Spectacled Petrel
Procellaria conspicillata

Petrel Mentón Blanco de Tristán da Cunha
Pétrel à lunettes

CRITICALLY ENDANGERED | ENDANGERED | **VULNERABLE** | NEAR THREATENED | LEAST CONCERN | NOT LISTED

Sometimes referred to as
Ringeye
White-chinned Petrel

Photo © R. Wanless

TAXONOMY

Order Procellariiformes
Family Procellariidae
Genus *Procellaria*
Species *P. conspicillata*

The Spectacled Petrel *Procellaria conspicillata* (Gould 1844) was long considered a subspecies of the White-chinned Petrel *P. aequinoctialis*. It was described as a separate species from the nominate form in 1998, based on consistent plumage differences, slightly earlier laying date for *P. conspicillata*, non-overlapping breeding ranges and significant differences in courtship calls [1]. This taxonomy has subsequently gained widespread acceptance, including by ACAP [2].

CONSERVATION LISTINGS AND PLANS

International

- Agreement on the Conservation of Albatrosses and Petrels – Annex 1 [2]
- 2008 IUCN Red List of Threatened Species – Vulnerable (since 2007) [3]
- Convention on Migratory Species - Appendix II [4]

Brazil

- National Species List of Brazilian Fauna Threatened with Extinction (Lista Nacional das Espécies da Fauna Brasileira Ameaçadas de Extinção) [5]
  - Endangered
- National Plan of Action for the Conservation of Albatrosses and Petrels (NPOA-Seabirds Brazil) [6]

South Africa

- *Sea Birds and Seals Protection Act, 1973 (Act No. 46 of 1973) (SBSPA)* [7]
- *Marine Living Resources Act (Act No. 18 of 1996): Policy on the Management of Seals, Seabirds and Shorebirds: 2007* [8]
- National Plan of Action (NPOA) for Reducing the Incidental Catch of Seabirds in Longline Fisheries 2008 [9]

Tristan da Cunha, UK Overseas Territories

- *The Conservation of Native Organisms and Natural Habitats (Tristan da Cunha) Ordinance 2006* [10] offers full legal protection to the species

Uruguay

- National Plan of Action for Reducing the Incidental Catch of Seabirds in Uruguayan Fisheries (PAN - Aves Marinas Uruguay) 2007 [11]

BREEDING BIOLOGY

Procellaria conspicillata breeds annually and is active in colonies from September to March [12]. Breeding phenology has not been well studied, but egg-laying commences in October, with hatching in December and the chicks fledge in March (Table 1) [1, 13]. The age of first return to breeding colonies and recruitment age are unknown, and there are no data on the breeding ecology of the species.

Table 1. *Breeding cycle of* P. conspicillata.

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
At colonies				■	■	■	■	■	■	■		
Egg laying					■	■						
Incubating					■	■	■					
Chick provisioning							■	■	■	■		

BREEDING STATES

Table 2. *Distribution of the global* P. conspicillata *population among Parties to the Agreement*

	United Kingdom
Breeding pairs	100%

BREEDING SITES

Procellaria conspicillata is endemic to Inaccessible Island, in the Tristan da Cunha group (Figure 1, Table 2, and Table 3). The total breeding population was estimated to be approximately 10,000 pairs in the 2004/2005 breeding season (Table 3) [14]. Similarities between *P. conspicillata* and subfossil remains of birds from Amsterdam Island in the southern Indian Ocean suggest that the species may once have bred there, supported by the collection of a specimen off Australia (very far out of present range) in the nineteenth century [1, 15]. An individual was photographed off Amsterdam Island in 1999 [16], mooting the existence of a tiny relict population or a future (re)colonisation.

