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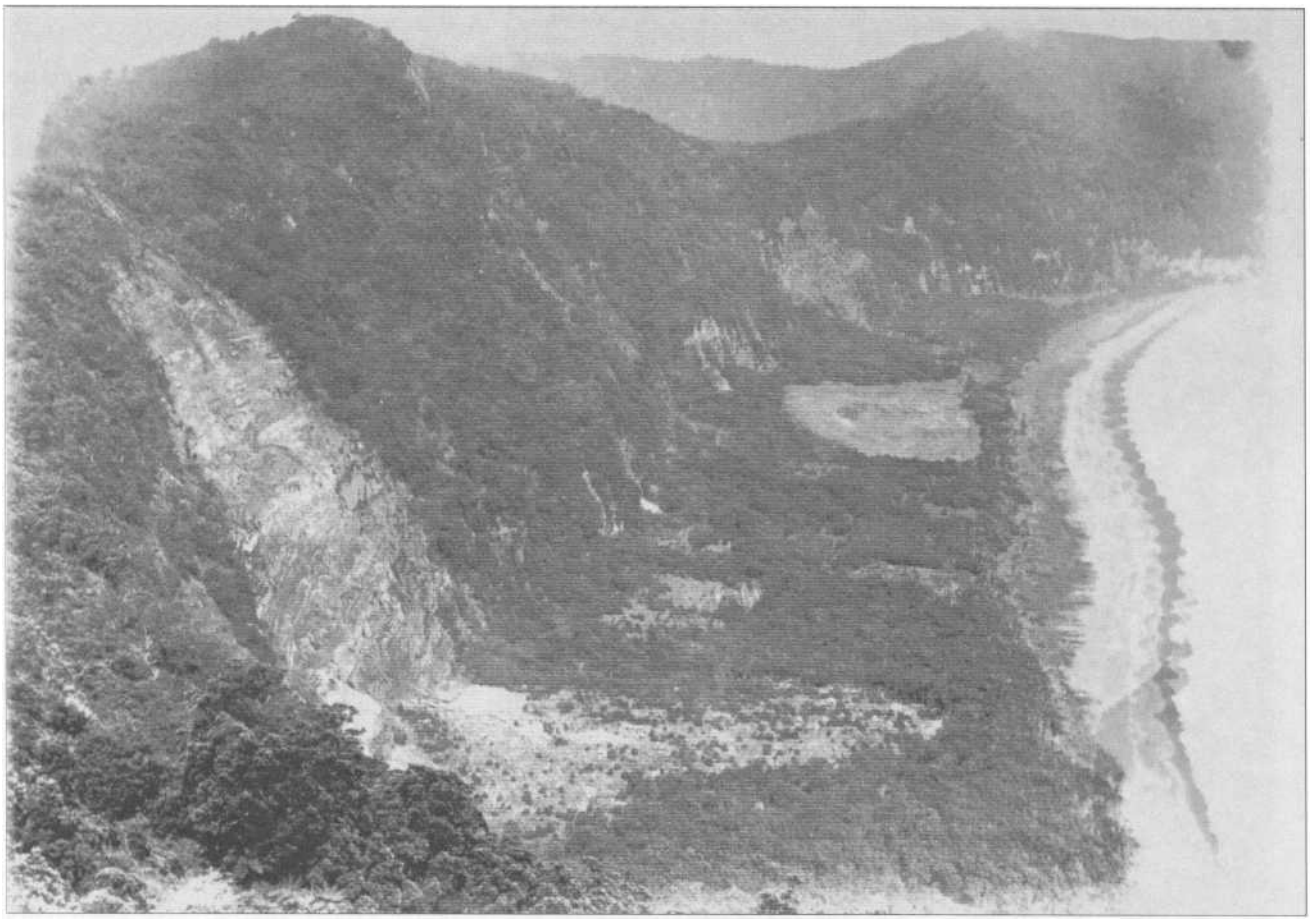

Figure 15 View south along Denham Bay, 1908, with no sign of Norfolk pines (Photo: W.R.B Oliver. Reproduced with permission from the Kermadec Expedition Album, Alexander Turnbull Library. Ref, no. C21461).

