Analysis of 23 years of Risso’s dolphin’s photo-identification in North-Western Mediterranean Sea, first results on movements and site fidelity

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INTRODUCTION
In the context of the French PELAGOS Sanctuary Research program 2010-2012, the GECEM, in partnership with the GIS3M and EcoOcéan Institut, conducted a study on Risso’s dolphin population in North-Western Mediterranean Sea. This study allowed collecting new photo-ID data and comparing two catalogues of photo-ID aggregated by the GECEM since 1989 and EcoOcean Institut since 1994.

MATERIAL & METHOD
- Study area: North Western Mediterranean Sea
  5 areas: OffShore (bathy>2000m), Gulf of Lion, West Provence, East Provence, Liguria
- Matching of 2 Risso’s dolphins photo-ID catalogues collected by the GECEM and EcoOcéan

Catalogues’ content

<table>
<thead>
<tr>
<th>Catalogue</th>
<th>Period</th>
<th>Number of groups photo-identified</th>
<th>Number of pictures</th>
<th>Number of Right profiles</th>
<th>Number of Left profiles</th>
<th>Number of both sides identifications</th>
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</thead>
<tbody>
<tr>
<td>GECEM</td>
<td>1989-2012</td>
<td>44</td>
<td>621</td>
<td>331</td>
<td>290</td>
<td>146</td>
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<tr>
<td>EOI</td>
<td>1994-2011</td>
<td>38</td>
<td>531</td>
<td>215</td>
<td>201</td>
<td>147</td>
</tr>
</tbody>
</table>

- Calcul of fidelity rate for dolphins recaptured at least 2 times:
  \[ FR = \frac{\text{Number of sightings of an individual in a specific area}}{\text{Total number of sightings of the individual}} \]

- Recaptures:
  - 896 identifications, 754 individuals, 179 recaptures (20%) concerning 122 dolphins
  - 68% of the recaptured dolphins observed only twice and 7% observed at least 4 times.
  - 16% of the recaptures occurred during the same year and 84% occurred in different years distant from 1 to 15 years.

- Sites frequentation:
  - 73% of the sightings occurred on the continental slope
  - Fidelity rate calculated for different areas show a high fidelity for the West Provence continental slope and a transient use of the offshore area.

RESULTS
- Movements
  - Intra-annual:
    - Mean distance between intra-annual recaptures: 33 km (EC=38) and maximum: 132 Km
    - Distance between two intra-annual sightings independent of the time, maximum speed of movement: 7km per day.
  - Inter-annual:
    - Mean distance between two inter-annual sightings: 59 km (EC=61; min=2; max=309).
    - 75% of the recaptures occur within 100 km from the other sightings of the individual and 63% within 50 km.
    - Two individuals show long distance movements (more than 200 km).

- Repartition of sightings and fidelity rate in the different areas

<table>
<thead>
<tr>
<th>Areas</th>
<th>Gulf of Lion</th>
<th>West Provence</th>
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<th>Liguria</th>
<th>Offshore</th>
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<tr>
<td>Number of sightings</td>
<td>23</td>
<td>194</td>
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<tr>
<td>Number of individuals sighted</td>
<td>18</td>
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<td>Fidelity Rate Mean (SD)</td>
<td>0,58 (0,25)</td>
<td>0,78 (0,25)</td>
<td>0,63 (0,27)</td>
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CONCLUSIONS & PERSPECTIVES
This study shows the interest of long-term photo-identification for the study and management of this species. Gathering for the first time so many data on this population, theses preliminary analyses comfort the hypothesis of a seasonal and regular use of the West Provence continental slope as a foraging area. The following analysis of this matching should provide interesting data on population structure. More data collecting all year round should help to conclude on a seasonal frequentation of these areas. The comparison with other catalogues in the North-Western Mediterranean basin should improve the understanding of the movements and the structure of the Risso’s dolphin’s population.

REFERENCES
- Bompar, J. M. (1996) Etude de la population de Dauphins de Risso (Grampus griseus) fréquentant la corne nord-ouest du futur Sanctuaire de Mer Ligure. Rapport GECEM pour le PNPC.

AKNOWLEDGEMENTS

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