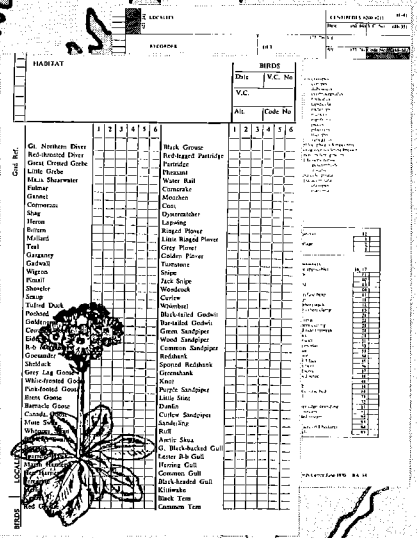
A Guide to Biological Recording in Scotland



Produced by the Biological Recording in Scotland Committee January 1977. Compiled by Alastair Sommerville

PREFACE

This manual is intended as a source of information about biological recording of all kinds, covering both the national distribution-mapping schemes and all of the other surveys and recording projects currently active in Scotland. It describes the aims of each scheme and gives an indication of the amount of work and degree of skill required from anybody wishing to participate. The appendices of addresses, reference works and distribution maps are intended to provide a useful 'way-in' to potential recorders. It is hoped that bringing together all the schemes in this way will give readers of this manual some idea of the scope of the investigations being carried out and the part that *they* might play in improving the knowledge we have of the plants, animals and habitats of Scotland.

BRISC would like to thank all the scheme organisers who have been so ready to enlighten us about their projects, the Biological Records Centre, Monks Wood for their support and the Nature Conservancy Council for the financial help to publish this manual. Any factual or implied errors in the text are, of course, entirely ours.

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THIS MANUAL and BRISC
(BIOLOGICAL RECORDING IN SCOTLAND COMMITTEE)

The recent acceleration of the pressures from industrial, urban and tourist developments has meant that there is now no part of Scotland where the plants and animals can be guaranteed safe from disturbance except perhaps in the relatively few nature reserves set aside for them. The only way in which the interests of wildlife can be effectively included in the local government planning process is by having to hand the basic facts on the distribution, numbers and habits of the species involved. It would be an impossible task to collect all information for each of the many thousands of different kinds of plants and animals found in Scotland but what we do know today is too meagre, too scattered and often too out of date to be of much practical use.

In 1974 a small group of professional biologists working in Scotland got together to see if there was a way to improve our detailed knowledge of the wildlife of Scotland. They organised a conference, Biorec 75 held in Dundee the following year, to give everyone interested in the subject a chance to make suggestions. The 120 delegates who included professional and amateur biologists, natural historians and planners, ornithologists, entomologists and mycologists, all agreed that there was an urgent need for more information and suggested various ways in which something could be done about it. These ideas formed the remit for an on-going committee formed at the conference and known as BRISC. Since that time we on the committee have taken each idea and explored the possible ways in which it could be put into practice. Our overall philosophy is based on the principle that we will only get anywhere if everyone who is interested in helping joins in. BRISC itself is only a *tiny* group of keen volunteers who want to act as an enthusiastic force to encourage others to help themselves. What we are doing can be summarised as follows:

We are keeping an index of all the field biologists working in Scotland to find out how much recording is going on at the moment and who is involved with it. This has meant contacting all the national societies, local natural history societies and individuals involved with recording has resulted in a preliminary list of some 200+ names with their interests and skills.

We are continuously publicising the recording that is going on to encourage and stimulate more people to take part. Our main effort in this respect has been the publication of this manual, which was originally produced for Biorec, but we have also offered to circulate our Committee minutes to anyone interested. A more detailed leaflet about BRISC and what we hope to achieve will be available soon. However, no amount of encouragement on its own will produce new recorders so we have concentrated on organising training courses on biological recording and on the identification of various groups of plants and animals. These residential, weekend or evening courses are at various levels to suit the beginner or the specialist. In 1976 we arranged four courses but many more are organised for 1977 – details from BRISC.

The gathering, vetting and filing of all of the information available now

and in the future presents quite a problem itself and BRISC has been spending a lot of time working out the best method(s) of doing this. *Local*, rather than national, biological record centres appear to be the answer and already several have been set up in Scotland. There are more details of all of them in this manual.
After almost two years the effects of the new interest in biological recording are beginning to appear. More people are enquiring how they can help, how they can improve their knowledge of their own branch of natural history and how they can learn about a new branch. If anyone has an idea or any constructive comments or wants help in any way please make contact with us; we would be pleased to hear from you. Meanwhile I hope that something in this manual will be the trigger to you getting more deeply involved in this fascinating necessary task. Alastair Sommerville (Chairman)

The other members of BRISC are Adam Ritchie (Dundee Museum), Ted Pelham-Clinton (Royal Scottish Museum), Detrich Burkel (Glasgow Museum), David Heppell (Royal Scottish Museum), Ian Bonner (Nature Conservancy Council).

BRISC's address is c/o The Scottish Wildlife Trust, 8 Dublin Street, Edinburgh, EH1 3PP.

NATIONAL DISTRIBUTION MAPPING

The Biological Records Centre (BRC), various national societies and many individuals have taken it upon themselves to collect together all the records of a particular group of animals or plants to discover how each species in that group is distributed throughout Britain. For all the major schemes one record of each species is required for every 10 kilometre×10 kilometre squares which make up the National Grid (about 900 for all of Scotland and the Islands). These records, when published as filled-in squares for presence and blank squares for absence, reveal the distribution of that species for the period for which the records were collected.(fig 1) Later maps will be compared to present ones to reveal changes in distribution due to natural or man-imposed causes. Two important shortcomings for this system are: (i) for poorly covered groups early maps tend to show the distribution of recorders rather than species and (ii) for even the best covered groups the presence of a species within a 10 kilometre square does not show how its distribution is related to a particular habitat type or climatic zone. This being so, many schemes organisers want greater detail than just presence within the square, asking the recorder for details of the habitat as well. Some schemes ask for smaller areas to be searched, e.g. 5×5 kilometre squares (*quadrants*) or 2×2 kilometre squares (*tetrads*). Other schemes use the Watsonian Vice Counties (VCs), which are divisions of the country, based on the political counties existing in 1870, which have been used for biological recording ever since. (fig 2) Marine schemes also use the 10 kilometre squares for coastal areas but they have an extra dimension, the open sea. For recording away from land they use the Sea Areas, the marine equivalent of vice-counties. (fig 3)

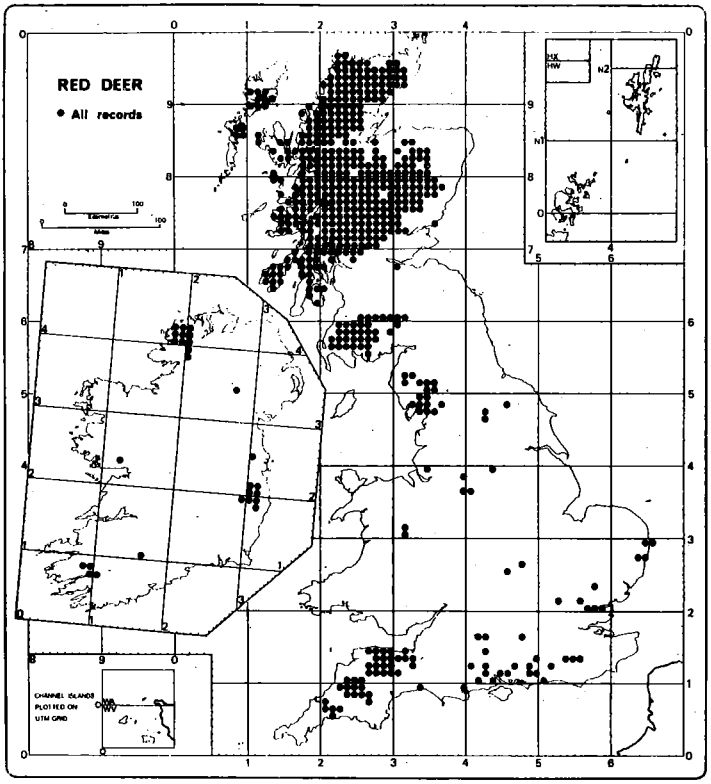


Figure 1. A 10 km square distribution map using the Irish National Grid for Ireland

THE NATIONAL RECORDING SCHEMES IN PROGRESS — SUMMER 1976

Marine Algae Distribution Scheme 800+ species *ALGAE*

The distribution of seaweeds is only known in a very general way to date. About 120 species can be found on any unpolluted shore and at least as many again occur below low tide mark. A guide leaflet is available to would-be recorders, along with a BRC field card. All records are vetted through a system of referees and so far some 30 recorders are active in Scotland. Help from amateurs is most welcome especially from skin-divers who could cover the lesser known deeper water species. A handbook for seaweed identification is being prepared by the organiser.

Contact: Dr. T. A. Norton, Department of Botany, The University, Glasgow, W2

Macro-fungi Mapping Schemes 3000 species *LARGER FUNGI*

Two schemes organised by the *British Mycological Society* are at present operating in Scotland one based on a BRC card listing 825 species and the other, the *European Mapping Scheme* in which 100 selected species of larger fungi, mainly Basidiomycetes, are being mapped on a 100 km basis (the British records are being accumulated in a 10 km form, for later use within the British Isles). This scheme has been in operation since 1962, and although maps for the first 50 species have been published in their Transactions further records would be welcome.

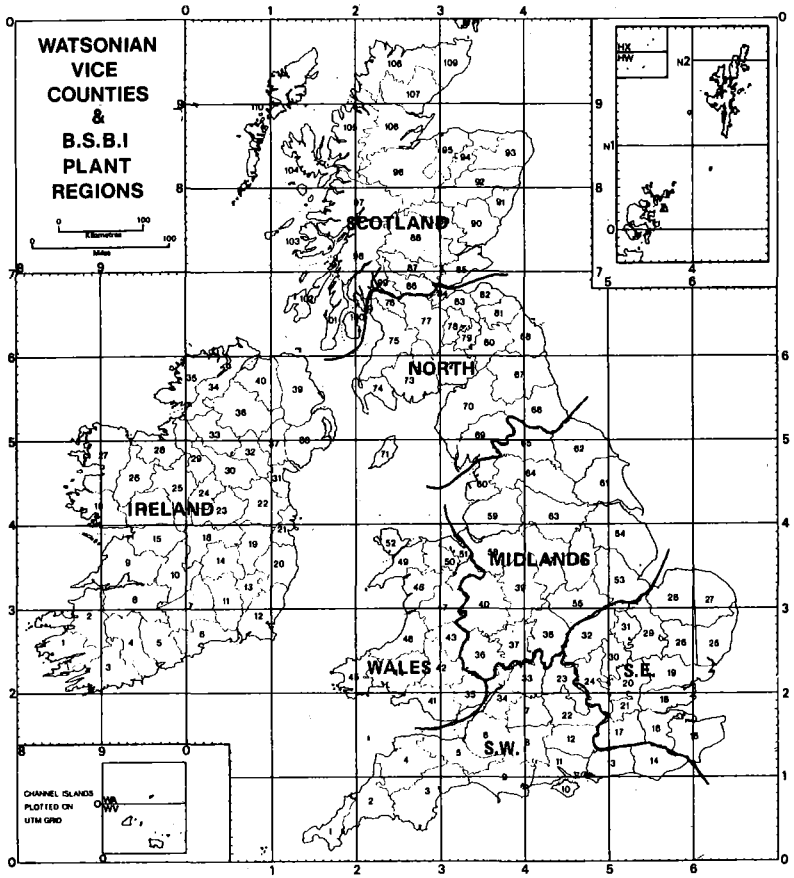


Figure 2. Watsonian Vice Counties and B.S.B.I. Plant Regions

ENGLAND AND WALES

1. West Cornwall (with Scilly)
2. East Cornwall
3. South Devon
4. North Devon
5. South Somerset
6. North Somerset
7. North Wiltshire
8. South Wiltshire
9. Dorset
10. Isle of Wight
11. South Hampshire
12. North Hampshire
13. West Sussex
14. East Sussex
15. East Kent
16. West Kent
17. Surrey
18. South Essex
19. North Essex
20. Hertfordshire
21. Middlesex
22. Berkshire
23. Oxfordshire
24. Buckinghamshire
25. East Suffolk
26. West Suffolk
27. East Norfolk
28. West Norfolk
29. Cambridgeshire
30. Bedfordshire
31. Huntingdonshire
32. Northamptonshire
33. East Gloucestershire
34. West Gloucestershire
35. Monmouthshire
36. Herefordshire
37. Worcestershire
38. Warwickshire
39. Staffordshire
40. Shropshire (Salop)
41. Glamorgan
42. Breconshire
43. Radnorshire
44. Carmarthenshire
45. Pembrokeshire
46. Cardiganshire
47. Montgomeryshire
48. Merionethshire
49. Caernarvonshire
50. Denbighshire
51. Flintshire
52. Anglesey
53. South Lincolnshire
54. North Lincolnshire
55. Leicestershire (with Rutland)
56. Nottinghamshire
57. Derbyshire
58. Cheshire
59. South Lancashire
60. West Lancashire
61. South-east Yorkshire
62. North-east Yorkshire
63. South-west Yorkshire
64. Mid-west Yorkshire
65. North-west Yorkshire
66. Durham
67. South Northumberland
68. North Northumberland (Cheviot)
69. Westmorland with North Lancashire
70. Cumberland
71. Isle of Man
113. Channel Isles

SCOTLAND

72. Dumfriesshire
73. Kirkcudbrightshire
74. Wigtownshire
75. Ayrshire
76. Renfrewshire
77. Lanarkshire
78. Peebleshire
79. Selkirkshire
80. Roxburghshire
81. Berwickshire
82. East Lothian (Haddington)
83. Midlothian (Edinburgh)
84. West Lothian (Linlithgow)
85. Fifeshire (with Kinross)
86. Stirlingshire
87. West Perthshire (with Clackmannan)
88. Mid Perthshire
89. East Perthshire
90. Angus (Forfar)
91. Kincardineshire
92. South Aberdeenshire
93. North Aberdeenshire
94. Banffshire
95. Moray (Elgin)
96. East Inverness-shire (with Nairn)
97. West Inverness-shire
98. Argyll Main
99. Dunbartonshire
100. Clyde Isles
101. Kintyre
102. South Ebudes
103. Mid Ebudes
104. North Ebudes
105. West Ross
106. East Ross
107. East Sutherland
108. West Sutherland
109. Caithness
110. Outer Hebrides
111. Orkney Islands
112. Shetland Islands (Zetland)

IRELAND

H.1. South Kerry
H.2. North Kerry
H.3. West Cork
H.4. Mid Cork
H.5. East Cork
H.6. Waterford
H.7. South Tipperary
H.8. Limerick
H.9. Clare
H.10. North Tipperary
H.11. Kilkenny
H.12. Wexford
H.13. Carlow
H.14. Leix (Queen's County)
H.15. South-east Galway
H.16. West Galway
H.17. North-east Galway
H.18. Offaly (King's County)
H.19. Kildare
H.20. Wicklow
H.21. Dublin
H.22. Meath
H.23. West Meath
H.24. Longford
H.25. Roscommon
H.26. East Mayo
H.27. West Mayo
H.28. Sligo
H.29. Leitrim
H.30. Cavan
H.31. Louth
H.32. Monaghan
H.33. Fermanagh
H.34. East Donegal
H.35. West Donegal
H.36. Tyrone
H.37. Armagh
H.38. Down
H.39. Antrim
H.40. Londonderry

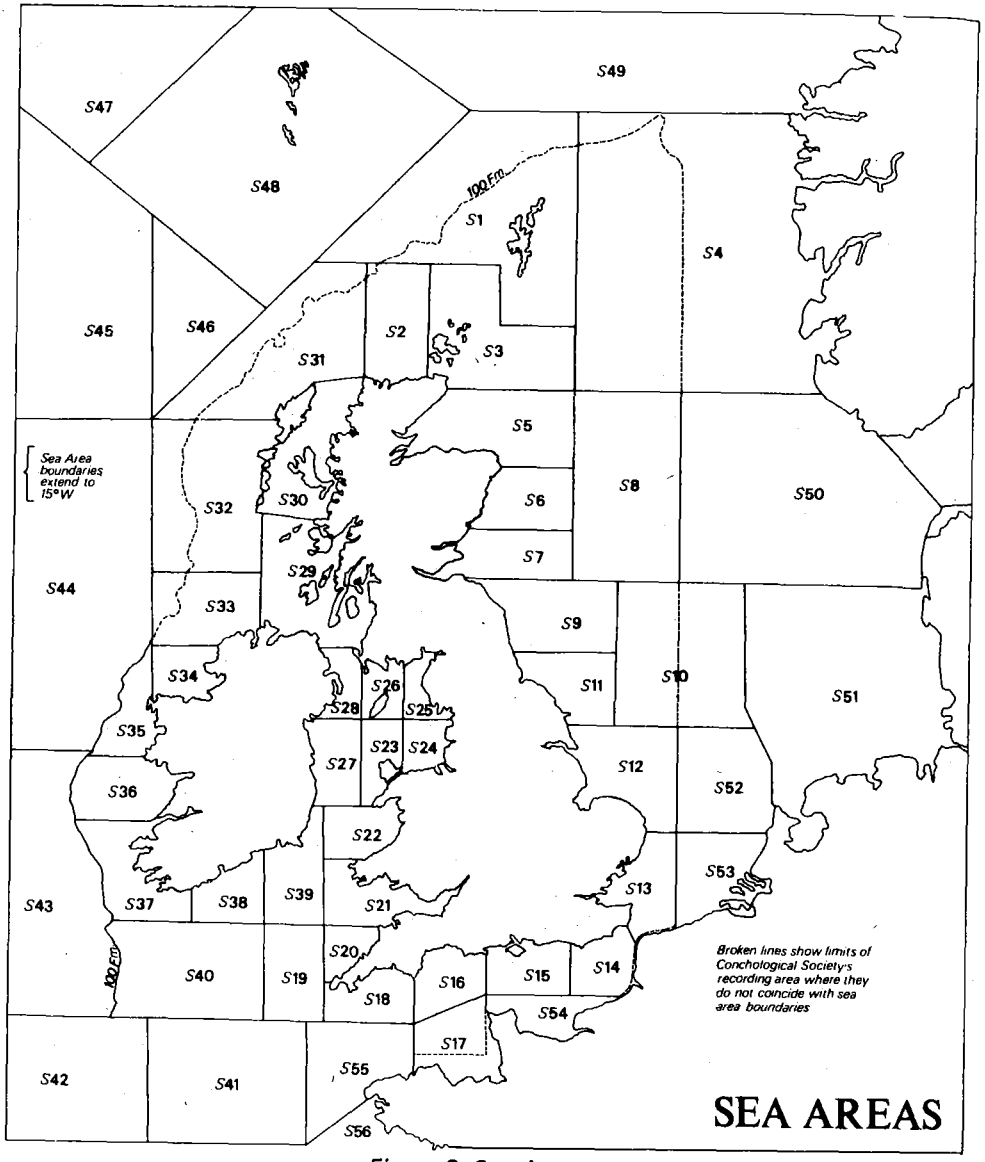


Figure 3. Sea Areas

No.	Area
S 01	Shetland
S 02	Sutherland
S 03	Orkney
S 04	Viking
S 05	Moray Firth
S 06	Aberdeen
S 07	Firth of Forth
S 08	North Sea
S 09	Northumberland
S 10	Dogger
S 11	Yorkshire
S 12	Wash
S 13	Thames

No.	Area
S 29	Clyde and Argyll
S 30	Minch
S 31	Lewis
S 32	Uist
S 33	North Donegal
S 34	Donegal Bay
S 35	Mayo
S 36	Galway Bay
S 37	Fastnet
S 38	Cork
S 39	Nymphe Bank
S 40	Labadie (Sole)
S 41	Chapelle

S 14	East Channel
S 15	Wight
S 16	*Portland*
S 17	Channel Isles
S 18	Plymouth (West Channel)
S 19	Scilly Isles
S 20	North Cornwall
S 21	Bristol Channel
S 22	Cardigan Bay
S 23	Anglesey
S 24	Liverpool Bay
S 25	*Solway*
S 26	Isle of Man
S 27	Dublin
S 28	Belfast

S 42	Lightning
S 43	Porcupine
S 44	*Rockall*
S 45	Bailey
S 46	Rosemary
S 47	South-East Iceland
S 48	Faroes
S 49	Trondheim
S 50	Fisher
S 51	German Bight
S 52	Texel
S 53	*Rhine*
S 54	Seine
S 55	Ushant
S 56	Biscay

The BRC cross-off card Recording scheme is in its infancy although an explanatory leaflet to illustrate the ideas behind the scheme and how the cards should be used will be available during 1976. The absence of any comprehensive book for identification of fungi has always been a draw-back but some headway can be made with the several popular books now available. When an interesting find is made the few Scottish specialists will be pleased to help you further so do not hesitate to contact one of them. Participation at the autumn fungus forays run by natural history societies and others from several centres will illustrate not only the problems but also the possibilities open to an amateur.

