

## **4. Habitats and Species: discussion and summary information**

### **4.1 Wider significance of habitats and species found in North-east Scotland**

Sections 2.2 and 3.2 identify those BSG listed habitats and species in NE Scotland which appear to be of particular significance in a wider context (i.e. in Scotland or the UK). This section provides a little further information by assessing the proportion of the national lists that occur in NE Scotland.

1,250 species are listed in total on the original national 'Long List'. Of these, 121 are on the 'Short List', 286 on the 'Middle List' and 848 only on the Long List. There are now 387 species on the revised Middle List (September, 1997). This includes some previously unlisted species as well as more taken from the Long list. It is not clear exactly how many species are currently on the Long list, but the total must be around 1300 species.

In NE Scotland:

Short List: Of 121 species, 29 occur (24%)

Middle List: Of 387 species, 78 occur (20%)

Long List: 291 species occur (c.22%)

Full Long List (including Short and Middle lists): Of c 1,300 species, 398 occur (c 30%)

These totals illustrate clearly that NE Scotland has an important part to play in the conservation of these priority species. Despite the lower species richness of invertebrates and plants in northern Scotland compared to the UK as a whole, more than a fifth of the high priority species occur in the area. The higher proportion of long list species is probably due to the large number of birds on the list, which are relatively mobile.

### **4.2 Analysis of distribution patterns and occurrence in Local Authority areas**

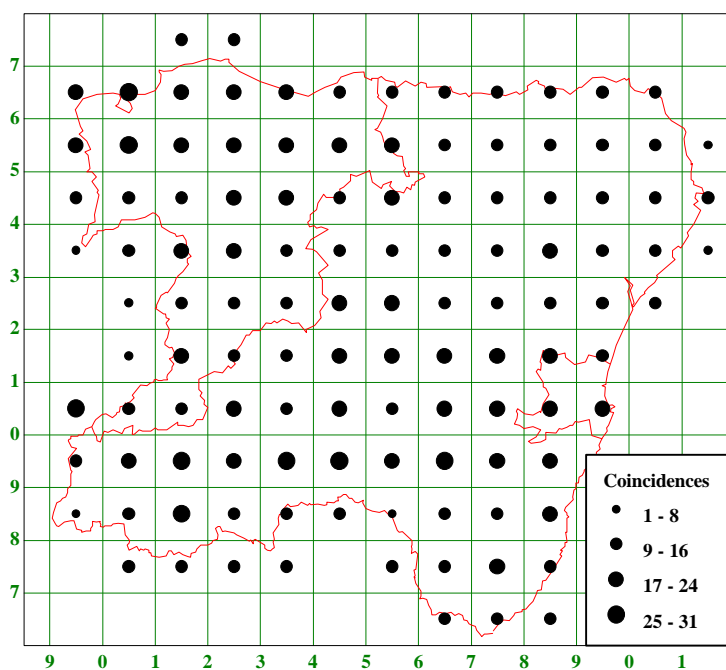
Appendices 1 and 2 list all BSG habitat types and Short, Middle and Long list species found in NE Scotland. When examining this information, it is obvious that both species and habitats are not evenly distributed across the area. This section summarises briefly the pattern of occurrence of some of the higher priority species, and also their occurrence in local authority areas and vice counties. It should be borne in mind that the latter is limited by the availability of information, and that the coincidence mapping reflects entirely the selection of species mapped. However, the analysis may indicate particular geographic areas with concentrations of biodiversity interest, using the BSG habitats, species and criteria.

In terms of habitats, the maps provided in Section 2 give the distributions of many broad and key habitat types. No further analyses of these have been undertaken. For species, however, we attempted to obtain distribution data for as many Short and Middle list species as possible; 85 of the 107 species have been mapped (see Section 3 species accounts). Marine species were not mapped as simple presence / absence dot maps would convey very little and maps showing numbers or densities are available elsewhere for seabirds and cetaceans. In general maps were not produced for introduced plants or very rare birds. For other species, records were too imprecise to be mapped.

Using the coincidence mapping facility of DMAP, a map was generated showing the extent to which Short and Middle list species dots coincided in each 10 km square (Map 16). All occurrences, whether old or recent records, were included. Map 16 indicates therefore, that areas of particular interest *in terms of these species only*, are found in NW Moray, Deeside, Glen Shee and Cairngorm, also Donside, lower Speyside, around Haddo House and Aberdeen itself.

Further analysis of coincidence maps shows that some taxa are more concentrated than others. For birds and mammals, which include many widespread species, there is no obvious pattern, with several listed species found in almost every square. The concentrations of species found in NW Moray and Deeside include large numbers of invertebrates and flowering plants, while the Cairngorms and Lochnagar area are important for their flora, including lichens, bryophytes and flowering plants.

**Map 16. Coincidence by 10km square of Short and Middle list species**



This distribution pattern, whilst highlighting some well-known and well-recorded areas (which in itself induces bias), also identifies some other areas which may not have been previously considered as being of high biodiversity interest. There are many other reasons, of course, why areas in 10 km squares in lower categories might be of extreme importance for biodiversity, for example, large numbers of a species (such as wintering wildfowl), a particular very rare species, or total species richness. However, this analysis is a first step in indentifying some important areas.

### **Local Authority areas and Vice Counties**

The three local authority areas in NE Scotland also vary in their importance for the listed species and habitats, as might be expected from size and location. Much more detailed information for Aberdeen City is given in Section 2.3.36, but some approximate summary statistics for all are given below.

**Moray:** holds c 275 listed species and around c 45 listed habitats

**Aberdeenshire:** holds c 309 listed species and c 44 listed habitats

**Aberdeen City:** holds c 161 listed species and c 29 listed habitats

**NE Scotland sea area:** holds c 65 listed species, of which 26 are entirely marine

The richest Vice County for species is VC92 (South Aberdeenshire), followed by VC95 (Moray), both with over 250 species. The other three are fairly similar (201-221 species).

Further analysis of species and habitat information is beyond the scope of this audit, but it seems clear that considering the relatively small size of the local authority area, Moray and its main component Vice County, is very rich indeed in terms of priority species and habitats.

### **4.3 Locally important habitats and species**

During discussions with local specialists, the following habitats and species were put forward as being locally important. Some of these are clearly of much wider importance than that, and may be possible candidates for further revisions of national lists. Others are habitats and species which are well-represented in the North-east, or species which may be outlying in their range in the UK.

