Environmental Consulting Options Tasmania

AN ASSESSMENT OF THE SIGNIFICANCE OF PROPOSED STATE FOREST COUPE BG034A FOR SPECIES OF NATIVE ORCHID

Environmental Consulting Options Tasmania (ECO*tas*) for Forest Practices Authority

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Background, Scope and Purpose

ECO*tas* was engaged to provide an assessment of the significance of proposed State forest coupe BG034A for Tasmanian native orchid species.

This consultancy has arisen because Forestry Tasmania (Mersey District) proposes to subject BG034A to native forest silviculture. In correspondence (27 March 2007) between the Crowther family (who live immediately adjacent to the State forest) and Mr Bob Hamilton (Forestry Tasmania, Mersey District), the potential significance of this part of State forest for terrestrial native orchids was raised. Specifically, the Crowther family indicated that about 40 species of orchids have been found from within the proposed coupe area (and several more species in nearby areas), and the list provided in correspondence included three species currently listed on the Tasmanian *Threatened Species Protection Act 1995*.

The Forest Practices Authority engaged ECO*tas* to determine the significance of the proposed coupe, especially in regard to the potential of the area to support species of high conservation significance (e.g. legislatively listed species, species with unusual or disjunct distributions, etc.).

The report is deliberately brief and is not intended to provide recommendations or management prescriptions for threatened flora. It is the role of the Forest Practices Authority, through the provisions of the *Forest Practices Code*, to provide advice on the management of flora values to Forestry Tasmania. However, some opinion is expressed on the ecology of certain species, where this may be of relevance to the management decision process.

Methods

Several information sources were used to determine the conservation significance of BG034A with regard to orchid diversity and species, including:

- the list of orchid species provided by the Crowther family (27 March 2007);
- information sourced from the *Natural Values Atlas* (DPIW's database of biological data, including threatened species);
- discussions with orchid specialists, most notably Hans and Annie Wapstra (but also a opportunistic discussion with Jeff Jeanes in regard to some specific species);
- discussions with the Crowther family, which included examination of 47 years of collecting history from the area in the form of verbal anecdotes, annotated "mud maps", an album of immaculately pressed orchid specimens (which generally included a record of the approximate collection site and date), and several photos of numerous species from the area;
- a brief field assessment by Mark Wapstra (ECO*tas*), Nina Roberts (Forest Practices Authority) and Lucy Crowther (neighbouring land owner) on 24 August 2007, with a slightly longer and more extensive field assessment by Mark Wapstra on 20 September 2007.

With respect to the field assessments, it is important to note that the assessments on 24 August 2007 and 20 September 2007 are well outside the peak flowering season for many of the species considered likely to occur in BG034A because many species flower later in spring/summer. However, the initial assessment was designed to deliberately coincide with the flowering period of *Cyrtostylis robusta* (a threatened species) because this species had been noted in the Crowther correspondence as being present. It is also noted that the 2007-2008 "season" is likely to be marginal to moderate with respect to orchid flowering response because of the general lack of rain in the region.

The field assessment was guided by the knowledge of Lucy Crowther with respect to the location of certain orchid species. Detailed botanical plot information was not recorded because the main purpose of the survey was to determine the significance of the site with respect to orchid diversity.

However, sufficient field notes on habitat types (particularly site characteristics such as geology, fire history, vegetation structure and composition, etc.) and digital images of representative examples of several vegetation types were taken.

