

FARTHEST NORTH — BOTANICAL NOTES ON THE NORTH CAPE AREA

R.E. Beaver

The North Cape area (Fig. 1) consists of the North Cape massif, a raised plateau reaching 234 m a.s.l., connected by a low-lying sand tombolo (Waikuku Flat) to the high land to the south. The northernmost point on the New Zealand mainland is named Kerr Point on Lands and Survey's old "inch to the mile" map. In the new metric series Kerr Point has migrated west and the northernmost point is named Surville Cliffs. Irrespective of names the area is a fascinating one to the botanist, the zoologist, the soil scientist and the geologist. Because of this the north-eastern portion of the area was designated a

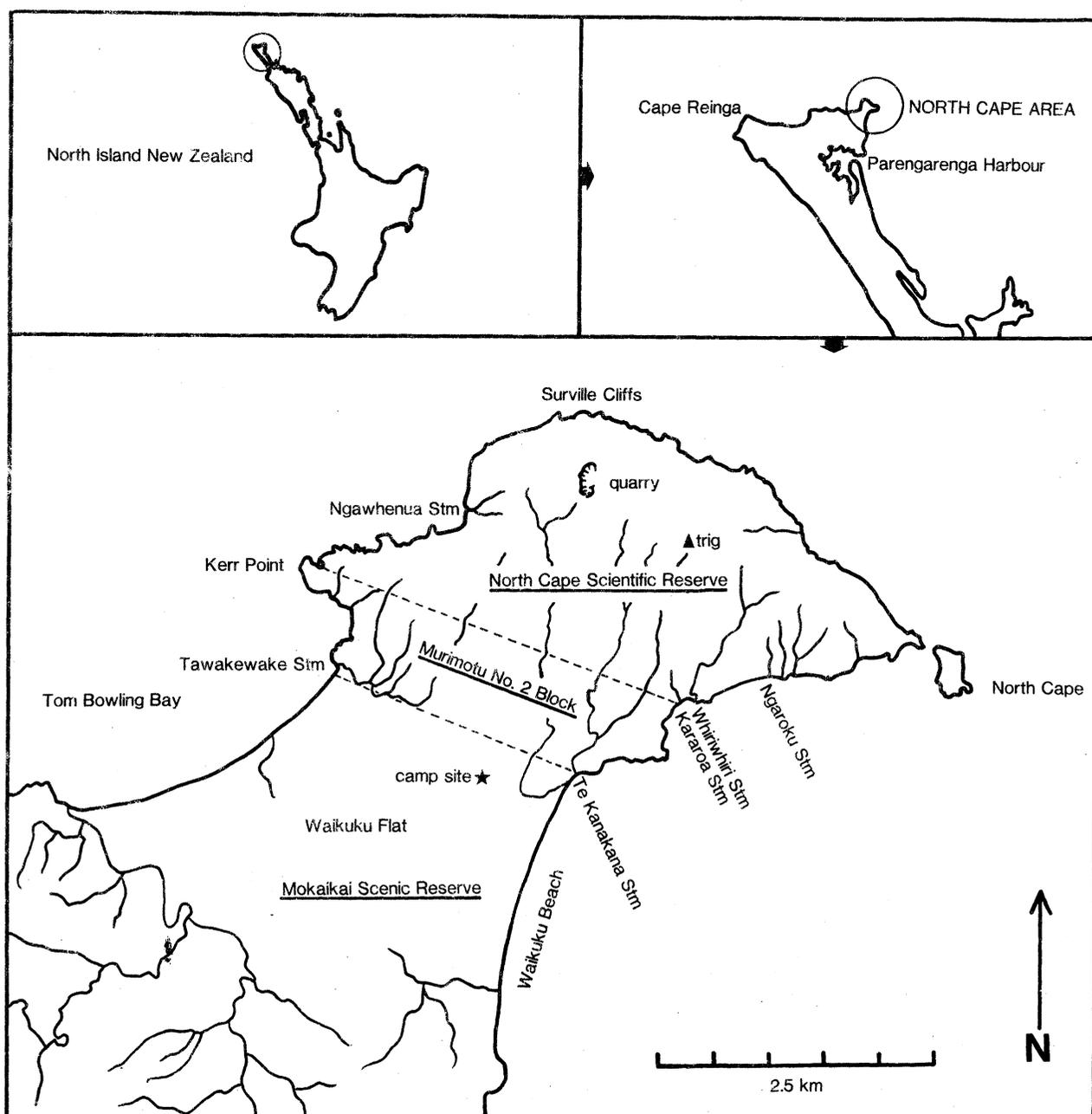


Fig. 1 Map of the North Cape area

Scientific Reserve in 1980 and access is now by permit only. The permit is, however, only the beginning. Permission and 2 keys are required to use the access road, and a four-wheel drive vehicle to negotiate it. Mind you when I first visited the area in 1966 I drove out from the Spirits Bay road in my old Austin A55. However this is more a reflection of the standard of the roads at the time rather than the cross country virtues of A55's.

