

## Further new species of *Taraxacum* from the British Isles

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### ABSTRACT

Nine new species of *Taraxacum* (Compositae) are described from the British Isles. Five of these, *Taraxacum ardlense*, *T. cambricum*, *T. celticum*, *T. luteum* and *T. subbracteatum*, are placed in section *Celtica* Sahlin, *T. edmondsonii* and *T. berthae* are placed in section *Naevoa*, *T. serpenticola* in section *Spectabilia*, and *T. sarniense* in section *Palustria*.

### INTRODUCTION

Since the publication in *Watsonia* of 'New species of *Taraxacum* from the British Isles' (Richards 1981), studies of the genus both here and on the continent have produced some valuable clarifications. The recent publication of two new sections, *Celtica* Sahlin (Sahlin 1984) and *Hamata* Øllgaard (Øllgaard 1983), together with the elucidation by us of five British species new to science in the section *Celtica*, suggest an opportune moment to publish these species and thus highlight some of the advances made. Four other new British species are also published below and provide a further opportunity to refer to current sectional designations within the former section *Spectabilia* Dahlstedt (1930) as treated in the *Taraxacum Flora of the British Isles* (Richards 1972a).

It was clearly recognised in Richards' *Flora* that Dahlstedt's section *Spectabilia* constituted a heterogeneous group of species. Christiansen (1942) had previously subdivided *Spectabilia* s.l. into four sections and these are listed by Richards, though not used. Of these sections *Macrodonia* is rarely used and appears to be of little value. Section *Naevoa* is now recognised by us as a most useful taxon; the species tend to be northerly in distribution and all have spotted leaves. Two species published here, *T. edmondsonii* and *T. berthae*, belong to this section. Christiansen's *Euspectabilia*, as Richards pointed out (Richards 1972b), should properly be known as *Spectabilia* Dahlst., as *T. spectabile* Dahlst. is clearly the type species. (*T. serpenticola*, described in this paper, belongs to this section). The remaining Christiansen section, *Crocea*, is retained for a distinctive group of arctic species which has a few representatives on Scottish mountains.

Although we have used the designation 'Celtica' informally among ourselves for some time, the formalisation of this section by Sahlin means that almost all the species previously lumped in section *Spectabilia* s.l. are now treated more meaningfully in four sections, viz. *Spectabilia* Dahlst., *Naevoa* Chr., *Crocea* Chr., and *Celtica* Sahlin. The impetus for the creation of section *Celtica* is not new. Indeed Richards (1972a, p. 45) recognises a category 'a' which constitutes the nucleus of the section. The *Celtica*, as the name suggests, are of western European distribution, the majority of the species being British or Irish. The concept of the section *Celtica* has broadened somewhat over time and has enabled a clarification of the hitherto confused boundary between some members of *Spectabilia* s.l. and section *Taraxacum* (*Vulgaria* s.l.). An added bonus has been the transfer of some species from the unwieldy section *Taraxacum* to *Celtica*.

We feel that it is worth noting here that the creation of the new section *Hamata* Øllgaard, a group which certainly has some affinities with the *Celtica*, accomplishes a similar delimitation of boundaries and a reduction in the size of section *Taraxacum*. The 20 or so species in this new section have for

some time been considered as sufficiently distinct morphologically to warrant this split. It is gratifying to note therefore that recent cytological investigations (Mogie & Richards 1983) provide further justification, by the revelation that these species possess an all-but-unique karyotype.

#### DESCRIPTIONS OF NEW SPECIES

##### 1. *Taraxacum ardlense* A. J. Richards, **sp. nov.** (Plate 1A)

Planta mediocris vel alta, haud robusta. Folia adscendentes vel erecta, obscure viridia, supra praesertim in nervo mediano aranoseo-pilosa, interlobia subtus maculata, supra praesertim prope nervo mediano irregulariter maculata; lamina sublonga, angusta, ad  $290 \times 40$  mm; lobi laterales 3–4, subdistantes, subcrispatis, proximaliter haud dentati, in apicem acuminatam subfiliformem abientes; lobus terminalis mediocris subsagittatus acutus, breviter mucronatus, integer vel in margine uno vel ambo simpliciter subdivisus; petiolus et nervus medianus subpurpureus intertextus viridi rubroque. Scapus sub anthesi foliis dimidio brevior vel ea aequans, omnino sparse aranoseo-pilosus, viridis sed ad basim saepe purpureus. Squamae exteriores patentes vel subrecurvatae,  $8\text{--}12 \times 2.5\text{--}4.5$  mm, vix marginatae, supra pallide virides saepe purpureo-suffusae, subtus obscure virides, subpruinosa. Calathium obscure luteum, 35–45 mm in diametro, ligulis stria cinereo-purpurea subtus notatis, purpureo-dentatis; styli subsordidi, sparse polliniferi. Corpus achenii 4 mm longus, stramineo-brunneus, ad apicem breviter spinulosus, alibi rugosus, in pyramidem conicam 0.6 mm longam abiens; rostrum 10–11 mm longum; pappus albus.

Plant medium-sized to tall, not robust. Leaves ascending to erect, dark dull green, aranose-pilose above, especially on the midrib, the interlobes blotched dark below, with irregular dark marks above, especially around the midrib; lamina rather long and narrow, to  $290 \times 40$  mm; lateral leaf-lobes 3–4, rather distant, somewhat crisped, but untoothed proximally, ending in an acuminate, subfiliform apex; terminal lobe of medium length, subsagittate, acute, shortly mucronate, entire or singly subdivided on one or both margins; petiole and midrib dull purple with interwoven green and red strands. Scape from half length of leaves to equalling leaves at flowering, sparsely aranose-pilose throughout, dull green but often purplish at base. Exterior bracts spreading-recurved,  $8\text{--}12 \times 2.5\text{--}4.5$  mm, scarcely bordered, pale green, often suffused purplish above, dark green beneath, somewhat pruinose. Capitulum deep yellow, 35–45 mm in diameter; ligules striped grey-purple, ligule teeth purple; styles faintly discoloured; pollen present but sparse. Achene body 4.0 mm, straw-brown, shortly spinulose at apex, rugose throughout, with conical cone, 0.6 mm; rostrum 10–11 mm; pappus white.

