

The land and freshwater molluscs of the island of Bute

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Introduction

Although my main natural history work has always centred on vertebrate zoology, I have also maintained a keen interest in several invertebrate groups. In particular, for many years I have been a member of both the Conchological and Malacological Societies and have taken a considerable interest in the distribution of the land and freshwater molluscs (in common parlance, snails and slugs) throughout the Island of Bute.

In general terms, these creatures - snails and slugs - are well known to most people. Many naturalists will at some time or other have encountered the numerous empty snail shells at a 'Thrush's Anvil', and nearly every householder with a garden carries on a steady war against the unfortunate slugs. Most people, however, may be surprised to learn that there are over 200 species of these land and freshwater (i.e. non-marine) molluscs in the British Isles, and that nearly 120 species have been recorded from various parts of the West of Scotland. Nevertheless, it is always worth recording the distribution of any animal group on an island, since there may well be marked differences in distribution between an island and the neighbouring mainland.

Historical Accounts

Although no account of the molluscs of Bute has previously appeared in the Buteshire Society's *Transactions*, the latter part of the 19th century saw the publication of a significant paper, read to the Natural History Society of Glasgow on 25th March 1890, on the Land and Fresh-Water Mollusca of Bute, a pioneer work which attempted to give one of the first-ever detailed accounts of these molluscs for any Scottish island (Scott, 1892).

Previously, in 1869 Mr. William Haddin had published a short paper listing the Helicidae which he had found on Bute during "the last two summers" (Haddin, 1869). He did extremely well, for in this short time he recorded no less than thirty-two species on Bute, and in a short preliminary paper Mr. Thomas Scott added an additional eight valid species of Helicidae to Haddin's Bute list (Scott, 1888).

In 1890, however, Thomas Scott produced his detailed paper on the land and freshwater molluscs of Bute (Scott, 1892), based on his own observations and on any records which had previously been published; altogether he listed and gave notes on sixty-one species or varieties, of which fifty-two would now be regarded as valid species. This was indeed an excellent total for the time, and was even more remarkable when one knows the circumstances of the recording. The details are as follows:

"My object, therefore, in preparing these notes is to try to fill up in some measure the gap left by Mr. Haddin, as well as to revise his list of the Helicidae in as far as it relates to the species observed in Bute, and thus bring together all the information we at present possess concerning the number of species known to occur in the island, and also what we know as to their distribution.

By way of explaining how I am in a position to attempt this work, it may be stated that in October, 1886, the Fishery Board for Scotland requested me to proceed to Rothesay to carry out some investigations at the Royal Aquarium; and I was stationed there till the end of June in the following year, that is, between eight and nine months. During these months a good deal of my leisure time was devoted to the examination of the land and freshwater invertebrate fauna of the island.

My *modus operandi* was somewhat as follows. During the shorter days the locality in the vicinity of the Aquarium was examined, and here a few interesting "finds" were secured, including the rare *Limax* (*Amalia*) *gagates*. One or two visits were also made to Loch Ascog and Loch Fad, but comparatively little was done throughout the winter. As soon, however, as the longer days of spring and early summer arrived, I frequently visited, in the early morning and also in the evening, localities more distant than those I had been able to reach during the winter months. Two or three times every week, when the weather was favourable, I was in the habit of leaving Rothesay between 3 and 4 a.m., or sometimes earlier, and proceeding to some place previously fixed on, where I would spend a short time collecting material and taking notes, after which I returned so as to reach the Aquarium before 9 a.m. In this way I have visited Loch Ascog, Loch Fad, Greenan Loch, Ettrick Bay, St. Ninian's Bay, Kames Bay, and other places. A good deal of time was thus also devoted to the examination of the shores as well as the landward part of the island, and that without interfering in any way with the Board's work. These early morning rambles were never lacking in interest, and I now look back on these hours, "snatched from sleep" that they might be given to the study of natural history, as the pleasantest and happiest I spent in Bute.

It was my intention to have explored the whole island, but the shortness of my stay prevented this being done. All that I was able in some measure to overtake was the examination of the central and perhaps the more interesting portion of it, which may be roughly defined as bounded by Kames Bay and Ettrick Bay on the north, and Kerrykroy and St. Ninian's Bay on the south. It will be observed that within this area are included the principal lochs of the island, and judging from its physical conditions in other respects, it might reasonably be expected to yield as great a variety of forms of molluscan life as either of the parts to the north or the south of it". (Scott, 1892: 170-172).

After presenting a summary of his Systematic List in table form towards the end of his paper, Scott then added the undernoted footnote:

"A perusal of the foregoing List will, I think, show that there is every likelihood of further research being rewarded by the discovery of other additions to the Mollusca of the island. Thus several aquatic species - such as *Sphaerium corneum*, *S. lacustre*, *Valvata piscinalis*, *V. cristata*, *Planorbis nitida*, etc. - may yet be found to occur in one or other of the lochs or ditches. The Swan Mussel (*Anodonta cygnaea*) may also yet be discovered in some of the lochs, as the conditions seem to be as favourable for its existence - say, in Greenan Loch - as they are in Lochend Loch, Edinburgh, where it is moderately common.

Though, as has been pointed out, several aquatic molluscs may yet be added to the fauna of Bute few additions to the terrestrial species now recorded are likely to be met with in the island. The following, however, may yet be observed: *Arion hortensis*, *Limax flavus*, *Succinea elegans*, *Helix rupestris*, *Pupa marginata*, *Bulimus obscurus*, and *Acme lineata*.

Sixty-one species and varieties are recorded in the preceding list, and these, with one or two exceptions, have all been certified by Mr. John W. Taylor, F.L.S., Leeds" (Scott, 1892: 181). [Mr. J.W. Taylor was the Conchological Society's Referee].

As anticipated, Scott was partly correct in his predictions, for quite apart from the Garden Slug *Arion hortensis* (see later) half of the additional species he mentions have since been recorded on Bute.

In simple terms, Thomas Scott put together a personal annotated list of 52 species, plus several varieties, after only some nine months on the island, during which time he was mainly occupied in official work for the Fishery Board. This was a truly astonishing piece of intensive work by Scott, but not unduly surprising when one considers some of his considerable achievements in other fields. Scott's Bute records were incorporated into W. Denison Roebuck's massive paper on Scottish Land and Fresh-Water Mollusca (Roebuck, 1891a) and the various supplements thereto (Roebuck 1891b, 1892-95); these publications also included a few additional Bute records, either by Roebuck himself or collected from other sources. W.D. Roebuck was the official Recorder for the Conchological Society.

Present Work

For nearly sixty years I myself have steadily collected records of all the species of land and freshwater molluscs which I have encountered on Bute. This was largely because of personal interest, and initially the collection of records was opportunistic, simply noting any species which I came across in the course of my other natural history work, but over the past twenty-odd years I have made fairly intensive efforts to search for specimens, in the hope of producing a reasonably complete list for the island, to compare with Thomas Scott's work of over a century ago, and to illustrate what one could reasonably expect to find on the island today. In total, I have managed to record sixty-eight species, and both Scott and myself have recorded some species additional to each other's lists. These, plus a number of species listed in the national Atlases (Kerney, 1976b and 1999) about which I have so far been unable to obtain further information, brings the total of land and freshwater molluscs recorded for Bute to at least 86 species, plus a few doubtful records.

