

LADY ISLE:

There are still a few rabbits after myxomatosis. 'Bats' have occasionally been seen at the beacon.

HORSE ISLAND:

'Bats' used to roost in the tower, but I was never able to catch any for identification. I have seen no rabbits since myxomatosis. I have never seen any brown rats here, but I was told locally that 'there used to be some'.

PLADDA:

The water-shrew used to occur here in the 1920s (*Scot. Nat.*, 1934: 99-100) but I have no recent records. Pipistrelles have occasionally been taken at the light.

HOLY ISLAND:

The pygmy shrew occurs. The pipistrelle is fairly common, and the long-eared bat has been identified. The rabbit and the brown rat are common.

INCHMARNOCK:

The pygmy shrew is fairly common. 'Bats' are fairly often seen. The rabbit is common. There are some house mice, but the brown rat seems to have been recently exterminated.

LITTLE CUMBRAE:

The pygmy shrew occurs. 'Bats, presumably the common ones' are occasionally seen at the light, and have been killed there. The rabbit and the brown rat are common.

BURNT ISLANDS:

The brown rat is fairly common.

EILEAN DEARG:

I found a partly decomposed brown rat here, but have no other evidence.

SGAT MOR:

The brown rat is fairly common.

EILEAN BUIDHE:

No record.

GLAS EILEAN:

No record.

EILEAN AOGHAINN:

Rabbits have been known to occur here since the end of the last century, but I have seen none in the last ten years; in 1958 I saw one.

I have no evidence of the occurrence of the hedgehog, mole, common shrew, stoat, weasel, wood-mouse, or voles on any of the small islands, although these all occur to some extent (sometimes after known introduction) on the three large Clyde islands of Arran, Bute and Cumbrae.

POPULATION STUDIES OF CLYDE SEABIRDS

By J. A. GIBSON

The Firth of Clyde, with its magnificent seabird rock of Ailsa Craig, its clusters of islands large and small, and the great sea-lochs stretching into the heart of the Argyll hill country, is a wonderful area for seabirds. Twenty-one species nest, or have nested, in the area—indeed, all the British-breeding seabirds except Leach's petrel and the skuas. Despite this wealth of seabird fauna, however, detailed knowledge of their exact status has always been marginal, largely owing to their inaccessibility on the islands and in south Argyll. McWilliam, in his 'Birds of the Firth of Clyde' emphasised that this was by far the most outstanding gap in our knowledge of Clyde birds, a fact to which he drew attention on several subsequent occasions. The area around Glasgow has always been well-known, but the Clyde islands and large areas of south Argyll were in parts almost entirely unworked.

In the mid-1940s McWilliam suggested to me that the time had come to fill this gap, and that I should undertake the task. Since I had been interested in seabirds above all other groups for as long as I could remember, and had been visiting Ailsa Craig since I was a small child, I at once accepted his offer and challenge, and this group of studies sets out the results I have achieved in the last twenty-five years.

From the outset my aims were simple; to locate and chart all the nesting colonies of Clyde seabirds and, having done so, to make a detailed census of their total population by as accurate methods as I could devise. When I started this work the breeding-distribution of our Clyde seabirds was most imperfectly known, and our knowledge of their populations, apart from some pioneer work being done by James Fisher on the Ailsa gannets, was almost precisely nil, so it was almost entirely new ground that had to be covered.

The scope of the work over the twenty-five years

ultimately fell into three parts—the first five years for a detailed survey of Ailsa Craig, the next ten years to locate and chart all the other colonies, and the last ten years to make the total census in some detail, although these all overlapped to some degree.

Right from the start it was obvious to McWilliam and myself that the whole project would depend entirely on the success made of the Ailsa Craig survey, and for the five years from 1946 to 1950 I spent almost the entire summer each year on Ailsa, mostly for the survey of the Craig itself (see *Scot. Nat.*, 63: 73-100, 159-177, 64: 61. 1951-1952), but also to experiment with census methods for the different groups, such as the auks (see *Brit. Birds*, 43: 329-321). For the next ten years I charted every breeding colony that could be discovered in the Clyde. This entailed visiting every island, every sea-cliff and every sizeable hill-loch in the Clyde area. There are many hundreds of these; the islands alone range from the size of Arran and the importance of Ailsa down to small islets barely separated from the mainland at low water, and many are quite unmarked as such on the Ordnance Survey maps. During this period I visited all the breeding colonies many times and, in addition to continuing the annual Ailsa Craig census of the gannets and some other species, published a long series of papers on the other Clyde islands. Finally for the past ten to twelve years the work has concentrated on counting all the known colonies; each year endeavouring to make a total count of the population of at least one species, and in several years to attempt a total count of all species. In 1951 I made my first attempt at a total census, with some degree of success, and was able to repeat this in greater detail in 1958, 1960, 1964, 1968 and 1969. Fortunately, in 1969 my census work coincided with 'Operation Seafarer', when an attempt was made to count all the breeding seabirds in Great Britain.