**Locally important habitats:** these are all considered separately in Section 2.

Birch woodland: well-represented in NE Scotland, with some extensive areas of regeneration

Riparian woodland: important in relation to river and catchment ecology

Scrub: extensive areas in NE Scotland, perhaps more so than in many other parts of the UK

Maritime heath: a distinctive coastal form of lowland heath, including clifftop and dune heath

Serpentine grassland and heath: some important local examples of a nationally scarce habitat

Rocks and scree: not adequately covered by BSG habitats

**Locally important species:** further information can be found under each major species group; species suggested by consultees are listed in the following table:

**Locally important species: Birds**

Ptarmigan

**Beetles***Chrysanthia nigricornis**Ampedus tristis**Cercyon alpinus***Butterflies and Moths**Dingy skipper *Erynnis tages**Catoptria permutatella*Black mountain moth *Psodos coracina***Molluscs***Vertigo alpestris**Vertigo pulsilla***Spiders***Lepthyphantes insiguus***Locally important species: Algae***Fucus distichus edentatus***Fungi***Laccaria maritima**Suillus flavidus**Tricholoma caligatum***Lichens***Sagiolechia protuberans**Bacidia igniarii**Biatora efflorescens**Micarea contexta**Rinodina degeliana**Pseudephebe minuscula**Anaptychia ciliaris ciliaris**Bacidia subincompta**Calicium parvum**Catinaria neuschildii**Cetraria pinastri**Chaenotheca laevigata**Chaenotheca xyloxena**Cladonia cenotea**Cladonia maxima**Cladonia uncinalis uncinalis**Hypocenomyce xanthococca**Hypogymnia farinacea**Lecidea botryosa**Leptogium saturninum**Parmelia septentrionalis**Peltigera malacea**Toninia coelestina**Toninia cumulata***Liverworts and Mosses***Cryptothallus mirabilis**Dicranum spurium***Vascular plants**coral-root orchid *Corallorhiza trifida*oyster plant *Mertensia maritima*creeping spearwort *Ranunculus reptans*grey hairgrass *Corynephorus canescens*wych elm *Ulmus glabra*forked spleenwort *Asplenium septentrionale*mountain bearberry *Arctostaphylos alpinus*Alpine milk-vetch *Astragalus alpinus*hare's-foot sedge *Carex lachenalii*mountain bog-sedge *Carex rariflora*close-headed alpine-sedge *Carex norvegica*Highland cudweed *Gnaphalium norvegicum*dark-red helleborine *Epipactis atrorubens*mountain avens *Dryas octopetala*round-leaved wintergreen *Pyrola rotundifolia*

#### 4.4 Priority species thought likely to occur in the area

The following species listed in the BSG (1995) lists were thought likely to occur in NE Scotland by consultees, but definite records are lacking:

The ant *Formica exsecta*:                      The mason bees *Osmia inermis* and *O. uncinata*  
 The spiders *Clubonia subsultans*, *Haplodrassus soerenseni*, *Pelecopsis elongata* and *Lepthyphantes antroniensis*

#### 4.5 Summary of some further actions needed to complete audit

The collation of information on such a wide range of habitats and species can never be considered complete. However, a number of areas where information seemed deficient were highlighted during this project. These are outlined below. In addition, there is the very general point that for many taxa, such as for many invertebrate and lower plant groups, there is very little information indeed, and many records included are rather old. There is an urgent need to find out much more about many of the key species and some of the habitats, in order to provide a full picture of the significance of NE Scotland in relation to the targets of the UK Biodiversity Action Plan.

##### Habitats: the following is needed:-

Upland Oakwood: clarification on the extent of this habitat in the area.

Wet woodland: a clearer definition of the habitat type, and information on its extent in the North-east.

Lowland Wood Pasture: a survey of its extent in the area in relation to the BSG definition.

The following habitat types require further collation of information and possibly survey in relation to their extent in NE Scotland:

Lowland dry acid grassland  
 Unimproved neutral grassland  
 Calcareous grassland  
 Species-rich hay meadows  
 Flood plain grazing marsh

More information is also required on marine habitats; possibly this will become available from the JNCC Marine Nature Conservation Review.

##### Species: the following is needed:-

Clarification is needed on the occurrence of some invertebrate species in relation to the boundary of Vice County 95 and the boundary of present day Moray.

Fish: more information on the occurrence in NE Scottish waters is required for marine fish, especially tope, sand goby and blue shark.

Fungi: more information on generally and in particular on the occurrence of *Armillaria ectypa*.

Invertebrates: more information is needed for several taxa (see also Section 4.4 above) e.g.

Flies: more information is required, particularly for craneflies.

Ants & Bees: the presence or absence of the mason bees *Osmia* spp. needs to be established, as does that of the ant *Formica exsecta*.

Marine molluscs: more information is required regarding the horse mussel and the presence or absence of *Stelliger bellulus* needs to be established.

## 5. Conclusions

This audit is a first step towards a full assessment of species and habitats in NE Scotland which are priorities for conservation. In particular, Sections 2.2 and 3.2 identify those which have important parts of their populations, or their national extents, in the area. These should be considered as first priorities for the development of Local Biodiversity Action Plans. The national lists will change as further information becomes available, and a mechanism to revise the information in this audit in the North-east should be established. Finally, several species and habitats of local importance have been identified. These should be added to through wider consultation, and efforts made to develop conservation action for these too.

We welcome comments on this report, particularly any corrections or further information. A contact address is given at the front.

## 6. Acknowledgements

We would very much like to thank the following individuals and organisations, all of whom have been extremely helpful in providing information and comments:

Colin Adams (University Field Station, Rowardennan, Loch Lomond); Duncan Alexander (for help with computing), Dr David Barbour, Alan Bell (SNH), The Botanical Society of the British Isles, Dr David Carss (Institute of Terrestrial Ecology, Banchory), Martin Cook, Dr Brian Coppins (Royal Botanic Gardens, Edinburgh), Judith Cox (Aberdeen City Council), Dr Hans Kruuk (ITE, Banchory), Graeme Cullen (Forestry Authority), Roger Cummins (ITE), Mike Davidson (Scottish Environmental Protection Agency), Caroline Davies (RSPB), John Edelsten, Kathy Fallowfield, Dr Garth Foster, Adrian Fowles (CCW), Professor Charles Gimingham, Priscilla Gordon-Duff, Viv Halcrow, Dr Liz Halliwell, Jon Hardey, Jonathan Hughes (SWT), Richard Johnstone (RSPB), Paul Kirkland (Butterfly Conservation), Dr Xavier Lambin (Aberdeen University), Ewan Lawrie (Scottish Natural Heritage), Roy Leverton, Dr Ron Macdonald (SNH), Stuart Macpherson (Aberdeen City Council), Dr Christine Maggs (Queen's University, Belfast), Linda Mathieson (Aberdeenshire Council), Dr Peter Maitland, Dr Mick Marquiss (ITE), Richard Marriott, Jill Matthews (SNH), Robert Moss (ITE), Nicky Penford (Farming and Wildlife Advisory Group), David Phillips (SNH), Professor Paul Racey (Aberdeen University), Allan Rae (Aberdeenshire Council), Rob Raynor (SNH), Dr Clare Scanlan (SEPA), Sue Scott, Mike Smedley (SNH), Betty Smith, Bob Smith, Sheila Street, Deirdre Tobin (SNH), Dr Paul Waring (and the National Macro-moth Recording Network), Kenneth Watt, Professor Roy Watling (RBGE), Adam Watson, Cameron Watt (Scottish Office Agriculture, Environment and Fisheries Department), David Welch, Dr Mark Young (Aberdeen University). We apologise for any omissions.

