

The plight of some indigenous Wellington coastal grasses, and a new threat

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Sadly, native New Zealand grasses are now absent from, or very uncommon in, most areas of Wellington. This is especially noticeable on the coast, where adventive species, many of them garden escapes or deliberate introductions, have taken over where indigenous plants used to be. One of the worst of these is of course marram, *Ammophila arenaria*, introduced long ago from Australia. But, in more recent years, the adventive sea couch, *Elytrigia pycnantha*, has stealthily, relentlessly become a significant threat. Below I briefly describe five indigenous coastal grasses. I then describe the aggressive adventive sea couch which is threatening their survival.

ELYMUS SOLANDRI (= *ANTHOSACHNE SOLANDRI*)²

Next time you're walking round the beach to Breaker Bay from Seatoun, via Dorset Point (highly recommended), look for scattered patches of this handsome, indigenous grass among the weeds at the base of the escarpment.



Figure 1. *Elymus solandri*. Photo: Jeremy Rolfe.



Figure 2. Dried, "Curly-Whiskers" inflorescences of *Elymus solandri*.

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2. Recently it has been suggested that *Elymus solandri* be treated in *Anthosachne* (Barkworth & Jacobs 2011), so we await a final decision.

It seems almost to have disappeared from Wellington coasts now, but makes an interesting addition to a rock garden. One of the six endemic New Zealand members of the *Elymus* genus, *E. solandri* is immediately recognisable by its attractive, unmistakable, intensely silver-blue leaves, and open, sprawling or decumbent habit (Fig. 1). The tawny inflorescence is up to 20 cm long with spikelets of up to 10 long-awned florets (Edgar & Connor 2000). These curl as they dry, prompting my nickname for it: “Curly-Whiskers” (Fig. 2). Easily overtopped by more vigorous adventives, *E. solandri* has retreated to mostly rocky sites, where it is less likely to be smothered.

TRisetum ANTARCTICUM

Trisetum antarcticum is an endemic New Zealand grass of threatened status, categorised nationally as in gradual decline. Records of it exist from the 19th century for the western and southern Wellington coast, but it is now uncommon here because of aggressive, adventive grasses invading the territory. Its natural habitat is coastal gravel, sand and bluffs, from sea level to 300m a.s.l. BotSoccers on the trip to the Carrad QEII Covenant on the western escarpment of Pukerua Bay may remember my pointing out one lone plant of it among weeds on a foreshore rockstack, such is its uncommonness. The tufts are noticeably densely compact (Fig. 3), with stiff, bluish-green, rigid leaves, smooth abaxially but adaxially ribbed and minutely hairy. The panicle is described by Edgar & Connor (2000) as “compact, dense, oblong; sometimes with spreading, lower branches” (Fig. 4). However, I have not yet seen any Wellington *T. antarcticum* with spreading, branched panicles. Seed from the single plant found during a botanical survey of Taputeranga Island in 2003, and from another



Figure 3. *Trisetum antarcticum*.



Figure 4. Panicles of *Trisetum antarcticum*.

plant on the Owhariu Bay foreshore was propagated at Wellington City Council's (WCC) Berhampore Nursery, and hundreds of plants resulted. After a search of early records at Te Papa, and on the advice of Wellington Conservancy staff, these were planted as "insurance" populations in appropriate sites such as Wellington South Coast, Matiu/Somes and Mana Islands. The Matiu/Somes planting succumbed to drought, but the Makara Foreshore Reserve and Mana plants are thriving and have spread.

***LACHNAGROSTIS FILIFORMIS*, NEW ZEALAND WIND GRASS**

The feature that captured my attention when I first saw this dainty, indigenous grass (Fig. 5) on Wellington's west coast was its unusual, expanded, almost-spherical panicle. This can be up to 30 cm diameter, and has delicate branches of unequal length radiating from a central point, like a dandelion seedhead. Even more delicate, filiform branchlets are dotted with gingery spikelets, which, as the common name suggests, are mobile in the wind. The usually-erect culm can be up to 30 cm, and arises from tufted, light green or bluish-green leaves. A healthy plant can have more than 40 culms arranged in a circle. Indigenous, but not endemic, New Zealand wind grass can grow as an annual or perennial. Recently two plants of it were recorded naturally occurring in Makara Foreshore Reserve, after WCC weed control there.



Figure 5. *Lachnagrostis filiformis*.