At this stage it is very necessary, and indeed a pleasure, to acknowledge my complete indebtedness to the Rev. J. M. McWilliam, not only for providing the initial impetus for the task, and for administering numerous verbal chastisements whenever he felt I was slacking on the job, but also for the immense amount of practical assistance he

gave me. In 1951, after he had read the original draft of my Ailsa Craig survey, and apparently approved of it, he passed on to me the cumulative card index of his entire Clyde bird notes, and also an enormous list of all his contacts and correspondents—shepherds, keepers, fishermen, landowners, farmers, etc.—throughout the Clyde. Each of these had taken half a lifetime of work on Clyde birds to compile. He did much more than this, however. He sat down and wrote to nearly all his contacts, and asked them to continue working with me as they had done with him in the past. In one year alone he wrote over a hundred personal letters on my behalf. If there is any merit in the seabird population studies that follow, and in all my other work on Clyde birds, then I hope I have made it abundantly clear that much of this belongs to McWilliam. He left the Clyde area for Tynron, Dumfriesshire, in 1938, but his influence and interest in Clyde birds continued for another thirty years until the day he died. I had the privilege of enjoying the closest personal friendship with 'The Minister' for a quarter of a century, and shall be eternally grateful to him and to his wife, Mrs Alice McWilliam, for many, many things.

This set of studies, therefore, sets out a summary of what I believe to be all that is known of the detailed breeding-distribution and population of each species of sea-bird in the Clyde area. It will appear as a series of papers in the *Transactions of the Buteshire Natural History Society*. This seems to me to be particularly fitting. The Buteshire Natural History Society is the natural history society of the Clyde islands, and the Clyde islands are the stronghold of the Clyde seabirds. Moreover, it was with the Buteshire society that the Rev. Mr. McWilliam was so closely associated for so long, and from Bute that he did his pioneer work on Clyde birds. McWilliam attained well-deserved eminence and high office in a great many societies and organisations, but to the end of his days the Buteshire Natural History Society remained especially dear to him.

I am grateful to a great many observers who have assisted me over the years with the Clyde seabird survey, and I hope to make suitable public acknowledgment of this in due course. Meanwhile, if anyone can add to the informat-

ion contained in this survey I shall be extremely grateful if they will communicate with me.

This first group of studies comprises the less common auks and terns, and the cormorants.

1. BLACK GUILLEMOT *Uria grylle* (L.)

Glenimore:

In 1898 John Robertson found a nest with two eggs on Glenimore and this was considered to be the first record of the black guillemot nesting in the Clyde area (*Trans. Nat. Hist. Soc. Glas.*, 5NS: 197-204). In 1900 Robertson found two nests. The black guillemot was known locally to be nesting here in the 1930s. John Bain knew of a few pairs nesting on Glenimore in the early 1940s. There were at least a dozen pairs in 1951, in 1953, and in 1955 (*Glasgow Bird Bull.*, 5: 11-12), five pairs in 1958 and 1960, apparently only one in 1964, three pairs in 1967, and four pairs in 1968 and 1969.

Sanda:

Well known as nesting on Sanda in the 1930s. By 1944 John Bain knew of eight pairs at the foot of the lighthouse rock and odd pairs among the boulders as far as the east point of the island. A slow but steady increase since then. At least 12 pairs in 1955, over twenty pairs in 1960, and at present there are at least fifty pairs—mainly on the west side and at the foot of lighthouse rock.

Sheep Island:

Possibly nesting by 1944. At least two pairs in 1953. None seen in 1958, but one pair in 1960. Three pairs in 1967, 1968 and 1969.

Mull of Kintyre:

Two pairs nesting in 1951, and 'well known' for many years before that. No great increase over the years; never more than four pairs known. None at all seen in 1960. Three pairs in 1968 and 1969.

South Ayrshire Cliffs:

A well-established breeding site along the south Carrick cliffs. Ten or twelve pairs known to nest since at least 1920. Numbers pretty static, and still apparently about the same.

Little Cumbrae:

Old established breeding site. J. P. Ritchie found two pairs nesting in 1924. Still two or three pairs nesting but no obvious increase.

