BANDING BARN SWALLOWS

(*Hirundo Erythrogaster*)

A REPORT OF OPERATIONS AT SHIRLEY, MASSACHUSETTS, 1932–36

By E. M. and W. M. DAVIS

EACH summer since 1932 the authors have tried to band as many Barn Swallows as possible. Starting on July 1, 1932, we banded 157 birds that season; in 1933, 417 new birds were banded and there were 17 returns; in 1934, we banded 779 new birds and had 38 returns; in 1935 we added 614 new birds and had 37 returns. Of the birds banded in 1932 in our barn, 16 were returns in 1933; 5 in 1934; 3 in 1935; 3 in 1936. From birds banded in 1933 there were 14 returns in 1934; 4 in 1935; 3 in 1936. This shows a great drop in returns after the first year, with the subsequent returns nearly the same from year to year. However, it would be well to have figures for several more years before drawing conclusions.

In getting these results we have used various methods to secure our birds. Naturally as many nestlings as possible are banded, and in doing this we have found a twenty-two foot extension ladder with a usable length of from eleven to eighteen feet of the greatest assistance. It allows us to reach nests at varying distances above the floor and scaffolds with a minimum of difficulty, and is light enough for one person to handle easily when necessary. On the accompanying map the barns which we have visited are indicated. It is a constant source of surprise how few "good" swallow barns are to be found; even as many as five nests in one barn are not at all common in this neighborhood; our very best barn (No. 17) contains eighteen occupied nests this year (1936).

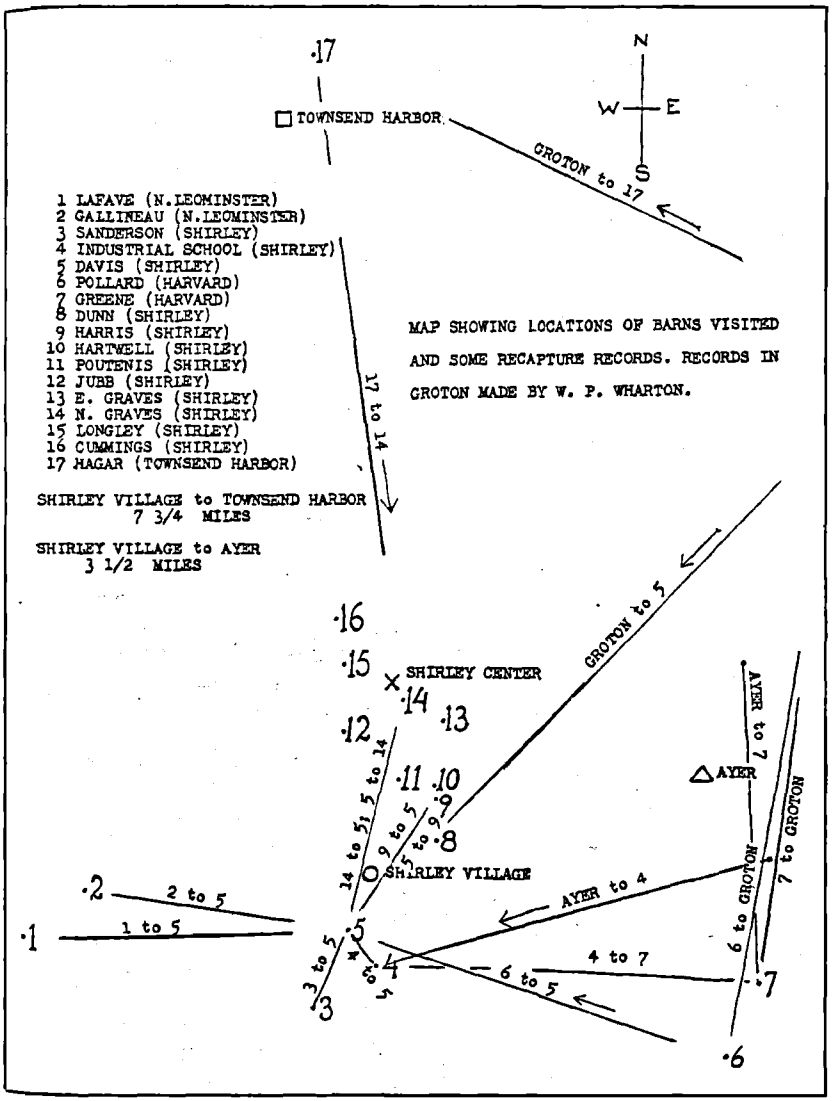
We have banded Swallows in seventeen different barns. Twelve of these are in Shirley, two in North Leominster, one in Townsend Harbor, and two in Harvard.

