

- Pied shag, black shag (both Sparse)
- Pied stilt, pied oystercatcher, white-faced heron, black-backed gull (all not threatened)

In addition to these records, white-faced heron were abundant in January 2006; 20–30 observed on shellbanks in the bay behind Schnapper Point. Bar-tailed godwits (Migrant) were also observed flying up and down the Oruawharo River.

Significance

A recent review of shorebird habitat networks deemed the Kaipara Harbour to be a ‘site of particular importance’ for NZ shorebirds, as it is within the top five non-breeding sites for seven species of indigenous-breeding shorebirds, and is also used by 1000+ Arctic migrants during summer months (Dowding & Moore 2006). This site contains 14% of the wading habitat in Otamatea ED Northland.

This is a representative site for ecological unit (e), glasswort-*Suaeda novae-zelandiae*-sharp rush herbfield on shellbank, which is particularly unique as it contains a regionally significant plant species (*Suaeda novae-zelandiae*). This species was only recorded at one other site in this survey (Tinopai foreshore on Otamatea River Confluence (Q09/021)).

The Kaira Creek Marginal Strip covers small areas of ecological unit (b) at the upper tidal limit. The Oruawharo River Marginal Strip covers the edge of a reclaimed mudflat. In total, 10.1 ha of Marginal Strip overlap with the estuarine habitats in this site. These are administered by DOC.

OTAMATEA RIVER CONFLUENCE

| | |
|----------------|---|
| Survey no. | Q09/021 |
| Survey date | Various (December 2005–January 2006; Wildland Consultants 2002) |
| Grid reference | Q09 243 479 |
| Area | 1878.0 ha |
| Altitude | sea level |

Ecological units

- (a) Mangrove shrubland and forest in estuary
- (b) Oioi-sea rush rushland in estuary
- (c) Sea primrose-remuremu-saltwater paspalum-sharp rush herbfield in estuary
- (d) Saltmarsh ribbonwood shrubland in estuary
- (e) Mudflats and sandflats in estuary

Landform/geology

Holocene estuaries, beaches, and intertidal rock flats. On both sides of the site there are geologically significant Miocene shore platforms (Kenny & Hayward 1996).

Vegetation/habitats

The Otamatea River Confluence area is a zone of fast water movement with extensive sandy beaches, mudflats and rock platforms (some of which are human-modified), and very little marginal vegetation.



Q09/021 Otamatea River Confluence

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 750 1,500 3,000 Metres



(a) A small amount of mangrove shrubland occurs in sheltered tidal areas of Komiti Bay and Hollands Bay, near Tinopai on the Hukatere peninsula. *Suaeda novae-zelandiae* (a regionally significant plant species) was found under the shrubland, along with several other more common species such as glasswort, *Baumea juncea*, shore bindweed and the invasive saltwater paspalum. The latter tends to be ubiquitous in saltmarshes of this site, but does not form large swards of its own community as in the other more sheltered estuarine sites.

(b) Mixtures of oioi and sea rush are also present in the two above-mentioned bays. It was in this community that a banded rail (Sparse) was seen and two fernbirds (Sparse) were heard in 2002 (Wildland Consultants Ltd 2004).

(c) Around the Tinopai foreshore (southern Komiti Bay), a salt meadow community of sea primrose, remuremu, saltwater paspalum and sharp rush

occurs. Minor components of the salt meadow recorded were NZ celery, *Aira caryophylla*, *Austrostipa stipoides*, *Isolepis cernua* and bachelor's button.

(d) Scattered patches of saltmarsh ribbonwood occur in the extreme upper tidal fringes of Hollands and Komiti Bays.

(e) The vast majority of the intertidal areas of this site are occupied by open, tidal mudflats and sandflats often underlain by rock platforms. A lot of the rock platforms in evidence today were constructed or modified by people attempting to enhance rock oyster beds between the early 1900s and the 1950s (Hay & Grant 2004).

Significant flora

Suaeda novae-zelandiae (regionally significant) occurs in this site (AK 294674).

Fauna

A wide variety of bird species uses this site. Some are listed below, based on records from Crockett (1992-2004), in which counts for 'Tinopai' roughly apply to the coast around Tinopai and the open waters of the confluence. Frequency of encounter and the range of numbers of individuals over the period are stated in brackets.

- Reef heron (1995 - 1 recorded) (Nationally Endangered)
- Caspian tern (regular, 1-16) (Nationally Vulnerable)
- White-fronted tern (sporadic 2-56) (Gradual Decline)
- Pied shag (sporadic, 1-8), little black shag (1993 - 1 recorded), black shag (1995 - 1 recorded) (all Sparse)
- Royal spoonbill (1996 - 3 recorded) (Coloniser)
- Variable oystercatcher (regular 1-9) (regionally significant)
- Pied oystercatcher (regular, up to 736 in winter), pied stilt (regular, 1-72), black-backed gull (sporadic, 2-6), red-billed gull (regular, 1-65), white-faced heron (regular, 2-22), spur-winged plover (sporadic, 2-3) (all not threatened)

In addition to these records, a banded rail (Sparse) and two North Island fernbirds (Sparse) were recorded in and around saltmarsh areas of Hollands Bay in 2002 (Wildland Consultants Ltd. 2004). Also, Australasian gannets and an Arctic skua (Migrant) were observed over the open water in January 2006.

