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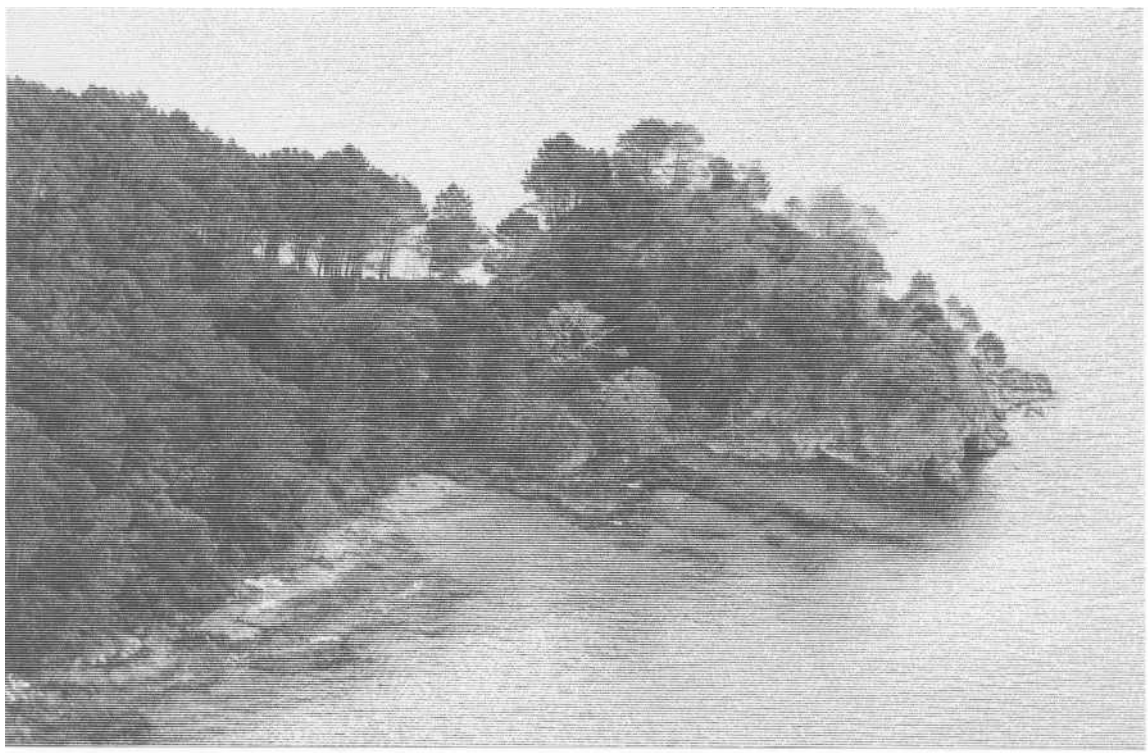
20(a)

**Figure 20(a), (b) Motuarohia, Pā Hill (Q05/77). (a) Vegetation recovery on former track following construction of boardwalk. (b) The peninsula pā at eastern end is in an open forest cover of pōhutukawa and pine.**



20(b)

***Vegetation***

Pā Hill is flanked on each side by private land that is now covered largely in pine forest. The reserve area itself has a large number of pōhutukawa on the rocky slopes (healthy in the absence of possums), a band of *Pinus radiata* bordered by kānuka forest, which is in turn bordered to the south by a zone of extremely dense kikuyu grass. On the ridge west of Pā Hill an area of former Māori settlement remains unplanted in pines and the ground is covered in a dense sward of pātītī (*Ehrharta stipoides,* meadow ricegrass) (Fig. 21(a)). This observation confirmed our view that pātītī will compete well on acid soils (replete with pine needles, Fig. 21(b)), in shade and on a droughty ridge. The relationship between kikuyu, pātītī and forest cover is therefore well illustrated at Motuarohia: wherever forest cover is removed, whether pine or kānuka, kikuyu soon replaces the pātītī and all surface impressions become obscured.