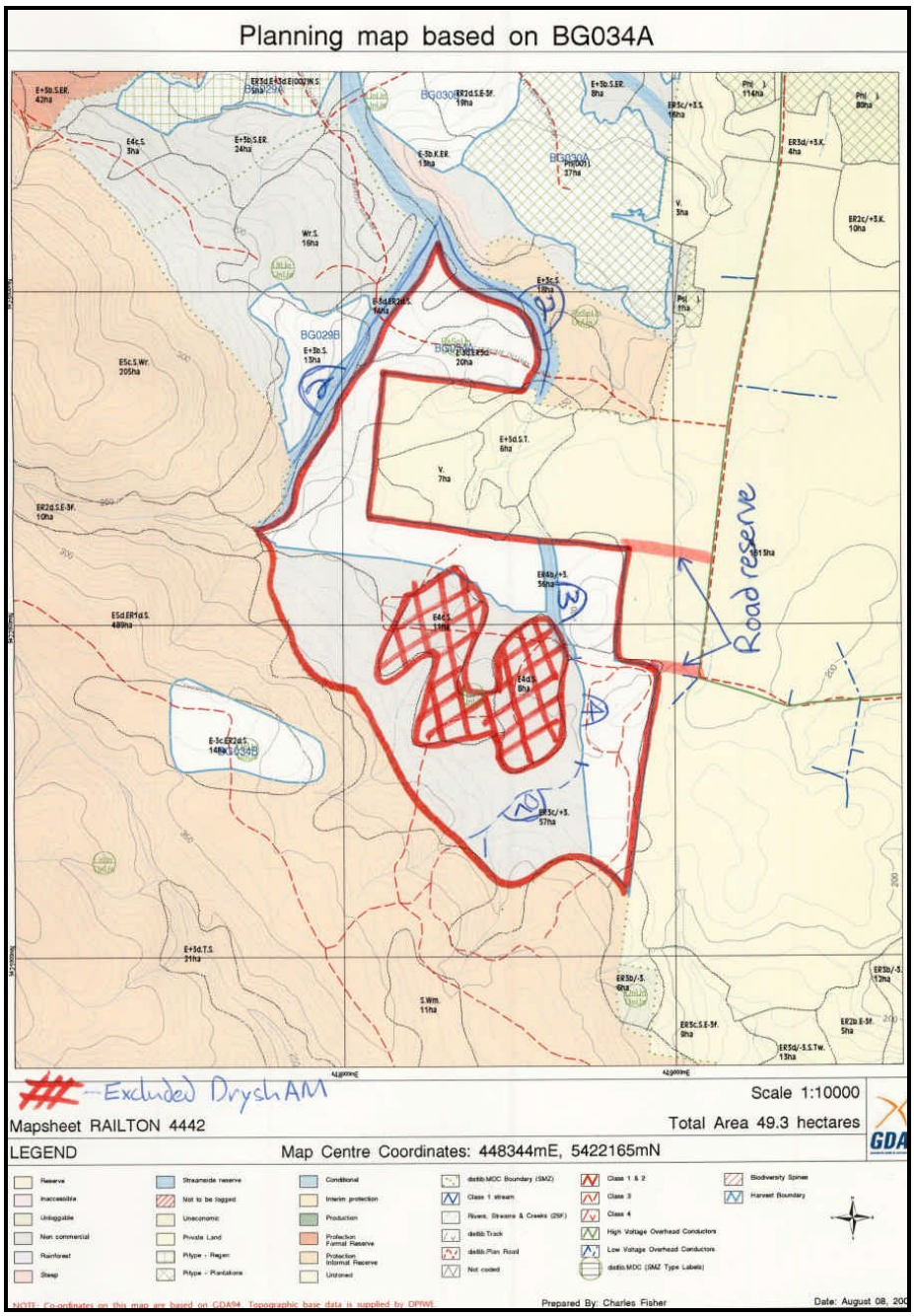

Figure 1. Study area (map supplied by Forest Practices Authority, original produced by Forestry Tasmania).

Results and Discussion

Comment on database sources

Databases such as Forestry Tasmania's *Conserve* database are designed to alert a planning forester to the actual or potential presence of significant biological values. In this case, a standard CONREP report would not indicate the likely presence of threatened orchid species from BG034A because there are no records of listed species within 5 km of the proposed coupe.

There are obvious limitations to databases that include only threatened species information because the significance of a site with respect to overall diversity or to particular species with unusual distributions (e.g. a non-threatened species with a disjunct distribution) will not be indicated.

Orchid species have been quite well mapped in Tasmania because of various longer term projects and the information included in the *Natural Values Atlas* is quite comprehensive, even with respect to non-threatened species. It is rare to have available a comprehensive list as provided by the Crowther family to complement existing database information.

Comment on database information

The *Natural Values Atlas* report indicates several records of non-threatened orchids from within and close to BG034A. The nearest records of threatened orchids to the proposed coupe are from the Henry Somerset Orchid Conservation Area near Latrobe (where species such as *Caladenia tonellii*, *Caladenia caudata*, *Caladenia congesta* and *Corunastylis nuda* have been recorded, amongst several other non-threatened species).

Orchid diversity within BG034A

Irrespective of the lack of information on orchid diversity provided by database sources, it is clear that BG034A (and surrounds) supports a relatively high orchid diversity. This comment is based on the comprehensive list provided by the Crowther family, supplemented with on-site discussions.

Approximately 40 species of orchid have been recorded from BG034A over a 47 year period. The term "approximately" is used deliberately because some of the species noted in the list are likely to represent more than one entity (see discussion below).

It is not highly unusual for a frequently and regularly visited site by dedicated orchid enthusiasts to support a high diversity of species. On the one hand, this is an obvious consequence of a long collecting history (in this case 47 years). On the other, a site with a naturally low diversity will obviously produce a shorter list irrespective of the length of time spent searching for species. Some orchid "hotspots" include the Freycinet Peninsula (which has one of the longest collecting histories for any part of the State by numerous orchid enthusiasts and specialists, and where over 80 species have been recorded), the Peter Murrell Conservation Area in south-eastern Tasmania (a similarly long collecting history, although orchid diversity is becoming significantly reduced due to the lack of a fire and other disturbance), the Henry Somerset Orchid Conservation Area near Latrobe (where over 50 species have been recorded) and the Circular Head area (which has a collecting history dating back to the early 1800s).

Orchid diversity at any particular site is a consequence of numerous factors. The collecting history has been discussed above. In general, the greater the diversity of potential habitats in any site (in this case, a "site" is the proposed coupe), the greater diversity of orchid species will be present. In the case of BG034A, the moderate elevational range, the drainage systems and the geology all indicate a site with the potential for a relatively high diversity. In addition, the topographic location of BG034A indicates a potential for high diversity. BG034A is in a transitional topographical position, located between the now largely cleared flats to the east and the steeper forested gully, slope and ridge systems to the west. These transitional locations often have a higher diversity than surrounding areas because species from both ends of a habitat continuum can be present.

It is interesting to note that the list of orchids for BG034A is quite lengthy but is "missing" several species that would often be considered likely to be present (e.g. species of *Diuris*). The fact that some distinctive species have not been recorded in 47 years of observations is a reasonable indication of their actual absence. However, many orchid species flower in response to disturbance (most notably fire) and the lack of fire in BG034A for about 26 years (as indicated by the Crowther family) will have a strong influence on the recent diversity of orchids: while there might be a list of over 40 species in the 47 year period, it would not surprise me if a set of surveys spread over the

peak flowering periods for most species undertaken at the present time (i.e. before a significant disturbance event) would produce a much shorter list (perhaps reduced by 50% or more).

