

## **Five new species of *Taraxacum* section *Celtica* (Asteraceae) from North-west Europe.**

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### **Abstract**

Five new species of the mostly west European *Taraxacum* section *Celtica* A.J. Richards (Asteraceae) are described. *Taraxacum amicum* A.J. Richards is only known from Somerset, England. *Taraxacum atrocollinum* A.J. Richards occurs in South-west England and Ireland. *Taraxacum chrysoglossum* A.J. Richards is described from Bute and is also recorded from the eastern Highlands, Scotland. *Taraxacum elegantifrons* A.J. Richards occurs on light calcareous soils in Ireland. *Taraxacum chlorofrugale* P. Oosterv. ex A.J. Richards from Germany, Netherlands, south England and Ireland is described formally for the first time.

**Keywords:** *Taraxacum amicum*; *Taraxacum atrocollinum*; *Taraxacum chlorofrugale*; *Taraxacum chrysoglossum*; *Taraxacum elegantifrons*; Britain; Ireland; Atlantic Europe.

### **Introduction**

*Taraxacum* section *Celtica* A.J. Richards contains about 50 agamospecies. Most species have a distinctly Atlantic distribution, ranging from Portugal to Norway with the greatest concentration in western parts of the British Isles. Approximately half of the species (24) are endemic to Britain and/or Ireland. Very few species (e.g. *T. nordstedtii* Dahlst. and *T. litorale* Raunk.) are distributed as far east as Poland. Many of the British species are restricted to rather remote districts and are still being discovered as the Taraxacology of these regions becomes better known (e.g. Orkney, Richards & Ferguson-Smyth, 2016; central Ireland, Richards & Doogue, 2017).

Since 2013, *Taraxacum* study meetings, organised through the Botanical Society of Britain and Ireland and each lasting several days, have contributed notably to the study of British and Irish *Taraxaca*; England, Scotland, Wales and Ireland have each hosted at least one of the six meetings. As described below, intensive studies during and after each meeting has resulted in the discovery of four of the five new species which form the subject of this paper.

### ***Taraxacum atrocollinum***

Our first knowledge of *T. atrocollinum* resulted from material collected by Leslie Tucker early one morning during the Botanical Society of Britain and Ireland *Taraxacum* study meeting based on Taunton, Somerset v.c. 6 in April 2016. As the study group assembled, they were presented with fresh specimens (Fig. 1).



**Figure 1. The original collection of *Taraxacum atrocollinum* in a fresh state (A.J. Richards).**

The initial impression was of a plant which combined the semi-prostrate, narrow, multilobate, three-dimensional leaves with shining red petioles and midribs of *T. subbracteatum* A.J. Richards with the blackish, erect, ovate exterior bracts of *T. britannicum* Dahlst.. Some features, such as three-dimensional leaves and dark ligule tips also recalled *T. duplidentifrons* Dahlst.. All three of these species, classified in *Taraxacum* section *Celtica*, occur frequently in south-west England. On the same day, Tucker collected material from a second site and further material was encountered by the party the next day about 4 km from the original site. Similar material has been collected subsequently in a further five sites in the Blackdown Hills, and from a site in South Devon v.c. 3. Similar plants have been collected in Shropshire (v.c. 40), but are not certainly of the same species. As this paper was being written a single collection was seen from Ireland, where it may not be native.

Further acquaintance with the Somerset plants revealed exterior bracts more strikingly bordered than in *T. britannicum* (but closely resembling those of *T. porteri* C.C. Haworth), and a leaf-shape which differed subtly from that of *T. subbracteatum*. The stigmas are paler than in *T. britannicum* and *T. duplidentifrons*,

and the achenes, although mostly smooth as in *T. britannicum*, are larger and darker with a slight reddish cast.

From the outset this material was informally known by the name 'T. atrocollinum' (Latin for 'dark hills') to commemorate what are presently regarded as the main localities in the Blackdown Hills.

