

Unknown species discovered on deep-sea expedition

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This transparent-bodied sea cucumber belongs to the Elpidiidae family and is called 'unicumber'. You can clearly see its intestines and that it has been eating sediment. We can only guess what the long tail is used for, but probably to be able to swim. Credit: SMARTEX/NHM/NOC

Transparent sea cucumbers, bowl-shaped sponges, and pink sea pigs are some of the fascinating animals discovered during a deep-sea expedition to the Pacific Ocean.

In March, a 45-day research expedition to the Clarion Clipperton Zone between Mexico and Hawaii in the eastern Pacific Ocean came to a close. One of the scientists on board the British research vessel James Cook was Thomas Dahlgren, a [marine ecologist](#) from the University of Gothenburg and the NORCE research institute.

"These areas are the Earth's least explored. It's estimated that only one out of 10 [animal species](#) living down here has been described by science," he says.

The area studied is a part of the Abyssal Plains, which are deep-sea areas at depths of 3,500 to 5,500 meters. Although they make up more than half of the Earth's surface, there's very little known about their fascinating animal life.

"This is one of very few cases where researchers can be involved in discovering new species and ecosystems in the same way as they did in the 18th century. It's very exciting," says Dahlgren.

Sea cucumbers and glass sponges

The animals living in these deep-sea areas have adapted to a life with very little nutrition. Most feed on organic debris, known as marine snow, falling from the more productive area close to the surface. As a result, this animal population is dominated by filter feeders, such as sponges, and sediment feeders, such as sea cucumbers.

"The lack of food causes individuals to live far apart, but the [species richness](#) in the area is surprisingly high. We see many exciting

specialized adaptations among the animals in these areas," says Dahlgren.

Using a remotely operated vehicle (ROV), the research team photographed the deep-sea life and took samples for future studies. One of the species captured on camera was a cup-shaped glass sponge, an animal believed to have the longest lifespan of any creature on Earth. They can live up to 15,000 years.

Another species discovered on the expedition was a pink sea pig, a sea cucumber from the genus *Amperima*. The species moves very slowly with its tube feet across the desolate plains in search of nutrient-rich sediments. The outgrowths on the front end of the underside are remodeled feet used to stuff food into the mouth.

"These [sea cucumbers](#) were some of the largest animals found on this expedition. They act as [ocean floor](#) vacuum cleaners, and specialize in finding sediment that has passed through the least number of stomachs," says Dahlgren.

Threatened by mining

The aim of the expedition was to map the biodiversity of the area, where deep-sea mining of rare metals used in [solar panels](#), electric car batteries, and other green technologies is planned. Several countries and companies are waiting for authorization to extract these metals bound to mineral nodules lying on the ocean floor.

The scientists want to find out more about how mining could affect the ecosystem, register existing species, and find out how the ecosystem is organized.

"We need to know more about this environment to be able to protect the

species living here. Today, 30% of these marine areas in consideration are protected, and we need to know whether this is enough to ensure that these species aren't at risk of extinction," says Dahlgren.

Abyssal Plains

The ocean floor that lies between 3,500 and 5,500 meters deep are called the Abyssal Plains. Despite the name, it's not an entirely flat landscape. There are plenty of ridges and small seamounts that can rise several hundred meters from the ocean floor, but in most cases, this is not enough to be disclosed on existing maps.

The environment on these plains is extremely nutrient poor. The nutrients present are either remainders from hot springs that lie further away, or excreted from the occasional whale cadavers sunk to the bottom. Otherwise, the nutrients originate from the productive sea surface several kilometers up, where only about one percent reach the ocean floor as marine snow.

Provided by University of Gothenburg

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