

EVALUATION OF SOME ECOLOGICAL PARAMETERS OF BOTTLENOSE DOLPHIN (*TURSIOPS TRUNCATUS*) IN MADEIRA ARCHIPELAGO: IMPLICATIONS FOR ITS CONSERVATION

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Introduction

Bottlenose dolphins are listed in Annex II of the EU's Habitats Directive, requiring Member states to propose key areas for designation as Special Areas of Conservation (SACs). The success of such designated areas depends upon the quality of available information to understand how these areas are used by the animals and what factors affect their distribution and abundance. In order to improve our understanding of ecology of bottlenose dolphins in Madeira archipelago, we initiated an extensive study to investigate some population parameters such as abundance; survival rates; site-fidelity and spatial distribution to identify areas that might need protection and management.

Study area



Fig.1- The Madeira archipelago in the NE Atlantic with special highlight to the study area.

Methods



Results and discussion

Photo-id

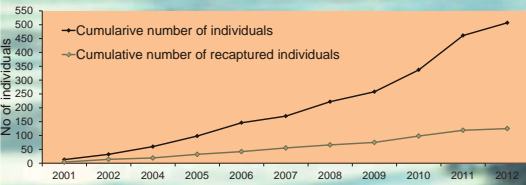


Figure 2- Discovery curve of all marked individuals and recaptured individuals

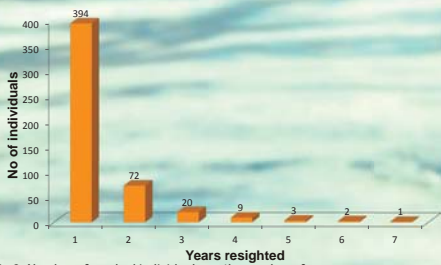


Fig.3- Number of marked individuals vs the number of years

Photo-id: A total of 501 bottlenose dolphins were identified during the eleven years of the study period. The discovery curve of the number of identified individuals (Fig.2) has not reached a plateau, suggesting we have not yet captured all the dolphins present in the study area. A total of 107 individuals (21%) were resighted during more than 1 y and 15 of which span over 4 y indicating some degree of site-fidelity. The proportion of individuals that was captured only once (324; 79%) seems to indicate that there are a high number of transients passing through the study area but not using the area permanently. Abundances estimates and survival rates for the study area are being calculated using mark-recapture methodology.

Spatial modeling

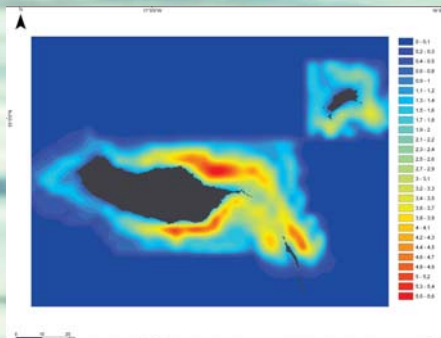


Figure 4- Map showing the relative density of bottlenose dolphins (dolphins/Km²) in the study area.

Spatial modelling: Spatial modelling first analysis revealed areas of higher density around Madeira Island (Fig.4), with an estimated abundance of 633 (CV=0.22; 95% CI = 425-759), and an estimated average density of 0.1435 dolphins per Km². The results obtained from the spatial modelling indicates that there are areas of higher relative density (mainly all the east part of Madeira island) and therefore, more important for their conservation. Further analysis is being made with a more complete dataset, and we aim to obtain information that can be used by governmental authorities to the creation and management of SACs for bottlenose dolphin in Madeira archipelago.

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