Ailsa Craig:

Reported as frequenting Ailsa for well over a century and breeding long suspected, but the first genuine proof of breeding was one young bird seen in 1954 (*Glasgow Bird Bull.*, 4: 11). Since then a steady increase has been noted. One young bird again in 1955; three in 1956; two in 1957; seven in 1958; nest found at the Loutin' Stone and later six young birds seen in 1959; eight in 1960; three nests near

Loutin' Stone in 1961. The increase has continued. Eight young in 1965; six in 1967; five nesting sites were noted in 1968. There were certainly ten pairs nesting in 1969. I have kept a very close check on Ailsa Craig for the past twenty-five years, and that is a very genuine recent colonisation and increase.

Pladda:

Two pairs nesting in 1946 and 1947 appears to be the first breeding record (*Glasgow Bird Bull.*, 3: 55-56). There are certainly half-a-dozen pairs breeding now and there may well be more. On one occasion in 1966 Ronald Macdonald saw over thirty birds on the sea around Pladda.

Arran:

Robert Gray (in Bryce's *Geology of Arran*, 1872) said 'A few pairs nest on the west side of Arran, where I have seen them in full breeding dress'. Whatever it may have done then I do not think any nest there now, since McWilliam and I have each searched for it repeatedly without success. One or two pairs could easily be missed, however. Earlier, Gray had stated (*Birds of Ayrshire and Wigtownshire*, 1869) that he had 'reason to believe that one or two pairs breed in the rocky fissures near Kildonan, in Arran', and Captain Archie Girvan told McWilliam in 1934 that he had seen birds fly out from Dippen Head (near Kildonan). In my *Birds of the Island of Arran* (1955) I asked for information about the black guillemot, and this prompted Dr. J. M. Leith to tell me that he had known the black guillemot to nest at Dippen Head since at least the early 1930s, and had seen nests many times. Acting on information supplied by Dr. Leith I too visited this site and was able to confirm breeding, so perhaps Robert Gray was correct after all. Only one or two pairs breed, and one pair has occupied the same nesting crevice for the past few years.

Eilean Loain, Loch Sween:

Two or three pairs of black guillemots have nested here since at least 1945, when they were shown to me by the late John Fraser, of Oban. This, of course, lies outside the Clyde sea area, and is on the very fringe of the Clyde faunal area, but is included here for the sake of completeness.

Eilean Aoghainn, Loch Fyne:

For twenty-five years I have repeatedly seen black guillemots off this island (near Minard) during summer but have never been able to prove breeding by finding nest or young. Further information would be welcome.

Summary:

The black guillemot was first recorded nesting in the Clyde area at Glenimore in 1898. It now certainly nests at nine sites in the Clyde sea area, and possibly at others. During the past twenty years

there has been a very genuine increase in population. The total Clyde breeding population within recent years has been as follows:

1951	.....	c. 40 pairs
1958	.....	c. 45-50 pairs
1960	.....	c. 45-50 pairs
1964	.....	c. 60 pairs
1968	.....	c. 100 pairs
1969	.....	c. 100 pairs

2. PUFFIN *Fratercula arctica* (L.)

Ailsa Craig:

Ailsa was one of the historic puffin colonies, but its recent history makes melancholy reading. I have already dealt with its history in some detail (see *Scot. Nat.*, 63: 98-99) and shall not repeat this here. Suffice to say that the decline can be traced to the combined effects of man, rats, oil and gulls. From possibly a quarter of a million birds in the 1860s there were only thirty birds on the whole island in 1947. The numbers picked up a little and there were some 250 pairs nesting at twelve sites in 1950, some 270 pairs in 1951, and about 300 pairs in 1953. I had hopes that the puffins would recover, but unfortunately the population again steadily declined. I continued annual counts and the puffins were down to under a dozen pairs by 1961. Fortunately, however, they never completely died out on Ailsa. (Reports in various publications about the puffin's extinction on Ailsa can be traced to casual visits, or lack of experience of the Craig, and are not true.) A few still nest every year, and seem to remain faithful to two particular nesting sites, but the ultimate end can hardly be long delayed, and the only hope for the Ailsa colony must surely rest with recolonisation from the other Clyde colonies. Recently there have been twelve pairs in 1967, possibly seven pairs in 1968, and nearly twenty pairs in 1969, all at two sites.

Glumimore:

The puffin was the first of the auks to colonise the Sanda group of islands in any numbers; they began nesting on Glumimore about 1920. They increased steadily and their population was in the region of two hundred pairs by 1955. A very substantial rock fall on Glumimore in the early 1960s destroyed a large part of their nesting area, and there were only about thirty pairs on the island in 1964, but they came back again and there are certainly 125 pairs nesting on Glumimore at present.

Sheep Island:

Puffins spread to Sheep Island, apparently from Glumimore, during the 1920s. They increased slowly—about thirty pairs in 1945 and fifty pairs in 1955. After the rock fall on Glumimore the puffins seemed to go to Sheep Island, and there were about two hundred pairs on Sheep in 1964, nesting mainly in the cliffs and amongst the fallen rocks on the east side. Eventually the puffins seemed to go back to

Glumimore in some strength, and in 1969 there were just under one hundred pairs on Sheep.

