G04

Demography and social structure of a bottlenose dolphin population in the English Channel

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Introduction

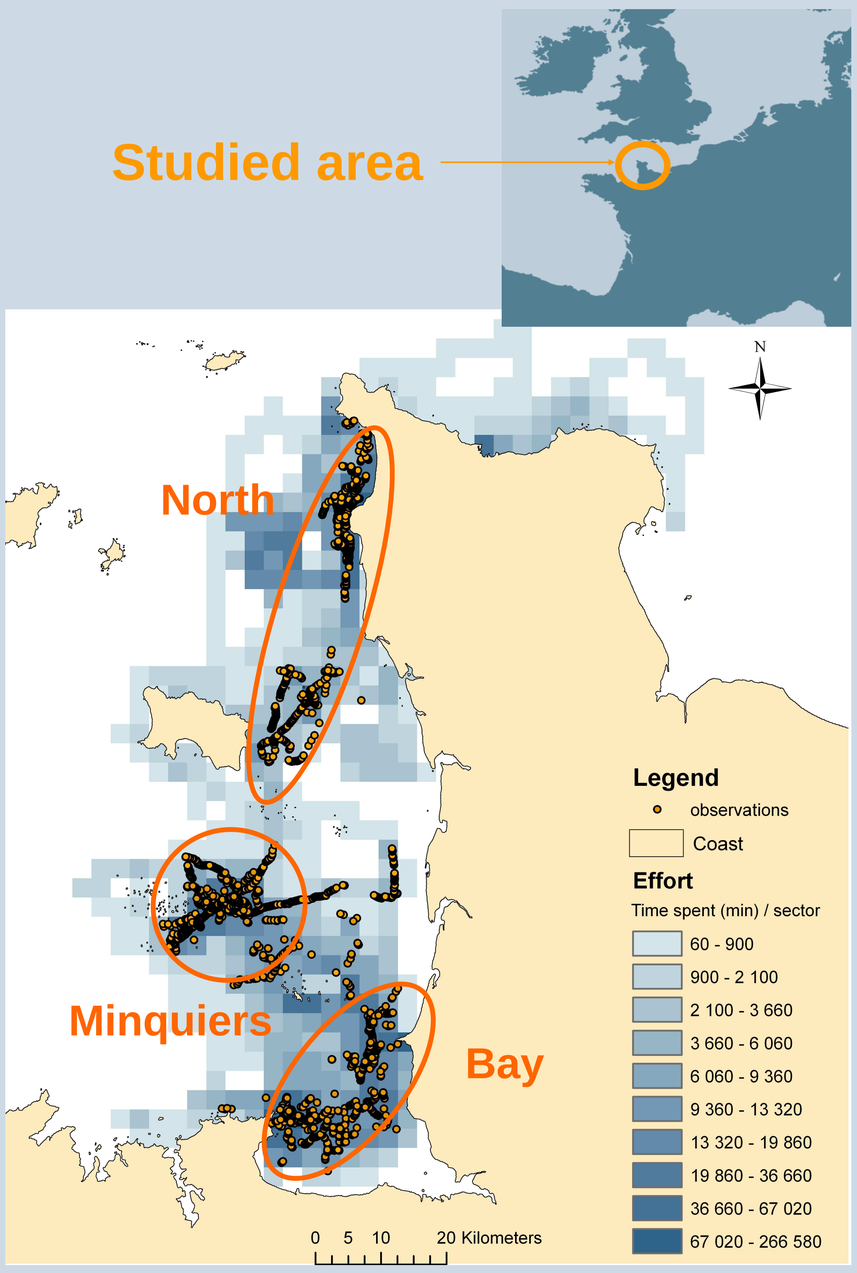
The study of demographic parameters and social structure of endangered marine top predator populations is critical to assess their ecology and to take conservation measures. Normandy coasts host one of the largest but poorly studied bottlenose dolphin population, *Tursiops truncatus*, in France. This study aims at improving the knowledge on these animals in particular within the context of both upcoming marine renewable energy projects and the creation of marine protected areas.

Methods

Photo-identification is carried out since 2004 in the Normandy region of the English Channel.

Demography Robust design mark recapture models were applied on photo-id data to estimate demographic parameters (1).

Social structure Association coefficients were calculated between pairs of individuals thanks to photo-id data (Half-Weight Index HWI). Social network was represented and temporal analyses (Lag Association Rate) on association coefficients were conducted (2,3).



Sightings were concentrated on three main areas : the Bay of the Mont Saint-Michel (Bay), the Minquiers archipelago (Minquiers) and the northern part of the gulf (North).

