

Profundal cobble benthos in Otsego Lake

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ABSTRACT

Two adjoining piles of cobble of unknown origin, rising a meter and a half high off a silt bottom of just less than ten meters depth, were identified off of Three Mile Point in Otsego Lake. Fourteen containers were buried flush with the substrate and filled with cleaned rubble from the site in October 1999. Seven containers each were recovered in January and July/August 2000. Rocks were cleaned of animals and measured. Animals recovered were identified and enumerated. Apparent seasonal differences in numbers noted could be the result of varying colonization rates and seasonal habitat availability.

INTRODUCTION

Two adjoining, relatively silt-free rock piles with approximately eight meter diameters rising off of a silt bottom in approximately ten meters of water off of Three Mile Point [N 42° 44.477'; W74° 53.948'] came to the attention of the BFS in 1999 (Lord, 2000). Past studies have been conducted of Otsego Lake's eu littoral cobble benthos (Wheat, 1993), but a benthos study has not been done on Otsego Lake exposed profundal cobbles. Due to internal seiches, summer water temperatures at the depth of these rock piles alternates between warm and cool (Hill, 1983; personal observation).

METHODS AND MATERIALS

In October of 1999, BFS volunteer divers buried 14 numbered plastic containers (average diameter of opening: 23.5 cm) level with the substrate in the Three Mile Point rock piles. These containers were filled with cobbles removed to make space for the containers in the substrate after the rocks were brushed clean of sediment and adhering organisms.

In January 2000, all even numbered containers were removed from the water by volunteer divers. Containers were pulled from the substrate and placed in a larger steel container to prevent disturbed organisms from escaping. The steel container was then lifted to the surface using a diver's lift bag. Containers were brought to the BFS laboratory where the smaller container was lifted out of the larger and the water remaining in the larger container was sieved to collect organisms. White pans were partially filled with lake water and used to wash off the rocks removed from the numbered containers. Pipettes and soft forceps were used to extract the organisms from the water. Animals were identified, counted, and preserved in 70% ethyl alcohol. The macrobenthos were later identified using Pennak (1989), Peckarsky *et al* (1995) and Smith (2001). Additional taxonomic information was obtained from the USDA's ITIS

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database (2002). Rocks were measured at their longest axis and the average length was calculated. In July and August 2000, the remaining seven containers were recovered and processed identically.

RESULTS

Results are presented in Tables 1 - 3. Table 1 contains data from the January collections, while Table 2 contains data from the July and August collections. Table 3 contrasts the two time periods. Average rock length in the seven January containers was 8.5 cm with average rock length varying from 5.86 to 10.51 cm in individual containers. Standard deviations ranges from 1.67 to 3.12. The average standard deviation was 2.44.

Container #:	2	4	6	8	10	12	14
Date:	1/1/00	1/1/00	1/1/00	1/10/00	1/1/00	1/10/00	1/1/00
Taxa							
Porifera	0	1	0	0	0	0	0
Cnidaria (<i>Hydra</i>)	4	1	1	5	0	TNTC	75
Platyhelminthes (Planariidae)	0	0	1	0	0	0	0
Rotifera (sessile)	TNTC	8	TNTC	TNTC	0	TNTC	TNTC
Ectoprocta	10	TNTC	10	3	TNTC	20	TNTC
Annelida	5	15	0	0	0	1	1
Mollusca (Gastropoda)	1	0	0	0	2	0	0
Arachnida (Hydrachnidia)	1	1	3	0	14	10	21
Cladocera	5	1	3	4	0	21	5
Copepoda	9	7	18	14	20	TNTC	70
Ostracoda	4	0	1	0	0	0	0
Isopoda	10	19	14	25	14	18	29
Amphipoda	7	3	13	7	13	8	15
Decopoda	0	0	1	0	0	1	0
Ephemeroptera	0	0	1	0	0	0	0
Megaloptera	0	1	0	0	0	0	0
Trichoptera	0	0	0	0	0	0	0
Other Diptera	0	2	2	0	7	0	0
Chironomidae	3	2	2	0	8	13	7
<i>Ambloplites rupestris</i>	0	0	0	0	0	0	0
<i>Cottus cognatus</i>	0	1	0	0	1	3	0

Table 1. Taxa collected in container named (date) after two to three months in situ. Organisms found in quantities > 200 are identified as "too numerous to count" (TNTC).

DISSUSSION

Total numbers of animals in various taxa varied significantly from winter to summer. Most numbers increased over that period. This is probably due to phenology of the animals

and/or the fact that the containers raised in the summer had been available for migration or colonization six plus months longer than the containers examined during the winter. A few populations decreased from winter to summer. The reasons for these are unknown, but some may be related to the relative abundance of macrophyte structure found in the summer offering alternative habitats. Others might be the result of more active summer predation.

Definitive identification of many of the organisms collected was made more difficult by our nonuse of narcotic agents prior to preservation.

Container #:	1	3	5	7	9	11	13
Date:	8/7/00	7/31/00	7/17/00	8/8/00	8/14/00	7/12/00	7/24/00
Taxa							
Porifera	3	6	3	8	TNTC	2	3
Cnidaria (<i>Hydra</i>)	6	0	10	0	4	13	6
Platyhelminthes (Planariidae)	5	2	0	1	3	3	0
Rotifera (sessile)	TNTC	17	0	0	TNTC	50	17
Ectoprocta	2	4	2	0	TNTC	11	3
Annelida	20	14	3	21	11	3	7
Mollusca (Gastropoda)	1	6	0	0	0	0	0
Arachnida (Hydrachnidia)	1	2	3	1	3	0	1
Cladocera	21	76	TNTC	61	4	74	82
Copepoda	21	87	103	170	5	65	TNTC
Ostracoda	2	7	3	8	3	0	0
Isopoda	119	84	184	127	66	50	75
Amphipoda	63	81	60	107	12	53	66
Decapoda	0	2	1	3	1	1	1
Ephemeroptera	0	0	1	0	0	0	0
Megaloptera	0	0	0	0	0	0	0
Trichoptera	0	0	0	0	0	0	1
Other Diptera	0	2	2	0	0	0	0
Chironomidae	16	28	42	9	20	25	15
<i>Ambloplites rupestris</i>	0	0	0	1	0	0	0
<i>Cottus cognatus</i>	0	0	0	0	0	0	0

Table 2. Taxa collected in container named (date) after ten plus months in situ. Organisms found in quantities > 200 are identified as "too numerous to count" (TNTC).

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Taxa	Season:	Winter	Summer
Porifera		1	225
Cnidaria (<i>Hydra</i>)		286	39
Platyhelminthes (Planariidae)		1	14
Rotifera (sessile)		1008	484
Ectoprocta		643	222
Annelida		22	79
Mollusca (Gastropoda)		3	7
Arachnida (Hydrachnidia)		50	11
Cladocera		39	518
Copepoda		338	651
Ostracoda		5	23
Isopoda		129	705
Amphipoda		66	442
Decapoda		2	9
Ephemeroptera		1	1
Megaloptera		1	0
Trichoptera		0	1
Other Diptera		11	4
Chironomidae		35	155
<i>Ambloplites rupestris</i>		0	1
<i>Cottus cognatus</i>		5	0

Table 3. Benthic organisms collected from containers raised on 1 and 10 January (winter) and on 12, 17, 24 and 31 July and 7,8 and 14 August (summer). Counts designated TNTC in Tables 1 and 2 were calculated as 200 for the above compilation.