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## GREAT LAKES FISHERY COMMISSION

Do discrete spawning stocks contribute differentially to Lake Erie's Walleye fisheries?

2017\_FAU\_44064

by:

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September 2024

**ABSTRACT:**

Understanding stock composition not only provides insight into ecological relationships driving community structure, it is also critical for sustainable management of fisheries. Stock structure has been determined using a variety of natural markers, e.g., otolith microchemistry, but when these methods fail alternative techniques are required. One approach is to track movements of individual fish with biotelemetry techniques and assign tagged individuals to a stock based on the location of presumed spawning activity. This approach requires having sufficient number of tagged individuals at-large for stock composition estimates to be representative of the population and any diversity within it and, depending on the technology used, infrastructure to support the monitoring of movements over relevant temporal and spatial scales. We used acoustic telemetry to estimate contributions to recreational and commercial walleye *Sander vitreus* fisheries in Lake Erie's western basin. The presence of tagged fish ( $n = 812$ , tagged across four years) across a patchwork of spawning locations was monitored during 2018-2022 spawning seasons (mean number of active transmitters each year = 185; range 64 - 250). For this report, we used residence indices and location sequences that suggested many locations were frequented by walleye during the spawning period. However, presumed open-water spawning habitats were generally used by a higher proportion of tagged fish from both fisheries than were any monitored rivers. Sequences of habitat use suggested repeatability in the use of spawning locations across years. Further, fish collected in the western basin of Lake Erie using commercial and recreational fishery methods differed in their movement patterns during both the non-spawning and spawning periods of the year. Our results provide evidence that different mixtures of spawning populations support commercial and recreational fisheries in the western basin of Lake Erie.