Species by Species Commentary

The following discussion is ordered alphabetically by "genera" with comments on the species known to be present and those considered likely to be present. I have used the term "genera" in this manner because I have followed the nomenclature of *The Orchids of Tasmania* because all concerned parties have access to this book and perhaps not to the more recent, and somewhat confusing, taxonomic information. However, I do make notes of the currently accepted nomenclature.

Acianthus

Both *Acianthus caudatus* and *A. pusillus* have been recorded from BG034A. *A. caudatus* was recorded on both field assessments (see cover image). The presence of these two species is not unusual with respect to habitat and location. Neither species is considered to have a high priority for conservation management. Both species can produce vegetatively (from tubers) or from seed. Disturbance is not critical to the persistence of either species although fire frequency is generally moderate to high in typical habitat.

Arthrochilus (now *Thynninorchis*)

Neither species present or likely to be present based on distribution and habitat. No further commentary warranted.

Burnettia

Burnettia cuneata has not been recorded from BG034A. Very marginal potential habitat (damp buttongrass moorland, damp heathland and paperbark or teatree scrub) is present but the species only emerges for one season after a fire. It is highly unlikely this species is present. No further commentary warranted.

Caladenia

Seven species have been recorded from BG034A based on the Crowther list: *C. alata*, *C. angustata*, *C carnea*, *C. cracens*, *C. gracilis*, *C. pusilla* and *C. transitoria*.

Of these, specimens and photos confirmed the presence of *C. alata*, *C. angustata*, *C. cracens*, *C. gracilis* and *C. transitoria*. None of these species are threatened or of high conservation significance. The presence of these species is not unusual with respect to habitat and location. No further commentary warranted.

The presence of *C. carnea* is considered highly likely. However, the specimens and photos indicated that collections to date represent the closely related (and more recently described) *C. fuscata*. This comment is based on the fact that a photo of a "field" of "pink fingers" showed all specimens to be single flowered. *C. fuscata* tends to always be single flowered and *C. carnea* more than one flowered. The species co-occur but when present together *C. fuscata* tends to flower about two weeks before *C. carnea* (although there can be significant overlap). Neither of these species are threatened or of high conservation significance. The presence of these two species (if both are present) is not unusual with respect to habitat and location.

The presence of *C. pusilla* is dubious. This species is listed as rare on the Tasmanian *Threatened Species Protection Act 1995* so its "collection" from BG034A requires some discussion. *C. pusilla* is the smallest of the Tasmanian *Caladenia* species and if the key in *The Orchids of Tasmania* is strictly adhered to, many small-flowered specimens of various *Caladenia* species will key to *C. pusilla* (or *C. mentiens*). However, there are some distinguishing features of *C. pusilla* that allow discrimination from other small flowered forms of usually larger flowered species. *C. pusilla* almost invariably occurs in coastal to very near-coastal sites on sandy and soils. The only situations where

the species occurs in more "inland" situations is on King Island and localised parts of the northeast (e.g. Low Head area), where typical coastal habitat extends inland. Typical habitat (mainly heathland, occasionally open woodland) is effectively absent from BG034A. *C. pusilla* also has a short stiff scape, which is a very useful distinguishing character.

Specimens in the Crowther collection of the smaller-flowered *Caladenia* collected from the BG034A area were examined (Figure 2) and these could easily be attributed to *C. alata* on the basis of the stellate arrangement of the corolla segments, the sub-apiculate segments and the distinctive orange basal calli and calli rows on the labellum. It is not unusual for *C. alata* to have a relatively short stature. I am confident to state that *C. pusilla* is highly unlikely to be present in BG034A.

Figure 2. Pressed specimens of small-flowered short *Caladenia* from the Crowther collection.

It is interesting to note that the Crowther list does not include any spider-orchids i.e. the large flowered *Caladenia* species recently placed in (and once again displaced from) the genus *Arachnorchis*. Spider-orchids are perhaps one of the most distinctive suite of Tasmanian terrestrial orchids and if present are unlikely to be overlooked. Many respond to hot summer fires with a few prolific flowering seasons and then virtually disappear. The infrequent fires in BG034A might explain the absence of spider-orchids.

Of the formally listed threatened species on the Tasmanian *Threatened Species Protection Act 1995*, I would consider that only *C. congesta* could potentially be present. This statement is made because there are widey distributed records of this species from the north of the State and marginal potential habitat (heathy woodland and open forest) is present. However, this is a highly distinctive species and based on the Crowther list it is clear that the species would have recorded if present because other species with a coincident flowering period (November to January) have been recorded.

Caleana and *Paracaleana*

Caleana major has been recorded from BG034A. The presence of this species is not unusual with respect to habitat and location. BG034A is unlikely to support *Paracaleana minor* (formerly included in *Caleana*) because of lack of suitable habitat (tends to occur in heathier forest, often on moss-covered granite slabs). No further commentary warranted.

Calochilus

Two species have been recorded from BG034A based on the Crowther list: *C. robertsonii* and *C. paludosus*. The presence of these species is not unusual with respect to habitat and location. BG034A is highly unlikely to support any species of *Calochilus* listed on the Tasmanian *Threatened Species Protection Act 1995.* No further commentary warranted.

