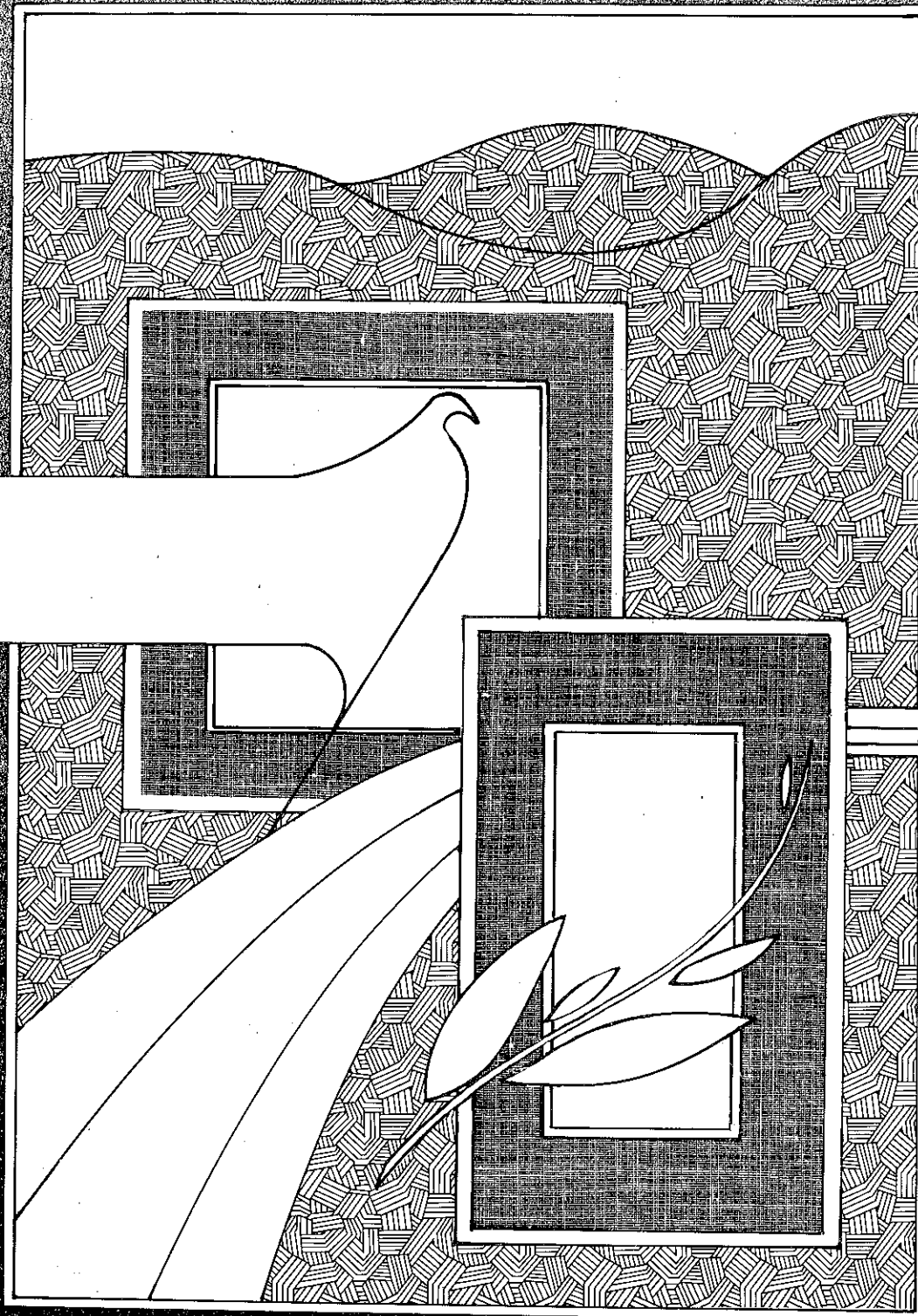


Auckland Conservancy

DEDICATED AREAS REPORT Number 9



Motutapere Ecological Area



MOTUTAPERECOLOGICAL AREA



NZ FOREST SERVICE
AUCKLAND CONSERVANCY
CPO BOX 39
AUCKLAND

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Location (Figure 1)

The proposed Motutapere Ecological Area is a large tract (2290 ha) of indigenous forest and scrub on the main axial range of the Coromandel Peninsula. It lies 14 km east-north-east of Thames and includes the high peaks of Kaitarakihi, Motutapere and Hihi (on the central ridge), as well as catchments draining to the east and west (midpoint at map ref. NZMS 260 T12 495515).

The proposed reserve straddles the boundary between the Thames and Tairua Ecological Districts (Simpson 1982, BRC 1983) and the boundary between the Kauaeranga and Hikuai Blocks of the Coromandel State Forest Park (NZFS 1978). The Motutapere reserve is bounded on all sides by the Forest Park. The most recent aerial photographs are NZAM survey no. 8163, run Q, photos 8 and 9 and run R, photos 7 and 8 (flown 10.1.83).

Access

Walking access through the proposed Ecological Area is available via several routes. Tracks enter the reserve from all four points of the compass. From the south, a track leads from the summit of the Kopu-Hikuai Road to the top of Kaitarakihi (track 5, NZFS 1983a). Here it joins with two other tracks, one leading to Motutapere and then down the Hihi Stream to the Kauaeranga Valley (track 21, NZFS 1983a); and the other (track 20, NZFS 1983a) leading past Motutapere, then on to the Hihi trig and finally joining up with the Billy Goat track to the north. A further track (track 23, NZFS 1983a) enters the reserve from the east, starting from the Hikuai Valley Road and climbs to intersect the main ridge track (track 20, NZFS 1983a), half an hour to the south of the Hihi trig.

History of Reservation

The Motutapere Ecological Area was initially proposed during consideration of scientific reserves throughout the Coromandel Peninsula by J.L. Nicholls, F.R.I., Rotorua in late 1977 (Nicholls 1977). In 1979, the S.C.C. (Scientific Coordinating Committee now renamed the State Forests Scientific Reserves Advisory Committee) inspected the area and recommended acceptance of the proposal. The proposal was approved in principle by the Minister of Forests on 18th February, 1981 but final gazettal of the reserve is still awaited.

Rationale and Objectives of Designation

The S.C.C. (1980) has listed criteria for the selection of scientific reserves. The proposed Motutapere Ecological Area fulfils many of these criteria. It covers a large range of land forms and vegetation sequences of the region (except for coastal vegetation). It is large, compact and consists of two complete upper catchments. It is also unroaded and the boundaries are clearly defined by natural features.

