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Waterbirds around the world

A global overview of the conservation,
management and research of the
world's waterbird flyways

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The conservation status of migratory waterbirds in Argentina: towards a national strategy

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We would like to dedicate this paper to the memory of Pablo Canevari, in recognition of his valuable contribution to the conservation of migratory species in Argentina and the Americas.

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ABSTRACT

We present a preliminary assessment of the conservation status of migratory species in Argentina, with a focus on waterbirds. This paper will be used as a basis for the organization of the First National Workshop on Migratory Species in 2006. Guidelines for the development of a national conservation strategy will be produced. The present study included a questionnaire survey of experts and an intensive search of the literature. The available information has been compiled and summarized, and the main gaps in knowledge have been identified. A general overview of the results is presented in terms of species distribution, the main flyways, population status (estimates and trends), threats and conservation priorities. We also present some case studies of potential “flagship” species. The experience gained during this first assessment will be used as a basis for the second stage: the National Workshop and its related outputs. The Waterbirds around the world Conference has proved to be an excellent forum for receiving additional input from experts.

INTRODUCTION

Located in southern South America, Argentina has a wide diversity and abundance of wetlands (e.g. seashores, estuaries, large rivers and associated floodplains, lagoons and marshes, salt lakes, and peatlands) which provide habitat for many waterbird species. Of the 245 species of waterbirds recorded in the country (Mazar Barnett & Pearman 2001), 100 are migrants (41%), and these include many ducks (18 species), flamingos (three species) and shorebirds (29 species).

Nearctic shorebirds that have their main non-breeding areas in Argentina (Canevari *et al.* 2001, Hayman *et al.* 1986) include coastal species (e.g. Hudsonian Godwit *Limosa haemastica*, Red Knot *Calidris canutus* and White-rumped Sandpiper *Calidris fuscicollis*) and grassland species that concentrate in the grasslands of the Pampas (e.g. American Golden Plover *Pluvialis dominica* and Buff-breasted Sandpiper *Tryngites subruficollis*). Moreover, many species migrate within South America, including various Patagonian migrants that have their main breeding areas in Patagonia and main non-breeding sites at lower latitudes (e.g. Magellanic Penguin *Spheniscus magellanicus*, Ruddy-headed Goose *Chloephaga rubidiceps* and Olog's Gull *Larus atlanticus*) (Yorio *et al.* 1998 & 1999, Madsen *et al.* 2003).

In view of the increase in threats to migratory species in recent years, it has become apparent that there is a need for a national conservation strategy for the conservation of migratory birds. Some efforts have already been made to address biodiversity conservation (SAyDS 2003), and action plans have been

prepared for individual species such as the Ruddy-headed Goose (De la Balze & Blanco 2002) and the Andean flamingos (Caziani *et al.* 2001). However, conservation of migratory species has not yet been addressed comprehensively.

The aim of this paper is to make a preliminary assessment of the conservation status of migratory waterbirds in Argentina as a first step towards the development of a comprehensive strategy for their conservation. Basic information is being gathered for broader consultation and the development of a National Workshop.

METHODS

In this first assessment, we included the waterbirds and seabirds occurring in Argentina, and took the following steps:

- 1) an intensive literature search to compile background information;
- 2) selection of species;
- 3) identification of experts on particular species;
- 4) questionnaire surveys and telephone interviews; and
- 5) compilation and analysis of data, including identification of the main gaps in information.

Sources of background information that were consulted included the general literature on Argentinean birds (Canevari *et al.* 1991, De la Peña & Rumboll 1998, Mazar Barnett & Pearman 2001, Narosky & Yzurieta 2003) and international publications (Wetlands International 2002, Hayman *et al.* 1986). Scientific articles and the ‘grey literature’ were also reviewed. Species were selected on the basis of the following criteria: a) the species should represent different migration types and taxonomic groups; b) they should have a threatened status; c) they should represent different habitat types and conditions, portraying different conservation problems; d) they should be appealing enough to become “flagship” species; and e) there should be sufficient information available.

Questionnaires on selected species were produced and sent to a number of experts. About 93% of the questionnaires were answered effectively, and these responses were followed by telephone interviews. The main points covered in this consultation were:

- 1) taxonomic information;
- 2) conservation status;
- 3) seasonal and spatial distribution, and migration routes;
- 4) population estimates and trends;
- 5) the available literature;
- 6) banding initiatives;

- 7) threats and the main conservation actions required; and
- 8) the major requirements for a national conservation strategy.