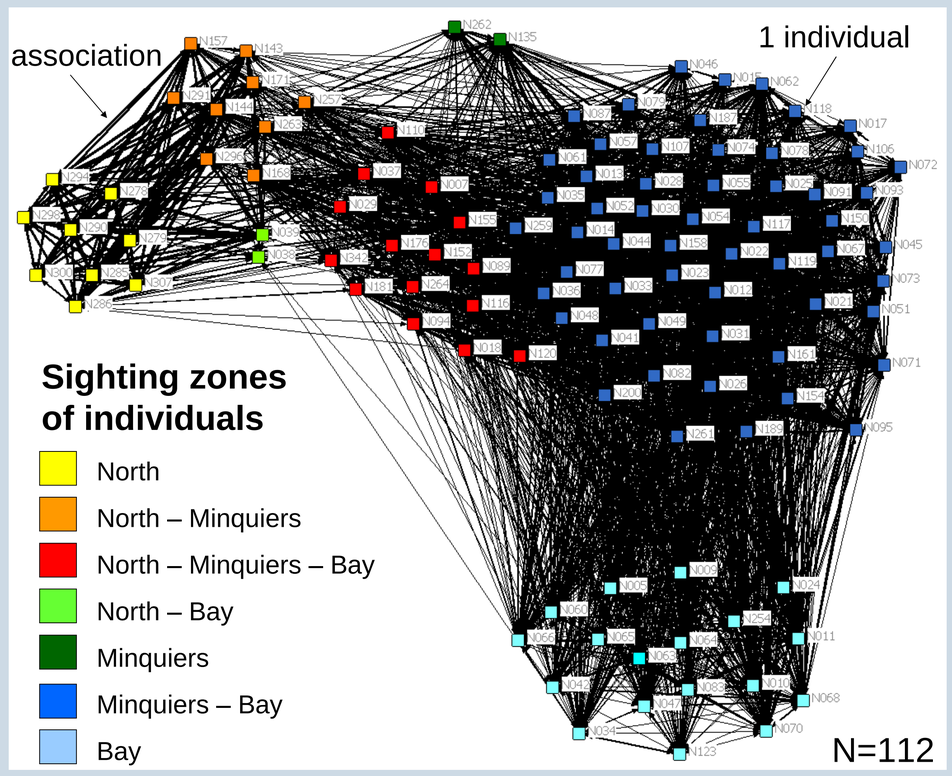
Results & Discussion

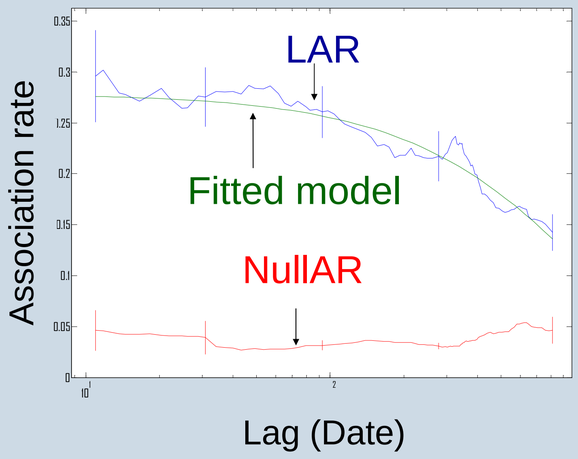
49000 photos have been analyzed and more than **600 individuals** were identified between 2004 and 2010 including sedentary and migrant animals.

Demography Annual survival estimation was **0,98**. Population abundance was **387 (95% IC 304-480)** for summer 2010 indicating the population being **one off the largest of Europe.**

Social structure HWI was **0,1** which indicates fluid association patterns.

The social network shows that individuals only observed in the Bay (light blue) and the one only seen in the North (yellow) were never seen together. However, they associated with common individuals spotted in the whole area (red). This indicates **a population unit which is spatially structured.**





Temporal analyses (LAR) on association coefficients reveal that the population lived in a **fission-fusion society.** While a large proportion (72%) of associations were casual, lasting about one day, some individuals shared more stable and stronger associations, lasting several years (28%). Further investigation is needed using genetics to test the influence of sex and relatedness in association patterns.

Conclusion & Perspectives

This study suggests a **large and demographycally healthy** population characterized by a **fission-fusion** social organization. It also shows a single population with **spatially segregated social units** that should be further examined using spatial, genetic, trophic, eco-toxicological and acoustic analyses in order to better assess the risks linked to increasing human activities. Biopsy sampling and acoustic recording have been initiated in 2010.

Acknowledgements

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