Drosera × *belezeana* Camus confirmed for the British Isles

D. A. PEARMAN

Algiers, Feock, Truro, Cornwall TR3 6RA

and

F. J. RUMSEY

Department of Botany, Natural History Museum, London SW7 5BD

ABSTRACT

The vigorous hybrid between *Drosera intermedia* Hayne and *D. rotundifolia* L. (*D.* × *belezeana* Camus) is confirmed as British for the first time and described. Previous records, where backed by specimens, have proved to be *D.* × *obovata* Mert. & Koch (*D. anglica* L. × *D. rotundifolia*). The history of the description and subsequent recording of this hybrid is given and its current abundance and distribution assessed. Many of the historical European records of this hybrid are now known to be errors. Both parental taxa are declining throughout continental Europe and the recently discovered British plants may be the only known extant naturally derived examples of this rare and attractive hybrid.

KEYWORDS: Round-leaved Sundew, Oblong-leaved Sundew, hybrid, Dorset.

INTRODUCTION

Drosera × *belezeana* in the British Isles

An unusual Sundew, tentatively identified in the field as the hybrid between *D. rotundifolia* and *D. intermedia* (*D* × *belezeana*), was first discovered from just west of the Agglestone, Godlingston Heath N.N.R. (SZ08), Dorset by DAP in August 1999. The identification was subsequently confirmed by Dr A. Culham at Reading University. On revisiting the site in August 2002 six colonies were found, with a further site in June 2003, both to the east and west of the Agglestone. The best find, however, was in a small dryish self-contained bog about 1 km to the west, where all three British *Drosera* species plus the two hybrids occurred within 15 m of each other.

All colonies grew in peaty bogs with the typical associates of both parents, including *Erica tetralix*, *Narthecium ossifragum*, *Rhynchospora alba*, *Molinia caerulea* (rarer), and *Sphagnum* species, particularly the rare but locally abundant *S. pulchrum* which is such a feature of these Dorset mires. Floristically, all sites were good examples of the M21 *Narthecium-Sphagnum papillosum* valley mire community, described by Rodwell (1991).

There were no obvious differences between the sites that had the hybrid present and those that did not. Most of the vegetation in the areas where the hybrid was found was considered to be too closed for *D. intermedia*, which was more abundant on bare peat on the adjoining wet heath.

The discovery of undoubted *D.* × *belezeana* led to a review of the historical records of this hybrid. Culham (1998) had suggested that this hybrid was "probably very rare". It was not listed in the earlier standard floras and checklists, eg. Clapham, Tutin & Moore, (1987), or Dandy (1958) but it is included in Stace (1991), who merely repeats the localities given by Webb, in Stace (1975). According to Webb this hybrid has been recorded only from v.c. 11 (the New Forest), v.c. 28 (Dersingham) and v.c. 46 (Borth Bog). However, evidence to support and substantiate these records is hard to find. Both of the first two records seem to rely on a note by Druce (1912) in the report of the Botanical Exchange Club where he states "*Drosera longifolia* × *rotundifolia* (*D. rotundifolia* × *intermedia*). Plants having intermediate characters between the above species have been noticed at Dersingham, Norfolk, growing with both the assumed parents, and Mr. H. Balfour

FIGURE 1. *D.* × *belezeana* near the Agglestone, Godlingston Heath N.N.R., Dorset showing growth form and habit. Photo B. Edwards.

brought me from the New Forest plants which he and I thought had the same parentage. Further specimens and observations are, however, required to prove the occurrence of this hybrid in Britain". The most recent floras of these two counties shed no further light. That of Hampshire (Brewis *et al*. 1996) merely lists the record as "New Forest" DAW(ebb) 1975 – i.e. citing the brief account in Stace (1975). The Norfolk Flora (Beckett *et al*. 1999) says "*D.* × *obovata* and *D.* × *belezeana* were both listed from Dersingham in the early years of the 20th Century, but there seems some confusion over the records so neither can be considered as certain." Doubt obviously still resided in Druce's mind as to the exact nature of these unusual plants and his comments are clearly much more equivocal than Webb's later account would suggest.

The record from Borth Bog, v.c. 46, Cardiganshire is more tangible in that it is supported by a herbarium specimen with a well-documented provenance, but it is erroneous. It rests on a specimen (in **NMW**) collected by J. H. Salter in 1940. A. O. Chater has been kind enough to consult Salter's diaries and they show that on 23 July 1940 he (Salter) went out onto the bog, quickly found the commoner hybrid *D.* × *obovata*, and after some searching, one specimen he believed to be of *D.* × *belezeana*. Alas, this has recently been re-determined by A. Culham as *D.* × *obovata*. A trip to the bog in September 2002 by A. O. Chater confirmed Salter's area as completely overgrown, and other *Drosera* areas as holding plentiful colonies of the three species, but only a very few clumps of putative *D.* × *obovata*.

