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The IFAW Penguin Rehabilitation and Research Network

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ABSTRACT

South America has seven species of penguins distributed along the Atlantic and Pacific coasts. The Magellanic penguins (*Spheniscus magellanicus*) breed in large colonies in Argentina and Chile and migrate north as far as Southwest Brazil between March and September. Gandini et al. (1994) estimated that 42,000 Magellanic penguins die each year due to chronic oil pollution along the coast of the Chubut Province, in Argentina. Every year, different species of oiled and

debilitated penguins show up on beaches along their migration range and are rescued by different rehabilitation organizations in Argentina, Uruguay and Brazil.

Through providing emergency response, management and animal care protocols, as well as occasional funding in South America during the past four years, IFAW has assisted with the rescue and rehabilitation of over a thousand oiled birds and developed a close network of organizations forming the IFAW Penguin Network. The Network's main purpose is to bring together organizations working with penguins in South America and help them to increase the number of rescued animals, standardize rehabilitation protocols and collect and combine data in an effort to quantify and document the devastation caused by chronic oiling. The goal is to understand the effects of oiling on penguins and to mitigate these effects through rehabilitation, research and prevention.

There are currently 8 IFAW Penguin Network affiliated organizations, which are working with penguins in some way, be it through wildlife rehabilitation, beach surveys or research. The goal of this paper is to present the Network's goals and achievements since 2001.

INTRODUCTION

Penguins are a distinctive group of flightless, pelagic birds widely distributed in the cooler waters of the southern hemisphere. South America has a large diversity of penguin species; out of the total of seventeen species, seven are distributed along the Atlantic and Pacific coasts of the continent and sub-Antarctic islands.

The penguins' feeding and migrating grounds overlap with heavy maritime traffic and oil exploration areas. Oil affecting penguins along the Atlantic coast of South America has been documented since the early seventies (Jehl 1975) and every year, during the austral winter, oiled and debilitated penguins are found on shore along their migration range and are rescued by different rehabilitation organizations in Argentina, Uruguay, Brazil and Chile (Ruoppolo et al. 2003a). Incidental releases of oil by spills or shipwrecks are a possible source of petroleum but oil-contaminated ballast water discharged at sea appears to be the main source of pollution (Boersma, 1987; Gandini et al., 1994; Ruoppolo et al. 2003b). Different species of penguins are found oiled including Magellanics (*Spheniscus magellanicus*), rockhoppers (*Eudyptes*

chrysocome chrysocome) and kings (*Aptenodytes patagonicus*) (Figs. 1, 2 and 3). Other species of seabirds are affected, but penguins are the most common sight.

The Magellanic penguin colonizes along the Atlantic and Pacific coasts of South America. The eastern population breeds in large colonies in Argentina and migrates north as far as Southwest Brazil, between March and September. Documentation by Gandini and collaborators (1994), show that an estimated number of 20,000 adult penguins and 22,000 juveniles die every year due to chronic oil pollution along the coast of Chubut (Argentina) alone, representing less than a third of the total range for the species. These numbers represent approximately 3% of the total population dying yearly due to oiling.

It is important to mention that the International Union for Conservation of Nature and Natural Resources (IUCN) Status' of Magellanic penguins was changed from Lower Risk in 2000 to Near Threatened in 2004 (IUCN 2004). Magellanic penguin populations are declining for many reasons, including chronic oiling and over fishing, making every effort to save individual animals increasingly important. For more information on South American penguin's taxonomy, population trends and status please refer to Table 1.

Through providing emergency response, management and animal care protocols; and funding in South America during the past four years, the International Fund for Animal Welfare - Emergency Relief Team (IFAW – ER Team) – Oiled Wildlife Division, co-managed by International Bird Rescue Research Center (IBRRC) and IFAW, has developed the IFAW Penguin Rehabilitation and Research Network. Its main purpose is to bring together organizations working with penguins in South America and help them to increase the number of rescued animals, standardize rehabilitation protocols and data collection. The overall objective is to use rehabilitation, research, prevention and publicity to bring attention to the plight of these

unknown victims of chronic oil pollution and the effects that this type of pollution has on the environment. Through these practices we may be able to achieve our goal of effecting international policy to prevent chronic oiling in the penguins' range.