This project was funded by Scottish Natural Heritage, Aberdeenshire Council and the RSPB, to whom we express our thanks. The species maps were produced using DMAP, and we would particularly like to thank Deirdre Tobin and SNH for producing the habitat maps from SNH's GIS.

Whilst we have attempted to summarise the information given to us as accurately as possible, inevitably errors will have arisen. We take full responsibility for these, and apologise if we have inadvertently misrepresented any of our consultees.

## 7. References

- Aebischer, N.J. & Ward, R.S. 1997. The distribution of corn buntings *Miliaria calandra* in Sussex in relation to crop type and invertebrate abundance. p124-138 *In: Donald, P.F. & Aebischer, N.J. 1997. The ecology and conservation of corn buntings Miliaria calandra. UK Nature Conservation, no. 13. JNCC, Peterborough*
- Alexander G.D. 1995. Foraging ecology of goosander (*Mergus merganser*) and red-breasted merganser (*M. serrator*) ducklings in north east Scotland. Unpublished PhD Thesis. University of Aberdeen.
- Allan, B. & Woods, P. 1993. Wild orchids of Scotland. 135pp. HMSO, Edinburgh
- Arnold, H.R. 1993. Atlas of mammals in Britain. ITE research publication no.6. 144pp. HMSO, London
- Arnold, H. R. 1995. Atlas of amphibians and reptiles in Britain. ITE Research Publication No 10. HMSO, London
- Balharry, E.A., McGowan, G.M., Kruuk, H. & Halliwell, E. 1996. Distribution of pine martens in Scotland as determined by field survey and questionnaire. *Scottish Natural Heritage, Survey and Monitoring Report No48.*
- Barne, J.H., Robson, C.F., Kaznowska, S.S., Doody, J.P & Davidson, N.C. (Eds.) 1996. Coasts and seas of the United Kingdom, Region 3 North-east Scotland: Cape Wrath to St Cyrus. 219pp. JNCC, Peterborough
- Bartrop, J., Bishop, G., Harvey, R., Holme, N.A., Knight, S.J.T., Powell, H.T. 1980. Report on the shores of the Moray Firth. *In: Survey of the littoral zone of the coast of Great Britain. SMBA/MBA.*
- Batten, L.A., Bibby, C.J., Clement, P., Elliott, G.D. & Porter, R.F. 1990. Red Data Birds in Britain. T & A.D. Poyser, London
- Bayfield, N.G. & Conroy, J.W.H. 1996. The Cairngorms Assets. The Cairngorms Partnership.
- Bennett, T.L. 1991. Benthic marine ecosystems in Great Britain: a review of current knowledge. Orkney, North Scotland, East Scotland and North-east England (MNCR coastal sectors 2 - 5). CSD report no.1171, Nature Conservancy Council, Peterborough
- Biodiversity Steering Group (BSG), 1995a. Biodiversity: The UK Steering Group Report. Vol. 1. Meeting the Rio Challenge. HMSO, London
- Biodiversity Steering Group, 1995b. Biodiversity: The UK Steering Group Report. Vol. 2. Annexes. HMSO, London
- Bratton, J.H. 1990. A review of the scarce Ephemeroptera and Plecoptera of Great Britain. Research & survey in nature conservation no. 29. Nature Conservancy Council, Peterborough
- British Myriapod Group, 1988. Preliminary atlas of the millipedes of the British Isles. 65pp. Biological Records Centre, ITE, Huntingdon
- Buck, A.L. 1993. An inventory of UK estuaries. Vol. 4. North and East Scotland. Joint Nature Conservation Committee, Peterborough
- Buckland, S.T., Bell, M.V. & Picozzi, N. (Eds). 1990. The birds of North-East Scotland. 473pp. North-East Bird Club, Aberdeen.

- Burd, F. 1989a. The saltmarsh survey of Great Britain: and inventory of British saltmarshes. Research & survey in nature conservation no. 17. 180pp. Nature Conservancy Council, Peterborough
- Burd, F. 1989b. Saltmarsh survey of Great Britain: Regional Supplement no. 14, North East Scotland. Nature Conservancy Council, Peterborough
- Butterfly Conservation. 1995. Species Action Plan for Pearl-bordered Fritillary
- Butterfly Conservation. 1996. Species Action Plan for Northern Brown Argus
- Carwardine, M. 1995. Whales, dolphins and porpoises. (Eyewitness handbook), Dorling Kindersley, London
- Catt, D.C., Baines, D., Moss, R., Leckie, F. & Picozzi, N. 1994. Abundance and distribution of capercaillie in Scotland, 1992-94. Final Report to SNH and RSPB. ITE & Game Conservancy Trust
- Church, J.M., Coppins, B.J., Gilbert, O.L., James, P.W. & Stewart, N.F. 1997 (1996). Red Data Books of Britain and Ireland: lichens. Vol. 1: Britain. Joint Nature Conservation Committee, Peterborough
- Cleator, B. 1993. The status of the genus *Zostera* in Scottish coastal waters. SNH Review no. 22, Scottish Natural Heritage, Edinburgh
- Cook, M. 1992. The birds of Moray and Nairn. 263pp. Mercat Press, Edinburgh
- Cook, M. Moray & Nairn Bird Reports 1991-1995
- Coppins, A.M. and Coppins, B.J. 1995. Quithel Wood SSSI, South Aberdeen: Lichen Survey. Report for SNH [NE/27/95]. 35 pp.
- Coppins, A.M. and Coppins, B.J. 1997. Action Plan for Lower Plants in Scotland Project, Lichens: *Peltigera malacea* Species Dossier. SNH/Royal Botanic Gardens, Edinburgh. 71 pp.
- Corbet G.B & Harris S. 1991. The Handbook of British Mammals. 3rd Edition. Blackwell.
- Cosgrove, P. & Young, M. 1997. *Margaritifera* preliminary report to SNH
- Court, N. 1986. A survey of the herb-rich grasslands in Deeside. Nature Conservancy Council.
- Cox, R., Parr, T.W. and Wyatt, B.K. 1996. Look-up tables for comparing land cover classifications. SNH, Research, Survey and Monitoring Report No.45.
- Cramp, S., Bourne, W. R. P. & Saunders, D. 1974. The seabirds of Britain and Ireland. Collins.
- Cranswick, P.W., Waters, R.J., Evans, J. & Pollitt, M.S. 1995. The Wetland Bird Survey 1993-94; wildfowl and wader counts. BTO, WWT, RSPB & JNCC
- Curran, S., Wilson, B. & Thompson, P. 1995. Recommendations for the sustainable management of the bottlenose dolphin population in the Moray Firth. University of Aberdeen.
- DAFS (Department of Agriculture and Fisheries for Scotland), 1989. Economic Report on Scottish Agriculture, 1988. HMSO
- Dennis, R. 1995. The birds of Badenoch & Strathspey. Colin Baxter Photography, Grantown-on-Spey. 160pp
- Dixon, P.S. & Irvine, L.M. 1977. Seaweeds of the British Isles. Vol. 1 Rhodophyta, Part 1; Introduction, Nemaliales, Gigartinales. British Museum (Natural History), London

