encountered carob (*Ceratonia siliqua*) in flower and then further interesting native species from far off places: Poor Knights lily (*Xeronema callistemon*); *Pittosporum dalli* from North West Nelson; *Teucridium parviflora* which occurs near Tairua; a large-fruited *Coprosma macrocarpa* from the Three Kings Islands; and a tree form of *Hebe parviflora.*

Along the side of the driveway we stopped to collect *Macadamia tetraphylla* nuts and marvelled at the rock hard shells that the rats had managed to gnaw through.

On the other side of the driveway were some South American ornamentals - *Bauhinia, Dombeya, Phytolacca dioica* (same genus as inkweed), and the sweet-scented *Datura inoxa*. The sleek reddish growing tip of *Schizolabia parahybum* impressed us as did the pink-flowered *Tibouchina granulosa* and the smaller purple flowers of *Tibouchina multiflora.*

We passed between the macadamia trees into an enclave containing some weird and wonderful plants - a prolific paper mulberry (*Broussonetia papyrifera*), a giant-leaved *Ficus auriculata*, a blue-fruited *Syzigium*, *Ficus religiosa* from Buddha's tomb in India, monkey paw (*Chiranthodendron pentadactylon*), and a pawpaw (*Carica quercifolia*) with small fruit that those of us with no taste found to be delightful.

A visit to Mt Albert Research Centre would not be complete without viewing the rarest plant in the world, *Pennantia baylissiana*, which Duncan and Davies nurseries first grew from material from the sole tree from the Three Kings Islands.

We searched for an elusive African sausage tree before moving on to an area below the Cunningham Building which contained more native species from the nether regions - *Macropiper huglandii* from Lord Howe Island and *M. melchior*, the red-fruited *Elingamita johnsonii*, *Tecomanthe speciosa* (in flower) all endemic to the Three Kings Islands, *Bohmeria* from the Kermadec Islands, *Streblus* hybrids (*S. banksii* x *S. smithii*), which were loaded with large insect galls, Three Kings milk tree (*Streblus smithii*), *Hibiscus trionum*, and *Astelia chathamica* 'Silver Spear'.

The brilliant vermillion flowers of the Queensland fire wheel tree (*Stenocarpus sinuatus*) were stunning. To complete the day we checked out an extensive plot of the native *Fuchsia procumbens* then proceeded to muse about the identity of a large tree beside the driveway - its flowers and fruit indicated that it was some kind of pear.

Most of us completed the day amazed by the beauty and diversity of plants that we had seen. Exposure to a great number of scientific names over a 5 hour period could become boring, but with the contrasts that we saw, there was never a dull moment.

Acknowledgments

Many thanks to Ewen Cameron for checking the scientific aspects of this trip report including helping with scientific names.

The Vascular Flora of Te Wakatehaua (The Bluff) Island, Ninety Mile Beach

P. J. de Lange

Introduction

During October 1990 and January 1996 I surveyed the vegetation of a series of low lying rocks located *c.* 8 km west of Te Kao. This geographic feature popularly known as "The Bluff" is the small outcrop referred to as Te Wakatehaua Island (The Bluff) on NZMS 260 N03 009238. Until 1995, Te Wakatehaua was used as a vantage point by tour buses working the Kaitaia - Cape Reinga tourist route. As a result, my initial survey found little of interest as the low turf communities of the island had been severely degraded by vehicle traffic and human trampling. Nevertheless, I was surprised to find one plant of the native sow thistle (*Sonchus kirkii*), so when the opportunity arose to visit the island in January 1996, I was keen to see how that plant

and the turf communities had fared. The January visit revealed several changes, most notably the lack of recent vehicle damage and a large yellow sign erected by the Muriwhenua Trust Board forbidding vehicle access, camping and other long term activities without appropriate permission. This sign, for the record, also referred to Te Wakatehaua island as "Maunganui Bluff".

This article describes the vegetation types of Te Wakatehaua Island and documents the flora based on notes made during both visits. Vouchers of some specimens collected from the island during these visits, and also by V. W. Lindauer (1940, 1942), R. C. Cooper (1970, 1971) and G. A. Taylor (1990), have been lodged in the Auckland Museum Herbarium (AK).

