ADDITIONS to the PORT HILLS FERN FLORA

J.D. Lovis

Since David Glenny's checklist for Castle Rock effectively adds two species to the list of ferns known on the Port Hills, some comment from a pteridologist is in order.

***Hymenophyllum cupressiforme* Labillardiere**

The existence of *Hymenophyllum cupressiforme,* an Australian species, in New Zealand was reported by Parris & Croxall (1972). These authors stated (op.cit. p.266) that '*H. cupressiforme* resembles *H. peltatum* more closely' (than it does *H. revolutum* Col.). I cannot agree. Indeed, I am not yet entirely convinced the *H. cupressiforme,* in New Zealand, is a good species, truly distinct from *H. revolutum.* Since *H. revolutum* is a Mew Zealand endemic, the problem of separating it from *H. cupressiforme* does not arise in Australia!

Diminutive *Hymenophyllum* plants are difficult to identify, even when fertile. Those looking at specimens on the Port Hills have to contend with the possibility of encountering any of *H. cupressiforme, minimum, multifidum, peltatum**, *rarum,* and *revolutum.* In this company, the entire margin of the lamina of *H. rarum* separates it from the others,just as the spines on the indusium are diagnostic for *H. minimum.* After that it gets tricky! To begin with, you need to be sure you are in the right subgenus, *Hymenophyllum* sensu stricto or *Meringium!* The 'official' criterion (cf. Allan 1961, p.22) only works for some collections of *Meringium.* Even the sorus of *multifidum* illustrated on p.23 (op. cit.) does not conform!

The *Hymenophyllum* on Castle Rock is certainly diminutive (only 1.0- 1.5cm in two sites, though the largest fronds in the third, most recently discovered station reach 3.0cm) and David Glenny is to be congratulated on spotting it at all. He has provided a splendid drawing of one of the longest fronds which captures the look of the plant very well. My opinion, having studied some of the plants in the field as well as under the microscope, is that it is certainly not *H. multifidum* or *H. peltatum,*and can only be *H. cupressiforme* or *H. revolutum.*

We are told by Parris & Croxall (op. cit., p. 264) that 'the lack of a wing on the stipe and all of the rachis is the best character distinguishing *H. revolutum* from *H. cupressiforme'* . Be careful not to misinterpret that statement, which is ambiguous - in their key 'Rachis not winged more than three-quarters to

---

* Present on Banks Peninsula, but not seen on the Port Hills.

base' leads to *H. revolutum.* I am mindful that in diminutive fronds,where the distance between pinnae is reduced, this character becomes a very fine distinction, particularly so since 'In some very small specimens [of *revolutum*] the rachis may be winged to its junction with the second to lowest pinnae' (loc. cit.). Nevertheless, if a decision has to be made, this Castle Rock plant fits *H. cupressiforme* better that it does *H. revolutum.* Either way this is a significant find, for none of the other old records for *H. tunbridgense* (= *revolutum* sensu Allan) on the Port Hills or Banks Peninsula have been confirmed.

Another approach to the problem is possible. There are old records for *H. revolutum* in the Canterbury foothills. David Norton and I have commenced re-examining these in the field. Already we have satisfied ourselves for one locality that the plant there corresponds well to the description of *H. cupressiforme.* Should it transpire that all Canterbury foothill records for *H. revolutum* are really *H. cupressiforme,* then it would be logical to accept that the tiny plant on Castle Rock, which is perhaps in isolation not determinable with any real confidence, is indeed *H. cupressiforme.*

***Pellaea* sp. ('Hot-rock' *Pellaea*)**

The existence of this species is likely to be known to rather few people, apart from those CBS members who attended the Mt Cavendish field trip on 3 October and those enthusiasts who have made a close study of the recent checklist (Brownsey et al. 1985, cf p.438). However at least two pteridologist, David Given and Tony Hueber, were already independently aware for some years that a strange *Pellaea* of distinctive appearance grew on Mt Cavendish. It is undoubtedly a 'good' species, distinguishable by several sound characters namely, shape, size and separation of the pinnae, attitude of rachis scales, distribution of sori, and length of pinna petioles. The shape of its pinnae has led to confusion with *P. falcata* but it seems that true *P. falcata* occurs in New Zealand only north of Auckland. 'Hot-rock' *Pellaea* is found principally in Central Otago and some drier parts of Marlborough. Around Christchurch, its main station is the localised population on Mt Cavendish, where the plants growing in the most exposed sites are very dwarfed. Though not seen on Castle Rock, I know of isolated specimens growing in two sites west of Castle Rock So far, only one very small population has been found on Banks Peninsula itself.

The plant found by David Glenny amongst shrubs below Castle Rock requires further study. At present I am confident only that it is not true 'Hot-rock' *Pellaea.* It resembles a tiny population growing in a confined site below Mt Pleasant in the upper Morgan Valley, but outside the the range there of 'Hot-rock' *Pellaea* , and intermediate in morphology between that species and *P. rotundifolia.* The Morgan valley plant shows a disturbed meiosis, produce spores displaying a wide range in size, and is surely a hybrid between these two species.

References

Brownsey, P.J. Given, D.R. & Lovis, J.D. 1985: A revised classification of New Zealand preditophytes with a synomic checklist of species. *New Zealand Journal of Botany 23,* 431-489.

Parris, B.S. & Croxall, J.P. 1972: *Hymenophyllum cuppresiforme* Labill. (Hymenophyllaceae) in New Zealand. *New Zealand Journal of Botany 10,* 259-266.