At first I had no particular aim in view with regard to publication, but the appearance of the second edition of the national 10km² distribution Atlas (Kerney, 1999) changed all that. In the first edition of the national 10km² distribution Atlas (Kerney, 1976b) most of Scott's 19th century records were included and marked as 'before 1950 only' (one of the cut-off points) which was perfectly correct, but in the second edition of the Atlas (Kerney, 1999), virtually all Scott's Bute records had been removed.

Mr. Thomas Scott, Naturalist to the Fishery Board for Scotland for many years, was one of the most highly regarded and reliable naturalists of his day, and was well recognised as an established authority on molluscs. He was the obvious choice to write the section on land and freshwater molluscs of the Clyde area for the 1901 British Association Glasgow Handbook (Scott, 1901), a report which, in summary form, encompassed everything then known about the distribution of these molluscs throughout the entire Clyde faunal area; it incorporated all Scott's own Bute records collected during 1886-87 (Scott, 1892), plus any later records. The discovery that Scott's perfectly authentic, indeed pioneer, Bute records had been omitted from the latest national Atlas therefore caused me considerable concern. Enquiries, however, indicated that most of these very early records had been removed only because of their antiquity, and apparent lack of any present-day published confirmation, not because of any doubts about the authenticity of Scott's old records.

It was largely this unfortunate omission of Scott's old records which stimulated me to go ahead and prepare this list of Bute molluscs for publication, thus confirming Scott's work of over a century ago and so avoiding any possible misunderstanding about the quality of Scott's original research.

All told, on Bute I have personally collected sixty-eight species of molluscs, some of which were kindly identified for me by David Heppell, but since our family home on Bute has always been in Kilchattan Bay it is perhaps understandable that a large proportion of the records come from the south part of the island. Nevertheless, there is no reason to believe that thorough investigation of similar suitable habitats in other parts of the island would produce any very different results. I have also listed the few species which I have found on the island of Inchmarnock.

In the following Systematic List, in addition to my own personal records, I have included any Bute records of other species which are given either by Scott (1892), Roebuck (1891a, 1891b, 1892-95) or in the two national 10km² distribution Atlases (Kerney, 1976b and 1999), even although I have not always been able to discover the full details. Precise information about some of the very early records is not always now available, but there is no reason to doubt their authenticity, so they are included for the sake of completeness; these instances are clearly set out in the text. As already indicated, this brings the total number of molluscs recorded for the Island of Bute to at least 86 species and it is hoped that the publication of this list for the island will

stimulate the interest of other Bute naturalists, who may be able to make additions to the list of species recorded.

For the sake of completeness, and ease of reference, the relevant publication details of Scott's 1892 paper and the 1999 national Atlas are given at the end of each section of text. The initials DH indicate that the identification was confirmed by Mr. David Heppell (see Acknowledgements).

English Names

In common with many of the smaller, or less 'exciting', animals of the countryside, many of the snails and slugs originally never had any common English names, although some early authors, particularly Ellis (1926) in his standard text-book, did attempt to give English names for most species. Even although many of these English names were somewhat contrived, and did not always accurately reflect habitat description, as a young naturalist I became accustomed to these common names from Ellis's book and from the senior naturalists of my early days, so have continued to use them.

By the early 1970s, however, it had become a widespread practice to describe molluscs entirely by their scientific names (many of which unfortunately kept changing) and not to use any English names at all (e.g. Waldén, 1976; Kerney, 1976a and 1976b). Recently, however, the established practice has changed yet again, and in the latest national 10km² distribution Atlas (Kerney, 1999) English names have been reintroduced for most species. In this respect, it is worth quoting an extract from the section on nomenclature, as follows:

English names are mainly from Ellis (1926) or from Victorian popular manuals. Very few of these names are genuinely vernacular and most are evidently back-formations from the Latin names of the species (in many cases now changed). Though hardly used in serious scientific literature they are included here for their historical interest" (Kerney, 1999: 21).

Despite these apparent drawbacks I personally, as indicated above, have always found the English names useful, particularly for the commoner species, so the old English names, at one time in fairly common use, are given in the following Systematic List, in the hope that they may be helpful to present-day naturalists. Some older alternative English names, at one time in use, are also given [within square brackets] in the text.

Pest Species

Possibly understandably, most people tend to regard all slugs and snails as garden and agricultural pests, at times very damaging to plants, fruit or crops, and take steps to kill most of them on sight. There is certainly no doubt that several species, particularly some species of slugs, can at times be a severe pest, especially if they occur, as they sometimes do, in plague numbers, when it is clearly necessary to take drastic action against them. Several of these 'harmful' species occur on Bute, some quite commonly, and accounts of such plagues on Bute and in other parts of the West of Scotland go back to at least the mid-1800s.

It may come as something of a surprise, therefore, even to fairly experienced naturalists, to learn that out of over 200 species of land and freshwater molluscs in the British Isles, only some six species are actually harmful to man's activities in this way, and the rest are all virtually harmless, doing little, if any, damage. The six 'harmful' species concerned are the Garden Slug *Arion hortensis*, Jet Slug *Milax gagates*, Keeled Slug *Tandonia* (*Milax*) *sowerbyi*, Field Slug *Deroceras* (*Agriolimax*) *reticulatum*, Strawberry Snail *Trichia* (*Helix*) *striolata*, and Garden (or Common) Snail *Helix aspersa*.

Three-quarters of a century ago Ellis drew careful attention to this: "It may be mentioned that the only British molluscs that do any appreciable damage to cultivated plants, are [the six species listed above]. Other species may sample the vegetables from time to time, but these six species are all with which the gardener need concern himself" (Ellis, 1926: 178-179). With a little care and patience, these six species are fairly easily identified. It is therefore a great pity to destroy all molluscs, many of which are extremely interesting little creatures, and perfectly harmless. It is worth while taking just a little trouble to identify the problem species and so leave the rest to get on with their lives.

There is one exception. The Dwarf Pond Snail *Lymnaea truncatula* is notorious as the intermediate host of the Sheep Liver-Fluke *Fasciola hepatica*. It is, and has always been, common on Bute (e.g. Scott, 1892), inhabiting marshes, ponds, ditches, and loch-sides, and no-one will object if as many as possible are killed.

Systematic List

Possibly more than any other animal group, the taxonomy of molluscs has undergone numerous changes over the past 150 years, and even the past quarter-century has seen several changes since the 1976 revisions by Waldén and Kerney, utilised in the first national 10km² distribution Atlas (Kerney 1976a)

The scientific names of many molluscan species have changed, sometimes several times, over the past hundred years, and no longer appear even in standard lists of synonyms, which means that they cannot always be easily identified nowadays. This can make difficulties for present-day naturalists, so for ease of reference, any very old scientific names used by Roebuck (1891a) or Scott (1892) are given in square brackets at the end of each relevant section of text. For very considerable help in researching many of the old and long-abandoned scientific names I am particularly grateful to my valued colleague Kathie Way, of the Department of Zoology at the Natural History Museum.