Physiography

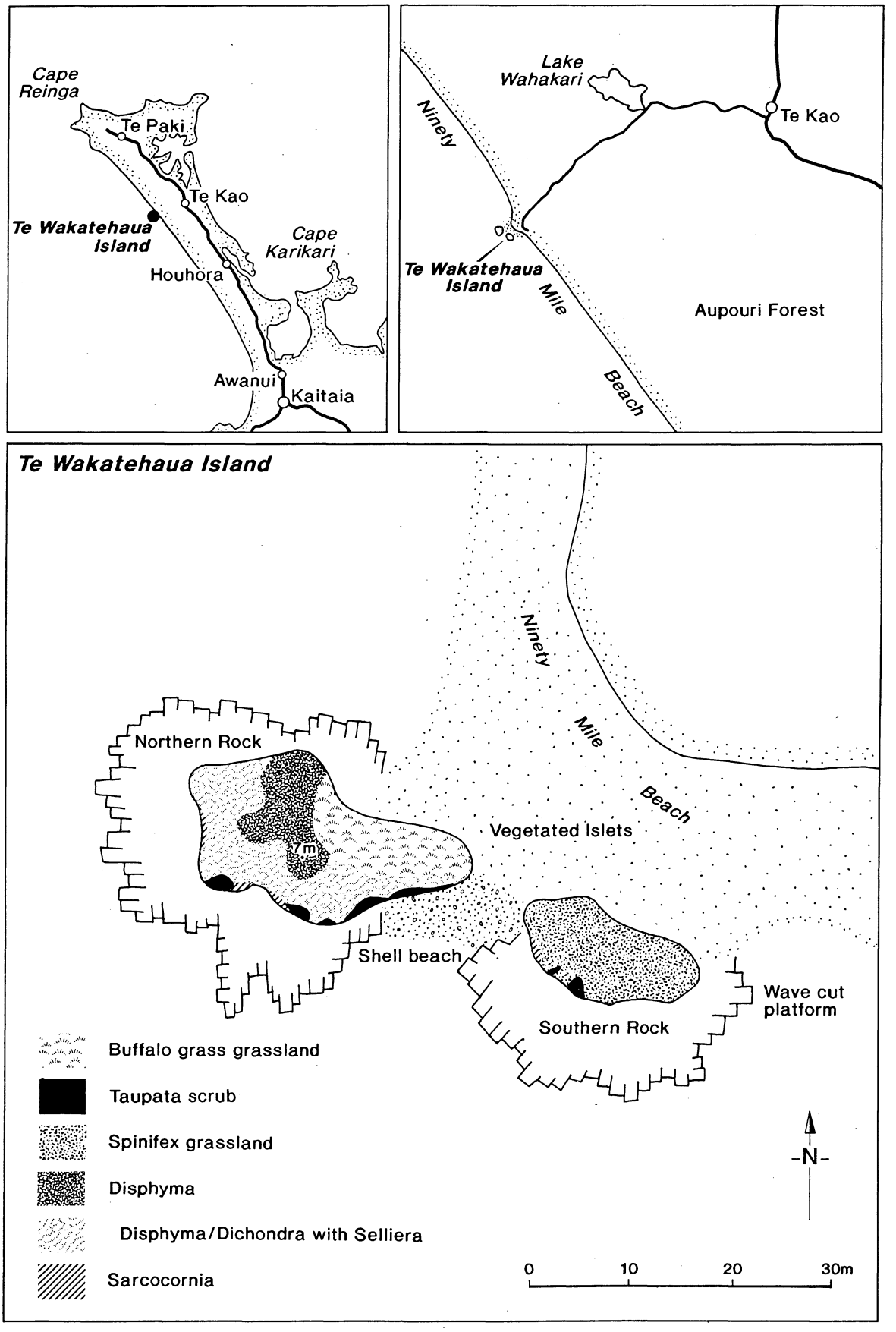
Te Wakatehaua Island (Figure 1) is a low lying (maximum elevation 7 m) outcrop of altered basaltic pillow lava, and is considered part of Mt Camel terrain (F. J. Brook *pers. comm.*, 1996). The island is connected to the mainland by a broad tombolo and except in strong westerlies, is accessible by foot irrespective of the tide. Te Wakatehaua Island comprises two discrete units of rock (referred to hereafter as "northern" and "southern" rocks) separated by a pure shell beach. Both rocks are covered in aeolian sand which has been deposited to form a series of low lying dunes. The exposed margin of the island comprises a wave cut platform fringed by steep 3-5 m bluffs, however in stormy weather it is quite likely that the island would be covered in salt spray and even wave wash. Several seepages drain the main northern outcrop. The leeward side of the island is covered in dunes which slope gently onto the tombolo connecting the island to Ninety Mile Beach.

