LAKE ONTARIO FISH COMMUNITIES AND FISHERIES:

2006 ANNUAL REPORT OF THE LAKE ONTARIO MANAGEMENT UNIT

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9. Partnerships

Lake Ontario Fish Communities and Fisheries: 2006 Annual Report of the Lake Ontario Management Unit

Foreword

The Lake Ontario Management Unit (LOMU) is one of three Great Lakes Branch units. It is dedicated to working towards the Great Lakes Branch's vision and mission of achieving sustainable development and aquatic ecosystem sustainability for Lake Ontario and the St Lawrence River. In addition, LOMU works to ensure the strategic directions and principles of Our Sustainable Future and Ontario's Biodiversity Strategy are met.

LOMU implements annual aquatic ecosystem and fisheries assessment and management activities through a variety of ways. Each year, partnerships are developed with a variety of non-government organizations and other government agencies to assist in the development and implementation of a broad range of activities necessary for the sustainable management of fisheries and aquatic ecosystems of the St. Lawrence River and Lake Ontario. Several notable partnerships were established in 2006, and are described within the report. We would like to express our sincere appreciation to the partners who contributed immensely to a number of successful initiatives.

Although 2006 was a challenging year from a financial perspective, LOMU continued to support the Lake Ontario Lakewide Management Plan (LaMP) and the 'Areas of Concern' identified in the Great Lakes Water Quality Agreement. LOMU also participated in planning for the next Canada / Ontario Agreement (COA). Some COA projects were maintained during 2006.

The Province of Ontario and New York State share responsibility for managing Lake Ontario fish communities and fisheries. The Ministry of Natural Resources works collaboratively with numerous agencies both in Canada and the U.S. to ensure the fish communities, fisheries and aquatic ecosystems of Lake Ontario and the St. Lawrence River are managed on sustainable basis. International cooperation is essential to the health of the Lake Ontario, Niagara and St. Lawrence River ecosystems and to the sustainable management of their fisheries. LOMU staff work closely with numerous Canadian and U.S. agencies within the international committee structures of the Great Lakes Fishery Commission (GLFC) and International Joint Commission (IJC).

Preventing invasions of non-native species, controlling the spread of fish disease and restoring native species within these water-bodies continued to be matters of great concern for both New York and Ontario. Bi-national cooperation in fishery management for Lake Ontario is formalized within GLFC and the Lake Ontario Committee (LOC). In 2006, OMNR worked closely with Canadian federal agencies, provincial governments, various U.S. federal and state agencies and non-government partners to develop and implement plans to protect and restore American eel and Atlantic salmon. Similar plans are under consideration regarding the conservation of lake sturgeon.

LOMU staff use a variety of means with which to communicate with the public, stakeholders, partners, the media, and other resource management agencies. Good communications strategies and products are important to effectively convey results of fisheries assessment, management and enforcement programs. LOMU staff routinely develop communications plans, news releases, public notices, fact sheets, brochures, scientific papers, reports and web products. Consultation helps us to understand stakeholder values, ideas and concerns. Staff interact with the public on a day-to-day basis through phone calls, site visits and contacts made in the field or during enforcement patrols. Staff actively participate on a variety of bi-national and inter-agency committees to share information and expertise, and to develop solutions to problems of common concern in the Great Lakes Basin. LOMU staff respond to a broad range of questions and information requests from the public, stakeholders, the media and other

agencies. Staff also provide support to senior managers by developing a variety of communications and briefing materials relating to the management of Lake Ontario fisheries and fish communities. A strong communications network is critical to making sound resource management decisions (e.g., setting sport fishing regulations, commercial fishing quotas, stocking levels, fisheries management objectives).

This Annual Report provides a synopsis of the activities of LOMU largely supported by base program resources; it reports results of 2006 assessment and management projects. LOMU recognizes its many partners and sponsors for their contributions to our program, including Ontario Power Generation the Ontario Federation of Anglers and Hunters, the Liquor Control Board of Ontario, Australia's Banrock Station Wines, the Toronto Region Conservation Authority, Fleming College and the University of Toronto.

We are pleased to share the important information about the activities and findings of the Lake Ontario Management Unit from 2006.

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1. Status of Major Species

The following is an overview of the status of major species in Ontario waters of Lake Ontario for 2006. The overview draws largely upon information presented in the chapters and sections that follow in this report.

1.1 Chinook Salmon

Growth and condition of large Chinook salmon in the Credit River recovered somewhat in 2006 but were still lower than most years since 1989 (see Section 2.8). Although current prey fish populations still support this top predator, the long term stability of the fish community remains in question.

1.2 Rainbow Trout

In 2006, counts of wild rainbow trout at the Ganaraska River fishway remained stable. Counts had declined, during the mid 1990s (see Section 2.1), consistent with a decline in catch rates from angler surveys (not conducted in 2006), and paralleled by similar declines in lake trout, brown trout, Atlantic salmon and coho salmon in Lake Ontario during the 1990s. Condition of rainbow trout in the Ganaraska River in 2006 remained similar to the long term average (see Section 2.1).

1.3 Lake Trout

The abundance of mature lake trout remains low. There has been an improvement in the body condition of mature lake trout (see Section 2.3).

