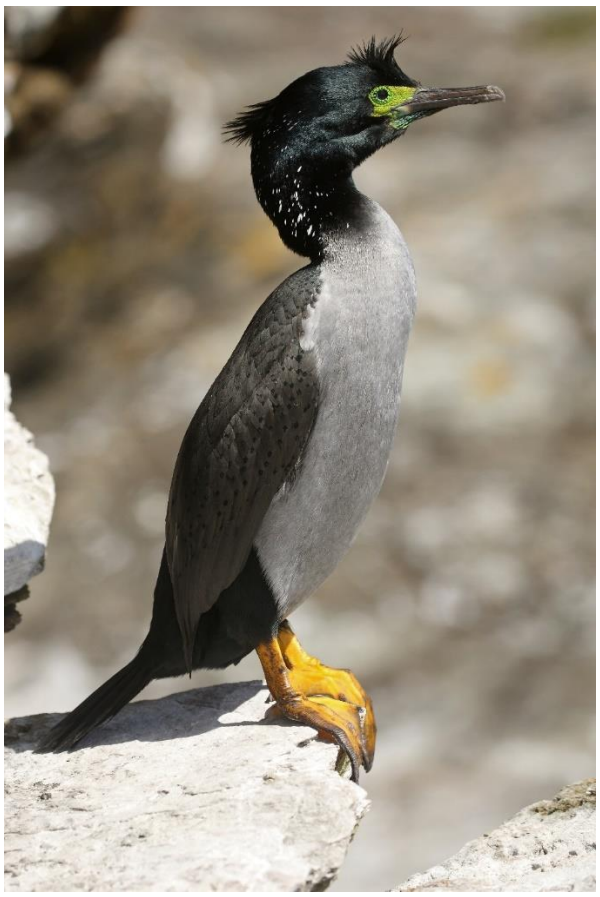
Pitt Island shag census 2016



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Pitt Island Shag census 2016

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EXECUTIVE SUMMARY

A survey of all of the rocky coastline of the Chatham Islands was carried out between Oct-Dec 2016 to undertake a census of breeding Pitt Island shag.

A total of 682 pairs of Pitt Island shag were recorded at 90 breeding sites throughout the islands. These results are similar to that recorded in 1997 (729 pairs) and suggest that the Pitt Island shag population has been stable for at least 20 years.

Most birds breed in small colonies, with mean colony size 7.6 pairs (range 1-36 nests) and 77% of colonies having ≤10 breeding pairs.

Significantly lower counts recorded in 2003 and 2011 are believed to be an artefact of the timing of a single survey missing the peak of breeding at most colonies, hence underestimating the breeding population.

The distribution of Pitt Island shag has changed since 1997. Previously only 47% of birds were found on Main Chatham, now 72% where recorded here. This reflects both an increase in numbers on Main Chatham, and a decline on Pitt and surrounding offshore islands. However, this may also be an artefact of later breeding on Pitt Island and surrounding off shore islands resulting in underestimating the population here.

Pitt Island shag numbers have increased in Te Whanga Lagoon, with birds spreading from Shag Rock onto Motuhinahina Island and breeding with Chatham Island shags at a new colony at Waikato Point.

Ground and boat based surveys (supported by aerial surveys of more isolated offshore reefs and albatross islands) is the most effective method at censusing Pitt Island shags, and is recommended for ongoing monitoring of this species and multiple surveys each season to cover peak breeding is highly recommended to get accurate results.

1. INTRODUCTION

Pitt Island shag (*Stictocarbo featherstoni*) is endemic to the Chatham Islands (Checklist committee 2010). With birds breeding of Chatham Island, Pitt Island, South East Island, Mangere Island, Little Mangere Island, The Castle, The Murumuru Rocks, Rabbit Island, The Sisters, The Forty Fours, The Western Reef and The Star Keys (Bell and Bell 2000).

The breeding season is poorly known, and is somewhat extended, with most laying occurring in August-September, but it can continue until December (Heather and Robertson 2005). There also appears to be some variation between colonies in different parts of the island.

The first full census of Pitt Island shag was carried out in the 1997/98 breeding season, when the breeding population was estimated at 729 pairs (Bell and Bell 2000). .

A second census was undertaken in 2003/04 and recorded 547 breeding pairs (Bester and Charteris 2004) and the most recent census was in 2011, when 434 breeding pairs were recorded (Debski *et. al.* 2012).

The resulting observed population decline of up to 40% has led to the species being listed as Critically Endangered (Robertson *et. al.* 2013).

