on migration, the bird probably being fairly near the end of its journey, while the high weight in autumn is presumably due to the birds being near the beginning of migration. Many passerines have been shown to increase in weight before migrating. The autumn adults are also slightly heavier than the juveniles (Table I).

The spring weight of Whitethroats on Skokholm averaged 13.7 g., little different from the Lundy weight. In autumn Skokholm juveniles average 0.6 grams heavier than those from Lundy.

Spotted Flycatcher (*Muscicapa striata*)

The mean average wing length for this species is the same in autumn as in spring; this is surprising as nearly all the autumn birds are thought to be first winter which, in many other passerine species have a shorter wing than do the adults. The diurnal differences in weight for twenty-six autumn birds are listed below.

Trapped before 1000 *hrs G.M.T.* — Ten birds averaged 14.4 grams.

Trapped after 1000 *hrs G.M.T.* — Sixteen birds averaged 15.9 g.

Speculation as to the reason for this quite marked difference has been made earlier in the paper.

A SUMMARY OF WORK ON SOME BREEDING BIRDS, 1947-56

By Barbara Whitaker

The following is a summary of observations and counts made by members of the Lundy Field Society and more particularly by the somewhat rapid succession of wardens, i.e. Hugh Boyd 1948-49, David Lea 1950-51, Peter Davis 1952-53, Barbara Whitaker 1954-56.

Fulmarus glacialis. **Fulmar Petrel.**

Eggs were first recorded by F. W. Gade at the Jenny's Cove colony in 1944. Since the Society's formation, the following facts about breeding have been recorded.

	Jenny's Cove			*Gannets' Rock*			*Devil's Chimney*		
Year	*No. Sites Occupied*	*No. Eggs*	*Chicks*	*No. Sites Occupied*	*No. Eggs*	*Chicks*	*No. Sites Occupied*	*No. Eggs*	*No. Chicks*
1947	6	3	1 hatched	3	1				
1948	6	5	none	6	4	3 hatched			
1949	–	–	1 hatched	–	5	1 fledged			
1950	–	4	2 fledged	–	3	2 fledged			
1951	–	6		–	5				
1952	11	9	3 hatched	10	7	3 hatched			
1953	15	–	2 ringed	12	–	2 ringed			
1954	12	9	3 hatched	8	6	3 hatched			
1955	13	7	5 hatched	–	8	4 hatched	1	1	1 hatched
1956	13	8	5 hatched	11	10	7 hatched	1	1	1 hatched

The numbers of Fulmars frequenting the Jenny's Cove colony seem to have remained comparatively steady for the last four years. The Gannets' Rock colony has shown a more sustained increase in

size. The number of eggs laid at the Jenny's Cove colony may well be in excess of the number recorded particularly in earlier years as the sites are difficult of access.

The only new area used since the Society's formation is just opposite the Devil's Chimney, about a quarter of a mile along the cliff from the main Jenny's Cove colony, the old colony not being visible from the new site.

The number of eggs hatching as shown in the table is really no indication of the degree of fertility, because of the predation by gulls after the birds have been disturbed from their eggs. This is particularly so on Gannets' Rock. During 1956, if birds had been put off their eggs by the Warden, care was taken to cover the eggs with a handful of vegetation. This probably accounts for the increase in the number of eggs hatched on Gannets' Rock. The only evidence of chicks dying during the past three years was in 1956 when one chick vanished aged twenty to twenty-five days, and another one was found dead at ten to fifteen days.

A dark phase bird has been present at Gannets' Rock since 1948, but it is not known if it is the same individual.

Phalacrocorax carbo. **Cormorant.**

The following is the number of nests recorded on Gannets' Rock during the past ten years, this represents the entire breeding population, except in 1948, when it was thought some additional pairs were breeding on the N.W. coast.

1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
6	8	7	3	2	4	3	2	1	0

The decrease in the breeding population may be due to the increased number of visits to Gannets' Rock. It has been visited seven to eight times per season during the past two years.

Phalacrocorax aristotelis. **Shag.**

There have been estimates of the number of pairs breeding on the island each year since 1948 which are given below, together with R. Perry's estimate for 1939.

