

The Western Naturalist

Volume Four 1975

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A Journal of Scottish Natural History

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Editorial Committee:

Dr. J.A. Gibson

Dr. John Hamilton

Professor J.C. Smyth

DEPARTMENT OF BIOLOGY, PAISLEY COLLEGE OF TECHNOLOGY,
HIGH STREET, PAISLEY

The *Western Naturalist* is an independent journal, published by the RENFREWSHIRE NATURAL HISTORY SOCIETY, devoted to the study of Scottish natural history, particularly, but not exclusively, to the natural history of the Western area. Although its main interests probably centre on fauna and flora it is prepared to publish articles on the many aspects embraced by its title including Zoology, Botany, History, Environment, Geology, Archaeology, Geography etc.

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THE MAMMALS OF KINTYRE

By J.A. GIBSON and DUNCAN COLVILLE
Kintyre Antiquarian and Natural History Society

Until quite recently surprisingly little seems to have been published on the mammals of Kintyre. Unfortunately Harvie-Brown and Buckley (1892), in their otherwise excellent book, make virtually no mention of Kintyre at all, and the early Clyde mammal papers by Alston (1880) and Boyd Watt (1902,1905) also give almost no Kintyre information, although in their defence it should be said that the authors clearly recognised, and drew attention to, these gaps in knowledge of their day.

There are some fairly obvious reasons for this apparent past neglect of Kintyre. Probably the relative isolation of Kintyre from other parts of Clyde or Argyll meant that it was rather inaccessible to previous workers on Clyde mammals, most of whom were based largely in the central belt of Scotland. Moreover, the fact that Kintyre was divided between two of the Scottish faunal areas may possibly have made earlier workers slightly hesitant as to how best to tackle the task. Gibson, however, in his detailed survey of Clyde mammals (1954), had no doubts in the matter. He included the whole of Kintyre within Clyde, as McWilliam (1936) had previously done with the birds, and made significant progress with information on mammal distribution within Kintyre and all other districts of South Argyll. To the best of our knowledge, however, no attempt appears to have been made to put together collected notes on Kintyre mammals until our own preliminary papers of 1972. Since then we have been able to add substantially to our information, so we hope the following notes will fill a significant gap in our knowledge of Clyde mammals.

The area covered is the Kintyre peninsula, with Davaar and the Sanda island group, but excluding the islands of Gigha and Cara. These notes do not include the cetaceans, which are being dealt with in a separate account of Clyde marine mammals (Gibson, in press).

Although there are occasional references to Kintyre natural history scattered throughout ancient documents, the earliest mammal notes of any real interest appeared at the end of the 18th century, in the *Old Statistical Account* of the 1790s, and Dr. John Smith's *General View of the Agriculture of the County of Argyle* (1798). Other useful information of this period can be

found in the early Kintyre farm rentals and letter books of the Argyll Estate, kindly made available to us. All these sources make passing references to mammals, usually in connection with agricultural interests, as one would expect.

In the *New Statistical Account* of 1845 two Kintyre parishes, Saddell and Skipness and Killean and Kilchenzie, give natural history notes which are quite outstandingly good for their time. The 1850s saw the start of a local newspaper in Kintyre, the *Argyllshire Herald* (now ceased), and in 1873 the *Campbeltown Courier* commenced publication. Throughout the years the columns of these, and later the *Oban Times*, have contained many scattered notes and letters which make direct or incidental references to Kintyre mammals. Many of these contributions came from the late Mr. Dugald Macintyre, the justly renowned Kintyre gamekeeper/naturalist, who also wrote several books and contributed numerous articles to various journals, almost all based on his experiences of Kintyre wildlife. We both knew Dugald Macintyre very well until he died in 1957, and derived much additional information from conversations with him. The estate registers and game books of many Kintyre estates have been made freely available to us, and these have proved to be extremely valuable. Finally, during the past twenty-five years we ourselves have published many papers and notes on various aspects of Kintyre mammals, but much of the information we have gathered over the years is being published here, or in our 1972 preliminary papers, for the first time. When collecting information on Kintyre mammals we have received abundant ready help from a great many people; everyone we asked for information cooperated most willingly, and we hope to make full and proper acknowledgement of all this assistance in due course.

The study of mammals in Kintyre is made particularly interesting by the presence of the narrow isthmus at Tarbert; this gives the Kintyre peninsula many of the features of an island, and seems to provide an effective barrier to the spread of some new species, or the re-entry of others formerly present but later exterminated. Some animals have effectively crossed this barrier but others, apparently with equal opportunities, have not.

Some of these possibilities for interesting observation were originally created by the destructive activities of man, which accompanied the greatly increased agricultural and sporting activity in the mid-19th century. The first gamekeepers were established on Kintyre estates in 1842, and within a very short time several species of animals classed as 'vermin' had been exterminated or greatly reduced. These included the Polecat, Pine Marten, Badger and Wild Cat; previously Alan Macintyre

had exterminated the Fox. It is worth noting that all this was possible only because Kintyre had very little woodland at that time. Nowadays this could no longer happen, since the steadily increasing plantations of the Forestry Commission and several private owners provide abundant natural sanctuary, so that those animals we now have are likely to remain (e.g: the Fox), despite all efforts at 'control'.

The past one and a half centuries have therefore shown us some remarkable changes; some due to the activities of man, by exterminating some species and introducing others, and some by natural spread or return.

Species which were formerly exterminated, but which have now successfully returned by natural spread, include the Fox and the Badger. The Fox had probably been extinct in Kintyre since well before 1825 and the Badger since about 1875, but by 1950 both species had regained a foothold, apparently by natural spread down from Knapdale where both species had remained fairly common. On the other hand two other species present in Knapdale, the Wild Cat and the Pine Marten, have not returned. The Wild Cat is steadily increasing in Knapdale, however, and we feel it can only be a relatively short time before it returns to Kintyre. Occasional rumours arise when large specimens of feral cats are shot in Kintyre, but so far no specimen we have examined has been a true Wild Cat. The Pine Marten is still rather uncommon in Knapdale, and mostly confined to the north, so it may be a very long time before it reaches Kintyre. We can never again expect to see the Polecat return by natural spread, since it has been exterminated throughout the entire Clyde area.

Several new species have arrived in Kintyre, apparently by natural extension of their ranges. These include the Mountain Hare around the mid-19th century, the Hedgehog around the end of the 19th century, and the Mole, celebrated in local legend, which was in north Kintyre around the early 1800s and had reached the Mull before 1900. Although not mentioned in the *New Statistical Account* (1845), the Brown Rat was fairly well known after the middle of the 19th century, and may well have had its advance assisted by accidental introductions. The Red Squirrel had made its way into north Kintyre by the turn of the century, presumably by direct spread after its introduction at Minard, Loch Fyne, in 1847.

Man has been directly responsible for the introduction of some species. The present population of Rabbits stems from their introduction to Machariorch, south Kintyre, about 1843, and the Sika Deer from their introduction to Carradale in 1893. Roe Deer were imported to Skipness in 1897 in an attempt to improve the stock. The various herds of Wild Goats presumably had their

Table I
CHANGES IN SOME KINTYRE MAMMALS, 1800-1975

Species	1800	1825	1850	1875	1900	1925	1950	1975	Comment
HEDGEHOG	-	-	-	(+)	(+)	+	+	+	Natural spread.
MOLE	(+)	(+)	+	+	+	+	+	+	Natural spread.
FOX	(+)	-	-	-	-	-	(+)	+	Exterminated; natural return.
PINE MARTEN	+	+	+	(+)	-	-	-	-	Exterminated; may yet return.
POLECAT (FERRET)	+	+	(+)	-	-	-	(+)	-	Exterminated.
MINK	-	-	-	-	-	-	(+)	-	Escapes; recent feral breeding.
BADGER	+	+	+	(+)	-	-	(+)	+	Escapes; bred ferally, now extinct.
WILD CAT	+	+	+	+	(+)	-	-	-	Exterminated; natural return.
SIKA DEER	-	-	-	-	(+)	+	+	+	Exterminated; will probably return.
WILD GOAT	(+)	+	+	+	(+)	+	+	+	Introduced; steady increase.
MOUNTAIN HARE	-	-	(+)	(+)	+	+	+	+	Original escapes; well established.
RABBIT	-	-	(+)	+	+	+	+	+	Natural spread.
RED SQUIRREL	-	-	-	(+)	(+)	+	+	+	Introduced; steady increase.
BLACK RAT	+	+	(+)	-	-	-	-	-	Natural spread after introduction further north.
BROWN RAT	-	(+)	(+)	+	+	+	+	+	Extinct.
			(+)	+	+	+	+	+	Natural spread (? accidental introduction).

+ Present; - Absent; (+) Marginal; i.e. gaining a foothold, or becoming extinct.

origin in escapes from the importations in the late 18th and early 19th centuries.

Animals can also arrive in Kintyre by other means. There is evidence that Otters have crossed from Ireland to Kintyre, and Red Deer have been seen swimming from Arran to Kintyre across the Kilbrannan Sound.

Table One shows the approximate changes, in quarter centuries, of sixteen Kintyre mammals during the 175 years from 1800 to 1975. For some of the smaller mammals, such as the shrews and small rodents, there is no sufficiently accurate contemporary evidence available to make comparisons possible. The remaining Kintyre mammals have not apparently shown any significant changes. The actual levels of population, however, may vary considerably over the years; for example, the Mountain Hare is virtually extinct in some parts of south Kintyre at the present day, but will presumably increase again.

If we compare the present-day position to that of 1800 we actually find that there are no really significant gaps, and some quite substantial gains. The Black Rat is extinct, but has been replaced by the all too common Brown Rat. The Polecat has long gone but Ferrets are now breeding ferally in some areas. The Wild Cat is still absent, although feral cats abound, and the true Wild Cat must surely soon follow the path of the Fox and the Badger and return to Kintyre, since it is steadily increasing in Knapdale. The Pine Marten also is still extinct in Kintyre, but since it is very much scarcer in Clyde its return is less predictable. On the credit side, however, Kintyre has gained the Hedgehog, Mole, Grey Seal, Sika Deer, Mountain Hare, Rabbit and Red Squirrel. The present-day Kintyre naturalist is therefore much better off for mammals than was his counterpart at the beginning of last century. There can be few other places in our country where this is the case.

In the following systematic list arrangement and nomenclature follows the *Checklist of Palaearctic and Indian Mammals*, by J.R. Ellerman and T.C.S. Morrison-Scott (second edition, 1966), published by the British Museum (Natural History), London.

Order INSECTIVORA

HEDGEHOG *Erinaceus europaeus* Linnaeus, 1758

The Hedgehog is now reasonably common and fairly widely distributed throughout Kintyre, right down to the Mull, but is a relatively recent arrival; there is no mention of the Hedgehog for Kintyre, or for any part of Clyde Argyll, in either the *Old* or the *New Statistical Accounts*. During the early years of this

century there was considerable discussion in the *Scottish Naturalist* and the *Zoologist* about the status of the Hedgehog in Argyll, and it was suggested that the frequency with which it was kept as a pet (this surprises us) might have led to frequent escapes, thereby allowing it to get locally established. At any rate, the Hedgehog reached Kintyre during the last quarter of the 19th century, apparently by direct spread from Knapdale down the peninsula.

In 1882 a Hedgehog captured near Campbeltown was exhibited in the town and attracted considerable attention (*Campbeltown Courier*, 24th June 1882) as a very rare animal. This is the earliest published record we have been able to trace. By 1904 the Hedgehog was still being described as "somewhat rare" near Campbeltown (*Campbeltown Courier*, 2nd July 1904), but by the 1920s Hedgehogs had reached Southend, and are now reasonably common in most areas.

An albino Hedgehog found near Campbeltown in 1952 was sent by air to Glasgow Zoo (*Campbeltown Courier*, 11th August 1952).

MOLE *Talpa europaea* Linnaeus, 1758

The Mole apparently began to spread into the Kintyre peninsula towards the end of the 18th century, when the minister of Campbeltown parish was able to write "The Mole, formerly unknown, has lately made an inroad to the extent of some miles within the isthmus" (*Old Statistical Account*, Vol. 10: 551; 1794). Later, in the *New Statistical Account*, the minister of Saddell and Skipness wrote (1843) that it had "commenced its ravages in the northern district of the parish" in the early 1820s, and a footnote to the account of Killean and Kilchenzie parish indicated that the Mole had reached there by 1843. From then on it spread down the peninsula with surprising rapidity and was well-known near Campbeltown by 1860.

Most people will be familiar with one of the versions of the old legend which stated that when the Mole had reached the Mull there would be no Campbells left in Kintyre. Moles reached the Mull of Kintyre by about 1900, but the position with regard to the Campbells appears to be little different!

Piebald specimens of Moles have been reported on several occasions, and a pure white Mole was caught at Langa, near Campbeltown, in 1868 (*Argyllshire Herald*, 15th February 1868). Mole-hills in Kintyre have often been found near the tops of the higher hills, at well over one thousand feet.

At the present time the Mole is common and widely distributed throughout the Kintyre peninsula; it is absent from the Sanda Island group (Gibson, 1970) and we have no records from Davaar.

COMMON SHREW *Sorex araneus* Linnaeus, 1758

Shrews are very active little animals, retiring by nature, often heard rustling and twittering amongst the leaf-litter and grass in woodlands, but not often seen by the casual observer.

The Common Shrew is very common and widely distributed in all suitable areas throughout the Kintyre peninsula, although we have no actual records from Davaar. There are apparently no shrews on Sheep Island or Glunimore, and in many years of trapping we have found no Common Shrews on Sanda, where Pygmy Shrews are common (Gibson, 1970).

In August 1972, however, Mr. John Mitchell and Mr. R.G. Nisbet were given a Common Shrew which had been caught by one of the farm cats on Sanda on the 27th. Because of the importance of this discovery (the first authentic record of the Common Shrew from any small Clyde island) the specimen was preserved and full details were published (Gibson, 1973). It seems almost certain that this Common Shrew was an accidental importation, probably in bales of straw, in the course of greatly increased farming activity on Sanda during the previous few years, but as Dr. Gibson wrote at the time, "it seems very unlikely that a farm cat could catch the only specimen of Common Shrew on the island, so it is probable that several were imported and that a breeding population may well become established". To the best of our knowledge, however, in subsequent trapping no further specimens of Common Shrews have so far been reported.

PYGMY SHREW *Sorex minutus* Linnaeus, 1766

Now known to be common and widely distributed throughout Kintyre, right down to the Mull. Throughout the peninsula the Pygmy Shrew occurs in close association with the Common Shrew, but on Sanda Island the Pygmy Shrew is extremely common (sometimes a "perfect plague") whereas the Common Shrew is absent (but see above for recent record of probable accidental introduction). We have several records of Pygmy Shrews from Davaar, but as yet we have no records of any shrews on Sheep Island or Glunimore.

WATER SHREW *Neomys fodiens* (Pennant, 1771)

The Water-Shrew is fairly well distributed throughout Kintyre, but is locally restricted to suitable habitat, as one would expect. It largely frequents small fresh, swiftly-running, streams although its territory may extend far away from water, into neighbouring scrub and woodland. As with most shrews, it is seldom seen by the casual observer, and many of our own records have come from examining the catches made by farm cats.

We have records from all over the peninsula, right down to Southend, but have no records from any of the Kintyre islands, from all of which it genuinely appears to be absent.

Order CHIROPTERA

DAUBENTON'S BAT *Myotis daubentoni* (Kuhl, 1819)

[We know of no record of a specimen of Daubenton's Bat having been obtained from anywhere in the Kintyre peninsula, although Dr. Gibson has several personal sight records of 'water bats' from Kintyre, in particular along the river at Carradale. From his experience of Daubenton's Bat in other parts of the Clyde area Dr. Gibson has no personal doubts that these water bats are Daubenton's, which is now well-known to be fairly widely distributed throughout south and west Scotland. Nevertheless, until we hear of a specimen actually being obtained and examined, we do not think Daubenton's Bat should be fully admitted to the Kintyre List. We shall be extremely grateful to receive any additional information].

PIPISTRELLE *Pipistrellus pipistrellus* (Schreber, 1774)

The Pipistrelle is very common throughout Kintyre, and is widely distributed in all areas. Although less common in hilly regions, Pipistrelles can often be seen on the higher hill-slopes and have actually been seen right at the summit of Bengullion (1154 feet), near Campbeltown. Kintyre has a mild climate and Pipistrelles have occasionally been recorded in winter from several localities throughout the peninsula.

'Bats' are often seen on Sanda, and are presumably Pipistrelles, although one can not always be certain. Some accurate records do exist, however, for the late John Bain, formerly head lightkeeper on Sanda, caught and identified several Pipistrelles around the Sanda light during the mid-1940s. We have a few records of bats, again presumably Pipistrelles, seen on Davaar.

While fishing at a Kintyre hill-loch, Mr. Colville once had the unusual experience of a Pipistrelle taking his fly when he was casting, and so getting hooked on his line (*Scotsman*, 5th June 1937).

LONG-EARED BAT *Plecotus auritus* (Linnaeus, 1758)

During the past forty years there have been a few isolated records of Long-eared Bats from Southend, Campbeltown, Carradale, Ronachan, and near Tarbert. The Long-eared Bat is probably much commoner in Kintyre than these meagre records suggest, but further assessment of its status is precluded by the usual difficulty in catching specimens. We shall be very glad to receive any additional information.

Order CARNIVORA

WOLF *Canis lupus* Linnaeus, 1758

Wolves certainly occurred in Kintyre until historical times, when the peninsula was still well-wooded, and their former presence is recorded in local place names. One of the best known is Dalavaddy (= Dail a' mhadaidh) meaning "the field of the wolf". The date of extermination is not clear, but it is unlikely that Wolves existed for very long into the 16th century.

FOX *Vulpes vulpes* (Linnaeus, 1758)

A detailed account of the return of the Fox to Kintyre has recently been published (Colville and Gibson, 1972) to which interested readers are referred. We do not propose to repeat the full details here, but a brief summary of the situation is given below:

The Fox was formerly very common in Kintyre, but was ultimately completely exterminated, towards the end largely by the efforts of Alan Macintyre (1745-1840), the noted Kintyre district fox-hunter. It is worth noting that this extermination was almost certainly made possible only because Kintyre at that time was largely devoid of woodland. The actual date of extermination must always be obscure, but there is some circumstantial evidence. There is no mention of the Fox for Kintyre in either the *Old* or the *New Statistical Accounts*, and since some Kintyre parishes in the *New Statistical Account* of 1845 contain fairly extensive natural history notes, including unusually careful references to population changes amongst certain species which were becoming scarce, it is safe to assume that the Fox had been exterminated in Kintyre long before, and was no longer the subject of even recent history. Possibly the Fox was virtually extinct in Kintyre as a resident species by around 1800, although stragglers would appear from time to time, crossing the narrow isthmus down from Knapdale, as indeed they did for the next 150 years until they got re-established.

By the early 1940s, however, Foxes were once more breeding in north Kintyre, local farmers placing the blame on the new Forestry Commission plantations for giving sanctuary to stragglers coming down from Knapdale. Indeed, in 1948 the Carradale branch of the National Farmers' Union was complaining that it seemed to be "more plantations, more foxes in Carradale". There would appear to have been some justice in this complaint, for although there were a very few areas of woodland in north Kintyre in the late 18th and early 19th centuries, when the last of the old breed of Kintyre Foxes was exterminated, their density was very low. The new Forestry Commission woodland, plus the steadily

increasing rhododendrons, planted so fashionably on some estates during the late 19th century, provided a totally different type of very dense cover. Moreover, the fact that this was readily available during the war-time lack of gamekeepers and trappers gave the Fox a chance to get established which it had never had before. As everyone knows, killing stray individuals appearing in a new district is fairly simple for an experienced trapper, but it is a very different matter to have to eradicate an established population from dense cover.

At any rate, the Fox steadily increased in numbers and was recorded from Southend by 1953. In 1955 the Kintyre Foxhunting Society was formed and bounties were offered for every Fox killed. On average, during the past ten years bounties have been paid for some ninety adults and cubs each year. Despite all this activity, however, the Fox remains reasonably common and well distributed throughout the Kintyre mainland, and is likely to remain so. Recently one was seen in the centre of Campbeltown.

There are no Foxes on the Kintyre islands.

PINE MARTEN *Martes martes* (Linnaeus, 1758)

The Pine Marten formerly occurred fairly commonly in Kintyre, and was recorded from the parishes of Killean and Kilchenzie and Saddell and Skipness (ie. the northern half of the peninsula) in the *New Statistical Account* of 1845.

Although Martens were killed by Alan Macintyre, the old fox-hunter, it was probably the establishment of game-keepers in Kintyre in 1842 that brought about the Pine Marten's extinction. Dugald Macintyre said that his father, one of the first Kintyre gamekeepers, actually killed the "last Marten in Kintyre on his first trapping round of the Mull in 1842" (*Oban Times*, 24th July 1948). Presumably this meant the last Pine Marten in south Kintyre, where the lack of woodland would mean that Martens were possibly never very common, but its extinction even in the northern, and at that time slightly more wooded, part of Kintyre probably followed shortly afterwards.

We know of no Kintyre record during the past hundred years, but recently the Pine Marten seems to be getting re-established in northern Knapdale, so it is not impossible that occasional Pine Martens may turn up in Kintyre in the distant future. If so, we hope they will be left in peace.

STOAT *Mustela erminea* Linnaeus, 1758

Common and widely distributed throughout the peninsula, right down to the Mull. The Stoat has always been fairly common in Kintyre, and despite the constant war waged upon it by gamekeepers

and farmers is likely to remain so. Newly-emancipated family parties of up to a dozen Stoats are occasionally seen in summer and early autumn, and give rise to tales about 'packs' of stoats; these parties do not usually occur in winter.

Stoats on the low ground in Kintyre rarely turn white in winter, although mottled specimens are not uncommon; amongst the hill Stoats the change to winter dress is usually complete by the end of December.

There are no Stoats on the Kintyre islands.

WEASEL *Mustela nivalis* Linnaeus, 1766

Much the same remarks apply as to the Stoat. The Weasel is common and widely distributed throughout the Kintyre peninsula and has always been so. It is commoner near habitation than the Stoat, and is often seen in gardens in Campbeltown. There are no Weasels on the Kintyre islands.

An unusual incident was a Weasel and a Rat caught in the same trap at Southend in January 1949. The Weasel was caught by the two fore legs and the Rat by the two hind legs; both were dead (*Campbeltown Courier*, 15th January 1949).

AMERICAN MINK *Mustela vison* Schreber, 1777

American Mink were kept on a fur farm at Torrisdale from about 1950 until 1962, when commercial fur farming ceased. Some Mink certainly escaped during this time and bred in the wild state in the Carradale Forest, but constant efforts by the local trappers and gamekeepers now seem to have exterminated these feral Mink, and we learn from Mr. Peter Strang, of Brackley, that no Mink have been trapped or seen since 1967. It would seem, therefore, that Mink are now extinct in this area, and we have no knowledge of Mink having been kept anywhere else in Kintyre.

POLECAT *Mustela putorius* Linnaeus, 1758

As far as we can discover, the true Polecat has been extinct in Kintyre for over a century. Formerly it occurred widely throughout the peninsula, and was described as "numerous" at Saddell and Skipness parish (1843) in *New Statistical Account*, but was steadily trapped out of existence after the appointment of gamekeepers in Kintyre in 1842. Dugald Macintyre said that his father trapped the last Polecat at the Mull "some years" after his appointment as gamekeeper in 1842; it was "a barren female, and the last of its race" (*Oban Times*, 24th July 1948). Possibly Polecats lingered on for a few more years in the northern part of the peninsula, where there were still said to be some in 1861. We have no records from the islands.

Ferrets *M. p. furo* escape all the time, and although the albino specimens do not seem to breed in the wild state, the dark forms do so readily, and at present dark Ferrets, usually called Polecat/Ferrets, are breeding in the feral state at several places throughout the peninsula.

BADGER *Meles meles* (Linnaeus, 1758)

The Badger formerly occurred widely throughout Kintyre and was recorded in the *New Statistical Account* (1843) "in considerable numbers". Unfortunately it was constantly persecuted after the appointment of gamekeepers in Kintyre in 1842, and had been largely exterminated by the 1870s. In the entrance hall of Keil House (now demolished) at Southend there was a glass case with some stuffed Badgers; these had been shot or trapped near Southend in 1868, and were apparently the last Badgers killed in the area. The minutes of the Kintyre Scientific Association (the forerunner of the Kintyre Antiquarian and Natural History Society) for 28th October 1892 record that Mr. Alexander Colville had presented a specimen of a Badger shot at the Mull of Kintyre, but it is very unlikely that this was a recently shot specimen, as has occasionally been assumed.

We are now glad to report, however, that the Badger has successfully re-colonised Kintyre, apparently by direct spread down the peninsula from Knapdale. In November 1938 four were accidentally and most unexpectedly trapped at Cour, an event which caused considerable local astonishment, and from then on records of Badgers have turned up with increasing frequency from various parts of the peninsula. In 1955 Badgers were discovered at Southend, near the farm of Kilblaan, apparently in the very same den which local memory recorded as last having been occupied by Badgers 110 years previously.

Badgers are now fairly well distributed throughout the Kintyre mainland and within recent years we have had several reports of Badgers killed by motor cars on Kintyre roads. There are a few records of Badgers having been seen out and about in mid-winter.

We have no records of Badgers from any of the Kintyre islands.

OTTER *Lutra lutra* (Linnaeus, 1758)

We are glad to say that the Otter remains very common and widely distributed throughout the wilder parts of Kintyre, around many parts of the shore, along the rivers, and at some of the hill-lochs. In Kintyre many overland routes regularly used by Otters between rivers and lochs are well-known, and these sometimes extend for several miles. The late Dugald Macintyre was

certain that Otters sometimes completely crossed Kintyre over land. Certainly Otters have sometimes been killed far away from water. Otters measuring over three and a half feet from nose to tip of tail have occasionally been killed in Kintyre. Fortunately Otters are little persecuted now.

Otters breed regularly on Sanda, are occasionally seen on Sheep Island, and have often been seen on Davaar. An Otter has been caught when swimming across West Loch Tarbert. Partial albino Otters have been trapped from time to time, but are not common.

Dugald Macintyre recorded that an Otter, trapped near the Mull of Kintyre by his father in the middle of last century, carried in its body the head of a spear recognised as of Irish manufacture; "no-one used the spear for the Otters in Kintyre at that date, and the presumption was that the trapped animal had made the passage from Ireland" (*Scotsman*, 6th April 1935).

Surprisingly enough, Otters are not infrequently killed by motor cars in Kintyre.

WILD CAT *Felis silvestris* Schreber, 1777

Formerly common and widely distributed throughout Kintyre, but was "fast decreasing" in Saddell and Skipness parish by the time of the *New Statistical Account* (1843). As with the Pine Marten and the Polecat, the appointment of gamekeepers in 1842 was the beginning of the end for the Kintyre Wild Cats. They seemed to survive a little longer, however, for a true Wild Cat was shot near Loch Garasdale in 1910 (*Ann. Scot. Nat. Hist.*, 1910: 245). This is the last record known to us. The specimen was mounted by Charles Kirk, the well-known taxidermist in Glasgow, and was preserved in Largie Castle for many years where we were able to examine it by the courtesy of Captain J.R.M. MacDonald; when Largie Castle was demolished the specimen was unfortunately lost.

Household and farm cats regularly go wild and breed in the feral state; these are commonly seen throughout the peninsula, and sometimes grow to a quite remarkable size. Some of the larger specimens are occasionally incorrectly reported as 'wild cats', but so far no specimen we have examined has been a true Wild Cat. It is worth recording, however, that Wild Cats are making something of a comeback in Knapdale, so some day they may try to make their way back down into Kintyre; indeed we feel this is simply a question of time. The most recent likely report of a 'wild cat' comes from Clachan in May 1974 (*Campbeltown Courier*, 16th May 1974), but we have been unable to examine the specimen.

In June 1955 Dr. Gibson saw a large feral cat on Sheep Is-

land, but despite intensive local enquiries could find no evidence as to how it got there (*Trans. Buteshire Nat. Hist. Soc.*, 17: 49).

