

## *Taraxacum majoricense* (Asteraceae), a new species from the Balearic Islands, Spain

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*Taraxacum majoricense* A. Galán & L. Sáez *sp. nova* collected from Mallorca in the Balearic Islands is described and illustrated. It is characterized by rough leaves with wide lobes, and by violet achenes. A key to all species of *Taraxacum* known from the Balearic Islands is provided. *Taraxacum tarragonense* Sennen is neotyped and newly described. *Taraxacum cacuminatum*, *T. catalanum*, *T. marklundii* and *T. tarragonense* are new records for the Balearic Islands.

The genus *Taraxacum* (Asteraceae) in the Balearic Islands has been treated by several authors. Soest (1961) described the endemic *T. balearicum*, but Richards and Sell (1976) mentioned only *T. obovatum*. Afterwards, Duvigneaud (1979) treated seven species: *T. balearicum*, *T. marginellum*, *T. mediterraneum*, *T. miniatum*, *T. obovatum*, *T. retzii*, and an undescribed species (*T. cupreum*). All of them were reported from Mallorca Island except *T. obovatum*, which was collected also in Ibiza.

*Taraxacum* is treated in the flora of eastern Iberian Peninsula and Balearic Islands (Bolòs & Vigo 1996) at aggregate level from a more synthetic point of view. Besides *T. obovatum*, that work cites *T. officinale* and *T. laevigatum*, and groups some micro-species: *T. balearicum* and *T. mediterraneum* in *T. officinale*, and *T. retzii* in *T. laevigatum*. The current EuroMed plantbase (<http://ww2.bgbm.org/EuroPlusMed>; query *Taraxacum*) contains the seven species mentioned in the Duvigneaud catalogue. In addi-

tion, Fraga and García (2004) reported *T. megaphyllum* from Menorca Island.

After a review of characters of the species of *Taraxacum* found in the Balearic Islands, we describe *T. majoricense*, which is added to the nine species found in this archipelago at present. The studied populations were compared with the descriptions of the Iberian and Balearic species prepared for the “Flora iberica” project (Castroviejo 1986–2015), and with the material held at B, BC, BCN, BR, COI, G, H, HGI, HJBS, JACA, K, L, MA, MAF, S, SEV, USP and VAL. The taxa are arranged according to their sectional position, and chorological data for each of them are reported. Typification of the names is given, taking into account that G.E. Haglund and J.L. van Soest did not choose a holotype for many species they described, but currently their protogues are accompanied by a photograph of the specimens used for description. We consider those photographs to refer to holotypes, according to Doll (1973) and McNeill *et al.* (2012):



**Fig. 1.** Holotype of *Taraxacum majoricense*.

Article 9.1). Finally, an identification key to the *Taraxacum* species known from the Balearic Islands is provided.