Wildlife Management International Limited was contracted by the Department of Conservation Marine Threats Team to undertake a census of Pitt Island shags and this report summarises the results of this census.

2. METHODS

This census followed the methods of Bell and Bell (2000) as closely as possible to maximise comparability, similar methods were also used in the 2003 and 2011 census ((Bester and Charteris 2004, Debski *et. al.* 2012). All areas of potential Pitt Island shag breeding habitat, the rocky shoreline and margins of Te Whanga Lagoon where search, either on foot or from a boat.

All breeding sites of Pitt Island shag were recorded on a handheld GPS and the number of breeding pairs counted. A breeding site is defined as a group of nest, separated by >100m from another group of nests. A breeding pair was defined as

- An adult bird apparently incubating
- An adult bird, or birds, guarding small chicks
- Chick on a nest site
- An adult bird/s on an empty nest and showing signs of nest building
- A pair of adult birds together on a nest site

The Western Reef and Ngatikitiki Rocks was surveyed from air, using the Air Chathams Cessna 206 aircraft. These islets were circled and aerial photographs taken. These were later inspected and the number of breeding pairs counted from the photos. Barry Baker provide images from the Sisters taken from the air, but these are unlikely to have provided full coverage of the breeding habitat of Pitt Island shag from these islands.

3. RESULTS

Between 14 October and 1 November 2016 a systematic survey of the entire rocky coastline on Chatham and Pitt Island (including offshore islets) was carried out on foot or by boat. The Western Reef and Ngatikitiki Rocks were surveyed from air on 14 October, and counts made from aerial photographs. The Forty Fours were visited and counted on 8 December. Unfortunately, due to

weather conditions, a visit was not possible and hence counts were unable to be undertaken on The Sisters. Barry Baker provided images from The Sisters which included some breeding shags, but is likely to provide full coverage of the breeding distribution on these islands so is likely an under estimate of numbers from The Sisters.

Pitt Island shags were recorded breeding at 88 sites throughout the islands, with a total of 673 breeding pairs recorded (Figure 1 and Table 1). Significantly more birds were found breeding on Chatham Island than Pitt and surrounding offshore islands (72% of breeding pairs).

The mean colony size was 7.6 pairs (range 1-36 nests), with most (77%) colonies having ≤10 breeding pairs.

Two new colonies were found in Te Whanga Lagoon, with birds spreading from Shag Rock to Motuhinahina Island and birds breeding at Waikato Point, where a new Chatham Island shag colony has developed.

Figure 1. Size and location of Pitt Island shag breeding colonies Oct-Dec 2016.

