

Permit Spatial Ecology at Western Dry Rocks: Insights from a Newly Established Seasonal Fishing Closure in the Florida Keys

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The movement patterns of Permit (*Trachinotus falcatus*) in the Florida Keys have been extensively tracked for over a decade using acoustic telemetry. Early research identified Western Dry Rocks (WDR) as a critical spawning site along the Florida Reef Tract, supporting reproduction of over 70% of Permit that spend the remainder of their annual cycle on nearshore flats. These findings contributed to establishment of the WDR seasonal fishing closure in 2021, which aims to protect spawning Permit from angling pressure during their peak reproductive period each year from April through July. To assess the effectiveness of the seasonal fishing closure, we tracked Permit movements before and after its implementation. Here, we present key metrics of spatial ecology across spawning sites in the Florida Keys, including (1) the extent of space use in and around the WDR closure boundaries, (2) residency time at WDR and nearby spawning sites, and (3) connectivity between spawning sites in the Lower and Middle Keys. Our results indicate that the WDR fishing closure is largely fulfilling its primary goal of protecting spawning Permit. However, there remains room for improvement. Some Permit spend time outside the current boundaries during the closure period, and residency increases as early as March. These findings suggest that adjusting the spatial boundaries and timing of the closure could enhance protection. Moreover, our results indicate that connectivity between WDR and sites in the Middle Keys (i.e., Thunderbolt Wreck, Seven Mile Bridge Rubble) is low, and therefore the protective measures provided by the seasonal fishing closure may not be equally effective across the broader Permit population in the Florida Keys. Given the 7-year sunset provision on the WDR closure, we hope these findings will be valuable to decision makers during the initiative's evaluation and contribute to a deeper understanding of Permit ecology in the Florida Keys.