



The Natural Laboratory Podcast Transcript: New Findings about Great White Sharks of the North Pacific

Introduction

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

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Today, I'm with Scot Anderson, a local researcher who's studied great white sharks here off Point Reyes Seashore and at the Farallons for more than two decades. In the fall of 2009, Anderson and his colleagues with Stanford University's Tagging of Pacific Predators Program, UC Davis and others published a paper on the sharks. Their study revealed new information about where the sharks travel to, how they spend their time, and showed that the shark population here off California's genetically different from great white shark populations throughout the world.

I sat down with Anderson to find out more about the study and what it tells us about these iconic and revered animals.

Scot Anderson Interview

Cassandra Brooks: Maybe you could tell me a little bit about what a typical day is like for you out in the field.

Scot Anderson: Yeah, okay, so a typical day, uh, going out looking for sharks, let's say, on the Farallon Island runs, we leave out of San Francisco, now, on a big sailboat called the *Derek M. Baylis*. It has this launch and we, uh, go to the island and we launch the launch and we work out of that for six hours on the water looking for sharks. Um, usually what we do is we put a decoy out that's about the size of a small sea lion and a small piece of whale blubber next to the boat, that's tied to the boat. And what that does is provides an area of scent around the boat that gets the sharks interested in sticking around. And then, if the shark comes around, we videotape them first, try to document what the shark looks like, who it is, and what their sex is, and then we go ahead and either tag them.

CB: How do you actually tag a great white shark?

SA: [cross talk] tag a white shark. [Brooks chuckles] Um, it sounds like it'd be a complicated process, but it's actually quite simple. You wait for the right moment, which is when the shark is at a 90-degree angle to you, swimming by the boat. So, then, the tag is on the end of a long pole and it has a harpoon-like dart on the end. Once it's embedded in the shark's skin, it's going

to stay there until it finally pulls out, in a year to two years, or something like that.

CB: And during that year to two years, it's collecting data the whole time about where the shark is going and...?

SA: Yeah...okay so there's two kinds of tags we use. The first kind of tag is a satellite tag and that we put on the shark and then it...it records data, like, uh, the depth of the water, the temperature of the water, and light levels, and things like that. And that's on the shark until a pre-programmed date that it's, uh, released. When it releases, it floats to the surface and starts downloading data.

The other kind of tag's called an acoustic tag and, um, it makes a sound that's a signature sound for each individual shark, comes out to a number. If they swim within a quarter mile of the receiver, it logs them in. Now these receivers are placed on the bottom and we have one at Tomales Point, one at Point Reyes, two at the Farallons, and two at Año Nuevo.

CB: Wonderful, so people will just have these underwater devices that are just constantly picking up these pings that are individual to each shark, and, then, you know when they are there and when they are not there.

SA: Yeah.

Scot Anderson Interview (continued)

CB: I was hoping you could tell me a little bit about the recent study that was published in the *Proceedings of the Royal Society*. And you were co-author on this study.

SA: Well, it's a study that, sort of pulls together a lot of different kinds of data. And, so, what we did was we took DNA data and looked at that and what we found is that the sharks are very closely related. And then you start looking at where the sharks have migrated to and from and it's actually a...an area that's well defined. They don't go much past Hawaii—maybe 500 miles beyond that—and they don't go past Midway, and they don't go north of in a line with Canada, and they are pretty much in this zone.

CB: But why do they even migrate as far as past Hawaii?

SA: So why do they go there?

CB: Yeah.

SA: Well, that still remains a question to be answered. But it really looks like it has to do more with breeding than feeding, because this population, when they're on the coast, is feeding on an abundance of food. So, why would you go somewhere where there is very little food?

CB: You were talking that the study also shows that this population is genetically distinct. Does that...so it means that they're not breeding with sharks from South Africa, obviously, or other areas...

SA: Right, yeah, because of the genetics, we know they're isolated up here and it's its own distinct population, so...

CB: And that seems like a very important finding in terms of understanding their role in the ecology here in the North Pacific.

SA: Yeah, you know, when you look at the role animals have in the environment, they're either going to be a producer or a consumer. Obviously, white sharks are apex predators; they're at the top of the game here. The role they play in the environment is...has yet to be totally understood, because we know they eat seals and sea lions—during certain times of year—and we know that they scavenge on dead whales and things and...but so do other animals. Whether they're actually, you know, keeping the environment healthy and all that, it's yet to be seen, but probably. They must play some role.

Conclusion

Looking out over the ocean from Tomales Point, it's surprising to think that great white sharks, among the most massive and mobile predators in the world, don't use the whole Pacific as their playground and that they don't mate with other white sharks in the world. Instead, they follow a strict and isolating migration path between California and the Hawaii region, which, as winter rapidly approaches,

they are soon to embark on. Why, exactly, they make these vast migrations remains to be seen, but until then, Anderson and colleagues will be out every fall doing more observational and tagging studies.

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With the Pacific Coast Science and Learning Center, I'm Cassandra Brooks.