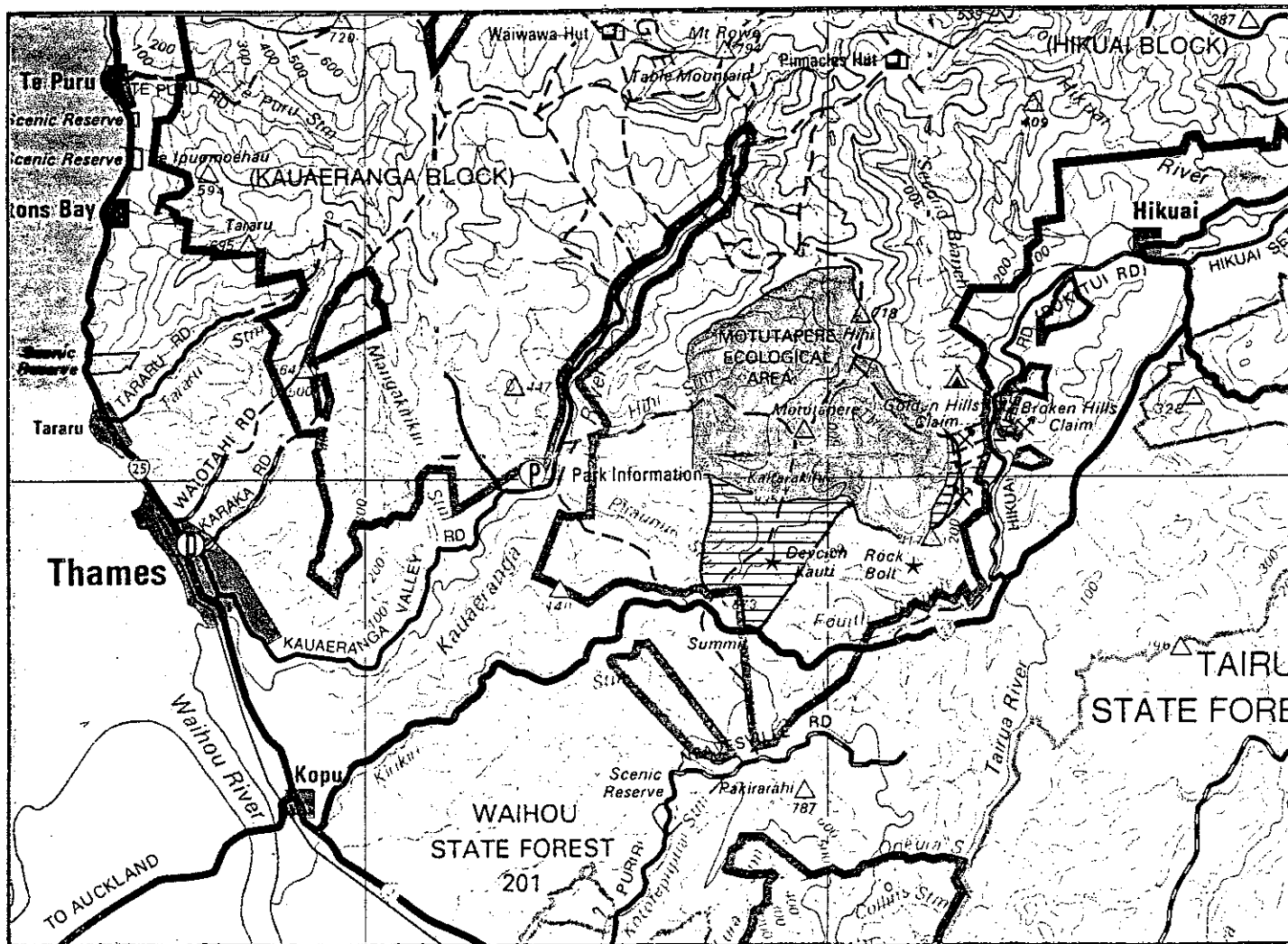



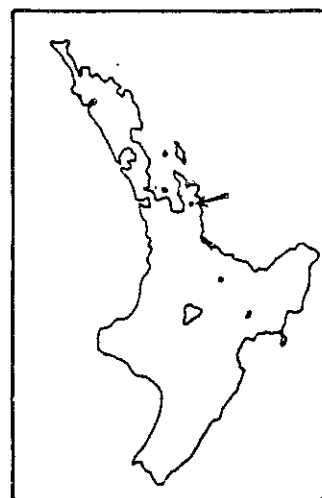


Fig. 1 : Location Diagram : proposed Motutapere Ecological Area

(based on NZMS 274/1 Coromandel State Forest Park, 2nd Edition 1983, NZFS, Government Printer)

- Ecological Area 
- State Forest Park Boundary 
- Proposed Extension (Anderson 1983) 



The specific objective of the Ecological Area is :

'to reserve a transect of the (inescapably) modified kauri-podocarp-hardwood forest across the contiguous contrasting landscapes of the middle Tairua and Kauaeranga catchments and includes Kaitarakihi and similar high pinnacles' (S.C.C. 1979)

After gazettal the Motutapere reserve will attain an IUCN* classification of IV (Nature Conservation Reserve), as do most ecological areas. IUCN management objectives of this type of reserve allow the application of manipulative management techniques to assure the survival of certain species of plants and animals. Scientific research, environmental monitoring and educational use are the primary activities associated with this category (IUCN 1978).

Topography

The reserve straddles a north-south oriented central ridge system which joins the three peaks of Kaitarakihi, Motutapere and Hihi. It consists of the upper catchment of the Hihi Stream and the catchment of the Third Branch of the Tairua River. Long steep slopes (26° to greater than 35°) with many bluffs characterise the majority of the reserve. The top of the main range has some flatter areas with slopes between 16° and 21°. Further to the east, the slopes also become more moderate (16° to 25°) with prominent rock outcrops and surface boulders. (Water and Soil Division, MOWD, 1975). Altitude ranges from 120 m in the west rising to 852 m (summit of Kaitarakihi) and then descending to 90 m in the east.

Climate

Discussion of climate on the Coromandel are given in Burns (1983) and Maunder (1974). The closest meteorological station exists at Thames. This station has recorded a mean annual rainfall of 1278 mm, a mean daily minimum temperature of 10.6°C and a mean daily maximum of 19.0°C (NZMS 1973). However, Thames occurs at sea level and local exposure and altitude will have an over-riding effect on the true climate experienced around Motutapere.

Geology

A range of rock types is represented in the proposed Ecological Area, occurring in a sequence from west to east. To the west the base rock is andesitic (Beeson's Island Volcanics), probably deposited subaerially in the Miocene, an activity which ceased in or before the Pliocene. To the east, forming the central range, are weathered ignimbrite sheets

*IUCN = International Union for the Conservation of Nature and Natural Resources.

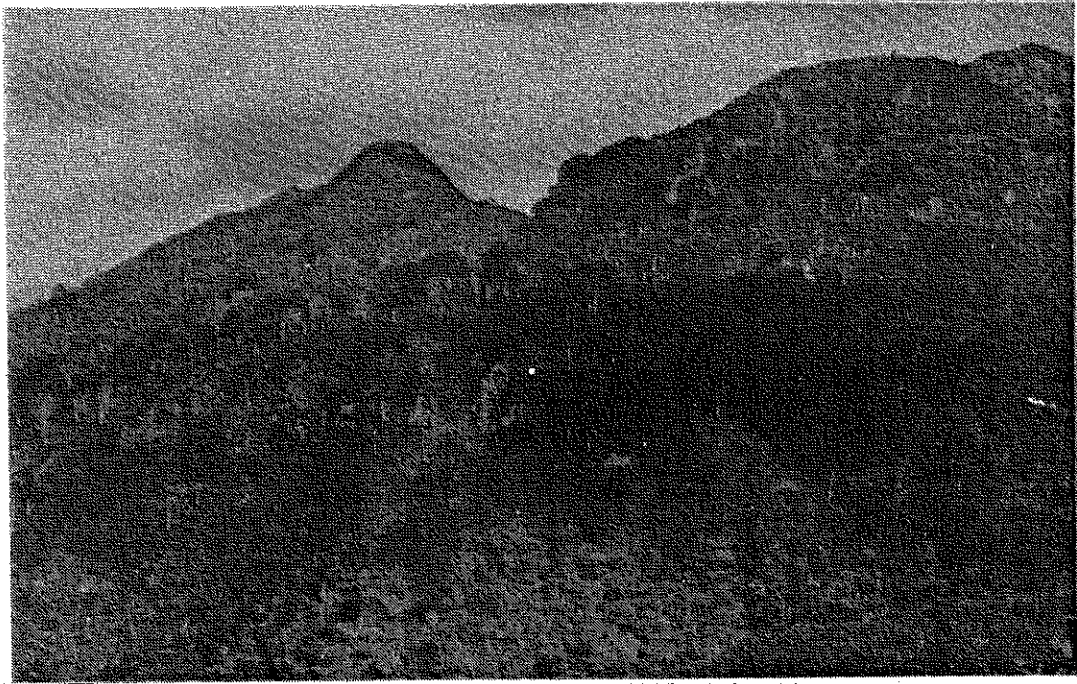


Photo 1 : Motutapere Ecological Area - kauri on eastern slopes of Motutapere
(photo by P. de Jager)

