The Magellanic penguin (*Spheniscus magellanicus*) as an indicator of chronic oil pollution off the coast of the Province of Buenos Aires, Argentina (1987-2008)

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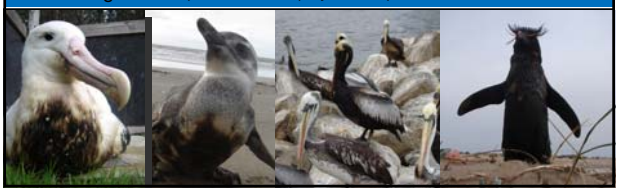
FUNDACION MUNDO MARINO / INTERNATIONAL FUND FOR ANIMAL WELFARE

Marine pollution by oil spills is one of the most threats to coastal biodiversity in the world, and seabirds are the main victims of this scourge. In effect, seabirds have been used as monitors of the oceans' health and of the incidence of oil pollution for a long time. (Furness and Camphuysen, 1997).



MAGDALENA, BUENOS AIRES , ARGENTINA1999

Several sources have been recognized for the presence of oil in the seas: natural seeps, vessels, pipelines, offshore exploration and ship wrecks but oil contaminated ballast water and tank washing at sea seem to be the main sources of pollution (Boersma, 1987; Gandini et al., 1994).

Unlike other geographical regions, in Argentina tanker accidents involving large numbers of seabirds have been sporadic events, but the occurrence of chronic oiling from various sources presents a constant and frequent worry along the Atlantic coast of South America

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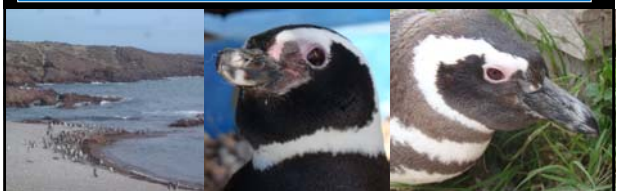
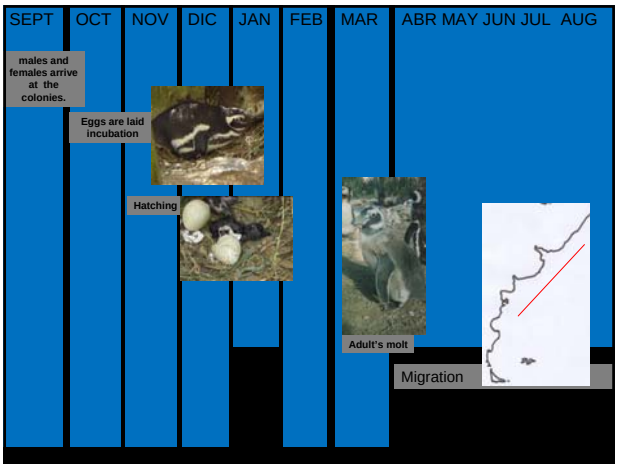
The most common species treated for oiling in this area is the Magellanic penguin (*Spheniscus magellanicus*), for which there are growing concerns related to their conservation due to oiling, over-fishing, loss of habitat and global warming.



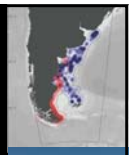
The International Union for the Conservation of Nature and Natural Resources (IUCN) Status' for the species was changed from Lower Risk in 2000, to Near Threatened in 2004 (BirdLife International, 2008).

They live along the Atlantic and Pacific coasts of South America. On the eastern coast, the species' largest breeding colonies are found from Peninsula Valdés (42º05'S, 64º51'W) south to Tierra del Fuego (54º54'S, 67º23'W). Their largest breeding colony, at Punta Tombo, Argentina, had approximately 200,000 breeding pairs in October 2006, a decline of 22% since 1987 (Boersma, 2008).



In Argentina, most of the oil exploration occurs in the south and ships make the distribution. During loading, transportation and unloading of the oil, between the ports of Patagonia and Buenos Aires, there are often accidents or unfortunate maneuvers that allow the loss of hydrocarbons into the ocean, along the penguins' geographical range.

Illegal and incidental operational discharges from shipping and offshore platforms can generate high mortality rates, especially when they happen near large seabird concentrations; in relation, chronic pollution threatens Magellanic penguins during their migration because their routes overlap with heavy maritime traffic and petroleum development (Stokes et al., 1998; Garcia Borboroglu et al., 2006).