Background information obtained from the literature and data on selected species provided by experts formed the basis for the present analysis. The taxonomy and systematic order follow Mazar Barnett & Pearman (2001). Information on the conservation status of waterbirds in Argentina was taken from García Fernández *et al.* (1997). Unless otherwise stated, information on population size was taken from Wetlands International (2002).

RESULTS

Migratory status

About 100 of the species of waterbirds and seabirds occurring in Argentina are migrants. Taxonomic groups including the highest proportion of migratory species are Phoenicopteriformes (100%, $n = 3$), Charadriiformes (61%, $n = 79$), Anseriformes (45%, $n = 39$) and Procellariiformes (36%, $n = 39$) (Fig. 1). Species were grouped in the following categories according to their migration patterns:

- 1) Nearctic migrants: species that breed in the North American tundra and migrate to the Southern Hemisphere during the non-breeding season, reaching Argentina in the austral spring and summer (e.g. Common Tern *Sterna hirundo*, Hudsonian Godwit, Red Knot and White-rumped Sandpiper);
- 2) Mid-latitude migrants: species that breed in Argentina and migrate to central and northern South America during the non-breeding season (e.g. American Wood Stork *Mycteria americana* and Spotted Rail *Pardirallus maculatus*); and
- 3) Patagonian migrants: species that breed in Patagonia and migrate to northern Argentina, reaching lower latitudes during the non-breeding season (e.g. Ruddy-headed Goose and Rufous-chested Dotterel *Charadrius modestus*).

Two other categories have also been considered:

- 4) Altitudinal migrants: species that breed in mountainous areas (including the “Puna” region and high plateaux in north-western Argentina) and make seasonal altitudinal migrations, moving to warmer, lower valleys during winter (e.g. the Andean flamingos);
- 5) Opportunistic migrants: nomadic species that make short- to long-distance movements with no regular pattern in search of favourable habitat conditions providing food and suitable nesting sites (e.g. several grebes, ducks and coots). In many cases, the conditions of the habitat are more important than climatic factors and time of year and, given favourable conditions, these species can breed all year round (Canevari *et al.* 1991).

The dominant migratory type varied between the taxonomic groups that were assessed. The Charadriiformes are dominated by Nearctic migrants, while Patagonian migrants dominate in all other taxa except for the Phoenicopteriformes, which include altitudinal and opportunistic migrants (Fig. 1).

Case studies

Sixteen species were selected to give as comprehensive an overview as possible (Table 1). In some cases, the information

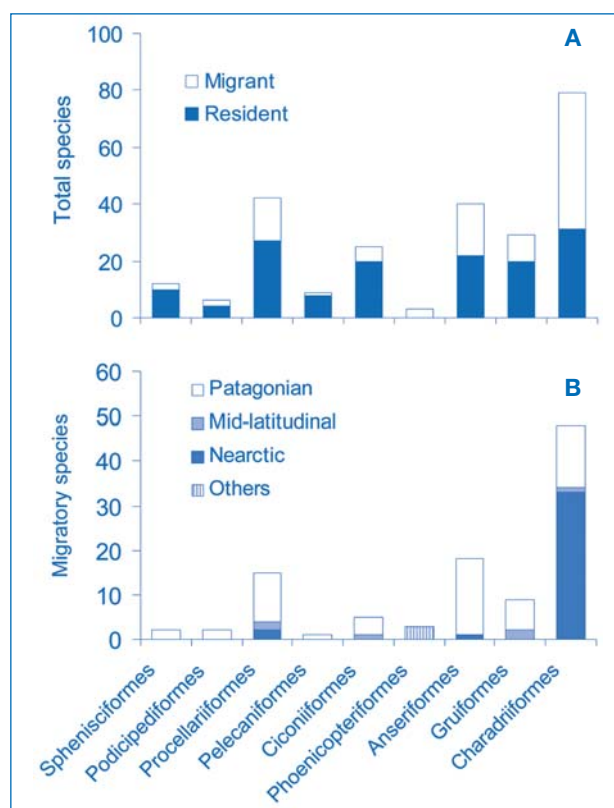


Fig. 1. The numbers of migratory waterbird species in Argentina by Order: (A) in relation to resident species, and (B) in each migrant category.

drawn from literature was revised on the basis of interviews with experts. Eight of the species listed in Table 1 are discussed in greater detail below to illustrate the results of the study. The major gaps in information for these eight species are listed in Table 2.

Magellanic Penguin *Spheniscus magellanicus*: This is a Patagonian migrant, breeding along the Patagonian coast from September to March. For the rest of the year (April to August), it is pelagic. The non-breeding range may include southern Brazil (P. Yorio *in litt.*), but no information is available on the migration routes.

