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Protecting wildlife close to home

BIBLIOGRAPHY OF SPECIES IDENTIFICATION, CONSERVATION & ECOLOGY

**Compiled by
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NB. All comments are personal views, usually based on practical experience of the books in question. Text in quotes is taken from publishers' or sellers' descriptions.

HABITAT MANAGEMENT

GENERAL

Kirby, P. 1992, 2001. *Habitat management for invertebrates*. Sandy: RSPB.

Despite its title, a superb and clearly-presented short overview of lowland habitats in general, their wildlife and management. Probably the quickest guide to read and absorb. Highly recommended.

Spellerberg, I.F., Goldsmith, F.B. & Morris, M.G. 1991. *The scientific management of temperate communities for conservation*. Oxford: Blackwell.

Sutherland, W.J. & Hill, D.A., eds. 1995. *Managing habitats for conservation*. 399pp. Cambridge: Cambridge University Press. £17.95 softback.

An up-to-date and well referenced overview of major habitats, the wildlife they support, and key management practices.

GRASSLANDS

Treweek, J., Jose, P. & Benstead, P. 1997. *The wet grassland guide: managing floodplains and coastal wet grassland for wildlife*. Sandy: RSPB.

HEATHLAND

Farrell, L. 1989. The different types and importance of British Heaths. *Bot. J. Linn. Soc.*, **101**, 291-9.

Gimingham, C.H. 1992. *Ecology of heathlands*. London: Chapman & Hall.

Usher, M.B. 1992. Management and diversity of arthropods in *Calluna* heathland. *Biodiversity and Conservation*, **1**, 63-79.

Webb, N.R. 1986. *Heathlands*. London: Collins.

QUARRIES, INDUSTRIAL SITES AND URBAN ECOLOGY (INCLUDING RESTORATION ECOLOGY)

Angermeier, P.L. 1994. Does biodiversity include artificial diversity? *Conservation Biology*, **8**, 600-602.

Barrow, C.J. 1991. *Land degradation: development and breakdown of terrestrial environments*. Cambridge: Cambridge University Press

Chinery, M. 1972. *The natural history of the garden*. London: Collins.

Gilbert, O.L. 1989. *The ecology of urban habitats*. London: Chapman & Hall.

Clear, thorough, concise, ecologically very sound, socially perceptive, and highly readable.

Majer, J.D. 1989. *Animals in primary succession: the role of fauna in reclaimed lands*. Cambridge: Cambridge University Press.

Owen, J. 1991. *The ecology of a garden: the first fifteen years*. Cambridge: Cambridge University Press

Whiteley, D. (editor) 1988. Sheffield's urban wildlife. *Sorby Record* no. 25. Sheffield: Sorby Natural History Society.

WETLANDS

Brooks, S. & Stoneman, R. 1997. *Conserving bogs: the management handbook*. Edinburgh: The Stationery Office.

Eversham, B.C. and Skidmore, P. 1994. The insect fauna and conservation of lowland bogs in eastern England. In: *Fifth European Congress of Entomology, Abstracts*, 187.

Eversham, B.C., Skidmore, P. and Buckland, P.C. 1995. Invertebrates as indicators of lowland bogs in eastern England: some British bogs in a European context. In: *Threatened species and bioindicators at the Pan-European level* (Proceedings of the 9th International Colloquium of the European Invertebrate Survey, Helsinki, 3-4 September 1993), edited by P.T. Harding, I. Valovirta, & D. Kime, 36-40.

Friday, L. (editor). 1997. *Wicken Fen: the making of a wetland nature reserve*. Colchester: Harley.

Foster, G.N., Foster, A.P., Eyre, M.D. & Bilton, D.T. 1989. Classification of water beetle assemblages in arable fenland and ranking of sites in relation to conservation value. -- *Freshwater Biol.*, **22**: 243-354.

Fowles, A.P. 1989. The Coleoptera of shingle banks on the River Ystwyth, Dyfed. *Entomologist's Record and Journal of Variation*, **101**: 209-221.

Macan, T.T. 1973. *Freshwater ecology*. London: Longman.

Macan, T.T. & Worthington, E.B. 1951. *Life in lakes and rivers*. London: Collins.

Moss, B. 2001. *The Broads*. London: Collins.

Purseglove, J. 1988. *Taming the flood: a history and natural history of rivers and wetlands*. Oxford: Oxford University Press & Channel 4.

Raven, P.H., Holmes, N.T.H., Dawson, F.H., Fox, P.J.A., Evereard, M.J., Fozzard, I.R. & Rouen, K.J. 1998. *River habitat quality: the physical character of rivers and streams in the UK* Bristol: Environment Agency.

Ward, D., Holmes, N. & Jose, P. 1995. *The new rivers and wetlands handbook*. Sandy: RSPB.

Wheeler, B.D., Shaw, S.C., Fojt, W.J., & Robertson, R.A. (editors). 1995. *Restoration of temperate wetlands*. Chichester: Wiley.

Uneven, diverse, over-priced and prone to a 'we-can-rebuild-it' glibness, but with some very valuable papers.

COASTAL HABITATS

Adam, P. 1990. *Saltmarsh ecology*. Cambridge: Cambridge University Press.

Lewis, J.R. 1964. *The ecology of rocky shores*. London: English Universities Press.

WOODLANDS

Burgess, R.L. & Sharpe, D.M. (eds). 1981. *Forest island dynamics in man-dominated landscapes*. New York: Springer Verlag.

Chrystal, R.N. 1937. *Insects of the British woodlands*. London: Warne.

Written for foresters, but remarkably thorough and full of snippets of field craft and insect behaviour. Still very useful, if you can cope with the out-dated taxonomy.

Johnson, E.A. 1992. *Fire and vegetation dynamics: studies from the North American boreal forest*. Cambridge: Cambridge University Press

Based on very different environments, but possibly with much relevance for lowland England.

Pollard, E., Hooper, M.D. & Moore, N.W. 1974. *Hedges*. London: Collins.

Peterken, G.F. 1996. *Natural woodland: ecology and conservation in north temperate regions*. Cambridge: Cambridge University Press.

Rackham, O. 1976. *Trees and woodland in the British landscape*. London: Dent.

Rackham, O. 1980. *Ancient woodland: its history, vegetation and uses in England*. London: Arnold.

Rochelle, J.A., Lehmann, L.A. & Wisniewski, J. (editors). 1999. *Forest fragmentation: wildlife and management implications*. Leiden: Brill.

Steele, R.C. & Welch, R.C. (eds). 1973. *Monks Wood: a nature reserve record*. Huntingdon: Nature Conservancy Council.

Warren, M.S. and Key, R.S. 1991. Woodlands: past, present and potential for insects. In: *The conservation of insects and their habitats*, edited by N.M. Collins and J.A. Thomas, 155-211. (15th Symposium of the Royal Entomological Society) London: Academic Press.

Vera, F. W. M. 2000. *Grazing Ecology and Forest History*. London: CABI. 528 pp.

"An essential text setting out continental theories about woodland dynamics and interactions with large herbivores; giving a very different perspective to those in British 'wildwood' hypotheses."

MONITORING, ECOLOGY & CONSERVATION BIOLOGY

USEFUL OVERVIEWS OF MONITORING

Goldsmith, F.B. ed. 1991. *Monitoring for Conservation and Ecology*. 275 pp. Chapman & Hall. 1991. £17.99 softback

An overview of the theory and practice of monitoring.

Hellawell, J.M. 1991. Development of a rationale for monitoring. In: *Monitoring for conservation and ecology*, edited by F.B. Goldsmith, 1-14. London: Chapman and Hall.

Gilbert, G., Gibbons, D.W. & Evans, J. *Bird Monitoring Methods*. RSPB, BTO, WWT, JNCC, ITE and The Seabird Group 1998. A very detailed practical guide.

Sutherland, W.J. 1996. *Ecological census techniques: a handbook*. Cambridge: Cambridge University Press. £17.95 softback.

A thorough review of population measurement; particularly strong on data analysis.

Spellerberg, I.F. 1991. *Monitoring ecological change*. Cambridge: Cambridge University Press.

GENERAL ECOLOGY AND BIOGEOGRAPHY

Begon, M., Harper, J.L. & Townsend, C.R. 1996. (3rd ed.) *Ecology: individuals, populations and communities*. 1068 pp. Oxford: Blackwell.

A thorough and readable modern textbook of ecology. Useful in providing the scientific framework for conservation and monitoring.

- Bennett, D.P. & Humphries, D.A.** 1965. *Introduction to field biology*. London: Edward Arnold.
Short, clear, practical and blending serious quantitative ecology with more general natural history surveys; aimed at 'A' level students and still useful.
- Crowson, R.A.** 1970. *Classification and biology*. London: Heinemann.
In addition to a good review of the subject in its title, this book is probably unique in English biological texts of the last fifty years in providing a clear philosophical basis of natural history and of taxonomy as activities, and as useful predictive tools in understanding the world.
- Harding, P.T.**, ed. 1992. *Biological recording of changes in British wildlife*. (ITE symposium no. 26). London: HMSO.
A conference report which discusses national changes in flora and fauna.
- Hudson, W.E.**, ed. 1991. *Landscape linkages and biodiversity*. Washington DC: Island Press for Defenders of Wildlife.
- McIntosh, R.P.** 1985. *The background of ecology: concept and theory*. Cambridge: Cambridge University Press.
An historical review of the development of ecology, emphasising the similarities and differences between botanical and zoological approaches.
- McLean, R.C. & Cook, W.R.I.** 1968. *Practical field ecology*. London: Allen & Unwin.
A small, rather old-fashioned practical guide, dating from the pre-computing age, so placing more emphasis on design of fieldwork and gathering useful data (rather than modern approaches of recording everything and hoping the computer will unravel the useful from the useless).
- Peters, R.H.** 1991. *A critique of ecology*. Cambridge: Cambridge University Press.
A critical and unforgiving review of the way ecology is done, and the lack of predictive power in so many ecological models. Although it contains much that is insightful and valid, it also tends to under-play the role of 'good' natural history and of predictive generalisations (see Crowson (1970) for a broadly-based philosophy of natural history).
- Schrader-Freshette, K.S. & McCoy, E.D.** 1993. *Method in ecology: strategies for conservation*. Cambridge: Cambridge University Press.
A philosophical as well as a practical review of ecology as applied to conservation, based on the value of sound natural history; in some ways, an answer to Peters (1991).
- Sutherland, W.J.** 1996. *From individual behaviour to population ecology*. Oxford: Oxford University Press.
An up-to-date text linking animal behaviour to population levels: crucial concepts in monitoring animals.
- Vincent, P.** 1990. *The biogeography of the British Isles - an introduction*. London: Routledge.
The only modern guide to patterns of species distribution in Britain and the factors which cause them.
- Wadsworth, R.M.** 1968. *The measurement of environmental factors in terrestrial ecology*. Oxford: Blackwell.
- Whittaker, R.H.** 1970. *Communities and ecosystems*. New York: Macmillan.

CONSERVATION

- Berry, R.J., Crawford, T.J. & Hewitt, G.M.** (editors). 1992. *Genes in ecology*. Oxford: Blackwell.
- Colston, A., Gerrard, C. & Parslow, R.** 1997. *Cambridgeshire's Red Data Book*. Cambridge: The Wildlife Trust for Bedfordshire, Cambridgeshire, Northamptonshire and Peterborough.
- Colston, A., Gerrard, C. Jackson, M., Moore, L. & Tero, C.** 1996. *Northamptonshire's Red Data Book: species to watch in the county*. Northampton: The Wildlife Trust for Bedfordshire, Cambridgeshire, Northamptonshire and Peterborough.
- Evans, D.** 1997. *A history of nature conservation in Britain*. London: Routledge.
- Forey, P.L., Humphries, C.J., & Vane-Wright, R.I.** (editors). 1994. *Systematics and conservation evaluation*. Oxford: Clarendon Press for Systematics Association.
- Gaston, K.J.** 1994. *Rarity*. London: Chapman & Hall.
Short, readable, rather mathematical, provocative and inconclusive.
- Gaston, K.J.** (editor). 1996. *Biodiversity: a biology of numbers and difference*. Oxford: Blackwell.
- Hansson, L.** (editor). 1992. *Ecological principles of nature conservation: applications in temperate and boreal environments*. London: Elsevier Applied Science.
- MacArthur, R.H.** 1972. *Geographical ecology*. New York: Harper & Row.
- MacArthur, R.H. and Wilson, E.O.** 1967. *The theory of island biogeography*. Princeton: Princeton University Press.
- Marren, P.** 2001. *Nature conservation*. London: Collins (New Naturalist vol. 91).
A historical review of the conservation movement in Britain, 1950-2001, written with verve and humour, and occasionally a rather biased and individual perspective. Rich in personalities, politics and opinion, a good read.