Significance

A recent review of indigenous shorebird habitat networks deemed the Kaipara Harbour to be a 'site of particular importance' for NZ shorebirds, as it is within the top five non-breeding sites for seven species of indigenous-breeding shorebirds, and is also used by 1000+ Arctic migrants during summer months (Dowding & Moore 2006). This site contains only 7% of the wading habitat in Otamatea ED Northland, but it seems to be a disproportionately important site for oystercatchers.

Though they are limited to small areas in Komiti and Hollands Bays, the saltmarsh and mangrove habitats in this site support a regionally significant plant species (*Suaeda novae-zelandiae*) and two threatened bird species (banded rail and NI fernbird) which were not recorded at any of the other saltmarsh ecological units in any of the other estuarine sites. Therefore this site is considered representative for four ecological units: (a) mangrove shrubland

and forest in estuary, (b) oioi-sea rushland in estuary, (c) sea primrose-remuremu-saltwater paspalum-sharp rush herbfield in estuary and (d) saltmarsh ribbonwood shrubland in estuary.

Shore platforms belonging to two sites of national geological significance occur within the Otamatea River Confluence site; these are the Puketotara Peninsula Miocene sediments and the Pakaurangi-Puketi shelf sediments on the Hukatere peninsula side (Kenny & Hayward 1996).

ONERIRI STATION HOMESTEAD FOREST REMNANTS

| | |
|----------------|--|
| Survey no. | Q09/022 |
| Survey date | 30 November 2005 |
| Grid reference | Q09 291 444 (2 remnants) |
| Area | 28.7 ha (28.5 ha forest, 0.2 ha wetland) |
| Altitude | 40-120 m asl |

Ecological units

- (a) Kahikatea-kanuka forest on moderate hillslope (48%)
- (b) Kanuka-kahikatea forest on local very steep hillslope (35%)
- (c) Tanekaha-tarata-mamangi forest on ridge top (10%)
- (d) Taraire-puriri-karaka forest in gully (5%)
- (e) Kauri forest on ridge top (1%)
- (f) Open water (constructed freshwater farm pond) (1%)

Landform/geology

Hillslopes and gully underlain by Miocene thinly interbedded sandstone and mudstone, and gravelly sandstone (Waitemata Group).

Vegetation

This forest remnant is in two blocks, divided by a farm track. The eastern block is very steep and fully fenced, however the western block is moderately sloping and open to grazing animals. Pines along the southern edge of the eastern block have been felled recently. At the top edge of the eastern block, a row of tall pines along the crest of the steep scarp remains, otherwise both remnants are surrounded by pasture.

(a) The most extensive forest type is kahikatea-kanuka forest, which is entirely within the unfenced western block. Puriri, kohekohe, rewarewa, taraire and emergent kauri rickers are frequent components of the canopy here. Also present are scattered tanekaha, rimu, totara, mamaku and epiphytic puka.

(b) The major forest cover in the eastern block is similar to type (a), however kanuka is more abundant than kahikatea. Tanekaha is a frequent and rather unusual associate of kahikatea in this forest type. Also frequent are rewarewa, taraire, mamangi and tarata. Ti kouka is occasional.

(c) Dry ridges extending down from the scarp support young tanekaha-tarata-mamangi forest, with associated frequent kanuka, rewarewa, ti kouka, lancewood, mapou and mamaku.

(d) A small gully running eastwards along the southern edge of the eastern block is forested with taraire, puriri and karaka, associated with frequent kahikatea and occasional mapou, ti kouka, titoki, rewarewa, pukatea and puka.



Q09/022 Oneriri Station Homestead Forest Remnants

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

F
 >F

0 250 500 1,000 Metres



(e) A small area of kauri forest occurs within the eastern block on a prominent knoll above the gully. This appears to have one mature tree and numerous rickers.

(f) A small farm pond is present in the western block. It is surrounded by pasture.

Fauna

Paradise shelduck, shining cuckoo.

Significance

Mature kauri forest (e) is extremely rare in Otamatea ED Northland, hence even one mature tree surrounded by younger kauri is a representative unit. This site

is also representative for three other ecological units: (a) kahikatea-kanuka forest on moderate hillslope, (b) kanuka-kahikatea forest on local very steep hillslope and (c) tanekaha-tarata-mamangi forest on ridge top. The forest in this site serves some important slope stability and riparian protection functions.

PUKETOTARA FOREST REMNANT 13

| | |
|----------------|------------------|
| Survey no. | Q09/024 |
| Survey date | 30 November 2005 |
| Grid reference | Q09 304 440 |
| Area | 9.7 ha |
| Altitude | 20–40 m asl |

Ecological units

- (a) Taraire-kowhai-kahikatea forest on moderate hillslope (60%)
- (b) Kowhai-kanuka-kahikatea forest on moderate hillslope (20%)
- (c) Kauri forest on ridge top (15%)
- (d) Kanuka treeland on moderate hillslope (5%)

Landform/geology

Coastal hillside of melange (undifferentiated Mangakahia & Motatau Complex lithologies), and Miocene thinly interbedded sandstone and mudstone (Waitemata Group).

Vegetation

This site comprises a single indigenous forest remnant on a south-facing slope surrounded by pastoral farmland. Before mudflats on its southern side were reclaimed from the sea, this forest would have been directly adjacent to the harbour. The slope rises moderately from the former coastal margin, and a small creek now tracks the edge of the old mudflat before turning out into a canal heading for the floodgates.

