

Coprosma (Rubiaceae) in Samoa

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Introduction

Coprosma is found right across the central Pacific Ocean region, from Lord Howe I., Norfolk I. and the Kermadecs to French Polynesia and the Hawaiian Islands. All species are endemic to their islands or island-groups, with the possible exception of the Pitcairn representative, which is nearly identical to that of Rapa Island. The twenty-five or so species in the tropical part of this region are restricted to cool upland 'cloud forest' at c. 300 m a.s.l. or more, an indication one supposes of their evolutionary origin somewhere near where the genus has its greatest diversity, New Zealand.

The wet scrubby montane zone of the large island of Savai'i is the sole location for the Samoan archipelago's only two coprosmas, *C. savaiensis* Rech. and *C. strigulosa* Lauterb. Both are small bushy trees. Whistler (1978) describes the former as common above 800 m and the latter as occasional to common above 1000 m.

The notes here on these two species were made as consolation for not being able to go on a collecting trip to Savai'i last year. If the dioecy of the genus is ignored there is sufficient material already in the Auckland War Memorial Museum herbarium (AK): a collection of each made a century ago by the German botanist, F. Vaupel, and one of *C. strigulosa* made last year by Art Whistler. Various aspects of the two plants are illustrated in Fig. 1. Oliver's revision (1935) has photographs of specimens.

Descriptions

Both species resemble New Zealand's *Coprosma macrocarpa* (rather than *C. robusta*): their leaf margins are not toothed distally, the venation is conspicuously reticulate adjacent to the midrib, and the stipules are shed cleanly.

Coprosma savaiensis (there is no liberty to change this ungrammatical spelling to "*savaiensis*", although Oliver did so) is the more robust of the two in foliage and is completely glabrous. Its pyrenes, like flattened orange pips, are much like those of *C. macrocarpa* and *C. robusta*. The shallow pit-domatia in the leaf-axils, however, contain peculiar contorted outgrowths (Fig. 2A), and one is reminded here of the lattice-like structure in the domatia of the Societies' *C. taitensis* (Fig. 2B) (Gardner 2002).

Coprosma strigulosa has narrower, membranous leaves, which are distinctive (and in fact quite attractive for a coprosma) in having appressed pale bristles on the midrib, margins and veins, especially below, and close to the domatia (Fig. 2C). The stipule is broader than that of *C. savaiensis* and is not keeled. Bristles occur along its margin, especially around the base of the apical colleter (tooth). The fruits are substantially different, being subglobose and somewhat two-lobed (cf. Norfolk Island's *C. pilosa*). As in the latter (and in New Zealand's didymous-fruited species) the *C. strigulosa* pyrenes have a deep central invagination, or 'notch', above the operculum (Gardner 2002).

