

Potamogeton × *lanceolatus* Sm. in the British Isles

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ABSTRACT

Potamogeton × *lanceolatus* Sm., the sterile hybrid between *P. coloratus* Hornem. and *P. berchtoldii* Fieb., is known only from the British Isles. The names *P. lanceolatus* Sm. and its synonyms *P. × lanceolatus* var. *hibernicus* A. Benn. and *P. × perpygmaeus* Hagstr. ex Druce are lectotypified. The distribution of *P. × lanceolatus* is outlined and the history of its taxonomic treatment reviewed.

INTRODUCTION

Potamogeton × *lanceolatus* Sm. (*P. coloratus* Hornem. × *P. berchtoldii* Fieb.) is one of the few hybrids between the broad-leaved *Potamogeton* species in Sect. *Potamogeton* and the species with narrow, linear leaves in Sect. *Graminifolii*. It is a sterile plant, only known from the British Isles. Since its discovery in 1806 three names have been given to it: *P. lanceolatus* Sm., *P. × lanceolatus* var. *hibernicus* A. Benn. and *P. × perpygmaeus* Hagstr. ex Druce. The purpose of this paper is to outline the circumstances in which these names were published, to lectotypify them where necessary and to describe the taxonomic history and distribution of this rare hybrid in the British Isles.

POTAMOGETON × LANCEOLATUS SM.

Potamogeton × *lanceolatus* Sm. in Sowerby, *Engl. bot.* 28: t. 1985 (1809) pro sp. ('*lanceolatum*')
Lectotype: North Wales, August 1808, H. Davies, herb. J. Sowerby, BM! Isolectotype in BM!

The description of *P. × lanceolatus* in *English Botany* was written by J. E. Smith and illustrated by a plate drawn by J. Sowerby. Smith (Sowerby 1809) stated that the plants he described were sent to him by the Rev. H. Davies "from the lakes of North Wales". There is no reason to suppose that Smith saw the earliest specimen of *P. × lanceolatus*, collected by Davies in October 1806 (BM). There is, however, a specimen in Smith's herbarium (LINN, Savage manuscript catalogue 246.17) labelled in his own hand "Potamogeton lanceolatum Engl. Bot. t.1985. North Wales. Rev. H. Davies 1807". There are two specimens in J. Sowerby's herbarium (BM) labelled "Potamogeton lanceolatum nova spec. Received H. Davies. N. Wales. August 1808. E.B. t.1985". All these specimens were determined as *P. × lanceolatus* by J. E. Dandy and G. Taylor, and I agree that they all represent this taxon. All conform to Smith's description, and none is a better match than the others.

Both the specimen in Smith's herbarium (LINN) and those in Sowerby's (BM) must be regarded as syntypes. Those in Smith's herbarium were presumably used by him to draw up the description in *English Botany*. Sowerby's specimens were probably sent to him directly by Rev. H. Davies. The original drawings for *English Botany* are preserved in the British Museum (Natural History) and notes on them show that some, at least, were based on specimens sent directly to Sowerby (e.g. *Schoenus monoicus*). There is no such evidence on the original drawing of *Potamogeton* × *lanceolatus*, but as Sowerby notes that it was drawn from fresh specimens it seems likely that they came directly to him. The labelling of the specimens also suggests this. There is therefore no

evidence that Smith saw them. Close comparison of the two sheets in Sowerby's herbarium with the original drawing show that one plant is so similar to the drawing that the conclusion that it is the plant actually drawn is inescapable. It is less easy to identify the plant drawn by comparing the specimen to the published plate as there are some differences between the original drawing and the published version, notably a young leaf at the apex of the stem on the drawing which appears on the plate as an inflorescence in bud.