A quarry in the reserve you say! Yes indeed. The Surville Cliffs are composed of the rock serpentinite (containing the mineral serpentine) and the quarry, located a short distance back from the cliffs, taps into this rock type. The rock is removed to be finely ground and used as fertiliser. (The mining licence recently came up for renewal; allowing further mining would be particularly inappropriate in view of the scientific importance of the reserve). Its use as fertiliser may seem rather curious as the soil developed on this rock type is very inimical to plant growth. Relatively few species are able to cope with the low calcium-high magnesium content, and the high concentrations of metals such as nickel, chromium and cobalt characteristic of serpentine soils. In response to these conditions specially adapted plant variants have often evolved where these soils occur throughout the world. In the case of North Cape, Druce et al. (1979), in a study of the serpentine flora, recognised 13 endemics (subspecies or varieties), an astonishing number for some 3 km of steep cliffs and less than a hectare of plateau.

The basic account of the botany of the area is that by Wheeler (1963), who recognised a mosaic of 4 different vegetation types on the North Cape massif (cliff communities, plateau scrub, hinterland scrub, coastal forest) and a further 4 on Waikuku Flat (gumland scrub, bog and freshwater swamp, salt swamp and sand flats, and sand dunes). In addition she listed a total of 342 vascular plants, mainly natives but including some exotics. A handful of further species were recorded on my 1966 visit (Beever & Jane, 1968), and by Druce et al. (1979).

I was fortunate to participate in the Offshore Island Research Group's expedition to the North Cape region 27 December 1986 to 4 January 1987, and the following notes are based on observations made at that time.

The area is at present still largely free of obtrusive aliens. The toe-toe is our own beautiful Cortaderia splendens, but I guess it is only a matter of time until the pampas grasses get there. Marram (*Ammophila arenaria) and tree lupin (*Lupinus arboreus) are established on the dunes at Waikuku Beach but pingao (Desmoschoenus spiralis) and Spinifex sericeus are still the predominant dune pioneers. A few troublesome weeds are getting a foothold including prickly hakea (*Hakea sericea) and the even more formidable downy hakea (*Hakea gibbosa). Both are present in small numbers on the plateau scrub (e.g. near the trig) and it would be both feasible and desirable to manually eliminate them from this community, which is of particular scientific importance. Unfortunately the species are both well established west toward Spirits Bay and it will not be possible to limit their march over much of the gumland of the Waikuku Flat. The only real hope of checking these plants over large areas is through biological control, and recent reports of leaf diseases attacking H. sericea introduced into South Africa's Cape region indicates one possibility. I was interested to see that some of the downy hakea plants on the plateau were somewhat sick with dead and dying leaves apparently caused by a leaf-spotting fungus. Another undesirable is brush wattle (*Albizia lophantha, !) represented

by a couple of trees near the mouth of the Kararoa Stream. Although there is enough seed on the trees to populate the whole area, the species could still be contained by ring barking the existing trees and repeated pulling of the seedlings which unfortunately would continue to come up for years.

As assistant bryologist to the expedition I spent a couple of days exploring two of the coastal forest remnants left on the headland. Pieces of fossil gum on the plateau indicate a past forest cover, and Waikuku Flat was covered with kauri forest supporting a variety of birds including kakapo, takahe and 6 species of moa (Grant-Mackie 1969). Today only a few small remnants of this forest remain.

Tree species present in the remnant just east of the Ngaroku Stream included taraire (Beilschmiedia tarairi), kohekohe (Dysoxylum spectabile), mangeo (Litsea calicaris), puriri (Vitex lucens), tawapou (Planchonella costata, !), rewarewa (Knightia excelsa) and both ponga (Cyathea dealbata), and mamaku (C. medullaris). Understorey shrubs noted included matata (Rhabdothermus solandri, !), Coprosma lucida, and hangehange (Geniostoma rupestre). New finds for the area included Astelia grandis (!), present at the interface between the forest and the adjacent kanuka (Kunzea ericoides, !) scrubland, and the root parasite Mida salicifolia (!). The only mesopteris seen was T. lanceolata (!) epiphytic on ponga. Wheeler recorded two species of corybas but did not name them. I found Corybas oblongus (!). A disappointing feature of this remnant was the very considerable damage done by pigs rooting up the forest floor.

