

Snail Darter feat. Warren Stiles and David Matthews

Hey to all you fish enthusiasts out there. Whether you're an avid angler or just curious about fish, we'd like to welcome you to Fish of the Week!, your audio almanac of all the fish. It's Wednesday, October 5 2022. And this year, we're excited to take you on a week by week tour fish across the country with guests from all walks of life. I'm Katrina Liebich with the US Fish and Wildlife Service in Alaska.

I'm Guy Eroh. And this week we've got a fish with one of the most interesting legal histories in the United States. We're doing the snail darter, finally.

Joining us to talk about this tiny Tennessee fish is Warren Stiles. He's a listing and recovery biologist for our Tennessee Ecological Services Field Office. And we've also got David Matthews, who's a fisheries biologist with the Tennessee Valley Authority. So welcome you, two.

Hey, folks, thank you for having us.

So I was hoping what do you guys could help us first put this fish in context of what's a pretty large group of fishes that are referred to as darters, we've already covered the diamond darter and the holiday darter and I'm curious where the snail darter fits in.

Well, it sounds like you've covered a couple of the other genera in the group. This one is from the genera Percina. So little perch, and I mean, that's what they are. They're in the perch and walleye family. But these guys get four inches long. And it's a really diverse family. I mean, something like what is it 80 or 100 species of these guys bang around the streams, mostly in the southeast.

And if you had one, if you were like looking down in a stream, or had one in hand, if you were so lucky, like what do they look like? Exactly what's their coloration? What's their body shape?

These guys are not as showy as the holiday darters you know, their model black and brown on their back. They're benthic fish. And so they're trying to look like the gravel below them. And then during breeding season, they get kind of this iridescent sheen down the side.

They're just a little brown fish. I mean...Warren's right. They're not as colorful as a lot of the darters that we have. I really love to see the look on someone's face when they see one live for the first time. They're kind of like, "Is that it? Really? That's it?" "Yeah, that's it."

And that's okay.

This is a fairly recently described darter. Only described back in the '70s by Etnier up there in Tennessee. Why do you want to call it a snail darter?

Well, they feed primarily on snails as part of their life history. So yeah, it's the snail darter, you know.

Interesting.

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You know, I've been hearing a lot about darters. We don't have any here in Alaska. But these guys tend to have pretty specific ranges it seems like. Could one of you guys tell us where exactly these fish are found?

I mean, this one's kind of funny. When it was first found, it was thought to be just a little Tennessee. The species name is "tanasi" which is the Cherokee town that was right there near where it was found. But now, you know, over the past 40 years, been documenting expansion of the species and discovering new populations. And now it's pretty much all through the Tennessee Valley.

We've covered some species that are listed as either threatened or endangered. What does it really mean for a species to be considered endangered? You know, I feel like everyone listening kind of has this sense, like, oh, well, we're worried that it might go extinct. But technical definitions wise, what is an endangered species? What's that mean for it?

An endangered species is a species at risk of extinction, currently, throughout all are a significant portion of its range. It's a timeline difference. It's not a level of threat. It's a timeline difference. And so a threatened species is at risk of becoming endangered within the foreseeable future.

What does that mean? foreseeable future? How many years are we talking?

It's, of course, not defined. And it's not settled in case law or policy. It's something that when we're going through the listing process, our recommenders our decision makers within the agency determine based on the biology of the species, what kind of data we have, what kind of threats they have. This is a short lived fish three or four years. So foreseeable future might be 30 years. Yeah. But for something like a tortoise or a sturgeon that can live you know, 80, 90, 100 years. That's only one generation. It's a different time step.

I hate ambiguity like that.

You should go to law school.

You mentioned it doesn't have all these stunning colors that some of the other darters have. But it just has this very special place in US legal history. The Endangered Species Act was signed in 1973 by Nixon. We got this dam project that's kind of partway undertaken. And all of a sudden we get this new species of darter that pops up right below it. Seems like it could be endangered. It gets listed into the ESA. And now this is one of the first major challenges because you got all these millions of dollars being put into Tellico Dam. And then there's a big lawsuit, a very famous lawsuit, TVA versus Hill. Is that right?

TVA V. Hank Hill?

Was it really Hank Hill?

Yeah. Henry Hill

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Really

[Laughs]

Is this the first species that kind of went up to the Supreme Court under that Act when that happened?

First test of the ESA.

Yeah, that's pretty cool.

