The Scottish Naturalist

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With which is incorporated

The Annals of Scottish Natural History

EDITED BY

ADAM WATSON,

WITH THE ASSISTANCE OF

V. C. WYNNE-EDWARDS, JAMES W. CAMPBELL,

and WINIFRED U. FLOWER

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The Scottish Naturalist

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REVIEW OF ORNITHOLOGICAL CHANGES IN SCOTLAND IN 1954

Evelyn V. Baxter
Upper Largo

This, the second review of Scottish bird records, is concerned with the records published in 1954. As before, the Bird Records Committee of the Scottish Ornithologists' Club asked me to compile the review, which is on the same lines as that for 1953.

The records in the year 1954 show much of interest. There are not as many reports of American visitors as there were in 1953, but records of the Far Eastern element bulk larger in the additions to the Scottish list than was the case in that year.

The winter showed matters of interest: an incursion of Scaup to inland waters in S. Scotland in early February (*Edin. Bird Bull.*, 4: 57), Green Sandpipers in Lanark, Fife and Aberdeen, in winter 1953-54 (*Scot. Nat.*, 66: 42); Ring Ouzels and Wheatears in Midlothian and Berwick, in winter (*Edin. Bird Bull.*, 4: 54).

Shore Larks and Lapland Buntings were again numerous in winter, and there are further details of the Crossbill immigration (*Edin. Bird Bull.*, 4: 42, 44).

There were more Corncrakes reported, especially in Forth (*Edin. Bird Bull.*, 5: 12), and unusually heavy passage of Ruffs at the Eden mouth at the end of August (*Edin. Bird Bull.*, 5: 7).

BIRDS NEW TO SCOTLAND

[Southern Cormorant *Phalacrocorax carbo sinensis*

A cormorant described as showing the characteristics of the southern race was seen at Aberlady on 4th April 1954, in full breeding plumage (*Edin. Bird Bull.*, 4: 47). In the present state of knowledge, the Committee consider that a single individual in the field cannot be assigned with certainty to either race (see *Scot. Nat.*, 65: 116).]

Little Egret *Egretta garzetta*

One seen at Spiggie Loch, Shetland, between 15th May and 21st June 1954 (*F.I.B.O. Bull.*, 2: 177); and one at Comrie, Perthshire, on 11th May 1954 (*F.I.B.O. Bull.*, 2: 145). A visitor from S. Europe, new to Scotland, Shetland, Tay, and N. Perth.

[Baikal Teal *Anas formosa*

A female of this E. Siberian species was seen at Fair Isle on 30th September and 1st October 1954 (*F.I.B.O. Bull.*, 2: 194). This species is commonly kept in captivity, and the bird may have been an escape; but there were other eastern species appearing at Fair Isle about this time, which strengthens its claim to a place on the Scottish List. It breeds in N.E. Asia and is new to Scotland, Shetland, and Fair Isle.]

Lesser White-fronted Goose *Anser erythropus*

The first satisfactory identification of this species comes from near Castle Douglas, where an immature and an adult bird were seen on various occasions between 20th February and 14th March 1954. This goose breeds in N. Europe and N. Asia and is new to Scotland, Solway, and Kirkcudbright (*Scot. Nat.*, 66: 186).

Wilson's Phalarope *Phalaropus tricolor*

A Wilson's phalarope frequented the neighbourhood of North Queensferry from 11th September to 5th October 1954. This is an American species, breeding in central and western N. America, and it is the first certain record for Scotland,

Forth, and South Fife (*Edin. Bird Bull.*, 4: 69; *Scot. Nat.*, 66: 188).

Siberian Thrush *Turdus sibiricus*

An adult male was trapped on the Isle of May on 1st October 1954. It is the first record for Britain, Scotland, Forth, and the island (*Edin. Bird Bull.*, 5: 1). Its breeding range is Asiatic.

Yellow-headed Wagtail *Motacilla citreola*

Two first winter specimens of this Siberian species were trapped on Fair Isle on 20th September and 1st October 1954, respectively. It is new to Britain, Scotland, Shetland, and Fair Isle (*F.I.B.O. Bull.*, 2: 191).

BIRDS NEW TO AREAS AND COUNTIES

[Night-Heron *Nycticorax nycticorax*

Night-herons noted in 1954 in East Lothian and Midlothian can only be regarded as escapes. Since 1952 these birds have been given full freedom in the Royal Scottish Zoological Park, Edinburgh, and therefore cannot be regarded as genuine visitors (*Edin. Bird Bull.*, 4: 66).]

Little Bittern *Ixobrychus minutus*

A male obtained at Maidens, Ayrshire, in the early spring of 1947 is the only record for Clyde and Ayrshire (*Ayrshire Archaeological and Natural History Society*, Series 2, 1: 116; and *Scot. Nat.*, 66: 66).

Harlequin-Duck *Histrionicus histrionicus*

A young drake shot on River Teviot on 16th January 1954 is the first record for the Scottish mainland, Tweed, and Roxburgh (*Scot. Nat.*, 66: 15).

Red-breasted Merganser *Mergus serrator*

A drake seen at Hamilton on 20th February 1954 appears to be the first record for Lanark (*Glas. & W. of Scot. Bird Bull.*, 3: 43).

White-fronted Goose *Anser albifrons*

A flock of at least 800 of the European race (*Anser a. albifrons*) is reported from the Newburgh marshes on 28th April 1931, the first definite record from Tay and North Fife (*Edin. Bird Bull.*, 4: 40). White-fronted geese (subsp.?) were identified at Blanefield (two shot) in November 1948. One seen at Endrick Mouth on 14th and 15th March 1953; and one in the Clyde valley above Hamilton on 25th March 1953. These records are new to West Stirling and Lanarkshire (*Scot. Nat.*, 66: 66).

Pink-footed Goose *Anser fabalis brachyrhynchus*

Five recorded at Achnahaird on 8th May 1952 are the first for the N.W. Highlands and W. Ross (*Scot. Nat.*, 66: 98).

Greater Snow-Goose *Anser caerulescens atlanticus*

One was found dead at Gladhouse on 4th January 1954. This is the second Scottish record, and is new to Forth and Midlothian (*Edin. Bird Bull.*, 4: 33, and *Scot. Nat.*, 66: 14). An immature snow-goose (subsp.?) was seen at Hamilton on 6th March 1954. The species has not previously been reported from Lanark (*Scot. Nat.*, 66: 15).

Bewick's Swan *Cygnus columbianus bewickii*

A herd is recorded in October 1942, and another on 14th October 1948, in West Ross (*Scot. Nat.*, 66: 99). These are the first noted in N.W. Highlands and W. Ross. A single bird is recorded from Skye in March 1949, and is new to that island (*Glas. & W. of Scot. Bird Bull.*, 3: 7).

Marsh-Harrier *Circus aeruginosus*

One on the Campsies on 19th December 1953 is the first record for W. Stirling (*Scot. Nat.*, 66: 67).

Montagu's Harrier *Circus pygargus*

A male at Spiggie on 5th May 1954 is the first record for Shetland (*F.I.B.O. Bull.*, 2: 178).

Northern Golden Plover *Charadrius a. apricarius*

A flock of 100 at Gladhouse on 25th April 1954 are the first recorded for Midlothian (*Edin. Bird Bull.*, 4: 62).

Whimbrel *Numenius phaeopus*

One at Drymen on 3rd May 1953 is the first record for W. Stirling (*Scot. Nat.*, 66: 68).

[Black-tailed Godwit *Limosa limosa*

Before acceptance as the first record for S. Argyll further evidence is desirable of the identification of three birds, seen at Crinan Bay on 4th September 1954 (*Glas. & W. of Scot. Bird Bull.*, 3: 43).]

Bar-tailed Godwit *Limosa lapponica*

Three records from Lanark in September and October 1953, all inland, are the first for that county (*Scot. Nat.*, 66: 68).

Green Sandpiper *Tringa ochropus*

A record from Badentarbet on 28th September 1943 is new to W. Ross (*Scot. Nat.*, 66: 99).

Wood-Sandpiper *Tringa glareola*

One on Islay on 7th June 1954 is the first recorded for the Inner Hebrides (*Scot. Nat.*, 66: 134).

Spotted Redshank *Tringa erythropus*

The first record of this species for S.E. Sutherland comes from Dornoch on 19th September 1954 (*Scot. Nat.*, 66: 185).

Knot *Calidris canutus*

One at Durness on 15th September 1954 is new to N. Sutherland (*F.I.B.O. Bull.*, 2: 213). On 18th July 1953, near Traigh (between Arisaig and Morar), three were seen in summer plumage, the first record for S. Inverness (*Scot. Nat.*, 66: 43).

Little Stint *Calidris minuta*

The first records of little stints in S.E. Sutherland come on 27th and 30th September 1953 from Dornoch (*Scot. Nat.*,

66: 43); while two, recorded on 2nd June 1954 at Reiff are new to the N.W. Highlands and W. Ross (*Scot. Nat.*, 66: 99).

[Siberian Herring-Gull *Larus argentatus heuglini*

A large dark herring-gull, probably of this race, was observed at North Berwick on 24th January 1954 and subsequent dates (*Scot. Nat.*, 66: 44).]

Black Tern *Chlidonias niger*

One in the Bay of Scousburgh on 18th to 21st June 1954 is new to Shetland (*F.I.B.O. Bull.*, 2: 178); and the first for the Isle of May was noted on 12th May 1954 (*id.* 2: 163).

Sooty Tern *Sterna fuscata*

One seen at Rendall on 22nd April 1954 is the second record for Scotland and first for Orkney (*Scot. Nat.*, 66: 190).

[Golden Oriole *Oriolus oriolus*

The evidence for one seen at Rosneath on 14th May 1951 is insufficient for identification (*Glas. & W. of Scot. Bird Bull.*, 3: 44).]

Jay *Garrulus glandarius*

One seen at Dornoch on 23rd September 1944 is the first record for S.E. Sutherland (*Scot. Nat.*, 66: 47).

Black Redstart *Phoenicurus ochruros*

One seen near Samalaman on 29th April 1921 is the first record for the N.W. Highlands and W. Inverness (*Scot. Nat.*, 66: 94).

Red-spotted Bluethroat *Cyanosylvia svecica*

The first record for the mainland of Angus comes from Buddon on 27th September 1953 (*Scot. Nat.*, 66: 52).

Barred Warbler *Sylvia nisoria*

A young bird seen by the River Dionard, N. Sutherland, on 16th August 1954 is the first record for Sutherland (*F.I.B.O. Bull.*, 2: 211).

Garden-Warbler *Sylvia borin*

One singing near Scourie on 11th June 1954 is new to W. Sutherland (*Scot. Nat.*, 66: 191).

Chiffchaff *Phylloscopus collybita*

One near Tillicoultry on 26th April 1954 is the first record for Clackmannan (*Edin. Bird Bull.*, 5: 16).

Yellow-browed Warbler *Phylloscopus inornatus*

A yellow-browed warbler identified near Samalaman on 11th April 1921, is new to the N.W. Highlands and W. Inverness (*Scot. Nat.*, 66: 94).

[Red-breasted Flycatcher *Muscicapa parva*

On investigation, a female recorded on 6th and 7th September 1954 near Troon, and a male and female seen at the same place in September 1952, are not acceptable (*Field*, 204: 671).]

Grey-headed Wagtail *Motacilla flava thunbergi*

A male seen at Gullane on 26th May 1954 is new to the mainland of Scotland, Forth and East Lothian (*Edin. Bird Bull.*, 4: 68).

Red-backed Shrike *Lanius collurio*

A male seen at Coylumbridge on 1st June 1954 is new to E. Inverness (*Scot. Nat.*, 66: 127); and a male seen near Portnahaven, Islay, is the first record for the Inner Hebrides (*Scot. Nat.*, 66: 142).

BREEDING RECORDS

There are some interesting notes under this heading:

Shag *Phalacrocorax aristotelis*

This species has recently increased in N.E. Scotland; in 1947 it was first recorded as breeding in Banff, and now nests in several places on the Troup Head line of cliffs. It also breeds in Aberdeenshire, between Cruden Bay and Longhaven (*Scot. Nat.*, 66: 122).

[Wigeon *Anas penelope*

We would like further corroborative evidence of the record of a pair having bred near Falkirk in 1953, before accepting this as the first breeding record for E. Stirling (*Glas. & W. of Scot. Bird Bull.*, 3: 42).]

Tufted Duck *Aythya fuligula*

A few pairs breed on the Storr Lochs—the first definite breeding record for Skye (*Glas. & W. of Scot. Bird Bull.*, 3: 7).

Common Scoter *Melanitta nigra*

Five pairs seen and two females flushed off eggs on Islay in June 1954. The other records from the Inner Hebrides are old ones from Coll and Tiree (*Scot. Nat.*, 66: 131).

Eider *Somateria mollissima*

First bred on Holy Island in 1951. First breeding record for Arran (*Glas. & W. of Scot. Bird Bull.*, 3: 39).

Goosander *Mergus merganser*

One nest found on 28th June 1939 is the first record for Skye (*Glas. & W. of Scot. Bird Bull.*, 3: 7).

Mute Swan *Cygnus olor*

Now breeding Lamlash—first breeding record for Arran (*Glas. & W. of Scot. Bird Bull.*, 3: 39).

Montagu's Harrier *Circus pygargus*

Attempted breeding is recorded in Galloway, 1953 (*Scot. Nat.*, 66: 41).

Roseate Tern *Sterna dougallii*

A nest and eggs of this species was found at Buddon Ness on 7th July 1953. First breeding record for Angus (*Scot. Nat.*, 66: 46).

Rock-Dove *Columba livia*

Recorded breeding on Ailsa Craig—"the first proved breeding this century"—(*Glas. & W. of Scot. Bird Bull.*, 3: 5). It would be interesting to know if these were pure-bred birds.

Hooded Crow *Corvus corone cornix*

A pair nested on Ailsa Craig in 1953 and reared three young. This is the first breeding record for Ailsa; and in view of the mixed population in S.W. Scotland it would be interesting to know if these were *pure* hooded crows (*Glas. & W. of Scot. Bird Bull.*, 3: 5).

Jackdaw *Corvus monedula*

Attempted to breed in Unst in 1953, but no young were seen. The only colony in Shetland is at Weisdale on the Mainland (*F.I.B.O. Bull.*, 2: 139).

Pied Flycatcher *Muscicapa hypoleuca*

Is extending its range in Perthshire (*Scot. Nat.*, 66: 54).

Tree-Pipit *Anthus trivialis*

Found breeding in Islay in 1954. Breeds Mull, Skye, and Raasay in Inner Hebrides (*Scot. Nat.*, 66: 142).

THE SHEEP POPULATION OF HIRTA, ST. KILDA, 1955 *

J. Morton Boyd
Glasgow University

In August 1952 a census of the sheep population on Hirta, the main island of St. Kilda, was carried out, and a total of 1,114 counted (Boyd, 1953). During May 1955 another expedition visited the island, with the kind permission of the Marquess of Bute, and another census of the sheep population was made.

The method of counting was similar to that employed in 1952, the island being sectioned with parties counting in each section simultaneously. This time, however, the village area and the surrounding slopes were counted separately. Care was again taken to count and time the passage of sheep from one section to another, and afterwards the counts of the various parties were correlated. The parties set out from Am Blaid at midday on 28th May.

Party 1, consisting of W. W. Norcliffe and myself, covered Mullach Geal, Mullach Mòr, Conachair and Oiseval, not including the slopes above the village. Party 2, consisting of F. T. Truefitt and G. H. D. Davenport, covered Mullach Bi, Gleann Mòr and the Cambir. Party 3, consisting of A. A. K. Whitehouse and Dr. J. P. Bull, covered Ruaival, Na h-Eagan, Leathaid a' Sgithoil Chaoil, Mullach Sgar, Creagan Dubh and Creagan Breac. Party 4, T. S. F. Norcliffe, covered the village area and the surrounding visible slopes of the Mullach ridge, Conachair and Oiseval. Party 1 counted 165, Party 2 counted 239, Party 3 counted 145 and Party 4 counted 161, giving a total of 710.

On this occasion it was possible to count the number of lambs at foot with the ewes. The average of seven flocks was fifty-seven lambs to 100 ewes, and the distribution of the seven counts about this mean was symmetrical with a maximum of sixty-seven and a minimum of forty-seven lambs to 100 ewes.

* *Received 28th June* 1955

Most of the lambs were half-grown and still sucking. The youngest was probably about a fortnight old and the oldest about ten weeks. In the village area alone something like fifty carcases of very young lambs were counted, and one dead ewe was found there lying in the open, not, as is usual, in a " cleit ". In the seven flocks only nine rams were counted for 100 ewes, but since the males were sometimes found in small parties of two or three on their own, this figure may be low.

Of the 216 individuals counted in the seven sample flocks, sixty-two or 29 per cent. were found to be of the light brown strain, a figure which compares favourably with the 23 per cent. obtained in 1952. The variation in coat colour cannot be attributed to the interbreeding of the introduced Soays with the blackface which remained after the 1930 evacuation, since on the island of Soay, where no blackface has ever been, I noticed the presence of both light and dark strains. Of the eleven rams present in the sample flocks two were seen to be of the light strain, and the white face character possessed by a minority of ewes is also possessed by the rams.

The vegetation of Hirta is divided almost equally into acid and basic grassland, with boundary zones on the cliffs of nitrophilous and maritime vegetation (Poore and Robertson, 1949). The fraction of the population found on the basic grassland in 1955 was 66 per cent., and compares favourably with the 77 per cent. found there in 1952. Although due allowance must be made for seasonal difference, the swards in May 1955 were noticeably deeper and fresher than in August 1952. The condition of the village meadows, however, was less luxuriant than in 1952, and ruts now present along the small stream, which issues from the well in the manse meadow, show that many more sheep come there to water than on the previous occasion. The pastures of Ruiaval, the Cambir and Gleann Mòr, where sheep are most dense, did not give the same impression of gross overgrazing as in 1952.

The behaviour of the flocks was also different. In 1952 at the high density level the animals were very restive, and easily stampeded. Only at night would they venture into the village area where we were staying, and they proved very difficult to approach. Now, however, at a lower density level, the flocks are much more approachable, and during the hours

of daylight, while members of the party were in the village area, as many as 148 lambs and ewes were counted within the perimeter wall.

The 1955 party landed on only one of the satellite islands, Dùn, where there are no sheep. Visits to Soay and Boreray were impracticable, but the pastures of Soay could be observed from the Cambir on Hirta, and those on Boreray from the boat as we sailed close to the island. Counting the sheep on Soay with binoculars at a range of about half a mile was made difficult by the background of talus slopes, but the eighty-seven counted probably constituted more than half of the total population. On the southern pastures of Boreray about 150 blackface were counted, and this probably constitutes about half the total population of that island. In 1951 Mr. J. Cunningham visited Boreray with a party and made an accurate count of 340 blackface. No sheep were taken off.

The three isolated populations of sheep in St. Kilda are living in a closed habitat in the absence of predators. The major population on Hirta has fallen by 40 per cent. of its 1952 strength in three years or less, and this has happened, as far as can be ascertained, without external interference. The geographical situation, the topography, and the low quality of wool and mutton discourage human interference.

This decline in numbers might have been expected as a direct consequence of the unusually severe winter of 1954-5. The sheep flocks in St. Kilda in such weather, however, are not strictly comparable with those on the mainland or the major Hebrides. St. Kilda is bathed, especially in winter, by salt spray, and snow would lie for a much shorter time than on the mainland. I know that at the most severe period of the winter in question snow lay on Tiree for less than a week, and then at no great depth. Moreover, there are on Hirta several hundred " cleits " which provide ample shelter for a large flock. From all appearances the flocks on the satellite islands have not been in the same manner affected by the winter; in fact on Soay, where no " cleits " exist, the flock seemed to be larger in 1955 than in 1952. The severe winter might conceivably have affected the Hirta flock more drastically than the others on account of the optimum number of head per acre being greatly exceeded.

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THE BIRDS ON ST. KILDA, MAY 1955 *

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Aldridge

A. A. K. Whitehouse
Whaley Bridge

An expedition visited St. Kilda from 24th to 30th May 1955, with the kind permission of the Marquess of Bute. The party lived on Hirta, and apart from one hour spent on Dùn by two members, no other island was visited. On the return voyage to Harris the party sailed along the west coast of Dùn, Hirta and Soay, and thence to Stac Lee and Boreray. Visibility was unrestricted, but rough seas made landing impossible.

On the day of arrival, between 2 p.m. and 3 p.m. B.S.T., the calm weather coupled with the low spring tide permitted two of the party to boulder-jump across Caolas an Duin. The eastern slopes of Dùn are gained by a moderately difficult ascent marked by a fixed chain placed there by the St. Kildans, and now of doubtful reliability. The tides were decreasing during the period, and although only one crossing was made without entering the water, it is feasible that, in May and early June, regular crossing could be made at the peak of the spring tides, with the party staying on Dùn over one or two twelve-hour periods.

Observations were therefore limited substantially to Hirta, and within the time available, no large-scale census work could be done. Careful records of all species seen were made, and the notes of all twelve members of the party were collated each evening with detailed cross-checking of any doubtful observations. The whole party was within the Village Bay watershed from 24th to 30th May, and the entire island was covered on 26th, 27th and 28th May. The Cambir was not visited on the 25th and 29th. Sample counts of several species were made for the purpose of comparison with past work and with simultaneous migrational observation elsewhere in

* *Received 25th July* 1955

Britain. With the exception of 24th May, when the island was beclouded, the weather was fine with fresh to strong east to south-east winds.

Great Northern Diver *Gavia immer*. One was seen on most mornings in Village Bay. During the day it moved out to sea.

Leach's Petrel *Oceanodroma leucorrhoa*. A large colony, probably hundreds strong, was discovered on Carn Mòr, a boulder-strewn terrace below Mullach Bi. The colony extended along the fringes of the gigantic talus slope where turf has developed, particularly on the north side. The site was visited on three nights and the species was active from about 12.30 a.m. to 3.30 a.m. B.S.T. on each occasion. The birds were coming in with quick darting flight and repeated calls of " wicka-wicka-ki-ki-ki " and " kik kicka kik kik-ki-ki-ki ". The larger size than the storm petrel was noticeable, and on one occasion the forked tail was observed. In many cases they flew straight into holes, while others flew low over the nesting site but did not alight. Attempts to catch the birds both in the air and on the ground were unsuccessful, and the musty smell was nowhere noticeable, owing presumably to the early date. An attempt to find this species by digging in daylight on Dùn failed, and here also the musty smell was not detected.

Storm-Petrel *Hydrobates pelagicus*. No definite record, although petrels in flight over the tumbled rocks on Ruaival and the foot of the talus slopes at Clash na Bearnaich, Village Bay, did not call and may have been of this species.

Manx Shearwater *Puffinus puffinus*. A large colony, probably more than 1,000 strong, was discovered on Carn Mòr in the giant talus between the fringing colonies of the Leach's petrel. The colony extends upwards for about 500 feet across the steeply sloping terrace from the lower sea-cliffs to the upper cliffs of Mullach Bi. The same area abounds with puffins which apparently share the same interconnecting system of cavities under the boulders. The shearwaters were flighting for a rather shorter time than the petrels, from about 1 a.m. to 3 a.m. B.S.T., when many were leaving their burrows and flying seawards, not horizontally, but in a steep swoop parallel to the nesting slope. Shearwaters were also heard calling on Dùn at night, in the distance from the summit of

Ruaival. On Carn Mòr thirteen were caught, ringed and photographed.

Fulmar *Fulmarus glacialis*. A few sample counts were made in selected areas for purposes of future comparison:

24th May	Giasgeir to Seilg Geo (not including geo)	450
	Seilg Geo	340
26th May	Soay Stac	320–30
28th May	Bradastac . . . Top .	235–50
	N.W. .	550
29th May	Bradastac . . . Top .	285
29th May	E. face of spur E. of Geo Oscar .	470

Five birds were ringed.

Gannet *Sula bassana*. Ones, twos or threes fishing in Village Bay on most days.

Cormorant *Phalacrocorax carbo*. Two in Village Bay, and one in Glen Bay.

Shag *Phalacrocorax aristotelis*. Always numbered in tens. A small colony was noted on the cliffs of Oiseval near Geo d'ha Glann Neill.

Heron *Ardea cinerea*. One in Village Bay on 24th May as the party arrived. Not seen again.

Eider *Somateria mollissima*. Numbers in Village Bay ranged from twenty-five to fifty and usually included nearly as many females as males. In Glen Bay ten were found. Five nests were found: two in the village, one in a " cleit " near Claigeann an Tigh Faire almost 1,000 feet above the sea, and two in Gleann Mòr.

Whooper Swan *Cygnus cygnus*. One flew up the valley from Village Bay at 6 a.m. on 28th May and disappeared over the east shoulder of Conachair. The skeleton of a swan was found in the lower village meadows.

Golden Eagle *Aquila chrysaëtos*. A single bird appeared on the evening of 26th May over the Conachair-Mullach Mòr plateau. It was attacked by a peregrine which came out from Glacan Chonachair but was hardly disturbed. The bird was in view for ninety seconds before it disappeared over the Mullach Geal ridge. About an hour later three members of

the party watched an eagle soaring high above Conachair, presumably the same bird.

Peregrine *Falco peregrinus*. No evidence of more than two birds. These were usually seen at Glacan Chonachair, on the village slopes of Oiseval, and also over the landward slopes of Mullach Bi.

Kestrel *Falco tinnunculus*. One male on 25th May over the western side of Mullach Sgar.

Corncrake *Crex crex*. One was first heard at 11.30 a.m. on 27th May, and then frequently heard and flushed in the western reaches of the village, where a single bird has been reported on four occasions since 1938.

Oystercatcher *Haematopus ostralegus*. Six nests were found inside the village wall, and eleven birds were counted in the village area on 27th May. At least four pairs were present in Glen Bay.

Lapwing *Vanellus vanellus*. Two arrived in the village on 26th May, one was seen there on the 27th, and two on the 28th and 29th.

Golden Plover *Charadrius apricarius*. One was seen on Mullach Sgar on 25th May, one on the Cambir on the 27th and 28th, and a pair appeared to be holding territory on Mullach Geal on 28th May. These all had the typical plumage of the northern subspecies *Ch. apricarius altifrons*. The female of the pair on 28th May had much less black on the sides of the head than the other birds, which were all males.

Turnstone *Arenaria interpres*. During the six days of the expedition the numbers decreased daily as follows: thirteen, twelve, nine, eight, five, three. A favourite roost was on the shore rocks just to the east of the manse.

Snipe *Capella gallinago*. Widespread over the whole of Hirta, calling day and night and also drumming at night. In spite of considerable searching no nests were found. Inside the village wall nine individuals were counted on 27th May.

Whimbrel *Numenius phaeopus*. Seen near Mullach Bi, in the village, on Ruaival, and on the Cambir. Daily counts through the period of the expedition were as follows: one, two, five, six, five, four. They did not appear to move on quickly, twos and threes remaining to feed all day in the village on 26th and 27th May.

Black-tailed Godwit *Limosa limosa.* One on the 29th near Ruaival in summer plumage, feeding and flying with three whimbrel.

Knot *Calidris canutus.* One noted on 24th and 26th May (possibly the same bird) in summer plumage frequenting the rocks near the pier in Village Bay. Roosted with turnstones.

Dunlin *Calidris alpina.* Seen both on the village shore and in Gleann Mòr, the daily numbers being: one, one, four, three, none, none.

Sanderling *Crocethia alba.* One on 29th May in winter plumage near the pier at Village Bay.

Greater Black-backed Gull *Larus marinus.* About ten in Village Bay and twenty in Glen Bay. One nest with young was found in Gleann Mòr. The Village Bay birds roosted with herring gulls during the day along the lower reaches of Amhuinn Mhòr, and at night are augmented probably by birds from Dùn at a roost on Ruaival. They were observed soaring over the petrel and shearwater colonies throughout the night on Carn Mòr.

Lesser Black-backed Gull *Larus fuscus.* Only ones and twos in Village Bay, but about eighty were present in Gleann Mòr, where three birds were seen to return to nests each containing three eggs. There were undoubtedly many more nests in the vicinity of Leacan an t-Sluic Mhoir.

Herring-Gull *Larus argentatus.* There were at least 150 on Hirta, twenty being counted around Village Bay and 130 in Gleann Mòr. They roosted with the great black-backed gulls.

Black-headed Gull *Larus ridibundus.* One in Village Bay on 26th May.

Kittiwake *Rissa tridactyla.* Widespread around the cliffs and noted collecting nesting material from two particular places on the western side of Gleann Mòr.

Razorbill *Alca torda.* Nesting colonies observed on the western cliffs of Bioda Mòr on Dùn, but none found on Hirta. The birds were common in the sea in the approaches to Village Bay, and particularly so off the west coast of Dùn.

Guillemot *Uria aalge.* The colony on Stac Biorach numbered 500 to 600, and other smaller colonies were observed at the tunnel at Gob na h-Airde, and Geo Oscar. Of sixty-nine counted on one ledge nine were bridled.

Black Guillemot *Uria grylle*. Seen near Dùn and a pair at Geo Chruadalian in Glen Bay. Not more than five birds were seen.

Puffin *Fratercula arctica*. Very abundant on Dùn, around Ard Uachdarachd, and on Carn Mòr, where they nested among the shearwaters.

Wood-Pigeon *Columba palumbus*. Two in Gleann Mòr on 26th May, one on the 28th, and one between Mullach Mòr and Conachair on the 27th.

Cuckoo *Cuculus canorus*. One on 24th and 27th May.

Swift *Apus apus*. Three seen on the 28th, and one of the 29th.

Skylark *Alauda arvensis*. One heard on 26th and 27th May on Mullach Sgar.

Swallow *Hirundo rustica*. Considerable passage with undoubtedly many more than the numbers collectively observed. The daily estimates from 24th to 29th May were as follows: none, twelve, ten, fifteen, twenty, five.

House-Martin *Delichon urbica*. Daily numbers were as follows: two, two, six, three, two, three.

Raven *Corvus corax*. Seen in many parts of Hirta, but not more than two or perhaps three pairs. One juvenile was seen on Conachair.

Hooded Crow *Corvus corone cornix*. Total seen usually six or seven daily on Hirta.

Wren *Troglodytes troglodytes*. Singing males were heard all round the cliffs and from the tops of Mullach Bi and Conachair. Counts were as follows: Dùn (not including the Castle area or Cul Clete A'Bhi), sixteen; Dùn, Giasgeir to Seilg Geo, three; Carn Mòr, three; Mullach Bi to Cambir, seven; inside the village wall, five. Only the last is a definite maximum for the areas specified. The territories of the five village males were roughly plotted and two of these extended over the wall, one being mainly outside in the "cleits" to the east of Lag Aitimir. The first song heard on Carn Mòr on 29th May was at 3.35 a.m. B.S.T. A nest with eggs was found in the village.

Wheatear *Oenanthe oenanthe*. Very common at first all over Hirta and then decreased steadily. Counts within the village perimeter wall east of Amhuinn Mhor on 24th, 27th

and 28th May gave twenty-three, three and one. One found recently dead weighed 22 gm., had a wing-length of 102 mm., and appeared to be of the Greenland subspecies *Œ. œ. leucorrhoa*, as did several of the live birds seen.

Sedge-Warbler *Acrocephalus schoenobaenus*. In the village iris flags there was one on 27th May, two on the 28th and one on the 29th.

Whitethroat *Sylvia communis*. One in village area on 24th May, two on the 27th, and one on the 29th.

Meadow-Pipit *Anthus pratensis*. One near Mullach Bi, but otherwise absent from Gleann Mòr. A maximum of six counted in the village area.

Rock-Pipit *Anthus spinoletta*. Very common and widespread.

White Wagtail *Motacilla alba alba*. Four on 24th May and one on the 25th. None seen thereafter.

Starling *Sturnus vulgaris*. Numerous. Nests were found in the village and at the shielings in Gleann Mòr. One was singing on a " cleit " near Mullach Bi about 1,000 feet above the sea. A flight of eighteen was noted over the village, and about a score were found roosting among the rocks on the summit of Ruaival.

Twite *Carduelis flavirostris*. Up to nine birds were counted in the village, where one was seen feeding young. Some birds moved up as far as An Lag Bho'n Tuath.

Tree-Sparrow *Passer montanus*. Two in the village on 27th May.

Discussion

The most interesting observation was perhaps the discovery of the major breeding colonies of Manx shearwater and Leach's petrel on Carn Mòr, which is fairly easily reached by a grassy gully between Claigeann an Tigh Faire and Mullach Bi. This site was suggested to us personally by Mr. James Fisher as a likely breeding place of shearwaters, since, according to the chronicles of St. Kilda, the natives used to hunt the birds there with dogs at night (Fisher and Lockley, 1954). Some similar talus slopes occurring on Mullach Bi above Geo na Lashulaich appear accessible, in daylight at least, and could profitably be explored for further colonies. Talus slopes at Tigh Dugan on

Soay and on the east side of Ard Uachdarachd on Conachair also seem likely breeding sites for petrels and shearwaters.

The most notable changes in the breeding populations since 1952 (Bagenal, 1953) are the re-establishment of the lesser black-backed gull, the return of the peregrine (although in this case breeding was not proved), and the apparent fall in numbers of the wrens within the village perimeter wall. The snipe population appears to have increased throughout the island as a whole since 1952, the birds being found even on the cliff terraces, but the four-pair community inside the village wall seems to have been maintained. The occurrence of the northern golden plover and the corncrake are again noteworthy.

Mr. I. J. Ferguson-Lees has kindly sent us an abstract of his notes on the 1948 census, when eleven pairs of wrens were counted in the village area and fourteen on the slopes behind. In 1947, when ten pairs were counted in the village area, others were also nesting on the hill behind (Fisher, 1948). Except for the male singing on the hillside to the east of Lag Aitimir, no wrens were found in the village basin in 1955 with the major part of their territories outside the village wall, nor were any found, except in the same area mentioned, in 1952 (Boyd, 1954). The history of the wren population in the village area is described by Armstrong (1953), and it has remained fairly constant at about a dozen pairs since 1931. The census methods have been different with counts of actual occupied nests, pairs in territories, singing males and fledged family groups. Our count of five singing males in the village area (one actually singing outside) may only suggest a fall in the village population provided polygamy is disproved. One nest was found with eggs in the middle of the village in the territory of a male, and within the same territory a pair were seen at the perimeter wall almost 100 yards from the nest.

A surprising number of migrants were observed for late May. This late movement was probably due to a cold spell earlier in the month when the hills of Harris and Skye were snow-covered. The fresh to strong east to south-east winds would be expected to bring birds from the southern reaches of the Long Island. This perhaps explains the volume and variety of migrants. The heron, golden eagle, lapwing,

dunlin, black-headed gull, cuckoo, swallow, sedge-warbler, whitethroat and tree-sparrow have been known to breed in the Outer Hebrides in recent times, and all the others with the possible exception of the black-tailed godwit, knot and wood-pigeon, are seen frequently on migration in the area. The wood-pigeon has been reported only twice from the Flannans, once in May and once in July, and has occurred as a straggler at Skerryvore (Baxter and Rintoul, 1953).

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RARE AND EXOTIC FISHES RECORDED IN SCOTLAND DURING 1954 *

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This fourth consecutive list of rare and exotic fishes recorded in Scotland continues to reveal the variety observed in previous years. As usual a fairly wide interpretation has been placed on the term " rare " in dealing with indigenous species, as experience has shown the desirability of including from time to time those species which though common in certain British waters are nevertheless extremely rare or entirely missing in others. Thus, for the first time in these lists reference is made to the appearance of *Maurolicus muelleri* in Scottish coastal waters and to the capture of isolated specimens of *Urophycis blennoides* within the Moray Firth.

Once more thanks are expressed to all those fishermen, fishery officers, members of the fish trade and private individuals who have helped in various ways to make the list that follows as interesting as it is.

Hexanchus griseus (Bonnaterre)—Six-gilled Shark

Records of this shark were more numerous than in previous years. Two of these were procured by a research vessel working great lines on grounds seldom visited by Scottish fishing vessels. The fish from St. Magnus Bay was particularly interesting since it had devoured about half of a seal.

Date	*Position*	*Gear*	*Length cm.*	*Sex*
5th January	St. Magnus Bay . .	Seine	—	—
15th July	Rosemary Bank . .	Great line	131	M.
2nd August	16′ N. Whiten Head .	Trawl	122	—
16th August	Porcupine Bank . .	Great line	188	F.
13th September	North Rona . . .	Trawl	—	—
14th September	North Rona . . .	Trawl	—	—

* *Received 9th December* 1955

Lamna cornubica (Gmelin)—Porbeagle

Investigations in 1954 have confirmed that the porbeagle, though in no way common, is at times more numerous in some Scottish waters, particularly off Shetland and the north-west coast, than has generally been experienced in the last thirty years. From 25th March until 31st December 120 porbeagles were landed in Scotland by fishing vessels. This total includes eighty-five fish caught in April during an experimental shark-fishing cruise sponsored by the White Fish Authority. Most of the captures were by hook and line, some were by trawl, a few by the fish becoming entangled in herring drift nets and one by seine. Grounds covered a wide area in the north-east Atlantic from 160′ S.E. of Aberdeen and the Viking Bank in the east to Faroe, south-east Iceland and Rockall Bank in the west. It is proposed that in future lists of rare fish mention of the porbeagle will be made only if its occurrences, which will continue to be recorded, are considered unusual.

Carcharinus glaucus (L.)—Blue Shark

After many years without any records of the blue shark five, comprising seven fish, were obtained in 1954.

Date	*Position*	*Gear*	*Length cm.*	*Sex*
12th August	West of Ireland . .	Great line	138	M.
19th August	Rockall Bank . .	Shark line	175	F.
19th August	Rockall Bank . .	Hand line	157	F.
6th September	George Bligh Bank .	Great line	175	F.
6th September	* Rockall Bank . .	Great line	137 to 168	—

* 3 specimens

Centrophorus squamosus (Gmelin)—no common name

The catch of a great liner working along the edge of the shelf between the Butt of Lewis and the Flannan Isles in April included twenty specimens of this shark with an average length of about 132 cm. Although numerous in Icelandic waters and found to the west of Ireland, it does not appear to have been recorded previously from the Scottish area.

Squatina squatina (L.)—Angel-fish

Three angel-fish from widely different localities were recorded.

Date	*Position*	*Gear*	*Length cm.*
14th April	24′ E.S.E. Aberdeen . .	Trawl	—
19th July	Burra Haaf, Shetland . .	Seine	107
24th September	5′ E. Tarbat Ness . . .	Seine	117

Torpedo nobiliana Bonaparte—Electric Ray

Four electric rays, all captured in trawl nets, were received at the laboratory during the year.

Date	*Position*	*Length cm.*	*Greatest breadth cm.*	*Sex*
20th January	70′ N. Rattray . .	64·0	44·5	F.
29th June	10′ S.E. Bell Rock . .	73·5	49·0	F.
14th September	Near Sulisker . . .	66·5	44·0	M.
19th November	23′ N.W. × W. Noup Head	77·0	49·0	M.

The first fish had been feeding on Gadoids; the others contained no food.

