

# Oysters

## from the ancient seas

Since the Croatian Natural History Museum is temporarily closed for the public, one of the ways how to stay in touch with the museum visitors is to present the museum inventory through the digital media. Therefore, we prepared the virtual exhibition about the fossil bivalves *Ostreida*, known as oysters.



Oysters are interesting and peculiar group of bivalves. They live attached to the substrate, mostly in shallow and agitated seas, near the coastline. Their soft tissue is protected by asymmetrical valves. Left valve is larger than the right one, and attached to the substrate. Valves are in most cases thick and ornamented, closed by a single muscle positioned in the valve center. Oysters open their valves by ligament, as any other bivalve. After the death, the former position of ligament is visible as a triangular ligament field. Undulations on the ligament field function as a dysodont hinge, enabling valves jointing, which is the most important classification criterion. Oysters have a specific type of reproduction. Most of the oysters change gender, depending on the season. When females fulfill the reproductive function, they become males. Fertilized eggs remain in the pallium and gills. Larvae in the beginning swim freely, and later they attach themselves to a hard surface. Oysters are filter feeders, and their worst enemies are sea stars, muricid snails, various crabs and fish. Since they live in assemblages, entire oyster banks can be sometimes fossilized in situ.

Although oysters appear at the beginning of the Mesozoic Era (maybe even at the end of the Paleozoic Era), the focus of this exhibition is on the Cenozoic taxa, especially from two epochs, Eocene and Miocene. Fossil oysters in Croatia are very common in the Miocene deposits from the northern regions, resulting in numerous specimens housed at the Croatian Natural History Museum. Together with the specimens from Croatia, on the exhibition are presented oysters from the comparative collections. This material comes from the Eocene of the Paris Basin, a type Eocene area, and from several Miocene localities in Italy. During the Eocene (around 56 to 33.9 Ma) and the Miocene (around 23.03 to 5.33 Ma) epochs, periods of extreme heat, with average temperatures higher than today, are recorded. During the Paleocene-Eocene Thermal Maximum the average annual temperature was around 8 °C higher, and during the Miocene Climatic Optimum it was 3-4 °C higher than today. Despite the heat, life in ancient seas „flourished“.

Recent representatives of oysters from the family Ostreidae today build „reefs“ in European shallow seas, similar as earlier in geologic history. The most famous and most common species of the fossil oysters from the Middle Miocene deposits is *Crassostrea gryphoides* (Schlotheim), with shell up to half a meter large. Recent large species, *Crassostrea gigas* (= *Magallana gigas*) (Thunberg), which inhabits muddy and rocky shallow sea bottoms, is probably her direct descendent. Representatives of the genus *Neopycnodonte* from the family Gryphaeidae, known as biogenic builders of the European seas, occupy slightly deeper niches. Their fossil equivalents are recorded since the Miocene Epoch, for example the species *Neopycnodonte navicularis* Brocchi. As oysters live in specific environments, they also provide a home for other organisms. Therefore, on oyster shells we can find attached smaller oysters, bryozoans, polychaetes, corals, crabs and foraminifers. Also, sponge or bivalve boring traces can be seen.

Together with the geologic-paleontological aspect of oysters, their historic meaning is significant. They played an important role in the Roman Empire, resulting in numerous records on European archeologic sites. Ancient Romans considered oysters as an exquisite delicatessen and they started the war with Bretons because of the oysters. In the Ancient Greece oysters were used not only as food, but also during the trials as a sentence tool. After the voting, the used „voting shell“ would be crushed to powder and used as aphrodisiac.

Oyster harvesting is one of the earliest maricultures, and oysters are harvested all around the world. There are several oyster farms in Croatia, including the Mali Ston Bay with the longest tradition since Roman times.

And one more thing...Oysters played an important role in life and creating of the great French writer Honoré de Balzac (1799-1850). He considered oysters as a „divine food“ in which he found an inspiration. Balzac would eat at least one oyster per day, and according to the gossip he once ate 365 oysters to provide a very fruitful year. We can believe this story or not, but the fact remains that Honoré de Balzac is one of the most fruitful French writers and the spiritual “father” of the European realism, no matter what the source of his inspiration was.

We hope we gained your attention for these unusual and useful bivalves, and invite you to enjoy the virtual exhibition Oysters from the ancient seas.