In addition to nestlings, we have made every effort to catch as many juveniles and adults as possible, for it was evident from the beginning that unless many of these were taken we could gather very little information of value. We have found it easy to catch adults at night in barns during the nesting season, using flash lights and long-handled nets. By this method on warm nights in the latter part of June, when most of the young are fairly well grown, as well as during the early part ofAugust under similar conditions for the second brood, we have caught and banded many adults without harming the young. Usually every bird in a barn can be caught in this way, and it is exciting as well as informative. Two teams of two persons each get the best results; one member of each team with a five-celled flash light and one with a net, one team at each

end of the barn. Another pair in the middle would be useful in a barn one hundred feet long, though not at all necessary. We look over a barn carefully and make our plans during daylight and then wait outside until after dark, when we enter and close doors and windows without turning on any lights or causing any disturbance if possible, for otherwise some Swallows may fly out before we get the openings closed. Frequently even before we flash on the lights some of the birds are fluttering, and an exciting time follows as the birds are caught and transferred to gathering cages. The light seldom attracts the birds, but merely disturbs them so that they flutter about like moths and are easily caught. As many as fifteen or twenty birds in a gathering cage have never yet injured one another. Our experience indicates that a stormy night will mean fewer birds in barns; just why we don't know, and undoubtedly they sometimes break this rule, but thus far it seems true that whenever possible a Swallow will stay out of a barn in stormy weather.

Our own barn has a loft running the whole length just under the ridgepole, with a window at one end. By taking a board out from the side of the loft, keeping the window closed, and shutting up the barn, and then creating a great disturbance on the scaffolds below, we have driven many birds into the loft and have caught them there with a butterfly net (see Figure 1). From July 15th to August 15th is the best time to catch birds in this way, and they are mostly juveniles. We have also found that when a good crop of hay is put into a barn, a loft is artificially made, and birds can be caught during the day by shutting the windows and doors and having two or more catchers stationed up in the hay with nets. We have caught about one thousand birds on the wing by one of these methods during four summers. The length of the net-handle varies with the space in which it is to be used, but it should be light and stiff, not "willowy." We have several nets with handles of different lengths. The best diameter is about twenty inches, and the net should be sufficiently deep to allow the bag to fold over the rim. Ordinary cloth mosquito-netting has been very satisfactory material for the net, with No. 9 wire for the rim. One of our best net-handles was made from a sapling. It may be said here that in catching a bird on the wing in daylight one should not swing the net at an approaching bird, for there is too much chance of injury. Adults, which fly much faster than juveniles, can best be caught by suddenly lifting the net in the path of an oncoming bird without giving it time to dodge, while juveniles can be caught from behind by swinging the net faster than they are going.

Most of the birds which are seen in barns during the daytime from July 15th until they all leave for the South are juveniles, though there are some adults that have young in the barn. Adults can be caught much more easily and in larger numbers at night


·17
TOWNSEND HARBOR
N
W E
S
GROTON to 17
1 LAFAVE (N.LEOMINSTER)
2 GALLINEAU (N.LEOMINSTER)
3 SANDERSON (SHIRLEY)
4 INDUSTRIAL SCHOOL (SHIRLEY)
5 DAVIS (SHIRLEY)
6 POLLARD (HARVARD)
7 GREENE (HARVARD)
8 DUNN (SHIRLEY)
9 HARRIS (SHIRLEY)
10 HARTWELL (SHIRLEY)
11 POUTENIS (SHIRLEY)
12 JUBB (SHIRLEY)
13 E. GRAVES (SHIRLEY)
14 N. GRAVES (SHIRLEY)
15 LONGLEY (SHIRLEY)
16 CUMMINGS (SHIRLEY)
17 HAGAR (TOWNSEND HARBOR)
17 to 14
MAP SHOWING LOCATIONS OF BARNS VISITED AND SOME RECAPTURE RECORDS. RECORDS IN GROTON MADE BY W. P. WHARTON.
SHIRLEY VILLAGE to TOWNSEND HARBOR
7 3/4 MILES
SHIRLEY VILLAGE to AYER
3 1/2 MILES
·16
·15
SHIRLEY CENTER
·14
·13
·12
·11
·10
·9
·8
GROTON to 5
14 to 5
11 to 5
9 to 5
5 to 9
AYER
AYER to 7
7 to GROTON
6 to GROTON
SHIRLEY VILLAGE
·2
2 to 5
·1
1 to 5
AYER to 4
3 to 5
·5
·4
·3
6 to 5
4 to 7
·7
·6

