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Source: Willdenowia, 43(2) : 287-291

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.43.43208

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A new record and new combination for *Dolomiaea* (*Compositae*, *Cardueae*) in China

Abstract

Chen Y. S. & Raab-Straube E. von: A new record and new combination for *Dolomiaea* (*Compositae*, *Cardueae*) in China. – Willdenowia 43: 287–291. December 2013. – ISSN 0511-9618; © 2013 BGBM Berlin-Dahlem.
Stable URL: http://dx.doi.org/10.3372/wi.43.43208

A plant previously known as *Jurinea taraxacifolia*, described from Myanmar, was recently discovered on the Chinese side of the Gaoligong Shan, the long N-S mountain range on the border between Myanmar and China. This taxon is transferred from *Jurinea* to *Dolomiaea* on account of its naked receptacle and brownish pappus bristles. It is compared with morphologically similar taxa. A detailed description and illustration of the species are provided for the first time.

Additional key words: *Asteraceae*, Yunnan, Gaoligong Shan, Myanmar, *Dolomiaea taraxacifolia*, *Jurinea*

Introduction

Dolomiaea DC. is a genus of the *Compositae* family, with about 13 species occuring in the Himalaya and the Hengduan Mountain region (Shi 1986; Wang & al. 2007; Shi & Raab-Straube 2011). This genus, established by Candolle (1833) with a single species, was revised by Ling (1965) and Shi (1986), who placed many Himalayan species originally described under *Jurinea* Cass. into *Dolomiaea*. Recent molecular studies (Wang & al. 2007) and comprehensive treatments of the tribe *Cardueae* (Susanna & Garcia-Jacas 2007, 2009) confirmed the status of *Dolomiaea* as an independent clade within the *Jurinea-Saussurea* group. Morphologically, *Dolomiaea* differs from *Jurinea* by the naked alveolate receptacle (vs. a receptacle bearing scales or bristles) and the usually much longer, often yellowish, brownish or reddish pappus bristles (vs. white pappus bristles), which are not inserted on a conic cupule (Häffner 2000; Susanna & Garcia-Jacas 2007; Shi & Raab-Straube 2011).

During a joint visit to the Herbarium of Harvard University in 2008, the authors found a strange specimen (*Gaoligong Shan Biodiversity Survey 31297*) collected from the Gaoligong Shan mountain range, which runs N-S along the border between Myanmar and China. We originally thought it might be a new species of *Dolomiaea*. The first author made an expedition to Gaoligong Shan in 2009 and successfully collected the corresponding material in the wild. During a visit to the Royal Botanic Garden Edinburgh in 2012, the first author had the chance to check the type material of *Jurinea taraxacifolia* J. Anthony and found that it was identical to the abovementioned specimen. *Jurinea taraxacifolia* was described from the W side of the Gaoligong Shan in Kachin state of N Myanmar. Since the occurrence of this species in China was not previously known and it is clearly a *Dolomiaea*, it is published here as the first record for China together with the necessary new combination in *Dolomiaea*. *Dolomiaea taraxacifolia* is compared with the morphologically similar *D. salwinensis* (Hand.-Mazz.) C.

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Shih and with *D. edulis* (Franch.) C. Shih. The diagnostic characters for *D. taraxacifolia* are given in Table 1.

Results and Discussion

Dolomiaea taraxacifolia (J. Anthony) Y. S. Chen & Raab-Straube, **comb. nov.** ≡ *Jurinea taraxacifolia* J. Anthony in Notes Roy. Bot. Gard. Edinburgh 18: 23. 1933 ≡ *Vladimiria taraxacifolia* (J. Anthony) Y. Ling in Acta Phytotax. Sin. 10: 83. 1965. – Holotype: [Myanmar, Kachin state], NE Upper Burma, W flank of N'Maikha-Salwin divide, 26°35'N, 98°48'E, 14 000 ft [4270 m], open stony moorland, Oct 1925, *G. Forrest 27441* (E 00275619; isotype: BM 000996182).

Illustrations — Fig. 1 and 2 (illustrated here for the first time).

