

**PROPOSAL FOR INCLUSION OF SPECIES ON THE APPENDICES OF THE CONVENTION
ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS**

A. PROPOSAL: To include the whole population of *Pelecanoides garnotii* (Lesson) in Appendix I

B. PROPONENT: Government of Peru

C. SUPPORTING STATEMENT

1. Taxon

1.1	Class	Aves
1.2	Order	Procellariiformes
1.3	Family	Pelecanoididae
1.4	Genus and species	<i>Pelecanoides garnotii</i> Lesson, 1828
1.5	Common name	Potoyunco, Yunco; Pato Yunco, Peruvian diving petrel

2. Biological data

2.1 Distribution

The Procellariiformes group and its abundance of species suggest that they play a potentially important role as consumers in marine pelagic ecosystems (Prince & Morgan, 1987). More specifically, the distribution of the Pelecanoididae family is restricted to the Southern Hemisphere, and only the Peruvian diving petrel (*Pelecanoides garnotii*) nests above the 6°S, without reaching the equator (Warham, 1990).

A species endemic to the Peruvian or Humboldt Current, is the only diving petrel to be found in waters with a temperature above 7°C in the western coast of South America (Murphy, 1936), ranging from Isla Lobos de Tierra, Peru (6° 27' S.) down to Isla Corral, Chile (37° S), and being capable of reaching 42°S during El Niño episodes (Harrison, 1983). Reports from the early 20th century cover the cities of Ancón, Callao, Chilca, several areas of Bahía de Pisco, Arica, Iquique, Taltal, and Valparaíso. (Murphy, 1936).

At present the species has the southernmost limit of its range in Coquimbo, Chile (30°S). In comparison with other species of the family Pelecanoididae, *P. garnotii* is the only one to reach low latitudes (Jahncke and Goya, 1998), and it breeds all year round. Breeding colonies are found in the coast of Chile and Peru, between 6° and 38° S (Murphy, 1936). In Chile, it ranges from Arica (18°S) to Corral (39°S) (Araya & Mille, 1986).



Pelecanoides garnotii is a sedentary species within its group, and prefers to inhabit in areas near the shore, since they provide a sure source of food (Roby, 1989), as is the case of the diving petrel population of Isla Choros (29°16'S), described as a highly productive habitat, being linked to an intense surfacing process (Acuña *et al.*, 1989).

2.2 Population

It has been found that Peruvian diving petrels have a growth rate which is linked to the seasons, being higher in winter (Ricklefs 1967).

Research carried out in Peru suggests the existence of diet seasonality. This, the authors think, would explain the different growth rates between seasons, as the quality of nutrition varies.

Up to 1998, a maximum population of 13 000 breeding pairs had been recorded in Islas San Gallan and La Vieja (Ica 14°S), in the Ica region (Jahncke and Goya, 1998). It is here where the last colonies for the species all over its range exist (AISS 1989, in Jahncke and Goya, 1998), yet there is also a breeding colony in Isla Choros, Coquimbo, Chile, where it is estimated that there are about 2000 breeding pairs (Contreras, pers. com.).

Recent studies on the diving petrel are few in Peru. In Chile the species formerly nested in Isla Santa María (37° S) and is said to have disappeared there at the beginning of the last century (Paessler, 1922). Murphy, however, in 1936, indicated its presence in Arica (18°S), Iquique (20°S), Taltal (25°S), Valparaíso (33°S), Corral (39°49'S) and Valdivia (39°48'S). There is then a great information void, up to the middle seventies, when the species is reported in only two segments of the Chilean coast, the gulf of Arauco (37°S), and near Isla Chañaral (29°S). A breeding colony of 1500 pairs has now been found in Isla Choros, in the Reserva Nacional Pingüinos de Humboldt (a three islands complex made out of Chañaral, Choros and Damas). Nowadays there are only occasional reports of the species in areas near Valdivia (Schlatter, pers. com.2001).

Another reported population in northern Chile is located in Isla Pan de Azúcar (26°S), with a very small breeding colony. However there is no trace of this species for 1995 (Luna, pers. com.2001)

2.3 Habitat

For half the 20th century Peruvian diving petrels inhabited the islands of the central and southern coasts of Peru. At that time, they were already reported as being the exclusive inhabitants of insular ecosystems. These were arid and lacked vegetation, except for a low hills habitat, present in some islands. The substratum there was rocky, and nests were placed in the rocks' crevices.