- Moore, N.W.** 1987. *The bird of time - the science and politics of nature conservation, a personal account*. Cambridge: Cambridge University Press
A perceptive and balanced view from the inside, by one of the leading figures in the development of conservation in Britain.
- Noss, R.F.** 1990. Indicators for monitoring biodiversity: a hierarchical approach. *Conservation Biology*, **4**, 355-364.
- Soulé, M.E.** 1987. *Viable populations for conservation*. Cambridge: Cambridge University Press.
A good review of the ecology of populations near to extinction, when monitoring may be most crucial.
- Prendergast, J.R., Quinn, R.M., Lawton, J.H., Eversham, B.C. and Gibbons, D.W.** 1993b. Rare species, the coincidence of diversity hotspots, and conservation strategies. *Nature*, **365**, 335-337.
- Sheail, J.** 1998. *Nature conservation in Britain: the formative years*. London: The Stationery Office.
- Southwood, T.R.E.** 1977. Habitat, the templet for ecological strategies? *Journal of Animal Ecology*, **46**, 337-365.
- Stamp, D.** 1969. *Nature conservation in Britain*. London: Collins.
A useful if rather dry historical review, giving a flavour of the rather staid and respectable post-war official conservation movement in Britain; a striking contrast with the livelier and more trenchant views of Marren (2001).
- Sutherland, W.J. & Hill, D.A.**, eds. 1995. *Managing habitats for conservation*. 399pp. Cambridge: Cambridge University Press. £17.95 softback.
An up-to-date and well referenced overview of major habitats, the wildlife they support, and key management practices.
- Sutherland, W.J.** 1996. *From individual behaviour to population ecology*. Oxford: Oxford University Press
A clear, engaging and distinctive approach to animal ecology.
- Sutherland, W.J.** (editor). 1998. *Conservation science and action*. Oxford: Blackwell Science.
A provocative set of essays on themes in conservation where recent advances in science offer new perspectives or answers.
- Usher, M.B.** 1973. *Biological management and conservation: ecological theory, application and planning*. London: Chapman & Hall.
- Usher, M.B.** ed. 1986. *Wildlife Conservation Evaluation*. London: Chapman & Hall.

SOILS

- Trudgill, S.** 1989. *Soil types: a field identification guide*. AIDGAP reprint, from *Field Studies*, **7**, 337-363.

GEOGRAPHY, GEOLOGY, LANDSCAPE and ARCHAEOLOGY as a background to conservation

- Atkinson, T.C., Briffa, K.R., Coope, G.R., Joachim, J.M. and Perry, D.W.** 1986. Climatic calibration of coleopteran data. In B.E. Berglund, editor, *Handbook of Holocene palaeoecology and palaeohydrology*, 851-858. Chichester: Wiley.
- Atkinson, T.C., Briffa, K.R. and Coope, G.R.** 1987. Seasonal temperatures in Britain during the past 22,000 years, reconstructed using beetle remains. *Nature*, **325**, 587-592.
- Ball, D.F., Radford, G.L. and Williams, W.M.** 1983. A land characteristic data bank for Great Britain. *Bangor Occasional Papers*, **13**. Bangor: ITE.
- Bowen, D.Q.**, 1978. *Quaternary geology: a stratigraphic framework for multidisciplinary work*. Oxford: Pergamon.
- Buckland, P. C.** (1979) *Thorne Moors: a palaeoecological study of a Bronze Age site (a contribution to the history of the British insect fauna)*. Birmingham: University of Birmingham, Department of Geography Occasional Publication 8.
- Buckland, P.C. and Coope, G.R.** 1991. *A bibliography and literature review of Quaternary entomology*. 85 pp. Sheffield: Collis.
- Cox, M., Straker, V., & Taylor, D.** 1995. *Wetlands: archaeology and nature conservation*. London: HMSO.
- Lowe, J.J. & Walker, M.J.C.** 1984. *reconstructing Quaternary environments*. Harlow: Longman.
- Nature Conservancy Council.** 1989. *Guidelines for the selection of biological SSSIs*. Peterborough: Nature Conservancy Council
- Nature Conservancy Council.** 1990. *Handbook for Phase 1 habitat survey - a technique for environmental audit*. Peterborough: Nature Conservancy Council
- O'Halloran, D., Green, C., Harley, M., Stanley, M. and Knill, J.** (editors). 1994. *Geological and Landscape Conservation*. (Proceedings of the Malvern International Conference, 1993). 530pp. London: Geological Society.
- Pretty, J.** 1998. *The living land: agriculture, food and community regeneration in rural Europe*. London: Earthscan.

Rackham, O. 1986.. *The history of the countryside*. London: Dent.
Roberts, N. 1989, 1998. *The Holocene: an environmental history*. Oxford: Blackwell.
White, I.D., Mottershead, D.N. & Harrison, S.J. 1984. *Environmental systems: an introductory text*. London: Allen & Unwin.

STATISTICAL METHODS

Blower, J.G., Cook, L.M. & Bishop, J.A., 1981. *Estimating the size of animal populations*. London: George, Allen & Unwin.

Short, clear, readable and not too mathematical.

Campbell, R.C. 1967, 1974 etc. *Statistics for biologists*. Cambridge: Cambridge University Press.

Fowler, J., Cohen, L. & Jarvis, P. 2nd ed. 1998. *Practical Statistics for Field Biology*. Chichester: John Wiley & Sons

Gauch, H.G. 1983. *Multivariate analysis in community ecology*. Cambridge: Cambridge University Press

Gilbert, N. 1989. *Biometrical interpretation: making sense of statistics in biology*. Oxford: Oxford University Press

Haining, R. 1990. *Spatial data analysis in the social and environmental sciences*. Cambridge: Cambridge University Press.

Jongman, R.H.J., Ter Braak, C.J.F., & van Tongeren, O.F.R. (editors). 1995. *Data analysis in community and landscape ecology*. Cambridge: Cambridge University Press

Kent, M. & Coker P., 1992. *Vegetation Description and Analysis, a practical approach*. John Wiley & Son

Ludwig, J.A. & Reynolds, J.F. 1988. *Statistical ecology: a primer on methods and computing*. New York: Wiley.

Clear and practical, complete with a disk of simple programs for analysing ecological data.

Taylor, D.R.F. 1990. *Geographic Information Systems: the microcomputer and modern cartography*. Oxford: Pergamon.

SERIES OF NATURAL HISTORY BOOKS

There are a few series of books on British natural history that have acquired almost cult status among both naturalists and book-collectors, and with good reason:

Wayside & Woodland series (F.Warne & Co). A long tradition since c. 1900, including classics (references below) such as South's *Moths*, Ragge's *Grasshoppers*, Southwood & Leston's *Land & Water Bugs*, and Longfield's *Dragonflies*. Many were the standard identification guides, with lots of (gently-presented) biological information for the general reader. A few, such as Southwood & Leston, have never been superseded; but as they are all now out of print (since Warnes were bought by Penguin in order to acquire copyright to Beatrix Potter's works), many are very expensive and hard to find. Facsimile editions of some volumes are now available on CD, or in print in some cases, from Pisces Publications.

New Naturalist (Collins), started in 1945, is probably the best-known, most sought-after, in parts most expensive, series of standard natural history volumes produced in the last century. There are currently 91 volumes in the main series, and numerous monographs (mainly on birds). They are very variable in style, content and presentation, but generally provide a definitive review of the biology, ecology and behaviour of a group of organisms, or the history and natural history of an area; with a few volumes on geology, landscape or themes like conservation. With a confidence bordering on arrogance, one volume (Marren, P. 1995) is called *The New Naturalists* and describes the history of the series and its authors; because of the importance of the series, this is actually a good account of the history of British naturalists, and the development of ecology and conservation, 1945-1995.

Collins Field Guides: the first series of comprehensively illustrated popular guides to the identification of plants or animals. Many have been the definitive guide to a group for decades. Some recent volumes, such as those on spiders and molluscs, even include technical detail, including genitalia diagrams and instructions on dissection. Similar volumes entitled 'Pocket guide' or 'Hand-guide' tend to be less comprehensive and often less accurate.

Naturalists Handbooks: originally launched by Cambridge University Press, and subsequently taken on by Richmond Publishing, these guides are typically short (initially 68 pages, later volumes sometimes longer),

aimed at undergraduates, and designed to introduce a group of organisms or a theme (such as *Insects on Nettles* or *Animals on the surface film* or *Insects, plants and microclimate*) specifically to enable students to undertake project work. The publishers quickly found that there was a larger readership among naturalists. The most useful volumes are probably those with a comprehensive taxonomic scope, such as *Solitary wasps*, *Bumblebees*, *Ladybirds*, *Mayflies*, *Mosquitoes*, *Blowflies* and *Ants*, each of which is the best available guide to its particular group.

BOTANY

PLANT ECOLOGY

Fitter, A.H. & Hay, R.K.M. 1987. *Environmental physiology of plants*. London: Academic Press.

Greig-Smith P. 1983. *Quantitative plant ecology*. (3rd ed.) Oxford: Blackwell.

Grime, J.P., Hodgson, J.G., and Hunt, R. 2nd edition 2007. *Comparative Plant Ecology: a functional approach to common British species*. Dalbeattie: Castlepoint Press.

Kershaw, K.A. & Looney, J.H. 1985. *Quantitative and dynamic plant ecology*. London: Edward Arnold.

Moore, P.D. and Chapman, S.B. 1986. *Methods in plant ecology*. (2nd ed.) Oxford: Blackwell.

Any one of the above three standard textbooks on practical plant ecology would be useful. Each has its strengths and weaknesses.

Quinn, R.M., Lawton, J.H., Eversham, B.C. and Wood, S.N. 1994. The biogeography of scarce vascular plants in Britain with respect to habitat preference, dispersal ability, and reproductive biology. *Biological Conservation*, **70**, 149-157.

Rabinowitz, D., Cairns, S. and Dillon, T. 1986. Seven forms of rarity and their frequency in the flora of the British Isles. In: *Conservation biology : the science of scarcity and diversity*. edited by M Soulé. Sunderland, Mass.: Sinauer Associates.

FLOWERING PLANTS

There are numerous popular illustrated guides, most of which are excellent for learning to recognise the commoner and more distinctive wild flowers, but few of which are comprehensive or critical enough to give confidence in the identification. Among the more widely used and fairly comprehensive illustrated guides are:

McClintock, D. & Fitter, R.S.R. 1956. *Collins pocket guide to wild flowers*. London: Collins.

A rather dated guide, with a mix of colour and black and white illustrations, still useful for many species, with helpful short descriptions and good habitat notes. Includes most grasses, sedges and rushes.

Distribution information outdated.

Fitter, R.S., Fitter, A. & Blamey, M. 1974. *The wild flowers of Britain and northern Europe*. London: Collins.

A popular starting point; o.k., but very few grasses, sedges and rushes.

Blamey, M. & Gray-Wilson, C. 1989. *The illustrated flora of Britain and northern Europe*. London: Hodder & Stoughton.

Larger and more detailed than the above, with keys to some of the more difficult groups, and helpful close-up illustrations of the critical bits of each species.

Blamey, M., Fitter, R. and Fitter, A., 2003, *Wild Flowers of Britain and Ireland*. London: A&C Black.

A colour illustrated book, which by covering only Britain and Ireland can be very comprehensive, including grasses, ferns etc, and may have superseded some of the others mentioned in usefulness.

Rose, F. & O'Reilly, C. 2nd ed. 2006. *The wild flower key*. London: Warne.

A well illustrated guide with keys to most groups, helpful descriptions and summaries of which features to look for in many groups. In the first edition some of the keys were difficult to use or relied on features which are variable but most aspects of this book have been improved for the second edition. Includes only a few common grasses, sedges and rushes. The version of the 2nd Ed. printed in late 2006 contained many small, and some not so small, errors (some listed in a long erratum slip that comes with the book and many more listed in a note in the BSBI Newsletter). It is anticipated that a revised and corrected version will be printed.

Keble-Martin, W. 1965 etc. *The concise British flora in colour*. London: Michael Joseph.

The first fairly comprehensive set of colour pictures. Rather stylised, and text rather brief. Good black and white drawings of grasses, sedges and rushes.

There are two authoritative single volume 'floras' for the more experienced botanist:

Clapham, A.R., Tutin, T.G. & Moore, D.M. (1987) *Flora of the British Isles*. Cambridge: Cambridge University Press. (earlier editions: **Clapham, A.R., Tutin, T.G. & Warburg, E.F.**, 1952, 1962).

Stace, C.A. 1997. *New flora of the British Isles*. 2nd edition. Cambridge: Cambridge University Press.

For native vascular plants, each has its strengths and weaknesses. Both have detailed keys, neither has any colour pictures, and few black and white drawings (both) or photographs (Stace only). Stace is more up-to-date (indeed, it has become the standard source for plant names), and he tackles certain 'difficult' groups better than any previous book, often with new illustrations; he is never afraid to use small features (even requiring a microscope) if these are the most reliable. 'CTM' (alias 'CTW') provide much more thorough descriptions, which can be very handy if parts of a plant (e.g. flowers, fruits) are missing. Their keys often use easier characters, and are more comfortably laid out. For non-native plants, Stace has to be used, because he includes over a thousand extra species, mainly casuals from food, gardens etc., and is far more reliable on the distribution and origins of aliens.

If the size or price of either of the above is daunting both of the volumes above are available as pocket versions:

Clapham, A.R., Tutin, T.G. & Warburg, E.F. 1986. *Excursion flora of the British Isles*. Cambridge: Cambridge University Press.

This is a good compromise, including most species, and with the same keys as the larger volume, but with briefer descriptions (and no descriptions for the rarest species).

Stace, C.A. 1999. *Field Flora of the British Isles*. Cambridge: Cambridge University Press.

Almost entirely composed of keys and missing even the short descriptions of the larger volume. An essential field guide for the experienced botanist who has the full version at home.

Sell, P.D. & Murrell, G. *Flora of Great Britain and Ireland Vol.5 Butomaceae-Orchidaceae*. 1997, *Vol. 4 Campanulaceae-Asteraceae*. 2006. Cambridge: Cambridge University Press.