The Flora

A total of 30 taxa were recorded over both visits (Appendix 1), of which 7 species (23%) are adventive. The flora is comprised of largely salt tolerant taxa, perhaps a further testimony to the inhospitable habitat the island would provide during strong westerly gales. Aside from my observations AK holds 19 collections made from Te Wakatehaua, 12 algae gathered by V. W. Lindauer between 1940-1942, specimens of horokaka (*Disphyma australe*) and *Einadia trigonos* obtained by R. C. Cooper in 1970 and 1971, and *Cassinia leptophylla*, *Crassula decumbens*, *Einadia trigonos*, *Senecio lautus* and *Zoysia mimima* collected by G. A. Taylor in 1990. None of these collections provide an insight into what the island's vegetation was like prior to my visits. However based on my observations in 1990 and 1996 much of the vegetation on the leeward side of the northern rock is covered in dense growths of buffalo grass (*Stenotaphrum secundatum*), through which small pockets of spinifex (*Spinifex sericeus*) and *Paspalum vaginatum* occasionally persist. In contrast the more exposed summit of the northern rock is virtually covered in a dense turf of the halophytes horokaka (*Disphyma australis*), *Dichondra* aff. *brevifolia* and *Zoysia* spp. It was in this low turf, near the cliff margin on this rock that I found a single plant of native sow thistle during October 1991. Unfortunately I failed to find this species during my January 1996 visit and presumably it is now extinct there.

Native sow thistle is now an uncommon species in the New Zealand (Wardle 1995; P.J. de Lange unpubl. data). While herbarium evidence suggests that nationally it may always have been a sparse species, it is now increasingly obvious that it is undergoing a decline and is today at best, an exceedingly local plant throughout large parts of its former range (cf. Wardle 1995). It appears to have been a strictly coastal species, favouring areas of coastline where there are seepages, loose talus or exposed rocky bluffs. In my experience I have usually found this species in association with *Blechnum banksii* and *Juncus caespiticius* in shaded seepages, or under overhangs where it grows on peaty material usually associated with *Isolepis cernua* and bubbly sheets of the blue green alga *Nostoc*. In Northland, it appears to be scarce, I know of small populations at Maunganui Bluff near Waipoua, at South Head near the entrance to the Hokianga Harbour, and in some sites along the remote Ahipara Coast. Otherwise, aside from the single plant I observed at Te Wakatehaua Island in 1990, I have only seen this species in the far north on Great (Manawa Tawhi) Island, in the Three Kings. At this last locality native sow thistle is frequently observed growing within coastal scrub and forest clearings. Quite a departure from its "favoured" habitat on the mainland. Possibly this is proof of the assertion made by Wardle (1995) that the habitats now frequented by native sow thistle are refugia to which the species has contracted in the face of competition from other sow thistles and common coastal weeds.

Figure 1. Location, physiography and distribution of main vegetation types on Te Wakatehaua Island.



Aside from native sow thistle, Te Wakatehaua Island is notable for the discovery of a small population of *Senecio* "Cuvier". This distinctive segregate of the lautsioid *Senecio* complex still awaits formal recognition (Figure 2). However work being carried out by the author and Dr Brian Murray (University of Auckland) suggest it is a distinct taxon, which deserves taxonomic recognition, and we are working to resolve this. Prior to the Te Wakatehaua discovery, and aside from Cuvier Island where it is well known (Webb *et al.* 1988), I had located *S.* "Cuvier" in several sites around the Bay of Islands, and on Great Barrier Island (de Lange 1990). This taxon is listed by the New Zealand Threatened Plant Committee as "Local" (Cameron *et al.* 1995). At present this classification is probably accurate, for although common on Cuvier Island, this taxon is extremely scarce elsewhere. Furthermore, the present disjunct distribution appears relictual, and it may well be that this taxon was formerly more widespread.

