STUDY PERFORMANCE REPORT

State: Michigan **Project No.:** F-80-R-8

Study No.: 230515 **Title:** Evaluation of the relative growth and survival of Assinica, Nipigon, and Iron River-strain brook trout stocked into small inland lakes.

Period Covered: October 1, 2006 to September 30, 2007

Study Objective: To determine the relative growth and survival of Assinica, Nipigon, and Iron River-strain brook trout stocked into small inland lakes.

Summary: Three strains of brook trout were sampled from research lakes and tagged to provide estimates of individual growth rates when they are later recaptured. Assinica were longer and heavier than Iron River and Nipigon brook trout in nearly all samples and many of the differences in size were statistically significant ($P_\alpha \leq 0.05$). Growth of Iron River brook trout slowed relative to the other strains from about a year after they were stocked in fall 2005 through June 2007. Survival of the Nipigon strain was very low compared to either Assinica or Iron River fish. Overall catch per unit effort for the Nipigon strain was 5 to 8 times lower than for the other strains.

Findings: Jobs 1, 2, and 3 were scheduled for 2006-07, and progress is reported below.

Job 1. Title: Collect and tag brook trout.–I used electrofishing gear to collect brook trout from East Fish Lake and Fuller Pond during fall 2005 and 2006 and during spring 2006 and 2007. Captured brook trout were measured, weighed, and tagged with VI Alpha tags manufactured by Northwest Marine Technology. Additional brook trout that attempted to emigrate were captured in fish traps permanently installed on the outlets of the research lakes. All trout captured were released back into the lakes after they were tagged.

Job 2. Title: Estimate growth and survival.–The Assinica strain was longer and heavier than the Iron River or the Nipigon strains in almost all samples collected from both research lakes (Figures 1-4). I used ANOVA and Tukey multiple comparison tests to compare total length and weight among strains for each sample collected. Differences were judged to be significant for $P_\alpha \leq 0.05$. Assinica were longer than Iron River fish in 8 of 11 samples and they were heavier than Iron River fish in 8 of 10 comparisons. Assinica were significantly longer and heavier than Nipigon in samples collected through fall 2005 but thereafter the sizes of both strains were similar. Iron River brook trout were initially larger than Nipigon in Fuller Pond but by June 2007 they were significantly shorter and lighter (Figures 1 and 2). A similar temporal reduction in growth rate for the Iron River strain relative to the Nipigon strain was observed in East Fish Lake but differences were significant only for the fall 2006 sample (Figures 3 and 4).

Survival of the Nipigon strain was 5 to 8 times lower than survival of the other strains (Figure 5). I used chi-square and binomial statistics to compare the overall frequency of capture of each strain in each research lake. In Fuller Pond I caught nearly 8 times more Iron River strain and nearly six times more Assinica strain fish than Nipigon. Survival of Iron River trout was higher than survival of Assinica in Fuller Pond (Figure 5). Survival of Assinica and Iron River brook trout was similar in East Fish Lake and both strains were more than five times more abundant than the Nipigon strain.

Job 3. Title: Write annual performance report.–This performance report was completed as scheduled.