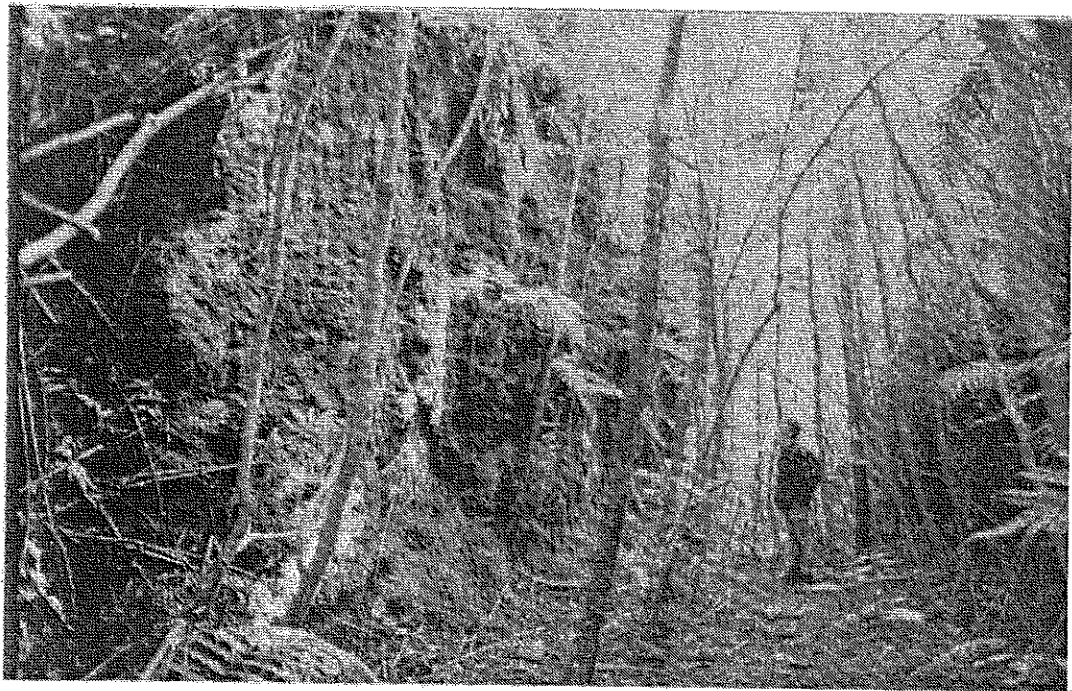


Photo 2 : Tramway cutting now colonized by towai and kanuka (photo by P. de Jager)

caused by rhyolitic eruptions which occurred in the Pliocene. Their extent is defined by the cliffs and bluffs which surround the central ridge. A striking feature of this ignimbrite formation is the sharp peak of Kaitarakihi. To the east, the rock type is composed of rhyolitic pumice, breccia and ignimbrite. (Water and Soil Division, MOWD, 1975; DSIR 1967).

Pedology and Erosion

A variety of soils are represented in the proposed Motutapere Ecological Area, changing from west to east associated with a similar sequence of base rock types. In the west the soils are predominantly Te Kie steepland soils, a stony clay loam related to brown granular clays formed from basalt and andesite of medium to high natural fertility; and Waitakere hill soils, a brown granular clay from andesite of medium to low natural fertility. As one ascends moving east, soils are Te Kie and Aroha steepland soils; the latter a sandy or clay loam skeletal soil from andesitic rock of medium to low natural fertility. Further still to the east and over the main ridgeline, soils are Tangatara steepland soils related to yellow brown earths. These are strongly weathered skeletal soils from rhyolitic rocks of low natural fertility. Finally, near the eastern boundary are Puketui hill soils and Whangamata sandy loams. Puketui hill soils are yellow brown earth hill soils from deeply weathered rhyolite of low natural fertility. Whangamata sandy loams are strongly leached yellow brown loams formed from Whangamata ash over rhyolite and andesite. (Eyre 1977, Department of Lands and Survey 1975).

Slips are locally common in the proposed Motutapere Ecological Area. Around the summit of Motutapere particularly, debris avalanche erosion is severe (21% - 40% of cover removed). In some of these slips, bare rock has been exposed. Elsewhere slight soil slip or gully erosion is present (Water and Soil Division, MOWD, 1975).

Comparison of early aerial photographs (NZAM, Run 980, photos 15-18, 1944) with the most recent (see 'Location') show that over the last 39 years, few distinct new slips have occurred. Around the summit of Motutapere all but one of sixteen slips in 1983 had equivalent slips in 1944. The slips in 1983 appeared less distinct than in the 1944 photographs however the two sets of photographs are at different scales. It would appear that erosion is not an immediate hazard to the integrity of the reserve.

Vegetation

This description is based on twenty five Forest Survey Tally Sheets (NZFS 1949), fifteen Ecological Forest Survey Tally Sheets (NZFS 1966) and six days field work (15th-18th March 1983 and 16th, 17th July 1984). Overlay 2 of figure 2 shows the location of the various field descriptions made.

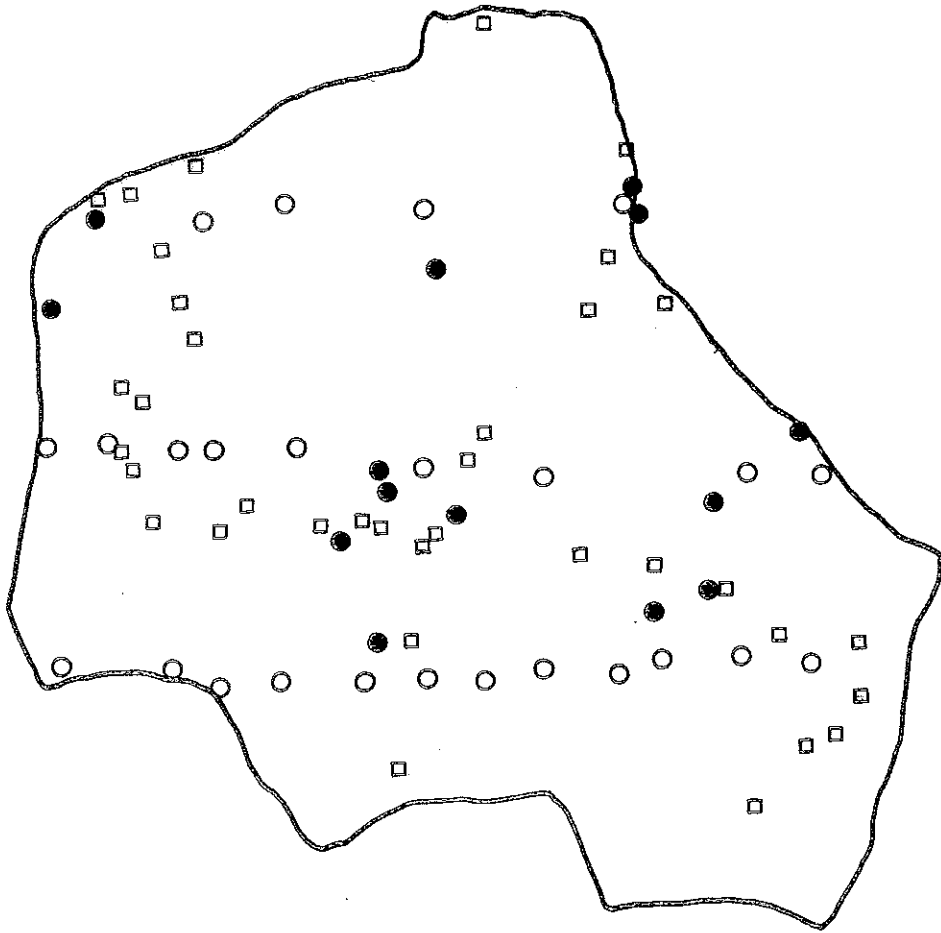
The method used to describe vegetation in the recent field work was a modified reece-type description in which the vegetation was recorded in a number of tiers. The five tiers used are canopy emergents, canopy, subcanopy (from beneath canopy height down to 2 m), shrub (2 m down to 50 cm) and groundcover (50 cm to ground level). Site descriptions are grouped into types based as closely as possible on Nicholls' (1976) classification. Further discussion of this method is given in Burns (1983).

I have classified the vegetation into five general types :

1. low altitude podocarp-hardwood forest with rare kauri (Nicholls' type D5);
2. mid-altitude kauri-podocarp-hardwood forest with rare hard beech;
3. high-altitude kauri-podocarp-hardwood forest (Nicholls' types B11 and B12);
4. hardwood (towai-dominated) scrub;
5. short manuka scrub associated with slips.