In Peru, according to Zamora's classification (1996), the diving petrel belongs to the eco region of cold sea water (Mar de Aguas Frías), which includes the Peruvian or Humboldt Current. The region extends from 6° S in Peru down to 42° S in Chiloé, Chile. It presents surface temperatures lower than 21°C, and a high salinity and nutrients content. This environment is also known as a surfacing area. Here the oceanographic phenomenon responsible for the surfacing of water rich in minerals takes place, which favours a high primary productivity that is the source of nutrients. The latter sustain the high biomass of marine populations of this system.

Another classification of marine ecosystems drawn by Sullivan and Bustamante (1999), divides them into a bio geographical province and three eco-regions, as the habitat for diving petrels. The Warm-Temperate Province of the south eastern Pacific includes the eco regions of Central Peru (6° S – 12° S), Humboldtiana (12° S – 25 ° S), and Central Chile (25°S - 33°S). It extends from the north of Peru down to the centre of Chile, with cold waters with a temperature of 18-19°C. The principal characteristics of this province are a narrow continental shelf, deep marine basins, arid conditions in the shoreline, and a high degree of endemism: 6% of the species of marine micro algae, 40% of bivalve molluscs and 70% of marine perciform fishes. In this area we find one of the most productive fisheries anywhere, based mostly on anchovy, sardine and hake. This large biomass provides nourishment for population of fish, birds and marine mammals. El Niño appears here between every 2 and 7 years, and warms the water, leading to a significant decrease in the productivity of the region. The principal threats to this ecosystem come from urban effluents and from fish-meal and fish-oil plants.

As stated the province is divided in three eco regions: Central Peru, Humboldtiana and Central Chile. The Central Peru eco-region extends from the north of Peru down to Callao. Its shoreline is made out of cliffs, sandy and rocky beaches, deserts, islands and rivers. There are few wetlands, and only some rivers. The upwelling associated with high primary productivity takes place here, and sustains a large amount of wild fauna. Salinity is higher than 34.5‰.

The Humboldtian region covers the southern part of Peru, down to northern Chile, and has more stable oceanic conditions, as well as many fish, birds and marine mammals. The main conservation problems have to do with coastal pollution and over-fishing. The main pollution sources are effluents from mining operations in the coast, drainage from large cities, and refuse from the fishmeal processing plants.

The Central Chile region ranges from 25° S, to the north of Antofagasta, down to Navidad, at 33° S, covering 1277 km of littoral. In contrast with the Humboldtian region, pelagic ecosystems are less productive, and the El Niño influence is a moderate one. The area may be seen as a transition zone between the Humboldtian and Araucaniana regions, since the latter shows different biotic and bio-economic aspects. The impact of coastal development, overexploitation of certain species, such as molluscs and fish, and industrial pollution, are the main problems to be prioritised here. All the reported populations of *P. garnotii* are linked to cold waters, and to surfacing sectors, and are found not far from the shore.

Diving petrels are strictly marine birds, inhabiting coastal waters, and spending most of their time swimming at surface level, with a clear predilection for diving (del Hoyo, 1992). There is information to the effect that the maximum average depth to which they dive is of up to 31.6?3.6 m. (Zavalaga & Janhcnke, 1997). On land they are very gregarious, and create dense breeding colonies. They build their nests/caves in flat, limy and compact soils, but may also be found in rocky cliffs, though in smaller numbers. They have a marked photoperiod, highly influenced by the moon. By daytime they are seen at sea, and they return to their nests at sunset. This depends on the amount of light present in the colony, and in the absence of light, they return at the onset of darkness, whereas when there is full moon they may return later, and even be active all night (Contreras *et al.*, 2001).

2.4 Migrations

There are no reports of regular migratory cycles in Peru and Chile, but the presence of individuals has been recorded far away from their breeding colonies, something that may be related to the fluctuations of the Peruvian or Humboldt Current, due to El Niño (Roca and Apaza, personal observation). The species may well present a sporadic dispersion, but only within the Humboldt current (Murphy, 1936). However, during “El Niño” episodes, their range may alter due to lack of sustenance.

3. **Threat data**

3.1 Direct threats to the population (factors, intensity)

Guano extraction was considered in the past as the main cause for habitat deterioration for the diving petrel, since the species sets its colonies by excavating this material, and hence suffers destruction when guano is taken away. Accordingly, populations decreased sharply when nests were destroyed (Schlatter & Simeone, 1999).

