Short Notes

THE DISTRIBUTION OF *CAREX HUMILIS* LEYSS. IN BRITAIN

Carex humilis is a Eurasian sedge extending from France in the west to Manchuria in the east, and from Spain, central Italy and Greece in the south to Poland and central Russia in the north. It is absent from Scandinavia. It is a plant of fully exposed and comparatively dry slopes, preferring a southerly aspect but by no means exclusively so, and in this respect is more akin to *C. ornithopoda* Willd. than to *C. digitata* L. (the three are grouped in Section *Digitatae* Fries). In Britain its headquarters are the chalk downlands where the counties of Wiltshire, Hampshire and Dorset meet, with outliers to the west and north-west on the Carboniferous limestone of the Mendips and of the Avon and Wye gorges. There is a single record, not recently confirmed, from the oolite at Bathampton. As may be seen, *C. humilis* is always strongly calcicolous, the pH as so far measured in Britain ranging between 7.3 and 7.9, with one reading (Crook Peak) at 6.4.

It is difficult to explain why this sedge is absent from the eastern downs. Coombe (1954) has suggested that the pattern is partly dictated by ancient clearances. Wells (1975) conjectures that the plant colonised arable land centuries ago when more favourable climatic conditions enabled it to set seed more readily than it does now. If this is so the present rapid destruction of the sedge may be irreversible.

The downlands of Britain have been variously cultivated through the ages, but the ploughing of sheep-runs in order to grow oats or barley or for conversion to cattle pastures has hitherto spared the steeper gradients and the ancient earthworks, both favourite habitats of *C. humilis*. Nowadays, however, the steepest slopes can be sprayed, from the air, with fertilisers and many of the earthworks (e.g. Stockton, Buzbury) are being used as winter stockyards. The growth of stronger grasses encouraged by the fertiliser, and the trampling by cattle, as well as their feeding methods (so much more destructive than those of sheep), can be quickly fatal to the sedge. Nevertheless there are many downland stations where it may still be counted in thousands. Furthermore, despite the plant's apparent inability to set much seed, detached pieces of it are sometimes capable, as pieces of *C. montana* are not, of re-rooting themselves. Such survivors may be found round the borders of fields that have been ploughed, and in this way the sedge may linger in, and might one day recolonise, areas from which it appears to have been eradicated.

Carex humilis is the earliest sedge to flower in Britain. The tufts of bright lemon-yellow anthers, curved over on relatively long filaments, usually enable it to be picked out by mid-March, a fortnight before *C. montana* has reached that stage. In April and May the mats of needle-like leaves are a vivid emerald green that stands out from the surrounding herbage, while in later summer these leaves, bronzed but still full of colour, continue to contrast with the dying grasses around them. By September, however, when the grasses are showing fresh growth, *C. humilis* is often very hard to detect until, at the turn of the year, those slopes on which the sedge is massed develop a characteristic red-brown colour.

The recorded British stations are listed below, with grid-references. All that have been traced have been surveyed since 1970, and the present size of each population is indicated by the letters A = 1 to 20, B = 21 to100, C = 101 to 1000, D = over 1000. Where the sedge has not been refound by R. W. D. the date of the last known sighting, with reference, is given.

N. Somerset, v.c.6: 31/2.5, Brean Down (D); 31/3.5, Crook Peak (C); 31/5.7, Leigh Woods (A); 31/7.6, Bathampton Down (White 1912).

N. Wilts., v.c.7: 41/0.6, Bishops Cannings (B).

S. Wilts., v.c.8: 31/8.3, Kelsey Farm Down (A); 31/9.1, Ashmore Down (B); Ashcombe's Bottom, 3 places (A,A,C); Malacombe Bottom (C); Pitt Place (Grose 1957), ploughed; 31/9.2, Win Green, 2 places (B,C); Malacombe Bottom (A); Winkelbury Hill, 2 places (B,B); Gallows Hill, 2 places (D,D); Trow Down (D); Middle Down, 2 places (D,D); Manwood Copse (D); Prescombe Down (D); Sutton Down (B); Woodminton Down (D); 31/9.3, Hindon (A); Tytherington Down (C); Well Bottom (B); Boyton Down, 1951, 2 small patches (D.E.Coombe field record);