*Taraxacum atrocollinum* A.J. Richards, **sp. nov.**

Rather small to medium-sized plants with a semi-prostrate habit and rather narrow, dark green lanceolate leaves, strikingly three-dimensional with shining red petioles and midribs. Lateral leaf-lobes 3-4, triangular, somewhat backward-pointing, acute, mostly entire, the distal margin straight to slightly convex; terminal lobe mostly entire with a slightly elongate acute to subobtuse apex; petioles unwinged proximally, bright shining red. Scapes ascending, mostly shorter than leaves, brownish-red, glabrous to sparsely pilose. Exterior bracts erect, 7-9 x 3.5-4 mm, ovate-lanceolate, dark green and scarcely pruinose outside, paler and pruinose inside, with a clear whitish border. Capitulum 40 mm diameter when open, ligules 1.5 x length of interior bracts, striped grey-violet externally with darker (orange to purple) teeth; stigma branches faintly discoloured when fresh, drying darker but not blackish; pollen abundant. Achenes slightly rufous mid-brown, smooth, slightly scaly above, achene body 3.5 mm, slender, cone narrowly cylindrical, 0.8-1.0 mm, rostrum 7 mm, slender, silver.

TYPE. Old meadow, Higher Buckland Farm, Staple Hill, South Somerset, v.c. 5, ST2404.1668, 16/04/2016, L. Tucker (**NMW**0001056, Fig. 2). Between Blackwater and Culmhead, v.c. 5, road verge, ST244.157, 16/04/2016, L. Tucker. Staple Hill FC car park, South Somerset v.c. 5, boundary bank, ST2468.1957, 17/04/2016, BSBI/SRPG *Taraxacum* workshop (**TTN**); 13/04/2017, S.J. Leach (**TTN**). Staple Hill FC, South Somerset v.c. 5, ST2398.1673, 15/05/2018, S.J. Leach SL18/29 (**TTN**). Higher Buckland Farm, v.c. 5, ST247.145, 13/04/2017, S.J. Leach (**TTN**). Priors Park, South Somerset v.c. 5, ST2251.1645, 13/04/2017, S.J. Leach (**TTN**). Britty Common, South Somerset v.c. 5, ST2614.1553, 15/05/2017, S.J. Leach (**TTN**). Monksilver Hall, South Somerset v.c. 5, ST0756.3745, 13/03/2017, J. Webb (**TTN**). Higher Sigford Lane, South Devon v.c. 3, SX781745, 19/04/2016, 26/04/2016, J.J. Day. Ireland. South Bull, Mornington, Meath v.c. H22, O1575, 05/04/2018, M. Norton (**DBN**).

The following poorly developed material can probably be referred to *T. atrocollinum*: Titterstone Clee Hill, Shropshire v.c. 40, SO593.776, 17/04/2016, T.C.G. Rich (**NMW**).

*Taraxacum atrocollinum* is characterised by the semi-prostrate, narrow, three-dimensional leaves with red petioles and midribs and the erect (-appressed), dark, ovate bracts with white borders. Amongst the members of *Taraxacum* section *Celtica*, the semi-prostrate, narrow, three-dimensional leaves with red petioles and midribs are only likely to be confused with those of *T. subbracteatum*. From *T. subbracteatum*, *T. atrocollinum* is best differentiated by the erect (-appressed), dark ovate bracts with white borders, resembling those of *T. porteri*. The bracts of *T. britannicum* are similar but lack a distinct border, and *T. britannicum* has blackish

stigmas. One late-season gathering of *T. atrocollinum* (Leach 18/29) superficially resembles *T. bracteatum* Dahlst., but the bracts are darker, bordered, and more erect.



**Figure 2. *Taraxacum atrocollinum* type specimen.**

Following the discovery of *T. atrocollinum* in Devon as well as Somerset, it should be sought elsewhere in hilly districts of south-west England, and possibly in the west Midlands. It seems to be typical of relatively undisturbed grassland on rather acidic soils with a high moisture content.

### ***Taraxacum chlorofragale***

*Taraxacum nordstedtii* Dahlst. is one of the most widespread and best-known dandelions, distributed through much of western, central and northern Europe. Typically it is a plant of undisturbed, moist meadows, although in western Britain it can colonise gardens, walls and paving. For many years it has been recognised to be highly heterotypic, the various elements united by a characteristic involucre and capitulum with erect, pruinose, unbordered bracts and short ligules with a strong brownish-purple stripe. Most forms lack pollen, have leaf-lobes with a marked concave angle distally, and as far as is known all are hexaploid ( $2n = 48$ ), otherwise

an extremely rare cytotype in the genus (Dudman & Richards, 1997). Variation within and between populations have tended to discourage attempts to formalise distinctions within the aggregate species. However, informal designations ('occidentale' and 'frugale') have been in use in the British Isles and elsewhere for several decades. When other related but more peripheral species (e.g. *T. celticum* A.J. Richards, *T. pseudonordstedtii* A.J. Richards, *T. landmarkii* Dahlst. and *T. olgae* A.J. Richards) have been tested cytologically, they have been found to have other chromosome numbers, usually tetraploid ( $2n = 32$ ).