Figure 16 View onto the south end of Denham Bay with a group of young Norfolk pines visible on the edge of the beach, 1944 (Photo:).11.Sorensen).

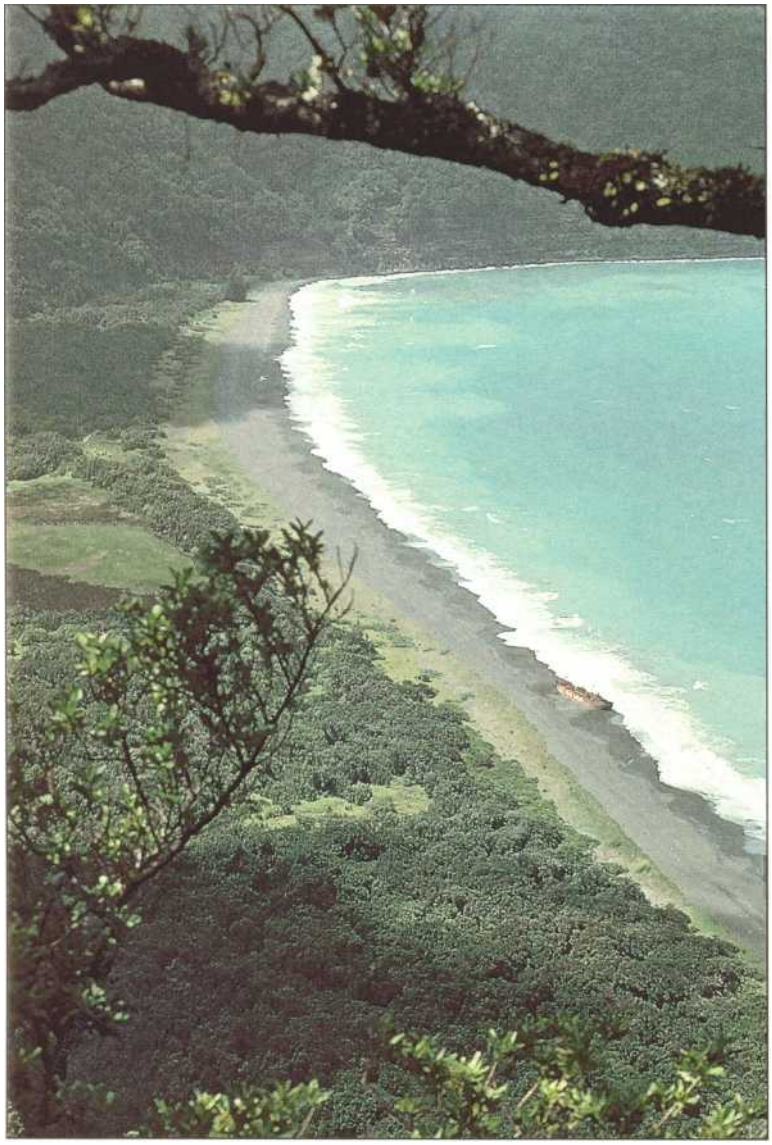

Figure 17 The Denham Bay Norfolk pines in October 1994. The wreck of the *Kinei Maru* which ran aground in 1986 lies in the surf zone.

### *5.9.2 Ecology*

Norfolk pine is a tall, pyramidal tree up to 45 m tall, in the same family as kauri (Araucariaceae). The leaves are short, densely packed and scale-like. Male and female cones are probably produced on the same tree although there are records of male and female cones being borne on separate trees. (In Auckland, Norfolk pine certainly has cones of both sexes produced on the same tree - E.K. Cameron, pers. comm.) The large female cones shatter on impact with the ground, scattering the seeds, or they disintegrate in the crown and the winged seeds are blown on the wind.

The species is light-demanding and the many seedlings which germinate beneath the parent trees usually do not persist. Establishment is successful where seeds have been blown onto bluffs and open ridges. Norfolk pine represents a threat to the forest on Raoul Island for two main reasons. Firstly, this species grows much taller than Kermadec pohutukawa (see Figures 12 and 13) and therefore will occupy space previously used by pohutukawa, thereby substantially altering the forest structure. Secondly, gymnosperms (such as Norfolk pine) create much more acidic soils in their vicinity and are likely to restrict the sites in which the native forest species can establish. However, Wright & Metson (1959) did not note any marked difference in the appearance of the soil profile beneath the Norfolk pines on the sand dunes in Denham Bay. The pines would have been present at this site for <50 years when these observations were made.