In the following Systematic List (which is confined to species, and excludes any varieties) arrangement and nomenclature largely follow the current national Atlas (Kerney, 1999), with some minor modifications which have long been more familiar to Scottish naturalists. In general, the Atlas taxonomy largely corresponds to Kerney and Cameron (1979) for snails, Quick (1960) plus Cameron, Eversham and Jackson (1983) for slugs, and Kerney (1976a) and Ellis (1978) for bivalves. It is clear, however, that "Molluscan taxonomy is far from settled" (Kerney, 1999), and later changes will almost certainly occur. In this respect, the very recently published account of the bivalves (Killeen, Aldridge and Oliver, 2004) illustrates this already.

Order MESOGASTROPODA

Family VALVATIDAE

COMMON VALVE SNAIL *Valvata piscinalis* (Müller, 1774)

Locally distributed in small numbers; ditches and edges of lochs. Not recorded by Scott. [Kerney, 1999: 29].

Family HYDROBIIDAE

LAVER SPIRE SNAIL *Hydrobia ulvae* (Pennant, 1777)

Two specimens from mud-flats near Kilchattan Bay since 1990 are my only records. Not recorded by Scott. [Kerney, 1999: 33]. [DH].

JENKINS'S SPIRE SNAIL *Potamopyrgus antipodarum* (Gray, 1840)

Fairly common and well distributed in ditches, streams and edges of lochs; also several specimens from brackish tidal water. Not recorded by Scott. [Kerney, 1999: 36]. [DH].

Family BITHYNIIDAE

COMMON BITHYNIA *Bithynia tentaculata* (Linnaeus, 1758)

In some parts of the country this species is fairly common in slow-moving rivers, canals, etc, but I have no personal record for Bute, and it was not recorded by Scott. Kerney (1999) gives an old record from the south-west of Bute, but I have been unable to discover the details. [Kerney, 1999: 39].

Family ACICULIDAE

POINT SNAIL *Acicula fusca* (Montagu, 1803)

Several specimens of this species, in a batch of very small snails collected from leaf litter in woods near Kilchattan Bay in 1981, were kindly identified for me by David Heppell; apparently the first records for Bute. This is a very small snail, however, easily overlooked unless deliberately searched for, so further work could well produce more records. Not recorded by Scott. [*Acme lineata*]. [Kerney, 1999: 43]. [DH].

Order BASOMMATOPHORA

Family ELLOBIIDAE

HERALD SNAIL *Carychium minimum* Müller, 1774

[Sedge Snail]. A very tiny snail, but fairly common and well distributed in wet places generally; marshes, ditches, edges of several Bute lochs, e.g. Lochs Fad and Greenan. Found on Inchmarnock. [Scott, 1892: 180; Kerney, 1999: 44].

SLENDER HERALD SNAIL *Carychium tridentatum* (Risso, 1826)

At one time this snail was regarded as a variety of *C. minimum*, but has since been given species rank. One specimen from a collection made in Torr Wood in 1988 was kindly identified for me by David Heppell. [Kerney, 1999: 45]. [DH].

TWO-TOOTHED SNAIL *Leucophytia bidentata* (Montagu, 1808)

This semi-marine species is recorded by Kerney from the 10km square NS15, which may or may not be from Bute, but I have no personal record. [Kerney, 1999: 47].

Family PHYSIDAE

COMMON BLADDER SNAIL *Physa fontinalis* (Linnaeus, 1758)

Locally common in suitable areas, e.g. weeds at side of lochs; Loch Fad and Greenan Loch. Recorded by Scott from Loch Fad. [Scott, 1892: 178; Kerney, 1999: 49].

Family LYMNAEIDAE

DWARF POND SNAIL *Lymnaea truncatula* (Müller, 1774)

Fairly common and widely distributed around marshes, ponds, ditches, edges of lochs, etc. Recorded by Scott as "frequent in ditches and lochs". This snail is notorious as the intermediate host of the Sheep Liver-Fluke *Fasciola hepatica*. Found on Inchmarnock. [Scott, 1892: 178; Kerney, 1999: 51].

MARSH POND SNAIL *Lymnaea palustris* (Müller, 1774)

Locally distributed, typically in shallow ditches, drains and marshes, but less common along edges of lochs; Scott recorded this species from "marshy ground at west end of Greenan Loch", where it can still be found. Has been found on Inchmarnock. [Scott, 1892: 178; Kerney, 1999: 53].

EAR POND SNAIL *Lymnaea auricularia* (Linnaeus, 1758)

Kerney (1976b and 1999) gives an old Bute record for the 10km square NS06, but this was certainly not recorded either by Scott or by Roebuck, and I have been unable to uncover any further details. I myself have never found this species on Bute. [Kerney, 1999: 55].

COMMON POND SNAIL *Lymnaea peregra* (Müller, 1774)

[Wandering Pond Snail]. Common and widely distributed throughout Bute, in marshes, ditches and lochs. Roebuck (1895) recorded it from the Bull Loch at the north of the island, where I also have found it. Common on Inchmarnock. [Scott, 1892: 178; Kerney, 1999: 56].

Family PLANORBIDAE

KEELED RAM'S-HORN *Planorbis carinatus* (Müller, 1774)

This snail does occur in several parts of the West of Scotland, but neither Scott nor myself has any record. Kerney (1976b and 1999) gives an old Bute record, which is not by Scott, for square NS05, but I have been unable to find further details. [Kerney, 1999: 59].

BUTTON RAM'S-HORN *Anisus leucostoma* (Millet, 1813)

[White-lipped Ram's Horn]. Not uncommon and fairly widely distributed, in marshes, ponds, ditches and lochs (less common) but I have personal records from Kirk Dam and Plan Loch. Scott said "small loch or pond near Ascog". [*Planorbis spirorbis*]. [Scott, 1892: 178; Kerney, 1999: 60].

TWISTED RAM'S-HORN *Bathyomphalus contortus* (Linnaeus, 1758)

Thinly distributed in small numbers in a variety of aquatic habitats; rivers, lochs, ponds, and ditches; most of the larger lochs. Scott recorded it from Loch Fad and Greenan Loch. [*Planorbis contortus*]. [Scott, 1892: 178; Kerney, 1999: 63].

SMOOTH RAM'S-HORN *Gyraulus laevis* (Alder, 1838)

This is a very local species. It was found by Scott in Greenan Loch, and after a considerable search I also found it there, but so far have found it nowhere else on the island. There appear to

be no other recent records listed by Kerney (1999). [*Planorbis laevis*, *Planorbis glaber*, *Zonites glaber*]. [Scott, 1892: 178; Kerney, 1999: 64]. [DH].

WHITE RAM'S-HORN *Gyraulus albus* (Müller, 1774)

Fairly common and well distributed in most suitable aquatic habitats. [*Planorbis albus*]. [Scott, 1892: 178; Kerney, 1999: 66].

NAUTILUS RAM'S-HORN *Gyraulus crista* (Linnaeus, 1758)

Locally distributed in small numbers in most suitable aquatic habitats. A very small snail, easily overlooked, but recorded by Scott from Loch Ascog and Greenan Loch. [*Planorbis nautilus*]. [Scott, 1892: 178; Kerney, 1999: 67]. [DH].

Family ANCYLIDAE

RIVER LIMPET *Ancylus fluviatilis* Müller, 1774

Recorded by Scott from Loch Fad and Loch Ascog, where it is still present; indeed it is present in small numbers around the margins of most Bute lochs. I have found this limpet in the Bull Loch at the north end of Bute, from where Roebuck (1895) also recorded it. [Scott, 1892: 178; Kerney, 1999: 72].

