

**Abstract:**

Managing fisheries through rapid environmental change requires diverse approaches for identifying and adapting to novel ecological conditions. For the Wisconsin Ceded Territory, we calculated 473 adult walleye (*Sander vitreus*) production ( $P$ ), biomass ( $B$ ), and  $P/B$  estimates for 1990–2012. Frequency distributions for production statistics were right-skewed, indicating the fishery is generally dominated by low production populations. Mean  $P$ ,  $B$ , and  $P/B$  were significantly elevated in natural recruitment (NR) lakes compared with combination (NR + stocking) and stocked-only lakes. Furthermore, combination populations had significantly higher production compared with stocked-only lakes. In NR lakes, walleye productivity changed little over time; however, the proportion of NR populations has declined over time. In combination and stocked-only populations, there were significant temporal declines in  $P$ ,  $B$ , and  $P/B$ , and the proportion of these lakes has increased through time. This study reveals the crucial link between fish recruitment potential and fish production, helping to explain why the regional walleye fishery is struggling. Causes for walleye recruitment and production declines remain unclear, but long-term shifts in fish habitats are likely involved (e.g., from climate change and indirect food web effects). Decreasing walleye production is an important and emerging fishery management challenge in the region and portends a need to adapt fisheries management systems collaboratively for future sustainability.

**URL:** <https://doi.org/10.1139/cjfas-2017-0311>.