The second remnant I looked at was that along the margin of the Whiriwhiri Stream. The 'forest' comprises only a small tongue in a sea of regenerating kanuka. Houhere (Hoheria populnea) and tutu (Coriaria arborea) were common and near the coast pohutukawa (Metrosideros excelsa) became important. The houpara (Pseudopanax lessonii) was most peculiar with rather lanky almost lianoid branches. I presume that it is the serpentine variety. Kawakawa (Macropiper excelsum, !) was present in the understorey along with terrestrial Senecio kirkii var. angustior (!). I was pleased to see a vigorous colony of the rare Pratia physaloides holding its own in a shaded spot, and also the rare fern Todea barbara along the creek margin. The 'saprophytic' orchid Gastrodia sesamoides (!), found growing under kanuka, is another new record. A most out of place magenta-flowered plant found clinging to rocks by a waterfall turned out to be the rose campion (*Lychnis coronaria, !) a native of southern Europe. How did it get to this isolated piece of country? A major hazard along the stream was the vast numbers of mosquitos out for their drink of blood. They rapidly realised when one had stopped to search a damp bank for mosses.

One botanical puzzle that interests me is the occurrence of large-leaved forms of mainland plants on some of the offshore islands. From its proximity to the Three Kings Islands, and its having itself being an island in the Pliocene, it might be expected that the North Cape/Cape Reinga region would also harbour large-leaved forms. However this does not seem to be the case. The leaves of kawakawa are relatively small in size and also have the purple-brown petioles and dull lamina upper surface of var. excelsum. Likewise the matata would not be out of place in the Waitakeres. Having a particular interest in cabbage trees I measured a sample of 5 trees growing on the margin of Waikuku Flat. Mean length (+S.D.) in mm of 10 leaves measured fresh was 615 ± 89, mean

maximum width 35 ± 7.8 , giving a mean length to breadth ratio of 18.1 ± 3.5 (specimens in AK). These figures place the population clearly with the mainland Cordyline australis, rather than that of the relatively broader Three Kings cabbage tree C. kaspar (Beever 1986).

* indicates adventives

! indicates voucher specimens have been lodged in the herbarium of the Auckland Institute and Museum (AK)

REFERENCES

- Beever, R.E. 1986. The species of Cordyline (Agavaceae) on the Poor Knights Islands, northern New Zealand. *Journal of the Royal Society of New Zealand* 16: 251-258.
- Beever, R.E., and Jane, G.T. 1967. Additional plant records from North Cape. *Tane* 13: 147-148.
- Druce, A.P., Bartlett, J.K., and Gardner, R.O. 1979. Indigenous vascular plants of the serpentine area of Surville cliffs and adjacent cliff tops, north-west of North Cape, New Zealand. *Tane* 25: 187-206.
- Grant-Mackie, J.A. 1969. in "North Cape. A scientific case for conservation". Compiled by I.M. Johnstone. *Tane* 15: 5-11.
- Wheeler, J.M. 1963. The vegetation of the North Cape area. *Tane* 9: 63-84.

Received 22 June 1987.

SOME MOSSES FROM THE MOKAIKAI SCENIC RESERVE, NORTH CAPE

Jessica E. Beever

The Mokaikai Scenic Reserve, in the Far North, stretches from the Parengarenga Harbour northwards to the North Cape massif. It thus includes the sand tombolo of Waikuku Flat at its northern boundary (see Fig. 1 of R.E. Beever, this issue) and a large area of higher ground, rising to nearly 200 m, in its southern part. The reserve encompasses a great range of habitats: unstable sand dunes, stable dunes bearing manuka scrub, salt marsh, freshwater swamp, coastal cliffs, upland areas of impeded drainage bearing manuka-dominated scrub, various stages of reverting pasture (mostly dominated by kanuka), and a number of forest remnants.

During a 6-day visit to the North Cape area, with the Offshore Islands Research Group over New Year 1986-1987, our camp was situated at the northern boundary of the reserve at a latitude of $34^{\circ}25'S$, further north even than Cape Reinga. The present article records mosses collected near the camp and on a few forays into other parts of the Mokaikai Scenic Reserve. A report on the mosses of the North Cape massif (comprising the North Cape Scientific Reserve and the Murimotu No. 2