REVIEWS

Pondweeds of Great Britain and Ireland. by CD Preston. BSBI Handbook No. 8, 1995. Botanical Society of the British Isles. 352pp. £16.50. ISBN 0 901158 24 0.

The pondweeds have generally been given a wide berth by field botanists. They can be hard to get at without grapnel and thigh waders and, more importantly, have a reputation for being almost impossible to identify. On this latter point there is now no excuse, as this excellent handbook tells you everything you need to know to get to grips with these 'difficult' plants. The book covers all the British and Irish members of the Potamogetonaceae (*Potamogeton* species and hybrids, and *Groenlandia densa*) and the closely related Ruppiaceae (*Ruppia maritima* and *R. cirrhosa*). Other plants popularly known as 'pondweeds', such as *Zannichellia palustris*, and *Elodea* and *Myriophyllum* species, are not included.

The book is in the familiar style of previous BSBI handbooks. It is rather larger than pocket-sized, but this does not detract from its usefulness as, in any case, many of the more troublesome fine-leaved pondweeds need to be identified 'back at base' with the help of a microscope. There are useful introductory chapters dealing with the history of pondweed studies in Britain and Ireland, and with pondweed classification, structure, life history and ecology.

A particularly helpful section deals with the collection and preservation of plant material for identification. This is followed by two keys. The first of these includes all the *Potamogeton* species (plus the two commonest hybrids, *P.x zizii* and *P.x nitens*, and *G. densa* and *Ruppia*), while the second includes *all* the *Potamogeton* hybrids (many of which are extremely rare). The latter key first divides the taxa into six major groups on the basis of easily observed leaf characters, with each group then being keyed out separately.

The species accounts are beautifully written, with technical details easy to follow and obscure terms and scientific gobbledygook (thankfully) kept to a minimum. There are useful notes on how to separate each taxon from those that superficially resemble it, with fine detailed drawings illustrating the species and hybrids, and with extra drawings highlighting those bits of the plants necessary for identification. The habit of some species can vary depending on the conditions in which they are growing. *Potamogeton pectinatus*, for example, which occurs in Somerset in both brackish and freshwater situations, and in both still and running waters, is known to be very variable in its habit and leaf shape, with much of this variation being environmentally induced.

The distribution of each taxon (except for those which are now extinct) is summarised in the form of a 10-km square dot map, with pre-1970 records being distinguished from those made from 1970 onwards. The criteria for determining whether or not to include a given record were fairly strict, with the consequence that 'recent' records for many species can be a bit thin on the ground. This sometimes gives a misleading impression: the map for *P. perfoliatus*, for example, suggests that it has disappeared from many localities in Somerset, yet in fact this species has been seen in many of its 'old' squares since 1970, and indeed is known to occur in a few squares for which there are no records at all in the published map.

The current status and future conservation of pondweeds is discussed. Their distribution has been affected by climate change and successional processes but there is little evidence that the *Potamogeton* flora has changed much in the highlands and islands of Scotland, the uplands of northern England and Wales and the western seaboard of Ireland. In contrast, human activities in the lowlands have modified freshwater habitats through drainage, canalisation and eutrophication. Even artificial water bodies like gravel pits – which can provide important refuges for pondweeds – have sometimes now disappeared. The distribution maps highlight the fact that many pondweeds have declined alarmingly in southern and eastern Britain. Somerset still possesses many interesting species including several – such as *P. friesii*, *P. trichoides* and *P. coloratus* – which are becoming increasingly rare elsewhere in the English lowlands.

This book is set to become the standard field guide to the British and Irish *Potamogeton* flora. Chris Preston's enthusiasm for pondweeds is infectious, and is bound to encourage more naturalists to 'take the plunge' (in both senses!) and get properly acquainted with this fascinating but somewhat neglected group.

KAREN POLLOCK

Aquatic Plants in Britain and Ireland, by C.D. Preston and J.M. Croft. Harley Books, 1997. 365 pp. £25. ISBN 0 946589 55 0.