Order STYLOMMATOPHORA

Family SUCCINEIDAE

LARGE AMBER SNAIL *Succinea putris* (Linnaeus, 1758)

Recorded by both Haddin (1869) from St. Ninian's Bay and Scott (1892) from Loch Fad, and by Roebuck (1891a: 451) from Port Bannatyne (A. Shaw), but I have never been able to find it; no record in Kerney (1999). *S. putris* is very rare in Scotland, although that alone is no reason to doubt the findings of experienced naturalists in the 19th century (but see next species). [Scott, 1892: 179].

PFEIFFER'S AMBER SNAIL *Oxyloma pfeifferi* (Rossmässler, 1835)

Fairly common and well distributed in most suitable aquatic habitats, including most of the lochs. Not recorded by Scott. David Heppell told me, however, that it was more than likely that Haddin, Scott and Roebuck had incorrectly identified their specimens as *Succinea putris* instead of *O. pfeifferi*; no criticism here, since in standard works of the day these two species were not clearly separated. Kerney (1999) now says "*S. putris* cannot always safely be distinguished from *Oxyloma pfeifferi* on external criteria. Only records confirmed by dissection or based on well-characterized material have therefore been mapped. Many 19th-century records are unreliable". [Kerney, 1999: 78]. [DH].

Family COCHLICOPIDAE

SLIPPERY MOSS SNAIL *Cochlicopa lubrica* (Müller, 1774)

A common snail, widely distributed on Bute; mainly in moderately damp and sheltered places, but found in a wide variety of habitats, including around several of the lochs. Also on Inchmarnock. [*Zua lubrica*]. [Scott, 1892: 180; Kerney, 1999: 81].

SMALL SLIPPERY MOSS SNAIL *Cochlicopa lubricella* (Porro, 1838)

Closely related, and very similar, to *C. lubrica*, but usually found in drier places; thinly distributed throughout the island. Not recorded by Scott, but listed by Kerney. [Kerney, 1999: 82]. [DH].

Family VERTIGINIDAE

TOOTHLESS CHRYSALIS SNAIL *Columella edentula* (Draparnaud, 1805)

Well known and fairly widely distributed on Bute; mainly in quiet areas, undisturbed by human activity, so can be local and may seem to change its habitat readily. Recorded by Haddin (1869) from side of Greenan Loch, and Skeoch Wood (presumably less disturbed in the middle of the 19th century) and by Scott "By the shores of Loch Fad, in a wood at Ascog". [*Vertigo edentula*]. [Scott, 1892: 180; Kerney, 1999: 85-86].

GRASSLAND CHRYSALIS SNAIL *Columella aspera* Waldén, 1966)

A very tiny snail, closely related to *C. edentula* (above), but can be locally common in uncultivated grassland and some woodland. Only distinguished in 1966, and all my collected specimens were identified for me by David Heppell. [Kerney, 1999: 87]. [DH].

MARSH WHORL SNAIL *Vertigo antivertigo* (Draparnaud, 1801)

A very small snail, and in my experience uncommon and local to some marshy places; all my personal records are from the south of the island. Scott said "By the shores of Loch Fad; frequent. Loch Ascog; not common". Haddin (1869) recorded it from Greenan Loch. I suspect that this species has declined in numbers. [Scott, 1892: 180; Kerney, 1999: 92]. [DH].

STRIATED WHORL SNAIL *Vertigo substriata* (Jeffreys, 1833)

A very small snail indeed, and all credit to Scott, who recorded it and said "By the shores of Loch Fad; rather scarce". Restricted to moist habitat, and in my experience still very scarce, but easily overlooked. I am grateful to David Heppell for confirming the identification of the few specimens I found. [Scott, 1892: 180; Kerney, 1999: 93]. [DH].

COMMON WHORL SNAIL *Vertigo pygmaea* (Draparnaud, 1801)

Although a very small snail, this species is fairly common and well distributed throughout the island; mainly in drier areas, although it can also be found not far from the edges of some of the lochs. [Scott, 1892: 180; Kerney, 1999: 94].

Family PUPILLIDAE

MOSS CHRYSALIS SNAIL *Pupilla muscorum* (Linnaeus, 1758)

Kerney (1999) lists an old record from the 10km square NS15, which may or may not refer to Bute; no further information available. Not recorded by Scott, and I have no personal record. [*Pupa marginata*]. [Kerney, 1999: 103].

ENGLISH CHRYSALIS SNAIL *Leiostryla anglica* (Wood, 1828)

Haddin (1869) recorded this species from Mount Stuart woods, but Scott (1892) said he "did not observe this species". Kerney (1976b and 1999) gives recent records of this species from the 10km squares NS15 and NS16, which may or may not refer to Bute. I have been unable to find the necessary details, and I have no personal record. [*Pupa ringens*, *Pupa anglica*]. [Kerney, 1999: 104].

COMMON CHRYSALIS SNAIL *Lauria cylindracea* (da Costa, 1778)

A small snail, fairly common and well distributed throughout the island, in a wide variety of habitats, although generally avoiding wetland areas. Scott recorded it as frequent by the shores of Loch Fad, although I myself have failed to find it there. [*Pupa umbilicata*]. [Scott, 1892: 180; Kerney, 1999: 105].

Family VALLONIIDAE

SMOOTH GRASS SNAIL *Vallonia pulchella* (Müller, 1774)

[Beautiful Grass Snail]. Scott recorded this small snail "Near Ardmalish Point, Ettrick Bay", and Haddin (1869) recorded it from St. Ninian's Bay. My own relatively few records come from marshland in the very south of the island, and I think I was fortunate to find them. Recorded by Kerney (1976b) but not in 1999. [*Helix pulchella*]. [Scott, 1892: 180]. [DH].

ECCENTRIC GRASS SNAIL *Vallonia excentrica* Sterki, 1892

Old records, not apparently by Scott, are listed by Kerney (1976b and 1999). I myself have not actually recognised this small snail on Bute, but at least one specimen, in a batch of small snails which I sent to the Royal Scottish Museum in 1988 as *V. pulchella*, had its identification changed by David Heppell to *V. excentrica*; I have never seen another. [Kerney, 1999: 109]. [DH].

PRICKLY SNAIL *Acanthinula aculeata* (Müller, 1774)

Several specimens of this small snail, found in woodland south of Kilchattan Bay, had my identification confirmed by David Heppell, but I have found no specimens anywhere else on the island, even although Scott recorded this species from "wood by the side of the shore road near Ascog" and Haddin (1869) found it at Woodend and Mount Stuart. Further information would be welcome. [*Helix aculeata*]. [Scott, 1892: 179; Kerney, 1999: 110]. [DH].

PLATED SNAIL *Spermodea lamellata* (Jeffreys, 1830)

Scott said he "did not observe this species", although Haddin (1869) recorded it from Woodend and Mount Stuart; Roebuck (1891a: 461) recorded it from Skeoch Woods (Alex. Shaw). I have never seen it on Bute, although old records from Bute were still listed by Kerney (1976b and 1999). I have been unable to obtain any further information. [*Helix lamellata*]. [Kerney, 1999: 111].

