

#### Article Information

Received date : March 10, 2023

Published date: March 20, 2023

#### Corresponding author

Mike Bingham, Environmental Research  
Unit, Casilla 263, Punta Arenas, Chile

DOI: 10.54026/ESECR/1090

#### Keywords

Estimated predator; Armadillos; Chicks in  
Argentina; Magellanic penguin

Distributed under Creative Commons

CC-BY 4.0

# Armadillos: The Under-Estimated Predator of Magellanic Penguin Chicks in Argentina

Mike Bingham\*

Environmental Research Unit, Chile

#### Abstract

The Armadillo *ChaetophRACTUS villosus* is the most common armadillo in Argentina. Publications indicate that it feeds on insects and worms, however direct observations have shown that it is also a major predator of Magellanic penguin chicks in Argentina. The recognition of armadillos as predators of penguin chicks is important for the management and conservation of penguins in Argentina.

#### Introduction

Magellanic penguins (*Spheniscus magellanicus*) are found only in southern South America, with breeding populations in Chile, Argentina and the Falkland Islands. Population studies estimate that the world population of Magellanic penguins is between 1.3 and 1.7 million breeding pairs, with approximately 700,000 pairs in Chile, 900,000 pairs in Argentina and 100,000 pairs in the Falklands [1-4]. In the Falkland Islands, the Magellanic penguin population has declined by 92% since the introduction of commercial fishing by the Falklands Islands Government in 1988 [1-3, 4, 5]. Adult penguins are no longer able to catch sufficient food for their chicks, causing high chick mortality and population decline [5]. Population studies since 1996 have shown that Magellanic penguin populations in southern Chile and Argentina are healthy and increasing over this same period [2,3]. Penguin colonies in Argentina have annually experienced large numbers of dead chicks found with their intestines and internal organs removed, but with no other injuries. Since neither foxes nor skuas kill penguins in such a manner, it had previously been assumed that this was the result of scavengers feeding on penguins that had died from other causes. However direct observations have shown that armadillos (*ChaetophRACTUS villosus*) are killing penguin chicks by biting their way directly into the penguin's abdomen. The armadillos then eat the internal organs leaving the carcass otherwise intact, without the typical injuries associated with predation. Commonly known as the Large Hairy Armadillo, *ChaetophRACTUS villosus* is the most common armadillo in Argentina. Publications indicate that it feeds on insects and worms, and its role as a major predator of Magellanic penguin chicks in Argentina has been largely unreported.

#### Methodology

Since 1996 penguin colonies along the Straits of Magellan and the Atlantic coast of Argentina have been studied on a regular basis as part of a long-term penguin monitoring program by the Environmental Research Unit. Colonies studied over this period include Magdalena Island, Contramaestra Island, Seno Otway and Punta Dungeness in Chile, and Cabo Virgenes, Punta Entrada, Monte Leon, Bahia Laura, Punta Buque and Isla Pinguino in Argentina. The aim is to monitor population trends, to identify any problems that may impact on the penguins, and to compare trends in Chile and Argentina with the population decline being observed in the adjacent Falkland Islands. The methodology and results of this research have been published periodically [2,3, 5, 6]. During the course of this penguin monitoring program, predation of penguin chicks by armadillos has been directly observed and documented by researchers.

#### Results and Discussion

Even though penguin populations are healthy and increasing in southern Argentina, it is still important to identify and understand the causes of penguin mortality. When the chicks are small the adult penguins take turns at catching food for them, with one parent staying in the nest with the chicks to protect them, and the partner going to sea to catch fish. As the two chicks get bigger and start to demand more food, both parents are forced to leave the chicks alone in the nest during the day, in order to catch sufficient food to keep both chicks fed. The chicks being left alone weigh between 2 and 3 kilograms and are strong enough to resist predation by foxes, gulls and skuas. However, they are completely defenseless against the stronger, heavier, and well armored armadillos. The armadillos are able to select any chick at random, over-power it, and bite a hole into the abdomen in order to eat the internal organs. Armadillos have strong pointed jaws for extracting worms and insects from hard soil, and they use the same action to burrow into the soft abdomen of the penguins in a matter of seconds. Armadillos can run faster than the chicks so escape is virtually impossible.

(Figure 1) shows an armadillo biting at the abdomen of a mortally wounded penguin chick. The armadillos attack the chicks in their nest, pinning them down on their back and biting a hole into the abdomen. On this occasion the chick managed to momentarily escape, but the armadillo followed the chick, continuing to attack only the abdomen. Within 2 minutes of this photo being taken the chick died from its internal injuries. The armadillo eats only the entrails and internal organs and then leaves the rest of the carcass intact. With no other injuries it appears as though the chick died from other causes and that the entrails were removed by scavengers. The only other predators of chicks in these colonies are foxes and skuas, neither of which kill large healthy chicks in such a distinct manner. The large number of penguin chick carcasses found each year in this condition, leads the author to believe that armadillos are a major predator of Magellanic penguin chicks in Argentina. Penguin chicks are protected by the adults for the first few weeks after hatching. The chicks then fledge and leave the colony at just 12 weeks of age. So there is only about a 6 week period during which the armadillos can take advantage of this easy food supply. Such a short period alone is not enough to sustain a high population of armadillos, and the penguin colonies in our study program have remained healthy despite this predation, with penguin populations either stable or increasing. However there are other colonies in the region where penguin populations have declined, and predation by armadillos may be playing a role in those declines.



**Figure 1:** Armadillo attacking a penguin chick © Mike Bingham, Environmental Research Unit, 2023.

### Acknowledgments

My special thanks go to the Chilean National Forestry Corporation (CONAF) and the Consejo Agrario Provincial (CAP), for their help and hospitality. I would like to thank my research assistants Noelia Reineck, Cici Legoe, Christopher Burney, Jennifer Rock, Jon Philipsborne, Joseph Brandt, Nidia, Mendez and Elena Mejias. My special thanks to the British Government's Department for Environment, Food and Rural Affairs for funding the establishment of this project through their Darwin Initiative Program.

### References

1. Falabella V, Campagna C (2019) Forum for the conservation of the Patagonian Sea 2019. Report of the IUCN Regional Red List First Workshop for species of the Patagonian Sea.
2. Bingham M (2020a) Magellanic penguin monitoring results for Magdalena Island (Chile) and Cabo Virgenes (Argentina) 2000 to 2019. *Anales Del Instituto De La Patagonia* 48(1): 27-35.
3. Bingham, M (2020b) The Status of Magellanic Penguins in Chile, Argentina and the Falkland Islands. *IJDR* 10(7): 128-135.
4. Ellis S, Croxall J, Cooper J (1996) Penguin Conservation Assessment and Management Plan. IUCN/SSC Conservation Breeding Specialist Group.
5. Bingham M (2002) The decline of Falklands penguins in the presence of a commercial fishing industry. *Revista Chilena de Historia Natural* 75: 805818.
6. Bingham M, Herrmann T (2008) Results of the Magellanic Penguin studies on Isla Magdalena (Chile) 2000-2008. *Anales Instituto del Instituto de la Patagonia* 36(2): 19-32.