This volume is the outcome of a co-operative venture begun in 1989 between the Nature Conservancy Council (latterly the Joint Nature Conservation Committee), the National Rivers Authority (now the Environment Agency) and the Institute of Terrestrial Ecology.

The book covers *aquatic* rather than 'wetland' plants, the aim being to include all vascular plant species which 'characteristically grow in water which persists throughout the year' (p.14). This seems straightforward enough, but it must have been a nightmare trying to decide where to draw the line: *Iris pseudacorus*, for example, is 'in', whereas *Caltha palustris* is 'out'. There are a few curious omissions – including *Leersia oryzoides*, which is a shame – but in general the selection does seem to have been a sensible one. The book's treatment of alien species, infraspecific taxa and hybrids is particularly thorough, and there are excellent accounts summarising the history of colonisation of such notorious aliens as *Azolla filiculoides*, *Elodea nuttallii*, *Lemna minuta* and *Crassula helmsii*.

The bulk of the book consists of systematic accounts, describing for each taxon its habitat requirements, associated species, reproductive biology and distribution, both in Europe and the rest of the world. Distribution within Britain and Ireland is portrayed by means of the now familiar 10-km square 'dot' maps, with records of native populations usefully separated into three date classes (pre-1950, 1950–1969 and 1970 onwards), and those of introduced populations separated into two (pre-1950 and 1950 onwards).

The maps are excellent, and are a considerable improvement on those published in the *Atlas of the British Flora* (1962), many of which are now badly out of date. But there are still gaps. Take, for example, my 'home' 10-km square (31/2.2): a quick cycle alongside the canal between Obridge and Creech St Michael turned up at least a dozen species for which no 'recent' records are given – including *Butomus umbellatus* and *Callitriche stagnalis*, apparently not seen since 1970, and *Potamogeton crispus*, *P. natans*, *P. pectinatus* and *P. perfoliatus*, for which there are only pre-1950 records. The biggest surprise, however, was *Myriophyllum spicatum*, which according to the map has *never* before been recorded in 31/2.2! Of course, records gathered for the *Atlas Flora of Somerset* will fill many of these apparent gaps, but there are plainly still opportunities to make new discoveries, even in a well-worked county like Somerset.

Here is an essential source book of information for anyone involved in the survey,

management or conservation of aquatic vegetation. But there is much in this volume to interest even those having only a nodding acquaintance with Somerset's watery places. Take a look at the distribution maps for *Hydrocharis morsus-ranae*, *Wollfia arrhiza*, *Hottonia palustris* and *Oenanthe aquatica*, for example, and you will quickly discover why our county is held in such high regard for its aquatic flora.

This book is an invitation to all of us to rise from our arm-chairs and risk getting our feet wet! Get hold of a copy if you can. It's worth every penny.

SIMON LEACH

Scarce Plants in Britain, edited by A. Stewart, D.A. Pearman, and C.D. Preston. JNCC, Peterborough. 1994. 515 pp. £34. ISBN 1 873701 66 7

The publication of *Scarce Plants in Britain* is the culmination of a co-operative project begun in 1990 to survey the nationally scarce vascular plants. The definition of a scarce plant adopted for the project was a native species recorded since 1970 from 16–100 10 km squares of the National Grid. The *Atlas of the British Flora*, published in 1962, provided a crude guide to the distribution and rarity of plants in Britain and Ireland and it was from this important source that the initial list of plants to survey was compiled.

Since the publication of the *Atlas*, much attention has been paid to the rarest British plants and in 1983 the *British Red Data Book: – 1. Vascular Plants* was published, detailing those plants which occurred in 15 10 km squares or less. But many of the species which are not sufficiently rare to be included in the *Red Data Book* are important as indicators of environmental change and are of considerable interest to conservationists. It was recognised that many species had undergone significant decline since the *Atlas of the British Flora*, and the Scarce Plant Project aimed to create a database of records of the species in the second tier of national rarity.