during the time that the young are in the nest, for juveniles seldom stay in a barn at night, and for that matter adults do not do so if they seemingly can find any excuse to stay away. Several times we have visited a barn at night where there were more nests with young in them than there were adults in the barn (allowing one adult per nest).

Barn Swallows are very successful in hatching their eggs and raising their young, of which there are ordinarily four or five in a nest, though we have found as few as one. Six young are not uncommon and we have recently found our only nest (one out of about four hundred) with seven young in it. Not over five per cent of the eggs are infertile, and very rarely indeed have we found two infertile eggs in one nest. Once hatched, practically every young bird lives to leave the nest. The danger time in this period appears to be when they are about ten days old. Occasionally we find a young bird of that age that has fallen out of the nest and is dead on the floor below. All our observations indicate that this is the result not of being pushed out by the other young, but possibly of poorly coördinated muscles combined with strong phototropism. It seems unlikely that more than two or three per cent of the young are lost this way. We have never found any young dead as a result of bad weather or because the parents could not gather food.

Parasites are very scarce; we have only one record of a maggot in a nest and only one nest which had mites. In this latter case, when the young reached that ten or twelve day age when we occasionally find them dead on the floor, they all jumped out and were killed. The mere fact of a young swallow being a runt in a nest does not imply that it will not grow satisfactorily; H20532 on July 19, 1932, was only half the size of the rest in the nest, and we nearly decided not to band it, but on August 9th we caught it as a juvenile appearing just as healthy as any other bird.

When the young birds leave the nest, they usually do not stay long in the vicinity, though there are many exceptions to this rule. It seems as if there must be a very heavy mortality among the young at this time, for we have never observed a brood that kept together outdoors for more than a day or two, though of course single birds may be fed much longer. Consequently any bird that cannot at once catch its own food has almost no chance to survive. With a species which is so successful in bringing its young to the flight stage we should have over-population if it were not for a high death-rate at some stage after leaving the nest, and this critical period offers a possible explanation of when the loss may occur.

After getting on the wing the juveniles spend some time wandering about the country, going into different barns (see Table 1, also note in *Bird-Banding*, Vol. IV, page 116).

TABLE 1

Juveniles visit various barns.

L35693	Banded as nestling in Hartwell barn,	June 21, 1935.
	Caught in Davis barn,	July 9, 1935.
	Caught in Davis barn,	August 6, 1935.
	Caught in Harris barn,	August 8, 1935.
L63145	Banded as juvenile in Davis barn,	July 22, 1934.
	Caught in Harris barn,	August 2, 1934.
L63131	Banded as juvenile in Davis barn,	July 21, 1934.
	Caught in Harris barn,	August 4, 1934.
L63093	Banded as juvenile in Davis barn,	July 16, 1934.
	Caught in Harris barn,	August 5, 1934.

Our records show that, if the weather is clear and warm, the juveniles will be in our barn about 8:30 or 9:00 A.M. sitting on ropes, etc., where they pass most of the rest of the morning quietly. If the weather is cloudy or rainy, the number that we catch in a day will drop from ten or twenty down to two or four; most of them do not come into the barn in bad weather. The only explanation we have is that possibly they have to take all their time outdoors in order to get enough to eat. The individual juveniles come from any direction (see Table 2) and the groups of juveniles in barns do not come back as a unit, but the make-up of the groups changes from day to day (see Tables 3 and 4), and, regardless of the weather

