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North Carolina Scientist Receives Prestigious US Fish and Wildlife Service Genius Prize for Genetics Project to Combat Illegal Turtle Trafficking

ASHEVILLE, NORTH CAROLINA, December 8, 2023 - Asheville-based biologist [JJ Apodaca](#) was recently awarded a highly competitive US Fish and Wildlife Service [Theodore Roosevelt Genius Prize \(TRGP\)](#) in the Preventing Wildlife Poaching and Trafficking category. Apodaca is the Executive Director of the [Amphibian and Reptile Conservancy \(ARC\)](#), a national nonprofit to conserve imperiled wildlife. The TRGP program, established by Congress in 2019, aims to foster creative, cutting-edge solutions for today's conservation challenges. Only five applicants from across the US were selected for TRGPs this year for their technology-driven wildlife and habitat protection innovations.

"It's our honor and duty to conserve biodiversity, and genetic tools are an incredibly powerful way for us to do so," said Apodaca. The work for which he was awarded the prize embodies both of these convictions. He uses innovative genetic sequencing techniques to return imperiled turtles that have been illegally poached to their home ranges in the wild.

In [2021](#), Apodaca and his partners did just that for several individuals representing North America's largest freshwater turtle species and one of the heaviest turtles in the world, alligator snapping turtles. An approximately 50-year-old female alligator snapping turtle was among 44 turtles rescued by wildlife law enforcement professionals from the black market in 2016.

Because alligator snapping turtles inhabit several eastern US states, it wasn't possible to accurately guess where to return her and the others. Although widespread, alligator snapping turtles are rare and being considered for protection under the US Endangered Species Act. Therefore, it was imperative to add these turtles, including the breeding-age female and her genes, back to their population of origin.

Plus, Apodaca explained, "The conditions for poached and smuggled turtles are incredibly inhumane, so getting them back where they belonged as quickly as possible was important to me for ethical

reasons." After sampling wild turtle populations and sequencing millions of pieces of the captive turtles' genes, he and his collaborators were able to locate the turtles' home river in Texas.

Shortly thereafter, these turtles, including the female of breeding age, were returned to the river from which they were poached. With some luck, these turtles will each do their part to reverse the declines they're experiencing by adding more young turtles to their populations.

This happy ending isn't the norm, unfortunately. It's estimated that millions of US turtles are poached and sold illegally every year for food and the pet trade. That number is likely in the billions when all of the world's turtles are included. In fact, "illegal poaching has become one of the most imminent threats to turtle diversity worldwide," said Apodaca.

To begin to address the vast need, Apodaca will use the prize to develop turtle genomics databases for the three most heavily trafficked turtle species in the US: the Blanding's turtle, eastern box turtle, and alligator snapping turtle. Having these databases readily available will be a critical step in streamlining the process of processing, testing, and releasing confiscated turtles back into the wild.

Most importantly, this streamlining will reduce the time poached turtles have to wait. Time is of the essence when it comes to getting these turtles back into their habitats. They're under a great deal of stress from the conditions in which they've been kept by poachers, and extending their time in captivity can be detrimental to their health.

These databases, along with the future development of databases for more species, are a critical step in fighting back against turtle trafficking so that these amazing animals can continue to inspire a sense of wonder in generations to come. "Receiving a TRGP for this work has been a great honor, one for which I feel very fortunate; knowing we're doing all we can to give imperiled turtles their best chance to persist into the future is an even greater reward," said Apodaca.

About Amphibian and Reptile Conservancy (ARC)

Amphibian and Reptile Conservancy, or ARC, is a 501(c)(3) nonprofit focused on identifying and conserving the highest priority places for amphibians and reptiles in the United States. We protect endangered amphibians and reptiles through a strategic, scientific, and passionate approach. We believe the conservation of amphibians, reptiles, and the habitats they depend on is vitally important. To learn more, visit ARCProtects.org.

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