During the last part of the twentieth century, Piet Oosterveld conducted an intensive study of the *T. nordstedtii* aggregate in the Netherlands, including related species such as *T. zevenbergii* Soest and *T. hygrophilum* Soest. This work involved isozyme analysis, comparative cultivation and ecological studies. An interim analysis was later published (Hagendijk et al., 1998), but no formal diagnoses were made. Later, *T. pietii-oosterveldii* H. Öllgaard was published (2015), based on Oosterveld's workname 'T. circummarginatum'. This species has since proved to be widespread and common in Ireland (Richards & Doogue, 2017) and also occurs rarely in west Wales.

Otherwise, although it is accepted that *T. nordstedtii* s.l. includes several distinct genotypes, the consensus seems to have been that Oosterveld's worknames 'T. crinitipes', 'T. frugale', 'T. drenthicum' and 'T. sterkii' do not yet merit formalisation. I consider the exception to be his 'T. chlorofrugale'. This workname was used for erect, pale green plants lacking any anthocyanin pigment and with very simple shallowly deltoid-lobed leaves which lack teeth; the exterior bracts are paler and less pruinose than in other members of the *T. nordstedtii* group. Plants answering this description have been recognised in the Britain and Ireland (mostly southern England and south Wales) for more than four decades, sometimes under the name 'frugale form'. They are now considered distinct enough to warrant formal description. Oosterveld's analysis (in Hagendijk et al, 1998) in the context of *T. nordstedtii* agg. - 'a completely green frugale-like species.....no or rudimentary pollen; petioles green, winged; stigmata blackish; outerbracts erect' - is sufficient for the species to be published here under his name, posthumously. It is illustrated as Fig. 5 in that paper (cultivated material). Unfortunately, this diagnosis was not validly published so is validated here.

*Taraxacum chlorofrugale* P. Oosterv. ex A.J. Richards **sp. nov.**

Small to medium-sized plants of a clear rather pale green with narrowly oblanceolate, suberect, mostly flat leaves and white mid-ribs and petioles. Lateral leaf-lobes 2-3, short, entire, deltoid, obtuse, often concavely-angled distally; terminal leaf-lobes of outer leaves short, obtusely tripartite; those of inner leaves narrowly helmet-shaped and often weakly dentate; petioles narrowly parallel-winged, about half length of leaf. Scapes equalling to exceeding leaves, suberect, green to pinkish and pilose distally. Exterior bracts erect to subappressed, 6-9 x 2.5-3.5 mm, ovate-lanceolate, green externally, the apex sometimes reddish, lacking pruinosity or pruinosity slight, unbordered or with very faint transparent borders, glabrous. Capitulum about 35 mm in diameter when open, the ligules more than 1.5 x length of inner bracts, striped brown externally and with dark, brownish teeth; stigmas with discoloured edges when fresh, drying blackish; pollen absent or with a

few empty grains. Achenes straw-brown, shortly spinulose distally, the body 3.0-3.3 mm, the cone 0.4 mm; rostrum 8 mm.



**Figure 3. *Taraxacum chlorofrugale* type.**

TYPE. Pentrefelin, NE side of road, Llandeilo, Carmarthen, v.c. 44, SN59577.23988, 21/04/2018, R.D. & K.A. Pryce 18035 (**NMW**0001071; Fig. 3). Bunt's Lane, Seaton, Devon v.c. 3, SY23.90, roadside bank of garden, 30/03/2008, T.C.G. Rich T40 (**NMW**). Wotton Park fen, SP61.66, Buckingham v.c. 24, 18/05/1969, A.J. Richards (**OXF**). Coity Tip, Monmouth v.c. 35, SO23610.09167, 07/05/2009, T.C.G. Rich T430 (**NMW**). Colemere, Shropshire v.c. 40, SJ436.329, 03/05/2017, T.C.G. Rich & A. McVeigh (**herb. TCGRich**). Fronafon, Login, Carmarthen v.c. 44, SN18321.23954, semi-improved neutral grassland pasture, 05/05/2018, R.D. & K.A. Pryce 18099 (**NMW**). Pantyllyn, Carmarthen v.c. 44, SN3471.2578, 12/05/2018, R.D. & K.A. Pryce 18136 (**NMW**). Crwbin, Carmarthen v.c. 44, SN4731.1279, 23/05/2018, R.D. & K.A. Pryce 18163, photo. Ireland: Ballyhoe Lough N84.95, Meath v.c. H22, 07/05/2018, M. Norton (**DBN**). Inishmicatreer, East Mayo v.c. H26, M17.49,