1.4 Lake Whitefish

Abundance of lake whitefish in assessment gillnets is very low relative to that of the 1990s (see Section 2.3). Many strong year-classes produced in the late 1980s and early 1990s are now fading in both assessment gillnets (see Section 2.3) and commercial gear (see Section 4.2). Reproductive success was very low after the mid 1990s until a strong year-class was produced in 2003 (see Section 2.4). Growth of these young fish is very slow and age-at-maturity is delayed. Fish from the 2003 year-class did not recruit to assessment gillnets in 2004 but began to recruit in 2005 and more fully in 2006—one to two years later than expected. More recent catches of age-0 fish in assessment bottom trawls suggested that poor year-classes were produced in 2004 and 2006 and another relatively strong year-class was produced in 2005 (see Section 2.4). The condition of lake whitefish caught in summer assessment gillnets improved after the mid to late 1990s but condition for fish caught during the fall spawning run commercial fishery remained low. The increase in commercial lake whitefish harvest in 2006 (see Section 4.1) is attributed to significantly greater fishing effort. The greater fishing effort likely resulted from the implementation of a quota "pool" system whereby fishers that achieved their individual quotas could draw upon the pool for additional quota.

1.5 American Eel

The total number of eel migrating upstream at the ladders, located at the Moses-Saunders Hydroelectric Dam on the St. Lawrence River, has increased during recent years and the average size of migrants declined (see Section 2.2). While these developments are encouraging, the abundance of eel entering the upper St. Lawrence River and Lake Ontario is still less than 2% of migrations observed in the early 1980s. Even with the closure of the commercial (2004) and sport fisheries (2005), the abundance of yellow eel in the Lake Ontario/upper St. Lawrence River ecosystem is low (see Section 7.3). Ontario worked with Ontario Power Generation and the Ontario Commercial Fishers Association to stock eels into the upper St. Lawrence River (see Section 7.1) to help to improve the biodiversity of this system and hope this will contribute to the size of global spawning stock. Ontario is continuing to work with management agencies in other jurisdictions, and other stakeholders, including Ontario Power Generation, Hydro Quebec and the New York Power Authority, to encourage the safe passage of eels around hydro dams and stock eels into the upper St. Lawrence River and Lake Ontario (see Section 7.3). Sustainable management practices throughout the range of this panmictic species (Labrador to the Caribbean) will be required to restore eel abundance.

1.6 Smallmouth Bass

Assessment gillnet (see Section 2.3) and nearshore trapnet indices (see Section 2.6) indicate that smallmouth bass, having declined in abundance during the 1990s, remain at low to moderate abundance levels in the nearshore areas of Lake Ontario. Smallmouth bass catches in Lake St. Francis assessment gillnets increased in 2006 (see Section 2.6).

1.7 Largemouth Bass

Assessment trapnetting and angling survey information indicate that largemouth bass abundance increased in the Bay of Quinte following increases in water transparency and aquatic vegetation in the late 1990s. Although their abundance has peaked and declined somewhat since the early 2000s, their current level of abundance likely rivals that of walleye in nearshore areas. Largemouth bass population status in other embayment areas of Lake Ontario is variable. Populations are low in areas with habitat impairments, for example in Hamilton Harbour and the Toronto waterfront area (see Section 2.6).

1.8 Panfish

Panfish, particularly pumpkinseed, bluegill and black crappie, increased dramatically during the late 1990s in the Bay of Quinte and possibly in other Lake Ontario embayments with suitable habitat (see Sections 2.3 and 2.4). Most recently, the abundance of these species appears to have generally declined.

1.9 Yellow Perch

Yellow perch are one of the most common species in the nearshore areas of Lake Ontario. Their current abundance levels in Lake Ontario are low to moderate compared to past levels (see Sections 2.3 and 2.4). Yellow perch catches in Lake St. Francis assessment gillnets increased significantly in 2006 (see Section 2.6). The increased Lake Ontario yellow perch commercial harvest in 2006 (see Section 4.1) is attributed to significantly greater fishing effort. The greater fishing effort likely resulted from the implementation of a quota “pool” system whereby fishers that achieved their individual quotas could draw upon the pool for additional quota.

1.10 Walleye

While abundance remains considerably lower than during the late 1980s and early 1990s, the walleye population has now been relatively stable since 2001. For example, assessment gillnet abundance indices (see Section 2.3) indicate that the walleye population has stabilized or increased slightly following a steady decline throughout the 1990s. Further, recruitment indices, based on young of year catch in bottom trawls (see Section 2.4), indicate that a strong year-class was produced in 2003, and that average (i.e. average for the last ten years) year-classes were produced in 2004, 2005 and 2006. Catch rates in May during the 2006 recreational fishery were the highest in over a decade (see Section 3.1). Age-3 fish (2003 year-class) dominated the recreational harvest. Based on the strength of recent recruitment levels, the walleye population will remain stable at least through 2008. Nearshore trapnetting catches of walleye in western Lake Ontario (i.e. Hamilton Harbour and the Toronto waterfront; see Section 2.6) were low relative to the Bay of Quinte. However, the 2003 year-class again dominated the age-class composition in these areas suggesting that reproductive success was widespread throughout Lake Ontario that year.

1.11 Prey Fish

The mid-summer abundance of yearling-and-older alewife increased from a very low level observed in 2005. The increase is due to a strong 2005 year-class.

The abundance of smelt fell back from last year to a low level similar to those seen in 2002-2003 (see section 2.5).

Round goby invaded Lake Ontario in the late 1990s and first appeared in routine Bay of Quinte assessment bottom trawls in 2001 and gillnets in 2002. Goby distribution expanded to include all areas of eastern Lake Ontario and the Bay of Quinte to depths of at least 36 m by 2006. Overall goby abundance increased until 2004 then declined,

especially in 2006 (see Sections 2.3 and 2.4). Round goby are now common in the diet of most potential fish predators (see Section 8.2).

2. Index Fishing Projects

2.1 Ganaraska Fishway Rainbow Trout Assessment

The fishway on the Ganaraska River at Port Hope has been in operation since 1974. Rainbow trout are counted and sampled for length, weight and age during the spring spawning run (Fig. 2.1.1). Counts have been stable since 1998, and estimated at 5,877 rainbow trout in 2006 (Table. 2.1.1).