Raia lintea Fries—no common name

Four fish, two of each sex, were landed by a great liner from the Loon Deeps, south-east Iceland, in September. Length measurements ranged from 65 to 72 cm. Although stated by Saemundsson (1949) to be rare off the south coast of Iceland the species would appear to be more numerous than records suggest.

Trygon pastinaca (L.)—Sting Ray

The first of two fish recorded during the year was trawled on 20th January 50′ N. of Rattray Head. This fish, an immature male, measured 39·5 cm. in length and 24·2 cm. across the disc. The second fish, which was identified on the market but not procured for detailed examination, was trawled on 30th October in the area about fifteen miles off Fife Ness.

Chimaera monstrosa L.—Chimaera or Rabbit Fish

The capture of a specimen of this species in the western North Sea—by seine net 20′ N.E. × E. of Eyemouth on 2nd April—is exceptional. The fish, a male, was 72 cm. long.

Acipenser sturio L.—Sturgeon

Date	*Position*	*Gear*	*Length cm.*	*Weight kg.*
4th January	1¾′ E. Johnshaven . .	Cod net	107	6·4
12th February	Off Tarbat Ness . .	Seine	122	13·6
27th February	North coast . . .	Seine	—	10·9
18th March	40′ N. ½ E. Buchan Ness .	Trawl	183	30·2
26th March	45′ S. × E. Aberdeen .	Trawl	*c.* 183	35·0
1st April	22′ N.E. × E. Eyemouth .	Seine	—	19·1
17th May	Off Cruden Bay . .	Seine	—	6·4
26th May	Clyde: 7′ S.E. Davaar Is. .	Seine	125	10·4
29th May	Off Loch Eriboll . .	Trawl	—	14·3
1st June	10′ S.E. Sule Skerry . .	Trawl	163	23·9
11th June	Turbot Bank . . .	Trawl	165	25·4
18th June	8′ N.E. Rattray Head .	Trawl	—	25·4
24th September	65′-72′ S. × E. ½ E. Aberdeen	Trawl	142	19·1

The total of thirteen sturgeon recorded in 1954 equals the highest number previously listed for any one year. Compared with the previous year, sturgeon captures were, on the whole, later in the season, while their distribution was more southerly, seven having been taken south of the latitude of Kinnaird Head. The Moray Firth appears only once in the present list as against six occasions in 1953.

Details of four sturgeon landed at English ports and reported in the *Fishing News* on various dates are rather meagre but the captures, one in each of the months March, April and May, presumably in the North Sea, and one in March off Land's End, do support the view that the incursion to British waters was later in 1954.

Two of the 1954 fish, the specimens of 4th January and 17th May, are interesting in being the smallest so far recorded in the laboratory lists.

Alosa alosa (L.)—Allis Shad

As in 1953 a single record of this shad was obtained during this year. The fish, a spent female of 50 cm., was caught in

a ground net on the east side of Raasay in the North Minch on 26th November.

Alosa finta (Cuvier)—Twaite Shad

No.	Date	Position	Gear	Length cm.	Sex
1.	2nd March	8′ S.W. Turnberry Light (Clyde) . . .	Seine	45·2	F.
2.	10th March	55′ E. ¾ N. Buchan Ness .	Seine	38·6	F.
3.	16th March	S. of Bell Rock . .	Trawl	47·0	F.
4.	16th March	S. of Bell Rock . .	Trawl	46·0	F.
5.	19th March	8′ N.E. Rattray Head .	Trawl	37·2	M.
6.	20th April	3′-4′ off Tolsta Head (Minch)	Seine	41·9	—
7.	7th October	50′ S. × E. Aberdeen .	Trawl	49·0	F.

The gonads in all five March fish were developing but spawning did not appear to be imminent; the fish caught in October was in a spent condition. The stomach contents were identified as follows: numbers 1 and 2 feeding heavily on *Meganyctiphanes norvegica*; 3 and 4 on sandeels; 5 empty; 6 not examined; 7 on fish and crustacea. Nematodes were numerous in the stomach of each of the first five specimens.

Single specimens of twaite shad were reported in 1951 and 1952 but none in 1953. The increase in the numbers during 1954 is therefore interesting.

Sardina pilchardus (Walbaum)—Pilchard

The first of two records obtained during the year comprised a sample of fish taken in an anchored herring net off Johnshaven, Angus, on 11th January. They ranged in size from 21·9 cm. to 24·5 cm. and represented various stages of maturity from immature to spent and recovering. These fish would appear to be from the pilchard shoals located in the same area in December 1953 (Rae and Wilson, 1954).

The second record, consisting of a single maturing female fish, 22·2 cm. in length, was obtained from a drift net catch of herrings taken 6′ N.E. × N. of Tiumpan Head (North Minch) on 9th September. Further evidence of the presence of pilchards in this area was provided by the capture of a few larvae in the plankton nets of research vessels operating in both the North and South Minches from 27th September to 21st October. Although this species is not common on the west

coast (Rae and Wilson, 1953) the 1954 evidence clearly indicates that spawning occurs, at least occasionally, in Scottish west coast waters.

Maurolicus muelleri (Gmelin)—Sheppy Argentine or Pearl-side

Larval and later stages of this small, North Atlantic, oceanic fish have appeared in plankton net catches from the northern North Sea but not in every year and not in great quantities. In March 1954, however, two specimens were taken by a research vessel off Burghead Bay and in October another was disgorged by a fish in a catch from off Cullen.

Belone belone (L.)—Garfish or Greenbone

Fewer specimens of the garfish were reported than in the last two years. Particularly remarkable was the absence of the species from the herring drifter catches in the north-eastern North Sea until 3rd May, when a single specimen, 62 cm. in length, was landed from 250′ N.E. ½ E. of Aberdeen. This proved to be the sole record from that fishery. Confirmation of the absence of the species from the herring catches during the spring season was supplied by the Herring Industry Board officer at Aberdeen.

A second record was obtained through Dr. A. C. Stephen of the Royal Scottish Museum from a stranding at Thorntonloch, Berwickshire, on 29th May. The fish, a female of 77·5 cm., showed evidence of being about to spawn. A third fish received during the year was washed on board a fishing vessel in a heavy sea 3′ S.E. of Wick on 8th November. This specimen was a spent female, 79 cm. in length; the stomach contained small fish and schizopods.

Entelurus aequoreus (L.)—Ocean Pipe-fish or Snake Pipe-fish

Although Day (1880-84) describes this fish as not uncommon off the east coast of Scotland, few specimens have been reported in the last fifty years. It seems desirable, therefore, to record three captures during the past year.

Date	*Position*	*Gear*	*Length cm.*	*Sex*
6th March	St. Andrews Bay . . .	Trawl	59	F.
15th March	Aberdour Bay . . .	Trawl	45	—
11th December	Near Wick	Stranded	48	F.

Raniceps raninus (L.)—Lesser Fork-beard

The six records of this species represent a larger total than in any recent year.

Date	*Position*	*Gear*	*Length cm.*	*Sex*
15th February	Off Aberdour Bay . .	Seine	18·0	F.
17th March	Off Lossiemouth . .	Trawl	19·0	—
28th March	40′ off Aberdeen . .	Trawl	17·5	F.
1st July	45′ E. ½ N. Aberdeen .	Trawl	22·0	F.
27th August	40′ E. ½ S. Aberdeen .	Trawl	21·5	M.
2nd December	Moray Firth . . .	Seine	19·0	M.

Gonad development in four cases was at a very early stage, but in the July female it was well advanced, while the male at the end of August was a spent fish.

Urophycis blennoides (Brünnich)—Greater Fork-beard

From time to time the greater fork-beard is caught near the Scottish coast well away from the usual deeper water habitat. One such specimen, 56 cm. long, was caught by a seine net on inshore grounds off Lybster, Caithness, on 19th May. Another record not hitherto published was obtained by a research vessel while trawling in Aberdour Bay (Moray Firth) on 15th October 1953. This was a smaller specimen of 24·5 cm.

Lampris guttatus (Brünnich)—Opah

Two specimens reported. The first was caught by trawl 14′ S.S.E. of Fuglo, Faroe, early in August and the second was stranded at the head of Cullivoe, Yell, Shetland, in mid-December. The total length of the latter was approximately 122 cm. and the greatest depth of the body about 91 cm.

Trachypterus arcticus (Brünnich)—Deal-fish

The appearance of this species in such numbers is phenomenal and provides the most remarkable feature of the year's rare fish records.

It will be noted that six of the fifteen records listed on page 30 were obtained in January and that, with one exception, these were all of fish stranded on the shore at different places in the Shetland and Orkney islands. The specimen of 13th January

Date	Position	Method of capture	Total length cm.	Length to caudal peduncle cm.	Greatest depth cm.
4th January	Collafirth, Shetland	Stranded	98·5	83·5	15·6
5th January	Nesting, Shetland	Stranded	—	—	—
9th January	Mid Yell, Shetland	Stranded	108·8	95·3	16·6
13th January	110′ N.E. ¾ E. Buchan Ness	Trawl	—	77·0	14·5
23rd January	Kettletoft, Sanday, Orkney	Stranded	—	—	—
26th January	Houton Head, Orphir, Orkney	Stranded	—	—	—
10th March	St. Combs, Aberdeenshire	Stranded	85 *	—	—
20th March	Lousy Bank	Great line	158·5	143·0	25·5
24th March	Garmouth, Moray Firth	Stranded	—	48 *	21·0
31st March	St. Combs, Aberdeenshire	Stranded	120·5	113	19·5
24th May	Altens, Nigg, Kincardineshire	Salmon net	83·0	69·0	12·0
1st June	Turbot Bank	Trawl	127·5	111·5	17·8
1st June	Balmedie, Aberdeenshire	Stranded	91·5*	—	—
10th June	Aberdeen Bank	Trawl	106·0	90·5	—
30th June	Off Newburgh	Seine	—	—	18·5

* Not actual measurements; estimates only

appears to have drifted clear of the islands to be captured by trawl well within the North Sea—latitude 58° 48′ N., longitude 0° 42′ E. No records were received during February and April. All the later North Sea captures, in March and again in late May and June, were either stranded on or captured near the Scottish east coast. The data clearly indicate that entry to the North Sea was *via* the north of Shetland. Also, the obvious grouping of the records as regards both times and localities indicates drift with the current from Shetland waters to the Moray Firth, Aberdeenshire coast and nearby grounds. The May-June fish were either later arrivals at the northern gateway or they had been held for a period within the influence of the Great Northern North Sea Eddy (Tait, 1937, Fig. 48). It cannot be assumed that all the fish reached the vicinity of the Shetlands at approximately the same time; the two October-November 1953 records (Rae and Wilson, 1954) tend to disturb that theory. Nevertheless it is interesting to note that a period of sixty-five days elapsed between the first Shetland

stranding and the first appearance on the Aberdeenshire coast, and that the corresponding figure for the May-June group is only a little more than twice that figure, namely 140 days.

Since more than half of the fish were found stranded or lying helpless in rock pools it is not surprising that some were partly destroyed by wave action and by the attentions of sea-birds before being collected. The incomplete state of some of the specimens may have accounted for what appeared to be morphological differences observed from one fish to another, but on the other hand dimensional differences in at least one instance suggest either different developmental stages or the possibility of more than one species being represented. In view of this uncertainty most of the specimens have been preserved and some were sent to the British Museum, together with earlier material, for systematic examination.

Capros aper (L.)—Boar-fish

Four specimens of this southern deep-water form were trawled in one hour by a research vessel on Porcupine Bank, 53° 25′ N., 13° 43′ W., at a depth of 154 to 165 metres on 16th August. Three of the fish were males of 12·9, 13·5 and 13·8 cm. and the fourth was a female of 14·3 cm. All were mature fish and all were feeding on mysids and copepods. Colleagues engaged in plankton research identified the following species —*Leptomysis gracilis* (four stomachs), *Calanus finmarchicus* (four), *Metridia lucens* (one), *Pleuromamma robusta* (one), *Calanus hyperboreus* (one).

Brama raii (Bloch)—Ray's Bream

Only four Ray's bream were recorded in 1954. The first of these was taken by trawl 10′ N. of Flugga on 15th September; the second by great line off the Butt of Lewis on 28th September; the third by trawl off Flugga on 19th October ; the fourth from a rock pool at Gardenstown on 29th December. The last fish alone was procured for examination in the laboratory. This proved to be a female of 56·4 cm.; the stomach was empty. As in so many of these fish, the flesh of both sides contained plerocercoid larvae of cestodes.

In contrast to the experience of recent years only one fish was found in the North Sea within the Orkney-Shetland

boundary line. Apart from the Butt of Lewis specimen, no reports were received from commercial liners of the presence of Ray's bream on western grounds during the latter half of the year. Furthermore, a research vessel, fishing with great lines from Barra Head to Porcupine Bank and on Rockall Bank during most of August, failed to locate the species. Penetration of Scottish waters by Ray's bream was, therefore, on a much smaller scale in 1954 than in any of the three preceding years.

Mullus surmuletus L.—Red Mullet

Twelve records (thirteen fish) of red mullet were listed in 1954 as compared with twenty records (twenty fish) in 1953 and fourteen records (eighteen fish) in 1952.

Date	*Position*	*Length cm.*	*Sex, etc.*
7th January	14′ E. Aberdeen	—	— —
3rd February	7′ N.E. Rattray Head	35·0	M. maturing
22nd March	9′ E. Wick	27·5	F. maturing
28th April	Sandy Riddle	37·5	M. spawning
7th May	Flannan Isles	—	— —
19th May	56° 26′ N., 1° 36′ W.	28·6	F. spent
27th May	8′ N.N.E. Rattray Head	35·5	F. maturing
17th June	North Berwick	15·9	— —
11th September	* 45′-48′ E.S.E. Aberdeen	—	— —
15th September	45′-48′ E.S.E. Aberdeen	32·0	F. spent
18th September	Off Tod Head (inshore)	28·7	M. spent
8th October	S. of Aberdeen	—	— —

* 2 specimens

The first record in 1953 was obtained on 21st May and the remaining *North Sea* captures in that year, sixteen in number, were in the later months, September to December. This is in marked contrast to 1954, when from 7th January to 17th June seven fish were reported from that area and during the last four months only five. Moreover, in 1953 localities of capture south of the latitude of Aberdeen numbered fifteen and there were only two north of that line, whereas in 1954 the corresponding figures were six, of which four belonged to the later months, and five, all prior to 28th May. These results indicate that the northward movement of red mullet from the southern North Sea in the later months of 1953 was much stronger than in the same period of 1954, and that the effect was experienced over a wider area than usual throughout the first half of 1954.

In yet another feature—the proportion of the sexes—the 1954 records differ slightly from those of recent years. In 1954 the ratio of males to females, in the fish whose sex was determined, was 3 : 4 as compared with 1 : 11 in 1953 and 0 : 6 in 1952.

As regards food, only two of the fish had been feeding—the specimens of 15th September (on molluscs) and 18th September (on annelids and amphipods). The stomachs of the other five available for examination were empty.

Spondyliosoma cantharus (Gmelin)—Black Bream or Old Wife

This southern fish made an interesting reappearance in Scottish east coast waters, where normally it is very rare.

Date	*Position*	*Gear*	*Length cm.*	*Sex*
19th January	Off Rattray Head . .	Trawl	25·5	F.
12th March	16′ E.N.E. Aberdeen . .	Trawl	34·3	—
26th June	2′ S.W. Pittenweem . .	Seine	22·9	—
1st September	Mithcowie Bank (Moray Firth)	Seine	26·4	—
16th November	35′ S. ½ E. Aberdeen . .	Trawl	25·4	M.

The stomach of the first capture contained no food and the last specimen was feeding on crustacea.

Labrus mixtus L.—Cuckoo Wrasse

The 1954 records were marked by a big increase in the numbers of this species. Out of a total of seventeen records (twenty-five fish) obtained from March to July with one in each of the months November and December, thirteen records (twenty fish) were from east coast grounds from Auskerry, Orkney, to the Bell Rock which are fished consistently by Scottish vessels throughout each year. The others were from near Skerryvore, 20′ N.N.E. Cape Wrath, Stormy Bank and Whiten Head.

While the increased numbers from these east coast grounds cannot definitely be ascribed to a movement into that area, where the cuckoo wrasse is indigenous, the possibility of some penetration from the west side cannot be ignored. Recording of the occurrences of the species will therefore continue, though the regular publication of detailed lists appears to be no longer necessary.

Ctenolabrus rupestris (L.)—Goldsinny

Two specimens of the goldsinny were caught by a research vessel, the first on 25th October in Dornoch Firth, the second on 28th October off Sandside Bay. The former, a female 13 cm. long, was feeding on decapod crustaceans and lamellibranchs; the latter, a male of the same size, on *Munida* and other crustaceans.

Trachinus draco L.—Greater Weever

This is another species of which more specimens have been reported than for some time. Occurrences during 1954 were as follows:

Date	*Position*	*Gear*	*Length cm.*	*Sex*
9th March	8′ S.E. Helmsdale	Seine	31·5	F.
3rd September	Off Eyemouth	Seine	24·3	—
11th September	4′ S.E. Helmsdale	Seine	26·0	F.*
6th November	N.E. Moray Firth	Seine	28·6	F.

* Stomach contents—sandeels

Aphanopus carbo Lowe—Black Scabbard Fish

Mr. D. W. Tucker of the British Museum (Natural History) has kindly permitted the inclusion of the following records obtained from the operations of Fleetwood trawlers.

5th February	50′ N.N.W. Flannan Isles	280 fm.	2 fish
2nd March	60′-65′ W. × S. Barra Head	320 fm.	1 fish*

* ex 4-5 baskets.

Also, to the 1953 record already published there can now be added the capture of four fish, in August of that year, 25′ N.W. of Sulisker in 255 fathoms.

Gobius pictus Malm—Painted Goby

Scottish records include few references to the painted goby. It is interesting, therefore, to report the capture of a specimen, 5 cm. long, in Aberdour Bay on 21st October.

Chirolophis galerita (L.)—Yarrell's Blenny

Records of this native species are also scarce. Two specimens were taken in lobster creels in Lunan Bay during

the year, one of 17·5 cm. on 26th July, the other of 17·3 cm. on 2nd August.

Lycodes esmarkii (Collett)—no common name

A specimen was caught by great line on the Vikural grounds, north-west Iceland in May. The fish, a male of 54·5 cm., had been feeding on echinoderms, including crinoids. Norman (1935) does not list the species as British. According to Saemundsson (1949) it is common north and east of Iceland but is not known from the north-west.

Fierasfer dentatus Cuvier—Fierasfer or Pearl Fish

A post-larval stage of fierasfer was caught in a plankton net at 53° 04′ N., 12° 11′ W. on 16th August.

Mugil capito Cuvier—Thin-lipped Grey Mullet

Most of the grey mullet taken in Scottish waters appear to be the thick-lipped species, *M. chelo* Cuvier. The capture of a thin-lipped specimen in a salmon seine in the mouth of the River Dee, at Aberdeen, on 22nd June is therefore of some interest. The fish was 40·5 cm. long.

Scorpaena dactyloptera Delaroche—Blue-mouth

Following the identification of three specimens in 1953 particular attention is being given to this species.

Date	*Position*	*Gear*	*No.*	*Length cm.*
17th April	5′ off Sandside Head	Seine	1	22
17th April	61° 01′ N., 0° 30′ W.	R.V. trawl	3	11-16
5th May	8′ N.N.E. Kinnaird Head	Trawl	4	25-30
6th May	8′ N.N.E. Kinnaird Head	Trawl	6	25-36
20th May	Off Aberdeen	R.V. trawl	1	11·5
16th July	60° 17′ N., 12° 14′ W.	R.V. great line	1	31
16th August	Porcupine Bank	R.V. trawl	6	12-17
8th September	57° 28′ N., 1° 18′ W.	R.V. trawl	1	21
23rd September	57° 58′ N., 0° 47′ E.	R.V. trawl	1	14
4th December	Rattray Head to Kinnaird	Trawl	3	37-45

The stomach contents of ten specimens were examined. Eight were feeding on crustacea, two on polychaetes and one on fish. The crustacean food types included *Munida* (in three stomachs), *Crangon* (two), *Pandalus* (one) and *Amphipoda* (one).

Trigla lucerna L.—Yellow Gurnard, Tub or Latchet

Eight specimens of the yellow gurnard were recorded during the year. As was the case with most of those taken in 1953, all were caught by trawl in coastal waters south of Duncansby Head. In this feature the yellow gurnard records resemble those of the red mullet, thus suggesting that the presence of the species in Scottish waters is largely due to migration from the southern North Sea.

Date	*Position*	*Length cm.*
21st January	5′ N.E. Bell Rock	—
20th May	Off Aberdeen Bay	40
21st May	Off Scurdy Ness	—
22nd May	Off Scurdy Ness	—
13th November	Off Tod Head	55
16th November	35′ S. ½ E. Aberdeen	—
8th December	10′ E.S.E. Tod Head	45
14th December	18′ E. × N. Aberdeen	40

Arnoglossus imperialis (Rafinesque)—no common name

A specimen of this fish, 16·2 cm. long, was trawled by a research vessel on Porcupine Bank, off the west of Ireland, on 16th August. Another specimen was found in the stomach of a large *Raia batis* caught by great line in the same area on the same date.

This species has never been recorded from Scottish waters, and according to Bowman (1923) the south-west coast of Ireland represents the northern limit of the distribution of the adult forms, although he reports the capture of larvae at various places in the Scottish area, including the northern North Sea. These larvae are regarded as having been carried northwards by water drift.

Mola mola (L.)—Sun-fish

One record of this species was listed during the year. The fish, 84 cm. long, was " clipped " on board a hand-line vessel, 2′ E. of Fraserburgh, on 20th October.

Lepadogaster bimaculatus (Bonnaterre)—Two-spotted Sucker

A specimen of this small coastal fish was found in the stomach of a cod caught off Sandside Bay at the end of October.

Records of the species are very scarce but two fish, each 4 cm. long, were taken at the entrance to Loch Eriboll on 7th June 1951, and two more were dredged from Broad Bay on 15th September 1950.

Thirty-eight species are represented in this year's list. Four of these, however, *Raia lintea*, *Capros aper*, *Lycodes esmarkii* and *Arnoglossus imperialis*, were caught outside the Scottish area.

The most striking feature of the 1954 records has already been referred to in the appearance in the north-western North Sea of deal-fish in unusual numbers. Knowledge of the distribution of the species is far from complete and nothing is known of its feeding and breeding habits. Opinion regarding the depth at which the adult lives has been based on the nature of its structure, its shape, coloration, etc. (Norman and Fraser, 1948). In seeking an explanation of these 1954 occurrences—unprecedented so far as Scotland is concerned—the possibility of some biological overflow, arising from exceptionally heavy recruitment, cannot be ignored. The rather small but broadly uniform size of most of the specimens seems to support this view. On the other hand, the distribution of the fish within the north-western North Sea was no doubt associated with water movements and their presence there may have originated from some hydrographical influence of a less obvious nature in an area of normal habitation.

The migration of sturgeons to our shores on a scale equal to, or even exceeding, last year's movement is also an important feature of the records and one which, financially at least, is of more interest to our fishermen.

From the larger numbers of six-gilled sharks and blue sharks recorded it might be assumed that these species too were more numerous than in recent years. These increased recordings, however, are more probably due to a renewed interest of fishermen in sharks generally, engendered by the opening up of a market for porbeagle. Exploratory great-line operations by one of the research vessels for the first time on western grounds also contributed to the shark records. Indeed it seems not unlikely that sharks in general were rather less numerous in Scottish waters during 1954. Statements by fishermen and by officers of the fishery protection service

certainly agree that basking sharks were far scarcer on west coast grounds than in 1953.

Two other species appear to have been more numerous in Scottish waters during the year—the electric ray (four records) and the black bream (five records)—but on the whole the number of exotic species reported was smaller than in recent years and in some cases, for example Ray's bream, the number of fish visiting the area seems to have been far fewer.

Turning to indigenous species from southern British waters, the records indicate a much reduced northward movement of red mullet. Little evidence was obtained of the presence of the grey mullets (*Mugil*) although these may have visited the west coast lochs. The increase in the numbers of the greater weever is interesting as this species too is regarded as a visitor from southern British waters.

Pelagic species such as garfish and allis shad were scarcer and no records of the saury pike and anchovy were received during the year. On the other hand, the pilchard representation was about normal and the twaite shad was definitely more numerous.

The capture of some of our rarer native British species such as the ocean pipe-fish, Yarrell's blenny, the painted goby and the two-spotted sucker is considered worthy of inclusion since recent records of these fishes are extremely scarce or completely lacking.

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THE HYDROID *HYDRANTHEA MARGARICA* (HINCKS) IN SCOTTISH WATERS *

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Hydranthea margarica (Hincks) is a small and rarely seen hydroid of the family Haleciidae which was first described by Hincks (1863) from Ilfracombe. Subsequently it was found by Thornely (1894) in Liverpool Bay, by S. F. Harmer in 1899 on the Norfolk coast and by E. T. Browne in October 1913 and February 1914 in the Plymouth area. The data relating to these Plymouth records and other unreported specimens from the English Channel in the British Museum are noted in Table I. To these is added a new record, the first from Scotland and the most northerly record we have of this elusive species. Hincks, Thornely and Harmer all found it growing on the polyzoan *Flustra foliacea*, and it is on this same substratum that the Scottish colonies were found.

TABLE I

BRITISH RECORDS OF *Hydranthea margarica* HINCKS

Locality	*Date*	*Condition*	*Collector*	*Substratum*
Ilfracombe . .	1863	Fertile	T. Hincks	On *Flustra*
Off Poole, Dorset .	1889	Sterile	F. Beckford	On *Flustra*
Lulworth, Dorset .	1889	Sterile	F. Beckford	On *Flustra*
Liverpool Bay .	1894	—	L. R. Thornely	On *Flustra*
Outside Swanage Bay, Dorset . .	1897	Sterile	R. Kirkpatrick	On *Flustra*
Norfolk . .	1899	—	Harmer (Garstang, 1901)	On *Flustra*
Stoke Point, Plymouth	23.10.1913	Fertile	E. T. Browne	On broken whelk shells
Plymouth . .	23.10.1913	Fertile	E. T. Browne	On *Halecium* sp.
Plymouth . .	24.2.1914	Sterile	E. T. Browne	On a stone
Eddystone Grounds, Plymouth . .	5.5.1936	Sterile	W. J. Rees	On handle of china cup
Sanda Island, Argyll	11.6.1952	Sterile	R. B. Pike	On *Flustra*

* *Received 17th December*, 1955

Lists of Clyde hydroids by Ritchie (1910 and 1911), King (1912), Chumley (1918) and Elmhirst (1923) do not record this species and it has not been reported either from Northumberland (Robson, 1914) or from Port Erin (Moore, 1937). There are no records from Sweden (Jäderholm, 1909), Denmark (Kramp, 1935), Holland (Vervoort, 1946), Belgium (Leloup, 1952) or Brittany (Teissier, 1950).

In the Mediterranean Motz-Kossowska (1911) found a sterile colony on a polyzoan living on the surface of *Cliona cellata*, and Huvé (1954) reported the species (also sterile) on a species of *Cellepora* and on the hydroid *Eudendrium ramosum* from submarine grottos at Marseilles. These records, together with the new one from Scottish waters (and the additional records from the collections of the British Museum noted in Table I) indicate that Polyzoa (especially *Flustra*) are a favoured substratum for this hydroid.

Hydranthea margarica has a creeping habit with the hydranths arising from short cup-like thecae ; this, together with the presence of groups of bean-shaped nematocysts between the tentacle bases and the presence of a web, readily distinguishes the species.

Measurements of four polyps of the colony from Sanda Island, Argyll, Scotland, are given below in Table II and the same Table gives details of a specimen taken at Plymouth and measured alive by Dr. W. J. Rees.

TABLE II

Measurements of Five Specimens (in mm.)

	Sanda Island				*Plymouth*
Length of hydranth to hypostome . .	0·76	0·40	0·54	1·00	0·85
Theca to hypostome .	0·56	0·30	0·42	0·84	0·7
Diameter of theca .	0·08	0·08	0·09	0·08	0·09
Length of tentacles .	0·17	0·16	0·20	0·10	—
Diameter of stolon .	0·07	0·08	0·08	0·06	0·05
Length of nematocysts .	0·04	0·04	0·04	0·04	—

In his unpublished observations on the living colonies taken by him at Plymouth on 23rd October 1913, E. T. Browne states: " The hydranths have 20-24 tentacles, connected by a web, as in *Campanulina*. The tentacles are alternately elevated and depressed. At the base of some of the tentacles, outside

and below the web, are large clusters of nematocysts, as described by Hincks. These nematocysts are very long and have a very long thread, at least 2 mm., when shot out. The number of clusters vary very much, from 4 to 10."

Huvé (1954) confirms Browne's findings with regard to the number of tentacles and clusters of nematocysts and his figures (Pl. V, Figs. 15 and 16) clearly show the partial absence of the groups of nematocysts between adjacent tentacles; this imperfection has also been noted in the Sanda colonies. According to Huvé the nematocysts are microbasic euryteles. Breeding has only been observed in the month of October (Table I).

Hydranthea margarica might be assumed from the earlier records (from the Mediterranean and southern Britain) to be almost a Lusitanian species, but this record from Sanda Island indicates that it has a more northerly distribution. Examination of more colonies of *Flustra* may reveal that *H. margarica* is distributed along the whole western seaboard of the British Isles, and possibly also on the N.E. coast of Scotland, although lower winter temperature conditions may not favour its existence there.

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ISLE OF MAY BIRD OBSERVATORY AND FIELD STATION

REPORT FOR 1953-55 *†

Prepared for the Observatory Committee
by
W. J. Eggeling
Hon. Secretary

During each of the years under review the number of "watched days" (days on which at least one observer was present on the island) was about the same: 165 in 1953, 170 in 1954, and 162 in 1955. Better cover is still required in spring and autumn, to ensure unbroken observation during the migration periods. More information on what goes on during summer and winter is also wanted.

Twenty-two species nested on the island between 1953 and 1955, and a useful body of information is being built up concerning them. Some of the more interesting points are dealt with briefly later in this Report. A paper on the breeding birds, prepared by the Hon. Secretary, tracing their fluctuations since the nesting of each species was first recorded, has appeared in *The Scottish Naturalist*, vol. 67.

Extensive improvements to the Observatory, including internal redecoration of the Low Light and the building of a new Ringing Hut have been effected. For nearly all this work the Committee is indebted once again to Mr. John Bain, whose name is already perpetuated in May history as the builder of the Bain Trap.

A Crow (or House) Trap was erected late in 1955 between the Bain Trap and the Chapel by a party of observers working under the direction of Mr. H. E. Axell of Dungeness. It will be given a thorough testing in 1956.

* *Received 19th December 1955*

† The last Report of the Isle of May Bird Observatory Committee, covering the two years 1951-52, appeared in the *Fair Isle Bird Observatory Report* for 1952, pp. 27-35. Previous Reports in this series, for the years 1935-38 and 1946-50, appeared in *The Scottish Naturalist*. The present Report deals fully with the year 1955 and also, but in less detail, with the events of 1953 and 1954.

During the period covered by this Report four species of birds were recorded from the island for the first time: the black tern (*Chlidonias niger*), Siberian thrush (*Turdus sibiricus*), greenish warbler (*Phylloscopus trochiloides*) and pine grosbeak (*Pinicola enucleator*).

Migration

The very long period of fine weather which extended almost unbroken from early spring to late autumn, and the absence of easterly winds thereafter, made 1955 a poor year for the observer of migration, although a good one from the point of view of the birds. There were no spectacular "rushes", so that the number of migrants ringed was smaller than usual, but there were the inevitable interesting occurrences in regard both to species and to dates. The following deserve mention:

Great Crested Grebe *Podiceps cristatus*. 8th April 1955, one. Second occurrence.

Red-necked Grebe *Podiceps griseigena*. 26th March 1955, one.

Slavonian Grebe *Podiceps auritus*. 27th March 1955, one.

Black-tailed Godwit *Limosa limosa*. 30th April 1955, two. Second occurrence. (Previously recorded in May 1902.)

Green Sandpiper *Tringa cchropus*. Four occurrences between 21st August and 25th September 1955.

Sanderling *Crocethia alba*. 22nd August 1955, one. Third occurrence.

Great Skua *Catharacta skua*. 1st May 1955, one. Second spring record.

Glaucous Gull *Larus hyperboreus*. 6th November 1955, one.

Nightjar *Caprimulgus europaeus*. 4th and 25th June 1955, one each day.

Red-spotted Bluethroat *Cyanosylvia s. svecica*. 25th June 1955, one. A most unusual date.

Greenish Warbler *Phylloscopus trochiloides viridanus*. 27th August–3rd September 1955, one. First record for the island.

Red-breasted Flycatcher *Muscicapa parva*. 12th October 1955, one.

Great Grey Shrike *Lanius excubitor*. 17th April 1955, one. First spring record. This bird killed at least two goldcrests (*Regulus regulus*) during the day it spent on the island.

Goldfinch *Carduelis carduelis*. 4th November 1955, one.

Twite *Carduelis flavirostris*. 27th October–6th November 1955, one. Fifth occurrence. The first twite to be ringed on the island.

Scarlet Grosbeak *Carpodacus erythrinus*. 22nd–23rd October 1955, one. A late date.

Lapland Bunting *Calcarius lapponicus*. 8th September and 25th October 1955, one each day.

Both 1953 and 1954 were more " normal " years than 1955 in regard to migration pattern, as reflected in the number of birds present and entering the traps. In both years there were periods during spring and autumn when the weather conditions resulted in large numbers of birds halting on the island. There was an especially large influx of Turdidae on 26th October 1954, when many thousands of fieldfares (*Turdus pilaris*) and blackbirds (*T. merula*), thousands of redwings (*T. musicus*) and some hundreds of song-thrushes (*T. ericetorum*) were present.

The more unusual birds occurring in 1953 and 1954 were:

Red-necked Grebe *Podiceps griseigena*. 14th–21st March, 5th April 1954, one or two daily.

Pintail *Anas acuta*. 2nd October 1953; 27th February, 18th September 1954, two, one, two, respectively.

Whooper Swan *Cygnus cygnus*. 30th September 1954, seven. Second occurrence.

Buzzard *Buteo buteo*. 29th September 1953, one.

Curlew-Sandpiper *Calidris testacea*. 7th–8th August 1954, one.

Ruff *Philomachus pugnax*. 13th–14th, 16th, 18th September 1954, one.

Black Tern *Chlidonias niger*. 12th, 14th May (one), 15th–20th September (up to three on five days) 1954. Not previously recorded from the island.

Raven *Corvus corax*. 22nd October 1954, two. Second occurrence.

Kingfisher *Alcedo atthis*. 13th August 1954, one.

Siberian Thrush *Turdus sibiricus*. 1st October 1954, one male, staying several days. First occurrence.

Redstart *Phoenicurus phoenicurus*. 18th September 1953, over fifty (an exceptionally large number).

Nightingale *Luscinia megarhynchos*. 1st-2nd, 4th, 14th May 1954, one daily (two trapped and ringed, so at least two birds involved).

Icterine Warbler *Hippolais icterina*. 19th May 1953, one. 13th–15th August 1954, one.

Goldfinch *Carduelis carduelis*. 15th May 1953, one. 12th, 20th–21st April, 12th May 1954, one daily.

Pine Grosbeak *Pinicola enucleator*. 8th–9th November 1954, one female. First occurrence.

Crossbill *Loxia curvirostra*. 1st–2nd July (eighteen), 3rd (twenty-four), 4th (fifteen), 5th (twenty), 6th (sixteen), 7th (four), 12th (five); 18th September (over twelve), 19th (three), 20th (four), 1953. Ten were ringed.

Among the crossbills trapped on the island on 18th September 1953 was an adult female the measurements of which suggested that it might be a parrot-crossbill (*Loxia pityopsittacus*). Details of this bird and a photograph of it were published in *British Birds*, 47: 274-275. The editors concluded that although the measurements fell within the range of the parrot-crossbill (*pityopsittacus*) they did not exceed those of the Scottish race (*L. c. scotica*): "Either of these is then a possibility, for the Scottish bird has occurred well to the south of its breeding haunts and it seems not unlikely that one should have been swept up in the heavy passage of crossbills from N. Europe which took place in the summer and autumn of 1953. Further, while the measurements seem certainly too large for the typical *curvirostra*, Colonel Meinertzhagen suggests that hybrids between *pytyopsittacus* and *curvirostra* do occur and one of these could well be the size of the May bird."*

* While this paper was in the press the Taxonomic Sub-committee of the B.O.U. have reported that "the Scottish Crossbill is better placed as a race of Parrot Crossbill" (*Ibis*, 98: 167, Jan. 1956).—Eds.

A full account of the occurrence of the adult male Siberian thrush (*Turdus sibiricus*) on 2nd October 1954 was reported in *British Birds*, 48: 21-24. This is the only Siberian thrush ever to be trapped and ringed in Britain and the first certain occurrence, although an earlier record from England can probably safely be accepted as genuine.

The trapping of the adult female pine grosbeak (*Pinicola enucleator*) on 9th November 1954 is described in *British Birds*, 48: 133-134. This is the first time the species has been reported from Scotland. An excellent colour photograph of the bird appeared in the *Scottish Field*, April 1955, p. 45. There was an irruption of pine grosbeaks into Scandinavia at about the time this bird appeared on the May. Specimens were seen also in Denmark.

Ringing

Notwithstanding the fact that considerably more breeding birds and nestlings were ringed in 1955 than in either of the two preceding years, the ringing total for the year was the lowest since 1949. Only about half the usual number of spring and autumn migrants were trapped.

During the three years birds of eighty-five species were ringed: 1,636 birds (fifty-nine species) were ringed in 1953, 1,941 (sixty-six species) in 1954, and 1,384 (sixty-two species) in 1955. Since large-scale ringing on the island began in 1934, altogether 19,964 birds of 122 species have been marked.

The shag (*Phalacrocorax aristotelis*) has increased greatly as a breeding bird in recent years. This is reflected in the figure of 177 birds (mostly nestlings) ringed in 1955, compared with 168 in all previous years combined. The Sandwich terns (*Sterna sandvicensis*) were more successful in their nesting than for some time past, and 119 nestlings were ringed in 1955 compared with sixty-three in 1954 and four in 1953. About 150 pairs each of common terns (*Sterna hirundo*) and Arctic terns (*Sterna macrura*) attempted to breed in 1954, and again in 1955, but very few (if any) young were reared. The reason for this is not understood; gulls are not thought to have been to blame. The last time that any appreciable number of young " comic " terns were ringed was in 1953, when seventy-three common terns were marked.

Mention should be made here of the outstanding trapping total of 27th October 1954, when 225 birds were ringed by two observers between 9 a.m. and dusk. This total was made up of 212 blackbirds, six song-thrushes, four redwings, one fieldfare, one starling (*Sturnus vulgaris*) and one brambling (*Fringilla montifringilla*). A single drive of the Bain Trap yielded no less than forty-six birds (forty-five blackbirds and one redwing). This was not the whole story of a red-letter twenty-four hours. The previous night the same two observers, setting out in the dark at 9 p.m., had ringed between then and 1.30 a.m., by torchlight, ninety-one birds: forty herring-gulls (*Larus argentatus*) sixteen great black-backed gulls (*L. marinus*), twenty-seven turnstones (*Arenaria interpres*), two redshanks (*Tringa totanus*), four oystercatchers (*Haematopus ostralegus*), one purple sandpiper (*Calidris maritima*) and one curlew (*Numenius arquata*).

