

Pateke (Brown teal - *Anas aucklandia chlorotis*) at Waikawau Bay.

Status: protected, endangered.

1 Background: Pateke in the Northern Coromandel.

Pateke are birds that prefer the edges of heavily vegetated wetlands and rivers. However, they do show adaptive behaviour and can also be found in high country, at estuary mouths, shore side and near pastureland. These dabbling ducks are very active at night or early evening and pairs can be seen or heard at this time, in the higher reaches and streams. Pateke are very gregarious and develop large roost sites on stream banks. They are often seen flocking/roosting in the open during the day. Birds pair for life and males can be very aggressive – particularly in the breeding season.

Wetland drainage, forest decline, shooting (despite protected status since 1921) and predation has seen a serious decline in this bird species over the last 80 years. In most places in New Zealand they have disappeared completely. However, a remnant population has hung on in the Upper Coromandel¹, but until the reintroduction of birds at Pt Charles in 2002 – 2004, there appeared to be no noticeable increase in numbers.

Some small recruitments may have taken place from Great Barrier Island where the largest, and nearest populations occur, but there is no proof of this.

In 2002 the first of four translocations of brown teal took place at Port Charles, a small coastal settlement some 15kms north of Waikawau Bay. The birds were released into the mouth of the Tangiaro Stream at Pt Charles, and were supplementary fed for some weeks before many dispersed into the surrounding pastures and wetland areas. Port Charles was selected because of intensive predator control and significant volunteer local landowner support. Moehau Environment Group was instrumentally involved with this initiative, although it was a Department of Conservation project with funding support from Banrock Wines.

Extensive pest control, particularly of wild cats and mustelids was carried out, by Moehau Environment Group, for several years as a precursor to the re-introduction at Port Charles. This pest control is ongoing. The spread of birds to, and the increase of birds in, areas adjacent to Pt Charles, is due to the effectiveness of this pest control and the pest control being carried over much of the Upper Peninsula.

Attrition rates from the first translocation were low (mostly killed by vehicles on roads) and a further three translocations took place over the next three years. Many of the birds were fitted with transmitters in those first two years, but not subsequently.

As the populations increased from breeding and translocation, small flocks began to disperse into other areas including Waikawau Bay. It was cause for celebration in 2004 when 11 pateke were observed roosting in the Waikawau Bay Stream, including some with transmitters.

Pateke had been noted sporadically in Waikawau Bay before, with a pair back in 1984 taking up residence in a stream at the south end of the Bay for two months before leaving². A further pair was discovered nesting near a drainage channel in the extreme north-western corner of the flat pasturelands behind Waikawau Bay in the mid 1990's. Efforts were made with animal traps to protect

¹ Both Port Jackson/Fletcher Bay, and Carey's Road at Port Charles have had pateke resident in the past 80years -pers. comm.- the Barnett family

² Pers. comment Wayne Todd.

them, but all ducklings were predated even though six mustelids were caught³. Any other sightings had been for very brief periods (of a day or so).

In 1999, 35 kill traps were installed for trapping mustelids and hedgehogs⁴ along the foreshore of Waikawau Bay and the northern margins of the estuary system⁵. Traps are serviced on a monthly basis, except over the summer period when they are checked weekly or fortnightly. Further trap lines for mustelids were installed on the eastern, western and southern margins of the wetlands, and throughout the whole catchment, in 2005. Cat traps are also part of this regime, within the Bay proper, with extra traps installed over the summer months.

In 2006, 150 rat traps were installed around the margins of the Waikawau Bay estuary and freshwater wetlands system (at the north end of Waikawau Bay). At this time 75 bait stations were also installed around the perimeter and on two lines in the heart of the wetlands, along with another 75 on the margins of the estuary system and the road.⁶ Rat traps are checked approximately every two weeks. Bait stations are serviced annually. Data is kept of all rats and mice trapped. Monitoring of the effectiveness of trapping is done every three months. Monitors showed that rat numbers declined significantly in the first few years of rodent control, but that mouse numbers then increased. Mouse control is a prime focus of animal pest control in the Waikawau Bay estuary/wetland project area. Additional rodent traps were installed in 2009 and again in 2015. There are now in excess of 250 traps in the Waikawau Bay Wetland area. Traps are serviced every two – three weeks.