The body condition of rainbow trout in Lake Ontario was calculated as the estimated weight of a 635 mm (25 inch) fish at the Ganaraska River. In 2006, the weights of male (3,025 g) and female (3,137 g) rainbow trout were close to the long term average for the study (Table 2.1.2).

In 2006, lamprey marks on rainbow trout in the Ganaraska River were again more than three times higher than the average for 1990-2003 (Table 2.1.3). The marking rates from 2004 to 2006 were similar to levels in the 1970s (Fig. 2.1.2). A high incidence of B1 marks[1] since 2004 indicated very recent attacks relative to rainbow trout migrating into the Ganaraska River (Table 2.1.4)

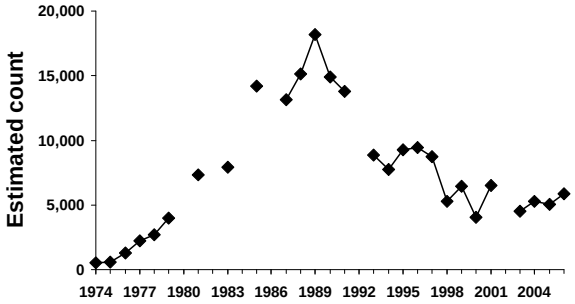

FIG. 2.1.1. Estimated upstream counts of rainbow trout at the Ganaraska River fishway, Port Hope, Ontario, during April and May, 1974-2006.

TABLE 2.1.1. Observed and estimated upstream counts of rainbow trout at the Ganaraska River fishway at Port Hope, Ontario, during April and May, 1974-2006.

	Upstream count	
Year	Observed	Estimated
1974	527	527
1975	591	591
1976	1,281	1,281
1977	2,237	2,237
1978	2,724	2,724
1979	4,004	4,004
1980		
1981	7,306	7,306
1982		
1983	7,907	7,907
1984		
1985	14,188	14,188
1986		
1987	10,603	13,144
1988	10,983	15,154
1989	13,121	18,169
1990	10,184	14,888
1991	9,366	13,804
1992		
1993	7,233	8,860
1994	6,249	7,749
1995	7,859	9,262
1996	8,084	9,454
1997	7,696	8,768
1998	3,808	5,288
1999	5,706	6,442
2000	3,382	4,050
2001	5,365	6,527
2002		
2003	3,897	4,494
2004	4,452	5,308
2005	4,417	5,055
2006	5,171	5,877

TABLE 2.1.2. Estimated weight of a 635 mm (25 inch) rainbow trout at the Ganaraska River fishway at Port Hope, Ontario, during April, 1974-2006.

	Male		Female	
Year	Sample size	Weight (g)	Sample size	Weight (g)
1974	173	3,074	231	3,210
1975	183	2,975	279	3,067
1976	411	3,174	588	3,324
1977	635	2,981	979	3,164
1978	255	3,185	512	3,340
1979	344	3,223	626	3,335
1981	252	3,178	468	3,359
1983	308	2,880	132	3,033
1985	410	3,172	154	3,205
1987	66	2,646	74	3,046
1990	259	2,868	197	3,071
1991	126	2,852	289	3,086
1992	138	2,998	165	3,113
1993	84	2,952	166	3,135
1994	109	3,248	178	3,356
1995	147	2,988	155	3,061
1997	140	3,143	127	3,270
1998	96	3,035	222	3,195
1999	173	3,063	290	3,226
2000	121	3,121	226	3,242
2001	295	2,919	290	3,041
2003	92	3,035	144	3,152
2004	139	3,054	242	3,193
2005	142	2,985	173	3,110
2006	101	3,025	217	3,137
Average		3,031		3,181

TABLE 2.1.3. Lamprey marks on rainbow trout in April, 1974-2006, at the Ganaraska River fishway, in Port Hope, Ontario. Since 1990, A1 and A2 marks[1] were called wounds and the remainder of marks were called scars to fit with historical classification.

Year	Wounds / fish	Scars / fish	Marks / fish	% with wounds	% with scars	% with marks	N
1974	0.083	0.676	0.759	7.02	33.21	36.81	527
1975	0.095	0.725	0.820	8.01	37.23	40.23	599
1976	0.090	0.355	0.445	6.64	23.28	28.13	1,280
1977	0.076	0.178	0.254	6.38	13.51	18.15	2,242
1978	0.097	0.380	0.476	8.12	28.40	33.65	2,722
1979	0.122	0.312	0.434	10.26	22.85	29.75	3,926
1981			0.516			36.18	5,489
1983	0.113	0.456	0.569	9.72	33.37	38.78	833
1985	0.040	0.154	0.193	3.66	11.46	14.49	1,256
1990	0.015	0.083	0.098	1.49	6.60	8.09	470
1991	0.012	0.091	0.103	1.19	7.40	8.35	419
1992	0.035	0.162	0.197	2.86	14.29	16.51	315
1993	0.034	0.165	0.199	3.07	15.33	17.24	261
1994	0.027	0.153	0.179	2.66	13.62	15.28	301
1995	0.017	0.046	0.063	1.65	4.29	5.94	303
1996	0.023	0.030	0.053	2.27	3.02	5.29	397
1997	0.017	0.158	0.175	1.72	12.71	13.75	291
1998	0.035	0.165	0.200	3.24	13.24	15.29	340
1999	0.015	0.086	0.101	1.47	7.55	8.60	477
2000	0.005	0.272	0.278	0.54	23.18	23.45	371
2001	0.028	0.229	0.257	2.47	17.76	18.75	608
2003	0.017	0.176	0.193	1.68	14.29	15.13	238
2004	0.079	0.459	0.538	6.89	33.67	37.50	392
2005	0.084	0.579	0.664	6.85	39.56	41.43	321
2006	0.088	0.577	0.665	6.90	40.13	44.51	319

