The Ecological Role of Patchy Cold-Water Coral Habitats: Does Coral Density Influence Local Biodiversity in Submarine Canyons of the Bay of Biscay?

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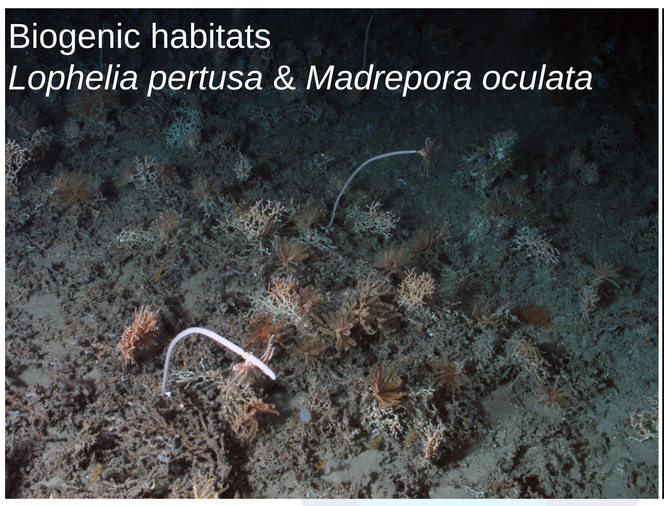
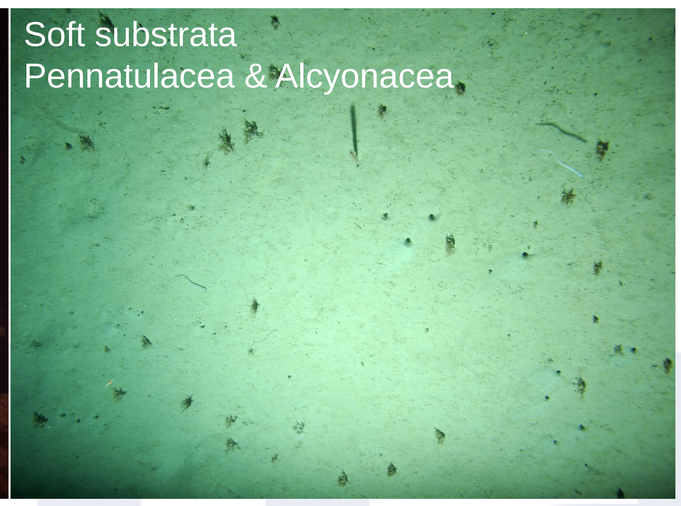
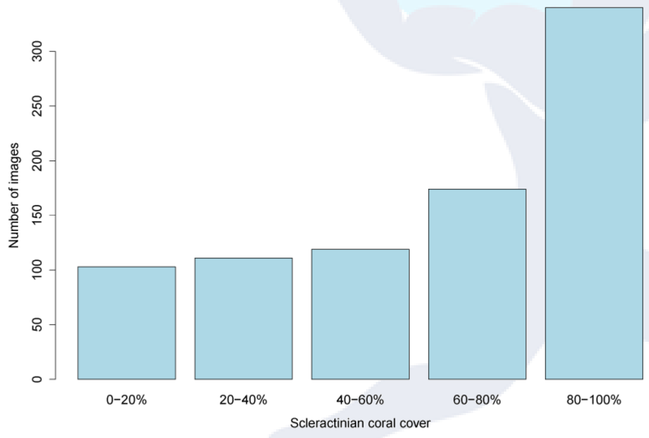
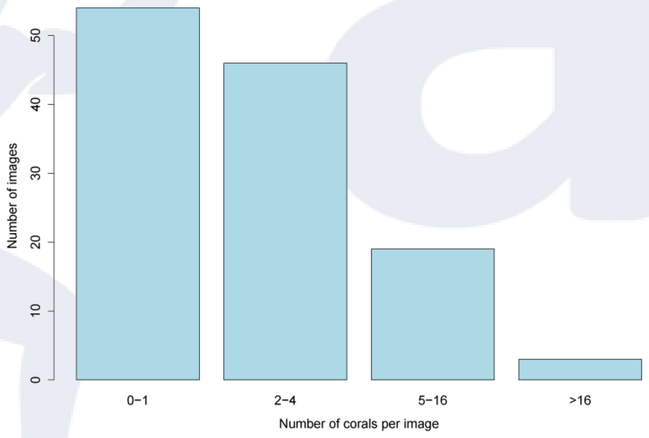
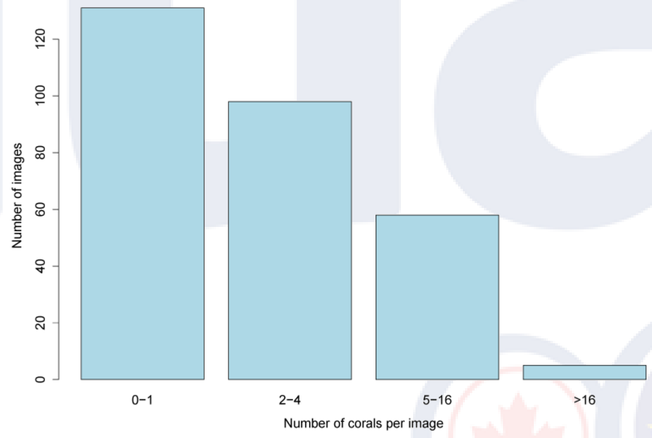
Objective In the Bay of Biscay, Cold Water Coral (CWC) habitats have been mapped in 24 submarine canyons. The distribution of these habitats, dominated by reef-building scleractinians, antipatharians, alcyonaceans and pennatulids, is patchy and their median size is small, ranging from 6 to 65 m. While the preservation of these Vulnerable Marine Ecosystems has become essential, all CWC habitats will not benefit from conservation strategies due to their widespread and patchy distribution. Priorities must thus be defined. Among the criteria for such prioritization, we explore here the ecological role that CWCs provide as habitat engineer.

