

Rat Cove and Brookwood Point littoral fish survey, 2002

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INTRODUCTION

During the summer of 2002, efforts to monitor the Otsego Lake littoral fish community continued with trap netting at both Rat Cove and Brookwood Point. The species composition of the littoral fish community in 1985 was reported by Austin et al. (1986). Regular sampling of the Rat Cove fish community began in 1989 (Foster 1995), and has continued most years since (Harman et al., 1997; Ingalls, 1998; Wilson and Warner, 1999; Meehan, 2000; 2001). Trap netting continued in 2002 to provide additional relative abundance of littoral fish species, particularly for alewives (*Alosa pseudoharengus*) and to gain an understanding of how that species impacts the community. Alewives are believed to have had a profound effect on Otsego's zooplankton community, which in turn has reduced algal grazing rates and increased phosphorus regeneration rates (Harman et al, 2002). Their establishment has caused a reduction in other planktivorous fish and has reduced water clarity and hypolimnetic oxygen concentrations.

This work is a component of broad research on alewives in Otsego Lake, which includes lake-wide hydroacoustic surveys (Warner and Cornwell, unpubl.) and littoral electrofishing (Cornwell, 2003). Trap netting may provide an index of fish abundance valuable to assess their role in the fish community and any effect of recent walleye (*Stizostidion vitreum*) stocking (Cornwell, 2003).

METHODS AND MATERIALS

One trap net was set up on the north shore of Rat Cove and another on Brookwood Point to catch littoral fish (Figure 1). Methods were consistent with studies conducted in previous years (Ingalls, 1998; Warner, unpubl.; Meehan, 2000; 2001).

The trap nets were set Monday through Thursday from May 30 through August 2 (Rat Cove, 33 days) and June 3 through August 2 (Brookwood Point, 31 days) according to the methods of Hubert (1996). The nets were pulled in the mornings, Tuesday through Friday. Captured fish were identified, measured to the nearest mm (TL), and weighed to the nearest gram before being released. Due to the fact that alewives tend not to survive after being released, no such attempt was made and the fish were transported back to the Biological Field Station in order to measure and weigh them more accurately (0.01 g).

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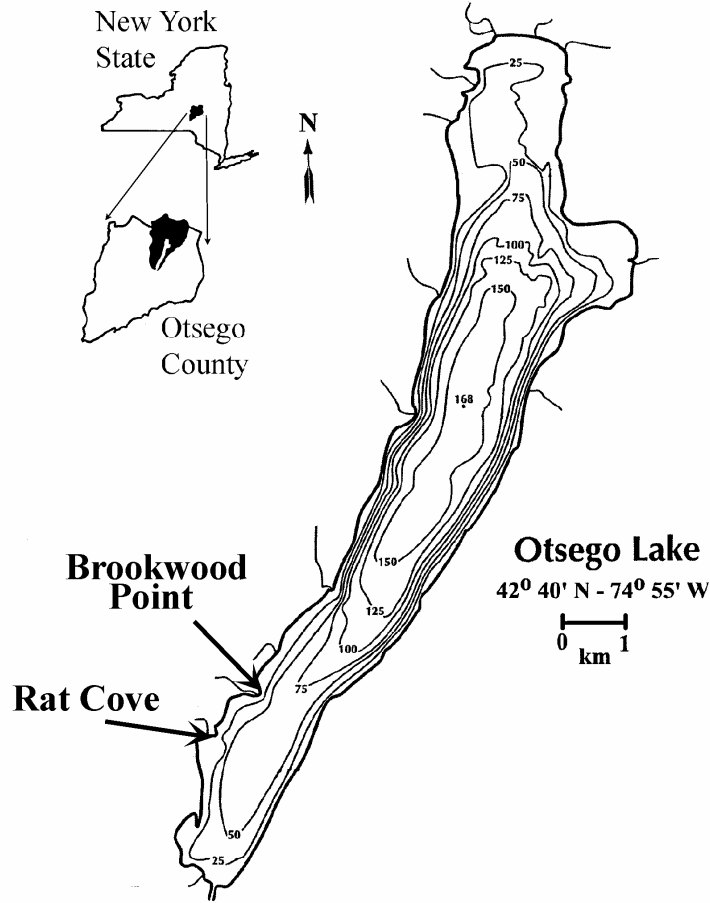


Figure 1. Otsego Lake, NY showing sites of trap netting.