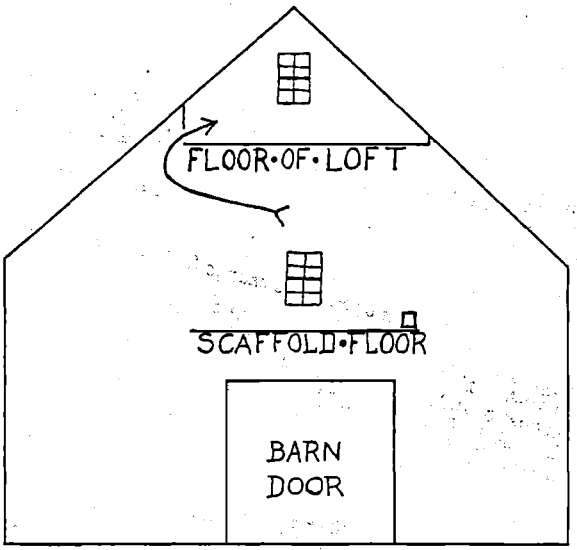


Figure 1. A skeleton view of the end of our barn. Juveniles stay on perches between the scaffold and loft floors. By making a disturbance there we drive them as indicated by the arrow and catch them in the loft with a net or against the window.

there are seldom many in our barn on any afternoon. We catch a few adults with the juveniles at this time of year—presumably birds which are not raising a second brood though this is not necessarily so. It surprised us to know that an adult nesting in one barn would be found in another barn during that period (see Table 5).

TABLE 2

Individual juveniles come from any direction.

35-1108	Banded as nestling at State Industrial School,	June 25, 1935.
	(Moved northwest) Caught in Davis barn,	August 4, 1935.
35-1032	Banded as nestling at Lafave barn,	June 17, 1935.
	(Moved east) Caught in Davis barn,	August 8, 1935.
L63593	Banded as nestling in N. Graves barn,	June 16, 1935.
	(Moved south) Caught in Davis barn,	July 16, 1935.
L63656	Banded as nestling in Hagar barn,	June 16, 1935.
	(Moved south) Caught in N. Graves barn,	August 9, 1935.
L63558	Banded as nestling in Harris barn,	June 16, 1935.
	(Moved southwest) Caught in Davis barn,	July 26, 1935.
H91475	Banded as nestling in Pollard barn,	June 15, 1934.
	(Moved west) Caught in Davis barn,	July 19, 1934.
H24794	Banded as nestling in Sanderson barn,	June 13, 1934.
	(Moved north) Caught in Davis barn,	August 4, 1934.

TABLE 3

Group of juveniles in barn one day does not come back as a unit.

July 23, 1934. 11 Juveniles, caught in barn, 4 repeat on 24th, 1 on August 14th.
August 2, 1934. 20 Juveniles, caught in barn, 1 repeat on August 4th.
July 18, 1935. 6 Juveniles, caught in barn, 1 repeat on August 8th, 1 on August 11th.
July 23, 1935. 6 Juveniles, caught in barn, 1 repeat on August 13th.

TABLE 4

Groups of juveniles in barns change from day to day.

August 3, 1935. 7 Juveniles caught, No repeats.
August 4, 1935. 16 Juveniles caught, No repeats.
August 5, 1935. 4 Juveniles caught, No repeats.
August 6, 1935. 4 Juveniles caught, No repeats.
August 7, 1935. 8 Juveniles caught, One repeated on the 8th.

TABLE 5

An adult nesting in one barn may go into another barn in the daytime.

35-1113	Banded at State Industrial School at night on	June 25, 1935.
	Caught in Davis barn during the day on	July 30th.
	Caught at Industrial School at night on	August 8th.
	Caught in Davis barn during the day on	August 14th and 15th.
L35544	Adult female. Banded at Industrial School at night on	June 16, 1934.
	Caught in Davis barn during the day on	July 29, 1934.
	Caught at Industrial School at night on	August 1, 1934.
L63433	Banded at Industrial School at night on	June 25, 1935.
	Caught in Davis barn during the day on	August 5th.
	Caught at Industrial School at night on	August 8th.
	Caught in Davis barn during the day on	August 14th.

It is becoming more and more evident that Barn Swallows do a great deal of wandering and enter during the day time many barns

in which they have no nests. From May 8th to June 12, 1936, we have caught 48 adults in our barn, yet there are only 8 nests being used. And as late as June 12th, we were catching an occasional pair in the loft, acting as though they were not yet settled anywhere, although they may just as likely be an incubating pair from some other barn (see Table 5).