Thus there are available for selection as lectotype two specimens closely related to the protologue, that studied by Smith who drew up the description and that drawn by Sowerby who illustrated it. J. E. Dandy and G. Taylor have labelled the specimen at LINN as the "type" and the sheet at BM which includes the plant illustrated in *English Botany* as the "lectotype" of *P. × lanceolatus*. This introduces a further complication. If one considers that the labelling of the BM specimen constitutes effective lectotypification then it must be accepted as the lectotype, as it could only be rejected if it seriously conflicts with the protologue. However if one considers that a lectotypification is only effective when published then there is a choice of lectotype, as Dandy and Taylor did not publish their selection. If I choose the specimen in Smith's herbarium as lectotype the actual lectotype of *P. × lanceolatus* will be left in doubt, as it would depend on one's view of what constitutes lectotypification. This would be undesirable, so I have decided to uphold Dandy and Taylor's choice and cite it above as lectotype. It is reproduced as Fig. 1.

It is unfortunate that the specimens available to Smith and Sowerby lacked broad floating leaves, one of the characteristic features of *P. × lanceolatus*. This was probably the reason for a number of erroneous nineteenth century records of *P. × lanceolatus*.

P. LANCEOLATUS VAR. *HIBERNICUS* A. BENN

Potamogeton lanceolatus var. *hibernicus* A. Benn. apud Praeger in *Irish Nat.* 5: 243 (1896).

Lectotype: Clonbrock River, Co. Galway, June 1896, R. L. Praeger, DBN!

P. lanceolatus forma *hibernicus* A. Benn. apud Praeger in *Irish Nat.* 5: 243 (1896), nom. provis.

R. L. Praeger collected *P. × lanceolatus* (as well as *P. coloratus*) from the Clonbrock River not far from the House on 21st June 1896, probably on a pre-breakfast ramble (McWeeney & Praeger 1896). Material from Clonbrock was submitted to Arthur Bennett who, after describing differences between it and plants from Anglesey and Cambridgeshire, stated "it might be called var. *hibernicus* (or f. *hibernicus*), characterized by its longer, and broader upper leaves, longer lower leaves, slightly longer flower-spikes and the structure of the leaves" (Praeger 1896). I follow J. E. Dandy and G. Taylor (in their unpublished monograph *British species of Potamogeton L.*) in regarding var. *hibernicus* as a validly published name, with f. *hibernicus* as a provisional name, not validly published at that rank. There is no material of Praeger's 1896 collection in Bennett's herbarium (BM). There are, however, two specimens in Praeger's herbarium (DBN). One is labelled "*Potamogeton lanceolatus* Smith var. *hibernicus*, A. Benn. in litt." and I have designated this as the lectotype. It is reproduced as Fig. 2.

There is some variation in the leaf shape of *Potamogeton × lanceolatus* (Figs. 2, 3). This appears to be correlated with the age of the plant and with environmental factors. The lower stem leaves are more or less linear and superficially resemble the leaves of *P. berchtoldii*, although they are broader and differ in venation. Sometimes such leaves occur all along the stem, even on a flowering plant. Other plants have broader upper leaves which are elliptical in shape and are more obviously intermediate between the putative parents. W. Wilson noticed that in Anglesey the broader leaves "are always found when the current is slow" (Hooker 1830). They are well developed in plants from Burwell which were collected from a ditch or cultivated in a small pond, but are not always found on plants collected in the swifter water of the Afon Lligwy or the Caher River. The type material of var. *hibernicus* only has more or less linear leaves. However I can see no difference between the leaf size and shape of these plants and that of some collections from the type locality of *P. × lanceolatus*, the Afon Lligwy (Table 1). I cannot understand why Bennett thought that the leaves of var. *hibernicus* were longer and broader than those of the type: there is no reason to regard them as broader, either in absolute terms or in relation to their length. The lacunae along the midrib, said by Bennett to be much less conspicuous in var. *hibernicus*, are similar to those of plants from Anglesey. I can

