



A review of the abundance and distribution of Striated Caracaras *Phalacroboenus australis* on the Falkland Islands



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The authors dedicate this report to Mr. Ian Strange and Mr. Robin Woods whose earlier surveys laid much ground work.

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“These birds, generally known among sealers by the name of “Johnny” rook, partake of the form and nature of the hawk and crow... Their claws are armed with large and strong talons, like those of an eagle; they are exceedingly bold and the most mischievous of all the feathered creation. The sailors who visit these islands, being often much vexed at their predatory tricks, have bestowed different names upon them, characteristic of their nature, as flying monkeys, flying devils....”

Charles Bernard 1812-13

“A tameness or lack of wariness is an example of the loss of defensive adaptations.... an ecological naiveté...these animals aren't imbeciles. Evolution has merely prepared them for a life in a world that is simpler and more innocent” where humans are entirely outside their experience.

David Quammen (Island Biography in an age of extinction) 1996

ABSTRACT

The Falkland Islands are globally important for the Striated Caracaras (*Phalacrocorax australis*). They reside mainly on the outer islands of the archipelago in strong association with seabird populations, and where human interference is relatively low.

A survey of the breeding population conducted in the austral summers of 2013/2014 and 2014/2015 indicates that the current population is likely to be the highest it has been for perhaps the last 100 years. Comparisons with previous island-wide surveys suggest that the population has increased recently, and that the revised population range for the Falkland Islands is 750 – 850 breeding pairs.

The breeding distribution of the species on the Falklands remains similar to that found during three previous surveys conducted since 1963. Islands that are considered as vegetationally pristine with dense tussock habitat and high densities of small burrowing seabirds supported the highest densities of breeding pairs of caracara, namely Bird Island, Saddle Island, and Beauchêne Island.

The five most important sites in terms of numbers of breeding pairs were: Grand Jason, Steeple Jason, New Island, Beauchêne Island, and Bird Island, with these five sites accounting for 50 % of the breeding population. A high proportion (80 %) of this species' breeding range occurs at National Nature Reserves and privately owned sanctuaries. Ensuring the long-term protection of these key breeding sites is critical for the long-term conservation of this species.

It is recommended that the global population of Striated Caracaras, including those in Tierra del Fuego be re-assessed.

INTRODUCTION

The Striated Caracara (*Phalacrocorax australis*) has a highly restricted breeding range confined to the southern most parts of the Southwest Atlantic. It occurs at isolated island shores and islets in the Magellan and Fuegian regions of Argentina and Chile (Marin *et. al* 2006) and at the Falklands. On the Falklands it is mainly restricted to the outer islands in the north-west, west, and south of the archipelago. The species is classified globally as Near Threatened (NT) on the IUCN Red List due their moderately small population estimated of 1500 - 4000 individuals (Birdlife International 2015).

The species is described as rare across much of its range (Bierregaard 1994), but locally numerous on some of the islands of the Falklands (Woods & Woods 1997; Strange 1996). The Falklands are likely to support the stronghold of the population, although insufficient population data, particularly at remote islands across their breeding range in southern South America, make assessing the status of the global population difficult.

On the Falkland Islands historical literature suggests that the population in the 19th Century was much higher than today; with the species being described as numerous by early visitors to the Falkland Islands. During visits in 1833 and 1834, for example, Charles Darwin wrote that not only were they “exceedingly numerous” but also “extraordinarily tame and fearless,” remarking that it “constantly haunted the neighbourhood of houses to pick up all kinds of offal” and was “very mischievous and inquisitive, quarrelsome and passionate” (Darwin 1845). In 1861 Charles Abbott noted that they were “one of the most common birds in East Falkland.” The decline in the population appears to have related to increased human activity across the archipelago, from the arrival of sealers, who depleted the archipelago’s natural resources. Through to the introduction and subsequent island-wide development of sheep farming (Cawkell & Hamilton 1961).

Population surveys at the Falkland Islands were undertaken during the latter half of the 20th Century, with the first counts derived from a series of visits to offshore islands in the archipelago in 1963-1965 and 1983-1986 (Strange 1996). These counts resulted in estimates of 450 and 337 breeding pairs, respectively for islands visited. During October and November of 1997 and 1998 the Falkland Islands Government funded dedicated island-wide surveys in anticipation of the establishment of the *Conservation of Wildlife and Nature Ordinance 1999*. This survey of 54 islands resulted in an estimated Falklands estimate of 500 pairs (Woods & Smith 1999). An additional 18 islands that were

surveyed in November 2006 (Woods 2007) indicated overall, breeding numbers were stable, with some small local increases based on the islands that were repeat visited.

The breeding range of Striated Caracaras strongly reflects the distribution of seabird and seal colonies and associated habitat. In addition, virtually all of the breeding population is now restricted to offshore islands that are either uninhabited or unfarmed. Even so, in some instances the species, thrives on several islands with farming settlements where they are valued as part of the ecosystem, for nature tourism, or both.

The species favours breeding territories at coastal fringes in dense stands of tussac (*Poa flabellata*) or on rock and cliff crevices on offshore islands. Higher densities of territories are supported where abundant and plentiful food sources are available (Strange 1996; Woods 2007). The species is best described as an opportunistic and aggressive scavenger rather than a predator.

Human threats appear to have been far greater and more consequential between the late-19th century and the mid-20th century. The introduction of sheep farming resulted in the loss of native habitat, and as sheep constituted a new “prey” item, Striated Caracaras became widely designated as a pest. Its height of vulnerability occurred from 1908 to 1930 when the Falkland Islands Government placed a bounty on the species, persecution persisted after the bounty was lifted, and legal protection was only granted in 1964. Nowadays, the species still retains an element of its reputation as a problematic bird, although it has increasingly been recognised as significant to wildlife tourism. A license to cull individuals can only be obtained from the government to alleviate problems arising from “*preventing serious damage to livestock.*”

In order to re-evaluate the breeding population and range of this species we conducted surveys during two austral summers at known and probable locations across its range at the Falkland Islands.

This report lays out initial findings and anecdotal observations of the surveys. It is anticipated and recommended that a more concise technical paper be submitted to a peer-reviewed journal summarizing what follows.

METHODS

The Falkland Islands are approximately 500 km off the southeastern coast of South America, and are situated between latitude 51°40' – 53°00' S and longitude 57°40' – 62°00' W. They are made up of two main islands, East and West Falkland and some 529 smaller islands (Falkland Islands Government island database), covering a total area of 12,000 km². The known distribution of breeding Striated Caracaras occurs on the outer islands of the archipelago from the north-west along an arc to the most southerly islands.

Selection of survey areas

A total of 145 islands were selected based on previous survey and anecdotal information (Strange 1996; Woods & Smith 1999; Woods 2007; FIG Island Database) that supported direct evidence of breeding pairs, either on specific islands or within island groups. We discounted islands when information obtained from landowners, who lived on or frequently visited their islands, indicated an absence of the species, or if no permission from the relevant landowner was obtained. In all instances we obtained the land owners permission before landing on islands we surveyed.

Survey timing

Surveys of breeding pairs and potential breeding territories were carried out over the two austral summers of 2013 - 2014 and 2014 - 2015. To coincide with the peak breeding period during incubation and small-chick rearing periods, work was carried out through November to January. During this period adults remain close to their nests and display aggressive behavior with raucous screeching when intruders approach, thus increasing detectability of breeding territories and nest locations. After eggs hatched in December – January, the distinct call of nestlings also helped us locate nests, including those in dense tussac.

Survey methods

Survey effort was conducted during 6 campaigns, two were undertaken from a yacht and landing on islands, and 4 were dedicated island visits to Steeple Jason (Jan 2013); Sea Lion Island (Jan 2013); Carcass Island (Jan 2013) and Grand Jason (Dec 2014).

The first yacht-based campaign (04-22 Dec 2013) focused on islands to the north and northwest of West Falkland, and included the Jason Islands Group (but not Steeple Jason

and Grand Jason), and islands to the west including the New Island Group (but not New Island). The second yacht campaign (14–30 Nov 2014) surveyed islands in the southwest to the south including New Island, Bird Island and Beauchêne Island. (*See appendix 1 for more details of survey effort*).

