

<i>Ramalina celastri</i>	Common.
<i>Sticta fuliginosa</i>	Occasional corticolous lichen.
<i>Sticta squamata</i>	Locally common corticolous lichen. https://inaturalist.nz/observations/39639478
<i>Strigula orbicularis</i>	Locally common foliicolous (or epiphyllous) lichen.
<i>Usnea cornuta</i>	Common. (Fig. 6)
<i>Usnea rubicunda</i>	Common corticolous lichen.

The uncommon grasses of northern New Zealand

Rhys Gardner

Introduction

Most of the following species are listed because of their relatively low representation in AK (herbarium, Auckland War Memorial Museum), but northern endemics, some of them not particularly rare, have been included too. The specimens and locations that are cited derive mostly from AK but checking of the Te Papa (WELT) and Landcare (CHR) online databases has also been done.

The focus is on updating the records of Edgar & Connor's *Flora of New Zealand*, vol. 5 Gramineae. There are two editions of this work. Mostly I refer to the initial publication (hereafter "FNZ 5"), which appeared in the year 2000. A second edition, containing a small number of additions and corrections, appeared ten years later ("FNZ 5, 2010").

If the accepted name of a grass has changed since 2000 the FNZ 5 synonym is noted. A fair number of illustrations ("Illn") are mentioned and notes and descriptive details additional to those of FNZ 5 are given where needed. Hints towards identification, though, have generally been omitted. I have already (Gardner 2018) discussed the earliest New Zealand records for some of these species.

The study area ("the north", "Northland", "northern New Zealand") covers the mainland south to the Manukau and Waitemata Harbours at c. lat. 37° S. The Three Kings Is. and the offshore islands are included too, but not the Kermadec Is. or the Coromandel Peninsula.

Statements about rarity and abundance just apply to the species as they are seen, or have been seen, in the study area. Native species are noted as such, sometimes as "endemic", i.e., endemic to New Zealand rather than just to Northland. For adventive and cultivated species the likely region of origin is provided.

With respect to the illustrations cited: "Buchanan" refers to Buchanan (1880) — see Connor & Edgar (2002) for a commentary. The references to illustrations in the Auckland Botanical Society Journal are cited in abbreviated form, as in the first entry below.

The species

1. *Amphibromus fluitans* Kirk

This sub-aquatic grass has always been very rare in northern New Zealand — there are no old specimens in AK. John Bartlett is said to have seen it at Ninety Mile Beach, and it was sighted by Peter de Lange at Lake Waiporohita on the Karikari Peninsula in 1998 (Gardner 2000; P. J. de Lange pers. comm.).

The species also occurs in south-eastern Australia. It was not found in New Zealand until c. 1880 and this seems to have led Jacobs & Lapinuro (1986: 716) to say that it might not be native here. But none of the Australian specimens they cite are very much older, and also, an increasing number of finds are being made from remote unmodified sites in the South Island (P. J. de Lange, pers. comm.). Illn: Kirk, TNZI 16 (1884) t. 28; ABS Jnl 55: 55(2000).

2. *Andropogon virginicus* L. broomsedge
Local, on dry roadsides at Te Paki, Karikari Peninsula, Kaimaumu Road and Taheke; seen recently among old sand dunes at Mangawhai (obs. ROG, August 2019). Adventive (North America). Illn: ABS Jnl 51: 32 (1996).

3. *Anemanthele lessoniana* (Steud.) Veldkamp pheasant's tail
An endemic grass of dry forest inland, e.g., on silty soils of river terraces. Probably found in the north only in restoration- and amenity-plantings. Its distribution is said to include North Auckland (FNZ 5: 68) but I have not seen a supporting specimen. A collection made in 2003 by Peter de Lange (Laingholm, West Auckland, spreading in a garden, AK 281162, 283785,) is the only indication I have that this grass can naturalize in the northern part of

the country. Illn: Buchanan t. 17; Hook. f., Fl. N.Z. 1 t. 67 (1853), as *Apera arundinacea*; ABS Jnl 58: 37 (2003); FNZ 5 2010, frontispiece.

4. *Anthosachne kingiana* subsp. *multiflora* (Banks & Sol. ex Hook.f.) Govaerts (FNZ 5: 396, as *Elymus multiflorus*)

A native species of coastal cliffs, perhaps mainly on lime-rich mudstones. Now almost restricted to the east coast's offshore islands. Peter de Lange has made the only recent collection from the west coast (Maungaraho Rock, near Dargaville, coll. 2014, AK 360221) but says the plant is also present at Maunganui Bluff. It still occurs locally in the Hauraki Gulf but has nearly gone from the Waitakeres. Illn: Buchanan t. 56B.

5. *Anthosachne scabra* (R.Br.) Nevski (FNZ 5: 397, as *Elymus rectisetus*)

Uncommon, now mainly in very dry sites on the east coast, including the islands of the Hauraki Gulf. Persists on the shore at Ambury on the Manukau Harbour (*M. Wilcox*, coll. 2000, AK 251554,). Adventive (Australia).