### ***Taraxacum majoricense* A. Galán & L. Sáez, sp. nova (Figs. 1–3)**

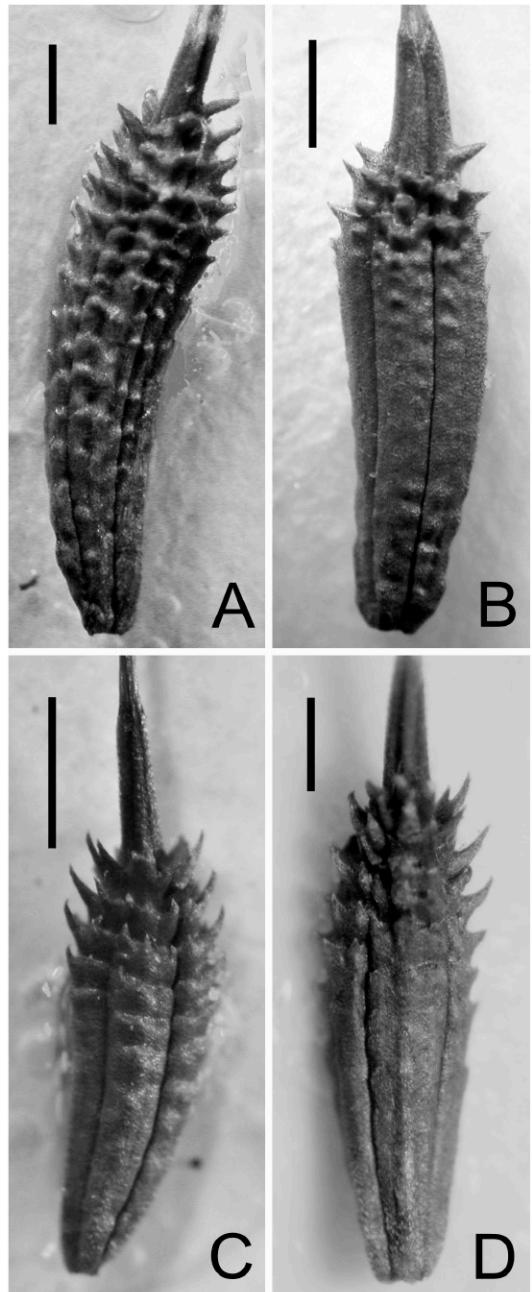
**TYPE:** Spain. Illes Balears. Mallorca, Puig Major de Son Torrella, depressions càrstiques, 31SDE8206, 1370 m a.s.l., 29 June 2011 X. Rotllan & L. Sáez LS7297 (holotype USP; isotype MA). — **PARATYPES:** Spain. Illes Balears. Mallorca, Puig Major, Comellar culminal, sobre Coma Fosca, base de penyal humit, 31SDE8206, 1415 m a.s.l., 3 June 2013 L. Sáez LS7410 (USP); Mallorca, Puig Major de Son Torrella, Coma Fosca, marge dret, base de penyal, 31SDE8207, 1220 m a.s.l., 23 June 2014 X. Manzano & L. Sáez LS7541 (USP); Mallorca,

Puig Major de Son Torrella, al N del cim, base de penyal humit, 31SDE8206, 1410 m a.s.l., 23 June 2014 X. Manzano & L. Sáez LS7544 (MA); Mallorca, Puig Major, Clotades, depressions càrstiques, 31SDE8206, 1350 m a.s.l., 3 June 2013 L. Sáez LS7399, L. Sáez LS7401 (USP); Mallorca, Puig Major, Comellar Estret, penyal, 31SDE8206, 1350 m a.s.l., 22 June 2015 L. Sáez LS7654 (USP).

A medium-sized plant, to 30 cm. Leaves 5.5–14.2 × 1–3.5 cm, spatulate to lanceolate, rough with disperse thick hairs 0.1–0.4 × 0.15 mm, uniseriate with 1–6 cells, outer usually toothed with small sparse spots, inner generally runcinate; midrib shiny green to purple; lateral lobes 3–7, 2.6–16.6 × 7.7–18.6 mm, deltoid, with distal margin generally toothed, straight to convex, sometimes sigmoid, and proximal



**Fig. 2.** Capitulum of *Taraxacum majoricense* (from the holotype). Scale bar = 5 mm.



**Fig. 3.** Achenes. — **A** and **B**: *Taraxacum majoricense* (from the holotype). — **C** and **D**: *T. braun-blanchetii* (A. Martínez Abraín & L. Sáez LS7390, USP). Scale bars: **A** = 0.7 mm, **B** and **C** = 1 mm, **D** = 0.8 mm.

margin entire to toothed, frequently continued on petiole, straight to concave or lightly sigmoid; terminal lobe 11.6–41.5 × 12.7–28.4 mm, triangular-rounded and sometimes with margins lightly convex; petiole green to purple, generally winged. Scapes purple, erect, longer than leaves at flowering, somewhat arachnoid-hairy below capitulum. Capitulum ca. 30 mm in diameter; involucre 8.7–18 × 5.7–7.6 mm; outer bracts (3.1)5–6.7(7.5) × 1.1–3.3 mm, erect with recurved tips, ovate-lanceolate, corniculate, pale green on upper surface, purplish green on lower and to margins, ciliolate to margins and apex and a scarious margin 0.1–0.3 mm; ligules ca. 10 mm long, yellow, outer purple on lower surface, and inner with reddish tips, with pollen; stigma branches yellow with purple hairs outside. Achenes violet; body 2.9–3.8 mm long with erose robust scales and spikelets to apex, smaller toward base, and rest smooth to

wrinkled; pyramid 0.7–1.2 mm, subcylindric to cylindric, sometimes with 1 or 2 small spikelets; rostrum (5.1)7–8.4(9.1) mm long, whitish to pale violet, and pappus 4.7–7.5 mm long, white.