The 'first' two volumes in this large and expensive (c. £85 per vol. in hdbk) new flora.. "This new, critical Flora provides a definitive account of the native species, naturalised species, frequent garden escapes and casuals found in the British Isles. Full keys and descriptions should enable the user to name all plants occurring in the wild, plus some ornamental trees and shrubs. Detailed accounts of all the large apomictic genera are given and many infraspecific variants included." One hundred pages of Vol. 4 are on Hawkweeds (*Hieracium*) alone.

Stace, C.A., van der Meijden, R. & de Kort, I. (Eds.). 2004. *Interactive Flora of the British Isles*. ETI Information Services Ltd. 2004.

This multimedia DVD combines a new and extended version of Stace's New Flora of the British Isles 2nd Ed., detailed distribution data from New Atlas of the British & Irish Flora and some 8500 illustrations (mainly photographs), amongst other items. [about £30]

Once you have grown used to Stace, CTM, or Sell & Murrell (or if you get fed up with struggling with certain parts), there are three 'trouble-shooting' books available.

Wigginton, M.J. & Graham, G.G. 1981. *Guide to the identification of some difficult plant groups*. Banbury: Nature Conservancy Council.

Originally written for Durham, Northumberland and Cumbria, but much more widely useful.

Rich, T.C.G. 1988. *Plant crib*. London: BSBI.

Rich, T.C.G., Jermy, A.C. & Carey, J.L. 1998, reprinted 2006. *Plant Crib 1998*. London: BSBI.

These together tackle most of the more tricky groups of vascular plants, apart from the large apomictic groups, and provide illustrations and better descriptions than are readily available elsewhere. The last of the three very nearly supersedes the other two.

Then, there are more specialized guides: don't be afraid to consult these, as they often make the plants easier to identify than supposedly more simple treatments in general books:

Hubbard, C.E. 1954, slightly revised 3rd ed. 1984. *Grasses*. Harmondsworth: Penguin.

Jermy, A.C., Simpson, D.A., Foley, M.J.Y. & Porter, M.S. 3rd edition, 2007. *Sedges of the British Isles*. London: BSBI. Extensively revised and enlarged to include the rest of the Cyperaceae and hybrid species. (supersedes the 2nd Ed. Jermy, A.C., Chater, A.O. & David, R.W. 1982)

Lousley, J.E. & Kent, D.H. 1981. *Docks and knotweeds of the British Isles*. London: BSBI. Out of print.

Meikle, R.D. 1984, reprinted 2006. *Willows and poplars of Great Britain and Ireland*. London: BSBI.

Preston, C.D. 1995, reprinted 2003. *Pondweeds of Great Britain and Ireland*. London: BSBI.

Rich, T.C.G. 1991, reprinted 2006. *Crucifers of Great Britain and Ireland*. London: BSBI.

Summerhayes, V.S. 1968. *Wild orchids of Britain*. London: Collins.

Tutin, T.G. 1980, reprinted 2006. *Umbellifers of the British Isles*. London: BSBI.

Finally, for the very committed, a couple of works on plants which almost all botanists avoid, or identify very vaguely:

Graham, G.G. & Primavesi, A.L. 1993, reprinted with corrections 2005. *Roses of Great Britain and Ireland*. London: BSBI.

Stace, C.A. 1974. *Hybridization and the flora of the British Isles*. London: Academic Press.

The latter book assumes a good knowledge of the parent species, and access to the standard floras. Given that, it is an excellent work, describing all known and suspected hybrids in Britain, with great insights into ecology and likely distribution. Often very useful in clarifying the difference between the parent plants too!

Beyond that, there are the plants which are even closer to impossible to identify: hawkweeds (*Hieracium*: about 250 microspecies), and brambles (*Rubus*: over 400 microspecies) and dandelions (*Taraxacum*: over 226 or so microspecies) for which the brave may consult:

Edees, E.S. & Newton, A.N. 1988. *Brambles of the British Isles*. London: Ray Society.

Dudman, A.A. and Richards, A.J. 1997, reprinted with minor alterations 2000. *Dandelions of Great Britain and Ireland*. London: BSBI.

and see Sell, P.D. & Murrell, G. above.

FERNS, HORSETAILS, CLUBMOSESSES etc.

As noted, **Stace** and **Clapham et al.** include the non-flowering vascular plants. Most popular guides do not (good old McClintock and Fitter do!), so if you're using Fitter, Fitter & Blamey, or Blamey & Gray-Wilson, or Rose (1981, 2006), you'll need something else for the ferns. The following are all very good in their different ways:

Rose, F. 1989. *Colour identification guide to the grasses, sedges, rushes and ferns of the British Isles and north-western Europe*. London: Viking.

The only guide including all species of ferns, horsetails and their allies illustrated with colour paintings.

Good keys, and brief descriptions; about £40.

Jermy, A. & Camus, J. 1991. *The illustrated field guide to ferns and allied plants of the British Isles*. London: Natural History Museum.

Excellent keys, clear and well-illustrated with line drawings and silhouettes, clear descriptions. Out of print.

Hyde, H.A., Wade, E. and Harrison, S.G. 1978. *Welsh ferns, clubmosses, quillworts and horsetails*. Cardiff: National Museum of Wales.

Well illustrated, good keys and line drawings, some black and white photographs.

Merryweather, J. & Hill, M. 1992. *The Fern Guide: a field guide to the ferns, clubmosses, quillworts and horsetails of the British Isles*. (AIDGAP). *Field Studies*, **8**, 101-188.

A modern style of key, with line drawings throughout. A user-friendly presentation, but not always using all the available characters of each species. Brief descriptions.

Page, C.N. 1982. *The ferns of Britain and Ireland*. Cambridge: Cambridge University Press.

A very thorough, well illustrated guide, with several silhouettes and line drawings of each species, subspecies and hybrid. Detailed critical descriptions and a wealth of ecological and distributional information. An invaluable monograph, very useful in identification, especially for the more difficult species and forms. No species-level keys, so not a quick guide for the novice.

If you want photographs to give you an idea of 'what species look like', you might try:

Jahns, H.M. 1980. *Collins guide to the ferns, mosses and lichens of Britain and north and central Europe*. London: Collins.

Lots of pleasant photographs, and quite helpful in confirming identifications reached using other guides.

Phillips, R. 1980. Grasses, ferns, mosses and lichens of Great Britain & Ireland. London: Pan.

Has a smaller selection of species, because of its wider scope; and problems with colours (oddly, its moss and liverwort greens are good, but some fern greens are too yellow or too blue-green).

Both are attractive and give a rough idea of the range of species, and are useful in confirming identification from other books, or in refreshing your memory. Very hit-and-miss on their own, though (see below for recommended starting texts with keys).

MOSSES AND LIVERWORTS

Sensitive indicators of atmospheric pollution. Important parts of the ground-flora of woodlands, and found in most vegetation types. Many species grow only on trees or rocks. The majority prefer fairly high humidity, so shaded areas are most productive. Mosses may dominate some wetlands, and *Sphagnum* can lay down deep peat in mires and bogs.

These are not easy groups to teach yourself quickly. Jahns (1980), above, has pretty pictures, and although these will help confirm an identification from more detailed texts, they will seldom allow you to name a species on their own. A microscope is necessary to get to know the group properly, though experienced bryologists can name most species with a hand-lens in the field. The best introduction is probably:

Watson, E.V. 1968 etc. *British mosses and liverworts*. Cambridge: Cambridge University Press.

Although only including the commoner species, this has almost everything the novice in the three counties is likely to find. If you happen to obtain the first edition, although the main text is rather dated, there's the bonus of a short field key, based on hand-lens characters, which was kept in a pocket inside the back cover.

The standard comprehensive guides are:

Smith, A.J.E. 1976. *The moss flora of Britain and Ireland*. Cambridge: Cambridge University Press.

Smith, A.J.E. 1990. *The liverworts of Britain and Ireland*. Cambridge: Cambridge University Press.

Not easy to use, but definitive and comprehensive. Better to consult after getting to grips with Watson first?

ALGAE

Most algae are microscopic, and well beyond most naturalists and most field surveys. The exception is the stoneworts, a small group of complex freshwater green macro-algae which are calcareous (they feel gritty), have branches arranged in whorls, and are easily mistaken for pondweeds or horsetails. Many species have an odd, rather unpleasant smell, reminiscent of gunpowder, stale garlic or mild rotting fish. The standard guide is:

Moore, J.A. 1986, reprinted 2005 with new preface and corrections. *Charophytes of Great Britain and Ireland*. London: BSBI.

For those with a good compound microscope and the time to use it:

John, D.M., Whitton, B.A. & Brook, A.J. 2002. *The freshwater algal flora of the British Isles*. Cambridge: Cambridge University Press/Natural History Museum.

A substantial and thorough guide, 700 A4 pages, and covering about 1700 of the 2200 or so British species (most omitted species are desmids, the subject of a forthcoming multi-volume handbook). Clear keys and black and white drawings, plus a CD of often-beautiful colour photomicrographs.

STATUS AND DISTRIBUTION

Perring, F.H., and Walters, S.M. 1962. *Atlas of the British Flora*. London: Nelson/BSBI.

Preston, C.D., Pearman, D.A. & Dines, T.D. 2002. *New Atlas of the British and Irish Flora*. London: BSBI/CEH/DEFRA.

Perring & Walters (1962) is essentially a set of maps. Its replacement is a massive and erudite tome, containing far more information on the habitats and history of each species, as well as maps containing records up to 2000. An accompanying CD maps many more species (mainly rare non-native species) and allows the data-set on which the atlas is based to be interrogated.

Stewart, A., Pearman, D.A. and Preston, C.D. 1994. *Scarce plants in Britain*. Peterborough: Joint Nature Conservation Committee.

A comprehensive review of vascular plants which were not rare enough to be in the Red Data Book but which occurred, or were thought to occur, in fewer than 100 10km squares in Britain. Good ecological and conservation details as well as maps.

Wigginton, M.J. 1999. *British Red Data Books, 1, Vascular Plants*. Peterborough: JNCC.

A review of the rarest British plants, generally those occurring in 15 or fewer of the c. 2800 10km squares in Britain.

The statuses ascribed in both the above volumes have been superseded by:

Cheffings, C.M. & Farrell, L. (Eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J., Taylor, I. 2005. *The Vascular Plant Red Data List for Great Britain Species Status 7: 1-116*. Peterborough, JNCC.

This report uses the IUCN criteria which take into account threat as well as rarity. Thus, rare species which have always been rare and which are not threatened can be ascribed a 'lower' conservation status than commoner species which are rapidly declining or otherwise under threat. Available as pdf download.

COUNTY FLORAS

Floras, in the sense of catalogues showing status and distribution of vascular plants, have now been published for most lowland British vice-counties. For many vice-counties there have been several and only the most recent are listed below.

Bedfordshire vc. 30

Dony, J.G. 1976. *Bedfordshire Plant Atlas*. Luton: Borough of Luton Museum and Art Gallery.

Dony, J.G. 1953. *Flora of Bedfordshire*. Luton: The Corporation of Luton Museum and Art Gallery.

Includes bryophytes.

Huntingdonshire vc. 31

Wells, T.C.E. 2003. *The Flora of Huntingdonshire and the Soke of Peterborough*. Huntingdonshire Fauna and Flora Society & T.C.E. Wells.

The only flora apart from the entry in the Victoria County History and the slender county checklist produced by J.S.Gilmour in 1965. Despite its title, this flora includes the entire district of Peterborough; thus it covers a significant part of vc 32 (with many discrepancies between this volume and the Gent & Wilson flora cited below) together with Stanground and the large fenland parish of Thorney, both properly part of vc 29 Cambridgeshire. Mainly comprising tetrad distribution maps with short species accounts.

Cambridge and the Isle of Ely vc. 29

Crompton, G. *Catalogue of Cambridgeshire Flora (Cambridgeshire Flora Records since 1538)*

www.cambridgeshireflora.com

An elegant and easy-to-use catalogue giving full details of flora records from the 16th century up to the present; divided into three sections: rare species, aliens, the rest. Complete download available for off-line browsing. Paper copies lodged at Cambridge University Library, Cambridge Botanic Garden, etc. The single most useful, up to date and accessible resource for Cambridgeshire vascular plant records.

Crompton, G., and Whitehouse, H.L.K. 1983. *A checklist of the flora of Cambridgeshire*. Cambridge: Privately printed.

Distribution lists at 10km square resolution. Includes bryophytes.

Perring, F.H., Sell, P.D., and Walters, S.M 1964. *A flora of Cambridgeshire*. Cambridge: Cambridge University Press.

The most recent 'full' flora. Includes bryophytes.

Northamptonshire and Peterborough vc. 32

Gent, G. and Wilson, R. et al 1995. *The Flora of Northamptonshire and the Soke of Peterborough*. Robert Wilson Designs.

Mainly comprising species distribution maps at 5km square resolution accompanied by short species accounts. The authors are intending to produce an update to this volume.

Lower plants are not yet comprehensively covered. An excellent 3-volume set for mosses and liverworts:

Hill, M.O., Preston, C.D. & Smith, A.E. 1991. *Atlas of the bryophytes of Britain and Ireland*. Volume 1 - Liverworts (Hepaticae and Anthocerotae). Colchester: Harley Books.

Hill, M.O., Preston, C.D. & Smith, A.E. 1992. *Atlas of the bryophytes of Britain and Ireland*. Volume 2 - Mosses (except Diplolepideae). Colchester: Harley Books.

Hill, M.O., Preston, C.D. & Smith, A.E. 1994. *Atlas of the bryophytes of Britain and Ireland*. Volume 3 - Mosses, Part 2. (Diplolepideae). Colchester: Harley Books.

