

**CLARIFICATION OF THE TYPE COLLECTION OF
CORUNASTYLIS NUDISCAPA (HOOK.F.) D.L.JONES &
M.A.CLEM.**

Mark Wapstra

*Environmental Consulting Options Tasmania, 28 Suncrest Avenue, Lenah
Valley, Tasmania 7008; email: mark@ecotas.com.au*

INTRODUCTION

At the time of writing this article, *Corunastylis nudiscapa* was listed as Extinct in Tasmania (Schedule 3) on the Tasmanian *Threatened Species Protection Act 1995* and in *A Census of the Vascular Plants of Tasmania* (Buchanan 2007) because until April 2008 it had not been recorded in Tasmania since 1840 and 1852.

There have long been informal musings in Tasmania regarding the status of the species with informal suggestions that the taxon has never been present, a view never formally published. Here I present a review of the taxonomic and early collecting history of the taxon in Tasmania with a view to clarifying its status. A companion article in this volume (Bonham 2008) relates the recent re-discovery of the species in the hills behind Hobart.

TAXONOMIC AND PUBLICATION HISTORY

The taxon was first described by Joseph Hooker in 1858 in his monumental work *Flora Tasmaniae* as *Prasophyllum nudiscapum*. In a note following his Latin diagnosis he states:

“Of this curious little species I have seen only the few specimens gathered by myself, which are passing into fruit, and one from Victoria. It is closely allied and very similar indeed to *P. brachystachyum*, but distinguishable at once by the bract of the scape being placed close under the spike; it has, further, fewer smaller flowers, shorter staminodia, and a narrower labellum, with more erose margins. Younger specimens are however necessary to complete the description of the flower”.

The taxon was not included in *The Tasmanian Flora* (Rodway 1903) or *Native Orchids of Tasmania* (Firth 1965), and neither author provided notes for reasons to its exclusion. Curtis (1979) included the taxon in *The Student's Flora of Tasmania Part 4A* under *Prasophyllum rufum* R.Br. with the annotation “? *P. nudiscapum* Hook.f.”. The most recent name for Curtis' *P. rufum* is *Corunastylis tasmanica* (D.L.Jones) D.L.Jones & M.A.Clem., a widespread and relatively common species.

The genus *Genoplesium* was reinterpreted and expanded to include a number of small-flowered species formerly included in *Prasophyllum* (Jones & Clements 1989). This change affected nine Tasmanian species of *Prasophyllum* included in Curtis (1979), including Hooker's *Prasophyllum nudiscapum*.

The taxon was included in *Native Orchids of Australia* as *Genoplesium nudiscapum* with a note to its existence in Tasmania (Jones 1988). It was later included in *The Orchids of Tasmania* (Jones *et al.* 1999) as *Genoplesium nudiscapum* with no notes regarding doubt as to its existence in the State, except with regard to its very likely extinct status, as promulgated by Jones (1998). Most recently, the taxon appears in *A Complete Guide to Native Orchids of Australia including the Island Territories* (Jones 2006), with a note on its distribution as “?Tas”, apparently indicating some doubt as to the Tasmanian origin of the collection.

COLLECTION HISTORY IN TASMANIA

Clements (1989) interpreted the type locality and collector of *C. nudiscapa* as “Tasmania, hill E. of Mt Wellington, 9 Feb. 1840, J.D.”, based on the annotations of the specimen held at Kew Herbarium, London (Plate 1). This citation was followed by Jones (1998). Hooker (1858) described the habitat as “sandy soil: near Hobart” and listed himself as the collector (in his usual annotation of “J.D.H.”).

That Hooker himself sighted the species in Tasmania seems clear by his statement in *Flora Tasmaniae*: “Of this curious little species I have seen only the few specimens gathered by myself, which are passing into fruit, and one from Victoria...”. The annotation on the type specimen is clearly in Hooker's hand writing (M. Clements pers. comm.) indicating very strongly that he was the actual collector of the material. This is supported by his lack of reference in his *Flora Tasmaniae* to other collectors because he usually specifically mentioned the names of other collectors. For example, for *Prasophyllum alpinum* he states the distribution as “Alpine and subalpine localities: Circular Head, *Gunn*; Mount Wellington, *Oldfield*; western Mountains, *Archer*”, and for *Prasophyllum nudum* he states “Collected by *Gunn*, but I do not know where” (Hooker 1858).

The type collection (Plate 1) has an annotation that is difficult to decipher with absolute certainty (Plate 2). The year written on the specimen sheet seems certain i.e. “1840”. However, the first part of the annotation is less clear. It has been previously interpreted by Clements (1989) as “9/2 ot 1840” implying 9 February 1840 although the meaning of the “ot” is unclear.