Tell me about TVA vs. Hill.

So lower Little Tennessee River was some of the finest farmland in East Tennessee. And so really, it was the farmers pushing back on flooding their farmland. There had been lawsuits around that that went nowhere. Then the snail darter showed up and it was a law student at UT Knoxville said, "Hey, is this something that might be worthy of going endangered and that might make an interesting term paper." And they ended up looking into this that petition to list the species because we were talking about the listing process. One way that things end up on the list is if the public petitions the [U.S. Fish and Wildlife] Service to list it, and then we review that petition, and it was termed listed. And so it now had the protection of the act. And since this was the only place known even though the beginning of the Tellico Dam predated the Endangered Species Act, it was determined that TVA is still liable to follow the Endangered Species Act. This is a jeopardy finding, we would cause the extinction of a species...you can't build the dam. So this worked its way through the courts. And it went to the Supreme Court. It was a surprise that it was ruled that way. And so they had to halt progress on the dam.

How does Tellico Dam even get built in?

Well, here's the end run. One of the Tennessee representatives put a rider on the national budget, exempting Tellico Dam from the Endangered Species Act.

So the dam gets built and then modified appropriately to take care of this fish as best as I can go with it.

That dam did not get modified.

Oh.

It was kind of an all hands rescue mission.

Surely, yeah. Yeah, around 1980. They started just looking all over the valley. Well, for two things, two reasons: for other populations of snail darters and to look for suitable habitat to relocate these fish. The dam was certainly going to just flood the habitat that this fish lived in. This is a shallow water river species or at least that's what we originally thought. But certainly 30, 40 feet of lake water over the top

of it wasn't going to be good for it. So to help out with that, a lot of the biologists working on it Fish and Wildlife Service and TVA biologists back in the day, they transplanted a lot of these fish and moved them out into some other rivers. Created some "ark" populations, if you will, to help thwart that impending extinction. In around 1990, they found some in South Chick[amauga], Big Sewee Creek, Little River, Sequatchie River that led to the 1984 declassified classification of the fish from endangered to threatened.

So I'm curious of these new populations that have been found, since Tellico kind of went in and you had that first population? How many do you think are descendants of these ark populations, as you call them? And how many do you think are just populations that people didn't know about at the time?

Hard to say. Some of those first that I mentioned they found in 1980. They were before any of the ark populations. I mean, so you know, they were evidently fish from Tellico. At one point, in 2007, we found a fish - snail darter - in Citico creeks that flows into the Little Tennessee into the upstream of Tellico dam. Yeah, into the lake. And I mean, these fish could not have it would have been a farfetched to think they swam through the lock at Fort Loudoun. Took a right turn and headed up Tellico reservoir to find Citico Creek. So that really blew our minds. You know, where did this fish come from about 2009, a guy in Missouri named Dave Herzog. He developed this small trawl to use in fishery science. It's like eight foot wide and 12 foot long. It's a funnel shaped net that we drag very slowly on the bottom of the river. So all of a sudden, we had some gear that could reach down deep and look for these fish. And Warren went out with this quite a bit and we started traveling all over the Tennessee River, and we found them in Watts Bar, Chickamauga, Gunter'sville, Pickwick, Wheeler, we found them over 272 miles of river system in the lakes, not everywhere, just in certain places, but spread out, we found all these populations that they never found back in the 80s when they were diving all these places looking for him. We were just like, "Wow, that's pretty cool." Now it's like, "Alright, we want to know where they're at." Obviously, they're in some other places. We'll keep looking.

What kind of things can we think about with dam operations and how those can be modified to maybe, like minimize or reduce impacts on fish living upstream or downstream?

That's really the key for this species recovery was changes in dam operation. You know, a lot of these dams were hypolimnetic releases while they were generating drawing water from deep in the reservoir. And Dave can talk more about how they improved the releases, but that really created kind of a cold, low oxygen environment downstream of these dams originally.

That's right, Warren. Yeah, in the early 90s, we started changing a lot of things, we had a big reservoir release improvement program. And that means a lot of things. We pumped oxygen into reservoirs, we forced air into reservoirs, we had surface pumps that would force the oxygenated water down to the intakes, so that we could oxygenate our tail waters. We also looked at how we operated these dams flow wise. In the past, if extra electricity was needed, it may be drawn from only one dam, and they would generate from that dam. But now when we need extra electricity, we generate from multiple dams. So we make the Tennessee system act more like a real river, and the flows are more consistent, and they're well-oxygenated. And we really believe that that has helped tremendously with this fish and other species as well.

