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Adriatic. (b) Research sub-areas off W coast of Istria and the transect lines

Results

 \geq 143 dolphins were photo-identified (ID-ed) during the systematic study in the years from 2012 to 2015 (Fig. 2); \succ group size of marked individuals was from 1-36 animals; M= 9.27(±6.53 SD); Me=7.5; Mo=4; N=56;

 \succ The average rate for distinctiveness was 0.79±0.03SD; The resignting rate was the highest in JUL 2015 with 56 and in AUG 2015 with 44 already known dolphins;



Discussion

Bottlenose dolphin is the last constantly present marine mammal species in the NE Adriatic Sea out of the three species being common in this area a few decades ago. The short beaked common dolphin (Delphinus delphis) is regionally extinct and the striped dolphin (Stenella *coeruleoalba*) is occasionally reported. Adriatic is showing already a high depletion of biodiversity as stated in several studies (Ponti, 2014). In 2014 Croatian government issued an action program for marine and coastal ecosystem management.

FIRST ABUNDANCE AND DISTRIBUTION REPORT OF **THE COMMON BOTTLENOSE DOLPHINS (Tursiops truncatus) OFF WEST ISTRIA, NORTH-EASTERN ADRIATIC SEA** Vivamar – Society for Sustainable Development for the Sea, Slovenia; Vivamar - Society for Marine Mammal Research & Sea Conservation, Croatia; darja.ribaric@vivamar.org;

Introduction



The common bottlenose dolphin (*Tursiops truncatus*, Montagu 1821) local population off west Istria in the NE Adriatic has no prior study of abundance and distribution despite the habitat's relevance for the preservation of this key species. The research area comprises part of the NATURA 2000 network, the EU's main nature and biodiversity policy to protect the threatened habitats and species across Europe. The bottlenose dolphin is listed as vulnerable by the IUCN Red List of Threatened Species in the Mediterranean Sea. Due to its geomorphological settings the Adriatic Sea is ecologically very sensitive. Therefore preserving the apex animals is of particular importance for the entire marine ecosystem. The aim of the study was to provide the first insight into the ecology of the local bottlenose dolphin population in order to be able to evaluate the degree of the threats thereafter and to prepare an effective and sustainable management plan for their conservation.

>The best estimate for the population abundance was Markovian Emigration model with the highest estimation of 141 animals (95% CI=105-198) for APR 2014 and the lowest in JUN 2015 with 47 animals (95% CI=33-75) (Fig. 3); \triangleright A recapture rate was defined by the site fidelity classes: rare (dolphins seen 1-2x), occasional (3-4x), frequent (5-6x) and common (7-10x) (Fig. 4); \succ The resignting rate was M=2.88 and Me=2 recaptures. >some individuals in the core research sub-area were ID-ed also during the surveys in Slovenia, showing that a home range of at least some dolphins extends the study area;

The recommendations were not met for the dolphins off west Istria, even if NATURA 2000 site was established particularly for these marine mammals. The presence of dolphins was recognized by the authorities but no population data were being collected to date. Thus, the official web site of the NATURA 2000 describes the status about the dolphin population off west Istria as deficient. With no information available, no effective steps were taken to ensure a favourable conservation for the dolphins. Baseline data provided in this study could encourage the authorities to act quicker in the execution of a management plan for this marine mammal community.

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Methods

Mark-recapture photo ID data were collected in the 927km2 area off West coast of Istria, in the north eastern Adriatic, in the systematic research from the year 2012-2015. A study design followed 7NM long east-west transects, separated by 1NM and the contour transects followed 1km and 500m distance from the coast. Since 2001, ad libitum surveys were executed for the distribution purpose and for the basic behaviour assesment, covering also Slovenian Sea and majority of the Trieste Gulf. Boat surveys were carried out in the sea state <3 Bf, with the average speed of 12Nm/h. Digital single reflex cameras had a 70-200mm F/2.8 APO lens. A total number of dolphins, number of subgroups, group structure, behaviour (travelling, socialising, foraging) and disturbance factors were collected. From data obtained a catalogue, dolphin capture history table, discovery curve, site fidelity and distinctiveness rate (after Balmer, 2008) were derived. Three statistical models were tested to obtain the abundance estimates: Chapman modification of the Lincoln-Petersen, a random abundance model and a robust Markovian model (Read et al. 2003; Balmer et al. 2008). ArcMap 10.4.1 (ESRI, Redlands, CA, USA) software was used to plot the distribution data.



Figure 5. A distribution plot for the common bottlenose dolphins off W coast of Istria, NE Adriatic.

References: Ponti et al. 2014. Ecological shifts in Mediterranean coralligenous assemblages related to gorgonian forest loss; NATURA 2000. 2016. [from: http://ec.europa.eu/environment/nature/natura2000/index_en.htmweb]; IUCN 2016. Red List of Threatened Species. Vers. 2016.1. [from: <u>www.iucnredlist.org</u>]; Balmer et al. 2008. Seasonal abundance and distribution patterns of common bottlenose dolphins (Tursiops truncatus) near St. Joseph Bay, Florida, USA, J. Cetac. *res. manage*. 10(2):157–167; Reed et al. 2002. Estimates of minimum viable population sizes for vertebrates and factors influencing those estimates. *Biol. Cons.* 113:23–34.

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Figure 6(a-b). (a) Dolphins named Aurora and Parrot from the catalogue; (b) dolphins in a tight group, being harrased by the too close dolphin watching boats.