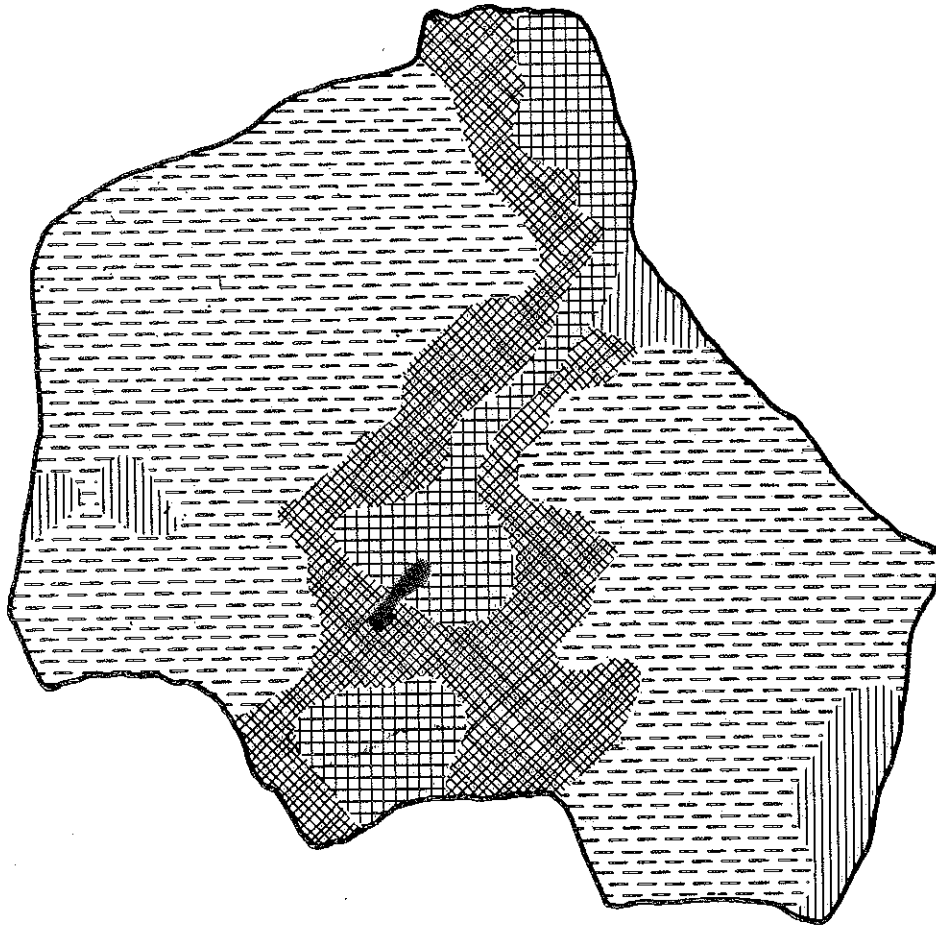
The extent of these types is shown on overlay 1 of figure 2. A detailed species list is given as appendix 1, giving both scientific and common names for plants observed during the 1983-84 fieldwork. The vegetation has been much modified and is a mosaic of vegetation 'islands' with different histories. To provide a conceptual grasp of the area under consideration, the types described are necessarily broad.

1. The first type is low altitude (< 450 m a.s.l.) podocarp hardwood forest (generalised stand structure, table I). This is the most extensive type in the Ecological Area and occurs both east and west of the main range. It has occasionally emergent northern rata, rimu and pukatea over a canopy largely comprised of tawa, towai, rewarewa and kohekohe. Occasional miro, hinau and mamaku with rare kauri also occur.
2. Mid-altitude (400 m to 600 m a.s.l.) kauri-podocarp-hardwood forest with rare hard beech forms the second forest type recognised (generalised stand structure, table II). Occasionally emergent are rimu and miro and groups of large kauri, the latter particularly on the eastern slopes. These overtop a canopy of abundant towai and tawari with occasional tawa, miro, kauri, hinau and rare hard beech. The hard beech are scattered throughout the type but occur particularly around the bluffs on the eastern side of Motutapere. A stand of large kauri (average diameter approximately 2 m), occurring on a high plateau immediately west of Motutapere and ringed by bluffs is particularly interesting. Unlogged because of the difficulty of extracting them, they have been bled for gum and many are dead or senescent. Amongst their number are the ninth and eighteenth largest (by truck volume) kauri known (NZFS 1983b).








Overlay 2 : Position of vegetation descriptions

- NZFS 1949
- NZFS 1966
- Burns 1983 - 1984



Overlay 1 : Forest type map

-  low altitude podocarp-hardwood forest
-  mid altitude kauri-podocarp-hardwood forest with rare hard beech
-  high altitude kauri-podocarp-hardwood forest
-  hardwood (towai-dominated) scrub
-  manuka scrub

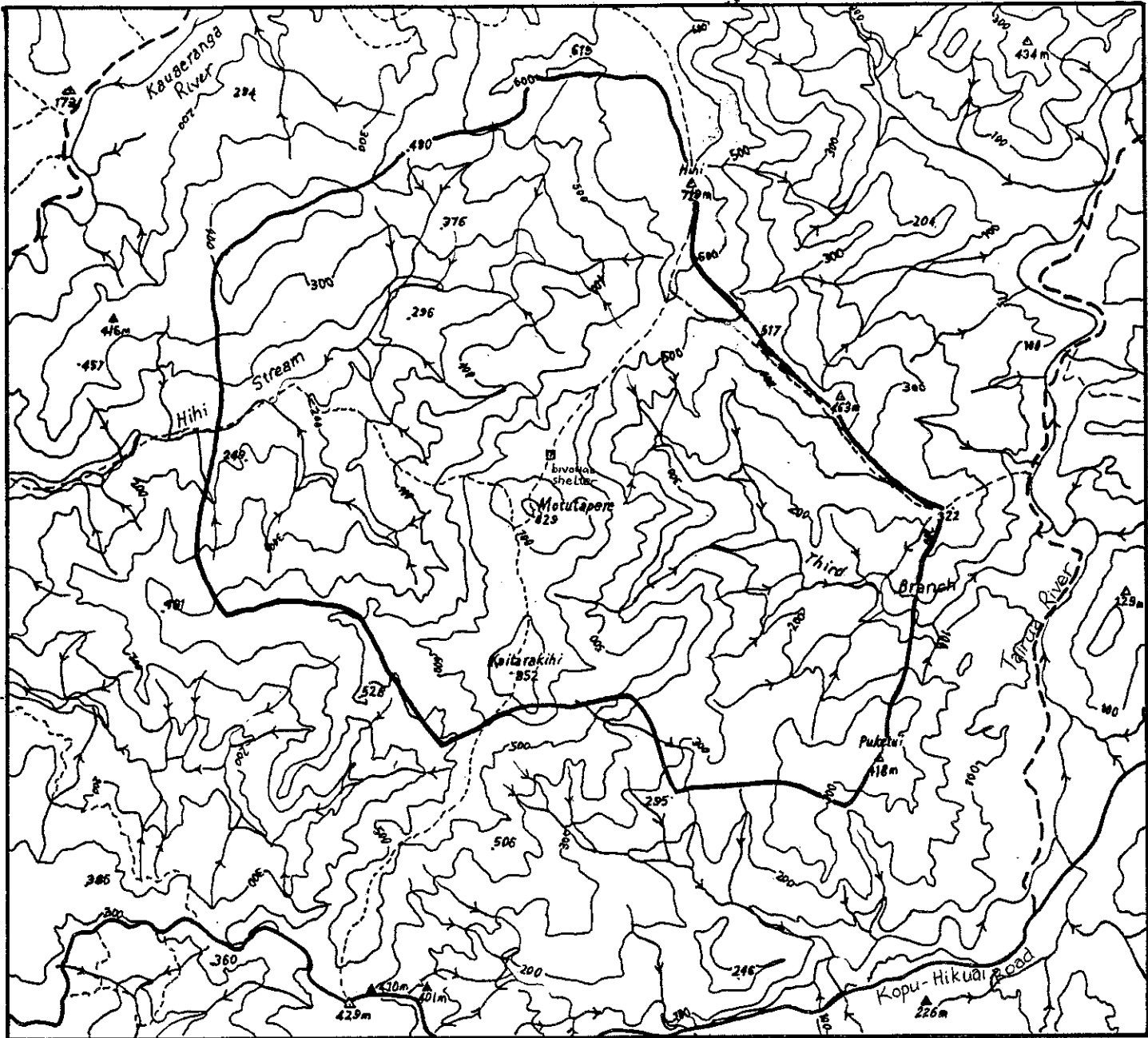
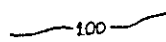


Figure 2 : Motutapere Ecological Area



100 m interval contours



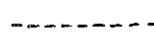
ecological area boundary



provincial state highway



metalled roads



tracks



drainage



▲; △ trig station beacons; unbeacons

G = Grid North

M = Magnetic North



Scale
1:50,000

TABLE I : GENERALISED STAND STRUCTURE FOR
LOW ALTITUDE PODOCARP-HARDWOOD FOREST

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT			northern rata rimu pukatea	tawa
CANOPY	tawa towai rewarewa	kohekohe	miro hinau mamaku	*kauri
SUBCANOPY	kohekohe pigeonwood ponga	mahoe nikau	heketara <i>Cyathea smithii</i>	
SHRUB		hangehange karapapa nikau kiekie <i>Coprosma grandifolia</i>	heketara five-finger mahoe ponga	
GROUNDCOVER		mosses <i>Blechnum fraseri</i> <i>B. filiforme</i> <i>Asplenium bulbiferum</i>	<i>Uncinia uncinata</i> <i>Hymenophyllum</i> spp.	
EPIPHYTES AND CLIMBERS	supplejack kiekie	mangemange <i>Blechnum filiforme</i> <i>Collospermum hastatum</i>		

DISTRIBUTION: Sites generally below 450 m a.s.l. plus some higher sheltered sites.

