Notes

RUBUS ASPERIDENS SUDRE EX BOUVET (ROSACEAE) IN THE BRITISH ISLES

Rubus asperidens, a widespread bramble of mainland Europe, features in the monograph of the genus by Watson (1958) as a British species, cited by him from five vice-counties, all but one in the far south-east of England. Subsequent examination of specimens so determined by him, however, has shown that he had an erroneous conception of this taxon and that his records were misattributed to it. Along with many other species claimed by him to occur in Britain, the name was relegated by Edees & Newton (1988) to an appendix listing names which have been applied to British Isles brambles dubiously at best.

Two pages earlier in the same work, Watson provided an account of another bramble well-known to earlier British batologists (as '*R. koehleri* var. *cognatus*') to which he had some years previously given the name *R. adenolobus* Watson. As that name later turned out to have been invalidly published, this species has since become familiar as *R. milesii*, a name chosen by Newton (1974) to commemorate the extensive work on the genus in Britain accomplished by the late B. A. Miles.

Watson listed the species he understood as *R. adenolobus* as occurring over a much wider part of Britain than has subsequently proved to be the case, betraying the fact that he interpreted the taxon rather loosely. In view of that, his claim to have seen material also from one département (Seine-et-Oise) in France has been disregarded, Edees & Newton (1988) having described the species as endemic to Britain. Since then Newton (1994) has also recorded this species from a wood in Co. Waterford, Ireland, v.c. H6. Newton has also recently informed the Belgian *Rubus* specialist H. Vannerom that a bramble collected in the Aachener Wald belonged to this species. The latter (in litt., 1993) regards the material in question as belonging to a rather variable species that embraces several taxa hitherto treated as distinct. That conclusion, however, is so sharply at variance with British experience of *R. milesii*, which is strikingly homogeneous throughout its range here, that it seems desirable that this broader interpretation be tested more widely before being generally adopted. In the present note, attention is accordingly given only to one of the several candidates proposed for that merger, as it has meanwhile emerged that this one at least is identical with *R. milesii* as presently understood by British batologists and bears a name, moreover, that has priority. Ironically, this is none other than *R. asperidens*, which Watson equated with one or more quite different brambles.

Already aware that Vannerom considered *R. asperidens* and *R. milesii* to be conspecific, I was nonetheless surprised to find a bramble in two woods in the Western Loire region of France in 1994 that was exactly the plant familiar to me under the latter name in Hampshire, in which it is common over much of the county. A. Newton subsequently concurred with my opinion that one of these French specimens was indistinguishable from the example in **BM** of *R. asperidens* distributed by Sudre as no. 556 in his *Batotheca Europaea*. It still remained to be established, however, that Sudre's interpretation of *R. asperidens* was the same as that of Bouvet, the original describer of the species.

Bouvet's name is absent from the *Index Herbariorum*, but his obituary mentions that he gave his collection to what was then known as the Herbier Lloyd (of which he acted for many years as honorary curator), now the Botanical Museum of the city of Angers. A loan from that institution, kindly arranged through the good offices of the Natural History Museum, provided me with sheets of five gatherings labelled in Bouvet's handwriting, all from localities cited for *R. asperidens* at the time of his description of the species (Bouvet 1907) and all patently identical with the British *R. milesii*. Four of the gatherings are labelled as *R. fuscus* Weihe, either with or without a question mark, and only one as *R. asperidens*, to which is attached a note about that species in Sudre's handwriting. It is this last specimen which must clearly be chosen as the lectotype, designated below.

There is some ambiguity about the rank intended by Bouvet for his new bramble. The name is printed in such a way as to suggest that it was to be treated as subordinate to *R. koehleri* Weihe &

Nees "(*sensu amplo*)". In the introduction to his paper Bouvet says that the arrangement follows that of Sudre's account of *Rubus* in Gandoger's *Novus Conspectus Florae Europae* (1905), but reference to that work fails to clarify matters. In a later paper Bouvet (1992) cites "*R. koehleri* subsp. *asperidens* Sudre in Bouvet" alongside a reference to his original description, but by then his usage is likely to have been influenced by Sudre's explicit preference in his own publications for giving it subspecific rank under *R. koehleri*. Fortunately, however, in a note appended to the protologue Bouvet used the words "cette espèce", which suggests that he did not have the formal rank of subspecies in mind at that time. It is also evident that this is a manuscript name of Sudre's that Bouvet was publishing on Sudre's behalf, so 'ex Bouvet' is technically the correct form of citation.

