

especially with the thin acute stipules of *C. acutifolia* and *C. macrocarpa*, which quickly dry off and fall cleanly from the node.

Unlike the two Samoan coprosmas (Gardner 2013), *C. laevigata* is not a plant of the wet "cloud forest" summits, but rather, is most plentiful at middle altitude (c. 250–300 m), on ridge crests that can get quite dry between July and September (e.g., notes on AK 150657, 271124).

In being able to survive times of drought the similarity of *C. laevigata* to *C. acutifolia* and *C. macrocarpa*, rather than to *C. robusta*, makes sense; likewise the suggestion by Oliver (1935) that the two coprosmas of a pair of relatively dry islands in eastern Polynesia, Rapa I. and Pitcairn I., might be very closely related to *C. laevigata*.

Hedyotis (Kadua) romanzoffiensis

A second "coprosma" occurs in the Cook Islands, not on Rarotonga but on several of the atolls in both the Northern and Southern island groups. It was described by Oliver (1935: 142) as *Coprosma*

oceanica, the type specimen coming from an atoll in the Tuamotu Is. in French Polynesia. Its succulent fruit seemed right for *Coprosma*, but its numerous, angular, papillose seeds, and the terminal position of the inflorescence (Fig. 2), soon meant it was recognized as a member of a different tribe in the Rubiaceae, the Hedyotidae. Today it is put into the big Old World genus *Hedyotis*, or into a Pacific segregate of this, *Kadua* (Terrell et al. 2005).

Regardless of generic, the plant now rejoices in the epithet "*romanzoffiensis*", having been discovered and named by an early 19th C. Russian scientific voyage into the Pacific — this was on an atoll they called Romanzoff Island, in what are now the Marshall Islands. It is found in the scrubby beach vegetation of coral atolls: the Marshall Is., Tuvalu, Kiribati and Tokelau in the west, the Cook Islands, and French Polynesia (including Pitcairn Is. but not the Societies or the Marquesas) in the east. Why it is not known from intervening low islands, for example those of Fiji, is yet another question for Pacific biogeographers.

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Notes on the wind grass, *Lachnagrostis filiformis* (Poaceae)

Rhys Gardner

As a native grass but a rather weedy one (and unusually for our flora, an annual), wind grass is still quite common in the Auckland region, in regularly disturbed sites like the edges of sand-dune lakes and estuaries. It has now spread into man-made (and sometimes quite dry) habitats too, such as railway corridors, industrial hard-stand areas, and the yards of budget car-dealers; see Appendix for more detail.

This article notes the salient points in the history of our knowledge of *Lachnagrostis filiformis*. The illustration (Fig. 1) is from Hitchcock (1922). Anyone looking for images on the Web should be aware that *L. filiformis* will often appear under the alternative legitimate name *Agrostis avenacea*.

The older literature

Banks and Solander discovered wind grass in New Zealand, but it only entered the public domain after the second of Cook's voyages, when the Forsters collected it in New Zealand and Easter Island, and described it as a new species, *Avena filiformis*. Over the next few decades though, it would usually have been thought of as a species of *Agrostis*, the big "rag bag" genus of 1-flowered grasses. Then, in 1820, the German botanist C. B. von Trinius (1778–1844) published a masterly survey of grass morphology and taxonomy and there the plant acquired a new genus-name, *Lachnagrostis*. Together with *L. filiformis* were *L. billardierei*, the sand wind-grass, which like *L. filiformis* is native to Australia and New Zealand, and *L. aemula*, a purely Australian species (Trinius 1820).



Fig. 1. *Lachnagrostis filiformis*, habit. From Hitchcock (1922, fig. 35, as *Agrostis retrofracta*). Based on a Hawaiian specimen. Plant can be presumed to be c. 30 cm tall.

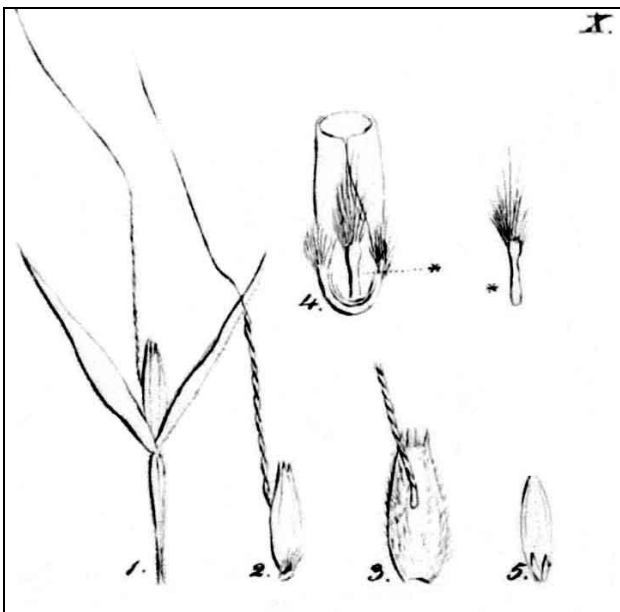


Fig. 2. *Lachnagrostis filiformis*, floral details. From Trinius (1820) t. 10 & p. 212. Caption [translated]: 1. Spikelet, greatly enlarged. 2. Floret. 3. The same, from the rear. 4. The lower part of the same, from the front. * the rachilla-vestige. 5. Palea with lodicules.