- Doody, J.P., Johnston, C. & Smith, B. (eds) 1993. Directory of the North Sea coastal margin. 262pp. Joint Nature Conservation Committee, Peterborough
- Donald, P.F. & Aebischer, N.J. (eds) 1997. The ecology and conservation of corn buntings *Miliaria calandra*. UK Nature Conservation, no. 13. JNCC, Peterborough
- Drake, C.M. 1991. Provisional atlas of the larger Brachycera (Diptera) of Britain and Ireland
- Easterbee, N., Hepburn, L.V. & Jefferies, D.J. 1991. Survey of the status and distribution of the wildcat in Scotland, 1983 - 1987. Nature Conservancy Council for Scotland.
- Emmet, A.M. & Heath, J. (eds) 1991. The moths and butterflies of Great Britain and Ireland. Vol. 7 (2). Lasiocampidae - Thyatiridae. Harley Books, London
- Evans, P.G.H. 1990. European cetaceans and seabirds in an oceanographic context. *Lutra* 33: 95-125
- Evans, P.G.H. 1992. Status review of cetaceans in British and Irish waters. UK Mammal Society Cetacean Group, Oxford.
- Evans, P.G.H., Fisher, P., Rees, I., Wainwright, J., Farrell, J. & Mayo, W. 1993. Foraging ecology of harbour porpoises in Shetland. p33-38 in *European Research on Cetaceans - 7* (ed. P.G.H. Evans). Proc. 7th Ann. Conf. ECS, Inverness Scotland 18-21 February 1993, European Cetacean Society, Cambridge
- Falk, S. 1991a. A review of the scarce and threatened bees, wasps and ants of Great Britain. Research & survey in nature conservation no. 35. 344pp. Nature Conservancy Council, Peterborough
- Falk, S. 1991b. A review of the scarce and threatened flies of Great Britain (Part 1). Research & survey in nature conservation no. 39. 194pp. Nature Conservancy Council, Peterborough
- Fletcher, R.L. 1987. Seaweeds of the British Isles. Volume 3, Fucophyceae (Phaeophyceae). British Museum (Natural History) / British Phycological Society.
- Forestry Authority 1994. Forestry in Grampian: a growing resource. Forestry Authority, Glasgow.
- Forster, J.A. & Green, J. 1985. p56-63 In Jenkins, D. 1985. The biology and management of the River Dee. Institute of Terrestrial Ecology, Banchory.
- Francis, I. 1996. Reserve Focus: Loch of Strathbeg, Aberdeenshire. *British Wildlife* 8: 109-111.
- Francis, I.S., Craib, J.K. & Rebecca, G.W. 1998. Birds of the Moray Moors. Moray Bird Report 1997. pp.81-90.
- Fraser, F.C. 1934. Report on cetacea stranded on the British coasts from 1927 to 1932. British Museum (Natural History), London
- Fraser, F.C. 1946. Report on cetacea stranded on the British coasts from 1933 to 1937. British Museum (Natural History), London
- Fraser, F.C. 1953. Report on cetacea stranded on the British coasts from 1938 to 1947. British Museum (Natural History), London
- Fraser Darling, F. & Boyd, J.M. 1989. Natural History in the Highlands and Islands. New Naturalist Series, Bloomsbury Books, London
- Fryday, A.M. 1996. 1594 *Cladonia uncialis* (L) Wigg ssp. *uncialis*. In: Seaward, 1996.

- Fryday, A.M., Wolseley, P.A. and Coppins, A.M. 1996. Monitoring of experimental management of terricolous lichen communities at Culbin Forest, Moray. SNH Research Report [NE/95/010]. 27pp.
- Geddes, C. 1996. Monitoring of rare montane vascular plants on Ben Lawers NNR and Caenlochan NNR. Scottish Natural Heritage Review no.44
- Gibbons, D., Reid, J.B. & Chapman, R.A. 1993. The new atlas of breeding birds in Britain and Ireland: 1988-1991. 520pp. T & AD Poyser, London
- Gibson, 1982. British Nemerteans. CUP
- Gilbert, G. and Gibbons, D.W. 1996. A review of habitat, land cover and land use survey and monitoring in the United Kingdom. RSPB unpublished report.
- Gilbert, O.L. 1996. 398 *Cladonia maxima* (Asah.)Ahti., and 402 *Cladonia mitis* In: Seaward 1996.
- Green R. & Green, J. 1997. Otter survey of Scotland 1991 - 1994. Vincent Wildlife Trust, London
- Habitat Surveys 1987. Grampian Habitat Change: Research Contract, Phase 1. [unpublished report to NCC NE Region, comparing Habitat Survey date - held by SNH, Aberdeen].
- Haggett, G.M. & Leverton, R. 1997. Contributions to the early stages of *Xylena exsoleta*. Entomologist's record and Journal of variation, 109: 65-75
- Halliwell, E. C. 1997. The ecology of red squirrels in Scotland in relation to pine marten predation. Unpublished PhD Thesis. University of Aberdeen. .
- Hammond, P.S., Benke, H., Berggren, P., Borchers, D.L., Buckland, S.T., Collet, A., Heide-Jorgensen, M.P., Heimlich-Boran, S., Hiby, A.R., Leopold, M.F. & øien, N. 1995. Distribution and abundance of the harbour porpoise and other small cetaceans in the North Sea and adjacent waters.
- Harding, P.T and Rose, F. 1986. Pasture Woodlands in Lowland Britain: a review of their importance for wildlife conservation. NERC/ITE. Huntingdon.
- Harding, P.T., Preston, C.D., Appleby, C.E., Arnold, H.R., Eversham, B.C., Croft, J.M. & Forrest, W.A. 1990. New and updated distribution maps of selected species prepared by the Biological Records Centre in 1989/90. CSD Report no. 1106, Nature Conservancy Council, Peterborough
- Harding-Hill, R. 1993. The Moray Firth Review. 257pp. Scottish Natural Heritage, Inverness
- Harmer, S.F. 1927. Report on cetacea stranded on the British coasts from 1913 to 1926. British Museum (Natural History), London
- Harriman R. & Pugh K.B. 1994. Water Chemistry. In The Fresh Waters of Scotland: A National Resource of International Significance. Eds, Maitland P.S., Boon P.J. & McLusky D.S. John Wiley & Sons Ltd.
- Harris, S., Morris, P., Wray, S. & Yalden, D. 1995. A review of British mammals: population estimates and conservation status of British mammals other than cetaceans. 168pp. JNCC, Peterborough
- Hayward, P.J. & Ryland, J.S. (eds) 1990. The marine fauna of the British Isles & NW Europe. Vol. 1. Introduction and Protozoans to Arthropods. Clarendon Press, Oxford
- Heath, J. & Emmet, A.M. (eds) 1979. The moths and butterflies of Great Britain and Ireland. Vol. 9. Sphingidae - Noctuidae (Noctuinae & Hadeninae). Curwen Books, London