The synonymy is thus as follows:

R. asperidens Sudre ex Bouvet, *Bulletin de la Société d'Études scientifiques d'Angers* n.s. **36**: 58 (1907); *R. koehleri* var. *cognatus* sensu Rogers, *Journal of botany* **33**: 102 (1895); *Handbook of British Rubi* 83 (1900), non *R. cognatus* N. E. Brown in Sowerby, *English Botany*, ed. 3, Suppl. 101 (1892), pro parte; *R. fuscus* sensu Boulay in Rouy & Camus, *Flore de France* **6**: 94 (1900), pro parte, non Weihe in Bluff & Fingerhuth, *Compendium florae Germaniae* **1**: 682 (1825); *R. fuscus* sensu Bouvet, *Association française pour l'Avancement des Sciences faites en . . . Paris* 684 (1903); *R. koehleri* subsp. *asperidens* (Sudre ex Bouvet) Sudre, *Rubi Europae* **5**: 186 (1912); *Batotheca Europaea* fasc. 12, no. 556 (1914); *R. adenolobus* W. C. R. Watson, *London naturalist* **1934**: 61 (1935) (nomen non rite publ.); *R. milesii* A. Newton, *Watsonia* **10**: 25 (1974).

LECTOTYPUS [here designated]: route des Landes à Saint-Lambert-de-la-Potherie, Saint-Jean-de-Linières, près d'Angers, Maine-et-Loire, France, 27 vii 1904, *G. Bouvet* (**ANG**).

ACKNOWLEDGMENTS

I am indebted to the Conservateur of the Musée Botanique, Angers, Dr D. Moreau, for the loan of material and to A. R. Vickery for arranging that.

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ARENARIA BALEARICA L. (MOSSY SANDWORT): OBSERVATIONS ON WATER-BORNE SPREAD IN PERTHSHIRE

Arenaria balearica L. (Caryophyllaceae) is an attractive, small, mat-forming perennial commonly grown in rock gardens. It is endemic to the Western Mediterranean and ascends to 1450 m (Chater & Halliday 1993). In the British Isles it is rarely naturalized any distance away from gardens so that its presence along several kilometres of a riverside habitat in Perthshire is of note.

I first noticed this species in the early 1950s on the River Almond in Perthshire where it formed conspicuous patches on the vertical walls of the bathing stage at Trinity College, Glenalmond. In 1967 while working in Perthshire I discovered further colonies both upstream and downstream from the school and was curious as to their origin. Further exploration showed the plant to be abundant

on the stonework of the riverside garden of Tulchan House some 3 km upstream from the school. This appeared to be the obvious source of the *Arenaria* on the Almond and, indeed, searching further upstream from Tulchan House failed to reveal any plants. Lt Col. B. A. Innes, the owner of Tulchan House at the time, told me that although parts of the house were 250 years old, the garden had been reconstructed in the period 1922–1924. It seemed likely that the introduction of *Arenaria balearica* may have dated from that time. Significantly, Francis Buchanan White (1898) did not record this species from Perthshire.

I also mentioned the plant to Alan Robson, the B.S.B.I. recorder for Mid-Perth (v.c. 88). He too had found *Arenaria balearica* on the Almond in 1967 and kindly gave me his own and additional records. Of interest was a record made a few years prior to 1950 by Miss Stewart of Methven from the south side of the Almond at Damdykes. She had been unable to refind it there in 1967. We had thought of writing an account of *Arenaria balearica* but nothing was done and sadly Alan Robson died in 1981.

In 1994 I managed to revisit some of the localities on the Almond and look at other sites. The species was still present at Tulchan House but very sparingly as the riverside banks were now much overgrown. There were, however, at least three large colonies covering several square metres downstream to Trinity College. These were on flat sandstone rocks at the edge of the river which would be covered by higher than average floods and on damp vertical cliffs ascending to 4·5 m above the mean river level. These cliff plants looked very much part of the native flora with *Crepis paludosa* (L.) Moench, *Cystopteris fragilis* (L.) Bernh., *Geranium robertianum* L., *Galium odoratum* (L.) Scop. and the thallose hepatic *Conocephalum conicum* (L.) Underw. as associates. Some colonies had been lost since 1967. The bathing stage at the school had gone, with no sign of masonry, and a colony reported by Alan Robson from the north side had been destroyed by a landslip caused by a fallen tree. Downstream from the school, a small colony was seen above Millhaugh Bridge and two large colonies covering several square metres on horizontal sandstone and vertical dolerite rocks some distance above and below Dalcrue. There was no sign of plants on tree stumps or bases previously seen and reported in 1967. The colony on the east-facing side of the Tay below the George Hotel at Perth reported by Murray (1964) was in a healthy state. It seems likely that it also is derived from Tulchan plants some 19 km distant. The Almond enters the Tay 4 km upstream on the same side and its current when in flood would flow against the high vertical retaining wall on which *Arenaria balearica* grows.