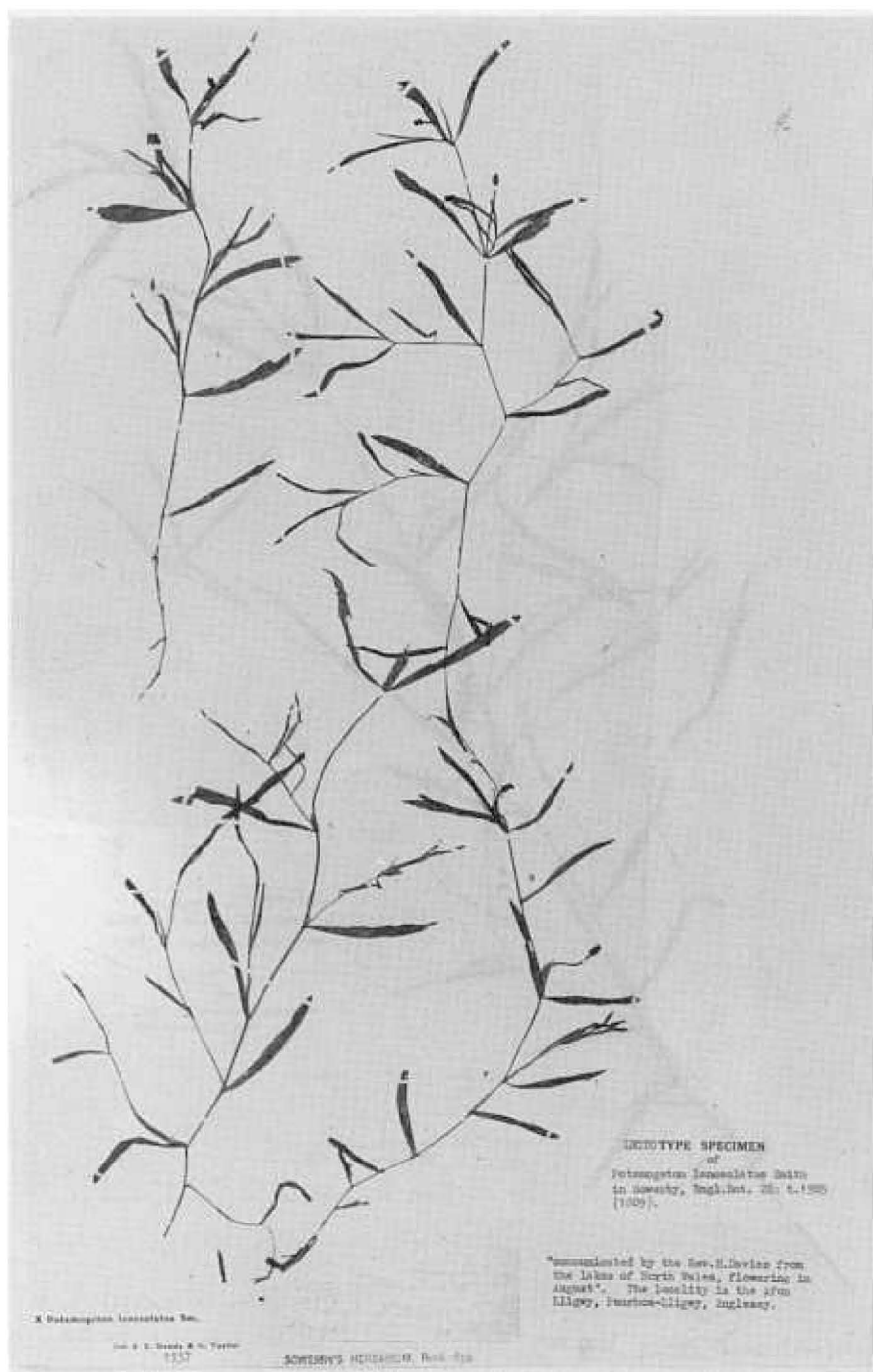


FIGURE 1. The lectotype of *Potamogeton lanceolatus* Sm. (BM). The plant on the lower right-hand side of the sheet is the one illustrated in *English Botany*, t. 185 (Sowerby 1809).