- Heath, J. & Emmet, A.M. (eds) 1983. The moths and butterflies of Great Britain and Ireland. Vol. 10. Noctuidae (Cucullinae to Hypeninae). Harley Books, London
- Heath, J. & Emmet, A.M. (eds) 1985. The moths and butterflies of Great Britain and Ireland. Vol. 2. Cossidae - Helionidae. Harley Books, London
- Heath, J., Pollard, E. & Thomas, J.A. 1984. Atlas of butterflies of Britain and Ireland. 158pp. Penguin books, Harmondsworth
- Hill, M.O., Preston, C.D., Smith, A.J.E. (eds). 1991. Atlas of the bryophytes of Britain and Ireland. Vol. 1. Liverworts. British Bryological Society, Cardiff
- Hill, M.O., Preston, C.D., Smith, A.J.E. (eds). 1992. Atlas of the bryophytes of Britain and Ireland. Vol. 2. Mosses (except Diplolepidae). British Bryological Society, Cardiff
- Hill, M.O., Preston, C.D., Smith, A.J.E. (eds). 1994. Atlas of the bryophytes of Britain and Ireland. Vol. 3. Mosses (Diplolepidae). British Bryological Society, Cardiff
- Hilton-Brown D. & Oldham R.S. 1991. The status of the widespread amphibians and reptiles in Britain, 1990, and changes during the 1980's. Nature Conservancy Council, No.131.
- Hiscock, K. 1991. Benthic marine ecosystems in Great Britain: a review of current knowledge. Introduction and Atlantic-European perspective. CSD report no.1170, Nature Conservancy Council, Peterborough
- Hoare, R.J.B., Hughes, J., Jones, A. & Ramel, G.J.L. 1996. A review of the status of *Formica exsecta* in Scotland 1994. The Entomologist 115 (1): 23-29
- Holloway, S. 1996. The historical atlas of breeding birds in Britain and Ireland: 1875-1900. 476pp. T & AD Poyser, London
- Hughes, J. 1996. Review of the distribution of *Formica exsecta* in Scotland. Report to SNH
- Hughes, J. 1997. The status of *Formica lugubris* and *F. aquilonia* (Hymenoptera: Formicidae) in Ross-shire and Sutherland. Unpublished report to SNH and SWT
- Hutchings, M.R. & Harris, S. 1996. The current status of the brown hare (*Lepus europaeus*) in Britain. 78pp. JNCC, Peterborough
- Hyman, P.S. & Parsons, M.S. 1992. A review of the scarce and threatened Coleoptera of Great Britain. Part 1. 484pp. JNCC UK Nature Conservation report no. 3
- Hyman, P.S. & Parsons, M.S. 1994. A review of the scarce and threatened Coleoptera of Great Britain. Part 2. 248pp. JNCC UK Nature Conservation report no. 12
- Ingram, R. & Noltie, H.J. 1981. The Flora of Angus (Forfar, vc 90). Dundee Museums & Art Galleries, Dundee
- International Bee Research Association, 1980. Atlas of the bumblebees of the British Isles. ITE, Huntingdon
- Jefferson, T.A. & Curry, B.E. 1994. A global review of porpoise (Cetacea: Phocoenidae) mortality in gillnets. Biological Conservation 67: 167-183
- Jenkins, D. 1985. The biology and management of the River Dee. Institute of Terrestrial Ecology, Banchory. 159pp

- Jenkins, D. & Bell, M.V. 1985. Vertebrates, except salmon and trout, associated with the River Dee. p83-93 *In* Jenkins, D. 1985. The biology and management of the River Dee. Institute of Terrestrial Ecology, Banchory. 159pp
- Jermy, A.C., Arnold, H.R., Farrell, L. & Perring, F.H. (eds) 1978. Atlas of ferns of the British Isles. The Botanical Society of the British Isles & The British Pteridological Society, London
- Kerney, M.P. (ed) 1976. Atlas of the non-marine mollusca of the British Isles. Conchological Society of Britain and Ireland, NERC, Huntingdon
- Kerney, M.P. & Cameron, R.A.D. 1979. A field guide to the land snails of Britain and North-west Europe. Collins, London
- Keymer, R.J. & Leach, S.J. 1990. Calcareous grassland - a limited resource in Britain. p11-17 *in* Hillier, S.H., Walton, D.W.H. & Wells, D.A. (eds.) 1990. Calcareous Grasslands - Ecology and Management. Proc. of a joint British Ecological Society / Nature Conservancy Council symposium, September, 1987. Bluntisham Books, Huntingdon
- Kirby, P. 1992. A review of the scarce and threatened Hemiptera of Great Britain. UK Nature Conservation report no. 2. Joint Nature Conservation Committee, Peterborough
- Kirkland, P. 1997. Butterflies for the new millenium. Scottish Wildlife 31: 31
- Kuiken, T., Simpson, V.R., Allchin, C.R., Bennett, P.M., Codd, G.A., Harris, E.A., Howes, G.J., Kennedy, S., Kirkwood, J.K., Law, R.J., Merrett, N.R., & Phillips, S. 1994a. Mass mortality of common dolphins (*Delphinus delphis*) in south west England due to incidental capture in fishing gear. Veterinary Record 134: 81-89
- Lack, P. 1986. The atlas of wintering birds in Britain and Ireland. 447pp. T & AD Poyser, London
- Lambin, X., Telfer, S., Cosgrove, P., & Alexander, G. 1996. Survey of water voles and mink on the rivers Don and Ythan. A Report to SNH (ref 70/96/F1A/007).
- Langton, T.E.S., Beckett, C.L., King, G.L. & Gaywood, M.J. 1996. Distribution and status of marine turtles in Scottish waters. Scottish Natural Heritage, Survey and Monitoring Report no.8
- LCS88. Land Cover of Scotland survey, 1988. Macaulay Land Use Research Institute/Scottish Natural Heritage.
- Leaper, G. (in prep.) Ecological profile of the harbour porpoise *Phocoena phocoena*
- Leaper, G. (in prep.) Ecological profile of bottlenose dolphin *Tursiops truncatus*, white-beaked dolphin *Lagenorhynchus albirostris* and white-sided dolphin *Lagenorhynchus acutus*
- Leverton, R., Young, M.R. & Barbour, D.A. 1997. *Epione paralellaria* D. & S. (Lep: Geometridae) and its association with aspen *Populus tremula* in the Scottish Highlands. The Entomologist's record and Journal of variation, 109: 49-55
- Lindsay, R. 1995. Bogs: the ecology, classification and conservation of ombrotrophic mires. 120pp, Scottish Natural Heritage, Perth
- Lindsay, R. & Immirzi, 1996. An inventory of lowland raised bogs in Great Britain. Scottish Natural Heritage, Research, Survey and Monitoring Report no. 78
- Lloyd, C., Tasker, M.L. & Partridge, K. 1991. The status of seabirds in Britain and Ireland. T. & A.D. Poyser, London, 351pp