Colonization of these riverside habitats is probably from seed but vegetative spread is also possible. The fragile stems break easily and, when planted, root from the ends and nodes. These could be trapped on the mossy silt-covered substrates and produce colonies which become a source for further spread. This process must have been active on the Almond for some 70 years. Significantly, all except one of the recently seen colonies grew on the south side of the river. This northern aspect was favoured and prevents the plants from drying out. The single colony on the south facing side was on horizontal rocks on a steep side section of the river where the southern aspect was shaded by a steep tree covered slope. George Swan (1993) mentions several localities for *A. balearica* on the River Tyne (Northumberland) although most are too far from the river to be of possible waterborne origin. However one site on the North Tyne near Barrasford, discovered by Michael Braithwaite in 1971, was near the river's edge. This habitat was very similar to the Perthshire ones of mossy rocks on the south side of the river above the normal flood level but at the occasional flood level (M. Braithwaite pers. comm., 1995). There may be as yet undiscovered colonies upstream. *Arenaria balearica* is well established on the River Almond and its future seems secure. The rocky nature of the riverside habitat, which is regularly scoured by floods, ensures that this habitat remains open and free from competition and allows *Arenaria balearica* to survive. It would be interesting to know whether waterborne spread is a means of dispersal in its native Mediterranean localities.

ACKNOWLEDGMENTS

I especially wish to thank the late Alan Robson for his helpful observations and additional records. I also thank the late Lt Col. B. A. Innes for information on the garden of Tulchan House, and Mr & Mrs John Irving for recent access to the garden. Thanks also go to Dr R. A. H. Smith for localizing

one of the sites, Professor George Swan and Michael Braithwaite for the Northumberland information and to Michael Taylor, Keeper of Natural History at the Perth Museum, for helpful comments.

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THE STATUS OF *SPIRANTHES ROMANZOFFIANA* CHAM. (ORCHIDACEAE), IRISH LADY'S TRESSES, ON COLONSAY (V.C. 102) IN 1995; WITH SPECIAL REFERENCE TO ASSOCIATED PLANT COMMUNITIES

Spiranthes romanzoffiana was unknown outside America until it was discovered in south-west Ireland in 1809 or 1810; it was recorded from the north of Ireland in 1892. A *Spiranthes* species was found in Coll, Scotland in 1921, but was not correctly identified as *Spiranthes romanzoffiana* until 1939. The first positive identification of the species for Britain was based on a water colour sketch and accompanying shrivelled specimen sent from the Scottish Hebridean Isle of Colonsay in 1930 (Loder 1935; Horsman 1989). In Europe, *Spiranthes romanzoffiana* is confined to the British Isles.

Perring & Farrell (1977, 1983) class *Spiranthes romanzoffiana* as a *British red data book* (B.R.D.B.) species. Stewart, Pearman & Preston (1994) class it as a "Scarce plant" with 18 post-1970 10-km squares (two of which occur on Colonsay) and two pre-1970 10-km squares. However it is still included on the Joint Nature Conservation Committee database as a B.R.D.B. species.

The plant is small (10–35 cm) and mid green in colour. Vegetative growth is usually followed by flowering in August. All these factors mean that it is virtually impossible to locate except when in bloom. Single spikes can sometimes be difficult to detect in tall vegetation, even then. The number of flowering spikes present at any one site varies greatly from year to year. In order to try to provide baseline data that could be used to detect long term changes in overall population levels, a survey of the Scottish sites was coordinated in 1995 by Scottish Natural Heritage and The Royal Botanic Garden, Edinburgh.

As part of this survey, visits were made in August 1995 to known *Spiranthes romanzoffiana* sites on Colonsay, i.e. sites in one of the three following categories: a. in the Biological Records Center database; b. noted or collated in the 1989 survey conducted by Mr Frank Horsman; and c. discovered by the author and his wife in 1992 or 1993. A site is here defined as a location where spikes of *Spiranthes romanzoffiana* occur within a few metres of each other, separated by tens (usually hundreds) of metres from the next plant or group of plants. In 1995 *Spiranthes romanzoffiana* was flowering at nine sites with a mean of 2·0 spikes per site, range 1–5. *Spiranthes romanzoffiana* was not flowering at the three category c sites i.e. discovered in 1992 or 1993. Similarly at 18 out of 23 (78%) of the previously recorded sites (categories a & b) no flowering was observed and hence no plants detected. Five completely new sites were discovered in 1995 (category d). In 1989 Frank Horsman found nine sites with plants in bloom. In the 1995 survey ten sites with flowering spikes were located (nine with flowering spikes intact, and one where spikes were reliably reported but had disappeared at the time of the visit). The mean height of 18 plants was 19·5 cm, range 12–34 cm. Basal lateral buds (which can be an important means of reproduction; Summerhayes 1968) were only observed on two plants.