The introduction of larger kill traps for wild cats, along with extensive trapping of rodents (protection of ducklings) in some areas, has seen significant increases in pateke counts in the Waikawau Bay catchment.

There is an intensive infrastructure for the control possums in the northern part of Waikawau Bay. Some possum control was carried out on an intermittent basis until late 2009 when control was stepped up and the infrastructure improved. A 100m wide wetlands perimeter now has a bait station infrastructure to rodent control density. These bait stations are serviced annually. There is no possum control for the Waikawau Bay area south of the Waikanae Valley stream exit.

Annual flock counts of pateke in the Waikawau Bay catchment, by the author, began in 2007.

2 Objectives:

- To count pateke numbers, in the Waikawau Bay area, so that trends in pateke abundance can be determined.
- To monitor the effectiveness of animal pest control methods utilized in the Waikawau catchment.

3 Methodology: (See Map - Appendix One)

3.a. For the purposes of the census, a flock site is defined as “a general area where more than two birds congregate during the day, particularly during the summer-autumn periods”.

3.b. Pateke flock roosting sites are tide dependant, so the high tide was chosen for surveys to coincide with maximum numbers of Pateke present at roosting sites.

³ Pers. comment Eddie Murphy, DOC, Coromandel Area Office (since left this position).

⁴ Hedgehogs are trapped along the foreshore and dune systems, as they are one of the main predators of New Zealand dotterels, banded dotterels and Variable Oyster Catcher eggs and chicks.

⁵ This trapping system was modified and expanded in 2009 – 2010.

⁶ Rat traps were not placed in the heart of the wetlands, so that human impacts are minimized in this fragile environment.

3.c A walking survey is carried out by one or two⁷ observers through a number of sites in the Waikawau Bay area.

3.d The flock sites detailed in Appendix One and Appendix Two, plus any other sites known to the observer, were watched and flock numbers counted.

3.e Sites were selected by both DOC and the observers

3.f Hybrid birds (e.g. Mallard-pateke cross) were not counted.

4 Results:

4.1 30, 31 January, 1 February, 2007 Census:

- The lowest number of birds counted was 12 and the highest was 22. Three sites counted.

4.2 2008 Census:

- On the 27th December, 2008, 208 Pateke were counted in the Bay the DOC ranger and two others along a 1km stretch of the Waikawau Stream.
- In the 2008 census, there were approximately 80 birds counted at four sites.

4.3 11, 12, 30 and 31 March, 2009

- Between 69 and 96 pateke were counted at five sites.

4.4 29 and 31 March 2010

- The lowest number counted was 94 and the highest 102 at five sites.

4.5. 3 and 4 February 2011:

- 124 was the lowest number of pateke seen and the highest was 146 at five sites.

4.6 1, 2, 28 and 29 February 2012:

- Between 122 and 182 pateke were counted at five sites.

4.7 11, 12, 28 February and 1 March 2013:

- Between 149 and 197 were counted at six sites

4.8 15, 28 February, 18, 31 March 2014:

- Between 150 and 205 birds were observed at six sites.

4.9 20 February, 6, 20 March and 3 April 2015:

- Between 195 and 212 pateke were counted at six sites.

4.10 11, 24 February, 10 and 25 March 2016:

- Between 143 and 175 were seen at six sites.

4.11 Largest number of Pateke in Counts from Waikawau Bay Area 2008 – 2016

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
17 ⁸	22	94	102	146	183	197	207	212	175

Table One

4.12 Summary of Results: (see notes in Appendix Three and Discussion Section below)

⁷ In some years there have been two observers (sharing the sites), however, in 2011, 2012, 2013, 2015, 2016 there was only one observer.