The species dives deep for food, approaching 35 m. (Zavalaga and Janhcnke, 1997). Fishing nets are at present considered one of the threats to the population. Another is constituted by predators, such as humans, foxes, and rats, in a continental environment. Diving petrels fall prey to the “*Pequen*” (*Athene cunicularia*) and the white owl (*Tito alba*). However, animals introduced by man have given rise to big imbalances (Schlatter & Simeone, 1999). Thus in Isla Chañaral (29°S), where, in 1938, there was an estimated population of 200.000 individuals, no nests were found after the introduction of foxes (Araya and Duffy, 1987)

3.2 Habitat destruction

Inadequate guano extraction has led to habitat destruction in Peru, in the past. At present, an agreement between an NGO and PROABONOS (Ministry of Agriculture), allowed for guano collection in 2001 9 in Punta San Juan, while implementing management measures for the protection of wild animals.

In Chile, similarly, the guano industry was the main threat to the habitat of diving petrels. Regulation came in 1963, both of fertilizers and of breeding areas, and forbade guano extraction in areas where birds were nesting.

3.3 Indirect threats

Studies made during El Niño of 1997-98, indicated a decrease in the percentages of adults laying eggs (45.25% to 17.5%), as well as a higher mortality of chicks (Janhcke and Goya 1998).

The main indirect threats to populations of marine birds are overexploitation of marine resources and “El Niño” episodes (Wolf & Valdivia, 1983; Tovar & Cabrera, 1983). Birds which already have conservation problems will be more affected. This is why we must monitor and conserve.

Present competition based on scarce marine resources involves not only the national economy, but also the availability of nourishment for different bird species. Lack of food has a negative impact on the life cycle of birds, and has consequences for the structure and dynamics of the population. The diving petrel’s diet is made of juveniles of *Engraulis ringens* (anchovy) and *Eufausea mucronata* (crustacean), species which are very abundant in northern Chile. Anchovy is a fishery resource of economic importance, and its present extraction constitutes a highly limiting instance for the growth of guano birds populations, behaving during El Niño episodes as a regulating factor for the size of the adult population (Jahncke, 1998).

The present lack of information does not allow us to elaborate a conservation proposal for the species nor to carry out actions to protect it.

3.4 Threats connected especially with migrations

Although we do not have regular data about regular migrations, the El Niño effect could lead to the migration of important population groups, due to lack of food, as in 1998, when dead birds of the *P. garnotii* species were found at distances greater than 200 km from their breeding grounds (Apaza and Figari, 1999).

Within the diving petrels family, the Peruvian bird is catalogued as a sedentary species (Murphy, 1936; Warham, 1990, del Hoyo, 1992). Should it disperse, this would very likely be linked to lack of nourishment.

3.5 National and international utilization

There is at present no utilization of this resource due to its conservation status.

4. **Protection status and needs**

There is no information about the population of the Peruvian diving petrel. As a starting measure, it is necessary to find the population groups reported in Peru for San Juan de Marcona (Ica) and Ilo (Moquegua). Confirmation of their existence would permit to prepare a monitoring plan in order to obtain appropriate information about the present status of the species.

Existing information about the populations of the species in Chile is scarce. There is no monitoring of the populations, and information on growth is isolated in time and unclear. Only 10.5% of the range is monitored. Other data about its present population is only incidental.

All the same, if a species’ evaluation is made with the available information, it would clearly not point to a danger of extinction for the populations of *P. garnotii*. It is important to have more information on the

status of the Peruvian diving petrel in Chile, since this would allow us to carry out a clear and precise evaluation of the present status of the species.

4.1 National protection status

The Peruvian government has taken the necessary legal measures to protect the species, which it considers in danger of extinction (RM N°. 01062-90-AG-DGFF). Decree 013-99-AG, which presents information on endangered species of wild animals, includes *Pelecanoides garnotii*, as a species in danger of extinction.

The population of *P. garnotii* has been declared vulnerable in Chile (Shlatter & Simeone, 1999). The Peruvian diving petrel population in its Region IV, is located within the Reserva Nacional Pingüinos de Humboldt, administered by CONAF (Corporación Nacional Forestal), a government institution in charge of the protection of the flora and fauna of protected natural regions.

There is legal protection for birds, in Chile, since 1955, when Decree 268 was promulgated, forbidding the hunting of wild birds during nesting, the collection of eggs and the capture of chicks over the whole Chilean territory. It also prohibits the sale or export of wild birds and their captivity without previous authorization from the Dirección General de Pesca y Caza. Decree F.L. N° R.R.A. N° 25 regulates the sale of guano.