NOTES: The most extensive type interbedded with a mosaic of regenerating hardwood scrub areas.

*kauri occurs as scattered individuals.

TABLE II : GENERALISED STAND STRUCTURE FOR
MID-ALTITUDE KAURI-PODOCARP-HARDWOOD FOREST WITH
RARE HARD BEECH

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT		kauri	rimu miro	
CANOPY	towai tawari		tawa miro kauri hinau	hard beech
SUBCANOPY	towai <i>Pseudopanax</i> <i>discolor</i>	tawari <i>Pseudopanax</i> <i>colensoi</i> <i>P. arborea</i>		hard beech
SHRUB		towai tawheowheo <i>Pseudopanax</i> <i>discolor</i> <i>Senecio kirki</i> karapapa	hangehange neinei	
GROUNDCOVER		<i>Astelia</i> <i>trinervia</i> <i>A. nervosa</i> <i>Gahnia</i> <i>setifolia</i> <i>G. pauciflora</i>	<i>Blechnum</i> <i>capense</i> karapapa	
EPIPHYTES AND CLIMBERS			kiekie mangemange	

DISTRIBUTION: Between 400 m and 600 m approximately on either side of the main range.

NOTES: Hard beech found on eastern slopes of Motutapere with stand of large senescent kauri.

TABLE III : GENERALISED STAND STRUCTURE FOR
HIGH ALTITUDE KAURI-PODOCARP-HARDWOOD FOREST

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT			kauri yellow-silver pine	miro
CANOPY	tawari	towai yellow-silver pine <i>Pseudopanax colensoi</i> <i>Dracophyllum pyramidale</i>	toatoa toro tawheowheo miro kauri southern rata	broadleaf rimu
SUBCANOPY	<i>Pseudopanax colensoi</i>	towai <i>Archeria racemosa</i> tawari <i>Pseudopanax discolor</i> <i>Quintinia serrata</i>	broadleaf toro korokia <i>Coprosma dodonaeifolia</i> <i>C. grandifolia</i> <i>Dracophyllum pyramidale</i>	
SHRUB	karapapa	towa tawheowheo <i>Coprosma grandifolia</i>	korokia <i>Archeria racemosa</i> <i>Coprosma dodonaeifolia</i> <i>Pseudopanax discolor</i> <i>P. colensoi</i>	
GROUNDCOVER	<i>Astelia trinervia</i> <i>Gahnia pauciflora</i>		<i>Astelia solandri</i> <i>A. nervosa</i> <i>Blechnum capense</i> <i>Gahnia setifolia</i>	
EPIPHYTES AND CLIMBERS		<i>Hymenophyllum multifidum</i> mosses	kidney fern <i>Astelia solandri</i>	

DISTRIBUTION: Above 550 m altitude along the main range.

NOTES: This type has been much modified by logging, fires and slipping. It is a conglomeration of sites of varying heights and (presumably) age with nevertheless similar species compositions.

TABLE IV : GENERALISED STAND STRUCTURE FOR
HARDWOOD (TOWAI-DOMINATED) SCRUB

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT			rewarewa	
CANOPY		towai o mamaku	kanuka o five-finger o kohekohe o mahoe o tawa o rangiora	
SUBCANOPY	towai	o mahoe hangehange o ponga wheki	karapapa o nikau heketara <i>Coprosma grandifolia</i>	
SHRUB		o rangiora pigeonwood o <i>Coprosma robusta</i>	o five-finger * <i>Pseudopanax discolor</i> * <i>P. colensoi</i> * tawari	
GROUND COVER	kiokio	hookgrass	<i>Pneumatopteris pennigera</i> bush rice grass kiekie	
EPIPHYTES AND CLIMBERS			<i>Collospermum hastatum</i>	

DISTRIBUTION:

Confined to relatively small zones mostly below 300 m altitude but with some areas up to 600 m.

NOTES:

Extremely variable scrub type representing regeneration from a number of different disturbances.

o = species restricted to sites < 450 m altitude

* = species restricted to sites > 450 m altitude

3. The third forest type, high altitude (> 600 m a.s.l.) kauri-podocarp-hardwood forest covers the three peaks included in the proposed Ecological Area (Hihi, Motutapere and Kaitarakihi) and the high altitude ridge which connects them. Table III gives the generalised stand structure. This area has also been variously affected by fires, slips and logging and although the species composition over the type is similar, height and structure vary considerably. Kauri and groups of yellow-silver pine are occasionally emergent over a canopy dominated by tawari. Other common canopy species are towai, yellow-silver pine, *Pseudopanax colensoi*, *Dracophyllum pyramidale*, toatoa, toro, tawheowheo, miro, kauri and southern rata. Rimu and broadleaf are rarer components of the canopy. Features of this type are the groundcover of *Astelia* and *Gahnia* species and the predominance of *Hymenophyllum multifidum* and mosses as epiphytes.
4. The fourth forest type recognised is a towai dominated scrub which occurs in small patches throughout the Ecological Area (generalised stand structure, table IV). Towai is easily the dominant species with associated species differing with altitude. At lower sites (below approximately 300 m) mamaku, five-finger, kohekohe, mahoe, tawa and rangiora are commonly associated with towai. At higher altitudes (approximately 500 m) tawari, *Pseudopanax discolor* and *P. colensoi* are common associates.
5. A fifth vegetation type, which hasn't been described in a table because of its small extent and simplicity, is that growing on and around some slip areas on the high western slopes of Motutapere. Here an area occurs of 1-2 m tall manuka with occasional small towai and mingimingi along with seedlings of other hardwood species. The groundcover is dense with kiokio, *Gahnia pauciflora* and around the rocky, almost bare scree areas, mountain flax.

Of those species listed as rare within the Coromandel Forest Park (Appendix 13, NZFS 1978), ten are found in the Proposed Motutapere Ecological Area (hard beech, *Archeria racemosa*, *Gaultheria paniculata*, *Olearia townsonii*, *Metrosideros albiflora*, *Pittosporum huttonianum*, *Pseudopanax simplex* var. *sinclairii*, *Dracophyllum patens*, *Brachyglottis myrianthos* and *Coprosma dodonaeifolia*.

Braggins et al (1983) list species with distributional significance in the Coromandel. Twenty-six species from this list occur in the Ecological Area including *Pittosporum virgatum*, listed as vulnerable in the Red Data Book of New Zealand (Williams and Given 1981).

Native Fauna

A list of wildlife recorded in the proposed Motutapere Ecological Area is given as Appendix 2. The central Coromandel block including the Ecological Area has an 'outstanding' wildlife rating (Anderson 1983). Two species of rare native bird occur in the reserve, kokako and N.I. brown kiwi. The Wildlife Service have records of kokako from three locations to the south and east of the Ecological Area boundaries and have proposed extensions to the reserve based on these observations (Figure 1).

Hochstetter's frog has also been recorded. This native frog is listed in the Red Data Book of New Zealand as rare (William and Given 1981).

Introduced Animals and Forest Conditions

Of 132 circular 4 m² plots examined throughout the proposed Ecological Area, intact possum pellets were present in 17 (12.8%) whereas intact goat and pig groups were only found in 1 each (0.8%). Infrequently areas disturbed by pig rooting were observed particularly on lowland stream flats. Heavy defoliation by possums of *Pseudopanax colensoi* and *P. arboreum* was commonly noted. Light browse by goats was recorded on karapapa, mamaku, kohekohe, hen and chicken fern and occasionally on several other species.