Contacts: European Mapping Scheme – D. M. Henderson, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR
British Isles Mapping Scheme – Dr Roy Watling, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR

Lichen Mapping Scheme — 1350+ species (710 on BRC card) — *LICHENS*

The British Lichen Society have been organising this survey since 1964 using a BRC field card and 22 maps have been published already in the *Lichenologist*. There are no official recorders for Scotland, but the coverage for Scotland is considered to be very good. Work supported by 2-year NERC grant should enable an Atlas of some 250 species to be published soon.

Contact: Dr M. R. D. Seaward, University of Bradford, Bradford, BD7 1DP

Bryophyte Mapping Scheme — 700 species (500 on BBS card) — *MOSSES*
285 species (210 on BBS card) — *LIVERWORTS*

The *British Bryological Society* are organising this survey and they use a single bryophyte field record card for the two groups, neither of which are easy to identify. There are no official Scottish organisers, the scheme being run for the whole of Britain and Ireland from a single centre; there are about 5 active recorders in Scotland but additional recording is carried out by visiting bryologists. 180 maps have already been published in the *Journal of Bryology* and a provisional atlas of 100 of the less common species is due out soon.

Contact: Dr A. J. E. Smith, BBS Mapping Secretary, School of Plant Biology, University College of North Wales, Bangor, Gwynedd, LL57 2UW

64 species — *FERNS*
20 species — *HORSETAILS*

The British Pterydological Society have collected records for the BSBI Atlas but are also interested in more detailed recording of 2×2 km squares. They are not represented officially in Scotland, but have at least 4 active recorders here.

Contact: The Secretary, The British Pterydological Society, 46 Sedley Rise, Loughton, Essex.

The Botanical Survey — 1750+ species — *FLOWERING PLANTS GRASSES FERNS*

The original survey organised by the *Botanical Society of the British Isles* (BSBI) of 10×10 km squares was completed in 1961 and published as the *Atlas of the British Flora* in 1962. The Society is now undertaking a more critical survey group by group of which Ferns have already been done (June '72–Dec. '73). This is organised in Scotland via 31+ vice-county recorders who are

responsible for the records from their vice county or counties and all records are submitted first to these recorders. *The Botanical Society of Edinburgh* works closely with the BSBI through the *Committee for the Study of the Scottish Flora* (CSSF) which is responsible for promoting and organising the surveys required for local floras etc. (see below). The Biological Records Centre produce a series of Plant field cards for the scheme which cover seven regional plant lists including 'Scotland' (north of the Clyde-Forth line) and 'North' (south of Scotland and northern England).

Contacts: Any BSBI Vice-county recorder – see appendix.
or Biological Records Centre, Monk's Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS

FLORAS

Many of the BSBI county recorders have undertaken to produce a local Flora often using a 5×5 km square basis. For the more remote areas the CSSF are helping to organise recording field trips to fill in blank squares.

Contact: the local BSBI recorder as listed in the Appendix.

Red Data Book for Britain 300+ species *RARE PLANTS*

The BRC are collecting detailed information on the exact populations of plants occurring in 15 or fewer 10 km squares in Britain to form the basis of the Red Data Book. Normally only expert botanists will be approached to help with this type of survey where a degree of confidentiality is required. The Scottish Records are now being co-ordinated by Paul Harrold of the Royal Botanic Garden, Edinburgh.

Contact: Regional Rare Plants Record Centre, P. Harrold, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR

Protection of Rare Plants *PLANT CONSER-VATION*

The Conservation of Wild Creatures and Wild Plants Act 1975. This Act gives special protection to 21 rare plants which may not be picked, uprooted or destroyed. *All other* wild plants cannot be *uprooted* by anyone except the owner or occupier of the land or anyone acting with the owner's permission. Many more species may be added to the special protection schedule but it is obvious that all naturalists should co-operate by taking special care not to pick or damage plants and to educate others to do likewise.

An information sheet listing the species concerned is available from the Council for Nature, Zoological Gardens Regent's Park, London, NW1 4RY on receipt of a stamped addressed envelope.

Marine Dinoflagellate Mapping Scheme 208 species *MARINE DINO-FLAGEL-LATES*

Most records are from marine research stations or from samples collected by the organisers. However, samples or lists are welcome from anywhere in Scotland. Schools and Universities might be interested in collecting material with a fine plankton net, fixing the material in neutralised formalin. Dip samples from areas of discoloured water can be preserved with Lugol's iodine. A BRC field card is available.

Contact: Dr John Doge, Department of Botany, Birkbeck College, London, WC1

Plant Parasitic Nematode Mapping Scheme *EELWORMS*

A nematology (i.e. eelworm) recording scheme encompassing the whole of the British Isles was started in 1970 by Dr C. E. Taylor, who initially conducted a

survey into the distribution of nematodes belonging to the family Longidoridae. Plant parasitic nematodes generally live in the soil and damage plants by either feeding on their roots or by introducing other harmful organisms, e.g. viruses and fungi. In Scotland soil has been collected by members of the Scottish Horticultural Research Institute, members of the Agricultural Colleges and by schools in the more remote islands. The information gleaned from the initial and subsequent surveys are of practical significance to agriculturalists since they give an assessment of the distribution and abundance of these economically important pests.

Contact: Dr Brian Boag, Scottish Horticultural Research Institute, Invergowrie, Dundee, DD2 5DA

Cladocera Mapping Scheme

WATER FLEAS

To find what water fleas are present in an area it is of maximum importance to sample as many habitats as possible as they are often associated with particular environmental conditions and their distribution in both time and space can be patchy. The removal of samples will have little effect on the total population as these animals reproduce parthenogenetically. The samples can be taken in a number of ways, e.g. plankton net or net fixed to a pole. The nets sold as childrens toys can also be used or a net could be made from wire and an old pair of tights.

All samples *must* be preserved, either in 4% formalin or 70% alcohol and a label attached to give date, location and a Grid Reference (at least to the nearest 10 km grid square). The organiser is willing to identify any samples if the sender includes the necessary return postage for the results and/or specimens.

Contact: John Hearn, c/o SWT, 8 Dublin Street, Edinburgh, EH1 3PP

Non-marine Isopod Survey Scheme

35 native species (48 total)

WOODLICE AND WATERLICE

This scheme is collecting records of habitat distribution, as well as geographical distribution, for the *British Isopoda Study Group*. Using a BRC record card, recorders are asked to tick a minimum of five details about the habitat for each collection. No skill in identification is needed as specimens should be sent with each card for identification by the Organiser. Comprehensive instructions are issued to all recorders, along with an irregular Newsletter. A provisional Atlas for all the native species is in preparation and will be published through BRC at the end of 1976.

Contacts: Scottish Organiser: Dr G. M. Collis, Department of Psychology, University of Strathclyde, 155 George Street, Glasgow, G1 1RD
Scheme Organiser: Paul T. Harding, ITE Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS

Marine Isopod Survey Scheme

98 species

MARINE ISOPODS

A fairly unfamiliar group of animals requiring specialist identification and very much under-recorded. The marine organiser of the *British Isopod Study Group* has collected round Scottish coasts for several years, but help from amateurs would be welcomed as identification can be undertaken by the organiser. A BRC record card has been produced which includes sections on the habitat type.

Contact: Dr R. J. Lincoln, British Museum (Natural History), Cromwell Road, London, SW7 5BD

AMPHI-PODS

An Amphipoda distribution Scheme is in preparation with the compilation of a record card for the British species. The present keys for the identification of amphipods are very unreliable and a more authoratative one is in preparation. The organiser would, however, welcome specimens sent to him for identification until the full Scheme is prepared.

Contact: J. M. Sanderson, Falkirk Museums, 15 Orchard Street, Falkirk, FK1 1RF

Crab Distribution Survey 56 species *CRABS*

A handbook is being prepared on the identification of the British Crabs but in the meanwhile the BM will undertake the identification of any crabs, lobsters or shrimps from Scotland. A BRC record card has been produced but there is no organised recording as such in Soctland at the moment.

Contact: K. W. Ingle, British Museum (Natural History), Cromwell Road, London, SW7 5BD

Millipede Mapping Scheme 49 species *MILLI-PEDES*

Covered as part of the British Myriapod survey scheme this is a difficult group to identify – some species being very small soil dwellers. Scotland is poorly covered and is thought to hold more than the 26 species so far discovered. A BRC record card is available requiring detailed habitat notes which are explained in the leaflet also used by the woodlouse survey. It is suggested that naturalists might look out for the pill millipede which has not been recorded north of the Forth-Clyde line. A pamphlet is available on the distribution records collected so far.

Contact: Dr C. Fairhurst, Department of Biology, University of Salford, Salford, M5 4WT

Centipede Recording Scheme 47 species *CENTI-PEDES*

Part of the British Myriapod Survey Scheme. Certain genera present difficulty but the organiser is quite prepared to identify specimens or confirm identifications. As in the woodlouse and millipede schemes a habitat section is included on the BRC record card. One established collector in Scotland.

Scotland is poorly recorded and some of the records are more than 50 years old. New records are required from all areas especially parts of SW Scotland, Argyll, N Scotland and Orkney.

An instruction card, identification guide sheet, and pamphlet on the distribution records collected so far are available.

Contact: A. D. Barber, Science Department, Plymouth College of Further Education, King's Road, Davenport, Plymouth

Dragonfly Mapping Scheme 44 species *DRAGON-FLIES (Odonata)*

Grasshopper Mapping Scheme 30 species *CRICKETS* and *GRASS-HOPPERS (Orthoptera)*

Earwings, Cockroaches and Stick Insect Mapping Schemes 7 species *EARWIGS (Dermaptera)*

9 species *COCKROACHES (Dictyoptera)*

3 species *STICK INSECTS (Phasmida)*

The Biological Records Centre (BRC) have organised these schemes and the five orders are dealt with together on a species list card. A large number of the species in these orders are not found in Scotland, but the group does include dragonflies, some of which are only found north of the Border, and all being very poorly recorded. A Provisional Atlas including all these species was published in 1973.

Contact: John Heath, Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS.

Butterfly Mapping Scheme 55 species *BUTTERFLIES*

Lepidoptera Mapping Scheme 850+ species *MOTHS*

The Biological Records Centre (BRC) have produced two separate BRC record cards for this order and over 1000 recorders have participated in the scheme. Butterflies are fairly easily identified but many of the moths are difficult to separate and a few require dissection of the genitalia to confirm the species. A booklet is available to enable recorders to identify the most difficult species. (*Guide to Critical Species of British Lepidoptera*.) The families of smaller moths known generally as 'micros' are not covered in this survey. Two *Provisional Atlases* are available – the first part of the Moths and the Butterflies (updated in 1975). However there are still over 400 10 km squares in Scotland unrecorded, particularly in the Southern Uplands, Sutherland and Lewis. The final Atlas will be produced in 1980.

Contact: John Heath, Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS.

RARE BUTTERFLIES

The *British Butterfly Conservation Society* is concerned by the decline of many of the British Butterflies and as a conservation measure they have a number of recorders responsible for individual rarer species. Their interest is mainly in the breeding and releasing of butterflies in localities where they have become extinct.

Contact: The Secretary, British Butterfly Conservation Society, Tudor House, Quorn, Leicestershire

Rothamsted Insect Survey *NOCTURNAL INSECTS*

Rothamsted Experimental Station began their Insect Survey in 1960 and now have in operation a number of standard pattern low power (tungsten light bulb not mercury vapour) moth traps scattered throughout the country – about 15 in Scotland. These are run by research institutions, schools or private individuals who operate the trap all night, every night throughout the year. The catches of moths are identified, counted and recorded by the recorder on special forms or killed and sent into Rothamsted for identification. The standard trap gives a quantative loading to species lists and the final product is hoped to be density maps of at least the economically important species.

Other insects coming to the light such as caddis flies, biting midges and aphids are also collected for identification.

A large amount of information on distribution, taxonomy and emergence dates from the survey gives rise to a number of other studies based on the recorders material supplemented with information from the Station's own suction traps which are also scattered throughout the country.

Contact: Rothamsted Experimental Station, Department of Entomology, Harpenden, Hertfordshire

Caddis Fly Mapping Scheme

194 species

CADDIS FLIES (Trichoptera)

A BRC card is available but the identification of many of the smaller species is difficult. There is no organised scheme as such.

Contact: John Heath, Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS

Cranefly Recording Scheme

320+ species

CRANE-FLIES (includes *Tipulidae Trichoceridae Anisopodidae Ptychop-teridae*)

This scheme is based on a BRC field card and there are several recorders in Scotland. Identification is difficult for the non-dipterest though some of the larger species have easily seen characters. Species new to Britain are still being discovered. The help of naturalists would be very welcome. Dried specimens (unmounted, and don't worry if legs break off) from anywhere in Scotland may be sent to the organisers who will return a list of identifications with comments. Further details on procedures are available and the organisers produce a newsletter which is circulated to those taking part in the scheme. (Craneflies=daddy-longlegs.)

Contact: Mr A. E. Stubbs, Nature Conservancy Council, 19–20 Belgrave Square, London, SW1X 8PY

Sciomyzidae Mapping Scheme

SCIOMYZID FLIES

This is a small family of flies parasitic on slugs and snails. All records from Scotland would be very useful but only those prepared to specialise in this group could usefully contribute. There is no BRC record card for the scheme.

Contact: Mr Stephenson, Rothampsted Experimental Station, Harpenden, Hertfordshire

Other Diptera Schemes

Other *FLIES*

There are currently several other schemes in varying stages of readiness. One on Dixidae is operational but the gnats would not be recognised by the general naturalist (if they are sent in as craneflies they will be passed on to the organiser).

A scheme on the larger Brachycera (Robberflies, Horseflies, Soldier Flies, Bee-flies etc) will start operation in 1976 and a further scheme on Hoverflies will be working on a limited basis, hopefully picking up momentum in either 1977 or 1978 once a new key is available.

The organiser will be glad of assistance in collecting material for identification, but only, please, if you know enough about diptera to ensure that you are sending the right types of fly. Training courses are arranged for those wishing to take a serious interest in Diptera.

Contact: Mr A. E. Stubbs, Nature Conservancy Council, 19–20 Belgrave Square, London, SW1X 8PY

Fleas Mapping Scheme 60 species *FLEAS*

A slide preparation and microscope are required for identification of fleas and is the work for a specialist. However, records are needed of fleas from birds and mammals and from their nests. There are no recorders as such, but fleas or nest material with fleas is wanted by the organiser. His particular interests at the moment are fleas from the badger, from small mammal nests and the nests of house martin and sand martin. He will search the nests, and report on the contents, if they are sent in flea tight containers. His records are passed on to BRC for production of a 10 km distribution map for each sp. and ssp. A leaflet is available on techniques for flea collecting, but there is no BRC field card. The *Provisional Atlas* was issued in late 1974.

Contact: Mr R. S. George, 8 Saint Peter's Street, Duxford, Cambridge, CB2 4RP

Bumble Bees Survey 19 species *BUMBLE BEES (Bombidae)*

The *International Bee Research Association* (BRA) started a survey of bumble bees in Britain and Ireland in 1969 which ended in 1975. Records were collected from 'new' 10 km squares by Recorders who identified their own specimens (difficult) and recorded them on BRC cards, and by Collectors who sent in specimens to the BRA. This was an important scheme, as it involved important pollinators and the effect of herbicides and insecticides on them. An illustrated key to the Bumble Bees and Cuckoo Bees is available from BRA, and a *Provisional Atlas* has been published by BRC. A 'final atlas' is being prepared from all records up to 1975, and will be published in 1976. Records from remote areas and any uncommon bumble bees from other parts should still be sent in.

Contact: IBRA, Hill House, Gerrards Cross, Bucks, SL9 0NR

Social Wasp Mapping Scheme 7 species *SOCIAL WASPS (Vespidae)*

This scheme was started in 1973 and although it involves some Recorders it chiefly depends on Samplers who recognise and collect samples of wasps and send them in to be identified. Records for all parts of Scotland are very scarce and specimens are wanted particularly those collected in August when the nests are at their maximum population. Information sheets on collecting and identification are available. Please send a second class postage stamp with all enquiries.

Contact: Mr M. E. Archer, St. John's College, Department of Biology, Heworth Croft, York, YO3 7SZ

Solitary Wasp Mapping Scheme 211 species *SOLITARY WASPS (Sphecidae)*

This scheme depends on voucher specimens being sent in to the organiser until each recorder has proved an ability to identify this quite difficult group accurately. Relatively few species are found in Scotland but as there are very few records, any information would be useful.

Contact: J. C. Felton, 20 Gare Court Road, Sittingbourne, Kent, ME10 1QN

Ant Mapping Scheme 41 species *ANTS*

Although records have been collected for the past 10 years more records or specimens of ants are still required, especially from southern Scotland (Vice counties 72–82) provided the exact location and date of collection are sent with them. Samples of workers of common species to be identified by the organiser would be of great interest. A BRC record card is available, and a complete set of *Provisional Maps* are being prepared by BRC.

Contact: Keith Barrett, 129 Smith's Lane, Windsor, Berkshire

Bees, Wasps and Ants Mapping Scheme *BEES, WASPS and ANTS*

The organisers of the above four mapping schemes hope to bring them all together to form BWAMS which would avoid duplication of effort for collectors and more economic handling of information and publicity for the organisers. It is hoped that a grant will be available soon to launch this scheme.