- (a) The major forest type is a diverse community where taraire, kowhai and kahikatea are common, with puriri, kauri and kanuka also noticeably frequent components of the canopy. Occasional rewarewa, titoki, ti kouka and lancewood are present.
- (b) Kowhai-kanuka-kahikatea forest occurs down on the former coastal fringes.
- (c) On the highest point, kauri ricker forest with occasional kahikatea is present.
- (d) A finger of kanuka treeland extends around the slope to the north.

Fauna

Kukupu (Gradual Decline).

Significance

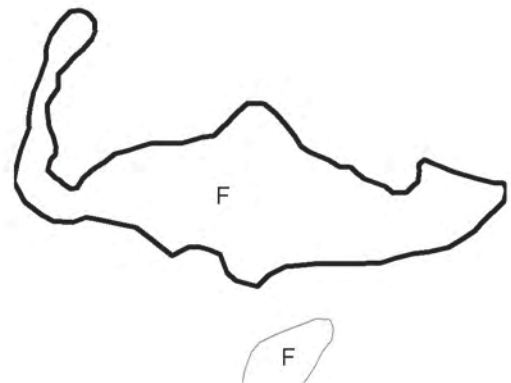
This site is significant as habitat for a threatened bird species (kukupu) and because it is near Ruataniwha Forest Remnant (Q09/030), a former small island which is now a hillock in the paddock to the south, which would otherwise be relatively isolated without it. Taraire-kowhai-kahikatea forest on moderate hillslope (a) and kowhai-kanuka-kahikatea forest on moderate hillslope (b) are both unique and representative examples of their types in Otamatea ED Northland.



Q09/024 Puketotara Forest Remnant 13

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



KAIPARA FOREST, PUKETOTARA

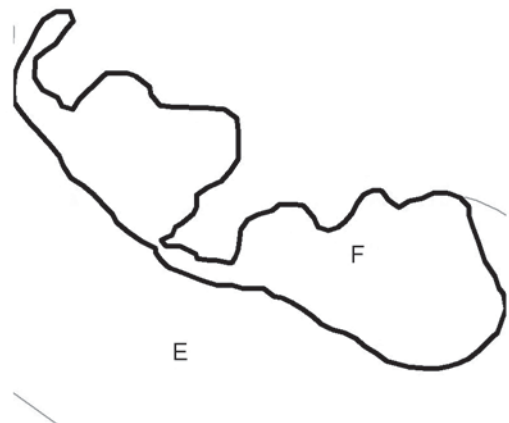
| | |
|----------------|------------------|
| Survey no. | Q09/026 |
| Survey date | 30 November 2005 |
| Grid reference | Q09 305 422 |
| Area | 25.1 ha |
| Altitude | 0-80 m asl |



Q09/026 Kaipara Forest, Puketotara

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Ecological units

- (a) Kauri-kanuka forest on moderate to steep hillslope (40%)
- (b) Kanuka forest on moderate to steep hillslope (30%)
- (c) Taraire-puriri forest on steep coastal margin (20%)
- (d) Pohutukawa forest on steep coastal margin (10%)

Landform/geology

Coastal headland underlain by melange (undifferentiated Mangakahia & Motatau Complex lithologies) and Miocene thinly interbedded sandstone and mudstone (Waitemata Group).

Vegetation

This natural area comprises two compact groves of indigenous forest joined by a narrow strip of kanuka trees, both groves on very steep coastal hillslopes sloping southwest towards sandy beaches of the Oruawharo River North Coast (Q09/020). The northern edges of the remnant abut grazed pasture. Stock access appears to be unrestricted, resulting in little understorey regeneration, at least on the upper slopes.

(a) The most extensive forest type comprises common kauri rickers and kanuka, and is restricted to upper slopes and ridge tops. Rimu is a frequent component, and tarata, mamaku and karaka are occasional. Manuka is present on paddock edges.

(b) Kanuka forest is distributed throughout upper- and mid-slopes, linking kauri ricker forest at the upper edge with taraire-puriri and pohutukawa forest on the coastal margin.

(c) The type and extent of coastal forest was interpreted from 2002 aerial photography only, and appears to occupy lower slope positions just above a fringe of pohutukawa. It is likely to be similar to taraire-puriri forest on Oneriri Pa Forest (Q09/027).

(d) Pohutukawa forest extent was also interpreted from aerial photography (flown in 2002), which clearly show a continuous belt of very large trees overhanging beaches and extending only 5-10 metres up the slopes, merging with type (c).

Fauna

Not surveyed.