On land surveys each surveyor was assigned an area of coastline which was walked and a handheld GPS unit used to record waypoints for breeding territories and/or behavior of adult breeding Striated Caracara. A total of six categories were selected based on previous survey methods (Woods & Smith 1999; Woods 2007): **1. Adult sitting or chicks/eggs seen in nest; 2. Adults displaying or aggressive; 3. At least one adult in a possible breeding territory; 4. Empty nest with an adult or adults in area; 5. Empty nest with no adults; 6. Adult and nest seen but contents not confirmed.**

Binoculars were used to scan for adults holding a territory, to locate nests and to confirm nest contents, particularly along steep cliffs. When possible nests were marked with a GPS position and if possible the contents described. The defensive behavior of breeding Striated Caracara pairs assisted the surveyors with assigning territories or finding nesting areas. In addition, adult breeding birds perch in the vicinity of their nests, often at high points on cliff ledges or tussac pedicels in prominent view making them readily observable from a distance or from boat-based platforms through binoculars.

Limitations of surveys

In some instances islands could not be fully circumnavigated coastally on foot due to steep cliffs, or impenetrable and difficult habitat. At Beauchêne Island, South Jason, and Sea Lion Island we were not able to navigate certain sections of coastline, however, these sections amounted to less than a quarter of the percentage of the total coastline and were surveyed from the yacht when possible.

During the yacht-based surveys it was not possible to land on all islands due to adverse weather and rough sea conditions. Time restraints meant that these islands were surveyed from the yacht by circumnavigating the island and using binoculars to observe Striated Caracara along the coastline. GPS waypoints taken from boat were later interpolated by using Google Earth to mark as waypoints on land. The disadvantage of

boat-based surveys meant nests were rarely observed from the distances and most observations were recorded as *birds in a possible breeding territory*.

RESULTS

Survey effort

Surveys of breeding Striated Caracara pairs were conducted over the two austral summers of 2013 - 2014 and 2014 - 2015. Of a possible 145 islands initially identified as potential sites for breeding pairs 79 were surveyed and 68 confirmed for presence of Striated Caracara.

Category counts

A total of 332 pairs were considered confirmed breeders, with either eggs or chicks observed. We found 11 territories where a nest and adults were observed but the nest contents could not be verified, in most cases because a bird was sitting in the nest and appeared to be incubating. An additional 173 pairs displayed aggressive behavior when approached indicating the likelihood of a breeding territory, although no nest was found. A total of 243 single adults were recorded in a possible breeding territory; this figure is relatively high and was likely due to either one of the pair incubating on the nest or because it included most counts from the boat and surveys along high cliffs (e.g. 50 % of the coastline of New Island was steep cliff). A total of 58 empty nests with adult birds in the vicinity were recorded and these were noted as possible failed or late breeders (e.g. at Steeple Jason we observed nest contents subsequently after the survey). Six empty nests were recorded with no adult birds in the vicinity.

Categories	Count
1. <i>Adult sitting or chicks or eggs seen in nest</i>	332
2. <i>Adults displaying or aggressive</i>	176
3. <i>At least one adult in a possible breeding territory</i>	243
4. <i>Empty nest with one or more adults in area</i>	58
5. <i>Empty nest with no adults</i>	6
6. <i>Adult and nest seen but could not see into nest</i>	11
Total number of apparent occupied and probable breeding territories:	826

Figure 1. Total numbers assigned to categories for breeding Striated Caracara at islands surveyed at the Falkland archipelago during austral summers of 2013-14 – 2014-15.

For consistency with previous surveys (Woods & Smith 1999; Woods 2007) we based island estimates on the assumption that categories 1, 2, 4, 6 represented an *apparent occupied* territory and categories 3 & 5 represented a *probable territory*. Following this method we calculated 577 apparent occupied territories with a further 249 probable territories. The overall estimate for numbers of breeding territories was the sum of the two groups combined (Figure 1).

Current breeding population estimate

The limitations of the survey work meant that not all islands could be fully circumnavigated or were only surveyed from a boat, and these counts ultimately biased the number of *Potential Territories* as nests could not be confirmed. Therefore, on the side of caution, we suggest that a population range for breeding pairs is derived. The current survey visited a total of 79 islands, however, surveys between 1963 and 2014 indicate a total of 120 islands have had a presence of breeding Striated Caracara at some time or another. Islands surveyed previously (Strange 1997; Woods & Smith 1999; Woods 2007), but not during this survey, may include another 30-40 breeding pairs.

Considering the above, we suggest that the current breeding population range is 750 – 850 pairs for the whole archipelago.

Comparison of the breeding population with previous surveys

The population estimate for 1963 – 1965 (c.40 islands) was around 450 pairs, and subsequent surveys in the 1980s of 337 pairs (c.58 island) (Strange 1996). A series of island surveys were next carried out in 1997-98 and 2006 with island population estimates of 500 and 520 pairs (54 and 18 islands), respectively (Woods & Smith 1999; Woods 2007). In addition, a survey at New Island during the summer of 2006 - 2007 revealed 85 territorial pairs (Catry *et al.* 2008), however this figure was not included with Woods 2006 island estimate (but has been incorporated in Figure 2).

Population trends

Data taken from key breeding sites that were surveyed at least 3 or 4 times between 1983 and 2014 indicate there have been some local population fluctuations (Figure 3). From the surveys in 1998 and in 2006 an overall decrease of 20 % was observed. The largest decline was on Grand Jason, with an observed 71 pairs declining to 44 pairs. In

contrast from surveys in 2006 and 2013 - 2014 there appears to have been an overall 144 % increase at the same sites, with the most notable change also at Grand Jason where numbers of pairs increased from 44 to 96.

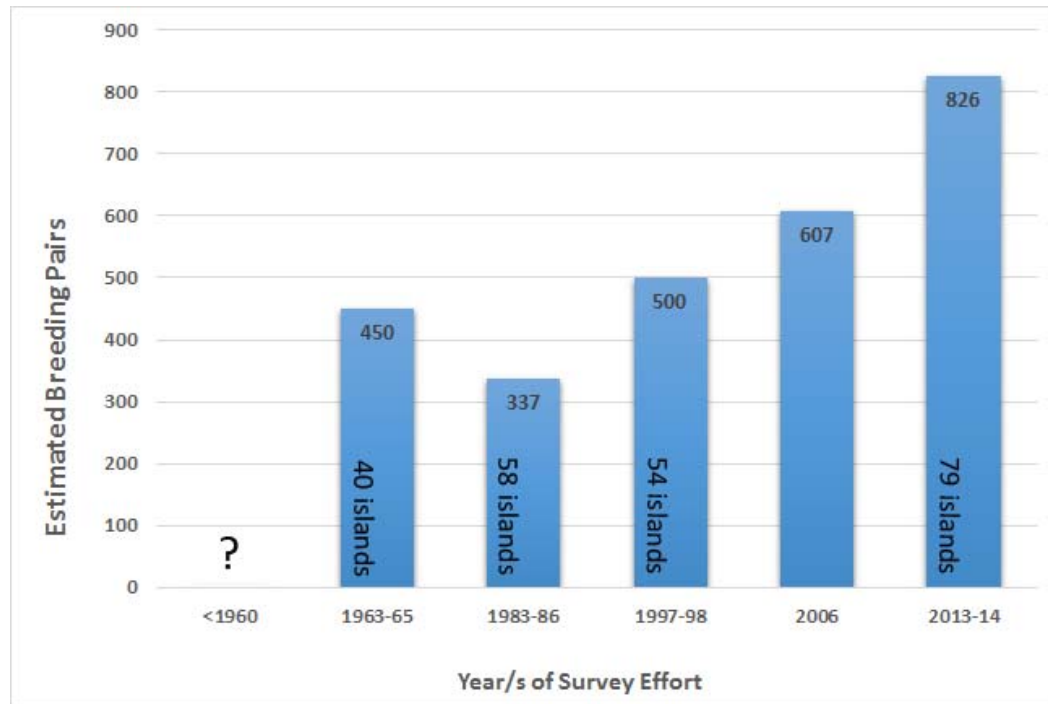


Figure 2. Results of all census counts for Striated Caracara at the Falkland Islands since 1963. (See appendix 5 for details on methods and authors)

	^a 1983-86	^b 1997-98	% Difference b-a	^c 2006	% Difference c-b	^d 2013-14	% Difference d-c
Gibraltar Rock	8	6	-25	NS	0	12	
The Twins	3	6	100	NS	0	14	
West Point	5	NS		7		15	114
Carcass Island	9	15	67	11	-27	27	145
North Fur	2	16	700	16	0	28	75
Flat Jason	20	34	70	26	-24	30	15
North Is. Elephant Jason	6	NS		NS		31	
Bird	20	35	75	30	-14	41	37
Beauchêne	10	32	220	36	13	66	83
Beauchêne	62	NS		NS		70	
New Is.	7	NS		NS		86	
Steeple Jason	40	72	80	64	-11	89	39
Grand Jason	14	71	407	44	-38	96	118
Total	206	305	48	248	-19	605	144

Figure 3. Estimates of the number of breeding Striated Caracara at key sites that have been repeat surveyed between 1983 and 2014. (a. Strange 1997; b. Woods & Smith 1999; c. Woods 2007)

Breeding distribution (re-do using total estimate)

The Jason group in the far northwest of the Falklands supported the highest numbers of territories (39 %).

