

DESCHAMPSIA ANTARCTICA AND COLOBANTHUS QUITENSIS
IN THE TERRA FIRMA ISLANDS

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ABSTRACT. The previously unsubstantiated record of the two native Antarctic flowering plants (*Deschampsia antarctica* and *Colobanthus quitensis*) on Alamode Island, Terra Firma Islands, has been confirmed. Both species occur abundantly and flower profusely on the relatively sheltered northern slopes of the north-east side of the island. This establishes the status of this island as the southernmost site (68° 43' S) in the world where vascular plants have so far been recorded.

The Terra Firma Islands (68° 42' S, 67° 32' W) (Fig. 1) lie 8 km north-west of Cape Berteaux, Fallières Coast, in southern Marguerite Bay off the west coast of the Antarctic Peninsula. The group comprises about a dozen small rocky islands, the largest of which is Alamode Island (320 m a.s.l.). They are mostly ice covered. The rocks of Barn Rock and Alamode Island are volcanic andesites while much of the rest of the islands is composed of basic gabbro. These islands are of particular phytogeographic interest as they represent the southernmost known localities where phanerogams occur (Smith and Poncet, 1985; Komarkova and others, 1985). Both Antarctic hair grass (*Deschampsia antarctica* Desv.) and Antarctic pearlwort (*Colobanthus quitensis* (Kunth) Bartl.) were found and collected on Barn Rock by S.P. on 16 February 1984 following the prediction by Smith (1982) that 'it is possible that *D. antarctica* may yet be found on the snow-free north side of Alamode Island, Terra Firma Islands, probably the only ecologically suitable site for a vascular plant south of Refuge Islands'. There are three sites on Barn Rock where the two species occur.

Although S.P. did not land on Alamode Island during her 1984 visit to the area observed discontinuous patches of yellowish-green vegetation on the rocky slopes above the north-east corner of the island. Because of possible confusion with mosses such as *Brachythecium austro-salebrosum* and *Drepanocladus uncinatus*, and lichens such as *Usnea antarctica* and *U. aurantiaco-atra*, when observed from some distance offshore, and in the absence of closer inspection and confirmation by specimens or photographs, Smith and Poncet (1985) had to conclude that 'the same species [*Deschampsia* and *Colobanthus*] almost certainly occur on Alamode Island, farther south [than Barn Rock] within the group, though this has yet to be confirmed'. However, Komarkova and others (1985) stated 'The most extensive (about 100 m²) discontinuous stand of vascular plants was found on the steep rocky north-facing slope of the largest Alamode Island [*sic*], from near sea level to about 80 m above... This stand, which is located south of Barn Rock, was not sampled; *Deschampsia* was seen from the boat but not *Colobanthus*, which is much less conspicuous.'

