

## Episode 3 Transcript

Brad:

Hi and welcome to the 3<sup>rd</sup> episode of The Wildlife Word.

The word for this episode is Mussels, more specifically freshwater mussels, which populate the various regions in New York. Mussels can be a great indicator of a healthy aquatic system. They work as natural filters to help purify waters.

The Service and our partners do a lot of work all around New York and for this episode we were able to interview two of the country's foremost experts on freshwater mussel conservation!

First up, we have Dave Strayer from the Cary Institute who is a lifetime "mussel-head" and has been working with mussels along the Delaware river even after his retirement!

Here's our interview with Dave...

Brad:

Hey Dave, It feels like Mussels can be an afterthought when thinking about aquatic wildlife, but they can be a great indicator of a healthy aquatic system and hold ecological value as natural filters to help purify water. Could you talk about different species that you have worked on, including any Federally-listed mussels and explain some of the challenges they face?

Dave:

Well Brad I've worked on mussels mainly in Michigan and New York and I guess I've probably worked on the 3 or 4 dozen of the 300 species that we have here in the United States. I have worked on several mussels that are now listed as Federally-listed or about to be Federally-listed, species like the Snuffbox mussel in southern New York or the rayed bean, and then I've worked on some mussels that are not listed but are still in trouble. Probably the best example is a mussel called the alewife floater. Its larvae use alewife and other shad species as hosts with their young. In the early 1990's when I started working on the Hudson there were about 400 million of them in the Hudson river so there was a very large population of these freshwater mussels in the river and in 1991 of course zebra mussels appeared in the river and by the mid 1990's the species has almost disappeared in the river. We haven't seen one in about 10 years now. So it was a very dramatic decline - in that case, it was a result of an invasive species but in other cases the mussels are in trouble because of things like dams or water pollution or habitat changed into watershed or habitat destruction of the habitat in the river itself, so we've seen lots and lots of examples of these dramatic declines. And I have I guess the misfortune to work on them.

Brad: How did you get started with working with freshwater mussels?

Dave: Well as a kid I spent a lot of time fishing and catching crayfish and just hanging out along the rivers in southeastern Michigan, I didn't have much scientific background really until I went to college I was taking these classes in water chemistry and all that kind of stuff and when I got back home I wanted to apply this knowledge to the rivers that I've grown up playing in. I didn't have a lab at home so I couldn't do water chemistry, but all you need to study mussel is a pair of old sneakers that you can wear in the water. I started looking for mussels in the rivers that I grew up in and there was a very renowned mollusk expert at the university of Michigan, a man named Henry Vandershelly was very kind to me and helped me learn my mussels and gave me encouragement. It also turned out the river that I grew up on

had 25-30 species of mussels but in the same sort of sad story that we just talked about almost all of them had disappeared. I was finding some old bones/old shells of some very rare species so it's kind of an interesting project.

Brad: So I understand you've been retired for about 3 years now. Are you still working with mussels? What about mussels keeps you motivated to continue? What can people listening do to help the conservation of freshwater mussels?

Dave: Yeah I retired about three years ago. I still work on mussels, I'm doing a few different projects with my colleagues where I used to work at the Cary Institute in eastern New York. We're writing up almost 30 years of data for mussel populations in the Hudson river. This has mostly been a documentation of a long slide into local extinction as a result of the zebra mussel. I'm also trying to do a review article of mussels and other suspension feeders. You mentioned that mussels can filter water, there quite a few animals in freshwater caddis flies, mussels and sponges that feed this way by removing particles from the water, or "filter feed". I'm trying to put together information on all those different groups and find out what kind of roles they play in a freshwater ecosystem. And then I go back and think about now that I'm retired I wanna go back to the area that I grew up. I'm thinking about getting out and looking at these streams forty years since I was a kid and see what's going on in these rivers and see if there is any recovery or disappearance in those local streams. So if it ever stops raining here, I'm gonna get out into those streams and see what's going on.

Brad: What can people listening do to help the conservation of freshwater mussels?

Dave: Boy that's a hard question... it's a good one though, I would say there are two ways you can answer that question. The first is what can you do personally: you can be sure that you don't move invasive species around - If you're an angler or kayaker if you're moving gear from one body of water to the next, make sure it's clean. Make sure it's been either disinfected or dried properly before you move invasive species between bodies of water. You can try to conserve water in your own personal life. You can get involved in your local watershed group. Nowadays, very many rivers have riverkeepers or lake associations that try to protect those resources and many of those groups are always looking for volunteers. The other class of action I would say would be larger scale political actions. I would say like letting your legislators and elected officials know that you care about water quality, biological diversity and your local streams and you're concerned about the weakening of the state and Federal protections. Then letting people know that you're concerned about proposed changes in the Clean Water Act, for example in my limited interaction with elected officials I know that they do respond to concerns from their constituents and if they don't hear about biological diversity and clean water they're going to assume that those issues are not important to us as other issues from other constituents.

Brad: That is great advice for anyone looking to get into freshwater mussel conservation. Thank you for your time, Dave.

Dave: Thank you Brad and I'm always happy to talk about mussels and rivers.

Transition into Bob's interview:

That was a really cool interview with Dave, who wrote the book of pearly mussels of New York state and is one of the best people in the country to speak with on mussels!

Now for our next interview, we were very lucky to have one of the Service's 2018 Recovery Champions who is nationally recognized for his efforts with at-risk and listed wildlife in Pennsylvania.

Bob Anderson is the assistant field supervisor at the Service's Pennsylvania Field Office who has been working on the conservation of mussels along the Allegheny river and has been successful!