- MacKenzie, N.A. & Worrell, R. 1995. A preliminary assessment of the ecology and status of ombrotrophic wooded bogs in Scotland. SNH Research, Survey & Monitoring Report no 40
- Maggs, C.A. & Hommersand, M.H. 1993. Seaweeds of the British Isles. Vol. 1 Rhodophyta, Part 3A; Ceramiales. HMSO, London
- Maitland, P.S. 1985. The status of the River Dee in a national and international context. p142-148 *In* Jenkins, D. 1985. The biology and management of the River Dee. Institute of Terrestrial Ecology, Banchory. 159pp
- Manuel, R.L. 1981. British Anthozoa. (Synopsis of British fauna no.18). 241pp. Academic Press, London
- Maitland, P. & Campbell, R. N. 1992. Freshwater fishes of the British Isles. Harper Collins New Naturalist.
- Marchant, J.H., Hudson, R., Carter, S.P. & Whittington, P. 1990. Population trends in British breeding birds. 300pp. British Trust for Ornithology, Tring
- Marquiss M. & Rae, R. 1995. Scottish crossbill moves between Deeside and Strathspey. *Scottish Bird News* 37: 2-3
- Marquiss M. & Rae, R. 1996. Movements of colour-ringed crossbills *Loxia sp.* in Grampian Ringing Group Report 1992-1994
- Marren, P. 1982. A natural history of Aberdeen. 184pp. Robin Callander, Finzean
- McCallum Webster, M. 1978. Flora of Moray, Nairn & East Inverness. 606pp. Aberdeen University Press.
- McGowan, G. 1997 The distribution of the small mountain ringlet *Erebia ephron mnemon* in Scotland. *Entomologists Gazette* 48: 135 - 145
- McKay, D.W. & Smith, M. 1979. Marine mollusca of East Scotland. Royal Scottish Museum, Edinburgh
- Milner, J.E. 1992. The tree book. Collins & Brown, London
- Morris, P.A. 1993. A red data book for British mammals. 107pp. The Mammal Society, London
- Merritt, R., Moore, N.W. & Eversham, B.C. 1986. Atlas of the dragonflies of Britain and Ireland. 149pp. ITE research publication no.9, HMSO, London
- Nature Conservancy Council, 1983. Ecology and conservation of rare amphibian and reptile species endangered in Britain.
- Nature Conservancy Council 1987. Handbook for Phase 1 habitat survey. NCC, Peterborough.
- NCMS, various dates. National Countryside Monitoring Scheme. Contact Scottish Natural Heritage. [See NCC/CCS 1988. National Countryside Monitoring Scheme, Scotland: Grampian. NCC/CCS, Edinburgh. 39 pp.]
- Nethersole-Thompson, D. 1975. Pine Crossbills. Poyser.
- Nethersole-Thompson, D. & Watson, A. 1981. The Cairngorms. The Melven Press, Perth. 317pp
- Newton, I., Marquiss, M., Wier, D. N. & Moss, D. 1977. Spacing of sparrowhawk nesting territories. *J. Anim. Ecol.* 46 425-441.

- NHS 1983-85. A Natural Habitat Survey of Grampian: 1983-1985. Grampian Regional Council. [Contact Aberdeenshire/Moray/Aberdeen councils, Planning Depts].
- North East River Purification Board, 1994. Water Quality Review, 1994. North East River Purification Board, Aberdeen.
- North East River Purification Board, 1995. River Spey Catchment Review 1995. NERP, Aberdeen
- North-east Scotland Bird Club. North-east Scotland Bird Reports 1991-1995
- Northridge, S.P., Tasker, M.L., Webb, A. & Williams, J.M. 1995. Distribution and relative abundance of harbour porpoises (*Phocoena phocoena*), white-beaked dolphins (*Lagenorhynchus albirostris*) and minke whales (*Balaenoptera acutorostrata*) around the British Isles. ICES J. Mar. Sci. 52: 55-66
- Norton, T.A. 1985. Provisional atlas of the marine algae of Britain and Ireland. ITE.
- O'Brien, M. 1994. Survey of breeding waders on Scottish lowlands: interim report. Includes site data for Grampian Region. RSPB, Edinburgh.
- O'Dare, A.M. & Coppins, B.J. 1993. The Burn (Gannochy Gorge SSSI), Kincardineshire, VC 91 - Lichen Survey. Report for SNH
- O'Dare, A.M. & Coppins, B.J. 1994. Craigendarroch SSSI, South Aberdeen (VC92): Lichen Survey. Report for SNH [NE/S/30/93]. 34 pp.
- O'Dare, A.M. & Coppins, B.J. 1994. Dinnit Oakwood NNR, South Aberdeen (VC92): Lichen Survey. Report for SNH [NE/S/19/94]. 32 pp.
- O'Dare, A.M., Coppins, B.J. & Fryday, A.M. 1995. Scottish Cryptogamic Conservation Project - Lichens. *Gyalecta ulmi*, Species Dossier. Scottish Natural Heritage & Royal Botanic Garden, Edinburgh
- Painter, M., Smith, K. & Gilbert, G. 1995. An inventory of British reedbeds. RSPB, Sandy
- Pepper, H.W. 1992. Survey of squirrels in Britain. Forestry Authority Wildlife and Conservation Research Branch.
- Pearsall, W.H. 1971. Mountains and moorlands. Collins (New Naturalist Series), London
- Perring, F.H. (ed) 1968. Critical supplement to Atlas of the British Flora. Thomas Nelson & Sons, London
- Perring, F.H. & Farrell, L. 1983. British Red Data Books: 1. Vascular Plants. Royal Society for Nature Conservation, Lincoln, 99pp.
- Perring, F.H. & Walters, S.M. 1982. Atlas of the British Flora. 3rd edition. E.P. Publishing, Wakefield
- Potts G.W. & Swaby S.E. 1991. Evaluation of the conservation requirements of the rarer British marine fish. Final Report to the Nature Conservancy Council. Report No.1228.
- Preston, C.D. 1995. Pondweeds of Great Britain and Ireland. BSBI handbook no.8. Botanical Society of the British Isles, London
- Preston, C.D., Croft, J.M., Dring, J.C.M. & Forrest, W.A. 1993. Database and atlas of aquatic vascular plants in the British Isles. Part 1: Distribution Maps. JNCC report no. 147, Institute of Terrestrial Ecology, Huntingdon

