Data and results for bottlenose dolphins abundance analyze

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In this document, we display the results of our analyze of bottlenose dolphins *(Tursiops truncatus)* in the northwestern Mediterranean Sea.

To study bottlenose dolphins, we combined two existing datasets in the French waters :

- aerial line-transects collecting bottlenose dolphins data following a distance sampling (DS) protocol.
- at-sea photo identification collecting indivdiual data about dolphins population.

We built a DS model to analyze aerial data, a spatial capture-recapture (SCR) model to analyze at-sea data, and a spatial integrated model (SIM) to analyze jointly both datasets and to estimate abundance and density.

Hereafter, we provide data exploration and displayed some of the results.

The Data

The study area is divided into 4356 sites. In the following figures, you find the transects and detections made by each monitoring program.

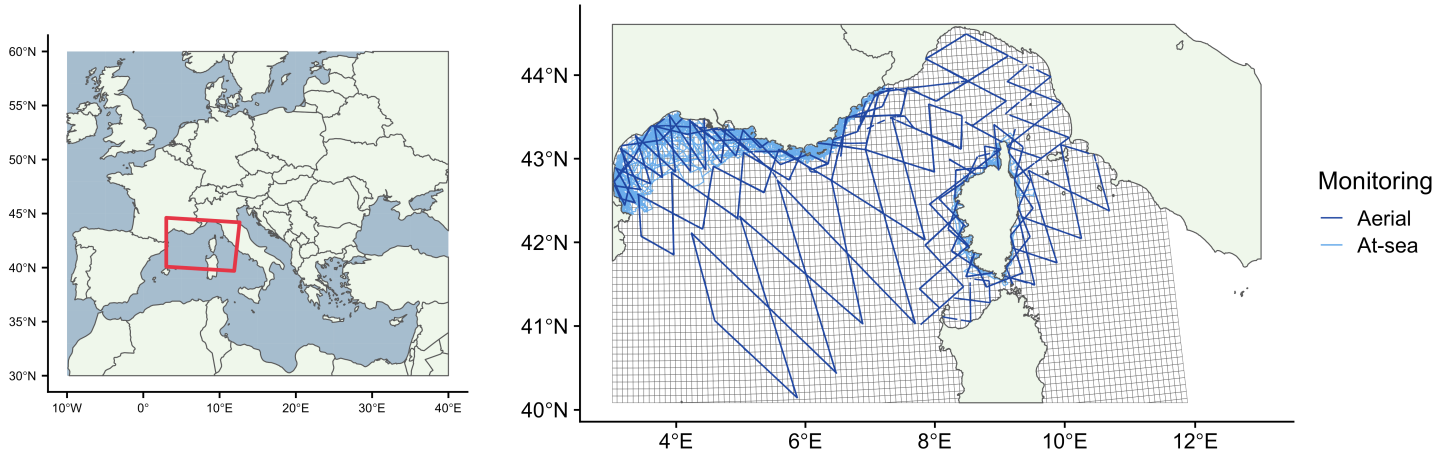

Figure 1: Transects of aerial at-sea monitoring programs

Results: comparison between models

About population size

We built the density surface λ from the Inhomogeneous Point Process in every site of the study area from the estimated parameters μ_0 and μ_1.

