

## WESTERN SCIENCE SPEAKS PODCAST SEASON 5, EPISODE 7

### EPISODE TITLE

Sharks Get Lonely Too

### PODCAST SUMMARY

Paul Mensink, a marine ecologist from Western's Department of Biology, tracks sharks that have strayed far away from their natural habitats in order to cope with unsustainable conditions – usually brought forth by humans. As Western's resident shark aficionado, Dr. Mensink stops by to explain human-marine interactions, why the monstrous depiction of sharks in popular media isn't a bad thing, and how we can #SaveTheSharks.

### INTERVIEW

#### Henry Standage 0:00

Hey, welcome to the Western science speaks podcast. I'm your host, Henry Standage and today we're with Dr. Paul Mensink. from the Department of Biology here at Western. Paul studies the interactions between people in marine environments with the hopes of promoting ocean sustainability. He came onto the show to talk about some of the environments where humans impose on marine life, and how we reconcile with the effects we have on these habitats. Then later on, we talk about how media exposure on programs such as the Discovery Channel Shark Week, impacts how people feel about sharks, and whether it's ultimately a force for good or force for evil. Anyway, here's the interview.

What are some of the various ways humans and marine environments interact? And what are the interactions that you primarily study in your work?

#### Paul Mensink 1:23

Yeah, great. So yeah, there's obviously a lot of different interactions that humans have with the ocean. And I can go from, you know, a more provisional aspect of ecosystem services in terms of food provision, getting food at the ocean, that ranges down to things like recreational ecosystem services, where we go out and enjoy time on the ocean, let's say sea kayaking, or something like that. And in between kind of something around ecotourism, where you go out and whale watching is a really good example where we're going out into the ocean and paying money for that. So, it's feeding into the economy. But we're not actually removing any species from the ocean, for the most part, at least they're doing any particular damage to them. The more provisional version is where people are fishing for food, there's different levels of that. We have commercial fisheries for those are actually going out and exploiting large numbers of species are numbers of individuals. And then those go on to be sold for food. And then you have kind of artisanal fisheries, where they are actually just obtaining fish for their for their own food supplies, if not going into a larger market. And also, we have recreational fisheries. So, they might go out and they potentially will catch species, sometimes that's catch and release and sometimes that's actually a take fishery, as well. So, we kind of have different levels of intensity of fisheries that are interacting with the ocean as well.

#### Henry Standage 2:59

Something we tend to do as humans is look at these great mammoth creatures like a shark and fail to look out what it does as a contributor to a marine ecosystem. So, what essential contributions does an animal like the shark take responsibility for?

#### Paul Mensink 3:15

Yeah, I think a lot of the time we consider sharks to be these big apex predators. So, they're kind of sitting on top of the ecosystem. And they played an important role there in terms of regulating what we call mesopredators. So,

these are predators that are kind of lower down food chain, and they can regulate them directly, so by feeding on them, but they can also regulate them indirectly by things like developing kind of landscapes of fear. So if you see a shark that's coming, it means that you're going to have to hunker down and not be able to go feed. So even even in cases where they're not directly consuming those mesopredators, they're still having an indirect effect by putting fear into them essentially. This should be said, though, that not all sharks are actually apex predators. There's lots of sharks that would be more scavengers, so we think of small dog fish, they're more scavenging on potentially discarded sediment in the ocean, or other dead animals that are available to them. They're really feeding on a whole range of things. But the classic examples we think of as apex predators are big things like great whites on top of the food chain, large range in terms of their movements. But our two largest fish species are also sharks, and those are whale sharks and basking sharks. And of course, they are planktivores, essentially, they're feeding on zooplankton, mostly near the surface, sometimes down in deeper layers, but they are not acting as apex predators in that case, but they are kind of majestic shark species as we think of them and are really important actually, for ecotourism as well.

