

Dispersal of Smallmouth Bass from a Simulated Tournament Weigh-In Site

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Abstract.—Simulated smallmouth bass *Micropterus dolomieu* fishing tournaments were staged in Dale Hollow Lake, a 12,400-ha reservoir in Tennessee, between March 2004 and February 2005 to investigate posttournament dispersal. Smallmouth bass ($n = 54$) were captured with conventional hook-and-line tackle and artificial lures, placed in live wells, and subjected to a weigh-in procedure before being externally tagged with an ultrasonic transmitter and released. Water temperatures ranged from 7.4°C to 29.3°C (mean [SE] = 17.6°C [2.5]), fish ranged in total length from 330 to 572 mm (mean = 452 [8.3]), and no fish were dead at the weigh-ins. Smallmouth bass dispersed rapidly away from the release site, which was located at the head of a 68-ha embayment. After 3–5 d, survivors ($n = 44$) traversed an average distance of 1,475 m [213]. Most (72%) fish swam uplake and out of the 385-ha study area after 6 d. The rapid dispersal of smallmouth bass may be relevant in systems that experience heavy tournament activity. The smallmouth bass caught and subjected to simulated tournament conditions on Dale Hollow Lake did not stockpile near the release site.

The movements of fish that have been translocated have long interested fisheries biologists. Shoemaker (1952) studied this phenomenon to address the assumption of random mixing of marked individuals when estimating population sizes. In that early work, pumpkinseeds *Lepomis gibbosus* and yellow bullheads *Ameiurus natalis* displayed homing behavior after translocation, whereas walleye *Sander vitreus* did not. Other early studies examined the dispersal and homing behavior of translocated fish to understand their basic ecology and how they perceive their environment (e.g., Hasler and Wisby 1958). In succeeding decades, applied research has increasingly been directed at understanding the movements, dispersal, and homing behavior of sport fish caught during competitive

fishing tournaments and released at a central weigh-in site.

Tournament activity that displaces significant numbers of smallmouth bass *Micropterus dolomieu* and largemouth bass *M. salmoides* could have ecological effects and management implications for reservoir populations (Schramm et al. 1991; Stang et al. 1996; Wilde 2003). Some researchers have noted that smallmouth bass disperse more rapidly and at greater distances than largemouth bass (Wilde 2003). However, Bunt et al. (2002) noted that smallmouth bass released at a tournament tended to stay near the release site in the Grand River, Ontario, for extended periods, thereby artificially increasing smallmouth bass density and possibly increasing the exploitation of released fish. Ridgway and Shuter (1996) noted that displaced smallmouth bass with internally implanted sonic tags remained within the general area of release sites for about 1 week in Lake Opeongo, Ontario. Although there is abundant published information on posttournament dispersal for largemouth bass (e.g., Ricks and Maceina 2008), there is little information on the postrelease dispersal of smallmouth bass in lakes or reservoirs outside of early work by Healey (1990), who reported that tournament-caught smallmouth bass dispersed more rapidly, and farther, than largemouth bass. The objective of our study was to measure postsimulated tournament dispersal of externally tagged smallmouth bass from a tournament release site in a large Tennessee reservoir.

Study Area

Dale Hollow Lake is a storage impoundment on the Obey and Wolf rivers that was constructed in 1943. It has a surface area of 12,400 ha at full pool, is approximately 92 km long, and has 1,000 km of shoreline. The reservoir is deep ($Z_{\text{mean}} = 15$ m) and oligo-mesotrophic (FTN Associates, Ltd. 2001); chlorophyll *a* concentrations during summer averaged 2 µg/L between 1971 and 1999 and Secchi disk transparencies averaged 3.1 m. Dale Hollow Lake is managed by the Tennessee Wildlife Resources Agency as a two-story fishery that supports popular fisheries for smallmouth bass, walleyes, and rainbow trout *Oncorhynchus*

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