- Purvis, O.W., Coppins, B.J., Hawksworth, D.L., James, P.W. & Moore, D.M. (eds). 1992. The lichen flora of Great Britain and Ireland. British Lichen Society, Natural History Museum, London
- Racey, P.A. & Rydell, J. 1995. A whiskered bat in north-east Scotland. *Scottish Bats* 3: 5
- Ratcliffe, D.A. 1981. The Vegetation. *in* Nethersole-Thompson, D. & Watson, A. 1981. The Cairngorms. The Melven Press, Perth.
- Raven, J. & Walters, M. 1956. Mountain Flowers. Collins, London. 240pp
- Rebecca, G.W. & Bainbridge, I.P. 1998 (in press.) The status of breeding merlins *Falco columbarius* in Britain in 1993-1994. *Bird Study*
- Rich, T.C.G. & Woodruff, E.R. 1990. The BSBI Monitoring Scheme 1987-88. CSD Report no. 1265, Nature Conservancy Council, Peterborough
- Rich, T.C.G. 1991. Crucifers of Great Britain and Ireland. BSBI handbook no.6. Botanical Society of the British Isles, London
- Rich, T.C.G. & Woodruff, E.R. 1995. A sample survey of the flora of Britain and Ireland. BSBI Monitoring Scheme 1987-1988. JNCC.
- Rich, T.C.G. & Dalby, D.H. 1996. The status and distribution of mountain scurvygrass (*Cochlearia micacea* Marshall) in Scotland, with ecological notes. *Bot. J. Scotl.* 48: 187-198
- Rodwell, J.S. (ed.) 1991a. British Plant Communities. Volume 1. Woodlands and Scrub. CUP, Cambridge
- Rodwell, J.S. (ed.) 1991b. British Plant Communities. Volume 2. Mires and Heaths CUP, Cambridge
- Rodwell J.S. (ed.) 1992. British Plant Communities. Volume 3. Grasslands and Montane Communities. CUP. Cambridge
- Rodwell J.S. (ed.) 1995. British Plant Communities. Volume 4. Aquatic communities, swamps and tall-herb fens. CUP. Cambridge
- Rose, F. 1981. The wild flower key. Frederick Warne, London
- Rose, F. 1995. 1016 *Parmelia septentrionalis* (Lynge) Ahti. In: Seaward, 1996.
- Ross, H.M. & Wilson, B. 1996. Violent interactions between bottlenose dolphins and harbour porpoises. *Proc. Royal Soc. B* 263: 283-286
- Rotheray, G.E. 1996. A survey of the saproxylic insect fauna of Speybank Wood, Badenoch & Strathspey. Research Survey & Monitoring Report NE/95/026, Scottish Natural Heritage
- Rothero, G. 1995a. Scottish Cryptogamic Conservation Project, Bryophytes: *Buxbaumia viridis* Species Dossier. Scottish Natural Heritage & Royal Botanic Garden, Edinburgh.
- Rothero, G. 1995b. Action Plans for lower plants in Scotland, Bryophytes: *Orthotrichum obtusifolium* Species Dossier. Scottish Natural Heritage & Royal Botanic Garden, Edinburgh.
- Rydell, J., Catto, C. & Racey, P.A. 1993. Observations of Leisler's bat *Nyctalus leisleri* in northern Scotland. *Scottish Bats* 2: 5-6
- Rydell, J. & Swift, S. M. 1995. Observations of Nathusius' pipistrelle *Pipistrellus nathusii* in northern Scotland. *Scottish Bats* 3: 6

- Scottish Native Woods 1996. Why Manage Riparian Woods? Information and guidance for managers. Scottish Native Woods, Aberfeldy.
- Seaward, D.R. 1990. Distribution of the marine molluscs of north west Europe. NCC.
- Seaward, M.R.D. (ed). 1996. Lichen atlas of the British Isles. British Lichen Society, London
- Sheldrick, M.C. 1989. Stranded whale records for the entire British coastline, 1967-1986. Investigations on Cetacea XXII: 298-329
- Sheldrick, M.C., Chimonides, P.J., Muir, A.I., George, J.D., Reid, R.J., Kuiken, T., Iskjaer-Ackley, C. & Kitchener, A. 1994. Stranded cetacean records for England, Scotland and Wales, 1987-1992. Investigations on Cetacea XXV: 259-283
- Shirt, D.B. (ed.) 1987. British Red Data Books: 2. Insects. Nature Conservancy Council, Peterborough, 402pp.
- Shrubbs, M. 1997. Historical trends in British and Irish corn bunting *Miliaria calandra* populations - evidence for the effects of agricultural change. p27-41 In: Donald, P.F. & Aebischer, N.J. 1997. The ecology and conservation of corn buntings *Miliaria calandra*. UK Nature Conservation, no. 13. JNCC, Peterborough
- Smith, A.J.E. 1978. The moss flora of Britain and Ireland. 706pp. Cambridge University Press, Cambridge
- Sneddon, P. & Randall, R.E. 1993. Coastal vegetated shingle structures of Great Britain: Main report. 61pp. JNCC, Peterborough
- Sneddon, P. & Randall, R.E. 1994. Coastal vegetated shingle structures of Great Britain: Appendix 2. Shingle sites in Scotland. 92pp. JNCC, Peterborough
- Speakman, J.R., Racey, P.A., Catto, C.M.C., Webb, P.I., Swift, S.M. & Burnett, A.M. 1991a. Minimum summer populations and densities of bats in N.E. Scotland, near the northern borders of their distributions. J. Zool. Lond. 225: 327-345
- Speakman, J.R., Racey, P.A., Hutson, A.M., Webb, P.I., & Burnett, A.M. 1991b. Status of *Nathusius' pipistrelle* (*Pipistrellus nathusii*) in Britain. J. Zool. Lond. 225: 685-690
- Stace, C. 1991. New Flora of the British Isles. Cambridge University Press. 1226pp
- Stewart, A., Pearman, D.A. & Preston, C.D. (eds). 1994. Scarce plants in Britain. 515pp. JNCC, Peterborough
- Stone, C.J., Webb, A., Barton, C., Ratcliffe, N., Reed, T.C., Tasker, M.L., Camphusyen, C.J. & Pienkowski, M.W. 1995. An atlas of seabird distribution in north-west European waters. 326pp. Joint Nature Conservation Committee, Peterborough
- Stoneman, R. & Wilson, E. 1996. Survey of Aberdeenshire bogs. Unpublished report to SNH
- Stubbs, A.E. 1992. Provisional atlas of the long-palped craneflies (Diptera: Tipulinae) of Britain and Ireland. Biological Records Centre, NERC, Monks Wood
- Thom, V. M. 1986. Birds in Scotland. 382pp. T & AD Poyser, London
- Thomson, G. 1980. The butterflies of Scotland. Croom Helm, London

