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# Differential prevalence of “melanistic” common dolphins (*Delphinus delphis*) across four European regions as obtained by small boat visual survey

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## INTRODUCTION

Although being relatively homogeneous within cetacean species, pigmentation patterns may greatly vary among conspecifics. It has been known for a few decades that some *Delphinus delphis* individuals may show an anomalous pigmentation: in the most frequent case, the yellow patch that produces the usual hourglass-like pattern on the flanks is missing, leading to a very dark appearance. Such individuals have been described from several areas around the globe (notably eastern Pacific, northeastern Atlantic and southwestern Pacific oceans). In this study, we quantified the proportion of “melanistic” specimen among different populations and made a comparison between areas in the Mediterranean Sea and northeast Atlantic.

## METHODS

The method is based on photo-identification.

We study the occurrence of abnormal dark pattern using at-sea visual data obtained by **Groupe de Recherche sur les Cétacés** with a 12-meter sailboat and a consistent methodology, that provided hundreds of common dolphins visual sightings without anomalously pigmented animals.



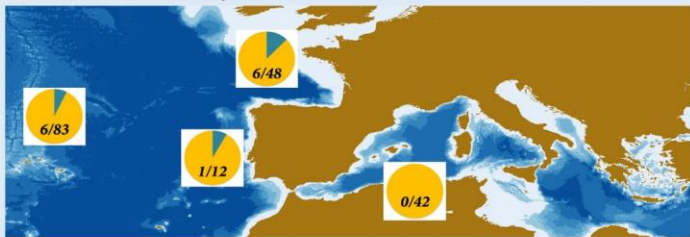
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We considered that a sighting should have three properties to be included in dataset: duration longer than 3 minutes, minimal distance between the dolphins and the boat shorter than 50 meters, good environmental conditions (daylight, sea state inferior to Beaufort 3).

## RESULTS

We filtered all the common dolphins sightings obtained between 1992 and 2022 in the Mediterranean Sea (42 sightings) and three areas of northeast Atlantic -Azores, Western Iberia, Bay of Biscay - (143 sightings).

Results showed remarkable differences in groups-with-melanistic-dolphins between areas (figure below): we obtained a ratio of **0 / 42** sightings in the Mediterranean Sea vs **13/143** in the Atlantic.



Fisher's exact test showed that proportions are significantly different ( $p=0,04$ ). The same test carried out between the three Atlantic areas showed that proportions in the Atlantic area are not different ( $p=0,61$ ).



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Fischer, Cétacés du Sud-ouest de la France, 1881

## Natural History

Fischer already described subspecies of *Delphinus delphis* in the Bay of Biscay (1881): was this « var. Moschatus » a melanistic specimen?

## Geographical distribution

Natoli et al. (2008: 1445) observed genetic variation and population differentiation based on geographic origin: they concluded that the oceanographic characteristics of the Alboran Sea was similar to those of the NE Atlantic Ocean, “the Almeria-Oran front situated 350 km within the Mediterranean Sea represents the actual oceanographic shift between Atlantic and Mediterranean waters”. The status of the common dolphin is not clear. However, our results suggests that distribution limit of melanistic common dolphins is Gibraltar straits.

## DISCUSSION

In this respect it would be useful to compare with studies results in Gibraltar straits.

### Mixed groups

Common dolphin groups were sometimes observed with *Stenella coeruleoalba* (9 times), *Stenella frontalis* (2), *Tursiops truncatus* (1). But we did not spot any “melanistic” in these groups.

Proportion of melanistic animals/school size  
Proportion was variable (from 1/130 to 1/6).

## CONCLUSION

The geographical distribution of melanistic individuals (relative homogeneity of the prevalence in the northeast Atlantic, opposed to the absence of this pigmentation in the Mediterranean) might be sign of differential genetic flows between areas. **These observations highlight the interest of consistent boat-based cetological fieldwork.**

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The difference in pigmentation may be related to a genetic mutation, but in this case it must be recessive. In 11 cases out of 13 the melanistic animals were single in the group, in another case we had a pair of similar-sized animals, and in one case an adult/juvenile pair: which would suggest that melanistic animals can reproduce.



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