Plant species lists with abundance values were drawn up for twelve sites (i.e. including the three category c sites where the precise location of the plant in 1992 or 1993 was known) and National Vegetation Classification (N.V.C.) communities (Rodwell 1991) allocated to each stand (Table 1).

TABLE 1. NATIONAL VEGETATION CLASSIFICATION COMMUNITIES AND SUB-COMMUNITIES AT TWELVE SITES AT WHICH *SPIRANTHES ROMANZOFFIANA* HAD FLOWERED IN 1992 (ONE SITE), 1993 (TWO SITES) OR 1995 (NINE SITES)

Code	Community and sub-community	Number of stands
M6	*Carex echinata—Sphagnum recurvum* mire	
M6d	*Juncus acutiflorus* sub-community	2
M10	*Carex dioica—Pinguicula vulgaris* mire*	
M10a	*Carex demissa—Juncus bulbosus/kochii* sub-community*	1
M23	*Juncus effusus/acutiflorus—Galium palustre* rush pasture	
M23a	*Juncus acutiflorus* sub-community	3
M23b	*Juncus effusus* sub-community	2
M25	*Molinia caerulea—Potentilla erecta* mire	
M25a	*Erica tetralix* sub-community	2
M25a/b	Intermediate between *Erica tetralix* and *Anthoxanthum odoratum* sub-communities	1
M25b	*Anthoxanthum odoratum* sub-community	1

* This stand only matched M10a approximately.

At five sites the stand showed a strong affinity to a second N.V.C. community. Many species were common to several stands. Allocation of stands to any one community was often therefore based on changes in the abundance levels of critical species, e.g. *Juncus acutiflorus* and *Molinia caerulea*.

Horsman (1994) states "this is a plant [*Spiranthes romanzoffiana*] with a distinctive habitat, this being the *Molinia caerulea* carpet, on old lazy beds, grazed by cattle." At only one of the overall total of 13 sites studied in detail were lazy beds present. However, *Molinia caerulea* did occur at most of these sites, at varying levels of abundance. In fact the variety of phytosociological associations in which the plant was recorded make it very difficult to define a typical *Spiranthes romanzoffiana* habitat in vegetational terms, though all are essentially wetland associations.

For 13 of the 21 plants recorded (20 flowering and one vegetative) one or two of the basal leaves had been affected by previous grazing; eleven had at least one stem leaf partly grazed. At the time of the visit, one flowering spike had been 'detached' by slug grazing and two by rabbit grazing. One spike 'disappeared' between a first and second visit, probably due to sheep grazing (time interval 13 days). Two spikes 'disappeared' two days after having first been observed by the crofter, probably due to rabbit grazing, as there were no stock in the field. In addition two spikes disappeared at one site grazed by sheep and cattle over a 31 day interval. The severance of flowering spikes was a very obvious field factor, but may not necessarily be critical at the population level. On the other hand the overall effect of the annual cycles of grazing and trampling, the intensity of grazing and trampling, and year-to-year variations in these factors on the growth, vegetative reproduction, seed production, establishment and levels of competition is probably extremely important. Conservation management for *Spiranthes romanzoffiana* would be fairly easy to arrange (given appropriate financial incentives) at enclosed sites. However at the extensive sites, i.e. where stock roam over large areas, it would be extremely difficult to organise. Six of the total of 13 sites were subject to extensive (unenclosed) grazing. As far as can be ascertained, 13 of the 23 sites from which the plant has been previously recorded were unenclosed.

The mean number of plants in bloom at the 13 sites was 2·0; and at the three new sites found in 1992–1993 (c), no flowering at all occurred in 1995. 1995 may well have been atypical, as many sites were drier than usual. Furthermore a low growth of herbage generally could have resulted in an overall intensification of grazing pressure. At one site and its environs, visited in 1991, 1992, 1993 and 1995, the number of flowering spikes recorded was 6, 1, 1 and 3 respectively. Monitoring population levels over a number of years will allow the degree of annual fluctuation in number of plants in bloom per site and the number of sites to be quantified absolutely. This will help to establish whether new locations recorded in both 1992–3 and 1995 reflect a genuine tendency of the species to continue to occupy new sites while simultaneously becoming locally extinct at others, or simply reflects a previous lack of knowledge on the plant's distribution on Colonsay. Once these

questions have been answered, it will then be possible to determine whether the long term trend for the species is one of expansion, contraction or stability. It is to be hoped that funding will be available to allow this important research to be carried out.