Order PINNIPEDIA

COMMON SEAL *Phoca vitulina* Linnaeus, 1758

The Common Seal has always been well-known in Kintyre; it occurs commonly around all suitable shores of the peninsula at all seasons of the year, although it is somewhat commoner on the west side. This has apparently always been the case, for the *New Statistical Account* for Saddell and Skipness parish (1843), on the east of the peninsula, says that the Common Seal "is found upon the coast, but they are not very numerous", whereas in the *Old Statistical Account* Ronachan on the west is given special mention because of the seals; "There are in this district seals and otters, the former so numerous as to give name to a farm in the parish, *Ronachan, Seal Field*" (Vol. 10: 60; 1794).

There are still well-known breeding sites near Ronachan at the mouth of West Loch Tarbert, on the Sanda Island group, and occasionally near the Mull. Common Seals are very regularly seen close inshore, sometimes quite close to habitation, and have often been seen well within the inner harbour at Campbeltown, although this does not seem to be so common within recent years. In 1951 a Common Seal actually entered the town of Campbeltown and created considerable excitement on the promenade before returning to the sea (*Campbeltown Courier*, 1st November 1951); a similar incident happened in January 1931.

Two pure white seals were seen near Tarbert harbour at the end of May 1911 (*Campbeltown Courier*, 3rd June 1911).

HARP SEAL *Phoca groenlandica* Erxleben, 1777

[The *Argyllshire Herald* for 26th July 1873 gives a detailed account of the capture of a seal in a net near Machrihanish; "The species captured belongs to the class of Harp Seal or *Phoca grienlandica* and is often a formidable antagonist to experienced hunters". A detailed description is given, but in our view it is not that of a Harp Seal, and indeed is more suitable for a Grey Seal. We are therefore unable to accept this as a valid record].

GREY SEAL *Halichoerus grypus* Fabricius, 1791

The Grey Seal is now well-known around the shores of Kintyre; indeed in the wilder places it is the typical Kintyre seal and is much commoner than the Common Seal. There are fairly large

gatherings on the rocks near Ronachan, around the Mull, and on the Sanda Island group, and smaller numbers are fairly well-known in other isolated spots, although the numbers are much reduced in winter.

On 21st June 1933 a Grey Seal was seen in Campbeltown inner harbour at half-past four in the morning, and apparently ate herrings flung from a fishing boat berthed at the quayside. This was regarded as a most remarkable occurrence (*Campbeltown Courier*, 24th June 1933).

The Grey Seal, however, has undergone a considerable change in status in Kintyre, as the following excerpts show. Writing in 1894 about the discovery of the tooth of a Grey Seal in archaeological excavations near Campbeltown, Mr. Alexander Gray, later to become Curator of the Millport Marine Biological Station, said "The grey seal is now extinct in this locality, but still exists in the wilder parts of the North of Scotland and the west coast of Ireland. Mr. Ritchie, the tenant of the little island of Sanda, which lies off the south end of the peninsula of Kintyre, informs me that, when he took possession forty years ago, a single pair of the grey seal lived on a dangerous reef of rocks in the Sound of Sanda, known as Paterson's rocks. They were also known to the former tenant of the island for many years, and seldom left the rocks which they had chosen for their home, unless for the purpose of obtaining food in the surrounding water. They remained at this place summer and winter, and were as much a recognised part of the landscape as the rocks themselves, from which they disappeared thirty-five years ago. This is, as far as I know, the last instance of the grey seal being resident in Kintyre" (*Proc. Soc. Antiq. Soc.*, Volume IV, Third Series: 271-272).

Alexander Gray was a highly competent observer, resident for many years in south Kintyre, and his comments can certainly be relied upon. Writing in 1926 Dugald Macintyre said he had seen the Grey Seal in Kintyre "on a few occasions" (*Chambers Journal*, June 1926, page 359). It seems quite clear, therefore, that the numbers of Grey Seals in Kintyre and Clyde have very considerably increased during the past fifty years.

At the end of October 1943 a Grey Seal with a recently born pup was found on the west coast of Kintyre near Ronachan by Mr. Alex. Blair and his son. This breeding record was reported in the *Field* of 8th July 1944, but no further instances of the breeding of the Grey Seal in Kintyre have come to our attention.

Order ARTIODACTYLA

WILD BOAR *Sus scrofa* Linnaeus, 1758

The former presence of the Wild Boar in Kintyre is recorded in local place names of gaelic origin (eg. *Beinn an Tuirc* = Hill of the Boar) and popular legends (eg. *Legend of Diarmid and the Wild Boar*). It would certainly be fairly common while the peninsula was well wooded, but is unlikely to have existed much beyond the 10th century.

At the turn of the century the skull of a Wild Boar was found during drainage work on Parkfergus farm; the skull was destroyed but one of the tusks ultimately found its way to the Royal Scottish Museum. Bones found in the Piper's Cave on Beggullion, near Campbeltown, and examined by Professor James Ritchie, were almost certainly those of a Wild Boar (see *Campbeltown Courier*, 6th May 1944).

FALLOW DEER *Dama dama* (Linnaeus, 1758)

According to the *New Statistical Account*, in 1843 the only species of deer present "in the wild state" in the parish of Saddell and Skipness was the Roe, but by the turn of the century there was a substantial herd of Fallow Deer in the Carradale area. We can trace no record of the introduction of Fallow Deer, so the origin of this herd is obscure. Possibly the phrase "in the wild state" implied that some other deer, such as Fallow, were kept in semi-captivity, and we shall be very glad to receive any additional information.

The Carradale herd has been vastly reduced, however, since well before the second world war (*Scotsman*, 3rd November 1951), and there are now only a few Fallows present. Stragglers are very occasionally reported from elsewhere in Kintyre, and as long ago as 1874 a Fallow Deer shot at Ballywilline, near Campbeltown, was locally regarded as a most unusual event (*Argyllshire Herald*, 21st November 1874); subsequent enquiry showed that this deer had been known in the area for over a year and had become fairly tame.

Within recent years the numbers of Fallow Deer at Carradale have increased very slightly (Mr. Peter Strang, *personal communication*), but their position in Kintyre must still be regarded as precarious.

There are now no Fallow Deer on the Kintyre islands; some were introduced to Sanda in the early part of the 19th century, but were removed, or shot out, around 1825 (Campbell, 1885).

RED DEER *Cervus elaphus* Linnaeus, 1758

From contemporary evidence it is fairly clear that in ancient times Red Deer were common in Kintyre. In the well known gaelic poem *Marbhrainn Niall Og Mhachra Shanuis* (Elegy to Young Neill of Machrihanish), from the Turner manuscripts, probably late 16th century (Cameron, 1894), there occurs the line "and bring down the stag on the height". Kintyre place names include Eleric (Colville, 1927) which is derived from *eileirg*, a "defile, natural or artificial, wider at one end than at the other, into which the deer were driven, often in hundreds, and slain as they passed through. The slaughter at the *eileirg* was the last stage in the great deer hunts which were once so common in Scotland and which survived in the north till the eighteenth century" (Watson, 1926).

When the Kintyre Red Deer died out is not clear, but in the second volume of *Macfarlane's Geographical Collections* an account of Kintyre, probably written about 1630, says of the hills about the Mull of Kintyre (p.188) "There was abundance of deir in this mountaine of ancient tyme but now there is none to be sein nether in this Mountaine nor in the rest of the mountaines and lands of Kintyre", and (p.527) "Dear and roes wonted to be heir, but now ther be none in all Cantyre". Probably the Red Deer had died out before the end of the 16th century.

There is no resident herd of Red Deer in Kintyre today, but during the past century stray individuals have fairly often appeared, probably coming from south Knapdale, where there is a small herd, and have been recorded from widely separated places throughout the peninsula, nearly down to the Mull (eg. *Campbeltown Courier*, 28th November 1891). One was shot at Carradale in 1950 (*Scotsman*, 3rd November 1951), possibly the first to be shot there this century, and others have been shot since then. At present there are about half-a-dozen beasts in the Carradale area, but the numbers are extremely variable.

It has long been known that Red Deer stags have occasionally been seen swimming between Kintyre and Arran, presumably in search of hinds (*Argyllshire Herald*, 4th December 1897), and on at least two occasions such stags have actually been caught and taken aboard fishing boats (Stuart and Stuart, 1848; *Campbeltown Courier*, 30th June 1900).

There are now no Red Deer on the Kintyre islands; some were introduced to Sanda in the early part of the 19th century, but were removed, or shot out, around 1825 (Campbell, 1885).

SIKA SEER *Cervus nippon* Temminck, 1838

Sika Deer were introduced to Kintyre in 1893 when nine hinds and two stags were liberated at Carradale by Mr. Austin Mackenzie.

The deer were brought from Fawley Court in Buckinghamshire and were landed at Carradale pier from the local steamer. Mr. Colville was actually present on the steamer at the time and clearly remembers his boyish interest in the strange deer. At that time Carradale Point was enclosed by a deer fence only on the landward end, and it was not long before the deer broke out from the Point by swimming round the end of the fence (Whitehead, 1964). They steadily increased and by 1925 had apparently become such a pest that a considerable number had to be shot.

Since then their numbers have varied considerably, but they have steadily continued to extend their range, west to Largie estate in Kintyre, and northwards well into south Knapdale. Stragglers wander far afield and have been seen as far north as Poltalloch (across the Crinan Canal), and south of Campbeltown; one was shot at Craigs, near Campbeltown, on 11th May 1963.

Whitehead (1964) also mentions that at Torrisdale, before the last war, some Sika stags became very tame and used to come to the houses for food not only in winter but in spring and summer also.

At present the population seems to be very much on the increase and Captain Macdonald tells us that for the past few years some thirty Sikas a year have been shot on the Largie estate. The total stock in Kintyre and Knapdale must at times number several hundred deer, and may well be one of the largest herds in Britain.

ROE DEER *Capreolus capreolus* (Linnaeus, 1758)

Roe Deer are now fairly widely distributed throughout Kintyre, and although their numbers are not large they have clearly increased during the past thirty years along with the steadily increasing areas of woodland. Over a century ago Roe were very much scarcer and were virtually confined to the north of the peninsula. In 1843 the *New Statistical Account* said there were no Roe Deer in the parish of Killean and Kilchenzie, and in Saddell and Skipness Roe Deer, "formerly numerous" had been reduced to "only a few stragglers" by agricultural improvements. Some Roes were still present in this area in 1861.

Whitehead (1964) reported a comment from Major Macalister Hall, proprietor of Torrisdale, about the virtual disappearance of Roe after the introduction of Sika Deer to the area. This is interesting, and it is worth noting that in 1897, four years after the introduction of the Sika Deer, three Roe Deer from Bute were imported to Skipness in an attempt to improve the local

population (*Campbeltown Courier*, 27th February 1897). There are certainly a good many Roe Deer in this area nowadays, however, and in 1972 twenty-four Roes were shot on the Forestry Commission ground at Carradale (Mr. Peter Strang, *personal communication*).

Roe Deer in Kintyre are by no means confined to wooded areas, and in some districts, eg: near the Mull, can be seen grazing out on the open moors.

Roe are sometimes seen swimming out at sea, and have occasionally been caught this way, but all these instances seem to us to have arisen from attempts to evade capture, and not from a natural migrating urge. At any rate, there is no evidence that Roe Deer ever occurred naturally on any of the Kintyre islands, although some were introduced to Sanda for a few years during the first quarter of the 19th century (Campbell, 1885).

CELTIC SHORTHORN *Bos longifrons* Owen, 1848

In the course of building excavations at Dalaruan, Campbeltown, in summer 1951, some bones were found at a depth of four feet. These bones were examined by Father James Webb and Mr. G. B. Lewis, Veterinary Surgeon, and were finally forwarded to the Royal Dick Veterinary College, Edinburgh, where the identification was confirmed that the bones were those of the Celtic Shorthorn, the prehistoric ancestor of some of our present domestic cattle. Although remains of the Celtic Shorthorn have often been found on the east side of the Clyde and on the islands, to the best of our knowledge they have not previously been found on the west. A fully documented report of this discovery, with drawings and photographs, has been placed in the library of the Kintyre Antiquarian and Natural History Society (No. 307).

WILD GOAT *Capra hircus* Linnaeus, 1758

During the late 18th and early 19th centuries Goats were imported in large numbers from Ireland to Scotland by way of Kintyre, and even towards the end of last century it was not uncommon to see Irish goat-herds driving their Goats north through the peninsula. Goats escape and go wild very easily, and the several herds of Wild Goats in Kintyre almost certainly derive some of their origins from these early importations. In Kintyre herds of Goats are known to have existed at seven sites, and a detailed survey of all herds in the Clyde area, past and present, has recently been published (Gibson, 1972) to which interested readers are referred. We do not propose to repeat the full details here, but a brief summary is given below.

Mull of Kintyre: Herd known for over a century. The Goats range widely over some ten miles of coastline from Ballygroggan

south of Machrihanish to Borgadelmore Point near the Mull. They habitually inhabit the sloping ground near the cliff tops, are seldom found more than a mile inland from the edge, and are often seen in the neighbourhood of the lighthouse. Size of herd very variable, depending on shooting, but at present just under a hundred beasts. All multi-coloured; formerly a few pure black Goats present.

Largiebaan: Goats have apparently inhabited the Largiebaan caves for centuries. All multi-coloured at present, and size of herd around twenty beasts.

Sanda: Goats were introduced to Sanda some time during the first quarter of the 19th century, but were removed or shot out around 1825 (Gibson, 1973).

Learside: A small herd of about a dozen Goats existed here during the 1920s and 1930s, but was shot out during the early 1940s. All Goats were multi-coloured.

Davaar: Goats were introduced to Davaar some time before the middle of the 19th century. They have been shot out, or nearly so, from time to time, and fresh stock introduced. Present size of herd about twenty animals. All multi-coloured, but some white ones were present during 1920s.

Knock: Around the turn of the century a small flock of about half-a-dozen Goats used to frequent the steep hillsides overlooking Knockruan Loch, north-east of Campbeltown. Herd apparently ceased to exist just before first world war.

Carradale: On Carradale Point there is a herd of some thirty pure-white Goats, apparently descended from Saanen stock. Present for at least a century. Population remains remarkably stable at around thirty beasts, and the herd has bred true for at least the past thirty-five years, and presumably for much longer.

It is interesting to note that in Kintyre farm leases granted by the Duke of Argyll during the 18th and 19th centuries there was usually a general prohibition on keeping a Goat, under a penalty of ten shilling per annum for every Goat kept.

Order PERISSODACTYLA

HORSE *Equus caballus* Linnaeus, 1758

In the course of the 1951 excavations (detailed under Celtic Shorthorn), the tooth of a primitive horse was found. This was reported by the Royal Dick Veterinary College as belonging to probably the earliest breed of horses ever to be found in Britain (See Library Report No. 307).

Order LAGOMORPHA

BROWN HARE *Lepus capensis* Linnaeus, 1758

The Brown Hare is apparently indigenous to Kintyre, and occurs widely throughout the entire peninsula. After myxomatosis and the fall in the Rabbit population it underwent the usual increase; in the mid-1950s one could easily count between thirty and forty Hares in a single field, and this great increase was reflected in the records of shooting bags, but the numbers soon became stabilized. There are no Hares on the Sanda island group, but an occasional Hare has been shot on Davaar, which was presumably reached by crossing the Dhorlin at low water.

Several hybrids with the Mountain Hare have been recorded from Kintyre, and at least one of these is in the Natural History Museum in London (*Field*, 11th May 1946).

In January 1907 a specimen of the Brown Hare was shot at Carradale, in which the head exhibited some areas of winter whitening (*Field*, 2nd February 1907, p.183). This specimen is also preserved in the British Museum (Natural History).

MOUNTAIN HARE *Lepus timidus* Linnaeus, 1758

The Mountain Hare used to be very common in all suitable localities throughout the Kintyre peninsula. In some places the population was exceptionally high, and over 200 have been shot on the Mull by a shooting party in a single day. Until just over ten years ago Mountain Hares were still fairly common, but within the past few years there has been a remarkable decrease in numbers, so that in some areas the Mountain Hare is now virtually extinct; fluctuations in Mountain Hare populations are not new, however, and presumably they will slowly increase again.

Over a century ago there were no Mountain Hares at all in Kintyre. They apparently entered the peninsula by the slow process of colonisation from the north, and presumably the removal of their natural enemies, following the appointment of gamekeepers in 1842, accelerated this progress.

In Kintyre the territory of the Brown Hare and the Mountain Hare inter-mingles and hare shoots commonly have both Brown and Mountain Hares listed in their bags for low-lying areas. Indeed, on the low ground at the Laggan near Machrihanish, and further north at Rhunahaorine, Mountain Hares can fairly often be seen nearly at sea-level. Several Hybrids between Mountain and Brown Hares have been recorded (see above).

We have heard it said that some Irish Hares *L.t. hibernicus* were introduced to Kintyre at the beginning of this century, and

we would be very glad to receive any definite information. The Irish Hare does not always turn white in winter, so if the story of introduction is correct, this might explain why specimens of Kintyre Mountain Hares are sometimes seen without their white winter coats.

RABBIT *Oryctolagus cuniculus* (Linnaeus, 1758)

A detailed history of the Rabbit in Kintyre has recently been published (Colville and Gibson, 1974) to which interested readers are referred. We do not propose to repeat the full details here, but give below a summary of the main points.

The present population of Rabbits in Kintyre undoubtedly stems from their introduction to Macharioch in the 1840s. It seems to be generally agreed that there were no Rabbits on the Kintyre mainland before that date. Further local introductions followed, and the Rabbits quickly spread and soon became abundant throughout the entire peninsula. The Rabbit warren at Machrihanish was simply gigantic and must have been one of the largest in the country.

This was the position up to the time of myxomatosis, which reached Kintyre in 1954. Large numbers of Rabbits died, and Mr. Colville reckoned that some 10,000 Rabbits must have died in the Machrihanish warren during the early stages of the outbreak. Although now vastly reduced in numbers the Rabbit still occurs widely throughout Kintyre, and periodic small localised outbreaks of myxomatosis help to keep the population in check.

There used to be some Rabbits on Davaar, but we know of none since myxomatosis. The Rabbits on Sanda were exterminated over fifty years ago. There are still some Rabbits on Sheep Island, but their numbers seem to be markedly decreasing.

There is also an ancient reference to the Rabbit in Kintyre in 1669 which is difficult to explain. Possibly there was an attempted introduction which did not succeed. Rabbits have been well known on Sheep Island, however, since at least the end of the 16th century and possibly much earlier (*Macfarlane's Geographical Collections*, Vol. 2: 187).

Order RODENTIA

RED SQUIRREL *Sciurus vulgaris* Linnaeus, 1758

A hundred years ago there were no Red Squirrels in Kintyre, and the present population is presumably descended from Squirrels released at Minard, Loch Fyne, in 1847 and which rapidly spread throughout the adjacent country (Harvie-Brown, 1881; Ritchie, 1920). Red Squirrels are now fairly common in the northern

part of the peninsula, and are steadily increasing in numbers in the Forestry Commission's new conifer plantations. They are occasionally seen further south in Kintyre, but the distribution of the Red Squirrel is largely confined to the wooded areas, as one would expect. There are no Grey Squirrels *Sciurus carolinensis* in Kintyre.

WOOD MOUSE *Apodemus sylvaticus* (Linnaeus, 1758)

The Wood Mouse or Long-tailed Field Mouse is very common throughout Kintyre. It is found all over the countryside, apart from the highest hills, and frequently invades houses, particularly in winter, so it should not be assumed that mice found in houses are House Mice; a very large proportion of the house-trapped specimens which we have examined have been Wood Mice. There are no Wood Mice on the Kintyre islands.

BLACK RAT *Rattus rattus* (Linnaeus, 1758)

Formerly occurred throughout Kintyre, but now long extinct. Dark specimens of the Brown Rat, and sometimes the black variety of the Water Vole, are at times mistakenly reported as Black Rats, but we know of no true record of a Black Rat in Kintyre during the past hundred years.

BROWN RAT *Rattus norvegicus* (Berkenhout, 1769)

Although not mentioned in the *New Statistical Account* (1845) the Brown Rat was fairly well known in Kintyre after the middle of the 19th century, and presumably had its advance assisted by accidental introductions at the ports. Nowadays it is very common and widely distributed throughout the peninsula, particularly near habitation and around the harbours. Brown Rats are also commonly found far away from man, however, and many seem to lead a permanent existence around the shores, on the moors, and along rivers and at hill-lochs, where, being excellent swimmers, they are often mistaken for Water Voles. When fishing at a hill-loch Mr. Colville once hooked a Brown Rat through the paw with his fishing fly.

There are some Brown Rats on Davaar, and they used to occur on Sanda, Sheep Island and Glunimore, from where there were published records until the early 1900s (Paterson, 1901). The Brown Rat, however, now seems to be extinct on Sanda and Glunimore; there are still some present on Sheep Island.

HOUSE MOUSE *Mus musculus* Linnaeus, 1758

Common and widely distributed throughout the peninsula, particularly near habitation, but also found widely away from man. The mouse of the farm-yard and the corn ricks may very

often be the House Mouse, and certainly in Kintyre the name 'House Mouse' can be something of a misnomer. Some House Mice were accidentally introduced to Sanda in the mid-1940s and got well established near the Lighthouse, but have now been trapped out of existence (*Trans. Buteshire Nat. Hist. Soc.*, 17: 50).

BANK VOLE *Clethrionomys glareolus* (Schreber, 1780)

Fairly common and widely distributed in all suitable habitats throughout Kintyre; we have trapped many specimens. The Bank Vole is not always distinguished from the Field Vole, even by otherwise knowledgeable countrymen, which may lead to occasional reports of its apparent scarcity. It is worth drawing attention to the work done by Godfrey on Kintyre Bank Voles (*Proc. Roy. Phys. Soc. Ed.*, 27: 47-55; 1958).

WATER VOLE *Arvicola terrestris* (Linnaeus, 1758)

This large dark vole is widely distributed throughout Kintyre, and although local is certainly not uncommon. It is commonest along the streams and near the hill-lochs, but is also found at many places around the shore. It is frequently confused with the Brown Rat by casual observers, and references to so-called 'water rats' should often be referred to Water Voles. Melanistic forms are particularly common in Kintyre and these black Water Voles presumably belong to the highland race *A. t. reta*, although we have not been able to examine any comparative material.

FIELD VOLE *Microtus agrestis* (Linnaeus, 1761)

The Field Vole or Short-tailed Vole is extremely common and widely distributed throughout Kintyre, and nowadays apparently forms a large part of the staple diet of Kintyre Buzzards, Kestrels, Short-eared Owls, and Foxes. Field Voles occasionally occur in 'plague' form, but history shows that Kintyre has been less affected by vole plagues than neighbouring parts of the country. We have no records of voles from any of the Kintyre islands, and a report that a 'field vole' was caught some years ago on Sanda Island appears to have been an error (see *Trans. Buteshire Nat. Hist. Soc.*, 17: 50).

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THE BREEDING BIRD COMMUNITY OF FARMLAND ON RHUM, INNER HEBRIDES

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KINLOCH FARM at the head of Loch Scresort is the only cultivated portion of the 26,400 acres (107 km²) of Rhum, the largest of the islands comprising the parish of the Small Isles, Inverness-shire. During the last week of May and first week of June in 1974 a British Trust for Ornithology team stayed on the island and repeated a breeding bird census made there in 1968 and 1969. The farm is probably not untypical of many won from moorland in western Scotland, and a discussion of its breeding birds may be of some interest.

The area covered by the census, approximately 80 acres (32 ha.) lies between the Kinloch River and the drystone boundary wall at the foot of the northside hill of Mulloch Mor. The eastern section, nearest the head of Loch Scresort, is mainly 'improved' land with ploughed fields and re-seeded grassland, and pasture for a small herd of dairy cattle. The western section is rough moorland grazing, frequented by a herd of Rhum ponies. (There are no sheep on the island). This section is dominated by purple moor-grass and bent-grasses, with rushes in the wetter patches. A small part of it, perhaps two acres of a raised heathery knoll, has some small conifers planted among gorse and broom. The two sections of the farm are separated by a shelterbelt planted in 1960 and now well grown, the trees being Scots pine and Norway spruce up to 4m. high, with gorse and broom on the western margin, and a stream running through the belt from north to south. There is also a young conifer plantation west of the farm steading. Between this and the river mouth, continuing along part of the north shore of the loch, is a belt of mature trees dominated by Scots pines in the west, and by broadleaved trees in the east. These trees are mainly ash, sycamore and beech, underplanted with alder, hawthorn and willow, though birch and alder, with aspen, are dominant on damp soil towards the eastern end. This belt is very close to, and is undoubtedly influenced by, the mature woodland of the Kinloch Castle 'policies' immediately across the river. The farm has one beech and hawthorn hedgerow, with bramble, bounding the ploughed and re-seeded area.

Nine census visits were made in 1968 and 1969, and 12 in 1974, at almost daily intervals. The same species total, 26,

was found in 1974 as in 1968 (there was one fewer in 1969). In 1974 the density for all species combined was 120 pairs per 100 acres, or approximately 300 pairs per km², which is close to the average figure for the three census years. Whitethroat *Sylvia communis*, Goldcrest *Regulus regulus* and Grey Wagtail *Motacilla cinerea*, present in 1968, were absent in 1969, when Woodpigeon *Columba palumbus* and Spotted Flycatcher *Muscicapa striata* were additional species. No fewer than six species were missing in 1974 as compared with 1968-1969; but Oystercatcher *Haematopus ostralegus* (nesting on a ploughed field), Hooded Crow *Corvus corone cornix* (nesting in a Scots pine), Blue Tit *Parus caeruleus* Long-tailed Tit *Aegithalos caudatus* and Reed Bunting *Emberiza schoeniclus* were new. (Neither Blue Tit nor Reed Bunting were found on the island in 1968-69, but the others were present in habitats other than the farmland). Details of the censuses are shown in Table 1. In presenting a pie diagram of the breeding-bird community, the figures for the three years have been combined (Figure 1).

Table I (a) KINLOCH FARM BIRD COMMUNITY			
	1968	1969	1974
Total species	26	25	26
Total pairs	103	90	96
Density, pairs 100 a.	129	113	120
Density, pairs km ²	320	280	298

The most noteworthy difference in strength between the two earlier years 1968 and 1969, concerns migratory species: in addition to the chats, warblers and other summer visitors to Britain, this category includes both Skylark *Alauda arvensis* and Meadow Pipit *Anthus pratensis*; (A note in Evans and Flower (1967), "winter flock at Kinloch 30-50, in 1960 only", suggests that the Skylark is scarce outside the breeding season). Whereas Meadow Pipits and Skylarks were equal in strength in 1969, the former was more than twice as common in 1968, and four times as common in 1974. That fluctuations in the numbers of both species occur seems clear from the literature. Bourne (1957) made no mention of the Skylark, which Evans and Flower considered to be "a widespread but rather scarce breeder". The Meadow Pipit shows no

RHUM

Kinloch Farm Bird Community

Based on census results in 1968, 1969 & 1974

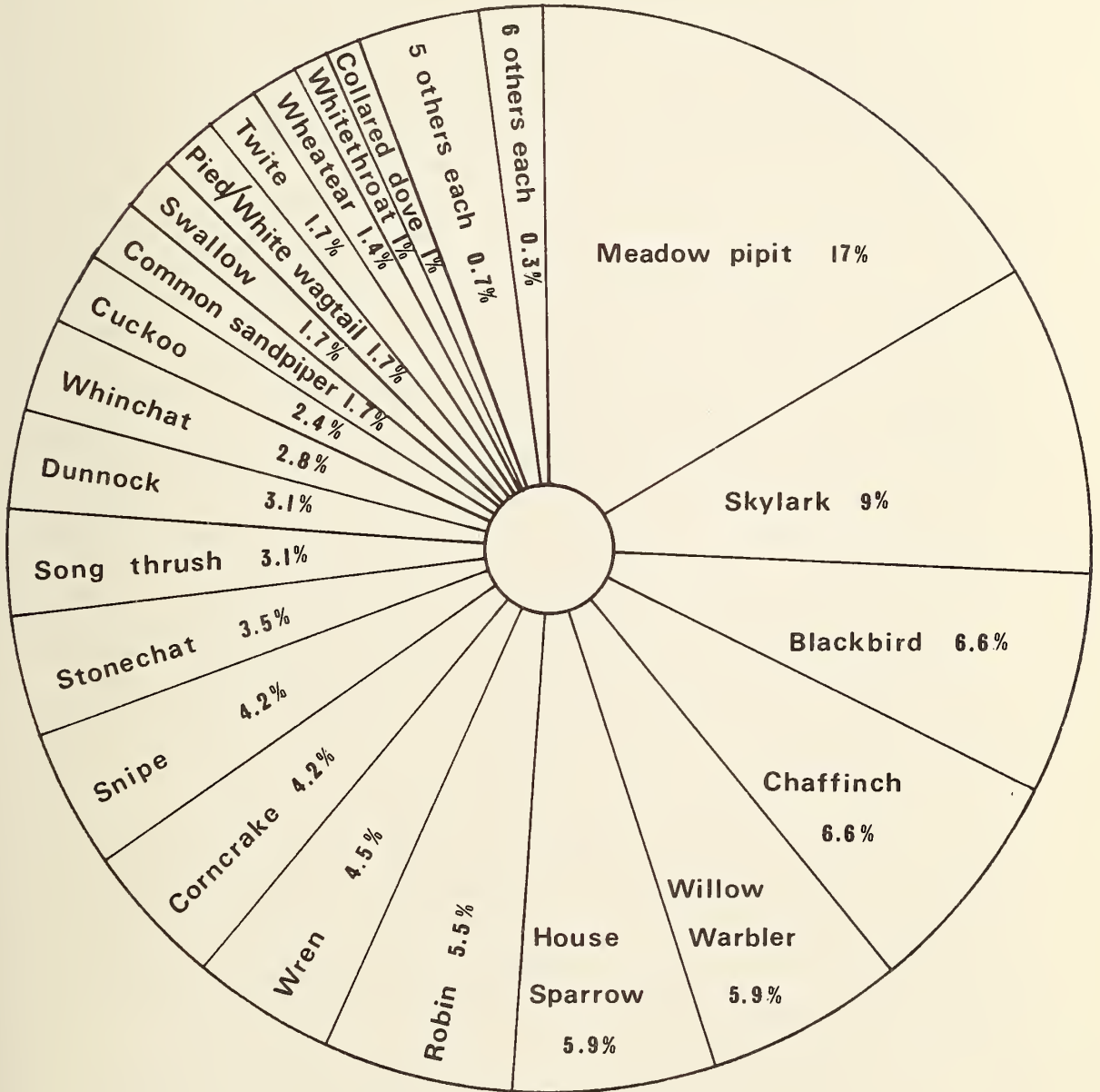


Fig. 1

apparent preference for improved as compared with unimproved land and its territories are fairly evenly dispersed over the whole farm.

