

# Research team discovers more than 50 potentially new deep-sea species in one of the most unexplored areas of the planet

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A Chaunax documented on the southwestern flank of Rapa NuiA Chaunax (genus of bony fish in the sea toad family) documented during Dive 664, a transect is located on the southwestern flank of Rapa Nui. The dive began at ~600 m depth and traveled upslope to ~200-300 m. The island is located near the western extent of the Salas y Gómez Ridge of underwater mountains. Credit: ROV SuBastian / Schmidt Ocean Institute

An international group of scientists, co-led by researcher Ariadna Mechó of the Barcelona Supercomputing Center—Centro Nacional de Supercomputación (BSC-CNS), observed 160 species on seamounts off the coast of Chile that had not yet been known to live in the region and suspect that at least 50 of these species are new to science.

The recent Schmidt Ocean Institute expedition to the underwater mountains of the Salas y Gómez Ridge, a remote and underexplored area that stretches from offshore Chile to Rapa Nui, resulted in identifying [deep-sea corals](#), glass sponges, [sea urchins](#), squids, fishes, mollusks, crabs, sea stars, squat lobsters, and other species likely never-before observed by scientists.

Mechó, a researcher in the Climate Variability and Change group at the BSC's Earth Sciences Department, presented the results of the 40-day scientific cruise "[Unexplored Seamounts of the Salas y Gómez Ridge](#)" and the current negotiations to create a blue corridor in the area at the "[Ocean Decade MPA Forum: Progress, obstacles and solutions](#)," an off-site event organized in the framework of the [UN Ocean Decade Conference](#) held in Barcelona from 10–12 April 2024.

"The main results of this campaign are that we have found between 50 and 60 potentially new species at first sight, a number that is likely to increase as we have many samples to work on in the laboratory.

"We also found one of the deepest mesophotic corals in the world, extending the distribution of this Polynesian fauna by several hundred kilometers. And at depth, we have found fields of sponges and corals, habitats that are considered vulnerable and in need of protection," said Mechó.



ROV SuBastian / Schmidt Ocean Institute An octopus documented during Dive 674, an exploration transect on the southeastern flank of an unexplored and unnamed seamount located within the national jurisdiction of Chile, east of Motu Motiro Hiva, an uninhabited island along the Salas y Gómez Ridge. The dive started at ~800 m depth and traveled upslope to ~270 m. This island is located near the western-central extent of the Salas y Gómez Ridge. Credit: ROV SuBastian / Schmidt Ocean Institute

The expedition took place from 24 February to 4 April with an international team of 25 scientists from 14 organizations in five countries (Chile, United States, Italy, Spain, Netherlands), including the first Rapa Nui [marine biologist](#), Emilia Ra'a Palma Tuki, a recent graduate of the Universidad Católica del Norte in Chile.

The Rapa Nui Sea Council, or Koro Nui o te Vaikava, supported the expedition, providing the main permit to work in the area, and



collaborated by providing a Koro Nui observer and a local sailing expert to bring to the expedition their perspectives as members of the Rapa Nui community.

The information collected during this research expedition will provide the scientific basis to inform the management of existing marine protected areas and potentially expand them, especially around the island of Rapa Nui.

## **One of the most unexplored areas of the planet**

The cruise is devoted to studying the ecosystems of one of the most unexplored areas of the world, the submarine mountains and oceanic islands of the Salas y Gómez Ridge, which is a 2,900-kilometer-long underwater mountain chain comprising more than 200 seamounts from offshore Chile to Rapa Nui, otherwise known as Easter Island (or Isla de Pascua).



A deep-sea dragon fish, an apex predator with enormous jaws filled with fang-like teeth, seen during Dive 674 along a transect on the southeastern flank of an unexplored and unnamed seamount located within the national jurisdiction of Chile, east of Motu Motiro Hiva, an uninhabited island along the Salas y Gómez Ridge. The dive started at ~800 m depth and traveled upslope to ~270 m. This island is located near the western-central extent of the Salas y Gómez Ridge. Credit: ROV SuBastian / Schmidt Ocean Institute

This ridge hosts one of the most unique and biodiverse seascapes on Earth, with an extremely high rate of endemism, critical habitats for benthic organisms, essential migration corridors for highly mobile species, and the presence of over 80 threatened or endangered species.

In addition, the Salas y Gómez Ridge possesses a rich cultural and maritime heritage with profound connections to Indigenous islander and mainland communities and other nations. This remote, underexplored region likely harbors pristine and unexploited habitats with abundant biodiversity that require international cooperation to protect them before they are lost.

## **Modeling the ocean with supercomputing**

The role of BSC and supercomputing in the campaign is to provide climate modeling data through different scenarios to establish the distribution of key species in the area. This will help us understand how these species will be impacted by future changes, depending on each possible scenario.

"But first, we need to better understand the biodiversity and connectivity

of the region to know which keystone species are found there and on which mountains exactly, as well as potential faunal breaks (where communities change or stop connecting with each other). Basically, it is a unique exploration in places where practically everything is unexplored," said Mechó.

The aim is to provide the critical information to support the designation of the Salas y Gomez Ridge as an ecologically and biologically significant marine area (EBSA) by the Convention on Biological Diversity and an ecological and socioeconomic "priority area" for international protection, by the [High Seas Treaty](#).

This cruise was strongly connected with an earlier campaign deployed between January and February 2024 and focused on studying the junction between the [Salas y Gomez and the Nazca Ridge, and the Desventuradas Islands](#).

During the two cruises, more than 100 new [species](#) have been discovered on the Salas y Gomez and the Nazca Ridge (SyGR), as well as coral and sponge gardens. That will emphasize the need for a blue corridor along the Salas y Gómez and Nazca Ridges, creating one of the first and larger high-seas marine protected areas in the world.

Provided by Barcelona Supercomputing Center

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