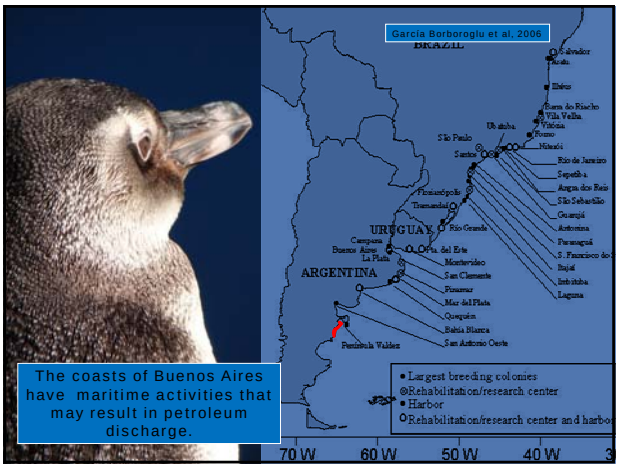
Extracted of :Falabella, V., Campagna, C. y Croxall, J. (edit.) (2009) " *Atlas del Mar Patagónico. Especies y espacios.*"Buenos Aires, Wildlife Conservation Society y BirdLife International.

The most important oil spill affecting wildlife happened in 1991, at Chubut, when 17,000 oiled penguins died.
This first case increased the public awareness about the fragility of our habitat.

The most impressive numbers are shown by Gandini et al. (1994), estimating 42,000 penguins die each year due to chronic oil pollution along the coast of Chubut Province, in Argentina.

Trying to minimize the effects of tanker traffic, in 1997 tanker routes were moved farther offshore by law enforcement.

The situation seems to be different in Buenos Aires, where there have been several spills, some important in size, such as the one in Magdalena, the most important accident in fresh water, that although it did not cause an obvious bird mortality, it severely damaged the environment. (Jan 1999, S 35°4' W 7°31'/ 5,400,400 litres of oil)



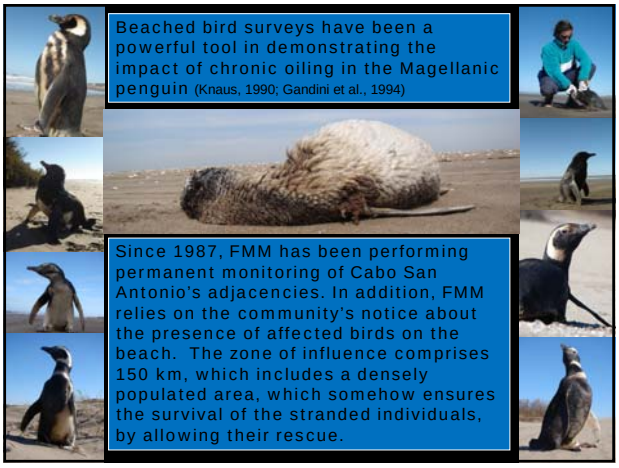
The coasts of Buenos Aires have maritime activities that may result in petroleum discharge.

Every year, the city of Buenos Aires disposes through drains the quantity of hydrocarbons equivalent to two spills like the one provoked by the Amoco Cadiz (France, 1978: 68,7 million gallons of crude oil). These hydrocarbons basically originate from automobiles' lubricants and engine oil.

Nevertheless, oil extraction and loading takes place at distant localities, but many oiled penguins are found mainly along the Buenos Aires's coast. Their behavior and amazing physical characteristics do not allow pointing the exact location of the spillage, although they genuinely demonstrate the presence of oil in the oceans.

FUNDACIÓN MUNDO MARINO, (FMM) is an animal rehabilitation center that has been operating since 1987 as a pioneer institution on the rehabilitation and release of different species of seabirds, sea turtles and sea mammal in Argentina.

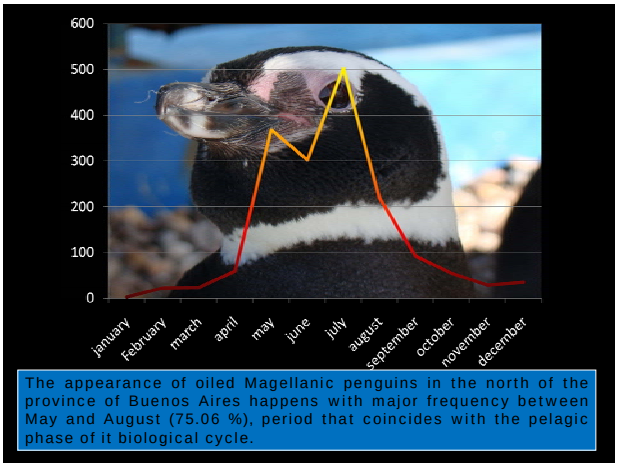
The Center not only assists affected sea birds, also gives the community the possibility to increase their knowledge on such urgent situation, through education and exposure.



