

Relative Growth and Survival of Three Strains of Rainbow Trout and Three Strains of Brown Trout Stocked into Small Michigan Inland Lakes

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Abstract.—The relative growth and survival was assessed over a 3-yr period for three strains of rainbow trout *Oncorhynchus mykiss* stocked as yearlings into two small oligotrophic lakes. Their relative tendency to emigrate was evaluated in one lake that had an outlet. The strains tested were Shasta (SH), Eagle Lake (EL), and Michigan steelhead (STT). Relative growth and survival was similarly evaluated for three strains of brown trout *Salmo trutta* stocked into four small, landlocked oligotrophic lakes. Brown trout strains examined were Wild Rose (WR), Seeforellen (SF), and Plymouth Rock (PR). No significant differences in survival of rainbow trout strains were found. However, point estimates of survival and standing crop in both lakes were highest for STT, intermediate for EL, and lowest for SH. EL-rainbow trout were significantly heavier than STT in four of the five samples collected over a 3-yr period from both lakes. EL trout were consistently heavier than SH in both lakes during the first 30 months after stocking. In West Lost Lake, EL were significantly larger than SH in all samples collected through 30 months after stocking, but at East Fish Lake weight differences were significant only for the sample collected ten months after trout were stocked. After 37 months residence, EL and SH in both lakes were of similar size. Overall results indicated few significant differences in growth of SH and STT. There was little evidence that any rainbow trout strain tested was more likely to emigrate from the experimental lake which had an outlet. Mean lengths and weights of WR and SF brown trout were similar during sampling periods from 6-37 months after stocking. WR and SF brown trout strains produced far more legal-sized fish (≥ 254 mm TL) than PR by six months after stocking because they were larger when stocked. There were no significant differences in survival or standing crops among brown trout strains after 30 months residence in the study lakes. When Ford Lake survival estimates were excluded from ANOVA analyses, survival of PR was significantly higher than for SF or WR, and survival of WR was higher than for SF after 30 months residence. After 30 months residence there were no significant differences in standing crops among brown trout strains.

The Michigan Department of Natural Resources (MDNR) has annually stocked approximately 2.7 million trout into inland lakes and streams in recent years (Anonymous 1993, 1994). Over 90% of these trout were yearlings that cost about 75 cents per fish to rear and stock. Fishery managers must choose between

an array of species and strains of trout and attempt to stock those that will yield the best catch rates and benefit-cost ratios. Field evaluations of different strains of rainbow trout *Oncorhynchus mykiss* frequently demonstrate different rates of growth, survival, and catchability or yield to anglers (Brauhn and