On 19 February 1986 Poncet succeeded in landing on Alamode Island (68° 43' S,

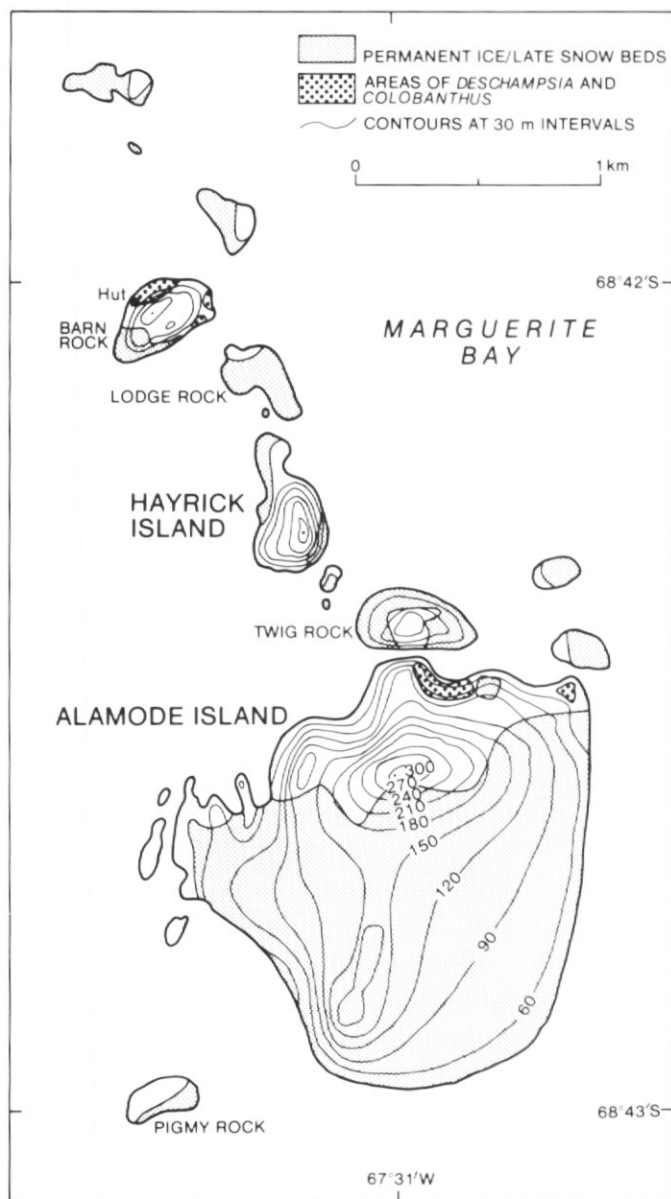


Fig. 1. Terra Firma Islands showing the sites where the two flowering plants, Antarctic Hair Grass and Antarctic Pearlwort, occur.

67° 31' W) and was able to confirm positively the existence of both vascular species. Both *Deschampsia* and *Colobanthus* are widespread over the north-east corner of the island (Fig. 2) from 2 to about 80 m a.s.l., and abundant in at least four areas where *Deschampsia* forms closed swards up to 2 m² and dense but discontinuous stands of up to 400 m². There are two main sites in which the flowering plants are a major component of the vegetation. The largest of these is on the north-facing slopes

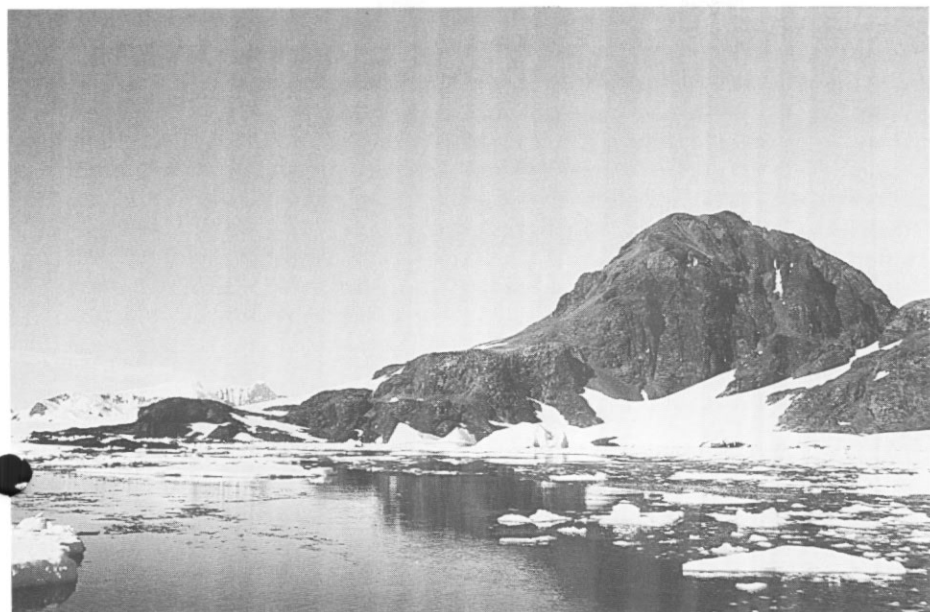


Fig. 2. View of north-east Alamode Island with Twin Rock at extreme right. *Deschampsia antarctica* and *Colobanthus quitensis* occur in scattered stands on the low headland at extreme left, and are abundant from 2 to 80 m altitude on the scree slopes, rock terraces and ledges in centre. (Photo S.P. 19 February 1986.)