The main source of new records was information gathered over two field seasons by amateur botanists from the Botanical Society of the British Isles (BSBI), the Wild Flower Society and the British Pteridological Society. Individuals with a particular interest in one or more species were invited to 'adopt' a species for field survey or herbarium research and to write the species account for the publication.

As a result of the work undertaken during the project, 254 species are defined as nationally Scarce and 9 species as Rare (found to occur in 15 or fewer 10 km squares). The number of native scarce species in each vice-county is tabulated, South Somerset and North Somerset having 62 and 94 respectively.

In *Scarce Plants in Britain* the aims, methods and data compilation are well set out and clearly explained. The main body of the book is taken up with the accounts of individual species. Most species have one page on which the status (Rare, Scarce or Not Scarce) is clearly shown, together with a species account and a distribution dot-map. The accounts are written by many different individuals and of varying length and style. They are generally well written and make interesting reading but a more extensive use of references would have been useful. The maps are similar to those in the *Atlas of the British Flora*, with present and past distribution and introductions indicated by means of different symbols in each 10 km square. The changing distribution of some species is illustrated by means of a series of maps for different time periods. For 73 species, where data were available, further maps are shown indicating the number of tetrads in each 10 km square in which the plant has recently been recorded. This latter information is an important refinement which gives a more accurate indication of scarcity, for, as we are all aware, one dot in one 10 km square gives no indication of whether the presence is one single plant, or a species that is found in every hedge bank.

In the chapter on habitats of scarce species in Britain the two different approaches (species and habitat) to the conservation of the British flora and fauna are well presented. They are both stated as essential for the development and application of effective conservation measures. Concise accounts of all the major habitat types from mountains to the sea, are provided. Geographical, historic and human factors are outlined in relation to changes and declines in the flora. Scarce plants of each habitat type are listed, and paired maps presented showing the numbers of scarce species in each habitat for all records and those since 1970. These maps indicate the decline in habitat and species richness since the original *Atlas* in 1962.

The final chapter, on changes in the knowledge of distribution of species, 1962–92, emphasises the changes in recording of the British flora that have taken place since the first major effort in 1955–59 for the *Atlas of British Flora*. It charts the development of the BSBI recording network and detailed flora mapping schemes. Several important points are raised regarding the apparent increase or decrease in the distribution of many species. It states that the greatly increased number of records available for some species (tabulated), can be attributed almost entirely to increased recording effort and that some declines in the number of sites in which the plant occurs are actually masked by the increase of records. 'For the majority of species there is no evidence that the range of the plants themselves has expanded.' Where declines have taken place, they are usually significant.

For those in Somerset who are familiar with the abundance of species such as Rootless Duckweed *Wolffia arrhiza*, or Frogbit *Hydrocharis morsus-ranae* on the Somerset Levels and Moors, it is very valuable to see that both these species are practically absent in the rest of south-west Britain. The similarity between the distribution of two other Somerset Levels rarities is of great interest. Marsh Pea *Lathyrus palustris* and Milk Parsley *Peucedanum palustre*, have similar habitats and both occur as isolated locations in Somerset, well away from their strongholds in East Anglia. The form in which the information is presented makes it possible to evaluate the importance of species and their habitats and to place them in national and even a European context. *Scarce Plants in Britain* should help county wildlife trusts and other conservation organisations to assess their county resource and it will facilitate the production of more County Red Data books.

Scarce Plants in Britain is a beautifully produced book. It is a large, substantial volume, well bound, and lies flat when opened. The species are listed in alphabetical order, making the information quickly and easily accessible. The text and maps are well spaced on the page and are 'easy on the eye'. It is a great pleasure to use as well as being packed with valuable and interesting information. This important publication sets a high standard which it is hoped will be emulated in the forthcoming third edition of the *Red Data Book* and, in a few years time, *Atlas 2000*.

E.J. MCDONNELL

British Plant Communities, Volume 4, Aquatic communities, swamps and tall-herb fens, edited by J.S. Rodwell. Cambridge University Press, 1995. 283 pp. £60. ISBN 0 521 39168 7.