I have assessed forest condition by considering :

1. the presence of seedlings and saplings of canopy species;
2. other evidence of plant growth and replacement eg: presence of new shoots, flowering or fruiting individuals;
3. the openness of the vegetation as a whole and in different tiers; and
4. the presence of dead or dying individuals.

Observations relevant to forest condition are as follows. Seedlings and saplings of canopy trees are frequent throughout the Motutapere region. Particularly interesting is the occurrence of young kauri scattered throughout the reserve.

The low scrub associations caused by fire and slips also seem to be regenerating satisfactorily. Nowhere does the forest display distinct browse zones, tiers of the forest noticeably open through browse.

Notable on the eastern slopes of Motutapere is the mortality and poor health of emergent large kauri and northern rata. Many of the large kauri are dead or senescent. This may partly be attributed to gum bleeding damage. The northern rata of the lower catchments appear brown and defoliated. The correlation between this observation and the high possum population cannot be ignored.

Presence of Exotic Plants

Several introduced plants were noted in the proposed Ecological Area. Of possible concern are pampas grass (*Cortaderia selloana*) covering some of the lower altitude slips and hawthorn (*Crataegus* spp.) which occurs in some streams (particularly in the Third Branch, Tairua River). Pines were removed from the slopes of Motutapere Mountain in 1982-83 (NZFS 1983c). No pines were seen during the 1983-1984 fieldwork.

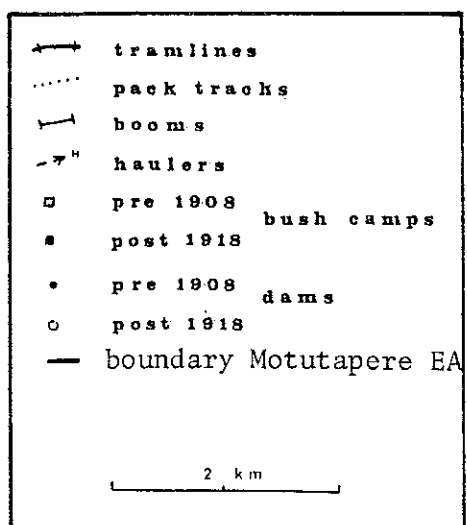
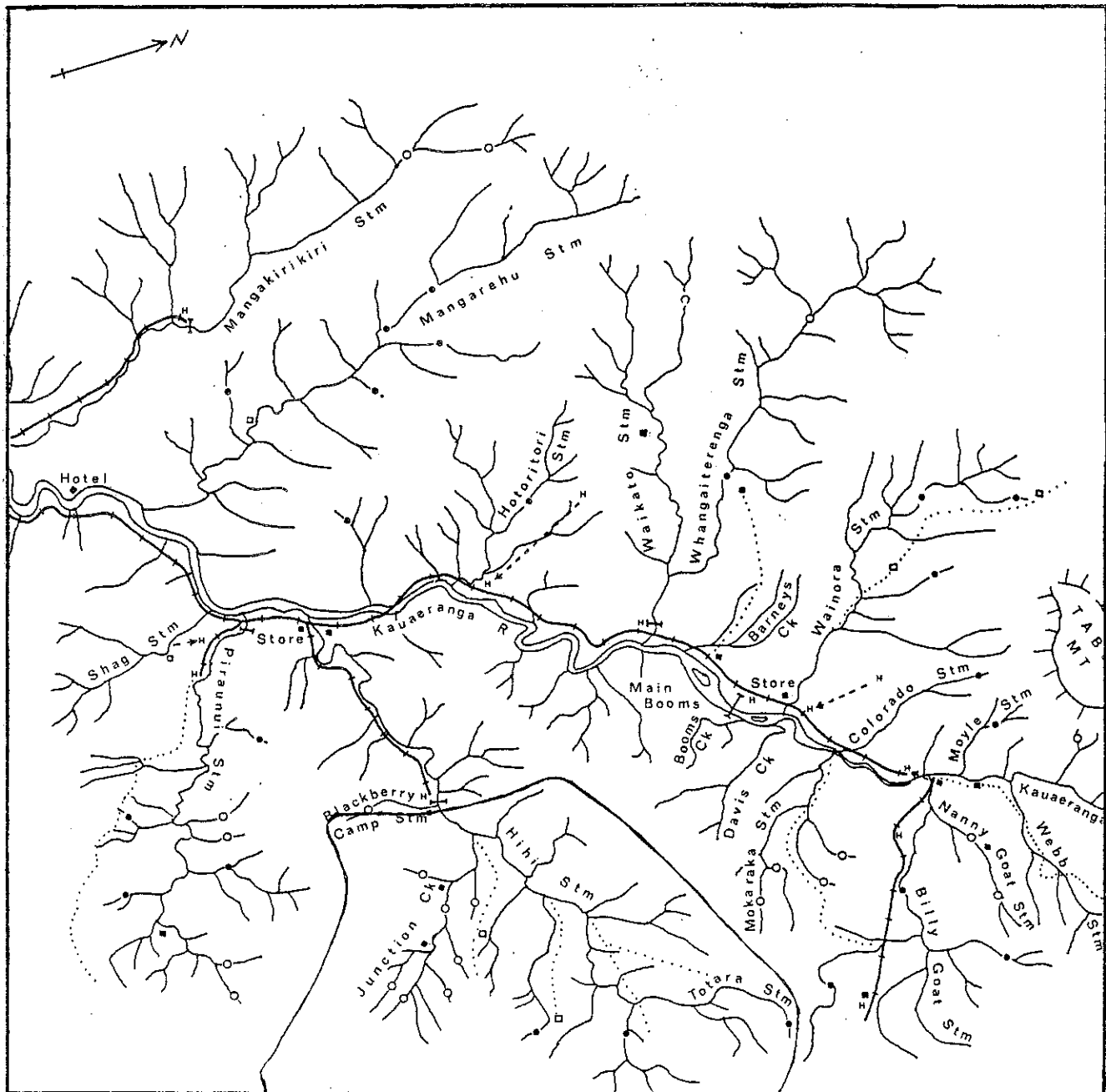


Figure 3

Map of Kauaeranga Valley including part of the Motutapere Ecological Area showing location of workings used during the kauri felling operations 1871-1928 (from Hayward 1978).

Human History and Influence

The proposed Motutapere Ecological Area has no known archaeological sites within it (New Zealand Historic Places Trust personal communication to Conservancy Archaeologist). The history of the area is concerned mostly with logging apart from a number of gold-mining claims staked at Broken Hills.

Logging in the Hihi Valley began in approximately 1878 when Stones' Shortland Sawmilling Company let a contract to a Mr Christie. The Hihi Valley provided 10,620 m³ of kauri with Junction Creek contributing an additional 8,260 m³ and a variety of methods were used to extract it. Bullocks, haulers and dams feeding booms in the Hihi Stream were used to get logs to a tramway. This was constructed in 1922 and was 2.5 km long, joining up with the main Kauaeranga tramway (Figure 3, Hayward 1978). Little remains of these constructions, but the vegetation bears the marks of modification by axe and fire. The Tairua watershed within the reserve has also been logged for kauri but not for podocarps (S.C.C. 1979). The large kauri on the eastern side of Motutapere have been bled for gum. Many of them are cut and scarred and it is probable that this activity has led to the death and senescence of many of these trees.

Gold was first discovered at Broken Hills on the Tairua River in 1893. A number of claims were staked of which the most successful were the Broken Hills claim, on the eastern side of the river (total output valued at £ 89,036), and the Golden Hills claim. This latter claim was worked between 1907 and 1923 for a yield of approximately 104 kg of bullion valued at £ 6,495 (Slane and White 1980).

Amoco Minerals N.Z. Ltd currently hold a prospecting licence (P.L. 31569) over 244 ha in the Golden Hills area. This includes 92 ha within the proposed Motutapere Ecological Area (Johnston 1982, see also Auckland Conservancy file 20/0/149/16). The licence expires on the 26th February 1986 (Johnston 1984).

Recent human influence has involved the erection of a radio mast on the summit of Hihi and the provision of a helipad and bivouac shelter just to the north of the Motutapere summit.

Recreational Facilities and Opportunities

The proposed Motutapere Ecological Area is well tracked (see also Figure 2 and 'Access' section). These tracks form part of the popular tramping area around the Kauaeranga Valley. The visitor's book on the summit of Kaitarakihi had 209 signatures over the year ending 31st March 1983 (NZFS 1983c). The management plan for the Forest Park 1978-1988 (NZFS 1978) proposes the siting of a hut near the summit of Motutapere. Holder et al (1983) state :

'Huts tend to draw a large number of people... This high use of huts creates conflicts in both cultural and environmental areas. A down-graded recreational experience for the user occurs, but more importantly, the impact on local environment is magnified'.