Sanda:

Sanda has been an intermittent nesting site of the puffin since the mid 1940s; some years present, some years absent, for no apparent reason. The numbers are never large. The best I recorded was about twenty-five pairs in 1964. They were absent in 1966, about twenty pairs in 1968, and absent again in 1969.

Mull of Kintyre:

I found puffins nesting at the Mull of Kintyre in 1956. There seemed to be about ten pairs nesting, and the birds were widely scattered over several hundred yards. In 1960 the numbers were about the same. I could only find four pairs in 1966, but there were at least twelve pairs in 1968. In 1969 I could see no puffins at all. This is clearly an unstable breeding station.

Summary:

Puffins nest at five stations in the Clyde area. Since the near-extinction of the Ailsa colony, the Clyde stronghold is in the south Kintyre island group. The total Clyde breeding population within recent years has been as follows:

1951	.....	c. 500 pairs
1958	.....	c. 300 pairs
1960	.....	c. 275 pairs
1964	.....	c. 275 pairs
1968	.....	c. 275 pairs
1969	.....	c. 250 pairs

3. ROSEATE TERN *Sterna dougallii* Mont.

Eilans, Cumbrae:

The first roseate terns known to science were shot by Dr. McDougall of Glasgow on 24th July 1812, as they were breeding on the 'Allans' or 'Eilans', the small rocky islands in Millport Bay, Great Cumbrae, in the Firth of Clyde. The discovery was first reported by George Montagu, to whom Dr. McDougall had sent a specimen, on six unnumbered pages in his *Supplement to the Ornithological Dictionary*, 1813. Unfortunately Montagu incorrectly reported the name of the bay as 'Milford', and confused the Eilans with the Cumbraes. John Gould, in his *Birds of Great Britain*, said that the discovery took place on the Cumbraes, two small rocky islands in Milford Bay, in the Firth of Forth, thereby adding a further error. Dr. McDougall believed that roseates only formed one in a hundred of the terns breeding on the Eilans. Robert Gray, in *Bryce's Geology of Arran*, 1872, said 'This colony existed until 1848 or 1849, when, through repeated molestation, the birds dwindled to a few pairs, and were afterwards completely extirpated.'

Carradale Bay:

Gray, in his *Birds of the West of Scotland*, 1871, said "although many years have elapsed since it totally disappeared from 'The

Allans', where it was originally met with, it is still found in considerable numbers in many parts of the western counties. The principal breeding place within easy reach is situated in Kilbrannan Sound, separating Arran from Kintyre. Two or three years ago I got a basketful of eggs from this station, gathered in a few minutes; but I afterwards regretted having taken so many, as I found on leaving the place that a number of pairs of the common tern were hovering overhead, mixed with the rarer species, from which I inferred that some of the eggs at least in my basket were not those of the roseate tern." Later, in Bryce's *Geology of Arran*, he identified this site as a 'group of islets off Carradale', and said he found it in 1859. This station was entirely deserted by 1900.

Inch Moan, Loch Lomond:

Gray (1871) also said "A few pairs of this very elegant bird have located themselves on Inchmoin, in Loch Lomond, where they breed in common with the two birds just named (common and arctic terns) and the lesser and sandwich terns." James Lumsden (*Natural History of Loch Lomond*, 1895) said he had never been able to identify the roseate tern at Inch Moan.

Lady Isle:

A few pairs of roseate terns were found nesting on Lady Isle, off Troon, on 30th July 1942 by Commander G. Hughes-Onslow (*British Birds*, 36: 241). This was the first published record of roseate terns nesting in the Clyde area since Gray's time and the first record for Ayrshire, although the small series of eggs collected by Thornton MacKeith just before the war and marked 'Ayrshire' (exact locality suppressed) were almost certainly from Lady Isle. This island was subsequently taken over as a bird reserve by the Scottish Society for the Protection of Wild Birds, and the roseates increased over the years, although the numbers fluctuated a great deal. I visited Lady Isle most years and the best year known to me was 1953, when nearly ninety nests were counted. Since then the trend has been slowly downwards; some twenty pairs were still nesting in 1964, and there were at least eight pairs in 1968. In 1969 I saw one adult bird, but could not prove breeding. It was stated (*Ayrshire Arch. and Nat. Hist. Collections*, 7: 153) that the spread of the black-headed gull virtually exterminated the Lady Isle colony by 1960. This was incorrect. By 1960 the black-headed gull colony was much smaller than it had been ten years previously, when the roseate population was much higher, and roseates were still nesting in some numbers by the mid-1960s. The increase in the larger gulls may well be a factor, however.

