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"Human influences on seahorse populations in the Ria Formosa lagoon, South Portugal".

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Objectives:

Assess the current status of the seahorse populations (*H. guttulatus* and *H. hippocampus*) and potential threats in the Ria Formosa lagoon, South Portugal.

1. Variation of seahorse populations over different temporal and spatial scales
2. Threats to seahorse populations in the Ria Formosa

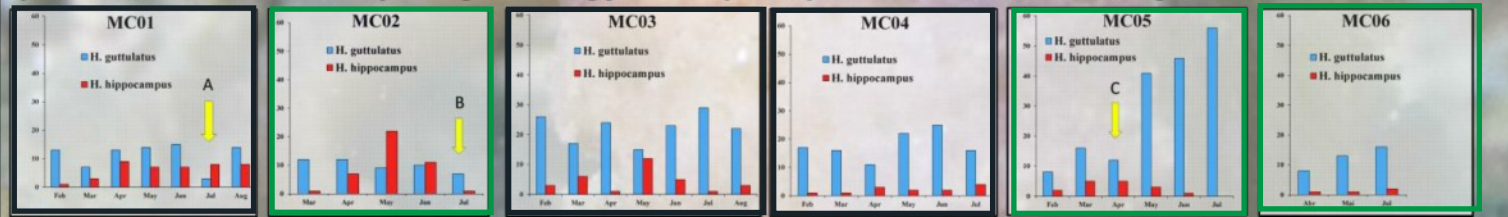
Material and Methods:

On the basis of previous research, we selected six focal sites in the Ria Formosa. These sites were chosen considering their higher seahorse density and site characteristics. Each site was surveyed on a monthly basis and data collected including seahorse species, size class, sex, substrate type, holdfasts and habitat description. As previous methodology was set for a higher density scenario, our underwater visual survey methodology was adapted for the bigger area. (For diagrams of the survey areas, and map of locations in the Ria, see original document).



Results:

These surveys found seahorse densities averaged 0.058 ± 0.025 seahorse.m⁻² for *H. guttulatus* and 0.014 ± 0.009 seahorse.m⁻² for *H. hippocampus* and maximum density was 0.19 and 0.07 seahorse.m⁻², respectively. These compare with previous reports of maximum densities of 0.51 and 0.07 for the two species (Curtis and Vincent, 2005). Pregnant males from both species were observed from May to August. Young juveniles (0-5cm) were found in March and August.



<i>H. guttulatus</i>	2001 2002	MC01	MC02	MC03	MC04	MC05	MC06
Minimum	---	0.005	0.023	0.040	0.053	0.027	0.027
Maximum	0.510	0.047	0.040	0.083	0.097	0.187	0.057
Average	0.073	0.038	0.033	0.061	0.075	0.100	0.042

<i>H. hippocampus</i>	2001 2002	MC01	MC02	MC03	MC04	MC05	MC06
Minimum	---	0.003	0.003	0.003	0.003	0.000	0.003
Maximum	0.072	0.030	0.073	0.013	0.040	0.017	0.007
Average	0.007	0.020	0.033	0.007	0.015	0.009	0.004

Editor's Note: green boxes indicate sites with seagrass habitat present, black boxes with seagrass absent.

*Densities are in seahorses per square metre. Average densities of *H. guttulatus* in Studland Bay in the peak year of 2010 were about 0.0006 per sq m, less than one hundredth of the density of area MC04 above, which was an area with no seagrass. Note that the data above show no clear preference by *H. guttulatus* for habitats with or without seagrass, other factors are clearly in play.*