15/05/2016, D. Doogue (**DBN**). Slieve Gullion, upper car park, Co. Armagh v.c. H37, J01.20, 27/04/2017, D. Doogue (**DBN**). Netherlands: Z.H. Rijswijk, Weiland aan de van Vredenburgweg, H. Zevenbergen & A. Hagendijk, 25/04/1971, L4242553 (Fig. 4). Germany: Feldberg, Seebuck-Ostseite, r27835 h03291, with *Viola palustris*, *Caltha palustris* and *Crepis paludosa*, G. Hugin 8114/1, 03/02/2002, photo.



**Figure 4. *Taraxacum chlorofragale* from Rijswijk, Netherlands L4242553.**

Oosterveld (in Hagendijk et al., 1998) states that *T. chlorofragale* is fairly widespread in the Netherlands; 'known from several places in the south of the country (Noord-Brabant) and recently also found in the north (Friesland)'. Unfortunately, at the time of writing, Oosterveld's herbarium at Leiden cannot be accessed while the herbarium is moved to a new building. Most of his herbarium is not yet accessible on-line, but one sheet, named *T. chlorofragale* by Oosterveld, can be viewed on-line (L4242553). This is reproduced here (Fig. 4) and is clearly the same taxon as the holotype. At present there is a single confirmed German record, but it seems likely that it will prove to be more widespread there, and it may occur

in Belgium. It has only been collected twice in Ireland, despite recent extensive explorations of the *Taraxacum* flora of Irish wetlands, and it is probably a scarce habitat specialist there and in southern Britain.



**Figure 5. *Taraxacum chloro-frugale*, involucre and ligules, Cardiganshire (R.D. Pryce).**

Another of Oosterveld's unpublished taxa, 'T. frugale', resembles *T. chloro-frugale* in some aspects, but has petioles and lower midribs strongly coloured vinous-red, with darker involucre, paler stigmata and has the potential to grow larger. Oosterveld (in Hagedijk et al., 1998) states that this is the same as 'the occidental modification of *T. nordstedtii*', but plants from Ireland and western Scotland that have been informally named 'T. occidentale' by Oosterveld and others are not the same, having semi-prostrate three-dimensional leaves, and may be close to the Swedish type of *T. nordstedtii*. It seems likely that Oosterveld originally used the informal epithet 'T. frugale' for simply lobed plants with erect leaves and non-pruinose involucre irrespective of whether the petioles were red or green. Latterly he separated *T. chloro-frugale* from 'T. frugale' on petiole colour and (probably) isozyme profile. Plants resembling 'T. frugale' probably occur in both Britain and Ireland, especially the latter, but are less well-defined than *T. chloro-frugale*, and like 'T. occidentale' are in my view probably still best regarded as part of the variable *T. nordstedtii* of which they may represent an ecad.

*Taraxacum chloro-frugale* has a rather narrow and distinct autecology. The associates listed by Hugin (above) from Feldberg are rather typical. It is a plant of rather undisturbed lowland mesic to calcium-rich wet places, often in some shade, fens, fenny grasslands, the edges of fen carr and ditches. The Devon record is from



a dry garden bank. Records so far suggest that it occurs in a band stretching from the southern half of Ireland and England through the Netherlands to northern Germany.

It is readily recognised as a rather small plant with pale green, suberect, simply lobed, usually untoothed, flat to weakly folded leaves with a white petiole and midrib. The exterior bracts are erect, green and lacking pruinose coloration, the brown-striped ligules rather longer than is typical for *T. nordstedtii* (Fig. 5) and the stigmata dry blackish.

### ***Taraxacum chrysoglossum***

During the Botanical Society of Britain and Ireland *Taraxacum* study meeting on the Isle of Bute, western Scotland in May 2017 it was suggested by our host Angus Hannah that we take the upland track leading to the Loch Dhu waterworks reservoir. On banks by the trackside participants noticed several *Taraxaca* with ligules lacking stripes, or almost so, the capitula appearing a pure yellow (Fig. 6). Such a character is rare in the genus, and in the British flora is only known in *Taraxacum luteum* C.C. Haworth & A.J. Richards, a widespread although scarce and local species endemic to the northern half of the country.