Black-browed Albatross *Thalassarche (Diomedea) melanophris*: This seabird is another Patagonian migrant, breeding from October to March in the Falklands/Malvinas, South Georgia, the South Sandwich Islands and South Orkney/Orcadas Islands. No specific information is available on its non-breeding areas (April to September), although it is known to reach all southern oceans (F. Rabuffetti *in litt.*). Individual birds are highly faithful to their breeding sites.

Andean Flamingo *Phoenicopterus andinus*: This is an altitudinal and opportunistic migrant. During the breeding season (October to April), it occurs in the “Puna” region of the high Andes in north-western Argentina, as well as in Chile, Bolivia and Perú. It migrates to lower areas during the non-breeding season, reaching as far as the central plains of Argentina and southern Perú (S. Caziani *in litt.*).

Ruddy-headed Goose *Chloephaga rubidiceps*: The mainland and Tierra del Fuego population of this Patagonian migrant has a very restricted distribution. Breeding pairs concentrate in the surroundings of Punta Arenas and in the northern portion of Tierra del Fuego (Madsen *et al.* 2003). During winter, the birds occur in a small area in southern Buenos Aires province (Blanco *et al.* 2003).

Table 1. Selected species of migratory waterbirds in Argentina, indicating migratory and conservation status, listing in Appendices to the Convention on the Conservation of Migratory Species of Wild Animals (CMS), and experts consulted.

Family	Species	Migratory status	Conservation Status		CMS	Expert consulted
			International	National		
Spheniscidae	<i>Spheniscus magellanicus</i> *	PAT	NGT	NLT	No	Pablo Yorio
Podicipedidae	<i>Podiceps gallardoi</i>	PAT / OPP	NGT	VU	No	Mauricio Rumboll
Diomedidae	<i>Thalassarche melanophris</i> *	PAT ?	EN	NLT	II	Fabián Rabuffetti
Phalacrocoracidae	<i>Phalacrocorax atriceps</i>	PAT ?	NGT	NLT	No	Esteban Frere
Phoenicopteridae	<i>Phoenicopus andinus</i> *	ALT / OPP	VU	VU	I-II	Sandra Caziani
Anatidae	<i>Chloephaga rubidiceps</i> *	PAT	NGT	EN	I-II	Daniel Blanco
Anatidae	<i>Anas specularis</i>	OPP / PAT ?	NGT	NLT ?	II	Mariano Gelain
Anatidae	<i>Tachyeres patachonicus</i>	PAT	NGT	NLT	II	Pablo García Borboroglu
Anatidae	<i>Netta peposaca</i>	OPP	NGT	NLT	II	María Elena Zaccagnini
Rallidae	<i>Rallus antarcticus</i> *	PAT ?	VU	CR	No	Juan Mazar Barnett & Santiago Imberti
Rallidae	<i>Porzana spiloptera</i>	PAT ?	VU	VU	No	Mark Pearman
Pluvianellidae	<i>Pluvianellus socialis</i>	PAT	NGT	NLT	II	Silvia Ferrari & Carlos Albrieu
Charadriidae	<i>Oreopholus ruficollis</i>	PAT	NT	NLT	II	Juan Pablo Isacch
Scolopacidae	<i>Calidris canutus</i> *	NEA	NT	NLT	II	Patricia González
Scolopacidae	<i>Tryngites subruficollis</i> *	NEA	NT	NLT	I-II	Daniel Blanco
Laridae	<i>Larus atlanticus</i> *	PAT	VU	NLT	I	Pablo Petracci

Migratory status: PAT – Patagonian; NEA – Nearctic; OPP – opportunistic; ALT – altitudinal. Conservation Status: CR – Critically Endangered; EN – Endangered; VU – Vulnerable; NT – Near Threatened; NGT – not globally threatened; NLT – not locally threatened. The eight species selected as case studies are indicated with an asterisk.

Austral Rail *Rallus antarcticus*: This small rail is an opportunistic as well as a Patagonian migrant, but little is known about its distribution and movements. There are records from Santa Cruz province in Argentina and Region XII in Chile, but breeding has only been reported from Torres del Paine in November and December (J. Mazar Barnett & S. Imberti *in litt.*).

Red Knot *Calidris canutus*: This is a Nearctic migrant shorebird. Most individuals of the subspecies *rufa* migrate annually between breeding sites in the Canadian Arctic and their main non-breeding areas in Tierra del Fuego, in Argentina and Chile (Harrington 2001, P. González *in litt.*).