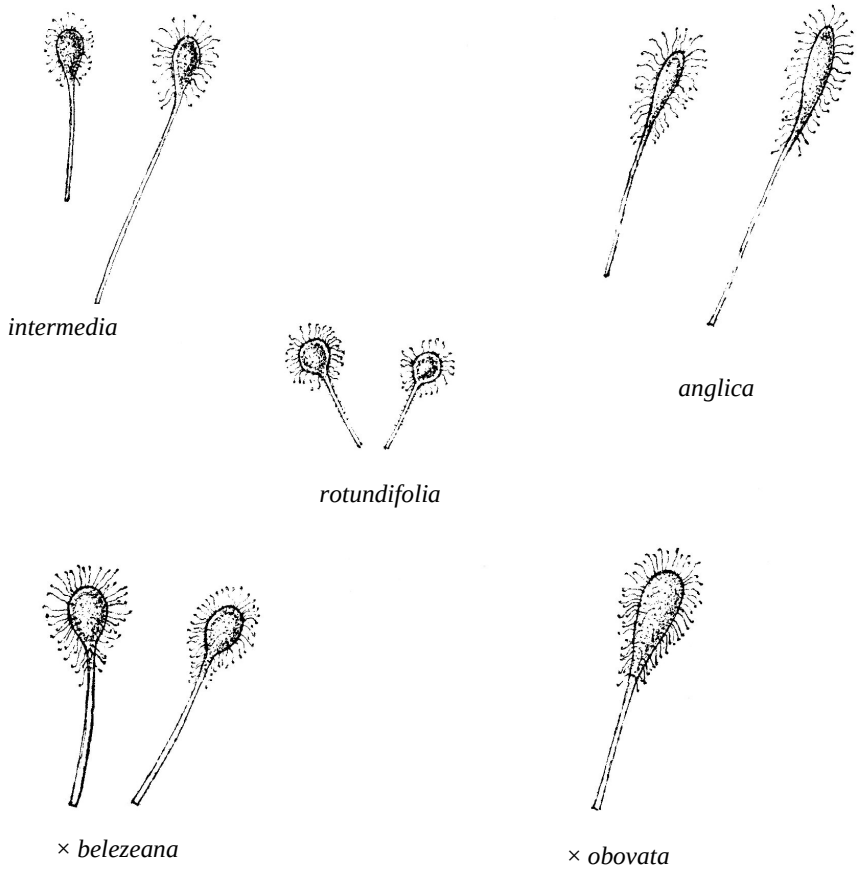

FIGURE 2. Typical leaves of the British *Drosera* species and their recorded hybrids

Prior to the recent Dorset find there is therefore no definite record of this hybrid from the British Isles. There are no British herbarium specimens identified as *D.* × *belezeana* in any of the major British herbaria and checking of material of the parental taxa and *D.* × *obovata* in **BM**, **K**, **E**, **RNG**, **NMW** and **LTR** has revealed no further *D.* × *belezeana* specimens. So, for the moment, that leaves the Dorset record as the first and only confirmed British site.

Both known *Drosera* hybrids are more vigorous than the parents but this is particularly the case with *D.* × *belezeana*. One of the colonies, which was visible from above, could be seen from almost 100 m away, and on closer inspection contained up to 40 leaves with each flowering stem. These leaves, perforce densely packed, are held consistently at an angle of 60º–80º from the ground, immediately differentiating them from the parents (Fig. 1). Leaf shape is most like that of *D. rotundifolia* (see Fig.2) but with a more cuneate base, more abruptly contracted to the petiole than in either *D. intermedia*, or *D.* × *obovata* – the taxon most likely to be confused with it, particularly when stunted. *D.* × *belezeana* has inherited the laterally produced peduncle from its *D. intermedia* parent, however confusion is easily possible when looking at past flowering stems of *D.* × *obovata* which may have become lateral through the continued growth of the shoot axis. In these instances a combination of leaf shape and seed surface characteristics will differentiate these hybrids – the abortive seeds of *D.* × *belezeana* having a faintly tuberculate surface reflecting the papillose surface of its *intermedia* parent as opposed to the reticulate surface of *D. anglica* (and *D. rotundifolia*).

D. × *belezeana* was first described from material collected from the environs of Paris in 1879 (Camus 1891). It was subsequently recorded from Bayern, Schlesien and Brandenburg by Schuster (1907), who regarded it as a somewhat variable entity. Webb (in Stace 1975) lists the hybrid as having been found in Austria, France and Germany. Huber (in Hegi 1961) does little more than re-list the localities given earlier by Schuster. This would appear to be a common pattern with those standard floras which do include the hybrid basing observations on earlier records, eg. Fournier (1977). The veracity of these is also open to question, thus Sebald, Seybold & Philippi (1992) reviewing historical records in the Baden-Württembergs region of Germany found that the three collections in **STU**, two collected by Bertsch and one by Schlenker, were all *D.* × *obovata*. A recent listing of the German flora (Wisskirchen & Haupler 1998) does not include *D.* × *belezeana* and similarly the most recent Austrian (Hartl *et al.*, 1992; Polatschak 1999; Schönfelder & Bresinsky 1990) and French floras (Guinochet & de Vilmorin 1973–1982) fail to include it. Species of *Drosera* have been in general decline throughout Europe through habitat loss and the opportunity for the hybrid to form will almost certainly have also declined.