⁸ Sites specified for count by DOC this year included southern estuary of the Bay but excluded the Northern end. Later sites included streams and sites at Northern end of the Bay where pateke tend to congregate. Therefore, this number is probably an underestimate.

- Numbers of pateke have been steadily rising over nine years of observing, but fell in 2016. This could be caused by a number of factors (see Discussion Section Five below).
- Roost sites are found throughout the catchment.
- During the breeding season sitings of paired pateke are as far afield as the tops of the catchment.

5 Discussion:

The spread of pateke from the initial release at Port Charles has been rapid and wide. During the winter of 2008, seven groups of Pateke ducks and numbers of ducklings were noted in Waikawau Bay. These were seen by a DOC officer during night work doing possum and predator control. These birds were discovered in forest locations in the uplands close to water. Birds have been seen from the highest point (White Star Ridge, 408m), to the rocky headland at the north end of the Bay. On December 27 of 2008, the Officer sited above (and friends), counted 208 ducks in the main river of the Bay. Also in 2008 over 150 birds were counted at Big Bay (close to Colville)⁹ There are up to 50 birds at any one time seen on the Karuna Pond and Lake Gaukroger. Birds have also been seen up to three kilometers inland on one of the tributaries to the Waikanae Valley stream¹⁰.

Out of breeding season, pateke are gregarious and roost and flock communally. A small roost site was established on the Waikawau Bay stream on the Denize Farm roadside in 2008. A major roost site was established near the Waikanae Valley Bridge in a large pohutakawa overhanging the stream, in 2009 - 2010. Shortly after the Waikanae Valley roost site was established the roost on the Denize roadside was largely abandoned, but congregations occurred in overhanging vegetation further downstream some 100 – 200mtres away. Other smaller sites have also been found in “ditches” and minor streams.

The breeding season is from July to December – peaking in September and October. A clutch is between 4-8 eggs and incubation takes 27 – 30 days. Birds fledge at 50 – 55 days. Birds pair for life and males can be particularly aggressive during the breeding season. In this respect the personal observations by the authors and comments from the local DOC Ranger ¹¹have noted that while commentators state that pateke are shy and reclusive birds they can also be very aggressive. During the breeding season sitings of paired pateke are as far afield as the tops of the Waikawau Bay catchment. Pairs are regularly seen along the sides of most streams in the catchment and duckling, (as many as eight in a gaggle), are often sited. Male pateke have been seen on a number of occasions harassing mallards and grey ducks. It has been rumored that male mallards and grey ducks attack and copulate with pateke, with the result being hybrids. Observations at Waikawau Bay do not support this contention; in fact the opposite has been seen to be the case with male pateke the aggressor and pursuer of female mallards in particular.

Pateke have a mixed diet, they eat vegetation, insects, worms and marine crustaceans. They are adaptable therefore able to exploit their environment in order to make the most of the foods available to them. Birds can be seen sieving mud at the base of stream beds and exploit both the estuarine and marine environment at Waikawau Bay. The cockle beds at Waikawau Bay are significant (see Shellfish Report, 2008 - 2009) and pateke are often seen feeding at this location at low tides.

In 2016 the annual pateke counts was lower than the preceding four annual pateke counts. It is speculated that this could be accounted for by any number of the following reasons:

- In the Summer of 2015 – 2016 the mustelid and wild cat population in the area was observed to be greater than that seen in many years and although further traps were dispersed into the field and nine cats were killed in a four week period over early January to early February 2016, trapping did not keep pace with animal pest numbers.
- The Summer of 2015 – 2016 was also very wet and vegetation growth around the major roost site grew exponentially, obscuring access and viewing into the site (this site had much lower count in 2016 than in previous 2-3 years);
- Alternately, a new roost site may have been being developed and utilized but this roost was not found by observers.

⁹ Pers comm., Jackie Goudie of Otautu Bay.

¹⁰ Seen on 2 occasions at dusk in late 2010 by the author and a few days earlier by a neighbour.

¹¹ Richard Goombes (as of 2010, there has been no DOC field ranger based at Waikawau Bay).

