An Approach for Assessing Paddlefish Populations Using Mark-Recapture Information

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Historically, management of fish populations has been achieved through the use of age-derived estimates of growth and mortality. For long-lived species such as the Paddlefish validation of calcified structures is necessary to correct for presence of false annuli or absence of growth rings. Regardless, numerous studies on Paddlefish populations throughout their range have continued the use of un-validated age estimates to evaluate dynamic rate functions. The use of mark-recapture studies has been applied widely to evaluate growth of short-lived fishes and only recently on a few long-lived freshwater fishes (i.e., White Sturgeon, Shovelnose Sturgeon, and Pallid Sturgeon). This study provides the first simultaneous evaluation of both mark-recapture and age-estimate information in determining population characteristics for Paddlefish. In doing so, this study has determined that the population of Paddlefish in the Black River below Clearwater Dam, Missouri is sustainable. Additionally, mark-recapture information is sufficient to produce accurate and reliable assessments of Paddlefish populations in lieu of validated aging structures. Future management of Paddlefish populations should be centered on accurate scientific methods; which is not the case when using un-validated aging structures (e.g., scales, otoliths, fin rays, dentary bones) to determine population parameters. Mark-recapture information can provide an accurate alternative source of growth and mortality information to be used in evaluating and managing Paddlefish populations throughout their range.