Also of high significance were areas to the west in the region of the New Island group with 17 % of territories. Islands in the north of the archipelago in the vicinity, and including West Point and Carcass Islands, to the islands around Pebble and Keppel Island represented 13 %. This latter group did not include Saunders Island (which does not support known breeding Striated Caracaras (D & S Pole-Evans pers. comm), although it does hold large numbers of juvenile and non-breeding birds, estimated to include 100-120 individuals).

Beauchêne Island at the extreme south of the archipelago and isolated from the main islands by some 60 km holds 9 % of territories. Islands located to the south of West Falkland, including Tussac Islands, and Bird Island to Arch Island group support 11 %. Islands surveyed around the coast of East Falkland, the Sound and the Sea Lion Group the Falkland Sound represented 5 % Islands in King George Bay, including the Passage Island group (Third and Fourth Passage Islands were not surveyed) held 5 %.

The five most important islands in terms of numbers of potential territories in 2013 – 2014 were Grand Jason (96), Steeple Jason (89), New Island (86), Beauchêne Island (70) and Bird Island (66). These five islands hold about half (49 %) of the potential territories of Striated Caracara (Figure 6). See appendix 4 for more details on island characteristics.

Distribution change over time

All breeding sites for Striated Caracara from surveys (where island information was recorded) were plotted in QGIS to highlight any potential changes in the known breeding distribution over time (Figure 5). The map indicates that overall breeding distribution is similar between previous surveys (1983-96; 1997/98 and 2006) to the current surveys (2013-2014). The Beaver Island group was not surveyed during 2013-14 surveys and coastal island to south and southeast of East Falkland were not surveyed prior to 2013.

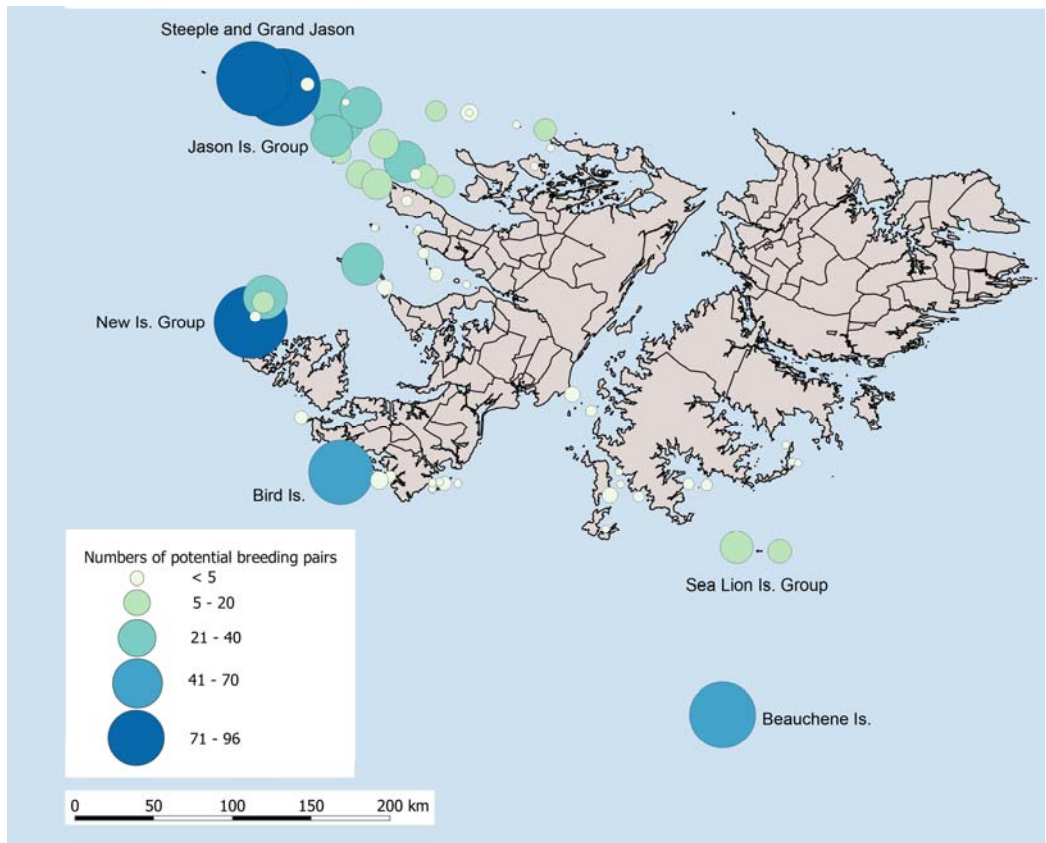


Figure 4. Distribution and abundance of estimated breeding territories of Striated Caracaras at the Falkland Islands from surveys conducted during 2013 - 2014 and 2014 - 2015.

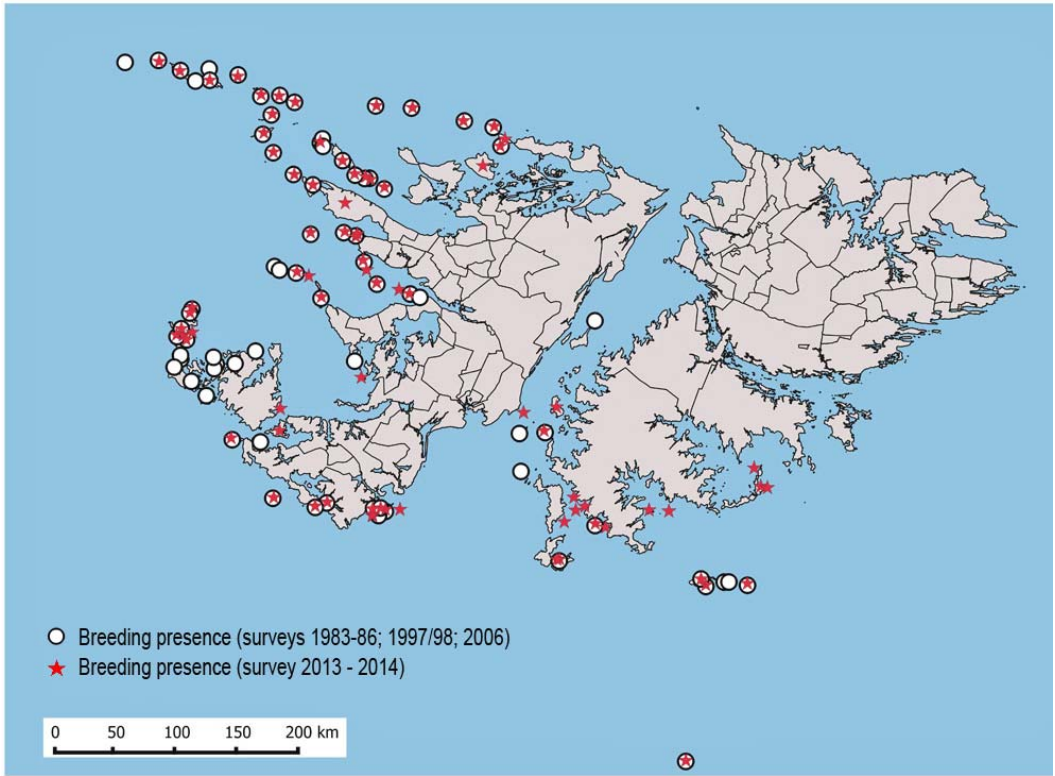


Figure 5. Distribution of recent breeding presence (2013/14 and 2014/15) with previous survey effort (1983-86; 1997/98; 2006).

