

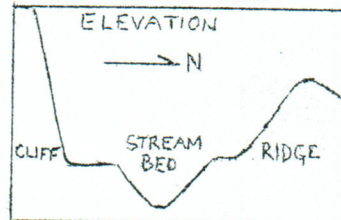
NOTES ON THE POHUTUKAWA FOREST,

HINGAIA, LITTLE BARRIER ISLAND.

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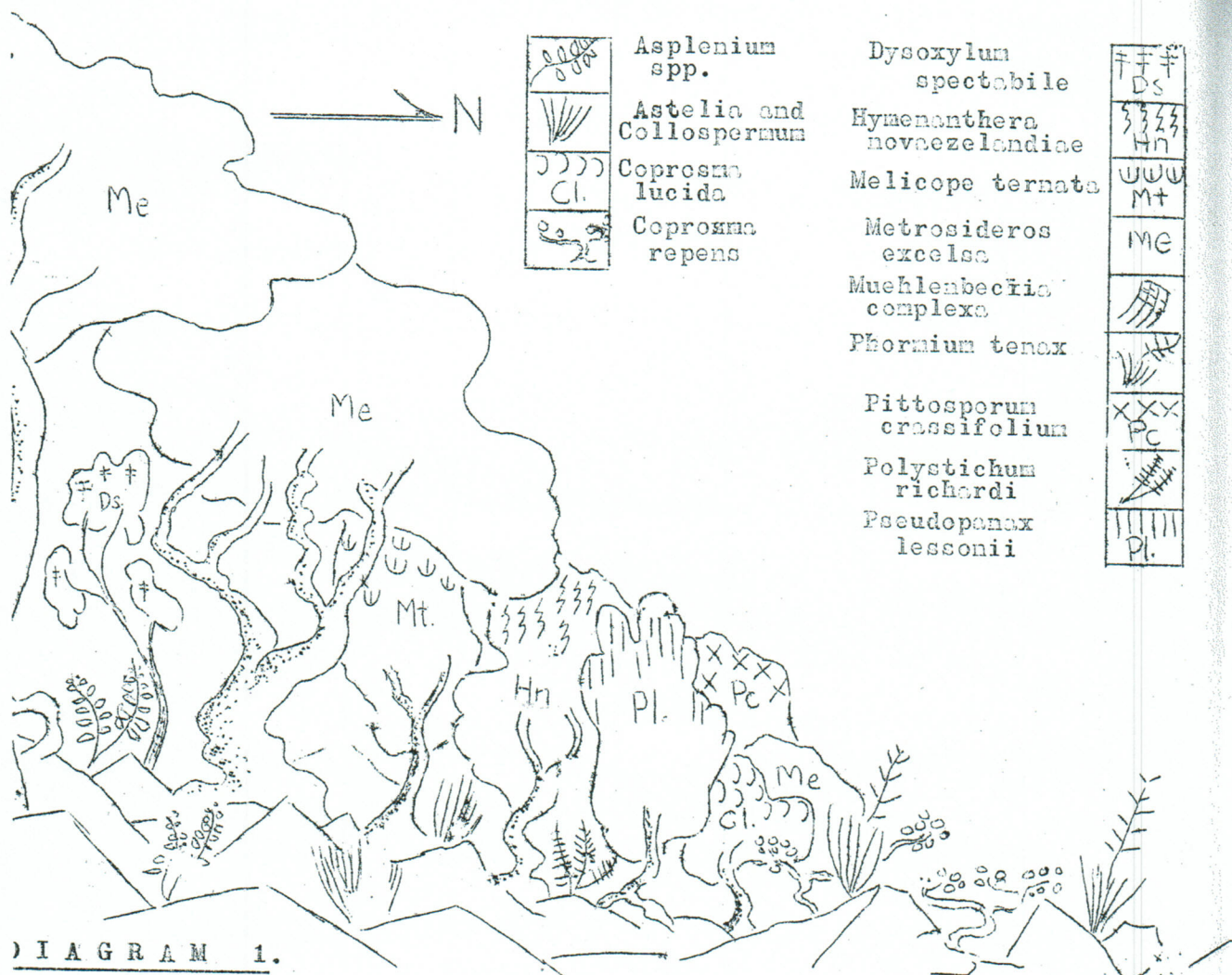
One of the most interesting areas of vegetation on Little Barrier is the 60 acres of pohutukawa forest at Hingaia. This area was formed by a huge landslide and is composed of great jumbled andesite blocks. From the exterior this vegetation shows little diversity, though closer examination reveals interesting aspects.

