# The New Captain of the Endurance Shipwreck Is an Anemone

A who's who of the new invertebrate crew steering Ernest Shackleton's sunken ship in the Weddell Sea.

By Sabrina Imbler
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Huw Griffiths, a marine bio-geographer at the British Antarctic Survey, was eating pancakes when news broke that the wreck of the Endurance — the famed ship helmed by Ernest Shackleton that sank in an expedition in 1915 — had been discovered.

Dr. Griffiths found himself far more interested in the footage than his breakfast. His first thought was that the ship looked almost fake, considering how eerily pristine it remained 106 years after sinking to the bottom of the Weddell Sea near Antarctica. His second thought: What was living on it?

Over the years, the ship had become as lush as a garden. In a Twitter thread, Dr. Griffiths zoomed in on the wreck footage to spotlight creatures that he recognized: anemones, sponges, sea squirts, sea stars and a lemon-yellow sea lily. Other tenants were more mysterious — white tendrils, transparent blobs and a mysterious feather-shaped creature.

Christopher Mah, a sea star researcher at the Smithsonian National Museum of Natural History, said he expected a "rich bonanza of critters living in and among the wreck of the Endurance." In the deep sea, where food is scarce and the landscape is mostly a mushy sludge, a shipwreck is precious real estate.

The wreck provides insights into the kinds of life in the Weddell Sea that live on hard structures, according to Louise Allcock, a zoologist at the National University of Ireland Galway. "There's been lots of work in the Weddell Sea but mostly on soft bottoms," Dr. Allcock said. "There is a chance there are new species, if only because of a lack of looking," she added.

When Katrin Linse, a marine biologist with the British Antarctic Survey, scanned the wreck footage in her office, she admired the anemones, worms, sponges and even a bright red amphipod, perhaps a species in the genus Eurythenes, that was swimming away from the wreck. Then she spotted something utterly surprising, perched by a porthole. "There's a crab," Dr. Linse said. "It shouldn't be there."

Dr. Linse, who helped discover the first hydrothermal vents in the Southern Ocean, has an eye for white crabs. The ghostly white creatures in the deep-sea mud can indicate the presence of vents nearby.

### The Hunt for the Wreck of the Endurance

Battling sea ice and freezing temperatures, a team of explorers and researchers found Ernest Shackleton's ship that sank in the Antarctic in 1915.

- **Historic Moment:** The discovery was announced on March 9. The wreck was located at the bottom of the Weddell Sea using undersea drones.
- **The Expedition:** Endurance22 began its search in February. Researchers studying Antarctic ice and global warming were part of the team.
- **Lush Garden:** Following the discovery, marine biologists have been scanning footage of the wreck. It could help determine which species live on it, and if any are new.
- **From the Archives:** Read the cablegram reporting the loss of the ship that Shackleton sent out after making it to safety in the Falkland Islands.

Dr. Linse messaged Dr. Griffiths, asking why he had not told her about the crab.

He had missed the animal entirely, its presence in the video merely a leggy white speck. A crab may be mundane in many places, but a crab had never been spotted before in the Weddell Sea. When Dr. Linse watched the video again, she found three more crabs.

The general absence of decapods — which include shrimp, crabs and lobsters — in the Antarctic has "intrigued polar biologists for so many years," Paula Rodríguez Flores, a researcher studying deep-sea squat lobsters at Harvard University's Museum of Comparative Zoology, said in an email.

Scientists had at one time hypothesized that decapod crabs were driven out of Antarctica millions of years ago and have only recently returned because of climate change, so "crabs in the Antarctic are still very exciting to find," Dr. Linse said

A squat lobster observed by the researchers, circled in red. Falklands Maritime Heritage Trust

A squat lobster of the Munidopsis genus. blickwinkel/Alamy

Dr. Griffiths wondered if the crab spotted on the wreck could be a species in the family Kiwaidae, which includes a hairy white yeti crab that lives by vents off Antarctica. But a closer look revealed the crustacean was not a crab but a deep-sea squat lobster in the genus Munidopsis, Dr. Rodríguez Flores said.

There is only one squat lobster species recorded in Antarctic waters. “This is for sure a different species,” she said, adding that a closer examination would establish its identity.

The crustacean’s presence opens up many new questions. “How did they get there?” Dr. Linse asked. “Is this a Munidopsis new species?” Dr. Rodríguez Flores asked. “Is it eating the ship?” Dr. Griffiths asked.

Although the crab is presumably free to scuttle about the Endurance, many of the ship’s other inhabitants are passive feeders like crinoids, glass sponges and anemones. These creatures are likely subsisting on the sprinkling of waste called marine snow, which here contains a lot of krill feces, Dr. Griffiths said. The ship’s elevation above the seafloor allows these largely immobile creatures to take advantage of water currents for feeding, Dr. Mah said.

Although the video quality prevents a closer identification of many of these species, some inhabitants stood out, especially near the wheel of the ship. Dr. Mah identified a snaking six-armed sea star as a brisingid sea star, either Freyastera or Belgicella. These stars extend their spiny arms into the water to capture small crustaceans and other food, he added.

An example of a brisingid sea star, Freyastera species. NOAA Exploration and Research

Dr. Mah identified a snaking six-armed sea star, circled in red, as a brisingid sea star, either Freyastera or Belgicella. Falklands Maritime Heritage Trust

Scientists are divided over whether a creature sitting near the wheel — which resembles an ostrich feather crossed with a Christmas tree — is a hydroid or a black coral. Dr. Allcock is team hydroid, noting the stem did not look straight enough for black coral. Joan J. Soto Àngel, a researcher at the University of Bergen in Norway, said it did not resemble the hydroids known from such depths, but added he was “100 percent sure there must be several species of hydroids growing on the wreck.”

The Endurance wreck is considered a historical monument under the terms of the Antarctic Treaty. “No one is allowed to touch it,” Dr. Griffiths said. Still, higher-resolution videos could help scientists determine which species live on the wreck, and if any of them are new.

For Estefanía Rodriguez, a curator at the American Museum of Natural History in New York who studies anemones, clearer videos might not be enough for species identification. The Endurance is studded with the tentacled stalks of anemones, from fat white ones to slenderer orange ones. But many anemone species look the same on the outside, meaning researchers need to cut them open to identify them.

“After more than 20 years studying this group, if someone shows me a picture and asks what this is, I can only say ‘anemone,’” said Dr. Rodriguez. “It’s not because I’m useless at my job.”

With extreme caution, Dr. Rodriguez suggested the fat white anemone belongs to the family Actinostolidae and the orange ones to the family Hormathiidae.

An example of an Actinostolidae “bulb.” NOAA Ocean Exploration and Research

A fat white anemone spotted on the stern of the Endurance, possibly belonging to the family Actinostolidae. Falklands Maritime Heritage Trust

Although Dr. Rodriguez was happy to see the wreck found, she was even happier to see the old ship’s hull dominated by anemones, which she said are understudied animals. “The group is about 600 million years old. That is what fascinates me,” Dr. Rodriguez said. “How they endure: They are tough things.”

For now, it is difficult to say how old the Endurance’s invertebrate crew is — how many moved in soon after the sinking 106 years ago or more recently. But glass sponges can live for thousands of years, and anemones for many decades.

From what is visible in the video, the largest living thing behind the wheel of the Endurance is an anemone (species unidentifiable).

“The old crew got off alive, and this is who’s moved in,” Dr. Griffiths said. “Who knows where that sea anemone is taking it?”