Significance

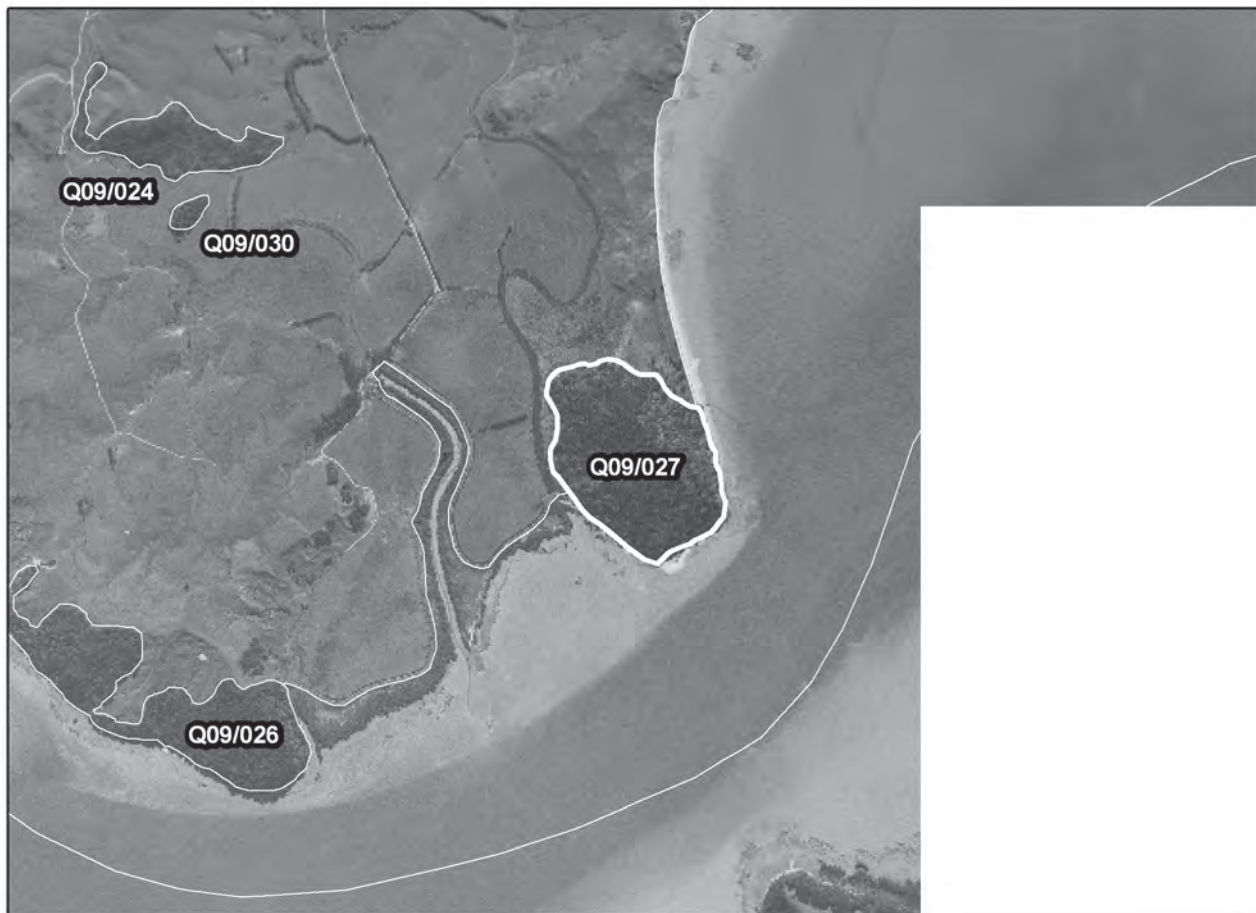
Though it was not possible to fully survey the coastal margins of the site, its compact shape and apparent habitat diversity contribute to its significance as a Level 1 site. The sequence from kauri-kanuka forest (a) to kanuka forest (b) to taraire-puriri forest (c) to pohutukawa forest (d) is a representative vegetation sequence from ridge top to coastal fringe on Northland Allochthon melange geology. The forest also stabilises the steep coastal slope and provides a protective vegetation buffer to the Oruawharo River North Coast site (Q09/020), in which only 16% of the land margin has coastal indigenous vegetation (the lowest percentage of all the estuarine sites surveyed in this study).

ONERIRI PA FOREST

| | |
|----------------|------------------|
| Survey no. | Q09/027 |
| Survey date | 30 November 2005 |
| Grid reference | Q09 320 430 |
| Area | 27.3 ha |
| Altitude | 0-60 m asl |

Ecological units

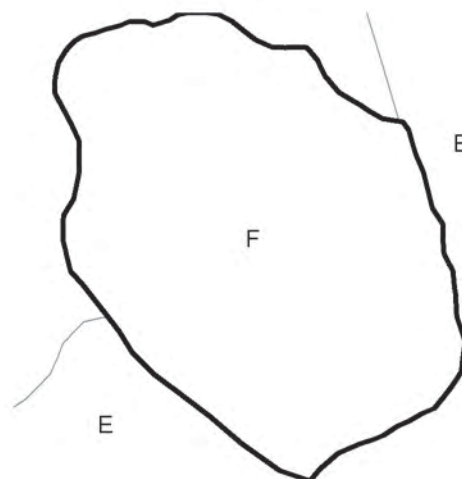
- (a) Pohutukawa-kanuka forest on steep coastal margin (70%)
- (b) Taraire-puriri forest on steep coastal margin (20%)
- (c) Kanuka forest on ridge top (10%)



Q09/027 Oneriri Pa Forest

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Landform/geology

Coastal headland underlain by Miocene thinly interbedded sandstone and mudstone (Waitemata Group).

Vegetation

Oneriri Pa is a prominent headland on the southeastern tip of Puketotara Peninsula. It is entirely forested, and is surrounded by sandy beaches, mudflats and mangroves on its seaward side, and reclaimed mudflat on its northern side.