The definitive review of the distribution of British mosses and liverworts, with short but effective ecological summaries.

Stewart, N.F. & Church, J.M. *Red Data Books of Britain and Ireland: Stoneworts*. 1999. JNCC et al.

Since so many stoneworts are considered to be rare this volume contains a substantial proportion of the British flora. Contains a useful key to all species, including the common ones.

VEGETATION

There have been several different classification systems for British and European vegetation, but the most recent seems to have become the standard: the National Vegetation Classification (NVC). The project, based at Lancaster University, began work in 1975, and has published its results in the 1990s:

Rodwell, J.S., editor. 1991a. *British plant communities*. Volume 1. *Woodland and scrub*. Cambridge: Cambridge University Press.

Rodwell, J.S., editor. 1991b. *British plant communities*. Volume 2. *Mires and heaths*. Cambridge: Cambridge University Press.

Rodwell, J.S., editor. 1992. *British plant communities*. Volume 3. *Grassland and montane communities*. Cambridge: Cambridge University Press.

Rodwell, J.S., editor. 1994. *British plant communities*. Volume 4. *Aquatic communities, swamps and tall-herb fens*. Cambridge: Cambridge University Press.

Rodwell, J.S., editor. 2000. *British plant communities*. Volume 5. *Maritime communities and vegetation of open habitats*. Cambridge: Cambridge University Press.

The NVC was commissioned by the Nature Conservancy Council as a classification for National Nature Reserves and SSSIs. Only when the project was well advanced did the possibility of using it in the wider countryside arise. So, it is an excellent classification of the better quality natural and semi-natural vegetation in Britain, but less useful on disturbed, degraded or manmade sites. The NVC is also rather weak on aquatic communities. Despite these shortcomings, it is the most thorough survey of British vegetation, and many consultants and other organisations have adopted it without question. Courses are available in the use of the NVC; all presuppose that vascular plants, and the more conspicuous mosses, can be identified accurately to species level. Omission of small, cryptic or 'difficult' species may affect the resulting assessment of vegetation types.

FUNGI

LICHENS

Along with mosses and liverworts, the most useful group to become familiar with if pollution monitoring is important to you. Lichens are richest on trees in fairly bright sunshine, and parkland trees often have more species than those in dense woodland. Habitats where the ground flora is sparse, such as heathlands, can be dominated by lichens of a few genera, especially *Cladonia* (cup-lichens, stag's-horn lichens, reindeer lichens). Elsewhere, they seldom form a major part of vegetation, and are found especially on trees, rocks, and walls; churchyard lichens are a study in themselves.

Superficially easier to recognise than mosses and liverworts, and some species can be named by comparison with pictures. Ultimately, lichens are perhaps more difficult to name than mosses in unpolluted parts of Britain; but there is only a limited flora in eastern England. The photographs in Jahns (above) are a start, but the selection of species is not ideal for eastern counties users. Two introductory guides which do cover almost all the species to be found in the region:

Duncan, U.K. 1970. *Introduction to British lichens*. Arbroath: Buncle.

Good keys, mediocre line drawings, and an indigestible introductory chapter with too many technical terms; fairly easy to use once familiar with vocabulary. Good lists of species by habitats. Names rather out of date. About 880 species.

Dobson, F.S. 2005 (5th edition) *Lichens: An Illustrated Guide to the British and Irish Species*. Richmond: Richmond Publishing.

“Covering 450 of the most common species and a selection of the rarer ones. Entries consist of full-colour photographs, a description, notes on habitat and distribution, and the approximate air pollution tolerance. Numerous line illustrations are also included, showing microscopic and diagnostic features.”

Don't be put off by the microchemical tests which the guides recommend: these simply involve dabbing a piece of lichen with a very small drop of a reagent (the two common ones are Domestos (calcium hypochlorite solution) and caustic soda/potash (sodium or potassium hydroxide solution). The third, para-phenylene diamine, is less easy to obtain.

A definitive handbook to all the British lichens is now available:

Purvis, O.W., Coppins, B.J., Hawksworth, D.L., James, P.W. & Moore, D.M. 1992. *The lichen flora of Great Britain and Ireland*. London: Natural History Museum & British Lichen Society.

Over 700 pp., few illustrations. Thorough keys, requiring good microscope, and measurement of spore sizes. Helpful descriptions and identification notes. Over 1700 species.

FUNGI

Ecologically very important. No comprehensive guide exists. Most species are microscopic (moulds, rusts, smuts etc.) and are beyond almost all fieldworkers. Macrofungi, including toadstools, mushrooms, bracket-fungi etc. are also of importance (many form mycorrhizal associations with the roots of trees and other vascular plants, to the benefit of the plant, and can completely change the character of vegetation). Almost impossible to monitor, but fun to record and list. Many guides available. The following pair are probably among the best combinations:

Phillips, R. 1981. *Mushrooms and other fungi of Great Britain and Europe*. London: Pan (paperback), Ward-Lock (hardback)

Large format, and fully illustrated with generally excellent colour photographs, but a serious work of scholarship, with good descriptions. Includes all common species and many rare ones, 900 in total. The best of the guides to identification by matching the pictures.

Bon, M. 1987. *The mushrooms and toadstools of Britain and north-west Europe*. London: Hodder & Stoughton.

Probably the best pocket guide, with a far larger range of species than most of its rivals (about 1500), good colour paintings, careful descriptions, keys to the larger genera, and even spore diagrams. Far more than a field guide.

There are many other guides which emulate one or other of the above, but are generally less successful, and mostly far less comprehensive. There are also several specialised texts to particular families or genera; references to these are provided in the above two books.

SLIME MOULDS

Ing, B. 1999. *The Myxomycetes of Britain and Ireland: An Identification Handbook* Richmond: Richmond Publishing.

“The first book this century to cover these fungi comprehensively. The introductory chapters cover life history, structure, ecology and distribution, how to find and collect material, bark culture techniques, microscopic examination and herbarium storage. The main section is devoted to identification, and includes keys, descriptions and illustrations.”

STATUS & DISTRIBUTION

Woods, R.G., Coppins, B.J. 2003. *A Conservation Evaluation of British Lichens*. British Lichen Society.

“Evaluates the entire British lichen flora in a clear and authoritative manner. The heart of the publication is a 27-page table listing lichens, followed by information on Evaluation 2002 (using IUCN Criteria), Red Data Book Evaluation 1997, Rarity (based on grid square occurrence), Endemics, BAP species, Schedule 8 species, International importance, and notes.”

A few volumes have been published for lichens; but for most purposes, the tiny maps of species in Dobson (above) may be adequate. Stoneworts are mapped in Moore's handbook (rather out-of-date); rare species are mapped in Stewart and Church (1999). The only fungal maps available so far are for slime moulds:

Ing, B. 1982. *Provisional atlas of the myxomycetes of the British Isles*. Huntingdon: Biological Records Centre.

VERTEBRATES

A wealth of information is available on the identification, ecology and distribution of British vertebrates, literally hundreds of new books are published each year, and only a very few key works can be cited here.

The standard source for birds is **Cramp, S.** (ed.) 1977-1993, *Handbook of the birds of Europe, the Middle East and North Africa: the birds of the Western Palaearctic*. Oxford: Oxford University Press, 9 volumes, which provides an ideal lead into specialist literature (often referred to as 'BWP'). A more readable concise version in 2 volumes was published in 1999. Still more readable, though less up to date is the single volume **Hollom, P.A.D.** (several editions since 1952) *Popular Handbook of British Birds* (Witherby), itself a condensation of the 5-volume *Handbook* (Witherby *et al.* 1938) which had been the definitive work from publication till the appearance of 'BWP'. On distribution and changing status, the *New Atlas of Breeding Birds in Britain and Ireland 1988-1991* (**Gibbons, D.W., Reid, J.B. & Chapman, R.A.**, 1993. Poyser) shows the current distribution, recent trends, and offers estimates of population size, for each resident and summer visitor. It also explains many of the difficulties in assessing the numbers of particular species. An equivalent *Atlas of Wintering Birds* is also available. There are also many specialist and more general books on aspects of bird biology: **Burton, J.F.** 1995. *Birds and climate change*. London: Christopher Helm, is an interesting read and a good review of an important topic. Almost any bird book published by A & AD Poyser will be good of its kind, and often clearly presented and readable.

For mammals, a series of short books or booklets from the Mammal Society is useful, as are longer monographs in series from Whittet Books and more recently from Poyser. *The handbook of British Mammals* (**Corbet, G.B. & Harris, S.**, 1990. Oxford) is a thorough compilation; a small, cheap guide, **Corbet, G.B.**, *Finding and identifying mammals in Britain* (Natural History Museum) is remarkably useful. Comprehensive and up-to-date literature on amphibians and reptiles is less easily found, though the Collins *New Naturalist* volume (M. Smith, 3rd 3d. 1964) is still useful, as is the Whittett volume on reptiles and amphibians by Tom Langton. The newsletter of Herpetofauna Groups of Britain and Ireland is a good source of informal recent information and advice.

A more recent *New Naturalist*, **Maitland, P. & Campbell, R.N.** 1992, *Freshwater Fishes*, is exemplary and well-referenced. The newly published **Davies, C.** 2004, *Freshwater Fishes in Britain* Colchester: Harley Books not only provides up-to-date distribution maps but also detailed accounts of each species.

For advice on monitoring, there are thorough chapters in **Sutherland, W.J.**, 1996. *Ecological census techniques: a handbook*. (Cambridge University Press), and on birds specifically, **Bibby, C.J., Burgess, N.D. & Hill, D.A. & Mustoe, S.H.** (2nd ed. 2000) *Bird Census Techniques* (Academic Press with Ecoscope, BTO, RSPB and BirdLife International) is excellent, and gives species-specific advice as well as describing general methods. For more information on analysis and presentation of data, **Taylor, K., Fuller, R.J. & Lack, P.C. eds.**, 1985. *Bird census and atlas studies* (Tring: BTO) is worth skimming.

- Arnold, E.A. and Burton, J.A.** 1978. *Field guide to the reptiles and amphibians of Britain and Europe*. London: Collins.
- Arnold, H.R.** 1993. *Atlas of the mammals of Britain*. London: HMSO.
- Arnold, H.R.** 1995. *Atlas of amphibians and reptiles in Britain*. London: HMSO.
- Bacon, L.** 2005. *Cambridgeshire & Peterborough Provisional Mammal Atlas*. Cambridgeshire and Peterborough Biological Records Centre.
- Batten, D.M., Bibby, C.J., Clement, P., Elliot, G.D. and Porter, R.F.** 1990. *Red Data birds in Britain*. London: Poyser.

INVERTEBRATES

Invertebrates are extremely diverse, and the literature may at first seem daunting. It varies from very simplistic illustrated guides to technical monographs which are usable only by experienced specialists. This rough guide to some of the more useful references is arranged by Order and Family, non-insects first. As far as possible, works are classified as follows:

- C** = conservation and habitat management
- E** = ecology, behaviour or general biology
- I** = identification
- L** = checklist

A note on series of invertebrate identification guides in general

Several series of books help with identification of invertebrates, and their distinctive 'house style' makes them more or less user-friendly, reliable or suited to beginners:

Naturalists' Handbooks: Modern A5-size booklets, mostly 60-80 pages, with clear, well-tested and well-illustrated keys, a few pages of colour illustrations, useful ecological notes, and a wealth of ideas for projects and fieldwork. Ideal for the beginner, some are definitive guides to taxonomic groups (*Ladybirds* and *Solitary wasps* would be hard to better), others tackle an ecological theme (such as *Insects on nettles* and *Aphid predators*). All are interesting, most are easy and enjoyable to use.

AIDGAP guides: produced by the Field Studies Council, to encourage fieldwork in Britain. Usually very thoroughly tested with users of widely differing experience. As a result, among the best-planned and executed keys available. Most are easy to use, well illustrated and inspire confidence in users. Excellent value for money, and include some of the finest and most effective guides available (e.g. *Water beetles*, *Woodlice* or *Lacewings*).

Royal Entomological Society Handbooks for the Identification of British Insects: for most groups of insects, the definitive keys (indeed, often the only keys), usually comprehensive, accurate and reliable. Softback, some volumes expensive. Almost all have line drawings, usually collected at the back of the book, so keys are somewhat awkward to use. Often highly technical (using more obscure vocabulary than strictly necessary), and usually assume you know what family your insect belongs to (and often expect you to be familiar with the appropriate *Introduction and key to families* volume. Recent reprints often badly reproduced. Mostly not suited to the novice, and irritating to the experienced entomologist, but the best available for many groups. Very recent volumes or editions have been published by the Field Studies Council.

Linnean Society Synopses of the British Fauna: essentially, equivalents of Royal Entomological Society handbooks, but for non-insect groups. Definitive, thorough and reliable, but in the past not especially easy to use. Those appearing since 1980 have generally been better designed and more user-friendly.

Fauna Entomologica Scandinavica: a well-produced hardback series, not cheap but usually reasonable value. Well illustrated, somewhat technical but usually more self-contained than the British equivalent. Most volumes include at least 90% of the British fauna, and some are deliberately comprehensive (even if some of our species do not occur in Scandinavia).

British Wildlife: this bimonthly magazine often includes valuable articles on invertebrates.

