

ART. XIX.—On *Poa breviglumis*, Hook. f.

By D. PETRIE, M.A.

[Read before the Auckland Institute, 22nd November, 1909.]

THE writer has long entertained a suspicion that the native grass *Poa breviglumis*, Hook. f., was not really distinct from what is taken to be the *Poa imbecilla* of Forster. Hooker's species was originally published in the "Flora Antarctica," vol. i, pp. 101 and 102 (1844), and was founded on specimens collected on Campbell Island. The name *Poa imbecilla* was applied by Forster in 1786 to a New Zealand grass, but he published no diagnosis or description of it. A number of years later Forster's name was assigned by Allan Cunningham, in his "Prodromus" (1836), to the *Poa* now so named.

In the "Flora Novæ-Zelandiæ" (1853) Hooker includes and describes Forster's *Poa imbecilla*, accepting Cunningham's identification of the plant, but he does not in any way refer to its likeness to his own *Poa breviglumis*. This may have been due to the fact that the forms of *Poa imbecilla*, Forst., that occur in the more northerly parts of New Zealand are not typical of the prevalent state of the species. In the "Handbook of the Flora of New Zealand" (1867) both the above *Poas* are included, and the author concludes that both grow on the main islands, from which he had at first supposed *Poa breviglumis* to be absent. Though it is unlikely that he had good or abundant material to work on when the Handbook was in preparation, he recognised the close affinity of the two species, and even suggested that his *Poa breviglumis* might be a variety of *Poa imbecilla*, Forst. He further mentions that Banks and Solander referred the mainland forms of his *Poa breviglumis* to *Poa imbecilla*.

In his excellent "Manual of the New Zealand Flora," published in 1906, Mr. Cheeseman maintains the two species as distinct, but refers all the forms found on the main islands to *Poa imbecilla*, Forst. He mentions also that he had seen only a fragment of one of Hooker's specimens from Campbell Island, and some two or three others collected by Kirk and Chapman on the Auckland Islands. All these specimens I have, through Mr. Cheeseman's kindness, been able to examine.

The Philosophical Institute of Canterbury's expedition (November, 1907) for the exploration of the subantarctic islands of New Zealand secured no specimen of the grass, the visit being undertaken at too early a season.

In January of this year Mr. B. C. Aston, a most enthusiastic and capable collector, visited the subantarctic islands, and made a fine collection of all the grasses he met with, including a number of specimens of *Poa breviglumis*, from Enderby Island (in the Auckland Group) and from Campbell Island. These have been entrusted to me for examination, and the specimens appear to make the position of the plant quite clear. From a study of this material I conclude that *Poa breviglumis* is merely a form of *Poa imbecilla*, and that it is doubtful if it should be ranked as a distinct variety.

The descriptions in the "Flora Antarctica" and in Cheeseman's Manual lay emphasis on the prominent nervation of the flowering-glumes. I am unable to find in these glumes of *Poa breviglumis* anything to distinguish

them in this or in other respects from those of *Poa imbecilla*. The fragment of one of Hooker's original specimens forwarded to Mr. Cheeseman from the Kew Herbarium agrees perfectly in the form of the flowering-glumes with those collected on the subantarctic islands by Kirk, Chapman, and Aston. In both the *Poas* under notice the nerves of the flowering-glumes are quite obscure, and it is only by transmitted light that they can be distinctly made out. The two lateral nerves are very close to the edge of the glume, and this added to their obscure appearance makes them difficult to observe readily by reflected light.

The nerves in the descriptions above referred to are said to be somewhat scaberulous; but in the large series of specimens I have examined it is very rare indeed for the nerves to be sensibly scaberulous, save on the keel.

A second differentiating character of some importance consists in the great inequality of the empty glumes in *Poa breviglumis*. My specimens of the entire series (including the two supposed species), both those from the main islands and those from the subantarctic islands, show considerable variation in the relative size of the empty glumes. In some of the Enderby Island specimens the lower empty glume is almost obsolete, while in quite a number of the Campbell Island ones it exactly matches the lower glume as it appears in the ordinary lowland forms of the series that are met with in the South Island. Moreover, the main-island forms not rarely show as marked a difference in the relative size of the empty glumes as obtains in specimens from the subantarctic islands.