6. *Anthosachne solandri* (Steud.) Barkworth & S.W.L. Jacobs (FNZ 5: 399, as *Elymus solandri*)

Endemic, rare, in dry coastal sites. This grass seems never to have been found north beyond Great Barrier I., where Thomas Kirk got it in 1867 (AK 11174) and where it was rediscovered in 2006 (*Cameron & Aspin*, Motu Kaikoura, N end of Mitre Peak, AK 298388). Donald Petrie obtained specimens from Mt Eden (e.g., CHR 333090). Illn: Buchanan t. 57A.

7. *Austroderia fulvida* (Buchanan) N.P.Barker & H.P. Linder (FNZ 5: 494, as *Cortaderia fulvida*) toetoe
Endemic, scattered throughout in colder sites; mostly along streams deep in forest, occasional as a colonizer of open places at higher altitudes. Known from the Herekino Forest, Mangamuka Ranges and Puketi Forest, and from the Waitakere Ranges; very infrequent, between these localities, although now widely used in revegetation projects around Auckland. Illn: Buchanan t. 28.

8. *Avena sativa* L. oat grass
According to Kirk (1870: 144) this Old World crop plant then grew "in great abundance on sea cliffs in the Kaipara". Nowadays only the slender oat, *A. barbata*, occurs in such situations.

9. *Brachypodium distachyon* (L.) P.Beauv.

A 1989 collection of this tufted annual from coastal screes on Great Barrier I. (Miner's Head to Ahuriri Point, AK 277679; FNZ 5: 376) seems to be the only record for New Zealand. Adventive (Europe-Asia).

10. *Brachypodium sylvaticum* (Huds.) P.Beauv.

false brome

Uncommon, in open places and woodland, usually on rather infertile soils. Recorded (FNZ 5: 376) for Whangarei and Auckland City, also known from Waiheke Island (*C. Kilgour*, coll. 2003, in shaded pasture under pohutukawa, AK 280124). Adventive (Old World). Illn: FNZ 5: 374 fig. 13.

11. *Bromus arenarius* Labill. sand brome

An uncommon winter-annual of dry rocky places, now found mainly in the North Cape district and on the offshore islands.

This grass's status is uncertain. It might be an indigenous species (first appearing in our literature as *Bromus australis* R. Br.) that is shared with coastal south-eastern Australia, where it is also rather infrequent. It is suggested that in both countries the post-European decline in sea-bird populations has adversely affected the dispersal of the plant and the maintenance of suitable habitat (P. J. de Lange, pers. comm.). Illn: Labillardière, Nov. Holl. Pl. t. 23. 1805; Buchanan, t. 56A; Turner (1895: pp. between 14 and 15), as *Bromus arenarius* var. *macrostachya* and *B. arenarius*.

12. *Cenchrus purpurascens* Thunb. (FNZ 5: 573, as *Pennisetum alopecuroides*)

In addition to a 1968 collection (Takatu near Warkworth, on coastal sands, CHR 175402,) there is one made in 1996 from Whangarei (*L. Forester*, spreading in carpark, AK 239457).

13. *Cenchrus purpureus* (Schumach.) Morrone (FNZ 5: 577, as *Pennisetum purpureum*)

The several specimens from the north all seem to represent cultivated plants, with the exception of AK 226996 (Waipapakauri, near Ogle Drive, *P.J. de Lange*, coll. 1995), where spontaneous plants were appearing in a roadside ditch next to a planting.

14. *Chionochloa bromoides* (Hook.f.) Zotov

coastal snow-tussock

An endemic of dry coastal cliffs. On the west coast known only from recent (post 1960s) finds at Maunganui Bluff, e.g., AK 363104. These plants were cited by Connor (1991: 232) as coming from "Mt Manganui". Known on the east coast from the Whangaroa Harbour [Stephenson I. here being the type locality] to Omaha and Leigh. Absent from the Three Kings Is.. Illn: Hooker, Fl. N.Z. 1 t. 68A. 1853, as *Danthonia bromoides*; Zotov (1963: 93 fig. 4).

On Motu Arohia in the Bay of Islands this distinctive grass has been seen in abundance (*R. Beever*, coll. 1980, AK 156531), but for some reason it was not among the finds Banks and Solander made there — perhaps burning of the island's scrub has let it increase.

15. *Chionochloa conspicua* subsp. *cunninghamii* (Hook. f.) Zotov

In Northland this endemic grass is found in just a few, cold places, mainly along streams in tall forest but also at higher altitude. It is known from Puketi Forest (Waipapa River), Waipoua Forest (Wairau Falls), and Whangarei Heads, and also from the Waitakeres, where it was first seen in 2001 (McCain 2002; Gardner 2007).

16. *Chrysopogon zizanioides* (L.) Roberty

vetiver grass

Tussock, to 50 cm tall, the extensive roots with a pleasant-smelling oil ; leaf-blades to c. 50 cm long, 4–7 mm wide when flat, firm-textured but nearly smooth except near the drawn-out tip, appressed-hairy adaxially at base; ligule a dense band of hairs 0.75 mm long; inflorescence narrowly plumose, to c. 30 cm long, yellowish brown, the branches fragile; spikelets c. 4 mm long, ornamented with stout conical prickles, sometimes with an awn 1 mm long.

