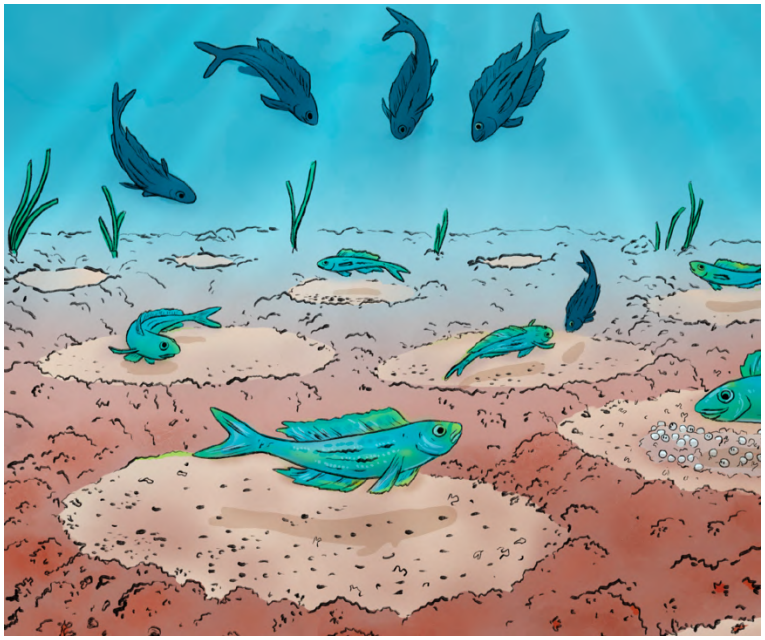
Gigantic picarel breeding colonies with male nest guarders discovered in the Mediterranean

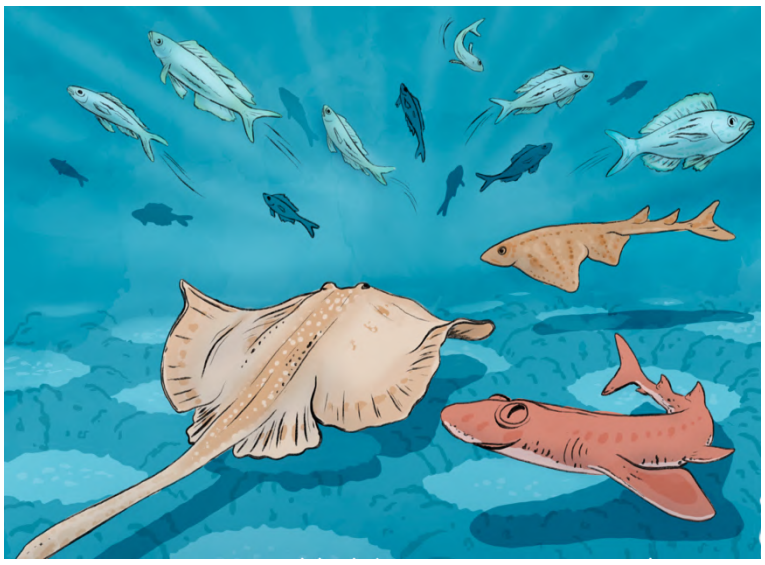
The discovery of a massive fish breeding ecosystem in the Mediterranean Sea has just been reported by researchers from Andromède Océanologie and the University of Montpellier (UM) in partnership with Agence de l'eau Rhône Méditerranée Corse, the Parc Naturel Marin du Cap Corse et de l'Agriate (PNMCCA) and Bastia Offshore Fishing. On the coast of Corsica Island, the breeding colonies of picarels (Spicara smaris) cover more than 134.6 ha between 37 and 50 m deep. More than 18 million nests, each guarded by a male, were estimated, attracting numerous predators, including critically endangered species like angelsharks (Squatina squatina), and promoting amazing behaviors. This phenomenon could be as important as the sardine run in South Africa!

While breeding colonies are well known in seabirds, they remain exceptional for marine fishes. Fifteen massive breeding colonies of picarels (Spicara smaris), a small hermaphrodite zooplanktivorous fish, consisting of nests each guarded by a male, were discovered by chance during video transects in

spring 2021 along the east coast of Corsica (French Mediterranean). This reproductive strategy (i.e. breeding colonies) is rare in marine fish but some of these picarel aggregations were known by local fishermen. What is new here is the extensive size of the breeding colonies and their consequent ecological role, certainly underestimated until now.



The seabed, including the lower limit of posidonia meadows, soft bottoms, and the predominant rhodolith beds, have been completely rebuilt in circular jointed nests measuring 55 cm in diameter on average. With a density of 2.6 nests per m^2, the estimated number of nests exceeds 18 million. A rich macrofauna including threatened species (IUCN red list) can be observed around the nests, eating eggs or adults. This finding highlights the exceptional ecological role of this small fish as an ecosystem engineer creating oases of marine life. This warrants further studies and better protection of the area, at least during this short breeding season.



These fifteen picarel breeding colonies were fortuitously discovered in May 2021 during a large field survey (a190 km-transect along the Corsican coast) focusing on angel sharks (see **Faure et al 2023**). Andromède océanologie used different tools to describe these colonies: sonar for the extent, photogrammetry for dimensions and density, diving and videorecording for behaviors and associated fauna. Beautiful images (photos by photographer Laurent Ballesta) and videos illustrate the article and its supplemental file.

Dr J. Deter assumes that the exceptional nature (in size) of this phenomenon and its lack of recognition are due to the very low fishing effort in the area and the low number of people visiting this sandy coastline, which hosts ones of the most pristine Posidonia seagrass beds of the Mediterranean. Raising awareness of this phenomenon is important not only for the management of fishing and boat anchoring, but also for the conservation of endangered species.

Reference: Gigantic picarel breeding colonies with male nest guarders discovered in the Mediterranean by Julie Deter, Laurent Ballesta, Adèle Barroil, Guilhem Marre, Nadia Faure, Jean-Jacques Riutort, Thomas Bockel, Sébastien Villéger, David Mouillot, Nicolas Tomasi, Kevin Da-Cunha and Florian Holon. Current Biology **(https://www.sciencedirect.com/science/article/abs/pii/S0960982224008960)**

Related article: An environmental DNA assay for the detection of Critically Endangered angel sharks (Squatina spp.) by Nadia Faure, Stéphanie Manel, Bastien Macé, Véronique Arnal, Nacim Guellati, Florian Holon, Adèle Barroil, Franck Pichot, Jean-Jacques Riutort, Gianni Insacco, Bruno Zava, David Mouillot and Julie Deter. Aquatic Conservation: Marine and Freshwater Ecosystems https://doi.org/10.1002/aqc.3954 **(https://medtrix.fr/wp-content/uploads/2023/05/Aquatic-Conservation-2023-Faure-An-environmental-DNA-assay-for-the-detection-of-Critically-Endangered-angel-sharks-.pdf)**

THIS DISCOVERY WOULD NOT HAVE BEEN POSSIBLE WITHOUT THE SUPPORT OF

CONTACTS

Claudia TANUS, Media relations manager
claudia.tanus@andromede

Dr Julie DETER, Scientific director
julie.deter@andromede-ocean.com
Tel: 04 67 66 32 48 or 06 70 10 54 94

** The drawings included in this press release are from the comic strip created by Aline Faure for Andromède Océanologie.*

** Photographs of this phenomenon are not available. Please refer to the article "Gigantic picarel breeding colonies with male nest guarders discovered in the Mediterranean" to view images.*