Abstract:

Maternal influences on age-0 walleye (*Sander vitreus* (Mitchill, 1818)) recruit abundance and survival from egg to fall were observed in Escanaba Lake, Wisconsin, in 1957–2015. Annual egg production best explained variation in age-0 recruitment, compared with female relative abundance, and adult abundance (sexes combined). Age-0 recruitment was not significantly correlated with any temperature metric tested or our index of yellow perch (*Perca flavescens* (Mitchill, 1814)) abundance. Survival of walleye from egg to fall age-0 was positively correlated with the percent contribution of large females (>55.9 cm) to annual egg production. Mean size diversity of females by length class did not influence age-0 recruit abundance or survival over time. Evidence for maternal effects via size- and age-specific influences on fecundity and age-0 walleye survival suggest that exploitation may influence natural recruitment by altering adult female size structure. Given recent declines observed in walleye natural recruitment in the upper Midwestern USA, understanding the roles of maternal drivers and exploitation on recruitment is critical for sustainable walleye management.