Recoveries

Details of the recovery of a large number of birds ringed on the Isle of May were received during the period. Some of the more interesting recoveries, a number of which have already been reported in *British Birds*, are noted briefly below:

Fulmar *Fulmarus glacialis*

309545. Breeding adult ringed 21.6.1952. Recovered off Skagen, Denmark, 2.11.1954.

309549. Breeding adult ringed 21.6.1952. Recovered Barents Sea, 4.12.1952.

Sandwich Tern *Sterna sandvicensis*

258368. Ringed as young 14.7.1951. Recovered off Cape St. Vincent, Portugal, 1.12.1953.

Cuckoo *Cuculus canorus*

258679. Ringed as juvenile 19.7.1953. Recovered Titagnas, Valencia, Spain, 15.7.1954.

Song-Thrush *Turdus ericetorum*

PX. 847. Ringed full grown 15.10.1952. Recovered Oporto, Portugal, 18.1.1953.

Redwing *Turdus musicus*

PX. 724. Ringed full grown 5.4.1952. Recovered Gijon, Asturias, Spain, 6.1.1953.

PX. 909. Ringed full grown 19.10.1952. Recovered near Wisbech, Cambridgeshire, 24.2.1955.

BLACKBIRD *Turdus merula*

16536. Ringed full grown 24.10.1950. Recovered near Molde, Norway, 11.4.1953.

R. 5958. Ringed full grown 8.10.1952. Recovered near Alesund, Norway, 2.8.1954.

R. 6050. Ringed first winter 17.10.1952. Recovered Obrestad, Jaerek, Norway, 31.5.1953.

R. 6183. Ringed first winter 23.10.1952. Recovered Asljunga, Kristianstad, Sweden, 5.5.1953.

R. 6202. Ringed full grown 9.3.1953. Recovered Moi, Norway, 18.10.1953.

XL. 642. Ringed full grown 27.10.1947. Recovered Schermer Polder, Noord Holland, 12.8.1953.

PX. 105. Ringed full grown 15.10.1951. Recovered Kristiansand, Norway, *ca.* 3.3.1955.

PX. 175. Ringed full grown 17.10.1951. Recovered Rade Ostfall, Norway, 3.7.1954.

PX. 246. Ringed full grown 27.10.1951. Recovered Ana-Sira, near Flekkefjord, Norway, 3.11.1953.

PX. 332. Ringed full grown 29.10.1951. Recovered Hauge, Norway, 14.11.1953.

X. 65338. Ringed full grown 13.10.1953. Recovered Randalstown, Co. Antrim, *ca.* 26.2.1955.

X. 65499. Ringed first winter 22.3.1954. Recovered Rogaland, Norway, 2.11.1954.

X. 65595. Ringed full grown 17.10.1954. Recovered Fiksdal, Ramsdal, Norway, 25.4.1955.

X. 65639. Ringed full grown 18.10.1954. Recovered Newtown Butler, Co. Fermanagh, *ca.* 17.1.1955.

X. 65844. Ringed first winter 27.10.1954. Recovered Tullyleague, Limerick, Eire, *ca.* 20.1.1955.

X. 65963. Ringed full grown 4.4.1955. Recovered Flesberg, Norway, 17.8.1955.

BLACK REDSTART *Phoenicurus ochruros*

LV. 208. Ringed full grown 12.4.1953. Recovered near Elbingerode, Harz, Germany, *ca.* 27.6.1953.

ROBIN *Erithacus rubecula*

MK. 213. Ringed full grown 27.10.1951. Recovered Tattershall, Lincolnshire, 25.2.1955.

Whitethroat *Sylvia communis*

KF. 715. Ringed Kilrenny, Fife, as nestling 14.6.1952. Recovered Isle of May 17.5.1954.

Willow-Warbler *Phylloscopus trochilus*

MK. 595. Ringed full grown 5.5.1952. Recovered Longton, Staffordshire, 9.8.1953.

JL. 304. Ringed full grown 3.9.1953. Recovered Thurso, Caithness, 12.5.1954.

JL. 347. Ringed full grown 4.5.1954. Recovered Staveley, Chesterfield, Derbyshire, *ca.* 18.5.1954.

Wood-Warbler *Phylloscopus sibilatrix*

LF. 503. Ringed full grown 12.7.1952. Recovered Fondouk, near Algiers, 8.4.1953.

Goldcrest *Regulus regulus*

LV. 089. Ringed full grown 23.10.1952. Recovered Ellerau, Segeberg, Holstein, Germany, 8.2.1953.

Meadow-Pipit *Anthus pratensis*

LO. 576. Ringed full grown 6.9.1951. Recovered Evora, S. Portugal, 18.1.1953.

Starling *Sturnus vulgaris*

P. 9205. Ringed full grown 16.3.1954. Recovered (long dead) Ringive, near Jelling, Jutland, *ca.* 2.2.1955.

P. 9249. Ringed full grown 22.3.1954. Recovered Nieblum auf Föhr, Schleswig-Holstein, Germany, 12.5.1954.

Brambling *Fringilla montifringilla*

LV. 252. Ringed full grown 3.5.1953. Recovered Beveren-Waas, West Flanders, Belgium, 12.11.1954.

Retrappings

Quite as interesting as many of the recoveries from far afield have been some of the retrappings of birds ringed on the island. These illustrate both constancy of return to breeding quarters and, although to a lesser extent, constancy of return to winter territory.

Much useful information is accruing concerning the meadow-pipit (*Anthus pratensis*), which occurs in large numbers on spring passage (mainly from the second half of March to the first half of May) and again on autumn passage (from the end of August to October). Between three and six pairs nest in

most years, this breeding population arriving in late March or April and leaving as a rule in August-September (although the case of LF. 512, ringed as a young bird on 25.7.1952 and retrapped on, among other dates, 30.9.1954 and 3.11.1955, indicates that in some instances they may stay later). Records are available of over a dozen adult or probably adult meadow-pipits, ringed on the island, which have been retrapped there between March and September, one, two or three years later. These older birds return to the island at about the same time in spring as do the young of the previous year. From the proximity of the retrapping dates one is almost tempted to say that they return together and it may well be that some have wintered as family parties or in flocks of families. Because so few birds breed on the island, most young birds move on after returning in their first spring, although in at least one instance a meadow-pipit born on the island has stayed on to breed after its return. Further intensive observation, combined with colour ringing, is required to follow up these indications.

The pied wagtail (*Motacilla alba*) is another species breeding in small numbers, between two and four pairs usually nesting. Ringing and colour ringing have shown that it is quite usual for the same adults to return to breed in subsequent years—the longest series so far is of three years—but no pied wagtail ringed on the island as a nestling has been recovered there in another year.

Constancy of return to the nesting area—even to the same site—is a familiar characteristic of many seabirds. It has been shown to apply on the Isle of May to the fulmar, shag, herring gull, kittiwake (*Rissa tridactyla*), razorbill (*Alca torda*) and guillemot (*Uria aalge.*) In the case of the fulmar, one male bird is known to have nested on the same site for at least six out of the past seven years, for the last four years (at least) with the same mate. Similarly, one well-known kittiwake has occupied the same nest-site for at least eight years. From 1950 to 1954 it was paired with a female which had been mated for at least two years previously with a male on an adjoining ledge.

The May is not a very favourable wintering area for Passerines, but, as has already been shown (*Scot. Nat.*, 63, 1951: 60-61), individual robins (*Erithacus rubecula*) sometimes

pick on the island for wintering and may return there for several years in succession. Further proof of this was obtained in 1954-55. Wrens (*Troglodytes troglodytes*) also sometimes resort to the May for the winter but so far none has been recorded in a subsequent season. The same is true of hedge-sparrows (*Prunella modularis.*)

Torchlight ringing and colour ringing may well reveal that some of the waders which frequent the Isle of May in winter do so in successive years. Between the late autumn of 1954 and the early spring of 1955 four purple sandpipers (*Calidris maritima*) and eighteen redshanks were ringed on the island. Both species are winter visitors and it is known that in 1955 no redshanks were present on the island from 30th April to 16th July, and no purple sandpipers from 20th May to (again) 16th July. On 2nd October 1955 one of three purple sandpipers on the North Ness was carrying a ring, and on 5th November 1955 one of a number of redshanks there was seen to be ringed. Neither bird, unfortunately, was retrapped but it is felt that they may well have been birds ringed on the island during the previous winter.

Changes of Status

As already mentioned, an interesting feature in recent years has been the great increase in the breeding population of shags. A similar increase has taken place elsewhere in Forth. Only one pair of shags was breeding in 1918, two pairs bred in 1924, at least six pairs in 1934, about ten in 1936, about six in 1944, about twelve in 1946, about fifty in 1951, between seventy and eighty in 1952, at least 140 in 1953 and 175-200 pairs in 1955.

Even more spectacular, although spread over a longer period, has been the increase of gulls. The first pair of lesser black-backed gulls (*Larus fuscus*) nested on the island in 1931 and since then the population has increased steadily. There were between two and three pairs in 1933 and 1935, seven pairs in 1936, eight in 1937, about fifteen in 1938, about seventy-five in 1946, about 100 in 1948, about 115 in 1951, 160-170 in 1952, about 175 in 1953, about 200 in 1954, and 250-300 pairs in 1955. In the case of the herring-gull the numbers are very

much greater. This species first nested in 1907 (one pair); there were about twelve pairs in 1914, about thirty-five in 1921, about thirty-eight in 1934, about 455 in 1936, about 760 in 1947, 1,000-1,250 in 1950, about 1,750 in 1952 and about 3,000 pairs in 1954 and 1955. The recent huge increase has occurred despite the removal of a considerable egg harvest annually and the attempts made in the last few years to reduce the population by deliberate egg-destruction in the interest of other nesting species.

The first successful breeding of the fulmar was in 1930, when one pair hatched a chick. In 1932 four sites had at least one egg and in 1933 six sites had at least four. By 1947 probably seven pairs were breeding and by 1949 probably about ten pairs. There was a noticeable increase in 1952, when seventeen eggs were laid but not more than six young flew. In 1954 at least nineteen eggs were laid by twenty-six pairs but only nine young fledged. In 1955 about the same number of pairs laid eggs but only seven young were raised.

More linnets (*Carduelis cannabina*) nested on the island in 1955 than for many years past. Between 1921 and 1952 there was only one (unsuccessful) attempt at nesting but in 1953 three pairs bred successfully. Probably three pairs (raising at least five broods) bred in 1954, and at least six pairs (probably raising at least ten successful broods) in 1955. One of the birds involved has bred on the island for three years in succession. A nestling of one of the 1953 broods summered in 1954 and probably bred.

A breeding species which appears to be declining in numbers is the puffin (*Fratercula arctica*): about thirty to forty pairs were stated to be nesting in 1883 but only twelve pairs bred in 1921 and only six in 1924. In 1951 there were probably less than ten pairs, in 1954 only seven or eight pairs, and in 1955 probably fewer still and no certain proof of nesting. No reason for the decrease can be suggested.

The Isle of May is presently without any resident blackbirds for the first time for over twenty-five years. In 1953 or 1954 only one (male) bird was resident and when this disappeared in mid-May 1955, no blackbirds remained. The last nest to be built (in 1952) was the result of a brother-sister mating of

birds reared on the island. Four eggs were laid but only three hatched. One of the chicks died almost at once, and the other two did not survive for long.

Thanks to the information available from the work of Eagle Clarke and the almost annual visits to the Isle of May made by the Misses Baxter and Rintoul for so many years from 1907 onwards, it is possible to note a number of changes in the status of some of the passage migrants. Mention was made in the Annual Report for 1950 (*Scot. Nat.*, 63, 1951: 56) of the increasing rarity of the hooded crow (*Corvus corone cornix*), which was previously a passage migrant in considerable numbers. As recorded in that Report, the hooded crow was seen on the island on only about three occasions annually in the nine years of observation between 1934 and 1950. Except for one record of eight birds in 1937, the greatest number seen on any one day was three. Hooded crows occurred in seven springs between 9th April and 18th May, and in four autumns between 21st August and 1st November.

In the five years 1951 to 1955 inclusive hooded crows were seen in four springs and two autumns. The spring occurrences, all between 8th April and 15th May, involved a total of thirteen birds on ten days ; the autumn occurrences, all between 13th October and 1st November, involved a maximum of forty-five birds on ten days, the greatest number on any one day being fourteen. No hooded crows at all were recorded in 1954 and only one in 1955 (spring). In 1955 a hooded crow × carrion crow hybrid was recorded on 15th April and again on four days in May.

The Annual Report for 1950 suggested (*loc. cit.*, p. 60) that the stonechat (*Saxicola torquata*) might be regaining its numbers but this has not been borne out by subsequent observation. In the five years 1951 to 1955 inclusive stonechats have been recorded on only four occasions in spring (three times in 1953, once in 1955—each time single birds) and on five occasions in autumn (three times in 1952, once in 1953 and once in 1954—again all single birds).

The " Status Book "—perhaps the most frequently consulted of the records maintained at the Field Station—was revised and brought up to date during 1955. One of the features brought out is the very well-defined and restricted

periods during which certain passage migrants normally occur on the island. As examples of this we may quote the following:

Bluethroat *Cyanosylvia svecica*. " Irregular passage in small numbers both in spring and autumn. Between 25 and 40 occurrences in spring, all between 7th May and 23rd May. Autumn occurrences all between 3rd September and 5th October."

Yellow-browed Warbler *Phylloscopus inornatus*. " Recorded at least 20 times in autumn (only), between 16th September and 24th October."

Spotted Flycatcher *Muscicapa striata*. " Spring passage in small numbers, mainly 7th May to 31st May (earliest 5th May, latest 12th June). Autumn passage in small numbers, mid-August to 16th October."

Red-breasted Flycatcher *Muscicapa parva*. " Only one spring occurrence, compared with over 30 occurrences in autumn. Mostly 18th September to 7th October (earliest 8th September, latest 13th October)."

Scarlet Grosbeak *Carpodacus erythrinus*. " Ten records, all of single birds, between 7th September and 25th September. Only one record outside this period (one bird on 22nd-23rd October 1955)."

Botany

A paper by Dr. E. V. Watson entitled " Observations on the Bryophyte Flora of the Isle of May " appeared in the *Transactions and Proceedings of the Botanical Society of Edinburgh*, 36 (1953): 165-180, bringing up to date the list of Bryophytes (mosses and liverworts) of the island. During 1955 Dr. Watson again visited the May and made further gatherings.

In 1954 and 1955 a collection was made by the Hon. Secretary of all the flowering plants and ferns on the island in connection with the survey of the British flora organised by the Botanical Society of the British Isles. Mounted specimens of all these plants have been deposited on the island for reference purposes. A paper on " The Flowering Plants and Ferns of the Isle of May, Firth of Forth, Fife (V.-C. 85) ", embodying the results of this work, has been published in the *Transactions and Proceedings of the Botanical Society of Edinburgh*, 37 (1956): 11-23.

Myxomatosis

Mention must be made here of the fact that myxomatosis reached the island in the spring of 1955, the first infected rabbit being seen on the North Ness on 27th March. By the end of October almost all the large rabbit population had been wiped out. From the circumstances surrounding the arrival of the disease it seems probable that a gull brought over an infected flea from the mainland.

By midsummer and early autumn the first results of the great reduction in rabbit numbers were becoming visible. Several plants not previously recorded from the island were seen in bloom, including two species of orchids. Grasses were flowering freely where diligent search had previously been required to find any ungrazed specimens at all.

It is not without some regret that the decimation of the rabbit population is recorded. The animals have been a feature of the island for well over six hundred years. The full effect of their virtual disappearance may not be felt for some time to come. It offers a fruitful field for study.

Acknowledgements

The thanks of the Observatory Committee and of the many observers who have visited the island are due to the Commissioners of Northern Lighthouses, to the lighthouse keepers on the island (especially, during this period, Messrs. Thorburn and Watt), and to Mr. W. Hughes, skipper of the *Fair Morn*, for their unfailing kindness at all times and for their much-appreciated assistance in so many ways.

ZOOLOGICAL NOTES

Spiny Lobsters off the Scottish Coasts.—Occurrences of *Palinurus vulgaris* reported during 1954, additional to those already published (*Scot. Nat.*, 66: 121), and a single record for 1955 are listed below.

Date	*Position*	*Gear*	*Sex*
1954. May	Egilsay I., Orkney	Creel	—
Aug.	W. side Westray, Orkney.	,,	Male
,,	13′ N.W. Hoy, Orkney	Seine	Female
Sept.	½′ off Sulisker, 59° 05′ N. 6° 10′ W.	Trawl	Male
,,	N. of Crowlin Is. 57° 21′ N. 5° 51′ W.	Net	Female
1955. Nov.	Burra Haaf, Shetland	Seine	Female

The Westray specimen was alive when received and still survives (Dec. 1955) in the Laboratory aquarium. Casting took place in June 1955 with only slight increase in carapace length. In the female from Crowlin Islands, also received alive, the shell had not yet completely hardened. This was a very large lobster weighing 3·6 kg. and at the time could be accommodated only in an outsize reservoir tank. It died on 15th November 1954, after a sudden drop in water temperature to 4° C. during frost. Weight had increased by 140 grams. None of the females was carrying eggs. No further records of larval forms in plankton samples have been obtained.—E. Wilson, Scottish Home Department, Marine Laboratory, Aberdeen.

White-billed Diver in East Lothian.—While watching geese from the Kilspindie side of Aberlady Bay on the afternoon of the 12th November 1955, we observed a white-billed diver (*Gavia adamsii*) swimming some yards from the rocky shore. As the tide was only half-ebbed, we were able to study the large bird swimming and diving in fairly deep water for over three-quarters of an hour, during which time all the main diagnostic features were noted.

The most noticeable character was the large bill, which was mostly dull straw-yellow in colour, though dark at the base, and was decidedly up-tilted. This was due to the lower mandible sloping up from the line of the chin to the tip of the bill in a more or less straight line, with no distinctive angle observed. The forehead, crown and back of neck were very dark, shading to a dirty white on the cheeks and sides of neck; this was continued on to the chin and throat, while the upper breast was pure white.

The back colour was very dark, with several large white, or off-white, spots on the mantle and scapulars. These spots could easily be seen at a distance, and, together with the bill colour, they indicated that the bird was most probably an adult moulting from summer into winter plumage. While under observation the bird dived continuously and twice was seen to bring up a small fish and splash it about on the calm water.

The following day several other ornithologists, including Ian Balfour-Paul, Dougal G. Andrew, and Keith S. Macgregor, observed the bird at close range in neighbouring Gosford Bay. The bird, on this occasion, was not noted to dive, but spent most of the time either preening or sitting motionless at the edge of the tide. It was last identified definitely by Ian Hay on the 17th November in Gosford Bay, though other observers recorded a " possible " three days later at the same place.

In the summary of the white-billed diver records in *British Birds*, 45: 421-424, 12 occurrences were listed. Since then at least two have been added. It is doubtful if the diver seen by Alexander Cross (*Scot. Nat.*, 1954: 37-38) can be considered a different bird from the one which J. Grierson records slightly later at the same place (*Edin. Bird Bull.*, 4: 49). Consequently, the above record at Aberlady Bay can be considered the 15th for Britain.—Frank D. Hamilton and Kathleen C. Hogarth, Edinburgh.

Pectoral Sandpiper in East Lothian.—On 19th November 1955, in Gosford Bay, East Lothian, I observed a medium-sized wader, not unlike an outsize dunlin, associating with a flock of redshanks. The light was poor at the time, but I had several good views of the bird at a distance of 30 yards, using 10× binoculars, and had no difficulty in identifying it as an American pectoral sandpiper (*Calidris melanotos*), a species which I have seen several times in the U.S.A. The upper parts were brown, variegated with darker markings, which gave a generally streaky appearance. The neck and upper breast were also streaked, forming a distinct " apron " in contrast with the white of the belly. The crown was darker, with a light eye-stripe, and the bill (straighter and more slender than that of the dunlin) was black. In flight, the blackish central tail feathers and the lack of any clear wing-bar were very noticeable. The legs were definitely pale but the light being so poor I should not like to say what their precise colour was. I was particularly struck by the sharpness of the distinction between the apron and the white of the lower body, which is why I ascribe it so confidently to *C. melanotos* rather than to the Siberian species.—W. Kenneth Richmond, Glasgow.

There are five previous Scottish records, and this is the second for East Lothian, one having been seen in Aberlady Bay on 10th August 1948 (*Scot. Nat.*, 61: 126-127).—Editors.

Probable Breeding of Snow-Bunting on Ben Nevis in 1954.—On 1st August 1954, as I reached the summit of Ben Nevis, I was surprised to see two snow-buntings (*Plectrophenax nivalis*) perching on the ruins of the old Observatory. One was an adult female, the other a juvenile which was constantly soliciting for food, both when perched on the ruins, and when the female flew down on to the scree to feed. This soliciting took the form of wing-quivering accompanied by continuous chirping, similar to the behaviour of a hungry young house-sparrow. Though the female's only reaction was to drive the young bird away repeatedly, the behaviour does suggest breeding nearby. The birds were under observation for twenty minutes and during that time did not move from the area of the ruins though I approached within ten yards.—C. D. T. Minton, Rugeley, Staffs.

There have been reports of snow-buntings on Ben Nevis during summer, with cases of suspected breeding and young birds seen, over a long period of years, particularly whilst the Observatory was manned and a regular log kept (see Harvie-Brown, *A Fauna of Argyll and the Inner Hebrides*, 1892, p. 79, 235-239, and Rintoul and Baxter, *The Birds of Scotland*, 1953, p. 89). Apparently a nest has never actually been found. The above record is of importance not only on account of its intrinsic value, but also because it shows how desirable it would be to obtain records of breeding from areas other than the " classic " districts.—Editors.

A White Otter.—In June 1954, while approaching an uninhabited island off the west coast of Argyll, I saw an all-white otter. As it was close inshore to the island and lay almost direct in our path, a good view was obtained at fairly close quarters. On landing on the island I followed the otter for about a quarter of a mile along the rocky precipitous coast as it kept near the shore being therefore able to get a good view of it from above. It was full-grown and, being white, was easily followed even deep into the sea. The boatman could recall having seen a white otter as a cub two years previously at the same spot. Its coat in appearance was like that of a polar bear. Local inquiries revealed that a white otter was at one time known in Loch Fyne, appropriately enough in the vicinity of Otter Ferry.—J. M. Fletcher, Lochgilphead.

According to J. G. Millais (*The Mammals of Great Britain and Ireland*, 1905, vol. 2, p. 35), "Albinoes, cream-coloured and spotted varieties of the Otter, are not very rare; most of the large museums possess a specimen". For Argyll, Harvie-Brown mentions two pure white otters—one killed in Jura, and another pre-served at Kildolton House, Islay (*A Fauna of Argyll and the Inner Hebrides*, 1892, p. 17).—EDITORS.

The Young Grey Seal.—We are told that there is a distinct difference between the young of the common seal (*Phoca vitulina*) and that of the grey or Atlantic seal (*Halichoerus grypus*) as regards their introductionto the sea. The young common seal, born in June, if not actually born in the water, takes to the sea immediately and is at once a good swimmer. The young grey seal is born ashore in the late autumn and does not take to the water until it has shed its white coat of hair, which may take two or three weeks. It is believed that if the young grey seal, at this early age, inadvertently falls into the sea, it may well be drowned, especially if the conditions are boisterous. My recent experience of a young grey seal does not fit into this accepted pattern of events, and may be worth recording. On 4th November 1955 I was informed that a young seal of this species had been born on a small beach at a desolate spot in the parish of Sandsting on the west mainland of Shetland, where none had ever been seen before. Next day I visited the spot, and there it was, in its white coat, sound asleep among some sea-weed at high water mark. Though this small beach was not fully exposed to the open Atlantic—being sheltered to a certain extent by off-lying skerries—a heavy swell was breaking on the beach, and was almost reaching the seal, which had its hind flippers curled up as if to keep them from getting wet. A cow and a bull seal were noticed in the sea about a hundred yards off the beach; but they quickly disappeared, and were not seen again during the three hours that the young one was kept under observation. (Incidentally, this bull was in attendance on a single cow sixteen miles from the nearest breeding skerries.) Although a very careful approach was made towards the youngster, it awoke suddenly, gave a frightened bark, and immediately made for the sea. It was in very fat condition, had a thick coat of white hair, none of which had moulted on the beach, and was undoubtedly less than a fortnight old; yet, without the slightest hesitation, it wriggled quickly down the beach towards the water. It was obvious, however, that as soon as it got amongst the breakers, the seal was in difficulties, because it was tumbled about in all directions in the most helpless manner. I was particularly struck by the fact that the action of the hind flippers was an aimless wobble quite incapable of getting the young animal into deeper water. For about five minutes this violent tumbling about went on, and I felt that drowning must surely be the result. Ultimately, however, and probably more by good luck than good management, the young one got beyond the breakers, and was able to get its head up and breathe regularly. With a slow and wobbly swimming motion, a peculiar wriggle, quite different

from the quick and effective movements of the adult, it edged over to one end of the beach, a matter of a dozen yards, where there was a low cliff; and against this the waves battered it time after time. However, it emerged from this ordeal, and wobbled, very slowly now, over to the other end of the beach, where there were a number of half-submerged rocks, and amongst these it was swept mercilessly by the waves, tumbling head over heels in a manner pitiful to watch. Every now and then it disappeared in the turmoil, and I was convinced that its dead body must soon be washed ashore, yet it survived this fearful treatment and reached an area off the middle of the beach, and just beyond the breakers, where, although the motion was violent, it found comparative peace, and (more or less) in this area it remained for the next two hours. During this period, it swam round and about, and undoubtedly its swimming abilities steadily improved. Occasionally its hind flippers would give it a small spurt of speed, of which they had seemed incapable earlier on. Although I was completely hidden from its sight it never once attempted to land on the beach. Almost certainly it was now becoming more at home in the water. Later on, it began to make short dives down to the sea bottom, a dozen or fifteen feet beneath it. Before darkness came on, a rather remarkable thing happened. The seal had made one of its dives and had come up with a piece of sea-weed in its mouth, and this it was releasing and catching again in the water. It seemed incredible that in these wild conditions and after the grim ordeal through which this young beast had so recently passed, it could be playing itself with a piece of sea-weed. Yet that was undoubtedly what it was doing. Was it conceivable that all I had seen had been normal procedure? One would scarcely think so; yet when I left the scene I was quite convinced that this young animal was well able to look after itself. Doubtless its mother would return to the beach later on, the young one would follow it ashore to be suckled, and it would sleep soundly after its rough-and-tumble introduction to the ocean. I had hoped to pay at least one more visit to the beach but the weather ruled out the boat journey necessary to reach it.

In conclusion, a few points may be touched upon which seem to me worthy of mention. Other young grey seals of which I have read have been more or less stationary during the suckling period, and have shed their white hair in a circlet around them before they took to the sea. Such may possibly be normal where there is little disturbance from man. In Shetland, unfortunately, the grey seal's greatest enemy is the man with a gun. Often I have disturbed groups lying ashore, and have seen the frantic seaward stampede—every animal literally quivering with terror. On my appearance in the present case, the old seals quickly deserted, and, on awakening, the young one instantly scrambled to the sea. A point of some importance is that in spite of a dreadful buffeting by breakers amongst barnacle-covered rocks, the young seal did not receive a single wound that I could see ; and I was watching it carefully at very close quarters. Most of the blows it received amongst the rocks must have been glancing ones, and against these it was well protected by a thick covering of fat and an overcoat of hide and *matted hair*.

I am reasonably sure that I had witnessed a grey seal's first approach to the sea. In the matter of three hours I had seen its development from a clumsy creature, quite unable to use its hind flippers effectively, to a fairly competent swimmer and diver. Physically it had stood a gruelling test, and, if playfulness is any indication, the experience had left it mentally quite unperturbed.—G. T. KAY, Lerwick.

NOTICE TO CONTRIBUTORS

THE SCOTTISH NATURALIST is devoted to the study of Scottish Natural History, and is therefore concerned with all the many aspects, zoological, botanical, geographical, topographical and climatic embraced by this title.

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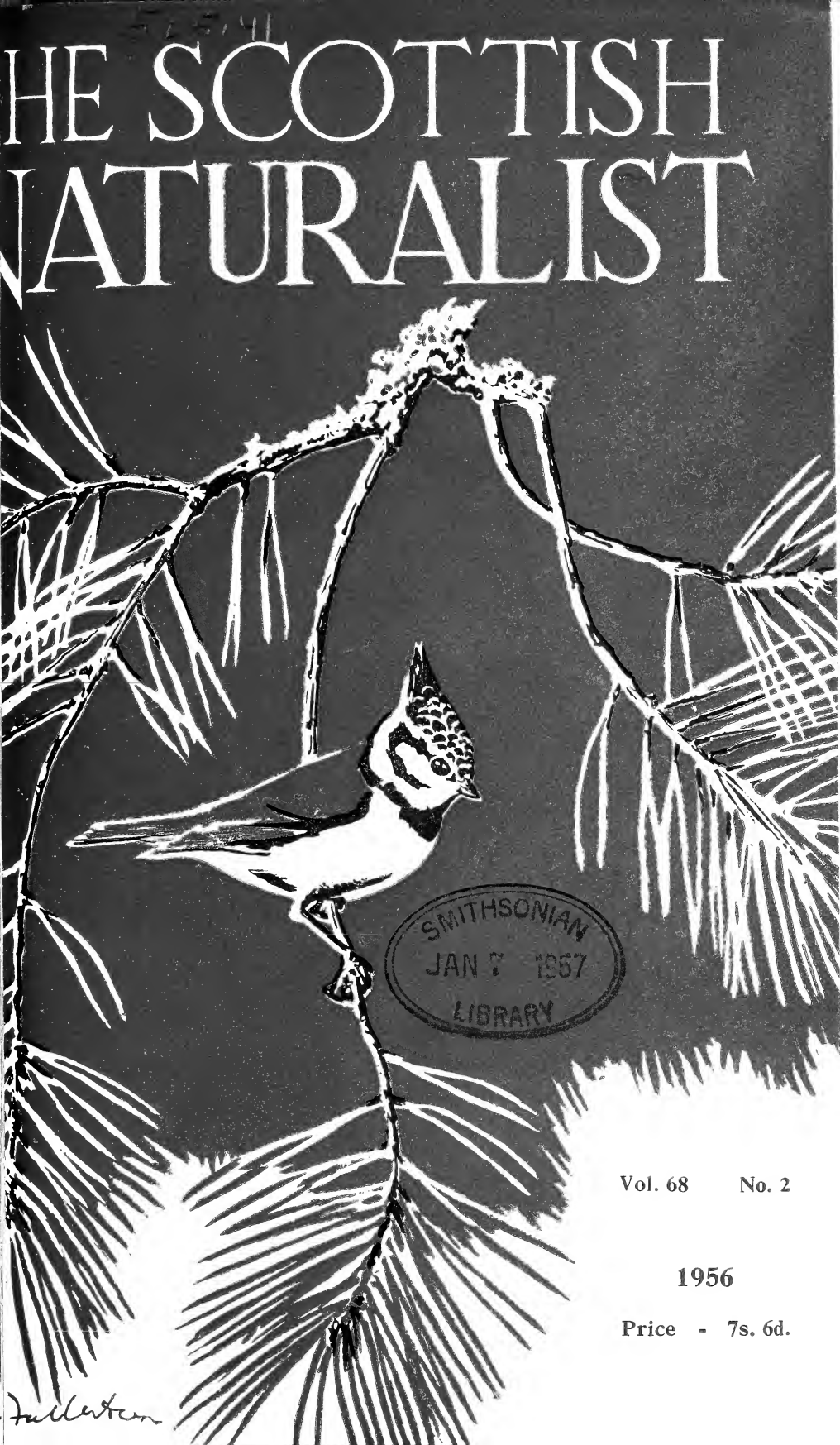

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The Scottish Naturalist

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THE PILOT WHALE STRANDING ON THE ORKNEY ISLAND OF WESTRAY, 1955 *

L. L. de Kock

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Sixty-seven pilot whales (*Globicephala melaena* Traill) were stranded on Sunday night, 14th March 1955, in Westray on the Point of Cott (Fig. 1). Heavy gales made it impossible to reach Westray before Tuesday afternoon.

On our arrival it was found that the whales had been stranded in two groups about 50 yards apart near high-water level on a gradually sloping stony beach. A few individuals were scattered singly along the beach over a distance of about half a mile. A large bull, which had run aground about one mile to the west of the others, was just visible at low tide. Of the two groups one consisted of seven males and nine females, the other of seventeen males and twenty females. The scattered animals belonged to either sex. Altogether thirty-nine whales were sexed and measured (Fig. 2 and Table I). Although the animals lay in different directions, the larger number faced landwards. They all lay on their sides, except those which were wedged in amongst others. Nine of the whales, all smaller ones, were still breathing at intervals of several minutes; otherwise they lay motionless. They did not seem to experience any difficulties in breathing on land.

The skin of the live and dead animals alike was smooth and of a shiny black colour on the back and sides; it showed

* *Received 1st September* 1955

no groups of white lines as described by Williamson (1949) in the pilot whales caught at Torgharn in 1947. On the ventral side the typical pattern of silver-grey was clearly visible. None

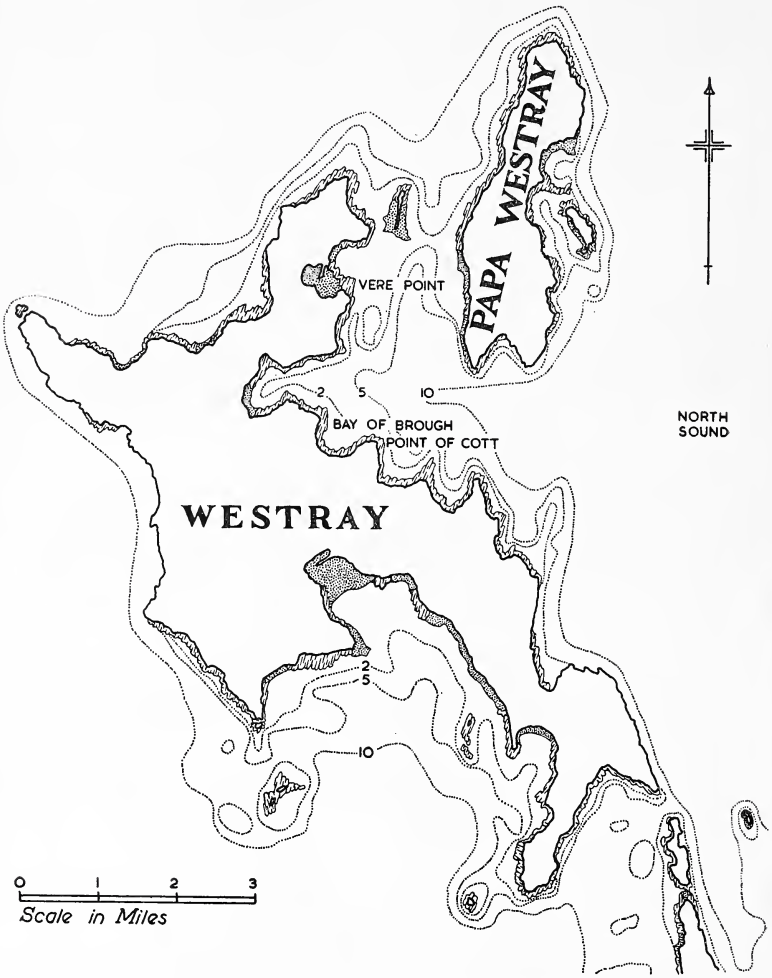

Fig. 1.—Map of Westray, Orkney.

showed any major injuries such as might have been inflicted by killer whales. The skin around the mouth showed, especially in the larger ones, many marks of cuttle-fish suckers, never exceeding a diameter of half an inch.

An interesting observation was made on the rapid sealing of minor wounds and abrasions, caused by the stranding, in a live whale. The blubber surrounding the wound contracted spontaneously by what seemed a reflex reaction so that the flow of blood was momentarily arrested. However, after several seconds, a relaxation set in which allowed a renewed but weaker blood flow. After several alternations of contractions and relaxations the wound was perfectly sealed.

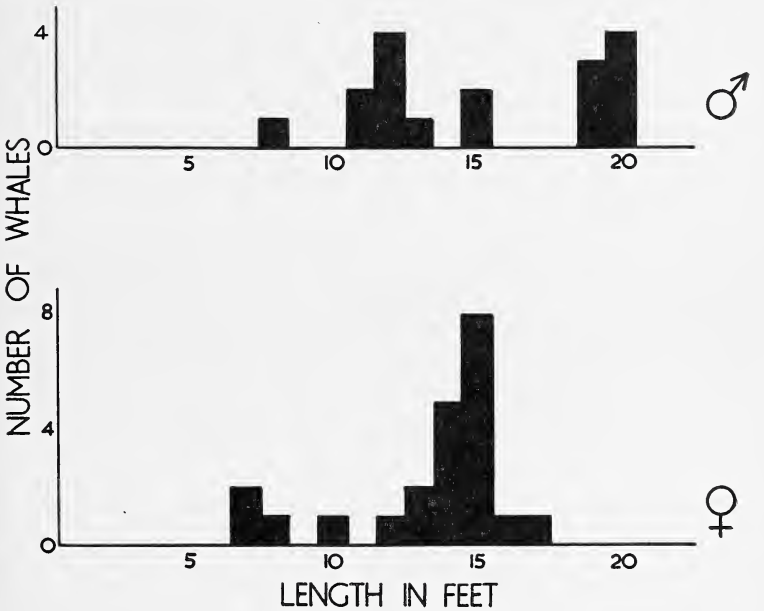

Fig. 2.—Measurement of stranded pilot whales.

It was, of course, necessary to put the whales out of their suffering, and one of them, owing to its position, could be killed only by piercing the heart. There, too, it was noticeable that even such a large wound, out of which blood rushed with enormous pressure, could be hermetically sealed for several seconds at a time. The surrounding body wall seemed to contract in a cramp-like fashion so that no blood escaped. But when the relaxations set in much blood was lost each time, so that the contractions became progressively weaker and less effective until they ceased altogether. At this stage death was heralded by a wild lashing of the tail followed by a

peculiar skin reaction. The skin lost its shininess and became dull and wrinkled as innumerable folds appeared over the whole body. The wrinkles remained quite stationary for the duration of the phenomenon. After a few seconds the animal died, the folds disappeared and the skin regained its original

TABLE I

Length and Girth of Whales

Males		Females	
Total length (in.)	*Girth behind dorsal fin*	*Total length (in.)*	*Girth behind dorsal fin*
245	122	211	—
244	—	197	—
243	126	189	102
242	128	188	—
239	—	187	—
238	—	187	94
228	—	183	90
175	—	183	—
173	84	183	—
157	78	179	—
147	78	175	—
147	78	174	—
137	71	173	89
133	—	171	—
102	53	170	80
		169	—
		158	78
		149	—
		123	64
		106	50
		93	42
		87	42

smoothness. This skin reaction occurred in all the nine whales killed. No sounds were emitted.