Chiloglottis

The Crowther list indicates the presence of four species in BG034A: *C. cornuta*, *C. gunnii*, *C. valida* and *C. reflexa*. Photos and specimens indicated that *C. cornuta*, *C. gunnii* and *C. reflexa* are present. The presence of these species is not unusual with respect to habitat and location. No further commentary warranted.

With respect to the listing of *C. valida*, the revised annotated list has corrected this to *C. triceratops*, a common and widespread species (*C. valida* is known in Tasmania only from King Island and is not likely to occur in BG034A).

It would be odd if BG034A and surrounds did not support *C. grammata* (not threatened), another common and widespread species, although it is more restricted to wetter forests at higher elevations. BG034A is highly unlikely to support any species of *Chiloglottis* listed on the Tasmanian *Threatened Species Protection Act 1995.* No further commentary warranted.

***Corunastylis* (= *Genoplesium*)**

Corunastylis despectans has been recorded from BG034A. Photos and pressed specimens confirmed the identification of the species. The presence of this species is not unusual with respect to habitat and location. BG034A is unlikely to support any species of *Corunastylis* listed on the Tasmanian *Threatened Species Protection Act 1995.* The only species with a marginal chance of being present is *C. nuda*, a species that is listed as rare, although it is widespread and occurs in a wide variety of habitats. No further commentary warranted.

Corybas

The Crowther list indicates the presence of three species in BG034A: *C. aconitiflorus*, *C. diemenicus* and *C. unguiculatus*. Photos and specimens indicated the presence of these species and at least *C. diemenicus* was recorded on 24 August 2007 (based on leaves, habitat and flowering period). The presence of these species is not unusual with respect to habitat and location. It would not surprise me if *C. incurvus* (not threatened) is recorded at some point, especially if fire frequency increase to moderate to high rather than low. No further commentary warranted.

Cryptostylis

Cryptostylis subulata has been recorded from BG034A. The presence of this species is not unusual with respect to habitat and location. The site for the species was examined (17 leaves present in an approximate 2 x 2 m area). BG034A is highly unlikely to support *C. leptochila* (a threatened species, known only from Flinders Island). No further commentary warranted.

Cyrtostylis

The Crowther list indicates the presence of both species in BG034A: *C. reniformis* and *C. robusta*. Because *C. robusta* is listed, pressed specimens from BG034A were examined. All can be easily attributed to the non threatened *C. reniformis* on the basis of leaf colour, leaf size and flora morphology, specifically the size of the labella (none greater than 10 mm long by 4 mm wide, well within the range for *C. reniformis* but well outside the range for *C. robusta*).

Most of the specimens examined were small in stature (c. 10 cm) with quite small leaves i.e. very typical *C. reniformis*. One specimen was 17 cm tall (13 cm to first flower) with a large leaf (Figure 3). While such a height is unusual, it is not outside the range expected for a specimen growing through thick leaf litter and a dense bracken understorey. *C. robusta* is almost always very near-

coastal (on the mainland it can occur further inland but only in habitats typical of a coastal environment) and BG034A does not display any of the features of typical *C. robusta* habitat.

The presence of *C. reniformis* is not unusual with respect to habitat and location. I am very comfortable to entirely discount the presence of *C. robusta* on the evidence presented. No further commentary warranted.

Figure 3. Pressed specimens of *Cyrtostylis* from the Crowther collection.

Dipodium

Dipodium roseum has been recorded from BG034A. The presence of this species is not unusual with respect to habitat and location. No further commentary warranted.

Diuris

The Crowther list indicates that no species of *Diuris* have been recorded from BG034A. I find this somewhat surprising based on the habitats present but these are distinctive species and unlikely to have been overlooked. BG034A is highly unlikely to support any species of *Diuris* listed on the Tasmanian *Threatened Species Protection Act 1995.*No further commentary warranted.

Dockrillia

Dockrillia striolata has not been recorded from BG034A. Potential habitat (rock faces and boulders, usually granite, restricted to the northeast) is entirely absent. No further commentary warranted.

Eriochilus

Eriochilus cucullatus has been recorded from BG034A (and leaves of the species were recorded from the northern section of BG034A on 24 August 2007). The presence of this species is not unusual with respect to habitat and location. No further commentary warranted.

Gastrodia

Gastrodia procera is included on the Crowther list. However, examination of photos indicated the species to be *G. procera*. The presence of *G. sesamoides* is not unlikely, although flowering is strongly promoted by summer fires, which have been absent for at least 26 years. The presence of *G. procera* is not unusual with respect to habitat and location (this species does not require fires to flower although flowering can be enhanced by summer fires). No further commentary warranted.

Glossodia

Glossodia major has been recorded from BG034A. The presence of this species is not unusual with respect to habitat and location. No further commentary warranted.

Leptoceras

Leptoceras menziesii has not been recorded from BG034A. Potential habitat (heathland and heathy open eucalypt forest, usually in very near-coastal areas) is effectively absent. No further commentary warranted.

Lyperanthus

Lyperanthus suaveolens has not been recorded from BG034A. Potential habitat (heathy and sedgy open eucalypt forest and woodland, sedgeland, heathland and grassland, usually in near-coastal areas) is effectively absent. No further commentary warranted.

