

# Fine-scale habitat use variation in a common bottlenose dolphin (*Tursiops truncatus*) population



Olga Mosca<sup>1\*</sup>, Bruno Díaz López<sup>1</sup>, Séverine Methion<sup>1</sup>

<sup>1</sup>. Bottlenose Dolphin Research Institute (BDRI). Av. Beiramar 192, O Grove 36980. Spain  
\*olgairnemosca@gmail.com



## BACKGROUND

It is important to identify key habitats within a population's range to better understand its ecology and to better inform conservation and management decisions.

Bottlenose dolphins (*Tursiops truncatus*) have a worldwide coastal distribution and are protected under the EU Habitats directives.

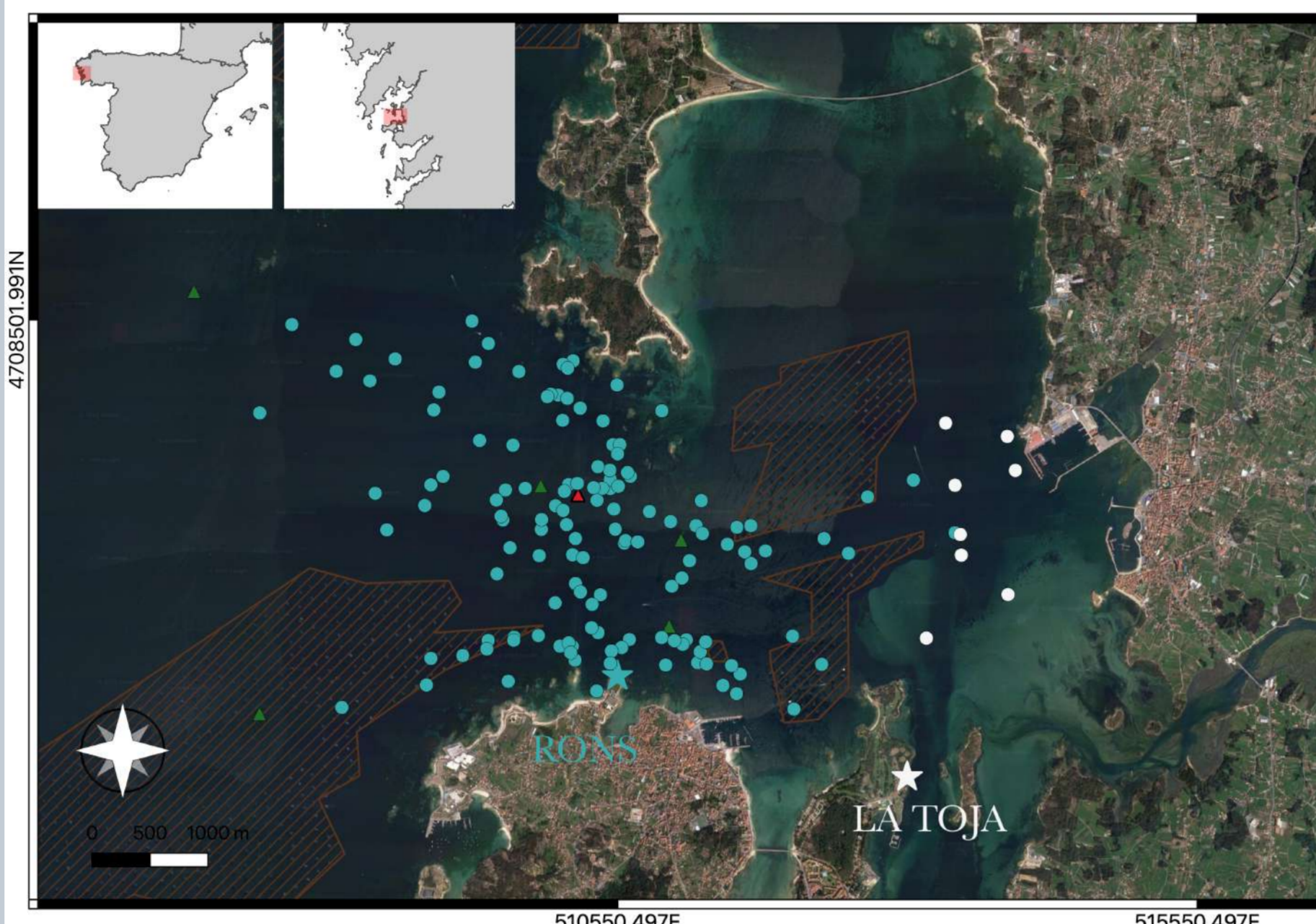


Figure 1. Map of the study area with dolphin sightings from Rons (blue) and La Toja (white)

The Ría de Arousa is the largest galician ría and NW Spain is an important and very productive upwelling region. In this ría there is a population of bottlenose dolphins present year-round (56-144 individuals)<sup>1</sup>.

## OBJECTIVES

1. Do bottlenose dolphins show variation in habitat use?
2. What are the environmental factors that better predict dolphin presence in the area?
3. Do these factors vary between two oceanographically distinct locations in the ría?

## METHODS

1. Land-based data collection at two sites (Rons and La Toja) from January 11<sup>th</sup> to November 26<sup>th</sup> 2018 :

- No Rain/Fog
- Douglas  $\leq 3$
- Sampling:
  - Dolphin presence/absence
  - Environmental variables

2. General Additive Models (GAMs) using R to model the environmental variables driving dolphin presence.

### Environmental Variables Collected

Date & Time

Moment of the day

Location

Tide Level & Category

Douglas

Wind Speed & Direction

**RONs** Wide, open area, varying water depths and bottom substrates

**LA TOJA** Protected, shallow channel leading to an estuarine area characterized by a muddy bottom

## REFERENCES

1. Methion, S. & Díaz López, B. (2018) Abundance and demographic parameters of bottlenose dolphins in a highly affected coastal ecosystem. *Marine and Freshwater Research* <https://doi.org/10.1071/MF17346>