Müller (1882) mentions the existence of two types of pilot whales, an observation confirmed by Williamson. One type is said to possess a broader back-fin than the other, whose fin is more erect and narrower. The back-fins of the Westray whales were closely examined, and it was found that the herd consisted of animals with rather similar fins, in no case showing an extremely pointed and erect fin as illustrated by Williamson. Differences shown in the accompanying photographs appear

more pronounced than they were in reality owing to slightly varying angles of view. However, differences could be observed at the posterior margin of the male and female dorsal fin. The mature bulls showed a very notched outline

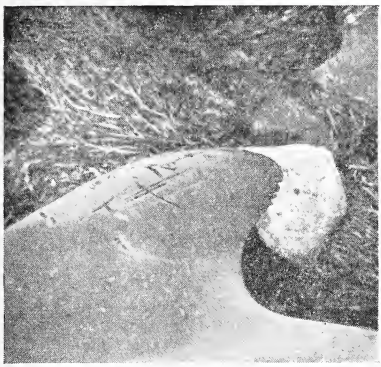

FIG. 3.—Posterior margin of a male dorsal fin showing a notched outline.

FIG. 4.—The smooth outline of a female dorsal fin.

FIG. 5.—The photograph shows how close inshore the herd was on Friday, two days previous to the stranding.

FIG. 6.—The milling herd seen from a rowing boat, of which they took no notice.

as seen in Fig. 3, compared with the smooth outline of all the female fins, Fig. 4. The scratches on the male fin were recent and most likely received during the stranding, while the notches, which were very similar in their appearance in all cases, gave the impression of being older injuries.

Unfortunately, time did not permit the investigation of any pregnant females. One cow, 13 feet 6 inches long, had given

birth to a bull calf during the stranding. Both were found dead. The calf was preserved in deep freeze for detailed dissection.

Several smaller animals were opened to obtain histological material. In all cases the lungs were not collapsed and no internal injuries had taken place as a consequence of the stranding. One stomach was opened and was found empty except for a layer of yellowish mucus. One whale had a cluster of cysts along the ribs in the pleural cavity which has not yet been identified. No external parasites were found.

Eye-witness accounts were obtained of the behaviour of the herd during the five days previous to the stranding.

The whales were first seen on Wednesday, 9th March, to the north between Westray and Papa Westray, near the Point of Vere, after an especially high spring tide (see map). On Thursday they were seen in difficulties amongst some reefs on the east side of the Bay of Brough. On Friday they proceeded to swim even further into the bay where they were seen milling around all day (Figs. 5 and 6). They were moving very close to the land, as can be seen in the photograph. People went out in rowing boats hoping to be able to chase the whales out to the open sea via the North Sound. But the herd took no notice, although the boats approached within a few yards. All witnesses agreed that the whales were in a complete state of panic, diving rapidly straight up and down, bringing up seaweed, and even causing injuries to each other so that blood " coloured the water red ". No cause for this behaviour was obvious. A large bull or several large bulls were said to have circled the herd continuously, indicating that the social system was still intact. All Friday and Saturday they continued their excited behaviour in the same area. During the night they made " a terrible noise ". Kritzler (1952) describes five different sounds emitted by pilot whales in captivity, one of which answers the description of the sounds made by the Westray whales. Kritzler speaks of a squealing, whistling sound emitted at times of excitement, fright or pain. On Sunday morning at low tide the flukes became visible on the large bull which had stranded one mile to the west of the herd. On Sunday the herd still continued as before. Finally, during Sunday night they beached in the eastern part of the

bay, at the Point of Cott. All this time a strong northerly gale continued to blow.

The Westray stranding differed from most recorded strandings in the fact that the herd was not caught unawares by a receding tide, but stayed for days in a bay whose bottom slopes gradually towards the open waters of the North Sound. They finally stranded for no obvious reason. It was always possible for them to escape by swimming out to the North Sound. The stationary behaviour in the Bay of Brough for four days is, therefore, very strange and it is difficult to offer an explanation.

However, a few facts come to mind which may be connected with this phenomenon.

It seems that the whales entered the islands' waters from the north between Westray and Papa Westray during an exceptionally high spring tide (full moon on the 8th). They must therefore have moved across some shallows which are normally covered by only two fathoms of water. The whales may have crossed this barrier unawares; or, as local opinion had it, been driven over it by some fright or disaster in the open sea beyond. Subsequently they found themselves enclosed by land on three sides and in the shallow waters between Westray and Papa Westray; this may have caused their panic or increased their previous fright. Pilot whales do not normally frequent these waters as they are too shallow for their liking. Müller says that they became exceedingly restless in water less than five fathoms, and this is about the depth here, especially in the Bay of Brough. Their exit to the north must have soon been blocked by the changing tides and the question arises why they did not find the way out to the east. Judging by the large bulls and the eye-witness accounts the herd did not lack leaders.

Two possible circumstances may have kept the whales in the Bay of Brough. The one may be found in a statement by Müller that " They cannot be driven against a strong tide, but prefer to swim against the wind ". This indicates a certain conditioning of their movements. The opening between the two islands to the east, into the North Sound, is relatively narrow, and as the wind came from an unchanging direction, currents may have been present which were so

adverse to the liking of the whales that their only route of escape was practically closed to them.

The other and more likely reason may have been that one of their leaders got stranded in the Bay of Brough and that they refused to leave him. As mentioned above, the carcase of one large bull was observed on Sunday morning at low tide. He may have been stranded on Friday on the outlying reefs, and became visible only after being carried further inshore. In such a case it is possible that the whales stayed in the vicinity of his stranding. Nearly all accounts of pilot whale hunts stress the pathetic habit of the survivors in returning to or staying with their injured and dead until they share the same fate.

The very last act of the herd, the actual stranding, may have been similar to an artificial stranding described by Greg (1855) at a pilot whale hunt in the Faroes, where the herd was trapped in a bay by a large net; after an unsuccessful attempt to break through the leaders turned round and, in what seemed an act of panic, swam straight into the land, taking the whole herd with them. There can be little doubt that the Westray herd went ashore—deliberately or accidentally—at more or less the same time, judging by their distribution along the beach.

Previous records of whale strandings are being investigated in order to elucidate such problems more thoroughly.

Acknowledgments

I am grateful to Mr. T. H. Drever, Westray, for his photographs of the live whales, and to Dr. P. C. de Kock and Mr. A. Anderson for their valuable assistance at the site of stranding in the face of severe weather conditions.

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WINTER BIRD NOTES FROM HOY, ORKNEY*

L. S. V. Venables

From 18th to 30th January 1956 I was on the island of Hoy, studying the winter behaviour of common seals (*Phoca vitulina*). When the tide was unsuitable for this work I was able to make a few bird-observations. These, of necessity, had to be rather casual, and I spent most of such spare time in discovering which species frequented the tree and bush cover in winter, for this has always interested us since our two-year study of Kergord Plantations in Shetland (Venables and Venables, 1948). Nowhere in these patches of Hoy cover did I see any conifers. No doubt if the considerably larger plantations on the Orkney mainland had been visited (some of which contain conifers) a greater variety of wintering birds would have been found, as among the Kergord Plantations in Shetland, which harbour such wintering species as long-eared owl (*Asio otus*), goldcrest (*R. regulus*) and bullfinch (*P. pyrrhula*).

Planted cover. Many houses and crofts have small patches of planted scrub-cover near them consisting mostly of aspen (*Populus tremula*), *Salix spp.*, rowan (*Sorbus aucuparia*), elder (*Sambucus sp.*), *Fuchsia sp.*, *Veronica sp.*, *Escallonia macrantha* and *Rosa sp.* Sycamores (*Acer pseudoplatanus*) are sometimes included, and these may reach 35 to 40 feet—high enough for rook (*Corvus frugilegus*) colonies—depending on shelter. The ground vegetation varies from natural grasses and woodrush (*Luzula*) to garden crops and bare earth. At Melsetter House, however, the planted areas cover several acres and 40-foot sycamores are numerous. Here, too, there are some laburnum trees (*Laburnum anagyroides*), hawthorn (*Crataegus*) and fruit bushes. The following species were found in planted cover:

Woodcock (*Scolopax rusticola*), 1.
Wood-pigeon (*Columba palumbus*), 2 " pairs ".
Wren (*T. troglodytes*), a few.
Fieldfare (*Turdus pilaris*), a flock of 5.

* *Received 14th February* 1956

Song-thrush (*Turdus ericetorum*), 7 in all. Only 1 of these appeared to be the grey-backed "Scandinavian" form (the form wintering in Shetland); the other 6 resembled the local breeding form.

Redwing (*Turdus musicus*), a few solitary birds.

Blackbird (*Turdus merula*), thinly distributed throughout; a count of 105 on Hoy and Orkney mainland between 18 and 31 Jan. gave: adult males, 43; first-winter males, 23 (total males 63 per cent.); females, 39.

Robin (*Erithacus rubecula*), 1.

Pied Wagtail (*Motacilla alba yarrelli*), 1.

Starling (*Sturnus vulgaris*), abundant.

Twite (*Carduelis flavirostris*), a flock of 4 and another of 35—the latter singing flock-song.

Chaffinch (*Fringilla coelebs*), a few small flocks and some solitary birds.

Brambling (*Fringilla montifringilla*), a flock of 10 with a few chaffinches.

House-sparrow (*Passer domesticus*), numerous, but not so abundant as starlings.

Hooded crow (*Corvus cornix*), jackdaw (*Corvus monedula*), and rook were not seen to make any use of trees during the day. A kestrel (*Falco tinnunculus*) was noted hunting around scrub patches in Rackwick.

Natural cover. In some sheltered stream valleys in Hoy one finds an occasional patch of scrubby aspen, willow, rowan, and rose. These are presumably natural, but are so restricted in height and area as to afford little winter cover. In these patches I found an occasional wren, blackbird, chaffinch, and one reed-bunting (*Emberiza schoeniclus*).

Berriedale, on the other hand, is of considerable interest, as it appears to be a relic of indigenous Orkney "forest". It is situated in the remote stream valley, sheltered by 1,500-foot hills, between Ordale and Rackwick. The vegetation consists of aspen, rowan, willow, and birch (*Betula sp.*), up to 30 feet, extreme height, with some rose and honeysuckle (*Lonicera periclymenum*). The dominant winter ground vegetation is ling (*Calluna sp.*), heaths (*Erica tetralix* and *E. cinerea*), woodrush, grasses, and dead bracken (*Pteridium aquilinum*), with patches of still green foxglove (*Digitalis purpurea*) leaves, and a few prostrate junipers (*Juniperus nana* = *siberica*). Two areas,

covering together perhaps not much over a couple of acres, are quite dense, and the rest is scattered along the banks of the burn. On 21st January I worked this locality as thoroughly as I could and found:

Woodcock, at least 2.
Wren, 1.
Fieldfare, a flock of 5
Blackbird, 1 adult male.
Meadow-pipit (*Anthus pratensis*), 1.

A hen-harrier (*Circus cyaneus*) was hunting around the open parts, and a red grouse (*Lagopus scoticus*) was heard calling higher up the hill above the trees.

Raptors. During my visit to Hoy the land was mostly or entirely snow-covered, and rabbits (*Oryctolagus cuniculus*) virtually extinct since the introduction of myxomatosis from South Ronaldsay on 2nd October 1954. Perhaps for this reason, two hen-harriers, one or two rough-legged buzzards (*Buteo lagopus*), two kestrels, and at least one peregrine (*Falco peregrinus*) were often seen hunting the shores of my seal area (Bay of Quoys to Selwick, north-east Hoy). Birds were plentiful on the washed-up banks of seaweed: rock-doves (*Columba livia*), starlings, rock-pipits (*Anthus spinoletta petrosus*), many *Charadriiformes*, and an occasional blackbird and song-thrush, but the only actual kill seen was when a kestrel took a starling.

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SOME RECORDS OF SCOTTISH COLEOPTERA DURING THE YEARS 1953-1955 *

R. A. Crowson
Zoology Department,
Glasgow University

Except where otherwise indicated, the following records relate to species met with in the course of my own field investigations and to the adult insects. In a few cases (marked with an asterisk) the species do not appear to have been previously recorded from Scotland. In order to save space, records of the more generally common species have been omitted. The classification adopted is that I have expounded elsewhere (*The Natural Classification of Coleoptera*, 1955; *Handbooks for the Identification of British Insects*, Vol. IV, part 1, Coleoptera—in press); the nomenclature is that of Kloet and Hincks' *Checklist of British Insects*.

Carabidae

Carabus glabratus Payk.: a second instar larva under stone at about 2000 ft. on Culter Fell, near Biggar, Lanark, 23.4.55. The date suggests that the larva had overwintered and the egg had been deposited in autumn or late summer.

Leistus fulvibarbis Dej.: Ardmore, Cardross, Dunbarton, 6.4.55; Kincraig Head, Earlsferry, Fife, 16.5.55. This species is rather scarce in Scotland, apparently restricted to particularly warm or sheltered spots.

Miscodera arctica Payk.: under large stone at about 2000 ft., Culter Fell, Biggar, Lanark, 5.9.54, two females; I failed to find the species on Ben Dorain, Bridge of Orchy, Argyll, 10.7.55.

Stomis pumicatus Panz.: two in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Amara vulgaris L. (*lunicollis* Schiodte): several in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54; one in turf, Dumbarton Rock, Dunbarton, 9.5.55.

* *Received 23rd February* 1956

Patrobus assimilis Chaud.: under stone at about 2000 ft., Culter Fell, Biggar, Lanark, 5.9.54.

Lyperosomus adstrictus Eschsch.: under stones on heath, Boat of Garten, Inverness, 24.6.55.

Pristonychus terricola Hbst.: numerous in pitfall traps among rabbit burrows on dunes, Aberlady Bay, East Lothian, 18.9.55. None were found by hand collecting in the vicinity by day, suggesting that the species hides in the rabbit burrows, where the larvae are likely to live. It will be interesting to see whether the beetles survive the almost total destruction of the rabbits in the locality by myxomatosis.

Europhilus micans Nic.: at roots of vegetation in dampish dune slack, head of Luce Bay, Wigtown, 26.9.55.

Lebia chlorocephala Hoffm.: in herbage, Kincraig Head, Earlsferry, Fife, 15.5.55. The larva of this species has recently been shown to develop as a parasite on pupae of Chrysomelidae.

Metabletus foveatus Geoff.: found in all the dune areas studied (Luce Bay, Wigtown; Turnberry, Ayr; Aberlady Bay, E. Lothian; Earlsferry, Fife) but nowhere else.

Dromius agilis F.: on and under bark of old oaks; Bothwell Castle, Lanark; Craignethan Castle, Lanark; Dalkeith Old Oak Wood, Midlothian.

Cymindis vaporariorum L.: under stones on heath, Boat of Garten, Inverness, 24.6.55.

Histeridae

* *Acritus nigricornis* Hoffm.: two in Clyde flood-drift, Garrion Bridge, 30.10.54.

Hister purpurascens Hbst.: several, ditto.

Pachylopus maritimus Steph.: adults occur commonly on all dune areas examined (see above) from March to October. I have so far found no indication of the food or larvae of this species.

Ptiliidae

Ptiliolum spencei Allib.: at bottom of haystack, Craigielaw, Aberlady, E. Lothian, 30.3.55.

Leptinidae

Leptinus testaceus Muell.: one in moss under trees, Bothwell Castle, Lanark, 30.10.55.

Anisotomidae

Liodes cinnamomea Panz. (the truffle beetle): one male swept from under old lime trees at Craignethan Castle, Lanark, 7.10.54. Experiments using tinned truffles as a bait in the same locality in September 1955 failed to attract this or any other truffle-eating species.

Anisotoma glabra Kug.: like *A. humeralis* F., this species is probably attached to a *Reticularia* or similar Mycetozoan. One on decaying pine stumps, Loch Tulla, Bridge of Orchy, Argyll, 6.6.54; Loch Mallachie, Abernethy Forest, Inverness, 25.6.55.

Colon latum Kraatz: two in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Choleva jeanneli Britten: one under turf (near mole burrow) on heath, Deil's Craig Dam, Mugdock, Stirling, 27.3.55.

Scydmaenidae

Scydmaenus tarsatus Muell.: haystack bottom, North Mains, Houston, Renfrew, 20.11.55.

Neuraphes sparshalli Denny: several in hedge-bank, Dalserf, Lanark, 22.1.56.

Silphidae

Aclypea (*Blitophaga*) *opaca* L. : one in arable field, Dalserf, Lanark, 12.8.54.

Scaphidiidae

* *Scaphidium* 4-*maculatum* Oliv.: larva on rotten log, Rossdhu, Loch Lomond, 23.7.53.

Staphylinidae

Pseudopsis sulcata Newm.: bottom of haystacks, Craigielaw, Aberlady, East Lothian, 4.9.54, 30.3.55; North Mains, Houston, Renfrew, 20.11.55.

Metopsia clypeata Muell.: widespread in lowlands—hedgerows, haystack bottoms, etc.; adults at all seasons, probable larvae found in hedgerow soil, 4.12.55.

Acidota crenata F.: under bark of felled beech, Garscube Estate, Glasgow, 30.8.54.

Arpedium brachypterum Grav.: under stone at about 2000 ft. on Culter Fell, Biggar, Lanark, 5.9.54; under stone at 3000 ft., Ben Dorain, Bridge of Orchy, Argyll, 10.7.55.

Anthophagus mandibularis Gyll.: under stone, 3000 ft., Ben Dorain, Bridge of Orchy, Argyll, 10.7.55.

Phyllodrepoidea crenata Grav.: under bark of dead ash, beech and oak; October and November; near Houston, Renfrew; Craignethan Castle, Lanark; Bothwell Castle, Lanark.

Geodromicus globulicollis Mann.: under stone at 3000 ft., Ben Dorain, Bridge of Orchy, Argyll, 10.7.55.

Coryphium angusticolle Steph.: under willow bark, Bothwell Castle, Lanark, 30.10.55.

Phloeocharis subtilissima Mann.: under bark of rather dry dead standing tree, Duntochter, Dunbarton, May 1952.

Coprophilus striatulus F.: two in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Syntomium aeneum Muell.: common in litter, etc. of damp deciduous woods in Clyde area; the larvae occur in the same habitats during the winter.

Ancyrophorus aureus Fauv.: in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

* *Platystethus alutaceus* Thoms.: one in pitfall trap in damp grassland, Aberlady Bay, East Lothian, 18.9.55.

Bledius subterraneus Er.: sandy banks of R. Spey, Boat of Garten, Inverness, 30.6.55.

Thinobius angusticeps Fauv.: one in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Dianous coerulescens Gyll.: the adults are common at the edges of streams in shaded places in the Clyde Valley; larvae may be found in the same habitats as the adults from May to July or August.

Astenus angustatus Payk.: haystack bottom, Craigielaw, Aberlady, East Lothian, 30.3.54; in turf, Kincraig Head, Earlsferry, Fife, 15.5.55.

Pselaphidae

Euplectus signatus Reich.: haystack bottom, North Mains, Houston, Renfrew, 20.11.55.

Clambidae

Calyptomerus dubius Marsh.: numerous in haystack bottoms, Craigielaw, Aberlady, East Lothian, 4.9.54 and 30.3.55.

Trogidae

Trox scaber L.: one crawling up trunk of damaged standing beech, Ardgryfe, Houston, Renfrew, 18.6.55. The only previous Scottish record I can find is one from Jardine Hall (near Lockerbie, Dumfries) over a century ago. The species is probably attached to owl nests.

Scarabaeidae

Aegialia arenaria F.: adults of this species were met with on all dune areas examined (Luce Bay, Wigtown; Turnberry, Ayr; Aberlady Bay, East Lothian; Earlsferry, Fife) from May till October. Larvae and food as yet unknown. May be some association between this species and *Pachylopus maritimus* (Histeridae).

A. sabuleti Panz.: Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54; on damp sand at edge of pool on heath, Boat of Garten, Inverness, 24.6.55.

Heptaulacus villosus Gyll.: under dead rabbit on dunes, Aberlady Bay, East Lothian, 8.7.55.

Oxyomus silvestris Scop.: Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Onthopagus ovatus L.: numerous under dead rabbit, Kincraig Head, Earlsferry, Fife, 15.5.55.

Trichius fasciatus L.: larva in rotten birch, Kinveachy Forest, Aviemore, Inverness, 26.6.55.

Byrrhidae

Morychus aeneus F.: dead adult on dunes, Aberlady Bay, East Lothian, 6.9.55.

Elateridae

Lacon murinus L.: larva in dune-turf, head of Luce Bay, Wigtown, 26.9.55.

Harminius undulatus Deg.: a half-grown larva apparently belonging to this species (according to van Emden's description) under bark of dead pine, Loch Tulla, Bridge of Orchy, Argyll, 6.6.54.

Trogositidae

Thymalus limbatus F.: under bark dead birch, Kinveachy Forest, Aviemore, Inverness, 26.6.55; under bark dead oak, High Park, Hamilton, 14.8.55.

Cucujidae

Dendrophagus crenatus Payk.: larva under pine bark, Torlum Hill, Crieff, Perth, 30.8.54; adults and larvae under bark of pine, Castle Spynie, Beauly, Inverness, August 1953; abundant under bark pine logs, sawmills, Aviemore, Inverness, June 1955.

Rhizophagidae

Rhizophagus parallelocollis Gyll.: under beech-bark, Ardgryfe, Houston, Renfrew, 18.6.55.

R. dispar Payk.: under beech-bark, Ardgryfe, Houston, 20.11.55; under oak-bark, Dalkeith Old Oak Wood, Midlothian, 5.11.55.

Monotoma picipes Hbst.: haystack bottom, North Mains, Houston, Renfrew, 20.11.55.

M. quadricollis Aube: haystack bottom, Braidwood, Lanark, 13.3.55.

Nitidulidae

Omosita colon L.: Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

O. depressa L.: by sweeping, Rossdhu, Loch Lomond, 14.5.55.

Cryptophagidae

Telmatophilus caricis Oliv.: on *Sparganium*, Darnley Limestone quarry, Glasgow, 4.8.54.

Henoticus serratus Gyll.: under bark pine logs, sawmills,

Aviemore, Inverness, 29.6.55; by sweeping, Abernethy Forest, Inverness, 27.6.55.

Paramecosoma melanocephalum Hbst.: in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

* *Caenoscelis ferruginea* Sahlb.: in pitfall trap under oaks, Craignethan Castle, Lanark, 16.8.55.

Erotylidae

Triplax russica L.: in rotten birch, Kinveachy Forest, Aviemore, Inverness, 26.6.55.

Endomychidae

Mycetaea hirta Marsh.: in pitfall trap under oaks, Craignethan Castle, Lanark, 16.8.55.

Coccinellidae

Scymnus redtenbacheri Muls.: in pitfall trap in dune-turf, Aberlady Bay, East Lothian, 18.9.55.

Corylophidae

* *Sericoderus lateralis* Gyll.: at bottom of haystacks, Violetbank Farm, Annan, Dumfries, 9.5.54; North Mains, Houston, Renfrew, 20.11.55; in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Merophysiidae

Anommatus 12-striatus Muell.: in Clyde flood-drift, Garrion Bridge, 30.10.54.

Colydiidae

Orthocerus clavicornis L.: adults in dune-turf (mosses and lichens dominant), Aberlady Bay, E. Lothian, 6.9.55; adults and larvae in dune-turf, head of Luce Bay, Wigtown, 26.9.55.

Mycetophagidae

Pseudotriphyllus suturalis F.: in bracket fungi on old oaks, Dalkeith Old Oak Wood, Midlothian, 5.11.55.

Triphyllus bicolor F.: ditto.

Tetratomidae

Tetratoma fungorum F.: adults and larvae in fungi on old oaks, Dalkeith Old Oak Wood, 5.11.55.

Tenebrionidae

Cylindronotus laevioctostriatus Goeze: adults and larvae in dune-turf (with *Erica*), head of Luce Bay, 26.9.55.

* *Phaleria cadaverina* F.: on dunes, Turnberry, Ayr, 25.8.54.

Phylan gibbus F.: ditto, also 5.3.55.

Melandryidae

Hallomenus binotatus Guens.: in fungus on dead pine, Castle Spynie, Beauly, Inverness, August 1953; adult and larva in *Polyporus betulinus*, Mugdock Wood, Milngavie, Stirling, 21.6.55; under bark dead oak, Hamilton High Park, Lanark, 14.8.55.

Abdera triguttata Gyll.: under bark pine logs, sawmills, Aviemore, Inverness, 29.6.55.

Zilora ferruginea Payk.: adults and larvae under bark dead pines, Aviemore, Inverness, June 1953.

Meloidae

Meloe violaceus Marsh.: crawling on ground, Coille na Glas Leitire, Loch Maree, West Ross, 21.6.54. This species occurs in several places near Glasgow.

Cerambycidae

Rhagium inquisitor L.: adult on dead pine, larvae under bark, Coille na Glas Leitire, Loch Maree, 21.6.54.

Grammoptera ruficornis F.: on hawthorn blossom, Craignethan Castle, Lanark, 12.6.55.

Phymatodes testaceus L.: larvae under bark dead oaks, Dalkeith Old Oak Wood, Midlothian, 5.11.55.

Chrysomelidae

Zeugophora turneri Power: adults numerous on foliage of aspen, Boat of Garten, 24-30 June 1955; probable larvae mining aspen leaves, Boat of Garten, early August, 1953.

Zeugophora subspinosa F.: on foliage of black poplar, Aviemore, Inverness, June 1953—the species appears to be absent from the Clyde area although its food plant is abundant.

Donacia crassipes F.: on foliage of *Nuphar*, Dubh Lochan, Loch Lomond, Stirling, 1.6.55.

Lema lichenis Voet: swept from river-bank herbage, Dalserf, Lanark, 12.8.54.

Chrysolina hyperici Forst.: on *Hypericum perforatum*, Dalserf, 12.8.54.

Galerucella nymphaeae L.: numerous larvae, few adults on *Potentilla palustris*, Possil Marsh, Glasgow, August 1953.

Derocrepis rufipes L.: adults abundant on *Vicia sepium* in Clyde valley from Bothwell Castle eastwards, none found so far to north or west of Glasgow, May to early July. Larvae found at roots of vetches, Dalserf, Lanark, 14.6.52.

* *Mantura matthewsi* Curt.: adults on rock-rose, Kincraig Head, Earlsferry, Fife, 20.8.54; larvae mining rock-rose leaves, same place, 15.5.55.

Chalcoides fulvicornis F.: adults on willow foliage, Kilbirnie, Ayr, May 1955; larvae at roots, same place, 8.7.55; adults on sallows, Dubh Lochan, Loch Lomond, Stirling, 17.6.55. Very local in Scotland.

Hippuriphila modeeri L.: in Clyde flood-drift, Garrion Bridge, Lanark, 30.10.54.

Mniophila muscorum Koch: ditto.

Apteropeda orbiculata Marsh.: on *Teucrium*, Dubh Lochan, Loch Lomond, Stirling, 2.6.55—Miss E. M. Cawthra.

Haltica ericeti Allard: on heath, Boat of Garten, Inverness, 24.6.55.

Longitarsus jacobaeae Waterh.: on ragwort on dunes, Aberlady Bay, East Lothian, 18.9.55. I have not found this species in the Clyde area.

L. exoletus L.: on *Echium*, Kincraig Head, Earlsferry, Fife, 19.6.55.

Curculionidae

Apion pallipes Kirby: on *Mercurialis*, Craignethan Castle, Lanark, 12.6.55.

Otiorrhynchus muscorum Bris.: in moss on wall, Mugdock Reservoir, Milngavie, Dunbarton, 14.2.55.

Barypithes sulcifrons Boh.: in turf, Dalkeith Old Oak Wood, Midlothian, 5.11.55.

Tropiphorus obtusus Bons.: in riverside turf, Dalsholm, Glasgow, 9.10.55.

Cleonus sulcirostris L.: adults very numerous, leaving characteristic trails on the dune sands, Aberlady Bay, East Lothian, 6.9.55; numerous freshly-emerged adults, few pupae, and one larva found in stem-swellings of *Cirsium arvense* just below ground-level; very few adults seen at same place on 18.9.55.

Notaris aethiops F.: at roots of *Carex* sp., sandy banks of Spey, Boat of Garten, Inverness, 30.6.55.

Orthochaetes setiger Beck.: in turf, Craignethan Castle, Lanark, 13.8.55.

Elleschus bipunctatus L.: on sallow, Dubh Lochan, Loch Lomond, Stirling, 17.6.55—Miss E. M. Cawthra.

Brachonyx pineti Payk.: on pine foliage, Coille na Glas Leitire, Loch Maree, West Ross, 17.6.55. Fairly common in Spey valley.

Anthonomus pedicularius L.: on hawthorn foliage, Rossdhu, Loch Lomond, Dunbarton, 14.5.55.

Limnobaris T-album L.: on *Carex* sp., Dubh Lochan, Loch Lomond, Stirling, 17.6.55—Miss E. M. Cawthra.

Zacladus geranii Payk.: on *Geranium sylvaticum* (none on *G. pratense*), Clyde bank, Dalserf, Lanark, 12.6.54; on *G. sanguineum*, Kincraig Head, Earlsferry, Fife, 19.6.55.

Scolytidae

* *Scolytus rugulosus* Ratz.: larvae under oak bark, Dalkeith Old Oak Wood, Midlothian, 5.11.55.

Trypodendron lineatum Ol.: flying, Abernethy Forest, Inverness, 27.6.55.

* *Dryocoetes villosus* F.: under bark of old oaks, Bothwell Castle, Lanark, 30.10.55; Dalkeith Old Oak Wood, Midlothian, 5.11.55.

D. autographus Ratz.: under bark dead beech, Ardgryfe, Houston, Renfrew, 18.6.55.

TREE-CREEPERS USING NEST-BOXES AND OTHER ARTIFICIAL NEST-SITES *

J. M. D. Mackenzie
St. Andrews

In the course of a series of experiments with artificial nest-sites, some 600 boxes were put up round Perth, in 23 sites of varying type and tree species, mostly commercial plantations. About 70 bits of bark were also fastened to trees; these were 2 feet long and so fastened as to curve and leave a space $2\frac{1}{2}$-3 inches wide between the bark and the tree, with entrances above and preferably on both sides. In these two kinds of sites at least 65 tree-creepers' (*Certhia familiaris*) nests have been found since 1946, from 45 of which young are known to have flown.

Numbers are not exact owing to pillaging and intermittent inspection; some were 75 miles from my present home. The pieces of bark were placed in groups of 3 or 4, and in each group there was never more than one nest in use at a time, the nearest groups being 200-300 yards apart. A second nest may be made later in the next site, box or bark, only 30 or 40 yards away. Territories seem to be fairly big, about 10 acres.

In 1948 I had a tree-creeper's nest in plot L in an ordinary tit box 2 years after its erection. The box was type A2 (British Trust for Ornithology's Field Guide No. 3, *Nestboxes*, 1954 (Revised Edition)); it was my own design and not intended for this species (*Scot. Nat.*, 60: 180). From the date, it was a second nest. In 1946 and 1947 there were nests behind a bit of bark 100 yards away, which was not used in 1948. The internal dimensions of the box were rather over 4 inches $\times$ 4 inches, a space larger than tree-creepers generally use (2 – $2\frac{1}{2}$ inches $\times$ 4 inches), and the cup was round, not watch-pocket in shape. In 1949 and 1950 there were nests behind the same bit of bark as before, and a second nest behind another bit. There was none in 1951, a year in which tree-creepers and other small birds were scarce around Perth, after

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a hard winter and a late spring. In 1952 there was a nest in a box of the same type as in 1948, about 50 yards away; it had been used by a robin (*Erithacus rubecula*) in 1951. I had 4 other nests behind pieces of bark elsewhere in 1952, but the pieces were getting old; they are not very durable. The above shows the course of events in a good plot, and it will be seen from the table that there were other nests in 1953-55.

TABLE I

TREE-CREEPERS' NESTS IN ARTIFICIAL SITES NEAR PERTH

Nests in boxes in plots					*Total of*	*Nests in barks in plots*											*Total of*	*Notes*
C	*H*	*L*	*N*	*U*	*Total*	*boxes*	*C*	*D*	*E*	*J*	*L*	*N*	*R*	*O*	*P*	*U*	*H*	*Total*	*barks*	
–	–	–	–	–	–	123	–	1	1	–	1	1	–	–	–	–	–	4	see notes	A few experimental barks
–	–	–	–	–	–	171	1	–	–	–	1	–	–	–	–	–	–	2	70	
–	–	1	1	–	2	472	1	2	2	2	1	1	1	–	–	–	–	10	70	
–	–	–	–	–	–	500+	–	1	1	2	1	–	2	1	2	–	–	10	70	
–	–	–	–	–	–	500+	–	2	1	–	1	–	–	–	2	–	–	6	70	
–	–	–	–	–	–	500+	–	–	–	–	–	–	–	–	–	–	–	–	70	Drop in number after hard winter
–	1	3	–	1	5	500+	1	2	1	1	–	–	–	–	–	–	–	5	70	
1	1	2	2	2	8	500+	–	2	1	–	–	1	–	–	–	–	–	4	70	C, L, P, R, damaged by gale
–	1	–	–	1	2	500+	–	–	–	–	1	–	–	–	–	–	–	1	70	Barks getting old
–	–	–	–	3	3	500+	–	1	1	–	1	–	–	–	–	–	–	3	70	
1	3	6	3	7	20		3	11	8	5	7	3	3	1	4	–	–	45		

Bits of bark were put up in 11 sites of all kinds; in all but 2, they were used at least once, and in these 2 sites, boxes were used. There have been nests in pure conifers, even in pure spruce plantations, as well as in mixed woods. Some plots (R, C, L, P), were so badly damaged by wind that they were unsuitable for the species after 1952-53.

Nests have been from 2 to 15 feet from the ground, the latter being the highest site tried. The tree species does not seem important. Oak, ash, elm, Scots pine, Norway and Sitka spruce, and Douglas fir have all been used. Beech was used only once, though there were several sites; perhaps the bark is too smooth. Certain bits of bark were used much

more often than others, e.g. 3 were used in 7 years out of ten; while others, apparently the same in all essentials, were unused.

A new site was often used in the first year. This indicated that there was a scarcity of suitable sites, as might be expected in commercial woods where dead trees with loose bark and ivy are unusual. There were empty boxes available in all plots, and if some birds will accept boxes there is no reason why any of them should have remained unoccupied. But boxes were used in only 5 out of 11 plots, in one of them only once in 10 years. If we omit this last one, the remaining 4 out of the 11 plots had 19 boxes used in 10 years, against nil in the other six plots. But the distribution is even more peculiar than this: when all the year's nests were in boxes, these were confined to a small corner of a plot; and except in two cases, this was the same corner that was used before and after. In plot U at Tentsmuir, for instance, 7 nests in boxes over 4 years were in a 30-acre part of a 250-acre plot; in plot L, 6 nests over 3 years were in a 4-acre part of a 12-acre plot, and the 7 nests in barks used here over 10 years were also in this small part. The first two occasions in 2 plots were in 1948 and 1952, and 1948 and 1953, 4 and 5 years apart, so it is unlikely that it was the same bird. It seems to be a very localised habit, perhaps due to adaptive learning or of genetic origin.

The typical local type of nest is not mentioned in *The Handbook*. It consists of a very few twigs, usually spruce and one or two birch, with the main body of the nest made of pine needles, and a slight trace of lining in which there are always a few bits of white rotten wood. These bits occur in every nest I have seen, and are diagnostic. The cup is usually due to shaping of the main material (needles and rotten wood) with a few feathers, bits of wool and fur, spiders' eggs, and cocoons, although one nest was profusely lined with feathers only.

In all, I have had 20 nests in boxes, of which groups of 3, 3, 2, and 2 were made by the same 4 pairs in the same season; this was deduced from the dates and because I never found more than one pair in each area. In one of the groups of 3, there was a fourth nest half made, and in one of the groups of 2, 2 more nests were started and left, all in boxes. Both the groups of 3 were: a first nest flown, a second nest deserted, and

a third flown. Especially when starting to incubate, the bird deserts easily; once when a stiff feather and once a pine needle moved over the eggs, and once caused by a slight movement of the box.

I had a total of 45 nests behind bits of bark, in nine plots out of 11. In the 2 plots where this site was not used, a total of 10 nests were in boxes.

I have also found about 20 nests, old and in use, in natural sites; 9 or 10 of these were in the thick ivy which used to

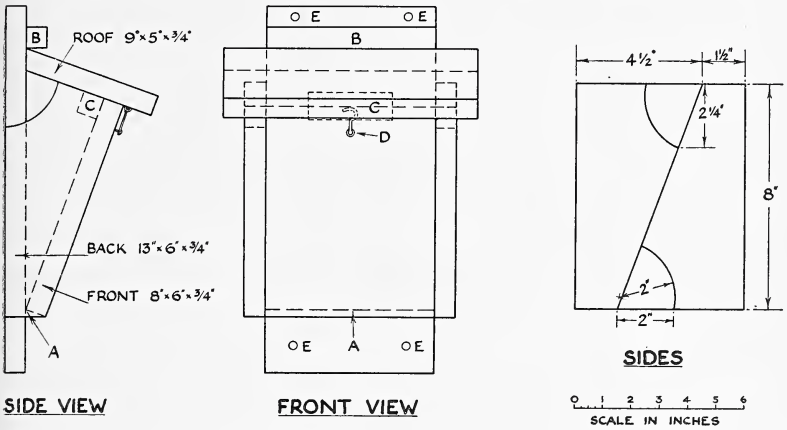

FIG. 1. EXPERIMENTAL NEST-BOX FOR TREE-CREEPERS.

cover Bruce's Cairn at Falls of Tummel, and in an old rotten rowan tree beside it.

A curious fact about barks may be worth noting. The first ones were put up by nailing the top and bottom to a tree. Some people hit them, so breaking them in the middle, when the lower half often turned round and hung down, leaving a crevice open at the bottom with an entry from the top. One bird managed to get a twig stuck and built a nest on it, but more often this frail support slipped, resulting in a pile of nest material on the ground below. Later, barks were wired to the tree and one nest was below the bottom wire with little support beneath it.

In 1955, I made 29 boxes of a different type. They are wedge-shaped (Fig. 1) with a removable top. They were

put up rather late and none were used in that year, but most of them were used for roosting in 1955-56, and two are being used for nesting in 1956. They seem to be taken in preference to normal tit-boxes which were also available, but in at least one place a tit-box has been used in preference to them. It is too early yet to know if they are generally acceptable when the birds get used to them. They are the nearest I have been able to get to a crevice which can be inspected.

The following is a possible explanation for the use of tit-boxes. The bird seems to change over from crevices to boxes fairly easily in some places, and once boxes have been adopted in any small area (4 to 30 acres) the strain living in that area tends to keep on using them. It is probably a micropopulation of at most 8-12 birds, reduced to a pair each breeding season. This indicates a sedentary habit at least for breeding. A particular bit of bark seems to be used again and again, presumably from something specially desirable about it. I have not yet had a box used twice. From the table, tree-creepers appear to show a growing willingness to take over or revert to a hole or nest-box instead of their accustomed crevice, where this ability has not been entirely lost through lack of opportunity.