ACKNOWLEDGMENTS

I am grateful to Dr Chris Sydes and Mr Phil Lusby for supervising the *Spiranthes romanzoffiana* survey, to my wife for support and encouragement, for access to Mr Frank Horsman's 1989 *Spiranthes romanzoffiana* survey report, and for the helpful comments of the referees.

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THE CORRECT AUTHORITY FOR LESSER CHICKWEED, *STELLARIA PALLIDA* (CARYOPHYLLACEAE)

The combination *Stellaria pallida*, based on *Alsine pallida* Dumort., is attributed to Louis Piré (*Bulletins de la Société Royale de Botanique de Belgique* **2**: 49 (1863)) in all standard Floras of Britain and Europe (cf. Ascherson & Graebner 1991; Clapham, Tutin & Warburg 1962; Hegi 1969; Greuter, Burdet & Long 1984; Rechinger 1988; Blamey & Grey-Wilson 1989; Romo 1990; Stace 1991; Kent 1992; Chater & Heywood 1993, as a few examples). Lesser Chickweed extends to Arabia and while proof-reading its treatment in Vol. **1** of the forthcoming *Flora of the Arabian Peninsula and Socotra* (Miller & Cope in press) I noticed that Piré's accent had been omitted and consulted his original publication. In so doing I became acutely aware that the combination *Stellaria pallida* (Dumort.) Piré is invalid under the current *International Code* (Greuter et al. 1994).

Piré's paper (Piré 1863) is concerned with the occurrence of the species in France and its conspecificity with *Stellaria boreana* Jord. Throughout, including the title and the caption to the excellent colour plate (facing p. 49), Piré consistently refers to the species as *Alsine pallida*. On p. 48, he provides a conspectus in which he recognises two genera: *Stellaria* with three species (*S. holostea* L., *S. glauca* With. and *S. graminea* L.) and *Alsine* with four (*A. media* L., *A. pallida* Dmtr., *A. neglecta* Dmtr. and *A. nemorum* L.). [Nomenclature and citation of authorities are Piré's.]

It is only at the very end of the paper that the combination *S. pallida* appears. Piré's text reads: "Nous croyons donc que le nom d'*Alsine pallida* Dmtr. doit être préféré à celui de *Stellaria Boreana* Jord. Si cependant on n'admettait point le genre *Alsine* et si l'on persistait à laisser cette espèce dans le genre *Stellaria*, je proposerais de la nommer *Stellaria pallida*, conservant ainsi le nom spécifique que a la priorité." This translates as follows (italics, other than for scientific names, are mine): We therefore believe that the name of *Alsine pallida* Dmtr. must be preferred to that of *Stellaria*

Boreana Jord. *If however one did not accept* the genus *Alsine* at all and *if one persisted in leaving this species in* the genus *Stellaria*, *I would propose* to name it *Stellaria pallida*, in this way keeping the specific name that has priority.

It is quite clear that Piré *did* accept *Alsine* as a genus distinct from *Stellaria*. His use of the future conditional tense ("je proposerais . . ."), and his use of *Alsine pallida* in preference to *Stellaria boreana*, also makes it very clear that he did not, at the time of publication, accept a circumscription of the genus *Stellaria* that embraced *Alsine* L. Thus, his proposal of the name *S. pallida* is contrary to Art. 34.1(b) of the *Code*, which states, "A name is not validly published . . . when it is merely proposed in anticipation of the future acceptance of the group concerned, or of a particular circumscription, position, or rank of the group (so-called provisional name)". Hence his combination in *Stellaria* must be deemed invalid. Indeed, it seems to be a text-book example of when this Article of the *Code* should be applied.

The earliest valid publication of the epithet *pallida* under *Stellaria* that I have traced (via Ascherson & Graebner (1919)) is in Murbeck (1891) where the name appears as "*S. pallida* DUMORTIER Florula Belgica, p. 109 (1827), sub *Alsine*; Piré in Bull. de la Soc. bot. de Belg., tom. II, p. 49 (1863) cum icone; F. Schultz Herb. norm. nov. ser., cent. 8 n. 755." In Murbeck's work the genus *Stellaria* is accepted in its present-day circumscription, including *Alsine* L. I have not managed to establish whether publication of the name on F. W. Schultz's *Herbarium normale* exsiccata (n.s. Cent. 8, no. 755), issued by K. Keck in c. 1881 and cited by Murbeck, was effective or valid (with inclusion of the basionym *Alsine pallida*), as I have not seen an example of the specimen. Hence, unless an earlier valid publication of *S. pallida* can be traced (none is indicated in the extensive citations provided by Ascherson & Graebner 1919), the name of this species should henceforth be cited as:

Stellaria pallida (Dumort.) Murb., *Lunds Universitets Års-skrift* **27**(5): 158 (May 1891).
BASIONYM: *Alsine pallida* Dumort., *Florula Belgica* 109 (1827–29).
SYNONYM: *Stellaria pallida* (Dumort.) Piré, *Bulletins de la Société Royale de Botanique de Belgique* **2**: 49 (1863), comb. inval.