**HABITAT:** As with other apomictic species of *Taraxacum* (Galán de Mera & Vicente Orellana 2008, 2010), the populations of *T. majoricense* are very small. The new species is restricted to a small area in the Puig Major mountain, between 1220 and 1420 m a.s.l. This mountain has an extraordinary concentration of endemic plant species, most of them of regional occurrence (Sáez 2010). *Taraxacum majoricense* grows on wet karst depressions and shady slopes, together with several Balearic or Tyrrhenian endemic taxa such as *Agrostis barceloi*, *Arenaria balearica*, *Bellium bellidioides*, *Carex rorulenta*, *Galium balearicum*, *Primula acaulis* subsp. *balearica*, *Sesleria insularis* and *Sibthorpia africana*, as well as more widely distributed taxa such as *Galium lucidum* and *Poa flaccidula*.

We think *T. majoricense* belongs to the section *Erythrosperma* because of its violet achenes with a subcylindric to cylindric pyramid, as in *T. braun-blanquetii*, but there is a different structure in the upper body spikelets. In *T. majoricense* they are smaller (ca. 0.28 mm) and more or less spreading, while in *T. braun-blanquetii* they are taller (ca. 0.37 mm) and somewhat erect (Fig. 3). Further, in *T. majoricense* the lateral leaf lobes are wider (7.7–18.6 mm) than in *T. braun-blanquetii* (1.1–5.5 mm), where the lower ones are frequently laciniate.

## The other species of *Taraxacum* from Balearic Islands

### 1. Sect. *Taraxacum*

#### *T. cacuminatum* G.E. Haglund

Acta Horti Gothob. 11: 23. 1936. — Holotype indicated by Lundvall and Øllgaard, Preslia 71: 67. 1999 (S!).

This species, distributed from northern Europe to the Iberian Peninsula, was hitherto not known from the Balearic Islands.

REPRESENTATIVE SPECIMEN EXAMINED: **Spain**. Balearic Islands, Mallorca, Puig Major, L. Sáez LS7395 (USP).

#### *T. mediterraneum* Soest

Vegetatio 5–6: 530. 1954. — HOLOTYPE: L!

*T. balearicum* Soest, Acta Bot. Neerl. 10: 282. 1961. —

HOLOTYPE: L!

*T. cupreum* Sahlin & Soest in sched, nom. nud.

Studying the type and other original material, we cannot differentiate *T. mediterraneum*, *T. balearicum*, *T. cupreum* and the specimens identified as *T. retzii* in BR. All of them have reflexed outer involucral bracts, straw-colored or brownish achenes with a conic pyramid, and deltoid, asymmetric leaf lobes. In addition, the studied specimens have hermaphroditic flowers with anthers with irregular pollen, suggesting apomictic reproduction. The holotype of *T. balearicum* is poor because its leaves are scarcely preserved and the achenes are missing.

REPRESENTATIVE SPECIMENS EXAMINED: **Spain**. Balearic Islands, Mallorca, L'Alfabia, L. Kofler (L 0002367!, holotype of *T. balearicum*); same locality, A. Galán 1868 (MA), A. Galán 1869 (USP, as *T. balearicum*). Mallorca, Lluch, J. Duvigneaud 65E186 (BR, as *T. retzii*); same locality, J. Duvigneaud 71E101 (BR, as *T. cupreum*); Mallorca, Pollensa, J. Duvigneaud 73E193 (BR, as *T. balearicum*); Mallorca, Artà, J. Duvigneaud 74E269 (BR).

### 2. Sect. *Scariosa* Hand.-Mazz.

#### *T. gaditanum* Talavera

Lagascalia 14(1): 161. 1986. — HOLOTYPE: SEV!

Characters of the plants collected in Menorca are the same as in *T. gaditanum*, described from Cadiz (Andalusia, Spain): Pinkish scapes growing before leaves, leaves with 2–7 deltoid to recurved lateral lobes, a sagittate to tri-lobed terminal lobe, and the proximal one often continued on the petiole; appressed and corniculate outer involucral bracts, with a scarious border to 0.8 mm, green with a blackish nerve and pinkish margins and tip; and greenish to straw-colored achenes with a pyramid to 1.8 mm long.