Prepared by: Andrew J. Nuhfer
Date: September 30, 2007

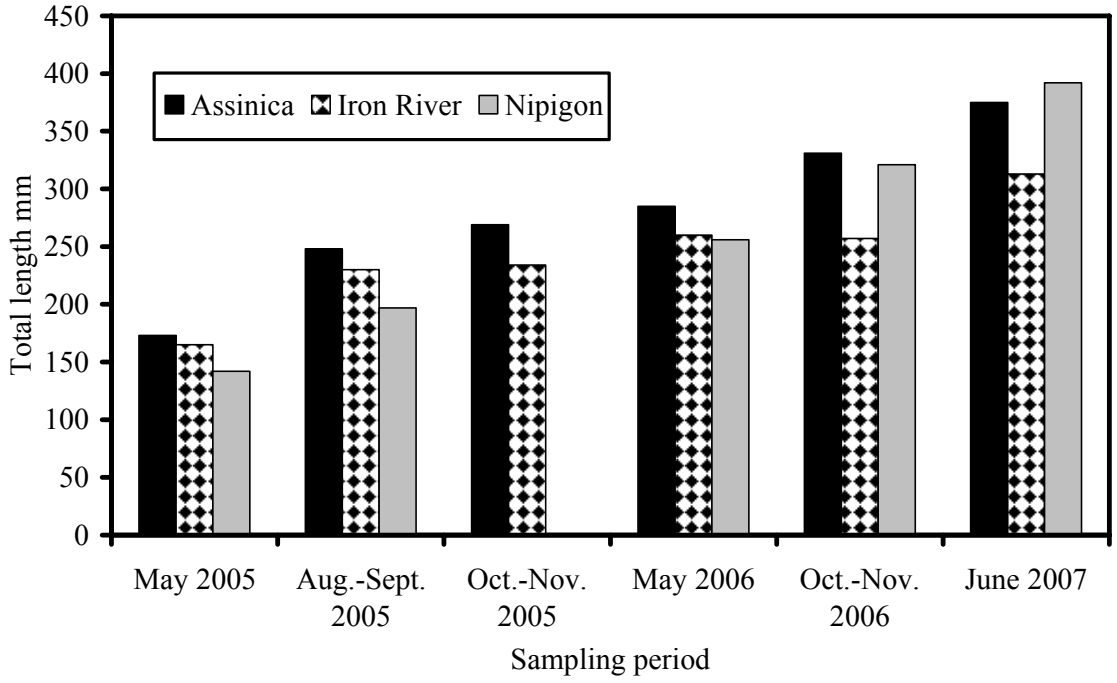

Figure 1.–Total length (mm) of three strains of brook trout collected from Fuller Pond.

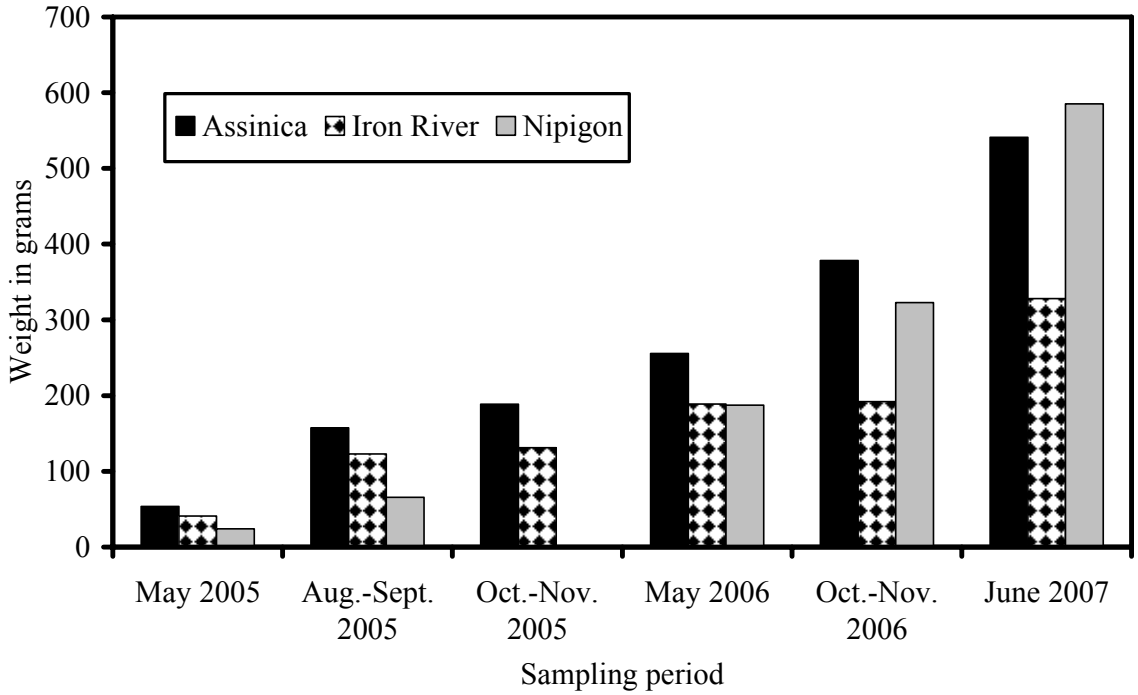

Figure 2.–Total weight (g) of three strains of brook trout collected from Fuller Pond.

