Marine scientists identify lobsters' ancestors

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Scientists have long believed that lobster-like crustaceans first appeared on planet Earth about 360 million years ago. But FIU marine scientist Heather Bracken-Grissom contends the ancestor of our favorite mealtime decapod actually may have started roaming the planet at least 12 million years earlier.

Using fossil records and DNA testing, a team of international scientists led by Bracken-Grissom has determined the first lobster-like crustacean appeared on planet Earth approximately 372-409 million years ago.

"This is the most complete study of lobsters to date. One hundred and seventy-three species were analyzed, including commercially important species such as Maine lobster, Florida's spiny lobsters and the redswamp crayfish, which Louisiana is famous for," Bracken-Grissom said. "We also included some very rare species, recently discovered in the 1970s, who had never been included in an analysis before. It was interesting to include them because we got to see where they fell in the lobster tree of life."

The study also examined the evolutionary relationships among lobsters, or how different species are related to each other. Bracken-Grissom's study found present crayfish distributions mirror the break up of the supercontinent Pangaea and Gondwana, the two southern supercontinents. The study also uncovered cryptic, or hidden diversity, with the discovery of several potential new species within lobsters.

"It's important to understand their evolutionary relationships, since that

has implications for biodiversity estimates and increased evolutionary understanding," Bracken-Grissom said. "It also has implications for conservation efforts, fisheries management and aquaculture management."

Commercial fisheries and aquaculture rely on spiny, slipper and reef lobsters to bring in billions of dollars each year for human consumption and aquarium trade. Lobsters also contribute to the cultural livelihood of many communities that celebrate these delicacies through festivals, crayfish boils and other social activities.

More information: Heather D. Bracken-Grissom, Shane T. Ahyong, Richard D. Wilkinson, Rodney M. Feldmann, Carrie E. Schweitzer, Jesse W. Breinholt, Matthew Bendall, Ferran Palero, Tin-Yam Chan, Darryl L. Felder, Rafael Robles, Ka-Hou Chu, Ling-Ming Tsang, Dohyup Kim, Joel W. Martin, and Keith A. Crandall. "The Emergence of the Lobsters: Phylogenetic Relationships, Morphological Evolution and Divergence Time Comparisons of an Ancient Group (Decapoda: Achelata, Astacidea, Glypheidea, Polychelida)." *Syst Biol* first published online February 20, 2014 DOI: 10.1093/sysbio/syu008

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