

Assessing Genetic Connectivity of the Permit (*Trachinotus falcatus*) Between South Florida and Belize

Andrew Natter, Benjamin Binder, Diego Cardeñosa, Gina Clementi, Kevin Feldheim, Kirk Gastrich, Kevin Boswell

Florida International University, Miami, FL, USA

The permit (*Trachinotus falcatus*) is a popular recreationally targeted fish that holds significant ecological and economic value across South Florida and Belize. Compared to their inshore recreationally fished counterparts, bonefish (*Albula vulpes*) and tarpon (*Megalops atlanticus*), permit have only garnered more attention recently. Although declines in bonefish and tarpon populations have been documented, data on permit population trends remain insufficient. Given that permit face similar threats; including depredation, fishing pressure, habitat degradation, pollution, and climate change, parallel declines are plausible. Conservation efforts, such as the establishment of the Special Permit Zone in South Florida (2011) and the seasonal fishing closure at Western Dry Rocks (WDR), aim to protect critical spawning aggregations, yet gaps persist in understanding how regional permit populations may influence each other. This study evaluates the genetic connectivity between permit populations in South Florida and Belize. In spring 2025, we collected fin clip samples from Belize, then compared the extracted DNA with samples collected in South Florida from 2022-2025, ranging from Biscayne Bay to the WDR. Our objective was to assess the extent of gene flow and determine whether Belize serves as a source of genetic connectivity and diversity for Florida permit, likely from larval dispersal via Gulf Stream-mediated transport. We expect to find high genetic connectivity between Belize and South Florida permit populations, suggesting that larval dispersal plays a key role in regional recruitment. These findings will have implications for international fisheries management and conservation strategies, especially if permit populations in South Florida benefit from an influx of genetic diversity from the western Caribbean, and if populations in each location are genetically healthy. Ultimately, this research aims to inform management of permit populations across their range.