## RESULTS

117 Days in the field

1113 Samples

354 Total Hours

191 Sightings:

- 175 Rons

- 16 La Toja

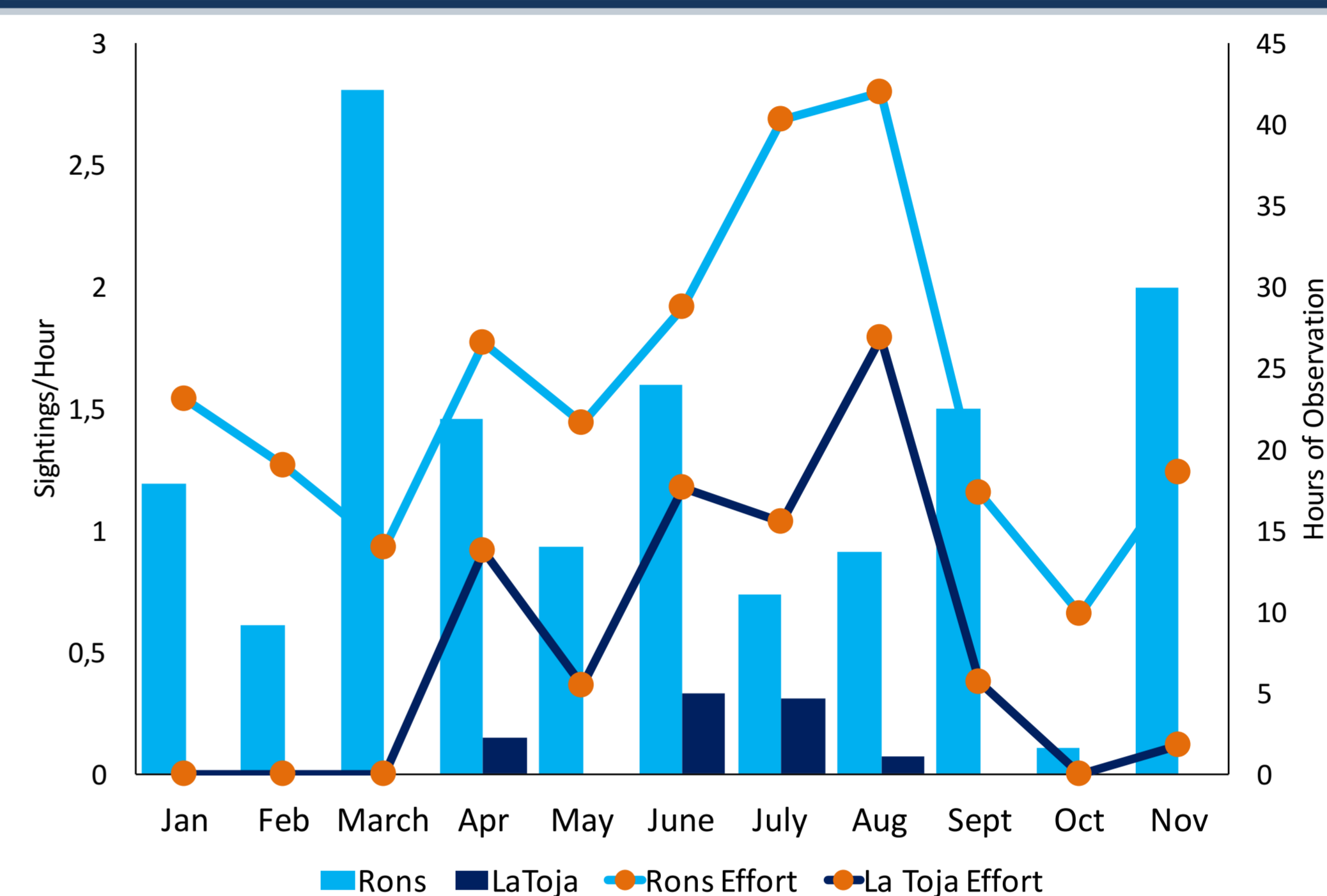


Figure 2. Dolphin sighting frequency (left axis, bar) and effort (right axis, line) at each location. Sighting frequency is calculated as the number of sightings per hour searching (not including sighting time).