Corncrakes *Crex crex* were fewer in 1969 than in 1968 and had almost disappeared by 1974. The farmland was presumably saturated in the first year since a bird occurred in a young tree-plot farther to the west in Kinloch Glen and another 'sang' regularly in the long grass of an overgrown lawn in front of the castle - as also happened in 1934 when six birds were said to have been 'craking' in the Kinloch area (Bourne 1957). The Corncrakes, even more noticeably than the Skylarks, were concentrated in the re-seeded fields and adjoining rushy patches.

Wheatear *Oenanthe oenanthe*, Whinchat *Saxicola rubetra* and Whitethroat were less in evidence in 1969 than in the previous year; all may have suffered from the drought conditions which occurred in 1968-69 in their wintering area, the Sahel Zone of West Africa (Winstanley, Spencer and Williamson 1974). So far as the chats are concerned, however, the situation may be misleading since they have fairly large territories and the same boundaries do not necessarily persist from year to year. A slight shift of ground could result in the focus of territorial activity lying outside the census plot; thus, although there were no Wheatears on the farm in 1974, there were pairs on the Mulloch Mor moorland nearby. Whinchats (two pairs in 1968 and one in 1969) had territories based on the shelterbelt, while a third pair in the first year occupied the planted corner in the north-west part of the farm. Doubtless the gorse and broom protecting the small conifers, which were then less than a metre tall, made these areas attractive, providing nesting cover, shelter for the broods, and (together with the walls and wire fences) prominent song-posts. By 1974 the growth of the trees may have rendered this habitat less suitable.

Between 1969 and 1974 there was considerable growth in the Robin *Erithacus rubecula* population in the Kinloch Castle 'polices' and this was reflected in an increase on the farm. The increase in Willow Warblers *Phylloscopus trochilus* and Wrens *Troglodytes troglodytes* is mainly attributable to the development of the young trees in the shelterbelt. More species and pairs were evident in the belt of mature trees and scrub along the shore than in 1969, and all are species which were doing well in the castle woodland.

The relative dominance of 'field' and 'forest' species changed markedly in the five years separating the 1969 and 1974 censuses (Table 2). In 1969 the 'field' species accounted for one half, but in 1974 only one third, of the total. 'Forest' species increased from 27% of the community in 1968-69 to 43%

	KINLOCH FARM BIRD COMMUNITY						
	Mapped Territories		Approx. Density 100 acres		Approx. Density km ²		
	1968	1969	1974	Min.	Max.	Min.	Max.
CORNCRAKE <i>Crex crex</i>	7	4	1	1.25	8.75	3.1	21.6
OYSTERCATCHER <i>Haematopus ostralegus</i>	-	-	1	1.25	3.1	3.1	
SNIPE <i>Capella gallinago</i>	4	3	5	3.75	6.25	9.5	15.5
CURLEW <i>Numenius arquata</i>	1	1	-	1.25	3.1	3.1	
COMMON SANDPIPER <i>Tringa hypoleucos</i>	2	2	1	1.25	2.5	3.1	6.2
WOODPIGEON <i>Columba palumbus</i>	-	1	-	1.25	3.1	3.1	
COLLARED DOVE <i>Streptopelia decaocto</i>	1	2	-	1.25	2.5	3.1	6.2
CUCKOO <i>Cuculus canorus</i>	2	3	2	2.5	3.75	6.2	9.3
SKYLARK <i>Alauda arvensis</i>	8	14	4	5.0	17.5	12.3	43.3

Table 1 (b) continued	Mapped Territories			Approx. Density 100 acres		Approx. Density km ²	
	1968	1969	1974	Min.	Max.	Min.	Max.
	SWALLOW <i>Hirundo rustica</i>	2	3	-	2.5	3.75	6.2
HOODED CROW <i>Corvus corone cornix</i>	-	-	1	1.25			3.1
BLUE TIT <i>Parus caeruleus</i>	-	-	1	1.25			3.1
LONG-TAILED TIT <i>Aegithalos caudatus</i>	-	-	1	1.25			3.1
WREN <i>Troglodytes troglodytes</i>	4	3	6	3.75	7.5	9.3	18.5
SONG THRUSH <i>Turdus philomelos</i>	2	3	4	2.5	5.0	6.2	12.3
BLACKBIRD <i>Turdus merula</i>	6	6	7	7.5	8.75	18.5	21.6
WHEATEAR <i>Oenanthe oenanthe</i>	3	1	-	1.25	3.75	3.1	9.3
STONECHAT <i>Saxicola torquata</i>	3	2	5	2.5	6.25	6.2	15.5
WHINCHAT <i>Saxicola rubetra</i>	5	1	2	1.25	6.25	3.1	15.5

Table 1 (b) continued	Mapped Territories				Approx. Density 100 acres		Approx. Density km ²	
	1968	1969	1974	Min.	Max.	Min.	Max.	
	ROBIN <i>Eritacus rubecula</i>	5	4	7	5.0	8.75	12.3	21.6
SEDGE WARBLER <i>Acrocephalus schoenobaenus</i>	1	1	-	1.25	1.25	3.1		
WHITETHROAT <i>Sylvia communis</i>	2	-	1	1.25	2.5	3.1	6.2	
WILLOW WARBLER <i>Phylloscopus trochilus</i>	4	4	9	5.0	11.25	12.3	27.8	
GOLDCREST <i>Regulus regulus</i>	1	-	1	1.25		3.1		
SPOTTED FLYCATCHER <i>Muscicapa striata</i>	-	-	-	1.25		3.1		
DUNNOCK <i>Prunella modularis</i>	4	1	4	1.25	5.0	3.1	12.4	
MEADOW PIPIT <i>Anthus pratensis</i>	19	14	16	17.5	23.75	43.3	58.5	

Table 1 (b) continued	Mapped Territories			Approx. Density 100 acres		Approx. Density km ²	
	1968	1969	1974	Min.	Max.	Min.	Max.
PIED/WHITE WAGTAIL <i>Motacilla alba</i>	2	2	1	1.25	2.5	3.1	6.2
GREY WAGTAIL <i>Motacilla cinerea</i>	1	-	1		1.25		3.1
TWITE <i>Acanthis flavirostris</i>	2	2	1	1.25	2.5	3.1	6.2
CHAFFINCH <i>Fringilla coelebs</i>	6	6	7	7.5	8.75	18.5	21.6
REED BUNTING <i>Emberiza schoeniclus</i>	-	-	2		2.5		6.2
HOUSE SPARROW <i>Passer domesticus</i>	6	6	5	6.25	7.5	15.5	18.5

Table 2 RELATIVE DOMINANCE OF 'FIELD', 'FOREST' and 'SCRUB' SPECIES
in 1968, 1969 and 1974

	FIELD SPECIES				FOREST SPECIES				SCRUB SPECIES			
	1968	1969	1974		1968	1969	1974		1968	1969	1974	
CORNCRAKE	7	4	1	HOODED CROW	-	-	1	STONECHAT	3	2	5	
OYSTERCATCHER	-	-	1	BLUE TIT	-	-	1	WHINCHAT	5	1	2	
SNIPE	4	3	5	L-TAILED TIT	-	-	1	SEDGE WARBLER	1	1	-	
CURLEW	1	1	-	WREN	4	3	6	WHITETHROAT	2	-	1	
C. SANDPIPER	2	2	1	SONG THRUSH	2	3	4	REED BUNTING	-	-	2	
CUCKOO	2	3	2	BLACKBIRD	6	6	7					
SKYLARK	8	14	4	WIL. WARBLER	4	4	9					
WHEATEAR	3	1	-	GOLDCREST	1	-	1					
MEADOW PIPIT	19	14	16	Sp. FLYCATCH.	-	1	-					
ALBA WAGTAIL	2	2	1	DUNNOCK	4	1	4					
GREY WAGTAIL	1	-	1	CHAFFINCH	6	6	7					
TWITE	2	2	1									
Totals:	51	46	33		27	24	41		11	4	10	
Percentage of Grand Total:	49.5	51	34.4	Percentage of Grand Total:	26.2	26.7	42.7	Percentage of Grand Total:	10.7	4.5	10.5	

NOTE: *Columbidae*, *Hirundinidae* and *Floceidae* are excluded from this table.

	KINLOCH FARM BIRD COMMUNITY: DISTRIBUTION IN WOODED HABITATS											
	1968			1969			1974					
	Beech Hawthorn Hedge	Mature Trees/ Scrub	Shelter Belt p.1960	Beech Hawthorn Hedge	Mature Trees/ Scrub	Shelter Belt p.1960	Beech Hawthorn Hedge	Mature Trees/ Scrub	Shelter Belt p.1960	Beech Hawthorn Hedge	Mature Trees/ Scrub	Shelter Belt p.1960
CORNCRAKE	-	-	1	-	-	-	-	-	-	-	-	-
WOODPIGEON	-	1	-	-	1	-	-	-	-	-	-	-
COLLARED DOVE	-	1	-	-	2	-	-	-	-	-	-	-
HOODED CROW	-	-	-	-	-	-	-	-	-	-	-	-
BLUE TIT	-	-	-	-	-	-	-	-	-	-	-	-
LONG-TAILED TIT	-	-	-	-	-	-	-	-	-	-	-	-
WREN	-	3	-	-	3	-	-	-	-	-	-	1
SONG THRUSH	-	3	-	1	2	-	1	3	-	1	-	-
BLACKBIRD	2	5	-	1	5	-	1	6	-	1	-	-
STONECHAT	-	-	-	-	-	-	-	-	-	-	-	-
WHINCHAT	-	-	2	-	-	1	-	-	1	-	-	-
ROBIN	-	5	-	-	4	-	-	-	-	-	-	-
SEDGE WARBLER	-	1	-	-	1	-	-	-	-	-	-	-
WILLOW WARBLER	1	3	-	-	4	-	-	-	-	-	-	4
WHITETHROAT	1	1	-	-	-	-	-	-	-	-	-	-
GOLDCREST	-	1	-	-	-	-	-	-	-	-	-	-
DUNNOCK	2	3	-	-	1	-	-	-	-	1	-	-
CHAFFINCH	1	5	-	1	5	-	1	5	-	1	-	1
REED BUNTING	-	-	-	-	-	-	-	-	-	-	-	1
Totals:	7	32	3	3	28	2	3	39	2	3	8	8

in 1974. These changes were doubtless due to the growth of the shelterbelt and the small plantation supplementing the riverside belt of trees and shrubs. The number of pairs dependent on woody cover is broken down into the three available habitats in Table 3; it will be seen that the mature trees and scrub, and in particular the shelterbelt, had made substantial gains.

With a total density of approximately 300 pairs per km², Kinloch Farm compares more than favourably with other Scottish farms for which the Common Birds Census carried out by the BTO has produced data: e.g. East Ross 143 pairs km², Midlothian 123 and 111 pairs km²; Renfrewshire 238 pairs km². The most valid comparison one can make is probably with the Tagan and Anancaun farmland (embracing rough grazing, rhacomitrium heath, alders and gorse) which a BTO expedition to Wester Ross examined superficially in 1968. As only three full visits were made, the census results cannot be used to derive density figures, but a reasonably good picture of species dominance can be drawn (Figure 2). Both areas were dominated by the ground-nesting passerines, Meadow Pipit and Skylark, with Chaffinch *Fringilla coelebs* and Willow Warbler fairly common. The common species of ornamental gardens, Blackbird *Turdus merula*, Robin and Song Thrush *Turdus philomelos*, are much more in evidence on Rhum, due to the proximity of the Castle 'policies'.

Golden Eagle *Aquila chrysaetos*, Kestrel *Falco tinnunculus* and Heron *Ardea cinerea* were seen occasionally. Wood pigeons and Mistle Thrushes *Turdus viscivorus* visited the fields from the castle grounds, while Herring and Common Gulls *Larus argentatus* and *L. canus* came in from the shore. A flock of non-breeding Golden Plovers *Pluvialis apricaria* (once ten birds) was present on most days.

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ANANCAUN / TAGAN FARM

Breeding Bird Community - 1968

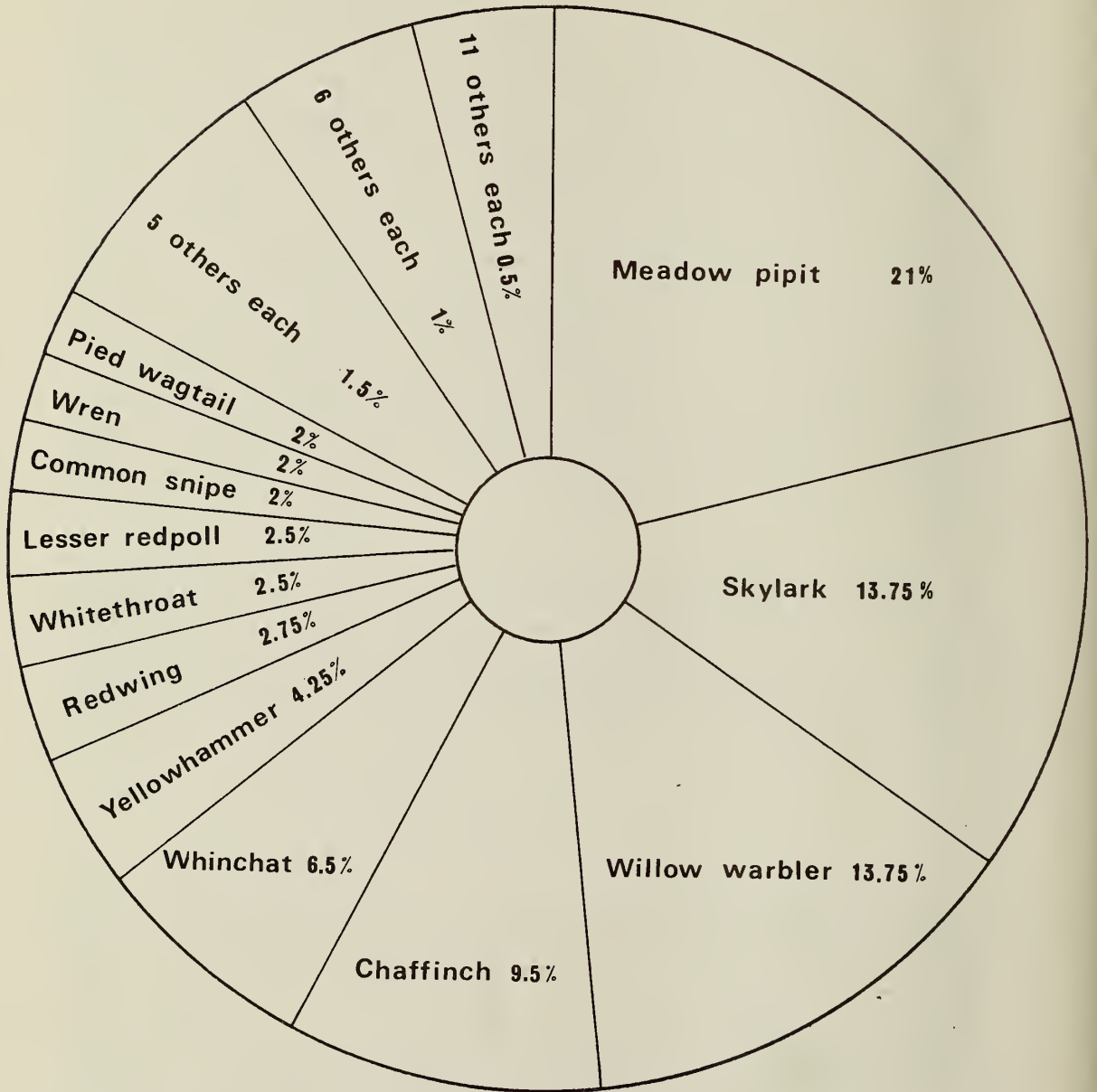


Fig. 2

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INTERTIDAL ALGAE OF SOME ESTUARIES IN GALLOWAY

By MARTIN WILKINSON

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Introduction:

This paper has two purposes. Firstly, although Perkins (1968,1969,1971) has given a fulsome account of the distributions of intertidal organisms, particularly animals, on the Solway coast, and Burrows (1960) has published a more detailed preliminary account of the intertidal algae of Galloway, there are relatively few data on the species of algae in the many sub-estuaries of the Solway system. This work aims to partly fill that gap by presenting preliminary lists of intertidal algae for three such estuaries. Secondly, the distribution pattern of algae along the estuaries is compared with those patterns reported by the author for the estuaries of the Rivers Clyde (Wilkinson 1973b), Wear (Wilkinson 1973a) and Add (Wilkinson and Roberts 1974) as part of a survey of the range of algal distribution patterns in estuaries.

The Sampling Sites

Samples of intertidal benthic algae were collected from a number of sites along the tidal lengths of the River Dee and its tributary the Tarff Water, in March 1974, the Water of Fleet, also in March 1974, and the Urr Water in August 1974. The positions of the sites are shown in Fig.1 and given as grid references in Table 1.

The Algae

The distribution of benthic algal species found along the three estuaries is shown in Table 2. The overall distribution pattern with increasing distance upstream and lowered average salinity is that already reported by Wilkinson (1973a) as being the usual pattern i.e. decreasing species number due to selective attenuation of the ranges of red algae at first, followed by brown algae, with green algae penetrating right upstream, and a brackish water component represented by *Vaucheria* spp., *Fucus ceranoides* and *Monostroma oxyspermum*.

The more interesting feature of these three Solway estuaries is the absence of a two zone shore with the lower half dominated by *Melosira nummuloides* (Dillw.) C.Ag., a filamentous diatom, as reported by Wilkinson for the polluted estuaries of the Clyde (1973b) and Wear (1973a). Also the upper reaches were

not characterised by conspicuous gelatinous colonies of blue-green algae as reported by Wilkinson and Roberts (1974) for the River Add in Argyllshire and the Rivers Ord and Brittle in Skye. The three Solway estuaries considered here would appear, on the basis of the present preliminary data, to represent a third category of estuary in which the upper reaches are characterised almost wholly by green algae and *Vaucheria* spp. Such estuaries have also been found by the author in Northumberland in the Rivers Twee, Aln, Coquet and Wansbeck for which detailed species distributions have not yet been published.

This possibility, that within the overall distribution pattern of algae in estuaries at least three different floristic types may exist, requires confirmation by more detailed examination of the estuaries named above and of others. Such work is in progress.

Table 1:

Site Name	Site No.	Type of Shore	Grid Ref.
<u>River Dee/Tarff</u>			
Brighthouse Bay	1	R	NX635450
Shoulder Craig	2	RM	NX663490
near Kirkchrist	3	R	NX675513
Kirkcudbright	4	BM	NX686516
-	5	BMW	NX686537
Low Bridge of Tarff	6	MP	NX685541
Glenald	7	V	NX686542
<u>Water of Fleet</u>			
Mosyard Bay	1	RS	NX552518
Skyreburn Bay	2	RBM	NX575545
Cardoness Castle	3	BM	NX592553
Alder Pool	4	R	NX595559
Fleet Bridge	5	V	NX598562
<u>Urr Water</u>			
Kippford	1	RMBW	NX837550
Palnackie	2	RBM	NX822569
near The Port	3	M	NX832603
Buittle Bridge	4	V	NX823606

Key to shore types: R - Rocky. M - Muddy. S - Sandy. B - Boulders or stones. P - Stonework of bridge. W - Wooden pilings. V - Low vertical muddy bank with little tidal range.

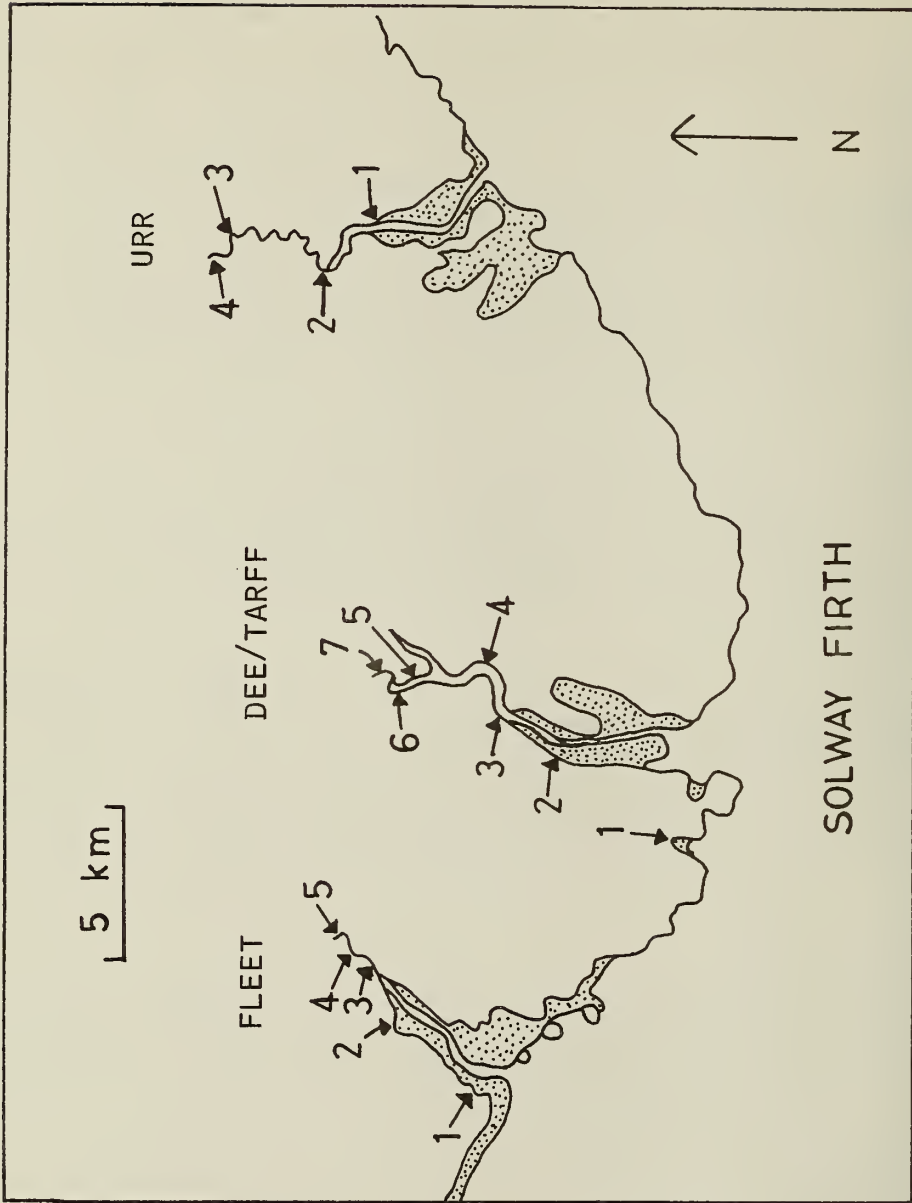


Figure I

Sketch map to show positions of sampling sites

Table 2: Full systematic list of algal species found at each sampling site. (Presence indicated by X)

ESTUARY:	DEE/TARFF							FLEET					URR				
SITE NO:	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	
CHLOROPHYCEA																	
<i>Blidingia marginata</i> (J.Ag.) P. Dang.	X	X	X	X	X	X	X	X	X	X	X		X	X			
<i>B. minima</i> (Kutz.) Kylin	X		X	X	X	X	X	X	X	X	X		X	X			
<i>Chaetomorpha linum</i> (O.F. Mull.) Kutz.								X									
<i>Cladophora glomerata</i> (L.) Kutz.																	X
<i>C. rupestris</i> (L.) Kutz.	X	X						X									
<i>C. sericea</i> (Huds.) Kutz.	X							X									
* <i>Codiolum</i> -phases	X							X									
<i>Enteromorpha intestinalis</i> (L.) Link	X	X	X	X	X	X	X	X	X				X	X			
<i>E. prolifera</i> (O.F. Mull.) J. Ag.														X			
<i>Entocladia perforans</i> (Huber) Levr.	X	X						X									
+ <i>Epicladia flustrae</i> Reinke								X									
+ <i>Eugomontia sacculata</i> Kornm.								X									
<i>Monostroma oxyspermum</i> (Kutz.) Doty			X	X						X			X				

ESTUARY:	DEE/TARFF							FLEET					URR			
	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4
<i>Elachista fucicola</i> (Vell.) Aresch.													X			
<i>E. scutulata</i> (Sm.) Aresch.	X															
<i>Fucus ceranoides</i> L.				X				X		X	X			X		
<i>F. serratus</i> L.	X	X														
<i>F. spiralis</i> L.	X	X	X					X	X					X		
<i>F. vesiculosus</i> L.	X	X	X					X						X		
<i>Halidrys siliquosa</i> (L.) Lyngb.								X								
<i>Pelvetia canaliculata</i> (L.) Dcne. et Thur.	X	X	X					X	X					X		
<i>Pilayella littoralis</i> (L.) Kjellm.	X	X	X						X							
<i>Sphacelaria radicans</i> (Dillw.) C. Ag.	X															
<i>Sphacelaria</i> sp.								X								
RHODOPHYCEAE																
<i>Ahmfeltia plicata</i> (Huds.) Fries	X							X								
<i>Bangia fuscopurpurea</i> (Dillw.) Lyngb.	X															
<i>Callithamnion corymbosum</i> (Sm. Lyngb.	X															

ESTUARY:	DEE/TARFF							FLEET					URR				
SITE NO:	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	
<i>Polyides rotundus</i> (Huds.) Grev.		X						X									
<i>Polysiphonia lanosa</i> (L.) Tandy	X	X						X					X				
<i>P. nigrescens</i> (Huds.) Grev.	X	X						X									
<i>Porphyra leucosticta</i> Thur.								X									
<i>P. umbilicalis</i> (L.) J. Ag.		X											X				
<i>Ptilota plumosa</i> (Huds.) J. Ag.	X																
MYXOPHYCEAE																	
+ <i>Entophysalis deusta</i> (Menegh.) Dr. et D.	X							X									
<i>Oscillatoria</i> sp.	X												X				
<i>Phormidium</i> sp.					X	X	X									X	X
+ <i>Plectonema terebrans</i> Gom.	X							X									
BACILLARIOPHYCEAE																	
° <i>Schizonema</i> sp.		X						X									
<i>Melosira moniliformis</i> (Mull.) Ag.					X												
XANTHOPHYCEAE																	
<i>Vaucheria</i> sp.	X		X	X	X	X	X		X			X				X	X
EUGLENOPHYCEAE																	
<i>Euglena</i> sp.				X	X						X						X

- Notes: * Phases in the life-histories of *Monostroma grevillei* (Thur.) Wittr., *Eugomontia sacculata* Kornm. and *Gomontia polyrhiza* Born. et Flah. which are, as yet, morphologically indistinguishable and which bore in mollusc shells.
- + Boring in mollusc shells.
- ° This name is here taken to mean all naviculoid diatoms growing in mucilaginous tubes forming macroscopic filaments.

