be some more returns this year and next.

The small number for 1922 does not indicate a less number of birds here, but that the Biological Survey was unable to supply bands on two occasions. From the 4th of May to the latter part of June and for a couple of weeks in the fall, I could do no banding. This year's report is only to June 30th and is about the same as other years to that date. While I do not believe that every bird that does not return is dead, nor that I get all that return, I do believe that if a great many of them were not dead my number of returns would be very much greater.

From year to year I see very little change in the number of Purple Finches here, which would indicate that the mortality from year to year just about equalled the reproduction. If the Purple Finches lived to a considerable age, it would not require a very great number of young each year to keep the average up, but my data on returns (see Table No. 1) show a rapid decline in number of birds returning after the first year. So to keep the average up from year to year the number of young raised must be very large.

Purple Finches are a good bit like chickens: put out food and in they come from all over the neighborhood. Other species do not act this way with me: there may be one hundred or more Whitethroats or Juncos scattered all over the hill where I live, but only a few at a time appear in around the

traps. It is not unusual for forty or more Purple Finches to be under a single drop trap. In fact, I frequently shake the string to frighten some out before dropping the trap. I do not like to take so many at one time. As I look each bird over, usually making some notes on plumage on each individual card, it would keep some of them in the traps entirely too long. From this habit of collecting together to feed, I am pretty sure that most Finches that return come to my station to feed at some time during each season.

I further believe the birds return quite locally to the same spot; banded birds are almost always seen among the first arrivals, and this year and last the first trapped Purple Finch had a band on.

Last year Dr. K. Christofferson, who has been associated with me in bird work for many years, was placed in charge of the Munuscong State Park and is banding there. His trapping station in the park is just about twenty miles south and not over five miles east of my station.

Last year he banded sixteen Purple Finches; seven of them returned this year to his station and another was trapped at my station. This year, to June 30th, he has banded one hundred and two, and trapped only one of mine, banded in May, 1926.

As his station is almost due south of mine, it would seem as though he should pick up a good many of my birds if they did not return very locally. A few more years should give us pretty conclusive data on this point. There being so many trapping stations scattered throughout New England, it appears to me banders in that area have a much better opportunity to settle this point than we have with only two stations operating.

As to the age of returns (see Table No. 4) I can be more definite, although on checking up for age, males in crimson plumage and adult females can only be put down as not less than so old.

A check-up again in a couple of years will be made to test the accuracy of the above analysis.

July 30, 1928