4.2 International protection status

The species is not listed in any of the CITES or CMS appendixes and is not included in the UICN's red list.

The Agreement on Biological Diversity, ratified by the Peruvian government in 1993 (D.S. N° 26181), provides a first legal framework, of a global character, for all kind of concerted actions on the preservation and sustainable use of biological diversity. In the second conference of the Parties (Jakarta, 1995), decision II/10 on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity, states the aim of promoting the utilization of integrated areas as the most appropriate conceptual framework for managing human impact on marine and coastal diversity, and the conservation and sustainable use of such biodiversity. Signatory countries were further invited to establish and/or strengthen institutional, administrative and legal arrangements for the development of an integrated management of the marine and coastal areas, and their integration within national development plans. These are the principles that Peru has committed to implement, though since they are not yet clear in its fisheries legislation, the necessary mechanisms must be established for their inclusion and practice.

Chile has subscribed 10 agreements or international treaties related to the sustainable use of species of marine vertebrate fauna, such as Reglamento para las faenas de caza marítima en las aguas del Pacífico Sur, ratified in 1954 by D.S. N° 432; Convención para la protección de la Flora, la Fauna y la Bellezas Escénicas Naturales de América, ratified in 1967 by D. S. N° 531; CITES, ratified in 1975 by D. L. N° 873; the Convention Concerning the Protection of the World Cultural and Natural Heritage, ratified in 1980 by D. L. 259; the CMS (Bonn Convention), ratified in 1981 by D. S. 868 and the Convention on Biological Diversity, ratified in 1995, by D.S. 1.963, among others. One of the international conventions that has had one of the greatest effects on conservation and sustainable use of marine species is CITES. Since its promulgation in Chilean law in 1975, 48 marine species of birds, mammals, and reptiles have been included in its appendixes (16 in appendix I and 32 in appendix II). Humboldt's penguin is the only bird species in this list (Iriarte, 1999)

Within the framework of the CMS (Bonn Agreement), ratified by the Peruvian Government in 1997, the objective exists of setting up multilateral agreements to contribute to the strict protection of the migratory species listed in Appendix I. This is a basic instrument for the developing of joint conservation plans with Chile.

4.3 Additional protection needs

Besides the existence of laws classifying a particular species as being in danger of extinction, there is no other measure in Peru to protect any population of wild animals.

Coordinated initiatives between institutions in Peru and Chile are indispensable for the conservation of this species. Meetings of a working group made up of the Department of Fauna Marina from the University of Coquimbo, Chile (blga. Macarena Contreras), National Institute of Natural Resources of Peru (INRENA) and independent researcher Manuel Apaza, have taken place in order to carry out a census of the species range, in an attempt to find additional breeding grounds, and to suggest some form of protection, by selecting an appropriate category for the species.

Besides the classification of the species as vulnerable, in Chile, there is no other conservation measure in place to protect its population.

Research is being carried out on the species by the Universidad Católica del Norte (UCN), in Coquimbo, to gather data on the ecology of feeding, the eco-physiology and the behaviour of the species. All very valuable because unknown so far. The conservation of marine birds is being contemplated, as well as plans for getting finance for the future establishment of a rehabilitation centre for birds.

An agreement is being coordinated between UCN and CONAF, to facilitate monitoring the species in the Reserva Nacional Pingüinos de Humboldt. This will allow a better information flux between government organisations and universities for the benefit of the conservation of birds in the reserve.

SERNAPESCA (Servicio Nacional de Pesca), is also a government organisations devoted to the conservation of species of birds, and it manages a joint project with UCN, to promote the importance of marine birds in the ecosystem, by spreading information among fishermen.

5. **Range States**

The two most important breeding colonies of the Peruvian littoral (Islas San Gallan and la Vieja) are found within the Reserva de Paracas. In Chile the most important population reported so far is located within the Reserva Nacional Pingüinos de Humboldt. This is a three coastal islands complex, where the island of Choros has the more restrictions for visitors, and only allows the presence of persons authorized to carry out scientific research.

6. **Comments from range States**

CONAF and UCN are the two institutions devoted to observations of the species in Chile, and both concentrate in the population of *P. garnotii* that inhabits the Reserva Nacional. There is no information about the species, or any monitoring, in other parts of Chile.

The Instituto Nacional de Recursos Naturales (INRENA), is in charge of coordinating actions for the species conservation in Peru, and it is hoped that these will be developed jointly with Chile.

7. **References**

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