Other interesting species found on the island include *Hebe stricta* var. *macroura*. This ill-defined taxon occurs in a myriad of distinctive forms, and that found on Te Wakatehaua is most similar to the prostrate type more commonly seen in coastal sites from Taranaki south to Wellington. Allan (1961) gives the northern limit for *Hebe stricta* var. *macroura* as 37° 30'S. Therefore, aside from one other isolated occurrence of this *Hebe* near Cape Reinga (CHR!), Te Wakatehaua Island is virtually the northern limit for this variety in New Zealand. Another interesting species forming a major part of the island's turf communities is probably part of the *Dichondra brevifolia* complex. Referred to here as *D.* aff. *brevifolia*, this taxon has bright green trowel-shaped leaves of variable dimensions, whose hairs are aligned in one direction. The leaves at senescence, turn bright canary-yellow. This taxon has been sparingly collected from the Three Kings (P. J. de Lange unpubl. data), Poor Knights (de Lange unpubl. data), Mokohinau (de Lange *et al.* 1995), and main Chatham Islands (AK!). In these sites it is often the dominant turf forming species on exposed peaty ground in coastal situations.

Vegetation Types

Buffalo Grass Grassland
Occupying a prominent part of the leeward side of the northern rock. Buffalo grass forms a dense sward through which few species can penetrate. Occasional plants of New Zealand wind grass (*Lachnagrostis billardierei*), *Isolepis nodosa*, two species of lotus (*Lotus suaveolens* and *L. pedunculatus*) and puha (*Sonchus oleraceus*) occur wherever the buffalo grass sward is sufficiently open.

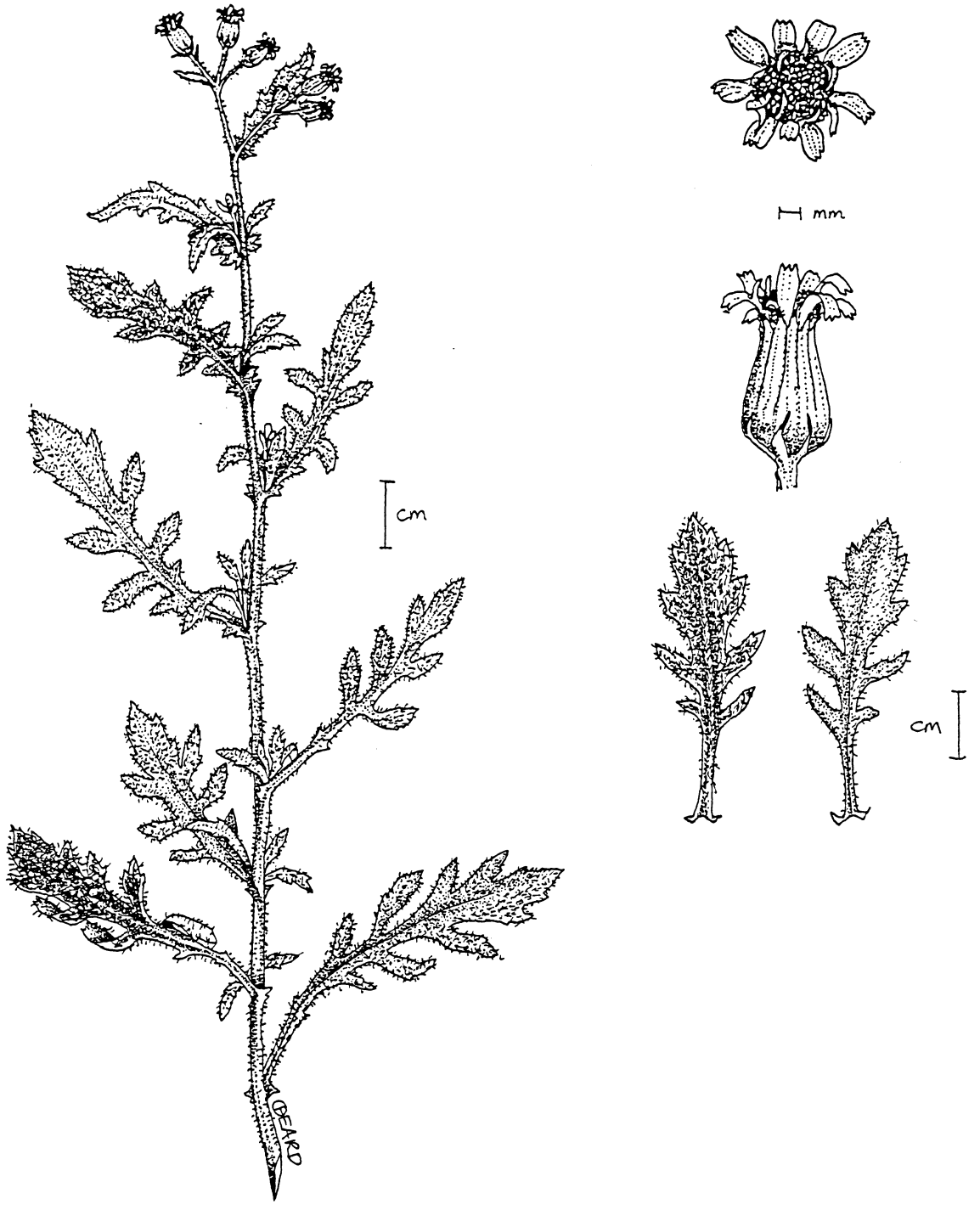
Taupata Scrub
Confined to the cliff margins on both rocks, this vegetation type consists of dense stunted specimens of taupata, through which *Senecio lautus*, *S.* "Cuvier", *Einadia trigonos*, *Calystegia soldanella* and occasional specimens of *Cassinia leptophylla* grow. In one site within this vegetation the prostrate form of *Hebe stricta* var. *macroura* is present.