HISTORY

Every year oiled penguins show up on beaches along their migration routes. Different institutions along the penguins' range rescue them in Argentina, Uruguay and Brazil, and to date have been taken primarily to six rehabilitation facilities (Fig. 4). Among these institutions, between 350 and 500 animals are being rescued every year. These organizations all have existing rehabilitation programs and can house up to approximately 150-200 birds at a time at each facility. Due to limiting factors such as funding for gasoline for beach patrols, fish for larger numbers of birds and other expenses related to the rehabilitation process, the search and rescue of oiled penguins is still insufficient, leaving many oiled birds in more remote areas to die.

Preliminary discussions with some organizations indicated that all of them were frustrated and recognized that, due to limited resources, their ability to retrieve the oiled birds from the beaches was significantly impaired. When discussing the possibility of working collaboratively with IFAW to participate in a Penguin Rehabilitation and Research Network that could significantly increase the amount of animals currently being rehabilitated, all parties were enthusiastic.

Since 2001, IFAW has collaborated with Fundación Mundo Marino (FMM); Fundación Mar del Plata Aquarium (FMdPAq); Centro de Recuperação de Animais Marinhos (CRAM) and Uruguay during emergency responses when there were high numbers of oiled penguins in care at these Centers and an initial network was created (Ruoppolo et al. 2003a). Through this network,

from 2001 to 2005, over a thousand penguins were rehabilitated (Table 2). On July 1st 2004, the IFAW Penguin Rehabilitation and Research Network Project officially started as part of the Emergency Relief Program - Oiled Wildlife Division. Since then, eight institutions were formally invited to participate and are now part of the Network (Fig. 4).

During the development of the Network, it was noted the need to create categories for the participants, and these are:

- Rehabilitation centers (rescue and release birds; some do beach patrols)
- Research groups (only work with beach patrols and/or research)
- Reporting institutions (rescue but don't release birds)

IFAW Penguin Network Participant Institutions and Categories (North to South):

Brazil

Rio de Janeiro State:

- GEMM-Lagos/ENSP/FIOCRUZ (Research group);

São Paulo State:

- Aquário de Ubatuba (Reporting institution) – <http://www.aquariodeubatuba.com.br>;
- Aquário Municipal de Santos (Reporting institution);

Paraná State:

- Centro de Estudos do Mar (CEM), Universidade Federal do Paraná (Rehabilitation center) - <http://www.cem.ufpr.br>;

Rio Grande do Sul State:

- Centro de Recuperação de Animais Marinhos (CRAM), Museu Oceanográfico Prof. Eliézer de C. Rios, Fundação Universidade Federal do Rio Grande (Rehabilitation center) - <http://www.furg.br/museu>;

Uruguay:

- Protección de Fauna Marina (PROFAUMA) (Rehabilitation center) –
<http://www.profauma.org>

Argentina:

- Fundación Mundo Marino (FMM) (Rehabilitation center) –
<http://www.mundomarino.com.ar>
- Fundación Mar del Plata Aquarium (MDP Aq) (Rehabilitation center) -
<http://www.mdpaquarium.com.ar>

PURPOSE

To understand the effects of oiling on penguins and to mitigate these effects through rehabilitation, research and prevention.

GOALS

Rehabilitation - To provide for the successful rehabilitation for as many oiled penguins as possible through:

- Visitations to all potential participating organizations and assess current needs;
- Training for staff and volunteers at pre-identified institutions for building local capacity and standardize protocols;
- Develop cooperative agreements with participating organizations;

- Provide funding for fuel to set-up beach patrols in identified areas to expand the rescue of oiled penguins;
- Provide proper transport boxes in an effort to lessen mortality during transport;
- Respond to situations where the number of animals exceeds the local capacity and the need for more help is necessary;
- Identify additional funding sources, ie: oil industry, corporations, etc.
- Provide supervision and management of the Network;

Research - To learn and gain information to help in the preservation of penguin species by:

- Documenting and publishing the effects of oiling on penguins through the collection and storage of biological samples for different studies: necropsies and results; hematology; cytology; parasitology; toxicology; and other samples, as applicable.
- Train staff and volunteers of affiliated institutions for adequate biological sample collection;
- Develop partnerships with South American universities for cooperative studies: pre-existing relationships at some universities will facilitate the development of new research projects involving penguins in Brazil, Uruguay and Argentina;
- Documentation, monitoring and record keeping:
 - Collect and analyze oiled feather samples for evidence;
 - Blood collection and storage of blood smears;
 - Standard morphometrics in accordance with Dr. P. Dee Boersma's penguin research program (University of Washington);
 - Photographic documentation of each animal (Figs. 5 and 6)
 - To promote post release monitoring:

- Tag the birds in accordance with Dr. P. Dee Boersma's penguin research program (University of Washington);
- Potential long term monitoring with satellite transmitters;
 - Publication of information:
- Protocols for the rehabilitation of oiled penguins;
- Results of conducted research;

Prevention and Education - To utilize the information gained through rehabilitation and research activities to bring public attention to the plight of the penguins and the issues of chronic oiling by:

- Putting focus on individual or groups of penguins in rehabilitation through media, IFAW member appeals, etc.;
- Use of research as legislative tool to call for more stringent laws, stricter enforcement and stronger fines;
- Using individual photos and feather samples to document and build a feather and photo bank of evidence (Figs. 5 and 6);
- Implement web page discussing these issues by:
 - Photo journal of all impacted animals and their disposition;
 - Articles and educational materials about chronic oiling throughout the world;
 - Annual updates of the network's activities.

RESULTS, DISCUSSION AND CONCLUSIONS

Environmental consciousness has been growing in recent years, and wildlife rehabilitation in developing countries faces great challenges. The need for this network, its expansion and

increased capabilities are evident, but limited local financial resources are usually the greatest problem. The treatment of oiled penguins is one of the most cost effective rehabilitation efforts in the world. During the responses funded by IFAW in Brazil, Uruguay and Argentina, in 2001 and 2002, the average amount spent on the recovery of each bird was US\$ 95, similar to what was spent per healthy bird released during the catastrophic Treasure oil spill in Cape Town - South Africa, in June 2000 (Nel et al., 2003). Past oiled penguin rehabilitation efforts managed by the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB), IBRRC and IFAW have been extremely successful to the point that Cape Nature Conservation, in South Africa, considers rehabilitation of oiled penguins to be an essential and valuable species management tool.

Since the beginning of this project, the IFAW ER Team has provided emergency response, management and animal care protocols, advice and occasional funding to the IFAW Penguin Network participant institutions. Since the first emergency response, funded by IFAW in 2001, 1,219 oiled penguins were treated with 81.2% rehabilitation success (991/1,219). The numbers of penguins rehabilitated and released by the different rehabilitation centers are presented on Table 2.

The IFAW Oiled Penguin Rehabilitation Manual is currently under development and once the basic written material has been laid out, it will be peer reviewed by wildlife rehabilitators, biologists, veterinarians and others throughout the world. A databank of oiled feathers and photos of affected animals is being developed, compiled and will be crucial for documenting the individual cases and building a bank of evidence.

This project addresses the need for increased regional response capacity and will facilitate best achievable care for higher numbers of oil impacted birds each year. Establishing a network

of organizations with trained staff to respond to high influxes of oiled birds and catastrophic oil spills substantially increases local capacity.

In addition, the IFAW Penguin Rehabilitation and Research Network will increase the global body of knowledge regarding penguins through data collection and proper documentation during rehabilitation, provide substantial improvements for the care of oiled penguins in South America, both in terms of the quality of care and the number of animals that are able to be treated, increase the capacity of wildlife rehabilitators, veterinarians, biologists and others working in the field of oiled wildlife response and just as importantly, dramatically increase the level of awareness about the plight of chronic oiling along the South American coast as well as globally.

ACKNOWLEDGMENTS

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LITERATURE CITED

Gandini, P.; Boersma, P.D.; Frere, E.; Gandini, M.; Holik, T. & Lichtenstein, V. 1994.

Magellanic penguins affected by chronic petroleum pollution along the coast of Chubut, Argentina. *The Auk* 111:20-27.

IUCN 2004. IUCN Red List of Threatened Species. (<www.redlist.org>).

Nel, D.C.; Crawford, R. J. M.; Parsons, N. 2003. The conservation status and impact of oiling on the African penguin. In: Nel & Whittington (eds.) *Rehabilitation of oiled African penguins: a*

conservation success story. Fotoplate and Mills Litho Book Printers, Cape Town, South Africa. 1-7.

Ruoppolo, V.; Silva, R. P.; Heredia, S. R. & Holcomb, J. 2003a. Magellanic penguin rehabilitation and research network. Proceedings of the Seventh International Conference on The Effects of Oil on Wildlife. Hamburg, Germany (In press).