### **Henry Standage 5:01**

Now, regardless of how I might feel about the killing of wildlife, such as a shark, I can at least understand that sometimes there is a benefit to using the parts of an animal to make a tool that's useful for humanity. But sometimes I see content like the 2011 Gordon Ramsay documentary Shark Bait, where he deep dives into the cultural practice of citizens eating shark fin soup in Asia. And the doc makes it clear that shark fin soup isn't nutritional, nor particularly tasty. It's this totally luxury meal. And I think any commercial product inherently relies on sustainability. So why do we see sharks being put near extinction by overfishing for something like shark fin soup, which has no qualities most people would deem is necessary?

### **Paul Mensink 5:50**

Yes, shark finning obviously has kind of risen to prominence in terms of public knowledge about it with things like the documentaries you're talking about, in particular things like Sharkwater was by Canadian filmmaker as well, that really sort of alerted people to this major problem. And one of the big issues with shark finning is kind of a wasteful process and method. Essentially, if you bring a shark on, you cut off its fins, and often they're put back into the water alive, or they're alive at least for a bit before they're going to succumb to their injuries. So the idea is that we're taking a relatively small amount of meat and in terms of taking it off the shark, and as you say, that in some cases might not be actually nutritious or a good meal, but we're actually removing small amount of flash, but we're causing total mortality to the shark. Now Canada has implemented shark finning bands. So, one of the policies we can do to reduce shark finning and say that the whole shark, it has to be landed with the fins intact, right. So, you can't sell a shark on the market that doesn't have its fins. And just very recently, around this time last year, Canada also banned the import and export of shark fins. And that was in part due to that documentary I was mentioning earlier about Sharkwater and exposing how large that problem is. And so, by Canada being one of the first countries to implement a shark finning ban in terms of import and export, that kind of makes a strong statement and tries to reduce the impact that shark finning has on Shark population.

### **Henry Standage 7:37**

How common is it to see governments put in regulations for overfishing?

### **Paul Mensink 7:42**

The most infamous example of fishing regulations gone wrong is the Atlantic cod collapse, we had the collapse of the fishery that still really hasn't recovered. And really a loss of way of life for many people in Newfoundland, who were generational fishermen, all of a sudden, now they had to try and be retrained or try and find new jobs. So that was a part of their way of life. So yeah, basically, after the cod collapse, a lot of our fishing shifted to two species, more like crustaceans. So, we go for lobsters, we go for shrimp now. So northern shrimp is a big fishery in Canada as well. And those fisheries seem to be a little bit more resilient than finfish fisheries to overfishing or at least they can be more sustainably fished. So, it's one of the things that's called fishing down the food chain, we essentially removed Atlantic cod at the top of the food web. And from there, we started fishing for things that were smaller and smaller. So that can still have devastating effects on the ecosystem as we sort of progress our fishing to smaller and smaller things that are there. Obviously, there are some, let's say, for example, in Europe,

there are major fishing fishery regulations. You've got a lot of different countries fishing in the same waters, and you have seen issues there with stock collapses as well. Then, again, cod really collapsed around the UK and Ireland there. And they tried to bring in policies similar to shark fin banning. So, it's kind of parallels with banning shark finning. If you take a shark, you can't remove pieces of it, you need to land the whole thing and sometimes the idea behind that is that that can be a deterrent to fishers if they go out in order to haul back all of that meat if they're not going to use all of that meat that might deter them.

**Henry Standage 9:44**

Yeah, last year, me and my housemates hosted a get together with friends. Well, we said look, we'll buy all the supplies for this. Can everyone just bring five bucks and we're going to donate all the money to for oceans which is a non-profit that seeks to take garbage out of the ocean. But to what degree should I have been skeptical that they would actually follow through with their promise that every 50 bucks equals 100 pounds of garbage taken out of the ocean? Because that was something I thought about at the time. How trustworthy is an organization like this?

**Paul Mensink 10:17**

A good example of that type of thing where you don't necessarily know what is going on behind the scenes, is the Marine Stewardship Council. Have you ever heard of them?

**Henry Standage 10:27**

No.