Ground Beetle Mapping Scheme 350 species *GROUND BEETLES (Carabidae)*

This scheme was started in 1971, and an estimated 25,000 records have been incorporated to date. Some species require specialist knowledge for accurate identification, and others are more readily identified after some experience. The organiser would therefore welcome specimens sent in for identification, which would be named and returned as a reference collection if required. Ground beetles can readily be collected from under stones, or by 'pitfall traps' such as beakers or jam jars set into the ground, with their mouth level with the soil surface. Data are also being obtained from local museum collections and natural history journals: help is urgently needed for this. Scottish records relate mainly to the popular holiday areas such as some of the Highlands, and regular collectors or recorders would be welcome in all parts of Scotland. There are only seven active contributors in Scotland so far. A BRC carabid field record card is available (also single species cards for data from museum collections, etc.).

Contact: Dr M. L. Luff, Department of Agricultural Biology, Close House Field Laboratory, Heddon on the Wall, Newcastle upon Tyne, NE15 0HT

Rove Beetle Mapping Scheme 1000 species *ROVE BEETLES (Staphylinidae)*

Many of these beetles are very small and as they are all very similar they cannot be identified by the beginner. The organiser cannot undertake to identify large numbers of these beetles, but he is interested in the few species of rove beetles from sheep and cattle dung. Details of a survey are due to be published soon.

Contact: P. M. Hammond, British Museum (Natural History), Cromwell Road, South Kensington, London, SW7

Ladybird Mapping Scheme 42 species *LADYBIRD BEETLES*

Surprisingly little is known about the distribution of this familiar group of beetles and records are urgently needed for Scotland so that a provisional atlas can be produced around 1980. A report on the progress of the scheme will be appearing in the *Entomologist's Gazette* during 1976.

A BRC field record card is available for the group and the organisers will identify any specimens sent to them (specimens can be returned to the recorder so that he/she can build up their own reference collection). For those not wishing to kill ladybirds we can also identify (in most cases) specimens from drawings showing the pattern of markings on the ladybird.

Identification can be difficult as some species are very variable in colour and in others obscure features must be examined for correct identification. Those not wishing to become deeply involved in identification are invited to record eight of the more easily identifiable species. These species have been chosen as ones that should show interesting patterns of distribution. Diagrams to aid the identification of these eight species are available and diagrams of the remaining species are in preparation.

Contact: John Muggleton, 32 Penton Road, Staines, Middx, TW18 2LD

Spider Mapping Scheme 615 species *SPIDERS*

Most species are difficult to identify and the organiser cannot undertake the identification of a lot of material. Scotland is very poorly covered especially the Borders and the extreme North. As there are only two active recorders working in Scotland at the moment more expert help would be very valuable.

Contact: Dr P Merrett, The Institute of Terrestrial Ecology, Furzebrook Research Station, Nr. Wareham, Dorset, BH20 5AS.

Pseudoscorpion Mapping Scheme 27 species *PSEUDO-SCOR-PIONS*

This scheme started in 1970 and so far specimens have been recorded from nearly six hundred 10 km squares, from all parts of the British Isles. Pseudoscorpions are most numerous in leaf litter and can be readily extracted by hand-sieving or use of a Tullgren funnel. Species occurring under bark and stones are found less frequently. Scotland is very poorly covered and most of the records so far received date from the early 1900s. Any specimens, preserved in a tube of 70% alcohol and bearing a label with full details of date, place and habitat where found, may be sent to the organiser for identification. Help is also sought from anyone who would be prepared to search out local records or report museum specimens. A BRC field card is available and also notes on collection and preservation of specimens. Identification is difficult and the organiser will only accept records for the mapping scheme if the determinations have been confirmed by a recognised expert.

Contact: P. E. Jones, The Institute of Terrestrial Ecology, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS

Opiliones Distribution Scheme 23 species *HARVEST-MEN*

Records of harvestmen (Opiliones) are wanted from all areas of Scotland, especially from damp ravines in more lowland areas where there is a species new to Britain. They are found on the ground, in moss and leaves, in low vegetation and on the lower branches of trees and shrubs. Search by torchlight is the best time to find them but most can be captured by day as well. Look also on the shady sides of walls, trees and under window ledges. Mature specimens are essential and most harvestmen become adult about September though a few mature in the earlier months. The recorder for Britain will be pleased to send record cards to observers and to assist with identification. Place one harvestman only in a small tube with a little tissue paper and the minimum of about 70% methyl alcohol and a label written in Indian ink giving the precise locality of capture (preferably with grid number), the date, collector's name and any other relevant information.

Contact: J. H. P. Sankey, Juniper Hall Field Centre, Dorking, Surrey, RH5 6DA

Tick Mapping Scheme *TICKS*

Ticks require detailed examination for their identification and are therefore best sent to a specialist. However, many naturalists who handle birds or mammals, could improve our knowledge of these and other ectoparasites by collecting specimens whenever possible. See below for details.

(ticks, lice, keds, flat-flies, fleas, 'bed-bugs' of birds and bats, bat-flies) *ECTO-PARASITES*

By keeping together these interesting ectoparasites much more valuable information can be obtained. Splitting the various types at the onset to send to different specialists can be a considerable waste of valuable data. So little is

known of the many aspects of their distribution, life-history, abundance, etc., that no ectoparasite is too common to the specialist. In particular specimens of ticks, keds and lice from deer in every part of Scotland would be of considerable interest. Ticks, etc., may *not* occur in all areas and this too is useful information.

All types of ectoparasite, therefore, found on a single host specimen should be placed in a tube of 70% alcohol, together with a label, bearing as much as possible of the following information (written in pencil) – name of host, sex and age (ad. or juv.) of host species, locality (Grid. ref.), date of capture and, if time permits, the condition of the host and degree of infestation.

Contact: G. B. Thompson, 56 Beaumont Road, Cambridge, CB1 4PY

Marine Mollusc Mapping Scheme 500 species

MARINE MOLLUSCS

The Conchological Society of Great Britain and Ireland uses Representatives (11 in Scotland to date) to check the identifications of field workers before passing their records on to main Record Organiser. All information is compiled on a BRC record card but voucher specimens must be kept of difficult or rare species. The scheme includes sea area coverage using specimens from trawls, etc. The results of the marine census work are reported in the *Conchologists' Newsletter.*

Contact: For Scotland – Dr S. Smith, Royal Scottish Museum, Chambers Street, Edinburgh

For Elsewhere – Dr C. P. Palmer, British Museum (Natural History), Cromwell Road, South Kensington, London, SW7

Terrestrial and Freshwater Mollusc Mapping Scheme 183 species

TERRESTRIAL MOLLUSCS FRESHWATER MOLLUSCS

This scheme, also organised by the Conchological Society, has been in progress for some time and the Atlas was published in 1976. However, coverage is poor for Scotland where large inland areas are without any records and most of the rest has only a few species recorded. Help is wanted and beginners can submit specimens or records to the Scottish organisers. Information is compiled on a BRC record card.

Contact: For Scotland – Dr S. Smith, Royal Scottish Museum, Chambers Street, Edinburgh

For elsewhere – Dr M. P. Kerney, Department of Geology, Imperial College, Prince Consort Road, London, SW7 2BP

Echinorderm Survey 82 species

SEA URCHINS SEA CUCUMBERS STARFISH

The Marine Biological Association of the United Kingdom (MBA) started a scheme in 1973 using a BRC card and covering the whole of the British Isles and the Continental Shelf to 200 metres depth. A key for identification can be supplied but it requires some zoological knowledge and a hand lens. Some species are difficult to identify but MBA will help with identification of the more obscure ones. There are no organisers in Scotland, but some recorders at the Marine labs and some Universities. A leaflet is available to help the beginner.

Contact: Dr Eve C. Southward, MBA, The Laboratory, Citadel Hill, Plymouth, PL1 2PB

Fresh Water Fish Recording Scheme 15 species *FRESH WATER FISH*

The scheme was started in 1966 using information gathered by an extensive questionnaire. Since the preliminary account was published (1969) a series of *Provisional Maps* have been published. More records are requested from empty squares on the maps, particularly from the West and the Islands. A BRC card is available which marks the critical species which need expert confirmation. An instruction sheet is available.

Contact: Dr Maitland, Institute of Terrestrial Ecology, Wetlands Research Group, 12 Hope Terrace, Edinburgh, EH9 2AS

Marine Fish Recording Scheme *MARINE FISH*

This group includes a large number of 'accidental visitors' as well as many deep sea species. However a BRC card is being produced along with a note explaining the recording method and how to deal with difficult species.

Contact: A. Wheeler, British Museum (Natural History), Cromwell Road, South Kensington, London, SW7

Reptiles and Amphibians Recording Scheme 8 species *AMPHIBIANS*
5 species *REPTILES*

The British Herpetological Society includes a Conservation Committee concerned with locating and identifying the main breeding localities of amphibians and reptiles all of which are decreasing in numbers and distribution. The organisation is through Regional Officers where these exist or direct to Henry Arnold at BRC. Records are collected of sites including the size of amphibian breeding ponds and numbers found there. The BRC have produced a *provisional Atlas* for reptiles and amphibians but records for new 10 km squares are still needed. A BRC field card for amphibians and reptiles is available.

Contact: For new distribution records or for breeding site records: Henry R. Arnold, Biological Records Centre, Abbots Ripton, Huntington, PE17 2LS

Atlas of Breeding Birds in Britain and Ireland 200+ species *BREEDING BIRDS*

The British Trust for Ornithology (BTO) undertakes a large number of recording schemes of various types best explained in the leaflet *BTO in Action* available from the BTO. This project covering the distribution of all British breeding birds has now been completed (1968–1972). It was a highly organised coverage of all 10 km squares which has resulted in an atlas which was published jointly by the BTO and the Irish Wildbird Conservancy in 1976.

Rare Breeding Birds Panel 42+ species *RARE BREEDING BIRDS*

A panel of representatives from the *Nature Conservancy Council, the Royal Society for the Protection of Birds,* the journal *British Birds* and the BTO meet to maintain up to date information on the rare breeding birds of the UK. All details are strictly confidential but a general annual summary is published in *British Birds*. Details are normally supplied to the panel via county report editors.

Contact: County report editor (see appendix) or Dr Sharrock, 59 Curlew Crescent, Bedford, MK41 7HY

Common Birds Census

COMMON BIRDS

This is a BTO project involving some 16 people in Scotland who each cover a particular area about 200 acres of farmland or 30–50 acres of woodland to monitor the breeding birds of that area from year to year. It has been in operation since 1962 and detects annual changes in numbers on a nationwide basis. It involves at least eight visits to the site between April and July every year noting singing birds, birds carrying food or nesting material and mapping their positions on the census plot to establish the numbers of breeding pairs within the area. The results are summarised in *Bird Study*.

Contact: Kenneth Williamson, BTO, Beech Grove, Tring, Hertfordshire, HP23 5NR

Waterways Bird Survey

WATERSIDE BIRDS

This BTO survey was started in 1974 and is similar to the Common Birds Census except that it monitors lengths of river and burn and the birds found there. It also requires 8+ visits a year etc. as above. The results are also published in *Bird Study*.

Contact: Kenneth Williamson, BTO, Beech Grove, Tring, Hertfordshire, HP23 5NR

Register of Ornithological Sites

BIRD HABITATS

A BTO scheme to record all ornithologically interesting sites with an indication of the degree of interest of each site, i.e. the type of bird community numbers of species, rarities found there etc. This information is recorded on a special form and eventually it is hoped to hold a completed form for each of the 950 Scottish sites which the BTO has listed on its files. The work is organised through 29 regional organisers who arrange coverage of the various sites. The Register will enable the most important breeding, feeding or roosting areas at a local level to be identified. As well as providing information at regional and national levels for conservation planning it is hoped that a conservation 'watch' would be kept over these sites in a similar way to the SWT's Listed Wildlife Sites (see below).

Contact: Robert Fuller, BTO, Beech Grove, Tring, Hertfordshire, HP23 5NR

Bird Ringing Scheme

BIRD RINGING

All ringing is organised through the BTO and ringers require a permit obtained after a period of training from an experienced ringer. All ringers also require a licence from the Nature Conservancy Council and if they are to disturb Schedule 1 species, approval to do so. There are a number of groups which do research on bird movements, longevity, etc., and then tend to specialise in particular species, e.g. in Scotland sea birds, finches, flycatchers, waders, chats, tits and warblers are being concentrated on at this moment. Ringing groups in Scotland include the *Edinburgh Ringing Group,* the *North Solway Ringing Group,* the *Tay Ringing Group* and the *Highland Ringing Group*. There are also a number of research projects at Aberdeen University for which ringing is an essential tool. The results of these ringing programmes are published by the groups in their own reports.

Contact: Ringing Office, BTO, Beech Grove, Tring, Hertfordshire, HP23 5NR, or one of the ringing groups direct (See appendix)

Birds of Estuaries Survey *ESTUARY BIRDS*

This scheme is run jointly by the BTO, the RSPB, the *Wildfowl Trust* and the *Irish Wildbird Conservancy,* and was set up in 1969 originally for 5 years but it will now probably be run continuously. There is a count on specified dates throughout the year on a middle Sunday in each month, at high tide, counting the birds at their roosts. Most of the birds involved (ducks, geese, gulls, etc.) are partially migratory and rely on the British estuaries for winter food supply. The survey is intended to establish the importance of these sites, nationally and internationally, in the face of pollution and development. Scotland includes six main estuary areas and the BTO organisers within these areas divide up the coastline and allocate each recorder one section which he covers on the chosen dates, chiefly through the winter. The results of this survey are being published as BTO library reports and reported in *Scottish Birds.*

Contact: Tony Prater, BTO, Beech Grove, Tring, Hertfordshire, HP23 5NR

National Wildfowl Counts *WILDFOWL*

This scheme organised by the *Wildfowl Trust* began in 1948 and it involves a count on the middle Sunday in the month from September to March, of the priority coastal sites for wildfowl and some of the more important inland sites. Organisation is via a number of regional organisers who also try to cover all waters over a period of one week during November and January and March. Figures from the January counts are adjusted for each species to an index based on the 1959 figures. This long term monitoring of populations of migratory species is very important for their conservation and trends in increases and decreases in species and sites are already very noticeable. The results of the counts are published in *Wildfowl.*

Contact: The Wildfowl Trust, Slimbridge, Gloucestershire

International Wildfowl Census *WILDFOWL*

Sponsored by the *International Waterfowl Research Bureau* but organised in Britain by the *Wildfowl Trust.* The counts are based on the mid-January wader and wildfowl counts (see above) but are used for a wader and wildfowl count for Europe and North Africa. The results are reviewed in *Wildfowl.*

Contact: *The Wildfowl Trust,* Slimbridge, Gloucestershire

British Geese Census 7+ species *GEESE*

The Wildfowl Trust also organise a more detailed annual census of winter goose populations and their age structure etc. Assistance from amateur goose counters always wanted. The results are published in *Wildfowl.*

Contact: *The Wildfowl Trust,* Slimbridge, Gloucestershire

Beached Bird Survey *OILED BIRDS*
Report on Oil and Oiled Birds on Beaches

The Royal Society for the Protection of Birds (RSPB) originally set up this survey to monitor the effect of oil on seabirds, but it now includes the effect of chemical pollutants. Every recorder covers an allocated stretch of coastline fairly frequently and notes all dead birds and possible cause of death, collecting one wing for further analysis of age, race and sex.

Contact: RSPB, Scottish Office, 17 Regent Terrace, Edinburgh, EH7 5BN

Scottish Bird Report 290 species *SCOTTISH BIRDS*

All records submitted by members of the *Scottish Ornithologists Club* (SOC) are compiled into a species by species report on the yearly status of birds in Scotland and this is published in *Scottish Birds*.

Contact: SOC, 21 Regents Terrace, Edinburgh, EH7 5BT. SOC direct or area representatives (see appendix)

BIRDS: SINGLE SPECIES SURVEYS

Research projects by members of the SOC, BTO and others are considered by the SOC Research Committee and details published in *Scottish Birds*. However, as many of the projects are short term, enquiries about the work being done on individual species should be directed to the SOC Edinburgh.

Contact: SOC, 21 Regent's Terrace, Edinburgh, EH7 5BT

Mammal Surveys (excludes whales) 68 species *MAMMALS*

The Mammal Society began their distribution mapping scheme in 1965 by adding to the large number of past records, new field records collected by their members. From this work a series of provisional *Distribution Maps* have been published. There is still a network of vice county recorders but only eight are listed for Scotland. Some of the smaller mammals require live trapping to be certain of establishing their presence and even the larger pine marten and wildcat need expert confirmation as sightings are rare. New 10 km square records are still needed, but these are now dealt with by the BRC, the Society concentrating on particular species e.g. the Badger, Bats, Harvest Mouse, Dormouse and Otter. A new series of provisional distribution maps will be published in 1976.

Contact: for new distribution records, Henry R. Arnold, Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS, or Local Mammal Society Recorder (see appendix)

National Badger Survey *BADGER*

To gather more information about this much persecuted species all records of Badgers and their setts are being collected by a number of county badger recorders of the Mammal Society co-ordinated by Mrs. E. Farquharson for Scotland. Details of the size, position and evidence of recent use is required for the setts along with details of soil type, general habitat, water supply, etc. More help is wanted in many parts of Scotland.

Contact: Mrs E. Farquharson, 6 Chamberlain Road, Edinburgh, EH10 4DN

WHALES

These are often difficult to identify at sea and most records rely on strandings. Any bodies should be notified to the Coastguard first who would then pass on the report to the Royal Scottish Museum. Peter Evans is co-ordinating a survey of this group and a key to species is being produced.

Contact: Peter Evans, c/o Aberdeen University, Department of Zoology, Tillydrone Avenue, Aberdeen, AB9 2TN

5 species *DEER*

The British Deer Society has been co-ordinating distribution records for all

species of deer including planning special recording operations at Branch meetings. The six regional branches have their records vetted by the Hon. Sec. for the Scottish Council.

Contact: Local BDS Branch (see appendix)

MAMMAL SINGLE SPECIES SURVEYS

The surveys are often undertaken as University (or private) research, and usually only last for a year or less. For up to date information on a particular species contact the *Mammal Society* direct.

Contact: Mammal Society, Harvest House, 62 London Road, Reading

17 species *BATS*

These delicate mammals are easily disturbed at their roosts and very difficult to identify in flight. Special techniques including ringing (under licence only) and sonic identification are proving useful in expert hands. *The Mammal Society* deal with these animals under a special *Bat Group*.

Contact: Dr P. Racey, Aberdeen University, Department of Zoology, Tillydrone Avenue, Aberdeen, AB9 2TN, or R. E. Stebbings, Monkswood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS

HABITAT RECORDING SCHEMES

A number of organisations have developed schemes for mapping and recording information on habitats. A selection of these schemes is given below under the name of the organisation promoting them.

THE BRITISH TRUST FOR ORNITHOLOGY (BTO)

(a) *Register of Ornithological Sites.* See also the entry under 'BIRD HABITATS'
The BTO, financed by Nature Conservancy Council, is in the process of documenting good bird sites, including information on the available habitats coded according to a special habitat classification.

By early 1976 well over 4000 sites had been registered throughout Britain and completed forms returned for nearly half of them.

(b) *Birds of Estuaries Enquiry.* See also the entry under 'ESTUARY BIRDS'
An 'estuarine habitat card' has now been produced and is supplied to all participants in the Enquiry.

SOCIETY FOR THE PROMOTION OF NATURE CONSERVATION (SPNC) previously the Society for the Promotion of Nature Reserves (SPNR)

Biological Sites Recording Scheme
In 1969 SPNR produced a scheme for recording information on the habitats present in Nature Reserves and other Sites of Scientific Interest, summarising it onto a single habitat card.