Family ENIDAE

LESSER BULIN *Ena obscura* (Müller, 1774)

Kerney (1976b and 1999) lists very old records from the 10km square NS15, which may or may not refer to Bute. This species was not recorded by Scott, and I have been unable to obtain any further information. I myself have never seen a specimen on Bute. [Kerney, 1999: 113].

Family PUNCTIDAE

DWARF SNAIL *Punctum pygmaeum* (Draparnaud, 1801)

A very tiny snail, recorded by Scott from "Near Ardmalish Point, Kames Bay; rare", but now known to occur in many situations in suitable habitat throughout the island, e.g. leaf litter, hedges, undisturbed grassland. I suspect it escapes recognition because of its very small size, and I am grateful to David Heppell for confirming the identification of my specimens. [*Helix pygmaea*]. [Scott, 1892: 180; Kerney, 1999: 114]. [DH].

Family DISCIDAE

ROUNDED SNAIL *Discus rotundatus* (Müller, 1774)

[Radiated Snail]. One of the commonest snails on Bute. Common virtually everywhere, and very well known in gardens. Found on Inchmarnock. [*Helix rotundata*]. [Scott, 1892: 180; Kerney, 1999: 118].

Family ARIONIDAE

LARGE BLACK SLUG *Arion ater* (Linnaeus, 1758)

[Black Snail]. Always known to be fairly common and widely distributed in all suitable habitats on Bute, although "not usually in small urban gardens" (Kerney, 1999) where it is usually destroyed on sight when it does occur, even although it is not generally regarded as a pest species, unless to some fruit, and then usually only rotting fruit on the ground. Occurs on Inchmarnock. [Scott, 1892: 178; Kerney, 1999: 120].

DUSKY SLUG *Arion subfuscus* Draparnaud, 1805

Fairly common and widely distributed throughout the island, even the far north. Recorded by Scott in Roebuck (1891a: 442). Occurs on Inchmarnock. [Kerney, 1999: 123].

BOURGUIGNAT'S SLUG *Arion circumscriptus* Johnston, 1828

Not uncommon and fairly widely distributed throughout the island. Somewhat surprisingly, not recorded by Scott (1892), but listed by Roebuck (1891a: 444) from Barone, and later by Scott (1901). [*Arion bourguignati*]. [Kerney, 1999: 124-125].

GARDEN SLUG *Arion hortensis* Férussac, 1819

Common and widely distributed throughout the island, and at times can be a severe garden and agricultural pest. In 1964 it occurred in almost plague numbers in some fields in the south of the island and caused extensive damage, even although a great many were quickly eaten by birds; by the following year numbers appeared to be back to normal. Compared to its present status,

however, the past history of the Garden Slug on Bute is confusing and contradictory, so requires some detailed consideration.

This species was not recorded by Scott; indeed he went so far as to say that *Arion hortensis* "may yet be observed" (Scott, 1892: 181). Roebuck (1891a: 442-443), however, made the general statement "Range probably universal, and the species may be expected to occur in every county", and then gave personal Bute records from Ardbeg Point and Barone. In his later Clyde paper, Scott (1901) listed this species for Bute without comment, presumably a reference to Roebuck's records (although not actually acknowledged as such), and gave no indication as to status. Since this species is now so well-known on Bute, there must obviously have been a very substantial increase in population, but the reasons for this are not clear. Occurs on Inchmarnock.

The taxonomy of this species, however, is still under investigation (see next species), and since the late 1970s some previously regarded races have now been given species status by some authorities. For example, Kerney (1999) gives separate listings to *A. distinctus* and *A. owenii*, which did not appear as such in his earlier volume (1976b). [Scott, 1892: 181; Kerney, 1999: 128-130].

GARDEN SLUG *Arion distinctus* Mabille, 1869 (Davies, 1977)

As noted above, although this species did not appear as such in the 1976 national Atlas, in the present national Atlas Kerney (1999) lists it for Bute, and now says "It should be noted that the majority of old records of *Arion hortensis* refer to this species"; and "The separate species were not distinguished prior to the 1970s [Davies, 1977] and remain inadequately recorded". I am unable to comment on this with regard to Bute, and clearly more information is required. [Kerney, 1999: 128-130].

So far, I have not heard of any modified English name being applied to this recent former race of *A. hortensis*, now given species rank as *A. distinctus* (Davies, 1977), so both species are still listed as Garden Slug.

GARDEN SLUG *Arion hortensis/distinctus*

In summary, whatever the position may have been in the 1890s, at present the Garden Slug is well-known and fairly widely distributed throughout Bute, as it is in most parts of the West of Scotland. To determine the exact species, however, which could be *hortensis*, *distinctus* or both, specialist investigation will be required.

HEDGEHOG SLUG *Arion intermedius* Normand, 1852

Probably the least common slug on Bute, but does occur in small numbers in a wide variety of habitats throughout the island. Recorded by Roebuck (1891a: 445) from Loch Greenan, and later quoted by Scott (1901). [*Arion minimus*]. [Kerney, 1999: 132]. [DH].

Family VITRINIDAE

PELLUCID GLASS SNAIL *Vitrina pellucida* (Müller, 1774)

A common snail throughout Bute, and found in a wide variety of habitats. Recorded by Scott from the shores of Loch Fad, where it is still present, and is also present around the shores of most Bute lochs; also found fairly high on moorland. Occurs on Inchmarnock. [Scott, 1892: 179; Kerney, 1999: 133].

Family ZONITIDAE

CRYSTAL SNAIL *Vitrea crystallina* (Müller, 1774)

Recorded by Scott as "Common; shores of Loch Fad, and other places". This is still the case, and this little snail is probably fairly well distributed throughout the island, although most of my own records come from the south part. [*Zonites crystallinus*, *Hyalinia crystallina*]. [Scott, 1892: 179; Kerney, 1999: 137].

MILKY CRYSTAL SNAIL *Vitrea contracta* (Westerlund, 1871)

A small snail, found in a variety of fairly dry habitats throughout the island; I have some records from the extreme north. Not uncommon, although not recorded by Scott and possibly overlooked. [Kerney, 1999: 138]. [DH].

RAYED GLASS SNAIL *Nesovitrea hammonis* (Ström, 1765)

Found in a wide variety of habitats, but usually in small numbers and not very common. Recorded by Scott from the shores of Loch Fad, although I myself have not found it there. Recorded from Mount Stuart and Greenan Loch. [*Zonites radiatulus*, *Hyalinia radiatula*]. [Scott, 1892: 179; Kerney, 1999: 139]. [DH].

CLEAR GLASS SNAIL *Aegopinella pura* (Alder, 1830)

[Delicate Glass Snail]. Reasonably common and fairly well distributed throughout the island; often found in leaf litter in deciduous woodland. Recorded by Scott, who found it on the shores of Loch Fad, although it is said that this snail will tolerate moist, but not wet, places. [*Zonites purus*, *Hyalinia pura*]. [Scott, 1892: 179; Kerney, 1999: 141].

SMOOTH GLASS SNAIL *Aegopinella nitidula* (Draparnaud, 1805)

[Dull Glass Snail]. Common and widely distributed in most suitable places throughout the island; woodland, banks and walls, grassland, waste ground and gardens; also around the edges of lochs. Has been found on Inchmarnock. Recorded by Scott as "frequent". [*Zonites nitidulus*, *Hyalinia nitidula*]. [Scott, 1892: 179; Kerney, 1999: 142].