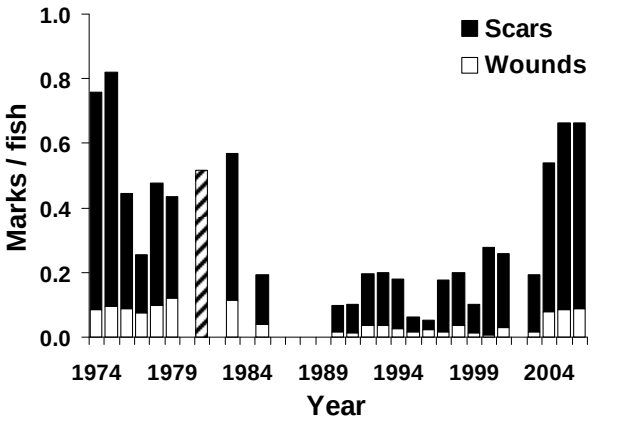

FIG. 2.1.2. Trend in lamprey marks on rainbow trout in April, 1974-2006, at the Ganaraska River fishway, in Port Hope, Ontario. Since 1990, A1 and A2 marks[1] (King and Edsall 1979) were called wounds and the remainder of marks were called scars to fit with historical classification. Scars and wounds were combined in 1981.

TABLE 2.1.4. Classification of lamprey marks[1] on rainbow trout in April, 1974-2006, at the Ganaraska River fishway, in Port Hope, Ontario.

	Marks / fish							
Year	A1	A2	A3	A4	B1	B2	B3	B4
1990	-	0.015	0.009	0.009	-	0.002	0.017	0.051
1991	-	0.012	0.012	0.002	0.029	0.007	0.017	0.019
1992	0.013	0.022	0.025	0.019	0.079	0.006	0.010	0.022
1993	0.011	0.023	0.019	0.023	0.061	-	0.008	0.054
1994	0.007	0.020	0.010	0.007	0.076	0.010	0.010	0.043
1995	0.007	0.010	0.017	0.003	-	-	0.020	0.007
1996	0.013	0.010	0.003	0.003	0.005	0.013	-	0.008
1997	0.003	0.014	0.021	-	-	0.021	0.017	0.086
1998	0.012	0.024	0.012	0.041	0.012	0.003	0.015	0.079
1999	-	0.013	0.013	0.021	0.010	0.023	0.013	0.107
2000	-	0.005	0.027	0.056	-	0.003	0.003	0.183
2001	0.002	0.026	0.021	0.069	-	-	0.002	0.127
2003	-	0.013	0.021	0.029	-	0.008	0.004	0.105
2004	0.020	0.059	0.092	0.064	0.171	0.005	0.031	0.094
2005	0.016	0.069	0.075	0.072	0.305	0.003	0.040	0.072
2006	0.022	0.050	0.125	0.041	-	0.028	0.041	0.107

[1]King, E. L., Jr. and T. A. Edsall. 1979. Illustrated field guide for the classification of sea lamprey attack marks on great lakes lake trout. G.L.F.C. Special Publication 79-1.

2.2. R. H. Saunders Hydroelectric Dam Eel Ladder Monitoring

American eel spawn in the Sargasso Sea. A portion of the juvenile population migrates up the St. Lawrence River and into Lake Ontario. Eel reside in Lake Ontario and the upper St. Lawrence River (LOSLR) for approximately twenty years before migrating back to the sea. Eel populations show evidence of decline in many areas of eastern Canada and particularly in LOSLR. This decline prompted the closure of the American eel commercial fishery in LOSLR during 2004 and the sport fishery during 2005. The cause of the decline is unknown but has been attributed to habitat loss and deterioration (e.g. dams), over-fishing, mortality in hydroelectric generating turbines, and environmental change in the northern Atlantic Ocean.

An eel ladder was installed at the R.H. Saunders Hydroelectric Dam at Cornwall in 1974 to assist with upstream eel migration. This ladder is operated as a partnership between Ontario Power Generation and Ontario Ministry of Natural Resources. This section provides estimates of the number of eel ascending the Saunders ladder during 2006 and biological characteristics of the migrating eel. During 2006, a second eel ladder (Moses ladder) was constructed and began operation on the U.S. portion of the Moses-Saunders Power Dam.

Eel Ladder Operation

The Saunders eel ladder was opened on June 1 and

TABLE 2.2.1. The numbers of eel observed in the trap at the top of the eel ladder located at the R.H. Saunders Hydroelectric Dam during 2006. The water temperature at the bottom of the ladder is also provided.

Date	Number of eels	Water temperature (^{o}C)
02-Jun-06	-	14.0
07-Jun-06	1	15.0
14-Jun-06	1	13.5
21-Jun-06	3	13.0
28-Jun-06	7	19.3
05-Jul-06	75	20.0
12-Jul-06	51	21.0
19-Jul-06	310	22.0
26-Jul-06	384	22.8
02-Aug-06	291	25.3
09-Aug-06	84	22.0
16-Aug-06	24	22.0
23-Aug-06	20	21.0
30-Aug-06	9	18.0
06-Sep-06	1	18.0
13-Sep-06	-	15.5
20-Sep-06	1	15.5
27-Sep-06	-	13.8
04-Oct-06	4	15.8
11-Oct-06	7	12.0

closed on October 12 (134 days) during 2006. Weekly counts of eel migration activity were obtained by placing a net at the top of the ladder (Table 2.2.1). A sub-sample of 153 eels were collected and sampled for biological characteristics.

The average size of eels migrating up the ladder continued to show a marked decrease in 2006 (average length 384 mm, range 260-578 mm, Fig. 2.2.1) compared to only four years ago . This is the first time since 1984 that the average length of the eels has been less than 400 mm.

