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Sea Grapes Podcast

Caulerpa racemosa variety *cylindracea*

"Sea grapes" may sound like something Poseidon would snack on, and not a killer algae. Yet *Caulerpa racemosa* var. *cylindracea* poses a serious threat to marine life. Spread by the bilge water of boats, this fast-growing alga is quick to take root, squeezing out native species. But there is one spot in the Mediterranean where *cylindracea* hasn't yet taken over, and biologists like Juan Manuel Ruiz Fernández are trying to discover why.

Transcript

Ari: From the Encyclopedia of Life, this is: One Species at a Time. I'm Ari Daniel Shapiro.

This is a story of plants duking it out. We'll start in southwestern Australia... where you can find a kind of algae called *Caulerpa racemosa* variety *cylindracea*. It also goes by the easier-to-pronounce name "sea grapes" because of the rounded side-shoots that dot the little branches. *Cylindracea* evolved off Australia, and it's part of a web of creatures that compete, but coexist. It gets eaten by urchins and fish. It fights other species of algae for light and turf. Sometimes it wins, and sometimes it loses. All these species, and many others, keep each other in check. Now, *cylindracea* isn't like pond algae. It doesn't grow on the water's surface. Instead, it anchors itself to the sea bottom, and to rocks. But *cylindracea* didn't stay put in Australia. Back in the early 90s, it showed up in the Mediterranean Sea, off Libya.

Fernández: What exactly happened nobody knows.

Ari: But chances are, says Juan Manuel Ruiz Fernández – a biologist with the Spanish Institute of Oceanography, it hitched a ride on a ship traveling from Australia to the Mediterranean...in the ballast waters. The theory is that a ship took on seawater in Australia and sucked in some *cylindracea* by accident. Once the ship got to the Mediterranean – somewhere close to Libya – it discharged that water. And the *cylindracea* just slipped out into the Med. Now, it's important to know what the Mediterranean looked like before *cylindracea* got here in the 90s.

Fernández: The native algae in the Mediterranean Sea are brown and red algae.

Ari: In addition, there are these lush meadows of *Posidonia* – a green sea grass that rings the Mediterranean. *Posidonia* roots itself in the sea bottom and grows only where light can penetrate – within 150 feet of shore. Ruiz Fernández has gotten to see *Posidonia* up close.

Fernández: It's really nice – you can see the sea grass move from one side to other, following the movement of the waves. It's a feeling of peace.

Ari: Ruiz Fernández talks about *Posidonia* like a kind of underwater forest. It provides shelter for countless fish and invertebrates, it helps prevent erosion and keep the water clear, and it stores carbon. The sea grass leaves even change their colors depending on the season. Ok, so that's the picture of the Mediterranean before 1990. Thick meadows of *Posidonia*. Carpets of brown and red algae. It's what things looked like when *cylindracea* – the green algae from Australia – showed up on the scene in the early 90s. And it wasn't long before *cylindracea* was on the move again – this time within the Mediterranean, which turned out to be a perfect new home for the algae. The temperature, the sunlight, the water – everything was just right for *cylindracea*.

Fernández: The algae have filaments that grow very fast.

Ari: As the filaments were slowly creeping along the seabed and over rocks, boat anchors and fishing nets inadvertently dragged *cylindracea* from one Mediterranean port to the next. And gradually, day by day, *cylindracea* fanned out, coating vast stretches of the Med. This algae has become one of the most aggressive invaders this part of the world has ever seen. By 2000 – in less than 10 years – *cylindracea* was flourishing off the coasts of 10 countries besides Libya, and the big Mediterranean islands.

The reason for *cylindracea*'s conquest is that usually when it comes up against one of the native brown or red algae, it wins. *Cylindracea* just grows faster ... so it's not even a contest.

Fernández: And this is the problem. The invasive algae almost in every place.

Ari: *Cylindracea*'s settled much of the rocky terrain, but there is one place where it can't seem to get a grip.

Fernández: The sea grass meadows.

Ari: The *Posidonia* sea grass meadows, which continue to thrive in the shallow, sandy waters along the Mediterranean coast.

Fernández: The hypothesis is that inside sea grass meadows, the algae don't have enough light to grow and survive.

Ari: So it sounds like this invasive algae, it's changing things – I mean it's not causing an entire crash of the Mediterranean ecosystem.

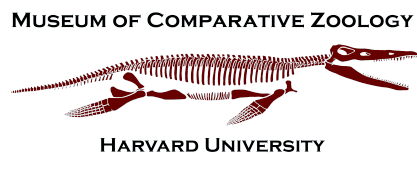
Fernández: We don't really know if this will be good or bad. This may be a new Mediterranean landscape with which we must live.

Ari: It'll take time to know whether the changes will be subtle or severe. And it's this uncertainty that's fueling Ruiz Fernández. He's set up a network of stations off the Spanish coast to monitor the presence and growth of *cylindracea*. His ultimate goal is to find a way to contain it.

Fernández: If we can protect sea grass meadows in the Mediterranean, we can control the spread of the invasive algae in every place.

Ari: For now, there's no real winner in this struggle between these plants. And Ruiz Fernández is working to make sure there aren't any big losers either. The seafloor isn't something most of us get to experience everyday. But its daily rhythms and balance are critical to the health of life both above and below the surface.

We've just created a Google Earth tour to illustrate this story of the invasive sea grapes. Take a look at eol.org. Our series, One Species at a Time, is produced by Atlantic Public Media in Woods Hole, Massachusetts. I'm Ari Daniel Shapiro.



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