The scheme is described in full, with examples in the *SPNR Technical Publication No. 1.* See appendix.

Contact: for Scotland: Scottish Wildlife Trust, 8 Dublin Street, Edinburgh, EH1 3PP

NATURE CONSERVANCY COUNCILL (NCC)

(a) *Sites of Special Scientific Interest (SSSI)*
An SSSI is any area which is of special scientific interest by reason of its flora or fauna, geological or physiographical features. There are currently about 800 SSSI's in Scotland which have been notified under Section 23 of the National Parks and Access to the Countryside Act, 1949, to the appropriate local planning authority who, in turn, are required to consult NCC before granting any planning permission affecting an SSSI.

For each site a boundary map, a site description and a file on the ownership, together with any biological records are kept in the relevant NCC Regional Office.

Many of these sites were originally drawn to the attention of the NCC by amateur naturalists who have and still do collect a lot of the biological records for SSSI's.

Contact: NCC Regional Officer or the local Assistant Regional Officer (see appendix)

(b) *Nature Conservation Review (NCR)*
In 1965 the then Nature Conservancy began a comprehensive review of all of the sites of nature conservation importance in Great Britain, to assess how far existing National Nature Reserves (NNRs) adequately represented the range of ecological variation in the country and to provide the basis for a long term programme for establishing former NNRs.

Many years' survey using specially designed habitat and species cards has resulted in a large volume of data on the most important sites in Britain. These sites have

been graded with the grades 1 and 2, referred to as key sites i.e. they comprise the sites of international or national importance.

The NCR describes some 700 key sites covering about 880,000 ha (2.2 m acres) of Britain. Almost all of these key sites are scheduled as SSSIs. About 20% of the key sites' area is already within National Nature Reserves and it is the long term plan that the whole area can e satisfactorily safeguarded by some means.

It has been agreed that the NCR should be published jointly by the Natural Environment Research Council (NERC) and NCC, to be available in 1977.

(c) *National Nature Reserves (NNRs)*
These have been referred to in the previous paragraph and like SSSIs are a statutory designation under Section 15 of the National Parks and Access to the Countryside Act 1949.

In May 1976 there were 44 NNRs in Scotland all of which have habitat and biological records maintained by the Warden, if there is one, or by the appropriate Regional Officer.

Specialist records from these Reserves are always welcomed but it is as well to check with the Regional Officer or Warden before a visit as permits are needed to visit some Reserves and for the collection of any specimens.

Contact: NCC Regional Office or relevant Reserve Warden (see appendix).

(d) *Habitat/Land use mapping*
NCC does not have a standard system of habitat mapping used throughout Scotland, but in 1974 the SE Region began began production of a series of habitat/land-use maps, at 1:25,000 scale, of the Borders to produce information on the range and quantity of natural and semi-natural habitats in the Region.

In 1975 the methodology was slightly modified in consultation with the Scottish Wildlife Trust (q.v.) and Dundee Museum (q.v.) to produce a scheme which could be applied to the whole of the Border, Lothian, Fife, Tayside and Central Regions.

By early 1976 cover, to varying levels of detail, was available for the whole of the Border and Lothian regions and Falkirk District done by NCC, SWT and other bodies including Falkirk District Council. Mapping was also underway in Angus, Perth and Kinross and planned for Fife and parts of the remainder of Central Region.

The data from the habitat maps will form the basis for producing factual information for incorporation into various planning documents on which policies for conservation can be based. The data will also provide a platform for launching more detailed studies of habitats which can be identified as being of probable interest, e.g. old deciduous woodlands, permanent grasslands, etc. From these surveys will come a more comprehensive coverage of SSSIs.

Anyone interested in assisting with the mapping exercise

Contact: (1) NCC – SE Region
2) SWT – HQ or Lothian, Fife, Borders, Central, Perth or Angus Branches
3) Dundee Museum – (see appendix)

THE SCOTTISH WILDLIFE TRUST (SWT)

(a) *Listed Wildlife Sites*
In a similar way to the NCC's SSSI designation the SWT have been surveying and listing local sites of wildlife interest to declare them as Listed Wildlife Sites to the relevant county planners. The actual technique used in the surveys varies from Branch to Branch, but is based on guidelines prepared with the help of the Nature

Conservancy. To date provisional lists have been prepared and submitted for several Districts of Strathclyde, Stirling District, Fife Region, Dumfries and Galloway Region, Borders Region, Tayside Region and parts of Highland Region including East Ross and Caithness areas.

Contact: SWT HQ or the Local Branch Secretary (see appendix)

(b) *Habitat Survey*
The SWT have been surveying their wildlife habitats of the Lothians for some years. Recorders are trained to fill in a 2½ km map with a simple colour code of major habitat types and to make detailed notes on any sites of special wildlife interest. Every field and field boundary is noted, working systematically over the ground one 1 km square at a time. From this survey sites worthy of a visit by a specialist are selected – any of these may eventually become a listed wildlife site. Angus District, Perth District, Fife Region and Clackmannan District are being surveyed by the Trust using this type of Habitat Survey in co-operation with the NCC (q.v.).

Contact: Local SWT Branch Secretary (see appendix).

(c) *Roadside Verges*
The road verges have been recognised as an important habitat by the NCC and recommendations for their management for wildlife have been circulated by the Department of the Environment in England and Wales. The Biological Records Centre maintain a register of *Roadside Verges of Conservation Importance in Great Britain* with their location, size, the species of plant or animal involved and the maintenance required for each site. The SWT has produced an internal *Administrative Note (No. 11)* on this subject and to date has created protected verges in Berwickshire, the Lothians, Perthshire and Angus. More survey work is required as well as continuing the management programmes with some help available from local amenity societies.

Contact: Local SWT Branch Secretary (see appendix)

(d) *Wildlife Reserves*
The SWT has forty Reserves throughout Scotland most of them managed by committees of local members. The management plans required for these Reserves are based on a detailed knowledge of the plants and animals found there. In most cases more help with survey work is required.

Contact: Local SWT Branch (see appendix)

BRITISH CAVE RESEARCH ASSOCIATION (BCRA)

This Association has been recording the invertebrate fauna of caves including 19 for Scotland. This work has been supported by an NERC grant and account of the findings has been produced in the *Transactions of the Cave Research Group*. The *Glasgow Speleological Society* are also interested in cave fauna but have concentrated on bats.

Contact: British Cave Research Association, Seaton House, 15 Shrublands Road, Berkhamstead, Herts, HP4 3HY

THE ROYAL SOCIETY FOR THE PROTECTION OF BIRDS (RSPB)

Reserves
The RSPB have some Reserves in Scotland, most of them with a resident warden. Management plans being prepared for the Reserves include the management of all the plants and other animals present and again precise information is needed for this.

Contact: RSPB, Scottish Office, 17 Regent Terrace, Edinburgh, EH7 5BN

THE BIOLOGICAL RECORDS CENTRE (BRC)

Reserves Event Recording

For reserve record keeping, especially where there is a warden, the BRC have devised a reserve recording scheme where besides the SPNR Habitat card (q.v.) and Species cards (see national recording schedules, two other cards are used. First, the *Event Record Card;* these are specially printed cards in triplicate which are filled in when any event occurs within the Reserve, for example, surveying, management, natural disaster, etc. The warden, Headquarters and BRC each receive a copy and there are computer facilities at BRC for processing this data. The other card is the *One Species Card* maintained for every important species in the Reserve, with details of sightings, etc., with conservation action based on this information. Details of the methods involved and examples of the cards used are given in the BRC booklet *Reserve Recording.*

At the moment the NCC and RSPB are the main users of this system on Reserves with full time wardens but it is hoped that there are at least some ideas in this method for the Scottish Wildlife Trust Reserve Management Committees.

Contact: G. L. Radford, Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS

PORCUPINE

This new scientific group (named after a ship used for the important benthic investigations round northern and western Britain in the 19th century), is being set up to encourage and unite the efforts of amateur and professional marine biologists of all disciplines, interested in ecology and distribution and working in northern England and Scotland. Comments and suggestions on this idea are welcomed.

Contact: Dr Shelagh Smith, Royal Scottish Museum, Chambers Street, Edinburgh, EH1 1JF

LOCAL BIOLOGICAL RECORD CENTRES

In England there has been a movement towards counties setting up a centre where all biological information on the area can be collected, filed and extracted. As most of these are based on local museums the idea has not been directly applicable to Scotland. However, a number of such Centres have been set up.

(a) *Dundee Museum Records Centre*

Under the direction of the Keeper of Natural History, a records centre has been in existence for some years. All information on Angus District coming into the Museum is filed in a storage area under the National Grid squares and site name. The centre is making efforts to collect more information by working on the Angus *Habitat Survey* (q.v.) in co-operation with the SWT and the NCC and by running their own surveys on amphibians and reptiles, etc. More help is always needed.

Contact: Adam Ritchie, Dundee Museum and Art Gallery, Albert Square, Dundee

(b) **Borders Biological Records Centre**

A centre for the Borders Region was set up by the local SWT in 1976 at Langton near Jedburgh. All the active local naturalists are participating in the project and an appeal for 'fill in' records for common animals and plants has resulted in a considerable amount of useful field work. More help is required in all fields.

Contact: Derek McGinn, 19 Orchard Terrace, Hawick, TD9 9LU

(c) *Fife Records Centre*

A Centre for the Fife Region is being set up by the local SWT Branch in co-operation with Kirkcaldy Museum. The exact format has not yet been worked out but already

schemes to fill in squares for amphibians and reptiles and butterflies have been very successful. The local natural history societies have encouraged the scheme and they are helping with the *Fife Habitat Survey* (q.v.) run in co-operation with the NCC. More help is required on all fronts.

Contact: George Ballantyne, 3 Asquith Street, Kirkcaldy

(d) *Paisley Museum Records Centre*
The Keeper at Paisley has been enthusiastically stimulating the collecting and storing of records for Renfrew District but the final form of the Centre will depend on the overall plan for the Region and the role played by Glasgow Museum. Any local help will be welcomed.

Contact: David Mellor, Paisley Museum, High Street, Paisley, Renfrewshire

(e) *Outer Hebrides Records Centre*
The problems of record centres in remote underpopulated areas are immense but an investigation into the possibilities of one in the Hebrides is being carried out. Helpful comments please to:

Contact: Stewart Angus, c/o 2 Jamieson Drive, Stornoway, Isle of Lewis

NATURAL HISTORY SOCIETIES

Almost all of the natural history societies in Scotland are involved in several of the national recording schemes as well as many of their own. These cannot be listed in detail here but the local society is often able to do very detailed surveys of the particular sites within their area. There is also a great deal of useful information on species distribution in the past journals of these societies.

Contact: Local Natural History Societies are listed in the appendix

APPENDIX 1

Scientific names and the problems associated with them.

Taxonomy: The need for a unique 'Latin' name for every species of plant and animal is recognised by everyone, but there still exists some confusion over the use of these names. Each species has a *Generic and specific* name, the former with a capital letter and the latter *always* with a small letter. When names are 'changed' it is mostly the Genus which is altered by someone re-arranging the groupings of individual species. Specific names are not so frequently changed. The *authority's name* following the specific name indicates the person who first published an adequate description of the species and the date when he did this. If his name is in brackets the Genus has been changed since he first described the species. For the sake of clarity the 'Latin' name is underlined in ordinary writing or typing or put in italics when printed.

Certainty of identification: This proves a trial for the organisers of every scheme for unless they can rely on the recorders correctly naming the animal or plant concerned the accumulated information is worthless. To get round this problem a few schemes have chosen to rely on 'unmistakable species only' (e.g. the Ladybird survey); or on specimens (e.g. the Wasp survey); or voucher speciments of 'tricky' species (e.g., the Moth Survey); or reliable recorders backed up by a method of checking the records by regional or county experts (e.g., the Botanical survey). Beginners starting on a scheme are bound to make mistakes but humility is of the essence and *if in doubt* of any identity the record should be checked by an expert, a voucher specimen retained or the record forgotten.

Check lists: These are lists of names of the plants or animals of one group found in a specified area, county or country, etc. They are very useful for standardising names, for clarifying confusions over synonyms (i.e., the list often includes the other names [synonyms] previously used for the Genus, species, etc.) and for providing a basic list for referring to as regards new records for the area concerned. For most groups of plants and animals there is a well accepted list of the British species arranged in a classification which is followed by those laymen working in that field. Some of these are listed in the Appendix.

APPENDIX 2

How to fill in the national distribution mapping schemes' record cards (extracted from the BRC booklet 'Instructions for Recorders').

FIELD CARDS

These cards are used for recording the presence of species within a 10 km square or smaller area. When more detailed information is to be given, e.g., for rare or critical species, introductions and escapes, an Individual Record Card (q.v.) should be completed.

Field Cards have been prepared for all the major groups of plants and animals. The card for each group consists of a printed list of all the species, or a selection of the commoner ones, in full or abbreviated form in alphabetical order for the group as a whole, or a broad taxonomic sub-division.

For the vascular plants species lists have been compiled for each of seven regions and Field Cards prepared accordingly. Each species is preceded by its code number. The species found in the square are recorded by crossing through the name (but NOT the number preceding the name) preferably in pencil. Species not listed should be added in clear handwriting under 'Other Species'.

One card should be completed for each 10 km square, or locality or Nature Reserve from which records are being made for each date class (i.e. period of years) as advised by the scheme organiser(s). *(For an example of a completed card, see fig. 4)*

The 'common data' boxes at the top of the card should be completed as follows:

GRID REF. Enter 10 km square reference (or more precise reference when appropriate(, e.g., 31/1—0— 10 km square or 31/117055 100 m square.

Grid Ref. 4 2 5 / 5 3 6 / 6 3 6

LOCALITY Gordon Moss Reserve
w. Gordon, Berwickshire.

HABITAT Peat bog with dense birchscrub, dis. railway track.

BRYOPHYTES

Date 13·5·76 | V.C. No. 81

V.C. BERWICKSHIRE

Alt. 475' | Code No.

001 Acau muti
003 ~~Aero cord~~
004 ~~cusp~~
005 giga
006 sarm
007 ~~stra~~
008 trif
009 Aloi aloi
010 ambi
012 rigi
013 Ambl deal
014 Ambl conf
015 spru
016 Ambl comp
019 serp
020 vari
021 Amph lapp
022 moug
023 Andr alpi
025 roth
026 rupe
027 Anoe comp
028 Anom conc
029 fili
033 Anom viti
034 Anti curt
035 Arch alte
036 Arct fulv
038 Atri cris
040 ~~undu~~
041 Aula andr
042 ~~palu~~
045 Barb conv
0451 comm
0452 conv
047 cyli
048 fall
049 ferr
051 horn
053 nieh
054 recu
055 refl
056 revo
057 ~~rigi~~
059 spad
060 toph
061 trif
062 ungu
063 vine
064 Bart hall
065 ithy
066 pomi
0661 cris
0662 pomi
069 Blin acut
071 Brac tric
072 ~~Brac albi~~
075 glar
076 mild
077 plum
078 popu
080 rivu
081 ~~cute~~
082 sale
084 velu
085 Breu chry
086 Bryu affi
087 alpi
0871 alpi
0874 viri
089 arge
0891 arge
0892 lana
090 bico
091 caes
093 cana
094 ~~capi~~
096 doni
097 eryt
099 incl
100 inte
105 mild
107 mura
110 pallen
111 palles
112 pend
113 pseu
1131 bimu
1132 pseu
121 ulig
122 warn
123 weig
126 Camp lute
128 seri
129 Camp chry
130 elod
133 poly
134 prot
135 somm
136 stel
137 Camp atro
138 brev
139 ~~flex~~
140 frag
141 ~~intr~~
142 piri
143 seti
144 schi
145 schw
147 subu
148 Camp saxi
151 ~~Cora purp~~
1511 coni
1512 purp
152 Cinc styg
153 Cinc font
154 mucr
156 Cirr cras
157 pili
158 ~~Clim dend~~
159 Cono tetr
161 Crat comm
1611 comm
1612 falc
1614 vire
163 ~~fili~~
164 ~~Cryp hete~~
166 Cten moll
1661 cond
1663 moll
169 Cyno brun
172 jenn
178 Desm conv
180 Dich pell
1802 flav
1803 pell
181 Dicr cerv
182 crispa
184 hete
185 rufe
186 schr
187 squa
188 subu
189 vari
190 Dicr aspe
191 denu
192 unci
193 ~~Dicr cir~~
194 crispu
196 Dicr blyt
197 ~~bonj~~
199 falc
200 flag
201 ~~fusc~~
203 maju
204 mont
206 ~~scop~~
207 scot
208 spur
209 star
210 stri
211 Diph foli
213 Dist capi
214 incl
215 Ditr cyli
216 flex
217 hete
222 Drep adun
2221 adun
2222 knei
223 exan
224 flui
225 lyco
226 revo
2261 inte
2262 revo
227 send
228 unci
229 vern
231 Enca cili
232 rhab
233 stre
234 vulg
235 Ento orth
238 Ephe recu
239 serr
2391 minu
2392 serr
242 Epip toze
243 Eucl vert
244 Eurh alop
245 conf
246 mega
248 mura
249 ~~prae~~
2491 prae
2492 stok
251 ripa
253 schl
254 spec
255 ~~stri~~
256 swar
257 Fiss adia
260 bryo
261 cras
262 cris
263 curn
265 exil
266 incu
267 minu
2671 minu
2672 tenu
269 osmu
272 rufu
274 taxi
275 viri
276 ~~Font anti~~
2761 anti
2764 grac
281 squa
282 Funa atte
283 fasc
284 ~~hygr~~
285 mueh
286 obtu
289 Grim alpi
2891 alpi
2892 rivu
291 apoc
297 deci
2971 deci
2972 robu
298 doni
301 funa
302 hart
305 laev
306 mari
309 orbi
311 pate
312 ~~pulv~~
313 retr
315 stri
316 subs
317 torq
319 tric
321 Gymn aeru
322 calc
323 recu
325 ~~Gyro tene~~
328 Hedw cili
329 inte
331 Hete hete
3311 flac
3312 hete
333 Homa tric
335 Hook luce
336 Hygr fluv
337 tena
338 Hygr dila
339 eugy
340 luri
342 ochr
344 Hylo brev
346 ~~splo~~
347 umbr
348 Hyoc flag
350 Hypn call
351 ~~cupr~~
3511 cupr
3512 ~~cuic~~
3513 fili
3514 lacu
3516 resu
3517 tect
352 hamu
353 impo
354 pati
356 Isop depr
357 eleg
358 muel
359 pulc
360 seli
361 Isot holt
362 myos
363 myur
364 stri
365 Lept piri
366 Lept ripa
367 Lept smit
368 Lept flex
373 Lesk poly
374 Leuc glau
375 Leuc sciu
377 Mees ulig
379 Mniu affi
380 cinc
381 cusp
382 ~~horn~~
383 long
385 marg
387 orth
388 pseu
389 ~~puna~~
391 rugi
392 seli
394 stel
395 ~~undu~~
397 Myur iula
401 Neck comp
402 cris
404 pumi
405 Octo font
406 Oedi grif
407 Olig herc
408 Onco vire
409 wahl
411 Orth line
412 Orth intr
413 rufe
414 ~~Orth affi~~
415 anom
416 cupu
417 diap
418 ~~lyal~~
421 pulc
422 rivu
423 rupe
426 spec
427 spru
428 stra
429 ~~stri~~
430 tene
433 Phas curv
434 cusp
435 floe
437 Phil calc
438 capi
439 font
441 seri
442 Phys pate
443 Phys pyri
446 Plag zier
447 Plag oede
448 Plag curv
449 dent
4491 ~~dent~~
4492 obtu
451 late
452 pili
453 plat
454 roes
455 ruth
456 silv
457 stri
458 succ
459 undu
460 Pleu acum
461 subu
462 Pleu squa
463 ~~Pleu schr~~
464 Pohl acum
465 albi
466 annot
468 crud
470 deli
471 drum
472 elon
474 ludw
475 nuta
476 poly
478 roth
479 Poly aloi
480 ~~alpe~~
481 alpi
482 ~~comm~~
483 ~~form~~
484 grac
485 ~~juni~~
486 nanu
488 ~~pili~~
489 urni
491 Pott bryo
494 crin
495 dava
496 heim
497 inte
498 lanc
499 rect
500 star
501 trun
503 Pseu niti
504 Pseu cate
507 ~~Pseu purp~~
508 Pter grac
510 Pter ovat
511 Pter fili
512 Ptil cris
514 Ptyc poly
515 Pyla poly
516 Rhab cren
517 dent
518 fuga
519 Rhac acic
520 aqua
521 cane
522 elli
523 fasc
524 hete
5242 grac
5243 hete
525 lanu
527 Rhod rose
528 Rhyn curv
529 pall
530 tees
531 tene
5311 lito
5312 tene
532 Rhyt lore
533 ~~aqua~~
534 ~~trig~~
535 Rhyt rugo
537 Schi penn
538 Scle caes
539 ille
540 Scor circ
541 Scor scor
544 Seli calc
545 don

Figure 4. Field Card

LOCALITY	(1) In the case of a 10 km square give the name of the most prominent place appearing in that square. (2) In the case of a Nature Reserve or more precise locality the name of the Reserve or locality as given on the 1" OS map should be entered.
HABITAT	Describe briefly. In the case of records from a whole 10 km square this may be inapplicable.
RECORDER'S NAME	This box only appears on recently produced cards. Enter your own name.
DATE	The date(s) on which the records were made – NOT the date of completion or submission of the card. When a period is involved give first and last dates.
VC NO.	Enter the Vice County number.
VC	Enter Vice County name.
ALT.	Enter altitude in feet or metres (state WHICH) when appropriate.
CODE NO.	Enter your personal code number. This will be allocated by the scheme organiser.