Island (owner)	Grand Jason (Wildlife Conservation society)	Steeple Jason (Wildlife Conservation society)	New Island (New Island Conservation Trust)	Beauchêne Island (FIG)	Bird Island (FIG)
Breeding territories	97	89	86	70	66
Island size (km ²)	13.8	7.9	23.6	1.7	1.2
Density of potential territories (km ²)	7.0	11.6	3.6	41.2	55.0
Habitat	Modified Historically grazed	Modified Historically grazed	Modified Historically grazed	Pristine >70 % tussac	Pristine >80 % tussac
	No-rodents	Mice present	Norway rat present	No-rodents	No-rodents
Black-browed albatross (pairs)	49,462*	214,303*	10,177*	139,336*	14,048*
Rockhopper penguin (pairs)	10,496**	121,396**	5667**	105,778**	10,254**
Gentoo penguin (pairs)	5,334**	5,812**	4,431**	681**	0
King cormorant	(B)***	(B)***	(B)***	(B)***	(B)***
Rock cormorant	(B)***	(B)***	(B)***	(B)***	(B)***
Fairy prion	-	-	-	>10,000***	-
Slender-billed prion	Tenfold to SJ ****	>5000****	ca. 2,000,000 pairs *****	-	Very numerous (Authors obs.)
Wilson's storm petrel	>50,000****	>500****	-	Present	Present
Grey-backed storm petrel	>5000****	>500****	-	Present	Present
Diving petrel	Present	-	Present	Present	Present
Sea lion	(NB) 1- 100	(NB) 1- 100	(NB) 1- 100	(B) 1- 100	Irregular haul out
Fur seal	irregular haul out	(B) (>50)	(B)ca.1000 *****	irregular haul out	(B)>5000 ***
Elephant seal	Irregular haul out	Irregular haul out	Irregular haul out	Irregular haul out	Irregular haul out

Figure 6. Habitat and resource characteristics of five key breeding sites for Striated Caracara. B = Breeders; NB= Non-breeders.

* Baylis, A. 2012a

** Baylis, A. 2012b

*** Woods & Woods 1997

**** Bolton *et al.* 2014

***** Catry *et al.* 2008

Breeding densities

Territorial densities were calculated per km² of the island size. Islands with highest breeding densities were Bird Island (55 pairs/km²) and Saddle Island (54 pairs/ km²; Woods 2007) and Beauchêne Island (41 pairs/ km²) with an average territory size of 0.018 km² (1.8 hectares or 4.2 acres).

At these islands, assuming an average breeding success (i.e. number of fledged young) of 2 fledglings per pair, based on observations at Carcass Island of 1.85 fledgling/pair (Reeves 2013) and New Island of 2.5 fledglings/pair (Catry *et al.* 2008), we calculated a seasonal density of 110 chicks raised per km². Examples of islands at this capacity are Bird Island (55 pairs) and Saddle Island (54 pairs; Woods 2007). Furthermore, at least 108 juvenile birds were observed at Bird Island during this survey, indicating the exceptionally abundant availability of food resources that supports both high numbers of breeding and non-breeding birds. Characteristically, islands of high breeding densities are predominately vegetated by dense tussac, are pristine with little if any historical or current human interference, and have numerous burrowing seabirds. High densities of territories are not necessarily dependent on island size as Saddle Island is less than 1 km² or necessarily dependent on access to coastal areas; for instance at Bird Island most breeding territories were found at the interior of the island (Figure 7). Bird Island does appear to be one of exceptions to the rule though.



Figure 7. Distribution of territories (red dots) at Bird Island (*Note: most nesting sites /territories at the interior appear to be associated with topographical features such as ridges, gulches and gullies*)

DISCUSSION

A breeding survey of Striated Caracara was carried out over the summers of 2013 - 2014 and 2014 - 2015. Of a total of 79 islands that were surveyed, 68 were found to support breeding territories of Striated Caracara, with an estimated total Falkland Islands population of 750 – 850 pairs.

Breeding population

A total of 6 surveys of Striated Caracara have been conducted since 1963 ranging from partial island wide surveys to a single island (Strange 1996; Woods & Smith 1999; Woods 2007; Catry *et al.* 2008). There are no estimates of the population prior to 1960s when Ian Strange undertook the first census efforts. Only anecdotal information exists to suggest that the species was historically numerous and that it bred on both the main islands.

From the first surveys during the mid-1960s the breeding population, of several hundred pairs, appears to have been slowly recovering to the present day figure. The current estimate of breeding pairs may well be the highest since the beginning of the last century, or at least before the height of the species persecution during 1908–1930. Since the 1960s there has been significant management changes that have overall benefitted the species including its protection under the Wild Animals and Birds Protection Ordinance 1964, as well legislation for island protection (including the Jason Islands and Beauchêne Island) under the Nature Reserves Ordinance 1964. The period also has given rise to newer concepts of island management, with a shift away from traditional farming and towards nature conservation. For instance, both Steeple Jason, Grand Jason and New Island were stocked with sheep until the 1970s after which they became private reserves; Striated Caracara had locally been exterminated at New Island (Strange 1996) and at Steeple and Grand Jason birds were still shot well into the 1960s (Meiburg 2006). Undoubtedly, a reprieve for the species at these locations would have offered an opportunity for the species to regain a foothold. The subsequent increase in the breeding population to the present day is likely to be reflected, by both improved attitudes and management of nature conservation (including under the Conservation and Wildlife Ordinance 1999), further protection of key sites as well as periods of favourable breeding conditions.

Population trends

There is likely to be some discrepancy among surveyors and survey methodology, considering 3 different teams have been involved. (See appendix 5 for summary of

survey methods). However, assuming that numbers of breeding Striated Caracara at the Falkland Islands have increased since the last survey in 2006, this time-period would coincide with a general recovery in seabird populations e.g. Black-browed albatross, Gentoo and Southern Rockhopper penguin (Wolfaardt 2012; Baylis *et al.* 2013a; Baylis *et al.* 2013b). During 2000 - 2005 seabird populations (notably Gentoo and Rockhopper) declined following after a harmful algal bloom (red tide) in 2002 causing high adult mortality (Huin 2006). Striated Caracara breeding success is intrinsically linked to their food resources, so increases in breeding seabird numbers provides improved availability of food. Furthermore, healthy populations of resident winter seabirds including Gentoo penguins and also Southern Sea Lions and South American Fur seals, may also contribute to improved winter survival rates.

Breeding distribution

Today, the species is mostly absent from East Falkland and only very small (two pairs) numbers breed on West Falkland on Dunbar Farm. As such it is all-but restricted to offshore islands. Its overall distribution on the Falklands has not significantly changed since the mid-1960s; its breeding distribution is still strongly associated with seabirds and predominant tussac habitat, and the highest territorial densities reflected high numbers of burrowing seabirds and a pristine or near pristine habitat. Permanent alterations to the landscape, through loss of natural habitat, e.g. burning and overgrazing of tussac, and subsequent loss of food sources, as well as competition from invasive species and human activities, ultimately acts to prevent the population re-colonising its former range across the main islands.

CONCLUSION

Historical accounts suggest that the species sharply declined in conjunction with sheep farming from the late 1800s to the mid-1900s, and when monitoring began in earnest in the mid-1960s the population estimate stood at around several hundred pairs. It would be virtually impossible to derive a population estimate for the species before man arrived at the Falklands, but according to accounts it was far higher than today with its breeding range spanning not only the outer islands, but also West and East Falkland. Nonetheless, the Striated Caracara population is unlikely to ever reach its former carrying capacity before human arrival. Today, the population is probably best described as stable, having reached a carrying capacity on most islands, and although local fluctuations may occur, it is unlikely that the species will significantly increase beyond its current size unless its distribution were to expand. Ensuring continued

protection of its current key breeding sites is therefore vital for the long-term conservation of this species. Further work into understanding population connectivity through movement and genetic studies would shed more light for its future outlook and protection.

Ideally, the species global population should be reassessed with the inclusion of any new information on population status and distribution for the Patagonia region.