Norfolk Island, where this species originates, is at the same latitude as Raoul, but further west. There is no doubt that Norfolk pines could come to occupy all available habitat on Raoul Island if left untreated because of the similarity of climate on both islands.

### *5.9.3 Control methods*

Hand pull seedlings and chainsaw trees. Herbicide is not necessary as the cut stumps do not resprout, and the seedlings are easily pulled up.

### 5.9.4 *Future work*

Check for and remove seedlings in the vicinity of the parent trees on the Northern Terraces. Cut down all trees which are not the original Bell plantings, i.e., all trees <140 cm d.b.h. near the Woolshed, on the ridge above Bell's Ravine, and at Denham Bay.

Monitor the original trees on the Northern Terraces and record whether male and female cones are produced on the same trees. If some trees are unisexual these could be used as a basis for vegetative propagation and the continuation of this historically significant species on the Island. Male cones are probably visible in spring and the trees bearing male cones should be marked at that time. Later, female cones which are borne higher on the trees will become visible and trees bearing those should be marked.

## 5.10 *Furcraea foetida* – MAURITIUS HEMP

### 5.10.1 *History*

Thomas Bell probably introduced Mauritius hemp to Raoul as a substitute for sisal (Sykes 1977a). The species was first recorded as naturalised, in Denham Bay, by Sorensen (1944) who estimated that there were several hundred plants, big and small, in one patch. He described this plant as thriving and spreading and noted that some tall, dry spikes showed where it had recently flowered, although when he inspected the plants in August there was no sign of developing flower spikes. Davison, from the Aeradio Committee, had obviously seen Mauritius hemp in 1938 since he told Sorensen (1944) that the species had vastly increased since 1938. Sorensen's view was that this aloe or century plant, as he called it, was harmful to native vegetation. Sykes (1977a) recorded Mauritius hemp from the Dry Crater beside Tui Lake in 1967 and noted that in Denham Bay it grew in several dense stands towards the seaward edge of the forest. In 1975, one plant on the north side of the Island near the start of the Denham Bay track was removed (Anon. 1976).

Before eradication commenced in 1974 the clump in the Dry Crater was 30-40 m across (Devine 1977). There were two sites in Denham Bay: one area extended westward from the swamp under the pohutukawa fringe for 300-400 m in clumps of varying size, and the other area was on the bush fringe east of the swamp and consisted of 2-3 large plants (Anon 1982a). In 1980 Sykes (1980) noted that this species had almost been eradicated. By 1982 only 11 plants were found in Denham Bay (Selby 1982a) and in 1984 a few young plants were found in Denham Bay but none were seen in the Dry Crater (Sykes 1984). Again, in 1990, a few young plants were seen in Denham Bay (Sykes 1990). Clapham (1991a) removed 12 plants from the Dry Crater. The plants ranged from 20 cm to 2.5 m tall but were not flowering. By 1993 Mauritius hemp appeared to have been eradicated. However, in 1994, two plants were found in Denham Bay and several plants were found growing epiphytically on pohutukawa in the Dry Crater. All plants were removed and one was planted in the garden at the Hostel for identification purposes (C. R. Veitch pers. comm.). Later in 1994 one epiphytic plant was removed from pohutukawa in Denham Bay (Uren 1994).

### 5.10.2 *Ecology*

Mauritius hemp is a perennial monocotyledon with fleshy leaves up to 3 m tall, in the agave family (Agavaceae). The leaves may or may not be spiny. Flower spikes to c. 12 m tall are produced from the centre of each plant. Fruit have not been recorded from the plants on Raoul (Sykes 1980), but on the flower spikes numerous small bulbils (vegetative dispersal units) are produced. The bulbils drop off and roll away or land on pohutukawa branches and sprout. Flowering has been recorded in October.

