

# WHAT COVID TAUGHT US ABOUT HOW ANGLING NESTING BASS HURTS BASS POPULATIONS

David Philipp and Julie Claussen, Fisheries Conservation Foundation

Largemouth and smallmouth bass (LMB and SMB) have a complex life history in which males of both species are entirely responsible for building nests, courting females for spawning, and then once fertilized eggs are in their nests, solely providing extended parental care of the resulting offspring for another 4-6 weeks post-fertilization. That parental care includes fanning the eggs until they hatch to keep them in contact with oxygenated water, as well as protecting the eggs, hatched larvae, and free-swimming fry from being consumed by brood predators like perch and sunfish. Uninterrupted parental care during development is imperative for offspring survival. If a male abandons (or is removed from) his nest during this parental care period, brood predators will quickly consume the offspring with upwards of 50% being eaten within the first 8-10 minutes of the male's absence. In situations where anglers catch and harvest nesting bass, rapid predation of the entire brood is always the end result.

To protect black bass reproductive success in many areas across the province, the Ontario Ministry of Natural Resources decades ago instituted a seasonal closure of fishing for nesting LMB and SMB during the spawning season. Currently, for Charleston Lake and many of the other popular black bass fishing lakes in the province, that closed season is defined as the period from December 16<sup>th</sup> until the third Saturday in June. That regulation specifically prohibits the use of angling tactics that would hook nesting male bass. The fact that it is legal during this period to fish for other species such as northern pike, walleye, yellow perch, various trout species, as well as all centrarchid species other than LMB and SMB, however, complicates compliance with and enforcement of that regulation. Unfortunately, some anglers use this "loophole" in the regulation to (illegally) target, catch, and release nesting male bass, thereby rendering this regulation ineffective at accomplishing its objective of protecting LMB and SMB reproductive success and recruitment (the annual production of the next year class). In

addition, even though catch-and-release angling can theoretically allow an angled nesting male the opportunity to return to his nest and resume guarding his brood, that often is not the case.

Traditional thinking among most anglers (as well as among most fisheries managers) has been that reproductive success and annual recruitment among LMB and SMB populations is determined primarily by environmental factors. Furthermore, that traditional thinking also believes that because each female bass can lay thousands of eggs, it only takes a few successful spawning pairs to re-populate the lake. As a result, angling nesting male bass should not be a major concern for the health of the LMB and SMB populations, because that angling should not affect overall recruitment in the lake. Well...our extended research group (including among others, Steve Cooke's group at Carleton University, Aaron Zolderdo's group at the Queens University Biological Station, Jeff Stein's and Cory Suski's groups at the University of Illinois, as well as others at the Fisheries Conservation Foundation) have argued for decades that this thinking is ALL WRONG. Our working hypothesis differs from that traditional thinking, stating instead that although black bass reproduction and recruitment are indeed affected by environmental variables, any reduction in reproductive success (e.g., via angling nesting males off their nests) results in reduced annual recruitment as well.

So how does COVID fit into this issue? We all know about the myriad awful things that were (and continue to be) a result of the COVID pandemic. Not everyone, however, realizes the tremendous impact it had on fishing in southern Ontario. Because of the restrictions put onto families re accessing their cottages during the spring seasons of 2020 and 2021, together with the ban on international travelers entering Canada (especially including angling tourists from the US), the level of angling activity of any kind during May and June (the spawning season for LMB and SMB in the area) was hugely reduced. In fact, fishing activity was close to zero in Opinicon Lake, the site of our long-term bass reproduction monitoring study. That radically altered angling scenario presented us with a once in a lifetime research opportunity to assess how a lake-wide no-fishing regulation during the bass spawning season would affect lake-wide reproductive success and annual recruitment for LMB and SMB populations. That is, would

there be no real bump in year class success (as per traditional thinking) or would there be a large increase (as per our working hypothesis)? So, what did we find?

The two non-COVID years (2019 and 2022) had lots of nests constructed, but with their high levels of angling (measured by visually assessing the percentage of hook wounds on nesting bass), their success rates were low. As a result, the overall reproductive success (number of successful fry produced) and annual recruitment (number of surviving juveniles in those year classes) were two of the lowest seen in over 30 years of the study. The two COVID years (2020 and 2021) on the other hand, had similar numbers of nests constructed, but with their extremely low levels of angling, the nesting success rate was very high. As a result, the overall reproductive success and annual recruitment were the two greatest ever seen during the study.

**Bottom Line:** Nobody in Canada (nor in at least parts of the US) should now still argue that fishing for nesting bass has no impact on population-wide reproduction or annual recruitment for LMB and SMB.

**Future Needs:** Innovative regulations need to be developed and implemented ASAP that successfully protect LMB and SMB reproduction and recruitment.

The study discussed above has recently been published in Fisheries Research:

Philipp, D. P., A. Zolderdo, M. J. Lawrence, J. E. Claussen, L. Nowell, P. Holder, S. J. Cooke. 2022. COVID-19 reduced recreational fishing effort during the black bass spawning season, resulting in increases in black bass reproductive success and annual recruitment.

<https://doi.org/10.1016/j.fishres.2022.106580>