HOLOTYPE: Enochdhu, East Perth, v.c. 89, GR 37/062.625, beside bridge over the River Ardl, A. J. Richards, 22/5/1982 (OXF). Isotypi: **herb. A. J. Richards**, **herb. C. C. Haworth**. Also: field records in several sites between Enochdhu and Kindrogan Field Centre at 37/055.630. Northumberland, v.c. 68, near Great Ryle, GR 46/01, G. A. Swan, 16/5/1982 (**herb. A. J. Richards**).

*T. ardlense* was first detected on a B.S.B.I. field meeting in the vicinity of Kindrogan Field Centre, where it was locally frequent, but it was not detected elsewhere in the region during this meeting. However, it soon became apparent that a specimen collected in Northumberland the previous week, and unidentified, belonged to the same species, and thus it is apparently widespread, although scarce, in northern Britain. Its closest relatives are in section *Celica*, and morphologically it falls between *T. raunkiaerii* and *T. subbracteatum*. It is distinct from both these in the longer and more recurved exterior bracts, the longer achenes and the leaf-shape. Although the leaves are similar to *T. raunkiaerii* in colour, texture and shape, the lateral leaf-lobes are fewer and more distant, and the terminal lobe more sagittate than in that species.

##### 2. *Taraxacum cambricum* A. J. Richards, **sp. nov.** (Plate 1B)

Planta mediocris, haud robusta. Folia adscendentes vel erecta, viridia, in nervo mediano glabrescentes, emaculata, late oblanceolata, ad  $200 \times 50$  mm; lobi laterales 2–4, patentes vel subrecurvati, lati obtusi, haud dentati, convexo-sigmoidei, margine distali recti vel concavo-angulosi, margine proximo convexi, saepe dente uno magno munito; lobus terminalis mediocris,

longitudine latitudinem aequans, obtusus submucronatus galeatus integer, quam alia pars folii paulo angustior; petiolus alatus, interdum late alatus, cum nervo mediano roseus vel purpureus, viride intertextus. Scapus folia plerumque superans, aranoseo-pilosus, denique glabrescens, pallide viridis apice roseo. Squamae exteriores erectae, inferiores patentes,  $8-13 \times 2-3.5$  mm, vix marginatae, supra pallide virides, subtus atrovirides atque valde pruinosa. Calathium luteum, 40–45 mm in diametro, ligulis planis stria atrocinerea subtus notatis, luteo-dentatis; styli sordidi, polliniferi vel raro epolliniferi. Corpus achenii 3.8–4.0 mm longus, fulvo-stramineus, ad apicem rugosus, alibi laevis, in pyramidem conicam 0.6 mm longam abiens; rostrum robustum, 6–7 mm longum; pappus albus.

Plant medium-sized, not robust. Leaves ascending to erect, bright green, glabrescent on midrib, not spotted or blotched, broadly oblanceolate, to  $200 \times 50$  mm; lateral leaf-lobes 2–4, patent to slightly recurved, broad, obtuse; the distal margin not toothed, convex, sigmoid, straight-sided or concave-angled; the proximal margin convex, occasionally provided with a single large tooth; terminal lobe medium-sized, about as long as broad, obtuse, but slightly mucronate, helmet-shaped, entire, slightly narrower than the rest of the leaf; petiole winged, sometimes broadly so; petiole and midrib deep pink or purple, with interwoven green strands. Scape usually exceeding leaves, aranoseo-pilose at first, glabrescent, pale green but pinkish at apex. Exterior bracts mostly erect, the lowest  $\pm$  spreading,  $8-13 \times 2-3.5$  mm, scarcely bordered, pale green inside, blackish green and heavily pruinose outside. Capitulum mid-yellow, 40–45 mm in diameter; ligules flat, striped dark grey, ligule teeth yellow; styles discoloured; pollen present or rarely absent. Achene body 3.8–4.0 mm, fulvous straw-brown, rugose at the apex, the rest smooth, with conical cone, 0.6 mm; rostrum stout, 6–7 mm; pappus white.

HOLOTYPE: Aberporth churchyard, Cardiganshire, v.c. 46, GR 22/256.511, 55 m, A. O. Chater, 5/4/1980 (OXF). Isotypus: NMW. Since recorded in a number of sites, and now known in the following vice-counties: 40, 42, 46, 50, 55, 58, 70 and 109.

*T. cambricum* was first discovered in Wales, hence the name, and is now known in three separate areas in the principality, but has also since been discovered in Shropshire, Cheshire, Leicestershire, Cumberland and in the north of Scotland, in Caithness. Thus, it may well prove to be widespread, although rather uncommon in central and northern Britain. *T. cambricum* is closely related to *T. adamii*, *T. gelertii*, *T. britannicum* and *T. praestans* in section *Celtica*. It has a distinctive leaf-shape with broad, obtuse lateral lobes bearing convex proximal margins, and an obtuse, helmet-shaped terminal lobe. Thus the leaf has neither the long, subdivided terminal lobe of *T. praestans*, nor the regular, recurved lateral lobes of *T. britannicum*. The lateral lobes of *T. adamii* and *T. gelertii* are usually acute, and more strictly deltoid, and neither species can be said to have a helmet-shaped terminal lobe. The achene is diagnostic, being considerably longer than in all these species except *T. gelertii*. In the latter, the achenes have many large spines and are rugose throughout. In common with *T. britannicum*, the achenes of *T. cambricum* are nearly smooth even at the apex, but they are much longer than in the former. The name *T. cambricum* should not be confused with the now obsolete name *T. cambriense* A. J. Richards (1972a, p. 98) for which the correct name is now *T. lancastriense* A. J. Richards.