It seems evident that some of the birds in the barn at night up to the time nesting starts in the spring are wanderers, for the results of catching the birds every other night before they have begun laying show constant changes both in numbers and in individuals. On the night of May 6, 1934, there were six birds in the barn, on the 8th there were eight birds, and on the rainy night of the 10th but six birds were there, and only four of these last had been there on either of the previous vists. This year there were thirteen birds on the night of May 8th, and only seven of these were present on May 10th along with four new arrivals. The rainy night of May 12th found only seven birds in the barn, of which four were repeats from the other nights and three were not caught.

We have as yet no idea why Swallows seem to put an arbitrary limit on the number of pairs that will nest in a barn, and hold pretty close to that number. Our barn, one hundred feet long, never has had over ten nesting pairs, and so far as we know, never less than eight. The Boutilier barn, about equal in size, has no nests. The Hagar barn, fifty feet long, has always fifteen to twenty occupied nests, while the Dunn barn of similar size has only two or three nests year after year.

As already stated, the birds nesting in a barn are not always there at night, and we have no record of catching at night a total of two adults for each occupied nest in a barn. Although at times we have come fairly close to that maximum, at other times we have fallen far short of it. What proportion of birds nesting in a barn will return to nest the following year is something upon which we have not yet adequate information, but at the present time it seems to be somewhat under 50 per cent on the average.

Eventually it may be possible to get some valuable information concerning the distribution of nestlings the following nesting season. This will require working over as large an area as possible, but since Mr. W. P. Wharton is looking out for the swallows in the Groton area, which borders on the Shirley area, there is good reason to be hopeful. Already we are picking up each other's birds from time to time. The only actual information of any value which we have up to the present concerns a brood of five nestlings banded on July 17, 1935, at the Shirley Industrial School (No. 4). One of these birds, L63688, is quite evidently nesting in our barn (No. 5) this year (it was caught at night on May 8th, and in the daytime on June 17, 1936; good evidence but not quite convincing); another one of the brood is nesting in the Green barn (No. 7) in Harvard,

Massachusetts, (about four miles away) having been caught there at night on June 18, 1936. There is also our record of two birds from a brood banded in the N. Graves barn (No. 14) last year which appeared in our barn in the daytime on successive days this spring. We have no idea, however, of the ultimate destination of these two birds; it is doubtful if they stayed with us. Our various return records of individual nestlings prove nothing at the present time other than that a young bird may return to the barn in which it was hatched or go elsewhere.

The locations of the barns we have visited are shown on the accompanying map, and these are most of the barns in the local Shirley area in which Swallows nest. There are, we believe, no barns south of the Sanderson barn (No. 3) having nesting Swallows, for a distance of about five miles, nor are there any within three miles of us to the east.

Conclusions are risky with Barn Swallows, for they seem constantly to break rules, but the work is fascinating and the results as they accumulate have been most interesting. We hope to be able to continue from year to year and trust that others also will try some intensive work with this species.

Shirley, Massachusetts.

SUMMARY AND ANALYSIS OF SOME RECORDS OF BANDED OSPREYS

BY C. BROOKE WORTH, M.D.

LINCOLN, in *Bird-Banding*[1], reported that up to July 1, 1936, 637 Ospreys (*Pandion haliaëtus carolinensis*) had been banded, and that 46 returns had been received.

This paper is a report of the Ospreys banded by Buckalew, Wilcox, Gillespie, and Worth, who, in that order, have been most successful in banding Ospreys, having tagged a total of 369 up to January 1, 1936, or somewhat over half of the entire number. They have had 47 recoveries to date, 43 of these up to July 1, 1935.[1]

Mention is also made in this report of six additional Osprey returns cited by Lincoln in the same article in *Bird-Banding*.

Herbert Buckalew has done by far the most extensive work, having banded many adult Ospreys, whereas, so far as I can discover, all other workers have confined their attention to fledglings in the nest. Buckalew uses a noose baited with fish and attached to a heavy log. He sets these snares along an exposed beach.[2]

He has banded 149 birds, all in Delaware. Of these, 26 were

[1]Vol. VII, pp. 38–45, 1936.
[2]*Eastern Bird-Banding Quarterly*, Vol. I, pp. 4–5, 1934.