

Length Distributions of Aggregating Permit (*Trachinotus falcatus*) in Response to the Western Dry Rocks Seasonal Closure

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Many coral reef-associated fishes participate in fish spawning aggregations (FSAs) as their sole reproductive opportunity, which recur annually on discrete reef promontories during the same season and/or lunar phase. The predictability of these aggregations makes them an easy target for fishers. In the Florida Keys, permit (*Trachinotus falcatus*) are a recreationally important coastal jack species that aggregate for spawning on offshore natural and artificial reefs from March through August, peaking around the full moons. Permit FSAs are often targeted by catch-and-release anglers during the spawning season when harvest is prohibited. Although post-release mortality is near zero, reports of high depredation rates by sharks threaten the sustainability of this fishery. In response, the Western Dry Rocks (WDR) seasonal closure (April 1-July 31) was implemented in 2021 to protect a multi-species spawning site, including a prominent permit FSA in the Lower Florida Keys. This study therefore aimed to monitor the status of the permit FSA in response to the closure at WDR. Fishery-independent surveys to determine permit size composition were conducted during the full moon periods between March and June from 2019-2025. Length distribution data can be used to determine temporal variation in 1) new recruitment and 2) spawning stock biomass when integrated with fecundity, length-weight, and abundance estimates. Most individuals were measured during peak spawning aggregation sizes in April and May. Mean fork length of permit has increased since 2019, indicating a positive shift in size distribution at this FSA. These results will contribute to evaluating the efficacy of the WDR seasonal closure and help identify other abiotic and biotic factors that may affect recruitment and size composition within this FSA.