The conditions required for best growth of Mauritius hemp are not known. In the locations in which it was growing on Raoul there was moderate shading beneath pohutukawa forest. Aside from the spread of the plant through bulbils, the plants themselves also spread from the base. So, once established at a site, the area occupied increases through growth of the individual plants. Dense stands can be built up, and these impede regeneration of the native forest species.

Dispersal of this plant is predictable because it only spreads vegetatively. Unlike Madeira vine, it does not grow close enough to the sea for sea dispersal around the coast to be a threat.

### 5.10.3 *Control methods*

Many herbicides were trialled and were not effective, or were suggested for trial, e.g., Tordon 520 and 2G, Weedazol TL, Phytazol A, Roundup, but hand removal of the plants was determined to be the best method (Champness 1976).

Plants are pulled or grubbed out then covered with black polythene or some opaque material (Sykes 1984) which excludes light and hastens breakdown of the plant tissue. In 1978, for example, approximately 4000 small to medium-sized plants from one of the two Denham Bay sites were picked and wrapped in polythene (Dale 1979) In 1979, Adlam enclosed bulbils in four gallon tins.

### 5.10.4 *Future work*

The two known sites for Mauritius hemp - Denham Bay and the Dry Crater - should be checked annually for plants. Epiphytic bulbils will be difficult to spot, but plants growing from these should be seen well before they get to flowering size.

## 5.11 *Ricinus communis* – CASTOR OIL PLANT

### *5.11.1 History*

Oliver (1910) recorded castor oil plant as a naturalised species in 1908. As Sykes (1977a) points out, the species must have been introduced early in the settlement phase because Morton (1964) refers to the Bells collecting Jew's ear fungi from the branches of castor oil plant. Jew's ear fungi grow on dead wood normally, so the trees must have been a reasonable size or age to have begun dying back. Sorensen (1944) photographed castor oil plants at Bell's Flat, near the present-day Woolshed.

Sykes (1977a) noted castor oil plant from four localities along the northern side of Raoul, from west of the Woolshed to near the Fishing Rock road junction. Apart from small stands of this species being formed at each location, he felt that the species probably had not increased its range since first reported by Oliver. In October 1990, 63 plants were destroyed in the Orchard area between Denham Bay track and Bell's Ravine (Crawley 1990). Clapham (1991 a) reported that the area covered by castor oil trees was being reduced. In 1993, castor oil plant was noted from the Northern Terraces and at Low Flat. However, in 1995 a large stand of mature castor oil plants was discovered c. 100 m west of Ravine 8 (Uren 1995a). All plants were removed and the site was marked.

### *5.11.2 Ecology*

Castor oil plant is a small, spreading tree up to 4 m tall, from the euphorbia family (Euphorbiaceae). The leaves are large, soft and deeply lobed (20-40 cm diam.). The flowers are clustered in heads and the softly spiny capsules contain rectangular seeds up to 15 mm long. Champness (1975) notes "The seeds are poisonous and a violent purgative, not to be eaten under any circumstances". Flowering and fruiting times are not known.

The species is light demanding and currently grows at the edge of the forest behind the Hostel or in light gaps. It is not clear why castor oil plant has not spread more widely on Raoul. It grows best in the same situations that the other category A plants enjoy. It may not be a strong competitor for resources or it may be limited by predation on seeds by rats (with cast-iron constitutions!). Some species may take a very long time to establish before they become aggressively invasive and it is possible that castor oil plant may be one of these. In terms of its growth habit and requirements, castor oil plant could disrupt forest regeneration in the same way as Brazilian buttercup or the guava species. Therefore, it would be prudent to eradicate castor oil plant while it is in low numbers instead of waiting to see if it does spread.

### *5.11.3 Control methods*

Pull out young plants. Cut down large plants and poison bases with Tordon 2G granules.

### *5.11.4 Future work*

Castor oil plant should be eradicated now, while still in low numbers. The methods used above would be appropriate. Treatment sites should be checked annually for at least 10 years to remove any seedlings which might germinate.

## 5.12 *Phyllostachys aurea* – WALKING STICK BAMBOO

Previously *Phyllostachus viridis*

### *5.12.1 History*

Bamboo was most likely introduced to the Island in association with the Meteorological Station, in the late 1940s-early 1950s. Early photographs of the Meteorological Station garden, on the area in front of the Hostel, which I have seen, show what appear to be small diameter clumps of bamboo to the west of the garden, more or less in the location that the bamboo is in now. The bamboo grows on a pohutukawa-dominated hillock immediately to the north-west of the Hostel and is spreading out across the lawn. There are a few clumps in the lawn which are now mown around. The bamboo is also spreading back into the forest.