GENERAL

Bevan, D. 1987. *Forest insects: a guide to insects feeding on trees in Britain*. Forestry Commission Handbook no. 1. London: HMSO. **E,I**

Bratton, J.H. 1991. *British Red Data Books 3: invertebrates other than insects*. Peterborough: Joint Nature Conservation Committee. **C**

- Buckland, P.C. and Coope, G.R.** 1991. *A bibliography and literature review of Quaternary entomology*. 85 pp. Sheffield: Collis. **E**
An excellent introduction to the study of recent subfossil insects in Britain; the bias toward beetles reflects the available material.
- Chinery, M.** 1993. *Collins Field Guide to the insects of Britain and northern Europe*. London: Collins. **I**
The best introduction to the identification and study of insects: well written text, keys to family (or better) for almost all groups, and thorough literature guide; illustrations mediocre and a small and poor selection of species; but next title is the ideal companion.
- Chinery, M.** 1986. *Collins pocket guide to the insects of Britain and western Europe*. London: Collins. Revised edition 2007. London A. & C.Black/Domino Books **I**
The best introductory set of colour pictures of insects, plus a few spiders, centipedes etc. A sensible selection of the commoner or more conspicuous species; few keys and very brief text. The revised edition suffers problems with colour values on some pages.
- Chinery, M.** 1977. *The natural history of the garden*. London: Collins. **E,I**
A surprisingly good introduction to many of the non-insect groups, such as spiders, woodlice, centipedes, millipedes etc.
- Collins, N.M. and Thomas, J.A.**, editors. 1991. *The conservation of insects and their habitats* (15th Symposium of the Royal Entomological Society of London). London: Academic Press. **C**
- Davis, B.N.K.** 1991. *Insects on nettles* (revised edition) Naturalists' Handbook, **1**. Slough: Richmond. **E,I**
- Davis, B.N.K., Walker, N., Ball, D.F. & Fitter, A.H.** 1992. *The Soil* (New Naturalist). London: Collins. **E**
- Disney, R.H.L., Erzinçlioglu, Y.Z., Henshaw, D.J., Howse, D., Unwin, D.M., Withers, P. and Woods, A.** 1982. Collecting methods and the adequacy of attempted faunal surveys, with reference to Diptera. *Field Studies*, **5**, 607-621.
- Eversham, B.C.** 1983. *Defining rare and notable species: a discussion*. Invertebrate Site Register report no. 22. London: NCC. 30pp. **C**
- Eversham, B.C.** 1994. Using invertebrates to monitor land use change and site management. In: *Invertebrates in the landscape: invertebrate recording in site evaluation and countryside monitoring*, edited by P.T. Harding, 36-45. (British Journal of Entomology and Natural History, **7** (supplement), Proceedings of the National Federation for Biological Recording Annual Conference). **E**
- Freeman, P.** 1980. *Common insect pests of stored food products*. London: British Museum (Natural History). **I (E)**
A simple, well-illustrated guide to most of the insects likely to be found living indoors.
- Fry, R. & Lonsdale, D.** (eds.) 1991. *Habitat conservation for insects - a neglected green issue*. London: Amateur Entomologists' Society. **C**
- Gaston, K.J.** 1994. *Rarity*. London: Chapman and Hall. **E,C**
- Guthrie, M.** 1989. *Animals of the surface film*. Naturalists' Handbook, **12**. Slough: Richmond. **E,I**
- Kirby, P.** 1992. *Habitat management for invertebrates*. Sandy: RSPB **C,E**
- Kirby, P.** 1994. Habitat fragmentation: species at risk. Invertebrate group identification. *English Nature Research Reports*, **89**. **C,E**
- Luff, M.L.** 1968. Some effects of Formalin on the numbers of Coleoptera caught in pitfall traps. *Entomologists' Monthly Magazine*, **104**, 115-116. **E**
- Luff, M.L.** 1975. Some features influencing the efficiency of pitfall traps. *Oecologia*, **19**, 345-357. **E**
- Magurran, A.** 1988. *Ecological Diversity and its measurement*. London: Chapman and Hall. **E**
- New, T.R.** 1995. *An introduction to invertebrate conservation biology*. Oxford: Oxford University Press **E**
- Prendergast, J.R, Quinn, R.M., Lawton, J.H., Eversham, B.C. and Gibbons, D.W.** 1993b. Rare species, the coincidence of diversity hotspots, and conservation strategies. *Nature*, **365**, 335-337. **C**
- Rotheray, G.E. & J.C.** 1989. *Aphid predators*. Naturalists' Handbook, **11**. Slough: Richmond. **E,I**
- Shirt, D.B.**, (ed.) 1987. *British Red Data Books, 2, Insects*. Peterborough: Nature Conservancy Council. **C,E**
- Skidmore, P.** 1991. *Insects of the British cow-dung community*. AIDGAP Occasional Publication No. 21. Field Studies Council. **I,E**
A superb introduction to a very wide range of groups in a well-defined microhabitat; the best novice's introduction to identifying insect larvae, with good illustrations and excellent keys.
- Speight, M.C.D.** 1989. *Saproxyllic invertebrates and their conservation*. Strasbourg: Council of Europe. (Nature & Environment Series, no. 42). **E,C**
An ecological review of the importance of dead wood for invertebrate conservation, with a strong emphasis on flies and beetles.
- Tilling, S.M.** 1987. *A key to the major groups of British terrestrial invertebrates*. AIDGAP, Field Studies Council. *Field Studies*, **6** (4): 695-766. **I**
- Varley, G.C., Gradwell, G.R. & Hassell, M.P.** 1973. *Insect population ecology: an analytical approach*. Oxford: Blackwell.

- Wallwork, J.A.** 1976. *The distribution and diversity of soil fauna*. London: Academic Press. **E**
- Warren, M.S. and Key, R.S.** 1991. Woodlands: past, present and potential for insects. In: *The conservation of insects and their habitats*, edited by N.M. Collins and J.A. Thomas, 155-211. (15th Symposium of the Royal Entomological Society) London: Academic Press. **C,E**
- Wheater, C.P. & Read, H.J.** 1996. *Animals under logs and stones*. Naturalists' Handbook, **22**. Slough: Richmond. **E,I**
 Attractive general introduction. Keys seem straightforward, though some use tricky or unreliable characters. O.k. as an introduction to major groups, with good biological information but choice of species to include is quirky.
- Valovirta, I., Harding, P.T. & Kime, D. (eds).** 1995. *Threatened species and bioindicators at the pan-European level*. Helsinki: European Invertebrate Survey.

Platyhelminthes: Tricladida (flatworms)

- Ball, I.R. & Reynoldson, T.B.** 1981. *British Planarians*. (Linnean Society Synopses of the British Fauna, New Series, 19). London: Academic Press. [includes terrestrial and marine as well as terrestrial species] **E,I**
- Reynoldson, T.B.** 1978. *A key to the British freshwater triclad*. (FBA Sci. Publ. 23). **E,I**

Annelida: Hirudinea (leeches)

- Elliott, J.M. & Mann, K.H.** 1979. *Key to British freshwater leeches*. (FBA Sci. Publ. 40). **E,I**

Nematoda: Nematomorpha (hair-worms)

- Schmidt-Rhaesa, A.** 1997. *Nematomorpha*. (Süßwasserfauna von Mitteleuropa, vol 4 pt 4). Stuttgart: Gustav Fischer. **E,I**

Lumbricidae (earthworms)

- Edwards, C.A. & Lofty, J.R.** 1977. *Biology of earthworms*. London: Chapman & Hall. **E**
- Simms, R.W. & Gerard, B.M.** 1985. *Earthworms*. (Linnean Society Synopses of the British Fauna, New Series, 31). London: Academic Press. **E,I**
 Only c. 40 spp., incl. rare introductions, but rather difficult to start: try adults only at first.

Crustacea: Amphipoda (freshwater shrimps, sandhoppers)

- Gledhill, T., Sutcliffe, D.W. & Williams, W.D.** 1976. *Key to the freshwater Crustacea: Malacostraca*. (FBA Sci. Publ. 32). **E,I**

Isopoda (woodlice and water slaters)

- Harding, P.T. and Sutton, S.L.** 1985. *Woodlice in Britain and Ireland: distribution and habitat*. Huntingdon: Institute of Terrestrial Ecology. **E**
- Hopkin, S.P.** 1991. *A key to the woodlice*. AIDGAP, Field Studies Council. *Field Studies*, **7** (4): 599-650. **I,E**
 Excellent, easy-to-use keys, good figures and colour photos of many species.
- Oliver, P.G. & Meehan, C.J.** 1993. *Woodlice*. (Synopses of the British Fauna (New Series), No. 49.). Shrewsbury: Field Studies Council, for Linnean Society/Estuarine & Coastal Sciences Association. **I,E**
 38 spp., keys o.k., excellent illustrations including fine details, useful confirmatory features additional to Hopkins.

Chilopoda (centipedes)

- Barber, A.D. and Keay, A.N.** 1988. *Atlas of the centipedes of the British Isles*. Huntingdon: Institute of Terrestrial Ecology. **E**
- Eason, E.H.** 1964. *Centipedes* **E,I**
- Lewis, J.G.E.** 1981. *Biology of centipedes*. Cambridge: Cambridge University Press. **E**

Diplopoda (millipedes)

- Blower, J.G.** 1985. *Millipedes*. (Linnean Society Synopses of the British Fauna, New Series, 35). Leiden: Brill/Backhus for Linnean Soc. **E,I**
- Hopkin, S.P. & Read, H.J.** 1992. *Biology of millipedes*. Oxford: Oxford University Press. **E**

Ephemeroptera (mayflies)

- Elliott, J.M., Humpesch, U.H. and Fidler, J.H.** 1983. *Key to the adults of the British Ephemeroptera*. Freshwater Biological Association Sci. Publ. , 47. **E,I**
- Harker, J.** 1989. *Mayflies*. (Naturalists' Handbook 13). Richmond. **E,I**

Elliott, J.M., Humpesch, U.H. and Macan, T.T. 1988. *Larvae of the British Ephemeroptera: a key with ecological notes*. Freshwater Biological Association Sci. Publ. 49. **E,I**

Odonata (dragonflies & damselflies)

Askew, R.R. 1988, 2002. *The dragonflies of Europe*. 308pp. Colchester : Harley. **I,(E)**

Essential if doing fieldwork abroad; superseded by next title for use in Britain. Second edition is in smaller-format softback, with a few additional species and some corrections and improvements.

Brooks, S.J. & Lewington, R. 1997 *Field Guide to the dragonflies of Great Britain and Ireland*. British Wildlife Publishing. **I,E,(C)**

The finest colour paintings of dragonflies available; clear identification features for adults, including rare migrants, and a key to larvae.

Corbet, P.S. 1999. *Dragonflies: behaviour and ecology of Odonata*. 829pp. Colchester: Harley.

The most thorough and well-referenced review of world dragonfly biology ever written; not a light read, but indispensable for serious enthusiasts.

Gerken, B. & Sternberg, K. 1999. *The exuviae of European dragonflies*. 355pp. Hoxter & Jena: Arnika & Eisvogel.

Bilingual in German and English, well illustrated and generally with clear keys, it adds some new features for British species, and points out where previously-used features are unreliable.

Hammond, C.O. (2nd ed., revised **R. Merritt**) 1983. *The dragonflies of Great Britain and Ireland*. Colchester : Harley. **I (E)**

For many years, the standard identification guide, and still very useful.

McGeeney, A. 1986. *A complete guide to British dragonflies*. London: Jonathan Cape. **E,I**

Probably the best available photographic guide to dragonflies.

Merritt, R., Moore, N.W. & Eversham, B.C. 1996. *Atlas of the British and Irish dragonflies*. London: HMSO. **E,C (I)**

An up-to-date summary of species distribution, changing status, habitats etc., with a chapter on conservation; identification hints.

Miller, P. 1994. *Dragonflies*. (Naturalists' Handbook 13). Richmond: Richmond Publishing. **I,E**

A straightforward short guide with background info.

Plecoptera (stoneflies)

Hynes, H.B.N. 1977. *A key to the adults and nymphs of the British stoneflies (Plecoptera)*. Freshwater Biological Association Sci. Publ., 47. **E,I**

Orthoptera (grasshoppers, bushcrickets), Dermaptera (earwigs), Dictyoptera (cockroaches)

Bellman, H. 1988. *A field guide to the grasshoppers and crickets of Britain and northern Europe*. London: Collins. **I**

Brown, V.K. 1983. *Grasshoppers*. (Naturalists' Handbook 2). Cambridge: Cambridge University Press. **I,E**

Haes, E.C.M. & Harding, P.T. (1997) *Atlas of the Orthoptera and allied insects of Britain and Ireland*. London: HMSO. **E**

Marshall, J. and Haes, E.M.C. 1987. *Grasshoppers and allied insects of Great Britain and Ireland*. Colchester: Harley. **C,E,I**

Definitive guide, with good keys, descriptions, ecological and distribution summaries, and excellent colour plates. Cassette of songs also available!

Ragge, D.R. & Reynolds, W.J. 1998. *The songs of the grasshoppers and crickets of western Europe*. 591pp. Colchester: Harley Books.

Accompanied by 2 CDs of the songs of all the British and most of the western European species. Includes some useful identification, distribution and behavioural notes.

Heteroptera (true bugs)

Hawkins, R.D. 2003. *Shieldbugs of Surrey*. Pirbright: Surrey Wildlife Trust.

An atlas of the Surrey species, but includes a clear, well-illustrated key to all the British shieldbugs, and 3 other families of large bugs, Coreidae, Rhopalidae and Alydidae. Very good colour photographs of live bugs, including nymphs of many species, and eggs of several.

Huxley, T. 2003. *Provisional Atlas of the British Aquatic Bugs (Hemiptera, Heteroptera)*. Huntingdon: Biological Records Centre.