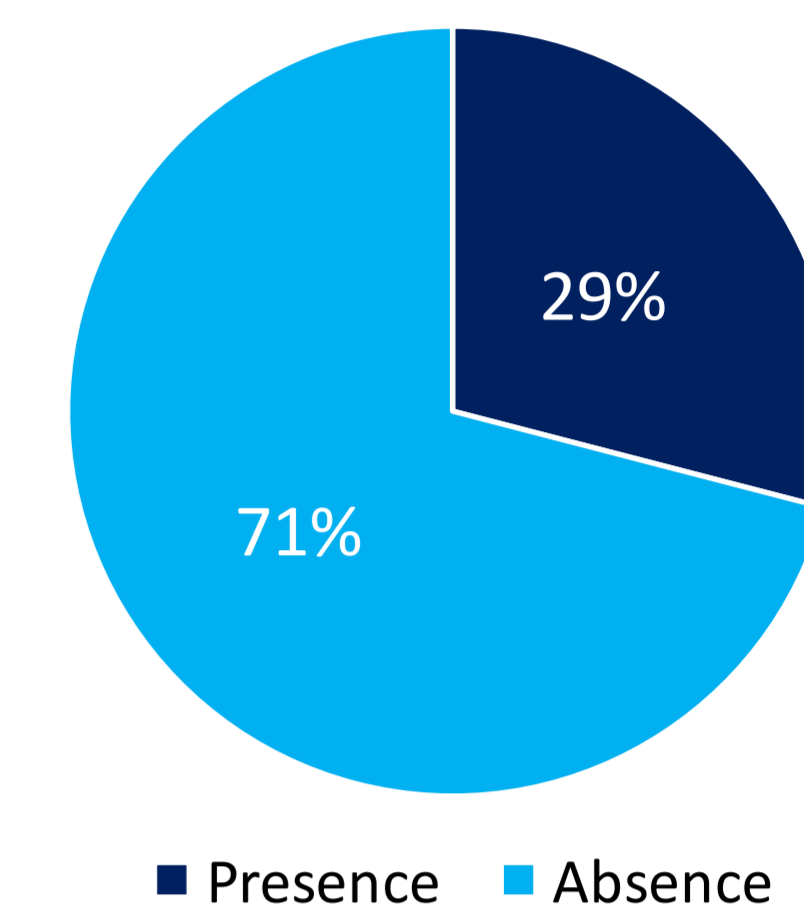


Figure 3. Proportion of dolphin presence in samples

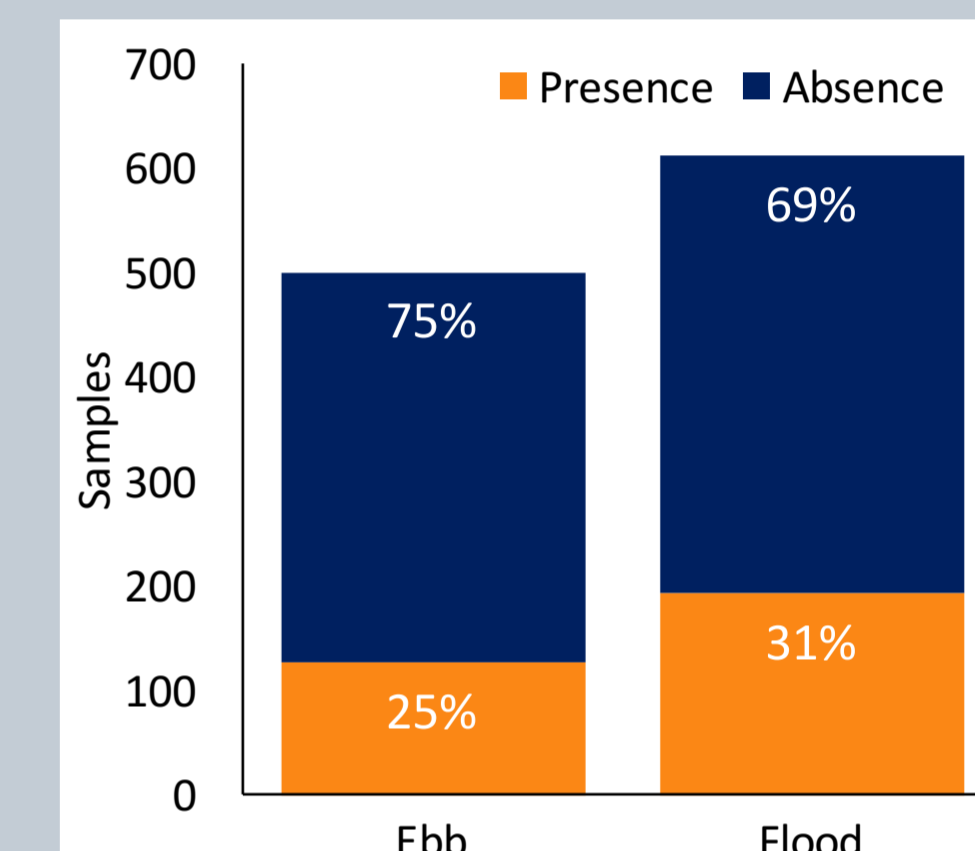


Figure 4. Proportion of dolphin presence at different tidal stages.