Hooker visited Tasmania in 1840 and 1841 as a member of the Antarctic expedition of Ross and Crozier (Hooker 1858) and he collected widely in the Hobart and Port Arthur areas (Buchanan 1988; Desmond 1999). Ronald Campbell Gunn, who was based in Hobart at the time as private secretary to Lieutenant-

Governor of Van Diemen's Land, Sir John Franklin, organised for an assistant to accompany Hooker on his botanical forays. While in Hobart, Hooker had use of Gunn's library and herbarium and together they collected in localities close to Hobart (Buchanan 1988). A small number of Hooker's collections (probably duplicates) from these excursions are found in Gunn's herbarium (Buchanan 1988).

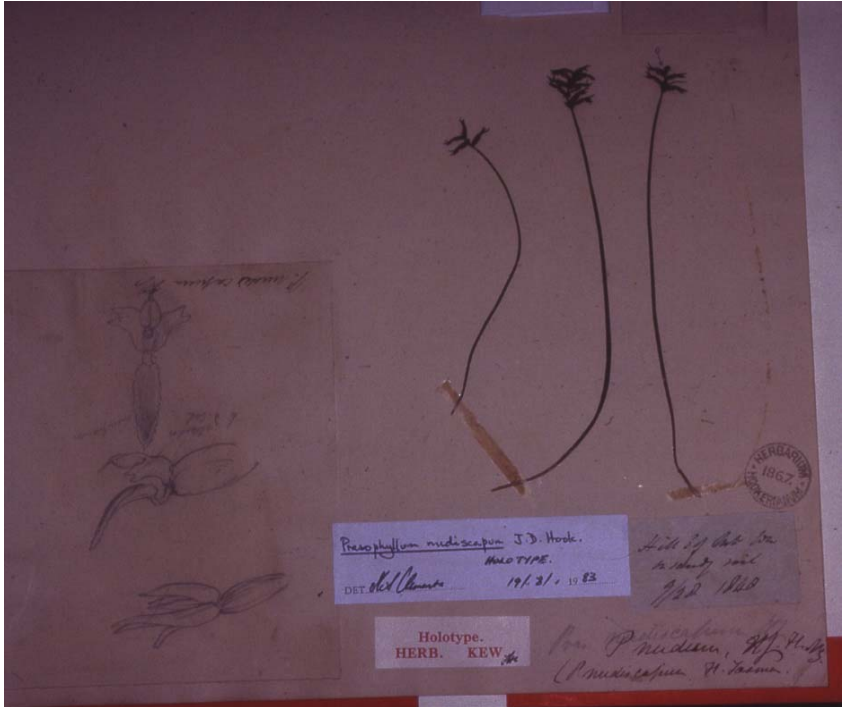


Plate 1. Photograph of the type collection of *Prasophyllum nudiscapum*. Note the elongate flower stalk and fertilised flowers of the inflorescence. The annotation is Hooker's handwriting and indicates the collection date (Plate 2). [Extract of copy of original slide of type sheet provided to Mark Clements by Royal Botanic Gardens, Kew, England].

The dates of Hooker's presence in Tasmania are clear from records of ships arriving and departing Hobart (e.g. Ross 1847; Nicholson 1985). The *Erebus* and *Terror* arrived for the first time in Hobart on 15-16 August 1840, departing for Antarctic regions on 12 November, returning to Hobart on 7 April 1841, and departing on 7 July 1841 for Port Jackson (Sydney) via no other ports. These dates, therefore, define when Hooker could have collected specimens.

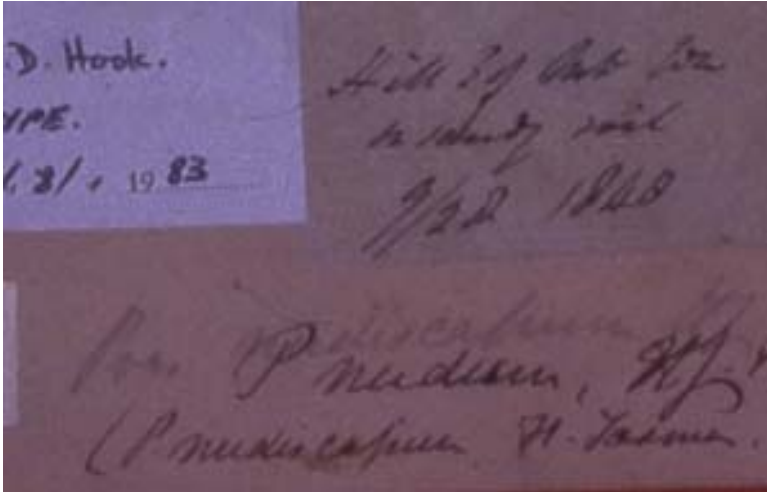


Plate 2. Annotation in Hooker's handwriting. [Extract of copy of original slide of type sheet provided to Mark Clements by Royal Botanic Gardens, Kew, England].

