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# Feeding ecology of invasive lionfish in southeast Florida

Ruchao Qian
*Nova Southeastern University*

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By analyzing the feeding ecology of invasive lionfish in southeast Florida, researchers found that it is necessary to control lionfish population.

SOURCE: Biological Invasions

***By Ruchao Qian  05 April 2020***

Since the mid-1980s, lionfish populations have exploded in the Caribbean Sea, Gulf of Mexico. Lionfish are native to the Indo-Pacific region, and before this invasion were not found in the Atlantic Ocean basin. The spines on lionfish fins contain venom that can impose severe pain upon its consumers, which allows them to have no natural predators in the Atlantic Ocean. Lionfish themselves are voracious predators and consume a large variety of reef fishes and invertebrates. Marine scientists have recently started to evaluate the ecosystem impacts that lionfish are having on their new habitats.

A recent study conducted by Sancho and colleagues has revealed the feeding ecology of lionfish. The research was conducted in Biscayne National Park in southeast Florida over two years. Lionfish were collected every month through snorkeling and SCUBA diving and their body length was measured once captured. To determine the diet component of lionfish, researchers analyzed the stomach contents through both morphological and genetic analysis.

Individual prey items in the stomach contents were visually classified to the lowest taxa under a dissecting microscope. Then the prey items were counted and measured. A following genetic test was conducted to verify the results from the morphology. The genetic test used was DNA barcoding, which utilizes a polymerase chain reaction (PCR), a common method used in molecular biology to copy and analyze DNA.

Results showed that lionfish changed their prey preference as they matured, indicating that the behavior and ecology of lionfish changes from juvenile to adult life stage. Juvenile lionfish consumed more shrimp than fishes, whereas adult lionfish mainly fed on fish, including multiple commercial fish species. This shift in the feeding ecology of lionfish has also caused a change in their dwelling habitat. Juvenile lionfish mostly live in shallow bay regions, which is largely inhabited by smaller shrimp. As they mature, adult lionfish will move to continental shelf edges to hunt for larger fish.

This demonstrated that lionfish are generalist predators that consume a variety of small reef fishes and crustaceans. Lionfish consume whichever prey are most available and as a result, have the potential to disrupt commercial fisheries. The annual consumption by lionfish in coastal area was estimated to be 593 kg of prey/ha. Currently, this consumption rate does not severely impact Florida's local ecosystems, but an increase in the lionfish population could lead to ecosystem shifts. Therefore, it is necessary to control the population size of the invasive lionfish.

**Citation:** Sancho, G., P. R. Kingsley-Smith, J. A. Morris, C. A. Toline, V. Mcdonough, and S. M. Doty. 2018. Invasive Lionfish (Pterois volitans/miles) feeding ecology in Biscayne National Park, Florida, USA. *Biological Invasions* **20**: 2343–2361. doi:10.1007/s10530-018-1705-4