- Kirby, P.** 1990. 1992: *A review of the scarce and threatened Hemiptera of Great Britain*. Peterborough: Joint Nature Conservation Committee. **C,E**
- Nau, B.S.** 2004. *Guide to shieldbugs of the British Isles*. Field Studies Council AIDGAP chart.
4 pages of very good colour photographs, and 2 pages of tabular descriptions, on a laminated gate-fold chart. Includes the 5 families of British shield-bugs, plus the leatherbugs (Coreidae).
- Savage, A.A.** 1989. *Adults of the British aquatic Hemiptera: Heteroptera*. (FBA Sci. Publ. 50). **E,I**
- Southwood, T.R.E. & Leston, D.** 1959. *Land and water bugs of the British Isles*. London: Warne. **E,I**
The only complete guide, long out of print, but available as CD facsimile (c. £23) and paperback reprint (c. £45) from Pisces Publications. For draft keys and updates, contact the Heteroptera Study Group c/o BRC at CEH Monks Wood.
- Savage, A.A.** 1999 *Key to the Larvae of British Corixidae*. Freshwater Biological Association Sci. Publ. 57. **I**
A useful, if difficult, addition to the literature, as many corixids are not adult until late summer and autumn, and the larvae are a prominent part of spring and summer freshwater samples.

Homoptera: Auchenorrhyncha (froghoppers & leafhoppers)

- Kirby, P.** 1990. 1992: *A review of the scarce and threatened Hemiptera of Great Britain*. Peterborough: Joint Nature Conservation Committee. **C,E**
- Le Quesne, W.J.** 1960. *Hemiptera: Fulgoromorpha*. Royal Entomological Society Handbooks for the Identification of British Insects, II (1). **I**
- Le Quesne, W.J.** 1965. *Hemiptera: Cicadomorpha (part)*. Royal Entomological Society Handbooks for the Identification of British Insects, II (2a). **I**
- Le Quesne, W.J.** 1969. *Hemiptera: Deltocephalinae*. Royal Entomological Society Handbooks for the Identification of British Insects, II (2b). **I**
- Le Quesne, W.J. & Payne, K.R.** 1981. *Hemiptera: Typhlocybinae*. Royal Entomological Society Handbooks for the Identification of British Insects, II (2c). **I**
- Ossiannilsson, F.** 1978, 1981, 1983. *The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark*. (Fauna Entomologica Scandinavica, 7 (1, 2, 3).) **E,I**
- Remane, R. & Wachmann, E.** 1993. *Zikaden: kennenlernen - beobachten*. Augsburg: Weltbild Verlag. **I,E**
Superb close-up colour photographs of over 180 species of leafhopper and froghopper; text in German.

Raphidioptera (snakeflies), Megaloptera (alderflies), Neuroptera (lacewings), Mecoptera (scorpionflies)

- Plant, C.W.** 1994. *Provisional atlas of the lacewings and allied insects (Neuroptera, Megaloptera, Raphidioptera and Mecoptera) of Britain and Ireland*. Huntingdon: Biological Records Centre. **E**
- Plant, C.W.** 1997. *AIDGAP: A key to the adults of British lacewings and their allies*. Field Studies Council. **I,(E)**
- Elliott, J.M.** 1996. *British Freshwater Megaloptera and Neuroptera: a key with ecological notes*. Freshwater Biological Association Sci. Publ. 54. **E, I**

Lepidoptera: Rhopalocera (butterflies)

- Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G. and Jeffcoate, S.** 2000. *The Millennium Atlas of Butterflies in Britain and Ireland*. Oxford: Oxford University Press.
- Fox, R., Asher, J., Brereton, T., Roy, D. & Warren, M.** 2006. *The State of Butterflies in Britain and Ireland*. Newbury: NatureBureau.
An update to the Millennium Atlas based on recording in the years since its publication.
- Hall, M.L.** 1981. *Instructions for independent recorders*. Huntingdon: ITE. **C,E**
Notes on the methodology for the Butterfly Monitoring Scheme.
- Harding, P.T. & Green, S.V.** 1991. *Recent survey and research on butterflies in Britain and Ireland: a species index and bibliography*. Huntingdon: ITE. **E**
- Heath, J.** 1981. *Threatened Rhopalocera (butterflies) of Europe*. (Nature and Environment Series, 23.) Strasbourg: Council of Europe.
- Heath, J. and Emmett, A.M.** (editors) 1990. *The moths and butterflies of Great Britain and Ireland*. 7 (1) Butterflies. Colchester: Harley. **I,E**
- Heath, J., Pollard, E. and Thomas, J.** 1984. *Atlas of butterflies in Britain and Ireland*. Harmondsworth: Viking. **C,E**
- Higgins, L.G. and Riley, N.D.** 1983. *A field guide to the butterflies of Britain and Europe*. London: Collins. **I**
- Pollard, E.** 1977. A method for assessing changes in the abundance of butterflies. *Biological Conservation*, 12, 115-134.
- Pollard, E.** 1990. Monitoring butterfly numbers. In: *Monitoring for conservation and ecology*, 87-111, edited by F.B. Goldsmith. London: Chapman and Hall. **C,E**

- Pollard, E.** 1991. Changes in the flight period of the hedge brown butterfly, *Pyronia tithonus*, during range expansion. *Journal of animal ecology*, **60**, 737-748. **E**
- Pollard, E. and Eversham, B.C.** 1994. Butterfly monitoring: interpreting the changes. In: *Ecology and conservation of butterflies*, edited by A.S. Pullen, 23-36. London: Chapman & Hall in association with Butterfly Conservation. **E**
- Pollard, E., Hall, M.L. and Bibby, T.J.** 1986. *Monitoring the abundance of butterflies, 1976-1985*. Research and survey in nature conservation no. 2. Peterborough: Nature Conservancy Council. **C,E**
- Pollard, E. and Yates, T.J.** 1993. *Monitoring butterflies for ecology and conservation*. London: Chapman and Hall, in association with the Institute of Terrestrial Ecology and the Joint Nature Conservation Committee. **C,E**
- Prendergast, J.R. and Eversham, B.C.** 1995. Butterfly species-richness in Britain: hotspot dynamics since 1930. *Biological Conservation*, **72**, 109-114. **C,E**
- Thomas, J.A.** 1989. *Hamlyn guide to Butterflies of the British Isles*. London: Hamlyn. **E,I**
By far the best pocket guide to butterfly identification and ecology.
- Thomas, J.A.** 1991. *The butterflies of Britain and Ireland*. London: Dorling Kindersley. **C,E,I**
The most thorough, accurate and readable guide to butterflies this century; superb illustrations.
- Thomas, J.A.** 1991. Rare species conservation: case studies of European butterflies. In: *The Sci. management of temperate communities for conservation*, edited by I.F. Spellerberg, F.B. Goldsmith and M.G. Morris, 149-197. Oxford: Blackwell Sci. Publ. **E**
- Thomas, J.A.** 1993. Holocene climate change and warm man-made refugia may explain why a sixth of British butterflies inhabit unnatural early-successional habitats. *Ecography*, **16**, 278-284.

Lepidoptera: Heterocera (macromoths)

- Bradley, J.B. and Fletcher, D.S.** 1979. *British Butterflies and Moths: a recorder's log-book and label list*. London: Curwen Books. **L**
- Carter, D.J. & Hargreaves, B.** 1986. *Collins field guide to caterpillars of Britain and Europe*. London: Collins **I**
Arranged by foodplant, with colour paintings of most of the larger caterpillars.
- Porter, Jim,** 1997. *Colour Identification Guide to the Caterpillars of the British Isles*. Viking. **E,I**
By far the best identification guide to caterpillars ever produced; includes larger moths and butterflies, with clear photographs of very nearly every species, and clear diagnostic text.
- Skinner, B.** 1985. *Colour Identification Guide to the Moths of the British Isles*. Viking. **E,I**
One of the best identification guide to larger moths currently available: fine text, excellent photographs of all species.
- Waring, P., Townsend, M. & Lewington, R.** 2003. *Field guide to the moths of Great Britain and Ireland*. 432pp. Hook: British Wildlife Publishing.
An up-to-date and comprehensive guide to "macros", with superb painting by Lewington, uniquely, of moths at rest, with wings folded. Thorough descriptions and good biological information. Lay-out does not make the guide particularly easy to use, as similar-looking but unrelated species are often in different parts of the book. A concise, spiral bound, version of this book by the same authors was published in 2007.

Lepidoptera: Heterocera (micromoths)

- Bradley, J.B. and Fletcher, D.S.** 1979. *British Butterflies and Moths: a recorder's log-book and label list*. London: Curwen Books. **L**
- Goater, B.** 1986. *British pyralid moths*. Colchester: Harley **E,I**
- See also: volumes in the series: Heath, J. and Emmett, A.M.** (editors) *The moths and butterflies of Great Britain and Ireland*. Colchester: Harley. **E,I**
Several published, ongoing, 12 volumes projected.

Trichoptera (Caddisflies)

- Edington, J.M. & Hildrew, A.G.** 1995. *A revised key to the Caseless caddis larvae of the British Isles*. Freshwater Biological Association Scientific Publication No. 53.
Revised and expanded from the 1981 key by the same authors.
- Hicken, N.E.** 1952. *Caddis: a short account of the biology of British caddis flies with special reference to the immature stages*. London: Methuen. x + 50pp.
- Hicken, N.E.** 1967. *Caddis larvae: larvae of the British Trichoptera*. London: Hutchinson. xii + 476pp.
A compilation of information from various sources, some based on very few specimens of larvae, not always correctly assigned to associated adults. So, some useful information and illustrations, but for identification, completely superseded by Wallace et al. (2003) and Edington & Hildrew (1995).
- Macan, T.T.** 1973. *A key to the adults of the British Trichoptera*. (FBA Scientific Publication No. 28). 151pp plus 5p. b&w photos of wings. **E,I**

Mosely, M.E. 1939. *The British caddis-flies (Trichoptera), a collector's guide*. London: Routledge. xiv + 320pp.
Wallace, I.D., Wallace, B. & Philipson, G.N. 2003. *Keys to the Case-bearing Caddis Larvae of Britain and Ireland*. Freshwater Biological Association Sci. Publ. 61. **E,I**
An up-to-date guide, as reliable as is possible with the current state of knowledge, and fairly straightforward to use.

Diptera (two-winged flies): general

Colyer, C.N. & Hammond, C.O. 1968. *Flies of the British Isles*. London: Warne **E (I)**

A superb, well-illustrated introduction to Diptera, with keys to families, descriptions of the commoner species, and much biological detail, and good reference lists

Oldroyd, H. 1970. Diptera: introduction and key to families (third edition). *Handbooks for the identification of British insects*, 9 (1). **I**

Stubbs, A.E. & Chandler, P. 1978. *A dipterist's handbook*. London: Amateur Entomologist's Society. **E**

Unwin, D.M. 1981. *A key to the families of British Diptera*. AIDGAP, Field Studies Council. *Field Studies*, 5 (2): 513-553. **I**

Syrphidae (hoverflies)

Ball, S.G., & Morris, R.K.A. 2001 (reprinted 2004). *Provisional atlas of British hoverflies (Diptera, Syrphidae)*. Huntingdon: Biological Records Centre.

Stubbs, A.E. & Falk, S.J. 1983. *British hoverflies*. London: British Entomological & Natural History Society. **E,I,C**

One of the best-designed, best illustrated, and easiest to use of all available insect guides.

Stubbs, A.E. 1996. *British Hoverflies: second (revised and enlarged) supplement*. London: British Entomological & Natural History Society. **E,I,C**

An update to the above, with new keys, biological and distribution notes.

Larger Brachycera (soldierflies, horseflies, robberflies and allies)

Drake, C.M. 1991. *Provisional atlas of the larger Brachycera (Diptera) of Britain and Ireland*. Huntingdon: Biological Records Centre. **E**

Oldroyd, H. 1969. Tabanoidea and Ailoidea. *Handbooks for the identification of British insects*, 9 (4). **I**

Stubbs, A.E. & Drake, C.M. (2001) *British Soldierflies and their allies*. London: British Entomological & Natural History Society. **E,I,C**

Similar to Stubbs & Falk's masterly guide to hoverflies, but with photographic colour plates. Likely to make this group of families much more popular.

Calliphoridae (blowflies)

Erzinclioğlu, Y.Z. 1996. *Blowflies*. Naturalists' Handbook, 23. Slough: Richmond. **E,I**

Emden, F.I. van 1954. Tachinidae & Calliphoridae. *Handbooks for the identification of British insects*, 10 (4a). **I**

Belshaw, R. 1993. Tachinidae. *Handbooks for the identification of British insects*, 10 (4a1). **I**

Tephritidae (picture-winged flies)

Clemons, L. 1996, *Provisional atlas of the Tephritidae (Diptera) of Britain and Ireland*. London: Dipterists Forum. **E**

White, I.M. 1988. Tephritid flies. *Handbooks for the identification of British insects*, 10 (5a). **I,E**

Excellent keys, clear figures, and photographs of wing patterns. An attractive family, all species are plant-feeding, mining leaves or stems, gall-forming, or burrowing in flower-heads, especially of Asteraceae.

Other fly families

See also references in Colyer & Hammond (1968), Stubbs & Chandler (1978) and Unwin (1983).

