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BULBIL WATSONIA IS A VARIETY OF *WATSONIA MERIANA* (L.)MILLER (IRIDACEAE)

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Abstract

Bulbil watsonia, formerly known as *Watsonia bulbillifera* or as *W. meriana* cultivar 'Bulbillifera', is more appropriately treated as *W. meriana* var. *bulbillifera*, stat. nov.

A distinct weedy *Watsonia*, known as bulbil watsonia, is an invader of native vegetation and pasture in southern Australia. It also occurs as a weed in South Africa (Goldblatt, 1989) and New Zealand. It falls within the circumscription of the widespread and variable South African species *Watsonia meriana* (L.)Miller in most characters (Goldblatt, 1989), but was described as the species *W. bulbillifera* by Mathews and Bolus (1922) because it produces cormils in the inflorescence.

Since one clone of bulbil watsonia was found to be triploid by Goldblatt (1971), it has been assumed to be dependent on vegetative reproduction. However, partially fertile plants producing a few capsules with fully developed seeds were reported by Mathews & Bolus (1922) at the type locality, and by Wilson (1993) in South Australia. The latter observed that although fruit set was about 65 percent, seed set was only of the order of one percent. Because at least some of these seeds are viable, the possibility of the occurrence of polyploidy and/or apomixis in the South Australian populations is currently under investigation (J. Conran pers. comm.).

Bulbil watsonia does not consist of a single uniform clone. The flower colour in Australian specimens varies from a dark red to a pale salmon-pink or orange, and the inflorescence also varies in the extent to which lateral branches are developed. These variations imply either sexual reproduction or a polyphyletic origin of bulbil watsonia. In view of the occurrence of very occasional individuals producing both seed and bulbils, represented by *D. Cooke 726*, in a large and variable population of *W. meriana* at in the Mount Lofty Ranges, the latter hypothesis is more likely.

Goldblatt (1989) reduced *W. bulbillifera* to a cultivar of *W. meriana* because it does not form wild populations except in localities where it is likely to be a garden escape, and was first noticed among feral and cultivated populations of this species in the 19th century. Goldblatt (pers. comm.) suggests this occurred around Paarl on the Cape Flats.

However, there is no evidence to suggest that bulbil watsonia is a product of artificial selection for ornamental values. It is a less desirable ornamental plant than diploid *W. meriana*, being taller but with fewer flowers widely spaced in an inflorescence that usually has poorly developed branches. The selective breeding of *Watsonia* cultivars from *W. meriana* and other species has been consistently towards denser inflorescences, and generally toward shorter plants. The tall persistent stems, sparse flowering and prolific vegetative reproduction of bulbil watsonia are all disadvantages from the gardener's viewpoint.

Bulbil watsonia is more likely to have been present in mixed populations of corms collected from the wild or to have originated among seedlings of *W. meriana*. It would have multiplied spontaneously and unnoticed in gardens at the expense of diploid *W. meriana* because it reproduced more efficiently by aerial cormils.

Bulbil watsonia does not conform to the definition of cultivar as "an assemblage of cultivated plants..." (International Code of Nomenclature for Cultivated Plants, 1980). This definition is usually interpreted (eg. Jeffrey, 1982; Hetterscheid & Brandenburg, 1995) to cover only cultigens or other kinds of plants maintained solely by cultivation, since cultivated specimens of wild taxa retain the same specific or infraspecific epithet as the wild populations. By analogy with other weeds that have evolved by natural selection within environments modified by human activities, bulbil watsonia is more appropriately treated as a wild taxon than as a culton (sensu Hetterscheid & Brandenburg, *l.c.*) produced by artificial selection or other human intervention. However, its close and complex relationship to *W. meriana* makes the rank of species also inappropriate. I have therefore taken the middle course of proposing it as a variety of *W. meriana.*

Watsonia meriana (L.)Miller var. ***bulbillifera*** (J. Mathews & L. Bolus)D.A. Cooke, *stat. nov.*

Basionym: *Watsonia bulbillifera* J. Mathews & L. Bolus, Ann. Bolus Herb. 3: 140 (1922). *Watsonia meriana* 'Bulbillifera' (J. Mathews & L. Bolus) Goldblatt, Ann. Kirstenbosch Bot. Gard. 19: 123-124 (1989).

