

Study finds Oregon's most common fish at least three distinct species

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Speckled dace

(Phys.org) —A new study has found that the most common fish species in Oregon – the speckled dace – is actually at least three separate and distinct species.

The findings suggest that Oregon may have greater biological diversity in its native [fish](#) populations than previously recognized, said researchers at Oregon State University who led the study. The management implications for the discovery are not yet known.

Results of the study are being published this week in the journal *Molecular Phylogenetics and Evolution*.

The speckled dace is a small minnow that appears in ponds, rivers, springs, lakes and other waterways from Canada to Mexico. It is the

most common fish in Oregon, meaning that it appears in more bodies of water than any other fish, the researchers say, yet little is known about its genetic makeup.

"For some reason, the speckled dace has never been fully investigated," said Kendra Hoekzema, a faculty research assistant in OSU's Department of Fisheries and Wildlife and lead author on the study. "Yet it varies greatly in genetics and morphology and now we're finding that more than one species is out there in a small corner of Oregon.

"Who knows how many other species there might be?" she added. "The Great Basin has a lot of springs."

The study began as a review of the Foskett Spring speckled dace which, as a listed federally threatened subspecies, must be investigated every five years. This particular dace has only been found in a single spring within Warner Valley in southeast Oregon, and as part of her study, Hoekzema collected speckled dace from surrounding basins, including the Warner system, Goose Lake, Lake Abert, Silver Lake and the Malheur River system, as well as Stinking Lake Spring on the Malheur National Wildlife Refuge.

DNA analysis led Hoekzema and co-author Brian Sidlauskas, an assistant professor in the Department of Fisheries and Wildlife at OSU, to determine that there are three "highly divergent" evolutionary lineages of speckled dace that warrant species-level status – the Malheur stream dace, Stinking Lake Spring dace, and dace from the other four basins combined.



Collecting dace

"The speckled dace has been on the books for decades as one species and yet when we look at one small corner of Oregon, we find three [distinct species](#)," Sidlauskas said. "Typically, when we think about new species being discovered, we think about some isolated part of the tropics. This is in our own backyard."

"It goes to show both how much diversity may exist," he added, "and how little we know about it."

Hoekzema said the Stinking Lake Spring dace appeared to have branched off genetically some 2.5 million years ago, while the Foskett Spring dace – and perhaps others – became isolated just 10,000 years ago.

The researchers also recommended that the Foskett Spring dace should

be listed as an "Evolutionarily Significant Unit" (ESU) and not a subspecies, a technical status change that would not necessarily affect how it is protected.

Paul Scheerer, a biologist with the Oregon Department of Fish and Wildlife, has been working at Foskett Spring since 2005 evaluating population status, trends and habitat conditions. He and his colleagues became concerned, Scheerer said, that the speckled daces' population was declining and that their habitat was shifting from open water vegetated habitat to emergent marsh.

The Bureau of Land Management, ODFW and the U.S. Fish and Wildlife Service conducted controlled burns of some of the vegetation in 2009 and then excavated new pools fed by the spring.

"Foskett speckled dace quickly expanded into the new pools," Scheerer said, "and since then we've experienced a seven-fold increase in the speckled dace to about 13,000 fish. We also introduced dace into nearby, recently restored ponds to expand their abundance and reduce the risk of catastrophic loss.



Mobile lab

"The OSU study results suggest there are more dace species out there than we previously knew," he added. "It will allow us to adequately protect and enhance these unique fish into the future. The work by OSU is invaluable and will allow us to better understand the diversity of the fish fauna that has evolved in these isolated desert basins."

The management implications on a broader scale are unclear, Sidlauskas said, because while the new species have been recognized as genetically distinct, their full geographic ranges are unknown. Nevertheless, the discovery of a distinct, unrecognized and possibly endemic species

within the Malheur refuge underscores the importance of such areas, he added.

"This suggests that the refuge may harbor even more diversity than we knew and highlights the importance of preserving and valuing such wild places," Sidlauskas said.



Coleman Lake

Although the minnows, which grow to a length of about three inches, don't carry the iconic status of Northwest salmon or steelhead, they are important parts of the food web in many areas. Many [species](#) of fish-eating fish love them.

"Speckled dace are the bon-bons of the fish world for piscatorial fish,"

Sidlauskas said, "and they are likely important prey for birds and other animals as well."

Provided by Oregon State University

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