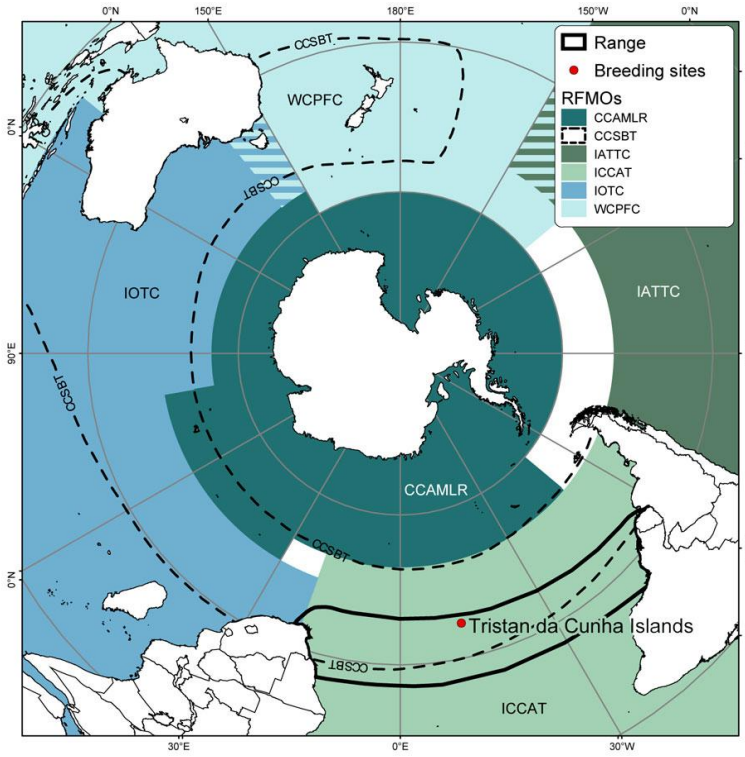

Figure 1. *Location of the single breeding site and approximate range of* P. conspicillata *with the boundaries of selected Regional Fisheries Management Organisations (RFMOs) also shown. Range is based on at-sea observations [17, 18, 19]*

CCAMLR – Commission for the Conservation of Antarctic Marine Living Resources
CCSBT - Convention for the Conservation of Southern Bluefin Tuna
IATTC - Inter-American Tropical Tuna Commission
ICCAT - International Commission for the Conservation of Atlantic Tunas
IOTC - Indian Ocean Tuna Commission
WCPFC - Western and Central Pacific Fisheries Commission

Table 3. *Monitoring methods and estimates of the population size (annual breeding pairs) for the single* P. conspicillata *breeding site.*

Breeding site location	Jurisdiction	Years monitored	Monitoring method	Monitoring accuracy	Annual Breeding pairs (last census)
Inaccessible Island 37°19'S, 12°44'W	United Kingdom	1937, 1950, 1983, 2000, 2005	A (100%)	Medium	10,000 (2005) [14]

CONSERVATION LISTINGS AND PLANS FOR THE BREEDING SITES

International

Inaccessible Island

- UNESCO Natural World Heritage Site – the Gough Island World Heritage Site was extended to include Inaccessible Island and its territorial waters in 2004 [20]
- RAMSAR Convention List of Wetlands of International Importance (designated 2008) [21]

Tristan da Cunha, UK Overseas Territories

Inaccessible Island

- Nature Reserve (declared 1997) - *The Conservation of Native Organisms and Natural Habitats (Tristan da Cunha) Ordinance 2006* [10]
- Inaccessible Island Management Plan [22]

POPULATION TRENDS

Inaccessible Island is the only known breeding locality for the species. Predation by introduced domestic pigs *Sus scrofa* is believed to have driven the population to the brink of extinction, with a lowest estimate of a few tens of pairs in 1937 [12], although this may have been a considerable underestimate [1]. Consecutive census estimates show consistent recovery in the breeding population, with an estimated 4,500 nests in December 1999 [13] and about 10,000 in November-December 2004 [14], equivalent to a breeding population of around 20,000 birds. Trends cannot be calculated for the population using linear regressions because of the infrequency of counts, many of which were fairly crude estimates [1]. However, a demographic model based on 7% annual growth matched closely the upward trend in census results [14]. As a result of these trends, the IUCN Red List amended the status of *P. conspicillata* in 2007, from Critically Endangered to Vulnerable [3].

Table 4. *Summary of population trend data for* P. conspicillata *at the single breeding site.*

Breeding site	Current monitoring	Trend years	% average change per year	Trend	% of population for which trend calculated
Inaccessible Island	no	1937, 1950, 1983, 2000, 2005	+7% [13]	Increasing	100%

Demographic parameters have not been examined for this species (Table 5).

