

***Taraxacum pseudohamatum* Dahlst. (Asteraceae, Cichorioideae) – a new naturalisation from the Chatham Islands, Aotearoa / New Zealand**

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Taraxacum pseudohamatum Dahlst. (Asteraceae, Cichorioideae) – a new naturalisation from the Chatham Islands, Aotearoa / New Zealand

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Abstract

Taraxacum pseudohamatum is reported from Rēkohu / Wharekauri / Chatham Island in the Chatham Islands, Aotearoa / New Zealand. This species is an addition to that island group's naturalised flora and the New Zealand Botanical Region. It is also the second member of *Taraxacum* Sect. *Hamatum* to be recorded from the islands. The first species of that section to be recorded from the islands is *Taraxacum hamatum*, which is still only known from a collection made from Hokoreoreo / Rangatira / South East Island. *Taraxacum pseudohamatum* is locally common on Rēkohu / Wharekauri / Chatham Island. The species is described using material from that island, and notes on its recognition and distinction from *T. hamatum* presented. The ecology of the species on Rēkohu / Wharekauri / Chatham Island is described.

Keywords

Taraxacum, *T. hamatum*, *T. pseudohamatum*, Rēkohu / Wharekauri / Chatham Island, New Zealand flora

Introduction

The application of names to the *Taraxacum* of Aotearoa / New Zealand has been a vexing issue. Currently, one endemic species, *Taraxacum zealandicum* Dahlst., and three naturalised species (*T. hamatum* Raunk., *T. insigne* M.P.Christ. & Wiinst., *T. lambinonii* Soest) are accepted as present in the country (de Lange et al. 2011; de Lange et al. *in press*; Ogle et al. 2020; Schönberger et al. 2022). However, for the naturalised *Taraxacum* the name universally used in Aotearoa / New Zealand is *T. officinale* F.H.Wigg. (Webb et al. 1988), in part because there have been few formal investigations into the taxonomy of *Taraxacum* in Aotearoa / New Zealand (see Heenan 2004). Therefore, *Taraxacum officinale* has been used in what can be best described as a convenient 'place holder' pending future taxonomic studies of the plants found there. The status of the endemic *Taraxacum zealandicum* presumably following Heenan (2004) is considered by the Biota of New Zealand as 'placement uncertain' (see <https://biotanz.landcareresearch.co.nz/search?query=Taraxacum+zealandicum&searchType=all>) with the indigenous *Taraxacum* treated as conspecific with *T. magellanicum* Comm. ex Sch. Bip following Webb et al. (1988) and Heenan (2004). However, that view is not supported by Uhlemann et al. (2004), who reinstated *T. zealandicum*, and relegated *T. magellanicum* to synonymy under *T. gilliesii* Hook. & Arn., which they treated as a South American endemic. Uhlemann et al. (2004) also placed *Taraxacum zealandicum* and the Australian *T. aristatum* G.E.Haglund & Markl. in a new section, *Australasica* Kirschner, Scarlett & Štěpánek. Currently the New Zealand Plant Conservation Network (<https://www.nzpcn.org.nz/flora/species/taraxacum-zealandicum/>) and New Zealand Indigenous Vascular Plant Threat Listing Panel (de Lange et al. *in press*) follow Uhlemann et al. (2004) in accepting that *T. zealandicum* is the correct name for Aotearoa / New Zealand plants that had previously been referred to *T. magellanicum* by Webb et al. (1988) and Heenan (2004). This view is followed here. A further endemic species, *Taraxacum castellanum* Sonck, was established for plants initially found on limestone outcrops and associated talus at Castlehill, Canterbury, by Sonck (1990). However, on further investigation Heenan (2004) concluded that *T. castellanum* was synonymous with the Western European *T. lambinonii* Soest.

Following Heenan (2004) there has been no further taxonomic investigation of the *Taraxacum* found in Aotearoa / New Zealand. Ogle et al. (2020) admitted

T. hamatum and *T. insigne* into the flora of Aotearoa / New Zealand on the basis of specimens so identified in the Allan Herbarium (CHR) (herbarium acronyms follow Thiers [2008–continuously updated]) by other people. Of these two species, *Taraxacum hamatum* was accepted for Aotearoa / New Zealand by Ogle et al. (2020) on the basis of a single collection (CHR 156630) of three detached leaves and two detached scapes (one with immature fruit, the other an open capitula) (Figure 1) made by Brian Bell in December 1961 from Hokoreoreo / Rangatira / South East Island in the Chatham Islands group. This specimen was determined as that species by taraxacologist A.J. Richards in 1979, and the identity confirmed by Hans Øllgaard, the author of *Taraxacum* Section *Hamatum* (Øllgaard 1983) in 1988.

