Two new combinations in *Corybas* and *Genoplesium* (Orchidaceae) for New South Wales.

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Abstract

The new combinations, *Corybas longitubus* (D.L.Jones & L.M.Copel.) M.A.M.Renner and *Genoplesium trifidum* (Rupp) M.A.M.Renner, are provided for a species described in a genus not currently accepted (*Corysanthes*), and for another species described in a genus since split (*Prasophyllum*) for which no valid combination in *Genoplesium* exists. The circumscription, recognition, and distribution of *Genoplesium trifidum* are all reconsidered.

Introduction

Preparation of the Australian Plant Census (APC 2019) treatment for Orchidaceae identified two orphaned species from New South Wales. These are taxa that are accepted, but for which no combinations in accepted genera are currently available.

Salisbury proposed the genus *Corybas* Salisb. based on *Corybas aconitiflorus* Salisb., in Hooker (1807). Brown (1810) was unimpressed by Salisbury's illustration and description, and published his own genus, *Corysanthes* R.Br., and species, *Corysanthes bicalcarata* R.Br. (=*Corybas aconitiflorus*); the lectotype of Brown's *Corysanthes* is *Corysanthes fimbriata* R.Br. (=*Corybas fimbriatus* (R.Br.) Rchb.f.), designated by Endlicher (1837). Salisbury's *Corybas* was not accepted by Bentham (1873), and for many years thereafter *Corysanthes* was used in preference (e.g., Rupp 1942). A third genus, *Nematoceros* Hook.f. was proposed for five species from New Zealand with filiform tepals (Hooker 1853). *Nematoceros* remained in occasional use in New Zealand, until the *Flora of New Zealand* treatment (Moore and Edgar 1970) placed all species under *Corybas*. During the latter half of the 20th Century all species previously assigned to *Corysanthes* and *Nematoceros* were placed in *Corybas*.

Both *Corysanthes* and *Nematoceros* were reinstated, and three new genera segregated from Australian and New Zealand *Corybas* by Jones et al. (2002): *Anzybas* D.L.Jones & M.A.Clem., *Molloybas* D.L.Jones & M.A.Clem., and *Singularibas* D.L.Jones & M.A.Clem., the latter two were monotypic. Evidence supporting the recognition of these new and reinstated genera was published subsequently by Clements et al. (2002), which included recovery of monophyla in the nrITS gene tree corresponding with the proposed genera. The generic classification proposed by Jones et al. (2002) has not been widely adopted, and *Corybas* remains circumscribed in the broad sense in both Australia and New Zealand (Lehnebach et al. 2016).
Corysanthes longituba D.L. Jones & L.M.Copel. was newly described by Jones and Copeland (2018) for a taxon that had been informally recognized for more than two decades, as Corybas sp. A in the Flora of New South Wales (Jones 1993) and as Corybas sp. aff. dilitatus (Barrington Tops) in Bishop (1996). A combination for Jones and Copeland’s (2018) species under Corybas is proposed below.

Genoplesium R.Br. was reinstated by Jones and Clements (1989) for a distinctive group of species then placed in Prasophyllum R.Br. sect. Genoplesium (R.Br.) Hook.f., and this reinstatement has been widely adopted. However, Jones et al. (2002), in the absence of published supporting data and contrary to their own earlier interpretations of morphological evidence, proposed Fitzgerald’s genus Corunastylis also be reinstated, leaving Genoplesium monotypic. That latter proposal has not been universally adopted, and further generic splitting within the Prasophyllum complex based on nrITS sequence data alone (Clements and Jones 2019), make a broadly circumscribed Prasophyllum more appealing, given the disruption to morphological circumscription of Corunastylis introduced by Mecodium; and likely more stable. There are inherent limitations to nrITS (Alvarez and Wenzel 2003), and broad inference of relationships from single gene trees (Degnan and Rosenberg 2009), the latter of which has already had a destabilizing influence on orchid taxonomy in Australia (Jones et al. 2002; Hopper 2009; Clements et al. 2015). Until the veracity of relationships presented by Clements and Jones (2019) has been corroborated by additional data, including both chloroplast and low-copy nuclear genes, the National Herbarium of New South Wales will continue to recognize two genera, Prasophyllum and Genoplesium, sensu Clements and Jones (1989).