***Microtis* (incorporating all recently erected genera)**

Microtis unifolia has been recorded from BG034A (based on the original Crowther list) and *M. parviflora* has also been recorded (based on the annotated list used during discussions). The presence of these species is not unusual with respect to habitat and location. BG034A is highly unlikely to support any species of "*Microtis*" listed on the Tasmanian *Threatened Species Protection Act 1995.* No further commentary warranted.

Orthoceras

Orthoceras strictum has not been recorded from BG034A. Potential habitat (buttongrass moorland, sedgy and scrubby heathland) is absent. No further commentary warranted.

Prasophyllum

Two species have been recorded from BG034A based on the Crowther list: *P. brevilabre* and *P. flavum*. The presence of these species is not unusual with respect to habitat and location. BG034A is highly unlikely to support any species of *Prasophyllum* listed on the Tasmanian *Threatened Species Protection Act 1995.* No further commentary warranted.

Pterostylis

Four species have been recorded from BG034A based on the Crowther list: *P. atriola*, *P. nutans*, *P pedunculata* and *P. tasmanica*.

Of these, specimens and photos confirmed the presence of *P. nutans*, *P pedunculata* and *P. tasmanica*. Both *P. nutans* and *P. pedunculata* were found flowering within the coupe on 24 August 2007 (see cover images). None of these species are threatened or of high conservation significance. The presence of these species is not unusual with respect to habitat and location. No further commentary warranted.

It is interesting to note that the Crowther list does not include any of the *P. "longifolia"* complex such as *P. melagramma*. The field assessment of 20 September 2007 recorded a small patch of *P. melagramma* (see cover image), effectively filling this gap in the expected species list.

Excluding the discussion below regarding *P. atriola*, of the other formally listed threatened species on the Tasmanian *Threatened Species Protection Act 1995*, I would consider that only *P.*

grandiflora could potentially be present in BG034A. This statement is made because there are widey distributed records of this species from the north of the State and marginal potential habitat (heathy and shrubby ope eucalypt forest) is present. However, this is a highly distinctive species and based on the Crowther list it is clear that the species would have recorded if present because other species with a coincident flowering period (April to August, essentially a winter flowering species) have been recorded. In addition, the species has not been recorded further west than around the Asbestos Ranges.

The possible presence of *P. atriola* requires further commentary. This species is listed as endangered on the Tasmanian *Threatened Species Protection Act 1995* so its "collection" from BG034A requires some discussion. *P. atriola* is a recently recognised species in the *P. aphylla*/*parviflora* complex (these small inward facing flowered species were temporarily assigned to the genus *Speculantha*). Given that our discussions indicated that specimens of this entity were noted in autumn (February to March), the most likely candidates are *P. atriola* or *P. parviflora* because the other two "*Speculantha*" species flower at a different time of year and occupy different habitats to those present in BG034A. *P. uliginosa* occurs in buttongrass moorland and sedgeland, is apparently restricted to the east and south coasts and flowers from late December and into January. *P. aphylla* occurs in buttongrass moorland, sedgeland, heathland and heathy open eucalypt forest and woodland and flowers from October to March, although lowland populations flower in the earlier part of this period. Both *P. uliginosa* and *P. aphylla* have distinctly fleshy scapes, a character not displayed by the pressed specimens, which all had much more wiry scapes.

The key to the "*Speculantha*" species provided in *The Orchids of Tasmania* appears to easily discriminate between *P. atriola* and *P. parviflora*, placing *P. parviflora* and *P. uliginosa* in one couplet based on possessing white and green (rarely slight brown in galea) flowers, and *P. aphylla* and *P. atriola* in another couplet based on possessing white, green and brown flowers. The sheet of pressed specimens included about six collections (Figure 4). Most had wiry scapes with small flowers that were clearly green and white and lacked any substantial brown colouration, suggesting identification as *P. parviflora*. On my first visit, I neglected to examine the specimens microscopically.

Figure 4. Pressed specimens of small-flowered *Pterostylis* from the Crowther collection. Note the variation in flower colour and scape height (taller light green-white flowers in middle of page; shorter darker green brown-suffused flowers in bottom and lower middle of page).

P. atriola tends to occur in colder habitats such as the top of Snug Tiers in the southeast, the Lake Leake area in the central east and the summit of Mount Montgomery in the central north. Having said this, I have also observed *P. atriola* in less "cold" habitats such as at the Wielangta State forest on the east coast and the relatively mild dry sclerophyll forests of the Pioneer area in the northeast, so I would not entirely discount the possible presence of *P. atriola* from BG034A.

A couple of the specimens on the page examined had shorter thicker scapes and flowers that were larger, less held on "branches" (as is typical for *P. parviflora*) and slightly suffused with brown (Figure 4). This led me to re-examine the specimens microscopically (on 20 September 2007) because *P. parviflora* and *P. atriola* are distinct in their dorsal sepal sculpture: *P. parviflora* has an entirely smooth dorsal sepal and *P. atriola* has a dorsal sepal possessing scabrid bumps, especially near its summit and tip, a character that transcends the need to consider flower colour *per se*. I examined my own collection of "*Speculantha*" species and found this character to hold true in all cases (Figure 5).

