

## SANITARY SURVEILLANCE OF THE MARINE ECOSYSTEM OF THE CANARY ISLANDS

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**Abstract:** During the last ten years, the IUSA Molecular Pathology Laboratory has set up and/or optimized numerous molecular diagnostic techniques using the polymerase chain reaction (PCR) technique for the accurate detection of marine wildlife pathogens in the Canary Islands, constituting the first systematic Sanitary Surveillance of our marine ecosystem. The presence of microorganisms including bacteria (*Brucella* spp., *Photobacterium damsela* subspecies *damsela*, *Bartonella henselae*, *Listeria monocytogenes* and *Erysipelothrix rhusiopathiae*), virus (herpesvirus, morbillivirus, poxvirus, polyomavirus, Flaviviruses including the two main lineages of West Nile Virus, Sars-CoV-2 and other compatible coronaviruses and Influenza virus (N1H1, H5, H7)), and parasites (*Nasitrema delphini* and *N. globicephalae*, *Crassicauda* spp. and *Toxoplasma gondii*) were detected, quantified, and typed by different and specific PCRs (conventional, nested, quantitative, retrotranscriptase, multiplex, SYBR Green and TaqMan, etc.). Different DNA/RNA extraction techniques are also carried out; an automated robot for these extractions has recently been incorporated into the laboratory, which greatly optimizes laboratory work. 260 cetaceans from 17 different species (*Balaenoptera acutorostrata*, *B. physalus*, *Delphinus delphis*, *Globicephala macrorhynchus*, *Grampus griseus*, *Kogia breviceps*, *Lagenodelphis hosei*, *Mesoplodon bidens*, *M. densirostris*, *M. europaeus*, *M. mirus*, *Physeter macrocephalus*, *Stenella coeruleoalba*, *S. frontalis*, *Steno bredanensis*, *Tursiops truncatus* and *Ziphius cavirostris*) and 72 seabirds of 14 different species (*Ardea cinerea*, *Bubulcus ibis*, *Bulweria bulwerii*, *Calonectris diomedea borealis*, *Charadrius alexandrinus*, *Ciconia ciconia*, *Fratercula arctica*, *Larus michahellis* *Atlantis*, *Morus bassanus*, *Nycticorax nycticorax*, *Oceanodroma leucorhoa*, *Pandion haliaetus*, *Puffinus puffinus canariensis*, and *Sterna sandvicensis*) have been analyzed to date. As a result, we have described the first detection of *Brucella* sp. in a cetacean stranded in the Canary Islands [1], a region with no reported cases of brucellosis for this taxon, the first detection of herpesvirus infection in Gervais' and Sowerby's beaked whales [2], and the

first molecular confirmation of a Dolphin Morbillivirus infection in a Cuvier's beaked whale [3], among others.

**Key words:** Sanitary Surveillance, Marine, Wildlife, PCR, Ecosystem.

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