

Population Characteristics of Assinica and Temiscamie Strains of Brook Trout in Two Michigan Lakes

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Abstract.--Matched numbers of Assinica and Temiscamie strains of brook trout (*Salvelinus fontinalis*) were stocked as fall fingerlings into two Michigan lakes. Survival, growth, movement, sex ratio, and maturity were determined for each strain to age V. Aside from a post-stocking mortality of Assinica fish, which was believed due primarily to a furunculosis infection contracted in the hatchery, there was little evidence of consistent or significant differences in the survival of either strain to age V. Long-term incremental increases in length were not significantly different among strains although Assinica tended to be significantly longer than Temiscamie at younger ages. Assinica were from 8 to 18% heavier than Temiscamie of the same length depending on the lake. There were no significant differences between the growth rates of the sexes. Sex ratios became progressively more weighted toward females each year, due to higher mortality rates for males of both strains. A majority of both strains matured at age I, and both were fully mature at age II. There was no appreciable difference among strains in vulnerability to capture by angling. Emigration rates for both strains within a lake were quite similar. Depending on the year, 40 to 90% of the populations attempted downstream movement out of the lakes during each spawning period, which could seriously deplete populations in lakes without fish barriers. Both Assinica and Temiscamie strains appear about equally suited for Michigan trout lake management.

Historically, brook trout (*Salvelinus fontinalis*) have been a significant part of Michigan's trout resource. They are held in high esteem both by anglers and non-anglers alike for their beauty and their association with clean water and a pristine environment. Brook trout have been designated the official state fish.

Wild brook trout populations have diminished somewhat since the early 1900s. We now use hatchery produced brook trout to augment wild populations in a number of streams where natural recruitment is

insufficient to maintain desirable fisheries. In addition, Michigan has numerous cold-water lakes that are managed for brook trout and these waters require periodic stocking of hatchery reared fish. Hatchery fish have become an integral part of the management of Michigan's brook trout fisheries.

Fish culturists have traditionally used domesticated strains of brook trout for hatchery production. In Michigan and elsewhere, the highly domesticated strains generally exhibit poor survival and growth when stocked in natural waters (Vincent