Spinifex Grassland
Confined to the southern rock where *Spinifex* forms the dominant vegetation on a low dune covering much of the rock. Associated species are sparse, and comprise odd tufts of *Calystegia soldanella*, *Zoysia pauciflora*, oioi (*Leptocarpus similis*) and New Zealand wind grass.

Disphyma Turf
Restricted to the northern rock, this vegetation type consists of a virtual 100 % cover of horokaka (*Disphyma australe*). Odd associates include coastal wind grass (*Lachnagrostis littoralis*), *Senecio lautus*, and *Selliera radicans*. As is often the situation the flower colour of horokaka was variable, with white, lilac and purple forms present, however plants with the lilac coloured flowers were dominant.

Disphyma / Dichondra Turf
Confined to the northern rock, this vegetation type is confined to the most exposed summit slopes of the rock. In the more sheltered sites it gives way to the *Disphyma* turf described above. In its typical form, this turf consists of a dense growth of *Dichondra* aff. *brevifolia* through which scattered specimens of horokaka and *Selliera radicans* grow. In sites damaged by vehicles both *Dichondra* and horokaka are replaced by *Selliera radicans*, *Ranunculus acaulis* and marsh primrose (*Samolus repens*). Where vehicle damage has been particularly severe and bare earth has been exposed, small ephemeral pools of water may be present. These are often bare, but several support a sparse growth of *Ranunculus acaulis*, *Isolepis cernua* and marsh primrose. Toward the cliff margins where this turf merges into taupata scrub, the turf is almost

Figure 2. Illustration of *Senecio* "Cuvier" showing habit, leaf and capitula details. Drawing from a live plant grown on from material gathered from Cuvier (Repanga) Island in October 1993.



entirely replaced by the grass *Zoysia minima.*

Sarcocornia Turf
The cliff faces on the exposed side of the northern rock are invariably bare, however in places small tufts of glasswort (*Sarcocornia quinqueflora*) protrude. Occasional co-associates during the January visit included marsh primrose, *Senecio lautus*, *Crassula sieberiana* and *Einadia trigonos*. Of these taxa, *Crassula sieberiana* is probably under-represented, as it is virtually an annual species, which is invariably more widespread during the wetter months.