The pasture on the former mudflats appears to be prone to flooding and seems to contain high cover of exotic rushes and pampas (this area was not surveyed further; though a closer inspection of these flooded pastures may reveal higher wetland habitat values). The situation with fencing is not clear; livestock may have access to the understorey of the forest, which would reduce its natural function and character.

(a) Pohutukawa and kanuka are equally common in the canopy over west- and east-facing slopes of Oneriri Pa, and frequent mamaku and occasional kowhai, puriri, ti kouka and nikau occur.

(b) Taraire-puriri forest occupies the south-facing slope. In this type kahikatea and karaka are frequent, with occasional ti kouka, kohekohe, nikau and kowhai.

(c) Kanuka forest occupies the ridge top, and may have developed following more recent clearance associated with the pa.

Fauna

Not surveyed.

Significance

Ecological unit (a) is considered to be the best and most extensive example of pohutukawa-kanuka forest on steep coastal margin in Otamatea ED Northland. It provides a protective vegetation buffer to the estuarine habitats of the Oruawharo River North Coast (Q09/020), which has the lowest percentage of indigenous coastal vegetation on its land margin (16%) out of the five estuarine sites identified. This site has cultural and archaeological significance as well as ecological significance.

UPPER WHAKAKI RIVER FOREST REMNANTS

| | |
|----------------|--------------------------|
| Survey no. | Q09/028 |
| Survey date | 13 December 2005 |
| Grid reference | Q09 328 466 (2 remnants) |
| Area | 6.7 ha |
| Altitude | 0-40 m asl |

Ecological units

(a) Totara-kanuka-puriri forest on gentle coastal margin (55%)

(b) Totara forest on gentle coastal margin (45%)

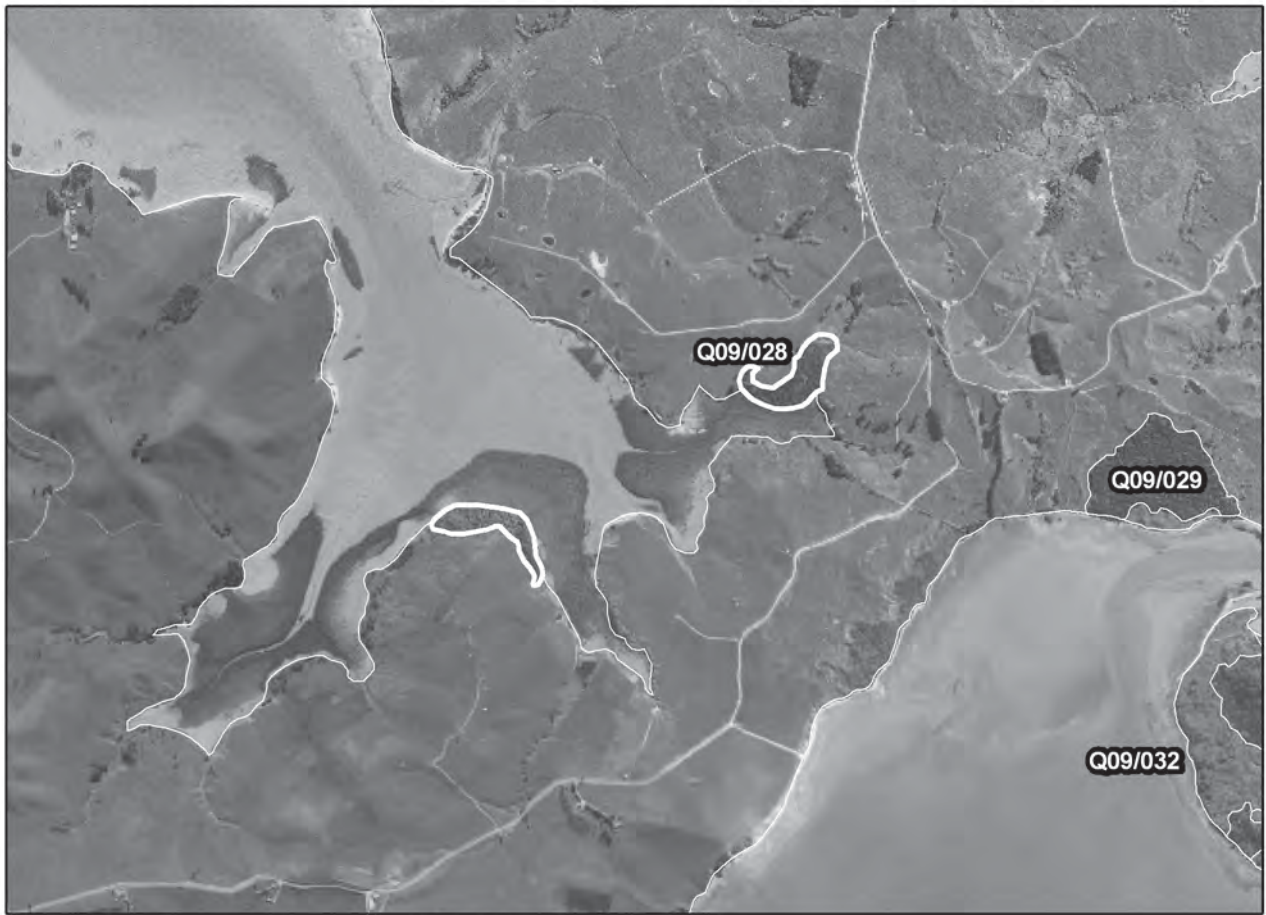
Landform/geology

Coastal hillsides underlain by Oligocene micritic limestone (Mahurangi Limestone, Motatau Complex) and melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

Two small remnants of coastal forest are linked by their common borders with mangrove forest at the upper reaches of the Whakaki River, although they are physically separate by approximately 700 m.

