

Shy species detected through new DNA technique

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Credit: WA Museum

New species-specific tests that can detect endangered and hard-to-find aquatic animals through the DNA they shed in the water has been created by researchers at the University of Adelaide and Curtin University.

The tests, which are developed by sequencing the mitochondrial genome

of an individual species and rely on environmental DNA in the water (termed eDNA), were used to detect the Blind Cave Eel (*Ophisternon candidum*) in the Pilbara, Western Australia, at eight separate locations; three sites where it has previously been physically detected and, more significantly, at five sites from which the species has never been recorded.

The Blind Cave Eel is the largest of three cavefish species known from Australia, growing up to 40cm long. It exists entirely in subterranean groundwater systems of the northern Carnarvon Basin and the Robe River catchment in north-western Australia.

It lacks eyes, has unpigmented skin and is notoriously difficult to locate during environmental surveys. It is listed as a vulnerable species.

Researcher Dr. Michelle Guzik, from the University of Adelaide's School of Biological Sciences and Environment Institute, said the eel could avoid capture using traditional sampling methods, which can bias the results from field surveys.

"There is a real need to develop non-invasive methods and knowledge that will increase the speed and scientific rigor of biological surveys for Environmental Protection Authority (EPA) approvals when assessing the potential for environmental disturbance," she said.

"We aim to broaden our eDNA approach and methodology for future inclusion into EPA guidelines."

Dr. Nicole White, from the Trace and Environmental DNA (TrEnD) Laboratory at Curtin University's School of Molecular and Life Sciences, said the new species-specific test meant the Blind Cave Eel could be detected without the need to physically catch the animal.

"Detection of rare or cryptic [species](#) in their environment can be challenging at the best of times and our results show eDNA can offer conservation agencies an additional monitoring tool to augment existing approaches."

More information: Nicole E. White et al. Detection of the rare Australian endemic blind cave eel (*Ophisternon candidum*) with environmental DNA: implications for threatened species management in subterranean environments, *Hydrobiologia* (2020). [DOI: 10.1007/s10750-020-04304-z](#)

Provided by Curtin University

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