Buff-breasted Sandpiper *Tryngites subruficollis*: This Nearctic migrant has its main non-breeding areas in the Río de la Plata grasslands in Argentina, Uruguay and Brazil, where it is present from September to February (Lanctot *et al.* 2002).

Olrog's Gull *Larus atlanticus*: This Patagonian migrant is endemic to southern South America, and the breeding colonies are restricted to the Atlantic coast of Argentina (Buenos Aires and Chubut provinces). No information is available on migration routes (P. Petracci *in litt.*).

Threats and conservation actions

The threats to the conservation of the selected species were identified. In decreasing order of importance they are:

- 1) habitat change (either human-induced or natural) and habitat loss;
- 2) pollution (ranging from oil spills to pesticides);
- 3) urban development and tourism; and
- 4) other threats. The latter category includes mining activities,

water management, collection of eggs and guano, overgrazing, pets and feral animals, and biological causes such as low reproductive success and specialized diet during the breeding season.

Further information is given in Table 3 for the eight case studies. Taking into account these threats and the gaps in information that had been identified, a number of conservation actions were suggested by the experts. In decreasing order of importance they were:

- 1) implementation of protected areas;
- 2) habitat and species management (including eradication of alien species);
- 3) education and public awareness;
- 4) law enforcement;
- 5) long-term monitoring; and
- 6) others.

The main conservation actions required for the eight case studies are listed in Table 3.

A major issue identified by the experts was the need for more research (banding studies, determination of flyways) as a necessary input for better implementation of these conservation actions.

DISCUSSION

This preliminary analysis provides a basis for the development of a national strategy for the conservation of migratory species in Argentina. The process involved the participation of many

Table 2. Population size and trend, revised national conservation status (from Table 1) and main gaps in information for eight species of migratory waterbirds in Argentina. Population estimates follow Wetlands International (2002) except for the two marine species and *Chloephaga rubidiceps*, for which the sources of information are specified.

Species	Population size	Population trend	National conservation status (revised)	Gaps in information
<i>Spheniscus magellanicus</i>	964 000 breeding pairs ⁽¹⁾	No information available	NLT	- Wintering distribution - Migration routes
<i>Thalassarche melanophris</i>	1 000 000 – 2 500 000 ind. ⁽²⁾	Decreasing	VU ?	- Distribution and abundance - Dispersion patterns - Interactions with fisheries
<i>Phoenicopterus andinus</i>	34 000 ind.	Decreasing	VU	- Habitat selection - Behaviour - Fluctuations in population size - Breeding biology
<i>Chloephaga rubidiceps</i>	900 – 1 178 ind. ⁽³⁾	Decreasing	EN	- Migration routes and stopover sites - Reproductive success - Local movements in winter
<i>Rallus antarcticus</i>	2 500 – 10 000 ind.	No information available	EN ?	- Seasonal movements and distribution - Breeding biology - General ecology (habitat use, behaviour) - Threats
<i>Calidris canutus</i>	60 000 ind.	Decreasing	EN	- Size of non-breeding population and demographic parameters in northern South America - Migration routes
<i>Tryngites subruficollis</i>	15 000 ind.	Decreasing	NLT	- Migration routes and stopover sites - Population size - Habitat use - Local movements during wintering
<i>Larus atlanticus</i>	4 600 ind.	Decreasing	VU	- Migration phenology and flyways - Winter quarters in Argentina, Uruguay and Brazil - Winter quarters in Argentina, Uruguay and Brazil

⁽¹⁾ Yorio *et al.* (1999), ⁽²⁾ BirdLife International (2000), ⁽³⁾ Blanco *et al.* (this volume)

experts from all around the country who provided updated information on the current status of migratory waterbirds, including natural history, distribution and migration, threats, conservation needs, gaps in information, and so on.

An analysis of the information provided by the experts identified many gaps in information and the need to revise the migratory and conservation status of several waterbird species. There should, in fact, be further discussion regarding the classification of migrants, as several species do not fit into any of the “traditional” categories. In some cases, there is an overlapping of features from different categories. Some species, such as the Black-browed Albatross and Austral Rail, show both Patagonian and opportunistic features, while the Andean Flamingo shows altitudinal and opportunistic characteristics. For many species, basic information on migration patterns is still lacking.

On the other hand, some species are known to be declining, e.g. the Black-browed Albatross. In this case, the available information suggests a decreasing trend for the Falklands/Malvinas colonies, which contain 80% of known breeding pairs (BirdLife

International 2003). The Black-browed Albatross was the main species found in the by-catch on long-line fishing vessels between 1999 and 2001, out of a total of 10 000 albatrosses and petrels counted (M. Favero pers. comm.)