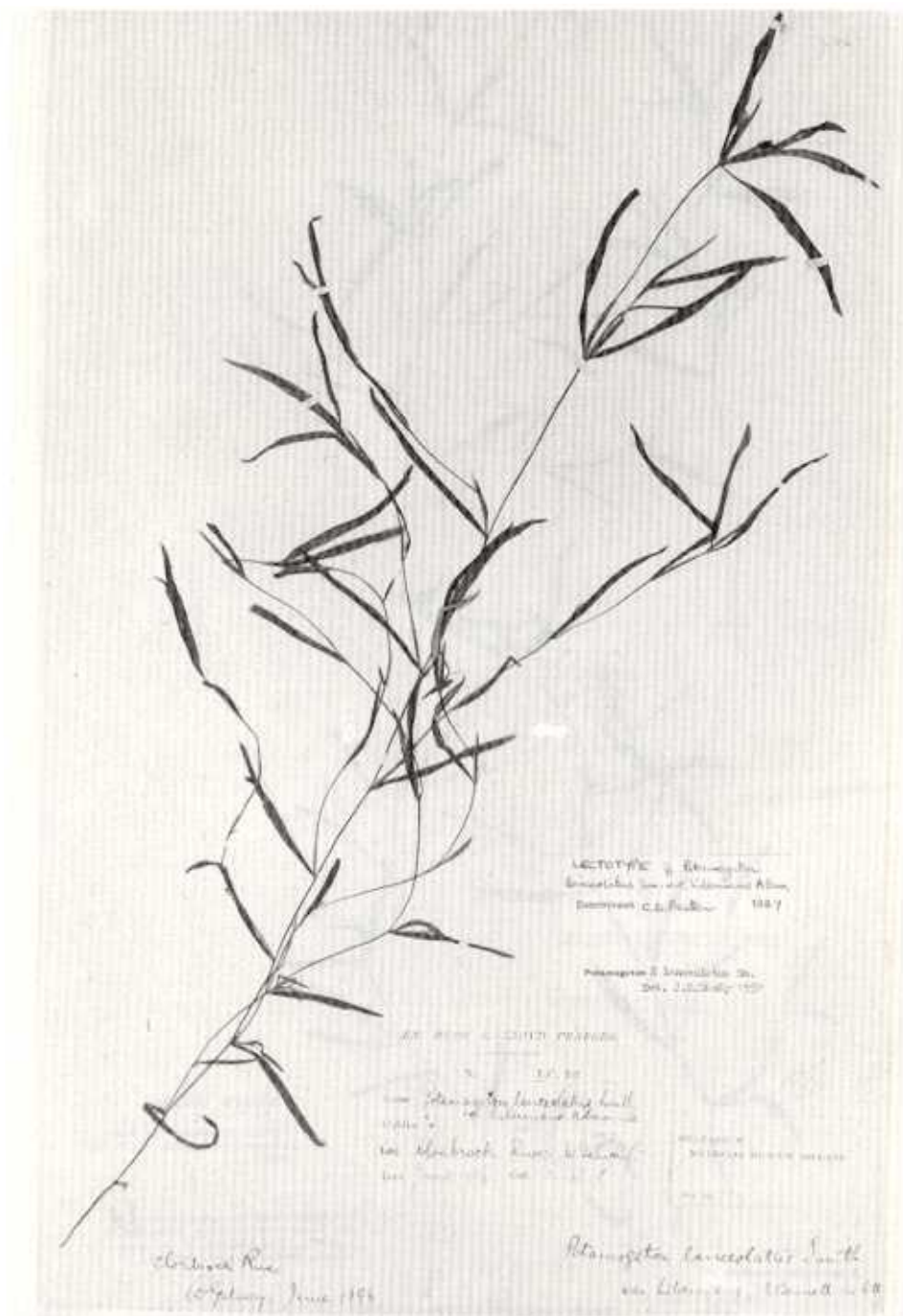


FIGURE 2. The lectotype of *Potamogeton lanceolatus* var. *hibernicus* A. Benn. (DBN). The specimen is a good example of the form of *P. × lanceolatus* without broad upper leaves.