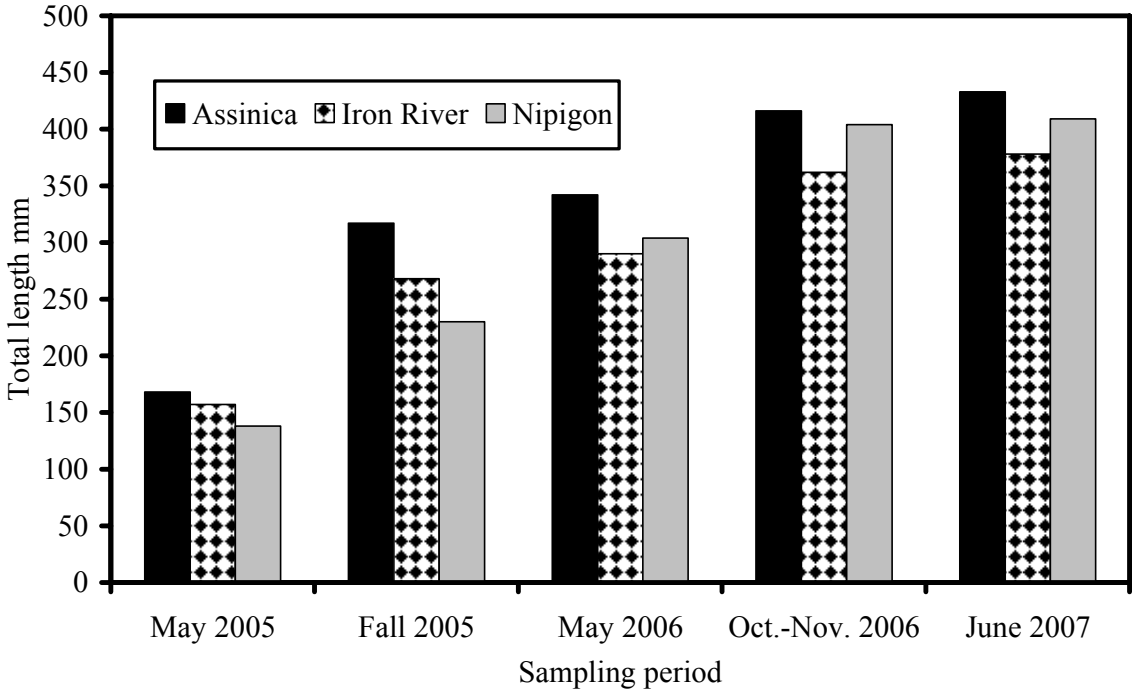

Figure 3.–Total length (mm) of three strains of brook trout collected from East Fish Lake.