Volumes 1–3 of *British Plant Communities* have been reviewed in previous numbers of this journal. Now we come to Volume 4, covering aquatic communities, swamps and tall-herb fens. As usual, the descriptive accounts are excellent. Even floristically dull communities (carpets of *Lemna gibba* spring to mind!) are made interesting by the eloquent 'Rodwellian' prose. Apparently meaningless jumbles of water-side plants suddenly make perfect sense, while the 'swampy bits' I have always viewed from afar are portrayed here with such enthusiasm that I'm beginning to think seriously about buying wellies!

The format of the book is the same as its predecessors. An introductory preamble is followed by community descriptions which are divided into two groups – first, 24 aquatic

communities (coded A1 to A24), then 28 swamps and tall-herb fens (S1 to S28) – each group preceded by an account of sampling methods and data analysis, and an overview of the communities. In comparison with habitats covered by previous volumes, the sampling of aquatic and swamp vegetation is rather poor, with nine communities and 22 sub-communities being characterised on the basis of fewer than 10 quadrats each. Stands dominated by such species as *Azolla filiculoides*, *Elodea nuttallii*, *Carex acuta*, *C. aquatilis* and *C. lasiocarpa* are described briefly, but due to lack of samples are not considered as communities in their own right. Duckweed vegetation dominated by *Wolffia arrhiza*, a Somerset speciality, is largely subsumed within the *Lemna gibba* community (A1), while pond-choking mats of *L. minuta* are included in the *Lemna minor* community (A2). A few vegetation types appear to have been overlooked entirely: why, for example, is there no *Sparganium emersum* community?

For aquatic vegetation the usual dichotomous key to communities is replaced by a 'synoptic table', though how one is supposed to use this to identify new samples is unclear. For poorly sampled communities the table can be misleading. For example, I have seen *Hottonia palustris*, *Oenanthe aquatica*, *S. emersum* and *Utricularia vulgaris* in the *Spirodela-Hydrocharis* community (A3) during recent ditch surveys in the Somerset Levels, yet none are listed for that community in the table – this is hardly surprising given that the species list was derived from just eight quadrats.

It is a pity that, due to the poor geographical coverage, there are no distribution maps for the aquatic communities. Surely 'maps-with-gaps' would have been better than no maps at all! It is also disappointing that there is no distribution map of all aquatic samples, though an equivalent map is included for swamps and tall-herb fens.

At the back of the book there is a useful 'index of species', listing the communities in which each species was recorded. However, it only includes instances of species appearing in the floristic tables, so one can easily be misled. For example, *Nymphoides peltata* is listed for one vegetation unit – the *Potamogeton pectinatus-Myriophyllum spicatum* community (A11) – yet is mentioned in the text as occurring also in the *Nymphaea alba* and *Nuphar lutea* communities (A7 and A8).

We are told that aquatic vegetation should be sampled separately from any emergent vegetation amongst which it is growing. This seems a sensible approach, with different structural elements being treated, in effect, as separate communities. Why, then, do the floristic tables for many swamp communities contain aquatic species (and *vice versa*)? *Lemna minor*, for example, is represented in 13 swamp and tall-herb fen communities, and can attain high cover (7–10 on the domin scale) in seven of these. When is a floating mat of *L. minor* to be assigned to the *Lemna minor* community (A2), as opposed to the swamp community it is growing beneath?

There are similar problems with the treatment of aquatic communities. Again, we are told that the different layers – submerged, floating-leaved and free-floating – should be sampled and described separately. Yet the *Elodea canadensis* community (A15), for example, has included within it mats of overlying *L. minor* (3–7 on the domin scale) which would surely have been better distinguished as a separate community. Such inconsistencies of approach are likely to be a source of immense frustration to field workers.

Notwithstanding these criticisms, this is an important book. While perhaps not in the same league as earlier volumes, it is still absorbing reading for anyone with an interest in British vegetation. For those involved in the study of wetland vegetation it will be as essential as a pair of wellies. But don't drop it in the water – at £60 you wouldn't want to buy it more than once!

SIMON LEACH