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Post-release survival and detection frequency of acoustically tagged Yellow Perch in Lake Erie's Central Basin

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ABSTRACT:

We evaluated detection probability, survival, apparent fate, and seasonal movements of Yellow Perch (*Perca flavescens*) in the Central Basin of Lake Erie using acoustic telemetry. A total of 139 fish were tagged with Innovasea V9 (n=39), V9DT (n=75), V9DT (n=25) acoustic transmitters and released in Lake Erie's Central Basin management unit 2 (MU2) on May 2, 2024. Tags were distributed across fish ranging in size from 220 mm to 360 mm representing the spawning stock. We found that Yellow Perch moved throughout Lake Erie's Central Basin, accessing both management units (MU2 and MU3) for substantial portions of the year. Detection probability estimates within a targeted study location demonstrated that detection efficiency could be improved with increased receiver densities and would likely contribute to improved fate assignments. Survival was likely impacted by barotrauma, as approximately 47% (n=65) of fish succumbed to tagging related mortalities after being captured and released in waters > 16 m. This suggests adjustments to capture and release timing and locations are required for future studies to limit the impact of barotrauma. Subsequent fates were assigned to all remaining fish (natural mortality = 14, harvest = 7, predation = 5, unknown = 42, and active = 6). Of the seven reported harvests, five occurred outside of the management unit that fish were released in (i.e., MU2), drawing potential concerns for the current harvest management structure in the Central Basin. The high proportion of unknown fates provides an opportunity to explore more robust statistical approaches to fate assignment. Finally, the substantial cross-management unit movements and distribution of mortality events suggest further investigation is needed into the seasonal movement dynamics of Lake Erie Yellow Perch.