DRAPARNAUD'S GLASS SNAIL *Oxychilus draparnaudi* (Beck, 1837)

A fairly large snail, not common, but has been found in several places throughout the island; mostly in gardens, on waste ground, and ground litter. Not recorded by Scott, but Roebuck (1891a: 453) included a probable record from Rothesay. [*Zonites draparnaldi*, *Hyalinia draparnaldi*]. [Kerney, 1999: 143]. [DH].

CELLAR SNAIL *Oxychilus cellarius* (Müller, 1774)

A fairly large snail. Common and well distributed around the island in its preferred habitats; under stones or litter, in caves, churchyards, and around loch shores. Scott recorded it as common. [*Zonites cellarius*, *Hyalinia cellaria*]. [Scott, 1892: 179; Kerney, 1999: 144].

GARLIC SNAIL *Oxychilus alliarius* (Miller, 1822)

A middle-sized snail. Always known to be common and well distributed around the island; many suitable habitats, e.g. ground litter, fields, hedges, waste ground, but tends to avoid marshy

places. Scott said it was common. [*Zonites alliarius*, *Hyalinia alliaria*]. [Scott, 1892: 179; Kerney, 1999: 145].

HOLLOWED GLASS SNAIL *Zonitoides excavatus* (Alder, 1830)

Recorded by Haddin (1869) from "Near Chapelton, above Ardbeg Point" and by Scott from "shores of Loch Fad and Loch Ascog", but neither author gave any indication of its population. Although I personally do have a few records, I consider it to be relatively rare and quite local, restricted to marshland near the sea; I have no records from the shores of the Bute freshwater lochs. [*Zonites excavatus*, *Hyalinia excavata*]. [Scott, 1892: 179; Kerney, 1999: 147].

SHINY GLASS SNAIL *Zonitoides nitidus* (Müller, 1774)

A middle-sized snail, of typical wetland habitat, e.g. around the shores of the lochs; often found on driftwood. Recorded by both Haddin and Scott, from Lochs Fad, Ascog and Greenan, where it can still be found fairly easily. Fairly common and widely distributed. [*Zonites nitidus*, *Hyalinia nitida*]. [Scott, 1892: 179; Kerney, 1999: 148].

Family MILACIDAE

JET SLUG *Milax gagates* (Draparnaud, 1801)

Scott regarded this species as rare in Scotland, and was pleased to record it as "Frequent in a garden near the Aquarium". Kerney (1999) said that, because of taxonomy problems, "Old (pre-1930) records of this species are unreliable and many have been discarded", but he has continued to show an old Bute occurrence in the national Atlas, a record presumably derived from Scott. This is something of a mystery, and I have been unable to discover any additional information. I myself have never seen *M. gagates* on Bute, and it is still regarded as rare in Scotland; it can be an agricultural pest. [*Limax gagates*, *Amalia gagates*]. [Scott, 1892: 179; Kerney, 1999: 149].

KEELED SLUG *Tandonia sowerbyi* (Férussac, 1823)

[Sowerby's Slug]. This is another slug which can be an agricultural pest, and Scott (in Roebuck, 1891a: 445) recorded it as common around Rothesay. Unfortunately it has the same taxonomic problems as the preceding species, and Kerney (1999: 150) says "It should be noted that old (pre-1930) records of this species made prior to the recognition of *Tandonia budapestensis* are unreliable and have mostly been discarded". He does, however, include this species, as an old Bute record, in both the 1976 and 1999 Atlases. This is somewhat surprising, but I have been unable to find any additional information. There is no doubt, however, that a slug, possibly or possibly not of this species, is locally common on Bute, so further detailed investigation is certainly required (see next species). [*Amalia sowerbyi*, *A. carinata*, *Milax sowerbyi*]. [Kerney, 1999: 150].

BUDAPEST SLUG *Tandonia budapestensis* (Hazay, 1881)

Kerney (1999: 152) says that this species was "Probably introduced. First recognized in the British Isles only in 1921, but there is evidence that it was present here at least from the 1880s. It is still spreading". New records are being reported all the time, and this slug is now known to be widely distributed throughout the British Isles. There are many perfectly valid records from the West of Scotland, in some parts of which it is quite common, although Kerney (1999) gives no record for Bute. This species can also be a severe agricultural pest.

As to whether this or the preceding species was the slug described by Scott over a century ago as common, and still well-known, must be somewhat conjectural, although on balance the evidence would tend to suggest *T. sowerbyi*. It is clear that specialist investigation is required. [*Milax budapestensis*]. [Kerney, 1999: 152].

Family LIMACIDAE

GREAT GREY SLUG *Limax maximus* Linnaeus, 1758

This large slug is well known and fairly well distributed around Bute in suitable habitats. It is a largely solitary species and is often found beneath logs or larger pieces of ground litter, but it is also a strong climber and can be found far up walls and trees; also in waste ground, farmyards and rubbish dumps. Scott said "Vicinity of the Aquarium, among herbage on the shore at Ettrick Bay, and other places". [Scott, 1892: 178; Kerney, 1999: 154].

YELLOW SLUG *Limax flavus* Linnaeus, 1758

In the 1999 Atlas Kerney gives a recent Bute record of this species from the 10km square NS06. I myself have never seen it, but this slug is very nocturnal and so is often under-recorded, even in other areas where it is known to occur. Any additional information would be very welcome. [Kerney, 1999: 156].

TREE SLUG *Lehmannia marginata* (Müller, 1774)

Scott said "Frequent; vicinity of the Aquarium, near Loch Fad, and on beech trees west of Rothesay". It is still well known throughout Bute. It is an excellent climber, as one would expect from its English name of Tree Slug, and Kerney (1999) says "By day it shelters under loose bark or in deep crevices in rocks and walls, emerging in damp weather or at night to feed and climb". Scott (1892) treated *Limax marginatus* and *L. arborum* as separate species, but Roebuck (1891a: 447) considered them to be the same species, which is in keeping with present-day taxonomy. [*Limax marginatus*, *L. arborum*]. [Scott, 1892: 178; Kerney, 1999: 159].

Family AGRIOLIMACIDAE

MARSH SLUG *Deroceras laeve* (Müller, 1774)

Fairly common and well distributed around Bute, in marshy places and other suitable wetland habitats; around the shores of most of the Bute lochs. Recorded by Scott as "Frequent in damp situations under stones; shore of Loch Fad, and other places". This is still very much the case. [*Limax laevis*, *Agriolimax laevis*]. [Scott, 1892: 178; Kerney, 1999: 161].

FIELD SLUG *Deroceras reticulatum* (Müller, 1774)

[Milky Slug]. Common and widely distributed; found virtually everywhere, in fields, roadside verges, waste ground, and gardens, although uncommon in woodland. I have found this slug in the far north of the island, near the Bull Loch. Can be a serious garden and agricultural pest, and in the 1964 'plague' of *A. hortensis* in the south of the island, large numbers of this species were also present. Occurs on Inchmarnock. [*Limax agrestis*, *Agriolimax agrestis*]. [Scott, 1892: 178; Kerney, 1999: 163].