Sherrington Down (Grose 1957), ploughed; Stockton Down, 3 places (C,D,D); Chilmark (B, a second station destroyed by road-widening *c* 1970); Starveall (D); Wyle Down (C); 31/9.4 Heytesbury (C); Knook Castle, 1973 (D.E.Coombe field record); Imber, Fore Down, 1968 (Grose 1969); Codford, 2 places (B,C); Edington, 1952 (Grose 1953); Tinhead (B); 40/0.1, Bokerley Dyke and Martin Down (D); Tidpit, Windmill Hill (D); 41/0.2, Woodminton Down (D, continuation of colony in 31/9.2); Marleycombe Hill (C); Knapp Down, 4 places (B,C,D,D); Chiselbury Camp, 1951, a few small patches (D.E.Coombe field record); Knowle Hill, 2 places (B,D); Verndítch Chase (C); Compton Down, 1967 (T.C.E.Wells field record); Hut Bottom, 2 places (A,B); Church Bottom, on east side almost continuous (D), on west side 3 places (D,D,D); Knighton Wood (C); Hoopside (B), and a second place, 1967 (T.C.E. Wells field record); Croucheston Drove, 4 places (A,B,D,D); Burcombe Down (B); Throope Hill, 2 places (B,D); Little Toyd Down (Welch & Grose 1943), ploughed; Stratford Tony Down (C); 41/0.3, Wylye Down (D, continuation of colony in 31/9.3); Church Dean Down (B); Deptford, 2 places (A,C); Upper Farm Down (C); Steeple Langford (D); Grovely (B); Berwick St James and Hadden Hill (Welch & Grose 1943), ploughed; 41/0.4, Tilshead (C); Yarnbury Castle (B); Parsonage Down, 2 places (D,D); 41/1.2, Salisbury Race Course, 1960+ (D.E.Coombe field record), site levelled *c* 1970; Grim's Ditch (C); Coombe Bissett Down (C, formerly plentiful, down since heavily fertilised); Homington, south (D); Homington, north (C); Whitsbury Gallops, 1951 (D.E.Coombe field record), re-seeded; Wick and New Court Down, largely ploughed but sedge survives in 2 enclosures (B,B); Gallows Hill (D); Odstock, 3 places (A,B,C); Clearbury Ring (B); 41/1.3, Druid's Lodge (C); Middle Woodford, 1952 (D.E.Coombe field record); Lake Down, 1951, 2 places (D.E.Coombe field record); Great Durnford (A); Hillcrest Bungalow, 1951 (Grose 1952); Figsbury Ring (A); Stock Bottom (B); 41/1.4, Alton Down (C); Wilsford Down (B); Stonehenge, 1973 (Coombe 1977, p. 94), now probably extinct through visitors' trampling; Durrington Down (Welch & Grose 1943), re-seeded; 41/1.5, Rushall Down (B); 41/2.2, Pepperbox Hill (C); 41/2.3, Porton (Wells *et al.* 1976, p. 623); Winterbourne Down (C); 41/2.4, Tidworth (B).

Dorset, v.c. 9: 30/8.9, Deverel Down (B); 31/8.0, Durweston Middle Hill, 1892, **BM**, **CGE**; Enford Bottom (A); 31/8.1, Hambledon Hill, 2 places (B,D); Hod Hill (D); 31/9.0, Buzbury Rings, 1977 (D.E.Coombe field record), cattle-trampled; Pimperne Long Barrow, 1956, **K**, cattle-trampled; Badbury Rings (A); Tarrant Rawston (D); Long Crichel Horse Down, 1892, **BM**; 31/9.1, Gunville Down (D); Tarrant Hinton (A); Chettle House (Mansel-Pleydell 1895), ploughed; Thickthorn Down (Biological Records Centre), ploughed; Week Street Down (C); Gussage Down (D); 41/0.1, Ackling Dyke (B); Oakley Down (A); Knowlton Temple (B); Pembridge Down (C).

S. Hants., v.c. 11: 41/0.1, Gallows Hill (B–extension of Wiltshire colony); Mizmaze (C).

W. Gloucs., v.c.34: 31/5.7, Clifton (C); 32/5.1, Symonds Yat, 2 places (B,B).

Hereford, v.c.36: 32/5.1, Great Doward, 2 places (B,B).

Derbys., v.c.57: 43/1.7, Miller's Dale, a curious plant, collected by D. M. Heath in 1930 as *C. humilis*, is in **OXF**. Kükenthal rejected the determination but could not name the sedge. It is probably very immature *C. ornithopoda*.

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R. W. DAVID

× *PSEUDORHIZA BRUNIANA* (BRÜGGER) P. F. HUNT IN ORKNEY

A single plant of what is believed to be the first record from the British Isles of the hybrid *Dactylorhiza maculata* (L.) Soó subsp. *ericetorum* (Linton) Hunt & Summerhayes × *Pseudorchis albida* (L.) Á. & D. Löve (= × *Pseudorhiza bruniana* (Brügger) P. F. Hunt) was found near Stenness, Orkney, on 22nd June, 1977, by J. Edelsten and the writer. It is also the first record from the British Isles of a hybrid of this generic combination.