6 Conclusions:

- A significant population of pateke is now established in the Waikawau Bay area. They move around, but their main roost appears to be along a main stream feeding the Waikawau estuary – the Waikanae Valley Bridge site-
- The population has increased dramatically over the last ten, due to migration from Port Charles.
- It would appear that there is sufficient cover, breeding and nesting areas, and food sources in the Waikawau Bay area to sustain a flock of 200+ pateke.
- The intensive animal pest control in the Waikawau Bay catchment has probably contributed significantly to this endangered bird's continuing survival and provided opportunity for population expansions.

7 Recommendations:

7.a That the census of pateke be continued on an annual basis for the next five years.

7.b Pest control be intensified to reduce impacts of predators especially cats, rats and mustelid control be upgraded around key roosting and feeding areas.

7.c That more road signs be erected warning motorists that pateke are present on and around the roads.

7.d That further roost sites are searched for on a regular basis and if found included in annual flock counts.

7.e That further research be carried out in relation to the aggressive behaviours toward other ducks, and investigation of their feeding habits in the estuary.



Pateke at Waikanae Valley Stream Bridge December 2008.

Appendix One

Pateke Flock Count Sites:



Appendix Two

Pateke Flock Count Sites:

1. Site1*. Denize farm paddock bridge to Waimanu Road Bridge (Waikawau Stream)
- a distance of 1km approx
E2734307 to E2734826
N6509718 to N6509129
2. Site 2*. Waimanu Road Bridge to Waikanae Stream Bridge
E2734826 to E2735450
N6509129 to N6508445.
3. Site 3. Karuna Pond - a recently created pond E2735440
N6507511
4. Site 4. "Lake Gaukrodger". Also recently created pond in pasture off the Waikawau Beach
Road (Past the Brick House) E2736494
N6507609
- 5a. Any other incidental sightings.
- 5b. During the 2010 survey period, DOC added another site (north estuary mouth)
E2735884
N6509006

*In 2010 a local observer noted a new and large roost developing in a large pohutakawa near the Waikanae Valley road bridge. This site was added to the census as site in its own rite in 2012 (Site 2 changed to Waikanae Valley Stream/bridge only. Waimanu road bridge count numbers included thereafter, in site 1 counts.

Appendix Three

Pateke Flock Count Results

30, 31 January, 1 February, 2007 Census:

site	30 Jan, 2007	31 Jan, 2007	1 Feb, 2007
Karuna Pond - Pateke count	2	2	0
Lake Gaukroger – Pateke count	16	20	12
Camp ground estuary – Pateke count	0	0	0
Totals	18	22	12

Table Two

2008 Census

There were approximately 80 birds counted at four sites (Appendix One and Appendix Two: sites 1, 2, 3, 4)

11th March, 2009 Census:

Site number	Pateke count
Site 1 Denize Bridge-Waimanu Rd Bridge	57
Site 2 Waimanu Bridge - Waikanae Valley bridge	7
Site 3 Karuna pond	15
Site 4 Lake Gaukroger	5
5a. Other sightings	2
total	86

Table Three

12th March, 2009

Site number	Pateke count
Site 1	41
Site 2	4
Site 3	21
Site 4	18
5a. Other sightings	0
total	86

Table Four

30th March, 2009

Site number	Pateke count
Site 1	51
Site 2	9
Site 3	13
Site 4	13
5a Other sightings	8
total	94

Table Five

31st March, 2009

Site number	Pateke count
Site 1	27
Site 2	14
Site 3	17
Site 4	11
Other sightings	0
total	69

Table Six

- The 2 Pateke added to Table Three at no. 5a were seen at a small pond in the uplands behind the wetlands on the Morrison's property.
- In March 2009 a small roost site (of around 40 birds) was located on the Denize stream bank, and on the side of the Waikawau road, near the Waimanu road intersection.
- The 8 Pateke sited under "other sightings" in Table Five, were seen at the outer Waikawau river mouth.
- On the evening of the 30 March 2009 there were 84 pateke feeding in the estuary mouth.
- On the evening of the 31 March 2009, 96 pateke were seen at the estuary mouth.