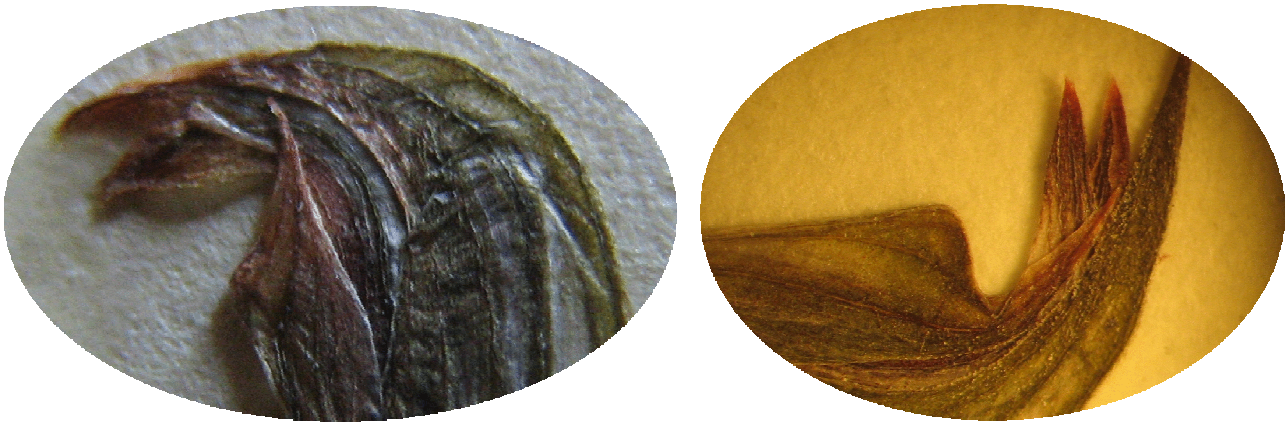

Figure 5. Close-up images of the galea of pressed specimens of *Pterostylis parviflora* (left hand side) and *Pterostylis atriola* (right hand side) from Mark Wapstra's personal herbarium (note: specimens have had their identifications confirmed by specialists). Note the complete smoothness of the galea surface in *P. parviflora* and the minutely scabrid galea surface in *P. atriola* (very obvious under a microscope).

All the specimens collected from BG034A held in the Crowther collection clearly have scabrid dorsal sepals (Figure 5). Based on the flowering time, the wiry scapes (as opposed to fleshy thicker scapes) and the morphology of the flowers, I am entirely confident that the specimens from BG034A represent *P. atriola*, a threatened species.

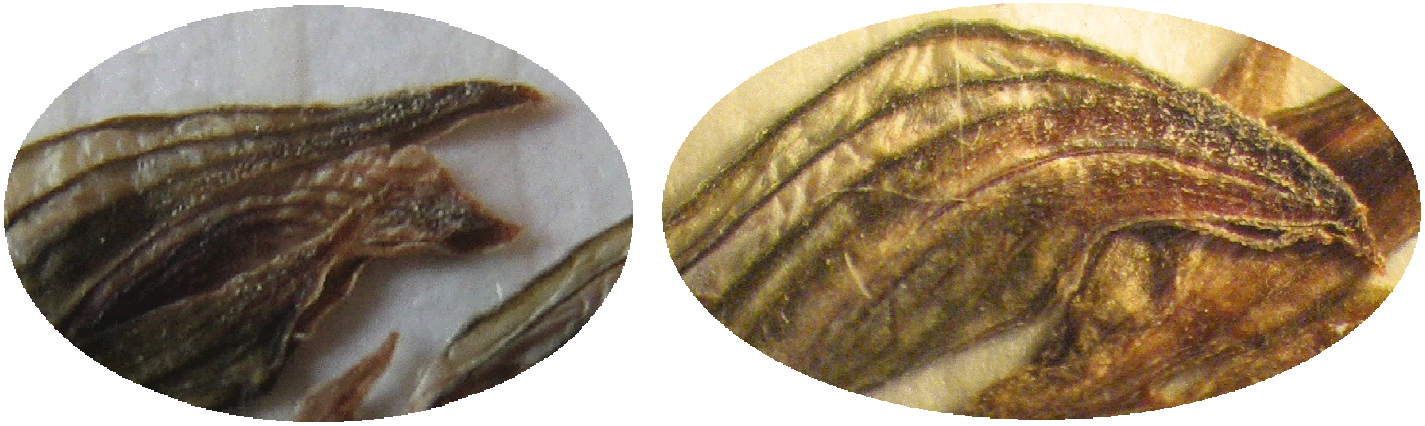

Figure 6. Close-up images of small-flowered *Pterostylis* specimens from the Crowther collection. Note the distinctive scabridicity to the dorsal surface of the galea, especially near the tip of the dorsal sepal.

The collection site of *P. atriola* was examined on 20 September 2007, noting the absence of flowering at the present time, to assess the potential of the remainder of the proposed coupe to support the species (cover photo shows typical forest composition and structure). The shrubby dry sclerophyll forest dominated by *Eucalyptus obliqua* and *E. amygdalina* present throughout much of BG034A is similar in structure and composition to the collection site. The question of whether *P. atriola* is likely to be more widespread is difficult to answer definitively but the fact that the Crowther collection is restricted to a single patch of forest and that the observations of the Crowthers are reliable, I am inclined to suggest that *P. atriola* has a restricted distribution in BG034A. This is not atypical for the "*Speculantha*" greenhoods, which are often localised in their occurrences. My experience with P. atriola sites suggests quite a wide range of densities from highly localised small populations (e.g. South Coast Track, Tebrakunna Road, Mount Montgomery) to widely separated low abundance populations (e.g. Wielangta area) to widespread and locally abundant populations (e.g. Snug Tiers and apparently the Lake Leake area).