Beached bird surveys have been a powerful tool in demonstrating the impact of chronic oiling in the Magellanic penguin (Knaus, 1990; Gandini et al., 1994)

Since 1987, FMM has been performing permanent monitoring of Cabo San Antonio's adjacencies. In addition, FMM relies on the community's notice about the presence of affected birds on the beach. The zone of influence comprises 150 km, which includes a densely populated area, which somehow ensures the survival of the stranded individuals, by allowing their rescue.

From 1987 until 2008, 2234 Magellanic penguins have been rescued and treated. Of those, 78.4% (1753/2234) were oiled



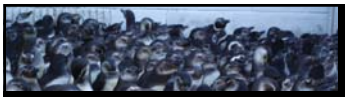
The appearance of oiled Magellanic penguins in the north of the province of Buenos Aires happens with major frequency between May and August (75.06 %), period that coincides with the pelagic phase of it biological cycle.

Of the birds oiled, the major percentage corresponds to adult penguins 67% (1174/1753), which has consequences for the conservation of the species.

The high proportion of adults affected suggests that chronic pollution is a major threat to the breeding population.

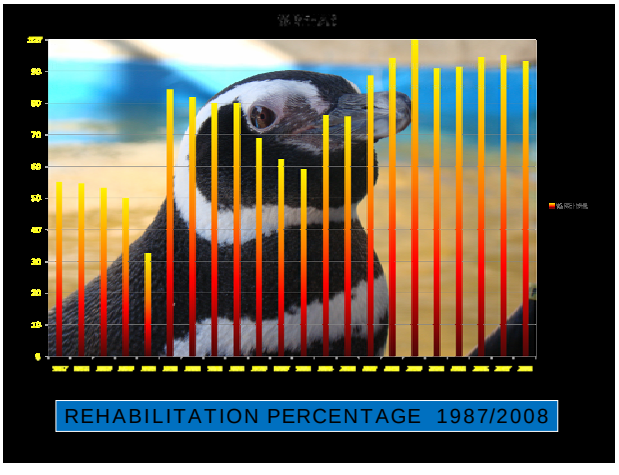
In long-lived birds such as penguins, breeding doesn't start till 5-7 years of age, and egg laying is limited to two eggs a year, even the slightest decrease in adult survival can cause the population to decline.

The development of the rehabilitation techniques perfected throughout 21 years has made possible to reach a percentage of successful rehabilitation of 94.91% in the last 7 years.



NUMBERS

years	Total live intake	oiled	% rehabilitation oiled penguins	
1987	20	18	55	10/18
1988	23	22	54,5	12/22
1989	96	96	53,3	51/96
1990	43	40	50	20/40
1991	64	57	32	18/57
1992	48	26	84	22/26
1993	27	21	80	17/21
1994	117	82	80	66/82
1995	100	71	69	57/71
1996	167	121	62	75/121
1997	125	125	59	78/125
1998	94	88	76,1	52/88
1999	113	93	75	70/93
2000	67	62	75,8	47/62
2001	300	217	88,6	192/217
2002	170	136	94	128/136
2003	31	17	100	17/17
2004	34	22	90,9	20/22
2005	48	48	93,7	45/48
2006	350	223	94,6	211/223
2007	140	140	95	133/140
2008	57	28	96,4	27/28
TOTAL	2234	1753		



REHABILITATION PERCENTAGE 1987/2008

In the South Atlantic Ocean, the presence of oiled birds is no longer heritage of a single nation: Uruguay, Brazil and Chile testify the same reality, which is not framed by geographical limitations or limited legislation.

All the information presented here and elsewhere about the extent of the problem is crucial for adequate zoning of marine sensitive regions, with designation of marine protected areas. It shows that the problem is not only limited to the birds' breeding areas but includes their entire migratory range, needing the commitment from several governments.

The constant incidence of oiled Magellanic penguins clearly shows that oiling is a major threat to seabird species off the coast of Buenos Aires, suggesting that proper surveillance, associated with national and international enforcement could reduce this needless mortality.

ACKNOWLEDGEMENTS

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THANK YOU!!!!!!!!!!!!

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