They advise that a hut is not necessary nor desirable at Motutapere. For safety reasons, a bivouac shelter has been erected at map ref. NZMS T12 496514.

Rockhounding is a popular activity in the Ecological Area, particularly up the Hihi stream where one can find both red and green jasper.

Summary, Discussion and Recommendations

The proposed Motutapere Ecological Area is a large (2290 ha) tract of indigenous forest and scrub on the main axial range of the Coromandel Peninsula. It straddles the boundary between the Thames and Tairua Ecological Districts and the boundary between the Kauaeranga and Hikuai Blocks of the Coromandel State Forest Park. The reserve consists of the peaks of Hihi, Motutapere and Kaitarakihi on a central north-south ridgeline and includes the catchments of the Hihi Stream to the west and the Third Branch of the Tairua River to the east. The country is steep with many bluffs; severe erosion occurs around the summit of Motutapere. From comparison of 1944 with 1983 aerial photos, the rate of slipping is slight over recent years. A variety of both soils and base rock types are represented from west to east across the proposed Ecological Area.

I have divided the vegetation into five basic types. These are low altitude podocarp-hardwood forest with rare kauri; mid altitude kauri-podocarp-hardwood forest with rare hard beech; high altitude kauri-podocarp-hardwood forest, towai dominated scrub and short manuka scrub. A number of nationally and regionally rare plant species occur in the proposed Motutapere reserve including *Pittosporum virgatum* listed as vulnerable in the Red Data Book of New Zealand (Williams and Given 1981). A group of large kauri occur on the eastern slopes of Motutapere, including the ninth and eighteenth largest kauri known. Many of these trees are dead or senescent, a possible result of gumbleeding. The central Coromandel block including the proposed Ecological Area has an 'outstanding' wildlife rating. Two rare species of native bird, kokako and N.I. brown kiwi have been recorded as well as Hochstetter's frog, a relatively rare native frog.

Major logging activities for kauri occurred throughout the Ecological Area with the associated dams, tramways, bullock tracks and booms especially in the Hihi catchment. Little remains of these constructions but the disturbed vegetation gives evidence of past assaults by axe and fire. In the Tairua catchment at least, however, no subsequent logging for podocarps followed the removal of kauri. Between approximately 1893 and 1923 gold was mined from the Broken Hills and Golden Hills regions on the eastern boundary of the Ecological Area.

The reserve is well tracked and forms part of the popular tramping area around the Kauaeranga Valley. A bivouac shelter and helipad occur just to the north of the Motutapere summit.

A brief inspection cannot be conclusive about animal numbers or their impact. However the relatively high incidence of possum sign combined with the defoliation of many large northern rata causes concern. Meads (1976) investigated possum browsing on northern rata in the Orongorongo Valley, Wellington. He found that over a five year period, three out of 24 trees died and all others showed some damage as a result of heavy browsing. Five other previously browsed trees all recovered when possums were excluded. Meads cautions however, that insects can cause similar impact. He observed heavy insect damage on northern rata near Whangarei.

Other introduced mammals appear to be in low numbers, not warranting control.

Photo 3 : (right) : Dracophyllum
patens with flower heads
(photo by P.de Jager)



Photo 4 : (below) : Coprosma
foetidissima
(photo by P.de Jager)



A hut has been proposed on a site just north of Motutapere (NZFS 1978). Holder et al (1983) considered this proposal and concluded that a hut was incompatible with an ecological reserve and should not be sited here. Huts tend to attract users and so increase their impact on the environment. A bivouac shelter has been erected for safety reasons and is sufficient for this purpose. I agree with Holder et al (1983) in opposing the siting of a hut at Motutapere.

Anderson (1983) has proposed two extensions to the proposed Motutapere Ecological Area to include two areas in which kokako have been sited. The first extends the reserve to the east and the second to the south reaching the Kopu-Hikuai Road. (Figure 1) Although the inclusion of known kokako habitat would undoubtedly increase the value of the reserve, the distribution of kokako habitat within the existing reserve should be examined before a firm proposal is formulated.

Management recommendations in order of priority are :

1. assess the effect of possums within the reserve and control where necessary and practical;
2. not to site a hut at Motutapere;
3. assess the value of extending the reserve with known kokako habitat;
4. set up several permanent plots in different vegetation types to monitor vegetation trends.

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Appendix 1 : Botanical Species List - proposed Motutapere
Ecological Area

Ferns

<i>Adiantum cunninghamii</i>	maidenhair fern
<i>A. viridescens</i>	
<i>Anarthropteris lanceolata</i>	
<i>Asplenium bulbiferum</i>	hen and chicken fern
<i>A. flaccidum</i>	
<i>A. lamprophyllum</i>	
<i>A. oblongifolium</i>	
<i>A. polyodon</i>	
<i>Blechnum capense</i> (forma 'a', kiokio)	kiokio
<i>B. capense</i> (forma 'b', <i>Lomaria latifolia</i>)	
<i>B. chambersii</i>	
<i>B. colensoi</i>	
<i>B. discolor</i>	crown fern
<i>B. filiforme</i>	
<i>B. fluviatile</i>	
<i>B. fraseri</i>	
<i>B. nigrum</i>	
<i>Ctenopteris heterophylla</i>	
<i>Cyathea cunninghamii</i>	
<i>C. dealbata</i>	ponga
<i>C. medullaris</i>	mamaku
<i>C. smithii</i>	
<i>Dicksonia squarrosa</i>	wheki
<i>Gleichenia cunninghamii</i>	umbrella fern
<i>G. dicarpa</i>	swamp umbrella fern
<i>Grammitis billardieri</i>	
<i>G. ciliata</i>	
<i>Histiopteris incisa</i>	histiopteris, water fern
<i>Hymenophyllum demissum</i>	filmy fern
<i>H. dilatatum</i>	filmy fern
<i>H. ferrugineum</i>	filmy fern
<i>H. flabellatum</i>	filmy fern
<i>H. flexuosum</i>	filmy fern
<i>H. multifidum</i>	filmy fern
<i>H. revolutum</i>	filmy fern
<i>H. sanguinolentum</i>	filmy fern
<i>H. scabrum</i>	filmy fern
<i>Hypolepis rufobarbatum</i>	
<i>Lastreopsis glabella</i>	
<i>L. hispida</i>	
<i>Leptopteris hymenophylloides</i>	heruheru
<i>Lindsaea trichomanoides</i>	
<i>Lygodium articulatum</i>	mangemange
<i>Paesia scaberula</i>	hard fern, ring fern
<i>Phymatosorus diversifolius</i>	
<i>P. scandens</i>	fragrant fern
<i>Pneumatopteris pennigera</i>	
<i>Pteridium acquilinum</i> var. <i>esculentum</i>	bracken
<i>Pteris macilentata</i>	
<i>Pyrrosia serpens</i>	
<i>Rumohra adiantiformis</i>	

<i>Trichomanes elongata</i>	
<i>T. reniforme</i>	kidney fern
<i>T. venosum</i>	

Fern Allies

Lycopodium billardieri
L. deuterodensum
L. scariosum
L. volubile
Tmesipteris elongata
T. Tarnensis

Gymnosperms

<i>Agathis australis</i>	kauri
<i>Dacrycarpus dacrydioides</i>	kahikatea
<i>Dacrydium cupressinum</i>	rimu
<i>Lepidothamnus intermedius</i>	yellow-silver pine
<i>Phyllocladus glaucus</i>	toatoa
<i>P. trichomanoides</i>	tanekaha
<i>Podocarpus hallii</i>	Hall's totara
<i>Prumnopitys ferruginea</i>	miro
<i>P. taxifolia</i>	matai