### 3. *Taraxacum celticum* A. J. Richards, **sp. nov.** (Plate 1c)

Planta mediocris, haud robusta. Folia adscendentes vel erecta, viridia, in nervo mediano glabrescentes, emaculata vel interlobia subtus maculata, oblanceolata, ad  $240 \times 55$  mm; lobi laterales 4–5, basi deltoidei lati 1(–3) dente vel lobulo acuto magno distaliter muniti, in apicem patentem vel irregulariter dirigentem acutum anguste lanceolatum margini recti e basi abrupte contracti; lobus terminalis brevis trilobatus edentatus, sublobo centrali obtuso mucronato sublobi lateralibus brevibus subacutis plerumque prorsum dirigentes ad angulum abrupte concavum inserto; petiolus alatus, interdum late alatus, cum nervo mediano roseus vel purpureus, viride intertextus, cum nervo mediano saepe distaliter viridescens. Scapus sub anthesi foliis brevior vel ea aequans, sub calathium aranoseo-pilosus viridis vel roseo-suffusus. Squamae exteriores patentes vel suberectae,  $9-12 \times 3-4$  mm, emarginatae vel vix marginatae, supra purpureo-suffusae, subtus obscure virides, purpureo-suffusae subpruinosa. Calathium luteum, 30–40 mm in diametro, ligulis planis stria

atrocinereo-violacea subtus notatis, purpureo-dentatis; styli obscuri, epolliniferi vel sparse polliniferi. Corpus achenii 3.5–3.8 mm longus, pallide brunneus, ad apicem breviter spinulosus, alibi laevis, in pyramidem conicam 0.4 mm longam abiens; rostrum 10 mm longum; pappus albus.

Plant medium-sized, not robust. Leaves ascending to erect, bright green, glabrescent on midrib, somewhat blotched on interlobes beneath, oblanceolate, to 240 × 55 mm; lateral leaf-lobes 4–5 with a broad deltoid base provided with 1(–3) large acute teeth or lobules distally, and a patent, forward-pointed or irregularly directed, entire, acute, narrowly lanceolate, ± straight-sided process abruptly contracted from the base; terminal lobe short, trilobate, not toothed, the central process ± obtuse, mucronate, abruptly concave-angled to the short subacute, often forward-pointing lateral processes; petiole winged, sometimes broadly so; petiole and midrib deep pink or purple with interwoven green strands, the midrib often becoming green distally. Scape shorter than or equalling leaves at flowering, aranose-pilose below capitulum, green or suffused pink. Exterior bracts spreading (–erect), 9–12 × 3–4 mm, unbordered or scarcely bordered, suffused purple inside, dark green suffused purple outside, somewhat pruinose. Capitulum mid-yellow, 30–40 mm in diameter; ligules flat, striped dark grey-violet, ligule teeth purple; styles dark; pollen absent, or sparsely present. Achene body 3.5–3.8 mm, pale brown, shortly spinulose at apex, the rest smooth, with conical cone, 0.4 mm; rostrum 10 mm; pappus white.

HOLOTYPE: Llanafan Bridge, Cardiganshire, v. c. 46, GR 22/685.714, south-facing grassy roadside bank 150 m west of the bridge, 70 m, A. O. Chater, 28/4/1979 (OXF). Isotypus: NMW. Since recorded from several sites, and now known in the following vice-counties: 42, 46, 48, 50, 51 and 58.

*T. celticum* has yet to be found away from central and northern Wales, and the Welsh borders. Although the sectional name *Celtica* was coined by C.-I. Sahlin before this species was detected, it seemed useful that a typical member of the section from Atlantic areas of the British Isles be given the name *T. celticum*. In the event, the discovery of this species provided an ideal opportunity, not least because, morphologically, it occupies a central position in the section and is typical of it. *T. celticum* is intermediate between *T. nordstedtii* and *T. gelertii*, and also shows features of *T. cambricum*. It lacks the characteristic short, purple-brown striped ligules and erect bracts of *T. nordstedtii*, and has longer achenes, but closely resembles some more dissected leaf-forms of that variable species. The achenes are similar to those of *T. gelertii* in shape and size, although the spines are less robust; however the exterior bracts of *T. celticum* are less long and broad than those of *T. gelertii*, and are suffused purple to an unusual extent in this section. The narrow, forward-pointing lobes with large lobules, and the trilobate terminal lobes are distinctive. Despite the forward-pointing teeth of the terminal lobe of *T. gelertii*, the latter can never be said to have a trilobate terminal lobe, and the leaf as a whole is much less dissected.

#### 4. *Taraxacum luteum* C. C. Haworth & A. J. Richards, sp. nov. (Plate 2A)

Planta mediocris. Folia adscendentes vel erecta, cano-viridia, supra arenoseo-pilosa, emaculata, anguste oblonga, ad 200 × 30 mm; lobi laterales 4–5, saepe alternati, recurvati, anguste triangulares, in apices filiformes abientes, marginibus distalis sigmoideis vel rectis, integribus vel dentibus filiformis munitis; interlobia subcrispata, integres vel filiformiter dentata vel interdum dente uno angusto instructa; lobus terminalis aut mediocris triangularis aut magnus subdivisus dentibus angustis ad basim recurvatis instructus; petiolus longitudine ad dimidium laminae, exaltus, cum nervo mediano purpureus. Scapus sub anthesi folia ± aequans, sub calathium pilosus alibi sparse pilosus, viridis vel roseus. Squamae exteriores erectae vel ad involucrem adpressae, lanceolatae vel ovatae, 8–10 × 2–4 mm, vix marginatae, supra pallide virides, subtus virides nitente, ad apicem obtusum anthocyane suffusae. Calathium luteum, 35–40 mm in diametro, ligulis planis, subtus haud striatis-dentatis; styli exserti sordidi polliniferi. Corpus achenii 3.5–3.8 mm longus, stramineo-brunneus, ad apicem paucis spinulis recurvatis instructus, alibi laevis, in pyramidem latam 0.4 mm longam abiens ad basim conicam; rostrum 10–11 mm longum; pappus albus.

Plant medium-sized. Leaves ascending to erect, dull grey-green, aranose-pilose above, unmarked, narrowly oblong, to 200 × 30 mm; lateral leaf-lobes 4–5, frequently alternate, recurved, narrowly triangular and tapering to a filiform apex; distal margin sigmoid or straight and entire or with a few



filiform teeth; interlobes somewhat crisped, entire or with filiform teeth and occasionally with a single narrow long tooth; terminal lobe either medium-sized and triangular or large and subdivided with a number of narrow, recurved teeth towards the base; petiole to 1/3 length of leaf, unwinged, petiole and midrib purple. Scape  $\pm$  equal to leaf length at flowering, pilose below capitulum, otherwise sparsely clothed, green and pink. Exterior bracts erect to adpressed, lanceolate or ovate,  $8-10 \times 2-4$  mm, scarcely bordered, pale green inside, glossy and green outside, suffused with anthocyanin towards the obtuse tip. Capitulum yellow, 35–40 mm in diameter; ligules pure yellow and totally lacking any stripe; styles exserted, discoloured; pollen present. Achene body 3.5–3.8 mm, straw-brown, a few narrow recurved spinules at the apex, the rest smooth, with broadly based cone, conical, 0.4 mm, rostrum 10–11 mm; pappus white.