For some hours, the assembled company believed that they had found *T. luteum* on Bute. However, when collected material and photographs were examined more closely that evening, it was clear that the Bute plant differed from *T. luteum* in several features, especially the leaf-shape. In fact, the leaves closely resembled those of *T. landmarkii*, being much more dissected than those of *T. luteum*, the narrow, slightly recurved lobes being dissected almost to the midrib. Also, the exterior bracts were much narrower than those of *T. luteum* and differed by being unbordered and lacking pruinose coloration. Furthermore, the stigma branches were discoloured in the fresh plant and dried quite a dark colour, and the achenes were much smaller than in *T. luteum*.

On the previous day, the party had walked south from Rothesay to the northern end of Loch Fad. Here they encountered a single plant under a gatepost which gave rise to much discussion. It was smaller and the leaves were even more dissected than the Dhu Loch plant, with pale pinkish-grey ligule stripes, and was initially suspected of being classified within *Taraxacum* section *Erythrosperma*, possibly *T. degelii* Hagl.. Latterly it became clear that it should also be regarded as a relative of *T. landmarkii* in *Taraxacum* section *Celtica*, differing by possessing pollen, with less erect exterior bracts and with longer, pale-striped ligules. A similar plant in a rather fragmentary condition was found two days later in coastal grassland in the south-east of Bute (Kilchattan), good material was photographed in north-east Bute, also in coastal grassland by Mark Lynes the following day, and Tim Rich collected further material in west Bute (Scarrel Point). These plants closely resembled the Dhu Loch plant, but all had coloured ligule stripes of varying intensity, mostly a rather faint greyish-pink.

Originally, this latter material was compared by Leslie Tucker to photos taken in Denmark by Hans Öllgaard to which he had given the workname 'T. saxorum'. Latterly it has become clear that 'T. saxorum' may not differ from the mostly Welsh *T. porteri* C.C. Haworth, possibly occurring in Denmark as an adventive. Further study has shown that all the Bute material is best considered as a single new species

which varies in the extent to which the ligules lack a stripe. The narrow bracts which lack pruinose coloration or a border differ markedly from those of *T. porteri*.



**Figure 6. *Taraxacum chrysoglossum* involucre and ligules, type locality, Bute (M. Lynes).**

Further material of this new species has been collected and cultivated by Tucker from several sites in the east-central Highlands of Scotland. Unlike the Bute sites, which are in unremarkable coastal or lowland grassland, these localities concern wet, base-rich flushes in the mountains. However this material seems to be identical to that from Bute.

The original Bute discoveries lacking ligule stripes were originally given the informal name 'T. luteolum', but this proved to be a later homonym. It is now called *T. chrysoglossum*, referring to the golden ligules of many individuals.

*Taraxacum chrysoglossum* A.J. Richards **sp. nov.**

Plant rather small to medium-sized. Leaves prostrate to ascending, dull slightly olive-green, with a dull red mid-rib, sparsely short-hairy, narrowly lanceolate. Leaf lateral lobes 4-5(-6), cut nearly to mid-rib, short, acute, nearly entire, narrowly triangular and slightly recurved on outer leaves, linear and omnidirectional on inner leaves; leaf terminal lobes equalling lateral lobes, on outer leaves subsagittate, slightly 'waisted', narrowly obtuse; on inner leaves trilobate and subacute. Petioles narrow, ±unwinged at base, dull red. Scapes equalling to slightly exceeding leaves, suberect, arachnoid below the capitulum. Exterior bracts 6-9 x 2(-3) mm, loosely erect, mid green, not or scarcely pruinose, unbordered or almost so. Capitulum 35-40 mm diameter, deep yellow, ligules flat, unstriped, with a pale inconspicuous silver stripe,

or with a pale pinkish-grey stripe, ligule teeth yellow. Styles exerted, discoloured, bearing pollen. Achenes pale brown, the body 3.0-3.2 mm, shortly spinulose at apex, rostrum 6-7 mm.