This tropical grass has recently been introduced to the warmer regions of New Zealand (south to Hawkes Bay at least) to control erosion on dry slopes. So far, it seems not to have naturalized, and is perhaps disinclined to flower here. Cultivated (Asia).

17. *Chloris gayana* Kunth

Rhodes grass

Uncommon, in dry coastal places. Seen in the last thirty or so years (AK 220047) from Woodhill Forest and Rimariki I., Mimiwhangata. Adventive (Africa).

18. *Chloris truncata* R.Br.

windmill grass

Uncommon, in dry waste places near the coast; presently known from Waitangi, and Casnell I. in the Mahurangi Harbour. Adventive (Australia).

19. *Coix lacryma-jobi* L. Job's tears (FNZ 5: 613, as "*lachryma-jobi*").

Local in gardens and an uncommon wild plant of waste ground; apparently not persistent anywhere. Adventive (Asia).

20. *Cortaderia jubata* (Lemoine) Stapf

purple pampas-grass

In damp to dry waste ground. Very local north of the Kaipara Harbour, perhaps mainly known from the Herekino-Awanui region (Wilcox 2014). By way of contrast, *C. selloana* is abundant in the north, in scrub and pine plantations and on coastal cliffs. (To put it mildly: through the continued negligence of landowners, DoC, iwi and local authorities a monster is now at large). Both species are adventive from South America. Illn: Knowles & Ecroyd (1985); ABS Jnl 58: 51 (2003).

21. *Cymbopogon narduus* (L.) Rendle

citronella grass

Large tussock, to 2 m tall; leaves scented of lemon and citronella. This Asian species seems to have been introduced in the early 1990s by the New Zealand horticultural trade 'in error' [legal term] for the culinary lemon-grass, *C. citratus*. A 1996 collection from the Auckland Botanic Gardens at Manurewa includes seedlings, with its label noting that some spikelets were viviparous (AK 224354). Other plants seen by me around Auckland since that time have not been setting seed. Illn: Bentley & Trimen, Medicinal Plants 4: t. 297 (1880).

22. *Cymbopogon refractus* (R.Br.) A.Camus

barbed-wire grass

Tufted perennial, to c. 30 cm tall (in New Zealand), often reddish, and faintly aromatic when crushed. Recently found wild on a dry hillside on Motutapu Island in the Hauraki Gulf (Heiss-Dunlop 2017). The nearest native population would be that of Norfolk I. Adventive (Australia / Pacific Ocean region). Illn: Turner (1895: facing p. 7), as *Andropogon refractus*.

23. *Deyeuxia avenoides* (Hook.f.) Buchanan

An endemic species of dry low-nutrient soils, e.g., on roadsides through gumland. Not a weed of waste ground, and, where it occurs, usually less abundant than *Deyeuxia quadriseta*. Illn: Buchanan t. 24 A; ABS Jnl 57: 24 (2002).

24. *Dichelachne inaequiglumis* (Hack.) Edgar & Connor

Once quite common in dry open places, including teatree scrub; now declining rapidly, and in particular, nearly gone from its former stronghold at west Auckland's Waikumete Cemetery. Said to be a native species shared with Australia. Illn: ABS Jnl 72: 73 (2017).

25. *Dichelachne sieberiana* Trin. & Rupr.

Tufted perennial to 75 cm or more tall; known in the last 50 years from dry open ground at Whangaroa and the Bay of Islands but not collected there recently. Adventive (Australia). Illn: Buchanan t. 16, as *D. sciurea*; ABS Jnl 72: 73 (2017).

26. *Digitaria aequiglumis* (Hack. & Arechav.) Parodi

Known from the Te Aupouri Peninsula, on dry gravelly ground at the coast (FNZ 5: 540), and recently found by Cameron Kilgour at Kaitoke Swamp on Great Barrier I., where it grows in the low manuka (*Leptospermum scoparium*) scrub of an interdune slack (C. Kilgour, pers. comm. 2019). Adventive (South America).

27. *Digitaria ciliaris* (Retz.) Koeler summer grass
Found long ago on the Poor Knights Is. and more recently at several places, including the former sewage sludge ponds at Mangere. Adventive (Old World tropics).

28. *Digitaria ischaemum* (Schreb.) Muhl.
There are only two recent northern collections in AK. Both were made by Alan Esler. One came from Kawakawa in 1981, from a "track through shrubland" and the other from Auckland City in 1987 (120 Mt Albert Road, footpath).

29. *Echinochloa telmatophila* P.W.Michael & Vickery swamp barnyard-grass
Known in the north just from one old undated collection (Port Albert, AK 98850). This lacks habitat data. The few collections from further south come from roadside gutters and damp sand-flats at the coast. Adventive (Australia).

30. *Eragrostis amabilis* (L.) Nees
Tufted slender annual, to c. 30 cm tall; leaf blades to 10 x 0.4 cm, usually glabrous; leaf-sheaths long-pilose especially at apex; inflorescence open, 15 cm long, bearded in axils; spikelets c. 2 x 2 mm, oblong-ovate, the rachis disarticulating when mature, each of the separated internodes retaining a palea and sometimes a lemma too; keels of palea with conspicuous cilia 0.25 mm long; grain turgid, 0.5 mm long.

