

## A NEW SPECIES OF *APTEROPTERIS* (HYMENOPHYLLACEAE) FROM TASMANIA

by

A.M. GRAY\* AND R.G. WILLIAMS†

### INTRODUCTION

The genus *Apteropteris* occurs only in New Zealand and in Tasmania; it is not known from mainland Australia. All material has previously been assigned to *A. malingii* (Hook.) Copeland (1938) which is the type species and which was apparently first discovered and collected by C. Maling on the ranges of Golden Bay, New Zealand, in 1861 (Hooker, 1862: pl. 64, as *Trichomanes malingii*). Detailed examination of extensive, widely separated Tasmanian collections, some New Zealand material and, as well, critical interpretation of descriptions presented in numerous botanical references has shown quite clearly that Tasmanian material represents a species distinct from *A. malingii*. This new species is described here.

### DESCRIPTION

***Apteropteris applanata*** A.M. Gray & R.G. Williams, sp. nov.

*A. malingii* (Hook.) Copeland affinis, sed differt sic:

*Rhachis* anguste alata, eius alae e basibus decurrentibus segmenti secundarii formantes; *segmenti ultimi* manifeste alati, applanati (nec teretia nec rigidi), lineari-oblongi, ratione longitudinis-latitudinis 3.5 : 1; *involucrum* ovoideo-cupulare, vix valvatum, margine integra (haud denticulata), ob tomentum vix obscuratum, bicostatum, costis ex porrectione distali alarum laminarum formatis; *receptaculum* prominens praecipue exsertum (raro omnino inclusum), saepe usque ad 1.5 mm praeter marginem involucri protrudens, teres et setaceum; *sporangia* prominentia, item praeter marginem involucri protrudentia.

Similar to *A. malingii* (Hook.) Copeland, but differing from that species thus:

*Rhachis* narrowly winged, the wings formed from the decurrent bases of the secondary segments and extending proximally to each successive lower group. *Ultimate segments* distinctly winged, flattened, not terete, not rigid, linear-oblong, length-breadth ratio 3.5 : 1. *Involucre* ovoid cupular, scarcely valved, with entire not denticulate rim, hardly obscured by the tomentum; involucre bicostate, the costae consisting of the distal extensions of the laminar wings. *Receptacle* rarely entirely enclosed, mostly exsert, prominent, often up to 1.5 mm beyond the rim of the involucre, terete, setaceous. *Sporangia* protruding beyond rim of involucre, prominent.

TYPE COLLECTION: eastern slopes of the Mt. King William range, central western Tasmania (42° 15' 28" S, 146° 09' 30" E; alt. c. 800 m), A.M. Gray & R.G. Williams 231, 10.ix.1977 (Holotype: HO; Isotypes: MEL, CANB, NSW, CHR.)

#### ALSO EXAMINED:

Tasmania Mt. King William I., (42° 15' 31" S, 146° 09' 30" E; alt. c. 760 m), A.M. Gray, 19.vi.1975 (HO, CHR, CANB, NSW); Waldheim Forest, Cradle Valley, (41° 38' 10" S, 145° 56' 30" E; alt. c. 930 m), A.M. Gray, 30.xii.1975 (HO, CHR, CANB, NSW); Cephissus River, Pine Valley, (41° 56' 45" S, 146° 03' 30" E; alt. c. 960 m), A. Moscal, 25.iv.1976 (HO, CHR, CANB, MEL); Lake Fenton, in Mt. Field National Park, (42° 40' 50" S, 146° 37' 45" E; alt. c. 960 m), A.M. Gray, 14.iv.1976 (HO, CHR, CANB, NSW, and the New Zealand Forest Research Institute); North-east ridge of Mt. Anne, S.W. Tas., (42° 55' 30" S, 146° 25' 45" E; alt. c. 800 m), A.M. Gray, 9.iv.1977 (HO, CHR, CANB, NSW).

\* 625 Huon Road, South Hobart, Tasmania, Australia 7000.

† Fairy Glen Road, Collinsvale, Tasmania, Australia 7012.





Fig. 1. *Apteropteris applanata* in situ on bark of *Athrotaxis selaginoides*, x c. 0.4.



Fig. 2. *Apteropteris applanata* showing the flattened frond segments, the conspicuous sporangia protruding beyond the rim of the involucre, and the protruding, bristle-like receptacle which becomes conspicuous after the sporangia are shed, x c. 2.5.



## DISCUSSION

The most obvious difference between the two species of *Apteropteris* is the presence, in *A. applanata*, of definite laminal wings; the ultimate frond segments are horizontally flattened and not terete and wingless as in *A. malingii*. Accordingly, the length-breadth ratio of the segments is less in *A. applanata*, (3-5 : 1) than in *A. malingii*, (8-12 : 1).

The involucre of *A. applanata* is hardly or not at all valved and the rim is entire or somewhat uneven but not denticulate.

The massed sporangia of *A. applanata* protrude well beyond the rim of the involucre and are most conspicuous. Following the shedding of the dehiscent sporangia, the bristle-like receptacle becomes very conspicuous, often protruding up to 1.5 mm beyond the rim of the involucre.

Critical examination of some characters is made difficult by the dense tomentum of stellate hairs covering members of this genus. Fresh, young material is desirable when making observations.



Fig. 3. *Apteropteris applanata* (left) and *A. malingii* (right). For *A. applanata* note the broad frond segments, and the receptacles which protrude well beyond the involucre rims. For *A. malingii* note the narrow segments and the terminal involucre; either ripe sporangia, or the receptacles left after the sporangia have been shed, are enclosed in the involucre.

*Apteropteris malingii* is usually epiphytic on the trunks of dead or dying *Libocedrus bidwillii*, rarely on *Dacrydium* or *Nothofagus* spp., and has been observed growing terrestrially (Copeland 1947). *A. applanata* is usually found on the trunks of living or dead *Athrotaxis* spp. (chiefly *A. selaginoides*) and, rarely, on the bark of *Banksia marginata*. Although preferring the trunks of certain trees on which to grow *A. applanata*, like *A. malingii*, will grow quite successfully as a terrestrial plant; *A. applanata* has been collected from fissures in quartzitic or schistose rocks, at a considerable altitude, often well above the tree-line.

The two species are widely separated geographically. As far as known, *A. malingii* is confined to New Zealand while *A. applanata* occurs only in Tasmania.

The specific epithet 'applanata' (Latin: flattened, expanded) is indicative of the most obvious difference between this species and its congener.

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