**Figure 7. *Taraxacum chrysoglossum* type.**

TYPE. Grassy verge Dhuloch waterworks lane, Isle of Bute v.c. 100, NS0780.6264, 07/05/2017, A.J. Richards and BSBI Taraxacum workshop (**NMW0001075**; Fig. 7), isotypes **NMW0001073**, **NMW0001974**. Kilchattan, Isle of Bute v.c. 100, NS1107.5419, grassland near a rocky shore, 07/05/2017, A.J. Richards and BSBI Taraxacum workshop (**NMW**). Between Rothesay and Loch Fad, Isle of Bute v.c. 100, NS078.639, pathside by gateway, 06/05/2017, T.C.G. Rich 2017-115 and BSBI Taraxacum workshop (**K**). Scarrel Point, Isle of Bute v.c. 100, NS0178.6662, 08/05/2017, T.C.G. Rich 2017-140 (**NMW**). Stuck, NS060.706, Isle of Bute v.c. 100, 08/05/2017, M. Lynes (photo). Kilbride Hill, Isle of Bute v.c. 100, NS03.67, A. Hannah, 05/07/2005. Glen Beag, E. Perth v.c. 89, NO143.760, flushed tufa deposits, 07/07/2015, L. Tucker (cultivated). Dunalt, Glen Doll, Angus v.c. 90, NO241.767,

flushed mica-schist talus, 21/06/2017, L. Tucker (cultivated). Hard Hill, Glen Mark, Angus v.c. 90, NO414.823, flushed sugar limestone, 26/06/2016, L. Tucker (cultivated). Gilfumman, Glen Mark, Angus v.c. 90, NO420.810, flushed sugar limestone, 01/06/2017, L. Tucker (cultivated).

*Taraxacum chrysoglossum* is characterised by the deeply cut lateral leaf lobes, the pale or absent ligule stripes, the narrow green bracts and abundant pollen. It has leaves closely resembling those of *T. landmarkii*, a widespread and not infrequent plant of upland Britain, and may well be confused with it at first glance. However, *T. landmarkii* is part of the *T. nordstedtii* complex with erect pruinose bracts and short purple-striped ligules, and it lacks pollen. The narrow green bracts and abundant pollen will rapidly differentiate *T. chrysoglossum* from *T. landmarkii*, while the pale ligule stripes are very distinctive, particularly when the stripes are missing entirely. *T. chrysoglossum* is so far known from two very different habitats and areas, although both tend to be base-rich. Very possibly it will prove to be more widespread in Scotland, and some past discoveries may have masqueraded as *T. landmarkii*.

### ***Taraxacum amicum***

*Taraxacum litorale* Raunk., one of the earliest dandelions to be described, is a scarce and threatened plant from undisturbed, wet meadows in central and eastern Europe. It has long been sought in the British Isles, and incorrectly determined specimens from the 1960s still persist in a few herbaria. Most often, the correct name for such plants is the polliniferous *T. akteum* Hagend., Soest & Zevenb. One of the most distinctive features of *T. litorale* amongst fen grassland species is that it lacks pollen.

On May Day 2017, Simon J. Leach discovered a remarkable dandelion in a lane-side flower border on the outskirts of Taunton, Somerset, v.c. 5 (SL 17/40). When this was sent to AJR he immediately identified it as *T. litorale*, returning it to Leach with a congratulatory note. At the time both Leach and AJR considered that this material lacked pollen, but Leach later found a little pollen in one capitulum. AJR considered the material to be a recent introduction, made more plausible by eastern European links to nearby farms and businesses. This discovery was announced in Leach & Richards (2018a) and in Leach & Richards (2018b).

The next surprising development in the same year was the independent discovery of what was clearly the same species by R. Randall in apparently semi-natural habitat ('rushy grassland') in the neighbouring vice-county of North Somerset (v.c. 6), about 30 km from the original site.

In 2018, Leach discovered what appeared to be the same plant in four further localities within a radius of about 7 km in the Taunton area. Habitats included a garden path and grassy road verge in the town itself, and a path and track through two woodlands in the Blackdown Hills. All these plants bore pollen, suggesting strongly that they were not *T. litorale*, and it occurred to me that they might be *T. copidophyllum* Dahlst.. Material was seen by Ingo Uhlemann who is familiar with *T. litorale* in Germany. He wrote: 'The supposed "*T. litorale*" cannot be *T. copidophyllum* (broader outer bracts with wider margin, more robust habit) which is not rare in particular in Northern Germany, or *T. leptoglotte* (lingulate and shorter terminal lobe) which is extremely rare in Germany. The latter I have seen only once in a saline meadow..... Sorry, but I have no idea what it can be. My first idea was

also *T. litorale* and I think it is a relative of it. The convex distal margins of leaf-lobes and the pollen presence are different.'