Known in the north from two recent Auckland collections (Cameron 2005). Because it seems not to have persisted at either site it has been termed a "transient" (FNZ 5 2010: p. A21). Adventive (Old World tropics).

31. *Eragrostis cilianensis* (All.) Janch.
The only recent AK collection for northern New Zealand is one from Auckland City, made by Peter de Lange in 1998 (Rodney Road, Northcote, in gutter and cracked asphalt, AK 235132). Adventive (Mediterranean region).

32. *Eragrostis curvula* (Schrud.) Nees African love grass
Uncommon, in dry waste ground and on sandy roadsides. This robust tussock was first collected in our area in 1962 at Inland Road by Lake Waiporohita (CHR 127230). It was still common there in 2013 (AK 346460-61; recorded by Wilcox (2014: 64) as *Poa labillardierei*). In 1995 it was collected from the Three Kings Is. (*de Lange*, one patch in kanuka (*Kunzea* sp.) scrub, all plants seen removed from island and destroyed, AK 225381). Adventive (Africa).

33. *Eragrostis leptostachya* (R.Br.) Steud.
Tufted perennial, to c. 75 cm tall; leaf-blades to 25 cm long and 2.2 mm wide; inflorescence an open panicle c. 30 cm diam., one or two obscure glandular bands (orange in dried material) close to the tips of the pedicels, the spikelets lanceolate, 1 cm long.

The only New Zealand collections of this Australian grass come from Mahuki I. near Great Barrier I., where it was first found in 1985 and again in 2015 – it has been suggested that it may have arrived here attached to gannets from E Australia and therefore should be treated as an addition to the native flora (Cameron 2014).

34. *Eragrostis multicaulis* Steud.
Tufted annual, to 20 cm tall, culms usually numerous; leaf blades to 8 x 0.3 cm, flat, glabrous; inflorescence an open panicle to 10 cm long, without glands on the axes or hairs in the branch-axils; spikelets c. 5 x 3 mm, oblong-ovate, often crimson, rachis not disarticulating but shedding the paleas and lemmas; grain only slightly compressed, 0.7 mm long.

Now known from several places in Auckland, growing mainly on dry roadside gravels (like the first collection, made in the Waitakere Ranges in 2011). Adventive (tropics of Asia?). Illn: ABS Jnl.66: 46 (2011); 69: 83 (2014).

35. *Festuca ovina* subsp. *hirtula* (W.G.Travis) M.J.Wilk.
This European grass is said to have been found in Auckland City (FNZ 5: 118). The record by Carse (1916: 243) of "*Festuca ovina* Not uncommon" for Manganui County seems to be unsupported by any specimen and probably represents *F. rubra*.

36. *Hemarthria uncinata* R.Br.
Loosely tufted or scrambling perennial, often reddish; leaf-blades 12 x 0.3 cm, nearly glabrous; ligule a long-ciliate membrane to 1 mm long; inflorescence(s) closely subtended by uppermost leaf sheath, very narrow, rigid and often curved, 6–14 cm long and 3 mm diam., its axis fracturing on maturity; spikelets 6–10 mm long, paired, one of each pair sunk into the rachis-axis, the apex of the glumes straight or (on the same plant) elongated into a rigid inflexed hook.

This Australian species was first collected from near Awanui in 1935, and has persisted there (AK !). It was found on the west coast in 2014 (Ripiro Beach near Dargaville, in *Banksia* woodland on sandy soil, *P. J. de Lange*, AK 348732), and on the east coast in 2017 (Sime Road, Ruakaka, on the edge of sandy coastal wetland, Lisa Forester, pers. comm.). In Auckland City, it has persisted for more than a decade in degraded native scrub at Massey East, e.g., at Spargo Reserve (obs. ROG, 2018).

Allan (1936: 141) misidentified the Awanui ("Kaitaia") material as the African species *H. altissima*. This name was used in FNZ 5 but was subsequently corrected to *H. uncinata* (FNZ 5 2010: pp. A21, 613), without any change to the description.

The supposed *H. altissima* was also said to persist at the abandoned nursery of the former DSIR's Kaikohe Research Station (FNZ 5: 613). It might just be possible that veritable *H. altissima* was once trialed there. Illn: Turner (1895: facing p. 28), as *H. compressa*; ABS Jnl 58: 197 (2003).

37. *Hierochloa redolens* (Vahl) Roem. & Schult.

karetu, holy grass

This native grass was found by Allan Cunningham in swamps of the Bay of Islands region (note the locality Karetu here), and later by Carse near Kaitaia. AK's records from further south are from long-gone populations at Auckland City's St John's Lake and "Papatoitoi" (Kohuora Crater?). Remarkably, *H. redolens* continues to thrive on Great King I., where it grows in low windswept scrub (A. Wright, pers. comm.). The species also occurs in New Guinea, Australia and South America. Illn: FNZ 5: 342 fig. 11.