**Paul Mensink 10:28**

So, they're what we call an eco label. So, they go out and they assess a fishery. And they determine based on information about the catches that they've been taking, and the policies and procedures that are set up for that fishery, and let's say the historical catches over time, determine whether or not that fishery is sustainable. You go to McDonald's. Now, I've never actually had this, but the fish fillet there, if you go through the drive thru, next to the fish sandwich, you'll see the blue Marine Stewardship Council label beside it. Right. So, the idea is that gives you as a consumer information about that product that says, hey, this has been audited by a third party, it says that this is a sustainable fish. In that case, I guess the idea is that you would feel more comfortable buying that product, knowing that it's been audited as sustainable. And so, there's a lot of different fisheries that the MSC human Stewardship Council would kind of certify sustainable. But there's also been some controversy in terms of when the fishery actually hires the Marine Stewardship Council to certify them. So, they have to prove to them but the Marine Stewardship Council probably needs to satisfy a given number of Fisheries as sustainable in order to kind of sustain themselves. It's interesting, sometimes you're not quite sure. But in some cases, you might not be getting what you pay for.

**Henry Standage 12:04**

That's a narrative that is really common to see in pharmaceuticals, whether it be someone like Dr. Oz, who's constantly recommending fat burners or whatever. But no, it's interesting. I'll definitely look out for that next time I'm at McDonald's.

**Paul Mensink 12:19**

Honestly, next time you go to I always try and tell my students like; it doesn't seem like a lot of them actually go through the McDonald's drive thru. I'm always like, hey, when's the last time you were at McDonald's drive thru and nobody kind of raises their hand. I mean, the thing that you kind of alluded to just there a second ago, kind of getting almost misleading information, sometimes about a product. And that can be a bit of what we'll call greenwashing, often is that, you know, you think that this product is really sustainable, because it's making claims to that effect. But in reality, it might not be as sustainable as it's supporting to be or might not be sustainable at all right? So using that type of eco label that claims of sustainability, in order to, you know, convince the consumer to buy that product. So we have to watch out for things like that.

**Henry Standage 13:11**

I'd love to talk about some of your research. Now, you've done something really, really cool where you track these rare, sometimes borderline extinct species of sharks that have traveled hundreds of miles from their native habitat as a reaction to these habitats no longer being viable to survive with them. So first, how do you find these rare species of shark? And what are the next steps when you do find one?

**Paul Mensink 13:36**

Yeah, absolutely. So, I mean, one of the more difficult things about working with marine species is that a lot of the data that we have comes from fisheries themselves, right. So, it's very logistically expensive to take a boat out of the ocean to conduct surveys to find out what population numbers are like for different species. And so, we often rely on catch data from fisheries themselves to tell us about how those species are doing. Sometimes that data can be not as accurate as we want it to be. But also, sometimes those catches go unreported, or we have illegal fishing happening as well. We don't get that information. And again, we rely on fisheries data a lot to tell us about how species are doing this a couple of different ways that we can get information and particularly for rare species. So once a species becomes endangered or critically endangered, rarely is there any longer a fishery for them, right? So, we kind of fish them down to a level where they might be endangered. And then we stopped that fishery. So, Canada stopped shark fisheries back in the 90s, early 90s. Right, but that means we also now don't have any way to gain information about them and that information is really important to help track their recoveries, what I am interested in and what some of my recent research has been about is finding other data sources for those critically endangered species or vulnerable species that we can use to help kind of inform conservation and management. One of the best ways we found so far is using some forms of citizen science. So untrained scientists that would collect data either through recreational fisheries, or also through sightings databases, as well. So if you're walking along the coast and you see a shark, or you were on a ferry crossing somewhere and see the shark, you can log that information, then we can use that information to determine where the sharks are, when they are there, how that's changed over time. And so that's actually really helpful. Again, it's trying to find where we can get data, when we do not have fisheries as a reliable source of data anymore.

**Henry Standage 16:00**

How far will the shark drift from its birthplace?