So far this species is known from six localities in the western English county of Somerset, where it is likely to be native, at least in its woodland and grassland habitats. The name refers both to the Society of Friends, whose Meeting House in Taunton was the venue for a *Taraxacum* workshop in 2016, and to the friendly circle of botanists in the Somerset Rare Plants Group who were inspired by that workshop to tackle the *Taraxacum* flora in their area.

*Taraxacum amicorum* A.J. Richards **sp. nov.**

A medium-sized to rather large plant with an erect growth habit. Leaves nearly glabrous, mid to rather dark somewhat olive-green with a purple midrib, becoming green near the apex, narrowly spatulate; outer leaves with 2-3 deltoid to hamate short, broad, mostly entire lateral lobes, terminal lobes helmet-shaped, equalling to greatly exceeding lateral lobes, up to one-third the length of the leaf; inner leaves unlobed or with 1(-2) very short deltoid lateral lobes and very long entire obtuse-sagittate terminal lobe approximately half the length of the leaf; petiole bright purple, often long, up to half the length of the leaf, unwinged except distally. Scapes shorter than, to somewhat exceeding, inner leaves, strongly arachnoid-pilose distally. Exterior bracts (5-)10 x 2.5-3.2 mm, ovate, erect, dark blackish-green with a marked white border, pruinose. Capitulum pale yellow, small, 25-30 mm diameter; ligules rather short, striped brown to purple; styles discoloured, drying blackish, pollen present. Achenes straw-coloured, mostly smooth with a few scale-like teeth distally; body 3.0 mm; cone very short and conical, 0.3 mm; rostrum 7-8 mm.

TYPE. Grassy road verge, Tangier Way/Wood St., Taunton, South Somerset v.c. 5, ST2256.2483, 14/04/2018, S.J. Leach SL18/6 (**NMW**0001072; Fig. 8). 15, Trinity St., Taunton, South Somerset v.c. 5, ST2350.2440, brick path in garden, 09/03/2017, S.J. Leach SL17/6; 06/05/2018, 18/24 (**TTN**). Thurlbear Wood, South Somerset v.c. 5, ST2673.2060, edge of path through woodland, 08/05/2018, S.J. Leach SL18/31 (**TTN**). Adcombe Wood, ST229.184, footpath/track through woodland, South Somerset v.c. 5, 18/05/2018, S.J. Leach SL18/32 (**TTN**). Sherford Rd., Taunton, South Somerset v.c. 5, ST2248.2326, in lane-side flower border, at base of hedge, 01/05/2017, S.J. Leach SL17/40 (**TTN**). G.B. Gruffy Somerset Wildlife Trust nature reserve, North Somerset v.c. 6, ST476.564, rushy grassland, 13/05/2017, R.D. Randall (**TTN**).

*Taraxacum amicorum* is characterised by the very narrow spatulate leaf shape with a long terminal lobe, brown to purple ligule stripes, small capitula, blackish involucre and blackish involucre with the presence of pollen. Amongst British species, *T. amicorum* is unmistakable. The very narrow spatulate leaf-shape (Fig. 9) is shared with very few other species, notably *T. palustrisquameum* A.J. Richards, and *T. anglicum* Dahlst.. Both these species are less heterophyllous, have paler involucre and stigmas, and lack the brown to purple ligule stripes of *T. amicorum* (dark red ligule stripes in *T. palustrisquameum*).

As Uhlemann has noted (above), amongst European species, *T. litorale* is probably the closest, but always lacks pollen and is less heterophyllous. Characteristically, the leaves have only 1(-2) lateral lobes and a very long terminal

lobe of a distinctive shape; in addition the small capitula, together with blackish involucre (Fig. 10) and stigmas are diagnostic. Probably, *T. amicorum* is related to the widespread British and Irish endemic *T. britannicum* Dahlst. which has similar involucre, achenes and the same blackish stigmas, but the leaf shape is very different.



**Figure 8. *Taraxacum amicorum* type.**

***Taraxacum elegantifrons***

A feature of recent Taraxacology has been the extensive, well-preserved and carefully documented collections from Ireland, coordinated through Declan Doogue (Richards & Doogue, 2017). These culminated in a Botanical Society of Britain and Ireland meeting in May 2018, led by Doogue and T.C.G. Rich, which the author was unfortunately unable to attend. Much of the material collected then was reviewed by

him early in 2019. This included a number of specimens, mostly collected by Margaret Norton in Meath, which somewhat resembled a gigantic *Taraxacum oxoniense* Dahlst. (a widespread and common British and Irish species in section *Erythrosperma* H. Lindb. f.).