As regards long-distance migrants, many shorebirds are decreasing in South America, including some species that have their main non-breeding areas in Argentina. A particular case is the *rufa* population of the Red Knot, which has been declining significantly for the last two decades, particularly in Tierra del Fuego, where numbers have fallen from 51 000 to 27 000 in 2000-2002, threatening the viability of the subspecies (Baker *et al.* 2004). Another example is the Buff-breasted Sandpiper, which continues to show a declining trend (Lanctot *et al.* 2002).

Patagonian migrants also include some species with an unfavourable conservation status. The mainland and Tierra del Fuego populations of the Ruddy-headed Goose have been in serious decline since the 1950s. This species is now considered to be in danger of extinction both in Argentina and in Chile, with the total population in both countries now estimated at

Table 3. Main threats and conservation actions identified for eight species of migratory waterbirds in Argentina.

Species	Threats	Conservation actions
<i>Spheniscus magellanicus</i>	Oil exploration Interaction with fisheries Disturbance from tourism	Further research? International co-operation?
<i>Thalassarche melanophris</i>	Interaction with fisheries (including by-catch in long-line fishing, trawling and jigging vessels) Predation by alien species Pollution Disturbance from tourism	By-catch mitigation measures Monitoring breeding colonies Assessment of off-shore distribution and abundance Banding studies
<i>Phoenicopterus andinus</i>	Habitat changes due to irrigation works Human disturbance in breeding colonies (including egg-collecting and tourism) Mining and poaching Agro-chemicals	Long-term programmes to monitor populations Basin management; regulations on water use and law enforcement
<i>Chloephaga rubidiceps</i>	Predation by Patagonian Grey Fox <i>Dusicyon griseus</i> Sport hunting and "pest" control Agro-chemicals Habitat changes	Protection of breeding and non-breeding areas Hunting regulations and law enforcement Education and public awareness campaigns Habitat management
<i>Rallus antarcticus</i>	Overgrazing Irrigation works Alien species?	Management plans for cattle-raising in Patagonian wetlands Water management planning
<i>Calidris canutus</i>	Tourism and unplanned development Potentially also industrial pollution, oil exploration, sea-farming projects	Management planning Law enforcement Education and public awareness campaigns Monitoring activities
<i>Tryngites subruficollis</i>	Habitat loss and changes due to agricultural development in former cattle-raising areas Pollution from pesticides in rice fields	Management of grasslands and cattle Regulations on pesticide use Public awareness campaigns Banding initiatives
<i>Larus atlanticus</i>	Egg-collecting Pollution (heavy metals) Draining works in crab habitats	Improvement of management plans Law enforcement in protected areas Identification of main non-breeding areas and migration routes Protection of the breeding colony at Isla del Puerto

only about 1 000 birds (Madsen *et al.* 2003, Blanco *et al.* in press). However, the Falklands/Malvinas population of this species has a favourable conservation status (Wetlands International 2002).

In some cases, a revision of the National Conservation Status is needed, as in the case of the Black-browed Albatross, which should be amended to Vulnerable (F. Rabuffetti *in litt.*), and the Austral Rail, which should be moved from Critically Endangered to Endangered (J. Mazar Barnett & S. Imberti *in litt.*). In addition, some species such as the Magellanic Penguin and Austral Rail are not included in the CMS Appendices, and thus lack the protection of this international conservation tool.

Moreover, gaps in information have proved to be critical. In some cases, even basic information is lacking (e.g. abundance and distribution, migration routes, wintering areas, habitat use), making the conservation of the species more difficult to accomplish. A lack of knowledge of the distribution and movements of the Austral Rail, for example, prevents the implementation of conservation measures for this species. In the case of the Red Knot, although there is valuable information on the migration of the species (Baker *et al.* 2004), important gaps in knowledge still remain: demographic parameters for the northern South America

and Tierra del Fuego populations, recruitment rates in the breeding areas, late migration and connectivity factors (P. González *in litt.*)

CONCLUSION

This preliminary assessment has enabled us to collect very valuable information on the migratory waterbirds in Argentina. We have identified many information gaps, the main threats and the main conservation actions required. Furthermore, we have confirmed that a wide consultation amongst waterbird specialists is needed as a next step towards the development of a comprehensive national strategy. With this in mind, a first National Workshop on Migratory Species is planned for 2006.

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Paolo Canevari - widely respected for his pioneering contribution to waterbird and wetland conservation in Argentina and the Americas. Photo: Theunis Piersma.