The junior author has been investigating the flora of the Chatham Islands for many years (de Lange et al. 1999; de Lange et al. 2008; de Lange et al. 2011). As part of that research, he has been collecting *Taraxacum* on the Chatham Islands, where possible cultivating these, and sending duplicate collections to the senior author at HFN.

As part of that investigation, we report here the recognition of *Taraxacum pseudohamatum* Dahlst. as a new record for the islands and so, by extension, the New Zealand Botanical Region (as defined by Allan 1961). In this paper we provide a description of *T. pseudohamatum* based on Chatham Islands specimens, provide details to enable its recognition and relationship to *T. hamatum*, and its ecology on the islands.



Figure 1. Herbarium specimen of *Taraxacum hamatum* (B. Bell s.n., Dec. 1961, CHR 156630) from Hokoreoro / Rangatira / South East Island. This specimen remains the only known record of this species from the Chatham Islands and Aotearoa / New Zealand. Photo: Courtesy of the Allan Herbarium (CHR).



Figure 2. *Taraxacum pseudohamatum*. (A) whole plant (removed from substrate) showing foliage, floral buds (note darkly pigmented inner whorl of the involucre), open capitula and immature fruiting heads, Rēkohu / Wharekauri / Chatham Island, South Coast, Waitangi – Tuku Road, residence of Mike Bell. Photo: P. J. de Lange, October 2023. (B) Foliage and floral buds – note the darkly pigmented bracts of inner whorl of the involucre and the outer spreading, glaucescent, pruinose bracts of the outer whorl of the involucre, Rēkohu / Wharekauri / Chatham Island, North Road, residence of John and Judy Kamo. Photo: P. J. de Lange, August 2022. (C) Involucre of a floral bud showing inner and outer whorls (note the glaucous pruinose adaxial surface of the outer whorl of bracts, and the margins which are distinctly bordered), Rēkohu / Wharekauri / Chatham Island, South Coast, Waitangi – Tuku Road, residence of Mike Bell. Photo: P. J. de Lange, October 2023. (D) Capitula (side view) showing disposition of the involucre bracts and ligule striping, Rēkohu / Wharekauri / Chatham Island, North Road, residence of John and Judy Kamo. Photo: P. J. de Lange, August 2022. (E) Capitula (side view) showing stigma coated in copious pollen, Rēkohu / Wharekauri / Chatham Island, South Coast, Waitangi – Tuku Road, residence of Mike Bell. Photo: P. J. de Lange, October 2023. (F) Mature achenes (pappus removed), ex cult. Rēkohu / Wharekauri / Chatham Island, North Road, residence of John and Judy Kamo. Photo: P. J. de Lange, January 2024.

Taxonomy

Taraxacum Section *Hamata* H. Øllgaard

Taraxacum belonging to section *Hamata* are widespread and common throughout northern Europe, with more than 20 species now recognised (Øllgaard 1983; Richards 2021). The species of this section are recognised by the usually homophyllous (at flowering), flat, non-cripsed, dark green leaves without spots, with leaf lobes that are mostly strongly recurved, and by the adaxial midrib of the leaves comprised of woven red and green strands. The exterior bracts of the involucre are strongly pruinose and mostly spreading-arcuate, and the flower buds apically darkly pigmented. In this section pollen is always present.

Taraxacum pseudohamatum Dahlst., *Rep. Bot. Soc. Exch. Club Brit. Isles*, 9(5): 564 (1932).