Elsewhere under the pines, a shrub layer of karamu and sweet-pea shrub is developing. Pōhutukawa, tauhinu (*Cassinia leptophylla*) and mānuka are regenerating on exposed soil, which appears to be now becoming stable. North-facing slopes are covered in mixed native (*Rhytidosperma* sp.) and exotic (sweet vernal) grassland.

***Management recommendations***

Care should be taken to monitor the *E. stipoides* grass-covered ridge west of Pā Hill. It provides a unique example of a single-species sward in semi-shade that may be the way of the future for many northern archaeological sites.

On Pā Hill itself, the existing pattern of tall grassland on the large terraces and regenerative shrubland of tauhinu and manuka elsewhere should be maintained. In the channel over which the boardwalk has been constructed, a layer of seeding māñuka brush would assist regeneration. This would introduce an otherwise unattainable low vegetation cover on the bare mineral soil, and mask some of the visual intrusiveness of the boardwalk. On-going maintenance should not be a problem and would simply involve two-yearly clearance of the sides of the boardwalk.

The peninsula pā (Q05/49, N12/11), at the eastern end of Motuarohia, also illustrated by Parkinson, is now largely covered in pines. They should be removed from this historically significant site, and pōhutukawa encouraged instead. Indeed, there could be a long term plan to remove pines from the island entirely.

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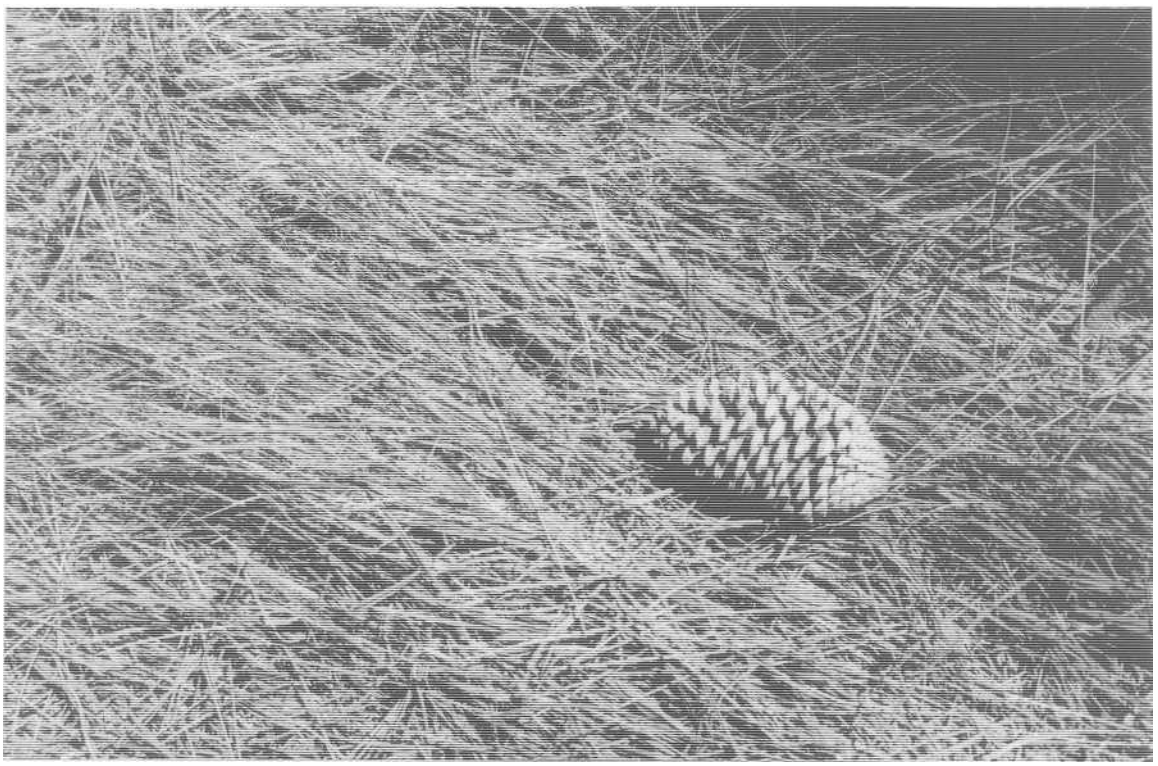
**3.7.4 Urupukapuka Island archaeological walk**