1466. *P. coloratus* × *pusillus* = *P. perpygmaeus* Hagström
in litt., incl. *P. lanceolatus* Sm., var. *Aibernensis* Ar. Benth. The
 plant was discovered by Mr P. O'Reilly in the Cahire River, Co.
 Clare. In June 1907 it was shown me by him. It grew in a rapid
 stream in a limestone area, but I could not find any *P. gramineus*
 growing with it, but the water was turbid from floods so my search
 was not exhaustive. As I said in *Rep. B.E.C.* 478, 1909, it did
 not strike me as identical with the Anglesey plant. Dr J. O. Hag-
 ström examined my specimen and (*in litt.*, 1919) suggested that
 while one parent was *pusillus* he believed that the second one was
coloratus. The latter species was not on record for that area. In



September 1921, I took Mrs Wodgewood to this place vainly hoping
 it might be found in fruit. The Cahire stream was then heavily
 fully flooded and we shortly found the above Pondweed in profu-
 sion and in very much better condition than that obtained on my
 first visit. A careful search also resulted in finding *P. coloratus* in
 some quantity—small specimens only, so rarely fruiting—thus cor-
 roborating the shrewd suggestion of Dr Hagström. Supplies of both
 plants were sent him and although near his end, he wrote of this
 hybrid which I, ad interim, name *P. perpygmaeus* as the most in-
 teresting Ireland orn. I will write a note on it in my new book
 about the Potamogetons. *P. perpygmaeus* is like the *P. lanceo-*
latus which was discovered by Mr Arthur Bennett in Burford Fen,
 Cambridgeshire, in 1880. *P. coloratus* and its hybrid, *P. perpyg-*
maeus, also occur in that place. The reddish colour of *coloratus* is also pre-
 sent in *perpygmaeus* which thus differs from the beautiful, grass-
 green of the Anglesey *lanceolatus*. *P. perpygmaeus* is, so far, un-
 recorded from the Continent.



FIGURE 3. The lectotype of *Potamogeton* × *perpygmaeus* Hagstr. ex Druce (OXF). The specimen shows the broad upper leaves often produced by the hybrid *P. coloratus* × *berchtoldii*.

TABLE 1. COMPARISON OF *POTAMOGETON* × *LANCEOLATUS* SPECIMENS FOR CHARACTERS ON WHICH VAR. *HIBERNICUS* WAS BASED

Based on dried specimens in BM & CGE (Afon Lligwy & Caher River) and DBN (Clonbrock, the type material of var. *hibernicus*).

	Afon Lligwy	Clonbrock	Caher River
Lower leaves (mm)		(22-)40-72 × (2-)3-5	25-65 × 2-5
Involucral leaves (mm)		40-65 × 3-6	21-48 × 3-7
Peduncles (mm)		39-42	10-51
Width of midrib and adjacent lacunae (mm)		0.3-0.7	0.3-0.7

therefore see no reason to regard the Clonbrock plants as distinct from those from Anglesey, and support the reduction of var. *hibernicus* to synonymy.

POTAMOGETON × *PERPYGMAEUS* HAGSTR. EX DRUCE

Potamogeton × *perpygmaeus* Hagstr. ex Druce in *Rep. botl Soc. Exch. Club Br. Isl.* 6: 630 (1923).

Lectotype: Cahir River, Co. Clare, September 1921, G. C. Druce, OXF!, photograph in BM!
Isolectotypes in BM!, CGE!, E!, K!, OXF! and probably elsewhere.