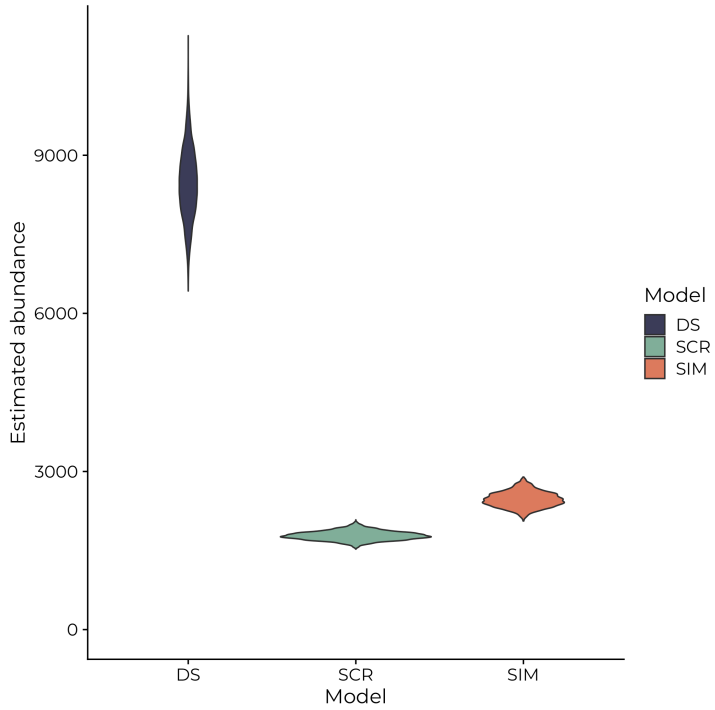

Figure 2: Abundance estimated by DS model, SCR model, and SIM

Density maps

Density maps are built projecting λ in every site of the study area.

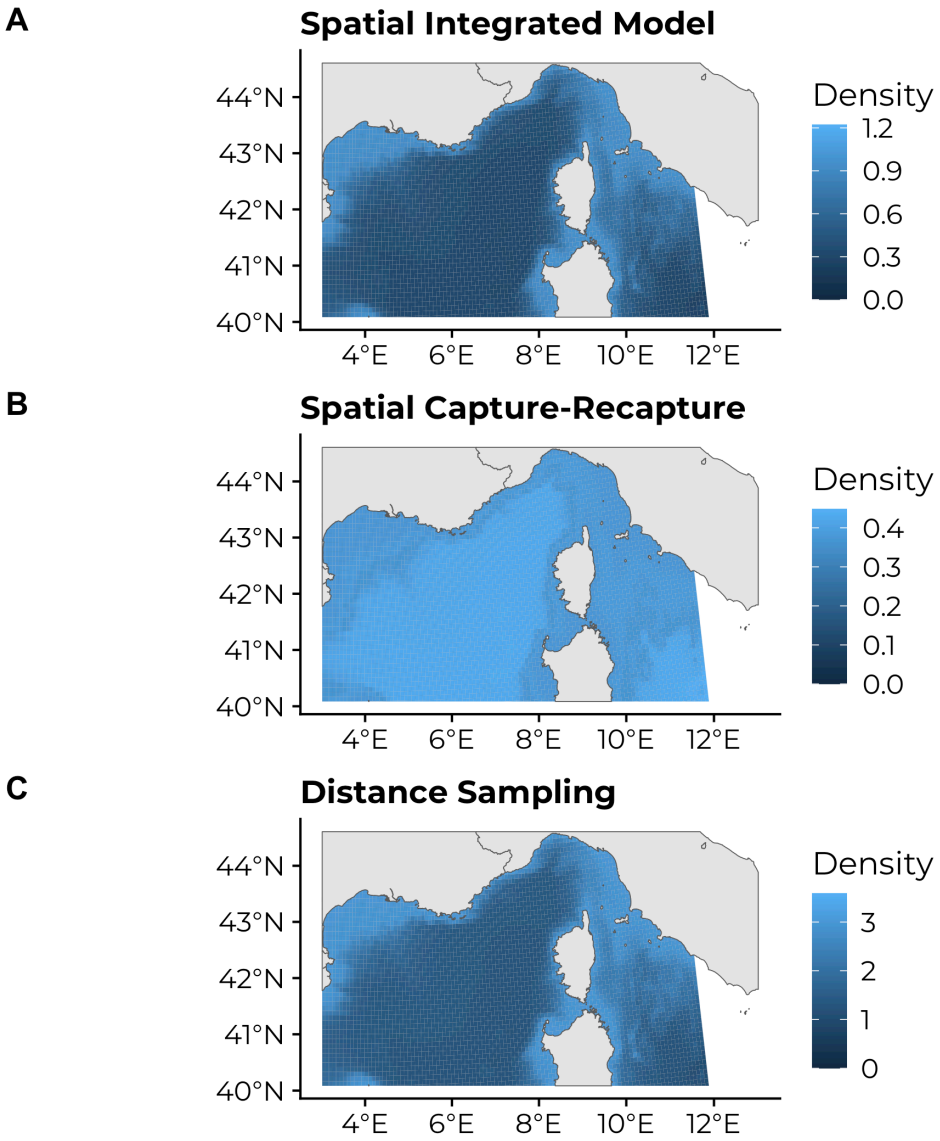

Figure 3: Density of bottlenose dolphins estimated by DS model, SCR model, and SIM