HOLOTYPE: Egremont, Cumberland, v.c. 70, GR 35/019.102, grassy roadside banks on Egremont to Wilton road, C. C. Haworth, 20/5/1980 (OXF). Isotypi: **BM**, **herb.** **A. J. Richards**. Known at several other sites in the west of v.c. 70. Also recorded from Brecon, v.c. 42, two sites in Banff, v.c. 96, and Co. Londonderry, v.c. H40.

*T. luteum* is unique among British dandelions in its lack of a ligule stripe, a feature which renders this species at once both striking and instantly recognisable. The species appears to be widespread in western Cumberland, but very scarce and scattered elsewhere.

The leaf shape somewhat resembles that of *T. ardense* but, apart from the ligule difference, the totally different bracts, erect to adpressed here as opposed to spreading to recurved in that species, renders them distinct. Moreover, pollen is abundant in *T. luteum* and scarce in *T. ardense*.

#### 5. *Taraxacum subbracteatum* A. J. Richards, **sp. nov** (Plate 2B)

Planta parva vel mediocris, haud robusta. Folia prostrata vel adscendentes, obscure viridia, in nervo mediano glabrescentes, interlobiis subtus vulgo maculatis, supra rariore maculatis, anguste oblanceolatis, ad  $280 \times 50$  mm, saepe crispata; lobi laterales 4–6, subrecurvati subbreves, margine distalo sigmoidei, integres vel acuminate 1(–3) dentati; lobus terminalis brevis, galeiformis vel subtrilobatus, apice subacuto mucronato, integri vel unidentato; petiolus anguste alatus, longus ad quartam vel tertiam partem folii, cum nervo mediano subpurpureus viride intertextus; nervus medianus distaliter saepe viridescens, nervi secundi etiam interdum purpurei. Scapus foliis brevior vel sub anthesi ea aequans, omnino aranoseo-pilosus, omnino vel non nisi ad apicem roseus. Squamae exteriores patentes (vel suberectae), valvatae,  $8-11 \times 3-4$  mm, vix marginatae, supra pallide virides vel subpurpureae, subtus obscure virides, vix pruinosa. Calathium obscure luteum, 30–40 mm in diametro, ligulis planis, stria atrocinereo-violacea subtus notatis, purpureo-dentatis; styli obscuri polliniferi. Corpus achenii 3.0–3.3 mm, stramineo-brunneus, apic breviter spinulosus, alibi laevis, in pyramidem conicam brevem 0.3 mm longam abiens; rostrum 10 mm longum; pappus albus.

Plant small to medium-sized, not robust. Leaves prostrate to ascending, dark green, glabrescent on the mid-rib, usually blotched on interlobes beneath and occasionally blotched on interlobes above, narrowly oblanceolate, to  $280 \times 50$  mm, often crisped; lateral leaf-lobes 4–6, somewhat recurved, rather short, the distal margin sigmoid, entire, or with 1(–3) acuminate teeth; terminal lobe short, helmet-shaped to weakly trilobate, the apex subacute, mucronate, lacking teeth, or with 1 tooth; petiole narrowly winged, 1/4 to 1/3 length of leaf; petiole and midrib purplish with interwoven green strands; the mid-rib often becoming green distally; secondary veins also sometimes purple. Scape shorter than leaves, or equalling leaves at flowering, aranose-pilose throughout, pinkish throughout, or towards the apex. Exterior bracts spreading (suberect), valvate,  $8-11 \times 3-4$  mm, scarcely bordered, pale green or tinged purple above, dark green beneath, scarcely pruinose. Capitulum deep yellow, 30–40 mm diameter; ligules flat, striped dark grey-violet, with purple ligule teeth; styles dark, pollen present. Achene body 3.0–3.3 mm, straw-brown, shortly spinulose at apex, the rest smooth, with conical cone, 0.3 mm; rostrum 10 mm; pappus white.

HOLOTYPE: Brill, Buckinghamshire, v.c. 24, GR 42/65.14, field margin, 170 m, A. J. Richards, 5/5/1969, ut *T. hamatiforme* Dahlst. (OXF). This specimen was part of an unnumbered exsiccatum, and isotypes have been lodged at **LTR**, **S**, **BM**, and perhaps elsewhere.

*T. subbracteatum* has been known in the British Isles since 1968 or earlier, but until recently has been confused with the unrelated species in section *Taraxacum*, *T. crispifolium* Lindb. f., which shares narrow dark, multilobate, crisped leaves and a short, valvate involucre. The latter species also occurs in the British Isles, but is much more scarce, and most earlier records refer to *T. subbracteatum*. *T. subbracteatum* is definitely known from the following 36 vice-counties: 2, 5, 9, 12, 14, 15, 20, 23, 24, 42, 44, 45, 46, 49, 50, 51, 55, 58, 59, 62, 67, 68, 70, 73, 75, 88, 89, 90, 94, 95, 96, 98, 101, 104, 106, 109. Although not recorded from Ireland, it seems principally to be an Atlantic species, and is locally abundant in such areas as Kintyre, west Argyll and Pembrokeshire. However, it is one of the few species in section *Celtica* that extend into south-eastern England (*T. nordstedtii*, *T. adamii* and *T. raunkiaerii* are others). *T. subbracteatum* is related to *T. britannicum* and *T. bracteatum*, although the latter species has been placed into section *Hamata* as an anomalous member, on account of its cytology. The leaf-shape is very similar to *T. britannicum*, which has however very distinctive erect, blackish pruinose, white-bordered bracts and scarcely rugose achenes. *T. bracteatum* is a grosser plant with broader leaves and fewer leaf-lobes. The valvate involucre of *T. subbracteatum* is distinctive, and it is an easy species to identify.