### *5.12.2 Ecology*

Bamboo is a densely growing perennial grass (family Poaceae) which, in this species, attains a height of 3 m. When bamboos flower they die and regenerate again from seed. However, flowering only occurs very infrequently (often at 50-100 year intervals), and walking stick bamboo has never been reported flowering in New Zealand. Thus, the bamboo should persist and slowly expand if not controlled.

Spread of bamboo is achieved by buds sprouting from underground running rhizomes. The growth of bamboo is so dense that it halts regeneration of forest species. Thus, in time, with the death of the forest canopy it will come to dominate any site at which it grows.

### *5.12.3 Control methods*

The only control used on this species to date has been mowing of the shoots which constantly spring up in the lawn.

A suggested method for control is to cut all existing bamboo poles and spray the young spikes which will arise with 2% Roundup. Alternatively, use Galant at a rate of 300 ml/10 l water/100 ml crop oil. Spraying fully grown bamboo will be difficult and is likely to cause more harm to non-target species. Regrowth up to 1 m tall is easier to target and will hopefully be large enough to translocate sufficient herbicide to the root system and kill the plant. The cut bamboo can be used about the station.

### *5.12.4 Future work*

Begin the task of removing the bamboo thicket. It would be best to control the whole thicket at once rather than trialling cutting and spraying regrowth in one part of the the thicket. The reason for this is that parts of the thicket which are remote from the spraying site will be connected by rhizomes and will support subsequent regrowth.

## 5.13 *Brachiaria mutica* - PARA GRASS

### *5.13.1 History*

Para grass was first recorded in a shallow gully near Bell's Ravine by Sykes (1977a) in 1966-67. Since then, the species has not spread from its original location in the abandoned Orchard above the Woolshed. The size of the infestation has increased, however. In 1967 Para grass occupied a space just a few metres in circumference, but by 1974 it occupied 0.5-1 acre (Taylor 1974) and by 1994 it had grown to cover nearly a hectare (Sykes and West in press). Ombler (1977) noted that Para grass excluded all others and suggested that treatment be instigated. To date the species has flowered sparingly on Raoul (Sykes and West in press) but it does appear to be an aggressive competitor through vegetative spread.

Presumably introduction of Para grass to Raoul was associated with the Meteorological station farm, either accidentally or deliberately, given its rate of expansion, although Sykes (1975) suggests the species results from the Bell era. This species is used as a forage grass in the tropical parts of Australia (Skerman and Riveros 1990).

### *5.13.2 Ecology*

Para grass is a stoloniferous perennial species (family Poaceae) which grows up to 2 m tall. Leaf blades are long, hairy and up to 16 mm wide. Most growth occurs in the summer months. Vegetative spread is via long stolons and bending branches, both of which root at the nodes. Lateral spread of 5 m per season has been recorded elsewhere (Skerman and Riveros 1990). Spread of the species by seed is unlikely as flowering is uncommon and sparse. The climate on Raoul is probably too cool for seed set, and marginal for flower initiation (Skerman and Riveros 1990).

Para grass prefers swampy places and stream banks for maximum growth (Skerman and Riveros 1990). Therefore, on Raoul it is unlikely to spread much beyond the gully it currently occupies. However, because it tolerates partial shade it is likely to persist, even under a tree or shrub canopy, for many years. This species has spread aggressively within this gully on Raoul and Taylor (1974) observed it smothering shrubs and buffalo grass.

### *5.13.3 Control methods*

Chemical control of this dense sward, using Roundup or Galant would be most effective.

### *5.13.4 Future work*

Spray the infestation with 2 % Roundup or Galant and replant the site with seedlings of native tree species raised on the island. Monitor the site and remove any regrowth.

*Category A(ii)* Species which are unlikely to have long term significant impact on the structure and composition of the native vegetation of Raoul Island but which are of sufficiently low abundance to be eradicated.

