INTRODUCTION

Cetacean aimed field research involves sea surveys, which are mainly designed to focus on those mammals. During fieldwork, observers often see non-mammal aquatic animals, but these sightings are frequently perceived as anecdotal and not used within main carried studies.

In this work we tried to estimate whether non-mammal marine macrofauna observations were related to cetacean sightings.

METHODS

A first overview:

Each of the extracted sessions contained a certain amount of non-mammal marine macrofauna sightings and a number of cetacean observations. Once weighted by the length of the session, these figures represented two rates of sightings per nautical mile.

We investigated whether they were correlated.

Taking proximity into account:

We then explored more accurately this correlation by estimating, within each prospection session, the spatial co-occurrence of the two sighting categories.

For each observation, we checked whether a sighting of a cetacean occurred less than one nautical mile away (+/event) or not (+/ and /+ events). Double-negative events were extrapolated from remaining (i.e. without fauna encounters) transect lengths, in order to enable independence testing.

Contingency table (expected values are bracketed)

<table>
<thead>
<tr>
<th>Cetaceans</th>
<th>+</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>176 (137)</td>
<td>1251 (1237)</td>
</tr>
<tr>
<td>-</td>
<td>43 (29)</td>
<td>170 (160)</td>
</tr>
</tbody>
</table>

This method allowed us to draw a contingency table that confirmed (Chi-squared test, p=0.002) a positive correlation between non-mammal marine macrofauna and cetacean sightings.

DISCUSSION AND CONCLUSIONS

Non-mammal marine macrofauna detection is probably biased by several factors. Mainly, apart from birds that can be detected rather easily, other taxa are affected by availability and perception biases, in an extent that greatly varies between species (these biases are obviously different if we consider a turtle and a sardine). Our fauna events should therefore be considered as fauna richness indicators rather than as true punctual sightings.

Some observers could also detect more non-mammal fauna when bored by the absence of cetaceans; this bias might be present but its effect would be anticorrelative, and thus can't explain our results.

Since the vast majority of the non-mammal fauna used in our analysis aren’t usually consumed by cetaceans in the NW Mediterranean (Astruc 2005), our results should be viewed more as biological habitat parameters than as simple predator-prey co-occurrences.

Although experimental and possibly flawed (whether on the concept or on the arbitrary choice of some parameters [in particular, the one-nautical-mile co-occurrence distance]), our principle of spatio-temporal correlation could potentially be used for other problems.

Our conclusions should be considered with caution but are overall very plausible, particularly regarding the differences between cetacean species.

REFERENCES AND ACKNOWLEDGEMENTS


Thanks to the GREC’s observers for their participation to data gathering.
Since this experimental study indicated that they seem to be effective strategic partners, special thanks to the various non-mammal marine macrofaunal species for their help during cetologic fieldwork.