It is difficult to reconcile Hooker's annotations on the type collection, his own writings in his *Flora Tasmaniae* and the dates of his presence in Tasmania. It is clear that Hooker could not have collected the specimens on 9 February of 1840 because he was not present. It is also clear that he did not inadvertently write 1840 instead of 1841 because he was also not in Hobart in February of that year. It seems unlikely that Hooker meant a day in September (i.e. the first part of the script could be interpreted as "9" indicating the ninth month and the script after the slash is a date, perhaps 28 or 20 based on the resemblance of the second "number" to an 8 or the 0 in the 1840 that follows). Writing the month preceding the day (as in modern US style) is unlikely to have been the convention for a mid 1840s Englishman and collection in late September of post-fertilised material suggests a much earlier flowering period.

Hooker (1858) listed the flowering period of his *Prasophyllum nudicaulis* as "Fl. Aug.". The cited flowering period of August may have been a guess on Hooker's part because the specimens in his collection are well into the fruiting stage (M. Clements pers. comm.; Plate 1) and Hooker himself suggested that younger plants were needed to complete his description of the species (Hooker 1858). If he collected the specimens in 1840, he had between 16 August and 12 November to make the collection.

Most Tasmanian species of *Corunastylis* flower in later summer to early autumn with most flowering in January to March (Jones *et al.* 1999), and Jones (2006) lists

the flowering time for *C. nudiscapa* (presumably for Victorian sites) as November to December. The recent re-discovery of *C. nudiscapa* in Tasmania (Bonham 2008), perhaps from the same area as Hooker's original collection, suggests a flowering period of late summer because flowering and fertilised plants were recorded in early April. Based on this, and numerous personal collections of *Corunastylis* from later in summer, a collection by Hooker of *C. nudiscapa* in the months of his presence in Tasmania seems, at least at first, unlikely. However, recent examination of additional herbarium material has revealed the presence of an additional specimen of *C. nudiscapa* from Tasmania (M. Clements pers. comm.). This specimen is from "Sandy and peaty hills, Oyster Cove" collected on "4/10/52" with the date written in that format indicating a collection on 4th October 1852 (Plate 4). In addition, the type specimen of *C. despectans* is listed as September and specimens of that species have been collected in July, March, January and February (Jones & Clements 1989), indicating a potentially long flowering (or at least detection) period for other *Corunastylis* species.

Clements (1989) concluded that "although there is a discrepancy between the original type citation, and the collection details on the type specimen there is no doubt this is the material on which the name was based". On this basis, it seems reasonable to conclude that the type collection of *C. nudiscapa* is from Tasmania. The exact date of collection is unclear but it cannot be cited as 9 February 1840.

My own interpretation of the annotation on the type sheet is that the first symbol is an upper case "G" (representing the name of a collector, most likely Gunn). This postulation is supported by the resemblance of the first part of the script and similar script of Joseph Hooker where he uses an upper case "G" (Plate 3). The second symbol is a slash (indicating a separating of the first and following symbols). The third symbol is a "2" (representing the 2nd day of a month). Interpretation of the first symbol as a "G" implies that Gunn may have led Hooker to the specimens.

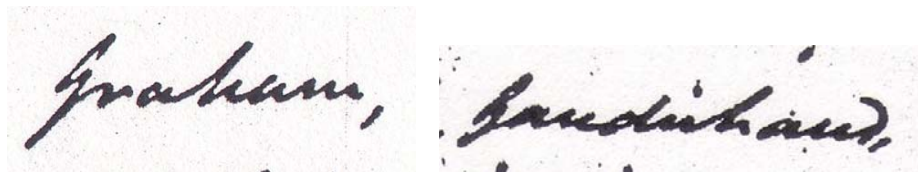


Plate 3. Examples of Hooker's handwriting from a letter he wrote to Robert Brown on July 13 1845, penned from his hotel in Paris. Note the strong resemblance of the first letter of the words "Graham" (from Dr Graham) and "Gaudichaud" to the first part of the script representing the date of collection on the type sheet shown in Plate 2.

The fourth part of the script is harder to decipher but in my opinion represents an upper case "O" or "D", indicating an abbreviated month of collection.

Interpretation of this symbol as an “O” seems the more plausible option. This is supported by the recent discovery of another Tasmanian specimen collected in October. My initial inclination was that the “O” was a “D”, representing December. However, this creates a more complex collection history not supported by Hooker’s own statements (Hooker 1858). A December collection implies that about three weeks after Hooker first departed Hobart bound for Antarctic waters, Gunn collected some material and provided (or mentioned) this to Hooker on his return to Hobart in April 1841. Given that Hooker stated that he had “...seen only the few specimens gathered by myself”, it may mean that Gunn took Hooker to where he had previously collected material on 2 December 1840 and Hooker collected material that had been fertilised (this would be possible in early April when Hooker was in Hobart again). Interpretation of the symbol as an “O” means that Hooker could have collected material himself.