## 5.14 *Foeniculum vulgare* – FENNEL

### *5.14.1 History*

In 1969 Sykes (1977a) first recorded this species growing near the swimming pool in the paddock by the Meteorological Station Hostel. All of the plants seen were destroyed. Since that time, fennel plants have grown periodically on the same site. Taylor (1974), Trotter (Trotter 1976, Sykes 1977b) and Ombler (1977) all observed and removed a few plants from this site. In 1975, Champness did not find fennel near the swimming pool but did remove one large plant from behind the generator shed (the first time fennel was noted in this location and possibly a misidentification). When Sykes visited Raoul in November 1980 there was no sign of this species (Sykes 1980) but when he next visited in October 1984 a mature plant with an old flower stalk and a few seedlings were seen near the swimming pool and destroyed. In 1990-91 and 1993, fennel was not seen (Sykes 1990, Clapham 1991a, pers. obs.) but in 1994 three plants were detected and destroyed (Veitch 1994, Uren 1995a). Fennel was presumably an accidental introduction to the Island (Sykes 1977a).

### *5.14.2 Ecology*

Fennel is a perennial herbaceous plant, from the carrot family (Apiaceae), which dies back to a stout rootstock after flowering. The plants usually reach 2 m height. Numerous seeds are produced from the yellow-flowered heads and these seeds are wind dispersed a short distance or attach to animals and are dispersed in that way. Plants flower from November through to May.

Fennel is a characteristic plant of open spaces and will grow on coastal slopes and on slips in the forest. Once established, dense infestations usually result, and this impedes regeneration of the native vegetation. This species is certainly persistent. Small numbers have been recorded and removed periodically but it still persists more than 25 years after being first reported. In 1982 fennel was regarded as exterminated but annual surveillance was recommended at least until the end of 1983 (Anon. 1982b)!

### *5.14.3 Control methods*

Grub out plants and burn or desiccate. As much of the taproot should be removed as possible as fennel can resprout from root fragments.

### *5.14.4 Future work*

The site where fennel has been recorded should be checked annually and any new plants grubbed out.

## 5.15 *Gomphocarpus fruticosus* - SWAN PLANT

Previously *Asclepias fruticosus*

### *5.15.1 History*

This species was first collected on Raoul by Sorensen (1944). In 1966-67, Sykes recorded swan plant from rough pasture near the Meteorological Station. Champness (1975) commented that it was near the Meteorological Station and had spread along the road to Fishing Rock. He noted swan plant's apparent ability to compete with buffalo grass, and suggested its behaviour be watched. Ombler (1977) noted this plant was common and suggested it could become a problem in the future. Thirteen plants were pulled out by Adlam (1979). Clapham (1991a) observed 4-5 plants from the same locality. In 1993, the species was still recorded from this area and from near the Hostel. Successive weed teams have removed plants from this site but there are always a small number present each year.

### *5.15.2 Ecology*

Swan plant is bushy shrub up to 2 m tall which has milky sap and belongs to the milkweed family (Asclepiadaceae). Leaves are linear, c. 10 x 1 cm. The smallish flowers (c. 15 mm diam) are clustered in small groups. The swan-shaped fruits are green (ripening to brown) and inflated, c. 4-6 cm long. Numerous, small, silkily hairy seeds are clustered in the fruit and are wind dispersed when the fruit wall ruptures upon drying.

It is worth eradicating this species which is currently in very low numbers because it is a relatively tall and densely growing shrub which thrives in high light environments. It is also a wind-dispersed species, and if left uncontrolled could disperse to more remote locations on the island. It is, therefore, a species which could interfere with recolonisation of open areas by forest.

### *5.15.3 Control methods*

All plants found have been hand pulled (e.g., Ombler 1977, Adlam 1979) and this method should be used in future.

### *5.15.4 Future work*

Check the area where the plant has been recorded in the past, at least twice each year. Hand pull each plant and hang up to desiccate. Remove any fruit present, even green pods, and destroy by burning.