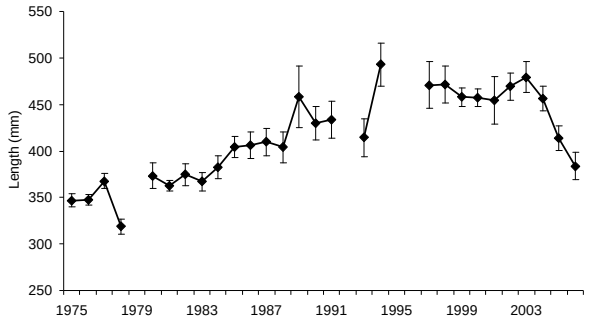

FIG. 2.2.1. Length (error bars are 95% confidence limits) of eel migrating upstream through the eel ladder located at the R.H. Saunders Hydroelectric Dam, 1975-2006.

It is estimated that 8,960 American eel migrated upstream during the entire period of ladder operation. This number is much lower that the numbers of eel observed during the early 1980s (over 1-million eels per year during 1982 and 1983). This number is somewhat lower than the number observed during 2005 (14,891 eels); however, operation of the new Moses ladder may have had an influence on the count. The interaction between the Moses ladder and the Saunders ladder has not been quantified. The Moses ladder was in operation between July 1 and October 31, 2007 and 8,184 eels moved up the ladder during this time period[1]. Combined, 17,144 eels ascended both ladders which represents a slight increase over the total number ascending the Saunders ladder alone in 2005.

The eel recruitment index was 224 eels/day, based on the 31-day peak migration period that occurred during July 11-August 12. The eel ladder migration index was very similar to 2005 (228 eels per day) and has increased somewhat over recent years (less than 100 eels/day from 1998-2004), but is still less than 1% of the indices observed in the early 1980s (Fig. 2.2.2).

[1] Personal communication with Dr. Kevin McGrath, New York Power Authority, 123 Main Street - 15K, White Plains, NY, 10601, United States of America mcgrath.k@nypa.gov

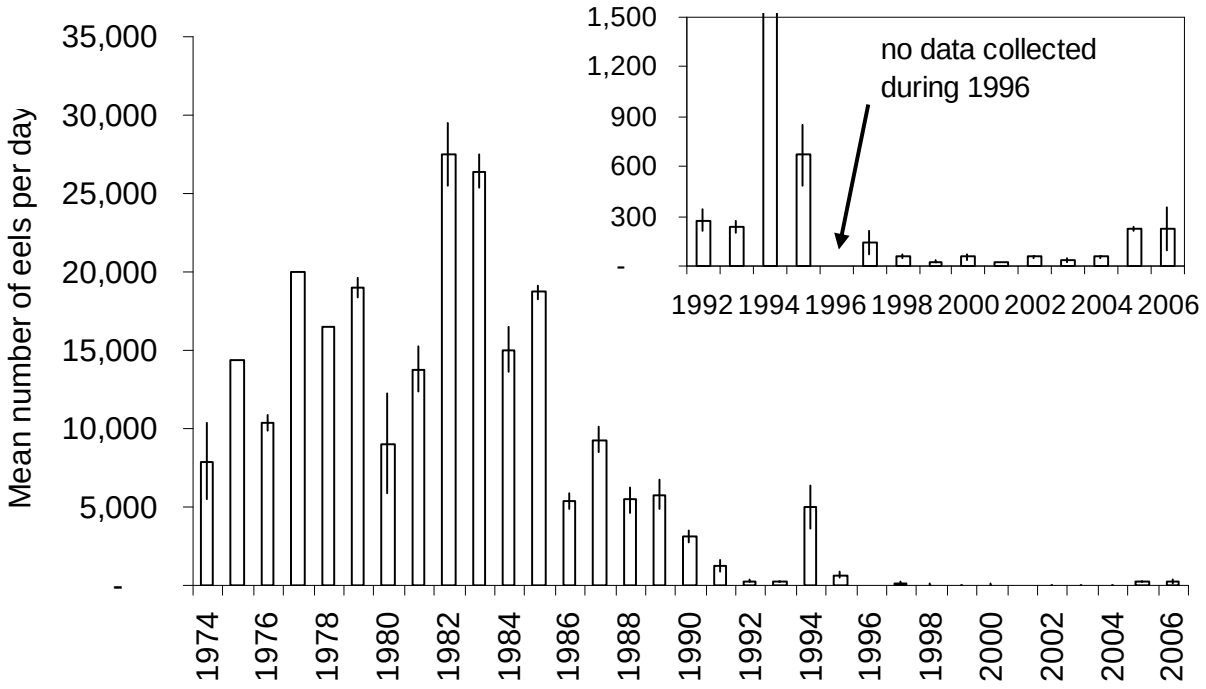

FIG. 2.2.2. Mean number of eels ascending the eel ladder per day at the R.H. Saunders hydroelectric Dam, Cornwall, Ontario during a 31-day peak migration period, 1974-2006. Vertical bars represent the 95% confidence intervals. No counts are available for 1996.

2.3 Eastern Lake Ontario and Bay of Quinte Fish Community Index Gillnetting

Bottom set gillnets have been used at fixed index netting sites (Fig. 2.3.1) in eastern Lake Ontario (ranging in depth from 2.5-140 m) and the Bay of Quinte (ranging in depth from 5-45 m) annually beginning with the Hay Bay site, in the Bay of Quinte, in 1958. Gillnets are multi-paneled with mesh sizes ranging from 1½-6 inch (½ inch increments) stretched mesh. Monofilament mesh replaced multifilament in 1992. The gillnetting program is used to monitor the abundance of a variety of warm, cool and cold-water fish species in the eastern Lake Ontario and Bay of Quinte.