Table 1 presents the approximate collection details for *P. atriola*. Note that I have not submitted this information to the *Natural Values Atlas* database because some key information is missing (collection date). I have requested this information from Lucy Crowther and once supplied, the Forest Practices Authority will be in a position to lodge the information. The easting and northing represent a GIS reading based on verbal directions provided by Lucy Crowther (see Figure 7 for context of site).

Table 1. Collection details of *P. atriola* from BG034A.

Species	Collector	Easting	Northing	Precision	Date
Pterostylis atriola	Joan Elliott	448240	5422265	50 m	

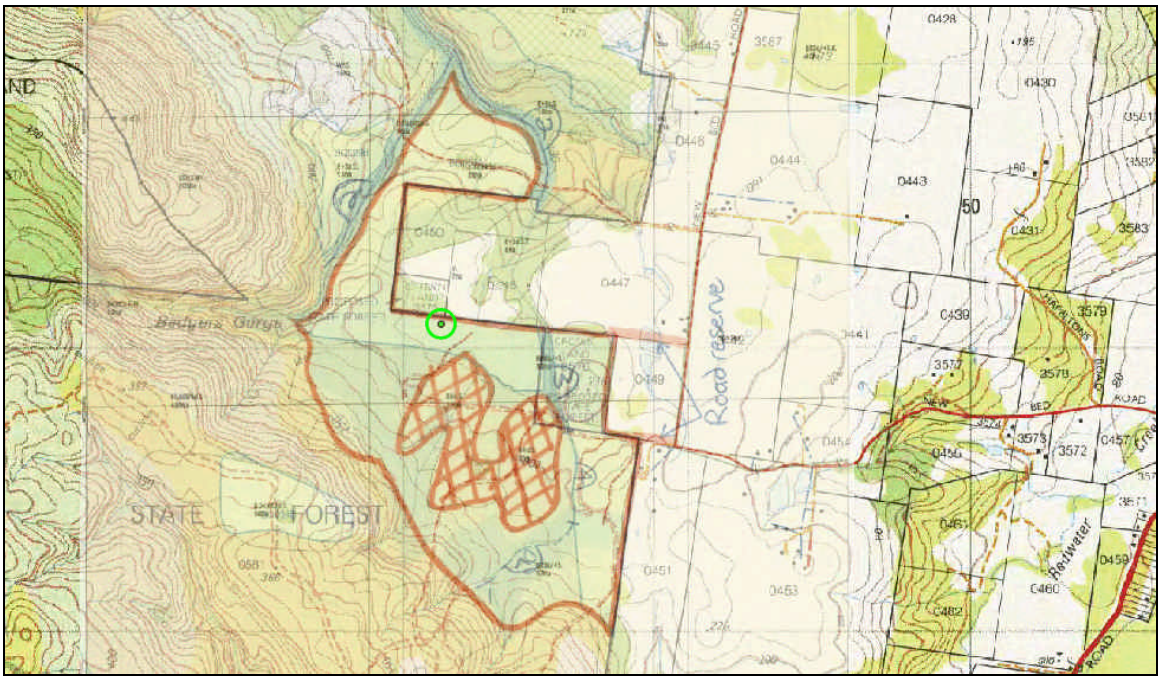

Figure 7. Location of *P. atriola* in BG034A (green dot). Note a 50 m buffer (green circle) has been placed around an approximate grid reference because the exact location of the original collection is not known precisely, although the location is quite accurate because it is identified by reference to property boundaries and walking/horse-riding trails in the area.

P. atriola is often located on disturbed sites. On Snug Tiers it occurs on the edges of regularly used 4WD tracks but it also occurs in less disturbed adjacent forest. At Wielangta the species occurs in the middle of frequently used dirt forestry tracks, in the pushed up gravel adjacent to graded forestry roads, in clearfelled and regenerating forest and in lightly selectively logged forest. The species appears to not require frequent fires to persist at a site but its pattern of distribution suggests that the species responds well to disturbance.

There have been no formal surveys for *P. atriola* in Tasmania. All current records are the result of taxonomic determinations of existing herbarium material (usually of *Pterostylis parviflora*, one of the members of a complex of at least four similar species in Tasmania) or opportunistic records from surveys for other purposes (e.g. development proposals, forestry operations). The site in BG034A represents a slight range in-filling being located between the most westerly location at Mount Montgomery and the next most easterly location at Holwell Gorge. The likelihood of its current known distribution being its actual distribution is low because further survey effort by people familiar with the species at the appropriate time of year (late January to early April) is likely to result in further subpopulations being discovered. Relatively recent records from the northeast (Wyniford River area), north (Mount Montgomery State Reserve) and the east coast (Wielangta area) support the supposition that the species is more widespread than indicated by current records (all of these records post-date the listing statement produced by DPIWE (TSU 2000)).

Pyrorchis

Pyrorchis nigricans has not been recorded from BG034A. Marginal potential habitat (heathy eucalypt woodland, teatree scrub, sedgeland and heathland) is present, although the species tends to be slightly more near coastal in its distribution. This is a highly distinctive species but is generally only recorded flowering after a fire event (although the distinctive ground hugging leaves are often present). No further commentary warranted.

