

# Contributions to a Knowledge of the Naturalized Flora of New Zealand. No. 3

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## Abstract

THE occurrence in New Zealand of species belonging to the genus *Soliva* is recorded and their relationships discussed.

## THE GENUS *Soliva* (COMPOSITAE) IN NEW ZEALAND

THE genus *Soliva* Ruiz et Pavon (Tribe *Anthemideae*, Compositae) comprises nine small annual species native to South America, but now naturalized in a number of countries. Two species were reported as adventive in New Zealand in 1883, and two other species have appeared subsequently; the purpose of this paper is to clear up the matter of the identity of the species in New Zealand, and their distribution.

### KEY TO SPECIES

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|--|------------------------|
| 1. Achenial wings <i>absent</i> (Fig. 1A) .. .. .                | <i>S. valdiviana</i>   |
| Achenial wings <i>present</i> .. .. .                            | 2.                     |
| 2. Achenial wings <i>thick</i> , transversely rugose (Fig. 1B) . | <i>S. anthemifolia</i> |
| Achenial wings <i>thin</i> , not transversely rugose .. .. .     | 3.                     |
| 3. Achenial wings with <i>entire</i> margins (Fig. 1C) .. .. .   | <i>S. sessilis</i>     |
| Achenial wings <i>deeply-lobed</i> near base (Fig. 1D) .. .      | <i>S. pterosperma</i>  |

### 1. *Soliva valdiviana* Phil.

In an earlier paper I determined a previously unrecorded plant as this Chilean species (1948: 182); I have since been advised by Dr. A. L. Cabrera, La Plata, Argentina, that this determination was correct.

The plant was first recorded from New Zealand, without locality, by the writer (1948: 182), and the first published reference to New Zealand distribution is by Cabrera (1949: 128) who records this species from Wellington ("Nueva Zelandia. — Wellington, leg. H. H. Allan, 48344 (LP.); Wellington, boca del Hutt [Hutt] River, leg. A. J. Healy, 48345 (LP.).").

Examination of herbarium material shows that this species was previously misidentified as *S. anthemifolia* (Juss.) R. Br. ex Less., and that the reported occurrence of this latter species near Wellington by Allan (1940: 152) refers to *S. valdiviana* Phil. Specimens have been examined from Tuakau \*(48346), Hamilton (58746), Masterton (59694), Upper Hutt (70207), Lower Hutt (48345), Wellington (48344, 59836, 70234), Westport (33257). I have noted the species at Marton, Feilding, Palmerston North and Shannon, but further collections from localities intermediate between those cited are necessary to give a clearer picture of distribution.

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\* Herbarium sheet number, Botany Division, D.S.I.R., Wellington.

2. *Soliva anthemifolia* (Juss.) R.Br. ex Less.

This species, restricted in distribution, has, as mentioned above, been confused with *S. valdiviana* Phil. and perhaps with *S. sessilis* Ruiz et Pav., when it was reported by Levy and Madden (1931: 420) as a weed of lawns and greens.

Recorded originally by Cheeseman (1883: 285) from "Alluvial flats of the Northern Wairoa River, near Dargaville and Mangawhare." it was later recorded by Cheeseman (1906: 1077) from "Fairburn's (near Mongonui), *H. Carse!*" and recently by Miss R. Mason and Messrs. N. T. Moar and R. Cooper (1950: 90) from "End of Bonnett's Road, Kaitaia."

The following material has been examined:—

(a) Auckland Institute and Museum Herbarium: Mangawhare, Northern Wairoa, T. F. Cheeseman (five specimens mounted on sheet, two belonging to this species, three to *S. sessilis* Ruiz et Pav.); Fairburn's, near Mongonui, T. F. Cheeseman; track into Lake Tongonge, N.T. Moar and R. Mason.

(b) Botany Division Herbarium: Mangawhare, Northern Wairoa, collector not stated (two specimens mounted on sheet, one belonging to this species, the other to *S. sessilis* Ruiz et Pav.).

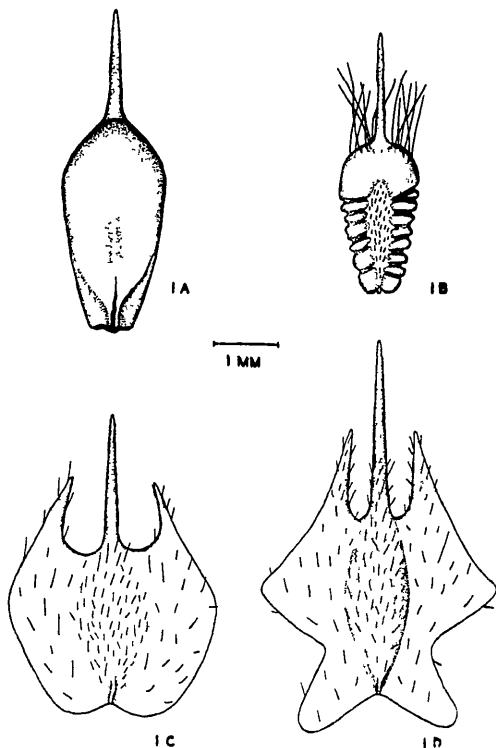


FIG. 1.—*Soliva* spp.—achenes of (A) *S. valdiviana* Phil., (B) *S. anthemifolia* (Juss.) R. Br. ex Less., (C) *S. sessilis* Ruiz et Pav., (D) *S. pterosperma* (Juss.) Less.