P. × *perpygmaeus* Hagstr. ex Druce in *Rep. botl Soc. Exch. Club Br. Isl.* 6: 580 (1922), *nom. nud.*

P. × *lanceolatus* was collected by P. B. O'Kelly in the Caher River in 1891, the first Irish record (Levinge 1891). In June 1909 G. C. Druce was taken by O'Kelly to see it, and noted that it did not strike him as identical to the Anglesey plant (Druce 1910). Later Druce submitted specimens to J. O. Hagström, who in 1919 suggested that they might be *P. coloratus* × *P. berchtoldii*, despite the fact that the former was not then known from the area (Hagström thought that *P.* × *lanceolatus* from Anglesey was *P. alpinus* × *P. berchtoldii*). In September 1921 Druce, making "a somewhat adventurous journey to Ireland just after the truce"^a, returned to the Caher River with Mrs M. L. Wedgwood. He found *P.* × *lanceolatus* "in profusion and in very much better condition than that obtained on my first visit", together with *P. coloratus* in some quantity (Druce 1923a, b). On examining the 1921 material Hagström suggested the name *P.* × *perpygmaeus* for plants from Ireland and Cambridgeshire, and promised to write a note on it in a book he was writing. At first Druce (1922) published *P.* × *perpygmaeus* as a *nomen nudum*, but he wrote a longer note about it after Hagström's death in 1922 (Druce 1923a). Although the second note does not contain a formal morphological description, Druce validated the name by his remark that "the reddish colour of *coloratus* is also present in *perpygmaeus* which thus differs from the beautiful grass-green of the Anglesey *lanceolatus*". (The fact that one would expect the Anglesey plant to have a reddish colour if it actually was *P. alpinus* × *P. berchtoldii* is not commented upon).

P. × *perpygmaeus* should be typified by a specimen from Druce's 1921 gathering, of which there are three sheets in his herbarium (OXF). I have selected one of these as the lectotype (Fig. 3). The extract from the B.E.C. Report in which Druce validated *P.* × *perpygmaeus* is attached to this sheet, as is a note from Hagström beginning "This hybrid which I ad int. [erim] names *P. perpygmaeus* is undoubtedly the most interesting plant Ireland owns . . .". This note from Hagström is dated 22nd July 1921, presumably an error as the material was not collected until September of that year.

Judging by herbarium specimens, the colour of *P.* × *lanceolatus* in Anglesey is no different from that of the populations in Ireland. Some Anglesey collections have clear green leaves but others – as Bennett (1924) pointed out – have a reddish brown tinge. Ironically this coloration is well developed in material collected by Druce himself in June 1900 (CGE). It is unfortunate that Hagström was

^a A truce between the Irish Republican Army and the forces of the British Crown had existed since 11th July 1921. The I.R.A. had retained their arms, and their units would have been in evidence at the time of Druce's visit

unable to publish his reasons for separating the Irish and Cambridgeshire plants as *P. × perpygmaeus*. I can see no differences which would justify such a distinction, and therefore agree with the view that they represent a single taxon.

TAXONOMIC HISTORY OF *P. × LANCEOLATUS*

Most 19th century authors maintained *P. lanceolatus* as a species (W. J. Hooker 1830, Babington 1843, Sowerby 1869, J. D. Hooker 1870). Of the authors of the standard Floras only Benthams (1858), whose species concept in *Potamogeton* was extremely broad, included *P. lanceolatus* as a synonym of *P. lucens*. However, some of the specimens attributed to *P. lanceolatus* were erroneously identified and the concept of this taxon, not all that clearly defined by Smith, became even more blurred. Thus the fifth edition of Babington's *Manual of British Botany* (1862), the most critical of the more readily available Victorian Floras and one written by an author who had a special interest in *Potamogeton*, contained erroneous records of *P. lanceolatus* from Buttermere, Killarney and Antrim. Babington added a description of the fruit of *P. lanceolatus* to this edition of the *Manual*, but this was based on material which he later recognized as *P. polygonifolius*. J. T. Syme concluded that all except the Anglesey specimens had been erroneously identified, a conclusion which Babington accepted (Sowerby 1869, Babington 1872).