A third differentiating character mentioned by Mr. Cheeseman is the "acute flowering-glumes" of *Poa breviglumis*. This character is, however, quite inconstant, and the variations it shows are matched by similar variations in the flowering-glumes of *Poa imbecilla*. In the original description of the species Hooker describes the flowering-glumes as "obtuse," and later, in the Handbook, he calls them "obtuse or acute." In the series of forms I have been able to study, these glumes are often acute or sub-acute; but obtuse flowering-glumes occur in the small specimens collected at some altitude on Campbell Island by Mr. Aston.

In specimens from the main islands and the subantarctic islands alike the panicle is subject to a great range of variation both in length and in form. In small forms only 3 in. or 4 in. high the panicle is short and compact, with shorter and broader spikelets that show smaller, blunter, and more coriaceous flowering-glumes. In other forms the grass is 9-15 in. high, with flaccid leaves and culms, and a panicle that is long, erect or nodding, lax, and ovate-oblong in outline. Others are intermediate in most of the above characters. The lower empty glume is especially variable in size, ranging from an almost obsolete condition to a narrow-ovate acute form, half as long as the upper empty glume, and occasionally even longer than this.

From what has been said it is evident that the differentiating characters of *Poa breviglumis* are quite inconstant, and that their variations correspond point by point with similar variations in *Poa imbecilla*. The gradations in the two plants are so complete and parallel that I cannot but conclude that the whole series forms a single species, well marked in general characters, but hardly capable of partition into stable varieties.

It is possible that the fragment of *Poa breviglumis* forwarded from Kew to Mr. Cheeseman does not really belong to that species, a doubt that the

distinct absence of "prominent nerves" in the flowering-glumes compels one to entertain.

It is in the variety of *Poa imbecilla*, Forst., which I have described as "*Poa Matthewsii*" that the acute, prominently nerved, and scabrid flowering-glumes occur, but no specimen of this variety has so far been met with on the subantarctic islands. Whether *Poa Matthewsii* is to be regarded as a distinct species or not cannot be settled until more ample and better specimens are available. Probably some of the forms included in it may be more correctly placed under *Poa imbecilla*, Forst.; but the forms with the long, slender, strongly nerved spikelets stand on a different footing.

ART. XX. — On the Naturalisation of *Calluna vulgaris*, Salisb., in the Taupo District.

By D. PETRIE, M.A.

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DURING a short visit to the Taupo district early in February of this year I was told that the Scotch heather (*anglice*, ling) had become established near the Opepe Bush. I took occasion to visit the locality referred to, and found that this interesting introduction had secured a firm footing over an area of some two or three acres. The plants were in full flower, though most of them were still young, as the ground has repeatedly had fires run through it to clear off the manuka (*Leptospermum scoparium*, Forst.) that forms the natural plant covering of the district. The fires kill off all the older plants, but great numbers readily grow up from seed, and the species must be considered to have firmly established itself in this locality. How far it has spread by natural causes is at present uncertain, as I do not know how widely the seed was originally sown; but there is every prospect of its spreading readily, as the plant is well adapted to the habitat, and seedlings grow up in abundance. I was informed that the seed was sown by Major Roberts, till lately Stipendiary Magistrate at Tauranga, during the later part of the war with the Natives in Te Kooti's time. I have been unable to learn from this gentleman the time and circumstances of the sowing of the seed.

It is important that the introduction and establishment of such exotic plants as this should be noted, and its spread deserves to be watched. The land on which the heather grows is a flat dry terrace of pumiceous soil, such as one finds over most of the Taupo and Kaingaroa Plains. A very large area of similar country is available for it to invade. The spot where it is now established is about three-quarters of a mile from the small bush at which Mr. King has fixed his residence. To him I am chiefly indebted for such particulars about its introduction as I have been able to glean.