Migratory Patterns and Seasonal Habitat Use of Great Hammerhead Sharks (*Sphyrna mokarran*) in the Southeastern United States

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The great hammerhead shark (*Sphyrna mokarran*) is a highly mobile shark species whose population in the United States declined dramatically through the early 2000s. Their spatial ecology is poorly understood, creating challenges for effective conservation of this enigmatic marine predator. Using acoustic telemetry and network analyses, we describe the movement patterns of 15 mature great hammerhead sharks (207–331.5 cm fork length) primarily within the waters of the southeastern United States from April 2019 to December 2022, including identifying movement corridors, core use areas and seasonal shifts in habitat use. Great hammerheads exhibited partial migration; some sharks undertook consistent, repeatable, round-trip migrations between the tagging site in the Florida Keys and northern points in the Gulf of Mexico and Atlantic coast. Conversely, others remained in the Florida Keys year-round. Network analysis coupled with community detection algorithms revealed that individual great hammerheads displayed oceanic basin affinity, favoring migration to either the Atlantic Ocean or Gulf of Mexico. Great hammerheads that remained in the Florida Keys shifted their habitat use seasonally from inshore channels (spring and summer) to offshore artificial reefs and the natural reef tract (summer through winter). These shifts may be driven by prey availability, as core use areas often corresponded to known locations of seasonal spawning aggregations for reef fish. These data fill an important knowledge gap for great hammerhead migratory patterns that can improve spatial management strategies for this historically overexploited species. We discuss the importance of drawing upon data from multiple tagging locations for highly mobile species management, particularly in the designation of essential fish habitat.