Example of Striated Caracara breeding habitat (Black-browed Albatross colony in background in dense tussac at Grand Jason Nov. 2014).

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Appendix 1: Survey Effort

Thirty-seven of the islands were surveyed during December 2013 over 19 days from a yacht. Twenty-eight of these were surveyed on foot and 9 from the yacht. A number of islets in the Beaver Island group were dropped after a delayed starting date due to a storm; these islands were assessed as not significant for breeding birds based on landowner information. Individual surveys typically took less than a day or one full day to complete with 3 people covering the larger islands and South Jason (375 ha) required a full day as well as boat based observations.

The second yacht based survey in Nov 2014 took 16 days with 30 islands surveyed by foot and 3 surveyed from the yacht (due to inaccessible access or being steep pinnacles of rock). Most islands during this campaign were relatively small (<100 ha) each taking several hours to survey, with the exception of New Island (1,181 ha) taking 4 days and Bird Island (120 ha) and Beauchêne Island (172 ha) taking a full day with 3 people. Unfortunately, at Beauchêne Island wet weather (for part of the day) likely contributed to lower detectability as Striated Caracaras tended to seek shelter during wet weather (MR pers. obs.).

Further dedicated surveys from land included Grand Jason, surveyed in December 2014 by 4 people over 3 days. Sea Lion and Carcass Island were surveyed by 2 people over 2 – 3 days in January 2013, as well as the eastern-end of Steeple Jason. The remainder of Steeple Jason was surveyed during November 2013.

Surveyors included: Micky Reeves (project officer), Leiv Poncet (skipper of yacht Peregrine); Sarah Crofts (FC, yacht trip 1, Sea Lion Island); Marilou Deligniers (yacht trip 1, Dunbar Farm, Carcass Island); Marine Quintin (yacht trip 2); Andy Stanworth (FC, Grand and Steeple Jason); Dafydd Crabtree (FC, Grand Jason); Stuart Smith (FC, Grand Jason) and Thesi Matzen (West Point Island).

Appendix 2: Nesting Habitat

Nesting habitat was recorded where possible during the surveys: a combination of tussac and peat bank was the most frequent encountered nesting habitat, followed by rocky ledges or under rocks or boulders on the ground. The most important criteria of nest location appeared to be shelter from prevailing weather and shelter or a top cover (often a rock ledge, peat bank or vegetation) from above to avoid waterlogging of the nest. Several nests were found in man-made structures, including abandoned oil drums, an old steam boiler left from the whaling industry and on a ship wreck. During the Darwin Project we observed the first known nest of this species in a tree (*Cupressus macrocarpa*) at Carcass Island settlement. Predominantly, nests were found along the coast, however, at Steeple Jason we observed nests at inland elevations (c. 200 metres a.s.l.), and on Bird Island a large portions of nests were found across the interior of the island. Nests were mainly a simple structure of vegetation; some contained debris that had washed ashore, such as fishing net, rope and plastic along with sheep wool and animal fur. In many nests, the cup during incubation appeared deep (10-20 cm) with only the tail showing of incubating adult birds. As the chicks developed the nest is partially destroyed and it takes on more of a platform appearance. Some nests were no more than scrapes on the ground between dense tussac stands. We observed territories that held several dis-used nests, with one territory having five nests within 100m radius, although with no contents.

Appendix 3: Observations of unusually nest contents and trios

We found three nests with clutches of four eggs on Bird Island, a situation that was not observed at any other island during our surveys, and had not been observed during previous surveys (Strange 1996). It appears that four-egg clutches are very uncommon occurrence for the species that have typical clutch sizes of 1-3 eggs. In addition to their being laid by a single female, these eggs may represent egg dumping or multiple females breeding cooperatively.

Three breeding territories on Bird Island contained at least one bird that exhibited sub-adult plumage, two of these were confirmed to have a nest with eggs. The third territory consisted of four birds, three of which were considered sub-adults with one adult. We observed the group defending their territory from us and other conspecifics, a recent and refurbished nest was found but due to its location it was not possible to observe the contents although the nest did look as if it was in use. A pair with eggs consisting of an

adult and bird showing sub-adult plumage was also seen on North End Island in the Bleaker Island group.

Cooperative breeding of trios was observed at three territories during the surveys and two territories with a four bird co-operation, one with a nest containing three chicks. Little is known about the benefits of 'cooperative breeding'. One territory on Carcass Island has had three birds in attendance since at least the surveys in 2006 (R. Woods pers. comm.). This nest is not in a high density Striated Caracara breeding area, and could be described within a low resource territory. Observations over three breeding seasons (2012/2013, 2013/14, 2014/15) of this trio show they have raised five chicks to fledging (MR pers. obs.). A trio breeding on Steeple Jason at the edge of a Gentoo Penguin colony (c. 2500 pairs) has raised three chicks in two breeding seasons (MR pers. obs.). A pair located less than 50 m from the trio, also raised three chicks to fledging in the same two breeding seasons. This would seem to suggest that having additional birds involved in raising chicks may actually have little benefit to improved breeding success.

Appendix 4: Description of key island breeding sites of the Striated Caracara

Grand Jason (13.8 km² private reserve, 97 breeding pairs). The largest of the Jason Island group at the far northwest of the Falklands and accounts for the largest numbers of estimated breeding territories. A group of some 56 individuals was observed near a group of male sub-adult Southern Sea Lions. Unusually nearly all (51) of these birds were adults, and although we could not determine if they were non-breeders it would be highly unusual for breeding birds to exhibit such group behavior. Grand Jason has large breeding populations of seabirds including Black-browed Albatrosses, Southern Rockhopper Penguins, Gentoo Penguins and Southern Giant Petrels, along with unquantified, but probably numerous burrowing petrels.

Steeple Jason (7.9 km², private reserve, 89 breeding pairs). The island has the largest breeding Black-browed Albatross colony in the world running for six kilometers along the southwest coast. Large numbers of Rockhopper Penguins and King Cormorants also breed within the colony. The colony is fringed on its landside by dense tussac which supports high concentrations of Striated Caracara breeding territories. Nest were also found nests at the inland higher elevations along the ridges of Steeple Jason peaks, with the highest approx. 200 metres a.s.l at the rock – vegetation interface.

New Island (23.63 km², National Nature Reserve, private reserve, 86 breeding pairs). The island has a diverse topography with high cliffs stretching along the west coast and sloping to low banks at the east. The difficult topography of the west coast of this island restricted our ability to observe nests which resulted in a higher percentage of birds, to other islands, recorded as 'possible breeding territory.' New Island has several colonies of mixed seabirds including Black-browed Albatrosses, Rockhopper Penguins and King Cormorants. An exceptionally large breeding population (c.2,000,000) of Slender-billed Prions (*Pachyptila belcheri*) has been identified as an important food source to Striated Caracara, hunting them at night when they return to their nesting burrows or by pulling incubating birds or nestlings out of burrows during the day (Catry *et al.* 2008). In addition several colonies of breeding South American Fur Seals (*Arctocephalus australis*) are concentrated along rocky platforms on the west coast of the island.

Beauchêne Island (1.7 km², National Nature Reserve, 70 breeding pairs). The most southerly island of the archipelago is the most remote breeding site of the Striated Caracara in the Falklands. It has previously been suggested that the population may well be isolated from the rest of the Falklands' breeding population (Strange 1996), although further work would be needed to confirm this. The island has large breeding colonies of Black-browed Albatrosses and Rockhopper Penguins, in addition to breeding Fairy Prions (*Pachyptila turtur*), Wilson's Storm Petrels (*Oceanites oceanicus*) and Grey-backed Storm Petrels (*Garrodia nereis*).

Bird Island (1.2 km² National Nature Reserve, 66 pairs). Located off the southwest coast of West Falkland the island holds Black-browed Albatrosses, Rockhopper Penguins and South American Fur Seals with numerous Slender-billed Prions We observed a large number of prion remains and it is likely they form an important part of Striated Caracara diet at this island. Interestingly, breeding territories were mostly at the interior of the island.