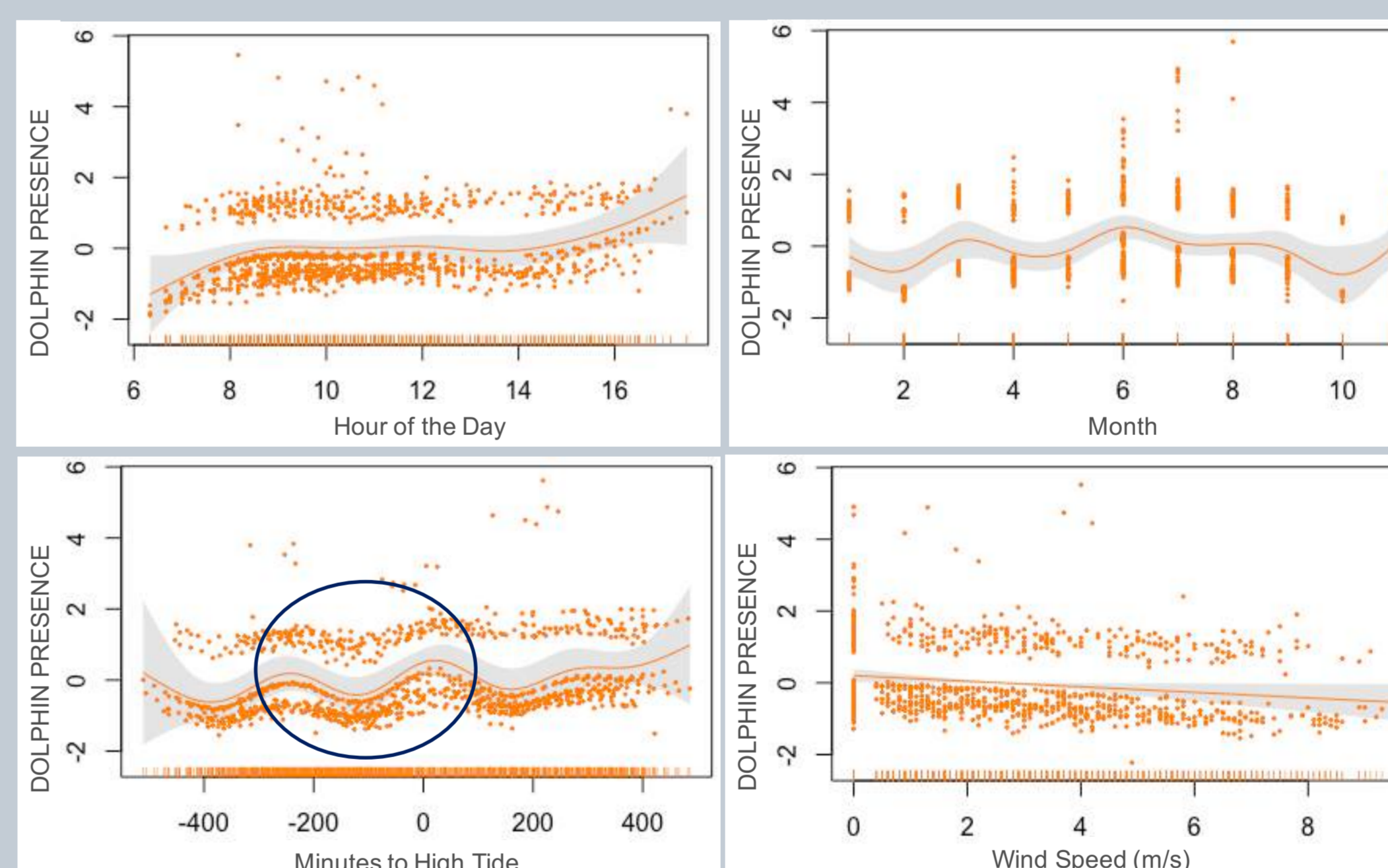


Figure 5. GAM plots for predicted dolphin presence with 95% confidence interval (grey). Hour, minutes to high tide, month and windspeed were the non-linear variables present in the best global model.

### Statistically significant variables of best overall model

Location

Hour

Month

Tide (Ebb/Flood)

Minutes to High Tide

Wind Speed

## CONCLUSIONS

- **Location** plays an important role in dolphin presence in the Ría de Arousa.
- Dolphin presence has **monthly and circadian temporal variation** and **tidal variation**.
- Marine top predators are very selective in the way they utilize different areas of their habitat based on different environmental variables through time.

## ACKNOWLEDGEMENTS

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