The tightly-packed head of small whitish flowers was taken at first glance to belong to *P. albida*, for which we were looking at the time (a colony had been found nearby in 1975 by N. Picozzi). At second glance, however, the stem and leaves were clearly of the *D. maculata* type. Closer examination showed that the flowers themselves were intermediate between those of the two species. All the floral segments were marked with *D. maculata*-type spots; the lip was shortish, longitudinally rectangular and with very small side-lobes; and the other segments were convergent, forming an *Orchis*-like hood or galea. It has since been pointed out by R. H. Roberts (*in litt.* 1977) that the spur was also intermediate—too broad at the base for *D. maculata* and too long for *P. albida*.

Photographs of the plant were submitted to Messrs G. Rodway, R. H. Roberts and P.F. Hunt as referees, and they agreed on the plant's putative identity. Colour prints, 25 × 20 cm, showing the whole plant at a reproduction ratio of about × 0.8, and the flowerhead at about × 6, have been deposited with the Royal Botanic Gardens, Kew. These prints were made by the CIBA process and should, therefore, be reasonably permanent.

The area was flat, dryish moorland at *c* 30 m altitude, the dominant vegetation being short heather which was evidently burnt at intervals. *D. maculata* subsp. *ericetorum* was extremely abundant, and there were also many specimens of *D. purpurella* (T. & T.A. Steph.) Soó, though these—like the hybrid—were within a few metres of the road; the materials used in roadmaking were perhaps less acid than the ambient soil.

D. fuchsii (Druce) Soó is a scarce plant in Orkney, and the nearest known colony is some 14 km to the east. The possibility of the hybrid being *D. fuchsii* × *P. albida* (= × *Pseudorhiza nieschalkii* (Senghas) P. F. Hunt) can, therefore, be discounted.

D. M. T. ETTLINGER

MYRIOPHYLLUM AQUATICUM (VELLOSO) VERDC. IN EAST SUSSEX

In Chicken's (1977) note on *Myriophyllum aquaticum* (Velloso) Verdc. (*M. brasiliense* Camb.) in Britain it was suggested that this plant might be found elsewhere in Britain besides Cornwall, and it was reported that it is reputedly frost-tender.

This species grows in a small pond at an altitude of 550 feet near Duddleswell, in Ashdown Forest, E. Sussex, v.c.14, where it was first identified by Dr C. T. Prime in 1976. During the winter of 1976/77 the ice on this pond was approximately 2″ thick yet the growth during the summer of 1977 was prolific, the plant growing thickly up to 10 ft from the bank along two sides of the pond. The winter of 1977/78 was just as cold, but the plant is now (July 1978) in an equal state of luxuriance and producing female flowers in abundance. A specimen is in **LTR**.

I understand (E. Chicken *in litt. ad* C. A. Stace 1978) that the Cornish plant had died out by July 1977, but that whether this disappearance can be attributed to the drought of 1976 or to the frosts of 1976/77 must remain uncertain; Mr Chicken believes the former.

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VARIATION IN FLOWER AND FRUIT RATIOS OF *ONONIS REPENS* L. IN THE BRITISH ISLES

Wild colonies of *Ononis repens* L. growing in various localities in the British Isles were sampled. Wherever possible the lengths of the wings, keel, fruiting calyx and capsule were measured from their base to their farthest tips. The ratios wing/keel length and fruiting calyx/capsule length are summarised in Table 1, which shows the range of variation in these parameters within the localities sampled. Duncan's Multiple Range Test (5% level) demarcates these localities into two homogeneous subgroups (localities 1-5 and 6-20) on the basis of the wing/keel ratio, but these do not correspond to any distinct geographical separation. No such demarcation on the fruiting calyx/capsule ratio is possible.