Dicot. Trees and Shrubs

<i>Alectryon excelsus</i>	titoki
<i>Alseuosmia macrophylla</i>	karapapa
<i>Archeria racemosa</i>	
<i>Aristotelia serrata</i>	wineberry
<i>Beilschmiedia tawa</i>	tawa
<i>Brachyglottis myrianthos</i>	
<i>B. repanda</i>	rangiora
<i>Carpodetus serratus</i>	putaputaweta
<i>Coprosma arborea</i>	
<i>C. banksii (colensoi)</i>	
<i>C. dodonaeifolia</i>	
<i>C. foetidissima</i>	
<i>C. grandifolia</i>	mamangi
<i>C. rhamnoides</i>	
<i>C. robusta</i>	karamu
<i>Coriaria arborea</i>	tutu
<i>Corokia buddleoides var. linearis</i>	korokia
<i>Craetagus spp.</i>	hawthorn
<i>Cyathodes fasciculata</i>	mingimingi
<i>C. juniperina</i>	mingimingi
<i>Dodonaea viscosa</i>	akeake
<i>Dracophyllum latifolium</i>	neinei
<i>D. patens</i>	
<i>D. pyramidale</i>	
<i>Dysoxylum spectabile</i>	kohekohe
<i>Elaeocarpus dentatus</i>	hinau
<i>Erica lusitanica</i>	Spanish heath

<i>Fuchsia excorticata</i>	kotukutuku
<i>Gaultheria antipoda</i>	
<i>G. paniculata</i>	
<i>Geniostoma rupestre</i> var. <i>crassum</i>	hangehange
<i>Griselinia littoralis</i>	broadleaf
<i>G. lucida</i>	puka
<i>Hebe macrocarpa</i> var. <i>latifolia</i>	
<i>H. stricta</i>	koromiko
<i>Hedycarya arborea</i>	pigeonwood
<i>Ixerba brexioides</i>	tawari
<i>Knightsia excelsa</i>	rewarewa
<i>Laurelia novaeseelandiae</i>	pukatea
<i>Leptospermum ericoides</i>	kanuka
<i>L. scoparium</i>	manuka
<i>Litsea calicaris</i>	mangaeo
<i>Lophomyrtus bullata</i>	ramarama
<i>Macropiper excelsum</i>	kawakawa
<i>Melicoytis ramifloris</i>	mahoe
<i>Metrosideros robusta</i>	northern rata
<i>M. umbellata</i>	southern rata
<i>Mida salicifolia</i>	maire
<i>Myrsine australis</i>	mapou
<i>M. salicina</i>	toro
<i>Nestegis lanceolata</i>	white maire
<i>Nothofagus truncata</i>	hard beech
<i>Olearia furfuracea</i>	
<i>O. rani</i>	heketara
<i>O. townsonii</i>	
<i>Phebalium nudum</i>	mairehau
<i>Pittosporum cornifolium</i>	
<i>P. ? ellipticum</i>	
<i>P. eugenioides</i>	tarata, lemonwood
<i>P. huttonianum</i>	
<i>P. virgatum</i>	
<i>Pomaderris kumeraho</i>	kumeraho
<i>Pseudopanax anomalum</i>	
<i>P. arboreum</i>	five-finger
<i>P. colensoi</i>	
<i>P. crassifolium</i>	lancewood
<i>P. discolor</i>	
<i>P. edgerleyi</i>	
<i>P. laetum</i>	
<i>P. simplex</i> var. <i>sinclairii</i>	
<i>Pseudowintera axillaris</i>	horopito
<i>P. colorata</i>	horopito
<i>Quintinia serrata</i>	tawheowheo
<i>Rhabdothamnus solandri</i>	
<i>Schefflera digitata</i>	pate
<i>Senecio kirkii</i>	Kirk's daisy
<i>Solanum aviculare</i>	poroporo
<i>Syzygium maire</i>	swamp maire
<i>Toronia toru</i>	toru
<i>Weinmannia silvicola</i>	towai

Dicot. lianes

<i>Clematis</i> spp.	
<i>Metrosideros albiflora</i>	climbing rata
<i>M. diffusa</i>	climbing rata
<i>M. fulgens</i>	climbing rata
<i>M. perforata</i>	climbing rata
<i>Muehlenbeckia australis</i>	
<i>Parsonsia</i> spp.	
<i>Rubus australis</i>	bush lawyer
<i>R. cissoides</i>	bush lawyer
<i>R. fruticosus</i>	blackberry

Dicot. herbs

<i>Acaena anserinifolia</i>	
<i>Cardamine debilis</i>	
<i>Cirsium vulgare</i>	Scotch thistle
<i>Digitalis purpurea</i>	foxglove
<i>Elatostema rugosum</i>	parataniwha
<i>Epilobium nerterioides</i>	
<i>E. rotundifolium</i>	
<i>Erigeron</i> spp.	fleabane
<i>Eupatorium</i> spp.	
<i>Gnaphalium gymmocephalum</i>	creeping cudweed
<i>G. involucratum</i>	creeping cudweed
<i>G. kerianse</i>	
<i>G. simplicicaule</i>	
<i>G. sphaericum</i>	Japanese cudweed
<i>Haloragis erecta</i>	shrubby haloragis
<i>Hydrocotyle elongata</i>	
<i>Leycesteria formosa</i>	Himalayan honeysuckle
<i>Nertera depressa</i>	
<i>N. dichondraefolia</i>	
<i>Pelargonium inodorum</i>	kopata
<i>Peperomia urvilleana</i>	
<i>Phytolacca octandra</i>	inkweed
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed
<i>Ranunculus</i> spp.	
<i>Senecio jacobea</i>	ragwort
<i>S. minimus</i>	
<i>Solanum nodiflorum</i>	small-flowered nightshade
<i>Viola filicaulis</i>	
<i>Wahlenbergia gracilis</i>	N.Z. harebell

Grasses

<i>Cortaderia fulvida</i>	
<i>C. selloana</i>	pampas grass
<i>Dichelachne crenata</i>	
<i>Ehrharta diplax</i>	bush rice grass
<i>Oplismenus hirtellus</i>	
<i>Poa anceps</i>	

Orchids

Bulbophyllum pygmaeum
Corybas rivularis
Dendrobium cunninghamii
Drymoanthus adversus
Earina autumnalis
E. mucronata
Pterostylis trullifolia

Other Monocots

<i>Astelia fragrans</i>	
<i>A. nervosa</i>	
<i>A. solandri</i>	
<i>A. trinervia</i>	kauri grass
<i>Carex fosteri</i>	
<i>C. geminata</i>	rautahi
<i>Collospermum hastatum</i>	
<i>C. microspermum</i>	
<i>Cordyline banksii</i>	
<i>C. pumilio</i>	
<i>Cyperus</i> spp.	
<i>Dianella nigra</i>	turuturu
<i>Freycinetia baueriana</i> subsp. <i>banksii</i>	kiekie
<i>Gahnia pauciflora</i>	
<i>G. setifolia</i>	
<i>G. xanthocarpa</i>	
<i>Juncus gregifloris</i>	
<i>J. planifolius</i>	
<i>J. usitatus</i>	
<i>Libertia pulchella</i>	
<i>Luzuriaga parviflora</i>	
<i>Machaerina sinclairii</i>	
<i>Morelotia affinis</i>	
<i>Phormium cookianum</i>	mountain flax
<i>Rhopalostylis sapida</i>	nikau
<i>Ripogonum scandens</i>	supplejack
<i>Schoenus tendo</i>	
<i>Scirpus inundatus</i>	
<i>Uncinia banksii</i>	
<i>U. uncinata</i>	hook grass

Appendix 2 : Wildlife of the Proposed Motutapere Ecological Area

(after Anderson 1983)

Native Birds

<i>Anthornis melanura</i>	bellbird
<i>Apteryx australis</i>	N.I. brown kiwi
<i>Callaeas cinerea</i> subsp. <i>wilsoni</i>	N.I. kokako
<i>Chalcites lucidus</i>	shining cuckoo
<i>Gerygone igata</i>	grey warbler
<i>Hemiphaga novaeseelandiae</i>	N.Z. pigeon
<i>Hirundo neoxena</i>	welcome swallow
<i>Petroica macrocephala</i>	pied tit
<i>Prosthemadera novaeseelandiae</i>	tui
<i>Rhipidura fuliginosa</i>	N.I. fantail
<i>Zosterops lateralis</i>	silvereye

Introduced Birds

<i>Acridotheres tristis</i>	myna
<i>Fringilla coelebs</i>	chaffinch
<i>Platycercus eximius</i>	eastern rosella
<i>Turdus merula</i>	blackbird
<i>T. philomelos</i>	songthrush

Amphibians

<i>Leiopelma hochstetteri</i>	Hochstetter's frog
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Introduced Mammals

<i>Capra hircus</i>	goat
<i>Sus scrofa</i>	pig
<i>Trichosurus vulpecula</i>	possum

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