Trinius did not explain the meaning of his new name. It is often said to mean "a hairy *Agrostis*" (Gr. *lachne* wool). This does conform with the modern view that *Agrostis* and *Lachnagrostis* are closely related. In his classification though, Trinius had the two well-separated, with *Agrostis* classed as 1-flowered and *Lachnagrostis* as several-flowered (a distinction not recognized today). His protologue for *Lachnagrostis* consists of three parts: the relevant part of a synopsis of grass genera, notes on the characters of the genus, with a listing of its three species, and an illustration (Trinius 1820, pp. 79 & 128, and t. 10 [caption p. 212] respectively). From these, one deduces that the name has a twofold basis: a hairy callus, and a conspicuously hairy rachilla extension (Fig. 2). A conservative approach to the etymology then would take the "agrostis" part of the generic just to have its classical meaning, "a grass".

Morphology

In distinguishing *Lachnagrostis* from *Agrostis*, *Calamagrostis*, *Deyeuxia* and *Dichelachne*, modern authors (Edgar 1995, Jacobs 2001, Jacobs & Brown 2009) all point out that the *Lachnagrostis* inflorescence tends to break off from the rest of the plant and that this tendency is rare or unknown in the other four genera. On beaches one sometimes sees the inflorescence of sand wind grass bowling along in puny emulation of its great cousin *Spinifex sericeus*. That of *L. filiformis* is relatively elongate and wispy and perhaps is floated to its destination as often as it is blown. In Australia though, this grass may not always be so feeble: once in New South Wales, it is said (Burbidge 1968), seed-heads of *L. filiformis* and other grasses accumulated so deeply in a railway cutting as to make a train lose grip on the tracks.

Where and how the inflorescence-stalk breaks seems to be a matter of chance — all places between the uppermost culm node and the lowest whorl of branches seem equally likely (pers. comm. J. McCauley, from observations of *L. filiformis* as a prolific plant-nursery weed). The above-cited authors note that some species may wholly or partially suppress this feature. Our coastal plant *L. littoralis* may be one of these: of fifty or more sheets of this in the Auckland War Memorial Museum (AK) only a handful include a detached seed-head.

Nativity and Distribution

Lachnagrostis filiformis is undisputedly native to New Zealand and Easter Island, and has always been treated as native to the Hawaiian Islands and Australia too. It is also widespread in the montane zones of the Lesser Sunda Is. and New Guinea, apparently as a native "weed" (Veldkamp 1982).

The species has occasionally been seen on Norfolk Island, although the earliest collection cited by Green (1994) is dated only 1912. According to Green the species is absent from Lord Howe Island, being replaced there by *L. aemula*. The subsequent Flora of Australia treatment (Jacobs & Brown 2009) gives the opposite distribution, and seems wrong (e.g., Peter de Lange's AK 236426 from Norfolk I. is certainly *L. filiformis*).

The species has naturalized in South Africa and in the New World too. For example, the Flora of North America (Barkworth et al. 2007, p. 696) states that *L. filiformis* has been known from several localities in the USA, including "waste areas around a wool-combing mill", and that it is invading one of California's most unique and endangered habitats, the ephemerally wet "vernal pools".

For Great Britain, *L. filiformis* is recorded as "a casual of wool and esparto" (Ryves et al. 1996), that

is, the plant appears sporadically near woollen mills and paper mills, getting to these places as a seed-contaminant of the raw products. The wool presumably comes from Australia or New Zealand. The esparto grass (actually two species, *Stipa tenacissima* and *Lygeum spartum*) comes from North Africa and Spain, but so far there seems to be no record of *L. filiformis* wild in these countries.

Appendix

Habitats of *L. filiformis* in the Auckland region, from label notes on specimens in the Auckland War Memorial Museum herbarium (AK): Clay roadside, sandflats at Waitakere River mouth, stable bare clay banks and clay-gravel talus near railway line, clay slopes above saltmarsh, damp fine scoria of quarry floor, by roadside ditch, long grass along fenceline, waste land, among *Juncus maritimus*, garden, low grass between graves, parking place gravel area, damp asphalt, between building and footpath, sand-dune lake margin, trackside, wetland near shore.

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Truffles of New Zealand: a discussion of bird dispersal characteristics of fruit bodies

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Truffle and truffle-like fungi typically have an indehiscent fruiting body, which does not open to release the spores. Associated with this feature, the spores are usually not actively released from the spore-bearing structure, whether an ascus or a basidium (Theirs 1984, Kendrick 2000). The fruiting bodies may be below ground (hypogeous), or produced at (emergent) or above (epigeous) the substrate surface. Many species either lack or have a very reduced stipe, but in some the fruiting body may resemble mushrooms in general morphology, complete with cap and stipe. Not unexpectedly for a biological group defined by the absence of characters, truffles are a phylogenetically diverse

assemblage including Ascomycota, Basidiomycota and Glomeromycota.

New Zealand has perhaps 170–200 species of truffles, mostly Basidiomycota but including a dozen or more Ascomycota, and four to five Glomeromycota. Taxonomically the species are poorly known, with about half described and various nomenclatural puzzles with those that have been named. A few, such as *Rhizopogon luteolus*,

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