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Yeah, yeah, that's cool. I mean, all across the US. I mean, it seems like dams are kind of a part of our landscape culverts and you've got Yeah, fish that are adapted to certain conditions. And if you can either modify operations to meet those conditions, or I guess the other option is dam removals, which is a different story. But that's cool.

Yeah, it's kind of a neat thing, when we're thinking about helping out biodiversity, increasing biodiversity, by the way we generate power and make electricity is kind of a neat thought, you know, when you can link those two together. It's not only helped the snail darters. We've had endangered mussels showing up in the lower Tennessee River that we haven't seen in 20 years. I mean, you know

That's cool.

So a lot of things have benefited from this. People often ask, what have we done exactly for the snail darter? It's hard to pinpoint one particular thing. There's just been so many improvements over the years that we feel like the river has gotten better. That's why we started finding these new populations everywhere.

So where are we at today coming from, you know, the first endangered species that case through to the Supreme Court to today. 2022? What's the latest news? And what do we have to be hopeful for with this fish?

Last year, we proposed to remove it from the Endangered Species Act, thanks to the changes in the reservoir release improvement program....

It's a mouthful, yeah.

RRIP

...that we worked with TVA on back in the 80s, and 90s. And then there's TVA surveys turning up these fish and all kinds of places. But it's kind of the reverse of the listing process. We worked through the recovery plan and looked at the recovered criteria. And the species was just knocking them out of the park.

That's awesome. This is a pretty big deal. I mean, it's not every day that something gets recovered. How many species have been recovered under the ESA, today?

It's well under 100. And we've got well over 1000 listed. So this is the first fish east of the Mississippi to come off the list.

Super cool.

So how long does the delisting process take? When are you going to end up doing this?

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It should publish around the time of this airing, and then it's 30 days for the listing to go into effect that comes off the list. And then, you know, five years of post delisting monitoring, which puts it on Dave...

We're so looking forward to that. No, we really are we really are we want to now work together to come up with a monitoring plan for the next five years and to leave a little wiggle room to look for new populations.

What's next for you. What fish are you going to be focusing on next?

You know a lot of these things we work on them in the field office, and then it goes for review through the region headquarters. For the past few months. I've been working on small scale darter SSA. Species Status Assessment. So looking at whether it warrants listing or not.

Starting over.

So I saw a quote from somebody from the 1970s. They called this fish a "worthless, unsightly minute inedible minnow." And to that, I think we could say a lot of things like size doesn't matter. It's not a minnow, it's darter. But in all seriousness, what does this fish represent to both of you? And why should people care about something so small that they can't eat?

Good question.

I mean, we can look at this different way. So it was a tool as a way to stop a dam in some ways. You know, everybody pinned it on the darter. And it was, it was more than that it was one pathway. But, you know, you will talk to endangered species, folks. And they'll bring up the rivet theory of endangered species where, you know, if you're flying an airplane, you pop one rivet loose, there goes one species, there goes another species, you know, eventually you're not going to have a plane. But there's that. A lot of these are kind of small, they have a small niche, but I kind of think they're intrinsically important as what they are. To grow up in the Little Tennessee Valley and hear anybody talk about like small fish, you're going to hear reference of the snail darter. And then to like, come into the career and get to mess around with taking it off the list. What an incredible opportunity. We certainly can't do it by ourselves.

None of us can. None of us can. And I'll reiterate that: none of us can. It takes partnerships, you know, it takes working together. This is a great example of that, you know, with Warren at the Fish and Wildlife Service and us at TVA. It feels good. It feels good to be a part of that.

Well congratulations, kudos to you.

Good work, fellas.

All right, well get out there and enjoy all the fish even those small ones that don't find their way to your plates.

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Yeah. Plenty to work on.

Thanks for listening to Fish of the Week! My name is Katrina Liebich. And my co-host is Guy Eroh. Our production partner for this series is Citizen Racecar. Produced and story edited by Tasha AF Limley. Production management by Gabriella Montequin. Post production by Alex Brower. Fish of the Week! is a production of the US Fish and Wildlife Service Alaska Regional Office of External Affairs. We honor thank and celebrate the whole community, individual tribes, states, our sister agencies, fish enthusiasts, scientists and others who have elevated our understanding and love as people and professionals of all the fish.