RESULTS AND DISCUSSION

Tables 1 and 2 provide the mean weekly catch for each year data are available, as well as the proportion contributed by each species, for Rat Cove and Brookwood Point, respectively. The two sites had similar fish species present. Fifteen species were collected at Rat Cove and 14 from Brookwood Point the difference being that creek chub sucker (*Erimyzon oblongus*) and emerald shiner (*Notropis atherinoides*) were found only at Brookwood Point and European rudd (*Scardinius erythrophthalmus*) was collected only at Rat Cove. When present, these three species were a minor part of the community. The total number of fish caught at Rat Cove was 410. The most common species collected there were pumpkinseed (*Lepomis gibbosus*), alewife, brown bullhead (*Ictalurus nebulosus*), and rock bass (*Ambloplites rupestris*). The total number of fish caught at Brookwood Point was 906. The majority of Brookwood Point catch was alewives with lower numbers of rock bass and pumpkinseeds. In both sites the catch rate of fish fluctuated greatly throughout summer.

The proportion of alewives in the 2002 was lower in both sites than previous years. That, as well as a substantially lower overall mean catch per week, implies a significant decline in alewives. This is consistent with hydroacoustic work, which documents a reduction in that population between fall 2001 and spring 2002 (Warner and Cornwell, unpubl.).

In order to better understand the effects of walleye stocking on the alewife population this study should be continued over the next few years. Trap netting is a valuable tool for alewife monitoring because alewife spawn in littoral areas. Therefore, year to year catch variations are reflective of lakewide abundance. Other fish that spawn in Rat Cove and/or Brookwood Point that are also planktivores are the golden Shiner (*Notemigonus crysoleucas*) and the European rudd (*Scardinius eruthrophthalmus*).

	1997	1999	2000	2001	2002
Mean Catch per Week	NA	NA	141	96	41
Alewife	54.5	79.6	85.2	70.6	19.5
Golden Shiner	2.3	0.5	0.4	0.3	1.0
European Rudd	0.2		0.1		0.7
Pumpkinseed	12.1	11.1	7.0	21.7	36.8
Bluegill	22.7	3.3	1.4	3.0	9.0
Redbreast Sunfish	1.0		0.6	0.6	0.7
Rock Bass	1.6	1.3	1.1	1.6	9.3
Largemouth Bass	0.1		0.1	0.6	0.7
Chain Pickerel	0.1	0.6	0.4	0.5	0.2
Atlantic Salmon				0.1	
Yellow Perch	2.1	2.1	1.8	0.5	3.1
White Sucker	0.5		0.7	0.2	1.5
Common Sucker			0.1		1.2
Common Carp	0.2	0.5	0.2	0.3	0.6
Brown Bullhead	2.6	0.2	1.2	0.1	15.6
Bluntnose Minnow		1.0			
Smallmouth Bass					0.2

Table 1. Total mean weekly catch at Rat Cove and the percent contributed by each species, 1997-2002.

	2000	2001	2002
Mean Catch Per Week	257.83	151	100.67
Alewife	86.94	90.94	76.6
Golden Shiner	0.06	0.19	1.1
European Rudd		0.19	
Pumpkinseed	1.23	4.91	11.92
Bluegill	2.46	0.57	0.88
Redbreast Sunfish	0.06		0.88
Rock Bass	3.04	2.26	3.97
Largemouth Bass	0.13	0.19	0.66
Chain Pickerel	0.06		0.33
Atlantic Salmon		0.19	
Yellow Perch	0.71	0.19	0.22
White Sucker	1.87		1.66
Common Sucker			
Common Carp	0.78	0.19	0.55
Brown Bullhead	2.59		0.99
Bluntnose Minnow	0.06		
Smallmouth Bass			
Creek Chub Sucker			0.11
Emerald Shiner			0.11
Spottail Shiner		0.38	

Table 2. Total mean weekly catch at Brookwood Point and the percent contributed by each species, 2000-2002.

Another observation noted this year was the variability in distributions of peaks of the alewife catch, which reflects the alewife's spawning activity. At Rat Cove, most alewives were collected from 20 June through early July, though they were never very prevalent (Figure 2) compared to the last several years. At Brookwood Point, alewife catch rates were sporadic, and often quite high, between 18 June and 10 July (Figure 3).

Pumpkinseed, the most common species encountered at Rat Cove and the second most common at Brookwood Point, showed different temporal variability at the two sites. At Rat Cove, they were encountered in moderate numbers throughout the summer, being relatively common from 13 June through 18 July (Figure 4). Conversely, they were common at Brookwood Point only between 21 and 28 June (Figure 5). This may be reflective of differences in how this species uses the two sites for spawning, which may be reflective of different substrate types.

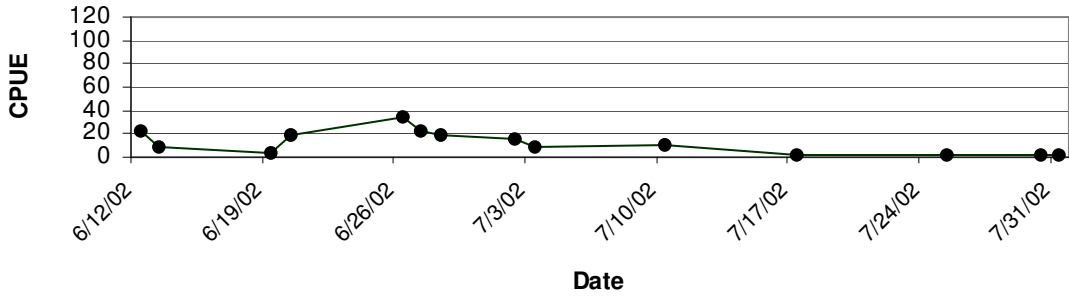


Figure 2. Alewife catch per unit effort (fish per 24 hr set) at Rat Cove, summer 2002.