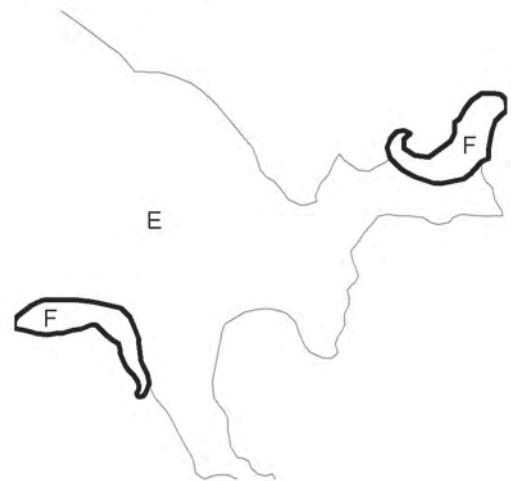
(a) The eastern patch extends along the north coast of a small inlet with mangrove shrubland. The most abundant canopy tree is totara, followed closely by kanuka and puriri which are both common. Kowhai and ti kouka are



Q09/028 Upper Whakaki River Forest Remnants

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



frequent, with occasional rimu, rewarewa, kauri, karaka, mamaku, nikau and mamangi. Several mature radiata pine trees are present at the upper edge and on the western end by the creek.

(b) The western patch is less diverse and also less dense (verging on becoming treeland), with only totara as an abundant canopy tree. Other species present include ti kouka, karaka, puriri, kowhai and hawthorn.

Fauna

Kingfisher.

Significance

Totara-kanuka-puriri forest on gentle coastal margin (a) is unique and representative, despite being relatively small and isolated. These are the only two areas of forest remaining on the upper Whakaki River and as there is no other forest (indigenous or exotic) within a 1 km radius, these remnants are likely to be important as 'stepping stones' for forest birds moving between the extensively forested areas of Puketotara Peninsula and the large area of forest and shrubland on Gittos Point Forest and Shrubland (Q09/032).

KAIRA CREEK FOREST

| | |
|----------------|------------------|
| Survey no. | Q09/029 |
| Survey date | 15 December 2005 |
| Grid reference | Q09 345 465 |
| Area | 11.1 ha |
| Altitude | 3-70 m asl |

Ecological unit

(a) Kahikatea-puriri-taraire-kanuka forest on gentle coastal margin (100%)

Landform/geology

Coastal hillside underlain by melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

This site comprises a compact indigenous forest remnant on the northern shore of the lower Kaira Creek (part of the Oruawhoro River North Coast Q09/020). The remnant is surrounded by pasture, and most of the coastal strip has been cleared, leaving the forest to extend to the coastal margin at only two places. The site appears to be partially fenced, but may still be grazed and trampled by livestock. The canopy is particularly diverse and species evenly distributed within it, with none of the four major canopy species exceeding 20% cover over the entire area. Young kahikatea are emergent over puriri, taraire and kanuka (the latter perhaps more common on edges), and rewarewa frequently pokes above the surrounding canopy. Karaka is only slightly less common than other canopy species. Pukatea, nikau, kohekohe and ti kouka are present in small amounts. Two mature kahikatea on the western side are probably survivors from past land clearance.

Fauna

Not surveyed.

Significance

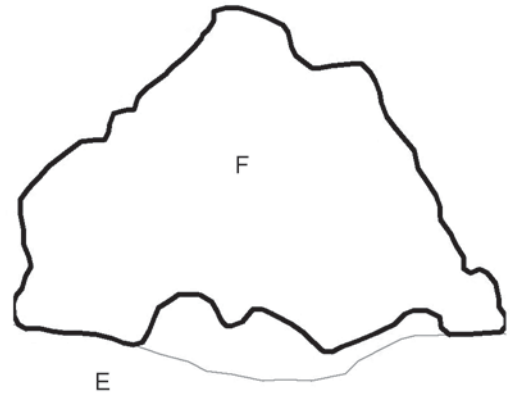
This is a unique and diverse coastal forest type with occasional mature emergent podocarps, which are now very rare in Otamatea ED Northland. All of these attributes render it a representative ecological unit. Grazing and trampling are probably affecting regeneration in the remnant, and there will be other mammalian threats to its natural values.