3. *Soliva sessilis* Ruiz et Pav.

This is the plant originally recorded by Cheeseman (1883: 285) as "*Soliva pterosperma* Less. ?" with the distribution "Rangiriri and near Ngaruawahia, first seen in January, 1879." Kirk (1899: 330) placed the plant under *S. sessilis* Ruiz et Pav., a course adopted subsequently by Cheeseman (1906: 1077, 1925: 1080) and Allan (1940: 152, 157).

Investigation of the genus by Cabrera (1949: 131) has shown that *S. sessilis* Ruiz et Pav. and *S. pterosperma* (Juss.) Less. are distinct entities, although confusion has existed in the application of the names for many years; he states that references in literature to *S. sessilis* subsequent to the publication of Grisebach's *Symbolae* (1879) have been, in fact, references to *S. sessilis* Griseb. (1879) which name is correctly a synonym of *S. pterosperma* (Juss.) Less. (1832), the name of a species differing markedly in achene characters from the true *S. sessilis* Ruiz et Pav. (1794).

In view of Cabrera's conclusions, it was anticipated that a change of name would be necessary for the material up to now placed under *S. sessilis* in New Zealand.

I have examined specimens collected from Rangiriri by Cheeseman, and which, although not dated, can, I think, be accepted as one of the original gatherings; also specimens from Ngaruawahia collected in May, 1885, by Kirk; and find that these and subsequent collections, with two exceptions, belong to the true *S. sessilis* Ruiz et Pav., and not to *S. pterosperma* (Juss.) Less. as would be supposed.

It is not clear from the descriptions of the New Zealand plants just which species has actually been referred to; neither Kirk (1899: 330) nor Allan (1940: 152) states whether the achenial wings are entire or lobed, although the plant figured by Allan (1940: 157; Fig. 57) clearly represents *S. pterosperma* (Juss.) Less., which species, according to herbarium material examined, was not recognised in New Zealand until recently.

The distribution as given for *S. sessilis* in New Zealand literature is largely correct, although it has been confused with *S. valdiviana* Phil. in several localities; in some localities the two species occur together, in other localities one or other of the species occurs alone.

#### 4 \* *Soliva pterosperma* (Juss.) Less.

This species is native of north-east Argentina, Uruguay and southern Brazil, and while closely related to *S. sessilis* Ruiz et Pav. is readily distinguished on achene characters.

The original collection of this species in New Zealand was by Miss L. M. Cranwell, from Onehunga (October-November, 1930)—there is a sheet in the Auckland Institute and Museum Herbarium under the name *S. sessilis* Ruiz et Pav. on which six stunted specimens are mounted, five of these being correct, while that in the centre of the bottom row is *S. pterosperma* (Juss.) Less. The only other New Zealand gathering, as far as is known, was by the writer from the railway yards, Shannon (35541). Further searching will be necessary to provide data on distribution and abundance of the species.

#### ECONOMIC SIGNIFICANCE

Usually small plants appressed to the ground, the species of *Soliva* are found as weeds of thin pasture on dry soils, waste places, lawns and greens. While they have little pastoral significance, it is as invaders of lawns and greens that *S. sessilis* and *S. valdiviana* have achieved prominence under the local names of "Jo Jo weed" or "Onehunga weed."

Apart from occupying sward space, the species have considerable nuisance effect in that the sharp terminal spines of the fruits cause acute personal discomfort to users of lawns and greens owing to the fruits catching in clothes and footwear and puncturing the skin. On a number of occasions I have observed the fruits of *S. sessilis* and *S. valdiviana* attached to canvas shoes, socks and other clothing of persons using infested greens, and have had to remove fruits from the soles of children's feet. The distribution of the species within a locality indicates that fruit dispersal by human beings is responsible for the spread of the

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\* Denotes species recorded for the first time for New Zealand.

two common species, as was suggested by Allan (1937: 34). I have also noted the fruits caught in the wool of lambs running on park areas, the sharp spines causing skin irritation; such instances of animal agency would no doubt be the reason for dispersal within such localised areas.

#### ACKNOWLEDGMENTS

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