For some schemes (e.g., Isopod Study Group) more elaborate cards are used. Special instructions for the completion of these will be issued by the schemes' organiser(s).

Each card has a type number in the bottom right hand corner (on the back on double sided cards) which should be quoted when requesting supplies of cards.

OTHER SPECIES CARD - GEN 1

This card is used in conjunction with a Field Card (q.v.) when there is insufficient space in the 'Other Species' section of that card. *(For an example of a completed card, see fig. 5)*

Species being recorded should be listed in clear handwriting or typed on the card leaving the left hand margin blank.

The Grid Ref., Date of records and Recorder's personal Code No. should be entered in the boxes at the top left hand corner of the card.

INDIVIDUAL RECORD CARDS

Terrestrial (Pink)

These cards are used for recording one species from one locality. They should be used only when it is desirable to give more information about a specimen (e.g., precise location) than is allowed for on the Field Cards. They must be used for rare and critical species; and should also be used for recording hybrids (see 'Sub-species'). Data written in the boxes provided on the front of the card will be trnsferred to 80-column punched cards which can be processed by computer and by the machinery at BRC. *(For an example of a completed card, see fig. 6)*

The original hand-written cards received by the Centre will have only the species number and the Vice-county number punched so as not to obliterate the written record. They will then be sorted mechanically for filing. If they are at all damaged the machines will not accept them and they will have to be re-written. For this reason they must not be:

(a) used in the field;
(b) folded;
(c) fastened together with paper clips;
(d) held together with rubber bands unless protected by cardboard.

The card should be completed as follows:

GENUS & SPECIES	Name, preferably scientific.
SUB-SPECIES, etc.	Name of sub-species, variety or 2nd parent of hybrid.
GRID REF.	Using the 8 spaces provided fill in the grid reference, e.g., 52/231746; if only 1 km grid reference known, e.g., 32/71–84–; if only 10 km grid reference known, e.g., 44/5—1—.
VICE COUNTY	Name and number.

Grid Ref.	Date	Gordon Moss Reserve OTHER SPECIES
3663-42-	18.6.67	
	Code No.	

FESTUCA TENUIFOLIA

DACTYLORCHIS PURPURELLA

HABENARIA BIFOLIA

BIOLOGICAL RECORDS CENTRE APRIL 1967 GEN 1

Figure 5. Other Species Card

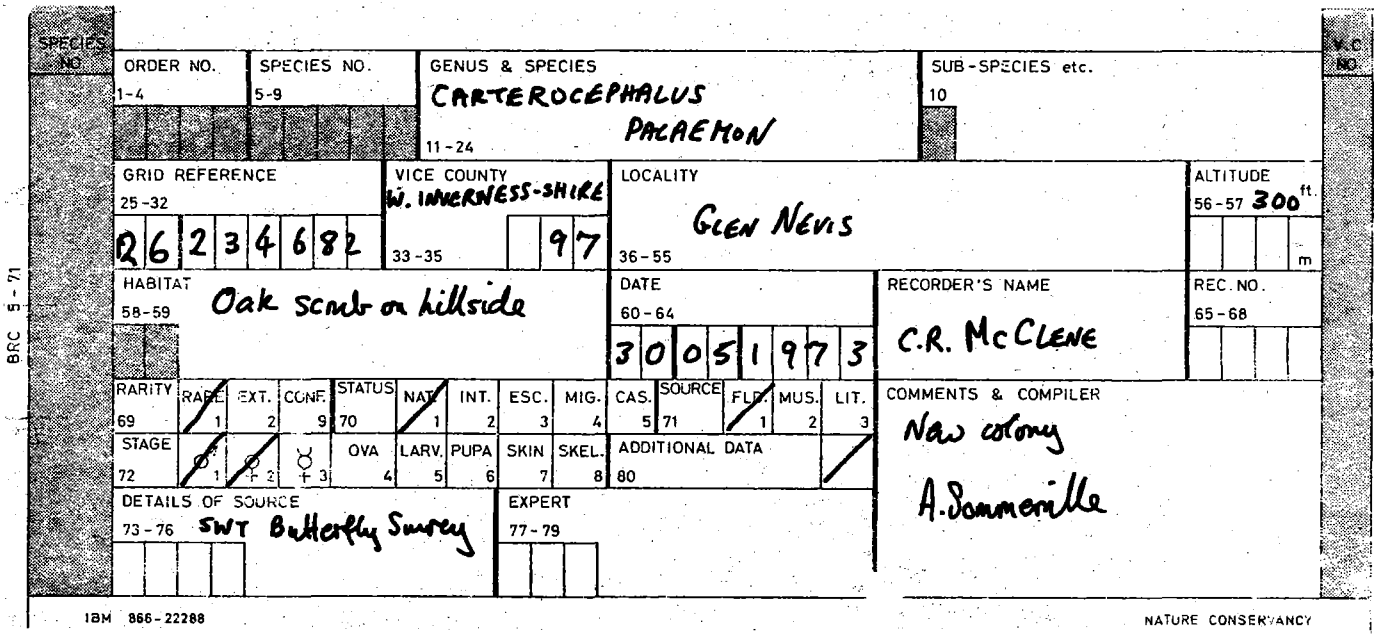


Figure 6. Terrestrial Individual Record Card

LOCALITY Enter the name of the town or village marked on the appropriate 1" OS map or the distance and direction from such a place. If possible this should be stated in twenty letters or less, e.g., 3 km SW Kimbolton or 5 mls. N Cambridge.

ALTITUDE When known this should be stated in feet or, preferably, metres.
NB – Do not put measurements in feet in the boxes which are for metres.

HABITAT Describe the habitat in which the specimen was found, if possible to fit one of the following categories:

0 Woodland
1 Scrub
2 Lowland heath
3 Basic grassland
4 Neutral or acid grassland
5 Marsh or fen
6 Aquatic habitats
7 Hedgerow and roadside
8 Waste ground, walls (ruderal)
9 Natural open habitats, cliffs and screes, mountain tops, sand dunes, shingle
10 Arable
11 Bog and moorland
12 Non-classifiable

For classes 0–9 and 12 it should also be stated if the habitat is maritime.

DATE Insert day, month and year, e.g., 23rd August, 1976 = 23/08/1966.

RECORDER'S NAME In the case of a *field record* this is the name of the person who saw the specimen and is filling in the card. For a *museum specimen* it will be the name of the collector which appears on the label. For a *literature record* it will be the name cited.

RECORDER'S NO. In the case of a *field record* this will be the personal code number of the person who has seen the species *and* is filling in the card. In the case of a *museum or literature record* it will be the number of the person filling in the card.

Rarity, status, source and stage are recorded by drawing a diagonal line through the appropriate box. The abbreviations are as follows:

RARITY
RARE = locally rare (normally used only when the species is known to be confined to a single locality not exceeding 1 km square in extent within a 10 km square).
EXT. = locally extinct (known to have occurred in the 10 km square but now absent [and not recorded for x years]).

STATUS
NAT. = native
INT. = introduced or planted deliberately
ESC. = escaped from garden, or zoo, etc., accidentally
MIG. = migrant
CAS. = accidental or casual, not persisting in natural surroundings for more than a year or two

SOURCE
FLD. = field
MUS. = museum or herbarium
LIT. = literature

STAGE
♂ = male
♀ = female
☿ = worker or hermaphrodite
OVA = ova
LARV. = larva
PUPA = pupa
SKIN = skin
SKEL. = skeleton

ADDITIONAL DATA	Place a diagonal line through the small box to the right if there are any additional data, and write these data or the reference to them on *the back of the card* (leave a margin of ¾" [2 cms] at each end) or in the space for comments.
COMMENTS & COMPILER	Any brief comments may be written in this box, and/or the name of the person filling in the card if other than the recorder.
DETAILS OF SOURCE	For *museum records* insert the name of the museum or herbarium in which the voucher material can be found, with the standard abbreviation if known; if in your own collection or that of the finder use PVT (Private), e.g., British Museum – BM. For literature records give the reference, e.g., *J. Soc. Brit. Ent.* 2:22. For literature records give the reference, e.g., J. Soc. Brit. Ent. 2:22.
EXPERT	Name of the expert who determined the material (when other than the recorder), e.g., E. R. Smith. NB – The boxes are for the initials.

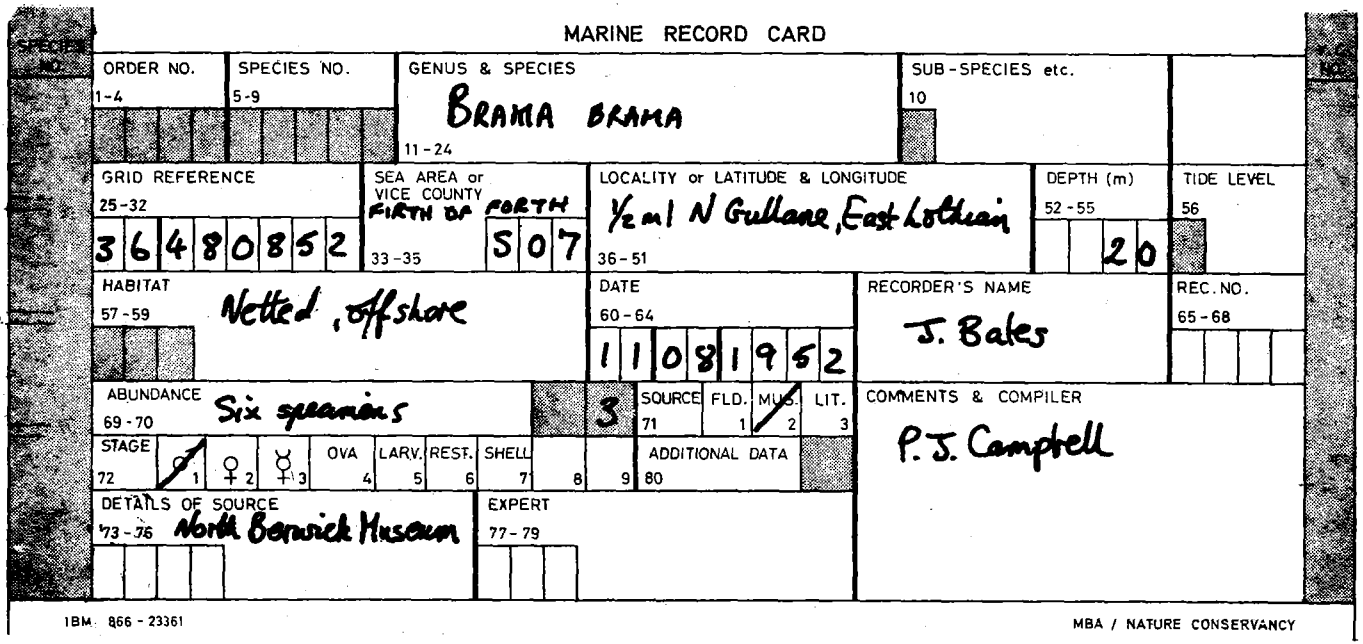
Nothing should be written in the stippled areas on the card as these are needed for coding. Any additional information should be written on the back of the card (see Additional Data). Information should always be given in the form requested and written information such as species name, locality etc. should be in CAPITALS. For some schemes it may be agreed to use one or more boxes for different purposes. When this is proposed it must be standardised within the scheme and all such modifications must be discussed with the Biological Records Centre. In certain cases a special card may be printed, e.g., for Marine Biological Recording (see below).

INDIVIDUAL RECORD CARDS

Marine (Yellow) *(For an example of a completed card, see fig. 7)*
These cards differ in some details from the terrestrial cards. Those sections common to both environments should be completed according to the instructions for terrestrial cards, and those specific to marine use should be completed as follows:

SEA AREA (or VICE COUNTY)	Name and number, e.g., Wight S15 Note: Sea Areas are always prefixed 'S'.
LOCALITY OR LATITUDE AND LONGITUDE	Enter the name of the nearest town, village or coastal feature marked on the appropriate 1" OS map or the distance and direction from such a place. If possible this should be stated in sixteen letters or less, e.g., 3 km SW Eastbourne or 5 mls N Tynemouth. Latitude and longitude when given should be to the nearest $\frac{1}{10}'$, e.g., 50° 18.5' N. 4° 14.2' W.
DEPTH	When known this should be stated in metres below chart datum.
TIDE LEVEL	When known this should be given as one of the following categories: 1 Intertidal but level not known 2 Supralittoral (above EHWS) 3 Supralittoral fringe (EHWS to HWN) 4 Upper midlittoral (HWN to MTL) 5 Midlittoral (about MTL) 6 Lower Midlittoral (MTL to LWN) 7 Sublittoral fringe (LWN to ELWS) 8 Sublittoral (below ELWS) 9 Other
HABITAT	Describe the habitat in which the specimen was found, if possible to fit the following categories:

Habitat	*Habit*	*Substrate*
1 Offshore	1. Floating or stranded	1 Hard (rock, boulder, large stones, glass, etc.)
2 Open coast	2 Swimming (nekton)	2 Weed



MARINE RECORD CARD

SPECIES NO.

ORDER NO. 1-4:

SPECIES NO. 5-9:

GENUS & SPECIES 11-24: BRAMA BRAMA

SUB-SPECIES etc. 10:

GRID REFERENCE 25-32: 36480852

SEA AREA or VICE COUNTY 33-35: FIRTH OF FORTH — S07

LOCALITY or LATITUDE & LONGITUDE 36-51: ½ml N Gullane, East Lothian

DEPTH (m) 52-55: 20

TIDE LEVEL 56:

HABITAT 57-59: Netted, offshore

DATE 60-64: 11081952

RECORDER'S NAME: J. Bates

REC. NO. 65-68:

ABUNDANCE 69-70: Six specimens

3

SOURCE 71: FLD. 1 / MUS. 2 / LIT. 3

COMMENTS & COMPILER: P.J. Campbell

STAGE 72: ♂ 1, ♀ 2, ☿ 3, OVA 4, LARV. 5, REST. 6, SHELL 7, 8, 9

ADDITIONAL DATA 80:

DETAILS OF SOURCE 73-76: North Berwick Museum

EXPERT 77-79:

BRC 2-72

IBM 866 - 23361

MBA / NATURE CONSERVANCY

Figure 7. Marine Individual Record Card

3 Shore of sea loch, lagoon, marine part of estuary, or other sheltered place	3 Plankton	3 Shell
4 Shore pool	4 Mobile epifauna	4 Pebbles, shingle, gravel
5 Freshwater stream on shore	5 Sessile epifauna	5 Shell or other calcareous gravel
6 Estuary (brackish part)	6 Burrowing or boring (infauna)	6 Muddy gravel
7 Saltmarsh	7 In crevices, under stones or under weed	7 Sand
8 Sand dunes	8 Interstitial	8 Muddy sand
9 Other	9 Epiphytic, epizoic, parasitic or commensal	9 Mud, clay or ooze

One category should be selected from each of the three classes.

ABUNDANCE — Give a quantitative assessment where possible on the following scales:

Quantity	*Unit*
§61 Present (no numerical data)	1 per sq. cm
2 <1	2 per sq. metre
3 1 to 10	3 per cubic cm
4 11 to 100	4 per cubic metre
5 101 to 1000	5 per trawl haul
6 1001 to 10,000	6 per dredge haul
7 >10,000	7 per 15 min. search on foot or diving
8 *Absent (none found during careful search of suitable habitat)*	8 *per 30 min. search on foot or diving*
9 Other	9 Other

One category should be selected from each of the two scales.

STAGE
REST. = Resting stage
SHELL = Shell
8 = Worn shell
NB – *If only worn shells are found please state under 'comments'; such species are less likely to be found living in the vicinity, and may even be sub-fossil*

ONE SPECIES CARD - GEN 2

This card is intended for use when:
(a) abstracting records from published lists
(b) recording data from museum or private collections, and
(c) compiling locality lists for single species when it is inconvenient to use Individual Record Cards or Field Cars. *(For an example of a completed card, see fig. 8)*

The card is completed as follows:

RECORDER'S NAME — Enter your name.

CODE NO. — Recorder's personal code number (allocated by the scheme organiser).

DATE CLASS — Indicate to which date class(es) records refer or enter actual date, when appropriate.

SPECIES — Scientific name in full with author's name if desirable.

COLLECTION/ REFERENCE — Name and location of collection or literature reference.

SPECIES NO. — Leave blank. For office use only.

LOCALITY — Name of locality. Give place name or distance and direction from a named place.

SPECIES

VANESSA CARDUI

GEN. & SPEC. NUM.

RECORDER

A. Sommerville

~~COL~~./REF.

Scottish Wildlife Trust Butterfly Survey 1975

Grid Ref.	V.C.	Collector	Loc.	Date	
27/260803	97	D. Mc Ewan	Glen Spean	-8.75	
37/391127	85	F. Spragge	Ceres, Fife	21.8.75	
36/645778	82	P. Fairburn	West Barns, E. Lothian	23.8.75	
36/669786	82	P. Fairburn	Dunbar, E. Lothian	23.8.75	
18/188498	104	J. Milne	Isle of Skye	9.6.75	

Figure 8. One Species Card

COLLECTOR	Name of collector or person responsible for record.
GRID REF.	10 km square reference or more precise reference when desirable (see section on Grid References).
VC	Vice County number.

