Is There Anybody Out There? Survival Estimation of Hatchery-Reared Pallid Sturgeon

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No recruitment of endangered pallid sturgeon (*Scaphirynchus albus*) has occurred in the upper Missouri River basin in at least 30 years and this species will likely be extirpated by 2024. Accordingly, the extant pallid sturgeon genetic pool is being preserved through captive propagation and stocking until habitat restoration permits re-establishment of self-sustaining populations. However, few recaptures of stocked fish and violation of model assumptions precluded evaluation of stocking programs over the past 10 years; no empirically derived survival estimates existed for hatchery-reared pallid sturgeon. We used a telemetry approach to develop a habitat-based sampling design that met model assumptions and yielded adequate recaptures to estimate survival of hatchery-reared pallid sturgeon stocked in the Yellowstone River. Telemetered fish appeared to preferentially select bluff pools and selectively sampling this habitat type resulted in catch rates (8.7 fish/hr or 1.6 fish/trammel net drift) 20 to 90 times greater than those of previous sampling designs. Apparent annual survival of three common stocking ages was estimated using Cormack-Jolly-Seber models. Probability of survival to age 2 of 13 month-old fish released in summer (0.19) was higher than that of 10 month-old fish released in spring (0.08) and 3 month-old fish released in autumn (0.01). Annual probability of survival for 13 month-old fish stocked in summer increased and stabilized (0.70) by age 4. Survival estimates for all stocking ages were lower than anticipated and suggest that stocking rates should be increased by an order of magnitude to meet current population targets and avoid local extinctions.