

Press release

Plouzané, 30th May 2017



The honeycomb worm: the architect at the heart of the REEHAB project

During your walks on the shore, you may have already noticed strange rounded masses resembling corals that are commonly attached to rocks. These honeycomb-like structures are built by the small (3 cm) marine worm *Sabellaria alveolata*. These tube worms construct their tubes by cementing sand and minute fragments of shell together. Aggregated tubes can form entire reefs—sometimes covering several hectares—that protect the coastline from erosion by attenuating wave action, whilst also playing an important role in coastal ecosystem biodiversity.

IFREMER scientists are counting on public participation in this research project: please help by reporting the presence of honeycomb worms on the REEHAB website: (<http://www.honeycombworms.org/en/>). During your walks on the coast, look for honeycomb worm reefs and, if possible, take pictures of them without trampling on them, particularly when foraging on the seashore!

The REEHAB project is studying the geographical distribution of this tube worm species and the effect of various environmental factors on its habitat. Run by Ifremer and funded by the Total Foundation, the REEHAB project involves three international scientific partners: the University of Porto (Portugal), Bangor University (Wales) and Plymouth University (England).



Honeycomb worm reef © Ifremer/Stanislas Dubois



A honeycomb worm, its bristly crown and numerous reddish-orange gills © Arnaud Guérin/Lithosphère



Honeycomb worm reef © Ifremer/Stanislas Dubois

The honeycomb worm is a sessile marine tube worm, meaning that it lives in a tube that it builds from sandy sediments, cementing them together with an organic glue that it secretes. At low tide, the worm stays in its tube, protected by a plug of mud. When the tide comes back in, it emerges out the top of the tube and deploys its feeding tentacles to trap the microalgae that it feeds on. The presence of honeycomb worm tubes often goes unnoticed; the tubes generally do not exceed more than a few centimetres. However, in some circumstances, they fuse together and form veritable reefs up to 2 m thick that can stretch over several square kilometres.

Biodiversity hotspots with 30,000 individuals per square metre

Honeycomb worm reefs harbour a broad range of microfauna that colonize the hollows of the reefs. Many species come to feed or find shelter. *“In the Bay of Mont-Saint-Michel, studies have shown that the number of species present in honeycomb worm reefs are up to ten times higher than in the muddy sediments that surround them,”* explains Stanislas Dubois, the REEHAB project coordinator and a researcher from the Coastal Benthic Ecology laboratory at the Ifremer Brittany Centre in Brest. Moreover, these marine annelids are filter-feeders, filtering water to extract their food. The high density of individuals—sometimes more than 30,000 individuals per m²—mean that these reefs are biological filters that actively contribute to the functioning of the bays in which they develop.

Mapping the distribution of honeycomb worm reefs on the coasts of Europe

Sabellaria alveolata is found from Scotland to Morocco. The highest densities are found on the French and English coasts, particularly in the English Channel and on the Atlantic coast. *“This species is not well known to the general public and has not been well studied by scientists. One of the goals of the REEHAB project is to map the past and present distributions of the honeycomb worm in Europe. To do so, we are using a data archaeology approach, compiling information on the presence of this species from fragmented historical sources that are often difficult to access,”* says Stanislas Dubois. Thanks to the partners present in different European countries, visits to the sites will help draw an accurate map of the current species distribution, from southern Portugal to Scotland. This information will, for example, help marine diversity managers define marine protected areas.

Linking reef health with worm health

The project also aims to observe variation in the *Sabellaria alveolata* bioconstructions and assess the health status of the worms. Stanislas Dubois emphasizes that *“honeycomb reefs show high variability over time, even within limited geographical areas. The processes and the environmental factors that explain the changes in distribution and abundance are currently poorly understood. We hope to determine if healthy reefs are built by healthy worms and vice versa. There are many similarities with coral reefs. The results should lead to recommendations on how to assess the health status of this specific habitat that plays key ecological roles for ecosystems.”*