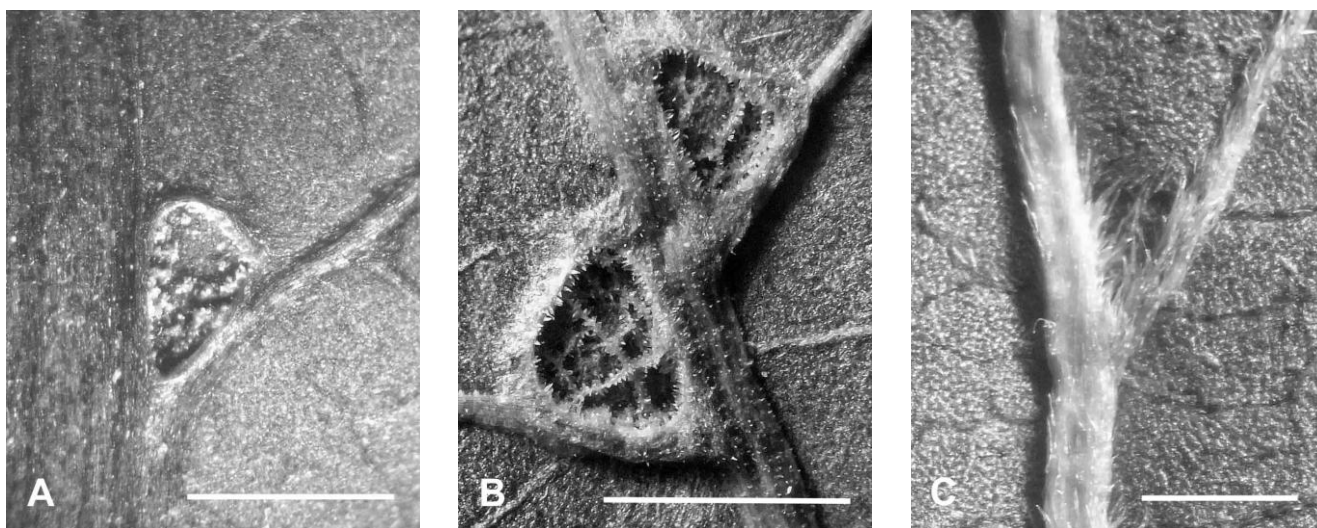


Fig. 2. Domatia of *Coprosma* species. A: *C. savaiensis* AK 28263. B: *C. taitensis* AK 162925. C: *C. strigulosa* Whistler 12816 (AK). Scale bars 1 mm.

A phylogeny of the genus, from which the relevance and rationale of all these characters might be assessed, is overdue. In the meantime one can enjoy speculating, perhaps under the spell of Alice

Tangerini's striking, intriguingly detailed illustrations of new species from the Marquesas Islands (Wagner & Lorence 2011).

References

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Auckland's long-awned brome grasses (*Bromus* species, Poaceae)

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Introduction

The grasses reviewed here are all introduced winter-annuals. Three are rather infrequent in northern New Zealand, only becoming "proper weeds" in the drier climates of Hawkes Bay, Nelson and Canterbury. The fourth species, *B. arenarius*, was first recorded in New Zealand by Allan Cunningham, and like other harmless Australians sighted early in our botanical history is often regarded, at least by collectors, as an honorary rare-plant.

Flora NZ V's key to the genus (Edgar & Connor 2000) separates out the long-awned bromes from those whose awn is less than a centimetre long. One of the latter group, *B. stamineus*, occasionally exceeds in this regard but is a rather infrequent South Island plant and a perennial one at that. Similarly, three long-awned annual species, *Bromus japonicus* var. *vestitus*, *B. madritensis* and *B. rubens*, have been picked up just a few times in NZ, from the southern North Island (Edgar & Connor 2000). This leaves four long-awned species in the Auckland region: *B. arenarius*, *B. diandrus*, *B. sterilis* and *B. tectorum* of which *B. diandrus* is by far the most common

Overview

Brome-grasses may be recognized vegetatively by their closed leaf-sheaths (at least the first-formed ones), membranous, dentate to deeply lacerate ligules, and (for NZ representatives) a lack of auricles or hair-tufts at the sheath-blade junction. The inflorescence is a panicle, often loose but sometimes dense and fan-shaped. The spikelets are straightforward in structure, having a pair of somewhat unequal glumes and c. 4–10 florets (all awned; upper florets sometimes vestigial). The brome ovary is topped by a swollen hairy structure, a feature shared with members of two other tribes (typified respectively by *Brachypodium* and *Hordeum*). This outgrowth is well-illustrated in Flora

NZ V. It remains on top of the matured grain and might help somehow in dispersal.

The glumes and lemmas of our four species have broad translucent margins. In the *B. tectorum* lemma these fuse just above the awn base to form a shortly bifid triangular tip in which there is no trace of nervation (unlike in the other three species). The awn itself is straight to somewhat recurved and is only weakly twisted. It is flat to grooved on its adaxial side, and ridged to convex abaxially, where there are several series of antrorse scabridities, rather feeble and hair-like in *B. arenarius* and *B. tectorum* but unpleasantly harsh in the large florets of *B. diandrus*. The callus at the floret-base is an innocuous structure, being more or less shortly rounded to subacute and with only a feeble pair of lateral hair-tufts.

As noted, the four species are annuals. They can make good growth in sunny, moderately fertile, well-drained sites, but are rather few-culmed, lack stolons or rhizomes, and rarely reach 50 cm tall.

Key

Bromus arenarius belongs to the type section of the genus. The others belong to sect. *Genea*, this a word for "offspring", i.e., a group of species separated from *Bromus* (Clifford & Bostock 2007).

A. Lower glume 3–5 nerved, upper glume 5–7 nerved; mature (i.e., "fruiting") spikelet with florets not greatly spreading, thus the spikelet becoming ovate-oblong in outline; [lowest inflorescence-branches mostly longer than spikelets (incl. awns); lower glume 0.7–1 cm long; lemma 1–1.5 cm long, loosely hairy all over; awn 1–2 cm long]

..... ***B. arenarius***

AA. Lower glume 1-nerved, upper glume 3-nerved; mature spikelet with florets angled out from each