Abstract:

Walleye (Sander vitreus) support harvest-oriented fisheries that are generally assumed to be self-regulating, but many walleye populations have declined over time. Regulations (i.e., length or bag limits, closed seasons) commonly used to manage walleye primarily restrict angler effort and exploitation as opposed to influencing catch rates. We evaluated walleye angler compulsory creel survey data from Escanaba Lake, Wisconsin during 1993–2015 to test whether bait type (i.e., live versus artificial) influenced walleye angler effort, probability of a catching a walleye, total catch, catch rates (hereafter, catch per unit effort (CPUE)), and catchability. The number of walleye anglers that used live bait was significantly higher (26,250) than those that used artificial bait (2414). Angler effort differed significantly by bait type (mean live 3.4 ± 0.04 SE and mean artificial 2.9 ± 0.1 SE hrs/trip). The use of live bait, the use of a guide, angler effort, walleye density, and month significantly influenced the probability of a catching a walleye and the abundance of catch. CPUE was highest in April-May and declined into the summer. CPUE and catchability (q) were significantly higher for live bait anglers (CPUE mean 0.44 ± 0.04 SE fish/hr; q mean 0.02 ± 0.002 SE) compared to artificial bait walleye anglers (CPUE mean 0.19 ± 0.03 SE fish/hr; q mean 0.008 ± 0.002 SE). Our results suggest that angler catchability of walleye in Escanaba Lake was dependent on bait type. A live bait restriction may be a viable tool for reducing exploitation in open-access walleye fisheries during population rehabilitation efforts while maintaining angling opportunities.

URL: https://doi.org/10.1016/j.fishres.2019.105330