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Short communication

Taxonomic status of *Taraxacum castellanum* Sonck (Asteraceae)

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Abstract *Taraxacum castellanum* was described in 1990 from plant specimens collected from Castle Hill, Canterbury, and at the time was regarded as endemic to New Zealand. *T. castellanum* is now considered to be a synonym of a European species, *T. lambinonii* (sect. *Erythrosperma*), and is treated as naturalised in New Zealand. It occurs in the eastern South Island on base-rich limestone and basalt substrates.

Keywords Asteraceae; *Taraxacum*; *T. castellanum*; *T. lambinonii*; naturalised flora; New Zealand flora

INTRODUCTION

Taraxacum in New Zealand is represented by a single indigenous dandelion species *T. magellanicum* Sch.Bip. and members of the naturalised *T. officinale* Weber complex (Garnock-Jones in Webb et al. 1988). However, as is well stated by Garnock-Jones (in Webb et al. 1988, p. 346), a broad circumscription of *T. officinale* was adopted for Flora IV because many species of *Taraxacum* are variable, display seasonal and environmental plasticity, and have the tendency to form apomictic races. These attributes made the assigning of New Zealand naturalised plants to European species very difficult.

Two species have been described in *Taraxacum* based on type material from Canterbury, New Zealand. Firstly, *T. zealandicum* Dahlst. was described in 1907 from specimens collected by S. Berggren near Porters Pass in February 1874. I have been unable to examine type material of *T. zealandicum*, but Marklund (1964) noted that the brief description indicates it may be related to the Australian *T. aristum* G.E.Haglund & Markl. (sect. *Arctica* Dahlst. subsect. *Antarctica* (Hand.-Mazz.) R.Doll.). The taxonomic status of *T. zealandicum* needs to be thoroughly investigated, which is beyond the scope of this paper. Secondly, *T. castellanum* Sonck was described in 1990 from specimens collected at Castle Hill, and was considered endemic to New Zealand (Sonck 1990). The distinctiveness of *T. castellanum*, known only from the type locality, has been problematic and doubts about its taxonomic and endemic status resulted in its not being included in New Zealand threatened plant lists (e.g., de Lange et al. 1999, 2004).

Since 1995 I have established a cultivated collection of *Taraxacum* species that are naturalised in New Zealand, in an attempt to understand the patterns of variation and resolve their taxonomic status. To date I have been able to distinguish about 12 different naturalised variants. Although I have been in contact with *Taraxacum* taxonomists N. H. Scarlett, R. F. Parsons, and H. Øllgard about the identity of some of these, I have been unable to apply names to most of the variants with any confidence. However, included among the cultivated collection is a set of plants referable to *T. castellanum* and I here provide a new assessment of this species.

RESULTS AND DISCUSSION

Plants collected from limestone (Castle Hill, Waihao Forks, and Awahokomo) and basalt (Mt Somers) and grown under uniform conditions at the Landcare Research experimental nursery, Lincoln, are identical and all are referable to *T. castellanum*. These

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plants are characterised by grass-green leaves with recurved lateral lobes, petiole flushed red, outer involucral bracts patent and lanceolate to ovate-lanceolate, pollen moderately abundant, outer ligules striped blue-purple, styles discoloured, achene pale red and about 3.5 mm long and with the cone 0.8 mm long.

Sonck (1990) implied that *T. castellanum* was endemic to New Zealand, but at the four locations where it has been collected it grows in disturbed habitats among naturalised and indigenous vegetation in areas with a long history of farming. At Castle Hill, the type locality for *T. castellanum*, it is very unlikely that an endemic species of *Taraxacum* could have gone unrecognised as this area has been well collected since the 1880s when J. D. Enys and T. Kirk first botanised that locality thoroughly. These issues raised doubts about the taxonomic and endemic status of *T. castellanum*, as it is unlikely to be a new endemic species as implied by Sonck (1990).

Plants of *T. castellanum* match the original description and illustrations of *T. lambinonii* Soest (van Soest 1961, fig. 13). In addition, herbarium specimens of *T. castellanum* (cultivated, ex Waihao Forks) sent to H. Øllgard in Aug 2000 are the same as plants of *T. lambinonii* cultivated in Europe by H. Øllgard (pers. comm.). *T. lambinonii* belongs to *Taraxacum* sect. *Erythrosperma* and includes small plants with dissected leaves, narrow achenes that are often reddish, and with a cylindrical cone up to 1.3 mm long, and they often occur in dry sandy or calcareous habitats (Dudman & Richards 1997). Accordingly, based on the present assessment, I consider that it is most appropriate that *T. castellanum* is treated as a synonym for *T. lambinonii*, and it is therefore considered an addition to the naturalised flora of New Zealand.