Horse Island:

In 1952 roseate terns were found nesting on Horse Island, off Ardrossan (*Glasgow Bird Bull.*, 1: 16-17). They seemed to increase slowly, and I counted at least twelve pairs nesting in 1960. In 1961 Horse Island was taken over by the Royal Society for the Protection

of Birds as a bird reserve, and since then the roseate population has fluctuated a great deal, although, as with Lady Isle, the trend has been downwards. In 1969 there were certainly one or two adults present, although proof of breeding was very doubtful. Again, protection from the large gulls may be necessary.

Carskey Bay, South Kintyre:

In June 1953 I found two pairs of roseate terns nesting on the shore at Carskey (*Glasgow Bird Bull.*, 2: 60). They were in company with a large colony of arctic terns. Unfortunately this site became increasingly visited by holiday-makers, and the colony quickly dwindled. No roseates, and few other terns, were known to nest after 1958, and eventually the activities of a sand and gravel company put the whole site virtually out of existence.

Pladda:

I saw roseates on Pladda intermittently during the early 1960s, and in 1966 my wife and I found seven pairs nesting. This seemed to be the first year, for we had been unable to prove breeding in 1965 although there were at least half-a-dozen adults present. Three pairs were certainly nesting in 1967. Unfortunately black-headed gulls began to nest on Pladda in 1964, and by 1966 were simply swarming over the roseate nesting area; no roseates were seen in 1968 or 1969. This was absolutely infuriating, since the black-headed gull has suddenly virtually abandoned Pladda as a nesting station, for no apparent reason; there were only two nests in 1968 and four in 1969. One can only hope that the roseates will return.

Sgat Mor, Loch Fyne:

It is worth recording that several roseates were seen amongst common terns on Sgat Mor in 1948 and 1949. This fact was suppressed by McWilliam and myself in our joint notes on the birds of the Sgat Islands (*Glasgow Bird Bull.*, 1: 2-3), in the hope that the roseates might become established. Unfortunately this island came to be visited more and more often by passing yachtsmen, and all the terns left. Picnic parties from yachts are now very common on Sgat Mor all through the summer, and it is very unlikely that terns will ever nest here again.

Summary:

The first roseate terns known to science were discovered on the Clyde islands, and since then roseate terns have been reported as nesting at seven sites in the Clyde. Three of these were abandoned last century, and the other four now seem to be more or less deserted. The year 1969 was the first time for twenty-five years that I had not personally seen a roseate tern's nest somewhere in the Clyde area. The roseate tern appears to change its nesting sites very readily, however, and there may still be hope for the erstwhile colonies at Lady Isle, Horse Island, and possibly Pladda. Roseates may well turn up unexpectedly somewhere else, and should be looked for constantly. The total Clyde breeding population within recent years

has been as follows: (The apparent steady decline is slightly misleading, for the population actually rose, and then fell again, between 1951 and 1958.)

1951	c. 75 pairs
1958	c. 65 pairs
1960	c. 40 pairs
1964	c. 20 pairs
1968	c. 10 pairs
1969	c. nil (?)

4. LITTLE TERN *Sterna albifrons* Pall.

Inch Moan, Loch Lomond:

Robert Gray (*Birds of the West of Scotland*, 1871) recorded a few pairs of little terns as nesting on Inch Moan, in Loch Lomond. Since the little tern is the most marine of our terns, and usually nests close to the sea, I found Gray's record unconvincing (*Scot. Nat.*, 64: 174) and Lumsden (1895) said he had never seen it at Loch Lomond. In fairness to Gray, however, he did say "a situation like this is entirely exceptional", so his statement may well have been correct.

Ballantrae:

On 8th August 1912 two parent birds and two young little terns were seen at Ballantrae, south Ayrshire, and one young bird was shot (*Zoologist*, 1912: 213). In 1922 Ritchie and McWilliam found two or three pairs preparing to nest on the shingle. In 1923 breeding was proved by Hughes-Onslow, and in 1928 by John Robertson. I have visited this colony regularly for the past twenty years. It has remained fairly small, with usually up to four nests each year, and sometimes less. The nesting area has now been included in a wildlife reserve by the Scottish Wildlife Trust.

Rhunahaorine Point, Kintyre:

Mrs. J. Macalister Hall saw a pair and found a nest with two eggs at Rhunahaorine in May 1938. I found one nest and saw three birds in the air in 1951. There were two nests in 1958, and at least four pairs were nesting in 1964. One nest was found in 1968, and two in 1969, although more birds were seen in the air. This site is fairly well protected.