Description — *Herbs* perennial, 7–15 cm tall. *Rhizome* unbranched, 0.5–1 cm in diam. *Stems* erect, simple, 3.5–11 cm long, 2–3 mm in diam., densely covered with brown multicellular hairs to 2 mm long. *Leaves* in a rosette, alternate; *stem leaves* 7–10, petiolate; petiole to 7 cm long, covered with brown multicellular hairs; *leaf blade* abaxially light green, adaxially green, oblong to elliptic, deeply and irregularly pinnatilobed to pinnatifid, 6–12 × 3–7 cm, abaxially sparsely covered with short brown multicellular hairs and with sessile vesicular glands, adaxially sparsely covered with brown multicellular hairs, base obliquely truncate, apex obtuse with a purple mucro; *lateral lobes* 4–6 pairs, oblong, margin entire or sometimes with 1 or 2 large teeth; *uppermost stem leaves* 5–7, subtending capitulum, sessile, adaxially whitish in central part, 4–9 × 1.5–4.5 cm, both surfaces sparsely covered with short brown multicellular hairs, margin distinctly toothed to pinnatifid, apex acute. *Capitulum* solitary, terminal on stem; *involucre* broadly campanulate, c. 3 × 3–4 cm; *phyllaries* in c. 5 rows, imbricate, abaxially dark brown, coriaceous, glabrous, margin entire in basal part, minutely toothed in apical part, apex acuminate; outer phyllaries ovate to oblong, 15–19 × 5–8 mm; middle phyllaries ovate to lanceolate, 15–22 × 4–6 mm; inner phyllaries narrowly lanceolate, 23–25 × 2.5–3 mm; *receptacle* flat, alveolate, glabrous. *Florets* numerous; *corolla* blackish purple, 25–30 mm long, tube 13–18 × 0.4–0.5 mm, glabrous, limb 7–11 mm long, throat 3–5 × 1.5–2 mm, with ve-

Fig. 1. *Dolomiaea taraxacifolia* – habit (China, Yunnan, Gongshan Xian, Bingzhongluo, Sijitong, Chuganchu lake, [27°59'14"N, 98°28'23"E], 3880–4000 m, 5 Sep 2009). – Photograph by Y. S. Chen.