Acknowledgement:

Mrs Christine E. Wilkinson is thanked for considerable assistance in this investigation.

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THE LOCH LIBO NATURE RESERVE

By J.C. SMYTH

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In 1973 the Scottish Wildlife Trust purchased Loch Libo, in Renfrewshire, as a reserve, along with the surrounding marshland and some woodland. The purchase was made possible by means of a most generous grant from the Fraser Trust, to which the Scottish Wildlife Trust is exceedingly grateful. The Clyde Area Branch, under whose care it fell, appointed a management committee under the convenership of a former owner, Mr. Ian Grant of Caldwell Law, to take what measures might be necessary for the care and maintenance of this attractive site.

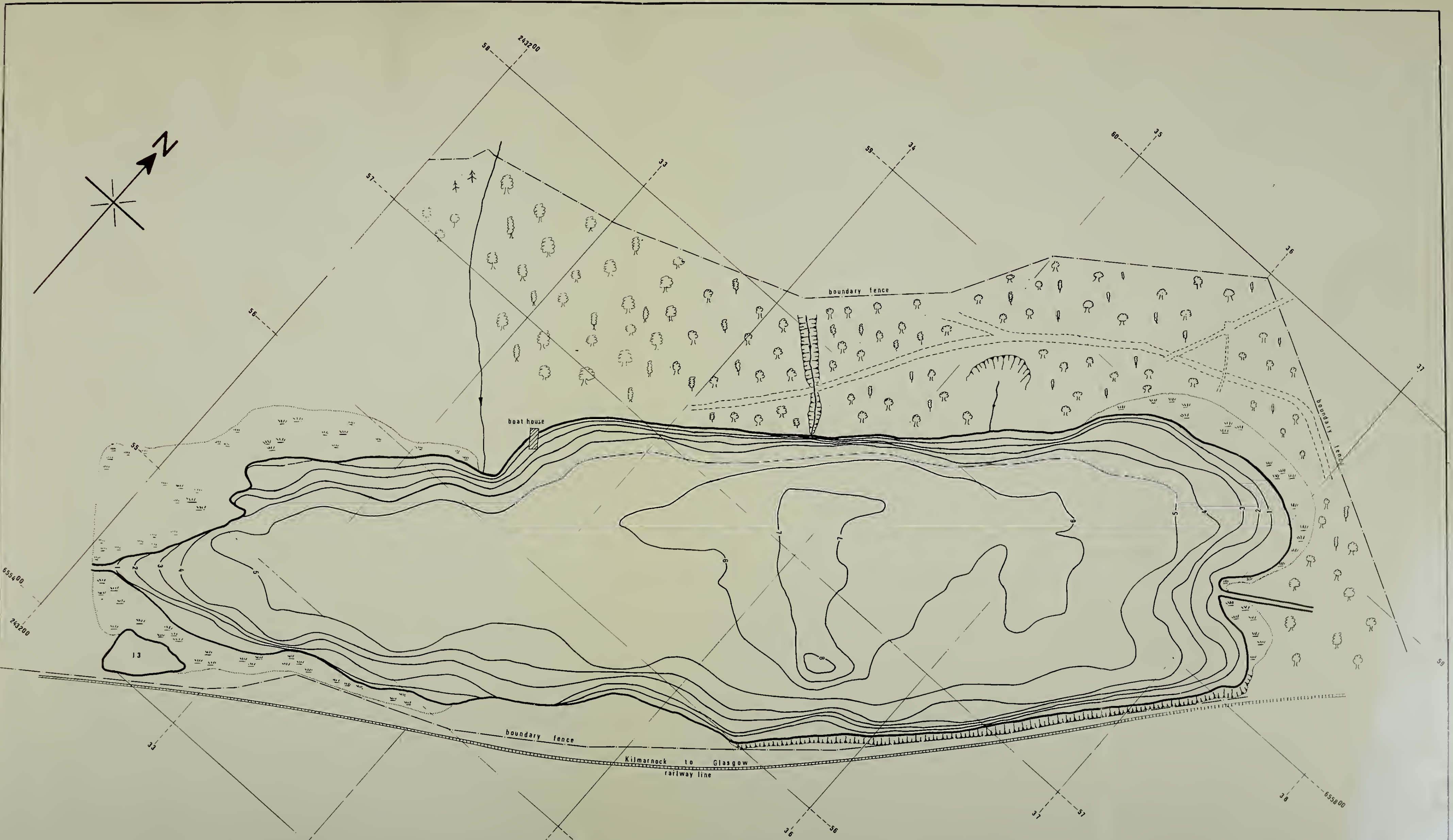
In this country, where most of the landscape is in some degree the product of human activity over a long period, the management of a reserve is rarely a matter of leaving things alone. At an early stage decisions have to be made as to the objectives of maintaining the reserve, what habitats, plants or animals it is desired to preserve or encourage and for what purpose - conservation, research, education or other object. The measures necessary to achieve these objectives then have to be devised, taking account of such influences as natural change (e.g. of vegetation) or the effects of human activity arising for example from change of use, interference or visitor pressure. Finally, practical means have to be found of putting the measures into effect.

Clearly the formulation of such a management plan calls for as much knowledge as can be gathered about the natural history of the area. Although Loch Libo has long attracted discerning naturalists it is surprising how little information has found its way into records. To help rectify this, and to provide some sort of base-line for further studies, a short symposium was held in Paisley College of Technology on 4th December 1974, at which several papers were presented and some useful discussion took place. The series of papers which follows in this volume of the *Western Naturalist* is based on papers contributed to the symposium. In spite of the lapse of time between presentation and publication the material contained has not been substantially augmented. One paper presented at the meeting by Mr. J.D. Hamilton on the limnology of the loch is not included, as the author did not feel our state of knowledge was yet sufficient to merit publication. It is to be hoped that in this as in other areas of study the gaps in our knowledge will soon be filled by further work. Many important decisions regarding the future of this

reserve have still to be taken, and will need to be supported by the best understanding we can achieve.

The accompanying hydrographical survey map of the loch was prepared under the direction of Mr. John Paul of the Department of Civil Engineering, Paisley College of Technology, and the photographs were taken by Mr. Julian Stephen of Studio Scotland, to both of whom we are very grateful.

Professor J.C. Smyth, Department of Biology, Paisley College of Technology.



LOCH LIBO

Bathymetric Contours to 1ft

(approx. scale 1:2000)

HISTORY AND TOPOGRAPHY OF LOCH LIBO

By IAN W. GRANT

President, Renfrewshire Natural History Society

The earliest written record of Loch Libo is from a Charter of the Steward, Walter II, son of Alan, dated 1294, to the Monks of Paisley. It grants them right of passage through his forest to enable them to go fishing in Loch Libo. They were also enjoined to unstring their bows whilst in the forest (more than likely, the forest of Fereneze).

Then, in 1374, Robert II bestowed on his brother-in-law, Sir Hugh Eglinton, the lands of Lochlibo-side (otherwise the Barony of Syde), formerly the property of the deceased prior owner Michael de Lardner. It is worth noting that all the gentlemen mentioned so far are Normans, without whom Scotland would be a quite different country today, both in patronym and place-name.

The later ownership is fully documented, *vide* the *Caldwell Papers* (Maitland Club, 1854; New Club, 1883-85) from the late 14th century when Gilchrist Muir (More) married the heiress of the Caldwell estates, the male line having failed. There is no doubt that the Caldwells were well established in the district before the 14th century; they appear to have no Norman connections but possibly stem from one of the much earlier Anglo-Saxon immigrants into the Kingdom of Strathclyde. The Caldwell family itself died out in the 18th century.

Not surprisingly, Loch Libo receives several mentions in the Eglinton Manuscripts, although strictly speaking it was not within the Barony, but these references are of interest as they show the very great diversities of spelling prevalent at that time, e.g. Lochlebog, Loychle Bokside, Lochlibock.

The first map on which Loch Libo appears is the one of Renfrewshire published by Blaeu in Amsterdam in 1654. This is almost certainly the work of Timothy Pont, the survey dating from about 1590. Although the Levern is shown as rising from the north end of the loch this is manifestly not so and, even at that time, could not have been so. Many of the water sources on that map, however, are a little inaccurate, and considering the misfortunes of the Pont papers over fifty or so years, perhaps this, as well as some of the wild spelling, is not so surprising.

The *Caldwell Papers* supply us with frequent references and interesting historical associations, such as: "In 1652 the

Laird had his friends at the fishing"; "in 1670 General Dalziel, who took over the Estates after the Mures' involvement with the Pentland Rising and the subsequent forfeiture, issued permits for the fishing at Loch Liboth".

The *Old Statistical Account* speaks of the loch "abounding with pike and perch". That was in 1792 and it is still true. In Dr. Pride's *History of the Parish of Neilston* (1910) there is an extremely interesting account of a mining tragedy in 1793 which refers to the waters of Loch Libo bursting into the mine workings and engulfing the miners. Subsequent quotes seem to stem from this source although differing dates are apparent. The main fact, however, is quite erroneous in that the water flows out of the main shaft and from there into the loch, so the flood water must be from subterranean sources gathered in the numerous other mine workings in this area, which lies immediately to the east of the loch. I hope to lay this particular ghost by further research in the newspapers of that age.

Since early times coal-mining has been active at Uplawmoor within the crush strata associated with the Barrhead fault, and is very possibly the principal reason for the village being where it is, apart from the popular belief that the 19th century Mures fancied making it into a "garden town". In Charles Taylor's *The Levern Delineated* (1830-31), a delightful little book, there is a lithograph of the loch which shows the donkey engine on the mine shaft at the east end, approximately where the level-crossing is today.

In 1847 the *New Statistical Account* states that the depth of the loch "is unknown; but it is considerable", but this could well be an idea born of the pit disaster. Interestingly enough, local people still refer to deep holes in the loch, perhaps a story invented by apprehensive mothers. We know, however, that Loch Libo is a shallow loch, at no place being much over two metres in depth, apart from one deep hole near the S.E. corner which is probably a remnant of the mine workings (see Fig. 1).

Dr. Pride, in his *History of the Parish of Neilston* (1910) refers to the natural history and topography of Loch Libo, but does not go into any great detail.

The drainage of the loch is by the Lugton Water, finishing up in the Firth of Clyde at Irvine. The level at the present time is much higher than formerly, due to the fact that no drainage has been carried out since the estate was broken up in 1919. The loch outflow to the west is very slow and in consequence silting has taken place, bringing it to something like 30-40 cm above its level in the 19th century. This is borne out by an old cart-road running round the north side, which is some 20-30

cm below the current level; this road was used by the estate and neighbouring farmers for carting out reeds for thatching.

Curling was a favoured pastime during the colder winters of forty and more years ago: the oldest club in the district is the Curlers', first formed in 1860.

The water source of Loch Libo is multi-spring; the west side has approximately ten springs feeding into the waterfall area, four off the hill at about mid-way, two large outfalls farther north emanating at about 15 metres above loch level and one heavy spring complex originating in the old Head of Syde farm complex (thought to be mediaeval) which enters the loch at the N.E. perimeter. The stream from the north carried the farms' drainage from the watershed at Shilford, again all spring fed. There are several feeding points on the east side, all passing beneath the railway embankment which forms about half the loch's eastern perimeter, the greatest flow being that from the mine shaft previously mentioned. It may be of interest to point out at this stage that the springs on the west side correspond to, and follow, the contour line of each successive lava sheet which, close to the fault line, dips towards the loch at 15 to 20 degrees. The non-conformity can actually be seen near to the waterfall on the west burn, where the carboniferous sandstone of the downthrow is exposed, the strata lying vertically against the basaltic lavas of Calciferous Sandstone Age.

The organic and mineral additives contributed to the loch by all these sources must be responsible in no small measure for the renowned Pike and Perch population. Furthermore, the mud and silt accretions, some 3-4 feet (1-1.2 metres) deep in places, cover several acres to the south west, showing that the loch must have been considerably larger centuries ago.

A word about the woodlands: the first estate plantings which we have on record are of 1730-1740 vintage, doubtless prompted by the Act of 1731. It is just possible that one or two isolated aged Beeches of this planting still survive, although it is more likely that the old ones are from the 1770 (*circa*) planting of the renowned Baron Mure of Caldwell, who died in 1796 not long after the existing Caldwell House was built to a design of Robert Adam. The *Old Statistical Account* refers to "extensive thriving plantations" at Loch Libo, and this we can verify by ring-dating giving dates between 1760 and 1800. Thereafter there was little planting done until the middle of the 19th century; indeed, the *New Statistical Account* of 1845 exhorts the local landowners to replant their woodlands. This was certainly done between 1850 and 1870 by the Mures and the remaining large deciduous trees (with the exception of a few from 1770) are all of this age. It is interesting to note that a few large

ones are stool shoots from felled trees of the early 18th century plantings. There is also little doubt that the great gales have had a marked influence on the estate woodlands, but it has proved impossible to make chronological sense out of the rural legend.

The mid-19th century plantings were of great importance throughout Renfrewshire; these were the Victorian Lairds' legacies to posterity and all the old estates have fine trees of this vintage, while several followed the fashion and planted arboreta in the vicinity of their grand houses. In point of fact Renfrewshire would be a sorry sight arboriculturally were it not for the efforts of these wealthy Victorians.

The species planted at Loch Libo and the surrounding estates were mainly Oak, Ash, Beech (by far the most plentiful), Sycamore and Elm. The very old trees are the Beech beside the waterfall, now showing visible signs of decay, another Beech about 200 metres to the east right on the march, and two Elms near the north-east perimeter. The other remaining trees are all that is now left of what must have been a fairly considerable 19th century managed woodland. The last organised planting by the estate was in 1910-1917 when fairly considerable areas were planted with coniferous trees, including a few isolated stands at the lochside. These, however, were cut out during the last war. The estate was sold up in 1919 and since then there have been (at Loch Libo) two major fellings and several minor ones, which effectively removed all the valuable and accessible trees. It is noticeable that the fine trees left would be extremely difficult to fell and almost impossible to extract. Since the last felling (c.1948) there has been only natural regeneration, Roe and Rabbit permitting; consequently sapling Sycamore abound plus a few Birches. None of these is free of basal bark damage, so very few fine trees will result. At the east end of the loch there is a charming stand of Aspen, with Alder, Birch and Willow, and on the north-west march there are two decayed Sweet Chestnuts showing vigorous epicormal growth.

The whole area will benefit from selective planting and a gradual reduction in the Sycamore population. Low canopy and rapid cover trees would be useful additions from the naturalist's viewpoint, particularly as much of the open ground is infested with bracken.

The old cart-roads are overgrown and swampy; they all require drainage and it is suggested that this should be a first priority because, under traffic in these conditions, these fine old mediaeval roads, of broken stone on boulder and pebble, just break down wherever the drainage water cannot get away. All the

old stone drains are remarkably well constructed and most of them can still be rescued, preferably by hand labour if available.

The loch itself constitutes quite a severe frost pocket, but the exposure of Lochlibo-side is such that it would be possible to establish semi-exotic trees as long as they were planted above the frost line.

The loch is a treasure house for the naturalist and will require to be monitored for several years before it yields up all its secrets. Work has already commenced on this project, and some is reported in the succeeding papers.

Warning: Access poses a problem. The Trust's only access to Loch Libo is by the level-crossing, now reinstated by British Railways at the Trust's request. It is essential to realise, however, that this single track railway line carries the express trains from Glasgow to the Midlands and, owing to the configuration of the ground at the crossing, both vision and sound are severely, and surprisingly, restricted. Visitors are therefore warned to take the greatest possible care at all times.

THE VEGETATION OF LOCH LIBO AND ITS MANAGEMENT

By EDWARD T. IDLE
Nature Conservancy Council

This short paper is divided into three parts; firstly, the floristics of Loch Libo and its immediate surroundings, dealing with particular species of interest; secondly, the vegetation around the loch and the main community types; thirdly, the broad options for management open to the Scottish Wildlife Trust.

1. FLORISTICS

The Nature Conservancy Council's list of vascular plants for Loch Libo includes 120 species. Taking into account the species from woodlands in the immediate catchment of the loch, this total is similar to that for other wetlands in the Glasgow area, e.g. Ashgrove Loch (NS275443) - 95 species, and Caldarven Loch (NS425837) - 97 species. A more thorough search of the woodland on the west side of Loch Libo might raise the total to about 175 species.

Three species from the total list are of particular interest because of their rarity and distributional patterns. They are the Crested Buckler Fern *Dryopteris cristata* (L) A. Gray, the Cowbane *Cicuta virosa* L. and the Lesser Pond Sedge *Carex acutiformis* Ehrh.

(a) *Dryopteris cristata*. Clapham *et al.* state that this plant is distributed throughout Europe from south east Norway on wet heath and marshes. It is very local or rare and decreasing, and in Britain is now extinct in two former sites in Nottingham and Yorkshire, the two nearest to Loch Libo. In the *Atlas of the British Flora* (Perring and Walters 1962) the plant is recorded in ten 10 km squares since 1930, but as already stated, several of these are no longer extant. The main centre for *D. cristata* in Britain at present is East Anglia and even there the plant is said to be decreasing through loss of habitat due to drainage. The *Atlas of the Plants of North Western Europe* (Hulten 1971) shows *D. cristata* as rare in Norway but well distributed in Sweden and sparsely distributed in Russia and Denmark. Hyde and Wade (1948) describe the distribution as 'circumpolar', occurring in northern and central Europe, western Siberia and Japan, east and north America from Newfoundland to Saskatchewan, south to Arkansas.

Hooker (1821) in *Flora Scotica* records the presence of *D. cristata* as 'native', while Henedy (1878) states that the plant is very rare in boggy heaths 'in a bog beyond Crofthead'. This site is about one mile north-east of Loch Libo in Cowdenburn Glen

(pers. comm. Dr. J.A. Gibson). Lee (1933) repeats Henneidy's description.

The evidence thus suggests that *Dryopteris cristata* has always been rare at Loch Libo and that it is at the extreme westerly edge of its European distribution. Searches for the plant on three occasions in the last 5 years have failed to locate identifiable specimens of *D. cristata* and a thorough investigation is now required to clarify its present status.

(b) *Cicuta virosa*. By contrast with the previous species *Cicuta virosa* is relatively abundant at Loch Libo. Clapham *et al.* state that the plant is 'mainly local' and scattered throughout Britain in 'shallow water, ditches and marshes'. The *Atlas of the British Flora* (1962), however, shows the plant as being restricted to something less than twenty 10 km squares. Hulten (1971) shows it as being well distributed in Sweden, Finland, Denmark and Russia but uncommon or rare in Norway. Matthews (1937) summarises this by including *Cicuta virosa* in his Continental Northern Element of the British Flora, a distribution which seems similar to *Dryopteris cristata*.

Hooker states that *C. virosa* is very abundant around Glasgow, naming Mugdock, Bardowie and Dougalston Lochs as stations. The plant occurs in none of these lochs at the present day. Henneidy and Lee both regard the plant as much less common, indicating a possible decrease during the 1800s.

(c) *Carex acutiformis*. *Carex acutiformis* is much commoner than the two previous species. Clapham *et al.* (1962) state that it is scattered throughout the British Isles in 'damp woods and on shady stream banks'. Both the *Atlas of the British Flora* (1962) and Hulten (1971) indicate that *C. acutiformis* is a more southerly species than the previous two and probably continental. The plant is scattered in Scotland where it is frequently associated with coastal habitats. In Scandinavia it is absent from all of Finland, Sweden and Norway but for the southern tips of those countries. Though both Hooker and Henneidy state that *C. acutiformis* is common, this does not appear to be the case at the present day when the plant is restricted to about five sites within the Clyde area.

2. VEGETATION

The vegetation of the loch and its surrounding wetlands can be divided for convenience into five zones or areas. One of these, submerged vegetation, can be dealt with quickly, for there is little information available about it. The Canadian Pond-weed *Elodea canadensis* and pondweeds of the genus *Potamogeton* have been casually recorded but there is no indication of the extent or produc-

tivity of the submerged vegetation. The other four zones are as follows: emergent reedswamp, Willow/Aspen/*Carex paniculata* carr, sandy and gravel shores, and *Menyanthes/Potentilla palustris* 'floating bog'.

(a) Sandy and gravel shores. These make up about 40% of the loch shore substrate mainly on the eastern side beside the railway line but also in the central part of the western side of the loch. Both have a sparse vegetation cover with occasional small stands of Reed-grass *Phalaris arundinacea*.

(b) Willow/Aspen carr. This covers about 20% of the loch shore at the northern end around the entrance of the inflow burn. A marked feature of this area is the abundance of large tussocks of Panicked sedge *Carex paniculata* some of which show the characteristic epiphytic growth of Valerian *Valeriana officinalis* and ferns *Dryopteris* spp. Stands of the sedges *Carex diandra* and *C. acuta* and Great reed-mace *Typha latifolia* occur within this area adjacent to more extensive areas of *Phalaris arundinacea*.

(c) Emergent reedswamps. This vegetation occurs mainly in the south western corner intermixed with 'floating bog', about 20% of the shore. The main species concerned are the taller species of sedge: *Carex rostrata*, *C. acutiformis* and *C. aquatilis*. In drier situations the reedswamp merges into *Carex paniculata* tussocks with *Cicuta virosa* and Marsh ragwort *Senecio aquaticus*. *Carex acutiformis* is particularly abundant near the mouth of the outflow stream where Narrow-leaved water parsnip *Berula erecta* is also present.

(d) *Menyanthes/Potentilla palustris* 'floating bog'. This covers the remaining part of the shore line around the embayments in the south and south west of the loch. A number of these embayments appear to be almost man-made and further work on the history of the loch is required to understand the development of vegetation on them. Floating vegetation, mainly Yellow water-lily *Nuphar lutea*, occurs only in this part of the loch. The 'floating bog' is formed by the development over the surface of the water of Buckbean *Menyanthes trifoliata* rhizomes which are colonised by Marsh cinquefoil *Potentilla palustris*, *Carex aquatilis*, Common Sallow *Salix atrocineria*, Yellow flag *Iris pseudocorus* and other species. The result is the formation of an insecure crust which is easily broken.

3. MANAGEMENT

In considering the objectives of management a number of preliminary points or constraints should be stated. Loch Libo is a small loch (8.5 ha) with several rare or uncommon plants and

animals within its surrounding vegetation. At least three facies of that vegetation are themselves of considerable interest and any management likely to alter them would probably be unacceptable. The loch has been used for educational purposes for a number of years and became a Scottish Wildlife Trust Reserve in 1975. The objective of management can therefore be fairly straightforward in the first instance.

1. To maintain and if possible extend the existing populations of rare plant and animal species within the loch.
2. To conserve the important stands of vegetation around the loch, e.g. Willow/Aspen carr, emergent reedswamp, *Menyanthes/Potentilla palustris* 'floating bog'.
3. To develop educational facilities and use, commensurate with objectives 1 and 2.
4. To develop limited recreational facilities and use, commensurate with objectives 1, 2 and 3.

In order to achieve these objectives a phased programme of management and monitoring will be required. The first requirement is for more information about the status at Loch Libo of the rare species and an application of autecological work to their particular situations. Maintenance of the present water regime should adequately conserve the important stands of vegetation, but in developing objectives (3) and (4) care must be taken to avoid trampling and undue disturbance. This can probably be achieved by limited rationalisation and improvement of the footpath system and directing it away from sensitive areas. With the removal of grazing, willow regeneration may occur more extensively in the south west of the loch but this is likely to take at least five years to show itself and a decision can then be taken as to whether to arrest further development of shrubs on the grounds of reducing the diversity of the main vegetation types. Alternatively, there will then be the option of allowing undisturbed development of the vegetation though the question of how this would affect rare species would then have to be faced.

The woodlands of the Reserve have been excluded from this paper but their management options are much more open. They have virtually no unique characteristics which might form the basis of a primary objective of management and the main constraint on any course of action might be simply its cost.

Botanical nomenclature follows that of Clapham, A.R., Tutin, T.G., and Warburg, E.F. *Flora of the British Isles*. 2nd Edition (1962).

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Loch Libo from the South



Loch Libo from the North



Loch Libo from the North-East

SUMMARY NOTES ON THE VERTEBRATE FAUNA OF LOCH LIBO AND NEIGHBOURHOOD

By J.A. GIBSON

Chairman, Clyde Area Branch, Scottish Wildlife Trust

On 4th December 1974 a symposium was held in Paisley College of Technology on the fauna and flora of Loch Libo, the Scottish Wildlife Trust's new Renfrewshire reserve near Uplawmoor. Contributions to the symposium included the following summary notes on the Loch Libo vertebrates. The notes are confined to Loch Libo itself and the immediately surrounding area; the detailed distribution of all Renfrewshire vertebrates, i.e. mammals, breeding birds, reptiles, amphibians and freshwater fishes, has recently been given in the *Atlas of Renfrewshire Vertebrates* (1970) and in a series of papers, mainly in the Renfrewshire Society's various publications, to which interested readers are referred for further details (*Trans. Paisley Nat. Soc.*, 5: 63-68; 6: 59-66. *Glasgow Bird Bull.*, 4: 28-32. *Western Nat.*, 1: 69-108; 2: 4-14; 3: 39-72).

MAMMALS

INSECTIVORES

The Hedgehog *Erinaceus europaeus* is fairly common in the district, including the village gardens, and the Mole *Talpa europaea* is common in the surrounding fields and hills. Both Pygmy Shrew *Sorex minutus* and Common Shrews *S. araneus* are common in the woods, and the Water Shrew *Neomys fodiens* occurs in the inlet and outlet streams.

These remarks on the shrews largely refer to the results of trapping which I carried out from the mid-1940s to the late 1950s. In my experience, however, the Water Shrew habitually favours clear swiftly moving streams, so I think it is possibly rather unlikely that there will now be many towards the south near the outlet of the new sewage disposal unit.

BATS

Daubenton's Bat *Myotis daubentoni* certainly occurs over the Loch and some have been found roosting in decayed trees in the woodland. This species is possibly more common since bats are often observed over the water, although it must not be assumed that all these bats are Daubenton's since Pipistrelles *Pipistrellus pipistrellus*, common in the area, also fairly regularly

hunt over the Loch. In addition to several sight records there is at least one record of a Long-Eared Bat *Plecotus auritus* having been found dead in the area; it may well be not uncommon but definite evidence is limited.

CARNIVORES

The Fox *Vulpes vulpes* is common in the district and there are several Foxdens used intermittently. Both the Stoat *Mustela erminea* and the Weasel *M. nivalis* are common in the area, and feral American Mink *M. vison*, now certainly present around the Loch, are likely to be a permanent feature. The Polecat *M. putorius*, which used to be common, is long extinct, but escaped Ferrets *M. p. furo* are regularly reported although no feral breeding in the area is at present known to me. The Badger *Meles meles* was formerly well-known with at least one working set. For many years only stray individuals were seen, but Badgers have now returned and one occupied set is again known. The Otter *Lutra lutra* used to be seen fairly regularly but to the best of my knowledge there have been no records of sightings within recent years. There are no records of true Wild Cats *Felis silvestris* this century, but feral Cats occur commonly.

DEER

The only deer is the Roe Deer *Capreolus capreolus*, which is fairly common in the woodlands. I have seen some drinking at the edge of the Loch.

RABBIT AND HARES

The Rabbit *Oryctolagus cuniculus* was formerly very common. It was much reduced by myxomatosis, but has since returned and increased, and there are now some scattered populations. Periodic local outbreaks of myxomatosis apparently keep the population under some control. The Brown Hare *Lepus europaeus* is fairly common all over the area, as one would expect. The Mountain Hare *L. timidus* is not really part of the fauna of the district, but there are some old records of occasional stragglers.