Plants collected by A.W. Teles & M. Silva (COI) near Lisbon (Portugal), and by other authors (BC, MAF) in Catalonia, are also similar to *T. gaditanum*. The name *T. megalorhizon*, applied by Fraga and García (2004) on plants from Menorca, seems to be an aggregate of many microspecies distributed at least in the surroundings of the Mediterranean Basin.

REPRESENTATIVE SPECIMENS EXAMINED: **Spain.** Balearic Islands, Menorca, Santa Àgada, Ferreries, *P. Fraga*, *E. Linares* & A. Galán 4274, 4292, 4293, 4294 (USP).

### 3. Sect. *Erythrosperma* (H. Lindb.) Dahlst.

#### *T. braun-blanquetii* Soest

Vegetatio 5–6: 524. 1954. — HOLOTYPE: L!

Several specimens of *T. braun-blanquetii* were identified by J.L. van Soest, sometimes with trepidation, as *T. miniatum*. The type material of *T. miniatum*, which comes from Aranjuez in the central Iberian Peninsula (K!), has reddish rather than violet achenes, and leaves with very irregular toothed lobes. In *T. braun-blanquetii* the leaf lateral lobes are connate, and have a regular deltoid shape reaching in the lower ones laciniate. Soest (1957) also mentioned plants very similar to *T. braun-blanquetii* from Corsica, although Štěpánek and Kirschner (2012) excluded it from the flora of that island pending a more detailed study of the species' morphological variability.

REPRESENTATIVE SPECIMENS EXAMINED: **Spain.** Balearic Islands, Mallorca, Bañalbufar, *J. Duvigneaud* 67E229 (BR, as *T. miniatum*); Mallorca, Caimari, *J. Duvigneaud* 71E90 (BR, as *T. miniatum*); Mallorca, Buñola, *J. Duvigneaud* 71E131 (BR, as *T. miniatum*). Mallorca, Puig de Galatzó, A. Martínez Abraín & L. Sáez LS7390 (USP); Mallorca, Puig Major, Clotades, L. Sáez LS7397 (USP), L. Sáez LS7398 (USP); Mallorca, Puig Major, Comellar culminal, L. Sáez LS7408 (USP); Mallorca, Puig Major, Bufador, L. Sáez LS7421 (USP); Mallorca, massís de Massanella, S. Jonasson & L. Sáez LS7513 (USP); S. Jonasson & L. Sáez LS7514 (USP); Same locality, S. Jonasson & L. Sáez LS7510 (USP); Mallorca, vessant N del Puig Caragoler, S. Jonasson & L. Sáez LS7512 (USP); Mallorca, Puig Tomir, L. Sáez & L.G. Valle LS7576 (USP). Menorca, Maò, *P. Fraga*, *E. Linares* & A. Galán 4286, 4287, 4288 (USP).

#### *T. tarragonense* Sennen

Ann. Soc. Linn. Lyon, ser. 2, 71: 11. 1924. — NEOTYPE (designated here): Spain. Tarragona, Cambrils, Barranco del Regueral, 20 March 1928 *Hno. Teodoro* (BC!).

A medium-sized plant, to 40 cm. Leaves 6.5–24 × 1.2–5.5 cm, spathulate, mild, toothed to pinnatisect; midrib green, sometimes purple; lateral lobes 3–6, 7.5–41.6 × 2.7–22.5 mm, deltoid to laciniate, acute, with distal margin entire

to toothed, straight or sigmoid, and proximal margin entire, straight to slightly sigmoid; terminal lobe 10.5–30 × 4–24.8 mm, triangular, sagittate to hastate, sometimes toothed; petiole green to purple, sometimes winged and toothed. Scapes brownish to purple, erect, longer than leaves at flowering, somewhat arachnoid-hairy below capitulum. Capitulum ca. 30 mm in diameter; involucre 11.5–20.6 × 6.6–14.7 mm; outer bracts (4.2)5.4–6.3(7.9) × 2.5–5 mm, adpressed to recurved, lanceolate, with a callus or horn, green on upper surface, purplish to ciliolate at margins and apex, and a scarious margin 0.1–1 mm; ligules 11.7–17.1 mm long, yellow, outer striped violet, inner with reddish tips; with pollen; stigma branches yellow, with greenish hairs outside. Achenes ferruginous; body 2.5–2.9 mm long with erose small scales and spikelets to apex, smaller toward base, rest wrinkled; pyramid 0.5–0.7 mm, subcylindric, sometimes with 1 or 2 little spikelets; rostrum (5.3)7.2–8.1(9.4) mm long, reddish, pappus 6.2–6.5 mm long, whitish with a yellow tinge.