TAXONOMY

***Taraxacum* sect. *Erythrosperma* (H.Lindb.) Dahlst.**

***Taraxacum lambinonii* Soest**, *Acta Bot. Neer. 10*, 289 (1961, as *T. lambinoni*)

= *Taraxacum castellanum* Sonck, *Ann. Bot. Fennici 27*, 277 (1990).

DESCRIPTION: Plants slender, up to 10 cm tall. Leaves numerous, grass-green; terminal lobe hastate, apices obtuse to subacute; lateral lobes 4–5, up to 10 mm long, ovate, narrow-ovate to narrow-triangular, falcate, recurved, apices acute to obtuse, bases of lateral and terminal lobes shortly obtuse to subacute; petiole narrow, flushed red. Scape purple-green. Involucre 10–12 mm long and 8–10 mm wide, pale green; bracts 4.0–7.0 × 1.5–2.0 mm, lanceolate to ovate-lanceolate, ± patent, base rounded, apices slightly callose. Capitulum up to 3 cm wide at maturity; ligules yellow, abaxial surface striped blue-purple; pollen moderately abundant; styles discoloured. Achene pale red, 3.5–3.9 mm long, cone 0.6–0.8 mm long.

This description is based on wild and cultivated New Zealand specimens.

FIRST RECORD: Sonck, C. E., *Ann. Bot. Fenn. 27*, 277–279 (1990, as *T. castellanum*).

ADDITIONAL RECORDS: Awahokomo, Otago, *P. B. Heenan*, 8 Nov 2001, CHR 546308; Castle Hill, Canterbury, *B. Molloy*, 24 May 2000, CHR 536712. Cultivated, Landcare Research, Lincoln: ex Awahokomo, Otago, *P. B. Heenan*, 13 Aug 1999, CHR 532716; ex Castle Hill, Canterbury, *P. B. Heenan*, Feb 2000, CHR 533218; ex Mount Somers, Canterbury, *P. B. Heenan*, 3 Sep 1999, CHR 533214; ex Waihao Forks, Canterbury, *P. B. Heenan*, 3 Apr 2003, CHR 565616.

DISTRIBUTION: Castle Hill, Waihao Forks, and Mount Somers (Canterbury), and Awahokomo (Otago).

HABITATS: At Castle Hill, Waihao Forks, and Awahokomo, *T. lambinonii* occurs on limestone outcrops where it grows in crevices, cracks, and among loose stones and debris. At Mount Somers it occurs on soils derived from basalt.

REGION OF ORIGIN: France.

ILLUSTRATIONS: van Soest (1961, fig. 13) and Sonck (1990, fig. 1, 2, as *T. castellanum*).

Chromosome numbers

Using flow cytometry (Matzk et al. 2000) the seeds of *T. lambinonii* (CHR 532716) have a embryo-to-endosperm DNA quantity ratio of 2:4 and this is consistent with apomictic seed formation by triploid plants. *T. lambinonii* is a known triploid with $2n$ = 24 (Sonck 1990, as *T. castellanum*; Krahulcová 1993).

Two chromosome counts ($2n$ = 16 and 24) have been made by Beuzenberg & Hair (1984) for New Zealand plants that were referred to the indigenous *T. magellanicum*. Unfortunately, there are no

vouchers for these counts (Beuzenberg & Hair 1984, p. 356). In *Taraxacum* the established diploid number is $2n = 16$ and this always occurs in sexual species, whereas $2n = 24$ is triploid and usually occurs in apomictic species (Richards 1973). Flow cytometry of seeds of *T. magellanicum* from two samples (CHR 394541, CHR 565641) gave embryo-to-endosperm ratios of 2:3, consistent with sexual seed formation. Therefore, it is most likely that the Beuzenberg & Hair (1984) counts represent the sexual *T. magellanicum* ($2n = 16$) and a naturalised apomictic species ($2n = 24$) (cf. Dawson 2000, p. 133).

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