Discussion

As far as I am aware this is the first account to be published of the flora of Te Wakatehaua Island. Rock outcrops are scarce along the Ninety Mile Beach, and so in many ways Te Wakatehaua is unique in providing the type of habitat it does. The island is a significant repository of a number of taxa either uncommon in the Te Aupouri district, close to or at their northern limits or becoming nationally scarce e.g., native sow thistle, *Senecio* "Cuvier", and *Hebe stricta* var. *macroura*. Hopefully now that vehicle visits to the island are being controlled, the damaged coastal turf will continue to regenerate, and some of these taxa may become more common. Unfortunately, unless some measures are taken to control the spread of buffalo grass, some if not all of the interesting indigenous species noted from the island will eventually be lost through competition from this aggressive grass.

Acknowledgments

I would like to thank Denis McKay for company in the field and Fred Brook for his comments on the geology of Te Wakatehaua. Ewen Cameron and Doug Rogan reviewed the manuscript and assisted with checking AK holdings for additional records from the island. Catherine Beard (University of Waikato) provided the excellent illustration of *Senecio* "Cuvier" and Sean Hutton (S & R Draughting, DoC) the illustration used for Figure 1.

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Appendix: Vascular Flora of Te Wakatehaua Island, Ninety Mile Beach

Abbreviations

(unc) = uncommon or local within survey area (<10 plants seen)
AK = Auckland Museum Herbarium
* = adventive

Dicotyledonous Shrubs

Cassinia leptophylla (incl. *C. retorta*)	(unc)	AK 229791
Coprosma repens		
Hebe stricta var. *macroura*	(unc)	

Grasses

Lachnagrosis billardierei		
L. littoralis subsp. *littoralis*		
**Paspalum vaginatum*		
Spinifex sericeus		
**Stenotaphrum secundatum*		
Zoysia minima		AK 229794
Z. pauciflora		

Rush-like Monocotyledonous Herbs

Leptocarpus similis		

Sedges

Isolepis cernua		
I. nodosa		

Dicotyledonous Composite Herbs

**Hypochoeris radicata*		
Senecio lautus var. *lautus*		AK 229793
S. "Cuvier"	(unc)	AK 225317
Sonchus kirkii	(1 plant seen in October 1990)	
**S. oleraceus*		

Dicotyledonous Herbs (other than Composites)

Calystegia soldanella		
Crassula decumbens	(unc)	AK 229792
C. sieberiana	(unc)	
Dichondra aff. *brevifolia*		AK 226114
Disphyma australe var. *australe*		AK 226107
Einadia trigonos subsp. *trigonos*	(unc)	AK 229795
**Lotus pedunculatus*		
**L. suaveolens*		
Ranunculus acaulis		
Sarcocornia quinqueflora subsp. *quinqueflora*		
Selliera radicans		

Total Taxa:	29
Total Adventive Taxa:	6
Total Indigenous Taxa:	23

There is Always Something New Around the Corner

Alistair MacArthur

The field trip on Saturday, 20th July 1996 led by Sandra Jones, made a circuit around many corners and steep ups and downs in the Cascade Kauri Park. This is in the northern part of the Waitakere Ranges. About 22 people braved the muddy conditions underfoot and set off up the track which leads high above the waterfall roaring in a hidden, rocky cleft. Soon we were high above the stream and track which is well known to thousands of summer visitors.

Part way up the first hill, someone about the middle of the column spoke up about "garlic fungus". A tiny sample of pungent-smelling fungus tissue was passed back hand-to-hand, till it ended in the hand that pens these words. It seemed that hardly anyone had experienced this strong smell by a forest track before. Calling the leaders of the party on the "walkie talkie" radio shed no light on the fungus. They seemed to find it difficult to comprehend that the tail of the party was surrounded by an aroma rather like a French bakeshop. Understanding came to them at the morning tea stop when the tail-enders caught up! Perhaps someone will tell us more about this fungus at an evening meeting or in