DISTRIBUTION AND HABITAT: This species is an endemic of the eastern Iberian Peninsula and Mallorca. It grows on road margins and ruderal habitats with disturbed soils up to 1600 m a.s.l.

In the protologue there was no indication of type material but there is the same locality, Cambrils, than on the selected voucher with two specimens collected by Ramón Peñafort Malagarriga (a.k.a. Brother Teodoro) in 1928 (Fig. 4). Specimens collected by Étienne Sennen in 1918 are lost from his type collections at BC, hence a neotype for this name is designated.

REPRESENTATIVE SPECIMEN EXAMINED: **Spain.** Balearic Islands. Mallorca, Lluc, 3 May 1947 *Palau Ferrer* (MA); Balearic Islands. Mallorca, Campos, May 1984 *J. Orell* (HJBS).

#### *T. marginellum* H. Lindb.

Acta Soc. Sci. Fenn., Ser. B, Opera Biol. 1(2): 171. 1932. — Lectotype designated by Doll, Feddes Repert. 84(1–2): 38. 1973 (H!).

This species, notoriously characterized by a whitish scarious margin and leaves toothed among the lobes, is frequent on basic soils in the Iberian Peninsula, as well as in the Balearic Islands.



**Fig. 4.** Neotype of *Taraxacum tarragonense*.

REPRESENTATIVE SPECIMENS EXAMINED: **Spain**. Balearic Islands. Mallorca, Pollensa, J. Duvigneaud 73E200 (BR); Mallorca, L'Alfàbia, 17 April 1984 J. Orell (HJBS); Mallorca, Castillo de Alaró, A. Galán 1957 (USP).

#### *T. catalanum* Soest

Collect. Bot. (Barcelona) 4: 21. 1954. — Holotype indicated by Doll, Feddes Repert. 84(1–2): 42 (BC!).

These specimens, with a wide midrib in the leaves, are the first records of *T. catalanum* for the Balearic Islands.

REPRESENTATIVE SPECIMENS EXAMINED: **Spain**. Balearic Islands. Mallorca, Puig Major X. Rotllan & L. Sáez LS7296 (USP); same locality, X. Manzano & L. Sáez LS7656 (USP).

#### 4. Sect. *Obovata* Soest

##### *T. obovatum* (Willd.) DC.

Mém. Agric. Soc. Agric. Dép. Seine 11: 15. 1808. — Lectotype designated by Kirschner and Štěpánek, Taxon 46: 94. 1997 (B!).

We cannot see differences between *T. obova-*

*tum* and *T. ochrocarpum* ( $\equiv T. obovatum$  subsp. *ochrocarpum*), because *T. obovatum* is very variable. Tison *et al.* (2010) agree that the coloration of the achenes between reddish and straw-colored is very variable, as Soest (1954) pointed out. However, leaves more or less hairy with a color change when adult, toothed to pinnatisect, as Tison *et al.* (2010) and Tison (2014) indicated for *T. ochrocarpum*, are highly variable characters even in one population. For example, we have not found hairy leaves in any Balearic specimens determined as *T. obovatum* subsp. *ochrocarpum* by Soest.

REPRESENTATIVE SPECIMENS EXAMINED: Spain. Balearic Islands, Ibiza, Cala de San Vicente, J. Duvigneaud 69E116 (BR); Mallorca, San Salvador, 1904 Chodat & Lendlner (G); Mallorca, Honor, 9 March 1947 Palau Ferrer (MA); Mallorca, Montes de Sta. María, 12 April 1949 Palau Ferrer (MA); Mallorca, Fornalutx, 22 March 1951 B. Alcover (HJBS); Mallorca, Coma de Son Torrella, 7 March 1962 Beniamar (HJBS); Mallorca, Mirador de Ses Pites, J. Duvigneaud 65E93 (BR); Mallorca, Andraitx, J. Duvigneaud 67E171 (BR); Mallorca, Monastère de Randa, J. Duvigneaud 73E101 (BR); Mallorca, Barranc, Can Silles, 13 March 1983 J. Orell (HJBS); Mallorca, Clot d'Albarca, Escorca, 14 April 1986 G. Bibiloni (HJBS); Mallorca, Puerto de Sa Calobra, A. Galán 1954 (USP); Mallorca, carretera del embalse de Cúber, A. Galán 1953 (USP); Mallorca, Castillo de Alaor, A. Galán 1955 (USP); Mallorca, Puig Tomir, L. Sáez & L.G. Valle LS7575 (USP).