Babington was able to visit Anglesey in 1880, where he was shown *P. lanceolatus* by J. E. Griffith, author of *The Flora of Anglesey and Carnarvonshire*. In his account of his visit Babington (1881) stressed the fact that the fruit of *P. lanceolatus* was still unknown, despite the fact that he had visited the site at the end of August and Griffith returned in late October. "If it had not been for Mr. Bennett's discovery", Babington commented, "we might have thought that the plant of Anglesea was a barren form of some species, and that it propagated itself by offsets . . . but the discovery of exactly the same plant in the Fens renders this improbable". Bennett's discovery of *P. × lanceolatus* in Cambridgeshire stimulated interest in the plant, and with the publication of his paper in the *Journal of Botany* (Bennett 1881) an excellent drawing of *P. × lanceolatus*, accompanied by an accurate and detailed description, finally became available to British botanists.

Alfred Fryer was the first to suggest that *P. × lanceolatus* was a hybrid. In an early discussion of the possibility of hybridization in the genus (Fryer 1888) he called it "one of the best and most distinct species of *Potamogeton*", citing it to demonstrate that "barrenness is no proof of hybridity". He later came to realize that it was a hybrid between a broad-leaved and a narrow-leaved species, suggesting the parentage *P. gramineus* (as *P. heterophyllus*) × *P. berchtoldii* (as *P. pusillus* [auct.]) for the Anglesey plant and *P. gramineus* × *P. friesii* for Cambridgeshire material (Fryer 1894). Hagström (1916) considered that the Anglesey plant was *P. alpinus* × *P. berchtoldii*, and later suggested the parentage *P. coloratus* × *P. berchtoldii* for plants from Cambridgeshire and Ireland (see above). Bennett (1919, 1925) refused to accept that either *P. alpinus* or *P. coloratus* was the broad-leaved parent of *P. × lanceolatus*, still favouring *P. gramineus*. However *P. coloratus* × *P. berchtoldii* is now accepted as the parentage of *P. × lanceolatus* at all its localities (Dandy 1958, 1975).

DISTRIBUTION OF *P. × LANCEOLATUS* IN THE BRITISH ISLES

CAMBRIDGESHIRE (v.c. 29)

Bennett (1880) discovered *P. × lanceolatus* at Burwell Fen on 4th August 1880. The exact locality was a ditch on the right-hand side of Burwell Drove, going from Wicken to Burwell (CGE). In his first notice of the plant Bennett (1880) stated that it grew with *P. coloratus*; in a later paper he said that it grew with *P. gramineus* in a ditch lined with *Eleocharis acicularis* (Bennett 1925). It was in the later note that he argued for *P. gramineus* rather than *P. coloratus* as one of the parents of *P. × lanceolatus*! Specimens of both *P. coloratus* and *P. gramineus* collected by Bennett at Burwell on the day he discovered *P. × lanceolatus* were seen by J. E. Dandy and G. Taylor.

Alfred Fryer searched repeatedly for *P. × lanceolatus* at Bennett's locality, without success. He reported (1894) that the ditch in which it grew "has now closed up, and its aquatic vegetation is extinct". He was unable to discover it in nearby water-courses. As a plant reliving entirely on

vegetative reproduction for its survival, *P. × lanceolatus* is presumably ill-adapted to survive a period when its habitat becomes overgrown.

Bennett cultivated the Burwell plant in a small pond in his Croydon garden – it “flourished remarkably” and he was able to distribute 200 specimens of cultivated material (Bennett 1925). The plate in Fryer & Bennett (1915) is based upon Cambridgeshire material.