Appendix 5: Summaries of methodology of previous island surveys

Strange 1963 – 65 & 1983 – 86

Observations were collected since early 1962 with much of the work carried out in the north-west of the archipelago, namely the Jason Islands, West Point Island and the main study at Beauchêne Island and also New Island. The first island survey was attempted during 1963 – 65 with adult breeding pairs counted and additional figures taken of birds appearing in winter at different settlements. A more comprehensive approach was

undertaken during 1983-86 through a grant from the National Geographic Society. The field work was mainly undertaken in the summer months and covered some 58 islands, covering the predominance of their range. Adult breeding pairs were counted with an island estimate derived.

Woods & Smith 1999

Surveys of 54 islands mainly conducted in spring of 1997 and 1998 aimed to establish only the presence of a territory-holding pair, and not to see the content of every nest. The count unit was based on *apparently occupied* site rather than a nest. A *probable* was used for the when existence of a breeding pair was suspected but could not be confirmed, usually based on the presence of a single adult or of two adults not exhibiting territorial behavior. The island estimate for breeding pairs was the sum of *apparently occupied* and *probable*.

Woods 2007

A further survey of 18 islands was carried out in 2006, most were repeat surveyed from the 1997/98 effort and broadly used a similar methodology. A total island estimate was derived from including counts from the 1997/98 previous census as well as other counts that were opportunistically derived from fieldwork within the intervening periods.

Catry *et al.* 2008

A complete census of the population at New Island only, was carried out in the summer season of 2006–2007, with about two-thirds of the coast-line walked during incubation and early chick rearing (from October to December) to confirm known nests and territorial pairs. In the second week of January surveys along the entire coastline recorded all adult birds and recently fledged young and nests. However, in the high cliffs of the West Coast of New Island, there were a number of situations where a nest could not be seen, despite the fact that a territorial pair was obviously present and sometimes calling chicks could be heard.

Appendix 6: Island survey counts of Striated Caracara 2013/14 & 2014/15.

Island	Survey	Survey date	Designate	1	2	3	4	5	6	Total
Albemarle Rock	Boat	Nov-14	NNR 1978	0	0	1	0	0	0	1
Annie Island	Foot	Nov-14	IBA, PS	0	0	4	0	0	0	4
Arch Island, Pyramid Rock	Boat	Nov-14	NNR 1978	0	0	1	0	0	0	1
Arch Islands East	Foot	Nov-14		0	0	3	0	0	0	3
Beauchêne Island	Foot	Nov-14	NNR 1964, IBA	38	14	12	5	1	0	70
Beef Island	Boat	Dec-13	IBA, PS	1	1	3	0	0	1	6
Bense Island	Foot	Dec-13	PS	0	0	0	1	0	0	1
Bird Island	Foot	Nov-14	NNR 1969, IBA	27	30	7	1	0	1	66
Blind Island	Foot	Nov-14		1	0	1	0	0	0	2
Button Is (Byron Sound)	Boat	Dec-14	IBA	0	0	1	0	0	0	1
Carcass Island	Foot	Jan-13	IBA	20	0	2	2	2	1	27
Cliff Knob Island	Foot	Dec-13	IBA, PS	0	0	2	0	0	0	2
Clump Island (Arch)	Boat	Nov-14		0	0	1	0	0	0	1
Clump Island (Sound)	Foot	Nov-14		0	0	0	2	0	0	2
Coffin Island	Boat	Dec-13	IBA, PS	1	0	6	0	0	0	7
Cross Island	Foot	Nov-14		1	0	1	0	0	0	2
Dunbar Farm	Foot	Jan-13		2	0	0	0	0	0	2
Dunbar Island	Foot	Dec-13	IBA, PS	0	3	5	0	0	0	8
Elephant Jason	Foot	Dec-13	NNR 1973, IBA	10	21	7	3	0	0	41
Emily Island	Foot	Nov-14	IBA	0	1	0	0	0	0	1
Fanny Island	Foot	Nov-14		2	0	0	0	0	0	2
First Passage Island	Foot	Dec-13		0	3	1	0	0	0	4
Flat Jason	Foot	Dec-13	NNR 1966, IBA	17	5	5	2	0	1	30
Ghost Island	Foot	Nov-14	IBA	1	0	0	0	0	0	1
Gibraltar Rock	Foot	Dec-13	IBA, PS	8	2	0	2	0	0	12
Gid's Island	Foot	Dec-13	IBA	0	0	1	0	0	0	1
Government Islet	Foot	Dec-13	IBA	4	2	2	0	0	0	8
Grand Jason	Foot	Dec-14	IBA, PS	45	35	10	5	0	1	96
Harbour Islands	Foot	Nov-14	PS	0	0	0	1	0	1	2
Hummock Island	Boat	Dec-13	IBA, PS	0	1	2	0	0	0	3
Jason East Cay	Foot	Dec-13	NNR 1973, IBA	1	0	0	0	0	0	1
Keppel Island	Foot	Dec-13	IBA	0	1	0	0	0	0	1
Keppel Islet	Foot	Dec-13	IBA	0	0	1	0	0	0	1
Ladrillo Island	Foot	Nov-14		0	1	0	0	0	0	1
Little Bense Island	Foot	Dec-13	PS	1	0	0	0	0	0	1
Low Island	Foot	Dec-13	NNR 1964, IBA	4	3	2	0	0	0	9
Mid Island	Foot	Nov-14	PS	0	0	1	0	0	0	1
Needle Rocks (Carcass)	Boat	Dec-13	IBA	0	0	2	0	0	0	2
New Island	Both	Nov-14	NNR 1993, PS	27	14	39	1	2	3	86
North Fur Island	Foot	Dec-13	NNR 1973, IBA	11	6	8	3	0	0	28
North Island	Foot	Dec-13 & Nov-14	IBA, PS	7	3	18	2	0	1	31
North Point Island	Foot	Nov-14	IBA	1	0	0	0	0	0	1
Port Egmont Cays	Foot	Dec-13		0	0	0	1	0	0	1
Rabbit Island	Foot	Dec-13		0	0	2	0	0	0	2
Round Island	Boat	Dec-13		0	0	1	0	0	0	1
Rum Islet	Foot	Nov-14	IBA, PS	2	0	0	0	0	0	2
Saddle Island	Foot	Dec-13	IBA, PS	3	0	5	0	0	0	8
Sandy Arch Islands	Foot	Nov-14		1	0	0	0	0	0	1
Sandy Bay Island	Foot	Nov-14		1	0	0	0	0	0	1
Sea Dog Island	Foot	Nov-14	NNR 1978	0	0	3	0	0	0	3
Sea Lion Easterly	Foot	Nov-14	IBA, PS	2	1	6	0	0	0	9
Seal Rocks (Jason Group)	Boat	Dec-13	IBA, PS	0	0	1	0	0	0	1
Sea Lion Island	Foot	Jan-13	NNR 2002, IBA	10	0	6	1	0	0	17
Second Passage Island	Foot	Dec-13	IBA	1	12	15	0	0	0	28
Sedge Island	Foot	Dec-13		3	0	3	1	0	0	7
Ship Island	Foot	Dec-13	IBA, PS	0	0	2	0	0	0	2
South Fur	Foot	Dec-13	NNR 1973, IBA	5	0	1	1		0	7
South Jason	Foot	Dec-13	NNR 1973, IBA	6	4	13	5	0	0	28
Split Island	Foot	Dec-13	PS	0	1	0	0	0	0	1
Steeple Jason	Foot	Nov, Jan 13	IBA, PS	43	7	26	13	0	0	89
Ten Shilling Bay Islands	Foot	Nov-14		2	1	1	0	0	1	5
The Fridays	Foot	Dec-13	NNR 1973, IBA	0	2	0	1	0	0	3
The Twins	Foot	Dec-13	NNR 1964, IBA	10	2	0	2	0	0	14
Tussac Islands	Foot	Nov-14		3	0	2	0	0	0	5
Tussac Islands (Arch)	Foot	Nov-14		1	0	0	0	0	0	1
West Island - F. Sound	Foot	Nov-14		2	0	2	0	0	0	4
West Point Island	Foot	Dec-13	IBA	7	0	5	2	1	0	15
Wreck Island	Foot	Dec-13		0	0	0	1	0	0	1
Totals				332	176	243	58	6	11	826