Q09/029 Kaira Creek Forest

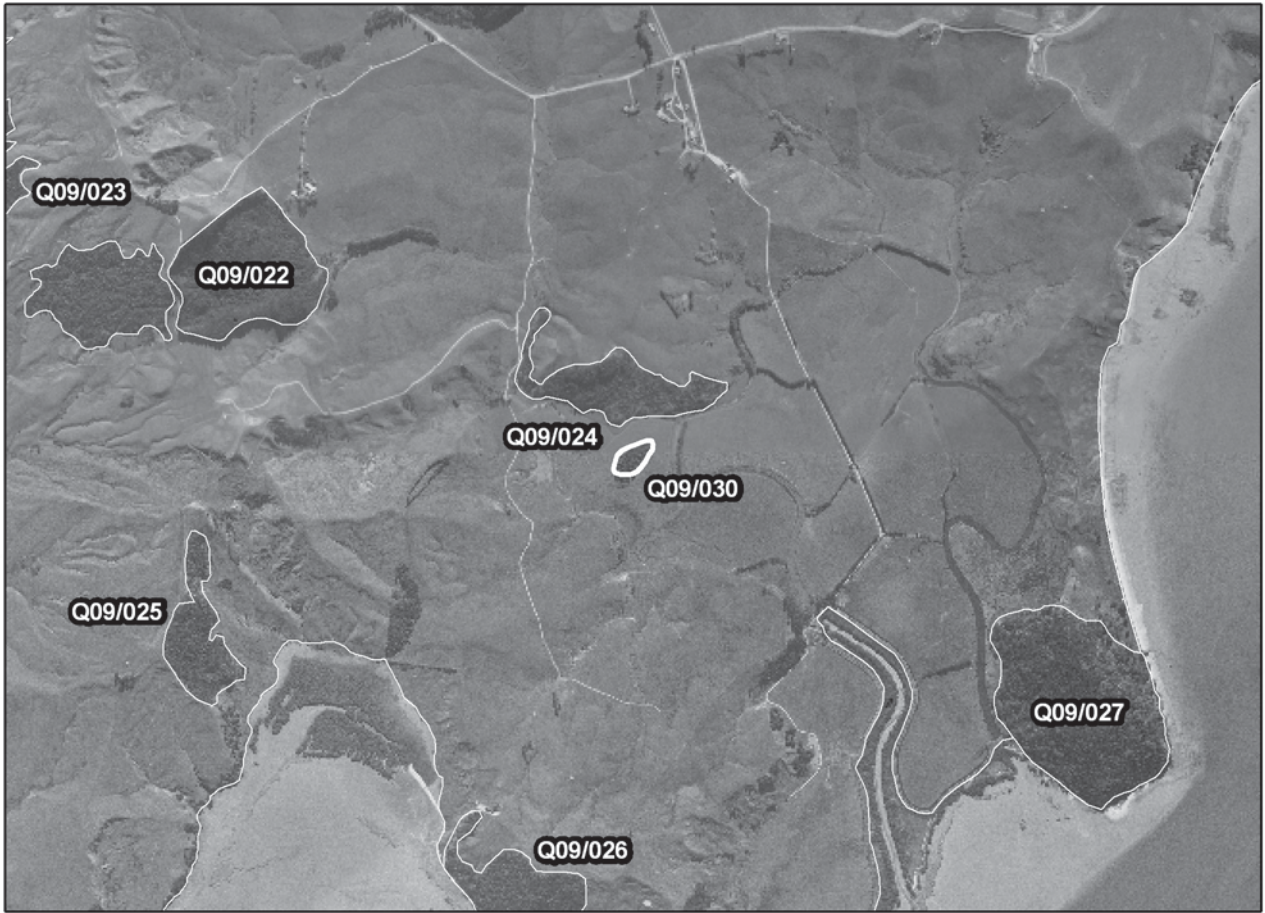
S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



RUATANIWHA FOREST REMNANT

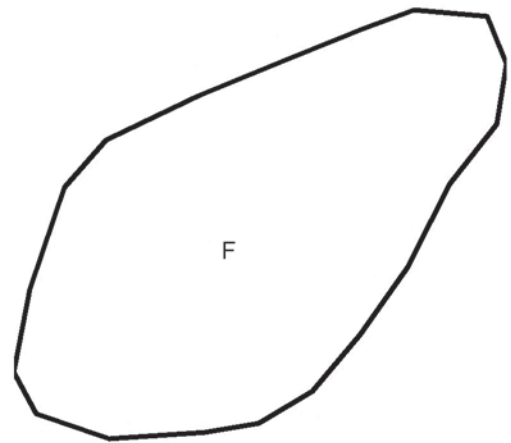
| | |
|----------------|------------------|
| Survey no. | Q09/030 |
| Survey date | 30 November 2005 |
| Grid reference | Q09 305 438 |
| Area | 0.9 ha |
| Altitude | 20-20 m asl |



Q09/030 Ruataniwha Forest Remnant

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Ecological unit

(a) Kauri-karaka-puriri forest on gentle hillslope (100%)

Landform/geology

Pleistocene alluvial and/or estuarine sediments underlying low constructional terrace remnant.

Vegetation

This little knoll used to be an island in a tidal inlet of the Oruawharo River, but since land reclamation in the bay between Kaipara Forest (Q09/026) and

Oneriri Pa Forest (Q09/027), it has become engulfed by dry pastoral land drained by various canals and ditches. The main canopy species on the site are kauri, karaka and puriri, followed by frequent kowhai, tarata and kanuka. Also found here are scattered individuals of titoki, matai, white maire, ti kouka, nikau and *Coprosma macrocarpa*. The understorey mostly comprises exotic grasses, but the indigenous grasses *Oplismenus birtellus* subsp. *imbecilis* and *Microlaena stipoides* are common on leaf litter in shady patches. Few seedlings or saplings are present, however occasional karaka seedlings were noted. This site was fenced > 12 years ago (Tony Walden pers. comm.), but little regeneration has occurred in that time, suggesting that fences may have been breached at times by livestock grazing in surrounding paddocks.