RODENTS

There are still a very few Red Squirrels *Sciurus vulgaris* but this is one of the areas of Renfrewshire where the Squirrel has substantially decreased. Wood Mice *Apodemus sylvaticus* are common, and there is apparently a small population of House Mice *Mus musculus*; I have trapped occasional specimens. The Brown Rat *Rattus norvegicus* is present around the shores of the Loch and the streams, but is possibly not so common as one might expect. The Field Vole *Microtus agrestis* is common, and I have

also trapped a good many Bank Voles *Clethrionomys glareolus*. The Water Vole *Arvicola terrestris* is reasonably common around the Loch, and its territory also extends well up into the woodlands.

BREEDING BIRDS

GREBES

There have always been a few Little Grebes *Tachybaptus ruficollis*, and several pairs of Great Crested Grebes *Podiceps cristatus* have been known to nest intermittently since the beginning of the century. Although kept secret for many years, it has now been released that Black-necked Grebes *P. nigricollis* formerly nested at the Barr Meadows, Lochwinnoch, but after the meadows became flooded about 1957 to form what is now the Barr Loch, the available reed beds largely disappeared and so did the grebes. For some years after this, however, Black-necked Grebes were seen at Loch Libo in summer and a reasonable assumption might be that the Lochwinnoch birds sought suitable habitat at Loch Libo. I was never able to prove nesting, however, although strongly suspected, and none has been seen for a few years.

HERON

Hérons *Ardea cinerea* commonly fish around the Loch, and there have been occasional solitary nests in the surrounding woods. The nearest large heronry is at Brownmuir Wood, near Roebank Reservoir.

WILDFOWL

Mallard *Anas platyrhynchos* and Tufted Ducks *Aythya fuligula* nest commonly; Teal *Anas crecca* less so. A few Shovelers *A. clypeata* have also nested and there have been one or two nesting records of Pochard *Aythya ferina*. A pair of Mute Swans *Cygnus olor* nested until the early years of the war, but I have no later information.

BIRDS OF PREY

Sparrowhawks *Accipiter nisus* and Kestrels *Falco tinnunculus* are well-known and nest in the surrounding woodland, as also do Tawny Owls *Strix aluco* and a very few Long-eared Owls *Asio otus* and Barn Owls *Tyto alba*. Short-eared Owls *Asio flammeus* have been seen, but do not nest in the immediate vicinity. Recently the Buzzard *Buteo buteo* has been seen in summer.

GAME BIRDS

There are a few Red Grouse *Lagopus lagopus* intermittently,

and they have nested in the neighbourhood. There are some very old records of Black Grouse *Lyrurus tetrix*, but none within recent years. Pheasants *Phasianus colchicus* are common, and Partridges *Perdix perdix* few.

RAILS etc.

Moorhens *Gallinula chloropus* and Coots *Fulica atra* are fairly common. Corncrakes *Crex crex* used to nest in the surrounding area and are now returning, and several pairs of Water Rails *Rallus aquaticus* nest. There used to be more Water Rails in the past, when I suspect there were more reed beds, and the late T. Thornton McKeith found many nests over the years.

WADERS

There are a few nesting pairs of Lapwings *Vanellus vanellus*, Curlews *Numenius arquata*, and Snipe *Gallinago gallinago*. Less common are Common Sandpipers *Tringa hypoleucos* near the water, and Woodcock *Scolopax rusticola* in the surrounding woods. Dunlins *Calidris alpina* and Golden Plovers *Pluvialis apricaria* have nested on higher ground nearby in past years.

GULLS AND TERNS

No gulls or terns nest at Loch Libo nowadays, although they are common visitors, but a few Black-headed Gulls *Larus ridibundus* nested near the south end at the beginning of the war; they did not last long. A few Common Terns *Sterna hirundo* have attempted to nest in the past, but without success.

DOVES

Wood Pigeons *Columba palumbus* are extremely common, and one or two pairs of Stock Doves *C. oenas* have nested in the surrounding woods. As with most parts of the country, Collared Doves *Streptopelia decaocto* are increasing.

WARBLERS

One of the most interesting features of Loch Libo was always the small population of Grasshopper Warblers *Locustella naevia*. Some still occur, but are now much scarcer. Loch Libo and Castle Semple, Lochwinnoch, have always been two of the strongholds of the Grasshopper Warbler in the West of Scotland, and it was at these two sites that Thornton McKeith carried out some of his great nest-finding feats. Sedge Warblers *Acrocephalus schoenobaenus* and Willow Warblers *Phylloscopus trochilus* are common, and there are a few pairs of Garden Warblers *Sylvia borin*, Whitethroats *S. communis*, Chiffchaffs *Phylloscopus collybita*

and Wood Warblers *P. sibilatrix*. The Blackcap *S. atricapilla* has nested.

OTHER GROUPS

The Cuckoo *Cuculus canorus* is common. Nightjars *Caprimulgus europaeus* used to nest in the vicinity, and may well still do so, but I lack recent first-hand information.

Swifts *Apus apus*, Swallows *Hirundo rustica*, and House Martins *Delichon urbica* are commonly seen, but I know of no local Sand Martin *Riparia riparia* colony. There are one or two pairs of Great Spotted Woodpeckers *Dendrocopus major*. Skylarks *Alauda arvensis*, Meadow Pipits *Anthus pratensis*, less commonly Tree Pipits *A. trivialis*, and Pied *Motacilla alba* and Grey Wagtails *M. cinerea*, all nest in the vicinity. Starlings *Sturnus vulgaris*, Jackdaws *Corvus monedula*, Magpies *Pica pica*, Rooks *Corvus frugilegus*, and Crows *Corvus corone* are all common.

Dippers *Cinclus cinclus* used to be present, but I have seen none within recent years. They may still occur.

The usual small garden birds i.e. Wren *Troglodytes troglodytes*, Dunnock *Prunella modularis*, Robin *Erithacus rubecula*, Spotted Flycatcher *Muscicapa striata*, Thrushes, Tits, Finches and Buntings all occur, as one would expect.

BIRDS - WINTER VISITORS

Some flocks of wildfowl frequent the Loch during the winter. These are mainly Mallard *Anas fuligula*, Wigeon *A. penelope*, Teal *A. crecca* and Tufted Ducks *Aythya fuligula*. The area of water is not large so the numbers of wildfowl are not outstanding.

Fairly large flocks of Fieldfares *Turdus pilaris* and Redwings *T. iliacus* occur in the surrounding fields on passage.

What is possibly a little more interesting is the number of Waxwings *Bombycilla garrulus* which can usually be seen in winter, particularly on the bushes along the railway line. In most winters this is the place in Renfrewshire where I can most easily rely on seeing Waxwings.

REPTILES

A good many Slow Worms *Anguis fragilis* have been taken in the area, indeed one of the best places used to be the edges of the railway line. This is apparently no longer the case, however, and the Slow Worm seems to have considerably diminished in numbers here as in most parts of the county. There are a few Lizards

Lacerta vivipara on the hillside and the edges of the woods. I know of only very few Adders *Vipera berus* having been seen in the area, and the last one was a long time ago, i.e. about the end of the second world war.

AMPHIBIANS

The Frog *Rana temporaria* is common, and there are a few Toads *Bufo bufo*. Both the Smooth *Triturus vulgaris* and Palmate Newts *T. helveticus* occur in reasonable numbers. Quite by accident I caught some Crested Newts *T. cristatus* in a dredge in 1952, but this is my only record, and indeed is apparently the last authentic record for Renfrewshire.

FRESHWATER FISHES

Fishing at Loch Libo is purely for coarse fish and there is not a great deal of much importance, although there is a substantial, fairly well known, population of Pike *Esox lucius*. In 1946, however, the late Mr. W.P. Perfect of Bridge of Weir, a well-known local authority on fishes, showed me some Brook Lampreys *Lampetra planeri* which he had dredged from the outlet of Loch Libo. Percy Perfect wrote the first account of Renfrewshire freshwater fishes for the Society's 1915 *Transactions*, and the Brook Lamprey was an addition to this list. He did not record this in the Renfrewshire Society's *Transactions* in the 1940s or 1950s, although he may have published it elsewhere unknown to me, but I made a note of it at the time since it appeared to be a new Renfrewshire record, and ultimately included it in the 1970 Renfrewshire *Atlas*. Although the Brook Lamprey is said to occur very widely throughout British streams I feel this record is worth mentioning.

THE COLEOPTERA OF LOCH LIBO

By R.A. CROWSON

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I have been unable to trace any published records of Coleoptera, prior to my own list given below, from Loch Libo, though the great Paisley naturalist of the 19th century, Morris Young, must surely have collected there. He recorded at least one of the Loch Libo specialities, *Notaris aethiops*, but like practically all his insect records it went down simply as "Paisley".

The beetles are a group of very great ecological diversity, and there are few if any groups of animals for which a species list for a given locality could tell us so much about it. My own active collecting visits to the site numbered only six, and the list compiled from them is very far from exhaustive; it amounts to some 112 species, listed below.

Most of the species in this list are of course common and widespread in Strathclyde, but a number of them, marked with an asterisk *, are more or less local or uncommon, and for two species** Loch Libo is the only known locality in the region. *Euconnus hirticollis*, recorded from only one other Scottish locality, is known as a fen insect in England; it is probably a specialist predator on some species of mite (Acarina). *Haemonia appendiculata* probably feeds on a *Potamogeton*; it has aquatic adaptations exceptional in its family Chrysomelidae. *Notaris aethiops* feeds on various species of *Carex* (though not on *C. caespitosa*).

I have made no specific attempt to collect water beetles in Loch Libo; there should be numerous species of Dytiscidae and Hydrophilidae not listed above, probably also further Elmidae and possibly some aquatic Curculionidae (*Bagoini*, *Eubrychius*, *Litodactylus*) which would need to be specially sought.

Most of the interesting beetles have been collected from the south-east end of the loch, in the fenny areas. In the interests of the *Haemonia* and probably of species of *Donacia* efforts should be made to maintain adequate growths of *Potamogeton* in the loch, and a good amount of submerged vegetation would be desirable for other water beetles and for aquatic insects generally.

- CARABIDAE: *Elaphrus cupreus* Duft.
Loricera pilicornis F.,
Dyschirius globosus Hbst.,
Bembidion atrocoeruleum Steph.
B. bruxellense Wesm.,
B. guttula F.,
Pterostichus strenuus Panz.,
P. diligens Sturm,
P. nigrita Payk.
Europhilus fuliginosus Panz.,
E. micans Nic.
E. gracilis Sturm
- HALIPLIDAE: *Brychius elevatus* Panz.,
Haliphus flavicollis Sturm
H. lineatocollis Marsh.,
H. lineolatus Mannh.,
H. wehnckeii Gerh.
- HYDRAENIDAE: *Hydraena riparia* Kugel.,
H. britteni Joy
- HYDROPHILIDAE: *Helophorus aequalis* L.,
H. arvenicus Muls.,*
H. affinis Marsh.,
H. aeneipennis Th.,
H. granularis L.,
Anacaena limbata F.,
Megasternum obscurum
Cercyon terminatus Mann.
- SCYDMAENIDAE: *Euconnus hirticollis* Ill.,**
Stenichnus collaris Mull.
- PSELAPHIDAE: *Bythinus puncticollis* Denny,
B. burrelli Denny,
B. macropalpus Aube
- STAPHYLINIDAE: *Anthobium ophthalmicum* Payk.,*
A. torquatum Marsh.
A. minutum L.,
Lesteva heeri Fauv.,
Olophrum piceum Gyll.,
Oxytelus rugosus Grav.,
O. tetracarinus Block,
Platystethus arenarius Fourc.*
Stenus junco Payk.,
S. rogeri Kr.,
S. clavicornis Scop.,
S. canaliculatus Gyll.,
S. boops Ljungh.,

- STAPHYLINIDAE: *S. binotatus* Ljungh.,
 (Continued) *S. pubescens* Steph.,*
S. pallitarsis Steph.,
S. nitidiusculus Steph.,
S. bifoveolatus Gyll.,
S. impressus Germ.,
S. bimaculatus Gyll.,
Lathrobium punctatum Zett.,*
L. brunnipes F.,
Othius myrmecophilus Kiesw.
Philonthus fimetarius Grav.,
Gabrius trossulus Nordm.
Quedius fuliginosus Grav.,
Q. molochinus Grav.,
Q. umbrinus Er.,
Q. picipes Mann.,
Q. nitipennis Steph.
Mycetoporus brunneus Marsh
M. splendens Marsh.,
Tachyporus chrysomelinus L.,
Tachinus rufipes Deg.,
T. marginellus F.,
Gymnusa variegata Kiesw.,*
Myllaena minuta Grav.,
M. brevicornis Matth.,
Oxyroda elongatula Aub.
- CLAMBIDAE: *Clambus armadillo* Deg.
- HELODIDAE: *Helodes marginata* F.,
Cyphon paykulli Guer.
C. variabilis Thunb.,
C. ochraceus Steph.
- ELMIDAE: *Elmis maugei* Bed.,
Limnius tuberculatus Mull.
- ELATERIDAE: *Cryptophypnus riparius* F.
Denticollis linearis L.,
Dolopius marginatus L.,
- CANTHARIDAE: *Rhagonycha elongata* Fall.,*
R. limbata Thunb.
- NITIDULIDAE: *Epuraea depressa* Gyll.
- CRYPTOPHAGIDAE: *Atomaria versicolor* Er.,
A. analis Er.
A. atricapilla Steph.
- BYTURIDAE: *Byturus tomentosus* F.,

- COCCINELLIDAE: *Coccidula rufa* Hbst.
- LATHRIDIIDAE: *Coninomus nodifer* Westw.,
C. bifasciatus Reitt.,
Lathridius lardarius De G.,
- SCRAPTIIDAE: *Anaspis rufilabris* Gyll.
- CHRYSOMELIDAE: *Haemonia appendiculata* Panz.,**
Plateumaris sericea L.,
Gastroidea viridula De G.,
Phaedon tumidulus Germ.,
P. cochleariae F.,
Prasocuris junci Brahm.,
Hydrothassa marginella L.,
H. aucta L.,*
Galerucella nymphaeae L.,
G. fergussoni Fowl.,
G. tenella L.,
Psylliodes picina Marsh.,*
Ps. cuprea Koch,
Ps. chrysocephala L.,
Phyllotreta flexuosa Ill.
- CURCULIONIDAE: *Notaris aethiops* F.*
Hypera rumicis L.,
Phytobius comari Hbst.,
Ceuthorrhynchus contractus Marsh.

THE FRESHWATER FISHES OF THE ISLAND OF ARRAN

By J.A. GIBSON

Chairman, Clyde Area Branch, Scottish Wildlife Trust

The freshwater fish fauna of Arran is not large, indeed the only freshwater species which I am able to record as occurring naturally on the island are the Salmon, Trout, Eel, Stickleback, Common Goby, and Flounder; Minnows have been introduced in the past but did not succeed. Other species of fishes usually classed as 'freshwater' have been taken at sea not far from the Arran shores. These include the Sea Lamprey *Petromyzon marinus*, Sturgeon *Acipenser sturio*, Allis Shad *Alosa alosa*, Twaite Shad *Alosa fallax*, and Thick-lipped Mullet *Crenimugil labrosus*. Since Arran is an island, however, situated virtually in the centre of the Firth of Clyde, it is very difficult to define what records are 'in Arran waters' and so draw an effective line. These species are therefore excluded, and this paper is confined to those species of freshwater fishes found actually in the burns, rivers and lochs of Arran or around the Arran shores.

As far as I can discover, no other species of freshwater fish has been introduced to Arran, but if this is shown to be the case I shall be grateful if any such introductions are drawn to my attention.

In the following list arrangement and nomenclature follows Wheeler (1969).

SALMON *Salmo salar* Linnaeus, 1758

Salmon are very common in Arran waters and at one time were fished commercially at many places round the shore. Nowadays some commercial fishing does take place, but apparently only at Blackwaterfoot and Sliddery. The abundance of Salmon was noted by many of the early writers, as far back as Martin Martin in 1695 and probably earlier. Pennant (1774) said the rivers of Machrie and Iorsa were "remarkable for the abundance of salmon"; according to Heron (1799) the "streams are richly stored with salmon"; and Dr. McNaughton (1845) summarised the position as follows: "When the rivers are swollen in summer, salmon and sea-trout ascend in considerable numbers, when they are caught both with the rod and the net; the latter, however, is used at the mouths of the rivers only".

Salmon occur commonly all round the Arran shores and in the rivers, particularly the rivers Machrie, Iorsa, and Rosa, but the only Arran loch to which Salmon ascend is Loch Iorsa, a fact

which was noted by Thomas Pennant as far back as 1772 and the Rev. John Hamilton in 1793: "Earsay loch, in the west of the island, which abounds with trouts of different sizes, and fine salmon". This is still the case.

Some extremely large Salmon have been taken in nets off the Arran shores in the Kilbrannan Sound - one of 54 lbs around 1903-1904 (*Western Nat.*, 2: 77) and specimens weighing 38 lbs and 42 lbs in early May 1877 (*Argyllshire Herald*, 12th May 1877). To the best of my knowledge no Salmon approaching these weights have been taken in Arran rivers, but specimens of 15-20 lbs have been caught from time to time, although most anglers on Arran would be glad to catch a Salmon of half this weight, which would be much nearer the average.

TROUT *Salmo trutta* Linnaeus, 1758

Trout are extremely variable in colour and in body shape, depending on surroundings and habits, but all forms are varieties of a single species. The small dark Brown Trout *S.t. fario* largely inhabits the burns and hill-lochs and is not migratory; the large silvery Sea Trout *S.t. trutta* largely inhabits the off-shore waters and rivers and is distinctly migratory.

Trout are very common in all Arran waters, and were mentioned by most of the early writers as being widely distributed throughout the burns and rivers and in most of the hill lochs. In particular, Loch Tanna was "celebrated" for its Trout (Macbride, 1845) and was "one of the best of the trouting lochs" (Wilson, 1842). In season large numbers of Sea Trout ascend all the principal rivers but the only loch they reach is Loch Iorsa. To the best of my knowledge the Arran hill-lochs have not been stocked with Trout, at least within recent years, but the rivers are occasionally stocked and recently the Arran Angling Association put 1,000 young Trout into the River Slidery.

The weights of Trout obtained on Arran are extremely variable, depending on locality. Native Arran burn and hill Trout are usually small, but large Sea Trout of up to 5 lbs in weight are certainly caught from time to time. Sea Trout of up to 10 lbs or even larger have occasionally been reported, but fish of this size are very rare on Arran. Moreover one often hears reports of these fish at second hand, and so cannot always assume that they have been carefully identified.

Although Rainbow Trout *Salmo gairdneri* and Brook Trout *Salvelinus fontinalis* have been widely introduced to many waters in the West of Scotland, to the best of my knowledge these have never been introduced to Arran.

MINNOW *Phoxinus phoxinus* (Linnaeus, 1758)

Paterson (1837) said "There were no minnows in Arran until lately, when they were brought from Ayrshire, it being expected that they will help to raise the trouts to a greater size". This introduction was also noted by Wilson (1842) and McNaughton (1845). Apparently the Minnows did not succeed, and I can trace no later record. I have heard rumours of more recent introductions but have been unable to obtain any firm details, and to the best of my knowledge there are no Minnows on Arran nowadays.

EEL *Anguilla anguilla* (Linnaeus, 1758).

The Eel is very common in all Arran waters; off-shore, along the streams and burns, and in most of the hill-lochs.

THREE-SPINED STICKLEBACK *Gasterosteus aculeatus* Linnaeus, 1758

The Three-spined Stickleback is common throughout most of the Arran rivers and burns, and is often found just off-shore near river mouths.

COMMON GOBY *Pomatoschistus microps* (Kroyer, 1840)

Small gobies occur fairly commonly in the brackish intertidal pools near river mouths all round the Clyde area. Until recently there was some confusion surrounding the identification of these small gobies, but within recent years much work has been done on their taxonomy. I have examined several specimens of these intertidal gobies collected from shore pools at Machrie, Lamlash, and Sannox. All exhibited the typical external appearance of *microps*, and with the aid of a hand-lens I counted the number of scales in a line along the side; no specimen had more than fifty scales, in keeping with Wheeler's identification key for *microps*.

The Common Goby has therefore been identified from Machrie, Lamlash, and Sannox, and I have no real doubt that this little fish is widely distributed in all suitable areas around Arran, which will usually mean where the rivers and burns come down to sandy shores.

FLOUNDER *Platichthys flesus* (Linnaeus, 1758)

Flounders are common around all suitable parts of the Arran shores, and are regularly seen or caught far up some of the rivers.

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THE ROMANS AND STRATHCLYDE: THE FIRST CENTURY A.D. OCCUPATION

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Preliminary

In 1954 an ancient road accompanied by quarry pits was traced round the shoulder of Burnhead Moor above Greenock (*Note 1*).

From 1954 until 1963 various surveys established that this was a Roman road, (*Note 2*), connecting with the Roman fortlet on Lurg Moor, Greenock (*Note 3*); that the fortlet was Antonine (*Note 4*); and that the road continued westward.

In 1963 an attempt to complete the Roman system by following the road resolutely from the gateway of Lurg Moor fortlet was initiated (*Note 5*); and, latterly, a reputed "Roman road" running east-west along the north face of Barscube Hill was traced and proved to be of the same system, linking Lurg Moor fortlet with the Antonine fort on Whitemoss Farm, Bishopton (*Note 6*).

The discovery and excavation in 1970 of a fortlet at Outerwards, Ayrshire, proved that the entire system was Antonine (*Note 7*). Indeed fieldwork was in the main conditioned by the permanence of the Antonine frontier and the inevitability of its western flank having been protected. This was by 1970 to some extent established, but there was no evidence of first century activity on the same pattern. The immediate problem was the location of first century remains in the Renfrewshire - North Ayrshire area. But there was no certain point of departure, and already sixteen years, seven almost exclusively albeit seasonally, had been spent in Roman fieldwork.

The time had come to re-examine the evidence, literary and archaeological; to become deconditioned, de-programmed.

The Literary Evidence

The near contemporary narration of events is the *De Vita Agricolae*, the story of the first century governor's achievements as related by his son-in-law, Tacitus (*Note 8*).

In his second campaign of 79 A.D. Agricola is here, there, everywhere, his actions lent precision and speed by a series of historic infinitives. He chose his own fort sites, (*loca cas-*

tris ipse capere), so strategically that as he gained fresh territory there was no interruption by outsiders, (et praesidiis castellisque circumdatae, tanta ratione curaque, ut nulla ante Britanniae nova pars inaccessita transierit). This implies a tight frontier cordon, for in the history of Roman Britain tribes tended to read their fate in that of their neighbours and to react accordingly. In the third Brigantian war of 69 A.D. it would appear that tribes from southern Scotland had intervened (*Note 9*).

In view of the implied tactical disposition of forward posts it may not be without significance that Tacitus reserves comment on Agricola's ability in this field for his account of the third campaign of 80 A.D.

In that year new tribes were encountered and the advance pushed forward to the Tay, with such success that there was time left to build forts. The enemy were so demoralised, stormed by the elements and the Romans, that it is extremely doubtful that the spearhead which reached the Tay relinquished its forward position.

It is at this point that Tacitus inserts his observations on Agricola's genius in the deployment of fortifications. "No fort on a site of his choosing was ever taken by storm, ever capitulated, or was ever abandoned. On the contrary the garrisons could frequently venture upon sallies; for they were secured against protracted siege by having supplies sufficient for a whole year. The enemy could no longer retrieve the losses of the summer by successes in the winter, but were equally hard pressed at both seasons" (*Note 10*).

These were obviously strongly defended permanent forts.

Here, then, is the explanation of the success of both the second and third campaigns. Behind these forts Agricola was to consolidate in fort and road building for almost two years and to secure his western flank before advancing further.

Where were these forts?

Here the account of the fourth campaign is instructive. "Quartus aestas obtinendis quae percucurrerat insumpta; ac si virtus exercitus et Romani nominis gloria pateretur, inventus in ipsa Britannia terminus, namque Clota et Bodotria diversi maris aestibus per immensum revectae, angusto terrarum spatio dirimuntur, quod tum praesidiis firmabatur atque omnis propior sinus tenebatur, summotis velut in aliam insulam hostibus".

The tense of pateretur sufficiently indicates that there was no intention of establishing a frontier. It was unthinkable. What follows confirms this. The reasons for this being a suitable

place for a boundary are the narrowness of the zone between Clyde and Forth, and the fact that, as a result of the previous year's campaigning, it was already held in strength by Agricola's forces. Where, then, were the forward positions in this narrow zone?

Such interpretations as "steps were now taken to strengthen this isthmus by fortified posts" (*Note 11*), or, "next year, 81, forts were established on this line" (*Note 12*) are influenced by archaeological inference. Until 1970 such influenced our thinking.

Agricola had no intention of establishing a limes. Tacitus could never have reported such a momentous decision in a subordinated past continuous passive; that would have been to strain towards the nadir of anticlimax. 'Tum or Nunc castellis firmare' would be more compatible with his style.

What was established was a halting place behind which for two years preparations for further advance were made; a halting place of necessity secured by a forward line of forts so provisioned that no ground could be regained by the enemy.

During those two years the pattern of permanent forts was superimposed upon the topography of southern Scotland, the western flank was secured, and a previous marine reconnaissance followed up by a sea-borne invasion, possibly to test the strength of Kintyre and the West before further advance (*Note 13*).

When the advance took place, in 83 A.D., we note that the Forth, not the Tay, is mentioned. (*Amplexus civitates trans Bodo-triam sitas*). It would seem that only Fife is to be considered, and the use of "amplexus" might indicate that Agricola was already in position to engulf the territory. This, in view of his sea power, would be a precise statement if he had held the Tay from the third campaign, so that Fife could be invested from all sides.

The Archaeological Evidence

Two main lines of advance by Agricola are known, by lines of forts extending from Corbridge via Newstead to the Forth, and from Carlisle via Birrens to Castledykes on the Upper Clyde (*Note 14*). The latter route thereafter is uncertain.

A cross road linking Newstead to Castledykes continues west by Loudoun Hill (*Note 15*) towards the Ayrshire coast; while, in the south west penetration is evidenced by forts at Dalswinton, Glenlochar, and a fortlet near Gatehouse of Fleet (*Note 16*). Otherwise no Roman sites have been located west of the Annan-Clyde route.

On the Forth-Clyde isthmus, although Cadder and Castlecary

have produced some evidence of first century occupation, one fort only, Camelon, has been shown to have been a permanent first century foundation (*Note 17*).

Between Forth and Tay lie Ardoch and Strageath (*Note 18*), while, to the west, forts at Lake of Menteith, Bochastle by Callander, Dalginross, and Fendoch have been interpreted as blocking the mountain passes during the sixth and seventh campaigns, (*Note 19*), and apparently in isolation, for Richmond could say of Fendoch, "No road of permanent construction had yet reached the fort before it was systematically dismantled after a short occupation" (*Note 20*).

But if these forts were not linked by a road to allow of close patrolling they would have been as effective as corks in broken bottles. While this is apparent from a study of the O.S. maps it is glaringly obvious to anyone who has actually walked the terrain. Enclosed by hills, without intercommunication any one post could have been attacked in force by hillmen who certainly would not have used the obvious glens to penetrate a loosely knit screen. The forts might have proved effective in preventing Lowlanders unaccustomed to the area from escaping northward, but for complete efficiency would still require communications. The essential limes is a road.

Granted a road link, however, the "blocking" forts assume a different aspect. Their distribution along a road is close to the normal spacing insofar as topography permits. The Romans did not erect forts on mountain tops. To such lofty sites were relegated fortlets or signal posts which might be used seasonally or as required (*Note 21*).

It seemed probable on reflection that these were the forts built after the Tay had been reached, and along the route of a column whose purpose was to completely enclose British territory; i.e. a column advancing from the south. The terminus would then lie near Inchtuthil, perhaps a cohort fort on the south side of the river, or at Perth. If so, Inchtuthil or Perth would be the common terminal of two columns, one continuing the eastern route from Newstead, via Camelon, Ardoch, and Strageath to the Tay, the other skirting the true Highland fringe in an advance from the Clyde.