Category Codes: 1. Adult sitting or chicks/eggs seen in nest; 2. Adults displaying or aggressive; 3. At least one adult in a possible breeding territory; 4. Empty nest with an adult or adults in area; 5. Empty nest with no adults; 6. Adult and nest seen but contents not confirmed.
 NNR=National Nature Reserves; IBA=Important Bird Area; PS=Private Sanctuary

Appendix 7: Island selected for 2013/14 and 2014/15 surveys

Islands Surveyed by Falklands Conservation (2013/14 and 2014/15)				Not surveyed (no landowner permission, bad weather, no time, landowner info indicated no birds)				
Island	Lat	Long	Estimate pairs	Island	Surveyed	Birds	Lat	Long
Albemarle Rock	-52.22	-60.39	1	0	No	n/a	-52.21	-58.87
Annie Island	-52.27	-59.68	4	Barclay	No	n/a	-51.79	-61.10
Arch Island, Pyramid Rock	-52.23	-60.51	1	Barren	Yes (owner)	no	-52.38	-59.71
Arch Islands East	-52.22	-60.45	3	Brandy	No	n/a	-52.44	-59.00
Beauchêne Island	-52.91	-59.19	70	Burnt	Yes (owner)	no	-51.42	-60.13
Beef Island	-51.73	-61.27	6	Calista	No	n/a	-52.03	-59.86
Bense Island	-51.49	-60.52	1	Castle Rock	No	n/a	-52.20	-60.80
Bird Island	-52.17	-60.93	66	Cattle Point	No	n/a	-52.21	-59.26
Blind Island	-52.28	-59.55	2	Channel	No	n/a	-51.80	-61.21
Button Island (Byron Sound)	-51.34	-60.45	1	Clarkes Islet	No	n/a	-51.03	-61.10
Carcass Island	-51.29	-60.56	27	Double	No	n/a	-51.87	-60.51
Circum Island	-51.94	-60.88	0	Drift wood	No	n/a	-52.27	-59.02
Cliff Island	-51.48	-60.57	0	East Wolfe	No	n/a	-52.04	-59.66
Cliff Knob Island	-51.72	-61.23	2	Elephant Cays	No	n/a	-52.13	-59.86
Clump Island (Arch)	-52.23	-60.51	1	Flat Tyssen	No	n/a	-51.88	-59.65
Clump Island (Sound)	-52.03	-59.75	2	Flat Wolfe	No	n/a	-52.01	-59.67
Coffin Island	-51.74	-61.26	7	Fourth Passage	No	n/a	-51.56	-60.87
Cross Island	-52.19	-60.70	2	Fox	No	n/a	-51.84	-60.49
Dunbar Farm	-51.40	-60.56	2	George	Yes (owner)	no	-52.35	-59.75
Dunbar Island	-51.37	-60.39	8	Governor - Beavel	No	n/a	-51.86	-61.19
Dyke Island	-51.99	-60.89	0	Great	No	n/a	-51.96	-59.70
Elephant Jason	-51.16	-60.85	41	Great	No	n/a	-52.08	-59.09
Emily Island	-52.37	-59.71	1	Green	No	no	-51.66	-60.26
Fanny Island	-52.24	-59.32	2	Gull	No	n/a	-51.81	-61.14
First Passage Island	-51.65	-60.68	4	Halt	No	n/a	-52.19	-58.88
Flat Jason	-51.11	-60.89	30	Harbour	No	n/a	-51.87	-60.87
Flores Harbour Island	-52.23	-59.59	0	Harpoon	No	n/a	-51.84	-60.53
Ghost Island	-52.19	-58.83	1	High Tyssen	No	n/a	-51.91	-59.67
Gibraltar Rock	-51.32	-60.77	12	Hill Gap	No	n/a	-51.85	-59.77
Gid's Island	-51.65	-60.30	1	Hill	No	n/a	-51.80	-61.08
Government Islet (Pebble)	-51.22	-59.92	8	Jason West Cay	No	n/a	-51.00	-61.45
Grand Jason	-51.06	-61.10	96	Kelp Lagoon	No	n/a	-52.34	-59.40
Green Island	-51.82	-60.55	0	Large	No	n/a	-52.14	-59.00
Harbour Islands	-52.25	-59.23	2	Lion Creek	No	n/a	-52.29	-59.49
Hummock Island	-51.62	-60.44	3	Little Coffin	No	n/a	-51.87	-61.16
Jason East Cay	-51.00	-61.31	1	Little	No	n/a	-52.15	-58.97
Keppel Island	-51.32	-59.97	1	Little	No	n/a	-52.15	-58.97
Keppel Islet	-51.27	-59.89	1	Little	yes-boat	no	-51.60	-60.47
Ladrillo Island	-52.20	-59.64	1	Low	No	n/a	-51.80	-61.12

Lion Creek Outer Island	-52.29	-59.51	0	Mikes	No	n/a	-52.10	-59.75
Little Bense Island	-51.49	-60.51	1	Motley	No	n/a	-52.13	-58.61
Low Island	-51.34	-60.47	9	North Tyssen	No	n/a	-51.87	-59.60
Mid Island	-52.24	-59.63	1	Outer Triste	No	n/a	-52.15	-58.71
Middle Island	-51.64	-60.35	0	Peat	yes	no	-52.18	-60.48
Needle Rocks (Carcass)	-51.33	-60.51	2	Peat Tyssen	No	n/a	-51.91	-59.66
New Island	-51.73	-61.30	86	Penn	No	n/a	-51.79	-61.15
North Fur Island	-51.13	-60.75	28	Pitt	No	n/a	-51.81	-61.06
North Island	-51.66	-61.23	31	Quacker	No	n/a	-51.78	-61.06
North Point Island	-52.14	-58.86	1	Ruggles	No	n/a	-52.07	-59.73
Outer Island	-51.86	-60.53	0	Sandbar	No	n/a	-51.93	-59.65
Pebble Islet	-51.25	-59.87	0	Sandy	No	n/a	-51.88	-59.63
Port Egmont Cays	-51.20	-60.04	1	Shell	No	n/a	-52.09	-59.01
Rabbit Island	-51.56	-60.49	2	Skull Bay	No	n/a	-51.89	-61.14
Round Island	-51.59	-60.73	1	Speedwell	Yes (owner)	no	-52.22	-59.69
Rum Islet	-52.45	-59.08	2	Staats	No	n/a	-51.89	-61.19
Saddle Island	-51.67	-61.24	8	Steeple Islet	No	n/a	-51.06	-61.16
Sandy Arch Islands	-52.21	-60.47	1	Stinker	No	n/a	-52.13	-59.80
Sandy Bay Island	-52.19	-58.80	1	Tea	No	n/a	-51.90	-61.18
Sea Dog Island	-52.01	-61.09	3	Third Passage	No	n/a	-51.57	-60.85
Sea Lion Easterly	-52.45	-58.90	9	Tickle	No	n/a	-51.99	-59.65
Seal Rocks (Jason Group)	-51.11	-60.81	1	Triste	No	n/a	-52.13	-58.72
Sea Lion Island	-52.43	-59.10	17	Tussac Point	No	n/a	-52.35	-59.34
Second Passage Island	-51.58	-60.78	28	Un-Named	No	n/a	-52.20	-60.69
Sedge Island	-51.15	-60.41	7	Wedge	No	n/a	-59.83	12.40
Ship Island	-51.71	-61.28	2	West	No	n/a	-52.02	-60.99
South Fur	-51.26	-60.85	7	West Tyssen	No	n/a	-51.89	-59.67
South Jason	-51.21	-60.89	28	Whiskey	No	n/a	-52.44	-58.99
Split Island	-51.48	-60.71	1	White Rock	No	n/a	-51.28	-60.89
Steeple Jason	-51.03	-61.22	89	Wolfe	No	n/a	-52.02	-59.68
Ten Shilling Bay Islands	-52.20	-60.75	5					
The Crouching Lions	-51.58	-60.48	0					
The Fridays	-51.05	-60.98	3					
The Twins	-51.24	-60.65	14					
Tiny Island	-52.37	-59.72	0					
Tussac Is. (South Harbour)	-52.02	-60.97	5					
Tussac Is. (Arch Islands)	-52.21	-60.50	1					
West Island - F. Sound	-51.98	-59.84	4					
West Point Island	-51.35	-60.69	15					
Wreck Island	-51.16	-60.26	1					
Totals			826					