SICILIAN SLUG *Deroceras panormitanum* (Lessona & Pollonera, 1882)

[Caruana's Slug]. This species is recorded by Kerney (1999) for the Bute 10km square NS06, but so far I have been unable to find any additional information. I have no personal record.

Kerney (1999) said that this species was probably introduced to Britain, with the first records coming from 1931: "In the last twenty-five years it has spread rapidly [throughout many parts of the country] and is now a common slug in many areas. It can be a pest". This is therefore an addition to the six pest species described by Ellis in 1926. Originally from the Mediterranean, it has now been widely spread by man in north-west Europe. [Kerney, 1999: 164].

Family EUCONULIDAE

TAWNY SNAIL *Euconulus fulvus* (Müller, 1774)

Scott said "Frequent; shores of Loch Fad, and other places". I have a few records, but would not go so far as to describe it as frequent. It is a fairly small snail, however, which lives in fairly undisturbed places, such as ground litter in woodlands, so it can easily be overlooked. [*Zonites fulvus*, *Hyalinia fulva*]. [Scott, 1892: 178; Kerney, 1999: 165-166]. [DH].

Family CLAUSILIIDAE

COMMON DOOR SNAIL *Clausilia bidentata* (Ström, 1765)

[Two-toothed Door Snail]. Common and fairly widely distributed; ground litter in woods, hedges, along walls; it can climb strongly up vertical surfaces. Scott recorded it as common; in the vicinity of the Aquarium and, interestingly, "By the side of an old wall at Ettrick Bay". [*Clausilia rugosa*]. [Scott, 1892: 180; Kerney, 1999: 171].

TREE SNAIL *Balea perversa* (Linnaeus, 1758)

Haddin (1869) recorded this species and said "At St. Ninian's Bay, Bute, it is to be found in colonies, adhering to stones in a loosely built wall on the shore. Under the loose bark of trees, chiefly ash, in many parts of the island". Scott (1892) recorded it "On trees near the side of Loch Fad, on trees near the old church west of Rothesay, and other places". This is a middle-sized snail, typically found on walls and trees, and almost never on the ground. Most of my own specimens were found in woods south of Kilchattan Bay, and I am grateful to David Heppell for confirming the identification. I have certainly never found it at St. Ninian's Bay, despite several searches, and I suspect that this snail is now much less common than formerly; any additional information will be welcome. Kerney (1999) says that this species "has declined in many areas". [Scott, 1892: 180; Kerney, 1999: 174]. [DH].

Family HELICIDAE

WRINKLED SNAIL *Candidula intersecta* (Poirer, 1801)

Fairly common and well distributed, in grassland or sandy areas, e.g. along the seashore; also in corn fields. Scott said "By the shore at Ettrick and St. Ninian's Bay". Haddin (1869) recorded this species from the "Banks of Greenan Loch", but I have not found it there. [*Helix caperata*, *Helicella caperata*]. [Scott, 1892: 180; Kerney, 1999: 179].

HEATH SNAIL *Helicella itala* (Linnaeus, 1758)

Both Haddin (1869) and Scott recorded this species from St. Ninian's Bay, and old records are listed by Kerney (1976b and 1999) but I have never managed to find it. It is said to be "less tolerant of cultivation" (Kerney, 1999: 182) and I suspect it may have decreased or become extinct on Bute. It is a fairly large snail and so should not be too difficult to find; any additional information would be welcome. [*Helix ericetorum*, *H. itala*]. [Scott, 1892: 180; Kerney, 1999: 182].

POINTED SNAIL *Cochlicella acuta* (Müller, 1774)

A mainly maritime species, inhabiting cliffs, sandhills, etc, and "rarely straying more than a mile or two inland" (Kerney, 1999: 186). Not recorded by Scott, and I have never found this fairly large snail on Bute. Kerney (1976b and 1999) gives an old record from the 10km square NS15, which may or may not refer to Bute, but information about this is not available. [Kerney, 1999: 186].

SILKY SNAIL *Ashfordia granulata* (Alder, 1830)

A middle-sized snail; not very common, but locally distributed in small numbers in marshy ground; several records from the Plan Loch in the south of the island. Not recorded by Scott personally, but Roebuck (1891a: 468) listed it for Port Bannatyne (Alex. Shaw). [*Helix granulata*, *H. sericea*]. [Kerney, 1999: 190]. [DH].

BROWN SNAIL *Perforatella subrufescens* (Miller, 1822)

Recorded by Haddin (1869) from Mount Stuart and Ardbeg, and by Scott (1892) from shores of Loch Fad; plus collected records from Port Bannatyne and Rothesay (Roebuck, 1891a: 469). Most of my personal records are specimens collected from ground litter and tree trunks in woodland south of Kilchattan Bay, but I have no real information about its present general status on the island. Old records given by Kerney (1976b and 1999). [*Helix fusca*, *Hygromia fusca*, *H. subrufescens*]. [Kerney, 1999: 191]. [DH].

STRAWBERRY SNAIL *Trichia striolata* (C. Pfeiffer, 1828)

Fairly common, and widely distributed in a great variety of habitats; tall grass, nettles, waste ground, road verges, rubbish dumps, fields, and in gardens where it can sometimes be a considerable pest. Somewhat surprisingly not recorded by Scott, although he noted that Haddin (1869) recorded one specimen from Ettrick Bay. Clearly this species (common on the mainland) must have considerably increased on Bute over the years, and in this respect Kerney (1999) says that *T. striolata* has become "much commoner through human activity. In Scotland, where it was rare, it is still extending its range". [*Helix rufescens*, *H. striolata*]. [Kerney, 1999: 195]. [DH].

HAIRY SNAIL *Trichia hispida* (Linnaeus, 1758)

Scott described this species as "frequent", recorded from many places around the island. This is still the case; fairly common and widely distributed in many varied habitats, although "Unlike *T. striolata*, it is rare in gardens" (Kerney, 1999). Not usually a pest species. [*Helix hispida*, *H. concinna*]. [Scott, 1892: 180; Kerney, 1999: 197]. [DH].

COPSE SNAIL *Arianta arbustorum* (Linnaeus, 1758)

Scott recorded this fairly large snail as "common in the vicinity of the Aquarium". It is still reasonably well known around the island, often in tall vegetation, woodland ground litter, and sometimes in grassland near the seashore. I have also found it near the Bull Loch in the north of Bute. [*Helix arbustorum*]. [Scott, 1892: 179; Kerney, 1999: 200].

BROWN-LIPPED SNAIL *Cepaea nemoralis* (Linnaeus, 1758)

[Grove Snail]. This is a very well-known snail, common and widely distributed around most parts of the island in a great variety of habitats; often climbs trees and walls. Recorded by both Haddin and Scott as common, which is still very much the case. Occurs on Inchmarnock. [*Helix nemoralis*]. [Scott, 1892: 179; Kerney, 1999: 203].