**6. *Taraxacum edmondsonii* A. J. Richards, sp. nov. (Plate 2c)**

Planta parva vel mediocris, haud robusta. Folia prostrata vel erecta, obscure viridia, supra praesertim prope nervo mediano sparse aranoseo-pilosa, saepe subparve discrete interdum sparse nigro-maculata vel emaculata, anguste lanceolata, ad 200 × 40 mm; lobi laterales 3–5, valde recurvati, angusti longo-acuminati, margine distalo plusminusve recto, integres vel acuminate parve 2–6 dentati; interlobia angusta, filiformiter dentata; lobus terminalis mediocris vel longus, sagittatus integer, acutus vel subobtus; petiolus exalatus vel anguste alatus, folia 3-plo brevior, cum nervo mediano obscure purpureus. Scapus sub anthesi folia aequans, praesertim sub calathium aranoseo-pilosus, purpureo-suffusi. Squamae exteriores vel rariore recurvatae vel erectae-patentes, 8–12 × 1–3 mm, anguste sed distincte pallide-marginatae vel purpureo-marginatae, ad basim saepe dentatae, supra pallide viride, subtus obscure viride, mutabiliter purpureo-suffusae, epruinosa. Calathium obscure luteum, 35–45 mm in diametro, ligulis planis, stria atropurpurea notatis, atropurpureo-dentatis; styli sordidi, polliniferi vel epolliniferi. Corpus achenii 3·3–3·5 mm longus, stramineo-brunneus, apice spinulis lato-basibus instructus, alibi laevis, in pyramidem conicam 0·5 mm longam abiens; rostrum 10–12 mm longum; pappus albus.

Plant small to medium-sized, not robust. Leaves prostrate to erect, dark green, sparsely aranose-pilose above, especially on the midrib, often black-spotted, with fairly small, discrete spots, which may be sparse or absent, narrowly lanceolate, to 200 × 40 mm; lateral leaf-lobes 3–5, strongly recurved, narrow, long-acuminate; distal margin ± straight, entire or with 2–6 rather small acuminate or filiform teeth; interlobes narrow, filiform dentate; terminal lobe medium length to long, sagittate, entire, acute to subobtus; petiole unwinged or narrowly winged, about 1/3 length of leaf; petiole and midrib deep purple. Scape about equalling leaves at flowering, aranose-pilose, especially under capitulum, usually suffused purple. Exterior bracts (recurved-) spreading (-erect), 8–12 × 1–3 mm, narrowly but distinctly pale to purple bordered, frequently dentate proximally, pale green above, dark green below, variably suffused purplish, not pruinose. Capitulum deep yellow, 35–45 mm in diameter; ligules flat, striped deep purple with purple ligule teeth; styles discoloured; pollen present or absent. Achene body 3·3–3·5 mm, straw-brown, with stout-based spinules at the apex, the rest smooth, with conical cone, 0·5 mm; rostrum 10–12 mm; pappus white.

HOLOTYPE: Eryrys, Denbighshire, v.c. 50, GR 33/19.57, damp limestone slope, *T. Edmondson*, 16/5/1982 (OXF). Isotype: **herb. T. Edmondson**.

Edmondson first collected this distinctive small *Naevisa* species in 1976, and has since collected it from various sites in Cheshire and Denbighshire, but it is only certainly known outside this area at present from one site in Hertfordshire, and in Jylland, Denmark. The Cheshire and Denbigh material originally gave rise to a good deal of confusion, and had been equated with *T. maculosum* A. J. Richards, *T. euryphyllum* (Dahlst.) M. P. Christiansen, *T. naevosiforme* Dahlst. and *T. pseudolarssonii* A. J. Richards, all of which are frequent in this area. Matters were further confused by otherwise similar material from the same site varying with respect to production of pollen.

Material was sent to C.-I. Sahlin, who suggested it might be a new species related to *T. maculigerum* Lindb.f. Material sent from Denmark by H. Øllgaard in 1982 included copious material of a plant informally named by him '*lange-maculigerum*', which he noted chiefly differed from *T. maculigerum* by the extenuate, sagittate terminal lobe (*T. maculigerum* is only known from three sites in the British Isles, in Ulster, but is common in Denmark). Øllgaard's '*lange-maculigerum*' had originally been named by A.J.R. *T. acrifolium* Dahlst. (1972a, p. 49), but this localised endemic from Orkney and Shetland is quite different, although similar in leaf-shape. '*Lange-maculigerum*' is identical with our revised, Cheshire and Denbighshire, concept of *T. edmondsonii*. We are most grateful to T. Edmondson, whose meticulous and copious collections, and taxonomic persistence have led to clarification of several taxonomic problems in section *Naevosa*.

In the British flora, *T. edmondsonii* is most closely related to *T. subnaevosum* and *T. olgae*, and shares with these species a rather small size, and leaves with small, punctate spots. It has more erect bracts and a different leaf-shape from the former, while the latter has smaller achenes, and much larger, more erect bracts. Most other British species in section *Naevosa* have larger leaf-spots, and none have the distinctive leaf-shape of *T. edmondsonii*. As noted by both Øllgaard and Sahlin, *T. edmondsonii* is undoubtedly closely related to *T. maculigerum*, from which it differs chiefly by leaf-shape. Øllgaard is currently investigating the reliability of this character in cultivation experiments.

#### 7. *Taraxacum berthae* C. C. Haworth, sp. nov. (Plate 3A)

Planta parva vel mediocris. Folia patentes, obscure viridia, supra paucè nigro-maculata, laeves, ad 140 mm longa; lobi laterales 2–4, subpatentes vel recurvati, triangulares, subconvexo vel recto vel sigmoideo, integre vel margine distalo sparse filiformo-dentati; interlobia integra vel filiformo-dentata vel interdum dente maiori munita; lobus terminalis vulgo magnus, ad tertiam partem folii longus, subsagittatus subobtusius mucronatus, integer vel ad basim subdivisus; petiolus exalatus vel anguste alatus, ad tertiam partem folii longus, cum nervo mediano purpureus. Scapus sub anthesi folia subaequans, pilosus vel glabrescens, purpureus. Squamae exteriores erectae vel ad involucrem adpressae, ovatae, 7–9 × 1.5–4 mm, supra pallide virides, subtus obscure virides, ad apicem purpureo-suffusae, vulgo emarginatae. Calathium c. 30 mm in diametro, ligulis stria obscure purpurea notatis; styli sordidi epolliniferi. Corpus achenii 3.6–3.9 mm longus, stramineo-brunneus, distaliter spinulis lato-basibus instructus, alibi laevis, in pyramidem conicam 0.5–0.6 mm longam abiens; rostrum 7 mm longum; pappus albus.