## 5. Sect. *Hamata* H. Øllg.

### *T. marklundii* Palmgr.

Acta Soc. Fauna Fl. Fenn. 34(1): 20. 1910. — Lectotype designated by Lundevall and Øllgaard, Preslia 71: 111. 1999 (H!).

In the Iberian Peninsula, *T. marklundii* seems to grow in areas with a maritime influence, as in the Balearic Islands, for which these are the first records. For Ibiza Island, this is the second reference to the genus after *T. obovatum*.

REPRESENTATIVE SPECIMENS EXAMINED: Spain. Balearic Islands, Ibiza, Sant Miquel, J. Serapio (USP); Mallorca, Palma de Mallorca, J. Duvigneaud 77E89 (BR, as *T. balearicum*); same locality, L. Sáez & al. LS7448 (USP). Menorca, Ferreries, P. Fraga, E. Linares & A. Galán 4273, 4289, 4290, 4291 (USP); Menorca, Maó, P. Fraga, E. Linares & A. Galán 4272 (USP).

## Key to the Balearic species of *Taraxacum*

1. Corolla with a pale-yellow limb. Achenes greenish to straw-colored, corpus 3–4.2 mm long, with spikelets to apex, rest wrinkled, with a subcylindrical pyramid (0.6)0.8–1.8 mm long, and rostrum (4.4)6–7(8.1) mm, greenish to straw-colored. Outer involucral bracts erect, generally with a subapical horn ..... *T. gaditanum*
1. Corolla with a yellow limb. Achenes straw-colored, pale-green, olive-green, brownish, reddish or violet, corpus 2.5–4 mm long, with bi-tricuspidate small scales and spikelets to apex, rest smooth, wrinkled or tuberculate, with a conical, subcylindrical or cylindrical pyramid 0.1–1.2 mm long, and rostrum 2–10.5 mm, whitish or greenish to reddish or pale violet. Outer involucral bracts erect to reflexed, sometimes with a callus or subapical horn ..... 2
2. Leaves rough, generally with purple spots ..... 3
2. Leaves mild, generally without purple spots ..... 4
3. Terminal leaf-lobes triangular-acute. Achenes pale-green to olive-green, corpus 2.8–3.2 mm long, with bi-tricuspidate small scales and spikelets to apex, rest wrinkled, with a ± cylindrical pyramid 0.9–1 mm long and rostrum 8.8–9(10.5) mm, whitish to greenish. Outer involucral bracts reflexed, without a callus or subapical horn ..... *T. cacuminatum*
3. Terminal leaf-lobes triangular-rounded. Achenes violet, corpus 2.9–3.8 mm long, with erose robust scales and spikelets to apex, rest smooth to wrinkled, with a subcylindrical to cylindrical pyramid 0.7–1.2 mm long and rostrum (5.1)7–8.4(9.1) mm, whitish to pale violet. Outer involucral bracts erect with recurved tips, with a subapical horn ..... *T. majoricense*
4. Lateral leaf-lobes deltoid to hamate, often with triangular teeth on upper margin. Achenes straw-colored to olive-green, corpus 2.9–3.2 mm long, with bicuspidate small scales and spikelets to apex, rest wrinkled, with a conical to subcylindrical pyramid 0.5–0.8 mm long and rostrum 6–7.9(10.1) mm, straw-colored to greenish. Outer involucral bracts recurved to reflexed, without a subapical callus or horn ..... *T. marklundii*
4. Lateral leaf-lobes deltoid, and sometimes toothed on upper margin. Achenes straw-colored or brownish, reddish or violet, corpus 2.5–4 mm long, with bi-tricuspidate small scales and spikelets to apex, rest smooth, wrinkled or tuberculate, with a conical to cylindrical pyramid 0.3–1.2 mm long and rostrum 6.3–9.4 mm, straw-colored, greenish, reddish or pale violet. Outer involucral bracts erect to reflexed, often with a subapical callus or horn ..... 5
5. Lateral leaf-lobes with asymmetric lower margins. Achenes straw-colored or brownish, corpus 2.5–3 mm long, with small spikelets to apex, rest smooth, with a subcylindrical pyramid 0.5–0.6 mm long, and rostrum 6.3–7.6 mm, greenish. Outer involucral bracts with an inconspicuous scarious margin, sometimes with a subapical callus ..... *T. mediterraneum* (incl. *T. balearicum*)
5. Lateral leaf-lobes with symmetric lower margins. Achenes reddish, violet or straw-colored, corpus 2.4–4 mm long, with bi-tricuspidate small scales and spikelets to apex,