WHITE-LIPPED SNAIL *Cepaea hortensis* (Müller, 1774)

Haddin (1869) said "*H. hortensis* I have never found in Bute, even after repeated searchings. Its great scarceness, compared with the abundance of *nemoralis*, is a fact worthy of note"; neither Scott nor Roebuck had any records. Although this slightly smaller species is closely allied to *C. nemoralis*, is widely distributed throughout the West of Scotland, and the two species are said to be found together quite often (Kerney, 1999), the shells of the two species are very similar and can also show considerable variation, so I strongly suspect that, in the past, some specimens of *C. hortensis* may have been incorrectly assumed to be *C. nemoralis*. The few specimens I collected from Mount Stuart and Ascog had their identification confirmed for me by David Heppell, but I can give no accurate assessment of this snail's status on Bute. The species may be much more common than the present meagre evidence indicates, and any additional information will be welcome. [*Helix hortensis*]. [Kerney, 1999: 204]. [DH].

GARDEN SNAIL *Helix aspersa* Müller, 1774

[Common Snail]. A very common snail, and one of the largest, found in a very wide variety of diverse habitats on Bute; it can be a considerable pest in gardens. Recorded by Scott as common, and Haddin (1869) said "*Helix aspersa* may be taken in countless numbers on the coast line. I remember a wall on the shore at Mount Stuart which was literally covered with this mollusk. In the gardens there it is the most destructive snail". This is still one of the commonest snails on Bute, and in some suitable areas it can be present in quite remarkable numbers. It is well known on Inchmarnock. [Scott, 1892: 179; Kerney, 1999: 205].

Order BIVALVIA

There is "no universally accepted system of classification of bivalve Mollusca, various authors having attached taxonomic importance to different characters" (Ellis, 1978). Indeed, Bowden and Heppell (1966-68) described no less than seven different systems. As already indicated, this list follows Kerney (1976a), slightly modified by Ellis (1978), with the Order name of Bivalvia retained and the English names taken from Killeen, Aldridge and Oliver (2004). Collection and identification of the smaller aquatic bivalves can at times be very difficult, but I have done the best I can, with very considerable help in identification from Mr. David Heppell (see Acknowledgements).

Family MARGARITIFERIDAE

FRESHWATER PEARL MUSSEL *Margaritifera margaritifera* (Linnaeus, 1758)

I have heard occasional rumours that the Scottish Freshwater Pearl Mussel, now becoming so rare, has been found on Bute, and indeed I have often been asked if I have found any. I know of no positive records, however, and I really doubt if Bute provides any very suitable habitat. The nearest locality to Bute where I know this species occurs, or used to occur, is the lower reaches of the River Ruel where it flows into Loch Riddon just to the north of Bute, but I have heard of none from this locality for some years. Any additional information will be welcome.

Family SPHAERIIDAE

HORNY ORB MUSSEL *Sphaerium corneum* (Linnaeus, 1758)

Occurs locally; my only records are from Scalpsie Bay and Loch Quien, but it is not so easy to find aquatic bivalves as land molluscs, so it may well be more common than these meagre records suggest. Not recorded by Scott. [Kerney, 1999: 214]. [DH].

Family PISIDIIDAE

CASERTA PEA MUSSEL *Pisidium casertanum* (Poli, 1791)

A fairly well known small bivalve, found widely throughout the West of Scotland in all kinds of aquatic habitats. Recorded by Scott (as *P. fontinale*) as frequent in Loch Fad, where I also have regularly found it. Most of my other records come from Dunagoil Bay and Kilchattan Bay. [*Pisidium fontinale*]. [Scott, 1892: 178; Kerney, 1999: 220]. [DH].

RED-CRUSTED PEA MUSSEL *Pisidium personatum* Malm, 1855

A small aquatic bivalve, fairly widely distributed throughout the West of Scotland, but several specimens from marshy ground south of Kilchattan Bay are my only records. Not recorded by Scott. [Kerney, 1999: 222]. [DH].

POROUS-SHELLED PEA MUSSEL *Pisidium obtusale* (Lamarck, 1818)

Several specimens of this species were discovered and identified for me by David Heppell in a collection of small bivalves, mainly *P. casertanum*, from Loch Fad in 1996; otherwise I would not have known of its existence on Bute. I have not actually tried to collect any more specimens, although I understand this species is not uncommon and fairly widely distributed throughout Scotland; most of the West of Scotland records in the national Atlas are marked as pre-1965. Not recorded by Scott. [Kerney, 1999: 223]. [DH].

ROSY PEA MUSSEL *Pisidium milium* Held, 1836

A pre-1965 record of this small bivalve is given in the national Atlas for the Bute 10km square NS05, but I have been unable to find additional information. Not recorded by Scott, and I have no personal records. [*Pisidium roseum*]. [Kerney, 1999: 224].

SHORT-ENDED PEA MUSSEL *Pisidium subtruncatum* Malm, 1855

There are Bute records in the national Atlas for the 10km square NS06 (pre-1965) and NS15 (after 1965) but, on enquiry, no precise details are apparently available. Not recorded by Scott, and I have no personal records. [Kerney, 1999: 226].

LILLJEBORG'S PEA MUSSEL *Pisidium lilljeborgii* Clessin, 1886

A Bute pre-1965 record for the 10km square NS06 is given in the national Atlas, but again I have been unable to discover any additional details. Not recorded by Scott, and I have no personal records. [Kerney, 1999: 229].

GLOBALAR PEA MUSSEL *Pisidium hibernicum* Westerlund, 1894

Occurs in small numbers in Loch Fad and the outlet of Loch Quien, which are my only localities. All specimens kindly identified for me by David Heppell. Not recorded by Scott, but old records listed by Kerney. [Kerney, 1999: 230]. [DH].

SHINING PEA MUSSEL *Pisidium nitidum* Jenyns, 1832

Both Roebuck (1891a: 496) and Scott (1892: 178) recorded two separate species under the scientific names of *P. nitidum* and *P. pusillum*, and both species were regarded as common and widely distributed throughout Scotland. Later taxonomy, however, showed that these were actually the same species, previously incorrectly separated, and assigned *pusillum* to *nitidum*. It is now clear that all previous records of *P. pusillum*, described by Roebuck as "probably the commonest species of the genus, and ranges throughout Scotland", should be properly assigned to *P. nitidum*. Scott regarded this species as frequent, and gave records from "Loch Fad, Loch Ascog, and other places". I have also regularly collected this small bivalve from Loch Fad, and also from Loch Quien. [*Pisidium pusillum*]. [Scott, 1892: 178; Kerney, 1999: 231]. [DH].

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Summary

The first serious work on Bute molluscs appeared in 1869 when William Haddin recorded 32 species. Intensive work by Scott (1888, 1892) and records collected by Roebuck (1891a, 1891b, 1892-95) on behalf of the Conchological Society had raised the total to nearly 60 species by the early 1890s. From then on, steady work confirmed the continued existence of most of the species already recorded and added several new species, so that the total has now reached at least 86 species, of which the majority are fairly easily recognised, although some are apparently quite rare or require specialised knowledge for their correct identification.

For any Bute naturalists who are interested in doing any work on molluscs, it is unfortunate that most of the earlier identification manuals are now out-of-print. Very fortunately, however, two simply first-class and relatively inexpensive field guides have recently become available, by Cameron (2003) and Killeen, Aldridge and Oliver (2004). These are two of the splendid Aidgap series published by the Field Studies Council, Preston Montford, Montford Bridge, Shrewsbury, Shropshire SY4 1HW (0845-3454072). These two outstanding publications have completely transformed the identification of molluscs in the field, and are most strongly recommended.