38. *Imperata cylindrica* (Nees) Stapf blady grass
Found in 1898 near Kaitaia (R. H. Matthews, AK 1263), and persisting there for at least twenty years (AK !). The only recent AK gatherings come from near Kerikeri, on dry grassy roadsides and similar sites (Edmonds Road; Motupapa I.; Moturoa I., E. Asquith, coll. 2006, AK 297000). This weedy tropical grass, strongly rhizomatous and tolerant of fire and poor soil, is now being sold as an ornamental by some Northland plant nurseries. Adventive (tropical Asia). Illn: Turner (1895: facing p. 30), as *I. arundinacea*.

39. *Lachnagrostis lyallii* (Hook. f.) Zotov

This native grass of light forest and open places is widely distributed from c. lat. 38° southwards, with only a single mention for North Auckland (Kaihu, north of Dargaville) given by FNZ 5. But it was discovered in 2008 in western Auckland 's Ararimu Valley (AK 302057), on the same sheltered and cool streamside that harbours *Veronica jovellanooides*.

40. *Melinis repens* (Willd.) Zizka

Natal grass, rose grass

Annual or short-lived perennial, loosely tufted, to 75 cm tall (probably less in New Zealand); leaf blades c. 10 x 0.5 cm, pilose with tubercle-based hairs; ligule a ciliate rim 1 mm long; inflorescence a loose panicle c. 10 cm diam., the axes and spikelets covered by long soft pink to purplish hairs; spikelets 4 mm long, rugose-tuberculate under the hairs, lower lemma occ. with an awn to 3 mm long.

Like *Imperata cylindrica* this too is a weedy, fire-adapted species of dry grassland and rocky waste. The few New Zealand collections include one made by H. B. Matthews in 1909 from some North Auckland locality (AK 98547 & CHR 20568). Somehow this material, labelled with the old name *Tricholaena rosea*, escaped mention by Cheeseman (1925). Adventive (southern Africa).

41. *Microlaena carsei* Cheeseman Carse's rice-grass
An endemic species, known from south of the Muriwhenua Peninsula to Waipoua and Trounson Park, with a single record from Great Barrier I. (de Lange & Norton, Peach Tree Track, coll. 2002, AK 257166). Often thought of as a kauri (*Agathis australis*) forest plant, but not confined to this community. It is probably better not to call it Carse grass.

42. *Microlaena polynoda* (Hook.f.) Hook.f.

bamboo rice-grass

An uncommon endemic of dry forest, occurring from the North Cape southwards down both coasts and on the offshore islands. According to native-plants grower Jeff McCauley (pers. comm., 2017) its flowering, though rather cryptic, does occur annually. Illn: Buchanan t. 4.

43. *Miscanthus x giganteus* Hodgkinson & Renvoize
In the last decade or so this man-made hybrid between *M. sinensis* and *M. sacchariflorus* has been promoted as a source of biofuel, etc. There is some activity in this regard in New Zealand, and in 2017 a collection was made from a planted stand at Te Kao (AK 366664). This grass grows to c. 3 m tall (much taller than *M. sinensis*), is only shortly-rhizomatous, and is said to be completely sterile.

44. *Miscanthus sinensis* Andersson

A robust tussock mostly seen as an ornamental, only occasionally spontaneous. For example, AK 330357 was collected in 2012 from a storm-water pond at Warkworth, but may simply have accompanied planting material from a nursery. Adventive (eastern Asia).

45. *Nassella trichotoma* (Nees) Arechav.

nassella tussock

Very local in northern New Zealand. Infestations in poor dry pasture have been known from Kaitaia and the Whangarei Heads, and from Auckland City, e.g., at Mt Mangere (first found here in c. 1950, rediscovered 1983). Adventive (South America). Illn: ABS Jnl 58: 37 (2003).

46. *Nassella neesiana* (Trin. & Rupr.) Barkworth
Northern records all date from the last forty or so years, mainly from the Waitakere Dam and Western Springs (where it was last collected in 2007). Adventive (South America).

47. *Nassella tenuissima* (Trin.) Barkworth

In the 1990s several northern plant-nurseries were selling this pernicious weed. But in this region, the only "infestation" for which AK has any record comes from the Wellsford Bowling Club, where in 1998 the grass had begun to spread from a planting (AK 237049). Illn: ABS Jnl 58: 37 (2003).

48. *Panicum huachucae* Ashe

Uncommon, in dry open ground, such as along roadsides. Found in Kaitia (most recently in 1976) and on Great Barrier Island (coll. 1986, CHR 437664). Adventive (North America).

Recently placed in *Dichanthelium*, which was formerly a subgenus of *Panicum*. Its correct name there is *D. acuminatum* (Sw.) Gould & C.A. Clark subsp. *fasciculatum*.

49. *Panicum lindheimeri* Nash

Several collections were made by H. B. Matthews from Kerikeri in c. 1913, e.g., AK 99300 (FINZ 5: 560, 564).