APPENDIX 3

CONTACTS: names and addresses of local and national societies

Amateur Entomologists' Society (AES)	23 Manor Way, North Harrow, Middlesex (Bulletin×4)
Biological Records Centre (BRC)	Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 1LS
Botanical Society of the British Isles (BBSI)	c/o Dept. of Botany, British Museum (Nat. Hist.), Cromwell Road, London (Watsonia ×2, Newsletter ×2)
County Recorders:	
Dumfriesshire	Mrs M. E. R. Martin, Old Bank House, Lochmaben, DG11 1PD
Kirkcudbrightshire	Mrs O. Stewart, 14 Church Hill, Edinburgh, EH10 4BQ
Wigtownshire	Miss J. Martin, 63 King Street, Castle Douglas, D67 1AG
Ayrshire	B. Simpson, 9 Glenbryde Road, Seamill, Ayrshire
Renfrewshire, Lanarkshire	R. Mackechnie, 9 Skirving Street, Shawlands, Glasgow, G41 3AB
Peebleshire	D. McCosh, 13 Cottesmore Gardens, London W8
Selkirkshire, Roxburghshire	Dr R. W. M. Corner, Hawthorn Hill, 36 Wordsworth Street, Penrith, Cumberland
Berwickshire	A. G. Long, Hancock Museum, Barras Bridge, Newcastle, NE2 4PT
East Lothian, West Lothian,	Miss E. P. Beattie, 47 McDonald Road, Edinburgh, EH7 4LY
Fifeshire	G. H. Ballantyne, 3 Asquith Street, Kirkcaldy, Fife
Stirlingshire	B. W. Ribbons, Dept. of Botany, The University, Glasgow, G12 8QQ
West Perthshire, Mid Perthshire, East Perthshire	A. W. Robson, Perth Road, Dunning, Perthshire
Angus	Dr U. K. Duncan, Parkhill, Arbroath, Angus
Kincardineshire	Mrs A. H. Somerville, Dept. of Botany, University of Aberdeen, St. Machar Drive, Aberdeen
South Aberdeenshire, North Aberdeenshire	Dr C. H. Gimingham, Dept. of Botany, University of Aberdeen, Old Aberdeen
Banffshire, Moray	Miss M. McCallum Webster, Rose Cottage, Dyke, by Forres, 1V36 0TF
East Inverness-shire	Miss E. R. T. Conacher, An Fharaid, Lawmarnock Road, Bridge of Weir, PA11 3AP
West Inverness-shire	A. A. Slack, 25 Garscadden Road, Glasgow, W5
Argyll	Mrs E. J. Montgomery, Kinlockruel, by Collintraive, Argyll
Dunbartonshire	A. Mc. G. Stirling, 17 Austen Road, Glasgow, W3
Clyde Islands	Mrs A. H. Sommerville, Dept. of Botany, University of Aberdeen, St. Machar Drive, Aberdeen
Kintyre	A. G. Kenneth, Stronachuillin, Ardrishaig, Argyll
South Ebudes	Miss C. W. Muirhead, Royal Botanic Garden, Edinburgh, EH3 5LR
Mid Ebudes (Mull)	J. F. M. Cannon, Dept. of Botany, British Museum (Nat. Hist.), Cromwell Road, London, SW7 5DD
(Other Isles)	Miss C. W. Muirhead, Royal Botanic Garden, Edinburgh, EH3 5LR
North Ebudes (Rhum)	Dr J. Eggeling, c/o Nature Conservancy Council, 12 Hope Terrace, Edinburgh, EH9 2AS
(Skye)	Mrs C. W. Murray, Prabost, Skeabost Bridge, Portree, Isle of Skye
West Ross	Dr D. M. Henderson, Royal Botanic Garden, Edinburgh, EH3 5LR
East Ross	Dr U. K. Duncan, Parkhill, Arbroath, Angus
East Sutherland	J. E. Kirby, 3 Ferry Croft, Lairg, Sutherland

West Sutherland	Dr J. Rogers, Hill Farming Research Organisation, Bush Estate, Penicuik, Mid Lothian
Caithness	J. M. Gunn, 2 The Terrace, Reay, by Thurso, Caithness
Outer Hebrides	Miss M. S. Campbell, Casa Rossa, Menton-Garavan, A-M, France
Orkney Isles	Miss E. R. Bullard, Toftwood, Kirkwall, Orkney
Shetland Isles	W. Scott, Easterhoull, Scalloway, Shetland Isles
Botanical Society of Edinburgh (BSE)	c/o The Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR (Newsletter ×2, *Transactions* ×1)
British Arachnological Society	Peare Tree House, The Green, Blenneshasset, Carlisle, CA5 3RE
British Bryological Society	A. J. E. Smith, University College of North Wales, School of Plant Biology, Memorial Buildings, Bangor, Wales, LL57 2UW (Transactions, Census Catalogues)
British Butterfly Conservation Society	Tudor House, Quorn, Leicestershire (News-sheet ×4)
British Cave Research Association	Seaton House, 15 Shrublands Road, Berkhamstead, Herts., HP4 3HY
British Deer Society	White Moor Head, Lother Park, Penrith, Westmorland (Deer ×3)
British Ecological Society	Harvest House, 62 London Road, Reading, RG1 5AS (*Journal of Aplied Ecology* ×2, *Journal of Ecology* ×3, *Journal of Animal Ecology* ×3)
British Herpetological Society	c/o London Zoo, Regents Park, London, NW1
British Lichen Society	c/o Dept. of Botany, British Museum (Nat. Hist.), Cromwell Road, London, SW7 5BD
British Museum (Natural History)	Departments of Zoology, Entomology, Palaeontology, Mineralogy, Botany, Cromwell Road, London, SW7 5BD
British Mycological Society	c/o Dr N. J. Dix, Dept. of Botany, The University, Stirling (Transactions, Bulletin)
British Ornithologists' Union	c/o Zoological Society of London, Regents Park, London, NW1 4RY (*Ibis* ×4)
British Phycological Society	c/o Marine Station, Millport, Isle of Cumbrae, Scotland (*British Phycological Bulletin* ×1)
British Pteridological Society	46 Sedley Rise, Loughton, Essex (*British Fern Gazette* ×1, Newsletter)
British Trust for Entomology	c/o Hope Department of Entomology, University Museum, Oxford
British Trust for Ornithology	Beech Grove, Tring, Hertfordshire (*Bird Study* ×4, *BTO News*)
Regional Representatives:	
Aberdeen, Kincardine and Banff	Dr R. S. Bailey, Cairnaquheen, Torphins, Aberdeen, AB3 4SS
Angus	N. K. Atkinson, 90 Bellevue Gardens, Arbroath, Angus, DD11 5BQ
Argyll	Miss M. MacMillan, An Fhuaran, Clachan Seil, Oban
Ayrshire	Rev J. S. Phillips, 73 Whitletts Road, Ayr
Caithness	D. M. Stark, 2 Harland Road, Castletown, Thurso
Dumfries	Sir Arthur Duncan, Castlehill, Kirkmahoe, Dumfries
Fife and Kinross	A. J. Bach, 14 Warwick Close, Leuchars, Fife
Galloway	Donald Watson, Barone, Dalry, by Castle Douglas
Hebrides (Outer)	Dr P. G. Hopkins, Leurbost, School House, Isle of Lewis
Inverness	Dr M. Rusk, 51 Old Edinburgh Road, Inverness
Isle of Mull	R. Coomber, 3-4 Staffa Cottages, Tobermory, Isle of Mull
Lanark, Renfrew, Dumbarton	G. L. A. Patrick, 11 Knollpark Drive, Clarkston, Glasgow
Lothians	A. W. Brown, 66 East Claremont Street, Edinburgh, EH7 4JR
Nairn and Moray	Dr R. Richter, Gordonstoun School, nr Elgin, Moray
Orkney	C. J. Booth, Ronas, 34 High Street, Kirkwall, Orkney
Peebles, Selkirk, Roxburgh and Berwick	Derek McGinn, Arnsheen, 19 Orchard Terrace, Hawick
Perthshire	E. S. Cameron, Strathclyde, 14 Union Road, Scone
Ross-shire	C. G. Headlam, Dallachie, Fearn, IV20 1TN
Shetland	Dr B. Marshall, Whalsay, Shetland
Skye	Seton Gordon, Upper Duntuilim, Isle of Skye

Stirling and Clackmannan	H. Robb, 27 Victoria Place, Stirling
Sutherland (East)	D. MacDonald, Elmbank, Dornoch, Sutherland
Sutherland (West)	Dr I. E. Pennie, Varkasaig, Scourie
Clyde Wader Group	Iain Gibson, 41B Moss Vale Street, Paisley, PA3 2LU
Committee for the Study of the Scottish Flora	Hon. Sec., Basil Ribbons, Department of Botany, The University, Glasgow, W2
Conchological Society of Great Britain and Ireland	51 Wychwood Avenue, Luton LU2 7HT (*Journal of Conchology* ×2, Newsletter ×4)
Dundee Museum and Art Gallery	Albert Square, Dundee, DD1 1DA
Edinburgh Ringing Group	Dr Derek Langslow, 32 Campbell Road, Longniddry, East Lothian
Freshwater Biological Association	The Ferry House, Far Sawrey, Ambleside, Westmorland
Glasgow Spelelogical Society	S. F. Thomas, 120 Lochlea Road, Newlands, Glasgow, S3
Highland Ringing Group	Roy Dennis, Landberg, North Keswick, Inverness, IV1 1XD
Institute of Terrestrial Ecology	Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS
International Bee Research Association	Hill House, Chalfont St. Peter, Gerard's Cross, Bucks., SL9 0NR
International Wildfowl Research Bureau	c/o The Wildfowl Trust, Slimbridge, Gloucester, GL2 7BT
Irish Wildbird Conservancy	Hon. Secretary, c/o Royal Irish Academy, 19 Dawson Street, Dublin
Joint Committee for the Conservation of British Insects	c/o Royal Entomological Society of London, 41 Queen's Gate, London, SW7
Mammal Society	Harvest House, 62 London Road, Reading, RG1 5AS
Marine Biological Association of United Kingdom	The Laboratory, Citadel Hill, Plymouth, PL1 2P
Natural History Societies	
Aberdeen and North of Scotland Zoological Society	Dr B. Nisbet, Natural History Department, Marischall College, Aberdeen
Andersonian Naturalists of Glasgow	Miss E. R. T. Conacher, An Fharaid, Lawmarnock Road, Bridge of Weir, Renfrewshire, PA11 3AP
Ayrshire Arch. and Natural History Society	Mr R. W. Brash, 54 Midton Road, Ayr, KA1 2SQ
Buteshire Natural History Society	Miss D. N. Marshall, The Museum, Stuart Street, Rothesay, Bute
Berwickshire Naturalists Club	T. D. Thomson, The Hill, Coldingham, Eyemouth
Caithness Field Club	R. M. Sharpe, 12 Dircot Place, Thursoe, Caithness
Clackmannanshire Field Studies Society	Mrs E. K. Kennedy, 26 Victoria Street, Alloa, Clackmannanshire
Dumfries and Galloway Natural History and Antiquarian Society	Mr and Mrs William, Hillis Tower, Lochfoot, by Dumfries
Dunbartonshire Natural History Society	Dr I. M. M. McPhail, 20 Barloan Crescent, Dumbarton
Dundee Naturalists Society	Mrs E. McClure, 3 Clive Street, Dundee
Dunfermline Naturalists Society	Miss J. G. Myles, 24 Alexandra Syreet, Dunfermline
East Lothian Antiquarian and Field Naturalist Society	R. Weatherhead, 1 Viewforth, Dunbar
Edinburgh Natural History Society	Mrs C. Stewart, 41 Craigleith Hill Avenue, Edinburgh, EH4 2JL
Falkirk Arch. and Natural History Society	Miss A. W. Stewart, 12 Wellside Place, Falkirk, Stirlingshire
Geological Society of Glasgow	Dr I. Rolfe, Hunterian Museum, The University, Glasgow, W2
Hamilton Natural History Society	Mrs A. Wallace, 28 South Park Road, Hamilton, Lanarkshire
Inverness Botany Group	Miss J. B. Dongan, 29 Midmills Road, Inverness

Inverness Field Club	E. Meldrum, 22 Beaufort Road, Inverness
Kirkcaldy Naturalists Society	W. Robb, 15 Lady Helen Street, Kirkcaldy, Fife
Largo Field Studies Society	Mrs E. M. Saunders, Ness Cottage, Lower Largo, Fife
Kintyre Antiquarian and Natural History Society	Mrs Wotherspoon, Sandbank, Campbeltown, Argyll
Mid Argyll Natural History and Antiquarian Society	F. Bruce, Auchindarroch Hotel, Ardnishaig, Argyll
Northern Naturalists Society	J. B. Coutts, 80 Fonthill Road, Aberdeen
Orkney Field Club	Mrs C. Spence, Park Cottage, Finstown, Orkney, KW17 2EG
Paisley Museum Natural History Society	Mrs G. Christie, Heathfield, Lochwinnoch, Renfrewshire, PA12 4LB
Paisley Naturalists Society	J. Kirkwood, 11 Sunchurch Road, Oldhall, Paisley, Renfrewshire
Perthshire Society of Natural Science	Miss R. Fothergill, 16 Pithearlis Terrace, Perth, PH2 0JZ
Renfrewshire Natural History Society	c/o Dept. of Biology, Paisley College of Technology, Paisley
West Dunbartonshire Natural History Society	Mr D. H. Mailin, 3 Upper Colquhoun Street, Helensburgh, Dunbartonshire
Nature Conservancy Council (NCC)	Scottish Headquarters, 12 Hope Terrace, Edinburgh, EH9 2AS – for addresses of Assistant Regional Officers
North Solway Ringing Group	Brian Turner, Shinnel House, Tynron, by Thornhill, Dumfries-shire
Ordnance Survey	43 Rose Street, Edinburgh 2
Rothampstead Experimental Station	Department of Entomology, Harpenden, Hertfordshire
Royal Entomological Society of London	41 Queen's Gate, London, SW7 (*Ecological Entomology* ×4, *Physiological Entomology* ×4, *Systematic Entomology* ×4)
Royal Scottish Museum	Chambers Street, Edinburgh, EH1 1JF
Royal Society for the Protection of Birds (RSPB)	The Lodge, Sandy, Beds., SG19 2DL (*Birds* ×6)
	Scottish Office: 17 Regents Terrace, Edinburgh, EH7 5PN
Scottish Ornithologists' Club (SOC)	Headquarters: 21 Regents Terrace, Edinburgh, EH7 5RT (*Scottish Birds* ×4)
Branches	
Aberdeen	Miss F. J. Craig, 22 Loanhead Terrace, Aberdeen, AB2 4SY
Ayr	J. Miller, 7 Kirkhill Crescent, Prestwick, Ayrshire
Dumfries	W. Austin, Glaston, 54 Albert Road, Dumfries
Dundee	Mrs A. Noltie, 14 Menteith Street, Broughty Ferry, Dundee, DD5 3EN
Edinburgh	Mrs H. Langslow, 32 Campbell Road, Longniddry, East Lothian
Glasgow	Mrs I. T. Draper, Otter's Holt, 37 Dumbrock Road, Strathblane, Glasgow, G63 9DG
Inverness	W. G. Prest, 70 Culloden Road, Balloch, by Inverness, IV1 2HH
New Galloway	Mrs K. C. R. Halliday, Dalveen, New Galloway, Kirkcudbrightshire, DG7 3RS
St. Andrews	Miss M. M. Spires, Greenacres, 87 Hepburn Gardens, St. Andrews, Fife
Stirling	A. B. Mitchell, 7 Gladstone Place, Stirling, FK8 2NN
Thurso	S. Laybourne, Old Schoolhouse, Harpsdale, Halkirk, Caithness, KW12 6UN
Wigtown	G. Shepherd, Bay House Restaurant, Cairnryan Road, Stranraer, Wigtownshire
Scottish Wildlife Trust	8 Dublin Street, Edinburgh, EH1 3PP (*Scottish Wildlife* ×3)
Branches and Area Representatives	
Aberdeen and Kincardine Branch	Keith Robinson, Luskentyre, Burnside Road, Peterculter, Aberdeenshire
Angus and Dundee Branch	J. B. Kelman, 2 Castle Street, Forfar, Angus
Aviemore Representative	Hon. Douglas Weir, Creag Dhu Lodge, by Newtonmore, Inverness-shire
Ayrshire Branch	David Gwynne, 18 Leven Road, Troon, Ayrshire
Banffshire Representative	John Edelsten, 14 South High Street, Portsoy, Banff

Caithness Representative	David Glass, Ivy Cottage, Brough, Curnet, Thurso, Caithness
Central Region Branch	David Thorogood, 29 Balkerach Street, Doune
Clyde Area Branch	John Findlay, 1 Westbank Quadrant, Glasgow, G12
Dumfries and Galloway Branch	Dr Peter Hopkins, Trath gu Leor, South Paddock, Newton Stewart
East Ross Members Group	W. H. Cormack, Tower Street, Tain
East Sutherland Representative	D. MacDonald, Elmbank, Dornoch, Sutherland
Fife Branch	Tom Gray, 36 Sinclair Avenue, Glenrothes
Inverness and Nairn Members' Group	John Mayne, Nessdale, Island Bank Road, Inverness
Lothians Branch	Pat Robertson, 6 Pomathorn Road, Penicuik, EH26 8LT
Morayshire Representative	A. Gunn, Spynie Farm Cottage, Pitgaveny, Elgin, IV30 2PG
Orkney Representative	Elaine Bullard, Toftwood, Kirkwall, Orkney
Perthshire Branch	Mrs Miriam Baker, Ard-Darrach, Birnam, Dunkeld
Tweed Valley Branch	Michael Braithwaite, Cockspurs, Lilliesleaf, Melrose
Wester Ross Representative	Major E. Hunter, Sheildaig Cottage, Gairloch, Ross-shire
West Sutherland Representative	Dr I. Pennie, Varkasaig, Scourie, Sutherland
Tay Ringing Group	David Oliver, East Cottage, Ballas, Cupar, Fife
Wildfowl Trust	Slimbridge, Gloucestershire (*Annual Report Bulletin* ×3)
Regional Organisers	
Aberdeenshire, Kincardineshire	Dr R. S. Bailey, Cairnaquheen, Torphins, Aberdeenshire
Angus	B. Pounder, 64 Forfar Road, Dundee, Angus
Argyll	Miss M. P. Macmillan, An Fhuaran, Clachan Seil, Argyll
Banffshire, Morayshire, Nairnshire	J. Edelsten, 14 South High Street, Portsoy, Banff, Banffshire, AB4 2NT
Borders	write to D. Salmon, The Wildfowl Trust, Slimbridge, Gloucester, GL2 7BT
Bute	J. B. Simpson, Estate Office, Rothesay, Bute
Caithness	S. Laybourne, Old Schoolhouse, Harpsdale, Halkirk, Caithness, KW12 6UN
Clackmannanshire, Perthshire, Stirlingshire	A. B. Mitchell, 7 Gladstone Place, Stirling, FK8 2NN
Clyde	R. A. Jeffrey, 5 Victoria Road, Paisley, Renfrewshire
Dumfriesshire, Kirkcudbrightshire, Wigtownshire	R. T. Smith, Applegarthtown, Lockerbie
Fife, Kinross-shire	Mrs J. A. R. Grant, Brackmont, Crail, Fife
Moray Firth	C. H. Headlam, Dallachie, Fearn, Ross-shire, IV20 1TN.
Orkney	D. Lea, Easter Sower, Orphir, Orkney, KW17 2RE
Perthshire (East)	E. D. Cameron, Strathclyde, 14 Union Road, Scone, PH2 6RZ
Shetland	P. Kinnear, 2 Mounthooly Street, Lerwick, Shetland, ZE1 0BJ
Sutherland (West)	Dr I. Pennie, Varkasaig, Scourie, Sutherland

APPENDIX 4

Bibliography

A list of books and papers, either in print or easily obtained, which are most useful for the identification of plants and animals of the groups being surveyed.

