First Photo-ID catalogue of gregarious oceanic dolphins in the Northern coast of Continental Portugal: *Delphinus delphis* and *Tursiops truncatus*

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Background

Photo-identification (photo-ID) is a non-invasive method for assessing population dynamics and spatio-temporal distribution of cetaceans. Nevertheless, there are limited photo-ID studies examining gregarious species found in large groups and oceanic environments.

Here, we present detailed methods on a modified processing protocol, adapted from literature [1], used for starting a photo-ID catalogue for poorly marked oceanic dolphins (*Delphinus delphis* and *Tursiops truncatus*).

Study Area

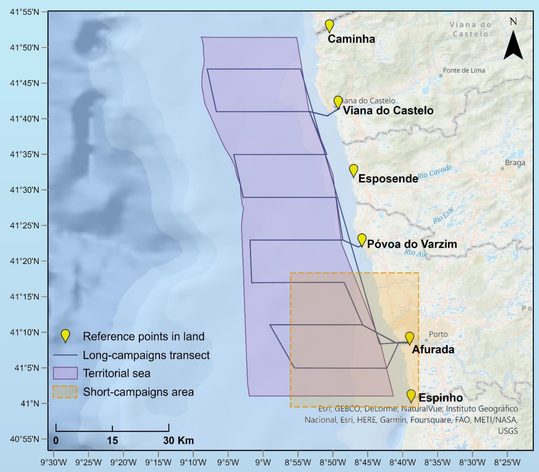

Fig.1 Map showing monitoring area covered during the study. Photo-ID was recorded during sightings along the route indicated with solid purple line and in the area marked in yellow.

Methods

EVALUATION OF PICTURE QUALITY
Evaluate the picture quality for each dorsal fin in the photograph (**PQ**):

PQ ≥ 2? — NO → The photo **is not** processed further

YES

NOTE: Each photograph is given an unique code name

CROPPING PHOTOGRAPHS
Crop the individual features: head, dorso, left and right dorsal, and the full body from each individual

NOTE: Each new individual is given an unique code name and a folder with the best photographs of the features

1st MATCHING PROCESS
Check for matches between the cropped individuals within the same sighting

INTRODUCE INDIVIDUALS IN THE FULL CATALOGUE
For each individual:
- Code name
- Code filenames of the best photographs for each feature
- Picture quality of the features
- Last capture (date of last photographed sighting)
- Number and size of dorsal nicks
- Recognizable pigmentation pattern (Yes/No)
- Other identifiable characteristics

FIND DISTINCTIVELY MARKED INDIVIDUALS (DMIs)
Individual classification into DMIs

HOW TO SEE IF IT IS A DMI?
Evaluation of:
- Dorsal PQs
- Nicks
- Pigmentation patern

According to Hupman et al, 2018

2nd MATCHING PROCESS
Check for matches between the new DMIs and the old DMIs

NOTE: Update the unique coding names, features photographs, and last captures.

INTRODUCE DMIs IN THE SELECTED CATALOGUE
Create/update capture histories for the new/matched DMIs (dates of photographic captures)

Results

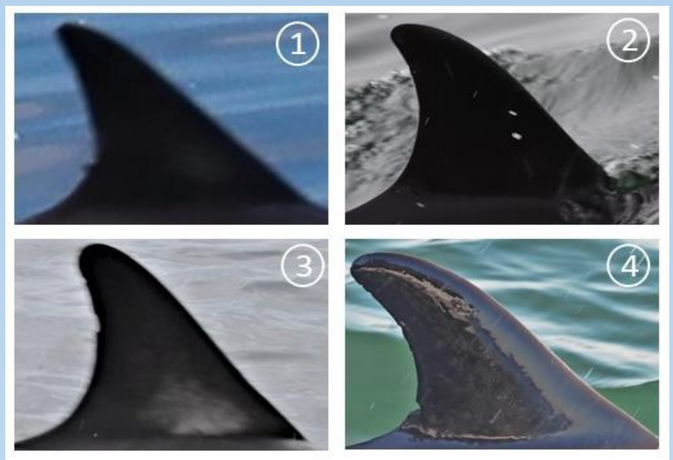

Fig.2 Picture Quality criteria with examples from poorly-marked *Delphinus delphis*. 1) Poor quality picture, non-distinctive; **2)** fair quality; **3)** good quality, distinctive; **4)** excellent quality, very distinctive.

Fig.4 First match from our Photo-ID catalogue. The same *D. delphis* individual seen 5 months apart, identified by looking at distinctive nicks on the trailing edge of the dorsal fin (indicated by red arrows).

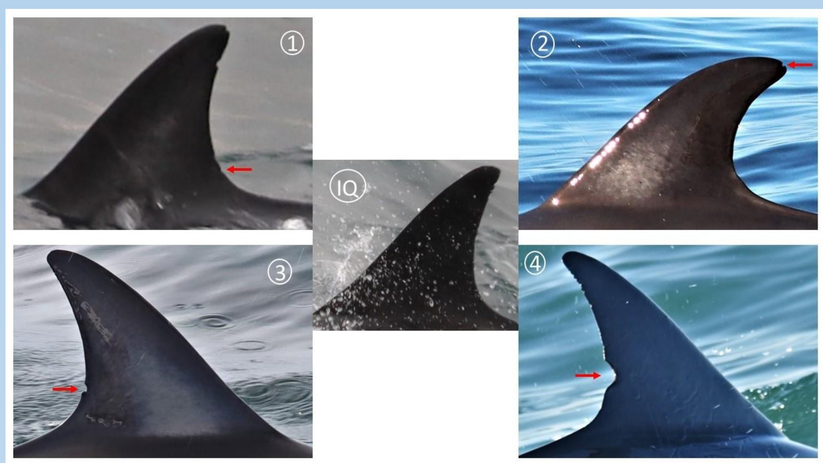

Fig.3 Nick size assessment criteria. With red arrows are indicated the nicks that correspond to the size class written in white. **1)** very minor nicks that can be missed; **2)** small but visible; **3)** average; **4)** deep cut; **IQ)** insufficient quality for assessment.

Table 1. Photo-ID results from monitoring efforts between June 2021 and September 2022. Total № of photos captured, how many individuals determined with PQ ≥ 2, and how many DMIs.

Species	N photos	N individuals PQ ≥ 2	DMIs
D. delphis	1840	220	59
T. truncatus	429	23	16

Main Conclusions

- *T. truncatus* are more naturally marked and distinguishable than *D. delphis.*
- *D. delphis* had one match for 47 sightings captured.
- Our results reinforce the need to expand the catalogue throughout seasons for a better insight into population structure and dynamics of dolphins in the Northern waters off Portugal.

References

[1] Hupman, K., et al. (2018). DOI - https://doi.org/10.1371/journal. pone.0198167

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