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HYDROCHARIS MORSUS-RANAE L. (HYDROCHARITACEAE) FRUITED IN BRITAIN IN 1995

Hydrocharis morsus-ranae L. (Frogbit) is a floating aquatic which, like many such species, has an effective method of vegetative reproduction (Cook & Lüönd 1982). Turions are produced throughout the growing season as terminal buds on slender stolons. Those which arise in spring and summer remain attached to the stolon and develop immediately into young plants; a colony of *H. morsus-ranae* often consists of groups of plants connected by rather fragile stolons. The turions (sometimes called hibernacula or winter-buds) which arise in autumn have a distinct abscission layer at the junction with the stolon and are readily detached. They are initially dormant and sink to the bottom of the water, growing into new plants in the spring.

Individual rosettes of *H. morsus-ranae* bear either male or female flowers. Scribailo & Posluszny (1984) found that most plants were dioecious, i.e. all the rosettes derived from them were male or all were female. However, 5–10% of plants were monoecious, giving rise to some male and some female rosettes. After flowering the peduncle curves down into the water, where the fruits mature. However, fruiting plants of *H. morsus-ranae* are rarely encountered in the native range of the species, probably because some colonies are exclusively male or female, and even if both sexes are present flowering may be very erratic. The factors which are required for flowering have not been studied critically, but Cook & Lüönd (1982) suggest that few flowers are produced if either climatic or local habitat conditions are unfavourable. In Britain Syme (1869) stated that "the fruit is apparently rarely perfected, as, although I have frequently looked for it, I have never been able to find it mature . . ." and Hooker (1870) commented more tersely that "*Fruit* I have not seen". Arber (1920) reported that although flowers are not uncommon, "seed is hardly ever set in this country. The ripened seed vessels are to be found, however, in Continental stations . . .". Successive editions of Clapham *et al.* (1952) say that the fruit is "rarely if ever produced in this country". The fruits of *H. morsus-ranae* are not described by Clapham *et al.* (1952), Dandy (1980) or Stace (1991).

Despite the statements in the literature cited above, there is some evidence that *H. morsus-ranae* does fruit periodically in Britain. A fruiting plant was illustrated by Butcher (1961) in a plate based on material collected at Wicken Fen, Cambs. (v.c. 29). It is difficult to assess the maturity of fruits on pressed herbarium specimens, but specimens in **BM** collected at the following sites apparently have mature fruits containing seeds: Amberley Wild Brooks, W. Sussex, v.c. 13 (*B. Welch*, 30 August 1953); Wey Navigation Canal between Weybridge and Byfleet, Surrey, v.c. 17 (*M. B. Gerrans*, 10 August 1947); Thorpe, E. Norfolk, v.c. 27 (*H. D. Geldart*, July 1852); River Ant near Barton Broad, E. Norfolk, v.c. 27 (*J. Groves*, 2 August 1897); Lousy Bay, Sutton Broad, E. Norfolk, v.c. 27 (*R. Gurney*, September 1947); a pond near the River [Great] Ouse near Elford Closes, Stretham, Cambs., v.c. 29 (*J. E. Dandy & G. Taylor*, 19 August 1932). There is also a fruiting specimen in **LTR** from a ditch near Ingham, E. Norfolk, v.c. 27 (*T. G. Tutin*, 4 August 1951, fide R. J. Gornall), but there are no fruiting specimens in **CGE**. The most detailed account of the fruiting of *H. morsus-ranae* in Britain is that of Gurney (1949), who reported that the species was exceptionally abundant in Norfolk in the summer of 1947, and flowered more freely than usual. A large proportion of the flowers set seed, which Gurney attributed to the "remarkably fine sunny weather" of the summer of 1947.