From the willingness of some groups or pairs to change to a box which, although man-made, is a perfectly normal nest-site for tits, etc., the crevice-nesting habit seems recent, although I have found this type of nest in the Chin Hills and Shan States in Burma. It has obvious survival value in primeval forest where there are plenty of dying trees with crevices and the bark falling away. No other bird uses exactly this site, as far as I know, whereas many use holes in trees. But in cultivated woods with no dying old trees, crevices become very scarce. I have seen some untouched primeval forest in Burma, but even there, there was little left and that mostly in the hills. In woods where man has been working, the old trees are felled, and in our plantations of the last 400 years or so, here and on the continent, there are few left. So since the recession of the glaciers about 10,000 years ago until about A.D. 1000 or 1500 crevices were common, but since then they have become increasingly scarce.

Some data on breeding are not complete, even for nests in

boxes. For instance two nests were found after the birds had flown, and some were deserted or robbed. The areas concerned are various woods in Perthshire, from Loch Tay to Perth; and Tentsmuir in Fife, a 6,000-acre forest of 30-year-old conifers on sand dunes, mostly Scots pine but with about 10 per cent Norway spruce and alder.

The following clutches were known for certain: 2 with 7 eggs, 6 with 6 eggs, 10 with 5 eggs, and 2 with 4 eggs. Both clutches of 4 were third layings, with the second nest deserted, and the young from the first nest flown. So the usual clutch size seems to be 5 rather than 6. This agrees with the trend of clutch size in tits, which tend to have smaller clutches in Scotland than in England, and not with the usual rule that the further north the bigger the clutch. But second nests tend to have bigger clutches than first, which may be due to the longer days for feeding in May and June. One of the clutches of 7 eggs was in a second nest; and the other, with the first egg laid on 15th May, was either a very late first nest, a re-nest after desertion, or even an early second. Of the 6 clutches of 6 eggs, three were second nests. Of 18 nests with certain data, 9 were certain first nests, 2 doubtful but probably re-nests or early second nests (first eggs 15th and 22nd May), 5 second nests and 2 third nests.

Once there was a second brood in the same nest as the first, probably with the addition of a few scraps of lining. Otherwise second clutches were laid in a different nest. While subsequent nests are built quickly the building of the first may be leisurely. A half nest found on 14th April was finished on 25th April. The first egg was probably laid on 26th April.

Eggs were laid every day, and sitting began with the last egg where this could be checked. The date of laying the first egg can be given with certainty only for 5 nests where the clutches were incomplete when first found. They were: 29th April, 3rd, 15th and 27th May, and 12th June, the last two being second clutches. But in 13 other nests this date can be inferred by extrapolation, with an error of at most $\pm$ 2 days, by estimating the ages of the young later on. The incubation and fledging periods seem to be about 15 days, but these data are not extensive. Dates for the first egg vary by at least a

fortnight with weather conditions. First nests were from 16th April (some were possibly earlier) to early May; second clutches from late May (26th, perhaps 22nd) to early June; and third layings, resulting from desertion of the second nest, in the second half of June. Birds may be sitting until mid-July and nestlings found up to the end of the month. In two cases the parents were building a second nest and probably laying while feeding the first brood. I have seen both parents feeding their brood one or two days after flying.

With a 15-day fledging period as against the tits' 18-21 days, the nestling tree-creepers grow and fledge more quickly; at four days they are equivalent to tits at 6 days, and at 12 days to tits at about 16 days. In this area they start to lay about a week before coal-tits (*Parus ater*), which are a week before great tits (*P. major*), with blue tits (*P. caeruleus*) a few days later still as a rule.

So tree-creepers which rear a second brood use both the earlier start and the shorter fledging period to fit it in. This gives it a total advantage of at least 3 weeks over the tits, which rarely have second nests, though I have found a few, perhaps 10 in 1,000.

Except for desertions, survival is good. Of 18 nests, 6 with a total of 32 eggs were deserted, mostly due to human interference. In the remaining 12 nests, 57 nestlings flew from 64 eggs. One was dead, there was 1 addled egg and 1 buried in the nest material, and 2 disappeared, probably as small nestlings. In 4 cases desertion was followed by re-nesting.

When nestlings were about 12 days old, one or other parent came to the nest with food 20 and 25 times in an hour, between 3 and 5 p.m. Faecal sacs were removed three and four times in the same period (two observations). On coming out, the birds sometimes started hunting on the nest tree itself or on one very close to it, or at any distance from there up to flying out of sight, say 100 yards. They also hunted on their way back, sometimes right up to the nest and with their beaks apparently full. I have not seen the bird land on the entrance as a tit nearly always does on the hole of a box, but somewhere on the tree from where it climbs or sidles into the nest. They are very quick, and the time taken is not more than two or three seconds.

APPENDIX

Construction of experimental nest-box for tree-creepers. Dimensions for $\frac{3}{4}$-inch wood. Do not plane smooth.

To assemble. Cut entrance in sides. Nail sides to back. Nail sides to front, using two 3-inch nails at A as spacers to ensure drainage gap at bottom. Cut top of lid to fit back neatly. Nail stops B and C to back and top. Fasten top with brass hook, D. Leave front square at bottom to drip away from back. Holes, E, for wiring to tree. Seal joint between B and back with Sealastick, etc.

RARE AND EXOTIC FISHES RECORDED IN SCOTLAND DURING 1955*

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This fifth consecutive list of rare fishes recorded in Scotland has been assembled from the usual sources. Once again the authors wish to thank all who have contributed specimens and information.

Hexanchus griseus (Bonnaterre)—Six-gilled Shark

Records of seven fish were obtained during the year. Three were trawled west of Shetland—two off Rona's Voe in February and one N.N.W. of Foula in March. The remaining four were were caught by great line one 80′ N.N.W. of Suleskerry in April and three by a research vessel on Rosemary Bank on 9th July. Six of the fish were females ranging from 163 to 241 cm. in length; no details were recorded about the seventh.

Cetorhinus maximus (Gunner)—Basking Shark

Summer visits by this species to west of Scotland grounds, sometimes in large shoals, cannot be regarded as rare. Nevertheless the recording of its appearance off the Scottish east coast especially when, as in 1955, the numbers on the west side seem to have been much below average, is important.

Two fish became entangled in drift nets east of Shetland on 20th July but even more interesting is the capture of a young male, 4 metres long, by a trawler 22 to 26 miles north-east of Buchan Ness on 19th November. The presence of a basking shark in Scottish coastal waters during winter is of considerable interest since it is commonly held that these fish depart from their summer feeding grounds for some unknown destination during autumn. The capture of this shark within the northern North Sea so late in the year is therefore an event of extreme rarity.

* *Received 22nd June 1956*

In view of the theory that basking sharks shed their gill rakers towards the end of the year and grow a new set before the next spring (Parker and Boeseman, 1954) one of the gill arches was procured for examination. No gill rakers were present on the arch but growth of a new set was clearly in evidence beneath the epidermis. In appearance the developing rakers closely resembled those illustrated in the paper referred to (Pl. 1, Fig. 1).

Two young basking sharks of 3·66 and 2·90 metres were also caught by Aberdeen trawlers on northern Faroese grounds on 17th June and 7th July respectively.

Carcharinus glaucus (L.)—Blue Shark

Two specimens, a male of 127 cm. and a female of 180 cm., were caught by a great liner on north-west Irish grounds at the end of July.

Mustelus mustelus (L.)—Smooth Hound

Following the capture of an immature female smooth hound by a research vessel at the entrance to the Firth of Forth on 19th January, the first record for some considerable time, landings at Aberdeen Fish Market were examined for this species throughout the year. In this way, another ten records were obtained including six males (84-99 cm.) and four females (79-91 cm.). All the fish with the exception of one from near the Longstone, were caught within a radius of 60 miles from Buchan Ness between 4th March and 1st December.

Spinax spinax (L.)—no common name

Several specimens of this fish, seldom seen on Aberdeen market, were landed on 7th May by a Swedish trawler from 75′ W. × N. of Haugesund. This area and others along the Norwegian Deep, however, represent part of the normal habitat of the species.

Centroscyllium fabricii (Reinhardt)—Black Dogfish

On 2nd May, during a cruise by the research ship *Scotia* in Icelandic waters, single specimens of this and of each of the

three following species were caught by great line at a depth of 622 metres south-west of Reykjanes (63°00′ N. 25°10′ W.). The specimen of this black dogfish, a female containing six embryos and measuring 74 cm. in length, has been preserved. Identification was based on Bigelow and Schroeder (1948). According to Saemundsson (1949) this species is fairly numerous off the south and west coasts of Iceland. Although reported from the Faroes, it has not been found in British waters.

Centroscymnus coelolepis, Bocage and Capello—Portuguese Shark

This fish, a male measuring 87 cm., has also been preserved. Identification in this case was based on Goode and Bean (1895) and Bigelow and Schroeder (1948). This species is more southerly in distribution than the others taken on the same occasion. Saemundsson (1949) refers to a single Icelandic record as *Centrophorus coelolepis* but more recently Brandes, Kotthaus, and Krefft (1954) have reported the capture of three specimens in deep water to the east of Iceland. Although also taken at the Faroes the species has not been reported, so far, from British waters.

Scymnodon jonsonii (Jensen)—no common name

First identified as a new species by Jensen in 1900 (Schmidt, 1901), this small shark was described in detail by Saemundsson (1922) under the name of *Centrophorus jonsonii*. Bigelow and Schroeder (1948 and 1953), however, enumerate the distinguishing features between the genera *Centrophorus* and *Scymnodon* and show by the rounded inner edge of the pectoral fins that Saemundsson's fish belongs to the latter. The present specimen, very dark brown (almost black) in colour, was a female of 68·9 cm.

This species is known only from southern Icelandic waters where, according to Saemundsson, it is numerous locally.

Centrophorus squamosus (Gmelin)—no common name

A female of this species was taken on the same occasion as the previous species. Saemundsson (1949) records this shark as numerous both south and west of Iceland.

Squatina squatina (L.)—Angel-fish

Two specimens were caught by trawlers, the first a female of 127 cm. on 30th April off the Butt of Lewis and the second, a smaller fish, E.N.E. of Buchan Ness on or about 10th October.

Torpedo nobiliana, Bonaparte—Electric Ray

Date	*Position*	*Gear*	*Length cm.*	*Sex*
2nd March	4′ off Clythness	Seine	106·7	F.
18th March	Off Arnish Point, Lewis	Drift net	23·3	M.
6th April	7′ E. May Island	Seine	91·5	F.
13th September	9′ S.E. Arnish Point, Lewis	Seine	85·0	F.

The second of these fish is interesting. It is the smallest electric ray ever recorded from Scottish waters. The fact that the umbilical aperture was still showing indicated that birth had taken place comparatively recently, possibly in waters outwith the main area of distribution of the species. It is tempting to speculate as to whether its capture might not be linked with that of a spent female in the same locality later in the year. Finally capture was by herring drift-net—maximum fishing depth at the time 15 fathoms, total depth 20-25 fathoms. Sim (p. 274) mentions the capture of one in herring nets in Wick Bay in 1884 but does not give the size nor does he specify if the net was " drift " or " anchored ".

In the stomach of the spent female (13th September) there was found a partly digested ling, *Molva molva*, which had measured at least 50 cm.

Trygon pastinaca (L.)—Sting Ray

Date	*Position*	*Gear*	*Length cm.*	*Breadth cm.*	*Sex*
27th January	35′ S.S.E. Aberdeen	Trawl	44·8	24·7	F.
26th November	Off Buchan Ness	Trawl	48·0	30·0	F.

A third specimen was received at the Natural History Department, Aberdeen University, in November but no details of capture are available.

Chimaera monstrosa L.—Chimaera or Rabbit-fish

Several specimens were landed from western Faroese Grounds in February and a young male of 30·5 cm. from 75′ W. × N. of Udsire early in May.

Acipenser sturio L.—Sturgeon

Date	Position	Gear	Length cm.	Weight kg.
18th January	4′ off Tiumpan Head	Trawl	183	—
January	West coast	*	—	—
21st April	12′ N.E. × N. Rattray	Trawl	107	19·1
21st April	30-35′ N.E. × N. Buchan Ness	Trawl	—	17·5
26th April	25′ W.N.W. Foula	Trawl	152	22·6
3rd May	3′ S.E. Montrose	Seine	—	10·9
13th May	8′ E. Butt of Lewis	Seine	152	19·1
11th June	Moray Firth	Seine	94	11·1
29th June	22′ N.E. × N. Buchan Ness	Trawl	168	22·2
22nd November	5′ S. Skerryvore	Seine	152	22·2
22nd November	Buchan Deeps	Trawl	125	9·5

* Press record, *The Scotsman*, 21st January 1955: trouble in the engine-room of the aircraft carrier H.M.S. *Glory* during a voyage from Firth of Clyde to Loch Eriboll attributed at first to silt from the estuary " led to the discovery of a sturgeon in a condenser pipe ".

Eleven fish were taken in Scottish waters during 1955, two less than in the previous year. As in 1954 most of the captures occurred in the first six months. Four of the 1955 fish were caught off the west coast of Scotland thus providing the highest number recorded from this area in any single year. Moreover trade journals have reported the capture of three sturgeons in Irish waters during the year—one, a fish of 152 cm., off Killybegs, north-west Ireland, in March (the second landed at that port within the memory of the fishermen) and two from off Kilkeel and Balbriggan in the Irish Sea in July and September respectively. Yet another fish, landed at Fleetwood in May, was presumably also caught on western grounds. These eight records undoubtedly indicate unusual numbers of sturgeon to the west of the British Isles during 1955.

In addition to the Scottish captures in the North Sea, two sturgeons were also landed at English ports. From press notes the first of these, a large fish of 305 cm., weighing 241·3 kg., was trawled 52′ E.N.E. of the Spurn Light on 27th October, while the other, of which no details are available, was landed on 25th December. Although the west coast captures were more numerous than in any post-war year those within the North Sea were fewer than in either of the last two years.

Alosa alosa (L.)—Allis Shad

Date	Position	Gear	Length cm.	Sex
4th March	Off Inchmarnock, Firth of Clyde	Seine	27·8	M.
22nd July	Buckpool, Moray Firth	Salmon Net	65·5	F.
16th August	Newburgh, Aberdeenshire	Salmon Net	51·4	M.
30th September	West coast (landed Mallaig)	Seine	42·0	M.

The large female was ripe at capture while the last two males were spent. A single *Pandalus* was found in the stomach of the fourth fish but those taken in July and August were empty.

Alosa finta (Cuvier)—Twaite Shad

Date	Position	Gear	Length cm.	Sex
3rd February	4′ off Macduff	Seine	41·3	F.
9th February	20′ N.E. Buckie	Seine	36·0	F.
3rd March	8′ N.E. Macduff	Seine	42·0	F.
11th March	Off Macduff	Seine	—	—
3rd December	Buchan Deeps	Trawl	47·8	F.

The first three fish were all maturing while the last had spawned and was recovering. The stomachs of the first two specimens were empty but the third contained fish remains and the fifth specimen had been feeding on small herring of about 12 cm. The four records for the outer Moray Firth in February and March recall four similar fish caught off the Scottish east coast in March of last year.

Sardina pilchardus (Walbaum)—Pilchard

A single fish 24 cm. long was trawled by a research vessel in Largo Bay on 11th January. The remains of another were found in the stomach of a haddock caught within the Firth of Forth a few days later.

Engraulis encrasicholus (L.)—Anchovy

One specimen was trawled by a research vessel from 59°00′ N. 2°00′ W. on 12th December.

Maurolicus muelleri (Gmelin)—Sheppy Argentine or Pearl-side

Two specimens of this small pelagic species, which rarely appears in Scottish inshore waters, were caught in the small mesh covering a research vessel's trawl, the first in St. Andrews Bay on 17th January and the second off Aberdeenshire at a depth of 36 metres on 2nd February.

Argentina silus (Ascanius)—Greater Argentine

Small quantities of this northern form, which is seldom seen on Aberdeen market, were landed by Swedish trawlers from Udsire and other neighbouring grounds in May. This area would appear to be within its normal distribution.

Scomberesox saurus (Walbaum)—Saury Pike

One fish of 37·5 cm. was caught by trawl 18′ N.N.W. of Rona's Voe, Shetland, on 26th August.

Belone belone (L.)—Garfish or Greenbone

Between 14th April and 13th May four records (five fish) were obtained from drifters fishing on grounds which ranged from 180′ to 247′ N.E. to E. × N. of Aberdeen. The fish were from 67 to 70 cm. in length and the reproductive organs of three examined revealed one of each sex approaching maturity while the third, a male, taken on 14th April, had actually spawned.

An interesting record was received from Dr. Slack of the Department of Zoology, Glasgow University. This consisted of the head of a garfish which had been found in the stomach of a salmon caught in the River Tweed in May. On 28th September two fish were caught by ring net in the Firth of Clyde between Arran and the Ayrshire coast; these were a male of 63 cm. and a spent female of 66 cm. Finally a recovering female of 80 cm. was trawled off Roan Island, north of Scotland, on 16th December.

Of five stomachs examined, four were empty while one of the April fish contained crustacean remains.

Malacocephalus laevis (Lowe)—Grenadier fish; syn. *Macrurus laevis* (Lowe)

A small specimen (32·4 cm.) was caught by a Fleetwood trawler in 200 fathoms off St. Kilda in October. The fish has been preserved. Although few examples of the Macruridae are landed in Scotland, it is probable that the family is more widely represented along the Atlantic Slope than Scottish records suggest.

Urophycis blennoides (Brünnich)—Greater Fork-Beard

A number of specimens of this fish were caught during the year at positions well south of their normal habitat. Five were taken from Buchan Ness northwards to a distance of 60 miles, one in each of the months February, March, April, May, and July. Even more unusual were captures of spent and mature females of 55 and 53 cm. off Lybster in the Moray Firth and off Gourdon, Angus, in the first week of April. This was followed by another inshore capture, one mile off Cruden Bay, Aberdeenshire, on 27th May. An isolated specimen was also received from near the Otter Ferry in Loch Fyne, the Firth of Clyde on 28th November; this fish was a spent female of 56 cm.

Raniceps raninus (L.)—Lesser Fork-Beard

In contrast to the six records of this species obtained in 1954 only one fish was reported from Scottish waters in 1955. This specimen, a spent male of 27 cm., was found in a lobster creel off Gourdon, Angus, on 7th September.

Lampris guttatus (Brünnich)—Opah or Moon-fish

The first of two fish recorded from Scottish waters was caught by an English trawler north-west of Scotland in 300 fm. early in May. The second, total length 111 cm., was taken from the shallows of Bixter Voe, south-west Shetland on 18th May.

Trachypterus arcticus (Brünnich)—Deal-fish

In sharp contrast to 1954, not one deal fish was recorded locally during the present year. One fish, however, 175 cm.

long, was trawled 10-12′ N.W. of Myggenaes, Faroe, on 20th November.

Morone labrax (L.)—Bass

Date	*Position*	*Gear*	*Length cm.*
22nd January	50′ S.½W. Aberdeen	Trawl	47·6
25th January	7′ S.E. Helmsdale	Seine	37·9
27th November	Off Girdleness	Seine	38·5

This handsome species is common on the south and west coasts of England. Although it is possible that it may visit Scottish west coast waters during the summer of certain years, not a single occurrence had been reported since the end of the last war until this year. The capture of three fish on Scottish east coast grounds is therefore of considerable interest.

Naucrates ductor (L.)—Pilot-fish

One record of this very rare fish was obtained from a herring drift-net catch from off Tiumpan Head, Lewis, on 3rd September. The fish, 26 cm. long, has been preserved.

Brama raii (Bloch)—Ray's Bream

Date	*Position*	*Method of capture*	*Length cm.*	*Sex*
8th August	Rockall Bank	Great line	—	— (4 fish)
14th October	Cape Wrath	Trawl	—	—
5th November	15-18′ E. Rattray Head	Trawl	52·5	M.
10th November	30′ N.N.E. Fraserburgh	Trawl	55·0	—
12th November	Basta Voe, N. Yell, Shetland	Stranded	52·0	F.
21st November	Hatson Beach, Orkney	* Stranded	55·3	F.
22nd November	Buchan Deeps	Trawl	58·4	—
26th November	Near Bell Rock	Trawl	—	—
28th November	4′ off Covesea, Moray Firth	Seine	53·0	F.
1st December	Granton Harbour	Gaffed	56·5	F. (2 fish)
4th December	Portobello Beach	† Stranded	55·9	— (3 fish)
21st December	26′ E.S.E. Aberdeen	Trawl	50·8	—
27th December	Crail	Stranded	53·3	—

* Seen to " rush itself ashore ".
† Received from Dr. A. C. Stephen, Royal Scottish Museum.

The thirteen records (19 fish) represent a marked increase on the numbers caught during each of the previous two years, although far fewer than the high total for 1952. The late arrival of the species in the northern North Sea was a notable feature. Up to the beginning of November only two records had been received yet within four weeks another nine had been listed from over a wide area ranging from north-east Shetland to the inner Firth of Forth. The lateness of the incursion is further emphasised by a spill-over of records into the early weeks of 1956—a feature which does not characterise every seasonal appearance made by this species.

Five of the fish were procured for detailed examination and in the flesh of four of them plerocercoid larvae of a cestode were present. One of the five was a male and the others females; all had spawned within the year. The stomachs of the Orkney, Covesea and one of the Granton fish were empty but the specimen caught on 5th November contained two gadoids and three small cephalopods (? *Sepiola*) and the Shetland specimen had been feeding on fish.

Mullus surmuletus L.—Red Mullet

Date	*Position*	*Length cm.*	*Sex*
26th January	8′ N.N.E. Rattray Head	—	—
16th November	60′ E. Aberdeen	36·5	F.
23rd November	Near Bell Rock	33·0	F.
8th December	30′ S.S.E. Aberdeen	33·0	F.
19th December	Buchan Deeps	12·2	—
31st December	Off Buchan Ness	—	—

These six fish, all by trawl, represent the smallest number of red mullet recorded from the Scottish area since 1951, when only one fish was reported.

The relative scarcity of records at the end of the year suggests that the movement of red mullet on to Scottish east coast grounds from the south was again on a small scale, as in 1954. In contrast, however, the movement, which in 1954 obviously took place in September and October, appears to have been much later in 1955 since records are confined to the second half of November and December.

The fish caught by a research vessel on 19th December is of special interest since it is one of the smallest of its species

ever taken in the area and provides further evidence that spawning may occasionally take place off the Scottish coast. The stomach of the specimen from the Bell Rock was found to contain four *Portunus sp.*, four *Crangon almanni* and remains of Polychaeta.

Spondyliosoma cantharus (Gmelin)—Black Bream

Date	*Position*	*Gear*	*Length cm.*	*Sex*
19th September	Off Skipness Point, Firth of Clyde	Seine	28·0	F.
10th October	Lower Loch Fyne, Firth of Clyde	Seine	26·1	M.
5th December	Off Noss Head, Caithness	Trawl	34·4	M.
6th December	10′ E.S.E. Wick	Seine	25·0	F.
8th December	Berwick Bank	Trawl	30·5	—
8th December	28′ S.E. Aberdeen	Trawl	33·0	—
10th December	Near Bell Rock	Trawl	40·6	—
10th December	15′ E. × N. Aberdeen	Trawl	33·0	—

These eight records constitute the highest total of this species in any single year since the laboratory lists were started. The time and place of the captures suggest a movement *via* the west coast to the North Sea but information regarding the presence or absence of the species in the southern North Sea during the year would be of interest in this connection.

The capture of six fish within five days in December and over such a wide area, extending from Noss Head to Berwick Bank, is remarkable. Although this agrees in point of time with most records of this species in the past it nevertheless is in sharp contrast to the year 1954 when five fish were caught at fairly even intervals from 19th January to 16th November. The evidence clearly shows, however, that a wave of black bream passed rapidly over Scottish east coast grounds early in December 1955.

Of the four fish available for internal examination, at least three showed signs of having spawned earlier in the year. The stomachs of the two males were empty but the fish taken off Wick had been feeding on *Astacilla*, amphipods and hydroids.

Labrus mixtus L—Cuckoo Wrasse

The five records of this wrasse show a marked decline from the number caught in 1954. One fish was taken on Whiten Head Bank in July; the others came from the outer Moray

Firth and mainly from off the Caithness coast in May, June, July, and December.

Trachinus draco L.—Greater Weever

One specimen 31·5 cm. in length was caught off the eastern entrance to the Pentland Firth on 26th May.

Lycodes esmarkii (Collet)—no common name

A single fish, a spent male of 68 cm., was trawled off the south of Iceland on 26th July.

Thunnus thynnus (L.)—Tunny

Despite the passage of shoals of tunny round the north-west coast of Scotland every year to feeding grounds in the central and southern North Sea, remarkably few tunny are seen or caught in coastal waters. The capture of a small specimen of 94 cm. in a shallow part of Loch Broom on 22nd August is, therefore, worth recording.

Fierasfer dentatus Cuvier—Pearl-fish or Fierasfer

A single specimen, 26 cm. in length, was trawled by a research vessel on the Greenwich meridian at 61°01′ N. latitude on 11th August.

Centrolophus niger (Gmelin)—Blackfish

One record was obtained from a herring drift-net catch 45′ S.E. × E. of Fraserburgh on 9th August. The fish was a male of 47·5 cm.; the stomach was empty.

Mugil chelo Cuvier—Thick-lipped Grey Mullet

Three specimens of this fish were received at the laboratory through the kindness of salmon fishers operating sweep nets in the River Dee near Victoria Bridge at Aberdeen. The fish, which measured from 32 to 39 cm., were taken on 30th June, 5th July, and 8th August. Two records were also provided by Mr. Marwick of Stromness; the first of these, a fish of 36 cm., was dropped by a gull at the Bay of Skaill, Orkney, on 29th July, while the second was caught in a set-net in the same

locality on the same date. A sixth record was obtained from Mr. Campbell of the Brown Trout Research Laboratory, Pitlochry. This fish, a male of 36·3 cm., was caught in a set-net in Loch Sunart, Argyllshire, on 5th August.

These six fish represent the highest number reported from Scottish waters since the end of the last war.

Scorpaena dactyloptera Delaroche—Blue-mouth

Date	*Position*	*Amount*	*Length*
29th January	Off Rattray Head	7 specimens	24 to 36 cm.
5th February	Hole o' Broch off Fraserburgh	⅝ cwt.	28 to 37 cm.
7th May	75′ W. × N. Haugesund	2 specimens	—

The above information originated from commercial sources, but, in addition, research vessels caught four fish, ranging from 12 to 18 cm.; at the following positions, 60°43′ N. 2°00′ E. on 30th March, Rockall Bank on 17th July, 58°30′ N. 1°00′ W. on 27th September and 59°00′ N. 1°00′ E. on 28th September.

These records, like those of previous years, again confirm the existence of the small concentration of this species in the deep " Hole o' the Broch " off Fraserburgh and Rattray Head and also indicate its presence in small numbers at various points throughout the northern North Sea and off the west coast of Scotland.

Trigla lucerna L.—Tub or Yellow Gurnard

Date	*Position*	*Length cm.*	*Date*	*Position*	*Length cm.*
29th January	Off Rattray Head	33	23rd June	16′ N.E. × E.	
4th February	33-40′ E. × N.			Buchan Ness	50
	Buchan Ness	—	7th October	Off Tod Head	46
14th March	60′ E. × N.		26th November	Off Bell Rock	51
	Buchan Ness	33	22nd December	27′ S.E. × E.	
14th May	Off Aberdeen	37		Aberdeen	46

Except for the second and third fish which were caught by seine net, all the others were taken by trawl. As regards numbers and time and place of capture, the records bear a close resemblance to those of 1954.

Trigla lineata Gmelin—Streaked Gurnard

This southern species is rarely taken off the Scottish coasts. It appears on the laboratory lists from the east side on only

two occasions previously, in 1933 and 1941. It was present in the Clyde between 1895 and 1899 (Scott, 1900) and Sim (1903) mentions one specimen caught near Aberdeen in 1896. It is therefore appropriate to record the capture by trawl of two specimens of this beautifully coloured fish during the year.

Date	*Position*	*Length cm.*	*Sex*
26th February	35′ E.½S. Aberdeen	34·5	F.
20th October	30-35′ S. Aberdeen	34·5	F.

Mola mola (L.)—Sunfish

Date	*Position*	*Length cm.*	*Depth Tip to tip of fins cm.*
17th August	N.E. to N. Flugga	80	112
26th August	20′ N.W. Foula	65	96

Both specimens were taken from the surface of the water by trawlers. In addition to these records from the Shetland area, sunfishes were observed by fishermen lying on the surface at a number of positions between the Butt of Lewis and Flugga during the summer.

Lepadogaster bimaculatus (Bonnaterre)—Two-spotted Sucker

Another record of this small shore-fish was obtained on 29th August from the Bay of Firth, Orkney.

In considering the outstanding features of the 1955 rare fish records the numbers of the various individual species are less impressive on the whole than in many earlier years. The most interesting feature in this connection is undoubtedly the eight records of *Spondyliosoma cantharus*, which has hitherto been regarded as extremely scarce in Scottish waters. Records of sturgeon are again well above average and the presence of this species on west coast grounds in greater numbers than usual is also worthy of note.

The numbers of Ray's bream, exceeding those in the previous two years, indicate at least a moderate incursion by this species into the northern North Sea. Among the scarcer species the electric ray and the thick-lipped grey mullet are more numerous than usual and, for the first time since 1946,

the bass appears in the list. Although only two specimens of the sunfish were received, this species appears from fishermen's reports to have been observed at a number of points along the edge of the deep water from Lewis to Shetland. The movements of red mullet and yellow gurnard to Scottish east coast grounds from the south, on the other hand, appear to have been on a rather small scale as in 1954.

A feature to which particular attention may be directed is the similarity in the times at which some of the visiting species appeared. Until the first week in November, records of Ray's bream were so scarce as to suggest that penetration to the northern North Sea would be insignificant; yet within a month twelve fish had been reported, all from positions to the east and south of the Orkney-Shetland line and further captures or strandings continued to be reported until 12th February 1956. Similarly, two records of black bream from the Clyde in September and October gave no indication of the sudden but brief appearance of this rare fish on Scottish east coast grounds which followed in the first half of December. Reference has already been made to the late records of red mullet. Although this species has generally appeared on Scottish east coast grounds by September, on this occasion the first record was obtained as late as 16th November. This was followed by others up to the end of the year and in at least one instance into the first weeks of the new year.

Turning to less rare species, a rather similar occurrence has been observed in the case of the tope *Eugaleus galeus* (L.). This small shark is not common in Scottish waters throughout the greater part of the year but a movement of fish from the Atlantic, beginning in September, is reflected in the numbers caught by fishing vessels. The following table gives numbers of tope noted on Aberdeen market in catches by Scottish vessels from September to January over the last three years.

The numbers in brackets represent fish caught on east coast grounds.

	1953-54	1954-55	1955-56
September	7	6 (1)	3
October	15 (2)	5 (4)	16 (15)
November	13 (6)	12 (5)	51 (30)
December	7 (2)	10 (7)	42 (18)
January	2 (2)	1 (1)	6 (2)

The data reveal several interesting features.

1. Most of the September records are from the north-west coast, thus indicating the direction from which the tope approach the Scottish area.
2. The 1955 incursion was much heavier than in either of the two previous years and this feature is strongly reflected in the figures for east coast grounds.
3. The 1955 season was rather later than in the other years and reached its peak in November and December which together provided 80 per cent. of the tope caught on east coast grounds during the five months, as against 67 per cent. in each of the others.
4. Evidence of the withdrawal of the shoals to their deeper water habitat is provided by the January records.

Another species which appears in commercial catches from north and east coast grounds during the winter months is the three-bearded rockling, *Onos tricirratus* (Bloch). The fish, from 40 to 50 cm. in length, are distinctively coloured—generally cream or fawn with large reddish brown spots.

With the exception of a single specimen caught off Pittenweem, Firth of Forth, on 20th September 1955, all records of such fish in recent years have been obtained from November to February. The following table gives the numbers noted in commercial catches over the last four winters.

	1952-53	1953-54	1954-55	1955-56
November	—	—	3	2 (2)
December	—	10 (2)	1 (1)	6 (6)
January	7 (7)	4 (4)	1	15 (14)
February	—	8 (2)	—	2 (2)

The numbers in brackets indicate captures on east coast grounds. With one exception from the east side of Shetland in February 1956, all the east coast records were from grounds extending from 60′ N.E. of Buchan Ness to the Bell Rock, while the north coast fish were caught south of a line from Noup Head to 12′ N.N.W. of Cape Wrath. It is obvious from the table that these three-bearded rocklings of the size range mentioned were more numerous on the nearer Scottish fishing grounds during the winters of 1953-54 and 1955-56. There is also evidence from the figures that the visitors were mainly

concentrated on north coast grounds in 1953-54 and on east coast grounds in 1955-56. This is not due to variations in the fishing intensity in the two areas. It is concluded therefore that here is another example of a fish which at the end of 1955 arrived on east coast grounds in greater numbers than usual.

Although it is seldom easy to explain the presence or movements of rare or exotic fishes in any area, the almost simultaneous arrival on the same grounds of at least five different species would appear to suggest some common cause or relationship. Scottish 1955 drift-bottle observations indicated a strong autumn influx of oceanic water which reached maximum intensity and penetration of the northern North Sea in December (Tait, 1956). It seems certain, therefore, that the sudden appearance of Ray's bream and black bream in the North Sea so late in the year was aided by the presence of conditions similar to those of their natural habitat in more southern parts of the North Atlantic. The unusually heavy invasion of east coast grounds by tope may also have been influenced by hydrographical conditions. The movement of red mullet northwards, and therefore in the opposite direction to the other species, may appear at first sight to require some other explanation. It is possible, however, that it was not until the late autumn water influx provided those conditions which the red mullet would normally encounter off the east coast in September that the northward movement was induced. The same water conditions may also explain the increased numbers of large three-bearded rockling, but uncertainty as to the origin of these fish meantime militates against relating their 1955 appearance on east coast grounds to contemporary hydrographic conditions.

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AYRSHIRE ROOKERIES *

Robert C. Walls

Kilmarnock

For some time I have been curious about the number and size of Ayrshire rookeries. Accordingly, during the last week of March and at week-ends in April 1956, I made a quick survey of the county.

Owing to limited time and the large areas to be covered my one-man census could be only approximate. Some rookeries were inaccessible, either due to the military or to barbed wire, and I had not the time to obtain permission. This entailed some counts from a distance by binoculars. It should be realised also that old nests are sure to be included, that some nests (and even rookeries) have likely been missed, that some nests may have been inadvertently counted twice, and that some nests were not yet built.

With such a large number of nests, it was too arduous a task to note the individual trees in use, but I place the Scots pine as the most popular, more being used than all the other trees combined.

Despite these limitations, however, I feel that these notes may be of value for future reference. I hope that any reader, who knows of any other Ayrshire rookery, will communicate its size and location to *The Scottish Naturalist*.

Rather than number each rookery in the figure, I have ruled off sections, marked with Roman numerals, and have given a four-figure reference for each rookery. Thus, in conjunction with the relevant 1-inch Ordnance Survey map, it should be possible to locate any rookery.

As anticipated, the rookeries were situated near arable and pasture land. The only ones at altitudes of above 600 feet were at Raithburn Farm near Fenwick (600+ ft.); Kaimes, Muirkirk (700 ft.); Duncanziemore Farm (700 ft.), and Kyle Farm (850 ft.), both near Cumnock. The last-mentioned has

* *Received 29th June* 1956

existed for only a few years and is surrounded by more moorland than is customary.

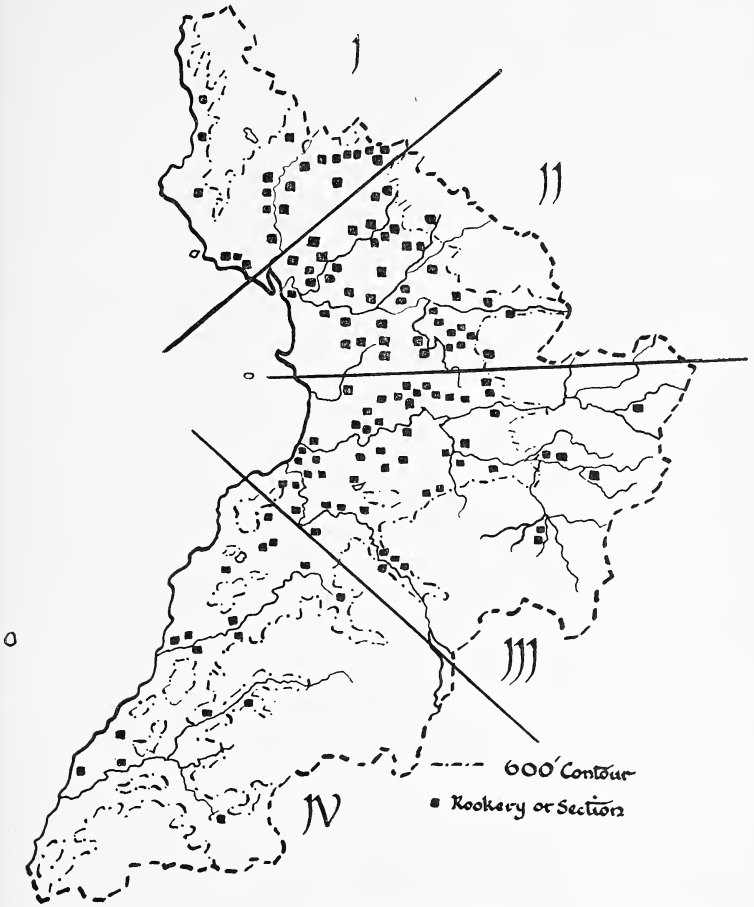

Fig. 1.—Distribution of rook (*Corvus frugilegus*) colonies in Ayrshire.

Density

The total number of nests is 25,851. In some it is difficult to judge where one rookery ends and another begins. The average size of each rookery is 205 nests, if we assume that there are 126 rookeries. Assuming two adult rooks per nest and the total area of Ayrshire to be 724,523 acres (*Third*

Statistical Account of Scotland), this gives nearly 46 adult rooks per square mile.

The area of crops, hay and pasture grass was 288,939 acres in 1948 and this gives, what seems to me to be more practical, a density of 114 adult rooks per square mile of this farm land.

The Handbook gives the average for the country as sixteen nests per square mile as against my twenty-three nests per square mile. This is probably accounted for by the fact that Ayrshire is above average as an agricultural county.

