the Waima Range are ancient remnants which were perhaps once widespread. The Waima Range appears to be a "hotspot" for endemism, there being several species of land-snail endemic to the area, two of which are recorded specifically from the Hauturu highpoint site. Another addition has recently been made to the interesting flora of the Waima Range with the discovery of a large *Dianella* which is regarded as a distinct taxon and has been tag-named *Dianella* "Waima".

Acknowledgements

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Wrapping up the cutty-grasses (*Gahnia* spp., Cyperaceae)

Rhys Gardner

In two previous articles I have described anatomical features of some of these plants, emphasizing that it is possible to name even bits of vegetative material. Here is a summary of this work, and some new information for *Morelotia affinis*, *Gahnia lacera*, and *G. rigida*.

Remember: the blade of the leaf is twisted (except in *M. affinis*) so that its underside, or abaxial surface, comes to face the light; the adaxial side, usually furrowed, is minutely papillate and is either smooth or scabrid; the ligule is a curving adaxial scale across the top of the sheath. When looking at the adaxial ridges with a hand-lens (x20 is better than x10), bend the leaf over a finger and get strong light on it from the side. Crushing the nuts to detect their taste should be done cautiously; sucking them is often sufficient, especially for *G. pauciflora*.

Morelotia affinis

The old leaves persist on the plant, with the sheaths twisting and contracting into a loose spiral, something not seen in any of the other species. Another unique feature is the lack of a ligule. The blades are rarely more than c. 8 mm wide and have a prominent pale midrib on the abaxial surface (and a corresponding V-shaped adaxial groove). The nuts are black, tasteless, and relatively small, like those of G. lacera, but they are ovoid whereas the nuts of the latter are obovoid.

Gahnia lacera

The blades of this plant reach up to c. 8(-11) mm wide; the adaxial grooves are shallow and the ridges here are smooth on their sides and top. Unlike all the following species, this plant has a distinct midrib, pale and raised adaxially, and just above the ligule there is a zone of short pointed hairs. The sheath is distinctive in its scattered papillae, like spots of resin.

Gahnia pauciflora and *G. procera* (see Gardner 1996)

The blades of these plants are much alike when dried, both being "medium-sized", that is, seldom more than 10 mm wide. The easiest way to name an unknown one of these is to match it to a known one. But they can be distinguished with a good handlens - the adaxial ridges of G. pauciflora have "whaleback" projections scattered along their edges and tops, which are not seen in *G. procera*. Also, under the microscope, the papillae on the sides of the ridges appear more or less regularly cylindrical in the former species, but contorted-annulate in the latter. The nuts of these and the following three species are flavoured, in varying degrees, of vanilla (or, say some, crystallized violets).

Gahnia setifolia, G. xanthocarpa (see Gardner 1995), and *G. rigida*
These are the wide-leaved species. The former two can readily be told apart, since the adaxial ridges of *G. setifolia* are strongly papillate and also have larger scabridities particularly along their sides - thus this surface feels rough to the tongue, cheek, or even fingers. In contrast, the adaxial ridges of *G. xanthocarpa* are very obscurely papillate and feel quite smooth. The leaf sheaths of the latter are also distinctive, being almost soft due to their dense cover of very short, erect, rounded brown papillae.

Gahnia rigida (Fig.1.), which I have examined from only a few specimens, seems to have sheaths much like those *of G. xanthocarpa* in that as they age they shred into fibres, and the leaf seems to persist on the plant base (this needs to be checked in the field). The sheaths seem to be much darker on their inner surface than in either of the other species. They are more or less smooth low down but in their upper half are ornamented with low and rather elongate dark red whalebacks like small appressed teeth. The blade's adaxial ridges are almost smooth, in contrast to those of *G. setifolia*, but they do have scattered triangular teeth along their sides, as in this latter species, and, minute and somewhat contorted papillae. A feature of the abaxial side of the leaf seems to be that it is very scabrid, even down to about 20 cm from the ligule; this too needs field-checking.

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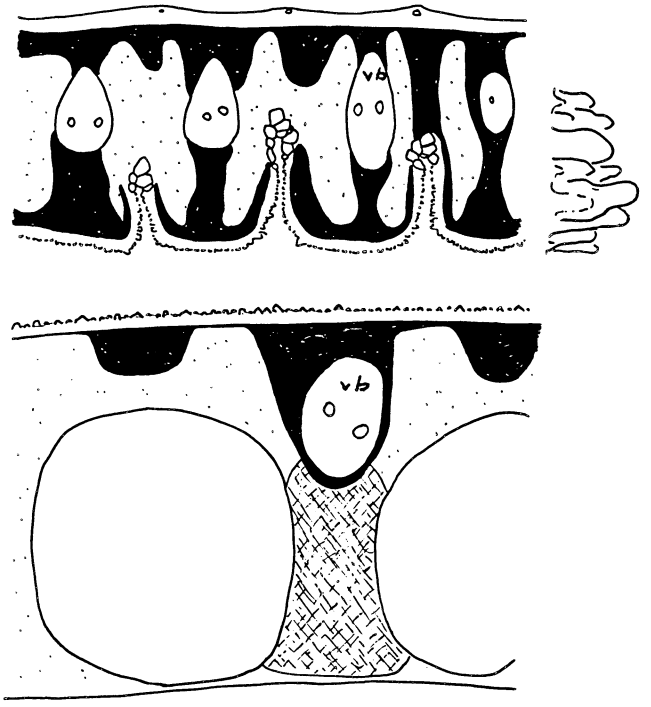

Fig.1. Gahnia rigida **(Norton, Okarito, AK s.n.). Transverse sections of leaf blade (above, 0.45 mm thick) and sheath (below, 0.8 mm thick). Inset above: papillae on ridge flanks, to c. 0.01 mm long. vb, vascular bundle.**