The summer of 1995, like that of 1947, was exceptionally warm and sunny (Branson 1995). We therefore examined populations of *H. morsus-ranae* in ditches in East Anglia in September 1995 to see if there was any evidence of fruit production. We found well-formed fruits at three of the four populations we examined. At Nene Washes, Cambs. (v.c. 29), and Woodwalton Fen, Hunts. (v.c. 31), fruiting plants were frequent in at least some ditches, and at Ludham Marshes, E. Norfolk (v.c. 27), plants were fruiting sparingly. We found only two small fruits, however, in the large population growing in apparently similar habitats at Swavesey, Cambs. (v.c. 29). As the flowers of *H. morsus-ranae* have disappeared by September, it is not possible on a single visit in the autumn to investigate the reasons why plants do not have fruit. Plants may have failed to fruit because they did not flower, or are male, or are females growing in a single-sex population, or are female plants in a mixed-sex population which failed to be cross-pollinated or which were cross-pollinated but failed to set seed for climatic or other reasons. It is also impossible to assess the proportion of female flowers which set seed.

In September and October 1995 C. Mainstone and P. R. Green kindly examined populations of

H. morsus-ranae in ditches in the Lewes Levels, E. Sussex (v.c. 14), and Westonzoyland, N. Somerset (v.c. 6), respectively. The plant was fruiting in both localities.

The fruits of *H. morsus-ranae* which we examined were borne on slightly curved, arcuate, or rarely sinuous, spongy peduncles 36–116 mm long and 2·0–3·3 mm in diameter. The fruits were ellipsoid, obovoid or globose, occasionally asymmetrical, smooth or with six ribs where the carpel walls showed through, and truncate at the apex with a circular black scar where the stigmas had been attached. They measured 8·0–11·4 × 4·0–9·6 mm. The seeds had characteristic blunt tubercles similar to those illustrated by Scribailo & Posluszny (1985). Both peduncles and fruits were green with a reddish brown or brown tinge, the fruits becoming brown with age. The turions, which were more frequent, differed in their narrowly ovoid shape and obtuse apex; they measured 6·1–13·5 × 2·6–5·6 mm and initially were green with faint or distinct reddish streaks along their length, but turned brown with age. They were borne on straight, slightly curved or arcuate stolons (3·9–)40–150 mm long and only (0·6–)1·0–1·9 mm in diameter. The stolons were slightly constricted at the junction with the turion, and eventually this junction curved so that the turion was held at an angle of 90° to the stolon; at this stage it was very easily detached.

The number of well-developed seeds in a random sample of fruits from each population was counted, and the results are presented in Table 1. Many fruits also contained numerous small, transparent seeds which are not included in the totals presented. We know of no comparable figures for Europe, but *H. morsus-ranae* is naturalised in North America and the numbers of seeds set by naturally-pollinated and hand-pollinated flowers in a Canadian population were measured by Scribailo & Posluszny (1984). Their figures are also reproduced in Table 1. The mean number of seeds per capsule in the Canadian population is similar to ours, but there appears to be more variation between fruits in the British sites.

The ease with which we discovered fruits of *H. morsus-ranae* suggests that they may be produced by many populations in Britain, at least during hot summers. They are likely to be found only if deliberately searched for, as they are held beneath the surface of the water. However, fruit production is not necessarily followed by the germination and establishment of seed. Scribailo & Posluszny (1985) were able to germinate seed of *H. morsus-ranae* under experimental conditions, but they only found two seedlings in the wild despite the fact that at their study site some 250 seeds/m^2 were produced in the preceding summer. However, they pointed out that the floating seedlings were easily confused with the duckweeds *Lemna minor* L. or *Spirodela polyrhiza* (L.) Schleiden (although the duckweeds differed in having roots arising directly from the lower surface of the leaf). Serbanescu-Jitariu (1972) reported seedlings from Romania in sites where *H. morsus-ranae* fruited freely for several years in succession. Further observations are required to establish whether *H. morsus-ranae* reproduces by seed in Britain. However, there can be no doubt that vegetative propagation is overwhelmingly important in this species.

TABLE 1. LOCALITIES WHERE FRUITING *HYDROCHARIS MORSUS-RANAE* WAS FOUND IN SEPTEMBER AND OCTOBER 1995, WITH DATA ON THE NUMBER OF SEEDS PER FRUIT AND A COMPARISON WITH CANADIAN DATA PUBLISHED BY SCRIBAILO & POSLUSZNY (1984)

Locality	Grid reference	No. of fruits examined	No. of well-formed seeds per fruit		
			Range	Mean	S.D.
Westonzoyland, v.c. 6	ST/3.3	2	14–59	37	—
Lewes Levels, v.c. 14	TQ/424.054	15	4–56	31	15
Ludham Marshes, v.c. 27	TM/407.180	15	4–96	36	28
Nene Washes R.S.P.B. Reserve, v.c. 29	TL/276.992	15	4–43	26	12
Middle Fen, Swavesey, v.c. 29	TL/35.70	2*	1	1	—
Woodwalton Fen N.N.R., v.c. 31	TL/233.849	30	1–74	42	18
Rondean Park, Lake Erie, Ontario, Canada					
1. naturally pollinated flowers		47	15–53	33	
2. hand pollinated flowers		29	7–47	32	

* only two small fruits found. S.D. = standard deviation.

