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Introduction

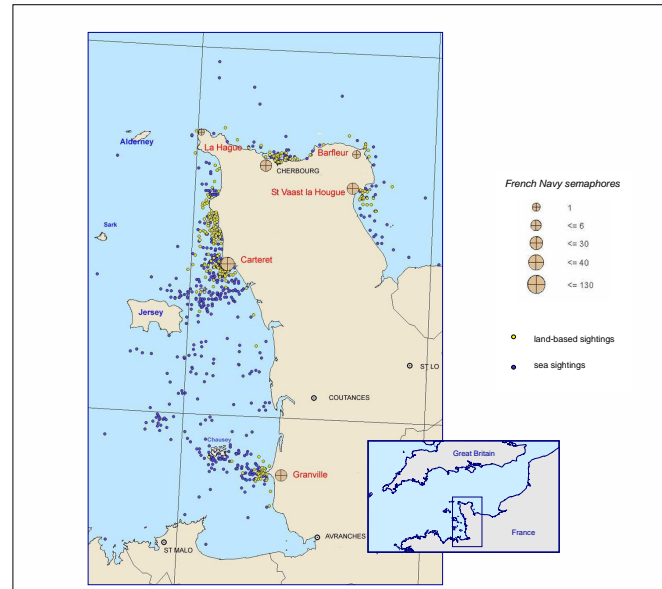
A population of bottlenose dolphins (*Tursiops Truncatus*) lives along the Normandy coast, in France. Dolphins are seen on a wide territory (around 3500 km²) including the coastal waters of the Cotentin Peninsular (from Mont Saint-Michel Bay to Veys Bay) and Channel Islands (Jersey, Alderney, Minquiers reefs).

We study the population since 1995. We use boat-based surveys and photo-identification techniques to investigate the distribution, habitat use and social organisation of dolphins. However, our first prospecting clearly suggested that focusing on few local areas would lead to important misinterpretations. The relevant analysis scale of the population includes all the coastal waters around the Cotentin Peninsular. The methodological problems induced by this large area led us to develop an important sightings network, whose originality and efficiency is due to the implication of numerous marine professional users.

The network

The sightings network includes both professional and non-professional marine people. Since 1997, a convention associates officially the six French Navy Semaphores (installations of Marine) and the professional fishermen authorities (700 boats concerned) covering the area. Others marine professionals (coastguards, marine customs, shuttles boats,...) are also involved in the network, though not on an official basis.

Militaries within Semaphores make themselves sightings. Other professional marine users transmit directly their observation by VHF to the nearest Semaphore. Information is collected on data grids that are ordered to us each month. Data include information on the observer and eventually its boat, on location, date and time of the sighting, on behavioural observations and meteorological conditions. Data grids are also available in harbours and are used by non-professional observers. Reliability of the information provided by the network requires an important work of public information. Meetings with professionals and conferences are regularly organised. Quality index are allocated to sightings depending on location precision and other cues.

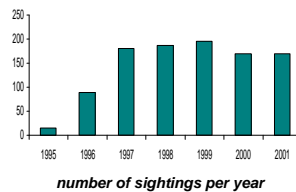


Overall distribution of sightings of Bottlenose Dolphin in Normandy

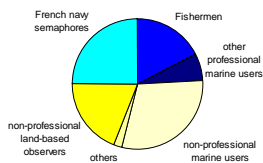
Network efficiency

Observational pressure

- 1006 sightings of bottlenose dolphins between 1995 and 2001
- Numerous parameters (number of observations per year, number of observers per year, mean number of observations per observer per year, etc.) indicate that the observational pressure is stabilised since 1998.

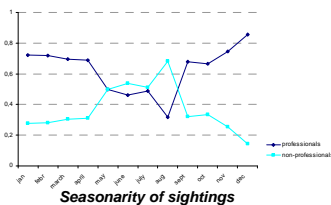


Complementarity between professional and non-professional marine users

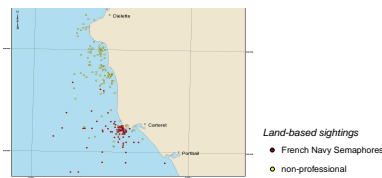


Repartition of sightings

Professional and non-professional marine users provide approximately the same amount of sightings



The contribution of professional marine users to sightings is more especially essential outside summertime



Complementarity of professional and non-professional land-based observers : example of Carteret area

Survey areas of professional and non-professional marine users are complementary

Spatio-temporal distribution of sightings

Dolphins are seen throughout the area and, since 1998, each month of the year. Since this year, the shape of the monthly distribution of sightings stays constant, with a high peak in summer and especially in August, and a decrease in winter. Meteorological observational conditions and variations in the intensity of boat traffic are undoubtedly involved in these time fluctuations.

Spatial sightings are not evenly distributed. Some areas show high concentrations. Dolphins are however regularly observed in the intermediate areas. Seasonal changes affect the distribution of sightings. For instance, sightings in the North (Cherbourg) occur mostly in winter, whereas sightings in the East (St-Vaast) occur mostly in summer.

Determining the link between spatio-temporal distribution of sightings and the actual spatio-temporal distribution of dolphins requires to take account of the underlying bias, especially nautical activity and weather conditions. The diversity and the complementarity of observers allows a cross-checking of information, thus a partial control of bias. Data from our boat surveys and especially from photo-identification provides additional information for the validation of the analyses.

Conclusion

The relevant scale for the study of the population of bottlenose dolphins living in the coastal waters of Normandy is large. To obviate this methodological constraint, the sightings network presented here is an essential tool, that reinforces and complements boat-based surveys and photo-identification. Furthermore, the partnership forged with marine users, professional or not, positively affects their concern in the protection of bottlenose dolphin, and more generally of marine mammals, in an area with important boat traffic.

Acknowledgments

We gratefully thank all the members of the network, and especially the marine authorities and fishermen for their collaboration.