Sect.	*Details*	*Map Ref.*	*No. of Nests*
I	Largs	2059	138
	Fairlie	2155	86
	West Kilbride and Seamill	2148	351
	Ardrossan (South Beach)	2442	54
	Saltcoats	2642	27
	Stevenston	2742	24
	Smithstone House (2 sections)	2944	63
	Monkcastle	2947	263
	Blair House	3048	451
	Dalry (2 sections)	2949	118
	Dalry (Highfield House and Hill-end)	2950	286
	Kilbirnie (Moor-park)	3155	242
	Spiers School	3553	120
	Trearne House	3753	133
	Gillies Hill (2 sections)	3853	114
	Blaelochhead	3953	43
	Caldwell Estate (4 sections)	4153	858
	Barrmill	3651	81
	Maulside	3352	504
	Highfield	3150	50
II	Eglinton Estate (by gate and behind hospital)	3141	358
	Irvine	3139	7
	Stane Castle	3440	69
	Bourtreehill	3439	225
	Dreghorn	3538	4
	Perceton	3540	134
II	Cunninghamhead House	3742	634
	Annick Lodge	3642	358
	Montgreenan Station	3443	36
	Kennox	3845	504
	Stewarton—		
	Lainshaw	4145	133
	Lochridge	4144	79
	Peacock Bank	4244	49
	Dunlop	4149	54
	Money Acres	4350	10
	Raithburn	4846	94
	Oldhall	4444	105
	Fenwick (2 sections)	4643	104
	Hillhouse Lodge	4741	145
	Tour	4140	498
	Thorntoun	3838	249
	Bankhead	3738	7
	Annanhill	4138	111
	Kilmarnock (4 sections)	4237	52
	Hurlford (3 sections)	4536	30
	Holmes (3 sections)	4736	31
	Loudon Castle	5138	552
	Newmilns	5437	14
	Lanfine	5637	283
	Wood	4835	40
	Treesbank	4134	135
	Newfield (2 sections)	3835	196
	Drybridge	3636	18
	Townend	3831	567
	Coodham (3 sections)	4033	594
	Craigie (2 sections)	4232	144

Sect.	Details	Map Ref.	No. of Nests
II	Adamhill	4330	155
	Dollars (3 sections)	4633	698
	Carnell	4632	197
	Bruntwood	5032	46
	Righead	4932	76
	Milrig	5034	179
	Sornhill (2 sections)	5134	262
	Auchencloich	5332	16
III	Kaimes	6926	60
	Sorn Mains	5427	298
	Black Dyke	5328	80
	South Logan	5524	20
	Ballochmyle Hospital	5226	50
	Netherplace	4927	407
	By Railway Bridge over road	4727	89
	Auchinweet	4529	63
	Parkhill	4527	201
	Barrhill	4527	52
	Westhill (3 sections)	4728	462
	Montgomerie (2 sections)	4426	152
	Westfield	4227	75
	Drumley Hospital	4025	524
	Adamton	3727	118
	Enterkine Entrance	4123	50
	Auchincruive (2 sections)	3823	61
	Craigie House and Holmston (2 sections)	3521	103
	Seafield Hospital	3521	40
	Belleisle	3320	132
	Newark Castle	3218	254
	Doonholm and Doonside (3 sections)	3318	368
	Glengall (2 sections)	3518	557
	Martnaham House	3917	554
	Carbieston Byres	3920	323
	Raithhill	4222	119
	Stair	4424	813
III	New Coylton	4219	661
	Drongan Pottery	4419	39
	Barturk	4922	119
	Auchinleck House	5023	72
	Ochiltree (2 sections)	5021	52
	Dumfries House	5420	423
	Lugar	5921	71
	Duncanziemore	6121	17
	Kyle	6519	105
	Craigbank	6012	329
	Ardnith	6013	70
	Auchincloigh	4916	284
	Sinclairston	4716	109
	Waterside (4 sections)	4308	124
	Hollybush	3914	234
	Doonside Mill	3814	573
	Dalrymple (3 sections)	3614	207
	E. Mains Hill	3412	227
	Monkwood and Minishant (2 sections)	3314	74
IV	Sauchrie House and Otterden (2 sections)	3014	726
	Maybole	3010	21
	Nether Culzean	3111	48
	Blanefield	2508	445
	Trochrague	2100	21
	Killochan (2 sections)	2200	380
	New Dailly	2601	235
	New Dailly Station	2602	109
	Kirkmichael House	3408	311
	Straiton (2 sections)	3805	351
	Barr	2794	17
	Auchlewan	2392	297
	Lendal Water	1490	54
	Groseclays	0985	548
	Colmonell	1586	133
	Barrhill (2 sections)	2381	82

ZOOLOGICAL NOTES

Parasitism of bird nests by Bumble Bees.—In the Forest of Dean in 1946-47 I found that a number of bird nests in boxes had been taken over by bumble bees (*Bombus*); of about 110 boxes occupied in 1946, fourteen contained bees' nests and one a wasp's nest. In 1947 six nests were taken over by bees, and there may have been others not noted. The wasp's nest was in an empty box. Most of the bees had taken over nests after the young birds had flown. Nests were taken for examination in 1947, and it was found that clutches of five and six eggs had been deserted by pied flycatchers (*Muscicapa hypoleuca*), a clutch of twelve by a great tit (*Parus major*), a clutch of seven by a blue tit (*P. caeruleus*), while one nest contained thirteen eggs with a blue tit dead on top. Two of the nests victimised were double, with a pied flycatcher nesting on top of a tit's nest.

In Perthshire, the table shows the number of nest-boxes recorded as taken over by bees. The nests parasitised were of great, blue, and coal-tits (*P. ater*), a redstart (*Phoenicurus phoenicurus*), a tree-creeper (*Certhia familiaris*), and a wren (*Troglodytes troglodytes*). The habitats were of many tree types. The earliest date on which bees were found in a nest was 9th May, and they have been found up to 27th July, but as boxes were inspected only at intervals, they were taken over before these dates. In many cases nests were taken over after the young had flown, or after they had been robbed or deserted, and so they were untenanted at the time; but on some occasions birds were nest-building, laying eggs or sitting, and twice there were nestlings, once nearly fully grown and about eighteen days old. Eight nestlings were thought to have flown a day or two earlier than usual at this nest.

On 17th May a great tit was sitting on five eggs in one box, and a bee came out buzzing loudly when I opened the box. Thirteen days later the box contained a bee's nest with the five eggs buried in the material. The bees churn up the nest very thoroughly; when disturbed they buzz and the whole nest heaves in a way quite alarming for men. This must be intolerable for a sitting bird, resulting in desertion. In the absence of any obvious alternative cause of death, it seems likely that the dead adults and nestlings found were killed by the bees.

Several nests with bees were sent to Professor G. C. Varley who identified them as *Bombus lucorum* L., a species normally recorded as using the nests of mice. The bees must also cause a small but

Occupied boxes taken over by bees near Perth, 1947-55

Year	*Occupied by birds*	*Occupied by bees*	*Percentage occupied by bees*
1947	45	4	9
1948	109	4	4
1949	140	7	5
1950	131	6	5
1951	102	6	6
1952	124	12	10
1953	103	3*	3
1954	136	6*	4
1955	70	2*	3

* In these years, nests from which birds had flown were removed early, so the chances for bees were reduced. In 1955, some boxes were not re-inspected owing to illness.

fairly regular annual loss in nesting of tits, etc. Probably the desertion of a nest, at least up to the early fledgling stage, is followed by re-nesting; the birds were not ringed, but new nests appeared in other boxes at dates agreeing with the desertion dates. After desertion in later stages, it seemed that they did not always re-nest. When re-nesting occurs late on, the disadvantages are the shorter time allowed for nestlings to mature before winter, perhaps a smaller clutch, and the disappearance in June of the larvae of (? oak) defoliators, which seem to be the ordinary food for nestlings. Owing mainly to intermittent inspection, data are not precise, but the nett loss seems to be small, probably only 1-2 per cent. It is perhaps greater in broad-leaved or mixed woods than in pure conifers.

There were also eight wasps' nests in nine years; these were usually in empty boxes. They often filled the whole box, so making it unusable for birds.—J. M. D. Mackenzie, St. Andrews.

Note on a White Oyster-catcher, 1955-1956.—In late April 1955 I had word that the white oyster-catcher (*Haematopus ostralegus*) was back in its old haunts, where it had been recorded almost every year since 1937. I went off on the next available day and within a very few minutes had seen the bird. It was feeding in a field near a croft and allowed us to have a good look at it through glasses.

There were no signs of age that I could see. It appeared to be in very good plumage and it was entirely white except for beak and legs.

There followed a rather severe " Gab-o-May " storm with a lot of snow and I got word that the bird had disappeared altogether.

I assumed that it had died in the storm. So I was greatly delighted when word came in mid-April this year that the white oyster-catcher was back!

The following Saturday I went off to the usual place and within 15 minutes and some 200 yards from where I had last seen it in 1955 the bird was feeding! Very trim and bright in plumage, no signs at all of age. After we had watched it for some time the bird flew down to the little burn on whose shingly bank we had more than once found a nest; though the white bird was joined by two normal black and white ones we failed to find a nest.—W. P. Young, Duffus, Morayshire.

A previous note on the history of this white bird (or, perhaps, birds), which has now been reported from the same unnamed glen in Morayshire almost continuously for twenty years, appeared in *Scot. Nat.*, 61: 185-187 (1949).—Editors.

Grey Phalarope in Ayrshire.—A dead grey phalarope (*Phalaropus fulicarius*) was found about 10th December 1955 at Greenan Farm, which lies on the coast two miles south of Ayr. The house is about 50 feet above sea-level and 200 yards from the shore. The bird was picked up at the back-door of the house after a south-westerly gale. It was still in good condition when we saw it three weeks later. Its identification was checked by Commander G. Hughes-Onslow and Mr. D. Cross. The only previous records for the county are a dead male on 9th October 1904 at Lendalfoot and nine or ten at Dunure on 6th November 1911 (E. R. Paton and O. G. Pike, 1929, *Birds of Ayrshire*).—K. J. M. Jackson and M. Holme, Alloway.

Two dead birds, not previously recorded, were found by Mr. D. Mair, Straiton, Maybole, who sends us the following particulars:

> 16th October 1937. One picked up dead in poor condition on the shore at Dunure. Identified by Mr. John McCrindle, Dunure.
>
> 10th December 1948. One picked up dead at Craigford Bridge, on the River Girvan near Straiton. Identification confirmed by Mr. B. W. Tucker, to whom the specimen was sent.—Editors.

Long-tailed Skua in South-east Sutherland. On the evening of 18th May 1956, I saw a long-tailed skua (*Stercorarius*

longicaudus) about 1½ miles inland from Dornoch. When first seen it was flying at a fair height over an area of rough pasture, about 50 yards distant from the roadway along which I was cycling at the time. At a first glance, and before the long streamer-like tail was noticed, I took the bird to be a kestrel (*Falco tinnunculus*). I had scarcely got the bird sighted through binoculars when it moved off in a westerly direction, flying quickly away with graceful sweeps. While it was still within range, however, the salient features noted were the elegant, streamlined body, the contrast between the light breast and neck and the dark head, and, particularly, the extremely long tail, the distal feathers of which appeared to waver slightly in the wind.—D. Macdonald, Dornoch, Sutherland.

Glaucous Gull inland in Sutherland.—On 28th October 1954, when motoring inland from the Kyle of Durness, Sutherland, along the Dionard River, I saw ahead of me an object which I took to be a rolled-up fleece. As I got nearer, it moved, and when I was almost alongside I saw it was a very large gull, at first sight creamy-white all over. As the car passed, it ran beside the road and took off, showing the upper wings and head faintly mottled with oatmeal or buff flecks, but with no black or grey marks anywhere. The bill was pale pinky-buff. In size the bird was larger than a herring-gull and probably as big as a great black-backed gull. I presume that this was a glaucous gull (*Larus hyperboreus*). The dark tip to the bill, shown in *The Handbook*, was not conspicuous. I heard next day that a similar bird had been seen at Durness at the same time. The weather had been very stormy and I assume that these birds had been driven inland.—Marion Campbell, Kilberry, Argyll.

Glaucous gulls are not uncommon on the north coast, but very rarely occur inland according to *The Handbook*. However, they occasionally come up rivers in north Scotland to feed on fish, irrespective of weather (Seton Gordon, 1944, *A Highland Year*: 57; *Brit. Birds*, 39: 253). Other inland records in Scotland are found in *The Birds of Scotland*: 657, and Vol. 67: 102 and 114. In the arctic they often come 30 miles or more up the rivers to feed on fish in summer.—Editors.

Little Gull and Iceland Gull in Argyll.—On 10th June 1952, when on the shore at Kilberry with a friend from Dorset, I saw a very small gull among five black-headed gulls. The legs

were very short, and the dark band across the wings and the dark back to the head were noticeable. I was able to get within 20 yards, and the identification as a little gull (*Larus minutus*) was positive, in comparison with the other species, by the wing-pattern when it eventually took flight, and by my friend's observation (she is familiar with the species around Bridport). This appears to be a new record for this district, as far as I can learn. The bird was clearly not in full breeding plumage, as the head was not completely black.

On 7th May 1955, with Mr. C. E. Palmar, I saw what was clearly an Iceland gull (*L. glaucoides*) on the shore at Kilberry. The bird was apparently very tired, and sat on a bank of seaweed until we were very near. Its plumage was pure white apart from a few flecks of pale fawn, and there were no black marks on wings or head. Other gulls, common, herring and black-headed, were about the bay, so that we could estimate its size with accuracy. In flight the wings were slender and pointed. Mr. Palmar is familiar with the species. It remained about the shore for at least three weeks, accompanying other gulls, though not very closely. This is the only record of the species in this district, so far as I know. —Marion Campbell, Kilberry.

Cuckoo in East Ross in Winter.—On 2nd December 1954 I was informed that a cuckoo (*Cuculus canorus*) had been observed " every day for the past week " near a roadway about half-a-mile south-west of Avoch, East Ross. I was sceptical; but on the same day I observed a cuckoo-like bird in the garden next to mine in Avoch. On 3rd December the Avoch park-keeper informed me that he had a " strange bird " on the bowling green. I went at once, and found that the bird was a young cuckoo. Its back was straw-coloured, its breast white with some mottling, and it had the characteristic tail, etc. The cuckoo roamed about over a considerable area during December but in the mornings was usually near where it was first observed; presumably that was near its roost. It was last seen on 25th December.—J. Lees, Avoch.

There are extremely few records of cuckoos in Britain between October and March, nearly all from England; December occurrences are very rare (*The Handbook*, 2: 299).—Editors.

Wryneck in East Ross.—On 7th September 1955 I was informed of a bird which was climbing about a post by a fisherman's

back-door, and causing attention by its curious habit of turning and twisting its neck. I found the bird, a wryneck (*Jynx torquilla*), on 8th September 1955 on the net-poles by the shore (Avoch, East Ross), where in addition to its neck-twisting, it did its characteristic " wing-spread " at the pole junctions. I judged the bird to be a young one, as the marks on the back, while distinct, did not stand out in relief, and the breast looked somewhat pale.—J. Lees, Avoch.

Effect of Myxomatosis on Tit Nests.—The disappearance of rabbits (*Oryctolagus cuniculus*), caused by myxomatosis, has had a curious effect on the nest-building habits of certain birds near Perth, and probably elsewhere, noted by me mainly in the tits. *The Handbook* gives for the nest lining of the great tit (*Parus major*) " a thick layer of felted hair or down " (I have also found wool commonly used), of the blue tit (*P. caeruleus*) " hair or wool with feathers ", and of the coal-tit (*P. ater*) " a thick layer of felted hair or down; feathers also used ". Most land mammals have two different types of hair; the guard hair, stiff and straight, with the function of keeping the underfur dry and free from felting, and the underfur, short, curly, dense and slightly felted, which keeps the animal warm. When I kept silver foxes, I found several nests lined almost entirely with silver fox underfur, and one with a lining of Angora rabbit combings. I was not keeping notes, and can remember only a coal-tit's nest definitely, but there were others. A chaffinch (*Fringilla coelebs*) nest was lined entirely with the hairs of a black-and-white spaniel; I saw them being collected from the lawn where the dog was groomed. So any hair (i.e. guard hair) or fur seems to be acceptable, but the hair used most is normally from cows, horses, and deer, and the fur used to be mainly rabbit fur, often tufts torn off in fighting, and so consisting of hair and fur mixed.

Up to 1954-55, most of my nest-box plots contained rabbits, as well as brown hares, red squirrels, red foxes and roe deer, besides such animals as rats, mice and stoats whose pelage seems too short to be used. A dead animal is often plucked. Up to 1954, when myxomatosis first became general, rabbit fur made up the vast majority of the fur used in tit's nests. Coal-tits in particular often made fur pads up to an inch in thickness, often extending beyond the cup over the top edges of the nest. In 1955 there were still rabbits about although many were dead, and I noted no change in the linings. But in 1956 rabbits were almost extinct, and this had a very obvious effect.

Some thirty coal-tits' nests, mostly in the Tentsmuir Plantations, and ten each of great and blue tits, have been found since then. In the coal-tit nests the thick pad has gone, being replaced by a hollow in the moss making the main body of the nest. This hollow is lined very sparsely with small feathers, scraps of wool, roe deer hair, old vegetable down (perhaps thistle, dandelion or fire weed), hare fur, and what may be an occasional much-weathered scrap of rabbit fur. The result is a different style of nest from that of the past. Great tits' nests seem to be lined mainly with wool, and blue tits' with feathers, again differing from those of former years. Of the two tree-creeper (*Certhia familiaris*) nests found so far, neither contained the usual few scraps of fur. One was lined entirely with feathers from barnyard fowls, the other with bits of white rotten wood—a diagnostic material in this area—carefully worked into shape, with a few cocoons.—J. M. D. Mackenzie, St. Andrews.

Abnormal Song of Mistle-Thrush.—It may be of interest to record the very abnormal song of a mistle-thrush (*Turdus viscivorus*) that has been singing at Farr, Strathnairn, from the middle of March until the third week in May 1956. It was a very loud and persistent " cheu-wee ", and occasionally " cheu-wee-cheu ", which went on at all hours of the day. Owing to circumstances I was unable to get very close to the bird, but Mr. George Waterston and Mr. Edwards, who were at Aviemore, very kindly came over here to Farr, Strathnairn, to identify it for me. They discovered it was a mistle-thrush. The song stopped abruptly in the third week in May. Mr. Waterston and Mr. Edwards were as surprised as I was when they discovered what the bird was.—Mrs. Alexander Mackenzie, Farr, Strathnairn.

White's Thrush in North Perth.—Early in January 1956, Mr. William Davidson, Curator of the Art Gallery and Museum, Perth, received a White's thrush (*Turdus dauma*) from the Marquess of Lansdowne. The bird was sent to Messrs. P. D. Malloch for preservation. I am greatly indebted to Sir Michael G. Nairn, on whose property this interesting bird was killed, for the following details of its capture :

" During a rough shoot on 3rd January of this year at Pitcarmick, Strathardle, this bird was shot in a birchwood by a walking gun in the belief that it was a woodcock, as there were quite a number of

them about on that particular day. The gun in question was the Hon. John Dewar of Dupplin Castle. When he went to collect the bird he was surprised to find that it was not a woodcock, but thought it was an ordinary thrush. It was only perchance that he picked it up and gave it to my gamekeeper, who (again perchance) happened to put it in his game bag. Only at the end of the day, when the rest of the bag was being counted and examined, was it realised that this bird was not an ordinary thrush.

" The Marquess of Landsowne, who was also a member of the party, asked me if he could have it identified and if necessary mounted, to which I agreed.

" To my knowledge, such a bird has never been seen in that area before, or since; but in flight it would be nearly impossible to distinguish. In that area there was a severe northerly gale on the night of 1st January, but apart from that there were no other exceptional weather conditions."

It is interesting to find that Yarrell (*A History of British Birds*, 4th edn. (1871), 1: 254), writing of the several examples obtained in Europe, remarks that they were flushed from ground covered with dead leaves, and that this " coupled with their mottled plumage and their large wings has in some instances led to their having been mistaken at the time for Woodcocks ". Howard Saunders (*An illustrated Manual of British Birds*, 2nd edn. (1899), p. 11) says the same of several of the specimens obtained in Great Britain.

This Perthshire bird, identified by dissection as a male, had already been mounted when I saw it at Messrs. Malloch's. Mr. A. Jamieson, taxidermist, told me that it was badly dishevelled when received, having lost a number of feathers, including two tail feathers; one tail feather and some body feathers, which had become detached, were sent in to him with the bird. In view of the diagnostic importance of the number of tail feathers—White's thrush has fourteen—it is important that this instability of the tail in the present specimen should be recorded. On examination I found twelve tail feathers in the mounted bird; it was clear that the two outermost on the right side were missing. The detached tail feather, which I saw, had lost part of the inner web, presumably due to shot: it is certainly the feather next to the outermost on the right. This loose feather is to be reinserted in the tail, so that when finally received by the museum for exhibition there will be thirteen tail feathers present, the right outermost having been lost, probably when the bird was shot. Measurements: bill 29 mm., tarsus 34 mm., wing about 164 mm. It was impossible to obtain a satisfactorily accurate measurement of the latter, as the bird was

mounted and drying. Mr. Jamieson informed me that on skinning the bird he found it was very fat. According to the *Handbook*, first-winter birds can be distinguished from adults by the yellowish-buff tips to the two central pairs of tail feathers; in the present specimen, though the tips are very slightly lighter than the olive-brown of the rest of feathers, they are certainly not yellowish-buff, so that the bird is probably not in its first winter. I wish to thank Mr. Davidson, Mr. Roberts and Mr. Jamieson, for their assistance.

White's thrush, or " golden mountain-thrush " as it is now called in the *B.O.U. Check List* (1952) has been recorded authentically on four previous occasions in Scotland; these were in Berwickshire (Dec. 1878), at Aberdeen (Oct. 1913), and at Fair Isle twice, in 1929 and 1944, each in October. Almost all of the more numerous English records and the three Irish ones have also been for the winter months.—James W. Campbell, Strathtay, Perthshire.

Winter records of Blackcaps in East Ross.—Blackcaps (*Sylvia atricapilla*) were observed at Avoch, East Ross, as follows:

26th December 1949. Ad. ♂ in nearby garden.

9th January 1951. Ad. ♂ near shore, ½ m. N.E.

7th January 1952. Ad. ♂ trapped in garden (wing 73 mm., wt. 17·8 g.). Noted in *Scot. Nat.* 64, 53.

31st December 1954. Ad. ♀ trapped in garden (wing 72 mm., wt. 16·5 g.). This bird had been seen on 26th December 1954 trying to feed on Cotoneaster berries. It was retrapped on 18th January 1955 (wt. 18·0 g.).

12th January 1955. Ad. ♀ trapped in garden (wing 73 mm., wt. 18·9 g.). It was retrapped on 18th January 1955 (wt. 20·7 g.). The traps were baited with breadcrumbs, so that winter diet would seem to be vegetable. Note the increase of weight with these last two—which suggests to me that the birds were underweight on arrival because they had come from a considerable distance.—J. Lees, Avoch.

Chiffchaff in Wester Ross.—On 13th June 1954 we saw and heard a chiffchaff (*Phylloscopus collybita*) singing at Coulin Lodge near Kinlochewe. The song post was a dead pine among mixed Scots pine and birch with rhododendron undergrowth. On the following morning the bird was still singing from the same spot. There was no evidence of a pair or breeding.—Elizabeth A. Garden and Valerie M. Thom, Aberdeen.

Perthshire Pied Flycatchers, 1955.—The weather in 1955 was extraordinary. From early April right on into the autumn, it was warm, dry, and without serious wind, except for the period from about 3rd May until 20th May, during which it was cold and windy. Although the temperature in my garden had risen to 70° the day before, there was a sleet shower at sea level at St. Andrews on 10th May, and snow on the 16th. The visible hills had snow on them much of that time. This just covers the period during which pied flycatchers (*Muscicapa hypoleuca*) have arrived in Perthshire in normal years. I had no nests myself, and have heard of none, although Dr. James Campbell says he had one cock at Strathtay, which stayed less than a day, moving on at once. During the vital migration period, round about 10th-14th May, conditions to the east of Loch Tay were so bad that very few birds came east; perhaps they went up the warmer west coast instead. Since 1950, when the first Perthshire nest was found, there has been only one year, 1951, when we have had no nests at all, and the weather in that year was similar in essentials during the critical period. It is described in my notes as follows: "The spring was very cold right on into June, with east winds. The snow above Loch Tay was still there in July." In May, conditions were quite unsuitable for an eastward movement.—J. M. D. Mackenzie, St. Andrews.

Hawfinches in North Perth.—In view of the records published in the *Scottish Naturalist* (60: 50 and 213-214), I have been keeping a special lookout for hawfinches (*Coccothraustes coccothraustes*) during the last few years in the Aberfeldy-Strathtay-Pitlochry area. Since the last was recorded in June 1948, at Aberfeldy, however, I neither saw nor heard of any in the district until this winter (1955-1956), when Mrs. Kyngdon informed Mr. George Blackwood that she had seen a pair, just before Christmas, in her garden at Pitlochry. Good views were had of the birds perched on an apple-tree, and also in flight, when the white markings on the wings showed clearly.

On 12th January 1956, Mr. Neville C. Morgan watched a hawfinch from his garden in Pitlochry; it was searching for food low down in brambles, and also high up in larches, where it was seen to break open a larch-cone. On 29th January, Mr. Morgan watched a female which visited his garden with a few chaffinches; it was seen digging its beak into soft ground, but it was impossible to see what food was taken.

I am indebted to Mr. Morgan for these details, and to Mr. George Blackwood for bringing these three occurrences to my notice.—James W. Campbell, Strathtay, Perthshire.

Crossbills Breeding on Deeside.—The note on crossbills (*Loxia curvirostra*) breeding in Aberdeenshire (*Scot. Nat.*, 67: 121) reminds me that I have an unpublished record of crossbills breeding in Kincardine.

In 1942-43 I lived in one of the cottages in Ardbeadie, Banchory; there was then a pinewood, since clear felled, on the east side of the Raemoir Road, opposite Ardbeadie. On 30th March 1943 a pair of crossbills appeared in the garden of my cottage and during the next three weeks two clearly distinguishable males and two females were regularly seen in the garden and in that of the next cottage. On 25th April one pair appeared in the garden accompanied by two newly fledged young and this family party was seen regularly during the next week. In the same year crossbills were seen at Tilquhillie, Banchory, on 29th March and 27th April, but I have no further evidence of breeding.

I wrote to the late B. W. Tucker about this occurrence at the time and I think it is worth quoting from his reply:

> . . . There are certainly plenty of crossbills on Deeside, at any rate in some years, but there is the possibility that they are immigrant Common Crossbills. I agree that one might well expect to find Scottish Crossbills there, but that is not proof.
>
> I am personally interested in your letter because I was myself at Braemar for some time in July. There were many crossbills in all the woods of that area, and from the most careful observation I formed the opinion judging from the bills that they were, mostly at any rate, Common Crossbills. But field observation cannot be conclusive in a case like this and even if it could, July is too late in the season; there might then well be immigrant Common Crossbills present in addition to a Scottish resident stock. I fear the only way of settling the matter really conclusively will be the shooting of some definitely breeding specimens in the nesting season, distasteful as this is.

This is, of course, just the reverse of Adam Watson's opinion, and both show the futility of trying to compare size or proportion with the memory of a previous observation. Nobody wants to go

shooting breeding crossbills, but it should be possible for someone on the spot to trap some for examination.—Ian D. Pennie, Golspie.

Snow Bunting in Skye in Summer.—In the last week of August 1932, I observed a ♂ snow bunting (*Plectrophenax nivalis*) in full plumage near the summit of Sgurr nan Gillean in the Cuillins. Since this date seems too early for an autumn immigrant, and since I can find no summer record of this species for Skye, this record might be of sufficient interest for publication.—M. F. M. Meiklejohn, Glasgow.

The amphipod *Orchestia gammarella* in St. Kilda.—During a visit to St. Kilda in July 1956, the Talitrid amphipods present at H.W.M. and under the slates around the manse were re-examined.

Evans (1906, *Ann. Scot. Nat. Hist.*, pp. 83-88) mentions the presence of the Talitrid *Orchestia littorea* (=*O. gammarella*) in the Village Bay. This species is not recorded in the faunal list of Gauld, Bagenal and Connell (1953, *Scot. Nat.*, 65: 29-49). However, they do record *Talitrus saltator* " under all kinds of objects at and about H.W.M., and also . . . under slates at the manse door ".

The amphipods found in 1956 both at H.W.M. and under slates around the manse, were identified as *Orchestia gammarella* (Pallas). Those from the former locus were in the sand between the boulders at the edge of the storm beach; those from the latter, in association with *Porcellio scaber*, *Petrobius brevistylis* and *Forficula auricularia*, under the slates. Males and females were present in both loci, and the latter bore eggs, some of which were of a deep purple colour. *O. gammarella* were found behind the manse as well as around the door. Searching of similar habitats around the factor's house yielded no results. Here the distance from the shore is presumably the limiting factor. In the case of the manse, which is 30 feet above sea-level, the distance from the storm beach is 250 yards and that from the rocks at the pier 50 yards.

Talitrus saltator is usually restricted to H.T.L. on sandy beaches; occurrences in other habitats are rare. It appears improbable that one species, previously unrecorded, can have been replaced completely in the course of a few years in two distinct habitats, by a species which has previously been recorded, and which is known to frequent such habitats.—Alexander Scott, Aberdeen University.

NOTICE TO CONTRIBUTORS

THE SCOTTISH NATURALIST is devoted to the study of Scottish Natural History, and is therefore concerned with all the many aspects, zoological, botanical, geographical, topographical and climatic embraced by this title.

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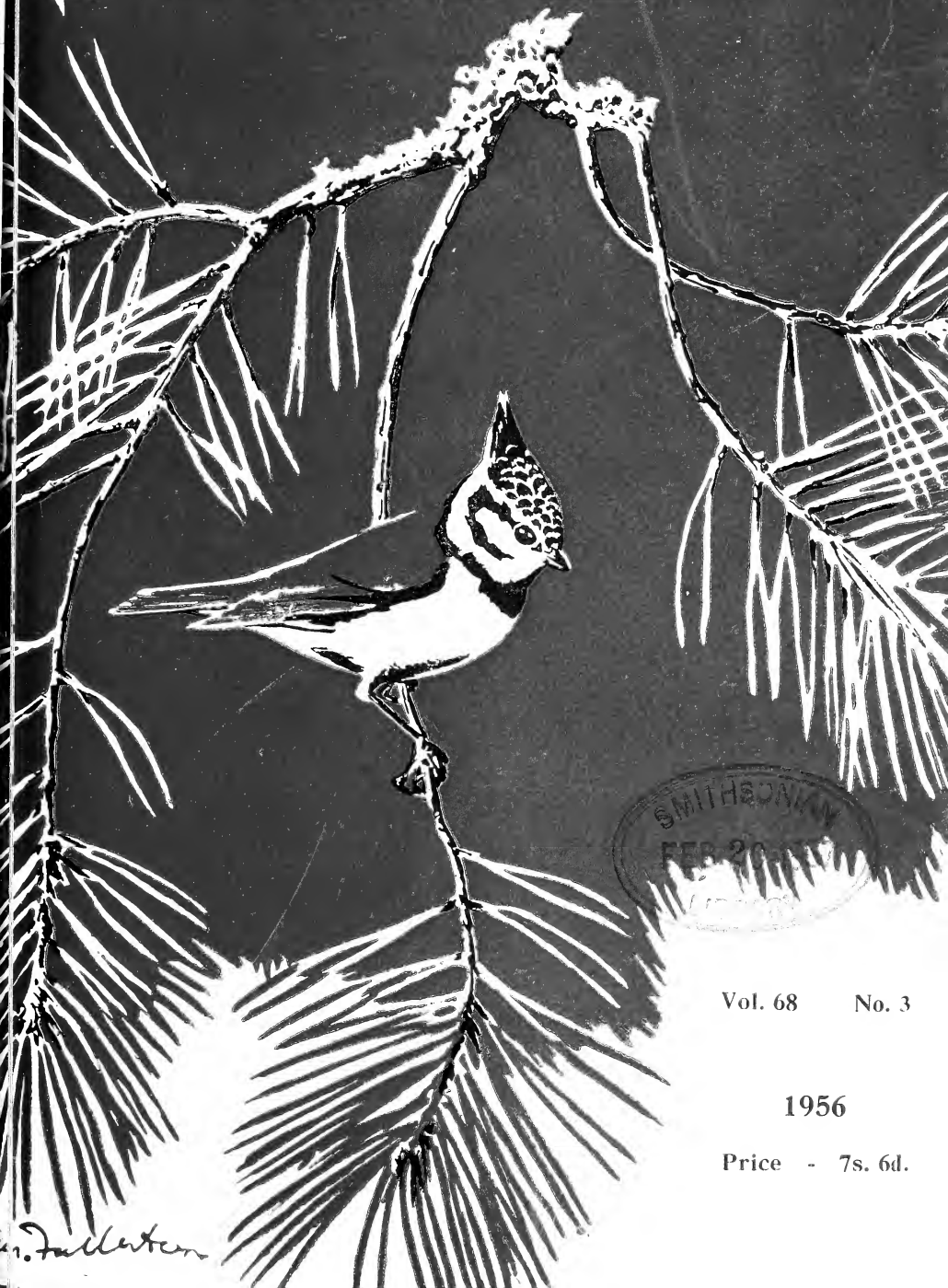

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The Scottish Naturalist

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A LIST OF THE BIRDS RECORDED FROM THE ISLE OF MAY *

W. J. Eggeling
Edinburgh

This list is a condensation of the *Status Book* of the Isle of May Bird Observatory—a loose-leaf volume detailing every species and sub-species of bird recorded from the island. The *Status Book* was compiled by H. F. D. Elder in 1934 from all published references to the avifauna of the May, notably the *Migration Reports of the British Association* (1880-88), the *Annals of Scottish Natural History* (1892-1911), *Reports on Scottish Ornithology* (1911-13) and a number of other papers by Miss E. V. Baxter and Miss L. J. Rintoul, of which the most important is perhaps "The birds of the Isle of May: a migration study" (*Ibis*, 1918: 247-287).

Ever since it first came into use, the *Status Book* has been kept up to date by the annual incorporation of any fresh information obtained during the preceding twelve months. A completely new version, reassessing the status of all the species, was drawn up during the winter of 1954-55 by G. L. Sandeman and the writer. From it the present account has been adapted, with additions up to and including 31st July 1956. Altogether, 219 full species are involved.

It should be appreciated that although records of one sort or another extend back over a period of more than seventy years, most of the observations relate to the spring and autumn

* *Received 26th July* 1956

migrations. The exact status of certain species in winter and, although to a lesser extent, in summer, is as yet uncertain.

The scientific names used in this list, and the order followed, are those of the *Check-list of the Birds of Great Britain and Ireland*, published by the British Ornithologists' Union (London) in 1952, except for the incorporation of the nomenclatural recommendations made by the Union's Taxonomic Sub-Committee in its First Report (*Ibis*, 1956: 157-168). The common names are those of the *B.T.O. Field List of British Birds*, prepared by the British Trust for Ornithology (Oxford, 1952). Amplification of the very brief mention of breeding status can be found in my recent account of " The breeding birds of the Isle of May " (*Scot. Nat.*, 1955: 72-89).

Black-throated Diver *Gavia arctica*

Twice September, once April.

Great Northern Diver *Gavia immer*

Twice September, once each December and February.

Red-throated Diver *Gavia stellata*

Twice each September and January, once each November and May.

Great Crested Grebe *Podiceps cristatus*

Once March, once April.

Red-necked Grebe *Podiceps griseigena*

Occasional in September to October and March to April.

Slavonian Grebe *Podiceps auritus*

Twice October, occasional in March and April.

Little Grebe *Podiceps ruficollis*

Occasional September to November, once in March.

Leach's Petrel *Oceanodroma leucorrhoa*

Once August, once October.

Storm Petrel *Hydrobates pelagicus*

A few old records of birds at the light in October and November. Has also occurred once in May and once in June.

Manx Shearwater *Procellaria puffinus*

Occurs off-shore in spring (April to June, mostly May) and autumn (mostly September to early November). Occasional in July and August.

Great Shearwater *Procellaria gravis*

Once September, once October.

Sooty Shearwater *Procellaria grisea*

Six occurrences, all September and October.

Fulmar *Fulmarus glacialis*

First recorded in May 1914, since when it has steadily become common, the fulmar has bred in small but increasing numbers since 1930. It has yet to be recorded in November.

Gannet *Sula bassana*

Occurs off-shore throughout the year. Bred for a time in the first half of the nineteenth century.

Cormorant *Phalacrocorax carbo*

Between thirty and fifty birds roost on the cliffs in winter; infrequent at other seasons. A few pairs may have bred in the twenties and eighties of the last century.

Shag *Phalacrocorax aristotelis*

Common at all seasons. Breeding in rapidly increasing numbers (175-200 nests in 1955, probably over 200 in 1956).

Heron *Ardea cinerea*

Occurs irregularly (mostly single birds) at all seasons, least often in June to August. There is a small passage in autumn.

MALLARD *Anas platyrhynchos*

Single birds, pairs or small parties may be seen at all seasons, less often in summer than at other times.

TEAL *Anas crecca*

Regular in small numbers from the latter part of August to the end of May.

GARGANEY *Anas querquedula*

Once in August.

WIGEON *Anas penelope*

Not infrequent between September and May.

PINTAIL *Anas acuta*

Six occurrences between September and May, all since 1937.

SHOVELER *Spatula clypeata*

Twice in May.

SCAUP *Aythya marila*

Six occurrences between September and May, all since 1934.

TUFTED DUCK *Aythya fuligula*

Once in September (five birds).

POCHARD *Aythya ferina*

Four times between August and April.

GOLDENEYE *Bucephala clangula*

Eight times between September and March, all since 1929.

LONG-TAILED DUCK *Clangula hyemalis*

Has been recorded fairly often between October and April, also once in May.

Velvet Scoter *Melanitta fusca*

Occasional between late September and mid-March.

Common Scoter *Melanitta nigra*

Not infrequent between September and April, occasionally also in May; once in July.

Eider *Somateria mollissima*

Eider are present throughout the year but most of the drakes are absent from the island from mid-June to August, returning in September and October. Between fifty and eighty pairs breed (sixty-four nests counted in the first half of June 1956).

King Eider *Somateria spectabilis*

Once, in October 1884 (five or six birds).

Red-breasted Merganser *Mergus serrator*

Occasional between July and November, once in April, twice in May.

Goosander *Mergus merganser*

Twice in October.

Smew *Mergus albellus*

Once in September, once in March; both males.

Shelduck *Tadorna tadorna*

Occasional, mostly single birds (maximum twelve) in April and May; a few occurrences in September; one record each for June and October. A pair bred in 1936.

Grey Lag Goose *Anser anser*

Occasional between September and December.

White-fronted Goose *Anser albifrons*

Once in October (a single bird).

Pink-footed Goose *Anser arvensis brachyrhynchus*

Seven times in September-October; twice in March-April.

Brent Goose *Branta bernicla*

Twice in October.

Barnacle Goose *Branta leucopsis*

Seven times between October and April.

Canada Goose *Branta canadensis*

Once in October 1935 (two birds); once in April 1952 (one bird).

Mute Swan *Cygnus olor*

Once in August (a single bird).

Whooper Swan *Cygnus cygnus*

Twice; a single bird and seven together some time in 1907 and in September 1954, respectively.

Bewick's Swan *Cygnus columbianus bewickii*

Once (single bird found dead in April 1956).

Buzzard *Buteo buteo*

Five times between late August and late October, once in May.

Sparrow Hawk *Accipiter nisus*

A good many records between late August and mid-November (mostly October); also between early April and late May.