29 March 2010 Census:

Site number	Pateke count
Site 1 Denize Farm Bridge – Waimanu Bridge	17
Site 2 Waimanu Briidge -Waikanae Valley bridge	65
Site 3 Karuna pond	13
Site 4 Lake Gaukroger	7
Site 5. North Estuary Mouth	0
total	102

Table Seven

31 March 2010

Site number	Pateke count
Site 1	2
Site 2	72
Site 3	17
Site 4	3
Site 5	0
total	94

Table Eight

- A further roost was of around 80 birds was noted near the Waikanae Valley Rd Bridge in early 2010.

3 February 2011 Census:

Site number	Pateke count
Site 1 Denize Bridge to–Waimanu Bridge	25
Site 2 Waimanu Bridge to Waikanae Valley bridge	38
Site 3 Karuna pond	39
Site 4 Lake Gaukroger	22
Site 5. North Estuary Mouth	0
total	124

Table Nine

4 February 2011

Site number	Pateke count
Site 1 Denize Bridge to–Waimanu Bridge	38
Site 2 Waimanu Bridge to Waikanae Valley bridge	34
Site 3 Karuna pond	42
Site 4 Lake Gaukroger	32
Site 5. North Estuary Mouth	0
total	146

Table Ten**1 February 2012:**

Site number	Pateke count
Site 1 Waimanu Rd Bridge	0
Site 2 Waikanae Valley bridge	2
Site 3 Karuna pond	68
Site 4 Lake Gaukroger	52
Site 5. North Estuary Mouth	0
total	122

Table Eleven**2 February 2012:**

Site number	Pateke count
Site 1 Waimanu Rd Bridge	0
Site 2 Waikanae Valley Bridge	2
Site 3 Karuna pond	74
Site 4 Lake Gaukroger	81
Site 5. North Estuary Mouth	0
total	157

Table Twelve**28 February 2012:**

Site number	Pateke count
Site 1 Waimanu Bridge	60
Site 2 Waikanae Valley Bridge	35
Site 3 Karuna pond	51
Site 4 Lake Gaukroger	36
Site 5. North Estuary Mouth	0
total	182

Table Thirteen**29 February 2012:**

Site number	Pateke count
Site 1 Waimanu Bridge	41
Site 2 Waikanae Valley Bridge	37
Site 3 Karuna pond	36
Site 4 Lake Gaukroger	39
Site 5. North Estuary Mouth	0
total	153

Table Fourteen

11 February 2013:

Site number	Pateke count
Site 1 Waimanu Bridge	31
Site 2 Waikanae Valley Bridge	64
Site 3 Karuna pond	37
Site 4 Lake Gaukroger	9
Site 5. North Estuary Mouth	56
total	197

Table Fifteen

12 February 2013:

Site number	Pateke count
Site 1 Waimanu Bridge	20
Site 2 Waikanae Valley Bridge	89
Site 3 Karuna pond	19
Site 4 Lake Gaukroger	15
Site 5. North Estuary Mouth	40
total	183

Table Sixteen

28 February 2013:

Site number	Pateke count
Site 1 Waimanu Bridge	51
Site 2 Waikanae Valley Bridge	56
Site 3 Karuna pond	37
Site 4 Lake Gaukroger	8
Site 5. North Estuary Mouth	0
Other sitings; campground estuary:	7
total	159

Table Seventeen

1 March 2013:

Site number	Pateke count
Site 1 Waimanu Bridge	31
Site 2 Waikanae Valley Bridge	88
Site 3 Karuna pond	23
Site 4 Lake Gaukroger	7
Site 5. North Estuary Mouth	0
Other sitings; campground estuary:	0
total	149

Table Eighteen

15 February 2014:

Site number	Pateke count
Site 1 Waimanu Bridge	14
Site 2 Waikanae Valley Bridge	102
Site 3 Karuna pond	11
Site 4a Lake Gaukroger	13
Site 4b	20
Site 5. North Estuary Mouth	4
Other sitings; campground estuary:	0
total	164