Appendix 8: Comparison of counts with previous island data

E=Estimate; C=Count; CO=Confirm; P=Probable

Island	Location (Decimal Degree)		Strange 1996		Woods 2007	Woods & Smith 1999		Woods 2007				Reeves & Crofts 2015	
			1983 - 86		<1988 E	1997/1998		2001 E?	2005 E?	2005/ 2006	? date count	2013/14.2014	
			C	P	C?	CO	P	C	C	CO		CO	P
Albemarle Rock	-52.22	-60.39										0	1
Annie Island	-52.27	-59.68										0	4
Arch Is (Pyramid Rock)	-52.23	-60.51										0	1
Arch Is. East (Big Arch Is.)	-52.22	-60.45										0	3
Arch Is. Group	-52.2	-60.5	2	4									
Bald Island	-51.8	-61	1	0									
Beauchêne Island	-52.91	-59.19	62	0					70			57	13
Beaver Island	-51.9	-61.3	0	2					2				
Beef Island	-51.73	-61.27	1	0					2			3	3
Bense Island	-51.49	-60.52				1			1			1	0
Big Arch Island (Arch Is. East)	-52.22	-60.45				2	4						
Bird Island (* estimate)	-52.17	-60.93	8	2		23(*50)	9			36(*50)		59	7
Blind Island	-52.28	-59.55										1	1
Brandv Island	-52.44	-59.00	2	0		1	0						
Button Island, Byron Sound	-51.34	-60.45				1						0	1
Calista Island	-52.03	-59.86	1	2	3								
Carcass Island	-51.29	-60.56	6	3		12	2			11		23	4
Clarke's Islet (Grand Jason)	-51.03	-61.10				3	0						
Cliff Island	-51.48	-60.57	1	0								0	0
Cliff Knob Island	-51.72	-61.23										0	2
Clump (Arch) Island	-52.23	-60.51										0	1
Clump (Sound) Island	-52.03	-59.75										2	0
Coffin Island	-51.74	-61.26	1	0				1				1	6
Cross Island ("Two")	-52.19	-60.70				3	1	2				1	1
Dunbar Farm	-51.40	-60.56										2	0
Dunbar Island	-51.37	-60.39	0	1		0	1					3	5
Dyke Island	-51.99	-60.89										0	0
Eddystone Rock	-51.2	-59.1	0	1									
Elephant Cays	-52.13	-59.86	2	10	12								
Elephant Jason	-51.16	-60.85	15	5		22	13			30		34	7
Emilv Island	-52.37	-59.71				1	0					1	0
Fannv Island	-52.24	-59.32										2	0
First Passage Island	-51.65	-60.68	0	2		0	2					3	1
Flat Jason	-51.11	-60.89	12	8		29	5			26		25	5
Flores Harbour Island	-52.23	-59.59										0	0
Fourth Passage Island	-51.56	-60.87	2	0	2								
Ghost Island	-52.19	-58.83										1	0
Gid's Island	-51.65	-60.30				1	0					0	1
Gibraltar Rock	-51.32	-60.77	4	4		4	2					12	0
Government Islet	-51.22	-59.92	0	5				1				6	2
Grand Jason	-51.06	-61.10	6	8		67	4			44		86	10
Green (KG Bav) Island	-51.66	-60.26				0	1						
Green (Philomel Rds) Island	-51.8	-60.6	1	0							1	0	0
Gull Island.	-51.81	-61.14						1					
Harbour Islands	-52.25	-59.23										2	0
Harpoon Island	-51.84	-60.53											
Hummock Island	-51.62	-60.44				2	2			5		1	2
Jason East Cav	-51.00	-61.31	1	0	2							1	0
Jason Islet (Steeple or Clarke's Islet?)			2	3									
Jason West Cav	-51.00	-61.45	0	2	2								
Keppel Island	-51.32	-59.97										1	0
Keppel Islet	-51.27	-59.89	0	1								0	1
Ladrilo Island	-52.20	-59.64										1	0
Letter Box Island	-51.8	-61.2	1	0					1				
Lion Creek Outer Island	-52.29	-59.51										0	0
Little Bense Island	-51.49	-60.51										1	0
Long Point (Rock)	-51.8	-61.3	1	0								1	
Low Island	-51.34	-60.47	1	0		4	1					7	2
Meredith Lagoon	?												

Mid Island	-52.24	-59.63								0	1
Middle (KG Bay) Island	-51.64	-60.35			0	0				0	0
Natural Arch (Big Arch)	-52.2	-60.5			0	2					
Needle Rocks	-51.33	-60.51			1					0	2
New Island	-51.73	-61.30	7	0			7			45	41
North Fur	-51.13	-60.75	1	1	10	6		16		20	8
North Island	-51.66	-61.23	6	0			6			13	18
North Point Island	-52.14	-58.86								1	0
North Swan Island	-51.7	-59.5	2	0					?		
North Tyssen Island	-51.87	-59.60							?		
Outer Island	-51.86	-60.53								0	0
Pebble Islet	-51.25	-59.87								0	0
Penn Island	-51.79	-61.15	0	1					?		
Pitt Island	-51.8	-61.1					1				
Port Edgar Islet	?		0	1	1						
Port Egmont Caves	-51.20	-60.04	1	3	4					1	0
Port Stephens Island	?								1		
Rabbit Island	-51.56	-60.49			0	1				0	2
Rabbit Is. Rocks (The Crouching Lions)	-51.58	-60.48							?		
Round Island	-51.59	-60.73								0	1
Rum Islet	-52.45	-59.08	0	1	1	0				2	0
Saddle Island	-51.67	-61.24	2	2				19		3	5
Sandy Bay Island (Bleaker)	-52.19	-58.80								1	0
Sandy Is. (Tyssen group)	-51.9	-59.6							?		
Sandy Arch (Is. west Big Arch Island)	-52.21	-60.47								1	0
Sea Dog Island	-52.01	-61.09	0	1	1	0				0	3
Sea Lion Easterly Island	-52.45	-58.90	2	1	3	2				3	6
Sea Lion Island	-52.43	-59.10	10	4	4	2	10			11	6
Seal Rocks (Iasons)	-51.11	-60.81	0	2	2					0	1
Seal Rocks (New Is.)	-51.8	-61.3	1	0					?		
Second Passage Island	-51.58	-60.78	2	6	4	3				13	15
Sedge Island	-51.15	-60.41	1	1	0	1		4		4	3
Ship Island	-51.71	-61.28					1			0	2
South Fur	-51.26	-60.85	6	0	4	0				6	1
South Jason	-51.21	-60.89	3	9				22		15	13
Spilt (Beaver) Island	-51.8	-61.3	0	1			1				
Split Island	-51.48	-60.71	1	0	1	1	2			1	0
Staats Island	-51.89	-61.19	1	0			1				
Steeple Islet	-51.06	-61.16			6	1		7			
Steeple Jason	-51.03	-61.22	35	5	68	4		64		63	26
Ten Shilling Bay Island	-52.20	-60.75	0	2	1	1				4	1
Ten Shilling Bay Peninsula	?						3				
The Crouching Lions (Rabbit Is. Rocks)	-51.58	-60.48								0	0
The Fridavs	-51.05	-60.98	0	2	4	1				3	0
The Twins	-51.24	-60.65	2	1	4	2				14	0
Third Passage Island	-51.57	-60.85	6	0	6						
Tinv Island	-52.37	-59.72								0	0
Tussac Island (Arch)	-52.21	-60.50			0	1				1	0
Tussac Islands (S. harbour)	-52.02	-60.97	0	2						3	2
Twin (N) Island	-51.2	-60.6			2			6			
Twin (S) Island	-51.3	-60.6			2			8			
Wedge Island	?								?		
West Island	?								?		
West Island (F. Sound)	-51.98	-59.84								2	2
West Point Island	-51.35	-60.69	3	2				7		9	6
West Tyssen Island	-51.9	-59.7							?		
Whisky Island	-52.4	-59			1	0					
Wreck Island	-51.16	-60.26	0	1	0	0				1	0
Is. west Big Arch Island (Sandy Arch)	-52.21	-60.47			1	0					
Occupied sites / count			225		290			305		577	
Probable sites			112		75			207 (inc. 1999 counts)		249	
Island population estimate (pairs)			337		500 (incl. counts from 1983-86)			520		826	