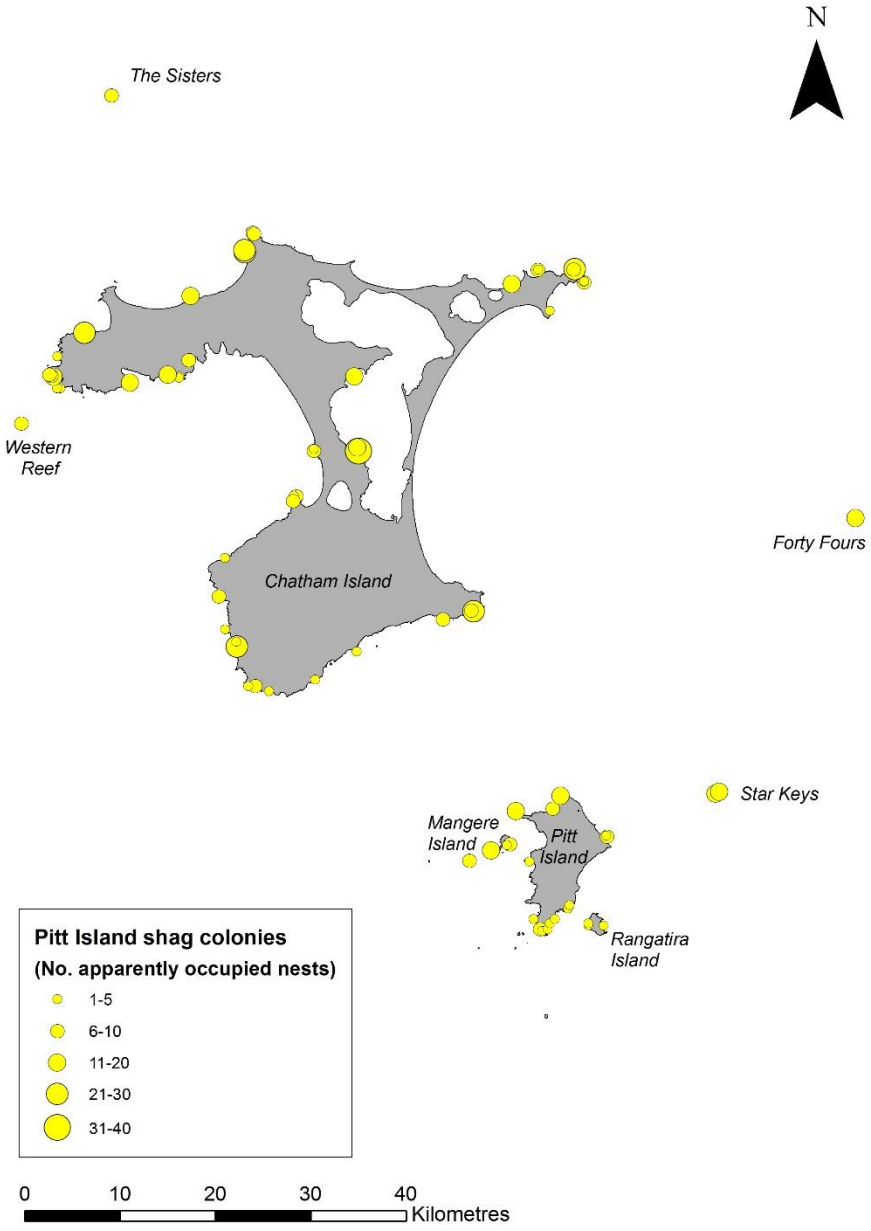

Table 1. Survey Area, survey date, number of breeding pairs of Pitt Island shag, and breeding status of colonies recorded during census Oct-Dec 2016.

Area	Area description	Date	Breeding pairs	Breeding status
Matarakau	Matarakau rocky coastline	17 Oct	0	
Point Munning	Kaingaroa to Te Whakuru Island	16 Oct	76	Nest building, incubating to large chicks
Okawa Point	Okawa Point rocky coastline	17 Oct	5	Half-grown chicks
Cape Fournier	Owenga to Green Point	22 Oct	47	Large chicks
South West Chatham	Green Point to Matakana Creek	22 Oct	46	Large Chicks
Waitangi	Matakana Creek to Waitangi Wharf	20 Oct	18	Nest building and incubating
Red Bluff	Red Bluffs	25 Oct	14	Incubating and small chicks
Port Hutt Bays	Paritu to Port Hutt	27 Oct	0	
Ocean Bay	Port Hutt to Western headland of Ocean Bay	26 Oct	38	Nest building, incubating to large chicks
Point Somes	Western Headland of Ocean Bay to Point Somes	26 Oct	5	Incubating
Western Reef	Western Reef, off Point Somes	14 Oct	7	Incubating
Te Raki Bay	Point Somes to Waitangi West	26 Oct	76	Small to Large chicks
Ngatikitiki Rocks	Ngatikitiki Rocks	14 Oct	12	Nest building and incubating
Cape Young	Mirangi and Cape Young	17 Oct	76	Nest building, incubating to large chicks
Motuhinahina Island	Motuhinahina Island and Shag Rock	1 Nov	50	Small to large chicks
Waikato Point	Waikato Point Te Whanga Lagoon	1 Nov	11	Large chicks
Chatham I. Sub Total			481	
Pitt Island North	Far Point (Paramata) to Kokepa Rock	28 Oct	33	Nest building, incubating to large chicks
Pitt Island East	Kokepa Rock to Glory Bay	28 Oct	10	Nest building, incubating to large chicks
Pitt Island South	Glory Bay to Rangurara	28 Oct	29	Nest building, incubating to large chicks
Pitt Island West	Ranguara to Far Point (Paramata)	28 Oct	1	Incubating
Rabbit Island	Rabbit Island	28 Oct	13	Nest building, incubating to large chicks
Mangere Islands	Mangere and Little Mangere Islands	28 Oct	23	Nest building, incubating to large chicks
The Castle	The Castle	28 Oct	8	Nest building, incubating to large chicks
South East Island	South East Island	28 Oct	13	Nest building, incubating to large chicks
The Star Keys	The Star Keys	28 Oct	43	Nest building, incubating to large chicks
Pitt I. Sub Total			173	
The Pyramid	The Pyramid	6 Oct	0	
The Forty Fours	The Forty Fours	8 Dec	19	Incubating to large chicks
The Sisters	The Sisters	23 Nov	9	Nest building and incubating
Albatross I. Sub Total			28	
Total			**682**	

4. DISCUSSION

A combined survey method of foot and boat is the most effective way to census Pitt Island shags. Although the use of aerial photography on some of the reefs and the albatross islands further offshore is likely to be useful. As Pitt Island shags breed in scattered groups in small caves, crevices and ledges along the rocky coastline in most areas this would make aerial survey extremely difficult. We recommend census on foot, and boat (supported by aerial survey of more remote islets) as the best method for censusing Pitt Island shag.