Species-specific catches in the gillnetting program are shown by geographic region in Tables 2.3.1-2.3.8 for the 1992-2006 time-period. Each gillnet catch was standardized to represent the total number of fish in 100 m of each mesh size and summed across the ten mesh sizes from 1½-6 inch . Twenty-seven different species and over 13,000 individual fish were caught in 2006.

More detailed biological information is presented below for selected species including lake whitefish, walleye, round goby and lake trout.

Lake Ontario

Middle Ground

The most abundant species in the gillnet catches at the Middle Ground site were yellow perch, walleye, white sucker and brown bullhead (Table 2.3.1). Among these species, only yellow perch were more abundant in 2006 than at any time during 1992-2006. Walleye, although less abundant than their long-term average, were more abundant in 2006 than at any time in the last ten years. Alewife, a species that was moderately abundant in the early to mid-1990s, has not been

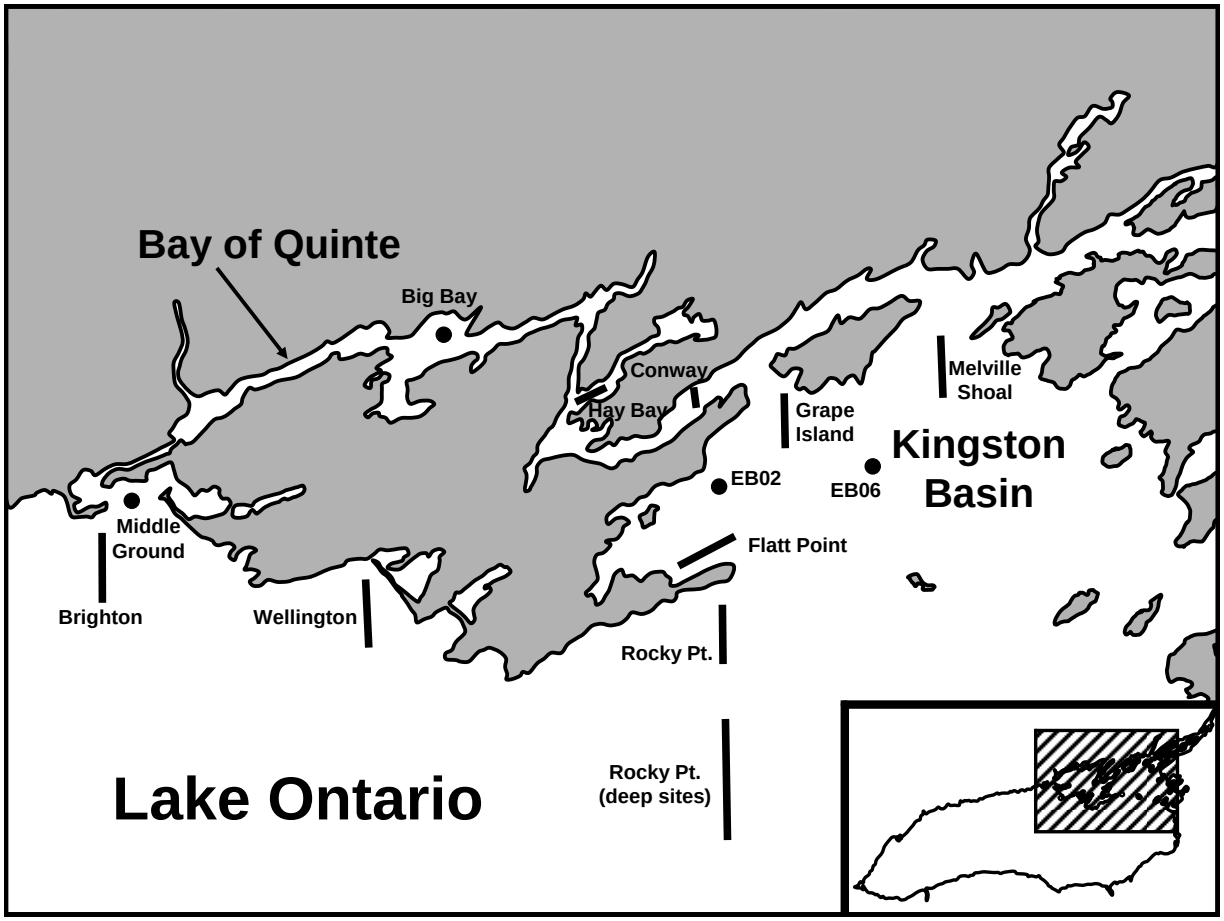

FIG. 2.3.1. Map of northeastern Lake Ontario. Shown are eastern Lake Ontario and Bay of Quinte fish community index gillnetting locations. Circles represent single depth sites; lines represent depth-stratified sampling areas.