Urupukapuka is an island of low relief with numerous small valleys and bays separated by broad ridges and headlands. Apart from a coastal fringe of pōhutukawa, the island is primarily covered in kānuka forest with areas of grassland, mostly kikuyu, on the ridges and easier slopes. Part of the island is grazed. Archaeological sites are scattered over the island, with numerous pā on the headlands. Several of the sites are interlinked

**21 (a)**



**21 (b)**

**Figure 21(a), (b) (a) Ridge west of Pā Hill showing dense carpet of *Ehrharta stipoides* shaded by pines. (b) Close-up of *Ehrharta stipoides* growing in pine litter.**

by an archaeological walk (Department of Conservation 1993b) and form part of active recreational and tourism use of the island. The walk was initiated and developed 10 years ago by Kathryn Rountree for the then Department of Lands and Survey (Rountree, 1984).

***Landscape considerations***

On the advice of John Hawley (landscape architect now with the Auckland Conservancy), the island has been, until recently, maintained as open grass-covered ridges, a mosaic of grass and kānuka on the slopes, with occasional headlands and gullies in brush wattle, regenerating coastal hardwood forest and some pōhutukawa. In recent years, under the department's management, stock has been removed from the bulk of the island. Much of the island is now covered in a tumbling sward of kikuyu grass. Ease of accidental fire management and the visibility of landscape features such as pā appear to be the main values lost by this process. Our view is that this kikuyu sward will persist for many decades and will not enable trees to regenerate except on the few remaining patches of bare soil. Kikuyu smothers surface features and other low ground ground cover, prevents regeneration, poses a potential fire hazard, and has little aesthetic or practical value in areas where soil stability is not an issue.

**3.7.4.1 Pā, site no. 9**, Q05/86 GR 225643 (N12/48).

This is a headland pā defended by a double transverse ditch. The enclosed area of the main platform is about 20 x 45 m in plan, while there are narrow terraces below the platform running more or less continuously along its length. The site was first recorded by Anne Leahy and Wendy Walsh (site record form) who noted that it was covered with "scrub" (presumably kānuka, brush wattle and vines) with large pōhutukawa on the transverse ditches. Rountree (1984), in her archaeologist's management report, advised on several shrubland clearance measures, tailored to particular parts of the site, and some retention of shrubs to conserve site features. On the main and second (lower, northern) platform, she advised clearance of all trees except some unmarked "mānuka" (i.e., kānuka) and the establishment of a grass sward. On the third (lowest, northern) terrace, she advised leaving a "canopy of manuka [i.e., kānuka] to shield terrace and permit grass growth". On the southern slopes, she noted: "leave ... as they are except for cutting of trees with trunks of more than 10 cm diameter". On the transverse ditches and banks, she advised leaving all live vegetation including the pōhutukawa, but recommended removing any dead vegetation (presumably shaded-out bracken fern, etc.). On the terrace east and just uphill from the outer ditch, she advised clearance and grassing to provide views of the ditches.

***Vegetation today*** (Fig. 22(a), (b))

Of these recommendations, clearance from the main platforms of brush wattle and some kānuka (plus track work not discussed above) has been done. In areas fully open to the sun, hummocks of kikuyu lie on the ground, contrasting markedly with the *Ehrharta* and *Dichondra* ground cover under the canopy of the surviving kanuka. Visibility of



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