

Bivalve family tree offers evolutionary clues

November 23 2015

Florida State University researchers, along with an international team of scientists, have put together the most complete look to date of the evolutionary family tree of cardiid bivalves, commonly known as cockles and clams.

"As scientists, we're trying to understand the history of life on earth," said Scott Stepan, professor of biological science at Florida State. "That is one of our greatest endeavors. I can't think of anything more innately human than understanding the history of life and where everything came from."

In the journal *Molecular Phylogenetics and Evolution*, Stepan and former FSU graduate student Nathanael Herrera lay out the phylogeny—or family tree—of cardiid bivalves, with a specific look at how the shifting of continents millions of years ago affected the evolution of the species.

Bivalves include clams, oysters, cockles, mussels, scallops and numerous other organisms living in both salt water and fresh water all over the world.

"Understanding their history is critical to understanding their present," Stepan said.

This is the most complete look of the cardiid phylogeny to date, but it only looks at about a third of them. Detailing the entire evolutionary history is exceptionally difficult because of the lack of good DNA

records, so full ones exist for very few biological groups.

Part of the study included a look at how the continents shifted millions of years ago and how that affected evolutionary patterns. Researchers discovered that much of the diversification in this family was localized over the years. For example, one group was restricted to the European area instead of being widespread throughout the world as previously believed.

"By incorporating more complex paleogeographic models that are biologically more realistic, we are able to gain some insights into the historical processes that are responsible for generating the extraordinary diversity in the marine realm," said Herrera, who is now pursuing a doctorate at the University of Montana.

They also discovered that most species within the family Cardiidae needed to be re-classified. For example, for years, giant clams were their own family, but they are just super-large cockles, Stepan said. They are often as large as 400 pounds.

Part of the reason for constructing a bivalve [family](#) tree, Stepan said, was to prove that it could be a [model organism](#) for studying evolution. Similarly, corn is viewed as a model organism to understand plant genetics, and fruit flies are used to understand some human functions because they share 75 percent of the genes that cause disease.

Provided by Florida State University

Citation: Bivalve family tree offers evolutionary clues (2015, November 23) retrieved 17 July 2024 from <https://phys.org/news/2015-11-bivalve-family-tree-evolutionary-clues.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.