Description (Figure 2): Stout, medium-sized to large plants bearing myriad suberect to erect leaves. Leaves not dimorphic, lanceolate, strongly hamate; adaxially usually glossy dark green, sometimes purple-green, or maroon when stressed or in exposed situations,

abaxially slightly paler, interlobes sometimes darkly blotched, surfaces sparsely hairy or not, mid-rib pinkish with interwoven strands; petioles ± winged near base, white or purple (depending on exposure). Lateral leaf lobes 5–6(–8), alternate, recurved, broad, subacute to acute, convex on distal margin, proximal lobes filiform-dentate. Terminal leaf lobes deltoid to sagittate, ± entire, subobtusate. Scapes equalling leaves or slightly overtopping them, glabrous or sparsely hairy, hairs appressed. Involucre in bud 20–25 mm long, initially broadly ovoid, prior to anthesis distinctly barrel-shaped, dark green-brown to dark purple-green; involucre bracts in two whorls, outer involucre bracts 16–20 mm, spreading, arcuate, usually reflexed at anthesis, 10–14 × 4.0–5.6 mm, broadly lanceolate, adaxially dark glaucous green, strongly pruinose, often suffused purple, abaxially dark green to purple-green, margins distinctly bordered; inner involucre bracts 12–18(–20), erect in bud, arcuate, apical $\frac{1}{3}$ – $\frac{1}{2}$ recurved at anthesis, abaxially dark brown-green, glaucescent to pruinose. Capitula 50–60 mm diameter, dark yellow. Ligules abaxially striped dark grey, or centrally grey with dark orange striping toward margins, inner florets sometimes finely tipped orange. Stigma dark yellow, pollen plentiful. Achene 3.5–4.0 mm long, pale yellow to yellow-brown; cone 0.4–0.6. Flowering: February – September. Chromosome number: $2n = 24$ (UNITEC 14264).

Specimens seen: Chatham Islands, Rēkohu / Wharekauri / Chatham Island: North Road, Kamo Property, P.J. de Lange CH4174, 21 Aug 2022, UNITEC 13581 (Duplicate: HFN 7140); Waitangi – Tuku Road, Mike Bell’s property, P.J. de Lange CH4487, 2 Oct 2023, UNITEC 14263; ex cult., Rēkohu / Wharekauri / Chatham Island: North Road, Kamo Property, P.J. de Lange CH4488, 16 Jan 2024, UNITEC 14264.

Recognition: Of those *Taraxacum* species on the Chatham Islands, *T. pseudohamatum* could only be confused with *T. hamatum*. From this species it is readily distinguished by the exterior bracts of the capitula, which have an obvious border (Figure 2C). Vegetative material, however, cannot be distinguished. From the other *Taraxacum* on the islands *T. pseudohamatum* is easily recognised by the hamate, lanceolate, usually darkly coloured leaves; dark green-brown to dark purple-green floral buds; and by the outer whorl of involucre bracts, which are adaxially dark glaucous green, strongly pruinose, often suffused purple, spreading and glabrous, and distinctly bordered (Figure 2).



Figure 3. *Taraxacum pseudohamatum* growing as a weed in a garden footpath, Wolvega, Weststellingwerf, Friesland, The Netherlands. Photo: K. Meijer, April 2024.



Figure 4. *Taraxacum pseudohamatum* in roadside grassland, Rēkohu / Wharekauri / Chatham Island, North Road, residence of John and Judy Kamo. Photo: P. J. de Lange, August 2022.



Figure 5. *Taraxacum pseudohamatum* growing in back of dunes amongst marram grass (*Calamagrostis arenaria*) and creeping buttercup (*Ranunculus repens*), Rēkohu / Wharekauri / Chatham Island, Kaingaroa Road near Ocean Mail, Matarakau, Photo: P. J. de Lange, September 2019.



Figure 6. *Taraxacum pseudohamatum* growing in gravelled margin of a deck of a new house, Rēkohu / Wharekauri / Chatham Island, South Coast, Waitangi – Tuku Road, residence of Mike Bell. Photo: P. J. de Lange, October 2023.

Ecology

Taraxacum pseudohamatum is an abundant ruderal of the British Islands and northern Europe, where it grows in grasslands, verges, land banks, and in urban wasteland, lawns and foot paths (Richards 2021) (Figure 3). On the Chatham Islands it occupies similar habitats, notably urban wasteland (Figure 4), roadsides, pasture and the landward side of marram grass (*Calamagrostis arenaria* (L.) Link.) dominated sand dunes (Figure 5). In these habitats it commonly associates with pasture grasses, including *Agrostis capillaris* L., *Lolium perenne* L. and *Poa trivialis* L., and herbs such as *Achillea millefolium* L., *Cerastium glomeratum* Thuill., *Ranunculus repens* L., *Stellaria media* (L.) Vill., *Trifolium repens* L., *Veronica*