**Figures 9, 10. *Taraxacum amicorum*, Taunton, Somerset (S.J. Leach).**

However, with regard to the long achenes, large capitula and substantial involucre, it soon became clear that the material was related more to *T. fulvicarpum* Dahlst., *T. aesculosum* A.J. Richards and *T. gaelorum* A.J. Richards, a group which has been aligned with *Taraxacum* section *Celtica* despite possessing some *Erythrosperma*-like characteristics. In this group it is immediately distinguished by its very lacerate leaves, narrow bright purple petiole and broadly suborbicular blue-green exterior bracts with a clear white border (Fig. 11).



**Figure 11. *Taraxacum elegantifrons* involucre from below, Meath (M. Norton).**

Although three of the known localities are in sand-dunes, others are richly vegetated banks on light calcareous soils inland. As well as eastern Ireland, there is a single probable record from Donegal in the north-west, and it seems likely that *T. elegantifrons* will prove to be more widespread in these Irish habitats.

On encountering the first specimen, the author thought it might represent a disomic ( $2n = 23$ ) aberrant (var. *elegans*, Sorenson & Gudjonsson 1946) of e.g. *T. aesculosum*, but later acquaintance of further material suggested otherwise. Nevertheless, this prompted the coining of the binomial epithet.

*Taraxacum elegantifrons* A.J. Richards **sp. nov.**

A medium-sized to rather tall plant with ascending to erect rather flaccid homophyllous leaves. Leaves subglabrous, clear pale to mid green, the mid-rib green distally, reddish proximally, leaves broadly lanceolate, lacerate, cut nearly to the midrib by with 4-7 omnidirectional sublinear lobes, acute but often expanded near the apex and the base, and with many interstitial acute lobules and large teeth; terminal lobe rather short, trilobate, acute; petiole bright purple, long and unwinged, but with a few teeth distally. Scapes shorter than to equalling leaves, arachnoid-pilose distally. Exterior bracts appressed proximally, erect distally, pruinose, mid blue-green with a white border, the proximal suborbicular with a cordate base, 6-7 x 4-5 mm, the distal narrowly ovate. Capitulum mid yellow, 35-45 mm in diameter when fully open, the ligules striped grey-pink with yellow teeth; stigma branches discoloured fresh and dry; pollen abundant. Achenes bright golden-brown with a faint pink tinge, with rather long teeth distally, the body 4.0 mm, the cylindrical cone 0.8-1.0 mm; rostrum very short, 4-6 mm.

TYPE. Sand dune on coastal shingle, Laytown, Meath, v.c. H22, O164.711, 05/05/2018, M. Norton, T.C.G. Rich et al. (DBNF, BSBI field meeting) 2018/32 (**DBN**101893; Fig. 12). Mornington, South Bull, Meath v.c. H22, O157.758, coastal sand-dunes, 05/04/2018, M. Norton 2018/6 (**DBN**). Blackcut, c. 8 km SE of Trim, Meath v.c. H22, N869.511, roadside bank, 16/05/2018, M. Norton 2018/101 (**DBN**). Slieve na Calliagh, Meath v.c. H22, N580.776, drystone retaining wall, 19/05/2018, M. Norton 2018/112 (**DBN**). St John's Point NE, W Donegal v.c. H34, G716.700, 08/05/2018, L. Tucker (**DBN**).

*Taraxacum elegantifrons* has very lacerate leaves, long, narrow bright purple petioles, broadly suborbicular, blue-green exterior bracts with a clear white border, pollen and long fruits. Like *T. amicum*, *T. elegantifrons* is another remarkable and easily-identified species. With its long, narrow, purple petioles and suborbicular bordered exterior bracts, it is most likely to be confused with giant forms of *T. oxoniense* with inner, 'summer form' leaves, although it is several times bigger than normal phenotypes of that species. The achenes are a full millimetre longer than in *T. oxoniense*, and the exterior bracts of the latter species are narrower, less orbicular, and lack the waxy blue-green character of those in *T. elegantifrons*. It seems that the typical habitat for *T. elegantifrons* is well-vegetated sand-dunes in Ireland. It may have been overlooked as *T. oxoniense* and it is possible that it will be found elsewhere in the British Isles.





**Figure 12. *T. elegantifrons* type.**

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