Table 5. *Demographic data for the single* P. conspicillata *breeding site.*

Breeding site	Mean breeding success	Juvenile survival	Adult survival
Inaccessible Island	No data	No data	No data

BREEDING SITES: THREATS

Inaccessible Island is legally protected as a nature reserve, a World Heritage Site and a Ramsar Wetland, and is currently free of invasive mammals and other land-based threats to *P. conspicillata*. However, the inhabited island of Tristan da Cunha is nearby (20 nm) and supports both black rats *Rattus rattus* and house mice *Mus musculus*, both of which are known predators of seabird chicks, including on islands within the Tristan group [23, 24]. Although visits to the island are infrequent, the possibility of an accidental colonisation by either rodent species from Tristan, and subsequent establishment remains a serious concern [22, 25, 26, 27].

Table 6. *Summary of known threats causing population level changes at the breeding sites of* P. conspicillata.

Breeding site	Human disturbance	Human take	Natural disaster	Parasite or Pathogen	Habitat loss or degradation	Predation by alien species	Contamination
Inaccessible Island	no	no	no	no	no	no [a]	no

[a] Feral pigs no longer occur on the island.

FORAGING ECOLOGY AND DIET

An early dietary study of *Procellaria conspicillata* indicated a diet of cephalopods, decapod crustaceans and small fish [12]. When attending fishing vessels in waters off South Africa, *P. conspicillata* usually associates with and forages alongside the more abundant *P. aequinoctialis* (RMW pers. obs.) and is also strongly attracted to fishing vessels in Brazilian waters [28]. A dietary study of *P. conspicillata* caught and drowned on longline vessels off Brazil (n=7) showed cephalopods were the dominant prey type, and fish were a minor secondary prey [29]. Bioluminescent squid *Histioteuthis* spp. and *Octopoteuthis* spp., were the dominant prey, indicating nocturnal foraging. It is likely that its feeding ecology is similar to that of the very closely related *P. aequinoctialis*. The latter is a versatile, surface-feeding or surface-diving marine predator that scavenges aggressively, can achieve depths >10 m in foraging dives [30] and is strongly attracted to fishing vessels [31, 32]. As its scientific specific name suggests, *P. aequinoctialis* is proficient at foraging in both night and day [31, 33].

MARINE DISTRIBUTION

Current information on distribution is based on at-sea observations and recoveries from longline-fishing operations. *Procellaria conspicillata* is essentially confined to the South Atlantic Ocean north of the South Polar Front, predominantly between 25-41°S [19]. It is present in Brazilian [34] and southern Africa waters year-round, and *contra* Enticott and O'Connell (1985) [19], may be present in Tristan waters through winter [35]. As indicated above, it may have bred and foraged in the Indian Ocean prior to recorded history [15]. Recent reports suggest that small numbers of birds venture as far as 46°S, and probably into territorial waters of Argentina [36]. The species has also been reported from Angola, but is probably a vagrant there [37].

Procellaria conspicillata overlaps with four Regional Fisheries Management Organisations (Figure 1; Table 7), but principally with the CCSBT, ICCAT and SEAFO (South East Atlantic Fishery Organisation).

Table 7. *Summary of the known ACAP Range States, Regional Fisheries Management Organisations and Exclusive Economic Zones of non-ACAP countries that overlap with the marine distribution of* P. conspicillata.

	Breeding and feeding range	Foraging range only	Few records - outside core foraging range
Known ACAP Range States	United Kingdom	South Africa Uruguay Brazil	Argentina?
Non-ACAP Exclusive Economic Zones		Namibia	Angola
Regional Fisheries Management Organisations [1]	CCSBT ICCAT SEAFO	IOTC	

[1] see Figure 1 and text for list of acronyms

MARINE THREATS

Procellaria conspicillata is vulnerable to being caught on longlines, principally in waters where its range overlaps with Brazilian fisheries [38, 39, 40]. Longlining mortality was thought to pose a large threat to the species' survival [13], but the confirmed, exponential growth in numbers of breeding birds at Inaccessible Island suggests it is not an urgent threat [14]. Mortality associated with trawling vessels is not known, but *P. aequinoctialis* is vulnerable to such interactions and therefore this merits more attention [41]. The extent and severity of plastic ingestion are unknown.