Table Nineteen

28 February 2014:

Site number	Pateke count
Site 1 Waimanu Bridge	25
Site 2 Waikanae Valley Bridge	53
Site 3 Karuna pond	34
Site 4a Lake Gaukroger	15
Site 4b	0
Site 5. North Estuary Mouth	23
Other sitings; campground estuary:	0
total	150

Table Twenty**18 March 2014:**

Site number	Pateke count
Site 1 Waimanu Bridge	13
Site 2 Waikanae Valley Bridge	86
Site 3 Karuna pond	22
Site 4a Lake Gaukroger	18
Site 4b	2
Site 5. North Estuary Mouth	22
Other sitings; campground estuary:	0
total	165

Table Twenty one**31 March 2014:**

Site number	Pateke count
Site 1 Waimanu Bridge	17
Site 2 Waikanae Valley Bridge	125
Site 3 Karuna pond	35
Site 4a Lake Gaukroger	24
Site 4b	4
Site 5. North Estuary Mouth	2
Other sitings; campground estuary:	0
total	207

Table Twenty two

- The small wetland on the other side of the road from Lake Gaukroger was added to census site counts this year (above 4b).

20 February 2015:

Site number	Pateke count
Site 1 Waimanu Bridge	28
Site 2 Waikanae Valley Bridge	108
Site 3 Karuna pond	27
Site 4a Lake Gaukroger	13
Site 4b	11
Site 5. North Estuary Mouth	16
Other sitings; campground estuary:	2
total	205

Table Twenty three

6 March 2015:

Site number	Pateke count
Site 1 Waimanu Bridge	35
Site 2 Waikanae Valley Bridge	130
Site 3 Karuna pond	13
Site 4a Lake Gaukroger	19
Site 4b	10
Site 5. North Estuary Mouth	0
Other sitings; campground estuary:	2
total	209

Table Twenty four

20 March 2015:

Site number	Pateke count
Site 1 Waimanu Bridge	32
Site 2 Waikanae Valley Bridge	99
Site 3 Karuna pond	21
Site 4a Lake Gaukroger	23
Site 4b	0
Site 5. North Estuary Mouth	18
Other sitings; campground estuary:	2
total	195

Table Twenty five

3 April 2015:

Site number	Pateke count
Site 1 Waimanu Bridge	26
Site 2 Waikanae Valley Bridge	138
Site 3 Karuna pond	5
Site 4a Lake Gaukroger	23
Site 4b	0
Site 5. North Estuary mouth	18
Other sitings; campground estuary:	2
total	212

Table Twenty six

11 February 2016:

Site number	Pateke count
Site 1 Waimanu Bridge	3
Site 2 Waikanae Valley Bridge	109
Site 3 Karuna pond	6
Site 4a Lake Gaukroger	17
Site 4b	3
Site 5. North Estuary Mouth	15
Other sitings; campground estuary:	0
total	153

Table Twenty seven

24 February 2016:

Site number	Pateke count
Site 1 Waimanu Bridge	24
Site 2 Waikanae Valley Bridge	107
Site 3 Karuna pond	4
Site 4a Lake Gaukroger	15

Site 4b	2
Site 5. North Estuary Mouth	2
Other sitings; campground estuary:	7
total	161

Table Twenty eight

10 March 2016:

Site number	Pateke count
Site 1 Waimanu Bridge	16
Site 2 Waikanae Valley Bridge	116
Site 3 Karuna pond	6
Site 4a Lake Gaukroger	18
Site 4b	8
Site 5.North Estuary Mouth	5
Other sitings; campground estuary:	6
total	175

Table Twenty nine

25 March 2016:

Site number	Pateke count
Site 1 Waimanu Bridge	43
Site 2 Waikanae Valley Bridge	78
Site 3 Karuna pond	0
Site 4a Lake Gaukroger	16
Site 4b	6
Site 5. North Estuary mouth	0
Other sitings; campground estuary:	3
total	143

Table Thirty