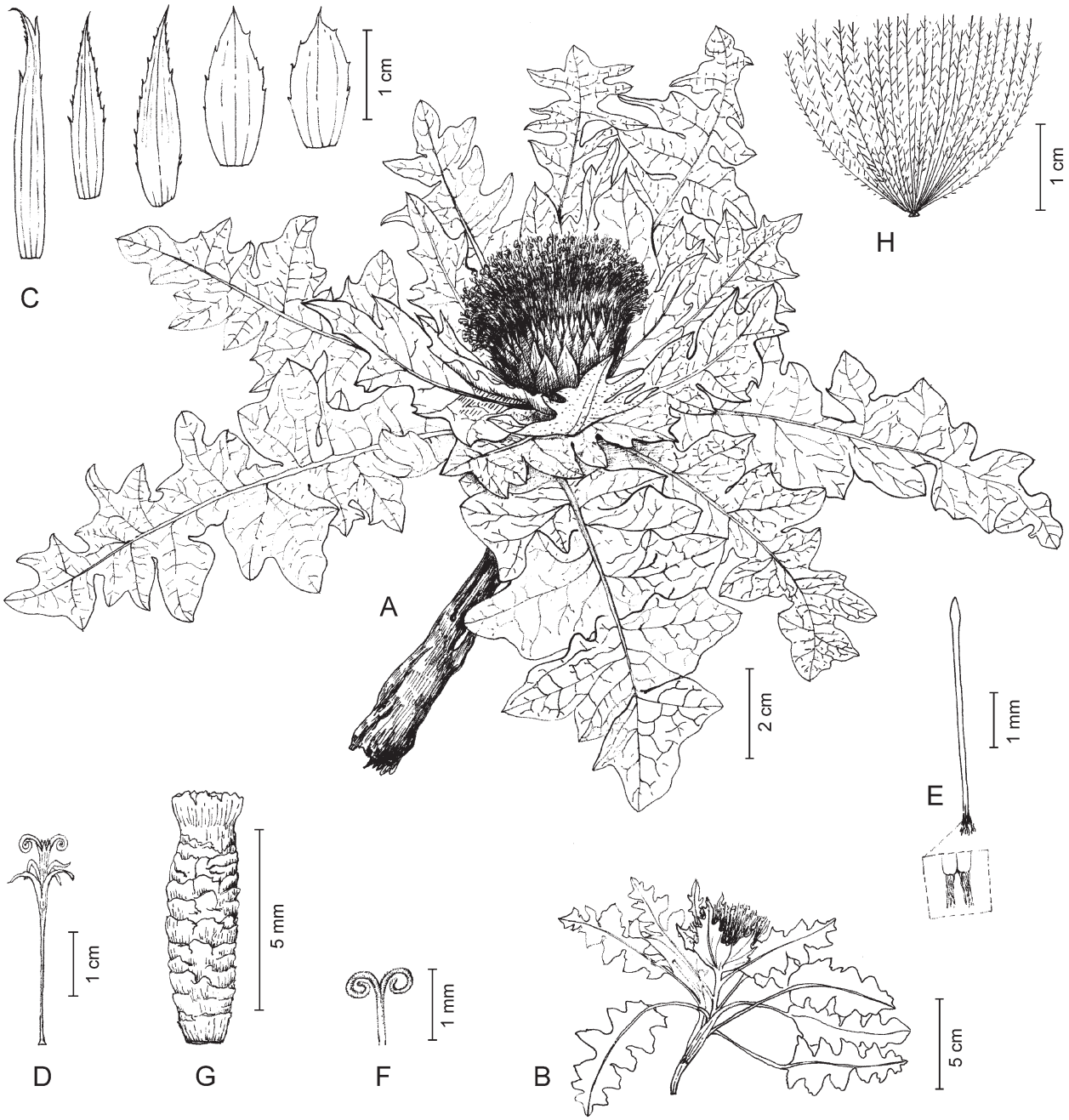

Fig. 2. *Dolomiaea taraxacifolia* – A: habit; B: habit in lateral view; C: phyllaries (from left to right: inner to outer); D: floret; E: anther; F: upper part of style with style branches; G: achene; H: pappus. – Drawn by Liu Ping; A, C–H from *Y. S. Chen 9729* (PE 2305228, 2305229); B from *Gaoligong Shan Biodiversity Survey 31297* (GH 00257754).

sicular, shortly stipitate glands, lobes 4–6 × c. 0.5 mm, glabrous; *anther tube* dark purple, to 10 mm long (including appendages), fertile part 6–8 mm long, basal appendages strongly lacerate, 1.2–1.5 mm long, apical appendages acute, c. 1.5 mm long; *style arms* linear, coiled, slender, to 4 mm long. *Achenes* dark brown, cylindric, tri- or tetragonous, 6–7 × c. 2 mm, transversely rugose, muricate, glabrous, base truncate, apex with a distinct toothed crown; *pappus bristles* very numerous (c. 50), in 2 or 3 rows, brownish, homomorphic, barbellate to shortly plumose, (8–)15–25 mm, unequal to subequal in length, basally all connate into a ring, fimbriae 0.2–0.8 mm long.

Phenology — Flowering from August to September and fruiting from September to October.

Distribution and ecology — *Dolomiaea taraxacifolia* occurs in N Gaoligong Shan in Kachin State of N Myanmar (Burma) and Gongshan county of NW Yunnan province of SW China. Up to now, only one subpopulation in Myanmar and two in China have been found. The plants

Table 1. Diagnostic characters for *Dolomiaea taraxacifolia*, *D. salwinensis* and *D. edulis* (data for the latter two species from Shi & Raab-Straube 2011).