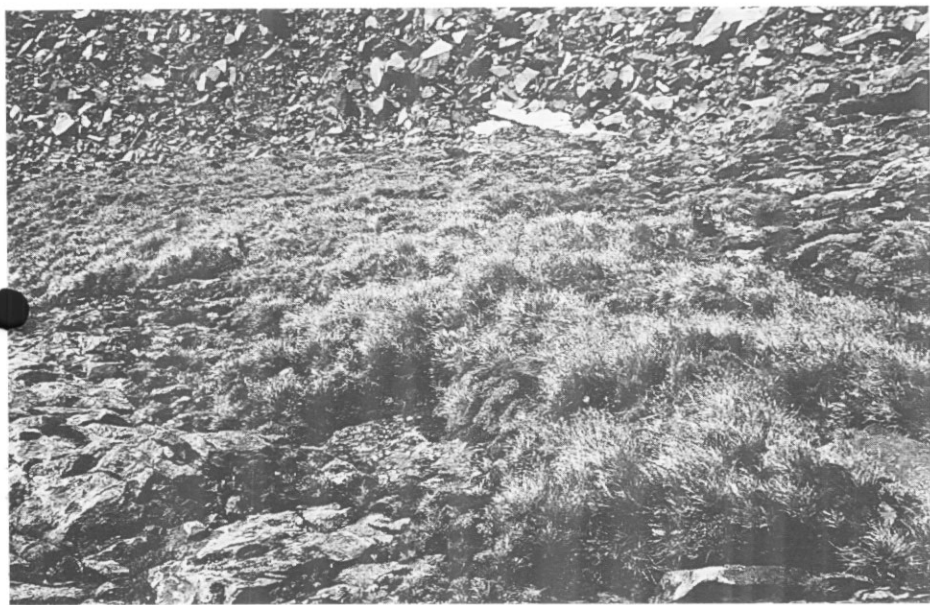


Fig. 3. Part of a dense sward of profusely flowering *Deschampsia antarctica*, with scattered *Colobanthus quitensis* cushions and bryophytes, on the terrace below the left slope of Alamode peak (see Fig. 2 centre). (Photo S.P. 19 February 1986.)

receiving some shelter from wind by the east side of Twig Rock. Here, both species are especially abundant (Fig. 3) in at least three areas. The east side of this site is moistened by melt runnels from an adjacent late snowbed. The other main site is on a low promontory at the north-east corner of the island. Between the two sites is an extensive stand of moss and the alga *Prasiola crispa*, but neither vascular plant was seen here. At lower altitudes both species occur on rock ledges, rock faces, scree slopes and more gentle well-drained gravelly slopes, and are particularly tall, luxuriant and fertile where they are irrigated by trickling meltwater from late snow patches higher up the rocky slopes. However, where the substratum was dry, the *Deschampsia* plants were short and yellow. In these lower sites both the grass and pearlwort colonize moss and are frequent associates in mixed bryophyte and lichen stands. Above about 10 m they increase in abundance and above 30 m, where there was more available moisture from melting snowbanks, the grass grows in dense stands interspersed with *Colobanthus* and scattered cryptogams. However, at this higher altitude it is the vascular plants which dominate the vegetation, unlike the lower slopes where mosses were predominant.

Both species were abundantly fertile and their flower development was exactly described by Komarkova and others (1985) for the Barn Rock populations two years earlier. Most of the grass inflorescences were fully exerted, with culms up to 10 cm long. The purplish flowers were closed and anthesis was not observed. Similarly, in *Colobanthus* most flowers were still in bud but a few capsules were open revealing mature seeds. The pedicels were frequently up to 1 cm long, considerably greater than in typical *Colobanthus* from many more northerly sites. However, no seedlings of either species were observed so that establishment by seed, rather than by vegetative means could not be confirmed.

Specimens collected by S. P. on Alamode Island contained several cryptogams in close association with the flowering plants. These included four mosses (*Bryum algens*, *Ceratodon* cf. *purpureus*, *Drepanocladus uncinatus* and *Pohlia nutans*), two liverworts (*Lophozia excisa* (= *L. propagulifera*) and *Cephaloziella varians* (= *C. exiliflora*), and one lichen (*Psoroma* cf. *cinnamomeum*) although *Usnea* spp. were abundant on stones and rock surfaces; the *Bryum* possessed sporophytes. This record for *Lophozia* is the farthest south yet reported for this species and is only the second liverwort known south of Nyen Island, Marguerite Bay (68° 12' S). Seppelt (1983) reported his discovery of *Cephaloziella exiliflora* in the Larsemann Hills, Princess Elizabeth Land (69° 26' S, 76° 00' E) (Seppelt, 1984) as the southernmost occurrence of a liverwort. However, this species is locally abundant in bryophyte flushes in Moutonnée Valley, Alexander Island (70° 52' S, 68° 19' W) (RILS, unpublished data), while a species of *Cephaloziella* has recently been reported on heated ground at the summit of Melbourne (74° 21' S, 164° 42' E), north Victoria Land (Broady and others, in press). The only sites near Terra Firma Islands searched for vascular plants were Mushroom Island (68° 54' S, 67° 53' W) and the Flyspot Rocks (68° 35' S, 68° 19' W). On the former *Andreaea regularis*, *Ceratodon* cf. *purpureus*, *Pohlia cruda*, *P. nutans* and *Cephaloziella varians* were collected. On the latter, extensive stands of *Usnea* spp. together with several mosses covered the north side of the main island, and specimens of *Bryum algens* and *C. varians* were collected. No vascular plants were noted at either site.

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