ACKNOWLEDGMENTS

We are grateful to English Nature and the Royal Society for the Protection of Birds for permission to examine *H. morsus-ranae* at Woodwalton Fen and the Nene Washes respectively, to Jane Croft for help with fieldwork at Woodwalton Fen and to Paul Green and Chris Mainstone for searching for fruits elsewhere.

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IS *GENTIANELLA ULIGINOSA* (WILLD.) BOERNER (GENTIANACEAE) PRESENT IN ENGLAND?

Dowlen & Ho (1995) drew attention to an over-looked specimen of *Gentianella ciliata* (L.) Borkh. from Wiltshire in the British herbarium at the Natural History Museum, London (**BM**). The herbarium also holds some specimens of *Gentianella uliginosa* (Willd.) Boerner from England. The purpose of this note is to draw attention to them to see if they can be refound in the field or clarify if they are correct.

DEVON (V.C. 4)

There are two sheets from Braunton Burrows, North Devon both determined by T.C.G.R.

The first record is based on a single specimen labelled "on Braunton Burrows" in **herb. E. Forster** which is undated but must have been collected before her herbarium was acquired in 1849. The specimen has the characteristically strongly out-curved calyx segments and a corolla 17–18 mm long. The basal rosette has two stems each with one long internode, a single leaf at the node and two flowers, and three flowers on pedicels arising directly from the rosette. The specimen is rooted in sand with a few shoots of a grass which appears to be *Agrostis stolonifera* L. It was originally labelled *G. amarella*, and I am unsure of the identity of the second specimen mounted with it.

The second record is based on *Gentianella* specimens labelled as collected by I. A. Williams on 8 September 1927 from Braunton Burrows. The specimens, presumably from one collection, were originally named as "*G. anglica*" but had been separated on to two sheets by A. J. Wilmott in 1949.

On one sheet there are four small plants in full flower which are *Gentianella anglica* (Pugsl.) E. F. Warb., as labelled. The second sheet has two large plants with very long internodes and unequal, spreading sepals, and are clearly *Gentianella uliginosa*. It is possible that the material may have been mislabelled, as *G. anglica* has never otherwise been observed flowering in the autumn. I. A. Williams was a reliable botanist who collected widely from Surrey to mid-Wales and Scotland; his obituary was given by Lousley (1962).

There are no other known records for Braunton or North Devon (J. Breeds and W. H. Tucker, pers. comm. 1995). Braunton has been extensively botanised in the past by well-known botanists such as H. W. Pugsley, F. R. E. Wright, W. P. Hiern and more recently by J. E. Lousley, L. J. Margetts and N. M. Pritchard, and it is surprising that it has not been refound. The dunes were visited again in 1995 specifically to look for *G. uliginosa* on 12 June and 20 September and an extensive search made of the dune slacks which looked similar to the South Wales sites. Whilst both *G. anglica* and *G. amarella* were found, there was no sign of *G. uliginosa*. Presumably it could reappear from buried seed uncovered by shifting sands, and it should be looked for again.

G. uliginosa is well known in South Wales on the opposite side of the Bristol Channel, and the North Devon record would fit the distribution pattern as also shown by other rare dune species such as *Matthiola sinuata* (L.) R. Br. and *Liparis loeselii* (L.) L. C. M. Richard. Interestingly, Pritchard (1959) suggested that the Bristol Channel race of *G. amarella* showed some features suggesting past introgression with *G. uliginosa*.

DERBYSHIRE (v.c. 57)

Lousley (1950) noted that *G. uliginosa* was listed for v.c. 57 by R. Wettstein in 1896 but further evidence for its occurrence was unknown. There is, however, one sheet of *G. uliginosa* from Buxton, Derbyshire, collected on 24 July 1898 by L. F. Blake. The material has unequal, out-curved sepals and very long terminal or second to terminal internodes; it was confirmed by T. N. Ho in 1992 and appears to be correctly named. Little appears to be known about Blake.

Clapham (1969) rejected Linton's (1903) record from Millers Dale; no material has been seen. The occurrence of two records from the Peak District suggests a more careful examination of *Gentianella* in damp meadows would be worthwhile.

ACKNOWLEDGMENTS

I would like to thank John Breeds, Quentin Kay, Mark Kitchen and Paul Smith for help in the field, Gwynn Ellis, Len Margetts and Bill Tucker for information, Megan Dowlen and Roy Vickery for assistance, and the keeper of **BM** for access to material.

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