Here, then, would be justification for "amplexus". With the enemy cut off, and unable to recover lost ground, by the Menteith - Fendoch - Tay line, a cordon could be thrown across the neck of Fife, and indeed the closely spaced signal stations from Ardoch to Strageath and along the Gask ridge may commemorate invigillation by the eastern column until the next advance was ordered. This would require forts at Perth and Stirling, the signal stations

being occupied for only two or three years (*Note 22*).

It was possible that the Carlisle - Castledykes army had followed the north bank of the Clyde, then thrust forward to Menteith, but there are objections to such a move. It seems beyond comprehension that a general of Agricola's stature should have left his entire western flank unprotected while advancing, or attempted to cordon it off over the entire distance from Solway to Clyde; or that he should have diverted the Castledykes column westward when it should have been driving for the isthmus in close support of the Newstead units.

Agricola's entire field army must have been committed to the conquest of Scotland. He had four legions, and regimental pride, *virtus exercitus*, is always the strong card in the general's pack. He ought to have used all four, but one would require to remain in reserve on account of the vast area of freshly conquered territory to the south. His three column advance through Strathmore in the final campaign might hint at the presence of three legions.

The probability would then arise that just as Oakwood and Easter Haprew (*Note 23*) were intermediates to what might be termed the central and eastern commands, so Loudoun Hill was intermediate to the central and an inferred western command; an army which advanced via Ayrshire to the Clyde, then encircled the Lowlands in an advance to the Tay. And from the evidence available, Agricola himself may have been its commander (*Note 24*).

But if the advance was from Ayrshire to Menteith then the Clyde was crossed near the end of the later Antonine Wall, at a point almost half way between Menteith and the Avondale route. A fort should lie close to the fording point, with, from consideration of spacing, an intermediate fort to the north and one to the south. The same consideration suggested that a fort should lie near Kilmarnock. Nevertheless there was the possibility of a cross route from Loudoun Hill.

Pure speculation? At least it was a working hypothesis.

In 1970 an attempt to locate a road running northward from Loudoun Hill was frustrated by cultivated ground. Instead the road led south to the junction with a cross-route running from near Wiston on the Garf and apparently headed on Coulter, to near Holehouse on the so-called "Ayr-Dalmellington Roman Road" (*Note 25*).

By 1971 it was obvious that some time would be consumed in tracing this system, and time was beginning to run out. The hypothetical road had not been established, but by now conviction had strengthened that there was an Agricolan fort close

to the suspected Clyde crossing, on Barochan Hill, Houston. If this could be proved Roman, and Agricolan, a major point in the theory would have been realised. Excavation was essential.

The Roman Fort on Barochan Hill, Houston

In 1886 a patera from the workshop of Cippius Polybius was found a short distance to the north-west of Barochan Hill (*Note 26*). The vessel had seen previous repair and it seemed feasible that it was a discard from a nearby military site.

In 1954 Mr. Richard Feachem, then an officer of RCAHMS detected on an aerial photograph the apparent twin ditches of a Roman fort along the north side and round the north-west corner of the summit of Barochan Hill. Probing, however, failed to locate ditches along the steep south face, but from the east end of the hill was recovered a fragment of first century Roman glass (*Note 27*). The site was referred to the late John Clarke who, although he doubted the suitability of the steep sided hill for a Roman fort was, nevertheless, impressed by patent rampart remains. Unable in 1954 to initiate excavations he passed his information to the writer and to Mrs Anne Hallifax Crawford.

In 1971 the site was closely inspected. It had every appearance of being a Roman fort. Mr. Feachem was contacted, expressed interest in proposed excavations, and willingly supplied information of the results of the probe conducted by himself and Mr. Alastair MacLaren in 1954.

When Mrs Crawford and the writer approached the late Mr. D. Henderson of Barochan House he readily gave permission for trial trenching and donated any finds to the Hunterian Museum, provided that initial excavation be confined to a belt of scrubby woodland which crosses the site (*Note 28*).

In 1972 almost four weeks were spent in excavation (*Note 29*). The results fully vindicated Mr. Feachem.

The Excavations

While this is not offered as a full excavation report, certain features of the site deserve comment.

The steep south face was tested in two sections. The only defence other than the rampart had been a palisade founded in a shallow trench. Surface indications are that as it rounds the south east corner it expands into a ditch to cover the east side of the fort (Fig. 1).

The rampart was c. 8.5 metres wide, of composite construction, rampart and manning bank having been planned as one. The rampart proper, c. 4.5 metres wide, was founded in a trench and supplied

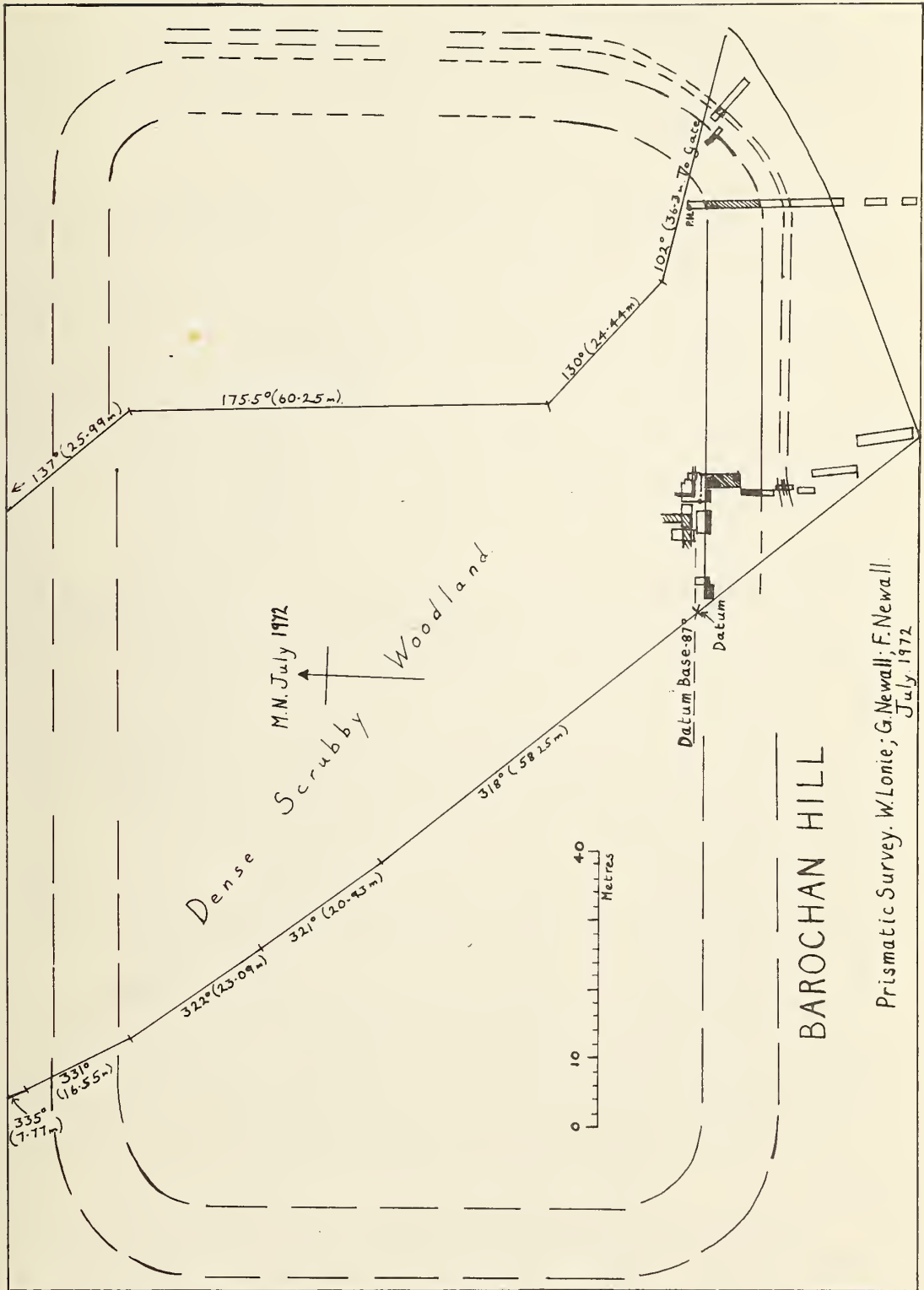


Fig. I. Ground plan of site; 1972 sections indicated.

with fore boulder kerb and laminated turf rear kerb. Immediately behind was a 4 metre wide extension, similarly founded, and similarly kerbed at rear. The area enclosed was c. 3.2 acres (c. 1.12 hectares).

Phase 1 (Fig. 2a)

Near the centre of the south side behind the rampart in the first phase lay a rectangular pit (Pit 1) and a circular pit (Pit 2) in close association.

The rectangular pit, 2.3 metres by at least 1.5 metres, by 1.2 metres deep, contained at bottom puddled clay.

The circular pit was 2.6 metres deep from the Roman surface and sloped downwards from diameter 1.25 metres at top to 0.6 metres at bottom. The sides were faced with burnt red clay impregnated with charred twigs, and coated with charcoal, especially towards the top (Fig. 3).

Phase 2 (Fig. 2b)

When disused, pit 2 had thrown into the bottom puddled clay as in pit 1, containing a number of unburnt twigs and flat pieces of cut wood. One was like a butter pat. Another, notched near each end, could have held a cord for cutting clay.

The fill was then of occupation earth containing numerous sherds, then alternating bands of occupation earth and clay. Near the top it was sealed with hard brown clay topped with cobbles, burnt daub, and crumbled poorly fired bricks, none completely baked through. Rammed gravel completed the fill.

The pits are interpreted as a puddling pit for clay brick manufacture, and a slow firing kiln which was not very efficient. The lengths of unburnt twigs suggest that wattling and daub was also processed.

Pit 1 now had stones and broken sherds thrown into the clay at the bottom, and on this an artificial ridge built within, parallel to the south and west sides and 0.7 - 0.5 metres from them, to form a foundation trench of which the outer side was the hard boulder clay pit faces. In it were located four post holes, all disturbed. The trench continued eastwards cut through the intervening ridge between the pits, and the upper fill of pit 2.

The rest of pit 1 was packed tightly to the top with rammed layers of earth, all containing sherds, etc.

Three metres to the west lay the south east corner of a major building, confirming that the fort faces west, and that

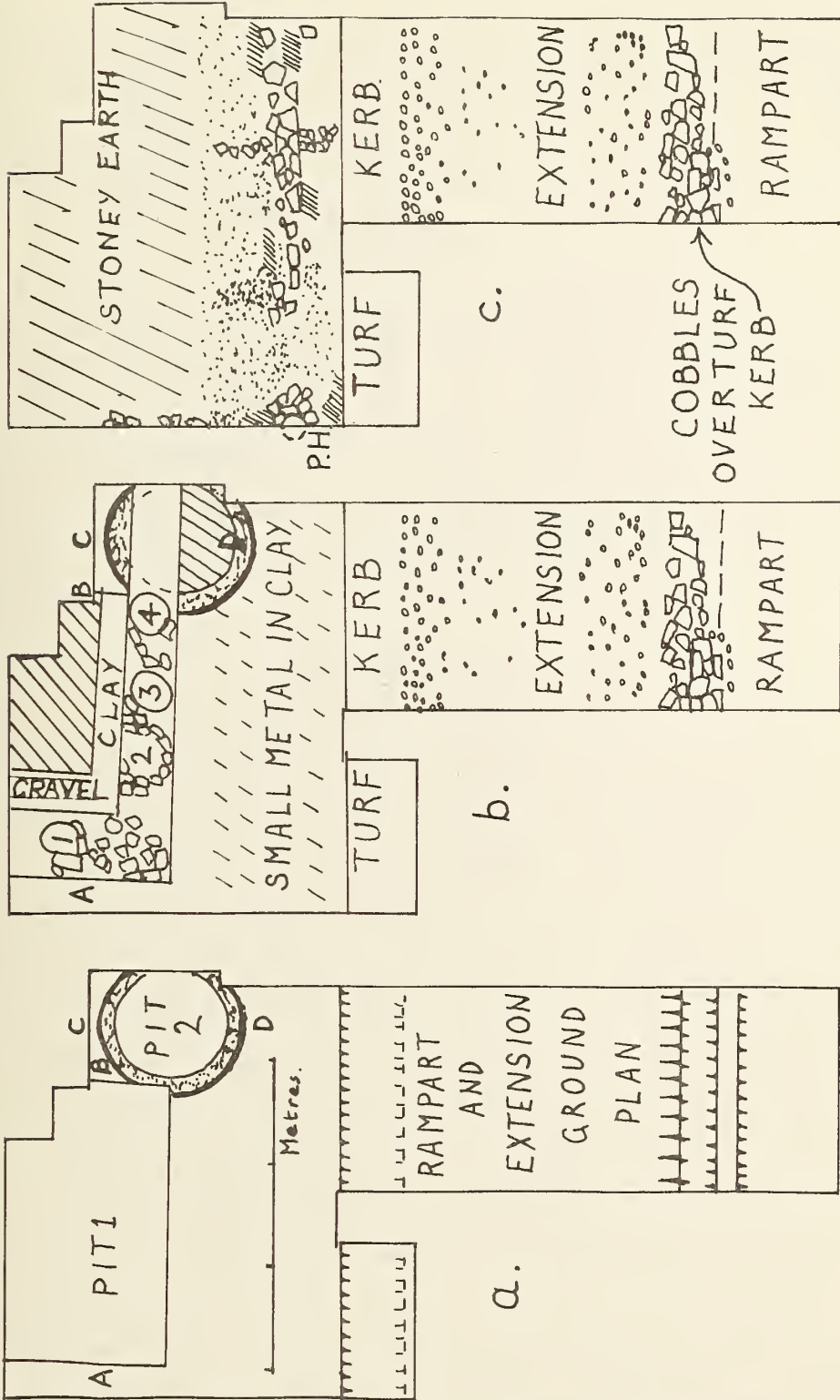


Fig. 2. a) Builders' level. b) Primary. c) Secondary.

the gateway as suspected from the initial survey lies a short distance west of the woodland boundary fence. The foundation course was of the poorly fired clay bricks, identifiable but in the main reduced to a pasty clay.

To the south lay a hearth, which produced further sherds. All finds were of the first century A.D., and included mortaria by Albinus and Sumacus.

Phase 3 (Fig. 2c)

Post holes and filled pits were later covered with stony earth and a building of which only a badly disturbed wall sill survived lay nearer the rampart. The sill had been an alignment of stones edged with daub. A spread of charcoal ran parallel to it. One post hole probably marked the southwest corner, and the west side appears to have lain under a baulk which could not be removed. To the west between this building and the major building which was now refounded on stone sills, of which little survived, was a hard packed layer of gravel, which partly covered the hearth to the south. The gravel was c 2.4 metres wide, but spread for some way along the south side of the major building.

From just beneath this gravel came a coin identified by Professor Anne S. Robertson as possibly an As of 86 A.D. (*Note 30*).

Two points may be stressed. Firstly the considerable number of sherds, etc. in and around the primary pits, all attributable to the fort construction party, coupled with the slow method of brick manufacture and the time necessary to construct the principal buildings might suggest a reduced garrison, perhaps one century, preparing the fort for later full occupation (cf. Ogilvie, 113 (Tac. 32,4) "*nec quicquam ultra formidinis: vacua castella*"). The barracks, indicated by the post holes and foundation trench was not built until the manufacturing process including wattling and daub had ceased. Secondly, if the compacted gravel layer is Roman, and it is difficult in view of the sill to the immediate east and its relation to the hearth to consider it otherwise, then the As of 86 A.D. sealed beneath it would point to a second permanent occupation taking place at or about the time that Inchtuthil was being evacuated. For how long this occupation lasted has not been determined, but it might have been at this time that the possible occupations in the Cadder and Castlecary vicinities were begun. Nevertheless if the central command drove straight for the isthmus it is always possible that posts intermediate to Barochan and Camelon were occupied from the beginning.

It does not follow that such sites should have lain along the line of the Antonine Wall. In this respect it may be observed that the site at Broken Tower, by Torrance not only lies to the north of the Wall but on the wrong side of the river Kelvin.

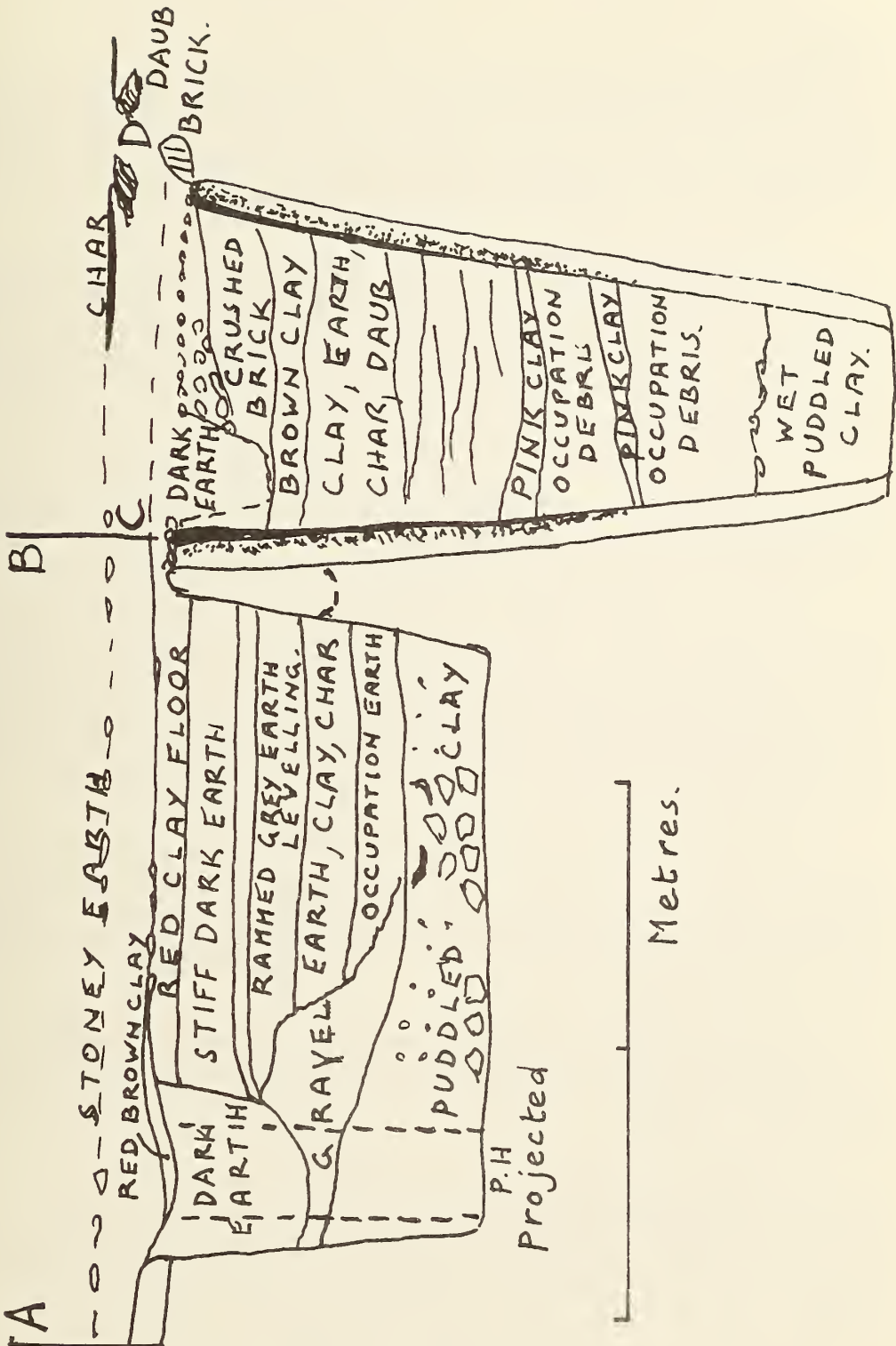


Fig. 3. Pit sections.

Sequel

While the proof that Barochan was Agricolan reinforced the hypothesis of a western route it was now necessary to locate the assumed north-south road. The over cultivated south was left to the future and attention focussed on rougher moorland north of the Clyde.

A preliminary check was undertaken at Menteith, where a length of road was traced for almost a mile south from the fort (Note 31). Subsequently the probable Clyde ford was located, in line with Barochan rather than with the later Antonine fort at Whitemoss (Note 32). The road was traced over Cameron Moor almost to the Endrick (Note 33), and, meanwhile, a length was followed between Menteith and Bochastle (Note 34).

Attention was then concentrated on the Endrick, where a possible Roman ford and road were recognised south of Drumtian Farm, and, overlooking it, on Carbeth Hill, NS 513823, a large near rectangular enclosure embracing c.7 acres (2.83 hectares).

With strictly linear sides and smoothly rounded corners it is adapted to the hill crest such that the sides measure, north - 173.8 metres; east - 195.2 metres; south - 173.2 metres; west - 201.3 metres. It exhibits a rampart terrace similar to Barochan. Like Barochan it occupies a steep-sided hill thrust forward into lower ground. It covers the Endrick ford. It lies 14 miles from Barochan, 9 miles from Menteith, 15½ miles from Bochastle, by Roman road.

In late 1974 with the interested permission of the proprietor, Mr. Loudon Bishop, the north and east sides were sectioned, over the presumed rampart terrace. It was discovered, and confirmed by Mr. Bishop as general over the entire area, that the humus is shallow, only 4-8 inches (10 to 20 cms) deep over rock (Note 35).

The east section was inconclusive. That on the north revealed what may be the final vestiges of a rampart of clayey turf enclosed by cheeks of white clay. This measured 31 ft (9.45 metres) in width.

No ditch was found. There remains the possibility that, in the appalling conditions when rain water began to flow freely in the sections and work was abandoned, a rock cut palisade trench remains to be investigated. At present, despite the many points in favour of the site, it has not been established that it is Roman.

Research continues on both the first century and second century A.D. systems.

Footnotes

- Note 1. By William O. Black. *Seventh Report* of SRG, CBA; DES, 1955, 25.
- Note 2. By William O. Black, Robert C. Scott, Mrs Anne Hallifax Crawford, George and Ernest Newall, Dr. William Lonie, and F. Newall. Summarised in DES, 1963, 43-44.
- Note 3. Feachem, R.W. in JRS, XLIII, 1953, 105, Fig. 25.
- Note 4. By William O. Black, George Newall, Ernest Newall, Frank Newall, jnr, F. Newall. DES 1959, 29. Robertson, Anne S. PSAS, XCVII, 1963-64, 198-9.
- Note 5. By Dr. William Lonie, F. Newall, latterly assisted by Alastair S. Newall. DES, 1964, 21, 45; 1966, 15-17; 1968, 40; 1969, 13; 1970, 12-13; 43; 1971, 12.
- Note 6. Reported by the late James Fraser of Bellevue, Kilmaccolm. Traced by Mrs Anne Hallifax Crawford, Alastair S. Newall, David Newall, Duncan MacKinnon, F. Newall, DES, 1971, 36; 1972, 36; 1973, 46-47.
- Note 7. Lonie, W; Newall, F; Newall, A.S. DES, 1970, 13-14.
- Note 8. *Cornelii Taciti De Vita Agricola*. Edited by R.M. Ogilvie and Sir Ian Richmond, Oxford, 1967, hereafter referred to as Ogilvie. For the present report we refer to the edition of 1970 and to the Mattingly - Handford translation, Penguin Classics, 1970.
- Note 9. Frere, S.S. *Britannia*, 1969, 97; 1974, 116.
- Note 10. Mattingly - Handford, 73.
- Note 11. Macdonald, G. *The Roman Wall in Scotland*, 1934, 1 (Tac. Agricola, 23).
- Note 12. Frere, S.S. *Britannia*, 1969, 106; 1974, 125.
- Note 13. For a recent discussion see Reed, N. *The Fifth Year of Agricola's Campaign*, *Britannia* II, 1971, 143-48.
- Note 14. Newstead. Curle, J. *A Roman Frontier Post and its People*, 1911.
Richmond, I.A. *Excavations at the Roman Fort at Newstead*. PSAS, LXXXIV, 1949-50, 1-38.
Castledykes. Robertson, Anne S. *The Roman Fort at Castledykes*. 1965.
Birrens. Robertson, Anne S. *Birrens (Blatobulgium)* 1975.
- Note 15. Loudoun Hill. St. Joseph, J.K. in *The Roman Occupation*

- of South Western Scotland*. 1952: 188-191, 210. JRS, XXIX, 1939, 201; XXXVII, 1947, 165; XXXIX (1949), 98.
- Note 16. Dalswinton. Richmond, I.: St. Joseph, J.K. TDGNHAS, XXXIV, 1955-56, 9ff.
- Glenlochar St. Joseph J.K. JRS, XLI, 1951, 60; XLII, 1952, 107.
- Gatehouse of Fleet, JRS, LI, 1961, 161; LII, 1962, 164; XLI, 1951, 61; DES, 1960, 29; 1961, 35.
- Note 17. Cadder and Castlecary. Hartley B.R. The Roman Occupation of Scotland; The Evidence of the Samian Ware. *Britannia*, III, 1972, 12.
- Camelon. PSAS, XXXV, 1900-01, 329ff.
- Note 18. Ardoch. PSAS, XXXII, 1897-98, 399-476. Breeze, D.J., PSAS, 102, 1969-70, 122-28.
- Strageath. Frere, S.S. DES, 1973, 42; 1974, 50-1; 1975, 38-40.
- Note 19. Menteith. St. Joseph, J.K. JRS, LXIII, 1973, 223.
- Bochastle. Anderson, W.A. The Roman Fort at Bochastle by Callander. TGAS, XIV, 1956, 35-63.
- Dalginross. PSAS, LVIII, 1923-4, 326. Cf. PSAS, 103, 1970-71, 131-2.
- Fendoch. Richmond, I.A. The Agricolan Fort at Fendoch. PSAS, LXXIII, 1938-39, 110-154.
- Note 20. Ogilvie, 69.
- Note 21. To facilitate field work Dr. Lonie listed the heights of Scottish sites. It may be observed that only fortlets and signal stations lie above 900 feet, e.g. Brownhart Law, Ruberslaw, Craik Cross Hill, Beattock, Eildon, Chew Green, Redshaw Burn, Hillside Hill. For comfort in winter conditions, and for ease of movement, and possibly water supply, permanent forts lie lower, e.g. Highland Bochastle, at only 200 feet.
- Note 22. Gask Ridge. Robertson, Anne S. Gask; DES, 1966, 73 - Flavian sherd. Parkneuk; DES, 1968, 28-9. Roundlaw; DES, 1972, 33.
- Ardoch - Strageath. Shielhill; DES, 1974, 51.
- Note 23. Oakwood. Feachem, R.W; Steer, K.A. PSAS, LXXXVI, 1951-52, 81ff.

- Easter Happrew. Steer, K.A. PSAS, LXXXVII, 1956-57, 93ff.
- Note 24. The Ninth, based on York probably used the eastern route. The emblem of the Second Augusta recorded at Castle Dykes although Antonine, may be a happy coincidence. If a third was deployed it was probably the Twentieth, Agricola's old command. It is to this legion that Richmond would attribute the construction of Inchtuthil (Ogilvie, 73). The Second Adiutrix, in reserve would command the garrisoning of territories newly won in the south and in Brigantia, and North Wales, and as the most expendable, not committed to forward action, was removed between 86 A.D. and 90 A.D. (Ogilvie, 75; but cf. Frere, 1974, 139-40). From the internal evidence of the second campaign, (Ogilvie, 218; 20, 2 - aestuaria), and of the fifth, Agricola was operating in the west. It should be noticed that in relation to a possible Western Command the Twentieth replaced the Second Adiutrix at Chester. (Ogilvie-75).
- Note 25. Lonie, W; Newall, A.S; Newall, F. DES, 1971, 12: 1972, 13-14, 24-25; 1973, 17-18, 35-36; 1974, 24.
- Note 26. PSAS, LV, 1920-21, 14; LXII, 1927-28, 247; LXVI, 1931-32, 298-9, 383. Arch. Journ. XLIX, 1892, Part II, 200; Part III, 288-31. TGAS, 1, 498-513, (1890). Britannia, 1, 1970, 221.
- Note 27. NMA 668. Robertson, Anne S. Britannia, 1, 1970, 224.
- Note 28. Mr. Henderson had planned to fence off part of the west field in 1973 to allow excavation of the gateway and barracks. In view of his untimely death it would have been indelicate to proceed.
- Note 29. With the assistance of Dr. William Lonie; Harry M. Sinclair; Neil Holt; George, David and Alastair S. Newall, and pupils of Port Glasgow High School, Robin Ward, Anne Williams and Carole MacInnes.
- Note 30. For a discussion of these coins see -
Robertson, Anne S. *Roman Coins Found in Scotland*, 1961-70. PSAS 103, 1970-71, 131-2.
- Note 31. Lonie, W; Newall, F. DES, 1973, 43.
- Note 32. Holt, N; Newall, F. DES, 1974, 34, 57-58.
- Note 33. MacKinnon, D; Newall, F; Sinclair, H.M. Lonie, W; Newall, D. DES 1974, 34-5.