## 5.16 *Populus nigra* - LOMBARDY POPLAR

### *5.16.1 History*

Sykes records this species as a relatively recent introduction to the Island. In 1966-69 there was a line of trees which had been planted around a reservoir on the Terraces and a few presumably wild trees above Low Flat on an open bank. Champness (1975) noted that all of the poplars on Raoul appeared to be attacked by poplar rust, and only the basal suckers had any leaves. Stems were

still green but branches bore only small leaf buds. He recommended removal of this species. In 1993 there was just one tree present, on the western edge of Bell's Ravine at the road side.

### 5.16.2 *Ecology*

Lombardy poplar is a tall, narrow tree up to 20 m tall, from the willow family (Salicaceae). Only male clones are present in New Zealand and the species spreads occasionally by suckering or by detached branches and twigs taking root. Lombardy poplars grow better in cool climates and are unlikely to thrive on Raoul.

### 5.16.3 *Control methods*

Poison standing stems with Roundup and fell with a chainsaw once dead.

### 5.16.4 *Future work*

Remove the one remaining tree.

## 5.17 *Senecio jacobaea* – RAGWORT

### 5.17.1 *History*

Sykes (1980) found a single plant of ragwort near Mahoe Hut in November 1980. The plant had not yet flowered and it was pulled out. It appears that ragwort seed had come in on building materials used to build the hut (Sykes 1990). Sykes (1984) reported that ragwort has not reappeared. Clapham (1991a) did not find ragwort in 1990-91. The Mahoe Hut site has been checked regularly since 1980 and no further ragwort plants have been seen.

### 5.17.2 *Ecology*

Ragwort is a biennial or perennial daisy up to 1 m tall, from the daisy family (Asteraceae). In the first year of growth a basal rosette is produced and in the second year yellow flowers are produced at the top of the flowering stem which grows from the centre of the rosette. Numerous small seeds with a fluffy pappus are produced and dispersed widely by the wind. Plants flower from November through to July, but on Raoul could flower at any time of year.

Like Scotch thistle, ragwort is a plant of open ground and light gaps. It will grow on coastal slopes and along tracks, wherever there is sufficient bare ground for the seeds to germinate and establish.

### 5.17.3 *Control methods*

The single plant was pulled out by hand. Should any others be found, hand removal should be sufficient.

### 5.17.4 *Future work*

The Mahoe Hut site should be checked annually for any further germination of ragwort.

# 6. Category B weeds

ADVENTIVES RESULTING FROM ACCIDENTAL OR DELIBERATE INTRODUCTION WHICH HAVE NO HISTORIC SIGNIFICANCE AND WHICH POSE A MINIMAL OR NO THREAT TO THE FOREST ECOSYSTEM OF RAOUL ISLAND.

## 6.1 *Alocasia brisbanensis* - AROID LILY

Previously *Alocasia macrorrhizos*

### *6.1.1 History*

In 1887 aroid lily was noted by Cheeseman as a plant cultivated by the Bells. He recorded it as "kapi (or large Arum) edible root". At this time then, aroid lily was not obviously naturalised, since Cheeseman did list naturalised plants that he saw at the time. Smith (1887) also records "kapi (a New Guinea plant with an edible root 2 ft long... )". Kape is the name widely used in Polynesia for *Alocasia macrorrhizos* (Massal and Barrau 1956). In 1908, Oliver (1910) did not record the aroid lily as being naturalised. By 1937, aroid lily was reported as "now one of the worst weeds" by Anderson (1938), although Davison recalled that the species was not common in the remoter southern parts of the Island (Sykes 1977a). Davison, himself, (1938) did regard the aroid lily (which he called arum) as a harmful weed. In 1944, Sorensen observed that the "introduced arum lily has a tremendous hold and especially in the gullies". Sykes (1977a) recorded aroid lily as dominant in much of the herbaceous layer in nearly all areas of the Island in 1966-67. Thus, since the early part of this century, aroid lily has spread throughout Raoul Island, and it is without doubt the most widespread naturalised plant on the Island. Aroid lily has also spread to the nearby Meyer Islets and was recorded in small patches from both North and South Meyer in 1967 (Anon. 1982a). In 1990, Sykes observed two small groups of this plant on North Meyer. All plants were pulled up and hung in tree forks to desiccate (Sykes 1990).