**Paul Mensink 16:04**

Yeah, what's so interesting is that we have a lot species making really, really long distance... I qualify migration there, because migration is normally moving from point, A to B. And then back to point A at some point. So, we know let's say, and often these cases might be separated on the western Atlantic versus the eastern Atlantic. And we've got movement that often happens seasonally, where they're moving, maybe overwintering in waters that are, this is the northern hemisphere here, waters that, let's say, could be off the coast of Africa. And then they come back up to places like the UK and Ireland, during the summer, where you get a lot of high productivity in the waters happening there. So, we've got migrations like that, but then we're also finding that they will go across the Atlantic as well. And that's what two of our papers last year found is that we've got poor people sharks, which are in my head many great whites. They are moving, we found one where a shark from recreational fishery tagging program moved from Ireland over to off the coast of Canada. And that kind of cross Atlantic transatlantic movement is really important, because often pieces are managed within this fishery zone. So we get species that move back and forth between those zones and it has some implications for how we try and manage them, you know, we have to manage it at a higher level than on either side, if we've got movement between them. There was also evidence that we found for basking sharks moving again across the Atlantic, and those are thousands of kilometers. And we don't know if they actually turn around and go back at some stage or if they are now in the population in the western Atlantic.

**Henry Standage 17:52**

But let me interject for one second, can you tell us quickly the difference between a basking shark and a typical shark?

**Paul Mensink 18:00**

Basking tracks look like very similar to brown great white sharks. So if you saw one swimming along with its mouth closed, you would be understandably terrified. But when they open their mouth, they're basically feeding on large forms of zooplankton. So, there's lots of videos of them swimming near the surface of water with their mouths really wide open. But again, there's no sharp teeth in there.

**Henry Standage 18:27**

It sounds like you're saying scientifically that they're the old men who eat applesauce.

**Paul Mensink 18:34**

Yeah, I guess you could put it that way. One of my colleagues over at Queen's University Belfast, they just completed a study where they actually put an accelerometer, so that's the same sort of thing that would be in your like Fitbit watch or something. So, it monitors your steps. In this case, they can use it to look at acceleration in the waters. They actually put these on the back of the fins of the sharks. And in that case, the shark was found to breach at a speed that was relatively comparable to a great white. So even though they're often seen as slow swimmers, they can pull really high speeds breaching out of the water, and they often do breach out of the water as well. So, they will actually, you know, there's lots of cool videos of them kind of flying under the water, I mean, there close to the size of a bus.

**Henry Standage 19:27**

Back to what we were talking about prior to my applesauce comment, you must be interested to see how COVID and quarantine is going to affect the sharks that were wandering. Now, though, there'll be months without human activity in their areas. What are you curious to look at when this is all said and done?

**Paul Mensink 19:47**

It's interesting. I've been asked before what the potential effects of COVID would be on the ocean. And I think it's a tough question to answer in terms of whether or not global fisheries have really stopped during this phase. Or if there's been a big reduction in the number of Fisheries that have been happening, certainly, I guess you wouldn't have as much coastal boat traffic. And that can reduce things like ship strikes, as well. And if you might have less recreational fishing, but I think for the most part, a lot of the damage that we're doing to the ocean is more chronic. So things like climate change, ocean warming, plastic pollution that we have in there, and historical overfishing and things that are not going to be altered by what is looking like kind of a six month hiatus in some of our ocean activities.

**Henry Standage 20:46**

Yeah. And next, I really do want to talk to you about Shark Week, because I think it's one of the more interesting cultural phenomenon's that we have, where you have all these citizens who probably don't think too much about sharks all year and then become these manic shark enthusiasts for one week. But how do you think that plays into the perception of sharks? Do you think, ultimately, it's good for them that they're getting this exposure that shows their raw beauty, their power, their uniqueness? Or do you think it's this force for evil, where the violent depiction of sharks on the shows makes people less sympathetic towards them?

**Paul Mensink 21:25**

I think popular media plays a really important role in trying to move our societies to be more sustainable. And I think Shark Week is kind of another example of that. Even if you've got a shark week program, talking about shark attacks, you're still learning more about the species. And often those are not going to be limited just talking about shark attacks, talking about how beautiful these ocean predators are. And so, I think that actually helps in terms of people learning more about them. Because again, let's say for anybody who lives away from the coast, they might not be ever worried about being attacked by a shark, but they can be fascinated by them. Just general exposure. I think people are learning more and more about these creatures, and they're just they're fascinating.