PRESENCE IN TASMANIA

The exact location of Hooker’s collection will never be known precisely. The fact that Hooker noted the species to occur on “sandy soils” (Plate 2) suggests the presence of the species in the dry eucalypt forests and woodland on infertile sandstone-mudstone sites. Numerous hills between Hobart and Mt Wellington are potentially suitable including sites such as Knocklofty, Brushy Hill, Fossil Hill, Ridgeway, Tolmans Hill and Chimney Pot Hill. Slightly further afield several sites are superficially similar (e.g. Gordons Hill, Natone Hill, Knopwood Hill and Mornington Hill on the eastern shore; Mount Nelson, Bonnet Hill, Boronia Hill and Tinderbox Hills and south of Hobart; Goat Hills, Mount Faulkner and Rose Hills between Hobart and Granton/Sorell Creek) and may be worth searching for the species. Many of these sites actually occur on Jurassic dolerite, a substrate that generally does not produce sandy soils, or mudstones, which tends to produce clayey soils. It is likely that the early botanists would have interpreted soil types quite broadly so “sandy soils” as written by Hooker (1858) may have referred to any soils derived from sedimentary rock types.

The recent re-discovery of *C. nudiscapa* from the dry eucalypt forest adjacent to Huon Road above the Waterworks (Bonham 2008) suggests that this may even be the type location. However, given that habitat for the species is so poorly known due to a paucity of collections, further survey is clearly warranted, at first based on the infertile mudstone-based hills around the Waterworks Reserve and Oyster Cove. The dry forests and woodlands on mudstone/sandstone around Hobart have been quite thoroughly searched over the past few decades by numerous orchid enthusiasts. I would like to note here that the late Les Rubenach’s field notebooks indicate his knowledge of the discrepancy between Hooker’s time in Tasmania and the original type collection citation. Further, he had investigated the most likely sites around Hobart using expert geological advice. The recent re-discovery of the species from an area frequented by orchid enthusiasts suggests that a high level of

searching over numerous years may be needed to record species that may only be present under certain circumstances.



Plate 4. Photograph of the additional collection *Corunastylis nudiscapa* from Oyster Cove (middle specimen is *C. nudiscapa*, others are *C. despectans*). The label suggests that the specimens were collected on 4th October 1852 by Joseph Milligan from “sandy and peaty hills, Oyster Cove”, which is supported by other Milligan collections from the D’Entrecasteaux Channel area in October, November and December of 1852, including others from Oyster Cove on 4th October 1852 (A. Buchanan pers. comm.).

It is noted that at the time of writing this article, the Department of Primary Industries and Water’s *Natural Values Atlas* database (the depository of threatened flora records) includes a single record for *C. nudiscapa* with a grid reference of 525112mE 5255183mN (GDA94) with a precision of 5000 m, which places a point in the middle of New Town. It is recommended that the database precision be altered to at least 10000 m to capture a wider area of potential habitat likely to be considered in the planning processes for developments. Alternatively, altering the grid reference of the type location to that of the approximate site of re-discovery in the hills around the Waterworks may be more prudent. The eastern slopes of Knocklofty have long been thought of as the most likely site of original collection because of the “sandy soils” derived from Triassic sandstone (rather than the more clayey soils derived from mudstone of the Waterworks hills) but either the Huon

Road site or Knocklofty can be interpreted as a distinct “hill east of Mt Wellington”.

The additional Oyster Cove specimen should be allocated a grid reference (centred for convenience on the settlement of Oyster Cove for no other reason than as a point of reference – 519900mE 5227320mN) with a precision of a least 10 km and entered into the *Natural Values Atlas* database.

During the preparation of this manuscript, the legislated status of extinct on the Tasmanian *Threatened Species Protection Act 1995* remained appropriate. However, the re-discovery of the species (Bonham 2008) means that a status of endangered is now more appropriate.

DISTRIBUTION OUTSIDE TASMANIA

Jones (2006) indicates that *C. nudiscapa* occurs at only one site in southwest Victoria, where it grows in open forest close to a swamp in clay loam, but whether the Victorian material is a good match for the Tasmanian material is still under investigation. Listings of the species from other states such as Queensland and New South Wales or a different or more widespread distribution in Victoria than cited in Jones (2006) (e.g. Jones 1988; Backhouse & Jeanes 1995; Jones *et al.* 1999) are not reliable due to taxonomic changes to the genus. It is more likely that the Tasmanian entity will be recognised as endemic to Tasmania and if so, the original name applied by Hooker (1858) would take precedence over subsequent names, meaning we have *Corunastylis nudiscapa*.

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