Carskey Bay, South Kintyre:

Two pairs of little terns were almost certainly nesting near the arctic tern colony in 1957, and one nest was found in 1958. One bird was seen in 1962, although the sand and gravel company's activities had more or less driven all the terns away. None was seen in 1964, but at least one bird was present, further along the shore from the old site, in 1969, and a few common terns were actually nesting, so the little terns may yet make a comeback.

Lady Isle:

There is an old unconfirmed record of the little tern nesting on

Lady Isle in the early 1920s. I have been unable to substantiate this, and shall be grateful to receive any additional information.

Summary:

Little terns have been reported as nesting at five sites within the Clyde area. One of these was abandoned last century, and another is very doubtful. At present the little tern nests regularly at two sites and has a tenuous hold on a third. The population remains small, and remarkably static. The total Clyde breeding population within recent years has been as follows:

1951	c. 4 pairs
1958	c. 7 pairs
1960	c. 5 pairs
1964	c. 8 pairs
1968	c. 6 pairs
1969	c. 6 pairs

5. SANDWICH TERN *Sterna sandvicensis* Lath.

Firth of Clyde:

Gray (*Birds of the West of Scotland*, 1871) implies that in former times the sandwich tern was a common nesting species in the West of Scotland, and in the Clyde area; "Some of the best known haunts, indeed, including . . . some of the islands on the Firth of Clyde on the west, have become entirely deserted; and it is questionable whether there is any breeding station in Scotland at present equal to those of twenty years ago." Just what Clyde islands Gray had in mind is by no means clear. He can hardly have meant the now well-known sites on Lady and Horse Islands in Ayrshire, for in the *Birds of Ayrshire and Wigtownshire* (1869) he and Anderson say they "have not been able to discover it breeding on any of the rocks frequented by the other species." Nor does Gray's Arran account (1872) imply breeding. The most likely candidate would seem to be the tern colony at Carradale, which appears to have been a favourite with Gray. If anyone else can throw any light on this problem I shall be extremely grateful.

Inch Moan, Loch Lomond:

Gray (1871) noted a small colony of sandwich terns on Inch Moan. This colony had long died out by the time of Lumsden (1895) who, however, apparently accepted the record, and noted that probable sandwich terns had recently been recorded (possibly breeding) from other Loch Lomond islands.

Horse Island:

In June 1912 T. Thornton MacKeith was given a sandwich tern's egg from a Clyde ternery, and on visiting the place he saw five birds. This was Horse Island, off Ardrossan, which MacKeith was to visit regularly for the next thirty years. The sandwich terns increased slowly, and there were about fifteen pairs when Ritchie made his first visit in 1932. They came on with a rush after that, and I counted over a hundred nests in 1942. Since then I have visited this colony most years; the population peaked to about 175 pairs in 1958, and

since then, although the colony has fluctuated a bit, there have never been less than a hundred pairs nesting.

Lady Isle:

In 1923 J. P. Ritchie found one sandwich tern's nest on 'the Clyde Estuary' and in 1924 found four nests at the same place (*Scot. Nat.*, 1924: 136). This locality (identity suppressed at the time) was Lady Isle, and 1923 appears to have been the first genuine record of breeding. The colony steadily increased, and by 1946 had over a hundred pairs. My best count was just over 180 pairs in 1952. The colony slowly declined from then on, but levelled out to slightly under a hundred pairs by 1960, and since then has been relatively stable. I counted eighty-two nests in 1969.

Ballantrae:

In June 1941 W. Jamieson found a sandwich tern's nest with three eggs at Ballantrae (*Glasgow Nat.*, 14: 96). I found a nest with one egg in May 1946, and again a nest with one egg in May 1950. These are, in fact, the only breeding records I can trace, although birds were often seen in the air and on the shingle. I always felt that, if left unmolested, they would breed regularly. Now that this area is being preserved by the Scottish Wildlife Trust I have high hopes that they will do so; it seemed virtually certain that at least one pair was nesting in 1969.

Little Cumbrae:

From 1936 to 1939 Dr. Charles Cairnie, of Largs, saw sandwich terns on the point along from the Castle on the Little Cumbrae. Birds were present throughout each summer, and although it seemed almost certain that they were nesting, he was never able to prove this by finding eggs or young.

Summary:

At present the sandwich tern nests regularly at two sites in the Clyde area, intermittently at a third site, and may possibly have nested at a fourth. Last century it probably nested at two other sites, but for at least fifty years it apparently nested nowhere in the Clyde area. The total Clyde breeding population within recent years has been as follows:

1951	c. 280 pairs
1958	c. 300 pairs
1960	c. 230 pairs
1964	c. 230 pairs
1968	c. 170 pairs
1969	c. 180 pairs

6. CORMORANT *Phalacrocorax carbo* (L.)

Loch Lomond Islands:

Last century cormorants occurred commonly on Loch Lomond, as they still do occasionally to the present day. Lumsden (1895) gives an interesting description of their roosting habits. Apparently they

were supposed to nest on the islands from time to time, but I have been unable to locate an actual record to substantiate this, apart from Lumsden's earlier statement of 1876: "sometimes breeds in the district".