Fauna

Kingfisher.

Significance

This site contains a unique and representative ecological unit in Otamatea ED Northland. It is an anomaly as it is somewhat disconnected from its original formative influences (i.e. tidal waters flowing around it). Ruataniwha is believed to be culturally significant to Te Uri o Hau (Tony Walden, pers. comm.).

GITTOS POINT FOREST AND SHRUBLAND

| | |
|----------------|---|
| Survey no. | Q09/032 |
| Survey date | 14 December 2005 |
| Grid reference | Q09 352 455 (3 remnants) |
| Area | 92.4 ha (74.5 ha forest, 17.9 ha shrubland) |
| Altitude | 0–60 m asl |

Ecological units

- (a) Kanuka forest on moderate to steep hillslope (50%)
- (b) Woolly nightshade–mapou shrubland on gentle coastal margin (25%)
- (c) Kanuka–puriri forest on gentle coastal margin (15%)
- (d) Kanuka forest on gentle coastal margin (10%)

Landform/geology

Coastal headland underlain by Cretaceous sandstone and mudstone (Mangakahia Complex) and melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

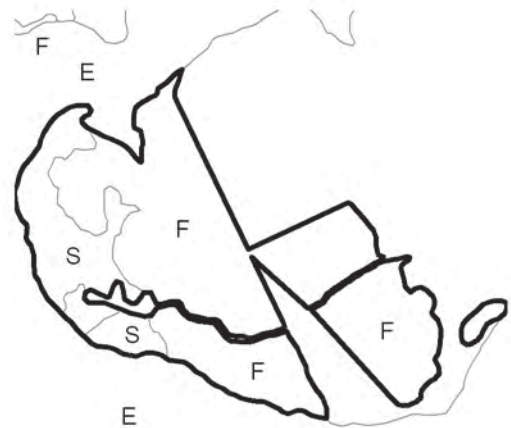
This site comprises regenerating forest and shrubland covering the end of Gittos Point on the Oruawharo River, which was named after a late 1800s Wesleyan missionary called William Gittos (Scott 1987). A large part of the headland is covered with forest and shrubland (some of it with a substantial exotic component), but it is dissected by a wedge-shaped paddock, and a private road with some clearance at the end of it. There appear to be one or two buildings in the forest at the end of the road. Fencing along the paddock margin of the main areas appears to be complete. The thickness of the undergrowth suggests that stock have not been into these areas for a number of years and



Q09/032 Gittos Point Forest and Shrubland

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



regeneration is proceeding well. An additional small forest remnant on the southern coast of the headland is included in the site. There is a cemetery on a small grassy hill by the coast nearby.

(a) Dense, young kanuka forest covers much of the higher, western parts of the remnant. A great diversity of other indigenous species occur occasionally, including mapou, ti kouka, mamaku, ponga, kahikatea, totara, hangehange, mahoe, mamangi, mingimingi and putaputaweta. Gorse is present, particularly on edges. Sparse radiata pine and maritime pine are emergent above the kanuka in small areas.

(b) The bulk of the lower, western part of the remnant bordering the Oruawharo River North Coast (Q09/020) is covered in woolly nightshade-mapou shrubland. These two species are equally common and have frequent ti kouka and totara saplings associated with them. Scattered large puriri, radiata pine and maritime pine are present.

(c) Kanuka is dominant and puriri is common in the vegetation of the northern coast, which is nestled in a protected gully mouth. Here, woolly nightshade and brush wattle appear frequent, and there are occasional indigenous species including mamaku, ti kouka and kahikatea. Both species of the aforementioned wilding pine are occasionally emergent here also.

(d) In the small, southern coastal remnant, abundant kanuka is associated with frequent karaka, puriri, kowhai, totara and kahikatea. Occasional species include taraire, ti kouka, mamangi, manuka, *Coprosma rhamnoides*, *C. macrocarpa*, mapou, pohuehue, small-leaved milk tree, pohutukawa, gorse, woolly nightshade, blackberry, macrocarpa and hawthorn.

A specimen of carmine rata (regionally significant) was collected from here (referred to as 'Stephen's Bush') in 1935 (AK 211359), but its continued presence is not confirmed.

Fauna

Kingfisher.

Significance

Pest plants such as woolly nightshade, gorse and wilding pines alter the natural character of this site, which is otherwise a good example of successional coastal forest. All ecological units except (b), which is the most affected by weed invasion, are considered representative of their types. Due to its large extent, this site forms an important protective buffer to the fringes of the Oruawharo River North Coast site (Q09/020), which is otherwise relatively denuded, with only 16% indigenous coastal vegetation.

ORUAWHARO SCHOOL FOREST

| | |
|----------------|--|
| Survey no. | Q09/033 |
| Survey date | 6 December 2005 |
| Grid reference | Q09 373 469 (2 remnants) |
| Area | 21.8 ha (9.5 ha forest, 12.3 ha shrubland) |
| Altitude | 7-60 m asl |

Ecological units

- (a) Totara-mapou shrubland on moderate hillslope (55%)
- (b) Totara-kanuka forest on moderate hillslope (35%)
- (c) Kowhai-totara-puriri-pukatea forest in gully (10%)

Landform/geology

Coastal hillside underlain by melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

This site is on the southwest-facing slope of a gentle gully draining into saltmarsh; the upper reaches are covered in shrubland and the lower reaches in forest.