- rest tuberculated, smooth or wrinkled, with a conical, subcylindrical or cylindrical pyramid 0.3–1.2 mm long, and rostrum 2–9.4 mm, greenish, straw-colored or reddish. Outer involucral bracts with a distinct scarious margin, currently with a subapical callus or horn ..... 6
6. Achenes straw-colored to reddish, corpus 2.5–4 mm long, with bi-tricuspidate small scales and spikelets to apex, rest tuberculate, with a conical pyramid 0.3–1 mm long, and rostrum (2)7–8 mm, straw-colored to greenish. Outer involucral bracts pale rose with a pale green scarious margin 0.1–0.5 mm, and a subapical horn ..... *T. obovatum*
6. Achenes reddish or violet, corpus 2.4–4.1 mm long, without or scarce bi-tricuspidate small scales and spikelets to apex, rest smooth or wrinkled, with a subcylindrical or cylindric pyramid 0.4–1.2 mm long, and rostrum 1.7–9.4 mm, whitish or greenish to reddish or pale violet. Outer involucral bracts green to dark green but purple to margin and apex, with a whitish scarious margin 0.1–1.1 mm, with a subapical callus or horn ... 7
7. Achenes reddish ..... 8
7. Achenes violet ..... 9
8. Plants up to 40 cm high. Corpus of achenes 2.5–2.9 mm long, with erose small scales and spikelets to apex, rest wrinkled, with a subcylindrical pyramid 0.5–0.7 mm, and rostrum (5.3)7.2–8.1(9.4) mm, reddish. Outer involucral bracts appressed to recurved, green but sometimes purple to margin and apex, with a whitish scarious margin 0.1–1.1 mm, and a subapical callus or horn ..... *T. tarraconense*
8. Plants up to 27 cm high. Corpus of achenes 2.7–3.8 mm long, sometimes with bi-tricuspidate small scales and spikelets to apex, rest smooth to wrinkled, with a cylindrical pyramid 0.6–1.2 mm, and rostrum (2.8)6–7 mm, greenish to reddish. Outer involucral bracts recurved, dark green but purple to margin and apex, with a whitish scarious margin 0.1–0.4 mm, and a subapical callus or horn ..... 10
9. Leaf lateral lobes 1.6–9.8 × 1.1–5.5 mm, lower ones frequently laciniate. Corpus of achenes 2.7–4.1 mm long, with erose, bi-tricuspidate scales and spikelets to apex (upper spikelets ca. 0.37 mm, somewhat erect), rest more or less wrinkled, with a cylindrical pyramid 0.7–1 mm long, and rostrum (5.8)7–8 mm, whitish to pale violet ..... *T. braun-blanquetii*
9. Leaf lateral lobes 2.6–16.6 × 7.7–18.6 mm, lower ones not laciniate, distal one frequently continued on petiole. Corpus of achenes 2.9–3.8 mm long, with erose robust scales and spikelets to apex (upper spikelets ca. 0.28 mm, more or less spreading), rest smooth to wrinkled, with a subcylindrical to cylindrical pyramid 0.7–1.2 mm long, and rostrum (5.1)7–8.4(9.1) mm, whitish to pale violet ..... *T. majoricense*
10. Leaves with petioles and midrib < 4 mm wide, interlobes with teeth. Terminal leaf-lobe triangular to hastate, or tri-lobed, lateral ones scarcely toothed in upper margin. Corpus of achenes 2.7–3.8 mm long, ever with bicuspidate scales and spikelets to apex, rest smooth, with a cylindrical pyramid 0.6–1.2 mm long, and rostrum (1.7)2.8–7 mm, greenish to reddish ..... *T. marginellum*
10. Leaves with petioles and midrib 4–9 mm wide, interlobes without teeth. Terminal leaf-lobe hastate, lateral ones frequently toothed in upper margin. Corpus of achenes 3–4 mm long, with bi-tricuspidate scales and spikelets to apex, rest smooth, with a cylindrical pyramid 0.8–1 mm long, and rostrum 5.6–7 mm, reddish ..... *T. catalanum*