Plant small to medium-sized. Leaves spreading, dull dark green, with black spots scattered on the adaxial surface, smooth, up to 140 mm; lateral leaf lobes 2–4, subpatent to recurved, triangular, subconvex to straight or sigmoid and entire or with sparse filiform teeth on the distal margin; interlobes entire to filiform denticulate or occasionally with a larger tooth; terminal lobe usually large, up to 1/3 leaf length, subsagittate, subobtus, mucronate, entire or subdivided at the base; petiole terete or narrowly winged, to 1/3 leaf length; petiole and midrib purple. Scape ± equalling the leaves at flowering, subglabrous or pilose, purple. External bracts erect to adpressed, ovate, 7–9 × 1.5–4 mm, pale green inside, dark green outside, suffused purple at the apex, mostly unbordered. Capitulum c. 30 mm in diameter; ligules with a dark purple stripe; styles discoloured, pollen absent. Achene body 3.6–3.9 mm, straw-brown, with a broad-based spinules above, the rest smooth; cone conical, 0.5–0.6 mm; rostrum 7 mm; pappus white.

HOLOTYPE: Whitehaven, Cumberland, v.c. 70, GR 25/984.178, as a garden weed at 5 Standings Rise, Whitehaven, C. C. Haworth, 10/5/1982 (OXF). Isotypi: BM, herb. A. J. Richards. This is the only known locality.

*T. berthae* clearly belongs to the group centred around the widespread *T. subnaevosum*. In leaf-shape and size it much resembles that species but it is a much darker plant and the bracts are entirely different, being pale, tenuous and recurved in *T. subnaevosum* but dark, robust and erect in *T. berthae*. *T. olgae* is another close relative but it lacks the large end lobe to the leaf. The external bracts of *T. olgae* are erect but have an extremely distinctive, wide, white border, which *T. berthae* lacks. The achenes of *T. berthae* are considerably larger and more robust than those of

both the other species mentioned. This species is known so far only from the front garden of the author! In spite of this it merits publication since it has been the subject of intense comparative scrutiny. The specific epithet recognizes the author's wife's forbearance with the hoe.

8. *Taraxacum serpenticola* A. J. Richards, **sp. nov.** (Plate 3b)

Planta parva vel mediocris, subrobusta. Folia prostrata vel adscendentes, obscure olivacea- vel brunneo-viridia, supra irregulariter obscuro-maculata, ovato-lanceolato-spathulata, ad 110 × 30 mm; folia aut elobata, apice obtusa breve mucronata, distaliter plusminusque integra, aut lobata 1-3 dentibus magnis deltoideis vel brevissimis lobis (ad quartem partem folii latis) instructa, deinde proximaliter irregulariter acuminato-dentata; petiolus ad basim exalatus, folia 4-plo brevior, cum nervo mediano obscure brunneo-purpureus, nervis lateralibus nonnullis etiam purpurei, supra prope nervum medium saepe brunneo-suffuso. Scapus sub anthesi folia brevior vel aequans, sub involucrio aranoseo-piliusculus, subpurpureus. Squamae exteriores ad involucrium adpressae, 5-7 × 2-4 mm, vix marginatae, extus brunneo-virides, praesertim ad apicem purpureo-suffusae. Calathium luteum, 30-35 mm in diametro, ligulatis planis, stria obscure rosea subtus notatis, purpureo-dentatis; styli subinclusi sordidi epolliniferi. Corpus achenii 4.8-5.0 mm longus, stramineo-brunneus, in quarta parte distali breviter spinulosus, alibi subrugosus, in pyramidem brevissimum 0.4 mm longam conicam abiens; rostrum crassum, ad pyramidem coloratam etiam crassiore, 5-6 mm longum; pappus albus.

Plant small to medium-sized, rather robust. Leaves prostrate to ascending, dark olive or brownish green, with sparse irregular dark spots on the upper surface, ovate-lanceolate-spathulate, to 110 × 30 mm; leaves ± unlobed, obtuse with a short mucronate tip, ± entire distally, with 1-3 large, obtuse, deltoid teeth, or very short lobes (not dissected to more than 1/4 the width of the leaf) and irregular, acuminate, smaller teeth distally; petiole unwinged proximally, about 1/4 of the leaf; petiole and midrib dark brown-purple, with some lateral veins also purple, and sometimes with a brownish suffusion on the upper surface in the region of the midrib. Scape shorter than or equalling leaves at flowering, slightly aranose-pilose beneath the capitulum, purplish. Exterior bracts adpressed to the involucre, 5-7 × 2-4 mm, scarcely bordered, olive green outside, suffused purple especially towards the apex. Capitulum mid-yellow, 30-35 mm diameter; ligules flat, striped deep carmine with purple teeth; styles ± included, discoloured; pollen absent. Achene body 4.8-5.0 mm, straw-brown, with short spines for the apical 1/4, the rest faintly rugose, with very short, conical cone, 0.4 mm; rostrum thick, becoming even thicker approaching the coloured cone, 5-6 mm; pappus white.

HOLOTYPE: Muckle Heog, Unst, Shetland, v.c. 112, GR HP/61, grassy ledges etc. among serpentine outcrops, *W. Scott* 2763, 13/6/1982 (OXF). Isotypus: **herb. W. Scott**. Paratypus: *W. Scott* 2703, 3/7/1980 (OXF).

In section *Spectabilia* (*Euspectabilia* sensu M. P. Christiansen 1942) only three species occur on the mainland of Britain, *T. spectabile* Dahlst., *T. faeroense* (Dahlst.) Dahlst. and *T. eximium* Dahlst. It is therefore remarkable that a further three species occur on Shetland and Orkney. One of these, recently detected, is *T. ornatum* Hagl., which also occurs in Norway, Sweden and probably Iceland. This is the plant originally illegitimately published by Beeby (1909) from Lang Clodie Loch, North Roe, Shetland as *T. spectabile* subsp. *geirhildae*. We are most grateful to W. Scott for his painstaking research which has led to this conclusion. A second is *T. acrifolium* Dahlst., now thought to be restricted to Orkney and Shetland (c.f. Richards 1972a). The third, *T. serpenticola*, is so far only known from the Unst serpentine rocks, which have long been known to possess a remarkable flora with at least one other localised endemic, *Cerastium arcticum* Lange subsp. *edmondstonii* (H. C. Watson) A. & D. Löve, and curious ecotypic variants of several other species.