Here is our interview with Bob:

Brad:

Hey Bob, congratulations on winning the services 2018 Recovery Champion award! For those who don't know, Recovery Champions are U.S. Fish and Wildlife Service staff and their partners whose work is advancing the recovery of endangered and threatened species of plants and animals in the United States. As someone who has been working on freshwater mussels for so long, what are some of the trends that we are seeing for freshwater mussels in the northeast? Are there any species that you are paying close attention to now? Do you have a favorite species?

Bob:

So trends of freshwater mussels...they're either stable or declining. There are more species that are being considered for listing and we're holding on to the ones that are on the endangered species list and doing good work to do recovery with them, so there is hope. They live in rivers that are near cities and everything runs downstream so they are exposed to a lot of the activities that people are doing. Species that I pay most attention to are in the Allegheny and French creek which are in western Pennsylvania and they're just spectacular, really great places to snorkel. Mussels do a lot of interesting things and it's fun to see them if you're out in the streams looking at them. They imitate fish to attract fish to them, they need fish for their life history so they have developed mechanisms to lure fish over, one of my favorite species that does this is the northern riffleshell, almost all of the world's population is in French creek and the Allegheny river and this one had a lure, but it goes past that. The female when she's ready to spawn comes up from the bottom of the river and opens up very widely and displays a beautiful brilliant mantle organ that surrounds the mussel itself and when a fish comes along she snaps on it like a venus fly trap, puts her babies on the fish then resuscitates it, then lets it go. There's videos online of it, it's incredible to see. Both online and in the wild, people see this mussel that people think is just a rock and they'll grab a live fish and use it for its purpose.

Brad:

Yeah that is incredible. Could you talk a little bit about the status of mussels in the Allegheny River? What were some of your takeaways from your work there?

Bob:

Yeah, well the Allegheny River is a fantastic place and there are places that we found endangered mussels 10-15 per square meter. That's the only place I know in the world that is like that. The water is clear, it runs off the Allegheny national forest, human population is relatively low in the area. It's a huge water supply for the city of Pittsburgh as well as lots of little towns all along the river. It just a beautiful river and we've been able to take the animals from there. We have been able to take the mussels there for various projects that are going to be disturbing the river bottom and kill the mussels, We've been able to salvage them from the Allegheny and take them to other places where the animals used to live. The northern riffleshell and the clubshell have been eliminated from a lot of streams in other states - Kentucky, Ohio, Indiana, Illinois, West Virginia - and so we had a program going for about ten years now taking animals from places that they would be hurt for a project that has to go through, and putting them in other rivers to try to establish other populations, then put them back to where they used to be.

There is a species recovery plan for each of them and we've been checking off the boxes to go through and make sure that not all of those species are in one river. Allegheny River is the source and it's doing well and we hope it stays that way, but if something ever happens, hopefully we will have the mussels someplace else.

Brad:

What were some of your challenges for the relocation of mussels?

Bob:

Yeah, it was logistics. The idea of trying to move ten or twenty or thirty thousand mussels and treat them gently in that process for hundreds of miles and get them into the stream. They had to go through Quarantine, we had to work with different programs in the US Fish and Wildlife Service, Refuges was important. Biologists at Lamar Fishery were actively involved in making sure that we didn't transport any diseases in that process to the Allegheny river to other streams. Working with all of the states as well, all of the states we are working with asked for them. Their agencies and governments did so - just doing all of that coordination with all of those people, it takes time and US Fish & Wildlife Service works with other people to achieve conservation and that's definitely very important doing these relocations. It's very biology-heavy, but it's getting the cooperation with other folks to make it happen.

Brad:

It's very interesting in conversation with how it takes coordination of a lot of people to make these projects work. What can people listening do to help the conservation of freshwater mussels?

Bob:

Yeah, so mussels are part of our world. They're part of our ecosystem, we're part of their ecosystem. People like fresh water - they need water for all of the things we do in life. Drink and bathe and cook and everything else. Mussels filter water so what we can do to help them is to make sure their water is good that they're breathing and eating from, as it is for us. If you think about mussels living in the stream, everything in the land runs into streams. People can reduce the use of chemicals on their lawn, they can certainly avoid dumping contaminants or oil into stream systems that go into the rivers. Anything that can be done to keep exposed land and keep vegetation so soil doesn't run into the rivers. Silt is bad for mussels, it's just like us breathing cloudy air. Quality water - they have to breath it in and sort out the food that they can actually eat, but if they get a lot of silt that's hard for them to do and can interfere with their breathing. That's something any landowner can do. Try to think about what your putting in the ground, 'cause it's gonna wash off, and when it does it's gonna end up in the rivers. Try to make sure that the ground is not eroding, which is good for their property and is good for the mussels too. Those are some very basic things, think about what you're putting down the drain even in your house because those things go to treatment plants that discharge into streams and rivers. Everything is connected and mussels are breathing the water and we're drinking the water and it all works in concert.

Brad:

That is very true! Congrats again on being a recovery champion and thank you for coming on the podcast.

Dave:

Thanks!

Conclusion:

It was very interesting to talk with the country's foremost experts on freshwater mussels. Hopefully if you're listening you are now more aware of the work that is being done to help freshwater mussels and we would like to say a big thank you from the NY field office to our guests, Dave Strayer and Bob Anderson for all of the good work they do every day protecting our local species!

That wraps up our third episode.

Now that you've heard the Wildlife Word, stay tuned for another episode coming next month!