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## References

- Bolòs O. & Vigo J. 1996: *Flora dels Països Catalans*, vol. 3. — Barcino, Barcelona.
- Castroviejo S. 1986–2015: *Flora iberica*, vols. I–XVI. — CSIC, Madrid.
- Doll R. 1973: Revision der sect. Erythrosperma Dahlst. emend. Lindb. f. der Gattung Taraxacum Zinn. — *Feddes Repertorium* 84(1–2): 1–180.
- Duvigneaud J. 1979: Catalogue provisoire de la flore des Baléares. — *Bulletin Société pour l'échange des plantes vasculaires de l'Europe occidentale et du bassin méditerranéen* 17 (Suppl.): 1–43.
- Fraga P. & García Ó. 2004: Notes i contribucions al coneixement de la flora de Menorca (VI). — *Bolletí de la Sociedad d'Història Natural de les Balears* 47: 143–152.
- Galán de Mera A. & Vicente Orellana J.A. 2008: A new species of *Taraxacum* sect. *Celtica* (Asteraceae) from the Portuguese mountains. — *Nordic Journal of Botany* 26: 361–363.
- Galán de Mera A. & Vicente Orellana J.A. 2010: *Taraxacum decastroi* and *T. lachianense* (Asteraceae), two new species from the Iberian Peninsula. — *Annales Botanici Fennici* 47: 307–311.
- McNeill J., Barrie F.R., Buck W.R., Demoulin V., Greuter W., Hawksworth D.L., Herendeen P., Knapp S., Marhold K., Prado J., Prud'homme Van Reine W.F., Smith G.F., Wiersema J.H. & Turland N.J. (eds.) 2012: International Code of Nomenclature for algae, fungi, and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011. —

- Regnum Vegetabile* 154: 1–208.
- Richards A.J. & Sell P.D. 1976: *Taraxacum* Weber. — In: Tutin T.G., Heywood V.H., Burges N.A. & Valentine D.H. (eds.), *Flora Europaea*, vol. 4 (Plantaginaceae to Compositae (and Rubiaceae)): 332–343. Cambridge University Press, Cambridge.
- Sáez L. 2010: Plantes endémiques dels Països Catalans. — In: Giralt J. (ed), *Història Natural dels Països Catalans. Suplement Fauna I Flora*: 161–164. Encyclopédia Catalana, Barcelona.
- Soest J.L. 1954: Sur quelques *Taraxaca* d'Espagne. — *Collectanea Botanica (Barcelona)* 4: 1–32.
- Soest J.L. 1957: Contribution à l'étude des *Taraxacum* de Corse. — *Acta Botanica Neerlandica* 6: 407–419.
- Soest J.L. 1961: Quelques nouvelles espèces de *Taraxacum*, natives d'Europe. — *Acta Botanica Neerlandica* 10: 280–306.
- Štěpánek J. & Kirschner J. 2012: A taxonomic revision of *Taraxacum* sect. *Erythrosperma* (Compositae-Lactuceae) in Corsica. — *Feddes Repertorium* 123(2): 139–176.
- Tison J.M. 2014: *Taraxacum* F.H. Wigg. — In: Tison J.M. & De Foucault B. (eds.), *Flora Gallica (Flore de France)*: 477–508. Biotope, Mèze.
- Tison J.M., Jauzein P., Girod C. & Espeut M. 2010: Combinaisons et statuts nouveaux proposés dans la "Flore de la France Méditerranéenne continentale". — *Biocosme mésogéen*, Nice 27: 109–133.