**Henry Standage 22:20**

I completely agree. It definitely romanticizes how beautiful and powerful these animals are. But at the same time, if you watch Shark Week, and you know, maybe find it scary, you might not be as furious when you see something

like sharks being used for shark fin soup. Why don't you tell us in next 5-10 years, where do you think your research is heading?

**Paul Mensink 22:43**

Yeah, absolutely. I think one of the things that we're working towards, is trying to find out where and when sharks are going to occur, what their wider movements are like in the ocean. And we're starting to be able to reveal that a lot more with things like bio telemetry and bio loggers that allow us to track movements much more specifically, so we could put a tag on a shark. And even if that shark is that depth, we can use things like the amount of light that is in the water column and pressure sensors to determine potentially where that shark is in the world based on what time the sun is coming up and what time the sun is setting. So you can get a lot of really detailed information about those movements. And we're starting to reveal more and more about generally their movement ecology. And that gives us a lot of information in terms of management and conservation plans, and then trying to take that and look at what might happen with climate change. And for a lot of these species temperature is really important in terms of determining where they are going to be, you know, for instance, there have been studies that have identified what they call the Goldilocks range for Tiger Sharks around 22 degrees water temperature, and associating that with when people are going to be potentially in in the water and when there might be a higher risk of shark attack at that stage. So, we can use some of those environmental variables to determine when or where these species are going to be. And once we have more information about species movements, then we can start making more robust management plans and thinking about how we can avoid or mitigate some of those anthropogenic threats. So, things like boat strikes, things like entanglement in fishing here. So, I think the more and more information we get the more informed are models and policies and practices are going to get. And the more informed the public becomes too. So again, this popular media that we've been talking about throughout this, is that the awareness is going to continue to grow. And again, example of the sharks and then Canada, part of that was driven by Oceana, Canada, and people who worked with the director of shark waters. So, there's this continuing pressure, once that popular media kind of exposes issues, and put pressure on on governments to put in policies that will help protect those species.

**Henry Standage 25:32**

Right now, we're seeing how powerful people can be when they come together and really fight for change. So with regards to overfishing as a citizen, what can we do? What would you recommend that people who care about these issues do next?

**Paul Mensink 25:55**

Yeah, I think we're really seeing within the fishing industry, but also with a lot of different areas around environment sustainability, that people can have an important voice, even individuals can. So, another analogy I like to bring up when we think about that is the microbead ban. So, these were the little microbeads that used to be in face washes and things like that. The drive to really remove those from products was started from, you know, nongovernmental organizations and consumers putting pressure on industry to remove those. And so even before the Canadian government banned the use of microbeads, there was a lot of pressure coming from the individual. So, another thing, which we were talking about earlier, as well, what can an individual do? Well, you can choose fish that have been sustainably caught. And again, sometimes those eco labels like the Marine Stewardship Council can help you identify those. You can support nongovernmental organizations to try and help drive their advocacy forward. And knowing that the company that you're working with or purchasing a ticket with is sustainably and safely conducting tourism is something else that people can do.

**Henry Standage 27:23**

Well, this was a lot of fun. We'll wrap up the interview now. But thanks so much for coming on.

**Paul Mensink 27:28**

Yeah, thank you so much. It was it was a pleasure to be on and thanks for the invite.

**Henry Standage 27:33**

Well, thanks, Paul.

**Paul Mensink 27:34**

Yeah, cheers. Thanks a lot for reaching out, Henry. I really appreciate it.

**Henry Standage 27:39**

That concludes another episode of Western science speaks. To make sure you stay up to date on the latest episodes and research from our community. Subscribe to us on Apple, Spotify and pod bean by searching WesternUScience. You can also find previous episodes of the show as well as research by Paul Mensink @uwo.ca/sci. For now, I'm Henry standage, signing out. Thanks for listening.