***POA BILLARDIEREI* (= *AUSTROFESTUCA LITTORALIS*),
HINAREPE, SAND TUSSOCK**

Indigenous to both New Zealand and Australia, at first glance sand tussock is often mistaken for silver tussock, *Poa cita*. But its erect culms and narrow “almost spike-like” panicles, with densely-packed spikelets (Edgar & Connor 2000) producing an attractive “plaited” look (Fig. 6), are markedly different from those of silver tussock. Sand tussock forms very dense clumps, usually c. 50 cm high in Wellington, on sand or shingle beaches such as Palliser Bay (Fig. 7). Its stiff, golden leaves are wiry, in-rolled, c. 1 mm wide, and sharply-pointed. In 1908, Dr Aston recorded sand tussock on Wellington’s Owhariu coast



Figure 6. Panicle of *Poa billardierei*.

but the species was believed lost from there until one plant was discovered in 1997 at Makara Foreshore Reserve after weed control by WCC began there. Particularly vulnerable to grazing, and to the many forms of disturbance by beach users, sand tussock plays a minor part in sand stabilisation (Bergin 2000), and is classified nationally and regionally as declining. In recent years, WCC’s Berhampore nursery has been propagating it to use in restoring some coastal ecosystems.



Figure 7. *Poa billardierei*.

***SPINIFEX SERICEUS*, KŌWHANGATARA, SILVERY SAND GRASS**

Found throughout New Zealand, this almost-exclusively coastal species is also indigenous to India, Australia, and some Pacific Islands. Its stout, horizontal stems run for tens of metres, with tufts of silky-hairy, silvery-green leaves c. 30 cm long at the nodes, stabilising dunes by reducing wind flow and trapping sand (Fig. 8). *Spinifex sericeus* is dioecious, and even from a distance, in flower, male plants are easily distinguishable from female plants (Figs. 9, 10). The racemes of the male inflorescence spread out in the shape of a fan, shown in Fig. 9, with bright orange pollen on the stamens. The female inflorescence, described by Edgar & Connor (2000) as conspicuous, is spherical (Fig. 10), with a radius of c. 15 cm. Its spikelets, clustered tightly at the centre, are between 15 and 18 mm long, and shaped exactly like a miniature toheroa shell. No wonder then, that in early times, some coastal Māori tribes are said to have thought that these were indeed toheroa seeds, and that as the *Spinifex* spheres bowled along in the wind, they seeded the beach with toheroa. Hence, through a process of inference, they called the spheres, “māmā pipī toheroa”, mothers of baby toheroa (Source: the late Pūhipi Te Pā (Te Rarawa), Ahipara, Te Oneroa-a-Tōhe, Ninety Mile Beach). It seems to me that worldwide, such a process of close observation and reasoning has been the basis of many a theory in the long history of scientific thought.



Figure 8. *Spinifex sericeus*.



Figure 9. Male inflorescence of *Spinifex sericeus*.



Figure 10. Female inflorescence of *Spinifex sericeus*.

***ELYTRIGIA PYCNANTHA*, SEA COUCH**

Sea couch is an unwelcome immigrant. This robust, adventive, rhizomatous grass is rapidly colonising Wellington's beaches, dunes and rocky sites, forming dense swards along much of the south coast (Fig. 11). From a distance, mature plants of it can easily be mistaken for our native spinifex, being of a similar height, and somewhat similar in colour, habit, and habitat. But closer up, one can see that *Elytrigia* leaves are not silky-hairy but have prominent, close-set, scabrid ribs and scabrid margins (Fig. 12).



Figure 11. *Elytrigia pycnantha*.



Figure 12. Close-up of *Elytrigia pycnantha*. Photo: Matt Renner.

The flowering/seeding culm is totally different from spinifex's. For a full description, see Edgar & Connor (2000, p. 404). Since sea couch is thriving within WCC's plantings of pīngao (*Ficinia spiralis*) and spinifex, regrettably it may have been mistaken for spinifex. Sea couch forms a large part of the south coast's almost 100% exotic sward, as well as thriving in wet sand, down near the high tide mark, clear evidence of its high salt tolerance.

WCC has implemented a spray programme to eliminate or at least control this threat to our already battered south coast indigenous ecosystems. Trials with Round-up were unsuccessful in Tarakena Bay, sea couch proving even more resistant than marram. Gallant is now being applied twice-yearly, with some success, and monitoring is continuing (Justin McCarthy pers. comm., Pest Control Officer, Parks and Gardens, WCC). I look forward to a time when the south coast might be managed so to return to a state as near indigenous as possible.

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