Type: South Africa, Cape Joostenberg, s.coll. (lecto.: Nat. Bot. Gard 707/1 in BOL fide Goldblatt (1989) p. 120).

Inflorescence 100-210 cm high with 10-15 flowers on the main axis; bracts in the lower part of the spike subtending subglobose clusters of 4-12 tunicate cormils in place of flowers, sometimes the upper bracts with a few cormils in addition to a normally developed flower. Perianth tube 45-50 mm long. Capsules rarely produced.

Selected specimens examined

WESTERN AUSTRALIA: *R.D. Royce 4705*, Bellevue, (PERTH).

SOUTH AUSTRALIA: *D.Cooke 662*, roadside W of Donnybrook, 17.xi.1993, (ADA 4485); *D.Cooke 726*, Freeway at Bridgewater, 7.xi.1996, (AD).

NEW SOUTH WALES: *T.Barratt s.n.*, North Turramurra near Kuringai Chase, 19.x.1960, (NSW).

SOUTH AFRICA: *G.J. Lewis 5305*, Breede River 8 miles W of Worcester, 4.xi.1958 (AD98661875)

NEW ZEALAND: *A.E. Orchard 3585*, 6 km N of Keri Keri, North Island, 13.x.1972 (AD97250371).

Watsonia meriana (L.)Miller var. *meriana*

Watsonia sp. B D.A. Cooke, Flora of Australia 46: 42 (1986).

Inflorescence 50-210 cm high with 10-25 flowers on the main axis, never bearing cormils. Perianth tube 35-50 mm long. Capsules frequently produced.

Selected specimens examined:

WESTERN AUSTRALIA: *T.E.H. Aplin 1200*, Waroona, (PERTH); *R.D.Royce 3901*, Yoongarillup, Busselton district, (PERTH).

SOUTH AUSTRALIA: *D. Cooke 601*, South-eastern Freeway S of Hahndorf, 12.xi.1990, (ADA 4367); *D. Cooke 723*, Freeway at Bridgewater, 7.xi.1996, (AD); ibid., *D. Cooke 720* (AD); Blackwood, n.coll., 31.x.1933 (ADA 12186).

The only reliable morphological distinction between the two varieties is the replacement of the lower flowers by cormil clusters in var. *bulbillifera.*

Each cluster of inflorescence cormils is homologous to the flower that it replaces. They can be clearly differentiated from the solitary cormils produced in the lower leaf axils of

some populations of var. *meriana* and some garden hybrids derived from this variety. In *Watsonia*, unlike most genera of Ixieae where a corm is formed from the base of the flowering shoot, growth is strictly sympodial: the shoot dies completely after flowering and all new corms are formed in the axils of cataphylls (Goldblatt, 1990). Cormils produced above ground in the axils of foliage leaves are therefore serially homologous to the underground corms. They are not uncommon in the genus, occurring for example a biotype of *W. aletroides* (Burm.f.)Ker Gawler cultivated in Australia.

Mixed populations of the two varieties occur in Australia, but var. *bulbillifera* is much more common and usually grows in pure stands.

It is also possible that the partially fertile populations of var. *bulbillifera* are triploid clones producing seed by apomixis, but in this case full fertility might be expected; they may also be hexaploids derived from sterile triploids. An alternative hypothesis is that var. *bulbillifera* originated from var. *meriana* as an autotetraploid, in which partial fertility would be expected. This autotetraploid could then have crossed with various biotypes of the diploid var. *meriana* to produce many triploid clones, accounting for the the minor variations noted above.

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