

Scientists find virus killing millions of sea stars along Pacific Coast

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This undated file photo released by the Rocky Intertidal Lab at University of California-Santa Cruz shows a sea star suffering from "sea star wasting disease" - it's missing one arm and has tissue damage to another. Marine scientists are finding a large number of dead starfish along the West Coast stricken with the disease that causes them to lose their arms and disintegrate. Photo: AP Photo/Laura Anderson, Rocky Intertidal Lab UC Santa Cruz

Millions of sea stars have died in the past year from Mexico to Alaska in one of the largest ocean die-offs ever seen.

Now, a team of more than a dozen researchers have made a major breakthrough in the mystery. They have found the cause of the disease that is killing the sea stars, which are also called starfish.

A virus is to blame, the scientists found. The virus had not been identified before, yet it isn't new either. Sea stars in museums from as long ago as 1942 have this virus, meaning it's been present in the Pacific Ocean for 72 years.

"Wasting Syndrome" Spreads

The virus has caused smaller outbreaks in the past, killing smaller numbers of starfish. No one knows what caused the virus to explode in the past year, killing up to 95 percent of the sea stars in some areas.

"We've never seen anything like the current outbreak," said Peter Raimondi of UC Santa Cruz. "Something may have happened recently."

The disease that is killing starfish is known as "wasting syndrome." It was first detected in Washington state in June 2013. Since then, it has spread south — to Oregon, California and all the way down to Mexico. The disease has even killed sea stars in major aquariums in Seattle, Monterey and other cities.

Wasting syndrome has infected at least 20 different species of starfish.

A Type Of Densovirus

Sea stars infected with wasting syndrome become slow and develop white lesions, or sores. Within days, they curl up and parts of their arms break off and crawl away. Soon after, the entire starfish turns into a gooey mess and dies.

Researchers from Cornell University, the University of California, Santa Cruz, and the Monterey Bay Aquarium announced their findings Monday in the magazine of the National Academy of Sciences. They said the disease is a type of densovirus, similar to viruses that affect insects, sea urchins and other invertebrates — animals without a backbone.

In the mystery of the dying sea stars, scientists now know the killer's name, but the case is not yet closed.

More Questions

More questions remain, according to Dr. Mike Murray of the Monterey Bay Aquarium. "What started it all off? Are there other problems in other species?"

Still, he called the discovery "a huge breakthrough."

Researchers have found the virus in sea urchins and sand dollars, but it isn't killing them in large numbers.

The virus spreads in seawater and sand, the scientists discovered. But it does not affect humans. And there is no way to offer a cure to starfish populations.

"It would be nice if we could do that, but it's too simplistic," Murray said. He compared the starfish disease outbreak to human epidemics like the Black Death in 14th-century Europe.

Sorting Millions Of Viruses

“This is one of those natural phenomena that may or may not have a human basis behind it,” he said. “It is going to play itself out, and hopefully it will do that in a way that will allow sea stars to persist. But there are no guarantees.”

Using cutting-edge genetic tools, scientists at Cornell University were able to pinpoint the disease.

“There are 10 million viruses in a drop of seawater, so discovering the virus associated with a marine disease can be like looking for a needle in a haystack,” said Cornell microbiologist Ian Hewson, co-author of the study.

Working with 335 sea stars collected on the West Coast, the Cornell researchers exposed healthy starfish to infected ones, learning how the disease spread.

Now, scientists have pinpointed the cause of the disease, but they still don't know how it spread so widely. The cause could be natural, like overpopulation of starfish in some areas. It could be related to humans — pollution, warming waters, or increasing acidity in the oceans.

Making A Comeback?

If the disease was triggered by human behavior, new laws could make a difference, experts say.

“It is probably part of their population cycle. But if it is driven by something linked to pollution or climate change or things like that, then we would have some responsibility to deal with it,” said Brian Tissot, director of the Humboldt State Marine Laboratory.

Sea stars are important predators in tide pools and waters near the shore. They eat mussels, clams and snails. Without starfish, mussels and other species could explode out of control, affecting other ocean life.

There is some hope, however. Sea stars in Big Sur and other areas had many offspring over the past year, scientists say. All those baby starfish may be a way the species is fighting back against the die-off. Still, big questions remain.

“How likely is this disease to maintain itself?” Raimondi asked. “How likely is it to jump to other species? Those are really important questions.”

Quiz

- 1 Select the sentence from the article that is MOST important to include in its summary.
 - (A) He compared the starfish disease outbreak to human epidemics like the Black Death in 14th-century Europe.
 - (B) Researchers from Cornell University, the University of California, Santa Cruz, and the Monterey Bay Aquarium announced their findings Monday in the magazine of the National Academy of Sciences.
 - (C) Now, a team of more than a dozen researchers have made a major breakthrough in the mystery.
 - (D) Sea stars in museums from as long ago as 1942 have this virus, meaning it's been present in the Pacific Ocean for 72 years.

- 2 Select the paragraph from the section "Sorting Millions Of Viruses" that describes why it was difficult to identify the virus.

- 3 The section "Making A Comeback?" adds to the article in each of the following ways EXCEPT:
 - (A) It focuses on the possibility of human behavior setting off the virus.
 - (B) It shows the importance of sea stars in the marine food web.
 - (C) It suggests that starfish have their own way of sustaining themselves.
 - (D) It implies that the disease might be triggered by their own increasing population.

- 4 Which of these does the author use to show the severity of the situation?
 - (A) a description of the symptoms of infected sea stars
 - (B) a mention of the virus being present for the past 72 years
 - (C) a description of the number of sea stars that have died
 - (D) a comparison with other viruses that affect other marine species