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Comparison of the Performance in Recreational Fisheries of Brown Trout Stocked as Spring and Fall Yearlings, Lake Huron

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Abstract.–We compared recreational harvest of put-grow-take brown trout stocked as yearlings during either late spring (June) or fall (October) at two sites, Thunder Bay and Tawas Bay, in Lake Huron, 2001–2003. An objective of the study was to determine whether performance was better for fish stocked at one time of year or the other, with the ultimate hope that this information could be used to reverse sharp declines documented for the Lake Huron brown trout fishery since 1996. In Thunder Bay, fall yearlings produced 2.3 times more observed returns to creel than spring yearlings, but returns there were nearly equal for the two stocking strategies when based upon unit of weight stocked. The pattern of returns in Tawas Bay was almost the reverse, with spring yearlings producing 3.9 times as many returns to creel as fall yearlings and 4.3 times the returns based on unit of weight stocked. There were no pronounced differences in growth between the spring and fall test groups. Brown trout had been stocked in June during 1991–2000 because the abundance of spawning alewives nearshore at that time of year was thought to provide a buffer from predators for the young brown trout. Alewives were declining in Lake Huron during this study, however, and by 2003 they were nearly absent. Predator fish, the most common of which were walleyes, fed mostly on alewives until the alewife decline. During this study the high percentage of void walleye stomachs (90%) suggested prey was in relatively short supply. Avian predators were also abundant for years previous to and during this study. In particular, double-crested cormorant numbers rose exponentially from 1989 to 2005 in Thunder Bay. We speculate that lower availability of alewives and other prey may have resulted in avian and fish predators consuming more than the usual number of stocked brown trout during the course of our study. Predation may have been especially high during spring when piscivorous birds were nesting and post-spawning walleyes were experiencing warming temperatures and

consequent rising energy demands. Differences in cormorant and alewife numbers between the two study sites may have been the reason for the higher return rates of spring yearlings in Tawas Bay than Thunder Bay. Soon after data collection for this study was concluded, emerald shiners began appearing in the nearshore, particularly in harbors and river mouths, in exceptionally high numbers during October. The shiners remained nearshore until early spring. Brown trout are distributed closer to shore than most other salmonids and therefore emerald shiners would be available as prey for fall-stocked yearlings during winter. Cormorant management began in Thunder Bay in 2006 and by 2007 the number of nesting pairs was less than half the number present during our study. If alewives remain scarce and emerald shiner abundance persists, conditions may now favor survival of yearling brown trout stocked during October over those stocked in spring.