

JOINT EVENT

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&

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Tuberculosis in marine mammals: Is it an emerging disease?Juan Pablo Loureiro^{1,2}¹National University of La Plata, Argentina²Mundo Marino Foundation, Argentina

The rehabilitation center of Mundo Marino's Foundation attended 2008 marine mammals, founded on the northern coast of Buenos Aires province (36° 22'S/56° 44' W to 37° 15'S/56° 58' W) from 1987 to date. Among the most frequently attended marine mammals there were: 1315/2008 (65, 49%) South American sea lions (*Arctocephalus australis*); 113/2008 (6, 59%) sub-Antarctic sea lions (*Arctocephalus tropicalis*) and 159/2008 (9, 27%) South American fur seals (*Otaria flavescens*). In 1983, the necropsy of an *A. australis* showed macroscopic lesions compatible with tuberculosis and this finding was the starting of a research project on this disease. On February 27, 1989, an adult female *A. australis*, weighing 40 kg, was rescued with signs of dyspnea, weakness, permanent ventral recumbency and poor physical condition. Despite medical care the animal died. Necropsy showed lung and lymphatic lesions compatible with tuberculosis. Bacteriological cultures and molecular biology of samples were collected and we could identify a new member of *Mycobacterium tuberculosis* complex: named *Mycobacterium pinnipedii*. The 2.17% of pinnipeds admitted into the rehabilitation center were diagnosed with tuberculosis. Isolates of mycobacteria strains from sea lions have shown to have *in vitro* sensitivity to the tuberculostatic drugs isoniazid, streptomycin, rifampin, ethambutol and paraminosalicylic acid. As the diagnosis of the diseases of the animals admitted to the rehabilitation center was being perfected, undescribed diseases were found. This situation makes it difficult to determine if they are emerging diseases or they already existed in nature.

Recent Publications:

1. Bastida R, Loureiro J D, Quse V, Bernardelli A, Rodriguez D and Costa E (1999) Tuberculosis in a wild sub-Antarctic fur seal from Argentina. *Journal of Wildlife Diseases* 35:796-798.
2. Bos K, Harkins K M, Herbig A, Coscolla M, Weber N, Comas I, Forrest S A, Bryant J M, Harris S R, Schuenemann V J, Campbell T J, Majander K, Wilbur A K, Guichon R A, Wolfe Steadman D L, Della Collins Cook, Niemann S, Behr M A, Zumarraga M, Bastida R, Huson D, Nieselt K, Young D, Parkhill J, Buikstra J E, Gagneux S, Stone A C and Krause J (2014) Pre-Columbian mycobacterial genomes reveal seals as a source of new world human tuberculosis. *Nature* 514:494-497.
3. Cousins D V, Bastida R, Cataldi A, Quse V, Redrobe S, Dow S, Duignan P, Murray A, Dupont C, Ahmed N, Collins D M, Butler W R, Dawson D, Rodriguez D, Loureiro J D, Romano M I, Zumarraga M and Bernardelli A (2003) Tuberculosis in seals caused by a novel member of the *Mycobacterium tuberculosis* complex: *Mycobacterium pinnipedii* sp., nov. *International Journal of Systematic and Evolutionary Microbiology* 53:1305-14.
4. Kiers A, Klarenbeek A, Mendelts B, Van Soolinger D and Koeter G (2008) Transmission of *Mycobacterium pinnipedii* to humans in a zoo with marine mammals. *The international Journal of Tuberculosis and Lung Disease* 12:1469-73.

Biography

Juan Pablo Loureiro obtained his title Doctor in Veterinary Medicine. He studied in La Plata National University, Argentina and obtained his specialist title in Reproduction at Cordoba National University, Argentina. His Undergraduate and Postgraduate studies were focused in biology, medicine and reproduction of marine mammals. He is part of the teaching staff at the La Plata National University. His main areas of teaching are animal anatomy and biology, medicine and conservation of marine fauna. He is also a Technical Director at the Rescue and Rehabilitation Center of Mundo Marino Foundation. This Center allows him to have direct contact with marine fauna and also to work in the diagnosis of tuberculosis among other emerging diseases. The monitoring of these diseases is one of the factors that allow controlling environmental health and taking the necessary precautions in each case.

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