The Natural Laboratory Podcast Transcript: Fishing for the Humboldt Squid

Introduction

This is the Natural Laboratory, a podcast exploring science for Bay Area National Parks. I'm Cassandra Brooks.

Today, I am out with scientists and educators off Monterey Bay searching for the Humboldt squid (*Dosidicus gigas*), also known as the Jumbo squid. Or in Mexico, where the fish are caught commercially, they call them "Diablo rojo"—the red devil.

These voracious deep-water predators, which can grow to up to ten feet long and swim 24 kilometers per hour, are new arrivals to the central California coast. Scientists from Stanford University's Hopkins Marine Station are studying the squid, trying to understand why they've moved into the northeast Pacific coast and what effect they might have on the local ecosystem.

Today, I join the Stanford crew for a fishing adventure, along with scientists with the National Marine Fisheries Service, local fishermen and educators with the Monterey Bay National Marine Sanctuary.

Erik Larsen Interview

Erik Larsen: So, I'm Erik Larsen, captain of the *Fulmar*, research vessel *Fulmar*, and we just left Monterey heading to a point about four miles southwest of Cypress Point off of Carmel. And we're going to stop the boat and set up for some squid jigging in about 700 meters.

It's a little windy, a little...little bit of swell, we've got about a six- or seven-foot swell and it's supposed to get to about 25 knots of wind. But, right now, its not too bad.

William Gilly Interview

Cassandra Brooks: I'm standing on the back of the boat with professor William Gilly, who's spearheading the Humboldt squid tagging effort as part of Hopkins' Tagging of Pacific Predators program.

We're perched on the side of the boat, holding sturdy fishing rods outfittedwith large, spiked, glow-in-the-dark jigs. We drop the jigs a couple hundred feet down in the water and wait, hoping to trick a squid into biting.

Humboldt squid feed in frenzies, snatching anything they can find in the water. They seize prey with long tentacles covered with rings of prickly serrated teeth, which they use to bring the prey up to their mouth where they devour it with a large sharp beak. If the squid are down here and actively feeding, they're sure to latch onto the jig.

Gilly's research team uses satellite tags to record an animal's movements underwater in space and time. Once affixed to a squid, the tag tells the researchers how deep the animals are diving, where they're traveling to, and where they prefer to live.

Historically, Humboldt squid were seldom found further north than Baja California, Mexico.

Then with the arrival of the 1997/98 El Niño, the squid came en masse, and they've maintained a fairly regular presence since then.

Why do you think they're here?

William Gilly: I guess there's a lot of stuff for them to eat. [chuckles] It's not clear why they seem to be expanding their presence to more northern latitudes. Maybe there are just too many of them in the south and they need to have growing room, or something. They seem to be establishing themselves in areas that, in recent history, have not been subject to their presence.

William Gilly Interview (continued)

WG: Monterey Bay. They seem to be getting pretty well established off the Olympic Peninsula in Washington. There's a lot of them, it seems, around Vancouver Island and southern Queen Charlotte Islands.

CB: Does it seem like they're here to stay?

WG: Well, they've been here, more or less stably, since 2002. I think unless something changes to make whatever they're eating go away, that they will probably be here for a while.

Julie Stewart Interview

CB: Julie Stewart is a graduate student in Gilly's lab who is looking at oceanographic properties that may correlate with the squid's seasonal invasions and migrations.

CB: So, you're saying you think it's a combination of climate change and ecosystem changes?

Julie Stewart: I think so. I mean, I think that they have to be able to get here to begin with, so, if climate change is providing, like, a route. But then once they are here, they need to be able to stay here. Physical oceanographic conditions have to be correct for them, and, then, also, they have to be able to find food and to be able to avoid predators and to be able to reproduce, which I think is a big thing.

So, we're trying to see if they are reproducing here. A big question is just establishment, like, is this thing able to establish, what is it eating, what is it doing?

So, if these squid are going somewhere else to spawn and, then, each generation is, sort of, re-invading, that's a really interesting question. And right now, we just don't know.

CB: So, the satellite tags should give you information as to whether or not they are actually just migrating here to feed and then returning back south.

JS: Right, right, that's the goal.

Danna Staaf Interview

CB: To find out if the squid are reproducing here in California, Danna Staaf, a graduate student in Gilly's lab, has been searching for squid babies, or what she calls paralarvae.

CB: We were just out here doing a plankton trawl...

Danna Staaf: That's right.

CB: What are you hoping to get in that?

DS: That's one of the main ways that we use to look for where squid babies are, among other things, and also the things that the squid babies would be eating. So, it gives you an ecological perspective on what's available out there for them.

We are up here in California, in cold water, which is not where they spawn, at least not where we think they spawn. We know that Humboldt squid spawn in warm waters off Mexico and Central America and further south than that, but we have not yet found any baby Humboldt squid in California. But we keep looking because as waters get warmer and as other conditions change, they might well start spawning here. So, we want to be the first to know.

CB: As of right now, do you think it's too cold for them?

DS: I do think it's too cold for them (it's too cold for me!).

CB: Right.

Conclusion

CB: We continue fishing for the rest of the day, but didn't find any adult or larval Humboldt squid.

Gilly and his team aren't sure why the squid were scarce today, but he'll be out again soon fishing in nearby waters.

This is Cassandra Brooks with the Pacific Coast Science and Learning Center at Point Reyes National Seashore.