50. *Urochloa maxima* (Jacq.) R.D.Webster

guinea grass

This large grass was found in 1979 at the edge of the motorway at Ellerslie, and persisted there for at least five years (FNZ5: 560). Also known as *Urochloa maxima* and *Megathyrus maximus*.

51. *Panicum miliaceum* L.

In northern New Zealand the "scattered" distribution of this grain crop is said to have resulted from seed spillages during transport and the disposal of cage-bird seed (FNZ 5: 562).

52. *Panicum schinzii* Hack. swamp panicum

This rare weed of crops and waste ground is said to prefer relatively damp sites and fertile soil. It has been recorded for Auckland City in 1943 and Kerikeri in 1981. There are no AK specimens of any date. Adventive (south-west Africa).

53. *Paspalum orbiculare* G.Forst.

Uncommon; on poor soil, often on sites wet in winter, such as ditches through clay, and usually with *Leptospermum scoparium* or sedges like *Machaerina teretifolia*. Declining in abundance, being outcompeted by weeds like *Paspalum urvillei*.

Widespread in warmer regions of Asia and the Pacific; and, on the strength of a single Banks & Solander specimen from the Bay of Islands (de Lange & Murray 2002: 19; E.K. Cameron, pers. comm.) to be regarded as a native to New Zealand. (Unusually, the species is not mentioned in the Banks & Solander ms. Flora; Gardner 2018: 79. It is however mentioned in their "Slip Catalogue" as occurring at Motu Arohia: E.K. Cameron, pers. comm. 2019). Illn: Buchanan t. 10A, as *P. scrobiculatum* [sic].

54. *Paspalum paniculatum* L.

Found once in Auckland City, by Alan Esler in 1986, from alongside the railway at Morningside. Not otherwise known from New Zealand. Adventive (tropical America).

55. *Paspalum pumilum* Nees

Said to have persisted for some time at the DSIR trial pasture at Kaikohe in the 1990s (e.g., CHR 474616) after being sown there. Not otherwise known from New Zealand. Adventive (tropical America).

56. *Poa billardierei* (Spreng.) St-Yves sand fescue (FNZ 5: 86, as *Austrofestuca littoralis*)

A rare native species of sandy places along both coasts. Often with pingao and spinifex but not where sand is accumulating rapidly; sometimes on flat ground near stream mouths.

Also found in Australia, where there are several other species anomalous in both *Festuca* (by the keeled lemmas) and *Poa* (the hairy rachilla).

The Maori name *matiatia* connects with the widespread Polynesian word *matie*, a generic term for grasses. Illn: Buchanan t. 54, as *Austrofestuca littoralis*.

57. *Poa cita* Edgar silver tussock

The most northern collection in AK of an undoubtedly wild plant comes from outside our area: *L. M. Cranwell*, Cape Colville cliffs, coll. 1934. Older records for the Three Kings Is. are misidentifications of *P. anceps* (Fl.NZ 5: 140, 152). and this is also the case for records from the Kermadecs (P. J. de Lange, pers. comm.).

58. *Poa labillardierei* Steud.

Known in northern New Zealand by a 1902 collection from Marua near Whangarei (AK 1875; CHR 6766) and by one made in 1984 from Rakino I. in the Hauraki Gulf (AK 167537). The recent record from Lake Ohia is in error; see *Eragrostis curvula* above. Adventive (Australia).

59. *Poa pusilla* Berggr.

An endemic coastal species, now rather uncommon in dry sandy or rocky places, such as open scrub and pine plantations. Its stronghold in our area may be the *Kunzea* scrub of Woodhill Forest. Illn: Buchanan t. 46E, 46F, as *Poa anceps* var. *debilis*.

60. *Poa imbecilla* Spreng.

An endemic of dry rocky places in scrub and open forest, now known in northern New Zealand only from the Hen and Chicken Is. Illn: Buchanan 53A, as *Poa breviglumis*.

61. *Puccinellia stricta* (Hook.f.) Blom

A native species of salt-marsh and shelly, sandy or rocky places at HWM. Found by Kirk at Onehunga, and rediscovered by Mike Wilcox there and also

further west on the Manukau Harbour, on the Ambury sea-frontage. Apparently not known further north, despite the reference by Cheeseman (1906, 1925, as *Atropis stricta* var. *stricta*) to the distribution being "from Bay of Islands southwards". Also in Australia. Illn: Hooker, Fl. Tasm. 2 t. 162. 1859, as *Glyceria stricta*.

62. *Rostraria cristata* (L.) Tzvelev

Found on Great Barrier I. by T. Kirk in 1867 (WELT 71125, 71127); not seen again in New Zealand. Adventive (Mediterranean region).

63. *Rytidosperma caespitosum* (Gaudich.) Connor & Edgar

Rather uncommon, in dry grassland and scrub. This grass became abundant near Spragg's Monument in the Waitakere Ranges after a fire in 1983 (AK 370253). Adventive (Australia).

64. *Rytidosperma clavatum* (Zotov) Connor & Edgar

An uncommon endemic of dry grassland and scrub, etc.; seen recently only from Great Barrier I. (Motu Kaikoura I., Cameron, AK 298330, coll. 2006).

