

Stenostachys gracilis, a native grass rare in northern New Zealand

Rhys Gardner

Hordeae, the tribe of grasses containing wheat, barley, couch-grass etc., is best developed in the Northern Hemisphere but *Elymus*, its largest genus has a fair presence in South America, Australia and New Zealand too. One of the components of that genus is treated in Flora of New Zealand V (Edgar & Connor 2000) as constituting the endemic *Stenostachys* Turcz.

The earliest known and most common of the three species of *Stenostachys* is *S. gracilis* (Hook.f.) Connor. The opening lines of the Flora NZ V description are as usual a neat picture of the live plant: Perennial stoloniferous grass forming open, wide and flat-leaved patches with narrow nodding inflorescences; often quite stout in forests. One might then seek out two old but good illustrations, by Hooker (1853 t. 70) and Buchanan (1880 t. 58), the latter reproduced here in Fig. 1 with its oldest published name, *Gymnostichum gracile*.

Armed with these search images, and seeing that the Flora of NZ V distribution begins "N: throughout except North Cape ...", one might hope to locate *S. gracilis* at some time in the reasonably near future, in "forests and shrublands, occasionally in grasslands; sea-level to 1300 m". But what neither this Flora nor the revision of the genus (Connor 1994) indicates is that *S. gracilis* has always been uncommon in the North Island, and that rediscovery of it near Auckland would be a major conservation event.

Such took place in May 2004, when Peter de Lange and ecoconsultant Myles Goodwin fell down a bank behind a salt-marsh in the southern Kaipara Harbour, onto a single individual of *S. gracilis*, so providing the Auckland Museum herbarium with its first northern collection in nearly a hundred years. Because Dr Connor's revision does not give mapped localities or geographical information with the specimens he cites, all the North Island AK material is listed below.

Without the inflorescence a specimen of *Stenostachys* might be hard to place; even the leaf-base auricles, generally well-developed in Hordeae, are rather small in this genus. The inflorescence is unusual: often the spikelets contain only a single floret and (in *S. gracilis*) the glumes are just short triangular projections or stumps or are absent altogether. These reductions make it hard to decide between Flora NZ V's key choices: are the spikelets edgewise to the rachis (*Stenostachys*) or broadside (*Elymus*)? One has seen that in a single-flowered spikelet of *Stenostachys* the back of the palea is directed towards the flattened face of the rachis.

To complete the historical information on *S. gracilis*, I note with Dr Connor that Banks and Solander collected it at Totaranui (Queen Charlotte Sound) in 1770 (e.g., AK

110586) and in their ms. Flora called it *Triticum languidum*. Moreover, Totaranui is the only one of their seven NZ localities for which they recorded this grass.

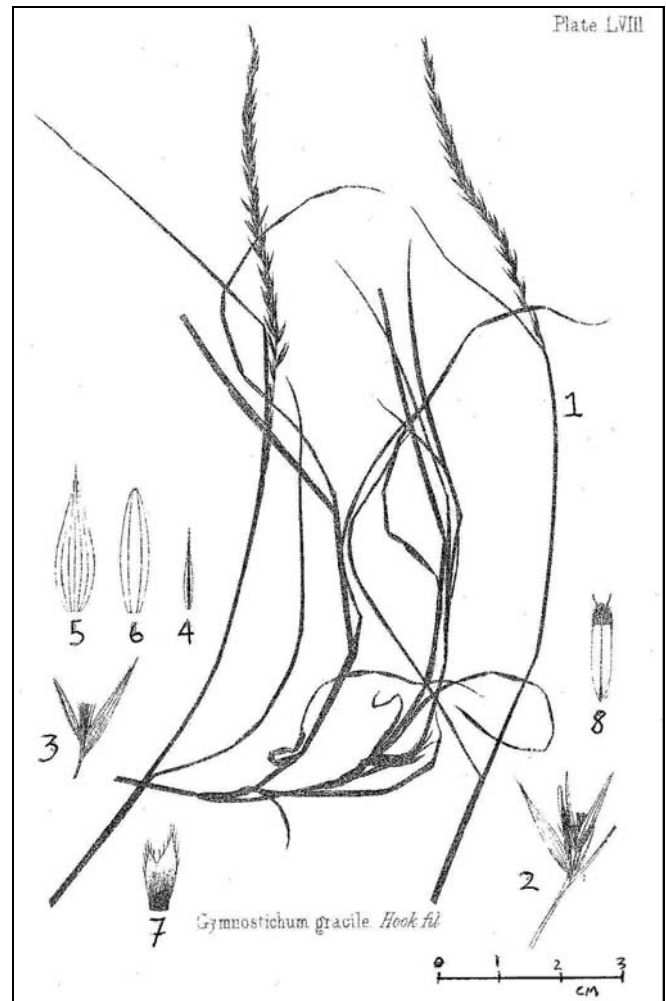


Figure 1: *Stenostachys gracile* (Hook.f.) Connor. 1 Plant. 2 Spikelet. 3. Floret. 4. Nervation of empty glumes. 5. Nervation of flowering glume [lemma]. 6. Nervation of palea. 7. Scale [lodicule. 8. Section of ovary. Figure and caption from Buchanan (1880 t. 58).