The 682 breeding pairs of Pitt Island Shags were counted in 2016, similar to the 729 pairs counted in 1997 (Bell and Bell, 2000). Given that this survey missed counting The Sisters, it is likely that the results are even closer to the 1997 count. This result is significantly higher than the 547 pairs counted in 2003 (Bester and Charteris, 2004) and the 388 pairs counted in 2011 (Debski et al, 2012).

The lower counts in 2003 and 2011 could be the result of the timing of the census in relation to shag breeding period during these two surveys. There is considerable variation in the timing of breeding both between and within colonies (Table 1.). As such, if the timing of counts misses peak breeding at several colonies, then numbers are likely to be underestimates.

Therefore, we feel that the 40% decline reported by Debski *et. al.* (2012) is not real, and that the population is likely to be more or less stable.

Future censuses of Pitt Island shags should undertake multiple counts of all areas to ensure that surveys coincide with peak breeding at all the different colonies.

Comparison of counts from different parts of the Islands indicate that there has possibly been some shift in the distribution of breeding birds (Table 2). The number of Pitt Island shag north of Pitt Strait has increased; 47% of birds breed on Chatham I. in 1997/98, whereas now in 2016 72% of birds were recorded from Chatham. With almost all sections of the island showing increased numbers, and particularly in Te Whanga lagoon where numbers have increased from 11 to 61 pairs.

Meanwhile the numbers of shags around Pitt Island have declined, and this is particularly obvious on South East Island (from 63 to 13 pairs). However, this change may also be an artefact of a lower count recorded from Pitt and surrounding Islands, as many of the colonies from here had birds nest building, or incubating eggs, and some pairs may yet to have started breeding. As such it is possible that these declines are again attributed to the timing of counts. Further surveys should be carried out to determine if population declines on and around Pitt Island are real.

To provide greater accuracy of population estimates, multiple counts each season are recommended to take into account the variation in the timing of breeding, both between and within colonies.

Table 2. Variation in the numbers of breeding pairs of Pitt Island shags recorded 1997-2016. 1997 data from Bell and Bell 2000, 2003 data from Bester and Charteris 2004, and 2011 data from Debski et. al. 2012.

Area	1997/98	2003/04	2011	2016
Matarakau	3	11	0	0
Point Munning	29	32	62	76
Okawa Point	7	0	0	5
Cape Fournier	31	24	22	47
South West Chatham	47	57	27	46
Waitangi	33	33	33	18
Red Bluff	6	9	10	14
Port Hutt Bays	0	0	1	0
Ocean Bay	30	10	14	38
Point Somes	19	21	7	5
Western Reef	0	4	-	7
Te Raki Bay	38	20	36	76
Ngatikitiki Rocks	18	9	3	12
Cape Young	68	14	62	76
Motuhinahina Island	11	7	12	50
Waikato Point	0	0	0	11
Chatham I. Sub Total	340	251	289	481
Pitt Island North	55	54	28	33
Pitt Island East	32	36	0	10
Pitt Island South	49	43	15	29
Pitt Island West	6	11	2	1
Rabbit Island	29	18	6	13
Mangere Islands	23	19	15	23
The Castle	6	14	11	8
South East Island	63	45	10	13
The Star Keys	46	43	12	43
Pitt I. Sub Total	309	283	99	173
The Pyramid			-	0
The Forty Fours	9	4	-	19
The Sisters	71	9	-	9
Albatross I. Sub Total	80	13	-	28
Total	**729**	**547**	**388**	**682**

5. ACKNOWLEDGMENTS

No work can be carried out in the Chatham Islands without the co-operation of local residents, and we thank all those land owners who willingly granted access across their property to survey potential shag breeding habitat. Special thanks to Ruka Lanauze and Bubbles Gregory-Hunt, Marlon and Nicola Thomas, and Robin Seymour for providing boat transport to count shags. We thank Air Chathams and in particular pilots Alex, Matt Emeny, Darren Kyle and Charlotte Fuller for undertaking the flights. This project was carried out with funding from the Department of Conservation Marine Threats Team, and we thank Kris Ramm for efficiently managing this.

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