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Elevation of rank for *Leucochrysum albicans* var. *tricolor* (Asteraceae: Gnaphalieae)

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Introduction

Recent scrutiny of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Department of Environment 1999), has resulted in a surprising determination that taxa below the rank of subspecies 'are not considered to be species for the purpose of the EPBC Act and are not eligible to be listed under section 178 of the EPBC Act' (Department of Environment 2014). This clearly has implications for the conservation of a number of taxa currently listed at varietal rank under the Act. At the time of writing, there are 19 varieties included in the Threatened Flora List (Department of Environment, continually updated A) and the case for retaining these on the List is being assessed (e.g. Department of Environment, continually updated B).

Leucochrysum albicans var. *tricolor* (DC.) Paul G. Wilson is currently listed as an 'endangered' taxon under the EPBC Act (Department of Environment 1999), and there appears to be no argument as to whether the taxon is correctly assessed as 'endangered' under the criteria accepted by the Act (Department of Environment, continually updated B). In order to have the threatened status of the taxon continue to be recognised, there needs to be either a case made for the amendment or reinterpretation of the Act, which, however desirable, is likely to be a very protracted and perhaps fruitless exercise, or elevation of *L. albicans* var. *tricolor* to a higher rank.

Abstract

Taxonomic and legislative arguments are offered to justify the elevation of *Leucochrysum albicans* var. *tricolor* (DC.) Paul G. Wilson to the rank of subspecies.

Key words: EPBC Act, conservation, subspecies, varieties

The distinction between the taxonomic ranks of variety and subspecies is unclear and there has been considerable discussion on how these ranks should be applied. The guiding document for the nomenclature of plants (McNeill et al. 2012), while indicating that recognition of both ranks is entirely admissible, offers no definition of the terms or indication as to how they should be applied. There has been argument that variety is the 'traditional' infraspecific rank and that subspecies is something of an afterthought offered as a way of drawing together more similar varieties from those regarded as more distant (Turner & Nesom 2000). Stuessy et al. (2014) regard this as the 'Eastern School' approach in the USA but appear not to embrace it with enthusiasm. More recently, the rank of subspecies has often been reserved for more or less morphologically distinct entities within a species where the difference between the entities is slight relative to those between existing species in the genus, but where there is little or no overlap in the geographical or ecological range of the entities, implying, if not necessitating, restricted (or nil) gene flow between the subspecies. This approach appears to be increasingly embraced by Australian botanists who draw a deliberate distinction between the ranks, and may use both within revisionary or monographical works (e.g. Orchard 1975 (*Haloragis* and related genera), 1986 (*Myriophyllum*); Walsh and Coates 1997 (*Pomaderris*); George 1999a (*Banksia*), 1999b (*Dryandra*); Duretto et al. 2013 (*Correa*)). Varietal rank may be used for weakly distinguishable entities for which a greater degree of sympatry or shared ecology is tolerated. The distinction, however, is imprecise and inconsistently applied. Often the distinction between varieties and subspecies has a historical basis, with certain taxonomic groups seeming to attract one infraspecific rank over the other (e.g. traditionally, grasses have been recognised infraspecifically as varieties, whereas taxonomists of more conspicuous plants, such as eucalypts, more commonly confer subspecific rank for 'trivial' entities). Given this lack of clarity and inconstant application of rank, Stuessy (2009) made the sensible recommendation that, for the maintenance of nomenclatural stability, unless there were compelling reasons to do otherwise, existing infraspecific classifications should be retained. It is interesting to note that the International Code for Zoological Nomenclature (Ride et al. 2012) accepts only 'subspecies' as a formal infraspecific rank and it is

tempting to think that the rationale for the EPBC Act was developed from a zoological rather than a botanical perspective – a similar criticism has been made of earlier iterations of the risk assessments of the international standard 'IUCN Red List of threatened species' (IUCN 2012).

Discussion

A revision of the *Leucochrysum albicans* (A.Cunn.) Paul G.Wilson complex (Dennis & Walsh 2010) elevated what was then *L. albicans* subsp. *alpinum* (F.Muell.) Paul G.Wilson to the rank of species and simplified the taxonomy of *L. albicans* to just two varieties (var. *albicans* and var. *tricolor* (DC.) Paul G.Wilson), both of which existed prior to the revision. The decision to retain the rank of variety for the two taxa was made on the basis of there being only one measured morphological trait that could separate them, i.e. white rather than yellow involucral bracts in var. *tricolor*. Nonetheless, var. *tricolor* was retrieved as a clearly separated group in both methods of analysis of a morphological dataset of 14 informative characters.

The mapped geographic ranges of the two varieties in the study indicates little overlap at a large scale, and at a finer scale where both may occur in close proximity, the two entities are known to occupy quite different habitats. Variety *albicans* is typically a plant of dry open forest and woodland, principally on shallow soils derived from sediments or granite. Variety *tricolor* is virtually confined to grassland communities, and at least in south-western Victoria and Tasmania, primarily associated with cracking clay soils derived from basalt or dolerite. Variety *tricolor* differs further in dying down to a rootstock following fruiting (Sinclair 2010), whereas var. *albicans* is generally an evergreen perennial (pers. obs.). Indeed, the distinctness in morphology, ecology and geography could be argued to be sufficient to recognise the taxon as a species, but the study of Dennis and Walsh (2010) suggested that the degree of difference between vars. *albicans* and *tricolor* was at a lower level than that between the other members of the *L. albicans* complex. Following the same rationale, a conservative approach is adopted here to retain recognition at infraspecific rank. But, while counter to the reasonable suggestion of Stuessy (2009) noted above, the elevation of var. *tricolor* to the rank of subspecies is proposed, both to concur with common usage in Australia, and to allow whatever

protection that is currently offered to it under the EPBC Act to continue, rather than to risk losing protection of a threatened taxon through a plausibly unintentional quirk of legislation.

Taxonomy

Leucochrysum albicans subsp. *tricolor* (DC.)

N.G.Walsh, **comb. et stat. nov.**

Helipterum incanum var. *tricolor* DC., *Prodr.* 6: 215 (1838); *Leucochrysum albicans* var. *tricolor* (DC.) Paul G.Wilson, *Nuytsia* 8(3): 443 (1992).

Type: TASMANIA. Van Diemen [Tasmania], *R.C. Gunn 108* (holo: G-DC), *fide* Wilson 1992.

Concluding remarks

While acceptance of the above reclassification of *Leucochrysum albicans* will at least retain protection under the EPBC Act for subsp. *tricolor*, the question remains about the appropriate rank for the remaining 18 taxa currently listed under the Act at varietal rank. At least some of these, e.g. *Correa lawrenceana* var. *genoensis* Paul G.Wilson, are recognised by botanists as deserving of higher rank and revisionary work in *Correa* is underway (G.W. Carr pers. comm.). Other listed varieties, unfamiliar to me, may similarly warrant elevation of rank and may retain (or regain) protection under the Act as a consequence of revision. Whatever the outcome of future work, the loss of protection under an act that seeks to protect biodiversity is regrettable at the very least, and would be considered by many to be absurd. Loss of protection through accidents of history or semantics around recognition of rank would be avoided by a sensible, minor reinterpretation of the EPBC Act and obviate a piecemeal approach, of which the current offering is admittedly an example.

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