Hen Harrier *Circus cyaneus*

Once in October.

Osprey *Pandion haliaetus*

Thrice, each time in the third week of May.

PEREGRINE *Falco peregrinus*

Occurs occasionally at all seasons. A pair used to breed but there has been no nest since 1929.

MERLIN *Falco columbarius*

Occurs regularly in autumn between late August and mid-November (well-marked passage September-October). Fairly frequent also in spring from mid-March to mid-April (occasionally into May). Reported once in December and once in July.

KESTREL *Falco tinnunculus*

Spring passage mainly in April-May (occasionally March), autumn passage August to November. One June record, several July.

QUAIL *Coturnix coturnix*

Thrice in May, once in October.

WATER RAIL *Rallus aquaticus*

Once in May, twice in September, a good many times in October and November.

CORNCRAKE *Crex crex*

Occasional between mid-April and May (once June); also in August to October (once November).

MOORHEN *Gallinula chloropus*

A number of records between April and early June, twice in late August, twice in early October. A pair bred in 1934.

COOT *Fulica atra*

Seven occurrences between February and May.

OYSTERCATCHER *Haematopus ostralegus*

A few are probably resident but the winter status is uncertain. There is some evidence of passage between February and May, and again in September. Breeding population eleven to fifteen pairs.

Lapwing *Vanellus vanellus*

Spring passage mainly between mid-February and mid-April, with stragglers to the end of May. There are a few June to July occurrences. Autumn passage August to November. A pair bred in 1897.

Ringed Plover *Charadrius hiaticula*

Single birds and small parties appear occasionally between March and October (chiefly April to May and August to September).

Grey Plover *Charadrius squatarola*

Once in September.

Golden Plover *Charadrius apricarius*

Spring passage March to May; autumn passage mainly between mid-August and early November. Has occurred twice in July and a few times in winter. The northern race (*C.a. altifrons*) has been identified three times in May.

Dotterel *Charadrius morinellus*

Twice in spring (end May and early June), seven times in autumn (August and September).

Turnstone *Arenaria interpres*

Present throughout the year but very few indeed in summer. The autumn build-up begins in July (exceptionally late June), the spring departure is almost complete by the end of May.

Snipe *Capella gallinago*

Passage in small numbers between March and the end of May, and from mid-September to mid-November; occasional in summer and winter.

Jack Snipe *Lymnocryptes minimus*

Occurs irregularly in small numbers between March and mid-May, and again from mid-September to November. Recorded once in summer (August); fairly frequent in winter.

Woodcock *Scolopax rusticola*

Spring passage from March to mid-May; autumn passage from late September to mid-November (mainly late October and early November). Recorded also in winter.

Curlew *Numenius arquata*

Occurs in small numbers throughout the year, with passage in March to April and August to September.

Whimbrel *Numenius phaeopus*

Spring passage in very small numbers in May (exceptionally late March and April). Autumn passage mid-July to mid-September (exceptionally early October).

Black-tailed Godwit *Limosa limosa*

Once in April, once in late May.

Bar-tailed Godwit *Limosa lapponica*

Four times between 6th and 24th September.

Green Sandpiper *Tringa ochropus*

Twice in May, eight times between August and September, all since 1938.

Wood Sandpiper *Tringa glareola*

Once in May, once in August.

Common Sandpiper *Tringa hypoleucos*

Slight passage in some years between mid-April and late May, and again from July to late September. Twice in June, once in October.

Redshank *Tringa totanus*

Present in small numbers in most months but sometimes absent in May and June. Irregular passage from late March to late May, and from early July to mid-October. A pair bred in 1912.

Greenshank *Tringa nebularia*

Seventeen occurrences between 8th August and 20th October.

Knot *Calidris canutus*

Has been reported only once in spring (May) as against about twenty occurrences in September (mostly in small numbers but one flock of 120 birds and one of 12). Recorded also thrice in July, once in August, twice in November and once in January.

Purple Sandpiper *Calidris maritima*

Small numbers are present regularly between August (exceptionally July) and late May; only one record for June.

Little Stint *Calidris minuta*

Three autumn occurrences (of from one to ten birds) between 28th August and 3rd October. No spring records.

Dunlin *Calidris alpina*

Irregular in small numbers in spring between March and May (mostly May); also in autumn from the first week of July to mid-October (once November).

Curlew Sandpiper *Calidris testacea*

Thrice between 7th August and 14th October.

Sanderling *Crocethia alba*

Thrice between 22nd August and 15th September.

Ruff *Philomachus pugnax*

Once in May, four times in September.

Stone Curlew *Burhinus oedicnemus*

Once in April, once in May.

Great Skua *Catharacta skua*

Twice in spring (24th April, 1st May), once in July, over thirty times in autumn (mostly between 8th September and 6th October).

Arctic Skua *Stercorarius parasiticus*

Frequent in small numbers off-shore in May, and between late August and October; recorded also twice in July.

Pomarine Skua *Stercorarius pomarinus*

Five occurrences between 27th August and 22nd September.

Long-tailed Skua *Stercorarius longicaudus*

Twice, on 19th September and 9th October.

Greater Black-backed Gull *Larus marinus*

Chiefly a winter visitor, numbers building up from late July to mid-October (mainly the second half of September onwards). After March many fewer birds, chiefly immature, are present, a few persisting through summer.

Lesser Black-backed Gull *Larus fuscus*

Used to occur on migration only but the British race (*L.f. graellsii*) has nested since 1930 so that passage movement is no longer distinguished readily. Between 200 and 250 pairs breed, arriving from the second half of March onwards: all have left by late September or early October. Out of season occurrences are exceptional. The typical race (*L.f. fuscus*) is recorded occasionally in May and (thrice only) in September.

Herring Gull *Larus argentatus*

Present in large numbers throughout the year, using the island both as a breeding area and a winter roost. About 3,000 pairs nest. Passage has been noted only twice, on 28th August 1931 and 24th September 1924.

Common Gull *Larus canus*

Occurs on passage in small numbers between late March and May, and between late August and early November.

Glaucous Gull *Larus hyperboreus*

Has occurred thrice in September, several times in October, thrice in November, a few times in April and several times in May.

Iceland Gull *Larus glaucoides*

Four records (involving five birds) in September, March and April.

Little Gull *Larus minutus*

Once in September, once in October, once in April.

Black-headed Gull *Larus ridibundus*

Not infrequent in small numbers between March and May, and again between August and October. Odd occurrences in June to July and November.

Kittiwake *Rissa tridactyla*

Over 2,000 pairs breed, arriving mid-March and leaving late October. A few November records, one for January.

Black Tern *Chlidonias niger*

Recorded only in 1954 (single birds on 12th and 14th May, and up to ten birds in a day on five days between 15th and 20th September).

Common Tern *Sterna hirundo*

Breeds in very variable numbers (about 150 pairs in 1955), arriving in the second half of April or first part of May, departing in late September or early October. Out-of-season occurrences are very rare.

Arctic Tern *Sterna macrura*

As for *S. hirundo*

Roseate Tern *Sterna dougallii*

Breeds irregularly in small numbers (three pairs in 1953 and 1954, four to five pairs in 1955, probably two pairs in 1956), arriving in mid-May and leaving at the end of August or in early September.

Little Tern *Sterna albifrons*

From one to five birds have been recorded on eight occasions in August and September.

Sandwich Tern *Sterna sandvicensis*

Breeds in very variable numbers (about 190 pairs in 1955, only a handful in 1956), arriving in the second half of April or early May and leaving in August. Odd birds are sometimes recorded in September and early October.

Razorbill *Alca torda*

Breeds regularly (about 375 pairs in 1955), the ledges being occupied permanently from about the end of April to mid-August. There are birds in the surrounding seas throughout the year.

Little Auk *Plautus alle*

Occurs occasionally between mid-October and late March; reported thrice in April.

Guillemot *Uria aalge*

The breeding population is about 2,000 pairs; otherwise as for *Alca torda*.

Black Guillemot *Cepphus grylle*

There are a good many records of from one to five birds off the island between the end of August and the end of May. Summer occurrences are very unusual. A few pairs bred in the early part of the nineteenth century.

Puffin *Fratercula arctica*

Breeds in small numbers (seven to eight pairs in 1954, probably fewer still in 1955 and 1956), arriving on the cliffs in April and May, and departing in August. Occurs in small numbers in the surrounding seas in winter.

Pallas's Sandgrouse *Syrrhaptes paradoxus*

Three were shot from a flock of about forty on 30th May 1888, the year of the great irruption.

Stock Dove *Columba oenas*

Single birds occur occasionally in April to May and September to October. There is one April record of four birds, and one of two.

Rock Dove *Columba livia*

The rock dove was last recorded with certainty (single birds) in 1884 and 1885: it bred in the first part of the nineteenth century.

Woodpigeon *Columba palumbus*

Irregular passage in small numbers, March to May and September to November; occasional in winter, infrequent in summer.

Turtle Dove *Streptopelia turtur*

Recorded a good many times in May and June, thrice in July, twice in August and six times in September.

Cuckoo *Cuculus canorus*

Spring passage in small numbers (most in a day, five) from the end of April to mid-June. Autumn passage, chiefly of immature birds, from early July to late September.

Barn Owl *Tyto alba*

Recorded only once—a bird of the dark-breasted race (*T.a. guttata*) on 19th December 1934.

Long-eared Owl *Asio otus*

Has occurred nine times between 12th April and 19th May, once in June, once in July, and fairly regularly in September and October. Also, occasionally, in November.

Short-eared Owl *Asio flammeus*

Occasional between early March and the third week of May; regular (sometimes in fair numbers) in September, October and early November.

Nightjar *Caprimulgus europaeus*

Recorded twice in May, thrice in June, and once each in July, August, September, and October.

Swift *Apus apus*

Spring passage from early May to early June; autumn passage from the end of July to late September. Recorded also once in April and twice in October.

Kingfisher *Alcedo atthis*

Thrice between 13th August and 2nd September.

Hoopoe *Upupa epops*

Twice in spring (end April, early May) and four times in autumn (between 1st and 7th October).

Great Spotted Woodpecker *Dendrocopos major*

Single birds have occurred on four occasions in September in addition to the unusual record of up to seven birds almost daily between 12th September and 9th October 1949. One of the single birds was not subspecifically identified; all the remainder belonged to the typical race.

Wryneck *Jynx torquilla*

Occasional in the first half of May, and between 28th August and 20th September.

Woodlark *Lullula arborea*

Recorded thrice in spring between 27th March and 12th May and about ten times in autumn (once on 27th August, otherwise between 26th September and 4th November).

Skylark *Alauda arvensis*

Passage in small numbers from February to May, and mid-August to mid-November. Occasional in summer, frequent in winter.

Shore Lark *Eremophila alpestris*

Twice in May, ten times in October.

Swallow *Hirundo rustica*

Spring passage from 11th April to early June; autumn passage from early August to mid-October (rarely early

November). Occasional in summer. A pair reared a brood in 1956 in one of the naval huts; this is the first record of nesting.

House Martin *Delichon urbica*

Spring passage from mid-April to mid-June (mainly May); autumn passage from late August to mid-October. Occasional in summer.

Sand Martin *Riparia riparia*

Spring passage in small numbers from mid-April to the end of May; autumn passage mid-July to mid-September (occasionally early October). Has occurred only once in June.

Golden Oriole *Oriolus oriolus*

Once in September.

Raven *Corvus corax*

Once in March, once in October.

Crow *Corvus corone*

The carrion crow (*C. corone corone*) occurs in small numbers at all seasons. There is some evidence of passage from March to late May, and between late September and mid-November. A pair sometimes breeds. The hooded crow (*C. corone cornix*) occurs infrequently between April and May, and again between the end of September and mid-November; it has been recorded also, very occasionally, in summer and winter.

Rook *Corvus frugilegus*

Irregular on passage in March and April (sometimes into May), and again between early September and early October. Recorded only once in August and once in November.

Jackdaw *Corvus monedula*

Irregular on passage from the third week of March to early May (exceptionally in early June), and again from mid-September to the third week of October.

Great Tit *Parus major*

Has occurred twice in autumn (October to November) and twice in spring. One October bird was of the continental race (*P.m. major*), the other three birds were not subspecifically identified.

Blue Tit *Parus caeruleus*

Recorded once in March and on four occasions between the end of September and early November. The March bird and two of the autumn birds were of the British race (*P.c. obscurus*), the other two were not racially identified.

Coal Tit *Parus ater*

Three occurrences between 30th September and 10th October, involving on one occasion the British race (*P.a. britannicus*) and on another the continental race (*P.a. ater*). The third bird was not racially identified.

Long-tailed Tit *Aegithalos caudatus*

Small parties have been recorded on a few occasions between 10th October and 5th November.

Treecreeper *Certhia familiaris*

Has occurred once in July and five times between 27th September and 21st October. Four of the autumn occurrences involved the British race (*C.f. britannica*), in the other two instances the race was not established.

Wren *Troglodytes troglodytes*

Passage in small numbers from late March to mid-May and from mid-September to mid-November; occasional in summer. A few individuals winter on the island.

Dipper *Cinclus cinclus*

Recorded twice in April, twice in August and once in December. The April birds were both of the British race (*C.c. gularis*). The others (all in 1884) were not racially determined.

Siberian Thrush *Turdus sibiricus*

Once in early October.

Mistle Thrush *Turdus viscivorus*

Irregular in small numbers between February and May, and again between September and mid-November. There are also a few records for July and August.

Fieldfare *Turdus pilaris*

Spring passage March to May (three records in early June); autumn passage often in very large numbers, mainly mid-October to mid-November although sometimes beginning in the second half of September. Frequent in winter.

Song Thrush *Turdus ericetorum*

Spring passage chiefly February to March but extending into May. Autumn passage mainly September to October, a few in August. Occasional in June to July and winter. The continental race (*T.e. philomelos*) has been identified only about a dozen times in spring (once in mid-April, the remainder in the first three weeks of May) but there is a marked autumn passage of continental birds, often in large numbers, from the end of September to early November. A few pairs of song thrushes used to breed; none has done so since 1938.

Redwing *Turdus musicus*

Spring passage February to May (chiefly March to April). Autumn passage much more marked and often in great numbers, mainly in October and the first half of November but occasionally from the latter part of September or even earlier. Occasional in winter.

Ring Ouzel *Turdus torquatus*

Spring passage in small numbers from the end of March to the end of May (mostly in mid-April to mid-May). Autumn passage September to November.

Blackbird *Turdus merula*

Spring passage from March to early May; autumn passage often in very large numbers (sometimes thousands in a day) mainly October to November but sometimes as early as September. There are movements in December to January also. A few birds winter on the island and there are also normally a few resident pairs although not since 1954.

Wheatear *Oenanthe oenanthe*

Spring passage of typical race from about 21st March to 10th June; autumn passage mainly early July to mid-October or a little later. A few pairs breed (three pairs in 1954 and 1955, probably four pairs in 1956). Birds of the Greenland race (*O.o. leucorrhoa*) occur on passage between mid-April and the end of May, and from late August to late October.

Black-eared Wheatear *Oenanthe hispanica*

Once (30th September to 8th October 1949).

Pied Wheatear *Oenanthe leucomela*

Once (19th October 1909).

Stonechat *Saxicola torquata*

The European race (*S.t. rubicola*) occurs occasionally in spring between 9th March and 16th May and in autumn between early September and late October (mostly mid-September to mid-October). Very few have been seen in recent years. The Siberian race (*S.t. maura*) has been recorded once, on 10th October 1912.

Whinchat *Saxicola rubetra*

Spring passage from the end of April to the end of May; autumn passage mainly from mid-August to early October. Odd birds have occurred in July. The largest number reported in a day is twenty in May.

Redstart *Phoenicurus phoenicurus*

Spring passage from mid-April to mid-June; autumn passage mainly from mid-August to the first week of October

(occasionally later). There are five summer records between 29th June and 23rd July. The largest number reported in a day is twenty in spring (May) and over fifty in autumn (September).

Black Redstart *Phoenicurus ochruros*

Fairly regular in small numbers both in spring and autumn, mainly from mid-March to the end of May, and from mid-September to early November. Has occurred twice in August.

Nightingale *Luscinia megarhynchos*

Six or seven occurrences (one at the end of August, the rest between 30th April and 22nd May).

Bluethroat *Cyanosylvia svecica*

Irregular passage in small numbers both in spring and autumn. There have been between twenty-five and forty occurrences in spring, all in May and all but one between 7th and 23rd May; the largest number of birds seen in a day is thirteen. Autumn records are rather less numerous, all between 3rd September and 5th October. A single occurrence in late June is quite exceptional. Most records refer to the typical red-spotted race; there are only two certain occurrences of white-spotted bluethroats (*C.s. cyanecula*), both in May.

Robin *Erithacus rubecula*

Spring passage of British race (*E.r. melophilus*) from early March to late May. Autumn passage mainly from the end of August to early October. Has occurred only once in July. A few birds usually winter on the island. Birds of the typical race occur occasionally in spring, mainly in May. They occur also in autumn, sometimes in very large numbers, between mid-September and late October.

Grasshopper Warbler *Locustella naevia*

Has been reported on fifteen occasions, eleven times in spring between 15th April and 24th May and four times in autumn between 4th September and 7th October.

Reed Warbler *Acrocephalus scirpaceus*

Thrice between 17th May and 14th June; thrice between 3rd September and 4th October.

Sedge Warbler *Acrocephalus schoenobaenus*

Main spring passage from the end of April to the end of May; main autumn passage from the end of July to the end of October. Largest number of birds in a day, eighty (in May).

Aquatic Warbler *Acrocephalus paludicola*

Once (on 26th September 1949).

Melodious Warbler *Hippolais polyglotta*

Once (on 27th September 1913).

Icterine Warbler *Hippolais icterina*

Single birds have been recorded once in spring (19th May) and five times in autumn (all between 8th August and 9th September). In addition, a varying number of birds (maximum, six) occurred daily between 5th and 12th September 1949, during which period nine were trapped.

Blackcap *Sylvia atricapilla*

Spring passage in small numbers (up to six in a day) mainly from late April to late May. Autumn passage, usually in slightly larger numbers, from the end of August to mid-November. Recorded once in early June and once in early February.

Barred Warbler *Sylvia nisoria*

A few birds generally occur in autumn (earliest 8th August, latest 13th October). The largest number recorded in a day has been six. There have been no spring occurrences.

Garden Warbler *Sylvia borin*

Spring passage in small numbers, mainly in May but sometimes extending into the first half of June. Autumn passage,

again in small numbers, mainly from September to mid-October (but occasionally beginning as early as August and extending into November). Has occurred twice in July. The largest number of birds reported in a day is twelve (in September).

Whitethroat *Sylvia communis*

Spring passage mainly from the latter part of April throughout May. Autumn passage mainly from mid-August to the first week of October. Recorded once in mid-June, occasionally in July. Largest number of birds in a day, about one hundred on two occasions (both in May).

Lesser Whitethroat *Sylvia curruca*

Spring passage of typical race in small numbers (up to seven in a day, on one exceptional occasion between thirty and forty), in the first three weeks of May; there have been three occurrences in June. Autumn passage, also in small numbers, mainly late August to mid-October.

The Siberian race (*S.c. blythi*) has been recorded about seven times in autumn between 9th September and 24th October, never in spring.

Subalpine Warbler *Sylvia cantillans*

Once (on 30th May 1924).

Willow Warbler *Phylloscopus trochilus*

Spring passage of typical race in considerable numbers, mainly from mid-April to the end of May, occasionally into early June. Autumn passage mainly early August to mid-October but some movement late June and July. Largest number of birds in a day, about 500 (early May). A pair bred in 1922.

The northern race (*P.t. acredula*) has been recorded fairly often in spring between 20th April and the end of May (once in June); most in a day, thirteen. There are only three autumn records, all between 8th September and 6th October.

GREENISH WARBLER *Phylloscopus trochiloides viridanus*

One record only—of a single bird remaining from 27th August to 3rd September 1955.

CHIFFCHAFF *Phylloscopus collybita*

Less than thirty spring occurrences of the typical race, nearly all of single birds (most in a day, three), mainly between the second week of April and late May. Fairly regular in autumn between 22nd August and October, latest 2nd November.

"Northern chiffchaffs" (*P. collybita* subsp.)—see K. Williamson in *British Birds*, 1954: 49-57—have been recorded a number of times in autumn under the names *P.c. abietinus* and *P.c. tristis*. Most of the occurrences have been in October (earliest 23rd September, latest 4th November).

WOOD WARBLER *Phylloscopus sibilatrix*

About eleven occurrences in spring (between 3rd May and 3rd June) and about twelve in autumn (between 12th July and 13th September).

YELLOW-BROWED WARBLER *Phylloscopus inornatus*

Recorded at least twenty times in autumn (only) between 16th September and 24th October. Most in a day, three.

GOLDCREST *Regulus regulus*

Spring passage chiefly in April but sometimes beginning in March and sometimes with stragglers into May. Autumn passage mainly September to October but occasionally as early as 22nd August and sometimes extending into November. There are a few winter records. The autumn movement is more marked than that of spring; it is often on a very big scale (200 or more birds on the island at a time).

SPOTTED FLYCATCHER *Muscicapa striata*

Spring passage in small numbers, mainly between 7th May and 31st May, occasionally extending into June. Autumn

passage, also in small numbers, from mid-August to mid-October. Largest number recorded in a day, twenty-five (in May).

Pied Flycatcher *Muscicapa hypoleuca*

Spring passage in small numbers, mainly from the end of April to the end of May, occasionally extending into early June; autumn passage in rather larger numbers, from early August to mid-October. Largest number in a day, about twenty in spring and about fifty in autumn.

Red-breasted Flycatcher *Muscicapa parva*

Recorded only once in spring (18th May 1946). Over thirty occurrences in autumn, involving up to three birds in a day, mostly between 18th September and 7th October (earliest 8th September, latest 13th October). At least twelve birds (eight trapped) occurred between 13th September and 7th October 1949.

Hedge Sparrow *Prunella modularis*

Spring passage of British race (*P.m. occidentalis*) from early March to the end of May; autumn passage mid-September to mid-November. A few individuals winter. There is one record of breeding (in 1884).

The typical race has been recorded in spring less than a dozen times, all between early April and mid-May. These continental birds visit the island also in autumn, between September and November.

Meadow Pipit *Anthus pratensis*

Occurs on spring passage in large numbers (e.g. about 750 birds on 7th April 1953 and about 1,000 birds on 16th April 1950), mainly between the second half of March and the first half of May but movement occasionally persists until the end of May. The autumn passage, in which large numbers of birds are involved, extends from the end of August to early November. Between three and seven pairs breed, the breeding population arriving in late March or April and leaving as a rule in August or September, although some individuals occasionally remain as late as November.

Tree Pipit *Anthus trivialis*

Irregular spring passage in small numbers from 7th April throughout May and occasionally into early June. Autumn passage again in small numbers, mainly from the last week of August to mid-October (earliest 11th August, latest 21st October).

Rock Pipit *Anthus spinoletta*

Spring passage has been observed in May (occasionally in April); autumn passage (sometimes involving up to over 100 birds in a day) mainly from mid-September to early October but occasionally from late August and sometimes as late as early November. About thirty pairs breed; it is doubtful if all of these winter on the island, although some of the birds certainly do.

Pied Wagtail, White Wagtail *Motacilla alba*

The spring passage of *alba* wagtails occurs chiefly in April and early May (occasionally late May); it involves only small numbers of birds. The autumn passage, also in small numbers, is mainly from mid-August to mid-October.

Between two and four pairs of pied wagtails (*M.a. yarrelli*) nest, this breeding population arriving between the end of February and the end of March, and leaving in October. Pied wagtails have occurred occasionally also in winter.

Extreme dates for the passage of the typical race (white wagtail) are:

Spring: earliest 3rd April, latest 29th May.
Autumn: earliest 11th August, latest 2nd October.

Grey Wagtail *Motacilla cinerea*

There are seven spring records of single birds between 17th March and 2nd April, compared with about twice as many autumn records, again of single birds, earliest 31st August, latest 27th October.

Yellow Wagtail, Blue-headed Wagtail, Grey-headed Wagtail *Motacilla flava*

There are about thirty spring records of *flava* wagtails, nearly all single birds (never more than three together),

between late April and early June. The only two autumn records are both of yellow wagtails (*M.f. flavissima*), which have occurred, however, about twenty times in spring, on every occasion except two between 3rd and 19th May. Single birds of the typical (blue-headed) race have been recorded four times between 2nd and 14th May. The grey-headed wagtail (*M.f. thunbergi*) has occurred six times (again all single birds) between 10th and 23rd May.

Waxwing *Bombycilla garrulus*

Recorded thrice between 4th and 26th November.

Great Grey Shrike *Lanius excubitor*

Has occurred only once in spring (17th April) as against about a dozen times in autumn between 30th September and 3rd November.

Woodchat Shrike *Lanius senator*

Once in spring (12th May), once in autumn (19th October).

Red-backed Shrike *Lanius cristatus*

L.c. collurio is not infrequent on spring passage in ones and twos, chiefly in May but four times in the first half of June. There are about ten autumn records, again of birds in ones and twos, all between 17th August and 27th September.

Isabelline Shrike *Lanius isabellinus*

Once in September.

Starling *Sturnus vulgaris*

The spring passage extends from mid-February to mid-April, sometimes to mid-May. The autumn passage begins on a small scale, usually from about mid-September but occasionally from the third week of August, with maximum movement (sometimes involving large numbers of birds) developing in October and November. Movement is to some extent obscured by the presence of a resident population. About twenty pairs breed, all on the cliffs.

HAWFINCH *Coccothraustes coccothraustes*

Once at the end of October.

GREENFINCH *Chloris chloris*

Spring passage in small numbers, mainly mid-March to mid-May; largest number in a day, nine. Autumn passage mainly October to November, occasionally last week September; maximum number of birds in a day, twenty-five. Small parties visit the island in winter.

GOLDFINCH *Carduelis carduelis*

Has occurred thrice in winter (twice November, once February) and six times in spring between 12th April and 15th May.

SISKIN *Spinus spinus*

There have been less than a dozen spring occurrences (one of a flock of thirteen, the rest mostly of single birds) between 17th March and 14th May. The autumn passage is occasionally in quite large flocks (e.g. over 100 on 18th September 1953) between 10th September and mid-November. There is only one winter record (January).

LINNET *Carduelis cannabina*

Spring passage in small numbers (up to fifteen in a day), mostly in March and April, occasionally into May. Autumn passage also in small numbers (maximum in a day, thirty-five), between 14th September and 8th November. Occasional in winter. A few pairs breed from time to time (three pairs in 1953 and 1954, six pairs in 1955, and between three and five pairs in 1956), the breeding population arriving in March and leaving in September or October.

TWITE *Carduelis flavirostris*

Four occurrences (February, May, October, November).

REDPOLL *Carduelis flammea*

There are some half dozen spring records (all May) and four autumn records (17th August to 4th October) of the lesser

redpoll (*Carduelis f. disruptis*), nearly all of single birds, none of flocks. There is only one (October) record of a greater redpoll (*C.f. rostrata*). The typical race (mealy redpoll) occurs irregularly in small numbers in spring between 14th March and 23rd May; it appears also in autumn, again usually in small numbers but occasionally in large flocks (e.g. the large irruptions in the autumns of 1910 and 1913) between 21st September and 12th November. There are a number of winter records.

Bullfinch *Pyrrhula pyrrhula*

Between 22nd October 1910 and the end of that month several examples of the typical race (northern bullfinch) occurred as part of a large irruption into Scotland generally. The British bullfinch (*P.b. nesa*) has never been recorded.

Scarlet Grosbeak *Carpodacus erythrinus*

There are ten records between 7th and 25th September, and one in late October, all of single birds.

Pine Grosbeak *Pinicola enucleator*

Once (8th to 9th November 1954).

Crossbill *Loxia curvirostra*

A dwindling party consisting originally of about twenty-four birds was present between mid-July and 26th August 1930; parties of roughly similar size were present also between 1st and 12th July 1953, and between 1st and 19th July 1956. In 1953 a single bird was recorded also on 12th and 13th August, and small numbers (up to twelve in a day) between 18th and 20th September. Single crossbills recorded at the end of May 1929, at the end of July 1944 and on 22nd October 1920, and a number reported in the summer of 1935, should probably also be ascribed to this species.

Parrot Crossbill *Loxia pityopsittacus*

Once (18th September 1953). Race uncertain.

Chaffinch *Fringilla coelebs*

Irregular passage in spring in small numbers (up to twenty-five in a day) from early March to late May; autumn passage often in fair numbers (up to one hundred in a day) from mid-September to early November. In 1944 a single cock remained from 5th June to 19th September, and there have been two other June occurrences. Occasional in winter.

Brambling *Fringilla montifringilla*

Spring passage mainly in April (earliest 10th March, latest 21st May). Autumn passage, often in very large flocks, mainly in October (earliest 15th September, latest 17th November). Occasional in winter. On 10th October 1909 there were thousands on the island.

Yellowhammer *Emberiza citrinella*

Spring passage in small numbers (maximum in a day, five), mainly in April; earliest record 16th March, latest 28th May. Autumn passage more irregular, again mostly single birds, mainly in October and the first half of November. Occasional in winter.

Corn Bunting *Emberiza calandra*

Thrice in May, once in August (two birds together), once in September.

Black-headed Bunting *Emberiza melanocephala*

Once in September.

Yellow-breasted Bunting *Emberiza aureola*

Once in September.

Cirl Bunting *Emberiza cirlus*

Twice in September (single birds), once in October (three birds together).

Ortolan Bunting *Emberiza hortulana*

Occasional in spring (maximum number in a day, six) between 2nd May and 1st June. Occasional in autumn

(nearly always single birds, once two, once three) between late August and late October.

Rustic Bunting *Emberiza rustica*

Has occurred twice—on 10th to 11th May 1947 and from 30th September to 13th October 1949.

Little Bunting *Emberiza pusilla*

Recorded nine times in autumn (maximum number in a day, four) between 25th September and 25th October. No spring occurrences.

Reed Bunting *Emberiza schoeniclus*

Spring passage in small numbers (up to seven in a day), mainly in May but sometimes in March and April. Autumn passage in small numbers (most in a day, ten) from late September to early November.

Lapland Bunting *Calcarius lapponicus*

Recorded about fourteen times in autumn, almost always as single birds (once two together), between mid-September and late October. No spring occurrences.

Snow Bunting *Plectrophenax nivalis*

Common on spring passage in March and the first half of April, with occasional birds up to late May. Common on autumn passage from mid-September to November (largest numbers, November). Occurs also in winter.

House Sparrow *Passer domesticus*

Sporadically resident, nesting for the last time in 1947. Single birds and small parties appear occasionally in spring and autumn (April to May and September to October).

Tree Sparrow *Passer montanus*

Occurs on spring passage in small numbers (maximum number in a day, twenty-two) in April and May. The autumn passage was previously larger than that of spring, mostly in October and the first week of November, but there have been no autumn records for over twenty years. Tree sparrows used to breed but have not done so since 1922.

REPORT ON BIRDS OF THE CLYDE AREA, 1955 *

M. F. M. Meiklejohn and C. E. Palmar
Glasgow

This, our sixth report of the kind, is concerned with unusual occurrences of vagrants or semi-vagrants, with unusual breeding records and with new, or apparently new, factors in distribution. As before, we include a small part of the Forth area in the Aberfoyle and Flanders Moss districts. Unless otherwise stated all dates apply to 1955.

This report does not claim to be complete. We have simply collected as much as we have been able to collect, and are especially grateful to those who, like Mr. H. Mayer-Gross and Mr. L. A. Urquhart, have, at the end of the year, sent us a full account of their observations, giving full details in the case of rare birds and adequate details for less unusual ones.

The contributors are D. G. Andrew, John Baird, Gordon Bennett, Miss F. M. Black, Dr. W. J. Eggeling, M. Forrester, Ian Hay, Alex. Henderson, J. Hood, Cdr. G. Hughes-Onslow, Miss M. I. Kinnear, H. Mayer-Gross, W. K. Richmond, L. A. Urquhart, R. C. Walls, G. Waterston and T. Weir.

Garganey *Anas querquedula*. Near the mouth of the R. Endrick, Dunbartonshire, 15th May, one ♂ (M.F.M.M.).

Gadwall *Anas strepera*. Dunwan dam, Renfrewshire, 19th March, a pair (L.A.U.). Hamilton, 25th March, a ♀, and 16th September, a pair (H.M.-G.). These records confirm the impression that the gadwall is a migrant of double passage through the Clyde area—scarce, but perhaps regular.

American Wigeon *Anas americana*. A ♂, doubtless the same as that already reported (*Scot. Nat.*, 66: 123 and 67: 67), was seen on the " rubbish-dump pool " at Hamilton on the following dates: 3rd April (L.A.U.), 21st and 26th April (M.F.M.M.), 6th November (H.M.-G.) and 20th November (M.I.K. and G.W.).

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Shoveler *Spatula clypeata*. On 23rd April, excellent views were obtained of a ♀ shoveler which had been flushed from a nest with eleven eggs in a marshy field near Balmaha. There seems to be no previous breeding record for West Stirling (M.F.M.M.).

Long-tailed Duck *Clangula hyemalis*. Single birds (♀ or imm. ♂) were seen as follows: Tannoch Loch, Milngavie (F.M.B.)—cf. *Scot. Nat.*, 67: 67; Bothwell Bridge, from 10th to 19th March (M.F.M.M.); Hamilton, rubbish-dump pool, from 21st April to 11th May—on which date the bird was acquiring adult ♂ plumage (M.F.M.M., G.W.); and Possil Marsh, 26th May (H.M.-G.). It seems possible that all these records refer to the same bird. We know of no previous record for Lanarkshire.

Smew *Mergus albellus*. Possil Marsh, 30th January, a red-headed bird (H.M.-G.). Bothwell Bridge, 12th March, a ♂ (W.K.R.) and on 15th (M.F.M.M.). On the Clyde above Hamilton there was a ♂, possibly the same as the Bothwell Bridge bird, on 21st April (M.F.M.M.).

Bean Goose *Anser fabalis*. In the locality near Balmaha where bean geese have been reported in previous years (*Scot. Nat.*, 67: 68) ten were seen on 30th January and 24 on 27th November (M.F.M.M.). W.K.R. also reports several among flocks of other geese on Flanders Moss in November.

Pink-footed Goose *Anser brachyrhynchus*. A single bird was seen by many observers in the Bothwell Bridge area throughout the winter of 1955-56, consorting with grey-lags. On Flanders Moss there were over a thousand in November (W.K.R.).

Canada Goose *Branta canadensis*. Of a pair seen at the Endrick mouth on 30th April one bore a ring and with all records of this species in the area it should be remembered that a free flying flock is kept by a collector of wildfowl at Kilcreggan. Two were seen on Loch Barr on 22nd October (J.H.).

Bewick's Swan *Cygnus bewickii*. Single birds were seen on the Clyde above Hamilton on 10th February (H.M.-G.), 29th April (L.A.U.) and 30th December (W.K.R.). On the morning of 14th January nine birds were seen on Craigmaddie Reservoir, Milngavie, and flew off in a south-east direction

(W.K.R.), and what were possibly the same birds were seen the same afternoon on the Clyde above Hamilton (M.F.M.M.).

Buzzard *Buteo buteo*. So far as we can ascertain myxomatosis seems to have had no effect whatsoever on the numbers of this species in the Clyde area.

Peregrine *Falco peregrinus*. As has been reported in earlier years (*Scot. Nat.*, 66: 68), a peregrine again haunted a tall tower in Glasgow, being observed at intervals from 31st August onwards (H.M.-G.).

Greenland Falcon *Falco rusticolus candicans*. As recorded in detail elsewhere (*Scot. Nat.*, in press), a bird of this species and race was seen by M.F. near the mouth of the R. Endrick on 3rd April.

Whimbrel *Numenius phaeopus*. There are two inland records of single birds from the mouth of the R. Endrick (Dumbarton bank) on the 8th and 15th May (M.F.M.M.).

Black-tailed Godwit *Limosa limosa*. R. Endrick mouth (Dumbarton bank), ten on 30th April (M.F.M.M.). Hamilton, 24th June, four (M.F.M.M.). R. Endrick mouth (Stirling bank), 11th August, one (T.W.). Possil Marsh, 21st August, five (G.B.).

Green Sandpiper *Tringa ochropus*. One at Hamilton on 5th September (H.M.-G.).

Dusky Redshank *Tringa erythropus*. A single bird was seen at Hamilton by several observers between 10th March and 26th April, and between 16th September and 10th November. There were two birds present on 7th October, and 3rd and 6th November.

Knot *Calidris canutus*. The only inland record is of a bird in summer plumage on the Dumbarton bank of the R. Endrick mouth on 8th May (M.F.M.M.).

Little Stint *Calidris minuta*. Single birds were seen at Hamilton on 12th and 13th July (W.J.E., M.F., T.W.) and on 7th October (M.F.M.M.).

Ruff *Philomachus pugnax*. Single ♂ ♂ in summer plumage (black phase, but probably different individuals) were seen at Hamilton on 6th and 12th July (W.J.E., M.F.M.M.). Three birds were seen in the same locality between 1st October and 4th December (D.G.A. and others); only one remained on 6th December.

Lesser Black-backed Gull *Larus fuscus*. Wintering records of the British race *graellsi* have been received as follows: Milngavie, 1st January, one; Glasgow, 6th November, one; between East Kilbride and Strathaven, 13th November, 20+; Busby, 22nd November, one; Hamilton, 4th December, one (D.G.A., C.E.P., W.K.R., M.F.M.M.). These records may indicate a new trend, previous wintering records being infrequent in the area.

Three birds of the typical race *fuscus* were seen at Ayr on 8th March. The light was excellent and the birds were " as black-mantled as any greater black-backs ", which species, *L. marinus*, was present for comparison (G.H.-O.). There seems to be no previous record of this race from Ayrshire.

Glaucous Gull *Larus hyperboreus*. A single immature bird was present in Ayr harbour in February and March (several observers), also in November and December (J.B.). In the third week of March there were at least four (G.H.-O.), a fact probably related to the presence of the herring fleet.

Iceland Gull *Larus glaucoides*. The bird reported previously from Hamilton in 1954 (*Scot. Nat.*, 67: 70) remained until 10th February, 1955 (H.M.-G.). One at Turnberry, 13th March (R.C.W.). Two in Ayr harbour from 13th to 22nd March (G.H.-O., M.F.M.M., H.M.-G.). All were immature.

Little Gull *Larus minutus*. An immature bird at Ballantrae on 10th December (R.C.W.). Mr. Walls writes: " I had an excellent view of the immature-kittiwake-like markings on the wings, the black bar across the tip of the square tail and the small dark bill." It fed from the surface of the water: black-headed gulls *L. ridibundus* were present for comparison of size.

Black Tern *Chlidonias niger*. One on Picketlaw Reservoir, Eaglesham, 26th September. The dark patches at the side of the breast were noted (L.A.U.).

Common Tern *Sterna hirundo*. On 6th June a nest with three eggs was found beside the Clyde above Hamilton (H.M.-G.). Although birds are present in the Hamilton area in most summers, this seems to be the first nest recorded there, or, indeed, from anywhere in Lanarkshire.

