

Notes on *Banksia* L.f. (Proteaceae)

A.S. George

'Four Gables', 18 Barclay Road, Kardinya, Western Australia 6163

Abstract

George, A.S. Notes on *Banksia* L.f. (Proteaceae). Nuytsia 11 (1): 21-24 (1996). *Banksia integrifolia* subsp. *aquilonia* is raised to specific rank, and *B. conferta* var. *penicillata*, *B. ericifolia* var. *macrantha* and *B. meisneri* var. *ascendens* to subspecific rank. *Banksia paludosa* subsp. *astrolux* is described as new. Lectotypes are chosen for *Banksia* sect. *Oncostylis* and *B. laricina*. *Banksia oblongifolia* subsp. *minor*, *B. occidentalis* subsp. *formosa* and *B. seminuda* subsp. *remanens* are not accepted.

Introduction

In preparation for a treatment of *Banksia* in the "Flora of Australia", a new subspecies is described, one taxon treated at varietal rank in my revision (George 1981) is raised to specific rank, and three taxa are accorded subspecific status in line with the concepts accepted in recent revisions of *Verticordia* (George 1991), *Synaphea* (George 1995) and *Dryandra* (George 1996). Two lectotypifications are made. Reasons are given for not accepting three infraspecific taxa published recently by other authors.

Lectotypifications

Banksia* sect. *Oncostylis Benth., Fl. Austral. 5: 542, 544 (1870)

Type: *B. ericifolia* L.f., (*lecto*, here chosen).

Discussion. Bentham included 13 species in the section. All are still placed there, but given the range of morphology of leaves, confluencescence and fruit it is appropriate to select a lectotype. The protologue diagnosis gives no lead to selection, hence *B. ericifolia* is chosen as the earliest-described of the included species.

Banksia laricina C. Gardner, J. Roy. Soc. Western Australia 47: 57 (1964).

Type: Beermullah, Western Australia, July 1958, C.A. Gardner 12840 (*lecto*: PERTH 01135708, here chosen; *isolecto*: PERTH 01135724); Moore River, Western Australia, July 1958, C.A. Gardner s.n. (*syn*: PERTH 01092898).

Discussion. At PERTH there are two sheets of *Gardner* 12840, one labelled 'Type Specimen' and with a label typed by him with the details in Latin as was often his practice, the second a duplicate from the material bequeathed to the Benedictine Community at New Norcia with a photocopy of the above typed label but no annotation as a Type. There is also a sheet of 'Moore River, July 1958, C.A. Gardner s.n.', with his hand-written label (also in Latin) but no annotation as a type. All are flowering specimens. The sheet with the 'Type Specimen' label is selected as lectotype.

New taxa and changes of status

Banksia aquilonia (A.S. George) A.S. George, *stat. nov.*

Banksia integrifolia var. *aquilonia* A.S. George, Nuytsia 3: 283 (1981); *B. integrifolia* subsp. *aquilonia* (A.S. George) Thiele, Austral. Syst. Bot. 7: 406 (1994). *Type:* Witts Lookout No. 1, Crystal Creek National Park, S of Ingham, Queensland, 12 April 1975, A.S. George 12973 (*holo:* BRI; *iso:* CANB, NSW, PERTH 04326067).

Discussion. This taxon was altered to subspecific rank by Thiele & Ladiges (1994), but I now consider it specifically distinct from *B. integrifolia*. Its leaf arrangement - spirally arranged but crowded - is readily recognizable through all growth stages from the first seedling leaves. Whorled leaves characterize all the plants that comprise *B. integrifolia*. *B. aquilonia* also has a unique row of short, stiff brown hairs each side of the midrib on the abaxial leaf surface, and its follicles typically are slightly larger than those of *B. integrifolia*.

Banksia conferta subsp. ***penicillata*** (A.S. George) A.S. George, *stat. nov.*

Banksia conferta var. *penicillata* A.S. George, Nuytsia 3: 289 (1981). *Type:* N of Clarence on the Newnes Tunnel Road, New South Wales, 6 April 1975, R. Coveny 3537 (*holo:* NSW; *iso:* PERTH 01579967).

Discussion. This also creates the autonym *B. conferta* A.S. George subsp. *conferta*. The subspecies are distinguished as follows: subsp. *conferta* has tessellated bark, entire adult leaves, pubescent involucre bracts and pubescent apices to the common bracts; subsp. *penicillata* has ± smooth bark, serrate leaves, villous involucre bracts and penicillate common bracts.

Banksia ericifolia subsp. ***macrantha*** (A.S. George) A.S. George, *stat. nov.*

Banksia ericifolia var. *macrantha* A.S. George, Nuytsia 3: 400 (1981). *Type:* c. 3 km NW of Byron Bay on road to 'Coast to Coast' Motel, New South Wales, 28 April 1975, A.S. George 13011 (*holo:* NSW; *iso:* CANB, PERTH 01580000, 01580019).

Discussion. This also creates the autonym *B. ericifolia* L.f. subsp. *ericifolia*.

Banksia meisneri subsp. ***ascendens*** (A.S. George) A.S. George, *stat. nov.*

Banksia meisneri var. *ascendens* A.S. George, Nuytsia 3: 448 (1981). *Type:* S of Tutunup (east of Busselton), Western Australia, 26 June 1973, A.S. George 11659 (*holo:* PERTH 01591142; *iso:* CANB, K, NSW, PERTH 01591150).

Discussion. This also creates the autonym *B. meisneri* Lehmann subsp. *meisneri*. The subspecies are distinguished on leaves and pistil length, subsp. *meisneri* having reflexed leaves 3-7 mm long and pistils 18-21 mm long, and subsp. *ascendens* ascending or spreading leaves 8-15 mm long and pistils 24-26 mm long.