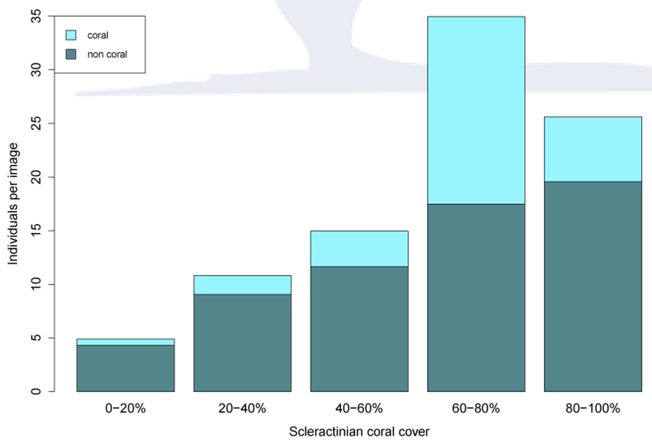


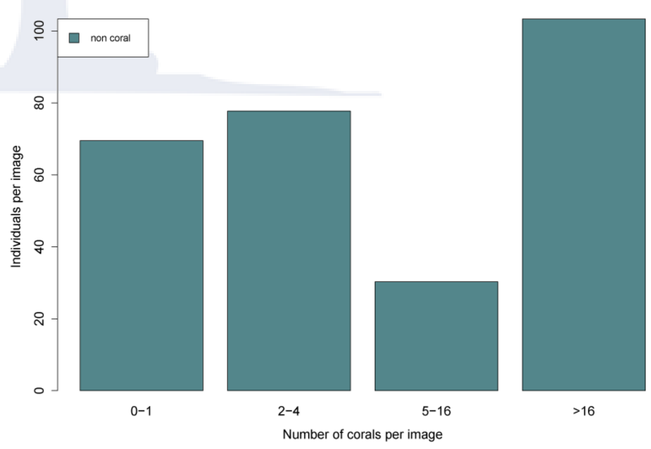


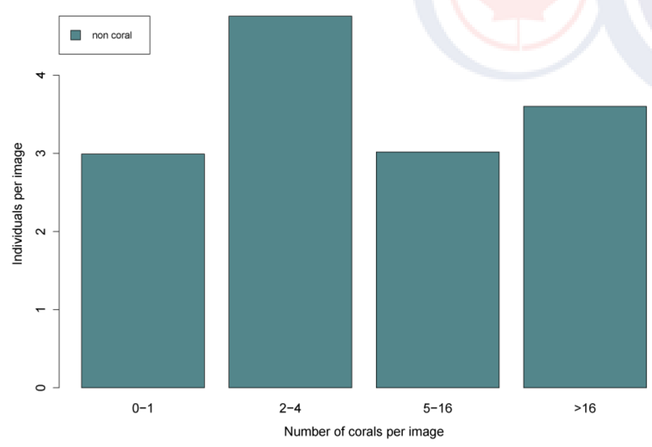


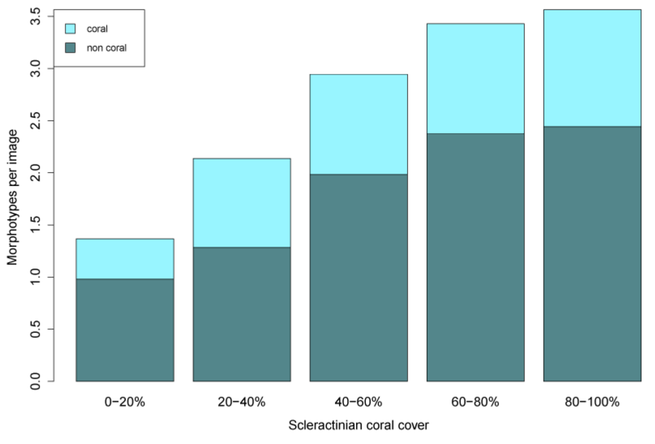


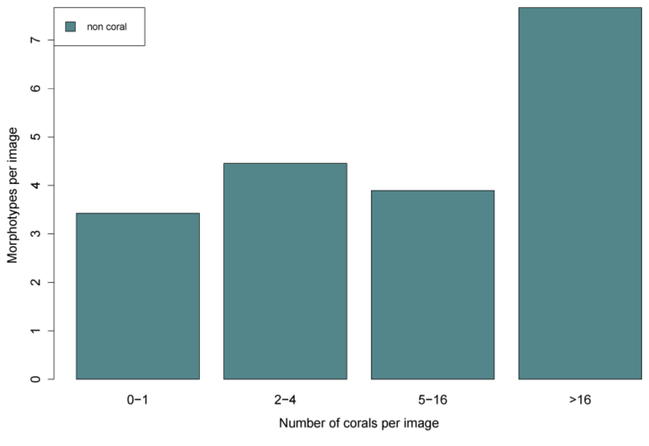


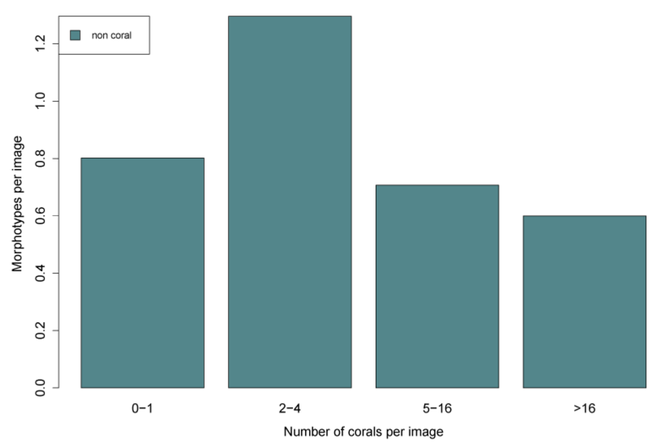












Results

- 2350 images from 46 dives of the *ROV Victor 6000* and towed camera *Scampi* annotated.
- High coral cover (> 60%) is common in biogenic habitats (60% of images) while high coral density (>5 colonies) is not on hard and soft substrata (ca 20% of images).
- In biogenic habitats, the abundance and diversity of the associated fauna tend to linearly increase with coral cover, although non-scleractinian corals are less abundant where *L. pertusa* and *M. oculata* occupy all space (competition?).
- On hard and soft substrata, there is no clear relationship between the density of corals and the abundance or diversity of the associated megafauna.

Conclusions

The ecological role of scleractinian reefs as habitat engineers is clearly demonstrated, a threshold of 60% coral cover is recommended as a conservation target.

The ecological role of non-scleractinian corals on hard and soft substrata is not demonstrated for the larger megafauna, other criteria or methods are needed for conservation prioritization.

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