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TABLE 1. WING/KEEL AND FRUITING CALYX/CAPSULE RATIOS OF *ONONIS REPENS* IN THE BRITISH ISLES

Locality	Wing/Keel Ratio n	Wing/Keel Ratio Mean & S.E.	Fruiting Calyx/Capsule Ratio n	Fruiting Calyx/Capsule Ratio Mean & S.E.
1. Stroud Road, E. Gloucs., v.c. 33	25	0·93±0·006	—	—
2. Oxwich Road, Glam., v.c. 41	33	0·94±0·006	—	—
3. Slapton Sands, S. Devon, v.c. 3	66	0·96±0·004	66	9·3±0·02
4. Luce Sands, Wigtown, v.c. 74	33	0·96±0·005	—	—
5. Oxwich Burrows, Glam., v.c. 41	34	0·96±0·005	—	—
6. Courtown Harbour, Wexford, v.c. H12	33	0·97±0·007	—	—
7. Boxhill, Surrey, v.c. 17	35	0·98±0·007	50	9·4±0·02
8. Rodborough Common, W. Gloucs., v.c. 34	50	0·98±0·007	50	9·8±0·01
9. Whitburn Coast, Durham, v.c. 66	51	0·98±0·006	63	9·9±0·01
10. Tunstall, E. Suffolk, v.c. 25	47	0·98±0·005	67	11·0±0·02
11. Albury, Surrey, v.c. 17	50	0·98±0·006	—	—
12. Clonakilty Bay, W. Cork, v.c. H3	20	0·99±0·001	—	—
13. Newmarket, W. Suffolk, v.c. 26	50	0·99±0·006	56	8·8±0·01
14. Holy Island Dunes, Cheviot, v.c. 68	50	0·99±0·006	—	—
15. Drigg Dunes, Cumberland, v.c. 70	43	0·99±0·009	—	—
16. Newark/Sleaford Road, S. Lincs., v.c. 53	54	1·00±0·005	34	8·3±0·01
17. Quarrington, S. Lincs., v.c. 53	92	1·00±0·004	—	—
18. Beachy Head, E. Sussex, v.c. 14	35	1·01±0·010	45	9·8±0·02
19. Lay-town, W. Meath, v.c. H23	99	1·01±0·080	—	—
20. Hartlepool Dunes, Durham, v.c. 66	50	1·01±0·008	98	10·0±0·01
21. Berwick, Cheviot, v.c. 68	—	—	37	9·2±0·01
22. Corbridge, S. Northumb., v.c. 67	—	—	50	11·0±0·02

SOME MORPHOLOGICAL VARIATION IN *ONONIS SPINOSA* L. IN THE BRITISH ISLES

Wild colonies of *Ononis spinosa* L. growing in various localities in the British Isles were sampled. Each plant was measured as follows: terminal leaflet length/greatest width (leaflet index), flower wing/keel

TABLE 1. LEAFLET, FLOWER AND FRUIT INDICES OF *ONONIS SPINOSA* L. IN THE BRITISH ISLES

	Leaflet index		Flower Index		Fruit Index	
	n	Mean & S.E.	n	Mean & S.E.	n	Mean & S.E.
1. Huntingdon, Hunts., v.c. 31	49	2·32 ± ·04	48	0·97 ± ·003	49	0·92 ± ·009
2. Quarrington South, S. Lincs, v.c. 53	92	2·36 ± ·04	55	0·99 ± ·006	48	0·90 ± ·008
3. Stow-on-the-Wold, E. Gloucs, v.c. 33	50	2·48 ± ·05	33	0·94 ± ·007	33	0·80 ± ·011
4. Quarrington North, S. Lincs, v.c. 53	50	2·50 ± ·05	49	1·05 ± ·008	36	0·83 ± ·008
5. Newark/Sleaford Road, S. Lincs, v.c. 53	50	2·58 ± ·05	50	0·98 ± ·007	28	0·94 ± ·024
6. Wyre, Hereford, v.c. 36	50	2·59 ± ·05	50	0·95 ± ·005	50	0·90 ± ·010
7. Merrow Common, Surrey, v.c. 17	50	2·60 ± ·06	48	0·97 ± ·004	40	0·91 ± ·009
8. Cranbourne, Dorset, v.c. 9	50	2·78 ± ·06	50	1·00 ± ·006	50	0·89 ± ·009
9. Eastbourne, E. Sussex, v.c. 14	68	2·84 ± ·05	40	0·99 ± ·007	40	0·83 ± ·012
10. Northwood, Salop, v.c. 40	49	2·93 ± ·06	49	0·97 ± ·007	49	0·89 ± ·009

length (flower index), and fruiting calyx/capsule length (fruit index). Table 1 presents a summary of the results.

Many of the populations sampled differ significantly when all three indices are considered together, although for each index the populations show a fairly continuous variation. The Merrow Common, Cranbourne, Eastbourne and Northwood populations are rather close for all three parameters; they all tend to have high leaflet indices (more lanceolate leaflets), flower indices approaching unity, and fruit indices less than unity (calyx shorter than fruit).

