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Orientation: Sustainable Use of Marine Resources

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PhD project: **Ontogenetic development and digestive functions in the long snouted seahorse *Hippocampus guttulatus***

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Summary: The high demand of seahorses for aquarium trade, traditional Chinese medicine (TCM) and as *souvenirs*, along with the destruction and degradation of coastal habitats (seagrass beds, coral reefs and mangroves), and accidental captures, has raised many concerns about the medium-term viability of seahorse's natural populations (*Hippocampus* spp.). The *ex-situ* production of seahorses has the potential to represent a valid alternative to individuals captured in the wild, although, for most species such activity is still a relatively new field of knowledge, which needs to implement the appropriate methodological techniques. The high mortality of seahorses at early developmental stages is mainly due to low digestion efficiency, representing a major bottleneck in the rearing of seahorses. For that reason, mechanistic understanding of ontogenetic development and growth patterns is of paramount importance for the determination of offspring quality in controlled restocking programs. The European long snouted seahorse *Hippocampus guttulatus* Cuvier 1829 is a recent candidate in the ornamental trade and its rearing will help in both the experimental assessment of ecological hypothesis and further development of conservational plans. Many aspects concerning rearing conditions have been recently investigated, however, there is still a lack of knowledge on many biological and physiological aspects, including developmental features. For this reason, the present Doctoral Thesis aims to shed light on the overall development of vital organs during the ontogeny of *H. guttulatus*, to determine the effect of different diets on the functionality of digestive organs, and to describe the role of goblet cells on digestive physiology.