Bass, J. 1998. *Last-instar Larvae and Pupae of the Simuliidae of Britain and Ireland: a key with brief ecological notes*. Freshwater Biological Association Sci. Publ. 55. **E,I**

Collin, J.E. 1961. *British Flies, vol. 6, Empididae*. Cambridge: Cambridge University Press. **I**

One of several amazingly detailed volumes, with extremely thorough descriptions of each species, and good black and white illustrations. Empids are a good family for site evaluation, and their study is often combined with Dolichopodidae, especially in wetlands.

Coe, R.L., Freeman, P. & Mattingley, P.F. 1950. Nematocera (part). *Handbooks for the identification of British insects*, 9 (2). **I**

Includes keys to Tipulidae, Trichoceridae, Anisopodidae (craneflies and crane-fly-lookalikes), Phoridae (scuttle-flies) and Chironomidae (non-biting midges).

- Disney, R.H.L.** 1999. *British Dixidae (Meniscus Midges) and Thaumaleidae (Trickle Midges): a key with ecological notes*. Freshwater Biological Association Sci. Publ. 56. **E,I**
- Disney, R.H.L.** 1983. Scuttle-flies (Phoridae). *Handbooks for the identification of British insects*, **10** (6). **I**
- Fonseca, E.C.M. d'A.** 1968. Muscidae. *Handbooks for the identification of British insects*, **10** (4b). **I**
- Fonseca, E.C.M. d'A.** 1978. Dolichopodidae. *Handbooks for the identification of British insects*, **9** (5). **I**
- Freeman, P.** 1984. Sciaridae. *Handbooks for the identification of British insects*, **9** (6). **I**
- Pitkin, B.R.** 1988. Lesser dung-flies (Sphaeroceridae, alias Borboridae). *Handbooks for the identification of British insects*, **10** (5e). **I**
- Pont, A.C.** 1979. Sepsidae. *Handbooks for the identification of British insects*, **10** (5c). **I**
- Rozkosny, R.** 1984. *The Sciomyzidae (Diptera) of Fennoscandia and Denmark*. (Fauna Entomologica Scandinavica, **14**) **E,I**
 Snail-killing flies: a small and distinctive family of quite conspicuous flies, with over 50 spp in Britain; good 'habitat quality indicators' in fens and in calcareous grasslands especially.
- Smith, K.G.V.** 1989. An introduction to the immature stages of British flies. *Handbooks for the identification of British insects*, **10** (14). **I**
- Spencer, K.A.** 1972. Agromyzidae. *Handbooks for the identification of British insects*, **10** (5g). **I**
- Withers, P.** 1989. Psychodidae (mothflies). *Dipterists' Digest* **4**, 1-83.

Hymenoptera: Aculeata (bees, wasps, ants)

- Bellman, H.** 1995. *Bienen, Wespen, Ameisen*. 336 pp. Stuttgart: Franckh-Kosmos.
 If you read German, an excellent intro to bees, wasps and ants, with excellent colour photos of a wide representative range of species. Worth having as an alternative to a reference collection of specimens, even when a British key appears.
- Edwards, R.** (ed.) 1996. *Bees, Wasps and Ants Recording Society Starter Pack*. Huntingdon: ITE. 66pp. **C,E,I**
 Excellent introduction, with information on collecting, identification, recording, photography, entomological suppliers, and a good bibliography.
- Edwards, R.** (editor) 1997. *Provisional atlas of the aculeate Hymenoptera of Britain and Ireland, part I*. Huntingdon: ITE. 139pp. Series continued to Part 6, published 2006. **C,E**
 Distribution maps and biological information on 344 species drawn from most families of bees, wasps and ants. See CEH website for further information.
- Gauld, I.D. & Bolton, B.** 1988. *The Hymenoptera*. London: British Museum (Natural History). **E**
 Very good overview of biology of the whole order, inc. parasitic species; not a substitute for specialist identification guides.
- Richards, O.W.** 1977. Hymenoptera: introduction and key to families. *Handbooks for the identification of British insects*, **6** (1), London: RES. **I (E)**
- Zahradnik, J. & Severa, F.** (1991, English ed. 1999) *Bees and wasps*. 192 pp. Leicester: Blitz Editions.
 Same series as the famous beetle book; paintings and photos of a representative range of bees, wasps, ants, sawflies and Parasitica. Pleasant reading, but not an identification guide.

Formicidae (ants)

- Baroni-Urbani, C. and Collingwood, C.A.** 1977. The zoogeography of ants (Hymenoptera: Formicidae) in northern Europe. *Acta zoologica fennica*, **2**, 1-34.
- Edwards, R.** (editor) 1997. *Provisional atlas of the aculeate Hymenoptera of Britain and Ireland, part I*. Huntingdon: ITE. 139pp. Series continued to Part 6, published 2006. **C,E**
 Distribution maps and biological information on 344 species drawn from most families of bees, wasps and ants. See CEH website for further information.
- Bellman, H.** 1995. *Bienen, Wespen, Ameisen*. Stuttgart: Kosmos. **E, I**
 In German; good introduction to behaviour; excellent close-up colour photographs of many species, useful to confirm identification from other guides.
- Biseau, J-C de, & Couvreur, J-M.** 1994. *Fourmis (Formicidae)*. Faune de Belgique. Brussels: Institut Royal des Sciences Naturelles de Belgique. **I**
 In French; clear well-illustrated keys to almost all the British species (missing *F. aquilonia* and *F. lugubris*), and including several additional species which might be found in Britain.
- Bolton, B. & Collingwood, C.A.** 1975. Hymenoptera, Formicidae. *Handbooks for the identification of British insects*, **6** (3c), London: RES. **I (E)**
- Brian, M.V.** 1977. *Ants*. London: Collins (New Naturalist). **E, I**
 Excellent review of ecology and behaviour; simple identification keys quite useful, but that to *Myrmica* may mislead.

Skinner, G.J. 1987. *Ants of the British Isles*. Aylesbury: Shire Natural History. **E, I**

A short and simple introduction to ecology and identification of ants.

Skinner, G.J. & Allen, G.W. 1996. *Ants*. Naturalists' Handbook, 24. Slough: Richmond Publishing Co. **E, I**

Pompilidae, Vespidae, Sphecidae (wasps)

Day, M.C. 1988. Spider wasps (Hymenoptera: Pompilidae). *Handbooks for the identification of British insects*, 6 (4). **I**

Morgan, D. 1984. Cuckoo-wasps (Hymenoptera: Chrysididae). *Handbooks for the identification of British insects*, 6 (5). **I**

Richards, O.W. 1980. Scolioidea, Vespoidea and Sphecoidea. *Handbooks for the identification of British insects*, 6 (3b), London: RES. **I (E)**

Yeo, P.F. & Corbet, S.A. 1983. *Solitary wasps*. Naturalists' Handbook, 3. Slough: Richmond Publishing Co. **E, I**

Apidae (bees)

Unfortunately, there is no up-to-date guide to most families of British bees, though a Royal Entomological Society Handbook, by G.R. Else, has been in preparation for many years.

Alford, D.V. 1973. *Bumble-bee Distribution Maps Scheme: guide to the British species*. Gerrards Cross: Bee Research Association (reprinted from *En. Gax.* 21-23.) 48pp. **I**

Identification keys with black and white illustrations of finer details.

Alford, D.V. 1975. *Bumble-bees*. London: Davis-Poynter. **E, I**

A detailed ecological monograph with identification information.

Alford, D.V. 1978. *The life of the bumble-bee*. London: Davis-Poynter. **E, I**

Short version of the above.

Edwards, M., & Jenner, M. 2006 *Field Guide to the Bumblebees of Great Britain & Ireland*. Eastbourne: Ocelli.

A reasonable guide to field identification, based largely on general appearance, body coloration and facial shape. Not as easy in practice as the colour coded schema suggests because most species vary in colour.

Brief sections on life cycle, habitats, conservation requirements, and good microphotographs of male genitalia.

Prys-Jones, O.E. & Corbet, S.A. 1987. *Bumblebees*. Naturalists' Handbook, 6. Slough: Richmond Publishing Co. **E, I**

Sladen, F.W.L. 1912, reprinted 1989. *The humble-bee: its life history and how to domesticate it*. Woonton: Logaston Press. **E, I**

A superb account of bumble-bee natural history, still useful and an inspiration to amateur naturalists.

Hymenoptera: Symphyta (Sawflies)

Benson, R.B. 1951. Hymenoptera Symphyta pt 1, first edition. *Handbooks for the identification of British insects*, 6 (2a). **I**

Benson, R.B. 1952. Hymenoptera Symphyta pt 2. *Handbooks for the identification of British insects*, 6 (2b). **I**

Benson, R.B. 1958. Hymenoptera Symphyta pt 3. *Handbooks for the identification of British insects*, 6 (2c). **I**

Quinlan, J. & Gauld, I.D. 1981. Symphyta (except Tenthredinidae), revised edition. *Handbooks for the identification of British insects*, 6 (2a). **I**

Wright, A. 1990. British Sawflies; a key to the adults of the genera occurring in Britain. AIDGAP: Field Studies Council.

Coleoptera (beetles): general

The Coleopterist. A journal devoted to beetles found in Britain and Ireland. Many useful papers on identification, with notes on ecology and distribution. 3 issues per year, for £8.

Cooter, J. & Barclay M.V.L. (eds.). 4th Edition, 2006. *A coleopterist's handbook*. Feltham: Amateur Entomologist's Society. **E**

"A thorough general introduction to the study of beetles. Information on where, when and how to find beetles; equipment; collecting and storing specimens; chapters on most families by specialists. 496 pages with 32 pages of colour plates." Hardback c.£54.

Crowson, R.A. 1956. Coleoptera: introduction and key to families. *Handbooks for the identification of British insects*, 4 (1). **I**

Crowson, R.A. 1981. *Biology of the Coleoptera*. London: Academic Press. **E**

Eversham, B.C. & Harding, P.T. 1996. Coleoptera recording schemes update. *Coleopterist*, 5, 13-18.

- Freude, H., Harde, K.W. & Lohse, G.H.** 1965-1983. *Die Käfer Mitteleuropas*. Krefeld: Goeke & Evers. **I**
Standard work on central European beetles, including almost all the British species, and most others which are likely to occur here. In German, but with well illustrated keys.
- Harde, K.W. , transl. and revised Hammond, P.M.** 1984. *A field guide in colour to beetles*. London: Octopus. Republished in smaller format, softback, Blitz editions, 1998. **I (E)**
By far the best colour guide to beetles in Britain and northern Europe; translated from a leading German coleopterist by the foremost British coleopterist; illustrates about 25% of our fauna: over 1000 species. Both editions now out-of-print.
- Hyman, P.H., revised by Parsons, M.S.** 1992: A review of the scarce and threatened Coleoptera of Great Britain, Part 1. Joint Nature Conservation Committee, Peterborough. **C,E**
- Jones, R.A. & Hodge, P.J.** 1995. *New British beetles: species not in Joy's practical handbook*. Reading: British Entomological & Natural History Society. **(I)**
An indispensable guide to literature on British beetles since 1932, giving references to and brief descriptions of all additional species since Joy; and to the rare species Joy omitted.
- Joy, N.H.** 1932. *A practical handbook of British beetles*. London: Witherby, reprinted (reduced size) by Classey, Faringdon, 1975, 1997. **I**
Still the only fairly comprehensive set of keys to British beetles this century. Very useful, especially in conjunction with Jones & Hodge (1995).
- Kloet, G.S. and Hincks, W.D.,** revised by Pope, R.D. (editor) 1979. *A Check List of British Insects. Part 3: Coleoptera and Strepsiptera*. London: Royal Entomological Society. **L**
- Unwin, D.M.** 1984. *A key to the families of Coleoptera (and Strepsiptera)*. AIDGAP: *Field Studies*, **6**, 149-197. **I**
A simple key to families, with clear line drawings; easy to use, but a few families are hard to key through; family definitions do not always tally with Joy or with European guides, so having reached an identification, check the notes at the end, too.

Carabidae (ground-beetles)

- Desender, K., Dufrière, M., Loreau, M., Luff, M.L. & Maelfait, J-P.** 1992. *Carabid beetles: ecology and evolution*. Dordrecht: Kluwer. **E**
Recent proceedings of a regular international conference on the ecology of ground-beetles. Contains many useful papers but extremely expensive (C. £165).]
- Eversham, B.C. and Telfer, M.G.** 1994. Conservation value of roadside verges for stenotopic heathland Carabidae: corridors or refugia? *Biodiversity and Conservation*, **3**, 538-545. **E,C**
- Forsythe, T.G.** 1987. *Common ground-beetles*. Naturalists Handbook, **8**. Slough: Richmond Publishing Co. **I,E**
Useful keys to most of the British species, but not always easy to use, and rather difficult to re-trace one's steps if one makes a mistake. A revised, enlarged edition including all the British species, was published in 2000.
- Hurka, K.** 1996. *Carabidae of the Czech and Slovak Republics*. Zlín: Kabourek.
Bilingual Czech and English, keys to almost all British species, and many others. Provides some new characters for certain species, and reasonable colour paintings. Available for under £40 in hardback.
- Lindroth, C.H.** 1974. Coleoptera: Carabidae. *Handbooks for the identification of British insects*, **4 (2)**. **I**
Out-of-print and difficult to obtain secondhand.
- Lindroth, C.H.** 1985, 1986. The Carabidae (Coleoptera) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica*, **15**. **I (E)**
- Luff, M.L.** 1993. *The Carabidae (Coleoptera) larvae of Fennoscandia and Denmark*. Fauna Entomologica Scandinavica, **27**. Leiden: Brill.
In English: good as far as it goes, but omits the less well-known species; difficult to use.
- Luff, M.L.** 1998. *Atlas of the ground-beetles (Carabidae) of Britain and Ireland*. Huntingdon: Institute of Terrestrial Ecology.
- Luff, M.L.** 2007. Coleoptera: Carabidae. *RES Handbooks for the identification of British insects*, **4 (2)** 2nd ed. *The Carabidae (ground beetles) of Britain and Ireland*. FSC
A successor to Lindroth (1974). "The prime purpose of this book is to enable the reliable identification of the adults of the 350 species of Carabid that occur in Britain and Ireland. Fully illustrated keys to subfamilies, tribes, genera and species are provided. Notes are given for each species to allow the user to confirm identification." 252 pages, with colour photographs of about 150 species and line drawings.