***Banksia oblongifolia* Cav.**

Discussion. Conran & Clifford (1987) published the combination *B. oblongifolia* subsp. *minor* (Maiden & Camfield) Conran & Clifford but their research covered mainly populations of *B. oblongifolia* in south-eastern Queensland. When the variation over the total range of the species is examined, it becomes clear that there is no morphological discontinuity at which a practical infraspecific distinction can be made.

When I published my revision of *Banksia* (George 1981), I had only photographs of the types of names published by Cavanilles (1800). Recently I had the opportunity to study the specimens themselves. The inflorescence on the lectotype sheet of *B. oblongifolia* (see Conran & Clifford 1987: 183) is from *B. marginata* Cav. and should be excluded from the type material of *B. oblongifolia*. This does not affect the current application of the name *oblongifolia*.

***Banksia occidentalis* R. Br.**

Discussion. Hopper (1989) published *B. occidentalis* subsp. *formosa* Hopper, which he distinguished from typical *B. occidentalis* by its smaller stature, usually shorter, broader leaves and more floriferous habit. Each of these characters is variable to the extent that there is no clear disjunction within the species. At the type locality (Black Point), there is a transition from low plants with short, broad leaves at the seaward edge of the population to taller, narrow-leaved plants inland. The subspecies is not accepted here. Low or coarse-leaved coastal variants occur in a number of other Western Australian species but are not formally named. Examples may be seen in *Banksia* (e.g. *B. grandis* Willd., *B. media* R. Br.), in other Proteaceae (notably *Hakea prostrata* R. Br.) and other families, e.g. *Templetonia retusa* (Vent.) R. Br. (Fabaceae) and *Exocarpus sparteus* R. Br. (Santalaceae).

***Banksia paludosa* R. Br. subsp. *astrolux* A.S. George, subsp. nov.**

Ab *Banksia paludosa* typica habitu non-lignotubero differt.

Typus: near Hilltop, north of Mittagong, New South Wales, 29 June 1990, A.S. George 16930 (*holo:* NSW; *iso:* BRI, K, MEL, NSW, PERTH).

Other collection examined. NEW SOUTH WALES: c. 17 km N of Mittagong, *B. Walters s.n.* (NSW).

Distribution. Restricted to several small populations north of Hilltop, New South Wales.

Habitat. Grows in sandy loam over sandstone in eucalypt forest.

Flowering period. May-August.

Etymology. Named from the Latin *aster* - a star, and *lux* - light, in reference to the locality which is at the beginning of an old track known as Starlight's Trail. Starlight was the name given to a bushranger of the area last Century.

Discussion. This has a habit similar to that of *B. conferta* subsp. *penicillata* A.S. George, i.e. non-lignotuberous, tall, and openly branched, but the flowers are quite like those of *B. paludosa* in being short and openly spaced in the confluence. The open spacing of the flowers in the confluence is characteristic of *B. paludosa* and occurs in no other species of ser. *Salicinae*. There is also no difference from typical *B. paludosa* in leaf and fruit morphology. It is geographically disjunct from typical *B. paludosa*, the nearest population of the latter being c. 30 km away.

***Banksia seminuda* (A.S. George) Rye**

Discussion. Hopper (1989) described *B. seminuda* subsp. *remanens* Hopper, distinguishing it from typical *B. seminuda* by its shorter stature, more floriferous habit and usually shorter, less serrate leaves. Within the species, each of these characters is variable to the extent that there is no clear disjunction into infraspecific taxa, and the subspecies is not accepted here.

Acknowledgements

I am grateful to Kevin Thiele for providing a copy of his Ph.D. thesis (The University of Melbourne) and for a copy of the manuscript of his paper with Pauline Ladiges now (April 1996) submitted to "Australian Systematic Botany". I also thank the staff of the herbarium at the Real Jardín Botánico, Madrid, Spain, for their assistance in studying the material of *Banksia* in the Cavanilles collection during my recent visit.

References

- Cavanilles, A.J. (1800). Observaciones sobre el suelo, naturales y plantas del Puerto Jackson y Bahía-Botanica. *Annales de Historia Natural* 3: 206-239.
- Conran, J.G. & Clifford, H.T. (1987). Variation in *Banksia oblongifolia* Cav. (Proteaceae). *Brunonia* 10: 177-187.
- George, A.S. (1981). The genus *Banksia* L.f. (Proteaceae). *Nuytsia* 3: 239-473.
- George, A.S. (1991). New taxa, combinations and typifications in *Verticordia* (Myrtaceae: Chamelauciae). *Nuytsia* 7: 231-394.
- George, A.S. (1995). *Synaphea*. In: Orchard, A.E. (ed.) "Flora of Australia." Vol. 16. pp. 271-306, 315.
- George, A.S. (1996). New taxa and a new infrageneric classification in *Dryandra* R. Br. (Proteaceae: Grevilleoideae). *Nuytsia* 10: 313-408.
- Hopper, S.D. (1989). New subspecies of *Banksia seminuda* and *B. occidentalis* (Proteaceae) from the south coast of Western Australia. *Nuytsia* 7: 15-24.
- Thiele, K. & Ladiges, P. (1994). The *Banksia integrifolia* L.f. species complex (Proteaceae). *Austral. Syst. Bot.* 7: 393-408.
- Thiele, K. & Ladiges, P. (in press). A cladistic analysis of *Banksia* L.f. (Proteaceae). *Austral. Syst. Bot.*