ANGLESEY (v.c. 52)

Despite the fact that Smith stated that the plants he described as *P. × lanceolatus* were sent to him by the Rev. H. Davies “from the lakes of North Wales” (Sowerby 1809), there is no doubt that they came from the Afon Lligwy, a stream in Anglesey. Davies (1813) himself cites the locality as “the rivulet between Bodafon and Lligwy” and the Afon Lligwy remains the only known Welsh locality for the hybrid. It was collected there repeatedly after its discovery by Davies. In 1875 C. Bailey found that it grew “in longish patches to the exclusion of anything else near it. In a few places where the stream is slower, and more water in, it simply fills it up, from the bed to the surface, so that ducks cannot comfortably paddle in it; in the swifter places it is in the middle of the brook, forming patches of two to three yards long by six to twelve inches broad” (Bennett 1881). Five years later Babington (1881) “found plenty of the plant growing in the quieter parts of the rather rapid stream, both above and below the bridge of Penrhos-lligwy”. Many botanists saw it subsequently, most recently R. H. Roberts who recorded it in c. 1960 at grid reference 23/483.854 and in 1968 near the bridge where the A5025 road crosses the Afon Lligwy, at 23/488.862. On 1st August 1987 Ms V. Morgan and I attempted to refind the plant in the Afon Lligwy, but without success.

CO. CLARE (v.c. H9)

As in Anglesey, *P. × lanceolatus* has been regularly collected in the Caher River since its discovery by P. B. O’Kelly in 1891. Webb & Scannell (1983) describe it as “plentiful in the Caher R. over most of its course”. On 26th June 1984 K.G. & J.O. Mountford recorded *Apium nodiflorum*, *Eleocharis palustris*, *Juncus articulatus*, *Mentha aquatica* and *Ranunculus flammula* as associates of *P. × lanceolatus* in the Caher River at grid reference M160.080.

N.E. GALWAY (v.c. H17)

Two localities for *P. × lanceolatus* are known in Co. Galway. It was discovered in the Clonbrock River by R. L. Praeger in 1896 and refound in the same river in 1952 at Clonbrock (*N. D. Simpson*, **BM**) and by Island Bridge near Ahascragh (*R. B. Drummond*, **K**). The other site is near Tuam, where it was discovered by R. L. Praeger in 1899. The most detailed specimen was collected on 13th July 1899 (**BM**) and is labelled “rapid shallow pebbly stream, Grange River, Barbersfort near Tuam”.

OTHER EUROPEAN HYBRIDS BETWEEN SPECIES IN SECT. *POTAMOGETON* AND SECT. *GRAMINIFOLII*

Three more hybrids between Sect. *Potamogeton* and Sect. *Graminifolii* are known in Europe. Two are similar to *P. × lanceolatus*: *P. × rivularis* Gillot, *P. polygonifolius* × *P. berchtoldii*, which is known from France, and *P. × miguelensis* Dandy, *P. polygonifolius* × *P. pusillus*, described from the Azores (Dandy 1970, 1975). The third hybrid is *P. × variifolius* Thore, *P. natans* × *P. berchtoldii*, recorded in France and Ireland (Dandy & Taylor 1967). The identity of *P. × heslop-harrisonii* Clark, described from the Outer Hebrides, has yet to be elucidated. Clark originally reported this as *P. gramineus* × *P. berchtoldii*, later amending this to *P. gramineus* × *P. perfoliatus* × *P. berchtoldii* (Clark 1942, 1943). Heslop Harrison (1949) commented that the parentage *P. alpinus* × *P. berchtoldii* could not be excluded. According to Clark (1943) the type material was deposited in the herbarium of the Department of Botany, King’s College, Newcastle upon Tyne (**NCE**), but I cannot find it there now, nor is it at **HAMU**, in Clark’s personal herbarium (**BM**) nor at **K**.

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