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SOME OBSERVATIONS ON *CATAPODIUM RIGIDUM* (L.) C. E. HUBBARD SUBSP. *MAJUS* (C. PRESL) PERRING & SELL

Perring and Sell (1967) separated *Catapodium rigidum* (L.) C. E. Hubbard subsp. *majus* (C.Presl) Perring & Sell from subsp. *rigidum* 'by its taller habit, wider leaves and open pyramidal inflorescence. It occurs in the south and west of the British Isles,, often near the sea, and abroad in south-west Europe and much of the Mediterranean region'. Lousley (1971) commented: 'further experience in the field suggests that it only occurs in places where one would expect a grass to be more luxuriant and that its characters may be related to climatic conditions'.

I have observed this taxon for several years on the Isles of Scilly, in The Burren, Co. Clare, and in southern Italy along the coast from Naples to Paestum. In cultivation the growth habit remains constant. Germination is fairly quick after seed-fall and both seed-set and germination percentage appear to be high. From comparison of autumn and spring sowing, it is clear that a period of vernalization is necessary for flowering. It produces a large population of plants from self-seeding and a dense stand survives to full growth. It would appear that plants require a minimum of competition from other species but are able to withstand strong competition from their own species.

Plants from The Burren self-seeded in cultivation; seeds germinated following a brief period of rain in early September 1976 and by the end of the month had produced seedlings 8 cm high. Several severe frosts in December did not affect the plants. On March 8th 1977, 20 autumn-sown seedlings were

TABLE 1. MEASUREMENTS OF *CATAPODIUM RIGIDUM* (L.) C. E. HUBBARD SUBSP. *RIGIDUM* AND SUBSP. *MAJUS* (C. PRESL) PERRING & SELL

	subsp. *rigidum*	subsp. *majus*
Lower glume length	1·3–1·9 mm	1·0–2·0 mm
Upper glume length	1·4–2·4 mm	1·6–2·5 mm
Lowest lemma length	2·0–2·5 mm	2·0–1·8 mm
Spikelet length	3·5–5·0 mm	4·5–6·0 mm
Panicle length	3·5–4·0 cm	3·0–9·0 cm
Leaf length	2·5–4·0 cm	6·0–13·0 cm
Leaf width	0·8–1·5 mm	1·0–3·5 mm
Ligule length	1·0–1·5 mm	2·0–3·5 mm
Plant height	3·0–12·0 cm	18·0–38·0 cm

space-planted and by May 30th their leaves were 6–18 cm long. Seed was also sown on March 8th, but by May 30th had only produced plants with leaves less than 4 cm, which had only increased to 7 cm by the end of June, by which time no flowering culms had appeared. Inflorescences opened on June 8th on the autumn sowings whilst the spring sowing did not produce a culm until early August. These facts may account for some of the observed variation in the development of wild plants, some of which could have germinated in the spring.

From observation of the growth-habit and the habitats of subsp. *majus*, it is doubtful whether Lousley's (1971) comment can be upheld. The general nature of the habitats of both subspecies are similar and both can be found growing together in The Burren and in southern Italy. Subsp. *majus* in Tresco Abbey Gardens, Isles of Scilly, is a slightly smaller than average plant for this subspecies, probably due to acidity. Lousley's *Flora* includes records from cultivated land, which is potentially acidic and where subsp. *majus* could have taken up added nutrition from fertilizer. The large plants seen in The Burren and in southern Italy grow on calcareous rock and soil. Whilst pH requirements vary in plants, a high pH becomes an essential factor in enhancing available nutrition, however low.

Subsp. *majus* in southern Italy is found at the foot of walls adjacent to pavement stones, on garden walls, on ancient stone ruins, in rubble at the base of limestone cliffs and on open road verges. In The Burren it is seen among stones and open low grass cover on walled green lanes and tracks, and in shallow pockets on limestone rocks, in all cases in open conditions with little or no other plant competition and not near any sources from which it could derive added plant nutrition. Its proximity to the sea is marked and it can be seen at 300m at Ravello facing the coast above Amalfi.

Some measurements of plants of the two subspecies are given in Table 1. The measurements for subsp. *majus* are taken from wild material in The Burren, southern Italy and Tresco and from cultivated material. The length of the glumes and lemmas of the two taxa are similar. In subsp. *majus* the length of the ligule, spikelet and panicle are greater than in subsp. *rigidum* and the open pyramidal shape of the panicle in subsp. *majus* is distinct. Also the greater leaf-width and -length and the greater height of subsp. *majus* shows it to be a distinct taxon.

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