Trautner, J. & Geigenmuller, K. 1987. *Tiger beetles, ground beetles. Illustrated keys to the Cicindelidae and Carabidae of Europe.* Aichtal, W Germany: Josef Margraf.

Bilingual German/English. Some genera keyed to species, but many only to subgenus, and some not at all.

Covers the fauna of different geographic areas for different genera; most British species are in, together with a large number of German, Scandinavian and sometimes southern European species. Keys rather brief, with some errors in the English; no descriptions. About £30 in softback, out-of-print in 2007.

Turin, H. and den Boer, P.J. 1988. Changes in the distribution of Carabid beetles in the Netherlands since 1880. II. Isolation of habitats and long-term time trends in the occurrence of Carabid species with different powers of dispersal (Coleoptera, Carabidae). *Biological Conservation*, **44**, 179-200.

Turin, H., Alders, K., Den Boer, P.J., Essen, S., Heijerman, T., Laane, W., and Penterman, E. 1991. Ecological characterization of carabid species (Coleoptera: Carabidae) in The Netherlands from thirty years of pitfall sampling. *Tijdschrift voor Entomol.*, **134**, 279-304.

Wachmann, E., Platen, R. and Barndt, D. 1995. *Laufkafer: Beobachtung, Lebensweise.* Augsburg: Naturbuch Verlag (Weltbild Verlag). ISBN 3 89440 125 7.

In German: text descriptive, and of limited use in identification, but clear colour photographs of about 220 species would help in the absence of a reference collection. About £16 in hardback from specialist booksellers in Britain.

Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae (water-beetles)

Foster, G.N. 1982. Atlas of British water beetles, part IV. *Balfour-Browne Club Newsletter*.

Foster, G.N. 1983. Atlas of British water beetles, preliminary edition, part 2. *The Balfour-Browne Club Newsletter*, **27**, 1-23. **E**

Foster, G.N. & Eyre, M.D. 1992. *Classification and ranking of water beetle communities.* Peterborough: JNCC. (UK Nature Conservation 1). **E**

A summary of large numbers of local and regional surveys, analysing species lists and providing a framework for assessing water bodies in terms of their beetles.

Foster, G.N., Foster, A.P., Eyre, M.D. & Bilton, D.T. 1989. Classification of water beetle assemblages in arable fenland and ranking of sites in relation to conservation value. *Freshwater Biol.*, **22**: 243-354. **E,C**

Friday, L.E. 1988. *A key to the adults of British water beetles.* AIDGAP, Field Studies Council. *Field Studies*, **7** (1): 1-151. **I,E**

An excellent guide, with very straightforward keys and good background.

Cerambycidae (longhorn beetles)

Bense, U. 1995. *Longhorn beetles: illustrated key to the Cerambycidae and Vesperidae of Europe.* Weikersheim: Margraf. **I**

Good keys and descriptions of the whole European fauna; parallel text in English and German.

Hicken, N. 1987. *Longhorn beetles of the British Isles.* Princes Risborough: Shire Natural History. 24pp.

An attractive descriptive account of the British fauna, with useful illustrations and identification tips.

Twinn, P.F.G. & Harding, P.T. 1999. *Provisional atlas of the longhorn beetles (Coleoptera: Cerambycidae) of the British Isles.* Huntingdon: Biological Records Centre

Distribution maps, short summary of ecology, and a good, up-to-date checklist.

Other Beetle Families

See also references in Harde & Hammond (1984) and especially in Jones & Hodge (1995), which provides an up-to-date guide to the literature.

Alexander, K.N.A. 2003. *Provisional Atlas of the Cantharoidea and Buprestoidea (Coleoptera) of Britain and Ireland.* Huntingdon: Biological Records Centre.

Brendell, M.J.D. 1975. Coleoptera: Tenebrionidae. *Handbooks for the identification of British insects*, **5** (10). **I**

Clarke, R.O.S. 1973. Coleoptera: Heteroceridae. *Handbooks for the identification of British insects*, **5** (2). **I**

Cox, M.L. 2007. *Atlas of the Seed and Leaf Beetles of Britain and Ireland.* Newbury: Pisces Publications.

Species accounts include 10km square distribution maps, world distribution, habitats, host plants, life cycle, graph showing records divided by month, etc. Short chapters on subjects such as biology, larval stages, collecting techniques, conservation importance. 47 colour photos.

Halstead, D.G.H. 1963. Sphaeritidae and Histeridae. *Handbooks for the identification of British insects*, **4** (10). **I**

Jessop, L. 1986. Scarabaeoidea (2nd edition). *Handbooks for the identification of British insects*, **5** (11). **I**

Johnson, C. 1993. *Provisional atlas of the Cryptophagidae: Atomariinae of Britain and Ireland.* Huntingdon: Biological Records Centre.

An interesting demonstration of how much information is available even for the smallest and most 'difficult' of British beetles.

- Kirk-Spriggs, A.H.** 1996. Pollen Beetles: Coleoptera: Kateretidae and Nitidulidae: Meligethinae. *Handbooks for the identification of British insects*, **5** (6a). **I**
- Majerus, M. & Kearns, P.** 1989. *Ladybirds*. Naturalists Handbook, **10**. Slough: Richmond Publishing Co. **I,E**
Clear keys (inc. a simplified one for beginners), excellent biological and distribution information, and good illustrations. Ideal intro to a family of only 24 spp. in Britain.
- Mendel, H.** 1990, 1998. *Provisional atlas of the click beetles (Coleoptera: Elateridae) of the British Isles*. Huntingdon: Biological Records Centre/Ipswich Museum
- Morris, M.G.** 1991. *Weevils*. Naturalists Handbook, **16**. Slough: Richmond Publishing Co. **I,E**
- Morris, M.G.** 1990. Orthocerous weevils. *Handbooks for the identification of British insects*, **5** (16). **I (E)**
- Morris, M.G.** 1997. Broad-nosed weevils. *Handbooks for the identification of British insects*, **5** (17a). **I (E)**
- Morris, M.G.** 2002. True weevils. (Subfamilies Raymondionyminae to Smicronychinae). *Handbooks for the identification of British insects*, **5** (17b) Part 1. **I (E)**
- Pearce, E.J.** 1957. Pselaphidae. *Handbooks for the identification of British insects*, **4** (8a). **I**

Arachnida: Opiliones (harvestmen, harvest-spiders)

- Eversham, B.C.** 1990. The harvest-spiders (Arachnida: Opiliones) of Huntingdonshire. *Report of the Huntingdonshire Fauna & Flora Society*, **42nd**, 1989, 22-28. **E**
- Hillyard, P.D. and Sankey, J.H.P.** 1989. *Harvestmen*. (Synopsis of the British Fauna (New Series), No. 4.). London: Linnean Society/Estuarine & Brackish-water Sciences Association **I,E**
About 24 spp. Excellent keys and illustrations; a vast improvement on previous editions.

Pseudoscorpiones (false-scorpions)

- Legg, G. & Jones, R.E.** 1988. *Pseudoscorpions (Arachnida)*. (Synopsis of the British Fauna (New Series), No. 40.). Leiden: Brill/Backhuys for Linnean Society/Estuarine & Brackish-water Sciences Association **I,E**
25 spp. Good keys and illustrations

Acari (mites) and Ixodida (ticks)

- Balogh, J.** 1972. *The oribatid genera of the world*. Budapest: Akademia Klado.
- Hillyard, P.D.** 1996. *Ticks of north-west Europe*. (Synopsis of the British Fauna (New Series), No. 52.). Shrewsbury: Field Studies Council, for Linnean Society/Estuarine & Coastal Sciences Association **I,E**
28 spp., good keys and illustrations, thorough biological background.

Araneae (spiders)

- Foelix, R.F.** 1982. *Biology of spiders*. Cambridge, Mass.: Harvard University Press. **E**
- Jones, Dick,** 1983. *The Country Life guide to spiders of Britain and northern Europe*. London: Hamlyn. **I**
Colour photographs of most of the larger species.
- Jones-Walters, L.M.** 1989. Keys to the families of British spiders. AIDGAP, Field Studies Council. *Field Studies*, **7** (2): 365-443. **I**
- Locket, G.H. & Millidge, A.F.** 1951, 1953. *British spiders*, vols. 1, 2. London: Ray Society. **I**
- Locket, G.H., Millidge, A.F. & Merrett, P.** 1974. *British spiders*, vol. 3. London: Ray Soc. **I**
- Roberts, M.J.** 1985. *Spiders of Great Britain and Ireland*. 3 volumes. Colchester: Harley. **I,E**
An up-to-date, large-format, lavishly illustrated guide.
- Roberts, M.J.** 1995. *Spiders of Britain and northern Europe*. London: HarperCollins. **I**
A concise guide with splendid colour plates of the larger species; omits most 'money-spiders', but otherwise comprehensive.

Mollusca: Gastropoda (slugs and snails) and Lamellibranchia (bivalves)

- Boycott, A.E.** 1934. The habitats of land Mollusca in Britain. *Journal of Ecology*, **22**, 1-38.
- Boycott, A.E.** 1936. The habitats of freshwater Mollusca in Britain. *Journal of Animal Ecology*, **5**, 116-186.
Two thorough accounts which have never been superseded; still useful.
- Cameron, R.A.D., Eversham, B.C., & Jackson, N.** 1984. *A field guide to the slugs of the British Isles*. AIDGAP publ. no. 156, 23pp. **I**
A fairly simple, straightforward key. Drafts of updated versions now available for testing.
- Cameron, R.A.D. & Redfern, M.** 1976. *British land snails*. Linnean Society Synopsis of the British Fauna, (New Series) **6**. London: Academic Press. (Revised version, joint with AIDGAP, in press.) **I**
Key to adult snails only (but hard to tell whether a shell is immature). Illustrations useful, descriptions mostly good. Use in conjunction with Kerney & Cameron.

- Ellis, A.E.** 1978. *British freshwater bivalve Mollusca*. Linnean Society Synopses of the British Fauna, (New Series) **11**. London: Academic Press. **I (E)**
 Good keys, excellent descriptions, b&w photos of all species. Not an easy group to learn, but a good guide.
- Eversham, B.C.** 1986. Slugs around Huntingdon. *Report of the Huntingdonshire Fauna & Flora Society*, **38th**, 1985, 22-26.
- Eversham, B.C. & Jolliffe, A.S.** 1992. Freshwater molluscs: their habitats and distribution. *Report of the Huntingdonshire Fauna & Flora Society*, 1991, **44th**, 30-42. **E**
- Gloer, P. & Meier-Brool, C.** 1994. *Süßwassermollusken: ein Bestimmungsschlüssel für die Bundesrepublik Deutschland*. Hamburg: Deutscher Jugendbund für Naturbeobachtung.
 Excellent illustrated keys to freshwater molluscs; text in German.
- Janus, H.** 1968, reprinted 1979 and later. *The young specialist looks at Molluscs*. London: Burke.
 Despite title, a thorough and well illustrated guide to land and freshwater snails and bivalves, with effective keys, descriptions and line drawings. Account of slugs out of date.
- Kerney, M.P.** 1976. *Atlas of the non-marine Mollusca of Britain and Ireland*. Huntingdon: NERC/Conchological Society of Great Britain and Ireland.
- Kerney, M.P.** 1999. *Atlas of the Land & Freshwater Molluscs of Britain and Ireland*. Colchester: Harley Books
- Kerney, M.P. and Cameron, R.A.D.** 1979. *A field guide to the land snails of Britain and north-west Europe*. London: Collins. **I,E**
 Excellent illustrations, descriptions and habitat info, but hard to use initially because of lack of keys or overview. Use alongside Cameron & Redfern or other simple keys.
- Kerney, M.P. & Stubbs, A.E.** 1980. *The conservation of snails, slugs and freshwater mussels*. 23pp. London: NCC.
 A short account of the need for, and methods of, mollusc conservation.
- Killeen, I., Aldridge, D. & Oliver, G.** 2004. *Freshwater bivalves of Britain and Ireland*. (Field Studies Council Occasional Publication No. 82)
 Extremely well illustrated and clearly presented, making the difficult *Pisidium* species at least more approachable.
- Killeen, I.J., Seddon, M.B. & Holmes, A.M.** 1998. *Molluscan conservation: a strategy for the 21st century*. (Journal of Conchology: Special Publication No. 2). 320pp. **C**
- Macan, T.T.** 1977. *A key to the fresh- and brackish-water Gastropods*. (FBA Sci. Publ. 13, 4th edition). **E,I**
 Straightforward and well illustrated, and generally reliable, though a few species are omitted and some errors remain.
- Wardhaugh, A.A.** 1989. *Land snails of the British Isles*. 24pp. Aylesbury: Shire Publications.
 A short, simple and well illustrated guide to many of the commoner species.
- Willing, M.J.** 1997. Fresh- and brackish-water molluscs: some current conservation issues. *British Wildlife*, **8**, 151-159.