TABLE 2.3.1. Species-specific catch per gillnet set at Middle Ground, 1992-2006. Shown are the average catches in 1-3 gillnet gangs set at a single depth (5 m) during each of 2-3 visits to a single site (Middle Ground). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Longnose gar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.1
Alewife	30.9	5.5	76.1	90.2	0.0	10.9	0.0	0.0	0.0	5.4	5.4	0.0	0.0	0.0	0.0	15.0
Gizzard shad	0.0	0.0	0.0	6.6	13.2	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	1.8
Brown trout	0.0	0.0	0.0	0.0	0.0	3.3	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.5
Lake trout	21.9	0.0	0.0	3.3	0.0	26.3	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	1.6	3.7
Northern pike	4.4	1.1	1.6	0.0	6.6	3.3	0.0	3.3	0.0	0.0	0.0	3.3	0.0	1.6	1.6	1.8
White sucker	3.3	2.2	0.0	13.2	19.7	9.9	6.6	23.0	8.2	9.9	20.2	0.0	13.7	4.9	8.2	9.5
Common carp	0.0	1.1	0.0	0.0	6.6	0.0	19.7	6.6	0.0	3.3	0.0	4.9	3.3	0.0	0.0	3.0
Brown bullhead	4.4	2.2	1.6	32.9	0.0	0.0	52.6	13.2	3.3	13.2	3.3	14.2	1.6	10.4	5.4	10.6
White perch	1.1	2.2	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Rock bass	0.0	3.3	3.3	10.9	3.3	3.3	6.6	32.6	27.2	7.1	1.6	3.3	4.9	3.3	0.0	7.4
Pumpkinseed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Bluegill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Smallmouth bass	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.2
Largemouth bass	0.0	0.0	0.0	0.0	0.0	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Yellow perch	539.8	267.5	455.0	332.7	129.4	281.6	1013.2	419.9	423.7	285.4	400.7	170.1	448.2	193.0	695.6	403.7
Walleye	19.0	23.0	25.7	16.4	50.3	3.3	0.0	6.6	0.0	1.6	3.3	6.6	3.3	4.9	8.2	11.5
Freshwater drum	0.0	1.1	0.0	9.9	13.2	0.0	13.2	0.0	3.3	0.0	1.6	0.0	19.7	1.6	0.0	4.2
Total catch	626	309	565	516	242	345	1118	523	467	326	436	204	496	223	722	475
Number of sets	6	6	4	2	2	2	1	2	4	4	4	4	4	4	4	

caught in the past four years.

Northeast

The most abundant species in Northeastern Lake Ontario gillnets were alewife, round goby, yellow perch, lake trout and walleye (Table 2.3.2). Of these species, alewife and round goby were more abundant in 2006 than the 1992-2006 average while yellow perch, lake trout and walleye were less abundant. The cold-water benthic species, lake trout, lake whitefish and round whitefish, declined markedly over the 1992-2006 time-period. Round goby, caught for the first time in 2003 are now the second most abundant species in the northeast region.

Rocky Point (deep sites)

No netting was completed at the Rocky Point deep netting locations in 2006 (Table 2.3.3).

Kingston Basin (nearshore sites)

As in 2005, the most abundant species in the Kingston Basin, Lake Ontario nearshore gillnets were alewife, yellow perch, round goby, walleye and rock bass (Table 2.3.4). Alewife abundance was higher in 2006 than in any other year since 1992. Yellow perch abundance was higher than the 1992-2006 average. Round goby, caught for the first time in 2003, are now the third most abundant species in the Kingston Basin nearshore region. Lake trout and lake whitefish catches were lower in 2006 in any other year since 1992. Burbot, which were caught each year from 1992-2004, have not been caught in the last two years.

Kingston Basin (deep sites)

The most abundant species in the Kingston Basin, Lake Ontario deep gillnets were alewife and lake trout (Table 2.3.5). Catches of nearly all species declined precipitously over the 1992-2006 time-period. Round goby, caught for the first time in 2004 at these deep sites, are now likely distributed throughout the Kingston Basin at all depths.

Bay of Quinte

Big Bay

The most abundant species at Big Bay, Bay of Quinte were white perch, yellow perch, freshwater drum, walleye and bluegill (Table 2.3.6). Of these species, white perch, freshwater drum and bluegill were more abundant in 2006 than the 1992-2006 average while yellow perch and walleye were less abundant. Black crappie was more abundant in 2006 than at any other time during 1992-2006. Round goby, having been caught each year since 2003, were absent from the 2006 catches.

TABLE 2.3.2. Species-specific catch per gillnet set in Northeastern Lake Ontario, 1992-2006. Shown are the average catches in 1-3 gillnet gangs set at each of 5 depths (range 7.5-27.5 m) during each of 2-3 visits to each of 3 sites (Brighton, Wellington and Rocky Point). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Alewife	218.6	130.8	338.7	439.2	721.6	337.3	897.1	550.8	218.3	385.6	657.0	396.9	474.0	916.2	773.4	497.0
Gizzard shad	0.1	5.1	0.8	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Coho salmon	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chinook salmon	1.5	5.5	8.3	3.3	2.6	0.9	1.4	0.6	0.0	0.4	1.4	4.1	4.8	1.5	1.5	2.5
Rainbow trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Atlantic salmon	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brown trout	0.5	0.3	3.0	0.2	0.0	0.7	0.5	0.2	0.7	0.3	3.3	1.2	1.9	1.0	1.3	1.0
Lake trout	80.7	37.3	69.4	60.9	28.5	29.2	28.2	7.9	22.4	11.8	8.9	3.0	7.5	1.3	3.2	26.7
Lake whitefish	5.0	9.5	4.8	7.7	2.9	3.4	0.7	0.0	0.7	0.4	0.1	0.8	0.2	0.1	0.2	2.4
Cisco (Lake herring)	1.3	1.3	1.2	1.1	0.0	0.0	0.7	0.2	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.4
Round whitefish	5.9	5.2	2.0	6.8	2.4	0.9	0.5	0.2	0.0	0.0	0.5	0.1	0.1	0.0	0.0	1.6
Chub	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow smelt	2.5	0.9	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Northern pike	0.1	0.4	0.7	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.1
White sucker	1.8	1.1	3.8	1.1	0.2	0.4	0.0	0.2	0.2	0.1	0.2	0.0	0.5	0.3	0.1	0.7
Greater redhorse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Lake chub	1.2	0.8	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.2
Common carp	0.4	0.4	0.7	0.0	0.7	0.2	0.2	0.0	0.2	0.0	0.0	0.1	0.2	0.2	0.0	0.2
Brown bullhead	0.0	0.1	0.0	0.0	0.0	0.2	0.5	0.2	0.9	1.2	0.7	1.9	0.8	1.1	0.0	0.5
Channel catfish	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stonecat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.5	0.4	0.1	0.0	0.2	0.1	0.2
American eel	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burbot	0.6	1.4	1.3	2.0	3.3	1.1	0.9	0.0	0.9	0.7	1.3	0.3	0.2	0.7	0.3	1.0
White perch	0.1	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rock bass	1.5	2.2	2.5	3.3	2.4	1.7	9.7	4.2	2.7	1.1	1.9	4.4	2.0	1.6	1.5	2.8
Pumpkinseed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smallmouth bass	6.1	4.0	4.4	2.0	0.2	0.4	1.8	4.9	0.4	1.5	1.4	1.5	1.7	0.9	0.9	2.1
Yellow perch	100.4	224.4	97.6	135.7	75.6	76.4	49.9	47.2	63.9	27.8	14.7	40.5	23.3	34.7	24.2	69.1
Walleye	4.9	6.7	5.6	2.9	1.8	1.8	3.2	2.4	0.8	0.0	1.1	1.2	3.4	4.4	1.8	2.8
Round goby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.5	71.3	63.3	9.2
Freshwater drum	1.1	1.9	3.0	0.4	2.6	1.6	0.5	1.5	0.4	0.2	0.2	0.4	1.0	0.1	0.3	1.0
Total catch	434	439	548	670	845	456	997	621	313	433	693	458	524	1036	873	623
Number of sets	90	90	40	30	30	30	29	35	36	60	60	60	60	60	60	