*T. serpenticola* is closely related to the other British species in the section. The achenes are longer than all except *T. eximium*, in which the spines are less well developed and the rest of the achene body lacks rugosity. The nearly entire leaves, even when well developed, and the dull, brownish hue of the leaves, which are thick and leathery, are distinctive, and the purplish exterior bracts are smaller than in *T. eximium*.



9. *Taraxacum sarniense* A. J. Richards, **sp. nov.** (Plate 3c)

Planta mediocris, gracilis. Folia erecta, viridia, emaculata, ad  $150 \times 15$  mm, integra, semper elobata, anguste lanceolato-spathulata, edentata vel proximaliter dentibus 3–5 distantibus regularibus brevibus deltoideis; apex foliae acutus; petiolus longitudine lamina foliae aequens, ad basim exalatus, purpureus; nervus medianus viridis vel ad basim subpurpureus. Scapus sub anthesi folia aequans vel ea superans, sub involucreto aranoso-pilosus, deinde glabrescens, ad apicem purpureo-suffusus. Squamae exteriores ad involucreto adpressae,  $3\text{--}6 \times 1\text{--}5\text{--}3\text{--}5$  mm, ovato-acuminatae, apice subrotundatae, extus virides, nervo mediano obscuriori, plusminusve manifeste albo-marginatae margine area quarta parte squamae totae aequanti, praecipue in alabastro interdum omnino roseo-suffusae. Calathium luteum, 25–35 mm in diametro, ligulis planis, stria cinereo-violaceis subtus notatis, purpureo-dentatis; styli sordidi polliniferi. Corpus achenii 3.0 mm longus, stramineo-brunneus, apice breviter spinulosus, alibi sublaevis, in pyramidem cylindricam 0.9 mm longam abiens; rostrum 10 mm longum; pappus albus.  $2n = 32$ .

Plant medium-sized, slender. Leaves erect, mid-green, unmarked, to  $150 \times 15$  mm, not lobed, narrowly lanceolate-spathulate, entire, or more usually with 3–5 distant, regularly spaced, deltoid, short teeth proximally; apex acute; petiole half length of leaf, unwinged proximally, purple; midrib green, or purplish proximally. Scape equalling or exceeding leaves at flowering, aranose-pilose beneath capitulum at first, glabrescent, usually suffused purple distally. Exterior bracts adpressed to the involucre,  $3\text{--}6 \times 1\text{--}5\text{--}3\text{--}5$  mm, ovate-acuminate, with the apex itself somewhat rounded, medium-green outside, with a darker mid-vein and with a  $\pm$  clearly demarcated white border about 1/4 of the area of the bract, all sometimes suffused pinkish, especially in bud. Capitulum mid-yellow, 25–35 mm in diameter; ligules flat, striped grey-violet, with purple ligule teeth; styles discoloured; pollen present. Achene body 3.0 mm, straw-brown, shortly spinulose at the apex, the rest  $\pm$  smooth, with cylindrical cone, 0.9 mm; rostrum 10 mm; pappus white.  $2n = 32$ .

HOLOTYPE: Grande Mare, Guernsey, v.c. S, pasture, D. McClintock, 22/4/1971 (OXF). Isotypus: STP. Paratypes: Grande Mare, Guernsey, seed collected 23/4/1966, cultivated at Durham University, A. J. Richards (OXF); Jersey, Étang de St Ouen, 9/5/1926 (herb. F. le Sueur).

In 1966, during a brief visit to Guernsey, I noted a species of *Taraxacum* in section *Palustria* growing in fenny meadows with a number of choice associates. Collected seed was grown to flowering, and appeared to key down to *T. austrinum* Hagl. in van Soest (1965). A specimen was sent to van Soest who wrote "I have no better proposal", on the basis of which this species was reported from Guernsey in Richards (1972a, p. 43). Other records from Lancashire and Cambridgeshire subsequently proved to be *T. palustrisquameum*, and those from Co. Galway, *T. webbii* A. J. Richards. Re-examination of Haglund's type of material from Sørø, Sjaelland, Denmark, by H. Øllgaard showed that van Soest (1965) misinterpreted *T. austrinum*, which has fusiform and scarcely spinulose achenes with a long cone, and lacks pollen. It has not been identified with certainty away from Sjaelland (Zealand). It is not clear to what species van Soest's remaining records from the Netherlands, Germany and France refer. Undoubtedly, *T. sarniense* is closely related to *T. austrinum*, from which it is best distinguished by the presence of pollen, and the turbinate, spinulose achenes. Of the British and Irish species in the section, *T. palustre* (Lyons) Symons and *T. webbii* both have much longer achenes. *T. pollichii* van Soest is similar to *T. sarniense* in many respects, with very similar achenes and the possession of pollen, but always has shortly lobed leaves of a different shape. It seems to be restricted to the New Forest in the British Isles. *T. sarniense* is best diagnosed by its characteristic, narrowly lanceolate-spathulate leaves with regularly spaced teeth (similar to *T. austrinum*), the presence of pollen, discoloured styles, short, turbinate achenes with a long cylindrical cone (similar to *T. pollichii*), and aranose-pilose scapes when young.