Sarcochilus

The Crowther list indicates the presence of *Sarcochilus australis* from BG034A. However, further discussion indicated that this listing represents a translocated population (from material from the Bakers Beach area a couple of decades old supplied by Peter Tonelli). The population has apparently not been observed for several years. Interestingly, I would not discount the presence of the species from permanently moist drainage systems in this area because the species is occasionally locally common in the central north of the State. Even if present, it is my opinion that streamside reserves as required by the *Forest Practices Code* will adequately cater for the species i.e. maintaining a moist microclimate in riparian forests.

Spiranthes

Spiranthes australis has not been recorded from BG034A. No potential habitat (poorly drained marshes and sedgelands) is present. No further commentary warranted.

Thelymitra

Five species have been recorded from BG034A based on the Crowther list: *T. aristata*, *T. cyanea*, *T. ixioides*, *T. pauciflora* and *T. rubra*. Some of these species were confirmed by reference to specimens and photos. Leaves of a least two species were recorded in the field on 24 August 2007 (one is almost certainly *T. aristata* based on the size of the leaf). The presence of these species is not unusual with respect to habitat and location.

The taxonomy of *Thelymitra* is moderately complex with several new species being described in recent years (and several more in press), mainly from within the *T. pauciflora – T. nuda* species complex. Whether the specimens recorded as *T. pauciflora* from within BG034A are that species or a closely related one is unknown and fresh material would be needed to confirm the identification.

BG034A is unlikely to support any species of *Thelymitra* listed on the Tasmanian *Threatened Species Protection Act 1995.* Listed species include *T. antennifera* ("rabbit-ears", perhaps one of the most distinctive species because of its colour and floral morphology, tends to be a very near-coastal species), *T. benthamiana* (highly distinctive blotched brown and yellow species restricted to Flinders Island), *T. bracteata* (restricted to south and east of the State, distinctive "new" species), *T. holmesii* (distinctive even in bud because of its brownish colouration), *T. jonesii* (very distinctive colour and column hood morphology), *T. malvina* (distinctive mauve colour to the column tufts, very near-coastal species) and *T. malvina* (another very near-coastal species with a distinctive column covered in sticky white powder). So while there are several listed species in the genus, the listed species are distinctive and occur in well-defined habitats and have quite restricted distributions that do not coincide with those presented in BG034A. No further commentary warranted.

Townsonia

Townsonia viridis has not been recorded from BG034A. No potential habitat (mixed forest and rainforest with *Nothofagus cunninghamii*) is present. No further commentary warranted.

Summary

Proposed State forest coupe BG034A was assessed for the significance in regard to native orchid diversity by reference to database information, local landowner knowledge and a brief site assessment.

BG034A presents a relatively diverse range of habitats and the coupe occurs on a topographically transitional site, resulting in a relatively high diversity of native orchid species being present. The diversity of species is not highly unusual relative to some other sites in the State, especially considering the 47 years of observations, but it is rare to have such detailed information on localised biodiversity values, and this should be recognised.

BG034A has not been burnt in c. 26 years. This is likely to have resulted in a temporal shift in both species diversity and abundance because many species of native orchids respond positively to a moderate to high fire frequency.

One species, *Pterostylis atriola* (snug greenhood), listed as threatened (endangered) on the Tasmanian *Threatened Species Protection Act 1995* is recorded from within BG034A. Some comments on the significance of this location are provided above in the discussion on the *Pterostylis* genus. It is my opinion that *P. atriola* is likely to occur in low numbers in BG034A and is possibly currently restricted to the one location. In the absence of disturbance (whether this be in the form of a prescribed burn and/or native forest silviculture) it is possible that the species' presence may become tenuous as the understorey becomes denser. It is possible that some canopy disturbance adjacent to the known site associated with ground disturbance will benefit the species (based on my observations of the species' distribution in the Wielangta forest area). Whether the specific site in BG034A should be deliberately disturbed (and to what degree e.g. light burn vs. intensive ground and canopy disturbance) or retained intact (and with what size "buffer e.g. 10 m vs 50 m vs 100 m) to assist in the species either persisting or becoming more widespread is difficult to comment on. Post-disturbance monitoring of the site and surrounds may yield answers to these questions but caution is warranted because it will always be difficult to separate natural fluctuations in population numbers and distribution from those attributed to a disturbance event.

Native forest silviculture (of any form, whether very light selective harvesting or a more intensive seed tree retention system) is unlikely to pose any substantial threat to the diversity and/or abundance of native orchids in BG034A. In fact, it is my opinion that the form of disturbance usually associated with native forest silviculture is relatively benign to most species of orchid (including many threatened species). It is likely that disturbance to both the canopy and soil by timber extraction operations will result in a flush of renewed growth by many species, including

many that have not been recorded for over a decade. If the harvesting operation is accompanied by fire, this may further promote orchid flowering (although it is noted that the ideal type of fire is perhaps a "hot" summer fire).

References

Crowther, A. & Crowther, L. (2007). *Correspondence to Forestry Tasmania dated 27 March 2007*.

Department of Primary Industries & Water (DPIW) (2007). *Natural Values Atlas Report – Observation Export 2400 (26 August 2007).*

Jones, D., Wapstra, H., Tonelli, P. & Harris, S. (1999). *The Orchids of Tasmania*. Melbourne University Press, Melbourne.

Threatened Species Unit (TSU) (2000). *Listing Statement Snug greenhood* Pterostylis atriola. Department of Primary Industries, Water and Environment, Tasmania.

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