KEY GAPS IN SPECIES ASSESSMENT

Protection (and specifically, adequate quarantine measures against rodent introductions) for Inaccessible Island is incomplete and thus presents a small, but potentially catastrophic risk. Data on important demographic parameters such as adult and juvenile survival, recruitment, breeding frequency, courtship period and mate fidelity are absent. These data would better inform demographic models used in the assessment of population trends. Annual population monitoring is unlikely to occur, and in the absence of stringent biosecurity arrangements should not be encouraged until the risk of introducing alien species is adequately managed [22, 27].

Photo © R. Wanless

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RECOMMENDED CITATION

Agreement on the Conservation of Albatrosses and Petrels. 2009. ACAP Species assessment: Spectacled Petrel *Procellaria conspicillata.* Downloaded from http://www.acap.aq on 3 September 2009.

GLOSSARY AND NOTES

(i) **Years**.
The "split-year" system is used. Any count (whether breeding pairs or fledglings) made in the austral summer (e.g. of 1993/94) is reported as the second half of this split year (i.e. 1994).

The only species which present potential problems in this respect are *Diomedea* albatrosses, which lay in December-January, but whose fledglings do not depart until the following October-December. In order to keep records of each breeding season together, breeding counts from e.g. December 1993-January 1994 and productivity counts (of chicks/fledglings) of October-December 1994 are reported as 1994.

If a range of years is presented, it should be assumed that the monitoring was continuous during that time. If the years of monitoring are discontinuous, the actual years in which monitoring occurred are indicated.

(ii) Methods Rating Matrix (based on NZ rating system)

METHOD
A Counts of nesting adults (Errors here are detection errors (the probability of not detecting a bird despite its being present during a survey), the "nest-failure error" (the probability of not counting a nesting bird because the nest had failed prior to the survey, or had not laid at the time of the survey) and sampling error).
B Counts of chicks (Errors here are detection error, sampling and nest-failure error. The latter is probably harder to estimate later in the breeding season than during the incubation period, due to the tendency for egg- and chick-failures to show high interannual variability compared with breeding frequency within a species).
C Counts of nest sites (Errors here are detection error, sampling error and "occupancy error" (probability of counting a site or burrow as active despite it's not being used for nesting by birds during the season).
D Aerial-photo (Errors here are detection errors, nest-failure error, occupancy error and sampling error (error associated with counting sites from photographs), and "visual obstruction bias" - the obstruction of nest sites from view, always underestimating numbers).
E Ship- or ground- based photo (Errors here are detection error, nest-failure error, occupancy error, sampling error and "visual obstruction bias" (the obstruction of nest sites from view from low-angle photos, always underestimating numbers)
F Unknown
G Count of eggs in subsample population
H Count of chicks in subsample population and extrapolation (chicks x breeding success - no count of eggs)

RELIABILITY
1 Census with errors estimated
2 Distance-sampling of representative portions of colonies/sites with errors estimated
3 Survey of quadrats or transects of representative portions of colonies/sites with errors estimated
4 Survey of quadrats or transects without representative sampling but with errors estimated
5 Survey of quadrats or transects without representative sampling nor errors estimated
6 Unknown

(iii) Population Survey Accuracy
High Within 10% of stated figure;
Medium Within 50% of stated figure;
Low Within 100% of stated figure (eg coarsely assessed via area of occupancy and assumed density)
Unknown

(iv) Population Trend
Trend analyses were run in TRIM software using the linear trend model with stepwise selection of change points (missing values removed) with serial correlation taken into account but not overdispersion.

(v) Productivity (Breeding Success)
Defined as proportion of eggs that survive to chicks at/near time of fledging unless indicated otherwise

(vi) Juvenile Survival

defined as:

1 Survival to first return/resight;
2 Survival to x age (x specified), or
3 Survival to recruitment into breeding population
4 Other
5 Unknown

(vii) Threats

A combination of scope (proportion of population) and severity (intensity) provide a level or magnitude of threat. Both scope and severity assess not only current threat impacts but also the anticipated threat impacts over the next decade or so, assuming the continuation of current conditions and trends.

		Scope (% population affected)			
		Very High (71-100%)	High (31-70%)	Medium (11-30%)	Low (1-10%)
Severity (likely % reduction of affected population within ten years)	Very High (71-100%)	**Very High**	**High**	**Medium**	**Low**
	High (31-70%)	**High**	**High**	**Medium**	**Low**
	Medium (11-30%)	**Medium**	**Medium**	**Medium**	**Low**
	Low (1-10%)	**Low**	**Low**	**Low**	**Low**