Loch Moan, Ayrshire:

There was a substantial breeding colony, of several hundred pairs, on Loch Moan in Gray's time, but they steadily declined owing to constant persecution, and the colony was finally exterminated just prior to 1900. One pair nested here about 1928. Cormorants are still seen on Loch Moan from time to time, but I know of no recent evidence of breeding.

South Ayrshire Cliffs:

An old-established breeding site. A small colony of cormorants has nested on the south Carrick cliffs and caves, in company with the more numerous shags, for well over a century. They were down to a few pairs in the 1920s, but began to increase during the last war, and for the past twenty years the population has remained reasonably stable around thirty pairs, although some fluctuation in numbers does take place.

South-West Kintyre:

There is a substantial colony of cormorants and shags, breeding in steep gullies on the west Kintyre cliffs, some two-three miles north of the Mull lighthouse. This has been well-known locally for at least fifty years, and Duncan Colville has a good series of photographs of the colony. In 1969 the cormorants numbered about twenty-five pairs.

Mull of Kintyre:

A few cormorants can often be seen along the south Mull cliffs, and have nested occasionally in the past. There was at least one nest in 1969.

Sheep Island and Glunimore:

In 1898 Paterson and Renwick wrote "The cormorant was very abundant, there being 20-30 birds in sight and we were very much disappointed not to find any trace of nests of this species, as there can be little doubt that it nests somewhere in this neighbourhood". In 1956 I wrote (*Glasgow Bird Bull.*, 5: 6) "I can trace no definite nesting records, and although I have seen cormorants round these islands many times, and have suspected breeding, it would be exceedingly difficult to prove breeding nowadays amongst the enormous colony of shags". This remains the position to the present day. Every year I see quite a few cormorants around, and actually on, these islands amongst the shags, and although I have no personal doubts that several pairs nest regularly, I have never had the good fortune to get definite proof of breeding.

Ailsa Craig:

Gray and Anderson (1869) reported a few pairs of cormorants breeding on Ailsa, but there appears to be no other evidence of nesting until 1950, when I found one pair nesting on the Barestack, after

having seen occasional birds from 1946 onwards (*Scot. Nat.*, 63: 82). Since then up to three pairs have nested; there were four nests in 1969.

Little Cumbræ:

One or two pairs of cormorants have nested from time to time on the miniature sea-cliff on the west side, although shags have always far outnumbered them. My first personal record was in 1944, although they were certainly nesting before that. Within recent years, however, a change has taken place. In 1968 there were seven pairs of cormorants. In 1969 there were at least 13 cormorant's nests and, as far as I could see, only five pairs of shags.

Holy Island:

One pair of cormorants nested in 1968; they were not present in 1969. This is my only record.

Arran:

There were two pairs of cormorants nesting in the new shag colony at the Black Cave in 1967. Breeding was apparently attempted in 1968 and 1969, but the nests were destroyed. It is unlikely that this colony will survive for very long.

Eilean Buidhe. Loch Fyne:

Walls and Thomas saw six cormorants off-shore in 1956, and found "one nest with four eggs, presumed to be this species" (*Glasgow Bird Bull.*, 7: 11). I myself have only seen shags and their nests here, so the picture is confused.

Summary:

Cormorants have been recorded as nesting at about a dozen sites in the Clyde area. Two of these were abandoned last century, and at one or two others breeding is doubtful or lacks definite proof. At four stations the numbers are either very small or breeding is intermittent. The total Clyde breeding population within recent years has been as follows:

1951	c. 60 pairs
1958	c. 55 pairs
1960	c. 50 pairs
1964	c. 60 pairs
1968	c. 65 pairs
1969	c. 75 pairs

7. SHAG *Phalacrocorax aristotelis* (L.)

South Ayrshire Cliffs:

An old-established breeding site. The extensive colony on the south Carrick cliffs and in the caves has been well-known for over a century, and always seems to have been substantial. I have visited this colony more or less annually for well over twenty years; the numbers fluctuate a bit, of course, but I have never known less than a hundred nests, and the colony peaked to nearly two hundred nests in 1947.