Year	1956	1955	1954	1953	1952	1951	1950	1949	1948	1939
No. of prs	132	127	123	72	86	54	37	75	*c.* 100	110

As between 1954-56 a special study of this species has been undertaken, the figures are not very comparable, the apparent increase in numbers during the past three years being almost certainly due to the time given to the species. But from R. Perry's figure of one hundred and ten in 1939 and from the fact that in 1949 an estimate of seventy-five pairs was made without the Shutter Rock being climbed, it seems likely that the breeding population has varied little during the last eighteen years. The slight increase in recorded numbers from 1954 to 1956 is fairly certainly due to an increased knowledge of the species over the three years.

The following are the number of breeding pairs in the S.W. Sample area for the last five years.

Year	1956	1955	1954	1953	1952
No. Breeding Pairs	44	46	53	50	54

These figures are comparable as a special effort has been made to cover this area and the Shutter Rock has been visited annually during the year. The slight decrease of nests in the area during 1955 and 1956 is almost certainly due to the erection of hides. For instance the Raven's Gully colony where there were eighteen nests in 1954, but at which a hide was erected in March 1955 dropped to ten nests in 1955, and to eight nests in 1956, when there was again a hide present. Work on the Shag during the last three years has shown that nest sites where the pair are unsuccessful in rearing any young are frequently not used in subsequent years whereas the successful nests are. This may explain the shifting of colonies about the island.

Haematopus ostralegus. **Oyster-catcher.**

An estimate has been made of the number of pairs breeding on the island during the past five years. These figures are set out below and show little change in the population.

Year	1956	1955	1954	1953	1952
	c.	*c.*	*minimum*	*c.*	*c.*
No. of pairs breeding	14	14	12	20	20

During 1956 the distribution of fourteen nests located was as follows : East coast, five ; S.E. peninsula, three ; West coast, four ; on top of the island at the Northend, one. During the past three years, nests that have been found on the West coast have been in the sea pink zone approx. 40′—50′ above H.W.M. The young from these nests have a wide area to wander in. When they are only a few days old the parents seem to bring them up the sidings and the family can be seen feeding here and on the short grass on top of the island. The tidal zone on the west coast must very frequently be unavailable to a young Oyster-catcher family, due to the spray from the heavy swell. By contrast, the pairs nesting on the east side seem to be almost entirely marine feeders during the chick rearing season. The east coast nests are usually between 15′—20′ above H.W.M. on bare rock or in the narrow thrift zone that exists on the headland of the east side ; these families never seem to penetrate the thick bracken of the east sidings to reach the top of the island. They usually have a small tidal zone available to them, but much of the food seems to be carried in by the parents. For instance at a nest on the Knoll Pin Point, where deep water restricts the sea frontage to 10—15 yards, two hundred and fifty-six empty limpet shells (*Patella* sp.) were found above H.W.M. on July 5th, two half grown chicks being in the area. On the Miller's Cake, from which there is a 15′ drop to beach level, two chicks were

present for about a fortnight and huge numbers of limpet shells covered the rock. A nest found in 1955 had an even more restricted area available to the newly hatched chicks. It was on the east side on a ledge 1 yard wide by 6 yards long with a 30′ sheer drop below it to deep water and backed by sheer cliff. The eggs were just hatching when the nest was found but the subsequent history of the chicks was not observed.

To conclude the following seem to be the requirements for nest sites :

East side. A comparatively flat area free of anything but short vegetation, and with adequate food supplies (especially limpets) close by. Such sites are comparatively rare due to heavy vegetation often growing down close to sea-level, steep cliffs and few beaches.

West side. A fairly flat area in the thrift zone backed by a comparatively gentle slope of short vegetation up which the parents and young chicks can walk and feed. Such areas are found at S. Pilots Quay, Dead Cow Point, The Pyramid and N. of St John's Stone. Nests are usually located in all these places. These requirements for nest sites and feeding areas probably account for the rather small breeding numbers on Lundy.

Vanellus vanellus. **Lapwing.**

The numbers of breeding pairs recorded during the past seven years were :

Year	1956	1955	1954	1953	1952	1951	1950
		c.	*c.*	*c.*	*c.*	*c.*	*c.*
No of pairs	5	10	10	10–11	8	7–8	7

The numbers seem to have remained relatively constant except for the fairly sudden drop between 1955 and 1956 which may be due to unusually heavy losses during the hard winter of 1955-56.

