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STETSON UNIVERSITY

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Stetson University Researcher Discovers Plethora of Parasites Infecting Pygmy Rattlesnakes

New study shows Burmese pythons spreading parasites

DELAND, Florida, April 10, 2019 – The Burmese python is one of the largest snakes in the world and a native of southeast Asia. For more than 15 years, the gigantic snake has decimated species and become the ruling reptile in the Florida Everglades.

Prior research by Melissa Miller, Ph.D., interagency python management coordinator of the Florida Fish and Wildlife Conservation Commission, and her colleagues found that in addition to eating many birds and mammals, the Burmese python problem has reached a new level of worrisome concern because it carries a parasite that infects native snakes in south Florida.

A new study, "[Spillover of Pentastome Parasites from Invasive Burmese Pythons to Pygmy Rattlesnakes, Extending Parasite Range in Florida, USA](#)," is based on research by [Terence Farrell, Ph.D.](#), professor of biology at Stetson University; Joseph Agugliaro, Ph.D., assistant professor of biology at Fairleigh Dickinson University; Heather Stockdale Walden, Ph.D., assistant professor of parasitology at the University of Florida; Jim Wellehan, Ph.D., associate professor of zoological medicine and microbiology at the University of Florida; April Childress, lab manager at the University of Florida; and Craig Lind, Ph.D., assistant professor of biology at Stockton University.

The research findings published in the Society for the Study of Amphibians and Reptiles' journal *Herpetological Review* suggest that pentastome parasites, or worms, are the likely culprit behind the deaths of three pygmy rattlesnakes at Lake Woodruff National Wildlife Refuge in DeLeon Springs, Florida. Pygmy rattlesnakes are venomous snakes native to the southeastern United States.

The research was funded by the [Brown Center for Faculty Innovation and Excellence](#) at [Stetson University](#) and a research and professional development grant from Stockton University.

Last August, Farrell and Lind -- Stetson's former Brown visiting teacher-scholar fellow in biology -- found a pygmy rattlesnake they were studying dead with parasites crawling out of its mouth.

"Dr. Lind and I have been studying pygmy rattlesnakes for decades and found this occurrence pretty alarming," said Farrell. "We conducted research and found that these types of parasites have never been found in pygmy rattlesnakes before."

Stetson's biology faculty and students conducted the preliminary testing, including examining and dissecting the three pygmy rattlesnakes, and found the parasites in the lung and trachea

areas, and was consistent with past parasite research findings. These parasites typically reside in the lungs of reptiles that become infected after eating contaminated prey.

The Stetson team collaborated with professors and a lab manager at the College of Veterinary Medicine at the University of Florida who administered a polymerase chain reaction test, which provides researchers with additional DNA and a better way to identify pentastome parasite species. The DNA sequences of the parasites found in the pygmy rattlesnakes were consistent with the parasite species from southeast Asia, which are normally found in Burmese pythons.

Farrell and his team of researchers have found the parasites in Central Florida, which is more than 100 miles away from where the Burmese pythons reside in the southern portion of the state.

“Our research shows that the parasites are moving north rapidly along the peninsula and appear to have some major health effects on pygmy rattlesnakes,” said Farrell, who was the paper’s senior research author.

Burmese pythons evolved in Asia with these parasites, but it’s a new problem for pygmy rattlesnakes and other Florida snakes.

“The parasites that were found in the pygmy rattlesnakes were larger than the ones found in Burmese pythons,” said Farrell. “It’s a nasty situation because the pygmy rattlesnakes haven’t evolved or developed defenses against the parasite.”

Stetson’s biology students are obtaining hands-on experience and conducting cutting-edge research about this new snake epidemic. The study will provide them with the tools they need for their science career.

“I have never worked with snakes before this project, so it has given me a greater understanding and appreciation,” said biology senior Maddy Wheeler. “In the future, I plan to get involved with conducting research on biological and environmental factors that may affect native species and ecosystems as a whole, so this study provided me with research that was geared towards conservation.”

The parasite phenomenon is a reason to worry.

“The research tells us that there’s a whole new concern about invasive species and the diseases and parasites that they bring with them,” said Farrell. “This parasite isn’t just a Florida problem. We have no idea how much of the U.S. this parasite will spread and move into, which may cause it to become a nationwide problem in a few years.”

About Stetson University

Founded in 1883, [Stetson University](#) is the oldest private university in Central Florida. Stetson focuses on intense learning experiences in a supportive community that allows students to develop their voice in a connected, inclusive environment. Stetson University ranks No. 5 on U.S. News & World Report’s 2019 list of Best Regional Universities (South), and has been recognized as one of The Princeton Review’s 384 Best Colleges, 2019 edition. [Stay connected](#) with Stetson on social media.

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