

UNIVERSITÀ DEGLI STUDI DI MILANO - BICOCCA

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Exploring the possibility of detecting rare vertebrates'
presence by means of eDNA analysis in the Caprera
Canyon: a high biodiversity hotspot

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ABSTRACT

Environmental DNA (eDNA) refers to the genetic material that can be extracted from environmental samples. The rapidly expanding study of eDNA has generated unprecedented ability to detect species and conduct genetic analyses for conservation, management and research, particularly in scenarios where the collection of whole organisms is impractical or impossible.

In this study, we use eDNA analysis in order to detect rare species of vertebrates and to evaluate the spatiotemporal distribution of marine mammals in an area biologically important due to the bathymetric conformation of the sea bottom (canyon). The focus is on two marine mammal species of conservation interest and also too evasive to be monitored using a traditional, visual approach: the Cuvier's beaked whale (*Ziphius cavirostris*) and the Mediterranean monk seal (*Monachus monachus*).

The area of interest is in the Caprera Canyon's region, placed in one of the major marine canyons' zones of the Mediterranean Sea, representing an important hotspot for marine biodiversity. Water samples are collected once a month for five months in three established points, filtered and then analyzed in laboratory via DNA extraction and qPCR using primers that are specific for the two species. Ten to twenty samples collected from the surrounding areas (Elba, Corsica, and Sardinia) were simultaneously analyzed as a control.