

# New Records of Northern Hemisphere Mosses in New Zealand

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## Summary

FIVE European species of mosses, *Brachythecium velutinum*, *Bryum pendulum*, *Dicranum scoparium*, *Funaria microstoma*, *Pseudophemerum azillare*, and one North American species, *Neckera pennata*, are recorded as indigenous to New Zealand.

THE percentage of endemism in our mosses has decreased as they have become better known or have been found to be conspecific with those of other countries or as new discoveries of our species have been made elsewhere, especially in Australia. However, it is surprising to find amongst new records that five species are common to the Northern Hemisphere and New Zealand, which shows how unsafe it would be to assume that a species newly found here would be new to science.

Four of the species have been collected from one locality only, though there may be several gatherings of the species, but the *Brachythecium* has been collected in widely spread localities in coastal and Central Otago. It is possible that it has been previously collected, but has been assigned to another species of this difficult genus. Fruit is present in all cases except for the *Dicranum*.

I wish to acknowledge the great assistance in determining the plants given by Mr. G. O. K. Sainsbury, as well as for his permission to publish the *Funaria microstoma* locality.

1. *Brachythecium velutinum* Hedw. Old pasture near Herbert, ca. 700 ft. alt. 24/8/50 K.W.A. No. 3866; rocky slope, Mt. Watkin, ca. 1,700 ft. alt. 4/10/50 K.W.A. No. 3922; amongst scattered manuka near Clarendon, south of Dunedin, 23/8/50 K.W.A. No. 3858; open rocky face on Otago Peninsula, ca. 800 ft. alt. 22/6/46 K.W.A. No. 1083; also many other gatherings from coastal Otago as well as the following from Central Otago: Coronet Peak, Queenstown, Aug. 1950 W. J. Wendleken; near Naseby, ca. 2,000 ft. 12/5/50 K.W.A. No. 3779; lower tree trunk, Te Anau, ca. 670 ft. alt. 28/9/47 K.W.A. No. 1089.

Like *Brachythecium paradoxum*, this species has the seta rough throughout, but differs in the bright or yellow-green silky tufts, in the less falcate-secund leaves, often only those near the ends of the branches showing this well, and in the more xerophytic habitat of rocky places or dry pastures. It is, however, apparently a very variable moss in Europe. E. B. Bartram agreed that a specimen sent him was this species. The distribution of this species, taken from Brotherus, is Europe, North Africa, Asia and North America.

2. *Bryum pendulum* (Hornsch.) Schimp. Flood plain of a sluicing drainage creek in the open near Naseby, Central Otago, ca. 2,000 ft. alt. 27/10/50 K.W.A. No. 3995.

This species is the prototype of the section *Ptychostomum*, a member of which is now for the first time detected in New Zealand. The ventral lamellae of the

outer teeth of the peristome are interconnected with bars and so markedly that the internal surface is irregularly sculptured, and not at all regularly lamellate as in *B. affine*, of which a few stems occur in the collecting. The spores are also much larger. The inner peristome is complete with 2-3 cilia, not appendiculate, and with quite long processes and here seemed to differ from *B. pendulum*, but sometimes the endostome seems to adhere to the outer teeth, as is usual in *Ptychostomum* and to break away in the upper part so as to appear to be rudimentary. The inflorescence is synoicous. The capsule is small for the species, but those of the associated *B. affine* are smaller than in other specimens I have, so in both cases this may be due to local conditions.

We understand E. B. Bartram, to whom part of the gathering was referred, to be of the opinion that *B. pendulum* sensu lato is involved, with which we agree. It differs from typical plants in its narrower leaf cells, well-developed cilia and smaller capsule, but as there is only one gathering, it would be unsafe to describe it as either a variety or form. The species is known from Europe, Asia and North America.

3. *Dicranum scoparium* Hedw. Two gatherings, hummocks in a swampy area, ca. 4,000 ft. alt., on the Rock and Pillar Range, near Middlemarch, Central Otago. 26/3/50 K.W.A. No. 3603 and 3604.

Both gatherings are sterile, and to that extent the naming must be provisional, but E. B. Bartram agrees that the moss is *D. scoparium* and suggests that it belongs to the var. *orthophyllum* (Brid.), which occurs in Greenland and elsewhere. The species is exceedingly variable in Europe. Superficially it much resembles some of our species of *Campylopus* and may easily be passed over in the field as such. The leaves are straight, erect, and appressed when dry, with alar regions well developed, often narrowed gradually to a narrow but usually obtuse or only broadly acute apex which may have 3 or 4 blunt denticulations and is flat, not cucullate and never hair pointed. The nerve is narrow, not more than  $\frac{1}{2}$  to  $\frac{1}{3}$  the breadth near the base of the leaf and hardly reaches the apex.

4. *Funaria microstoma* Bry. eur. On calcareous earth, Long Point, Mahia Peninsula, Hawke's Bay. 1/10/40 G. O. K. Sainsbury No. 9742, in his herbarium.

The New Zealand plant appeared from literature to differ from *F. microstoma* in having the peristome teeth entirely without appendiculae, with the lid rather flatter, but E. B. Bartram could not see the slightest reason for separating it from that species. It differs from *F. hygrometrica* in the peristome character mentioned, a very marked difference, in the absence of or imperfect inner peristome, in the large papillose spores and in the longer acumination of the leaves. The spores in *F. hygrometrica* are in some forms large, but are always quite smooth. *F. microstoma* is known from Europe and North America.

Mr. Sainsbury has seen part of the type of the Victorian *F. salsicola* C. M. and has found it to be near this and possibly only a variety. The leaves there have piliform points, and the spores, though large, are smooth and colourless, though this latter may be due to immaturity: they are brown in *F. microstoma*.

5. *Pseudephemerum axillare* (Lindb.) Hag. Swampy ground sheltered by tall swamp growth, Lake Waiholo, south of Dunedin, ca 50 ft. alt. 10/1/51 K.W.A. No. 4070 and 7/3/51 No. 4146.

Dr. Persson, of Sweden, to whom specimens were referred, considered it extremely close to *P. axillare*, of which he sent two specimens from Upland Sweden. These are somewhat smaller than our plants, but otherwise agree very

well, but as no antheridia were found, the inflorescence could not be verified. The antheridia are given in literature as naked on the fertile stems. Previously placed in *Pleuroidium*, the plant differs strikingly from that genus in the sympodial stem which innovates below the capsule so that several capsules, apparently lateral, may be borne on each plant (not only one terminal one), in the undifferentiated perichaetial leaves, weak nerve and in the lax areolation. The species grows in Northern and Western Europe.

6. *Neckera hymenodonta* C. M. Our plant, which is common on trees, was referred to the northern *N. pennata* by Hooker in the Handbook. Dixon, in his Studies in the Bryology of New Zealand, follows C. Mueller in treating the Australasian plant as distinct in peristome characters, having the processes of the inner peristome better developed and half the length of the outer teeth. However, the processes are usually much shorter than this, sometimes less than  $\frac{1}{4}$  the height of the teeth, and Sainsbury has seen North American specimens which he considers quite conspecific with our moss, so it should properly be known as *N. pennata* Hedw.