

Persistent organic pollutants in juvenile of Magellanic penguins (*Spheniscus magellanicus*) found on the southern and southeastern coast of Brazil.



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Every year, Magellanic penguins (*Spheniscus magellanicus*) leave their colony in Patagonia, Argentina/Chile and head to sea for months in the search for food. For juveniles, this is the first pelagic migration. At specific feeding grounds, these penguins come into contact with human activities, such as fishing and tourism. The presence of persistent organic pollutants (POPs) in the environment in which these penguins migrate may be another factor affecting their biology and population decline.

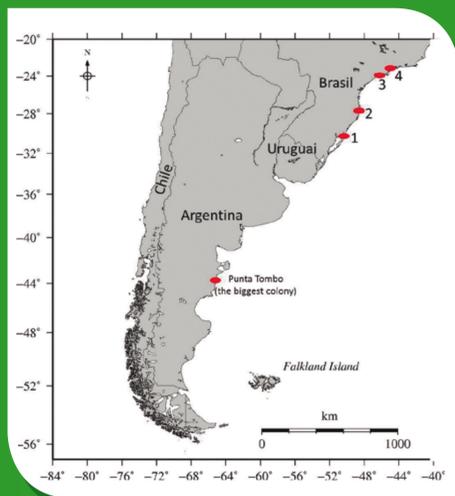


Figure 01
Sampling sites in Brazil.

The present study demonstrates the occurrence of persistent organic pollutants in Magellanic penguins found debilitated on the beaches of Brazil, between 2008 - 2011. Figure 01.

Fifty six juveniles were analyzed (Figure 02). Due to the body state, only the liver was analyzed, as the birds were found virtually without adipose tissue.

Samples stored in aluminum foil, and kept frozen until analysis. Samples were analyzed based on MacLeod et al. (1986) procedure, with some adaptations as described in Figure 04.

The following POPs concentrations were found: Σ PCBs: 3.16 to 835 ng g⁻¹; Σ DDTs: 2.3 to 274 ng g⁻¹; and Σ HCHs: 1.10 to 44.3 ng g⁻¹, HCB 0.86 to 108 ng g⁻¹. Among the PCBs, there was a predominance of hexachlorobiphenyls (138 and 153) and heptachlorobiphenyls (180 and 187). Among the organochlorinated pesticides, DDT predominated, mainly in the p,p'-DDE form. The maximum concentrations of POPs found in the specimens of *S. magellanicus* reached levels as high as 102 to 103 ng g⁻¹ (wet weight) above those found in *Pygoscelis adeliae* and *Pygoscelis papua* from Antarctica.



Figure 02
Juvenile of Magellanic penguin

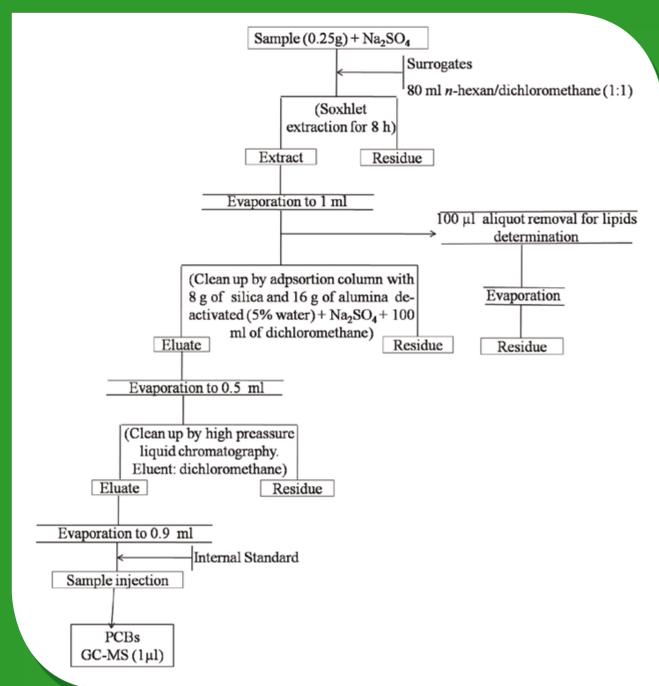


Figure 03
Method for PCBs and chlorinated pesticides analysis

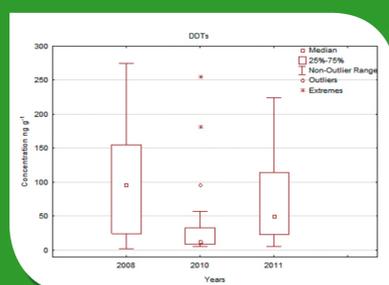


Figure 04
DDTs concentration in ng g⁻¹ wet weight in Magellanic penguin liver.

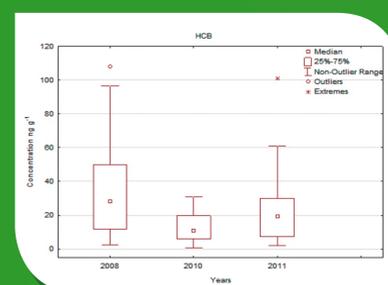


Figure 05
HCB concentration in ng g⁻¹ wet weight in Magellanic penguin liver.

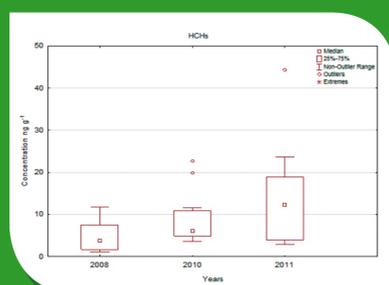


Figure 06
HCHs concentration in ng g⁻¹ wet weight in Magellanic penguin liver.

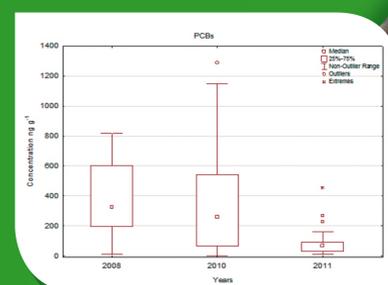


Figure 07
PCBs concentration in ng g⁻¹ wet weight in Magellanic penguin liver.

CONCLUSION

- > Concentrations of POPs in samples of Magellanic penguin are not due only to exposure of these animals to a local source of contaminants, but also to migratory behavior of these animals.
- > The higher concentration of light congeners in the samples also suggests atmospheric transport of PCBs. Overall, organochlorine levels are lower than those found in Antarctic.
- > However, more studies are necessary to better evaluate the species contamination.