	Dolomiaea taraxacifolia	***Dolomiaea salwinensis***	***Dolomiaea edulis***
Total height [cm]	7–15	4–10	8–30
Petiole	unwinged	broadly winged	unwinged
Leaf blade size [cm]	6–12 × 3–7	2.5–10 × 1–2.5	5–20 × 3–17
Leaf blade shape	oblong to elliptic, deeply and irregularly pinnately lobed to pinnatifid	narrowly elliptic, narrowly ovate or spatulate, undivided to pinnately lobed	obovate, elliptic or broadly ovate to suborbicular, undivided to pinnately lobed
Leaf indumentum	strigose	glabrous	strigose
Involucre diameter [mm]	30–40	15–25	40–60
Outer phyllaries length [mm]	15–19	10–13	12–26
Inner phyllaries length [mm]	23–25	16–20	25–40
Corolla length [mm]	25–30	20–25	28–32
Achene length [mm]	6–7	3.5–4	7–8

grow in open stony moorland, in open alpine meadows and on rocky slopes among boulders on marble. The plants were found between 3800 and 4300 metres above sea level.

Taxonomic remarks — Dolomiaea taraxacifolia is most similar to *D. edulis* in general appearance, but differs from that taxon by more dissected leaf blades and smaller dimensions of capitula, phyllaries, floral elements and achenes (see Table 1). *Dolomiaea taraxacifolia* is also similar to *D. salwinensis*, but is easily recognized by its much larger size, deeply pinnatilobed to pinnatifid leaves with unwinged petiole, presence of brownish multicellular hairs, large thin bract-like uppermost leaves clustering around and subtending the capitulum, and larger capitula, floral elements and achenes (Table 1). *Dolomiaea berardioidea* (Franch.) C. Shih, *D. edulis*, *D. salwinensis* and *D. taraxacifolia* form a group of monocephalous species with ± concolorous, green leaves within the genus *Dolomiaea*, whereas the remaining species of the genus always have several clustered capitula and leaves often grey to white on the abaxial surface. *Dolomiaea taraxacifolia*, known from a relatively small area on the border between Myanmar and NW Yunnan, is morphologically intermediate between *D. edulis* and *D. salwinensis*, which both occur in the same region. A comprehensive revision of the genus *Dolomiaea* in SW China is still lacking, as well as molecular studies with a complete sampling. Therefore, the phylogenetic relationships between the apparently closely related species will have to be examined in future studies.

Additional specimens seen — China: Yunnan: Gongshan Xian: Bingzhongluo, about 2.7 direct km S of Gawagapu mountain and 15.6 direct km WSW of Bingzhongluo in the next basin to the E of Chukuai lake, E side of Gaoligong Shan, 27°59'14"N, 98°28'23"E, 3980 m, 21 Aug 2006, *Gaoligong Shan Biodiversity Survey 31297* (CAS 1089013, GH 00257754); ibid., about 4 direct km S of Gawagapu mountain and c. 15.9 direct km WSW of Bingzhongluo, 27°58'29"N, 98°28'29"E, 3880 m, 25 Aug 2006, *Gaoligong Shan Biodiversity Survey 31398* (CAS 1089187); N slopes of mountain Kenichunpo, N of Sikitung [Sijitong], 3810 m, alpine meadows, Aug–Oct 1932, *J. F. Rock 22550* (GH 125985); Changputong, 3700–3900 m, on rocks, 15 Sep 1940, *K. M. Feng 7813* (KUN, PE); Bingzhongluo, Sijitong, Chuganchu lake, [27°59'14"N, 98°28'23"E], 3880–4000 m, 5 Sep 2009, *Y. S. Chen 9729* (PE 2305228, 2305229). Myanmar: [Kachin State]: N'Maikha-Salwin divide, W flank of the Chimi-li, Sep 1924, *G. Forrest 25102* (paratype: E).

Acknowledgements

We are grateful to the curators of A, CAS, E, GH, KUN and PE for allowing study of their collections or arranging for specimens on loan. We would like to thank Ms. Liu Ping for drawing Fig. 2, and two anonymous reviewers for their comments, which helped to improve the manuscript. This research was supported by the International Cooperation Program of the Bureau of International Cooperation of the Chinese Academy of Sciences (grant no: GJHZ1140) and the National Natural Science Foundation of China (grant no: 31110103911, 31370226).

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