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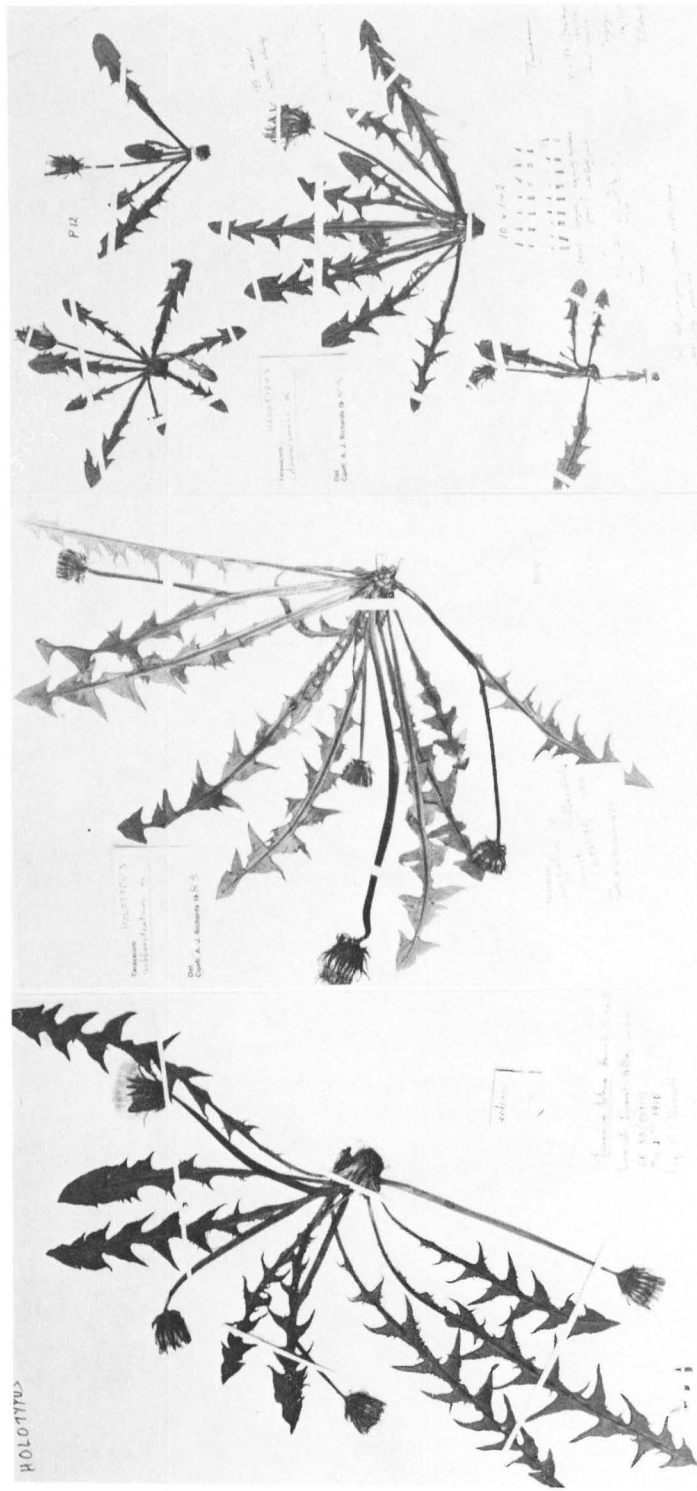
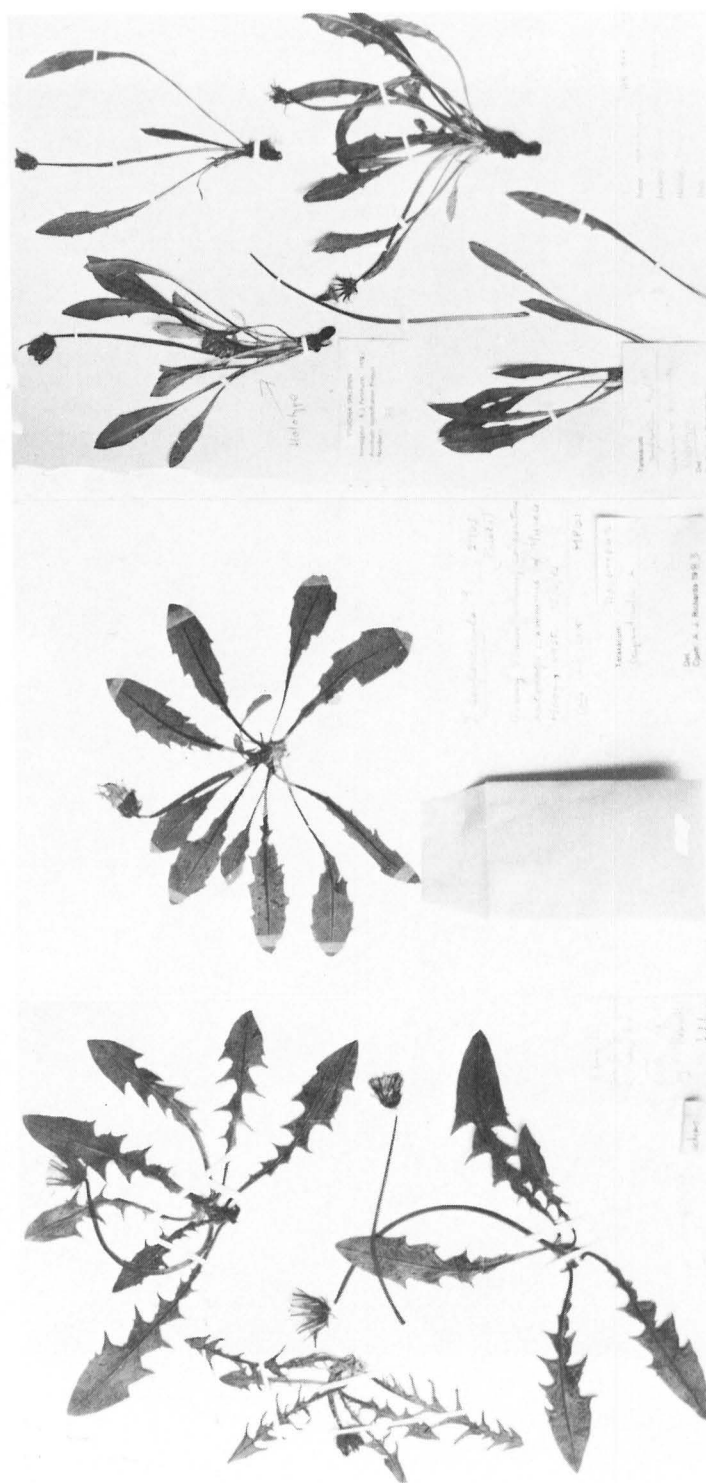


PLATE 2. A, *Taraxacum luteum*; B, *T. subbracteatum*; C, *T. edmondsonii*. All  $\times 1/5$ .





**A** *Taraxacum berthae*; **B**, *T. serpenicolae*; **C**, *T. sarniense*. All  $\times 1/5$ .



PLATE 4. *Halimione portulacoides* growing on coastal rock at Howth Head, Co. Dublin, GR O/268.371, 25th June 1979. The plant was photographed in the vicinity of quadrat 2 (Table 1).