Around the base of the cliff at the southern end there is a much better formed soil than over the rest of Hingaia. From the weathering of the cliffs above, and by deposition from the ephemeral stream of Pohutukawa Gulley, detritus has covered all but the largest rock masses. The cliffs to the south and west, and a steep ridge to the north, heavily shade the area. Thus the vegetation, dominated by tall straight pohutukawa (Metrosideros excelsa) is open: there is much litter underneath, and a moderate amount of humus. Young Rhopalostylis sapida (Nikau) is frequent and flourishing. Corynocarpus laevigata and Dysoxylum spectabile are frequent as seedlings, and occasional as older trees; Asplenium bulbiferum is abundant throughout. However, there is no dense undergrowth, there are few shrubs, and the absence of Collospermum hastatum and Astelia banksii is notable. The change on passing northwards over the ridge is abrupt, probably the result of increased light. Here the undergrowth is far denser, Astelia is frequent, whilst Nikau is abundant as young plants, few of which seem any older than ten years. Several healthy Beilschmiedia tawa seedlings were present.



This area of Hingaia is apparently well protected from the full force of the northerly winds by the backing cliffs to the south and west. The coastal margin is not a dense shrub 'hedge' as on the north side (see later) but merely a border of Phormium tenax amongst the pohutukawa. This structure is probably partly edaphic as the change to the shrub hedge further up the coast is moderately abrupt, and related more clearly to the soil change. This vegetation in Pohutukawa Gully shows a rapid transition from the pohutukawa forest described to "semi-coastal forest" further back (Hamilton, 1937).

Along the north-eastern side of Hingaia the vegetation, unprotected from wind and lying in to the sun, clearly suffers more exposure. This has resulted in the development along the adlittoral margin of the forest of a dense wind-clipped hedge, with occasional outlyers amongst the stunted beach rocks of Phormium tenax, Coprosma repens and Muehlenbeckia complexa. The hedge itself includes these species, and Coprosma lucida, Pseudopanax lessonii, Hymenanthera novae-zelandiae, Melicope ternata and stunted pohutukawa, with dense masses of Polystichum richardi underneath.