- Tucker, G.M. & Heath, M.F. 1994. Birds in Europe: their conservation status. Birdlife International Conservation Series no. 3, Birdlife International, Cambridge
- Velander, K.A., 1983. Pine marten survey of Scotland, England and Wales 1980-1982. Vincent Wildlife Trust, London.
- Wallace, I.D. 1991 A review of the Trichoptera of Great Britain. Research & Survey Report no. 32, Nature Conservancy Council, Peterborough
- Walsh, P.M. 1993. Counts of breeding seabirds on the Grampian coast in 1992: Dunottar - Catterline, Cruden Bay - Boddam and Troup Head /Lion's Head. Joint Nature Conservation Committee Report no. 151
- Waring, P. 1997 (in press). An atlas of the scarce and threatened macro-moths of Great Britain. JNCC, Peterborough (draft version)
- Watling, R., Coppins, B.J., Fleming, L.V. & Davy, L.M. 1996. Cairngorm Project: Inventory of restricted lower plants (larger fungi and lichenised fungi). Final Report to SNH. 264pp
- Watson, A. & Rae, S. 1997. Preliminary results from a study of habitat selection and population size of corn buntings *Miliaria calandra* in north-east Scotland. p115-123 *In*: Donald, P.F. & Aebischer, N.J. 1997. The ecology and conservation of corn buntings *Miliaria calandra*. UK Nature Conservation, no. 13. JNCC, Peterborough
- Watt, K. 1997. Hoverflies: *Blera fallax* - breeding site discovered. Biodiversity in NE Scotland no. 4
- Watt, A.D., Wright, S.M., Brown, T.A.W., Barbour, D.A., Young, M.R. & Bayfield, N.A. 1996. Scottish Diurnal Lepidoptera Project: Species distribution, database and GIS. Report to SNH, ITE, Edinburgh
- Welch, D. 1970. *Saxifraga hirculus* L. in north-east Scotland. Trans. Bot. Soc. Edinb. 41: 27-30
- Welch, D. 1993a. Flora of North Aberdeenshire. David Welch, Banchory
- Welch, D. 1993b. Survey of *Saxifraga hirculus* in NE Scotland, and a review of information relevant to its conservation. Report to Scottish Natural Heritage, Institute for Terrestrial Ecology contract no. 07/2/92/F2/208
- Welch, D. 1996. Habitat preferences and status of *Saxifraga hirculus* L. in North-east Scotland. Bot. J. Scotl. 48: 177-186
- Whitehead P.J.P., Bauchot M.-L., Hureau J.-C., Nielsen J. & Tortonese E. (Eds). 1989. Fishes of the north-eastern Atlantic and the Mediterranean. UNESCO.
- Whitten, A.J. 1990. A proposed programme for Britain's protected species. CSD report no. 1089, Nature Conservancy Council, Peterborough
- Wilkinson, M. 1979. Marine algae of the Grampian Region of Scotland. *Br. phycol.* 14: 33-41.
- Wilson, B. 1995. The ecology of bottlenose dolphins in the Moray Firth, Scotland: a population at the northern extreme of the species' range. PhD thesis, University of Aberdeen.

**Appendix 1 List of Biodiversity Steering Group habitats and occurrence  
in North-east Scotland**



**Appendix 2 List of UK Biodiversity Steering Group Species occurring in North-east Scotland**



















### Appendix 3: Recent additions to the Middle list

In April 1997, the BURD Steering Group produced a proposal for a revised Middle List; this was accepted in September 1997. There may also be further revisions in future. The proposed revised list numbers 387 species, made up of the original Middle list, with additions from the long list and also of previously unlisted species. A small number of species have been removed from the Middle List. Most of the additional species do not occur in NE Scotland, those present are listed below; further information is provided elsewhere in the report.

#### Species added from long list

##### Mammals

<i>Grampus griseus</i>	Risso's dolphin
<i>Orcinus orca</i>	killer whale
<i>Tursiops truncatus</i>	bottlenose dolphin

##### Birds

<i>Tetrao tetrix</i>	black grouse
----------------------	--------------

##### Fish

<i>Cetorhinus maximus</i>	basking shark
---------------------------	---------------

##### Insects

<i>Formica aquilonia</i>	Scottish wood ant
<i>Aricia artaxerxes</i>	northern brown argus butterfly
<i>Blera fallax</i>	a hoverfly
<i>Hammerschmidtia ferruginea</i>	a hoverfly

##### Molluscs

<i>Atrina fragilis</i>	fan mussel
<i>Modiolus modiolus</i>	horse mussel
<i>Ostrea edulis</i>	native oyster

##### Lichens

<i>Alectoria ochroleuca</i>	alpine sulphur-tresses
<i>Bellemeria alpina</i>	a lichen

##### Vascular Plants

<i>Pilularia globulifera</i>	pillwort (fern)
<i>Melampyrum sylvaticum</i>	small cow-wheat

#### Previously unlisted species

##### Insects

<i>Formica lugubris</i>	a wood ant
<i>Cryptocephalus decemmaculatus</i>	a leaf beetle
<i>Rhyncaenus testaceus</i>	a jumping weevil
<i>Lipsothrix ecucullata</i>	a crane fly
<i>Thereva lunulata</i>	a stiletto fly
<i>Brachyptera putata</i>	a stonefly

##### Vascular Plants

<i>Juniperus communis</i>	juniper
---------------------------	---------

#### Removed from Middle list

<i>Metasyrphus lapponicus</i>	a hoverfly
<i>Dyscia fagaria</i>	grey-scalloped bar moth
<i>Cladonia fragilissima</i>	a lichen