Prasophyllum trifidum Rupp was described from Castlecrag, a suburb on Sydney’s north shore (Rupp 1941). In the Flora of Queensland (Jones 1989, p. 384), P. trifidum was treated as Genoplesium trifidum (Rupp) D.L. Jones & M.A.Clem. but this name was invalid as full and direct reference to the place of publication of P. trifidum was not provided (see Articles 38.12 and 45.1 of International Code of Nomenclature, Turland et al. 2018). Prasophyllum trifidum was treated as a synonym of G. rufum (R.Br.) D.L. Jones & M.A.Clem. by Jones and Clements (1989), then reinstated in the genus Corunastylis by Jones and Clements (2004). Corunastylis is not accepted as distinct from Genoplesium, and a new combination for Rupp’s species is proposed below. Currently it is generally accepted that P. trifidum Rupp occurs only on the Northern and Central Coast of New South Wales, and Queensland records are referable to other species. Here the distribution and circumscription of G. trifidum are reconsidered with reference to the type material, with the result that many specimens attributed to this taxon are excluded, which has implications for the known distribution and abundance of G. trifidum.

Taxonomic Treatment

Corybas longitubus (D.L. Jones & L.M.Copel.) M.A.M.Renner comb. nov.

Basionym: Corysanthes longitubus D.L. Jones & L.M.Copel., Australian Orchid Review 83(6): 56 (2018).

Type: New South Wales; Barrington Tops, 50 m downstream of Manning River Camping area, 8 Sept. 2004, W.M. Dowling 412 (holotype: CANB 652827; isotypes: MEL, NSW 935081!)

≡ Corybas sp. A. sensu D.L. Jones, Flora of New South Wales Volume 4: 215 (1993)
≡ Corybas sp. aff. dilitatus (Barrington Tops)

For description, images, and recognition of this species see Jones and Copeland (2018).

Genoplesium trifidum (Rupp) M.A.M.Renner comb. nov.

Basionym: Prasophyllum trifidum Rupp, The Victorian Naturalist 58(2): 21 (1941).

Type citation: Castlecrag, Middle Harbour, Port Jackson; May 1940. (H.M.R.R.)

Type: Castlecrag, May 1940, H.M.R.Rupp (NSW 87486!)

≡ Genoplesium trifidum (Rupp) D.L.Jones, & M.A.Clem., Flora of south-eastern Queensland 3: 384 (1989) nom. inval.
≡ Corunastylis trifida (Rupp) D.L.Jones & M.A.Clem., The Orchadian, Scientific Supplement 14(8): xiii (2004)

Description: Leaf terete, 110–330 mm long, 1–2 mm wide, lamina sheathing the scape, linear, free lamina 15–30 mm long and 2–3 mm wide, ending below or level with the first flower. Inflorescence 160–380 mm long, bearing 10–42 flowers on a spike 12–43 mm long; flowers opening in sequence from the base; pedicel and ovary straight, 1–4 mm long, lengthening with age such that young spikes with newly opened flowers are densely crowded while older spikes with all flowers open and presenting may be openly spaced. Flowers porrect to deflexed, dorsal sepal 3 mm long, 1.5 mm wide, triangular-ovate, concave and inflated at medial base, apex shortly attenuate, not bearing a gland; lateral sepals 4 mm long, 1 mm wide, linear-lanceolate,
of New South Wales was collected in 1949. The most recent genuine and correctly identified specimen held by the National Herbarium collection made in January at Oxford Falls. No information on habitat or microsite is recorded in association with the specimens. The series of specimens collected during the 1940's from Castlecrag, Castlecove, and Roseville by Rupp, Dockrill, Bowden and Schmidt are morphologically homogeneous, sharing all of the characters presented in the recognition section above. Most specimens in the National Herbarium of New South Wales identified as *G. trifidum* do not possess this combination of distinctive characters. The distribution and shape of glands, the size and shape of column arms, petals, and sepals, are all significant characters with regards species circumscription (e.g. Jones 2001), implying specimens lacking the characters possessed by the type have been misidentified.