65. *Rytidosperma laeve* (Vickery) Connor & Edgar

Very rare in northern New Zealand, as in the country at large; no specimens in AK. Adventive (Australia).

66. *Rytidosperma pilosum* (R. Br.) Connor & Edgar

Perhaps once quite common in dry coastal sites, including *Metrosideros excelsa* forest; now uncommon and seen mainly as a roadside plant, often in association with *Leptospermum scoparium*. Perhaps a native species, or an early adventive from Australia (Gardner 2018). Illn: Buchanan t. 33, as *Danthonia pilosa*; Zotov (1963: 115 fig. 9); ABS Jnl 65: 129 (2010).

67. *Rytidosperma tenuius* (Steud.) A.Hansen & Sunding

Rare, in dry places. Has been found in the Waitakere Ranges, most recently in 1979 (*Esler*, Maungaroa Rock, AK 161289). Not seen at Waikumete Cemetery for twenty or so years. Adventive (Australia).

68. *Saccharum officinarum* L.

sugar cane

A cultivated Old World exotic, found throughout pre-European Polynesia but not a Maori introduction to New Zealand. Occasional in home gardens, perhaps sometimes persisting after being discarded. None of the AK specimens has an inflorescence.

69. *Sacciolepis indica* (L.) Chase

Indian cupscale grass

Tufted or sprawling annual, to 50 cm tall. Found in 1974 at Lake Rotokawau on damp sandy ground,

and in March 2018 at Spirits Bay (*E.K. Cameron & S.A. Heiss-Dunlop*, AK 370504). Adventive (tropical Asia).

70. *Spartina townsendii* H.Groves & J.Groves,

This is a hybrid between the Northern Hemisphere's *S. anglica* and *S. maritima*. It resembles *S. anglica* (sporadic in our area) in forming relatively dense swards but has a ligule only 1–2 mm long and spikelets with shrivelled (indehiscent, infertile) anthers just 5–8 mm long. It is rare in northern New Zealand. Partridge (1987) accepted a 1976 collection (Beach Road, Te Atatu, Waitemata Harbour) as being this hybrid, and the colony persisted there at least until 1998 (AK 235241). Other post-Partridge AK records (which I have determined myself, with various degrees of certitude) come from Rangaunu Harbour and the Manukau Harbour (Favona Creek, and Puhinui Creek). Adventive from England, apparently as a deliberate introduction.

71. *Stenostachys gracilis* (Hook.f.) Connor

Endemic, rare in northern New Zealand. Found in light scrub and open habitats in forest, e.g., along stream banks, logging road cuttings, and on the root-plates of large wind-thrown trees. There are old records from near Kaitaia and from Pahi on the Kaipara Harbour. The only recent northern AK collection was made by Peter de Lange, from near Shelly Beach on the south-west side of the Kaipara Harbour, growing under tall *Kunzea* scrub (AK 286639, coll. 2004). Further investigation of the coast here would be worthwhile. Illn: Hooker, Fl. N.Z. 1 t. 70. 1853 as *Gymnostichum gracile*; Buchanan t. 58, as *G. gracile*; ABS Jnl 59: 146 (2004).

72. *Themeda triandra* Forssk.

kangaroo grass

A plant of dry grassland, known long ago from the Whangaparaoa Peninsula (Cheeseman 1925: 1055, as *T. Forskalii*) and St John's College at Purewa, Auckland City (e.g., AK 99576). Recently found by Mike Wilcox on Brown's I. in the Hauraki Gulf (Wilcox 2008). Adventive (Australia and other warmer parts of the Old World). Illn: Hooker, Fl. Tasm. 2 t. 156. 1859, as *Anthistiria australis*; Turner (1895: facing p. 9) as *A. ciliata*.

73. *Trisetum arduanum* Edgar & A.P. Druce

native oat-grass

Tufted perennial, to 50 cm tall but often sprawling or drooping. A rare endemic of coastal cliffs and river-side bluffs. There is only one old northern mainland collection in AK, a collection by Donald Petrie from the "Bay of Islands". The grass persists on the Three Kings Is. and some offshore islands, and also on Maungaraho Rock near Dargaville (P. J. de Lange, AK 233099, coll. 1997). Although there seems to be no record

from Maunganui Bluff, Peter de Lange (pers. comm.) believes it probably does grow there (but will be losing ground to *Sporobolus indicus*, etc.). The stronghold for the species in northern New Zealand is the Hen and Chicken Is. It is now rare in the Hauraki Gulf and very rare in the Waitakere Ranges.

74. *Trisetum flavescens* (L.) P.Beauv.

Found by D. Petrie on a Epsom roadside in 1919 (AK 99562), apparently as an escape from his garden. Adventive (Europe-Asia).

75. *Trisetum serpentinum* Edgar & A.P. Druce

This endemic grass, known in the north only from the Surville Cliffs, has leaf-blades that are usually inrolled (to 1 mm diam.) and culms with long fine hairs above the nodes.

76. *Triticum aestivum* L.

Wheat in our area is local and infrequent and perhaps usually comes from discarded poultry seed, etc. According to Kirk (1870: 145) this Old World crop was "frequently renewed from accidental causes, but can scarcely be said to maintain its ground".