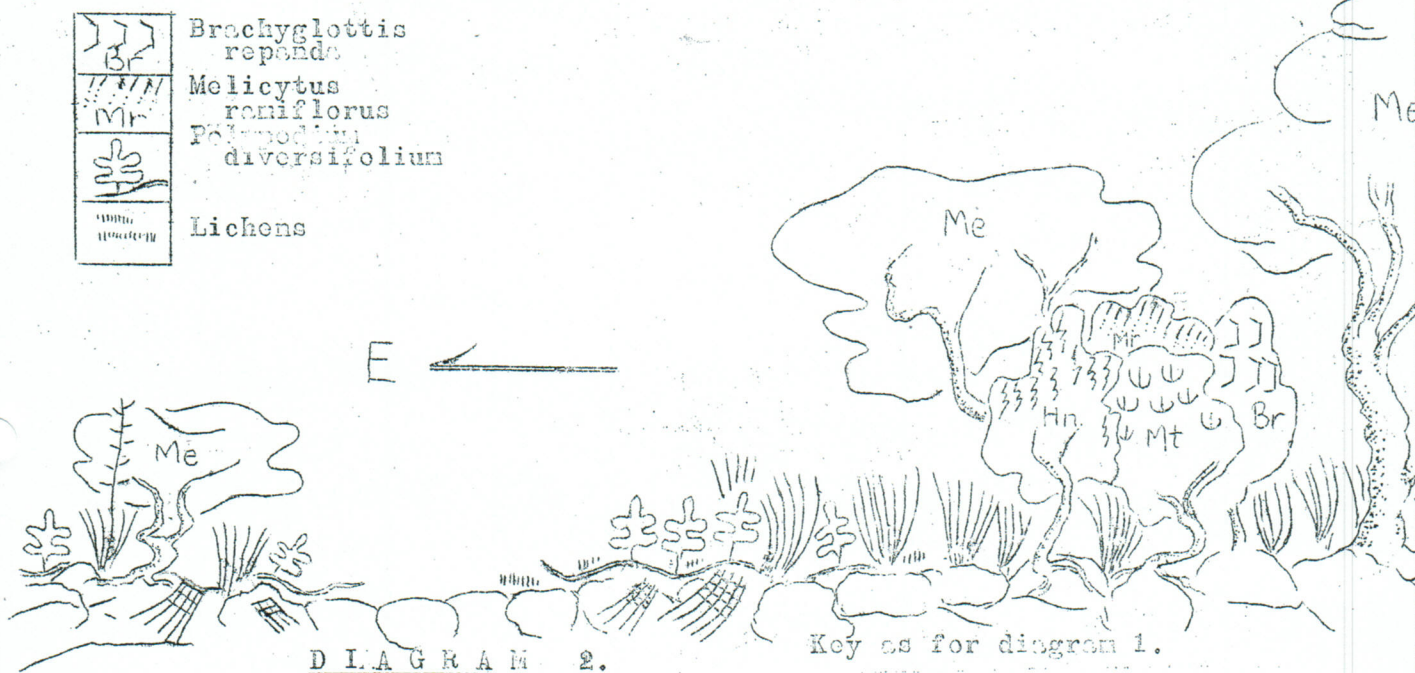


er and straighter, dominating as before. Compared with the south-side, the undergrowth is rich, even though there is far less soil as is present only as small pockets in crevices) and dry litter mounds. On the rocks themselves grow Collospermum hastatum and Romia urvilleana, whilst in the crevice pockets are vigorously growing Dysoxylum spectabile (seedlings and young trees frequent), Coccoloba laevigata, Coprosma lucida, Sideroxylon novo-zelandicum (young), Beilschmiedia tarairi (young), Melicope ramiflora, Costaella ligustrifolia (occasional), Astelia banksii, Asplenium bulbiferum, A. lucidum, Polystichum richardii and Rhopalostylis sapida (occasional only - contrast south side). There is a greater wealth of epiphytes - Pittosporum cornifolium, Collospermum hastatum, Asplenium filiforme and Polypodium pustulatum. In places dense groves of Podocarpus solandri and (particularly further inland) Rhipogonum repens were seen. The latter is associated with dense masses of Dysoxylum spectabile, Coccoloba laevigata, Sideroxylon novo-zelandicum, Entelea arborescens, Coprosma australis, Cyathea medullosa and Asplenium bulbiferum characteristically in areas where old podocarps have fallen.

Towards the west of Hingaia, in the
of the flat, Beilschmiedia tawa seedlings are common; occasion-
seedlings are B. taraire, Vitex lucens and Dysoxylum spectabile.

diversifolium, P. pustulatum and Polystichum richardii. There are occasional areas where pohutukawa is much smaller and open, with, underneath, masses of Collospermum hastatum or in other places Brachyglottis repanda, Macropiper excelsum, Sideroxylon novo-zelandicum, Coprosma australis and Astelia banksii. It appears that these areas are younger than the bulk of the vegetation.

There are a few areas still extant where the rock slide is uncolonised; here at the edge of the vegetation can be seen a process of marginal advance. New centres of colonisation are also seen. The process of colonisation as revealed by these two apparently leads through the following course. Pohutukawa is the primary colonist: single plants establish themselves. Underneath, litter and humus collect, and lichen growth on the rock is facilitated. These, and the shade, permit Astelia banksii and often Phormium tenax to establish, later followed by Collospermum hastatum. Underneath these, in the moist shade, Polypodium diversifolium or sometimes Cyclophorus serpens, and Muehlenbeckia complexa establish, to send out runners which extend over the bare rock. A belt of lichens* (e.g. Cladonia rangiferina) grows in front of these runners and (with a moss Campylopus) amongst them.



The association apparently advances as a unit, runners (with a fronting growth of lichens) from the shelter and water supply of the Astelia and Collospermum being followed by a spread of those two. Behind, amongst the Collospermum and Astelia, such shrubs as Hymenanthera novae-zelandiae, Brachyglottis repanda, Melicope ternata, Melicytus ramiflorus etc. establish themselves in a thick scrub, reminiscent of the coastal 'hedge'; until overtopped by old or young pohutukawa. It is interesting to compare this process of colonisation with that at Rangitoto (De

* I wish to thank Mr. J.S. Edwards for notes on these details.

e similarity suggests that in a few centuries
y be covered in forest very similar to that today

We also have indications of what
forest at Hingaia in the future. The active
e been mentioned: they include, near the coast,
a, taraire, and particularly Kohekohe; and further
uriri, kohekohe, Sideroxylon and particularly tawa.
mature trees was a seedling pohutukawa found, and
len pohutukawa was being replaced by the species
larly kohekohe. It appears then that Hingaia
a Dysoxylum dominated coastal forest"; also, since
arently not replace itself at all, the present for-
two generations old. This would indicate that
t landslide, perhaps occurring in the last 1,000-
does not conflict with geological evidence.

There are many problems posed by
various associations on off-shore islands. Why
of Taranga covered with pohutukawa? What is the
to vegetation?(Millener, 1953). What is the age
the pohutukawa forest of the crater of Mayor Island?
he only "forest" on White Island, where it shows a
es, between mature forest and stunted young trees?

Our present knowledge of the
osideros excelsa (see De Berg, 1946) could well be
arly if related to investigations into the phys-
ies. This could make one of the most interesting
vegetation work on off-shore islands.

- (1946) Unpublished thesis "Some Observations on
Metrosideros Excelsa Sol. ex Gaertn."
 - (1937) "The Little Barrier Island." D.S.I.R.
Bull. No. 54.
 - (1953) Rept. of 2nd Ann. Meeting, N.Z. Ecol. Soc.
"How Old is the Vegetation on Rangitoto
Island?"
-

land portions of Hingaia the indications are that
ire will be more important, and that something app-
ta-tawa forest may result. with rata, tawa, karaka,