- Note 34. By Dr. W. Lonie. All the above lengths have been re-traced and extended by Dr. Lonie; H.M. Sinclair; D. Newall; and the author. The Endrick ford was located after several early fords downstream had been closely inspected, including the major 17th-18th century coach road ford.
- Note 35. The excavation team were Harry M. Sinclair, Neil Holt, George Newall, David Newall, Lawrence J.F. Keppie, Alastair Henderson, and William Lonie.

NOTES ON THE BIRDS OF MID-ARGYLL

By IDA RAINIER
Argyll Representative,
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The area covered by this article is the local government District of Mid-Argyll; from Tarbert in the south, to Traighua-ine, south of the Craignish peninsula, in the north; across Loch Awe (excluding Dalavich) via the headwaters of Glen Aray and Glen Shira to Loch Fyne near Dundarave.

The main period is from 1st January 1964 to 31st December 1974, but when earlier or later records are considered to be of unusual interest, these are also given.

The notes are compiled from daily counts of all species seen, by Mrs I. Rainier, assisted by Mrs E.M. Roberts of Kilmichael-Glassary since 1968, and the Rev. and Mrs Duncan-Jones of Lochgilphead since 1971. Mr. W.M. Barr M.R.C.V.S. has helped with his sightings of raptors, and the compilers are greatly indebted to Miss Marion Campbell of Kilberry for her detailed notes on the birds of Kilberry and Ormsary areas.

A species is recorded as 'breeding' only when the compilers of these notes have personal evidence of its doing so. It must be clear, however, that many other species almost certainly breed, and indeed several others have been recorded as breeding in the Kilberry area by Miss Campbell.

The scenery of mid-Argyll is varied.

It is certainly hilly; the hills, boulder-strewn, mostly covered with coarse grass but occasionally with heather, do not rise above 1200 feet. They contain many lochs and lochans, and one or two reservoirs, but owing to acidity and steep rocky shores, with consequent sparse vegetation for food and reeds for nesting sites, these waters are inhabited almost solely by a few Divers and Common Gulls.

There is a large acreage of Forestry Commission plantations; dark blocks of conifers, wherein few birds but Coal Tits, Great Tits, Wrens, Robins, Goldcrests and a few Crossbills live, though some Woodcock are found in the less mature forests.

In North Knapdale there are patches of deciduous woodland, with old, decaying trees, and lack of new growth because of sheep grazing; also stretches of feral rhododendrons, swampy areas of alders and scrub, and a few farms.

South Knapdale has more varied bird habitat, with more extensive and better cared-for deciduous woodlands, fewer conifer forests, and more farms, many with arable as well as grazing land. It is also less disturbed by building development, caravan sites, and holiday-makers. The only cliffs in the area are at Kilberry.

Adjectives can have different meanings to different users. The probable rating, for instance, by a Knapdale resident of a party of ducks or waders as "numerous" would cause bird-watchers from, say, Solway or the Kent or Essex marshes, to raise cynical smiles, and on the whole, one can but agree with the statement by the authors of the summer survey of Knapdale in 1936 and 1937, that "in general, Knapdale is not ornithologically rich" (*Scot. Nat.*, 1937: 163-168).

BLACK-THROATED DIVER *Gavia arctica*

Commoner than the Red-throat and often seen on freshwater lochs such as Coillebarr (Achnamara), which is near sea level, as well as hill lochs. Breeds.

GREAT NORTHERN DIVER *Gavia immer*

Once fairly common, a few always being seen in winter on the sea lochs and open sea, but now showing considerable decrease. This could probably be attributed to the shellfish fishing in many of the lochs, such as Lochs Sween and Craignish where the sea-beds are now furrowed like a ploughed field, resulting in the scarcity, almost to extinction, of small Saithe, Lythe, etc., only Mackerel and Sea-Trout coming up with the tide. Parts of the Sound of Jura are similarly affected.

RED-THROATED DIVER *Gavia stellata*

Fairly common on hill and sea lochs, but less so than Black-throat. Breeds hill lochs.

SLAVONIAN GREBE *Podiceps auritus*

Occasional winter visitor.

LITTLE GREBE *Tachybaptus ruficollis*

Found on suitable habitat, such as reedy lochs on low ground, but there are now fewer winter visitors on the sea lochs. Breeds.

FULMAR *Fulmarus glacialis*

Breeds on cliffs at Kilberry, but not recorded elsewhere, except for one found dead at Loch Gilp in November 1960.

MANX SHEARWATER *Puffinus puffinus*

Occasionally seen in Sound of Jura. Party of thirty birds Sound of Jura, 8th August 1971.

GREAT SHEARWATER *Puffinus gravis*

One, Sound of Jura, 5th September 1936. One, Loch Fyne, 1st September 1969.

LEACH'S PETREL *Oceanodroma leucorhoa*

Occasional; Sound of Jura.

GANNET *Sula bassana*

Common off-shore, especially in spring and summer, but no records from Loch Sween.

CORMORANT *Phalacrocorax carbo*

Common and widespread; sea-lochs, Sound of Jura, and fishing in freshwater lochs. Breeds regularly on some off-shore islands.

SHAG *Phalacrocorax aristotelis*

Common; nests off-shore islands. There used to be a winter roost at the head of Loch Sween until about 1970, but this is now deserted.

HERON *Ardea cinerea*

Widespread throughout area, which contains a number of heronries. Fishes ditches, as well as by fresh and salt-water lochs and rivers.

MALLARD *Anas platyrhynchos*

Common and widespread. Breeds.

TEAL *Anas crecca*

Less common than Mallard or Wigeon in winter. Breeds in small numbers.

WIGEON *Anas penelope*

Common in winter; off-shore and salt water lochs. Breeding status uncertain, but nested Loch na Laraiche, Achnamara, in 1958 and has possibly nested elsewhere.

SHOVELER *Anas clypeata*

Only one record, at Keills, in 1957.

SCAUP *Aythya marila*

Occasional off-shore winter visitor. A duck spent several days on upper reaches of River Add, Christmas 1968.

TUFTED DUCK *Aythya fuligula*

Fairly common in winter at Kilberry, Ormsary and Ardrishaig Lochs; elsewhere very local. Some summer sightings from North Knapdale: two - 24th May 1965; four - 23rd May 1970; two - 3rd May and three - 31st July 1974; two - 23rd April 1975; but no evidence of breeding.

POCHARD *Aythya ferina*

Not common. A few seen every winter on the freshwater lochs, especially in hard weather.

GOLDENEYE *Bucephala clangula*

Common winter visitor, fresh and salt water. Juvenile seen with adults at Bellanoch, River Add mouth, 7th April 1974 and again February 1975, suggests possible breeding, as does a pair on Loch na Laraiche, Achnamara, in May 1975.

LONG-TAILED DUCK *Clangula hyemalis*

Party of ten seen, Loch Sween, 7th February 1972. A few winter records from Kilberry area.

VELVER SCOTER *Melanitta fusca*

Rare. Seen only at Kilberry. One 22nd October 1950; two - 29th August 1951; one - 11th April 1954; one - 29th March 1971; one - January 1974.

COMMON SCOTER *Melanitta nigra*

Fairly common off-shore in winter at Kilberry.

EIDER *Somateria mollissima*

Common; sea lochs and open sea. Breeds mostly on islets in sea-lochs.

RED-BREASTED MERGANSER *Mergus serrator*

Common on fresh and salt water lochs, rivers, and occasionally small burns and open sea. Breeds.

GOOSANDER *Mergus merganser*

Resident summer and winter, but not as widespread as the Red-breasted Merganser. Usually seen on fresh water rather than sea lochs, although six birds seen on Loch Scotnish on 15th March 1975. Two separate broods seen on the River Add in September 1956; no breeding records from South Knapdale.

SMEW *Mergus albellus*

Rare winter visitor; Kilberry.

SHELDUCK *Tadorna tadorna*

Common, with considerable increase in winter. Breeds.

GREYLAG GOOSE *Anser anser*

Numerous in winter in all suitable habitat.

WHITE-FRONTED GOOSE *Anser albifrons*

Fairly common in Kilberry area, but not elsewhere.

BEAN GOOSE *Anser fabalis*

Occasional at Kilberry; not elsewhere.

BARNACLE GOOSE *Branta leucopsis*

Fairly common winter visitor. Most birds apparently come from Islay, where they winter in large numbers.

MUTE SWAN *Cygnus olor*

Numerous, and is increasing; on freshwater lochs, sea lochs and rivers. Breeds.

WHOOOPER SWAN *Cygnus cygnus*

Still fairly common, but a marked decrease over the last fifteen years. It used to be unusual to find even a small freshwater loch untenanted, and over a hundred birds were counted by myself at Keills in the late 'fifties. Birds are now found on only a few of the small lochs, and whereas they used to remain on a loch for some time, they now seem restless, and stay only a short time.

GOLDEN EAGLE *Aquila chrysaetos*

Not uncommon; regular sightings, but owing to the extensive territory required by one pair, it is difficult to know how often one sees the same bird. Breeds.

BUZZARD *Buteo buteo*

Common. Breeds in Forestry Commission plantations as well as in deciduous trees.

ROUGH-LEGGED BUZZARD *Buteo lagopus*

One seen, 31st October and 1st November 1973, in company with Common Buzzards at Keills, Loch Sween.

SPARROWHAWK *Accipiter nisus*

Fairly common, showing a slight increase during last three years. Breeds.

GOSHAWK *Accipiter gentilis*

A nest with young was found on 7th August 1973 in a Forestry Commission Plantation within the area; the nest was watched daily until 12th August when the young birds were seen in flight. Although this site has remained undisturbed the birds have not returned. Since then Goshawks have been seen as follows: One on 23rd March and 13th April 1974; two on 9th March 1975 and single birds on 27th March, 12th April, 23rd August and 21st November 1975. The possibility that the nesting record and subsequent sightings had their origins in falconers' escapes must be borne in mind.

HEN HARRIER *Circus cyaneus*

Fairly common on open ground, and occasionally seen in Forestry Commission clearings. Breeds.

OSPREY *Pandion haliaetus*

Rare; but occasional sightings all seasons, including Loch Awe, Keills, and on hills above Crinan Canal at Cairnbaan.

PEREGRINE *Falco peregrinus*

Fairly common; often seen in flight over houses on outskirts of Lochgilphead, as well as by seashore and on hills. Numbers seem steady, but as with the Golden Eagle, the Peregrine's range is so great, particularly in winter, that it is difficult to know how often one sees the same birds. Breeds.

MERLIN *Falco columbarius*

Rare until last few years. Now increasing slightly, which is somewhat surprising, considering the steady encroachment by the Forestry Commission on its most favoured habitat, i.e. heather. Breeds.

KESTREL *Falco tinnunculus*

Common. Breeds.

RED GROUSE *Lagopus lagopus*

Not common and now very local, owing to Forestry Commission's destruction of heather habitat and food supply. Found chiefly Lochawe-side, Eredine, Ederline and Ormsary. Now rare in Lochgilphead area, Tayvallich and Ardfern. Breeds.

BLACK GROUSE *Lymurus tetrix*

Fairly common and has increased recently. Breeds.

CAPERCAILLIE *Tetrao urogallus*

A single bird was seen on 18th and 19th October 1956 in a Forestry Commission plantation near Tayvallich. In October 1957 a single bird was again seen near the same place. During 1972 single birds were several times reported from another plantation, also near Tayvallich.

PARTRIDGE *Perdix perdix*

Pair reported farmland, Keills, during 1950s but seen only two days. This is the only report.

PHEASANT *Phasianus colchicus*

Common. Some bred in captivity, and birds which have escaped being shot probably account for most of the local stock. Breeds.

WATER RAIL *Rallus aquaticus*

One at Kilberry in November 1952, and one by Achnamara burn, 6th November 1969.

CORNCRAKE *Crex crex*

Years ago was fairly common; now decreasing annually. Breeds.

MOORHEN *Gallinula chloropus*

Not very common, owing to lack of sluggish and reedy waters. Breeds.

COOT *Fulica atra*

Very local, but a few now seen all year round on Loch Leatham, Kilmichael-Glassary, to which the birds have recently come.

Juveniles and adults seen here in 1974 and 1975, which presumes breeding. No evidence of breeding in South Knapdale.

OYSTERCATCHER *Haematopus ostralegus*

Still very common, although a steady decrease noted during the past ten years. While flocks of several hundred can still be seen in certain spots, such as Loch Gilp, during autumn and winter, one can now no longer be certain of seeing small flocks of up to thirty birds all the year round in every possible natural haunt, as once was the case. Breeds.

LAPWING *Vanellus vanellus*

Common throughout year. Breeds.

RINGED PLOVER *Charadrius hiaticula*

Fairly common, but rather less so than expected; on shingle beaches and gravelly estuary banks. Breeds.

GREY PLOVER *Pluvialis squatarola*

One at Kilberry on 8th January 1970.

GOLDEN PLOVER *Pluvialis apricaria*

Very local. Fairly common Ormsary and Kilberry, where it breeds, but only occasional in rest of area, despite apparently suitable habitat.

TURNSTONE *Arenaria interpres*

Occasional winter, and on passage, Kilberry; rare in North Knapdale, where there were only five sightings known from 1956 to 1963; one in 1966, and one in 1969.

SNIPE *Gallinago gallinago*

Fairly common, though less so than one would expect, considering the large amount of apparently suitable wet land. Breeds.

JACK SNIPE *Lymnocyptes minimus*

Occasional winter visitor.

WOODCOCK *Scolopax rusticola*

While still common, with considerable influx of winter visitors, has decreased slightly, presumably due to the maturing of Forestry Commission conifers, which reduces its food supply.

Though much felling has also occurred, the felled areas are too bare and disturbed to harbour the birds. Breeds.

CURLEW *Numenius arquata*

Common. Breeds.

WHIMBREL *Numenius phaeopus*

A few every winter.

BLACK-TAILED GODWIT *Limosa limosa*

Three together, Crinan Moss mud flats, on 4th September 1954; one a male in summer plumage; closely approached. Flock of 7 birds at Kilberry Head in August 1973.

BAR-TAILED GODWIT *Limosa lapponica*

Occasional winter visitor.

COMMON SANDPIPER *Tringa hypoleucos*

Common. Breeds shores of fresh and salt water lochs, and river banks.

REDSHANK *Tringa totanus*

Common. Breeds.

GREENSHANK *Tringa nebularia*

Uncommon in North Knapdale. From January 1964 onwards, there were only eleven sightings, sometimes of a small group of two or three. Last sighting was of a single bird in 1968. No record from the south of the area.

KNOT *Calidris canutus*

Seen only at Loch Gilp and in small numbers. Since the species is common elsewhere, it is strange that it should have been recorded from only one district of this area.

PURPLE SANDPIPER *Calidris maritima*

Rare winter visitor.

DUNLIN *Calidris alpina*

Common in winter, but apparently surprisingly rare as a breeding species. Known to have bred the banks of the River Add, North Knapdale in early 1960s, and birds seen displaying at Kilberry in 1951 and 1957, but no other evidence of breeding.

RUFF *Philomachus pugnax*

An adult male at Keills, near the mouth of Loch Sween, on 7th June 1973, and another in a field near Kilmartin on 21st August 1975. Both in full breeding plumage.

GREAT SKUA *Stercorarius skua*

Occasionally reported from the Sound of Jura, but too far out to be included in these records. One was seen in Loch Sween, however, on 1st June 1972 after a severe S.W. gale.

ARCTIC SKUA *Stercorarius parasiticus*

Occasional winter visitor to Kilberry area, but rarely in North Knapdale. Nowadays occasionally seen in summer at Kilberry. Until ten years ago a few birds had been seen for several summers flying over Crinan Bay, where breeding was strongly suspected, but no longer, apparently owing to disturbance by speed boats and picnic parties.

GREAT BLACK-BACKED GULL *Larus marinus*

Fairly common off-shore and mudflats, all seasons. Breeds.

LESSER BLACK-BACKED GULL *Larus fuscus*

Fairly common in summer on shores and following farm tractors. Breeds. On mudflats in winter, with occasional records of Scandinavian race.

HERRING GULL *Larus argentatus*

Numerous and widely distributed. Seashore, inland loch shores, and flying above Forestry Commission plantations, villages, etc. Breeds islets at mouths of sea lochs.

COMMON GULL *Larus canus*

Widespread and increasing. Found inland as well as by shores, nesting on islets in freshwater and salt water lochs, on mainland beaches, and open, rough country such as Crinan Moss.

LITTLE GULL *Larus minutus*

One, Kilberry, 10th June 1952. One, Ardrishaig, 22nd August 1968.

BLACK-HEADED GULL *Larus ridibundus*

Common, inland and by shores. Breeds islets in fresh and salt water lochs, and open rough country inland.

KITTIWAKE *Rissa tridactyla*

Occasional, Sound of Jura. Parties of immature birds seen mouth of Loch Sween every September, presumably from breeding colonies on Inner Hebrides.

COMMON TERN *Sterna hirundo*

Common. Appears regularly Crinan Harbour Island, Tayvallich, and head of Loch Sween in mid-May, but departure dates are less regular. Breeds.

ARCTIC TERN *Sterna paradisaea*

Present in large numbers further down sea lochs than the Common Tern, but also in Tayvallich harbour, mixed with Commons. Breeds on islets in sea lochs.

SANDWICH TERN *Sterna sandvicensis*

Occasionally seen near Kilberry. One, Carsaig Bay, Tayvallich, May 1955, but no breeding evidence.

RAZORBILL *Alca torda*

Not uncommon, Sound of Jura.

GUILLEMOT *Uria aalge*

Fairly common, Sound of Jura, but less so than Razorbill.

BLACK GUILLEMOT *Cepphus grylle*

Often seen sea lochs and open sea. Breeds on rocky islets.

PUFFIN *Fratercula arctica*

Fairly often seen near Kilberry; no records from North Knapdale.

ROCK DOVE *Columba livia*

While still common at Kilberry, has decreased almost to extinction in North Knapdale, where birds last seen - five together - on 19th April 1971. It was, however, always somewhat local there, but could regularly be seen at Castle Sween and the old ferry house at Keills, nesting in both places. At Castle Sween a pair of Barn Owls and a Peregrine, now also gone, could be seen, the Peregrine hunting the doves! The abandonment of the Castle Sween site is undoubtedly due to disturbance by the caravan camp. Probably now breeds only in Kilberry area.

WOOD PIGEON *Columba palumbus*

Common in suitable habitat, of which there is not a great deal in North Knapdale, owing to preponderance of Forestry Commission conifers holding only a few pigeons, but there is a large influx of winter visitors to farmlands. Breeds.

COLLARED DOVE *Streptopelia decaocto*

First North Knapdale appearance was on 31st May 1965 at Kilmartin, where nested. Brood sickened slowly (after fledging) and died. New brood August 1966. Then several birds seen on farmland nearby, in February and March 1967. Thereafter a steady increase, and birds are now widespread and established over whole area.

CUCKOO *Cuculus canorus*

Common. Breeds.

BARN OWL *Tyto alba*

Shows universal decrease. Once regular nesting places now deserted, though breeding evident in some.

TAWNY OWL *Strix aluco*

Common. Breeds.

LONG-EARED OWL *Asio otus*

Occasionally seen, and in view of the large extent of conifer plantations one might expect it to be commoner. No proof of breeding in North Knapdale although almost certainly does so. Believed to have bred near Kilberry from 1947 to 1950 but no proof obtained.

SHORT-EARED OWL *Asio flammeus*

Fairly common on open ground. Breeds.

NIGHTJAR *Caprimulgus europaeus*

Never common or widespread, but could be regularly heard in various haunts, many being now abandoned. A considerable decrease, but still breeds in south of the area.

SWIFT *Apus apus*

Recorded only from Inveraray, where birds may be seen circling above the town every summer; has nested in past but no recent evidence. Further information would be welcomed!

KINGFISHER *Alcedo atthis*

Occasional in winter and summer at Kilberry; winter only, North Knapdale.

GREEN WOODPECKER *Picus viridis*

Recorded only from North Knapdale. One seen at Tayvallich on 2nd January 1958, and one apparently resident (possibly one of a pair) at Castleton-Shirvan estate, by Lochgilphead, during 1974. Two or three reports of sightings between 1954 and 1960, but not conclusive.

GREAT SPOTTED WOODPECKER *Dendrocopus major*

Once fairly common in Forestry Commission plantations and deciduous trees, but steady decrease noted. Breeds.

SKYLARK *Alauda arvensis*

Common. Breeds.

SWALLOW *Hirundo rustica*

Common. Breeds.

HOUSE MARTIN *Delichon urbica*

Common near habitation. Breeds.

SAND MARTIN *Riparia riparia*

Once common, but decrease noted over whole area during last three years. Breeds.

RAVEN *Corvus corax*

Fairly common open country, but slight decrease noted in North Knapdale. Breeds.

CROW *Corvus corone*

Hooded Crow *c.c. cornix* common and widely distributed. Carrion Crow *c.c. corone* fairly common, as are Hybrids. Breeds.

ROOK *Corvus frugilegus*

Common. Breeds.

JACKDAW *Corvus monedula*

Abundant. Breeds.

MAGPIE *Pica pica*

Occasional, but now slowly increasing. Sometimes seen flying across roads in North Knapdale, but apparently absent from the Forestry plantations. Recently reported to have nested near Loch Gair. Apparently no records from Kilberry area for past twelve years.

JAY *Garrulus glandarius*

Since colonising Achnamara in 1955, numbers have remained steady in Forestry Commission woods, and are not apparently increasing. Does not appear to have spread outside woods, or down to Kilberry. Breeds.

GREAT TIT *Parus major*

Common. Breeds.

BLUE TIT *Parus caeruleus*

Common. Breeds.

COAL TIT *Parus ater*

Numerous in Forestry Commission plantations. Winters in large numbers in gardens, using feeding tables, but leaves for forests March to July. Breeds.

WILLOW TIT *Parus montanus*

One, Forestry Commission woods, near Fairy Isles, Loch Sween, on 5th April 1971.

LONG-TAILED TIT *Aegithalos caudatus*

Fairly common; numbers swelled by winter visitors. Breeds.

NUTHATCH *Sitta europaea*

In 1879 the Duke of Argyll released several birds near Inveraray, although nothing further was apparently heard. In 1955 a very keen and earnest observer, aged eleven, gave an excellent report of one near Inveraray. Since then Nuthatches have several times been reported in North Knapdale, including several records by reliable observers (some of whom had previous experience of Nuthatches in the south of England) during 1972 and 1973. Unfortunately the compilers of this article have not personally seen the Nuthatch, but its presence in North Knapdale and Ormsary must now be regarded as almost certain. No Kilberry records.

TREETREEPER *Certhia familiaris*

Seen regularly on living deciduous trees, and on those killed by Forestry Commission ring-barking. Breeds.

WREN *Troglodytes troglodytes*

Common, not only in gardens, farmland, and lower slopes of hills, etc., but in conifer plantations and clearings. Breeds.

DIPPER *Cinclus cinclus*

Fairly common, fast flowing rivers and burns; occasionally freshwater lochs. Breeds.

MISTLE THRUSH *Turdus viscivorus*

Fairly common. Breeds.

FIELDFARE *Turdus pilaris*

Common on passage and in winter. Report of breeding in 1972 unsubstantiated, though probably correct.

SONG THRUSH *Turdus philomelos*

Common, but not widespread. Breeds.

REDWING *Turdus iliacus*

Common on passage and in winter.

RING OUZEL *Turdus torquatus*

Although the compilers of this article have seen none personally, within recent years a few sightings have been reported by reputable observers; one on hills above Achnamara, one on Oban road by Kilmartin, one on Lochaweside, and one or two at Kilberry.

BLACKBIRD *Turdus merula*

Numerous and widespread. Breeds.

WHEATEAR *Oenanthe oenanthe*

Fairly common until 1973/74, when marked decrease. Judging by reports in various ornithological journals, this decrease was universal. Breeds.

STONECHAT *Saxicola torquata*

Common. Breeds.

WHINCHAT *Saxicola rubetra*

Common, and appears to be increasing slightly. Breeds.

REDSTART *Phoenicurus phoenicurus*

Once fairly common in suitable habitat, but although these appear unchanged to the human observer, a steady decrease of the birds is noted. Breeds in south of area.

ROBIN *Erithacus rubecula*

Common and widespread. Breeds.

GRASSHOPPER WARBLER *Locustella naevia*

Uncommon; local and decreasing, owing to encroachment of habitat by Forestry Commission planting. Breeds.

SEDGE WARBLER *Acrocephalus schoenobaenus*

Found in some reed beds and reedy fringes of wide ditches, but less common than might be expected. Breeds.

BLACKCAP *Sylvia atricapilla*

As Garden Warbler, but also several records of wintering birds on garden feeding tables. Reported as breeding in south of area.

GARDEN WARBLER *Sylvia borin*

Occasional summer records, but no definite breeding records. None for Knapdale, and Kilberry status very doubtful.

WHITETHROAT *Sylvia communis*

Fairly common scrub and roadside etc. until 1970; then sharp decline, continuing until bird was really rare. By 1972 upward trend noted, and by 1974 numbers had reached 1969 status. Breeds.

WILLOW WARBLER *Phylloscopus trochilus*

Common and widespread - gardens, hedgerows, scrub, roadsides, and lower slopes of hills, etc. Breeds.

CHIFFCHAFF *Phylloscopus collybita*

In deciduous woods, but nowhere common. Breeds in south of area.

WOOD WARBLER *Phylloscopus sibilatrix*

For several years until 1967 one or two Wood Warblers were seen annually in the same place - a few beech trees bordering the main road from Achnamara to Lochgilphead - but breeding was not proved, and no more birds were seen until 1975 when one was seen at the Point of Knap on 7th June. There are a few records from the Kilberry area.

GOLDCREST *Regulus regulus*

Common Forestry Commission plantations. Breeds.

SPOTTED FLYCATCHER *Muscicapa striata*

Fairly common. Breeds. Late date, 27th September 1974.

DUNNOCK *Prunella modularis*

Common; gardens, hedgerows, and edges of Forestry Commission plantations. Breeds.

MEADOW PIPIT *Anthus pratensis*

Abundant and very widespread; farmland, seashore (in company with Rock Pipits), and on hills and open country. Breeds.

TREE PIPIT *Anthus trivialis*

Not very common, but seen in open country with occasional trees and gardens. Presumably breeds, but no firm evidence.

ROCK PIPIT *Anthus spinoletta*

Common rocky shores. Breeds.

PIED WAGTAIL *Motacilla alba*

Common and widely distributed; breeds. White Wagtails are also seen in the area, fairly commonly on autumn passage and a few on spring passage. A few White Wagtails can also be seen most summers, and a juvenile was seen on 10th August 1972.

GREY WAGTAIL *Motacilla cinerea*

Fairly common on swift flowing burns; sometimes on shores of sea-lochs. Breeds. Much scarcer in winter.

YELLOW WAGTAIL *Motacilla flava*

On 6th March 1918 one was seen on the Kilberry shore by the late Mrs Campbell of Kilberry. Two, Kilberry shore, 28th August 1968.

WAXWING *Bombycilla garrulus*

Some sightings every winter. Very large 'explosion' November/December 1965, when exhausted birds were found even on islets at entrances to sea-lochs.

GREAT GREY SHRIKE *Lanius excubitor*

One or two recorded each winter.

STARLING *Sturnus vulgaris*

Abundant and widespread. Breeds.

GREENFINCH *Carduelis chloris*

Common; gardens, deciduous woods, roadsides etc. Breeds.

GOLDFINCH *Carduelis carduelis*

Formerly seen only occasionally, but has increased considerably since 1968. Breeds in south Knapdale.