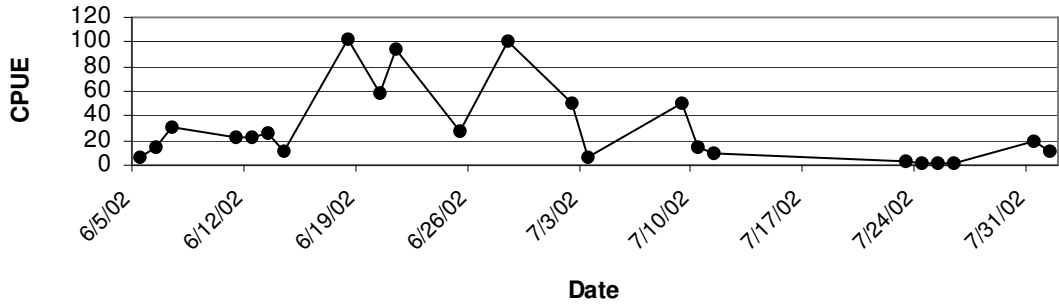


Figure 3. Alewife catch per unit effort (fish per 24 hr set) at Brookwood Point, summer 2002.

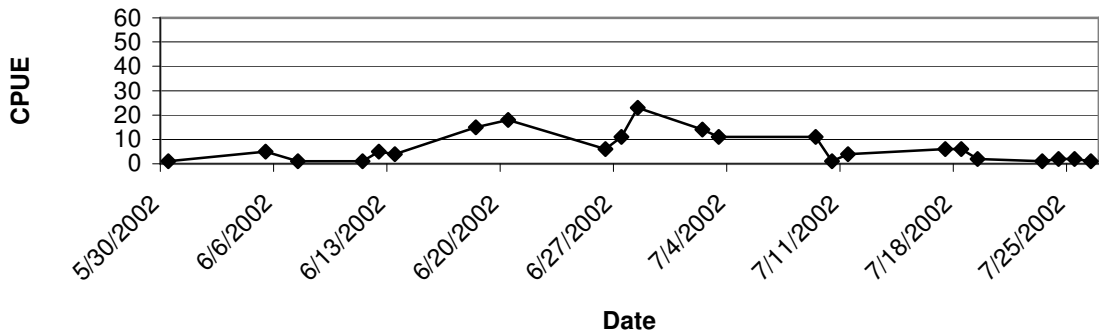


Figure 4. Pumpkinseed catch per unit effort (fish per 24 hr set) at Rat Cove, summer .

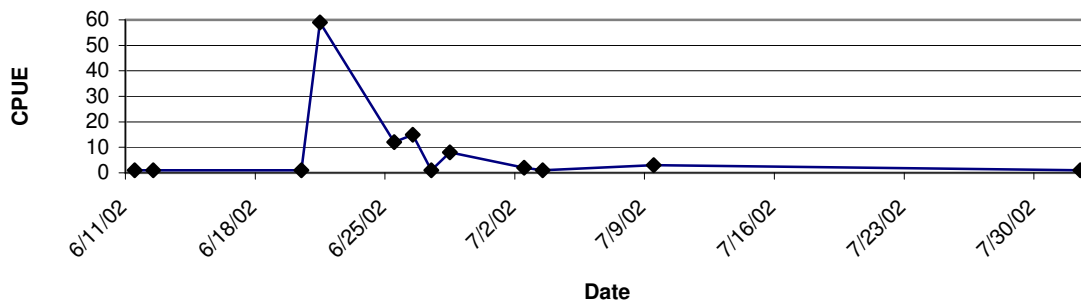


Figure 5. Pumpkinseed catch per unit effort (fish per 24 hr set) at Brookwood Point, summer 2002.

CONCLUSION

Although trap netting only occurred at two sites, the long-term nature of this sampling program should provide a reasonable index of littoral fish abundance. Along with the decreasing catch of alewives, other conditions considered and more fully understood were the patterns of yearly fluctuation, relative abundance of other species, and the patterns of species abundance. Trap netting has been conducted in Otsego Lake for most of the past 12 years. Year to year variations of alewife abundance, as well as variations within each summer, should be evaluated. Also, these data should be compared with abundance estimates derived from acoustic surveys for those years for which data are available. That would provide insight into the value of trap netting as an indicator of abundance as well as the success of each year's year class.

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