The spread of this plant on Raoul was assisted by the goats which were abundant on the Island but were eradicated in 1984. The effect of the goats was to eat all palatable species out of the understorey and to climb into the pohutukawa trees to eat foliage of that species and any others that they could reach. Thus, they created an unnaturally light canopy cover and often an almost bare ground layer. Aroid lily, which was unpalatable to goats (Sykes 1969, 1977a; Parkes 1984), was able to spread throughout both the dry and the wet forest as it grows best in relatively high light levels.

Eradication of the goats on Raoul has had a major impact on the aroid lily. In most parts of the forest, especially the wet forest, the understorey is dense with regeneration of native trees and ferns. Also, the pohutukawa canopy has

**Figure 18 Aroid lily flower and foliage, October 1994.**

recovered to produce much more dense shade. The aroids in the forest persist as large rhizomes (up to 60 x 10 cm) with one or two stunted leaves protruding from the end. It is a matter of time before the starch reserves of the rhizomes are exhausted and the plants under the forest die out.

### *6.1.2 Ecology*

Aroid lily is a large rhizomatous perennial in the arum family (Araceae). The rhizome usually grows along the soil surface and can be over 50 cm long. In well-grown plants 4-5 sagittate leaves arise from the end of the rhizome on stems up to 2 m tall. The leaves, which are large (75 x 50 cm), die back from the tips during spring and during this phase the leaf stalks are mucilaginous. Flowers are produced freely on plants in full sun. The flowers are typical of the arum family with numerous small creamy yellow flowers crowded on a stalk which is surrounded by a pale green sheath, or spadix (Figure 18). The flowers are fragrant, with a perfume similar to violets. Flowering is from August through to April. Fruit are small (1 cm diameter), red and fleshy and are clustered on the flower stalk. The rhizome, if damaged, will sprout from lateral buds, but the terminal bud is dominant.

The foliage of aroid lily contains abundant calcium oxalate crystals which are very irritating to skin tissue and eyes. Workers on Raoul have been affected when sap has splashed in their eyes while cutting the aroid back during track maintenance (e.g., Champness 1975, Bracefield 1987). Rashes can develop where sensitive skin contacts aroid foliage when moving through dense stands (e.g., Hancox 1982). In general, care should be taken when this species is encountered.

Aroid lily is light demanding and grows best in canopy gaps, at the forest edge and in the grassland. In the canopy gaps on ridges and in Denham Bay, the extent to which aroid lily can invade is clearly seen. Dense stands up to 2 m tall, or more, are formed. The usual height for the aroid is c. 1 m. Areas up to 0.5 ha or more may be covered in aroid, e.g., south end of Denham Bay (Figure 19). However, most infestations today are no more than 10 x 10 m. Aroid lily also grows in the grassland fringes around the Island but it cannot compete with the dense growth of buffalo grass, and is most usually confined to the damper hollows.

Figure 19 Aroid lily growing in a light gap at the south end of Denham Hay. Black, vertical, slim stems in the photo are grape vines, October 1994.

Widespread distribution throughout Raoul and onto the Meyer Islets has probably resulted from birds dispersing the seeds. Vegetative reproduction will occur from fragments of the rhizomes rolling down hills. The goats probably caused a fair amount of rhizome damage when moving through the forest and they could have enhanced the rate of spread in this way. Because aroid lily is bird-dispersed its spread is unpredictable but since it covers virtually all of Raoul island and is also on the Meyers, the only places it can infest now are the other small islets adjacent to the Meyers, The seed probably does not persist long in the soil, unlike Mysore thorn and others, so aroid lily will not colonise disturbed areas rapidly because the seed will have to be dispersed into the area. If rhizomes are already present, then they could grow rapidly in high-light conditions created following tree falls, slips, etc.

Now that the goats have been eradicated from Raoul, aroid lily does not pose the threat that it did when the forest was so grossly modified by browsing. The natural light levels beneath the forest canopy are too low for this species. As the forest canopy gradually closes in on clearings, the aroid lily will be further reduced and will be restricted to the forest edge, e.g.; around the lakes, road edges, etc.

### 6.1.3 *Control methods*

It was observed during early control operations on other species that Tordon 2G was ineffective at poisoning aroid lily.

### 6.1.4 *Future work*

Hand-pull small seedlings in high light areas if away from any infestation.

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