SISKIN *Carduelis spinus*

Fairly common winter and summer; alders, scrub etc. Large 'explosion' January/February/March 1970. Breeds.

LINNET *Acanthis cannabina*

Fairly common throughout year, numbers augmented in winter. Breeds.

TWITE *Acanthis flavirostris*

Occasional to rare in North Knapdale. No Kilberry records.

REDPOLL *Acanthis flammea*

Fairly common; alders and scrub. Breeds.

BULLFINCH *Pyrrhula pyrrhula*

Fairly common; Forestry Commission plantations, gardens, etc. Considerable increase last six years. Breeds.

CROSSBILL *Loxia curvirostra*

Occasional in Forestry Commission forests. Bred north Knapdale in 1971.

CHAFFINCH *Fringilla coelebs*

Shares with Herring Gull and Common Gull the distinction of

being probably the most abundant species. Widespread and almost ubiquitous, with even larger population in winter. Breeds.

BRAMBLING *Fringilla montifringilla*

Fairly common in winter.

CORN BUNTING *Emberiza calandra*

Fairly common on farmland. Breeds in south of area.

YELLOWHAMMER *Emberiza citrinella*

Common. Large flocks seen in winter, alone and in company with other finches. Breeds.

REED BUNTING *Emberiza schoeniclus*

Fairly common, but local; apparently absent from many reedy places, where one would normally expect to find it. Breeds.

SNOW BUNTING *Plectrophenax nivalis*

Occasional winter visitor.

HOUSE SPARROW *Passer domesticus*

Abundant, but less so than Chaffinch because of its frequenting only by habitations and occasionally farm premises and farm lands. Breeds.

TREE SPARROW *Passer montanus*

A small colony of Tree Sparrows was found in scrub bushes near Keills in 1956, and another in bushes by a farm yard near Kilmartin in 1963. Apart from these unusual finds there have been occasional sightings of single birds most years from 1956 to 1974. No proof of breeding, however.

SPIDERS AND PHALANGIDS OF INCHCAILLOCH, LOCH LOMOND II - SEASONAL ACTIVITY OF HARVESTMEN

By DAVID J. CURTIS

Department of Biology, Paisley College of Technology

Harvestmen, of the class Arachnida, order Phalangida, include common species to be found during late summer and autumn months. Eleven species of these animals have been recorded on the island of Inchcailloch in the Loch Lomond National Nature Reserve (Curtis, 1973). Following completion of sampling and revision of species determination, the seasonal activity of these species is considered here, based on pitfall captures at four woodland sites during the two years August 1971 to August 1973, as described by Curtis (1973). The number of animals falling into the traps is dependent on both population density and the activity of individual animals; this number is, therefore, a useful indicator of their effective significance in the ecosystem to which they belong.

In considering seasonal activity, the following data are relevant: the numbers of animals taken, the time of year when most active and the degree to which this activity is restricted to a short time interval, i.e. stenochrone, or dispersed through the year, i.e. eurychrone. As an indication of this third aspect, in this paper an index for each species is calculated as the reciprocal of the sum of squared proportions (p_i) of annual total captured in each month (i.e. $1/\sum p_i^2$). The value of this index can range from 1.0 for species totally occurring in only one month, i.e. completely stenochrone, to 12.0 for species occurring in equal proportions in all twelve months of the year, i.e. completely eurychrone. These data are considered below for a total of 11785 adults and sub-adults of the eleven species caught on Inchcailloch.

Nomenclature adopted here is that used by Sankey and Savory (1974). Where this differs from that used in the earlier paper (Curtis, 1973) the name previously used is given in brackets.

Infrequent Species

Five species were recorded only sporadically or in small numbers. *Oligolophus hanseni* (Kraepelin) (= *O. hanseni* (Kraepelin)) is a species which typically inhabits branches of trees etc. It was captured mainly in June-July, a period slightly in advance of its typical occurrence as indicated by Sankey and Savory (1974), possibly indicating some ground activity before

the animals migrate up into the higher herbage, bushes and trees. *Oligolophus meadii* Cambridge (= *Odiellus meadei* (Cambridge)) was taken mainly in November, within its normal seasonal range. *Mitostoma chrysomelas* (Hermann) (= *Nemastoma chrysomelas* (Hermann)) and the very infrequent *Megabunus diadema* (Fabricius) occurred at scattered intervals through the year, whilst *Platybunus triangularis* (Herbst) showed its typical pattern of nymphs taken in the winter and adults in summer months.

Frequent Species

The remaining six species were taken in sufficient numbers to allow examination of seasonality and comparison of the two 12-month periods August 1971-1972 and August 1972-1973.

The most numerous species was *Nemastoma bimaculatum* (Fabricius) with 3270 captured in the first year (seasonality index = 5.00) and 5456 in the second year (index of 4.15). Peak time of capture was July-November and the seasonality indices for both years show restriction of activity to this time of year, in contrast to the continuous activity through the year indicated by Sankey and Savory (1974). In spite of the rather low seasonality index values, this species is still somewhat more eurychrone than the other abundant species. Captures of *N. bimaculatum* were noticeably higher in the second year of sampling than in the first (see Figures 1 and 2).

The next most abundant species, though far less numerous than *N. bimaculatum*, was *Oligolophus (Odiellus) palpinalis* (Herbst) (= *Odiellus palpinalis* (Herbst)), with 617 captured in the first year and 580 in the second. Although the numbers in each year are similar, this species was much more stenochrone in 1972-73 with an index of 1.85, comparing with 3.17 in 1971-72. In both years the peak activity in October-December is slightly later than the July-November period indicated by Sankey and Savory (1974).

Oligolophus tridens (C.L. Koch) was much more numerous (771 captures) and stenochrone (index of 2.18) in 1971-72 than in 1972-73 (288; 4.64), although in both years it occurred during its expected period of activity from August to November. This species, in fact, was taken at all four sites, not restricted to sites 1 and 2 as erroneously described by Curtis (1973). Somewhat less frequent was *Lacinius ephippiatus* (C.L. Koch) with 190 captures in 1971-72 (seasonality index of 2.98) and only 82 in 1972-73 (index of 3.99), a pattern similar to the previous species and also agreeing with its expected time of occurrence. *Oligolophus agrestis* (Meade) showed similar patterns in both years with two annual totals of 129 and 115 and corresponding indices of 3.66 and 4.15 respectively for 1971-72 and 1972-73;

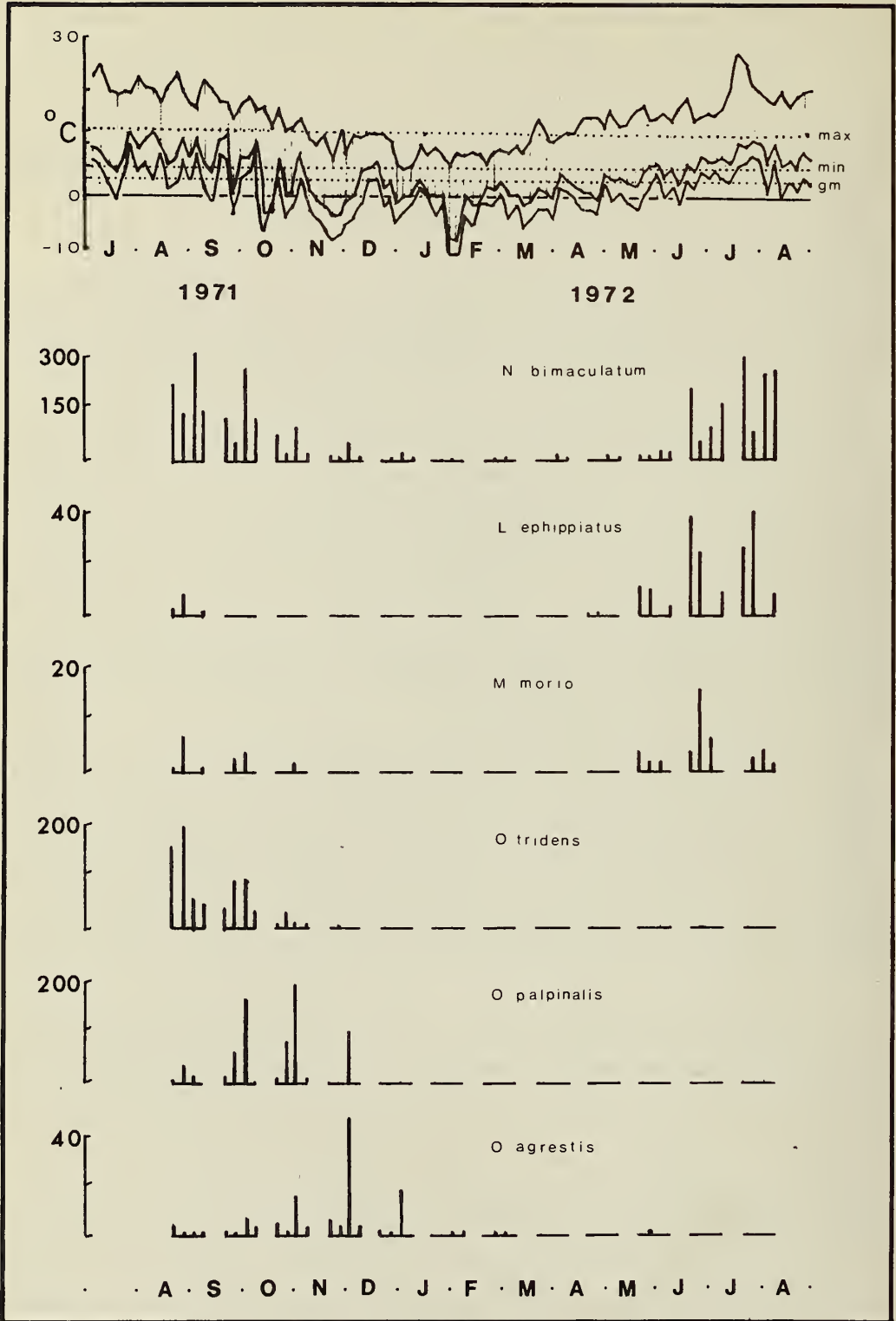


Figure 1

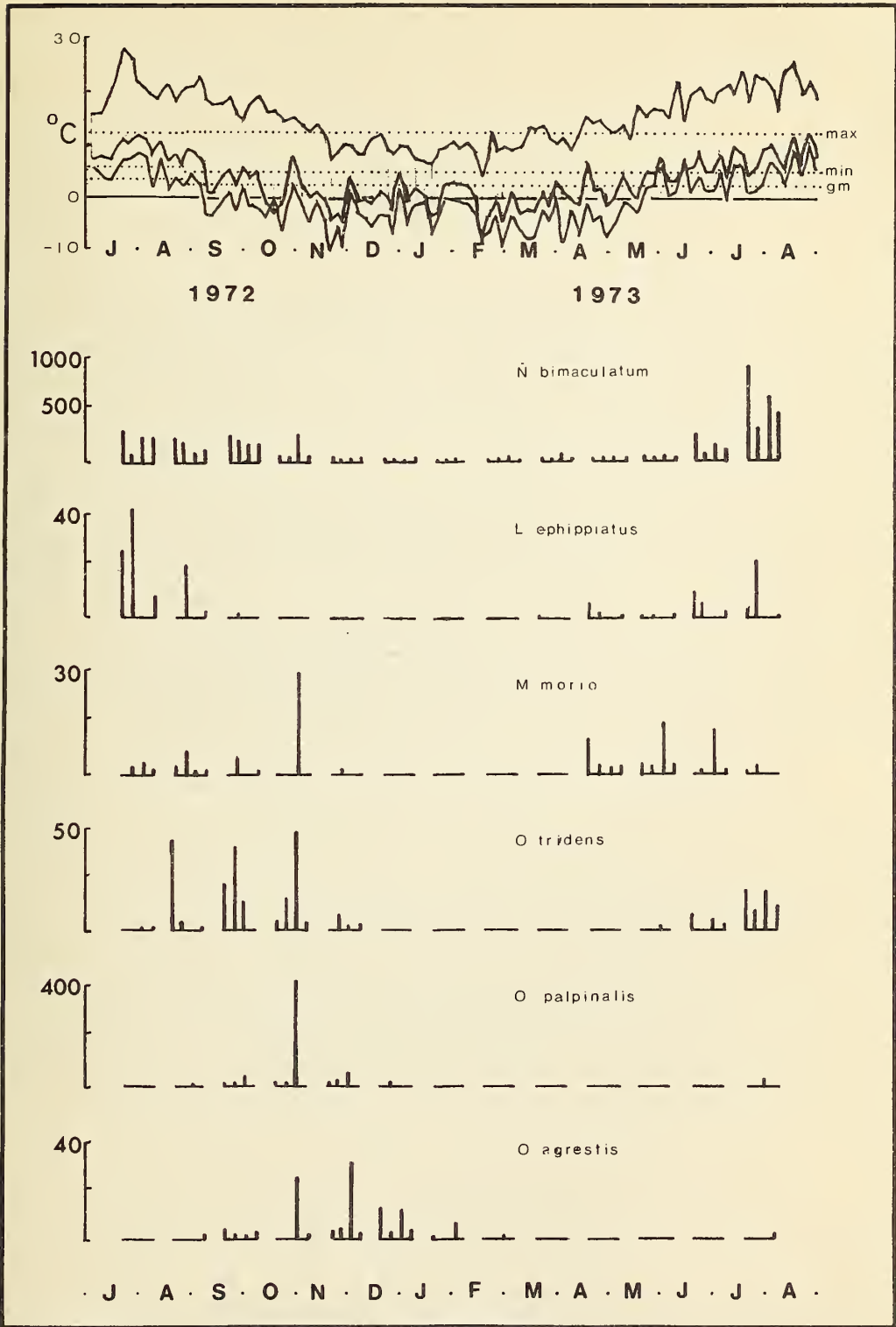


Figure 2

the observed activity was slightly later than the usual period for this species. The least numerous of these abundant species was *Mitopus morio* (Fabricius) which showed an increase in both numbers and eurychronicity from 1971-72 (62; 3.81) to 1972-73 (106; 5.41), occurring at the expected active period from August to December, but also during April-July in 1973.

Explanation of Figures

These data for the frequent species are summarised in Figures 1 and 2, which also indicate the variation in temperature over each respective period 1971-72 and 1972-73. The maximum, minimum and grass minimum temperatures are those recorded at the weather station at Arrochymore, only about 1 km from the island. The annual means for the respective 12-month periods are indicated by dotted lines (max - maximum; min - minimum; gm - grass minimum). Similarity between the two years' temperature patterns is apparent and there is also similarity in the phalangid occurrences. The time of peak activity of the various harvestmen is suggestive of a pattern of succession by the species, particularly the oligolophines (*L. ehippiatus* down to *O. agrestis*), with *N. bimaculatum* being slightly more spread through the year. The relative abundance of the species is shown for the four sites in each month. Note the difference in scales between the two figures, especially for *N. bimaculatum*, *O. tridens* and *O. palpinalis*.

N. bimaculatum occurs most frequently when the climate temperature is steady above the annual mean and its numbers decline with falling temperature. *L. ehippiatus* increases in abundance whilst temperature is rising from annual mean and declines when temperatures are maximal, whereas *M. morio* activity increases with rising temperature and then diminishes with falling temperatures. The latter two species are thus essentially summer species. The remaining three species could be regarded as autumn species: *O. tridens* increasing while temperature is near maximal levels and decreasing when temperature drops to near minimal; or winter species, i.e. *O. palpinalis* occurring when temperature falls to annual mean levels and *O. agrestis* which was taken mostly while temperatures were largely below the annual mean.

In comparing the two years, there is a similar pattern of succession shown by the harvestmen. However, in 1972-73, this seems to start somewhat later; for example in *O. palpinalis*, *M. morio*, notably *O. agrestis* and to some extent *O. tridens* and *N. bimaculatum*. In general, the activity peaks for these species in 1972-73 are about 1-2 months later than in 1971-72. This may be related to differences in climatic conditions between the two years. These climatic conditions are, however, modified

by the habitat structure, vegetation etc., in which the harvestmen live. Thus, for example, in both year's sampling later peaks are seen at station 3 than at the other sites for all species (apart from *L. ephippiatus* which is absent from this site). This might be explained by the nature of the ground vegetation cover which at this site includes many mosses, *Calluna* and *Vaccinium*; during the winter months these persistent vegetative structures could provide some degree of shelter and insulation, allowing later activity of the phalangids.

The picture presented here is a somewhat simplified consideration of the effect of climate on invertebrate activity. More thorough analysis should include factors other than temperature, such as humidity, precipitation, wind speed and direction. Consideration of temperature as a meteorological factor can also include aspects other than gross fluctuations. These other aspects, e.g. occurrence of warm, sunny days, can have a direct bearing on the activity of harvestmen and spiders in quite complex ways as indicated by Pearson and White (1964). It is hoped to examine these aspects.

Acknowledgements

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ADDITIONAL NOTES ON THE BIRDS OF THE ISLAND OF ARRAN

By J.A. GIBSON

Chairman, Clyde Area Branch, Scottish Wildlife Trust

In 1956 I published a small book on *The Birds of the Island of Arran*; since then I have continued to visit the island regularly, and have noted many interesting changes, particularly amongst the breeding bird populations. This short paper does not include all changes, which would be tantamount to rewriting the book, but it does include those changes in the breeding birds (plus a few 'possibles') which are more important or more likely to be of interest to other observers. In my Arran book I wrote that "there never seems to have been an ornithologist resident on the island; certainly not one who has been prepared to write about the birds", but happily this is no longer the case, and for much help received I should like to express my thanks to Mrs Margaret H. Dunn, Mrs Monica Priestley and Mr. Howard Walker, formerly head gamekeeper and now Field Officer with U.F.A.W. For continued help my thanks are also due to Lady Jean Fforde and Arran Estates, and to Major P.F.T. Boscawen and Mr. S.C. Gibbs of Dougrie Estate.

BLACK-THROATED DIVER *Gavia arctica*

One pair now nests fairly regularly at a certain loch in the north of the island; known since at least early 1950s.

RED-THROATED DIVER *Gavia stellata*

Known to nest on Arran for over a century and now very well established, with several pairs nesting regularly at hill-lochs, both in the north and south of the island. Breeding has been recorded beside at least eight lochs, although not all of these are occupied every year. Present breeding population possibly five pairs.

FULMAR *Fulmarus glacialis*

First known to nest on Arran in 1948, at Drumadoon, and now nesting at many places along the west and south cliffs, including Catacol, Machrie, Drumadoon, Corriecravie, Kildonan and Corrygills. Prospecting at several other parts of Arran and also apparently prospecting Holy Island, although Mr. Howard Walker tells me that there is as yet no sign of breeding.

CORMORANT *Phalacrocorax carbo*

A pair of Cormorants nested on Holy Island in 1968 (*Trans. Buteshire Nat. Hist. Soc.*, 17: 92); possibly later, but no proof. Two pairs of Cormorants were 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 and I have no later record.

SHAG *Phalacrocorax aristotelis*

Shags began to nest at the Black Cave, Bennan Head, in 1963. They increased quickly and there were eight pairs in 1964; I counted seventeen nests in 1967, in which year 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. A few young birds were certainly reared in the early years, but I have no record of breeding after 1969 (*Trans. Buteshire Nat. Hist. Soc.*, 17: 94). I saw two Shags in this area in 1971, but there was no sign of a nest.

SHOVELER *Anas clypeata*

On two occasions in the late 1950s a female with young was seen at Loch a' Mhuilinn, behind Lochranza. I have no later record, and this loch has long since dried up, so any further nesting in this area would be very unlikely.

EIDER *Somateria mollissima*

A simply remarkable increase during the past twenty-five years, and now almost certainly the commonest nesting duck. Nests at very many places around the Arran shores, and on Holy Island and Pladda.

GOLDEN EAGLE *Aquila chrysaetos*

At least two, and possibly three, pairs still nesting, but breeding success variable.

BUZZARD *Buteo buteo*

A substantial increase, and now nests commonly all over the island.

SPARROWHAWK *Accipiter nisus*

A marked decrease, in common with many other parts of the country, and was virtually extinct on Arran by the early 1960s. Since then the Sparrowhawk has made some sort of recovery and a good many pairs now nest. The sanctuary provided by the steadily

increasing plantations of the Forestry Commission may possibly be a factor in aiding recovery.

HEN HARRIER *Circus cyaneus*

A very substantial increase, and has become well established as a breeding species since the early 1950s. Many pairs now nest all over the island and in some places Hen Harriers are nesting right in amongst the new Forestry plantations, where they are apparently choosing these sites in preference to nearby open moorland.

PEREGRINE *Falco peregrinus*

Of the eight traditional sites only three or four now seem to be fairly regularly occupied. There are occasional nests elsewhere, but these may be existing birds choosing alternative sites. Young birds have certainly been successfully reared within recent years, however, and there appears to be good reason for being optimistic about the Arran Peregrines. Mrs Dunn reckoned that at least three pairs nested in 1972 (*Scot. Birds*, 7: 346).

PTARMIGAN *Lagopus mutus*

Mr. Howard Walker tells me that since winter 1972, and possibly earlier, several Ptarmigan have been seen in autumn and winter on the high ridges near the head of Glen Sannox. The Ptarmigan has thus returned to Arran after an absence of three-quarters of a century. As far as I am aware there has been no proof of breeding so far, and we can only hope that this will come fairly soon.

WATER RAIL *Rallus aquaticus*

In view of the few positive breeding records of this secretive bird it is worth recording the probable breeding in 1972 (*Scot. Birds*, 7: 347).

CORNCRAKE *Crex crex*

Still nesting occasionally and can usually be heard calling in various parts of the island, although numbers can vary very markedly from year to year.

GREENSHANK *Tringa nebularia*

A pair heard calling, and seen displaying, at a certain area of north Arran many times during the summers of the late 1950s and early 1960s. Breeding strongly suspected but not proved, and to the best of my knowledge no record since 1963.

GREAT BLACK-BACKED GULL *Larus marinus*

A very substantial spread and now nesting at many sites throughout Arran, and on Holy Island and Pladda. The large colony at the hill-lochs near the Boguillie had increased to nearly one hundred pairs by 1969 (*Trans. Buteshire Nat. Hist. Soc.*, 18: 26), but now appears to be completely deserted.

BLACK-HEADED GULL *Larus ridibundus*

For some years a small colony nested at Loch a' Mhuilinn, behind Lochranza, but abandoned this site around 1960 when the loch had virtually dried up. To the best of my knowledge the only Black-headed Gulls nesting on Arran at present are a few pairs nesting sporadically at a marsh near Machrie. Black-headed Gulls began to nest on Pladda for the first time in 1964, and had rocketed to nearly two hundred pairs by 1966; numbers were well down in 1967 and by 1970 they had apparently completely abandoned the island (*Trans. Buteshire Nat. Hist. Soc.*, 17: 119-120).

COMMON TERN *Sterna hirundo*

In 1956 I said I knew of no Common Terns actually nesting on Arran itself, but confirmation quickly arrived that for some years a few pairs had been nesting at isolated places along the west and south shores (*Glas. Bird Bull.*, 7: 12-13); since then I have seen many nests myself. There are small groups, or isolated nests, on the shore near Pirnmill, Dougrie, Machrie, Drumadoon, Kilpatrick, and Corriecravie. Nesting success is extremely variable, because of frequent disturbance, and nesting sites are changed very readily. There is also a small but fairly stable colony of up to a dozen nests, known for the past ten years and probably earlier, on the shore at Corrygills.

ARCTIC TERN *Sterna paradisaea*

Since 1956 a few isolated pairs of Arctic Terns have been found nesting at several places along the west and south shores of Arran, from Pirnmill to Corriecravie. Breeding success is very erratic, however, depending on disturbance.

ROSEATE TERN *Sterna dougalli*

A few pairs bred on Pladda from 1965 to 1967 and probably earlier (*Trans. Buteshire Nat. Hist. Soc.*, 17: 120). As far as I know there have been no breeding records since then.

BLACK GUILLEMOT *Cepphus grylle*

In 1956 I said I had been unable to prove any breeding of the Black Guillemot on Arran itself, and appealed for information.

This prompted Dr. J.M. Leith to write and tell me that he had known the Black Guillemot to nest at Dippen Head since at least the early 1930s, and that he had seen nests many times. Acting on information supplied by Dr. Leith I too visited this site and was also able to confirm breeding (*Trans. Buteshire Nat. Hist. Soc.*, 17: 83). Only one or two pairs seem to breed, and one particular nesting crevice has been occupied for many years.

COLLARED DOVE *Streptopelia decaocto*

Known to nest on Arran since at least 1966 and probably earlier. Now fairly widespread and steadily increasing, as with most parts of the country.

BARN OWL *Tyto alba*

The Barn Owl is certainly holding its own on Arran, and in fact appears to be quietly increasing as a breeding species. In the early 1950s I knew of only a few pairs, but Mrs Dunn has recently recorded a clear increase (*Scot. Birds*, 7: 365; 8: 255).

NIGHTJAR *Caprimulgus europaeus*

Formerly very common but had substantially decreased, almost to extinction, by the mid-1950s. A steady increase in the number of records within recent years, however, and now probably breeding more regularly on Arran than at any time during the past half-century (also see *Scot. Birds*, 7: 145, 365; 8: 256).

KINGFISHER *Alcedo atthis*

As is now well known, Kingfishers are certainly returning to many parts of the West of Scotland. During the past few years there have been many reports of birds from several Arran rivers, with good evidence of nesting from the Sannox, Rosa, and possibly Machrie, burns.

MAGPIE *Pica pica*

An increasing number of stragglers has been reported during the past twenty-five years, and I would not be unduly surprised to hear of breeding, or attempted breeding, in the not too distant future.

CHOUGH *Pyrhocorax pyrrhocorax*

During the past ten years I have received several sight records of Choughs seen in various parts of Arran. Although the observers have not been ornithologists in the accepted sense, there is little doubt that these records are perfectly authentic. I myself have not yet seen a Chough on Arran, but I hope that it

may soon return as a breeding species. It is certainly increasing in Kintyre.

WILLOW TIT *Parus montanus*

Since the late 1950s I have received several apparently perfectly genuine records of Willow Tits on Arran, and have seen one myself. A bird has also been seen carrying food, thus suggesting breeding. Any additional information would be very welcome.

STONECHAT *Saxicola torquata*

Making a very substantial recovery as a breeding species after some years with a very diminished population.

REDSTART *Phoenicurus phoenicurus*

Formerly uncommon, but steady increase and by the early 1960s was nesting in reasonable numbers at most suitable places on Arran. A marked decrease within recent years, however, and as far as I know very few pairs now nest.

GRASSHOPPER WARBLER *Locustella naevia*

Formerly fairly common but has undergone a very marked decrease in numbers during the past few years; indeed in 1973 Mrs Dunn recorded no Grasshopper Warblers at all "for first time in 18 years" (*Scot. Birds*, 8: 266).

WHITE WAGTAIL *Motacilla alba*

A pair of birds of the race *M. a. alba* was reported to have bred at Machrie in 1972 (*Scot. Birds*, 7: 378).

RED-BACKED SHRIKE *Lanius collurio*

On 16th June 1968 Mr. J. Ian Waddington, Director of the Clyde River Purification Board, and Mrs. Waddington saw a male and female Red-backed Shrike near Lochranza. Mr. and Mrs Waddington are very experienced observers and were familiar with the Red-backed Shrike which they had recently been watching in Europe. Unfortunately they had to leave the island the following day and so were unable to make a detailed search for any possible nest. I know of no further records.

SISKIN *Carduelis spinus*

A definite increase on Arran and has recently been recorded breeding in several areas. The year 1972 was apparently a very successful breeding year (*Scot. Birds*, 7: 380).

CROSSBILL *Loxia curvirostra*

Since the mid-1950s (*Glas. Bird Bull.*, 7: 13-14) Crossbills in summer have been reported many times from one particular area in the south of Arran, and breeding has been strongly suspected on many occasions. Following irruptions, Crossbills have also been seen on Arran in summer (e.g. *Scot. Birds*, 7: 382). To the best of my knowledge, however, proof of breeding has not yet been obtained.

TREE SPARROW *Passer montanus*

Several more records have come to light from the Kilpatrick area, where there was formerly a small breeding population. As far as I am aware, however, there is no recent evidence of breeding, and any additional information will be greatly welcomed.

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