Red-spotted Bluethroat *Luscinia svecica svecica*. On 15th

and 16th June 1949 Mr. Frank Glen was able to watch a bluethroat, evidently of this race, in his garden at Ballantrae. This record was investigated by G.H.-O., who is convinced of its authenticity. Mr. Glen is an aviculturist and was able to give a description which could only apply to this bird.

White Wagtail *Motacilla alba alba*. Passage was recorded at Hamilton and at the R. Endrick mouth between 21st April and 3rd May, reaching its peak at the latter locality on 30th April when 40+ were seen, as well as fair numbers of tree pipits *Anthus trivialis* (M.F.M.M.).

Yellow Wagtail *Motacilla flava* subsp. On 8th May a bird of this species was seen at the R. Endrick mouth, Dumbarton bank: its yellow underparts and relatively short tail were clearly seen and its characteristic "seep" note heard; unfortunately its head was not observed, so the race could not be determined. Records from north of the Clyde valley are scarce (M.F.M.M.).

Red-backed Shrike *Lanius collurio*. A ♂ bird of this species was seen twice near Glasgow, on 25th September on the Pollok Estate, and on 2nd October in Newlands Park (A.H.). There appears to be only one previous record for the Clyde area. The observer has furnished us with a full description of the bird and there can be no doubt of the authenticity of his report.

Tree Sparrow *Passer montanus*. Clyde valley above Hamilton, 10th February, between five and ten, with reed buntings *Emberiza schoeniclus*. (H.M.-G.). Strathaven area, 13th November, 20+ (M.F.M.M., C.E.P.). In neighbouring parts of the Forth area three or four were seen at Buchlyvie on 27th February (I.H.) and on 1st May a pair were seen carrying nesting material to a hole in a tree near Port of Menteith station (M.F.M.M.).

THE HATTON CASTLE ROOKERY *

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THE great colony of rooks (*Corvus frugilegus*) at Hatton Castle, near Turriff in Aberdeenshire, is the largest in Britain (E. V. Baxter and L. J. Rintoul, 1953, *The Birds of Scotland*, p. 13). Its maximum limits are $1\frac{1}{4}$ miles from north to south and $\frac{3}{4}$ mile from east to west. During the national survey of rookeries in spring 1945 I counted 6,085 nests there. The count was repeated in spring 1956, mostly in May.

In 1956 the total number of nests counted was 5,790. However, this apparent slight decrease since 1945 of about 300, or about 5 per cent., is not considered really significant of a decrease in population. Though the totals are given here to the last whole number counted, in fact both are only approximations to the real totals. In these large rookeries, especially in the coniferous trees, the nests are often crammed together in great masses of sticks, that may be several yards wide or high. In such cases it is possible only to make a rough guess at the number of nests. In 1956 repeat counts were often done as a check, in a different order (e.g. starting at the top of the tree if the first count was started at the bottom). These often showed a variation in the counts of $\pm$ 10 per cent. in the same tree, and sometimes even more. Consequently both the 1945 and 1956 figures should be taken as accurate only if the limits $\pm$ about 600 are also considered.

The number of nests is a larger figure than the number of breeding pairs; in any year at Hatton many nests are unused, and what are considered to be nests from below often prove on inspection to be solid masses of sticks, presumably used in previous years and sometimes serving as foundations for new nests. When I climbed a number of spruce trees in 1945, I was surprised to find that the proportion of nests (or rather of what had been taken to be nests from ground level) that were unused was as high as $\frac{1}{5}$ in a sample of about 120. The

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proportion unused in the beech trees would probably have been less, as the old nests in the beeches are more liable to be blown out in winter gales; however, most nests are in conifers. In view of this qualification, it is estimated that the total of breeding pairs at Hatton is a good deal less than the total of nests; probably it is about 5,000 ± 500. This is of course a very rough figure; the sample was small, and quite likely the proportion of unused nests has changed from year to year, especially after a devastating gale such as that in 1953. The total of non-breeding birds remains an entirely unknown quantity.

Hatton is a long-established rookery, and for many years great numbers of young rooks have been shot there, about the time when they leave the nest. In 1944 the late owner Col. Duff reported that 8,000 young had been shot that year; the average number shot every year was 10,000, and in one year before the last war the total was 15,000. Before the actual census was undertaken, he had already estimated the size of the rookery at about 6,000 nests, with a possible maximum of 7,000 in that peak year before the war.

In 1956 the forester, Mr. Milne, said that 18,000 cartridges and bullets had been issued for the shooting that spring, and again about 10,000 young shot. After the shooting I counted about 6,000 dead and 200 injured young rooks on the ground or in the trees, without searching among the bushes or being able to count the large numbers that were dead in the nests. Mr. Milne also considered that almost as many had escaped as had been shot; though this estimate is more subjective and so less accurate, it is likely that thousands did escape. Certainly over 1,200 living young were counted by the writer on the branches out of the nests, and many were heard screaming still in the nests, long after the shooting was over, and after many had already successfully flown. At the same time a further 200 fully-fledged young were seen in fields near the rookery. It is safe to say that at the very least well over 1,500 escaped.

In every spring since 1945 the campaign for shooting young rooks has been carried out at most rookeries in north-east Scotland, and the number shot every year at the larger rookeries remains fairly constant. It is significant that the

population has evidently not decreased; at Hatton the forester considers there has even been a slight increase there since the war. The fact that it is so stable suggests that possibly a balance has been reached, with the annual removal of a crop of young merely increasing the chances of survival of those that escape. Some research on this problem would be well worth while, especially as the cost of this method of control is so great.

Since 1945 great changes have occurred in the woods at Hatton. The gale in January 1953 blew down large parts of the rookery, including one complete block that had held over 1,000 nests in 1945. During the following breeding season great numbers for the first time built nests in plantations of Scots pine, in trees often less than 30 feet high. Since then the spread has continued, till now well over half the nests are in compact blocks of pine wood, and the majority of the rest in scattered conifers.

Summary

At Hatton Castle, Aberdeenshire, the number of rooks' nests in spring 1956 was about 5,800 ± 600. About 10,000 young were shot there in 1956. At least over 1,500 young escaped shooting.

THE LUMBRICIDAE IN THE HEBRIDES

II—Geographical Distribution *

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The global distribution of the Lumbricidae is reviewed by Stephenson (1930), and the more precise distribution in the British Isles by Cernosvitov and Evans (1947). Such a phrase as " we now find them (the Lumbricidae) distributed over a considerable part of the British Isles ", used by Cernosvitov and Evans in 1947, reflects to some extent the lack of precise knowledge of the widespread distribution in Britain. Some of the first Scottish records come from the Forth area (Evans, 1910). Guild (1948) describes the presence of fourteen species in the Carse of Stirling, and later (Guild, 1951*a*, 1951*b*, and 1952) the distribution of fifteen species in Scottish pastures (two of which had not previously been recorded), from the Lothians, the Borders, and from a few sites in Perthshire, Argyll, and Ross-shire. Satchell (1955*b*) and Svendsen (unpublished) have recorded the occurrence of earthworms respectively in Lake District woodlands and a Northumberland moorland, close to the Scottish border.

The only Hebridean Lumbricid records already published are seven species from Barra, Outer Hebrides (Forrest *et al.*, 1936), and eleven species found by J. D. Robertson in Canna (Bertram, 1938), making thirteen different species in all. The distribution of the Lumbricidae in Hirta, the main island of St. Kilda, is described by the author (Boyd, 1956 in press), who records nine species, three of which, all of the genus *Dendrobaena*, were not previously reported from Barra or Canna. This paper is a supplement to another on the ecological distribution of the Lumbricidae in Hebridean soils, and incorporates those records already mentioned with others obtained from thirteen islands on the outer fringe, including four of the Inner Hebrides, and nine of the Outer Hebrides.

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At present twenty-seven species of earthworm have been identified from British soils. Of those, twenty-five are listed by Cernosvitov and Evans (1947), and the remaining two by Muldal (1952) and Satchell (1955*a*). So far sixteen species have been reported from the Scottish mainland (Guild, 1951*a*), and fourteen (excluding the disputed specimen *Allolobophora relicta* Southern) have been recorded from Ireland (Southern, 1913; Cernosvitov and Evans, 1947). Other species are undoubtedly present, distributed locally. Here eighteen species are recorded from the Hebrides, *Dendrobaena rubida* and *D. subrubicunda* being considered as separate species. Two, *Bimastus tenuis* and *D. subrubicunda* are not mentioned by Guild from the Scottish mainland, and *Allolobophora icterica*, found in one locality near Stirling has not so far been found in the Hebrides.

Large scale collections have been made by transect methods over all major soil types such as shell-sand dunes, *machair*, cultivated (enclosed) ground, grass-moor, and heather moor (peat bog), with niches in dung-pats, under stones, in marsh, and in open soil being searched. These transects were carried out in Islay (Kilchoman), Tiree (Balinoe, Barrapoll, and The Reef), Gunna, Coll (Machair Mhor), Barra (Allasdale), North Uist (Newton), Harris (Scilebost), Shillay (Harris), Scarp (Harris), Scalpay (Harris), St. Kilda (Hirta), Lewis (Ness). Minor collections were also made in the sand dunes and *machair* of South Uist (Grogorry), and Benbecula (Creagorry).

Table 1 shows the complex for all the islands in which major collections were made, together with the Canna collection (Bertram, 1938). Tiree, where more collecting was done than elsewhere, has at least sixteen species, and Shillay, the 113-acre island off Pabbay, Sound of Harris, which has never been inhabited, at least four species. The minor collections from South Uist and Benbecula show *Allolobophora caliginosa*, *A. chlorotica*, *A. longa*, *B. tenuis*, *L. castaneus*, and *L. rubellus* to be present in both islands.

No sign of endemism has so far been detected in Hebridean earthworms. All species are widely distributed throughout the world and have been given the name "peregrine" (Michaelsen, 1900) to distinguish them from the endemic. The immediate geological history of the Hebrides (Phemister,

1948; Charlesworth, 1955) suggests that during the Pleistocene and early Quaternary the whole area was blanketted by an ice-sheet, with the exception of a few ice-free *nunataks*.

Earthworms cannot survive freezing, and although exceptional records have been obtained in Kolguev, Nova Zembla,

TABLE I

Occurrence of Lumbricidae in the Hebrides, incorporating all Records

	Islay	Tiree	Gunna	Coll	Barra	North Uist	Harris	Shillay (Harris)	Scarp (Harris)	Scalpay (Harris)	St. Kilda	Lewis	Canna
A. caliginosa	x	x	x	x	x	x	x	x	x	x	x	x	x
A. chlorotica	x	x	x	x	x	x	—	—	—	—	—	—	—
**A. longa*	x	x	—	—	x	x	x	—	x	—	—	x	x
B. eiseni	x	x	—	x	x	x	x	—	x	x	x	x	—
B. tenuis	x	x	x	x	x	x	x	x	—	x	—	x	x
D. mammalis	—	x	—	x	x	x	—	—	—	—	—	—	—
D. octaedra	x	x	x	x	x	x	—	x	x	x	x	x	—
D. rubida	x	x	x	x	x	x	x	x	x	x	x	x	—
D. subrubicunda	x	x	x	x	x	x	x	x	x	x	x	x	—
E. foetida	—	—	—	—	—	—	—	—	—	—	—	—	x
E. rosea	x	x	—	x	x	x	—	—	—	x	x	—	x
E. tetraedra	x	x	x	x	x	x	x	—	—	x	x	x	x
L. castaneus	x	x	x	x	x	x	x	—	—	—	x	x	x
L. festivus	—	x	—	x	—	—	—	—	—	—	—	—	—
L. rubellus	x	x	x	x	x	x	x	x	x	x	x	x	x
L. terrestris	x	x	—	x	x	x	—	—	—	—	—	x	x
O. cyaneum	x	x	—	x	—	—	x	—	—	—	—	—	x
O. lacteum	—	x	—	—	x	—	—	—	—	x	—	x	—

x = recorded

* *A. longa* = *A. terrestris* forma *longa* (Ude)

and the north coast of Siberia (Stephenson, 1930), the probability of earthworms surviving the ice-ages in the Hebrides appears very small. Endemic species are found in southern Ireland and England which lay beyond the southern limit of ice transgression. Colonisation of soils in northern Britain probably followed closely the settlement of the ice-free land by man, since man is considered (Stephenson, 1930) to be the principal vector of earthworms. The distribution of such species as *Dendrobaena mammalis*, *Eisenia foetida*, *Lumbricus*

festivus, and *Octolasium lacteum* in the Hebrides suggests that colonisation may still be in progress.

Since the colonisation of the Hebrides by man, trading has been carried out directly with the mainland, Ireland, and probably Norway. There have also been strong inter-island trade connections. Heslop Harrison (1948), in his explanation of the presence of animals and plants with Irish affinities in the Western Isles of Scotland, overlooks the fact that strong connections existed in the days of sailing boats between the Inner Hebrides and Ireland. A member of the crew of the old sailing ship *Mary Stewart*, the remains of which are still to be seen in Scarinish harbour, Tiree, has described to the author the direct trade between the islands and Ireland in lime and farm produce. The shipment of potatoes, oats, animal fodder, livestock, implements, building materials, and in a few instances of soil to enhance gardens in the Outer Hebrides, have all played an important part in conveying earthworms to the remotest Hebrides.

The Species

Allolobophora caliginosa (Savigny). A dominant species in all islands. Both forma *typica* and *trapezoides* A. Duges are often present in the same locality. It is abundant in *machair* and cultivated soils, present in grass-moor, but scarce in dunes, and absent from peat bogs. More numerous in the open soil than in dung-pats.

A. chlorotica (Savigny). Present, yet never abundant, in *machair*, cultivated gound, and grass-moor. Although common in islands south of the Sound of Harris, it is much less so in Harris and Lewis, no records having yet been obtained from there, or from St. Kilda. Common under stones.

A. terrestris forma *longa* (Ude). Patchy in distribution both throughout the islands, and within each island. Reported from all the major islands searched, except Coll. Usually found in shell-sand loam, but colonises dune basins, and is found occasionally on grass-moor usually near derelict in-bye croftland. Not found in peat bogs.

Bimastus eiseni (Levinsen). A dominant species on moorland soils of all the major islands except perhaps Canna where

it may have been overlooked. Not found at all in shell-sand dunes or *machair*, but colonises peat cuttings. Aggregates in dung-pats.

B. tenuis (Eisen). A dominant species in dunes and *machair*, and is common on cultivated ground and grass-moor, but not on heather-moor. Not reported from St. Kilda, but one was found in a lazy-bed in Scalpay (Harris). More common in dung or under stones than in open soil.

Dendrobaena mammalis (Savigny). Present in *machair*, cultivated ground, and grass-moor in Coll, Tiree, Barra, and North Uist, but not so far recorded from Harris, Lewis, or Canna. Never abundant, it colonises the niches in dung and under stones, and has not so far been taken from open soil.

D. octaedra (Savigny). A dominant species in all islands, but not so far recorded from Canna, though it is probably present there locally. Abundant in dung in *machair*, cultivated soils, and moorland, it is also a successful colonist of shell-sand dunes and peat cuttings.

D. rubida (Savigny)—*D. subrubicunda* (Eisen). Both species, which are very closely related, are widely distributed from Islay to Lewis, occurring in small islands around the Harris coast and at St. Kilda. They are never dominant, but occur principally in dung-pats on all types of soil from shell-sand dunes to peat bogs.

Eisenia foetida (Savigny). This species has not been found to occur in natural field populations (Guild, 1951*a*), and its distribution in the Hebrides seems to confirm this. It occurs most abundantly in middens, and though a few of those were searched no specimens were found. The only records come from a compost heap and garden soil in Canna.

E. rosea (Savigny). All specimens so far obtained are forma *typica*. A comparatively uncommon species in the islands where it occurs, found usually under stones on the grass-moor. It is common, however, in St. Kilda and Scalpay (Harris).

Eiseniella tetraedra forma *typica* (Savigny). A dominant species in marshes, but not common on well drained or well grazed ground. It has been found in rank ungrazed *machair* well away from any marsh or watercourse. It occurs in dung-pats on all marshes from the dunes to the peat bogs. Recorded in all the major collections.

Lumbricus castaneus (Savigny). Common on *machair* and cultivated soils, but scarcer in dunes and moorland, and not found in peat cuttings. Has been recorded almost everywhere, but so far only one specimen has been obtained from Islay.

L. festivus (Savigny). Found as a dominant in dung-pats in dunes and *machair* in Coll, but except for a few collected in dung on the grass-moor in Tiree, the species has not been found elsewhere. The species, together with *O. lacteum*, clearly possesses a restricted geographical range in the Hebrides. Its distribution in the West Highlands and Inner Hebrides is unknown except for local occurrences in Coll and Tiree, but its complete absence from the ten islands searched in the Outer Hebrides seems to suggest that *L. festivus* has not yet colonised Hebridean soils on the scale of most other species. Guild (1951*a*) observes that this species is scarce and localised on the British mainland, and its sparse occurrence in the Hebrides stands out in contrast to the co-incidental abundance and ubiquity of *L. rubellus*.

L. rubellus (Hoffmeister). A dominant species in all islands searched from Islay to Lewis, and in St. Kilda. It is found colonising both unstable dune and peat bog, and is abundant in *machair*, cultivated soils, and grass-moor. It is found in dung-pats, under stones, in open soils, and is present in tussocks of *Armeria maritima* on sea cliffs. It is not common in marshes.

L. terrestris Linnaeus. An uncommon species in *machair*, cultivated ground, and grass moor usually near present or ruined habitation. It is more common in open soils and under stones than in dung-pats. Evans (1948) and Darwin (1881) have shown this species to be a deep burrowing species, and its lack of success in colonising Hebridean soils may be caused by the very shallow soil depth overall.

Octolasium cyaneum (Savigny). Fairly common on *machair*, cultivated ground, and grass-moor, but not in dunes or heather-moor. More common under stones than elsewhere. It has been recorded only once in the same locality as the related species *O. lacteum*, in Tiree, and then only by a single specimen of the latter.

O. lacteum (Orley). Local in distribution. Recorded from

Tiree (one mature specimen), Barra, Scalpay (Harris), and Lewis. Most common under stones in peaty cultivated soils and on the grass-moor.

Acknowledgements

The author is deeply indebted to Nature Conservancy for a grant to cover ecological research in Hebridean soils, of which this is but a small part, and to Dr. J. D. Robertson for helpful criticism.

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ZOOLOGICAL NOTES

Dragonflies recorded from the Isle of May.—So far, only two species of dragonfly have been recorded with certainty from the Isle of May. They are *Sympetrum fonscolombii* (Selys) and *Aeshna caerulea* (Stroem).

The occurrence of the *Sympetrum* was reported 44 years ago by W. Evans (*Scot. Nat.*, 1912: 12-14), who saw two specimens on the island on 17th August 1911, and captured one of them, a female. Another red dragonfly seen on the May by Miss E. V. Baxter on 13th September 1911, is likely to have been the same species. *S. fonscolombii*, the red-veined sympetrum, occurs in Britain only as a migrant or wanderer, probably reaching us from the Mediterranean region. It is described by Cynthia Longfield (1949, *The Dragonflies of the British Isles*), as " one of the rarer migrants and the most brilliantly scarled-red of any of the darter dragonflies ". It usually arrives in July in the years it visits Britain, but sometimes in June and also in August. Exceptionally, it has been seen in September and October. The most striking invasion was in July 1911, the year the species was reported from the May.

The single specimen of *Aeshna caerulea*, the blue aeshna, obtained on the May was caught in the Bain bird trap on 11th September 1953, by A. G. S. Bryson, M. I. Kinnear and G. Waterston, and named at the Royal Scottish Museum. Longfield stated that it is the rarest of the British aeshnas and is found in only a few counties of Scotland (Sutherland, Inverness, Argyll, Perth and perhaps Ross). As it is found also throughout North Europe it is quite possible that it reached the island from overseas.

Dr. E. V. Baxter has informed me that she and Miss L. J. Rintoul saw on the Isle of May on 30th September 1908 a large dragonfly with blue, green and gold on its body. Clearly, this could not have been *Aeshna caerulea*, but may well have been one of the other species in the genus, perhaps *A. cyanea* (Mueller), the southern aeshna.—W. J. Eggeling, Edinburgh.

Spiders new to Inverness-shire.—On 13th June 1955 I collected some spiders from the wooded slopes on the north bank of Loch Ness, some miles outside Inverness on the Fort Augustus road. In less than two hours, twenty-two species were taken; four of these (marked by asterisk) were new to Inverness-shire:

Ciniflo fenestralis
Clubiona terrestris
* Clubiona compta
Zora nemoralis
Oxyptila sp. (immature)
Heliophanus flavipes
Neon reticulatus
Lycosa lugubris
* Pirata hygrophilus
Textrix denticulata
* Hahnia helveola
Meta segmentata
Meta merianae
Theridion sisyphium
Theridion pallens
Pocadicnemis pumila
Monocephalus fuscipes
* Microneta viaria
Lepthyphantes obscurus
Lepthyphantes zimmermanni
Lepthyphantes flavipes
Linyphia peltata

A. M. Wild, Staffordshire.

A Spider Collection in the Black Wood of Rannoch.— On 14th and 15th June 1955 I made a collection of spiders in the Black Wood of Rannoch, Perthshire. I found a promising-looking area about four miles from Kinlochrannoch, and searched on the bark of large pines and amongst thick damp moss. The vegetation was very wet on 14th; on the 15th the sun was bright and the catch of spiders much better. The following were taken:

Ciniflo fenestralis
Dictyna arundinacea
Segestria senoculata
Drassodes lapidosus
Philodromus aureolus
Salticus cingulatus
Lycosa pullata
Lycosa nigriceps
Pirata hygrophilus
* Episinus angulatus
Dipoena torva
* Steatoda bipunctata
Theridion sisyphium
Theridion pallens
Robertus lividus
Tetragnatha sp. (immature).
Meta segmentata
Meta merianae
Zygiella stroemi
* Dicymbium nigrum
Pocadicnemis pumila
* Oedothorax gibbosus (or tuberosus)
* Hilaira excisa
* Hillhousia misera
Syedrula innotabilis
* Meioneta beata
Lepthyphantes obscurus
Lepthyphantes zimmermanni
Lepthyphantes ericaeus

Those marked with an asterisk are new records for Perthshire. In this list *Episinus angulatus* is not only the first authentic record for Perthshire, but also for Scotland, since existing records are in doubt and might refer to *E. truncatus*. *Dipoena torva* has been found only once before in Britain, taken in the same locality in 1944 by Mr. La Touche (Locket, G. H., and A. F. Millidge, 1953, *British Spiders*, Vol. 2). Both sexes were found on the trunks of large pines, one male and three females. The male appears to mimic the large wood ant *Formica rufa*, and one female which was taken on its web was found devouring one of these fierce ants, although the

spider was only about half the size of its prey. *Dipoena tristis* has been reported by both Millidge and Locket (*Proc. Linn. Soc. Lond.*, 158: 110-118) and Wiehle (1937, *Tierwelt Deutschlands*, 33 Teil, 183) as feeding on *Formica rufa*, and Dr. Millidge tells me (private communication) that he thinks all the British *Dipoena* species may feed on ants. Until recently, *Zygiella stroemi* had been found in Britain only in the Black Wood, where it is not uncommon in a certain area. I took both sexes. *Hillhousia misera* has only once before been taken in Scotland. The specimens of the *Oedothorax* were females, and so might equally well be *O. gibbosus* or *O. tuberosus*, since only the males of these species can be distinguished. The specimen of *Steatoda bipunctata* was taken indoors at Kinlochrannoch. —A. M. Wild, Stone, Staffordshire.

The above notes form an important addition to the fauna of the Black Wood. A recent account of spiders in this area was published by Alexander Roy (*Scot. Nat.*, 67: 19-22).—Editors.

Remains of Turtle washed ashore in Shetland.—This turtle was found on the beach at Meal, Burra Isle, in an advanced state of decomposition, lacking head, neck and part of the carapace. It was estimated by local observers to measure about 6 feet from tip to tip of flippers, to be 3 feet in length and to weigh about 1½ cwt. The shell was reported to be dark grey above and cream below. We are indebted to Dr. H. W. Parker of the British Museum, to whom a part of the carapace was sent, for the following note.—Editors.

The fragment of the headless turtle stranded in Shetland on 4th January 1956 consists of a piece of the lateral edge of the right side of the carapace at the point where the first and second costal bones meet the marginals. Parts of a costal epidermal shield and of the third marginal shield are present, together with the whole of the fourth marginal. The presence of these epidermal shields and the fact that they do not overlap eliminates two of the species of turtle that occur in the North Atlantic—the luth and the hawksbill. Of the remaining species, common loggerhead, Kemp's loggerhead and green, the last mentioned is the species to which the specimen most probably belongs.

This identification is based on the shape and proportions of the fourth marginal shield, the colour and texture of the " tortoise-shell " and the mottled appearance of the hind limbs as they appear in the photographs; it must be regarded as probable rather than

certain. Records of the natural occurrence of the green turtle on the coasts of North-west Europe are controversial. There are no authentic records from the British coast and some, at least, of the records from the Dutch and Belgian coasts derive from specimens that had been in captivity (there were lead tags on their flippers) but had presumably died whilst on their way to market and been thrown overboard. It has been suggested (Parker, 1939) that the turtles washed ashore in North-west Europe, where there are no resident turtle populations, are transatlantic strays carried over in the Gulf Stream Drift, and that the green turtle, being exclusively herbivorous, is the one species that could not make such an ocean crossing but would starve to death on the way. The stranding in Shetland accordingly presents two problems: was it undoubtedly a green turtle and, if so, was the animal feral? The fact that it was headless, but not otherwise mutilated, suggests the possibility that it had been butchered but jettisoned for some unknown reason.

Records of turtle strandings in Britain in recent years will be found in

(*a*) Parker, H. W., 1939. Turtles stranded on the British coast, 1938-1939. *Proc. Linn. Soc. Lond.*, Sess. 151, Pt. 2, 5; 127-129.

(*b*) Wilson, D. P., 1947. The Portuguese man-of-war, *Physalia physalis* L., in British and adjacent seas. *J. Mar. biol. Ass. U.K.*, 27: 139-172 (turtles, p. 160).

(*c*) Stephen, A. C., 1953. Scottish turtle records previous to 1953. *Scot. Nat.*, 65: 108-114.

Sooty Shearwaters in the Pentland Firth.—There are still rather few records of sooty shearwaters (*Procellaria grisea*) in the waters off the north of Scotland, and the following observations therefore seem worth recording. On 22nd August 1955 I travelled in the SS. *St. Ola* from Stromness (Orkney) to Scrabster (Caithness), and during the 25-mile crossing I saw single sooty shearwaters five times, at long intervals. The chances are that they were all different birds, since they paid no attention to the ship, but continued on their way. The weather was fine, hot, and calm, and all five passed the ship at distances of between 50 and 250 yards. I noted their long narrow black wings, with somewhat paler linings below, and the slightly paler bases of the primaries; and there were Manx shearwaters for size-comparison. The sooty shearwater is a bird well known to me.

The first was seen not far south of Rora Head, Hoy, and the last two within five miles of Dunnet Head.—V. C. Wynne-Edwards, Aberdeen.

Increase in Fulmars in North-east Scotland.—In recent years there has been a great increase in the population of fulmars (*Fulmarus glacialis*) at a few of the oldest breeding stations in north-east Scotland. On 20th August 1946 at the Pennan Head colony in Aberdeenshire, I counted a total of 239 occupied sites and about 220 young on the cliffs between Strahangles Point and the county boundary (James Fisher, 1952, *The Fulmar*, 188). On the same day the colony at Troup Head, Banffshire, held 124 young on 135 sites, stretching along the cliffs from Crovie Head to the county boundary near Pennan. Ten years later, in the third week of July 1956, the counts were repeated. The Pennan Head colony held 714 occupied sites, the Troup one 678 sites. It was too early to make a count of the number of young birds, as many were undoubtedly out of sight below brooding adults. Certainly there were over 200 young at each colony.

The almost four-fold increase in ten years, from a total of 374 sites at both colonies in 1946 to a total of 1,392 in 1956, is in fact deceptively great. The 1946 counts were done in August when the number of occupied sites is usually much smaller than in July; in the latter half of August in a Shetland colony, the number of sites was about two-thirds of the total in the latter half of July (*The Fulmar*, 486). However, even if this is taken into account, the increase is still very large, of the order of two and a half times. Fulmars now breed on all cliffs from Crovie Head to the bay at New Aberdour, five miles to the east. On some parts of the cliffs they are the commonest birds.—Adam Watson, Aberdeen.

Fulmar inland in Aberdeenshire.—On 28th June 1956 at Foucausie, Grandhome, a fulmar (*Fulmarus glacialis*) flew over the house from a south-easterly direction. Through binoculars the tube-nose was plainly seen. It circled the house several times, then flew off in a north-easterly direction. Grandhome lies to the north-west of Aberdeen and is three miles from the coast and out of sight of the sea.—Elizabeth A. Garden, Aberdeen.

Fulmar and Herring-Gull Eggs in the same Nest.—At Balcary, Kirkcudbright, on 3rd June 1956, my son Andrew and I

came upon a fulmar (*Fulmarus glacialis*) sitting in a nest of a herring-gull (*Larus argentatus*). More to our surprise the fulmar was brooding two eggs of the gull along with its own egg. The fulmar's had every appearance of a fresh egg, while those of the gull had been slightly incubated and then become a trifle stale. This might make it seem that the fulmar had actually dispossessed the gull.—Ernest Blezard, Blackwell, Carlisle.

James Fisher (*The Fulmar*, 406), recorded a few observations of fulmars incubating herring-gulls' eggs as well as their own, including one fulmar near Arbroath sitting on its own egg plus two herring-gulls' eggs.—Editors.

Early Cormorant nesting in Kirkcudbright.—Cormorants (*Phalacrocorax carbo*) had deserted the cliffs at Balcary, Kirkcudbright, by 3rd June 1956, evidently in favour of the conglomerate cliffs of Orroland, where on 3rd April, Ralph Stokoe and I found about 100 established. On 15th April when, joined by Austin Barton, we revisited that place, their numbers had doubled. Four nests now held eggs, two clutches of four and two of three eggs. Two clutches of four and three eggs were several days incubated even at this early date. The nests were formed mainly of scraps of dried bracken (*Pteris aquilina*), an unusual material.—Ernest Blezard, Carlisle.

The Handbook, 4: 4, records breeding time as "latter half April and early May in southern part of Brit. Is., exceptionally beginning April . . . in Scotland latter half May to early June." —Editors.

Increase in Tufted Duck (*Aythya fuligula*) in Sutherland.—In June 1955, in the Durness area, we found nineteen or twenty pairs. In 1939 there were only about half-a-dozen pairs (*The Birds of Scotland*, 416).—M. F. M. Meiklejohn and J. K. Stanford.

Large Gathering of Whooper Swans in Aberdeenshire.—On 10th October 1955 118 whooper swans (*Cygnus cygnus*) were counted on the Loch of Strathbeg. By 16th November this number was doubled, 241 whoopers being counted. A week later on the 22nd the number had risen to 326. A visit on 28th December revealed that none remained on the loch, although 46 were found

about two miles away. *The Birds of Scotland* states that 176 have been recorded there in the past. Regular visits were made to Strathbeg during the winter of 1954-55 but only fourteen were seen and those in early February.—Elizabeth A. Garden, Aberdeen.

Return of Bewick's Swans in Aberdeenshire. On 28th December 1955 a party of Bewick's swans (*Cygnus bewickii*) consisting of two adults and three juveniles, was found about two miles from Rattray Head. A similar party (? the same) was found at the same locality on 1st March 1956. (See *Scot. Nat.*, 67: 112-113, for 1954 record.)—Elizabeth A. Garden, Aberdeen.

Sandwich Tern Breeding in Sutherland.—On 16th June 1955, we saw a pair of Sandwich terns (*Sterna sandvicensis*) among a colony of arctic terns on an island in a freshwater loch near Durness. We reported the fact to Mr. Gerald Holt, who later found a nest with two eggs, which successfully hatched on 2nd July. There appears to be no previous breeding record for the north coast of Scotland.—M. F. M. Meiklejohn and J. K. Stanford.

Stonechats in East Fife.—During the years 1952, 1955 and 1956 I have followed the breeding success of a few pairs of stonechats (*Saxicola torquata*) on the stretch of coast between Cellardyke and Fifeness in East Fife.

In 1952, two pairs were nesting within half-a-mile of one another in the Caiplie area. The first pair raised two broods successfully, six nestlings from a clutch of six leaving the nest on each occasion. They flew in the third week of May and the second week of June respectively. The second pair lost its first brood to an unknown predator but was successful with its second laying, five young (hatched from a clutch of five eggs) flying in the third week of June. One of the young was recovered in mid-November in Lancashire.

Throughout the winter of 1954-55 there was a pair of stonechats at Fifeness. They raised two broods successfully in the spring of 1955, five young from a five-egg clutch leaving the nest in the second week of May and six young from a six-egg clutch flying in the second week of July. All the young were ringed before they left the nest. No attempt was made to ring the adults.

In the winter of 1954-55 there was only one pair of birds in the Caiplie area, where there had been two pairs in 1952. Both birds were in evidence until the early spring of 1955, when the female disappeared. The male failed to find another mate and was seen, alone, each month up to and including June. On 24th July, however, there were two birds present. The female was a young bird with a bright new ring. I think it a fair guess that she was one of the first brood of the Fifeness pair, nesting about $3\frac{1}{2}$ miles to the north-east, which flew in May (young of the second brood were still, in late July, at Fifeness in the company of their parents). The cock bird was in an excited state; he was watched " seeing off " a cock wheatear (*Oenanthe oenanthe*) and was aggressively territorial in his behaviour when people and dogs approached. The female appeared quite uninterested in his doings. Both birds were seen again in August but not thereafter. There has been no pair in the area since.

The adult stonechats at Fifeness remained there throughout the winter of 1955-56; they were seen at least once each month from November onwards. Numbers in the East Fife area were augmented as usual in March, by passage migrants; for example there were three pairs between Crail and Fifeness on the 8th (Frank Beard in *Edin. Bird Bull*, 6: 48) but none of the extra birds remained to breed. On 14th April the female of the Fifeness pair was sitting on five eggs, only a few yards from the second of the 1955 nest sites; the male was much in evidence and very noisy. Two weeks later the nest was found to have been destroyed, just before hatching, by a fire lit to burn gorse. The birds had moved off a couple of hundred yards to a new territory, in which, on 19th May, a nest containing young about three days old was located. The male bird was again very demonstrative. The ring was so obvious that I am quite certain he was not the same male seen previously. Possibly he may have been a bird from one of the 1955 broods.

The chief object of this note is to suggest that the systematic ringing and colour ringing, and subsequent observing of small isolated populations of breeding stonechats might well pay handsome returns in the form of information about the life histories of these birds. The ringing of the young presents no problem and, with the exercise of a little ingenuity, the ringing of adult birds should not be too difficult; meal-worms in Potter traps near a favourite perch might be worth trying.

According to *The Handbook*, although the stonechat is " partly resident as a species, there is considerable evidence that individuals seen at other seasons in most areas are not those that breed there in

summer, though some adults do appear to be residents ". I feel fairly confident that in the cases noted above where I have indicated that breeding birds over-wintered, they did in fact do so, although, since the birds were not ringed, proof is lacking. I base my belief on the constantly similar behaviour of the birds, their uniform addiction to certain points of vantage, and their similar reactions on our visits to various types of disturbance. It should be noted that very little evidence is yet available from ringing on the movements of British stonechats. From Sir Landsborough Thomson's recent paper on " The migrations of British chats as shown by the results of ringing " (*Brit. Birds*, 49: 63-73), it would appear that the main contention of *The Handbook* statement requires confirmation.

Although stonechats are still relatively rare birds in East Fife, the species is recovering in numbers in some parts of Scotland. On 3rd May 1956, when motoring along the 20-mile stretch of road between Kinlochewe and Grudie Bridge in Wester Ross, I saw four pairs of stonechats all feeding flying young.—W. J. Eggeling, Anstruther.

Garden-Warbler in Sutherland.—On 12th June 1955 a garden-warbler (*Sylvia borin*) was singing all the morning in the small wood behind Scourie House and good views were obtained of it. A bird of this species was heard in a neighbouring wood in 1954 by Dr. I. D. Pennie and Mr. D. G. Andrew (*Vol.* 66: 191). —M. F. M. Meiklejohn and J. K. Stanford.

Spotted Flycatchers in Orkney.—On 7th July 1955 in Binscarth Woods, Finstown, Orkney, I saw a cock and hen spotted flycatcher (*Muscicapa striata*) feeding three fledglings that can hardly have left the nest more than a day or two previously. In my mind there is no doubt that this pair of spotted flycatchers nested in the woods in the summer of 1955. They breed only occasionally in Orkney.—John Boyes, Newcastle.

The previous few breeding records of this species in Orkney were collected by David Lack (*Ibis*, 85: 21); Binscarth was one of the localities mentioned.—Editors.

Red-backed Shrike (*Lanius collurio*) in Perthshire.—On 2nd June 1956, while motoring in Strath Bran a few miles east of Amulree on the Dunkeld road, I was surprised to see a male red-backed shrike

which flew out of the hedge and in front of the car for a short distance. It was close enough to identify with certainty, but by the time I had stopped, it had disappeared in some trees close to a farm.—J. K. Stanford, Wiltshire.

There is a previous record from North Perth (*Scot. Nat.*, 63: 129).—Editors.

Crossbills at Dawyk, Peebles-shire.—Crossbills (*Loxia curvirostra*) were first located in Scots pines at Dawyk on 20th April 1954, when four were seen together. These were probably remnants of the 1953 " invasion ", which, having found an ideal habitat, had stayed on into the breeding season. Although they were seen again that month there was no indication of breeding. There were at least two adult males.

In 1955 crossbills were seen on three occasions, in April, June and July. No estimate of their numbers could be made, because although they were frequently seen, never more than two could be located at once. On 15th June a young bird of the year was seen, which seemed to indicate breeding in the area.

On 28th March 1956 the first proof of nesting in the area was obtained when a female was seen building a nearly-completed nest in a Scots pine overhanging the main road. The nest was about 30 feet up and was situated in the matted twigs at the end of a fairly substantial branch. The bird appeared to have reached the stage of lining the nest, and moss and lichens were collected from nearby trees for the purpose. A male attended the female for much of the time, but gave no help in nest-building. Unfortunately I was unable to return to the area until 20th May, by which time of course there would have been no activity about the nest whether breeding had been successful or not. However, on 3rd June, I. V. Balfour-Paul saw a young crossbill of the year, which may have been from this nest.

On 28th March 1956 mating was observed between the female with the nest and the male, and also between the same male and another female—an interesting point, proving polygamy in the crossbill.—John Baird, Edinburgh.

According to *The Birds of Scotland*, there is no record of crossbills breeding in Peebles.—Editors.

INDEX

Note.—Species of birds and mammals are listed under their English names; there is a collective entry under MAMMALS and another for each other vertebrate class (except birds). Invertebrates are collected under their respective classes (e.g. SPIDERS, CRUSTACEA), and in addition there is an entry for each order of insects. References to plants are grouped under BOTANY.

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