In contrast to *Drosera* × *obovata* which is undoubtedly under-recorded (Culham 1998) and is frequent wherever its generally ecologically isolated parental taxa meet, *D.* × *belezeana* is obviously a remarkably rare hybrid. While also ecologically somewhat distinct, *D. intermedia* and *D. rotundifolia* probably grow in closer proximity more regularly than do *D. rotundifolia* and *D. anglica* throughout the less extensive, but still amphi-atlantic, range of *D. intermedia*. Clearly there is a more distinct barrier to hybridisation between these two taxa than exists between *D. rotundifolia* and *D. anglica*. This might in part be predicted as the diploid *D. rotundifolia* has long been recognised as one parent to the allopolyploid *D. anglica* (Wood 1955), whereas the diploid *D. intermedia* is more phylogenetically distant. At what stage the barrier(s) to reproduction occur is unclear although the hybrid has been successfully raised artificially using *D. intermedia* from southern U.S.A. (Slack 1986), an area from which the hybrid has never naturally been known to occur (Schnell 2002).

ACKNOWLEDGMENTS

Clive Stace gave much help at the start of our investigations, particularly in finding a note that the Cardiganshire record had been redetermined. Bryan Edwards surveyed the Dorset sites in 2002 with DAP, and Arthur Chater, Alistair Culham, Michael Grundmann, Tim Rich, Johannes Vogel (and Anita Pearman with her illustrations) all helped with the production of this paper.

REFERENCES

BREWIS, A., BOWMAN, R. P. & ROSE, F. (1996). *The Flora of Hampshire.* Harley Books, Colchester.

BECKETT, G., BULL, A. & STEVENSON, R. (1999). *A Flora of Norfolk.* Privately published.

CAMUS, E. G.(1891). Notes sur les *Drosera observés* dans les environs de Paris. *J. Bot., Paris* **5**: 196–199.

CLAPHAM, A. R., TUTIN, T. G. & MOORE, D. M. (1987) *Flora of the British Isles, 3rd Ed*. Cambridge University Press, Cambridge.

CULHAM, A. (1998). *Drosera*, in RICH, T. C. & JERMY, A. C. eds. *Plant Crib 1998*. Botanical Society of the British Isles, London.

DANDY, J. E. (1958). *List of British vascular plants.* British Museum (Natural History) & Botanical Society of the British Isles, London.

DRUCE, G. C. (1912). "*Drosera longifolia* × *rotundifolia*" in Plant Notes for 1911, etc. *Botanical Exchange Club* **3**: 20.

FOURNIER, P. (1977). *Les Quatres flores de France, 2nd ed*. reprint. Lechevalier, Paris.

GUINOCHET, M & DE VILMORIN, R (1973–1982) *Flore de France*. Centre Nationale de Recherche Scientifique, Paris.

HARTL, H., KNIELY, G., LEUTE, G. H., NIKFELD, H. & PERKO, M. (1992). *Verbreitungatlas der farn-und Blütenpflanzen Kärntens.* Verlag des Naturwissencschafflichen vereins für Kärnten, Klagenfurt.

HEGI, G. (1961) *Illustrierte flora von Mittel-Europa*, Bd.IV, tl. 2A. Carl Hanser, Munich.

POLATSCHAK, A. (1999). *Flora von Nordtirol, Osttirol und Vorarlberg.* Tiroler landesmuseum ferdinandeum, Innsbruck.

RODWELL, J. S. (1991). (ed.) *British plant communities, 2. Mires and heaths.* Cambridge University Press, Cambridge.

SCHNELL, D. E. (2002) *Carnivorous plants of the United States and Canada, 2nd. Ed.* Timber Press, Portland, Oregon.
SCHÖNFELDER, P. & BRESINSLKY, A. (1990). *Verbreitungsatlas der Farn-und BlütenpflanzenBayerns.* Eugen Ulmer GmbH & Co., Stuttgart.
SCHUSTER, J. (1907) Über *Drosera belezeana* Camus. *Allg. bot. Zeitung* **13**:180–183.
SEBALD, O., SEYBOLD, S. & PHILIPPI, G. (1992). *Die Farn-und Blütenpflanzen Baden-Württembergs.*, Eugen Ulmer GmbH & Co., Stuttgart.
SLACK, A. (1986). *Insect eating plants and how to grow them.* Alphabooks, Sherborne, Dorset.
STACE, C. A. (1975). (ed). *Hybridization and the Flora of The British Isles.* Academic Press, London.
STACE, C. A. (1991). *New flora of the British Isles.* Cambridge University Press, Cambridge.
WISSKIRCHEN, R. & HAEUPLER, H. (1998). *Standardliste der Farn-und Blütenpflanzen Deutschlands.* Eugen Ulmer GmbH & Co., Stuttgart.
WOOD, C. E. (1955). Evidence for the hybrid origin of *Drosera anglica*. *Rhodora* **57**: 105–130.

(*Accepted July 2003*)