

Population genomics unveil seahorse domain

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Credit: The City College of New York

In a finding vital to effective species management, a team including City College of New York biologists has determined that the lined seahorse (*Hippocampus erectus*) is more a permanent resident of the western mid-Atlantic Ocean than a vagrant.

The fish is commonly found in three western Atlantic zoogeographic provinces, although inhabitants of the temperate northern Virginia Province are often considered tropical vagrants that arrive during warm seasons from the southern provinces and perish as temperatures decline.

Researchers including PhD student J.T. Boehm and Dr. Michael

Hickerson of City College decided to test the alternative hypotheses of historical persistence versus the ephemerality of a northern Virginia Province population. They used a dataset consisting of 11,708 randomly sampled spots from the genomes of individuals collected from the eastern Gulf of Mexico to Long Island, N.Y.

"Concordant results from genomic analyses all infer three genetically divergent subpopulations, and strongly support Virginia Province inhabitants as a genetically diverged and a historically persistent ancestral gene pool," said Boehm.

The results suggested that individuals that emerge in coastal areas during the warm season can be considered "local" and support offshore migration during the colder months.

"This research demonstrates how a large number of genes sampled across a geographical range can capture the diversity of coalescent histories (across loci) while inferring population history," said Hickerson. "Moreover, these results clearly demonstrate the utility of population genomic data to infer peripheral subpopulation persistence in difficult-to-observe species."

The study is being published on January 28, 2015, in the journal *PLOS ONE*.

Provided by City College of New York

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