Size, Age and Growth of Nesting Male Pumpkinseeds (Lepomis gibbosus) in Rat Cove, Otsego Lake, NY

John R. O'Connor¹, John R. Foster², John Urban³, and Jim Hakala⁴

ABSTRACT

Male pumpkinseed sunfish nesting in Rat Cove, Otsego Lake were angled from their nests, scales taken, aged, and back calculation of growth was determined for each fish. Nesting males were found to have a mean size of 118mm and a mean age of 4+ years. Age and growth of nesting males was similar to research from other cold water bodies.

INTRODUCTION

Pumpkinseed prefer shallow, weedy expanses of warm water (Trautman, 1981). Otsego Lake is a deep, cold, steep-sided, mesotrophic lake. Its limited littoral zone is not well suited for pumpkinseed nesting. Suitable nesting habitat is limited and shared with many other warm water fish such as bluegills (Lepomis macrochirus), red-breasted sunfish (Lepomis auritus), largemouth bass (Micropterus salmoides), and carp (Cyprinus carpio) (MacWatters, 1983). Furthermore, good pumpkinseed nesting habitat is continuously disturbed by spawning carp.

The goal of this study was to determine if the population dynamics of nesting male pumpkinseed in a cold water lake with limited nesting sites were similar to that described for warm water lakes with extensive nesting sites. In order to meet this goal, size, age of sexual maturity and the growth of nesting males were studied in Rat Cove. This paper is part of a larger study examining the nest site selection and spawning success of pumpkinseed in Otsego Lake.

MATERIALS AND METHODS

Otsego Lake is located in Otsego County, New York at the headwaters of the Susquehanna watershed. The lake is 168 feet deep, 8.25 miles long and an average of 0.8 miles wide. This study took place in Rat Cove located along the southwest shore about one mile north of Cooperstown (Fig. 1). The study site was chosen because it supported the highest pumpkinseed density in the lake (Foster 1996).

¹1996, 1995, 1994 Robert C. MacWatters Internship in Fisheries and Aquatic Science.
²BFS Visiting Researcher, 1994-96. Fisheries and Aquaculture, SUNY College of Agriculture and Technology, Cobleskill, New York 12043
Figure 1: Bathymetric map of Otsego Lake and a close-up of Rat Cove (depth in feet).
Data were collected from mid June through early August, 1994-1996 (mean water temperature 22°C). Small numbered rocks were to denote individual nests and fish. Nesting male pumpkinseeds were angled from their nests and anesthetized with 2-phenoxyethanol. Total length was measured and scales removed from behind the operculum. Fish were immediately returned to their nests. Scales were removed from behind the operculum, just above the pectoral fin and read on a micro-fiche reader (42X magnification). Age and back-calculation of growth was determined for each fish following the guidelines of Regier (1962), Lux (1971), Casselman (1987), and Jearld (1992).

RESULTS

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<td>Age range (in years)</td>
<td>3+ to 8+</td>
<td>3+ to 6+</td>
<td>2+ to 9+</td>
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<tr>
<td>Mean age (in years)</td>
<td>4+</td>
<td>4+</td>
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<tr>
<td>Size range (in mm)</td>
<td>107-151</td>
<td>98-152</td>
<td>97-149</td>
</tr>
<tr>
<td>Mean size (in mm)</td>
<td>126</td>
<td>119</td>
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The mean age of nesting male pumpkinseed in Rat Cove has remained 4+ years for the duration of the study (Figure 3). The mean length has decreased by eight millimeters over the past three years, while the size range has remained relatively stable (Figure2).

DISCUSSION

Pumpkinseed usually reach maturity by age two (Scott and Crossman. 1973). In 1994 and 1995 the youngest nesting male was 3+, however in 1996, two of the nesting males were 2+ years. Both were large fish for their age but neither spawned successfully. These data suggest that the majority of male pumpkinseed sunfish don’t reach sexual maturity until age 3+ in Rat Cove (Figure 4). Ten years ago, Otsego Lake pumpkinseed grew faster and larger than they do today (Austin et al., 1986). This change in size and growth may be an indication of overpopulation and stunting, or may be due to a loss of valuable littoral zone habitat.

Danylchuk and Fox (1994) described the age and growth of pumpkinseeds in Little Round Lake, a deep meromictic lake with limited littoral zone. Pumpkinseed there show very slow growth and only obtain a length around 100mm. Slow growth in the cold waters of Otsego Lake seems to result in a similar delay in maturity. Most other pumpkinseed studies have been conducted in warm, mesotrophic and eutrophic water
Figure 2: Length-frequency distribution of nesting male pumpkinseed sunfish (N=134) in Rat Cove, Otsego Lake, 1994-1996.

Figure 3: Age-frequency distribution of nesting male pumpkinseed sunfish (N=134) in Rat Cove, Otsego Lake, 1994-1996.
Figure 4: Growth curve of nesting male pumpkinseed sunfish in Rat Cove, Otsego Lake.
bodies and report faster growth and larger sizes. This is shown by Deacon and Keast (1987) and Fox and Keast (1991) from five warm Ontario waters.

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LITERATURE CITED