Ruoppolo, V.; Boersma, D.; Borboroglu, P. G.; Reyes, L.; Silva, R. P. 2003b. Chronic oiling affecting Magellanic penguins in South America: a review. Proceedings of the Seventh International Conference on The Effects of Oil on Wildlife. Hamburg, Germany (In press).

Table 1 – Taxonomy; population estimates; trend and status of penguin species in South America

Family Spheniscidae	Common name	Scientific name	Population estimates and trend	IUCN Red List Category Status (2004)
Genus				
Spheniscus	Humboldt penguin	<i>Spheniscus humboldti</i>	3,300-12,000 ↓	Vulnerable
	Galapagos penguin	<i>Spheniscus mendiculus</i>	1,200 ↓	Endangered
	Magellanic penguin	<i>Spheniscus magellanicus</i>	2,600,000	Near Threatened
Pygoscelis	Gentoo penguin	<i>Pygoscelis papua</i>	630,000	Near Threatened
Eudyptes	Rockhopper penguin	<i>Eudyptes chrysocome</i>	7,340,000 ↓	Vulnerable
	Macaroni penguin	<i>Eudyptes chrysolophus</i>	18,000,000 ↓	Vulnerable
Aptenodytes	King penguin	<i>Aptenodytes patagonicus</i>	2,000,000	Least concern

References:

2004 IUCN Red List of Threatened Species (<http://www.redlist.org>);

BirdLife International (<http://www.birdlife.org>).

Caption:

Trend: ↓ Decreasing

IUCN Red List Categories: Least Concern; Near Threatened; Vulnerable; Endangered

Table 2 – Percentage of oiled penguins rehabilitated and released by the IFAW Penguin Network in South America: 2001-2004.

Institution (Country)	2001	2002	2003	2004	TOTAL
CRAM (Brazil)	0% (0/2)	81,7% (94/115)	88,8% (16/18)	70% (7/10)	80,6% (117/145)
IFAW ER (Uruguay)	91,4% (64/70)	93,3% (126/135)	xx	xx	92,6% (190/205)
FMM (Argentina)	87,9% (196/223)	94% (128/136)	100% (17/17)	90,9% (20/22)	90,7% (361/398)
FMdPAq (Argentina)	61,7% (165/267)	79,1% (91/115)	80% (16/20)	69% (38/55)	67,8% (310/457)
Natura Patagonia - Berge Nice spill (Chile)	xx	Xx	xx	92,8% (13/14)	92,8% (13/14)
Total percentage released:	75.6% (425/562)	87.6% (439/501)	89% (49/55)	77.2% (78/101)	81,2% (991/1219)



Fig. 1

Fig. 1: Oiled Magellanic penguins. Credit: IFAW - Valeria Ruoppolo

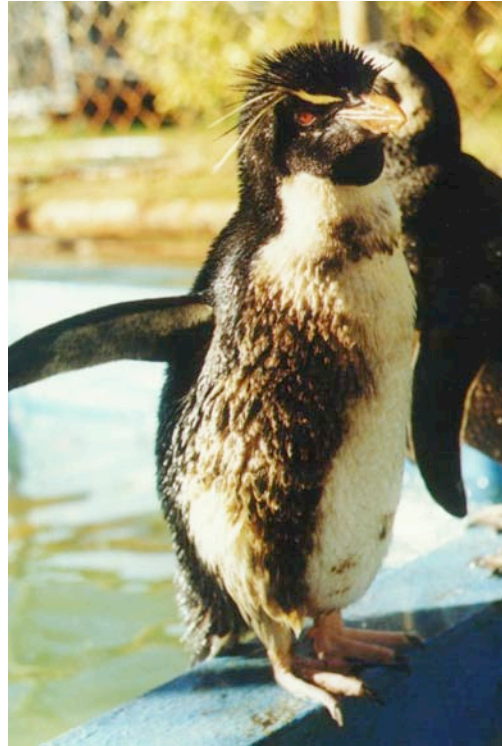


Fig. 2

Fig. 2: Oiled rockhopper penguin. Credit: IFAW - Valeria Ruoppolo



Fig. 3: Oiled king penguins. Credit: FMM - Sergio Rodriguez Heredia



Fig. 4: Map of South America showing the IFAW Penguin Rehabilitation and Research Network participant institutions



Figs. 5 and 6: Examples of the IFAW Penguin Network image databank.

Credits: IFAW PN – CRAM and FMM