The *Genoplesium trifidum* can be recognized by the combination of 1) closely ciliolate labellum margins, wherein the marginal cells are elongate, and their ends are free from neighbouring cells; 2) the papillose callus surface; 3) the elliptic-ovate labellum whose apex is acute; 4) the pale, cinctate to hook-shaped gland attached to the apex of each petal and typically presenting on the inner surface of the petal; 5) the absence of glands on the apex of the dorsal and lateral sepal, or presence of a minute usually fuscous gland-like protruberance; 6) the broad upper column arm that narrows to an obtuse to rounded apex, the lower column arm being narrow acuminate, and papillose to ciliolate at the apex. The pale cincturate to hook-shaped gland attached to the apex of each petal will immediately distinguish *G. trifidum* from all other similar species including *G. rufum*.

**Notes:** The specific epithet chosen by Rupp referred to the presence of three column arms, while this is a feature of flowers in some specimens, in which it presents as subdivision of the upper column arm, it is not consistently expressed. Subdivision of the upper column arm occurs sporadically in other species (M.A.M. Renner pers. obs.). Rupp (1941) stated in the protologue ‘no segments gland-tipped’ but this statement is in conflict with his own type, in which the petals each bear a gland at the petal apex. Presumably Rupp did not recognize these structures as glands, but exactly what he made of them is unclear as he omitted a description of the petals from his protologue. These glands were described and figured by Jones (1989).

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The *Genoplesium trifidum* (as *Corunastylis trifida* (Rupp) D.L.Jones & M.A.Clem.) image in Jones (2006) may not be this species, given the presence of conspicuous pale glands on the lateral sepal apex, and the absence of glands on the petals of the photographed plant.

**Distribution and ecology:** *Genoplesium trifidum* is endemic to New South Wales and is known with certainty only from the north shore of Sydney, in the vicinity of Castlecrag, Castlecove and Roselle, and from Oxford Falls. All reports from the North Coast of New South Wales and Queensland are referable to other species. All herbarium specimens are flowering, with most being collected in April or May, suggesting this is primarily an autumn-flowering species, though flowering at other times of the year is possible, as demonstrated by a collection made in January at Oxford Falls. No information on habitat or microsite is recorded in association with the specimens. The most recent genuine and correctly identified specimen held by the National Herbarium of New South Wales was collected in 1949.
Fig. 1. *Genoplesium trifidum* (Rupp) M.A.M. Renner. A, C: Petals; B: Dorsal sepal; D,E: Lateral sepals; F: Column; G: Column with labellum in lateral-oblique view showing labellum articulated on curved column-foot; H: Labellum; I: Cells of labellum margin. Scale bars A-F, H: 1 mm; G: 1 mm as indicated; I 160 µm as indicated. All from A.R. Rupp & H.M.R. Rupp (NSW 209997).

Conservation status: Data deficient. Historical confusion regarding the circumscription of *Genoplesium trifidum* and lack of recent collections to the immediate north of Sydney preclude an informed assessment. Although no recent collections are known within the National Herbarium of New South Wales, recent collections may exist under other names. Searchers in both herbarium and field are required. Habitat that
may be suitable for *G. rufum* occurs to the north of Castlecrag and Castlecove within Garigal National Park, around Manly Reservoir, and Narrabeen Lagoon. Searches here, and further afield including Ku-ring-gai Chase National Park and Berowra Valley National Park should be completed.

**Specimens examined:** New South Wales: Central Coast: Moore's Creek Roseville, 9 Apr 1949, *W. Schmidt* (NSW 210019); Oxford Falls, Jan 1940, *H.M.R. Rupp & C.A. Messmer* (NSW 210015); ibid, Jun 1940, *C.A. Messmer & H.M.R. Rupp* (NSW 210017); near Castlecove Golf Links, Middle Harbour, Port Jackson, Apr 1942, *H.M.R. Rupp* ex herb. Rupp 444b (NSW 210016); Castlecove, May 1945, *A.R. Rupp & H.M.R. Rupp* (NSW 210018); Roseville Golf Links, Apr 1949, *F.W. Schmidt* (NSW 9282); Castlecove, Apr 1948, *I. Bowden* (NSW 209997); Castlecove, Middle Harbour, Port Jackson, 16 Apr 1949, *A.W. Dockrill* (NSW 209996); Middlecove, Apr 1949, *I. Bowden* (NSW 209995).

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