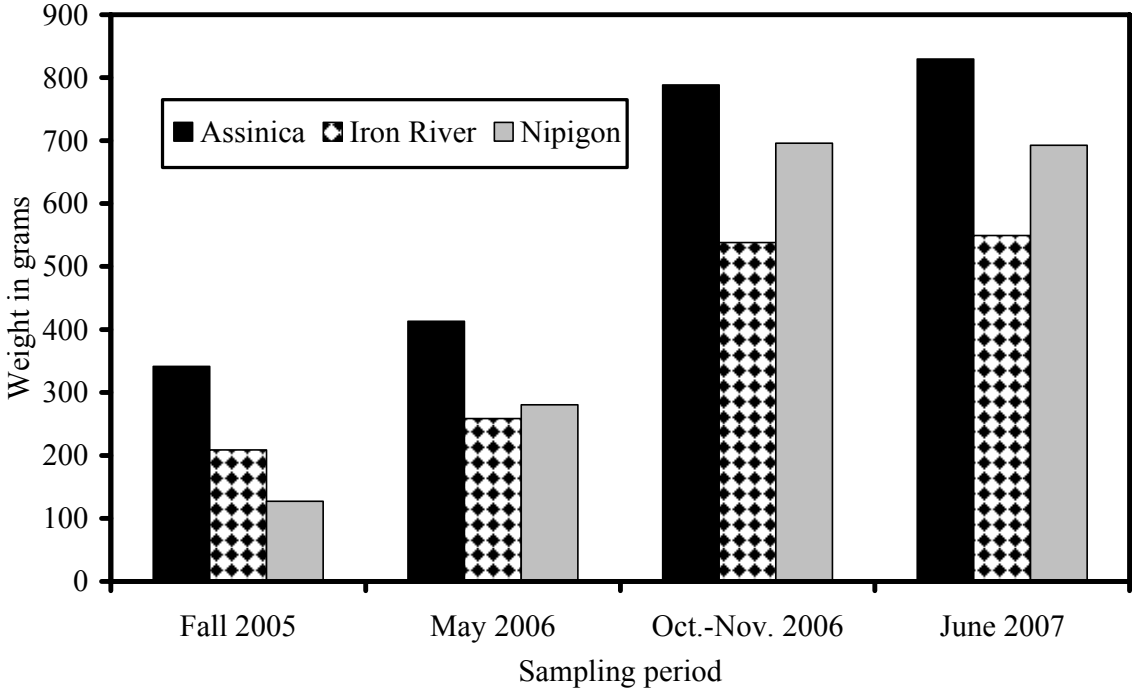

Figure 4.–Total weight (g) of three strains of brook trout collected from East Fish Lake.

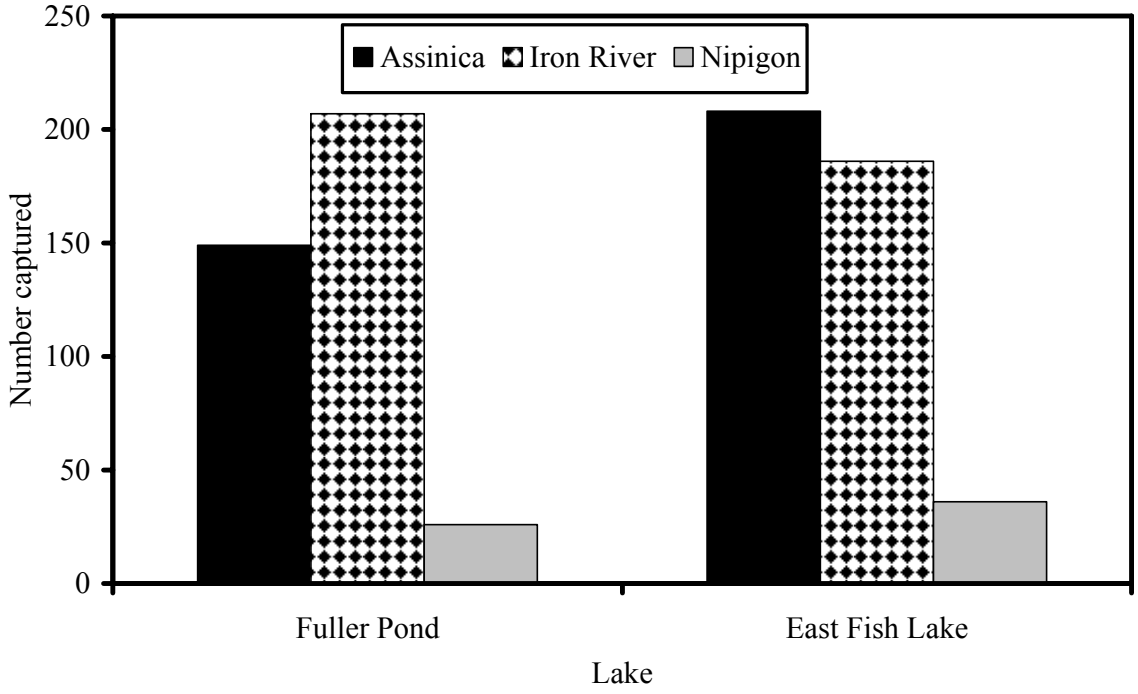

Figure 5.–Total number of each brook trout strain captured during all sampling periods combined from May 2005 through May 2007.