persica Poir. and usually a potentially undescribed species of *Taraxacum* F.H.Wigg. whose biostatus is unclear, and which is widespread across Rēkohu / Wharekauri / Chatham Island. In urban wasteland and roadsides, plants often grow in open ground, especially where livestock and / or vehicles have scoured away the grass cover. In these sites it can be locally dominant, associating with *Capsella bursa-pastoris* (L.) Medik., *Lepidium didymum* L., *Plantago lanceolata* L., *P. major* L., *Poa annua* L., *Sagina procumbens* L., *Trifolium dubium* Sibth., *Urtica urens* L., and on occasion *Veronica persica* Poir. and the *Taraxacum* mentioned above. In dunes, on the landward side, often where pasture abuts marram grass, or on cattle-pugged peaty soils merging into the dunes, *Taraxacum pseudohamatum* can be quite

common, though easily overlooked unless flowering. Plants are most conspicuous in late winter through spring when they are flowering, after which time they can be harder to discern as the surrounding vegetation undergoes 'spring flush', soon overtopping plants, with the result that they become vegetative. Of those *Taraxacum* seen on the islands, *T. pseudohamatum* is the more commonly noted in sites kept open by humans, livestock and vehicles. It is often found in seasonally flooded ground, and around freshly overturned soil, along drains and around new buildings (Figure 6).

Discussion

De Lange et al. (2011) accepted three *Taraxacum* from the Chatham Islands, *T. hamatum*, *T. officinale* and *T. aff. magellanicum*. In their work they adopted a broad concept of *Taraxacum*, following the concept of Webb et al. (1988), thereby referring a number of races of uncertain identity into *T. officinale*. Subsequent field work on the islands has not located any further plants referable to the race of *T. magellanicum* sensu Webb et al. (1988) (now referred to *T. zealandicum* s.l.). Thus, the status of that plant, known from only a handful of imperfect specimens lodged at CHR, needs further investigation. Of the other two, plants generically referred to *T. officinale* are now in cultivation and are being studied further to see what, if any, recognised *Taraxacum* species they may match. *Taraxacum hamatum* is still only known from a single collection made by Brian Bell in 1961 from Hokoreoreo / Rangatira / South East Island (CHR 156630). No *Taraxacum* were seen by the junior author during a survey of that island in July 2015, but specimens of *Taraxacum* Sect. *Hamatum* have been collected from Rēkohu / Wharekauri / Chatham Island in 2022 / 2023 and these are here referred to *T. pseudohamatum*. *Taraxacum hamatum* needs to be searched for across all of the islands, as it is unlikely to occur only on Hokoreoreo / Rangatira / South East Island; especially as that island's naturalised flora is derived from direct introduction and / or dispersal of propagules from nearby Rangihau / Rangiauria / Pitt Island (P. J. de Lange unpubl. data). As regards Hokoreoreo / Rangatira / South East Island, unfortunately botanists rarely visit that island. We recommend that visitors to that island look for *Taraxacum* with a view to obtaining better collections, images and live plants to grow on.

Taraxacum pseudohamatum is not currently known from the main islands of Aotearoa / New Zealand.

Nevertheless, we suspect it is present there; de Lange et al. (2011) note that the naturalised flora of the Chatham Islands is largely derived from direct introductions from Aotearoa / New Zealand. Therefore, we think it unlikely that *T. pseudohamatum* somehow bypassed the larger islands of Aotearoa / New Zealand to be introduced only to the Chatham Islands. Further, as already noted, attempts to determine Aotearoa / New Zealand *Taraxacum* to species rank is still in its infancy, with most collections reflecting the decision by the authors of the naturalised flora (Webb et al. 1988) to treat all assumedly naturalised *Taraxacum* as *T. officinale*. As a result, there are numerous collections in the nation's herbaria that await critical analysis by a *Taraxacum* expert. It would not surprise us if some of these were *T. pseudohamatum*.

Data accessibility statement

No additional database

Author Contributions (CRediT – Contribution Roles Taxonomy)

Karst Meijer: Investigation (equal); validation (equal); writing – review and editing.

André Aptroot: Investigation (equal); writing – review and editing.

Tianyi Tang: Data curation; writing – review and editing.

Peter de Lange: Conceptualisation (lead); investigation (lead); project administration (lead); resources (lead); supervision (lead); data curation (lead); validation (lead); writing – original draft preparation (lead); writing – review and editing (lead).

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