The letter after each indicates the category of work:

A. Popular books, most useful for the complete beginner. Most of these do not give an account of all the species, but some are more advanced and useful also to the more experienced recorder.

B. Basic works for identification, essential for the serious student of the group. Very few are quite complete and up to date and the specialist will usually find it necessary to acquire additional literature to assist identification of certain groups. A much more comprehensive list of key works is provided by:
Bibliography of key works for the identification of the British fauna and flora: G. J. Kerrich, R. D. Meikle and N. Tebble, 1967 (3rd edition). The Systematics Association (c/o British Museum [Natural History], Cromwell Road, London, SW7 5BD).

C. Check lists. Most of these give the accepted names of species used for recording. Others, though not the standard lists in use, are nevertheless useful for interpreting the names used in older works.

PLANTS

ALGAE

A handbook of the British seaweeds: L. Newton, 1931 (photolitho reprint 1958). British Museum (Nat. Hist.) (Out of date, but still useful) B
A key to the genera of the British seaweeds: W. E. Jones, 1962 (also published 1964 as reprint with revisions). *Field Studies* **1**(4): 1–32 B
British seaweeds: C. I. Dickinson, 1963. Eyre and Spottiswoode (The Kew Series) A
See addendum (p. 13)

FUNGI

A census catalogue of British Myxomycetes: B. Ing, 1968. British Mycological Society B
British Ascomycetes: R. W. G. Dennis, 1968. Wheldon & Wesley (British distributors) B
British rust fungi: M. Wilson & D. M. Henderson, 1966. Cambridge UP B
Check list of European hymenomycetous Heterobasidiae: M. A. Donk, 1966. *Persoonia* **4**(2): 145–335 C
The polypores (2nd edition): D. N. Pegler, 1975. *Bulletin of the British Mycological Society* **7** supplement B
New check list of British Agarics and Boleti: R. W. G. Dennis, P. D. Orton and F. B. Hora, 1960. *Transactions of the British Mycological Society* **43** supplement C
A chronological catalogue to the literature of the British Gasteromycetes: J. T. Palmer, 1968. *Nova Hedwigia* **25**: 65–178 C
Dematiaceous Hyphomycetes: M. B. Ellis, 1971. Commonwealth Mycological Institute, Kew B
Collins guide to mushrooms and toadstools: M. Lange & F. B. Hora, 1963. Collins (Recently out of print) A
Identification of larger fungi: R. Watling, 1973. Holton Educational Publications A

LICHENS

A guide to the study of lichens: H. K. Duncan, 1959. Buncle B
A new check-list of British lichens: P. W. James, 1965. *Lichenologist* **3**: 95–153 C
The observer's book of lichens: K. I. Alvin and K. A. Kershaw, 1963. Warne (Out of print) A
Macrolichens: E. Dahl and H. Krog, 1973. Richmond Publishing Co., Richmond, Surrey A

MOSSES AND LIVERWORTS

British mosses and liverworts (2nd edition): E. V. Watson, 1968. Cambridge UP A
Students' handbook of British mosses: H. N. Dixon, 1924 (reprint 1954). Wheldon & Wesley B
A census catalogue of British mosses (3rd edition): E. F. Warburg, 1963. British Bryological Society, Ipswich C
The students handbook of British hepatics (2nd edition): S. M. MacVicar, 1926 (reprint 1961). Wheldon & Wesley B
A census catalogue of British hepatics (2nd edition): J. A. Paton, 1965. British Bryological Society, Ipswich C

VASCULAR PLANTS

Flora of the British Isles (2nd edition): A. R. Clapham, T. G. Tutin and E. F. Warburg, 1962. Cambridge UP B
List of British vascular plants: J. E. Dandy, 1958. British Museum (Nat. Hist.) C
The concise British flora in colour: W. Keble Martin, 1965. Ebury Press A

Grasses (2nd edition): C. E. Hubbard, 1968. Penguin Books B
British sedges: A. E. Jermy and T. G. Tutin, 1968. Botanical Society of the British Isles B
Welsh ferns (5th edition): H. A. Hyde, A. E. Wade and S. G. Harrison, 1969. National Museum of Wales, Cardiff B

INVERTEBRATES

GENERAL

Collins pocket guide to the sea shore: J. H. Barrett and C. M. Yonge, 1958. Collins A
The Oxford book of invertebrates: Protozoa, sponges, coelenterates, worms, molluscs, echinoderms, and arthropods (other than insects): D. Nichols, J. A. L. Cooke and D. Whiteley, 1971. Oxford UP A

MOLLUSCS

(See also *Literature on British molluscs:* S. M. Turk, 1966 [Papers for students no. 7] Conchological Society of Great Britain and Ireland [51 Wychwood Avenue, Luton, Beds., LU2 7HT]).
British Shells: N. F. McMillan, 1968. Warne A
The young specialist looks at land and freshwater molluscs: H. Janus, 1965. Burke, London B
A nomenclatural list of the land Mollusca of the British Isles: H. W. Walden, 1976. *Journal of Conchology* **29**(1): 21–25 C
A list of the fresh and brackish-water Mollusca of the British Isles: M. P. Kerney, 1976. *Journal of Conchology* **29**(1): 26–28 C
British freshwater bivalve molluscs: A. E. Ellis, 1962. *Synopses of the British Fauna* **13.** Linnean Society of London. (Burlington House, Piccadilly, London) B
Concordance to the field card for British marine Mollusca: S. M. Turk, 1973. Conchological Society of Great Britain and Ireland C
British bivalve seashells, a handbook for identification (2nd edition): N. Tebble, 1976. HMSO, Edinburgh B
Key to the British marine Gastropoda: S. M. Smith, 1974 (RSM Information Series [Natural History] **2**). Royal Scottish Museum, Edinburgh B

MILLIPEDES

British millipedes (Diplopoda), with keys to the species: J. G. Blower, 1958. *Synopses of the British Fauna* **11.** Linnean Society of London

CENTIPEDES

Centipedes of the British Isles: E. H. Eason, 1964. Warne

INSECTS

A check list of British insects: G. S. Kloet and W. D. Hincks, 1945. Kloet & Hincks, Stockport (Out of print; being superseded in parts by 2nd edition) C
A check list of British insects: G. S. Kloet and W. D. Hincks, 2nd edition (revised). Royal Entomological Society of London:
Part 1, 1964, Small orders and Hemiptera C
Part 2, 1972, Lepidoptera C
Part 5, 1976, Diptera and Siphonaptera C
Handbooks for the identification of British insects. Royal Entomological Society of London (41 Queen's Gate, London, SW7 5HU). A series of keys intended eventually to cover all the British insects. Those which include groups being surveyed are as follows: B
Vol. 1, Part 5. Dermaptera and Orthoptera: W. D. Hincks, 1956 (2nd edition)
Vol. 1, Part 10. Odonata: F. C. Fraser, 1956 (2nd edition)
Vol. 1, Part 16. Siphonaptera: F. G. A. M. Smit, 1957
Vol. 4, Part 1. Coleoptera. Introduction and key to families: R. A. Crowson, 1956
Vol. 4, Part 2. Coleoptera. Carabidae: C. H. Lindroth, 1974
Vol. 4, Part 8(a). Coleoptera. Staphylinidae (part): C. E. Tottenham, 1954
Vol. 5, Part 7. Coleoptera. Coccinellidae and Sphindidae: R. D. Pope, 1953 (Out of print)
Vol. 6, Part 1. Hymenoptera. Introduction and key to families: O. W. Richards, 1956

Vol. 6, Part 3(c). Hymenoptera. Formicidae: B. Bolton and C. A. Collingwood, 1975
Vol. 9, Part 1. Diptera. Introduction and key to families: H. Oldroyd, 1970 (3rd edition)
Vol. 9, Part 2. Diptera. Nematocera (part): R. L. Coe, P. Freeman and P. F. Mattingly, 1950 Out of print)

Freshwater Biological Association Scientific Publications. B
Freshwater Biological Association (The Ferry House, Ambleside, Cumbria, LA22 0LP). A series of keys to many groups of aquatic animals including insects. The only volume concerning an insect group at present being surveyed is:
No. 28. A key to the adults of the British Trichoptera: T. T. Macan, 1973

A field guide to the insects of Britain and northern Europe: M. Chinery, 1973. Collins A
Grasshoppers, crickets and cockroaches of the British Isles: D. R. Ragge, 1965. Warne B
The dragonflies of the British Isles: C. E. Longfield, 1949. Warne B
The moths and butterflies of Great Britain and Ireland, **1** (of 11 vols. when series is complete): J. Heath (editor), 1976. Blackwell Sci. Publ. & Curwen Press B
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Wasps: J. P. Spradbery, 1973. Sidgwick & Jackson B
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CRUSTACEANS

A key to the British freshwater Cladocera with notes on their ecology: D. J. Scourfield and J. P. Harding, 1966. *Freshwater biological Association scientific Publications* **5** (3rd edition) B
British marine Isopods: E. Naylor, 1972. *Synopses of the British Fauna* (new series) **3.** Linnean Society of London B
Key to British woodlice: S. L. Sutton *et al.,* 1972. Ginn, London B
Caprellidae: R. J. Harrison, 1944. *Synopses of the British Fauna* **2.** Linnean Society of London B
Gammaridae (Amphipoda): D. M. Reid, 1944. *Synopses of the British Fauna* **3.** Linnean Society of London B
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A revised key to the British species of Crustacea: Malacostraca occurring in fresh water: T. Gledhill, D. W. Sutcliff and W. D. Williams, 1976. *Freshwater biological Association scientific Publications* **32** B

The fauna of the Clyde sea area. Crustacea: Euphausiacea and Decapoda with an illustrated key to the British species: J. A. Allen, 1967. Scottish Marine Biological Association, Millport B

PSEUDOSCORPIONS

False-scorpions: The families Chthoniidae, Neobisiidae, Cheridiidae. G. Legg, 1971. *Countryside* **21**(1) B
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British ticks: D. R. Arthur, 1963. Butterworths

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HARVESTMEN

British harvestmen: J. H. P. Fankey and T. H. Savory, 1974. *Synopses of the British Fauna* (new series) **4.** Linnean Society of London B

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Keys for the identification of Echinodermata of the British Isles. E. C. Southward, 1972. Distributed privately by scheme organiser to recorders B

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A key to the freshwater fishes of the British Isles: P. S. Maitland, 1972. *Freshwater Biological Association scientific Publications* **27** B

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The Hamlyn guide to birds of Britain and Europe: B. Bruun and A. Singer, 1970. Hamlyn A

The birds of Britain and Europe with North Africa and the Middle East: H. Heinzel, R. Fitter and J. Parslow, 1972. Collins A

The handbook of British birds, 5 vols.: H. F. Witherby, F. C. R. Jourdain, N. F. Ricehurst and B. W. Tucker, 1940–1. Witherby (Out of print) B

A field guide to birds' nests: B. Campbell and J. Ferguson-Lees, 1972, Constable B

The status of birds in Britain and Ireland: D. W. Snow (edit.), 1971. Blackwell Sci. Publ. C

MAMMALS

British mammals: L. H. Matthews, 1952. Collins (New Naturalist Series) A

The handbook of British mammals: H. N. Southern, 1964. Blackwell Sci. Publ. (Out of print: new edition due 1976) B

Finding and identifying mammals in Britain: G. B. Corbet, 1975. British Museum (Natural History) B

ADDENDUM

Check-list of British marine algae – third revision: M. Peake and P. S. Dixon, 1976. *Journal of the marine biological Association of the United Kingdom* **56**: 527–594 C

APPENDIX 5

Maps and their use in recording

All of the recording scheme organisers ask for the grid reference of the site from which the records have been collected. Full details of how this figure is worked out can be found in the footnotes of the 1" and 2½" maps produced by the Ordnance Survey. These maps form the bulk of those used by naturalists for field work but there is a larger range of maps available with different coverages depending on the scale. The following maps are all available from the Scottish agents, Thomas Nelson and Sons Ltd., 18 Dalkeith Road, Edinburgh, EH16 5BS, who can also provide detailed catalogues of the available maps.

One inch maps (1:63,360) These are the 77 basic maps for finding your way about Scotland and are too well known to need further description.

One and a quarter inch maps (1:50,000) The 85 maps at this new scale have replaced the One inch maps and have a new form of colouring, contours expressed in metres and a few changes in the symbols used (e.g., there are no woodland symbols shown).

Two and a half inch maps (1:25,000) This scale shows most of the detail required for field work (e.g. field boundaries, individual buildings, contours at 25 foot intervals). They come in two series: the First Series, each covering a 10×10 km square, and the modern Second Series each covering 10×20 km. Most of the Highlands and Islands were never covered by the First Series but a start has been made with the Second Series.

Six inch maps (1:10,000) (old maps 1:10,560) The considerable detail on these maps make them very suitable for use as a base map for a Reserve map, etc. The old scale maps are still the only ones available for much of Scotland and they are all pre 1939 and have no national grid markings. The new series is based on the national grid each one being 5×5 km and it is gradually being extended to cover all of Scotland.

Geological maps These are of three types: *Solid* which shows the underlying rock formations; *Drift* which includes the extensive glacial material which often covers the bed rock and a *combined* form. For the biologist the Drift series are probably the most useful as the vegetation reflects the soil's parent material whether this is glacial material or bed rock. The Maps are available at the quarter inch scale (1:253,440) covering all of Scotland and at the one inch scale covering most of Scotland except for the central regions of Inverness and the coastal areas to the NW, E and SE.

Soil Survey Maps These maps cover most of the agricultural areas in Scotland showing details of the different soil types at a scale of One inch to the mile.

Also of interest to the naturalist in the interpretation of the distributions of plants and animals are the maps produced by the Macaulay Institute for Soil Research, Craigiebuckler, Aberdeen, AB9 2QJ. Particularly useful are the maps of Scotland at the scale of 1:625,000 showing the Assessment of Climatic Conditions in Scotland divided into three different aspects but there are a number of more detailed surveys available for some parts of the country. Details of these publications are available from the Institute.

N.B. Issued in January of each year and sent free on receipt of a SAE (9 x 6½; 7p)
The Guide is still available free on receipt of a SAE (9 x 6½; 12p)

It is suggested that this sheet is kept in the back of the booklet and alterations mentioned in it indicated in the text by *. Incorrect information should be deleted to avoid confusion. Alterations to the text are underlined; new items are marked *; other entries are additional to the text.

BRISC is always interested in individuals' views on bilogical recording in Scotland and offers for discussion, to anyone who is interested, the minutes of its meetings.

BRISC, c/o 8 Dublin Street, Edinburgh, EH1 3PP. - Alastair Sommerville, Chairman.

PREFACE

The list of published national distribution maps was omitted from the appendix. Mention of new ones are included below and a complete list with details is available from BRISC or BRC.

THE NATIONAL RECORDING SCHEMES

P.6 MACRO-FUNGI: The BMS have appointed a recording sub-committee under Dr. Watling and have produced a booklet (50p) about their foray sites and the distribution of a few of the common larger fungi within them. Details from Dr. Watling.

P.9 LICHENS: The Atlas is due out in mid 1978.

MOSSES & LIVERWORTS: It is hoped to complete recording in Britain by 1982 and then to produce an Atlas.

FERNS: Atlas due out 1978.

FLOWERING PLANTS: There has been a reprint of the Atlas with limited updating (£25) and a reprint of the Critical Supplement is due in 1978 (c.£12.50).

P.10 RARE PLANTS: The Red Data Book is available (£2.95) from SPNC.

MARINE DINOFLAGELLATES: Draft maps for 100 species have been prepared but more samples and records are welcome. Contact: Prof. John D. Dodge, Royal Holloway College, Huntersdale, Callowhill, Virginia Water, Surrey GU25 4LN.

EELWORMS: Coverage is very good for Scotland & a Provisional Atlas (£2) is available.

P.11 WATER FLEAS: A BRC card listing 88 species is available. Contact: John Hearn, 3 Waverley Way, Carshalton Beeches, Surrey.

WOODLICE: A Provisional Atlas is available (£2.27) but more records are needed.

P.12 CRABS: Contact: Dr. R. Ingle, Institute of Oceanographic Studies, Brook Road, Wormley, Godalming, Surrey.

CENTIPEDES: Contact: A.D. Barber, Plymouth College of Further Education, King's Road, Devonport, Plymouth, Devon.

* DRAGONFLIES: Now with a separate organiser. A Provisional Atlas is due out in 1978 and will show very poor coverage of the group particularly in Scotland. An annual Newsletter is available and the organiser will be pleased to help with taxonomic problems. An excellent, illustrated book has been published which makes identification much easier. Contact: David Chelmick, 6 Gander Hill, Haywards Heath, Sussex.

* GRASSHOPPERS: Now with a separate organiser. Records are wanted from everywhere in Scotland as even visited squares are underrecorded. A Newsletter is available to recorders and a Provisional Atlas is due out in 1978. Contact: E.C.M. Haes, 5 Grinstead Avenue, Lancing, W. Sussex.

P.13 * LACEWINGS, SNAKEFLIES, ALDERFLIES, SCORPION FLIES:
The Neuroptera and Mecoptera Mapping Scheme 69 species
This scheme, started in 1976, covers two orders of insects, the Neuroptera & the Mecoptera. Some species are distinctive but most are difficult to identify without microscopic examination, and the taxonomic position of some species is uncertain. The organiser is pleased to receive material (with data) and will identify specimens

for return to the collector where required. A BRC field card is available. Our knowledge of the distribution of the Neuroptera & Mecoptera in Scotland is largely due to work carried out 40 or more years ago and the area is poorly covered. The Neuroptera are particularly interesting, with the British records of some species confined to Scotland. Contact: Dr. M.A. Kirby, Dept of Zoology, Williamson Building, University of Manchester, Manchester, M13 9PL.

BUTTERFLIES & MOTHS: The field survey must be completed by the end of 1979 - there are still 230 10 km. squares in Scotland with no records at all.

P.14 CADDIS FLIES: A Provisional Atlas is due out in 1978.

FLIES: There are currently 7 schemes in operation and the organisers have formed a Central Panel to co-ordinate their efforts. For these schemes material may be placed in envelopes and posted in a crush resistant box - a list of records will be returned. Pinned collections are also acceptable for identification and return. Self identified records will normally only be considered from recorders who have built up a basic collection of vetted material. BRC cards are available for the large groups. All schemes are as much concerned with gaining ecological and life history information as they are with mapping. Material is welcome from the non-specialist as this is the only way of gaining coverage in areas where specialists are few. It is easy to recognise at least the larger craneflies, but it is only worth sending material if there is reasonable confidence that it is relevant to one of the schemes. (See Colyer & Hammond, 1968, Flies of the British Isles) Contact: Mr A.E. Stubbs, Nature Conservancy Council, 19/20 Belgrave Square, London SW1X 8PY.