Ailsa Craig:

Ailsa was an ancient nesting site of the shag. Pennant said the shag bred on Ailsa, and Gray frequently refers to Ailsa as a breeding site. It seems to have abandoned Ailsa for a time, for there is no nesting record for seventy years, although the odd pair may have bred and been overlooked. It was certainly back nesting in the early 1940s, however, and there were twelve nests in 1947, eighteen nests in 1950, and thirty nests in 1953. It is not always easy to determine the Ailsa population, for the nests are scattered all round the cliffs in small groups, and there are usually a good many non-breeding birds present. The breeding population certainly fluctuates a good deal, but on the whole is slowly increasing. There were at least sixty pairs nesting in 1969.

Sheep Island and Glunimore:

It is convenient to consider these two islands together. In 1900 Paterson and Renwick found a nest with three eggs on Glunimore, none on Sheep Island, and this appears to have been the first record. From then on the shag seems to have increased steadily, and there were 'hundreds' breeding on these islands in the late 1920s. John Bain wrote of a 'very large colony on Sheep Island' in 1944, and Borland and Walls estimated the colony at three hundred pairs in 1951, nearly all on Sheep and Glunimore. In 1953 I counted nearly three hundred nests on Sheep Island, and eighty on Glunimore. The steady increase continued. In 1958 there were some 375 nests on Sheep Island and at least a hundred on Glunimore. Shortly after this, local fishermen began to destroy the nests and eggs systematically, and the population has steadily diminished; it is unlikely that it will ever be allowed to reach its former size. In 1968 and 1969 there were about seventy nests on Sheep Island, and fifty nests on Glunimore.

Sanda:

A few pairs of shags have nested on Sanda since the early 1940s, and possibly earlier, but the numbers fluctuate a lot, are never large, and some years they are absent altogether. The nesting area is usually confined to a small cave on the east side. There were eighteen nests in 1969; this is the highest number I have known.

South-West Kintyre:

As mentioned under cormorant, there is an old-established breeding colony of cormorants and shags in some steep gullies on the south-west Kintyre cliffs, some two-three miles north of the Mull lighthouse. As with most colonies of this species, considerable fluctuation takes place, but there were certainly ninety pairs of shags in 1969, and "some years there have been more".

Mull of Kintyre:

Shags nest in small groups scattered along the Mull cliffs, but their numbers are never large, and they change their nesting ledges very readily from year to year. The largest number I have counted was twenty-three nests in 1958; I could see at least sixteen nests in

1969. Shags have certainly been known to nest here since the mid-1930s, although Robert Gray in Bryce's *Geology of Arran* (1872) mentions the "Mull of Cantire" as a breeding place of the shag. This statement does not appear in Gray's better-known work on *The Birds of the West of Scotland*.

Davaar:

A pair of shags nested on Davaar, off Campbeltown, in 1958, in 1965, and possibly on other occasions.

Little Cumbrae:

A few pairs of shags have certainly nested on the Little Cumbrae since the late 1930s; the nesting site is the miniature sea-cliff on the west side. The population has been fairly stable around a dozen pairs for the past fifteen years, but recently cormorants have increased and the shags have decreased; there were only five pairs of shags in 1969.

Pladda:

One or two pairs of shags have nested intermittently on Pladda since 1961.

Holy Island:

A few pairs nest amongst the boulders and fallen rocks on the east side. The possible nesting area is very large, and there are usually a good many non-breeding birds present, so an accurate count of the nesting pairs is not always easy. About half-a-dozen pairs usually nest, and have been known to do so since 1949. Four pairs were nesting in 1969.

Arran:

Shags began nesting at the Black Cave, Bannan Head, in 1963. They increased quickly and took over much of the area used by the rock doves. There were eight pairs in 1964, and seventeen nests in 1967, when they were joined by two pairs of cormorants. Most of the nests were pulled out and the eggs smashed in 1967, 1968 and 1969, but whether by fishermen or casual visitors I do not know. Young birds were certainly reared in the early years, but it is unlikely that this colony will survive for very long.

Inchmarnock:

I found one pair of shags breeding on Inchmarnock in 1968. In 1969 there were at least four nests along the south-west cliffs and shore, right in the thick of the gull colony.

Sgat Mor, Loch Fyne:

A pair of shags was nesting on Sgat Mor in 1955. This remains my only record.

Eilean Buidhe, Loch Fyne:

There were three shag's nests on Eilean Buidhe in 1954; one nest in 1958; one in 1961; none seen since then.

Summary:

Shags have been reported as nesting at fifteen sites in the Clyde area, but at nearly half of these sites the numbers are very small or

breeding is intermittent. Most of the other nesting stations are old-established and fairly substantial. The total Clyde breeding population within recent years has been as follows:

1951	c. 600 pairs
1958	c. 750 pairs
1960	c. 675 pairs
1964	c. 450 pairs
1968	c. 400 pairs
1969	c. 425 pairs