77. *Urochloa panicoides* P.Beauv.

A tropical annual, found by Anthony Wright in 1978 near 5 Korokino Rd, One Tree Hill, Auckland City; persisting there for more than a decade (FNZ 5: 595).

78. *Zizania latifolia* (Griseb.) Stapf

Manchurian rice-grass
A robust riparian grass, able to grow in water up to c. 1 m deep but also found in ditches and wet pasture. Known mainly from the Northern Wairoa River at Dargaville; being controlled here. Very sporadic southwards; known in the last forty or so years from Lakes Kereta and Karaka, two of the Muriwai dune-lakes. It was also found on a Titirangi property in 2000 (McCain, AK 244697–700).

Erroneous records

An erroneous record additional to those noted by FNZ 5 (*Aristida calycina*, *Dichanthium annulatum*, *Urochloa glumaris*) is the tentative one made by Allan Cunningham (1837: 371) for *Rottboellia uniflora*. The specimen it is based on (*R. Cunningham*, coll. 1834, Bay of Islands) is presumably at Kew and almost certainly represents a species of *Zoysia*.

Another might be that of the only record from the New Zealand mainland of *Digitaria setigera* Roem. & Schult.. This *U.S. Exploring Expedition* specimen supposedly came from the Bay of Islands in 1840 (FNZ 5: 544). It is well known though that labelling errors in this voyage's plant collections are all too common.

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Flower Fairies Down Under

Rhys Gardner

Introduction

A hundred years ago children's books teemed with talking animals, sentient wildflowers, and empathetic fairies. Social historians say this was part of a reaction against materialism and the despoliation of the natural world, and was largely carried out by women. Such considerations, and the history of the genre, have been examined elsewhere (Muir 1982, Holden 1992, Wood 2000); here I just want to mention some writer-artists (all female) from Australia and New Zealand whose works I think combine fantasy, plant lore and botanical illustration in a very pleasing way (Note 1).

The kind of work referenced in the next paragraphs is well represented in late nineteenth and twentieth century Australia and New Zealand, particularly in the former country, where there was an earlier emergence of a leisured class with its art societies, art-buyers, and parents willing to support artistic offspring. I list here only four Australians; others include Ethel Jackson Morris, Dorothy Hall [NZ born], Pixie O'Harris, Christian Yandell, Edith Alsop, Harold Gaze, and Peg Maltby.

Firstly, though the major contribution of Englishwoman Cicely Mary Barker (1895–1973) must be acknowledged. Her little books, published between 1923 and 1948, show angelic child-fairies lying among, climbing in, or declaiming from, an accurate and comprehensive depiction of English trees, shrubs and flowers. Through her, many a young naturalist must have learnt that plants are grouped in families and have family 'faces' (Oates 2015: 23). Laing (1995) is a biography of this devout and talented woman (Note 2).

Australia

1. May Gibbs (1877–1969) spent most of her life in Western Australia and Sydney. A biography (Holden & Brummit 2011) says that as a young adult she consistently won prizes for botanical art. Her children's stories about the little Gumnut People (Fig. 1) (at times in conflict with the Bad Banksia Men, who lack only motorbikes) seem to be much better known in Australia than New Zealand. Perhaps

children there are, like the plants, made of tougher stuff (Note 3; and see Note from the Australian editor, below References).

2. Ida Rentoul Outhwaite (1888–1960), who lived in Melbourne, has also been given an illustrated biography (Muir and Holden 1986). In her 1933 "A Book of Wild Flowers" the plants have equal place with the fairies (Fig. 2). She enjoyed considerable success in her lifetime and is now called "The Queen of the Fairies", at least by entrepreneurs selling her artwork on-line, though the title should probably be shared with Nuri Mass (<https://nla.gov.au/nla.obj-143427620>, and see below).

3. The third and fourth Australian writer-artists are Celeste Mass and her daughter Nuri (1918–93). In their joint works Celeste drew the fairies and Nuri the flora (Fig. 3). The stories are amusing (Note 4) and well-informed about ecological matters. Nuri Mass also wrote and illustrated a book (1967) on mountain flowers.

New Zealand

1. Emily Harris (1837–1925) came to this country as a child. In the 1890s she produced three books of plant lithographs. Some were hand-coloured and prints of several of these were issued by the Alexander Turnbull Library in the 1960s and '70s. Her plant drawings in a fairy-book by Mrs A. E. Moore (1909) get a mention by Sampson (1985), although he hints of their being upstaged by the text's cast of fairies, smugglers, Australian geologist, unfortunately-named Maori servant Te Kooti, and tuatara who turns into a prince.

2. Avis Acres (1910–94) was born in Wellington. The family moved to Auckland in 1913, and some short time after that, among the trees and rocks of her home at 10 Grange Road, Mt Eden, she came upon fairies (Ireton 1993; ROG unpublished fieldwork). Her three "Hutu and Kawa" books of the '50s were widely enjoyed and expressed a strong conservation ethic too (Fig. 4). But they fell out of favour when educators decided that fantasy should not be part of a child's mental diet.