* Dixidae Recording Scheme 14 species
A small group of gnats breeding in freshwater. Some experience is needed to recognise a Dixid but if any are sent in among craneflies they will be forwarded. A Freshwater Biological Association key is available. Contact: Dr R.H.L. Disney, Malham Tarn Field Centre, Settle, Yorkshire, BD24 9PU.

Larger Brachycera Recording Scheme 152 species
Robber Flies, Soldier Flies, Bee Flies, Horse Flies and other related groups include many of our largest flies as well as many smaller ones. There is a great variety of biology within this range of flies and some very interesting species occur in Scotland. A Royal Entomological Society key is available. Contact: Dr A. Irwin, Castle Museum, Norwich.

* Hoverfly Recording Scheme about 250 species
One of the most popular groups of flies, including a variety of wasp and bee mimics as well as many more obscure species. Despite the colourful appearance associated with this group some species are difficult to identify without initial assistance. A new reference work is under preparation & until this is published the scheme will have to work on a limited basis. Contact: Mr J Ismay, Hope Dept, Oxford University, Oxford.

* Conopidae Recording Scheme 24 species
Conopids look rather like wasps and are parasitic on true bees and wasps. Though the Scottish fauna is small, there is at least one species of great interest. A Royal Entomological Society key is available. Contact: K.G.V. Smith, British Museum (Natural History), Cromwell Road, London SW7.

* Sepsidae Recording Scheme 26 species
Sepsid flies are small but very distinctive, especially the ones with a tiny black spot near the tip of the wing which is made conspicuous by slowly waving the wings when the fly walks. Most species are black. A Royal Entomological Society key should be in print in about a year's time. Contact: Mr A.C. Pont, Dept of Entomology, British Museum (Natural History), Cromwell Road, London SW7.

P.15 ANTS: A Provisional Atlas is due out in 1978.

P.18 MARINE MOLLUSCS: A Provisional Pilot Atlas of about 60 species is being planned. More information for all species is welcome, particularly for the extremely long western coastline with its great variety of habitat. Particular attention is required for the smaller and inconspicuous species. These are not always easy to find in the field but they can be recovered from small portions of the microhabitat such as algal fronds and holdfasts, & silt in crevices, by means of soaking in fresh water overnight.

P.19 AMPHIBIANS & REPTILES: Contact: Henry R Arnold, I.T.E., Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS.

RARE BREEDING BIRDS: Contact: Dr J.T.R. Sharrock, Fountains, Park Lane, Blunham, Bedford, MK44 3NJ.

P.20 COMMON BIRDS: Contact: Population & Surveys Section, BTO, Beech Grove, Tring, Herts.

WATERSIDE BIRDS: Contact: Population & Surveys Section, BTO, Beech Grove, Tring, Herts

BIRD RINGING: Also now groups in Aberdeen & Glasgow, see under Ringing Groups in Appendix 3.

* BIRD OBSERVATORIES: Strategically placed centres for bird ringing scattered through Britain chiefly on headlands or islands. There are 2 in Scotland which offer opportunities for the observation of migration and studies of seabird colonies. Both operate Heligoland traps. See under Bird Observatories Appendix 3.

P.21 OILED BIRDS: Run in conjunction with the Seabird Group. In Scotland 200 counters are involved covering 700 km of coastline, 5 times a year. More volunteers always needed.

P.22 SCOTTISH BIRDS: The SOC have a network of Local Recorders covering the whole of Scotland who receive, vet and maintain local records and pass the relevant information for the compilation of the Scottish Bird Report. Observers wishing to report a bird should approach the appropriate Recorder as listed in Appendix 3.

BIRDS SINGLE SPECIES SURVEYS: A review of current research by the various organisations & individuals working in Scotland is published in "Scottish Birds" Vol 19, No 8,
* Winter 1977. It has been pointed out that a number of special surveys, including long term monitoring surveys are being carried out by the RSPB &/or the NCC particularly of seabirds, wildfowl, birds of prey, divers & grebes. Most of these involve individual research workers but some local help is often sought. Details of this work can be obtained direct from the RSPB (Scottish Office), NCC (Scottish HQ) or the SOC.

MAMMALS: A new Atlas is due to be published shortly.

WHALES: Cetacean Survey (Cetacean Group). This survey is intended to make more use of sightings of whales and dolphins and a guide (35p) is available from the organiser to help with identification. Recording is on a standardised form and volunteers are needed to undertake regular seawatching sessions from headlands. Note that stranding records are collated by the British Museum (Nat Hist). Contact: Peter Evans, Zoology Dept, South Parkes Road, Oxford, OX1 3PS. The West of Scotland recorder, Dr J.A. Gibson, Foremount House, Kilbarchan, Renfrewshire (Kilbarchan 2419), is prepared to travel, at short notice, to identify stranded whales within his area.

HABITAT RECORDING SCHEMES

P.24 BTO: Register of Ornithological Sites: due to be completed by the end of 1977.

P.25 SWT (b) Habitat Survey: also now covering Ayrshire

* (e) Other surveys: The Branches of the Trust often initiate special surveys of habitats or species for which information is particularly needed, e.g. the coast (Ayrshire), ponds (Lothians), amphibians (Fife), butterflies (HQ), using help from other societies and individuals. The Clyde Area Branch are involved in an extensive recording project covering all vertebrates within the Clyde Faunal Area co-ordinated by Dr J. Gibson, the Chairman and local Mammal Society recorder. Help for these projects is always needed and welcome. Contact: Local SWT Branch (see appendix).

P.26 RSPB: The RSPB has 25 reserves in Scotland, most of which have a full-time or seasonal warden. Most reserves operate the BRC scheme and recording is carried out on birds, mammals, plants, butterflies, moths (some operate traps) and other animal groups. All wardened reserves operate under a detailed management plan. Information or enquiries welcome.

P.27 BRC: Event Recording: G.L. Radford, I.T.E., Bangor Research Station, Penrhos Road, Bangor, Gwynedd, LL57 2LQ.

PORCUPINE: The Society is now flourishing & encompasses those people interested in the ecology & distribution of the marine fauna & flora of the NE Atlantic. New members welcome.

* LOCAL BIOLOGICAL RECORD CENTRES: It has been pointed out that some local natural history societies have very comprehensive records for their particular locality with site and species records dating back many years. Accounts of these records are published in the journals of the societies and in some cases (e.g. Renfrewshire

& Kintyre Natural History Societies) comprehensive distribution atlases have been published. Details from the societies.

Although the idea of all organisations and individuals co-operating through a LERC has become more accepted there are still many difficulties in setting up and financing permanent centres which will collate all flora, fauna and habitat records. Some progress has been made and 1978 should see the status of most centres clarified.

(b) BORDERS BIOLOGICAL RECORDS CENTRE: Contact: Michael Braithwaite, Cockspurs, Lilliesleaf, Melrose.

(c) FIFE RECORDS CENTRE: no further progress. Contact: Tom Gray, 36 Sinclair Avenue, Glenrothes, Fife.

(d) RENFREWSHIRE RECORDS CENTRE (previously known as the Paisley Museum Records Centre): This centre has been functioning strongly for the last 2 years covering the whole of the Vice-county of Renfrewshire and includes a habitat survey and site register.

The former Renfrewshire Biological Records Centre was established by the Renfrewshire Natural History Society in 1965 and was the first local biological records centre to be set up in Scotland. The recording of vertebrates in Renfrewshire is now done in conjunction with the Clyde Area Branch of the SWT (see above); botanical and invertebrate records are being passed on to the Renfrewshire Records Centre. For further information contact Dr J A Gibson, Foremount House, Kilbarchan, Renfrewshire.

(e) OUTER HEBRIDES RECORD CENTRE: No further progress but a new natural history society has been set up and would be pleased to receive any records, particularly from visitors. Contact: Stewart Angus, Gibson Hostel, Ripley Place, Stornoway.

* (f) AYRSHIRE RECORDS CENTRE: A centre is being set up by the Ayrshire Branch of the SWT to cover the old county of Ayrshire. A habitat and site survey is under way. Contact: W Brackenridge, 24 Craigie Road, Ayr, KA8 0EZ.

* (g) CENTRAL REGION RECORDS CENTRE: A centre is being set up by the Central Branch of the SWT. Contact: Bob Cook, 23 Victoria Terrace, Menstrie, Clacks, FK11 7EE.

* Centres are being considered in other areas of Scotland. Contact: BRISC.

APPENDIX 3

* BIRD CLUBS: Shetland Bird Club: Mrs D Slawson, 152 Sandveien, Lerwick, Shetland
Sutherland Bird Group: I Hogg, Alderberry Cottage, Brora, Sutherland

* BIRD OBSERVATORIES: Fair Isle Bird Observatory: R Broad, Fair Isle, Shetland
Isle of May Bird Observatory: J M S Arnott, East Redford House, Edinburgh, EH13 0AS

BOTANICAL SOCIETY OF THE BRITISH ISLES (BSBI): Vice County Recorders:-
Wigtownshire: A J Silverside, Biology Dept, Paisley Coll of Tech, High Street, Paisley.
* North Aberdeenshire: D Welch, Banchory Research Station (ITE), Hill of Brathens,
Dunbartonshire: A McG Sterling Banchory, Kincardineshire, AB3 4BY

BRITISH DEER SOCIETY: M Clarke, Greenbrae, Minstead, Lyndhurst, Hants

BRITISH PHYCOLOGICAL SOCIETY: (British Phycological Journal x 4 + Newsletter)

BRITISH TRUST FOR ORNITHOLOGY (BTO): Regional Representatives:-
Aberdeen & Kincardine: No rep
Angus: N K Atkinson, 140 Linefield Road, Carnoustie, Angus
* Banff: M J H Cook, Rowanbrae, Clockan, Buckie, Banffshire
Caithness: No rep
Fife & Kinross: No rep
Hebrides (Outer): No rep
Inverness: No rep
Lothians: A.W. Brown, 136 Windsor Drive, Penicuik, Midlothian, EH26 8EP
Peebles etc: R J Robertson, 123 Howden Road, Jedburgh, Roxburghshire
Skye: No rep

* MAMMAL SOCIETY RECORDERS: Orkney: Mrs S C Spence, Linneth Harray, Orkney, KW17 2LQ
* Shetland: P Kinnear, 2 Mounthooly Street, Lerwick, Shetland, ZE1 0BJ
* Grid squares 28 x 38: D E Hanson, Darwin, Tiniver Street, Dufftown, Banffshire
* Clyde Area: Dr J A Gibson, Foremount House, Kilbarchan, Renfrewshire
* Fife & Kinross: G H Ballantyne, 3 Asquith House, Kirkcaldy, Fife.

NATURAL HISTORY SOCIETIES:

Andersonian Nats: Mrs A. Walker, 20 St. Vincent Crescent, Glasgow, G38 LO

* Arran Natural History Society: D. McNicol, Cladach, Brodick, Island of Arran

Ayrshire Arch: Dr R. Waite, 74 Doonfoot Road, Ayr. KA7 2AN

Dumfries & Galloway: Mr & Mrs D. Adamson, 39 Roberts Crescent, Dumfries

East Lothian Antiq: J.N. Cartwright, Old School House, Bolton, Haddington

* Hawick Natural History Society: A. Buckham, Forester's Cottage, Wells, Denham, Rox.

Inverness Field Club: Mrs MacLean, Hazelbrae House, Balnain, Glen Urquhart, Inv'shire

Largo Field Studies: H.D. Macmerry, 8 South Feus, Upper Largo, Fife

* Lochaber Natural Hist Soc: Mrs J.A.S. Newman, 6 Pob's Drive, Corpach, Fort William

Orkney Field Club: c/o County Library, Laing Street, Kirkwall, Orkney

Paisley Naturalists Society: Delete, former name of Renfrewshire Nat Hist Society

Renfrewshire Nats: Dr J. Hamilton, c/o Biology Dept, Paisley College, Paisley

* South West Ross Field Club: Mrs M.F. Murchison, Bank House, Balnacra, Ross-shire

West Dunbartonshire: D.H. Malan, 3 Upper Colquhoun Street, Helensburgh

* Western Isles Natural Hist Soc: S. Angus, Gibson Hostel, Ripley Place, Stornoway, Lewis

RINGING GROUPS:

* Clyde R.G.: (replacing Clyde Wader Group) Hector Galbraith, 76 Neilston Road, Paisley

Edinburgh R.G.: S.R. da Prato, 38 Carlaverock Grove, Tranent, East Lothian

* Grampian R.G.: Stephen Baille, Culterty Field Station, Newburgh, Ellon

Tay R.G.: R.L. McMillan, 44 Durley Dene Crescent, Bridge of Earn, Perthshire

See also Highland R.G. and North Solway R.G.

S.O.C. - BRANCHES (Secretaries):

Aberdeen: Miss F.J. Greig etc.

Dumfries: Dr N.E. Armstrong, Deil's Dike, Lochmaben, Dumfriesshire, DG11 1RM

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Glasgow: D.C. Shenton, 7 Avon Avenue, Carluke, Lanarkshire, ML8 5DD

Inverness: Miss E.M. Campbell, 'Pitkerrie', 4 Old Mill Road, Inverness

New Galloway: Dr G.A. Fleming, 7 Midtown, Dalry, By Castle Douglas, Kirkcudbrightshire

* S.O.C. - LOCAL RECORDERS:

* Shetland (except Fair Isle): R.J. Tulloch, Lussetter House, Mid Yell, Shetland

* Fair Isle: R.A. Broad, Bird Observatory, Fair Isle, Shetland

* Orkney: D. Lea, 6 Old Scarpa Road, Kirkwall, Orkney, KW15 1BB

* Outer Hebrides: W.A.J. Cunningham, Aros, 10 Barony Square, Stornoway, Isle of Lewis

* Caithness: Mrs P.M. Collett, Sandyquoy, East Gills, Scrabster, Caithness, KW14 7UH

* Sutherland: Dr I.D. Pennie, 5 Badcall, Scourie, Sutherland

* Ross-shire (except Black Isle), Inverness-shire (mainland more than 18 miles from Inverness): R.H. Dennis, Landberg, North Kessock, Inverness, IV1 1XD

* Ross-shire (Black Isle only), Inverness-shire (within 18 miles of Inverness): M.I. Harvey, Clach, Bhan, Loaneckheim, Kiltarlity, Inverness-shire

* Nairnshire, Morayshire, Banffshire: N. Elkins, 10 Oakbank Place, Elgin, Morayshire

* Aberdeenshire, N. Kincardineshire: Dr A.G. Knox, Zoology Dept, Aberdeen University, Tillydrone Avenue, Aberdeen, AB9 2TN; & W. Murray, Culterty Field Station, Newburgh, Aberdeenshire, AB4 OAA

* Angus, S. Kincardineshire: N.K. Atkinson, 140 Linefield Road, Carnoustie, Angus, DD7 6DT; & G.M. Crighton, 23 Church Street, Brechin, Angus

* Perthshire: R.L. McMillan, 44 Durley Dene Crescent, Kintillo, Bridge of Earn

* Kinross-shire: Mrs B.H. Gray, Vane Farm, Kinross

* Isle of May: J.M.S. Arnott, East Redford House, Redford Road, Edinburgh, EH13 OAS

* Fife: K. Brockie, 'Morven', Russell Street, Strathmiglo, Fife, KY14 7QW

* Clacks, E. Stirlingshire: Dr C.J. Henty, 3 The Broich, Alva, Clacks.

* W. Lothian, Forth Islands (except May), Midlothian: R.W.J. Smith, 33 Hunter Terrace, Loanhead, Midlothian

* E. Lothian: K.S. Macgregor, 16 Merchiston Avenue, Edinburgh, EH10 4NY

* Berwickshire: G. Evans, Ranger's Cottage, Northfield, St. Abbs, Nr. Eyemouth

* Peebleshire, Roxburghshire, Selkirkshire: A.J. Smith, Glenview, Selkirk, TD7 4LX

* Argyllshire, Inner Hebrides, Skye: M.J.P. Gregory, Duiletter, Kilmory Road, Lochgilphead, Argyllshire, PA31 8NL

* Dunbartonshire, W. Stirlingshire, Renfrewshire: I.P. Gibson, Arcadia, The Glen, Howwood, Renfrewshire

* Lanarkshire: H. Galbraith, 96 Neilsten Road, Paisley, Renfrewshire

* Ayrshire, Arran, Bute: R.H. Hogg, Schoolhouse, Crosshill, Maybole, Ayrshire

* Dumfriesshire: R.T. Smith, Applegarthtown, Lockerbie, Dumfriesshire

* Kirkcudbrightshire, Wigtownshire: A.D. Watson, Barone, Dalry, Castle Douglas

SCOTTISH WILDLIFE TRUST (SWT) - Branches and Area Representatives:
Ayrshire Branch: David Gwynne, 38 Leven Road, Troon, Ayrshire, KA10 7DX
Clyde Area Branch: W.M. McMurtrie, 21 Eastwood Avenue, Giffnock, Glasgow, G46 6LS
Lothians Branch: D. Lane, 4 Frogston Grove, Fairmilehead, Edinburgh, EH10 7AG
Moray Rep: A. Gunn, Easter Greens, Lossiemouth, IV31 6RX
* Outer Hebrides Rep: S. Angus, Gibson Hostel, Ripley Place, Stornoway, Isle of Lewis

* SOCIETY FOR THE BIBLIOGRAPHY OF NATURAL HISTORY: British Museum (Nat Hist), Cromwell Road, London, SW7 5BN

* SOCIETY FOR THE PROMOTION OF NATURE CONSERVATION (SPNC): The Green, Nettleham, Lincoln, LN2 2NR

WILDFOWL TRUST - Regional Organisers:
* Ayrshire: A.G. Stewart, 31 St Andrews Avenue, Prestwick, Ayrshire, KA9 2DY
Borders: A. Bramhall, 28 Blakehope Court, Tweedbank, Galashiels, Selkirk, TD1 3RB
Clacks, Perth (West), Stirling: A.B. Mitchell, 10 Kenilworth Court, Bridge of Allan, Stirlingshire, FK9 4EB
Dumfries etc: Dr E. Fellows, 19 Airds Drive, Dumfries (1977-78)
* Lothians: R.W.J. Smith, 33 Hunter Terrace, Loanhead, Midlothian
* Wester Ross, Inner & Outer Hebrides: A. Currie, Glaiseilean, Broadford, Skye, IV49 9AQ

APPENDIX 4

ALGAE: Oxford Book of Flowerless Plants, F.H. Brightman & B.E. Nicholson, 1966, O.U.P.
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APPENDIX 5

* ADMIRALTY CHARTS: These are required for offshore work. They can be obtained on a variety of scales. Agents: Chattan Security Transport Ltd., Marine Services, 15 Bernard Street, Leith.

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It would be of great help in preparing further updating sheets if a note of any incorrect information, omissions or reports of progress could be forwarded to BRISC during 1978 before the end of November. Ideas on the possible expansion of this Guide would also be welcome.

The printing of this manual was financed by the Nature Conservancy Council

The Scottish Wildlife Trust

(Limited by Guarantee)
8 Dublin Street
Edinburgh EH1 3PP Telephone: 031-556 4199