Rissa tridactyla. **Kittiwake.**

Number of Occupied Nests

Year	1956	1955	1953	1952	1951	1950	1949
	count	*count*	*count*	*estimate*	*count*	*count*	*count*
	1,335	1,308	1,858	2,500	2,026	1,387	[1,600]

In 1949 no nest count was made. The total cited is based on the number of birds counted in a complete survey, corrected for the proportion of nests with one or both parents present. The reason for the recorded fluctuations are not apparent but may well be due to human error.

Dates of Breeding etc.

Year	1956	1955	1954	1953	1952	1951	1949
1st egg seen	May 14	May 18	May 18	(May 18)	May 13	May 24	May 22
1st chick seen	—	—	—	June 8	June 12	—	—
1st young on wing	July 11	July 20	July 18	—	—	—	July 22

The date for first egg seen in 1953 has been deduced from the date of first chick seen.

May 18th is the average date for the first egg to be seen and July 18th the average date for the first young to be seen on the wing. As no very intensive watch is kept on the species, the actual date of these occurrences is probably slightly earlier.

Alca torda. **Razorbill**

No attempt has been made by the Society to take a census of the whole island. The figures for the S.W. Sample area (see 'Work on Nesting Sea Birds'), show some decline in numbers to a minimum in 1953, but a slow increase during the past three years. It is not known if this represents the trend of the island population as a whole. But the impression is that the numbers have remained relatively static since the Society's inauguration.

Dates of Breeding etc.

Year	1956	1955	1954	1953	1952	1951	1949
1st egg seen	May 7	May 10	—	May 2	May 6	May 26	May 15
1st chick seen	June 9	June 11	June 10	June 5	June 12	—	June 22

The data from which the above figures have been compiled are derived from casual rather than intensive observations. May 6th is the average date for the first egg to be seen (1952-56). In both 1954 and 1952, the first chick seen was judged to be two or three days old. Taking the data from 1953, 1955 and 1956 we have an average incubation period of thirty-three days, compared with the average of 34.3 days (range 33—36) found as the result of intensive observation on Skokholm in 1947 (J. Keighley and R. M. Lockley, 1948. *British Birds*, 41, 113-14).

In 1956 when the first egg was seen on May 7th, there were twenty-five eggs noted on Gannets' Rock on May 12th; as the rock does not support a large Razorbill colony it would seem that soon after the first egg is laid the majority follow suit.

Uria aalge. **Guillemot.**

A census of Guillemots has been attempted during three years of the Society's activities. The figures are tabled below:

1956	1955	1949
3,910	3,850	3,500

The counts have been made during May, June and early July of adults on the cliffs and in the water immediately surrounding the island. Although the figures must be well below the actual population, due to some birds being away fishing, the method is sufficiently consistent to permit the conclusion that the population has changed little during the past seven years.

Dates of Breeding etc.

Year	1956	1955	1954	1953	1952	1951	1949
1st egg seen	May 7	May 10	—	May 14	May 16	May 23	May 22
1st chick seen	June 11	June 11	June 16	—	June 20	—	June 23

The last five years probably give a fair idea of the normal date of laying except for 1954 when there was no Warden in residence until May 17th. The average date for these four years is May 12th, and the average incubation period thirty-four days for the years in which information of first egg and chick are recorded. No precise determination of the incubation period of the Guillemot from intensive observations seems yet to have been made, but in view of the close agreement between the Razorbill results just cited it seems likely that the true period is close to thirty-four days.

Fratercula arctica. **Puffin.**

The maximum recorded in the log in 1950 was *c.* 500, and in 1953 *c.* 250. Presumably both numbers represent counts of a single flock, seen, almost certainly off Puffin Slope. P. Davis tells me he estimated a population of eight hundred birds in 1952. During the last three years the maximum number recorded at Puffin Slope and the adjoining water has been :

1954	1955	1956
c. 200–300	*c.* 290	*c.* 80

On the west coast any birds seen have been recorded with the locality and the following estimates represent the sum of the maxima recorded at different localities.

1954	1955	1956
c. 80	*c.* 45	*c.* 30

The drop in the number of Puffins seems to be continuing. The reason is fairly obviously not rats. Rats were present on the island for many years without apparently controlling the number of Puffins. On Skokholm where there are no rats the population has also decreased greatly during the past fifteen years (R. M. Lockley). It would seem that the departure of Puffins from Lundy is due to some other cause, such as a depletion of the food supply in the surrounding waters, or losses of adults due to 'oiling'.