The type specimen of Russian botanist Turczaninow's *Stenostachys narduroides* was collected by British naval captain Sir James Everard Home (fl. 1840-53) from some unspecified NZ locality. Hooker had published his name in 1853, nine years earlier than the Russian, so his epithet *gracilis* must be used. But in rounding off the grasses in his later Handbook of the New Zealand Flora (1864) Hooker would provide a piece of taxonomic tragicomedy, in saying forcibly that he knew "of no plant like it in New Zealand, nor does any such occur in Sir E. Home's original collection in the British Museum. Can it be *Triticum* badly described?". But on the previous page of the Handbook, last of the grasses Hooker had just treated, is, yes, his own *Gymnostichum gracile*.

Specimens of *Stenostachys gracile* from North I. in AK

"Waikauwhia below crossing", collector's name illegible, possibly "Mr H. J. Andrews, Takahura", herb. H. B. Matthews, s.d., AK 11608

Waikouwhia [sic], Kaitaia, H. B. Matthews, 1910, AK 11608-9

Pahi, Kaipara, T. Kirk, AK 11176

Shelly Beach Road (Creighton property) Q10 306125, 0 m alt., de Lange 6056 & M. Goodwin, AK 286639, 22 May 2004, bank below dense kanuka canopy

Thames River, T. F. Cheeseman, Dec. 1880, AK 2030 etc.

Kaweka Ra., Ngaruroro Rvr below Ngaawapurua confluence, 790 m, M. A. M. Renner, Feb 2001, AK 281975, on damp soil, river bank in shade of mountain beech, sporadic.

Acknowledgements

I am grateful to Peter de Lange and Myles Goodwin for letting me write up their discovery, and to Annette Wilson (current Australian Botanical Liaison Officer at Kew) for searching BM for a Home duplicate, though to no avail.

References

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Grammitis ferns in the Auckland region

B S Parris

The fern genus *Grammitis* (Grammitidaceae) has a reputation for being difficult to identify, because the species look rather similar. They all have simple fronds that range from strap-shaped to spatulate in outline, with sori that are occasionally \pm circular, usually elongate, and not protected by an indusium. *Anarthropteris lanceolata* (Polypodiaceae) is also often misidentified as a *Grammitis* because it has similar shaped fronds with \pm circular exindusiate sori. However, it can easily be distinguished by its netted (reticulate) venation and the presence of thick paraphyses (hair-like structures in the sori) made up of several rows of cells that are evident in young fronds. In addition, it produces young plants on stolons and can thus develop large colonies on rock faces and tree trunks. *Grammitis* species, on the other hand, have veins that are once or twice branched, with the branches not joining at their tips, paraphyses in the sori, if present, are of the same type of simple hair that occurs on the lamina surfaces, and no New Zealand species produce young plants on stolons.

There are 11 species in New Zealand. They can be grouped informally by habitat and spore size as follows:

1) Small-spored species of lowland to upland habits, sea level to 1000 m, mostly restricted to lower latitudes; on trees, rocks or soil; mean spore diameter 25-26 μm ; *G. billardierei*, *G. ciliata*, *G. pseudociliata*, *G. rawlingsii*, *G. aff. rawlingsii*.

2. Upland to montane species of intermediate spore size, restricted to higher altitudes, (100-)700-1700 m in mainland New Zealand, lower on Subantarctic Islands, and/or higher latitudes; on trees (*G. magellanica* subsp. *magellanica*) or rocks (*G. givenii*); mean spore diameter 34-35 μm ; *G. givenii*, *G. magellanica* subsp. *magellanica*.

3. Mainly upland to montane species of large spore size, mainly restricted to higher altitudes, (sea level-)800-1700 m and/or higher latitudes, sometimes only occurring above the tree line; usually on rocks but *G. magellanica* subsp. *nothofageti* is epiphytic; mean spore diameter 40-41 μm diam. (*G. gunnii*), 43 μm diam. (*G. magellanica* subsp. *nothofageti*), 45 μm diam. (*G. patagonica*), 47 μm diam. (*G. poeppigiana*), 42 μm diam. (*G. rigida*).

Seven of the 11 New Zealand species have been found in the Auckland region (North Auckland and South Auckland provinces). They are *G. billardierei*, *G. ciliata*, *G. magellanica* subsp. *nothofageti*, *G. patagonica*, *G. pseudociliata*, *G. rawlingsii* and *G. aff. rawlingsii*. The most commonly encountered species are *G. billardierei*, *G. ciliata*, *G. pseudociliata* and *G. rawlingsii*.

A combination of morphological and ecological characters is useful in identifying the species of the Auckland region.