TABLE 2.3.3. Species-specific catch per gillnet set at Rocky Point Lake Ontario deep sites (range 60-140 m), 1997-2006. Shown are the average catches in 2-3 gillnet gangs set at each of 4 depths during each of 2 visits to Rocky Point. The total number of sets each year is indicated.

	Year										
Species	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Alewife	30.3	88.0	7.6	0.8	80.6	2.5	60.6	95.1	12.1		41.9
Lake trout	36.5	34.5	42.5	29.6	44.8	41.1	27.4	14.3	12.1		31.4
Lake whitefish	0.0	8.6	5.1	0.4	0.8	0.0	0.5	0.0	0.5		1.8
Cisco (Lake herring)	0.0	2.1	0.5	0.8	0.0	0.8	0.5	1.4	0.0		0.7
Rainbow smelt	3.9	3.3	3.5	0.8	0.0	1.2	0.0	0.0	0.0		1.4
Burbot	1.3	0.4	1.0	0.0	0.0	0.0	0.0	0.3	0.0		0.3
Slimy sculpin	0.0	1.6	0.0	0.4	0.4	0.0	0.3	0.3	0.0		0.3
Total catch	72	139	60	33	127	46	89	111	25		78
Number of sets	15	16	13	16	16	16	24	24	24	0	

Not completed

TABLE 2.3.4. Species-specific catch per gillnet set in the Kingston Basin Lake Ontario (nearshore sites), 1992-2006. Shown are the average catches in 1-3 gillnet gangs set at each of 5 depths (range 7.5-27.5 m) during each of 2-3 visits to each of 3 sites (Flatt Point, Grape Island and Melville Shoal). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Lake sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.1
Alewife	838.4	469.6	186.0	538.4	508.6	351.9	1329.3	552.3	392.3	530.6	130.3	151.0	497.0	1195.1	1700.5	624.8
Gizzard shad	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chinook salmon	0.3	1.9	0.0	0.9	0.0	0.0	0.7	0.2	0.3	0.0	0.0	0.0	0.8	0.4	0.0	0.4
Brown trout	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.0	0.1	0.1	0.5	0.1
Lake trout	66.5	82.5	97.3	76.0	57.7	24.7	15.7	3.4	3.3	6.3	3.0	3.8	2.5	2.3	1.1	29.7
Lake whitefish	20.5	42.6	34.6	27.1	15.1	8.4	15.9	1.4	4.8	10.7	6.8	2.9	6.1	1.4	0.7	13.3
Cisco (Lake herring)	6.9	3.7	7.1	2.6	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	1.4
Round whitefish	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coregonus sp.	0.0	0.1	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Rainbow smelt	3.5	0.5	0.5	1.7	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
Northern pike	0.8	0.4	0.3	0.4	0.2	0.0	0.5	0.0	0.1	0.4	0.2	0.1	0.1	0.3	0.1	0.3
White sucker	5.6	6.0	0.5	1.8	0.0	0.9	4.8	0.3	1.5	1.1	1.0	1.8	2.2	1.3	0.8	2.0
Silver sedhorse	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greater redhorse	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moxostoma sp.	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Common carp	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1
Brown bullhead	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.1	0.0	0.1	0.4	0.5	0.1	0.1	0.2
Channel catfish	1.0	0.1	0.0	0.2	0.0	1.0	0.5	0.5	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Stonecat	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.8	1.4	0.9	0.7	1.1	0.0	0.4
Burbot	0.1	0.4	0.2	0.7	0.9	1.6	1.4	0.3	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.4
Threespine stickleback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White perch	1.9	2.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.1	0.0	0.4
Rock bass	10.9	11.2	5.4	3.7	0.7	10.6	15.5	15.6	8.1	7.7	2.4	4.6	6.1	4.4	6.3	7.5
Pumpkinseed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Smallmouth bass	3.7	3.9	1.3	2.9	0.0	3.2	4.2	4.5	1.1	1.2	1.8	2.0	1.6	0.4	1.6	2.2
Yellow perch	319.0	306.6	96.2	60.7	58.2	97.7	147.0	118.4	117.8	46.8	112.5	103.9	298.5	127.5	250.7	150.8
Walleye	38.3	33.9	18.3	38.8	6.6	21.1	26.1	34.3	13.8	11.3	8.8	9.4	11.9	10.3	17.2	20.0
Round goby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	129.9	42.2	56.9	15.5
Freshwater drum	1.6	0.6	1.2	1.3	0.0	1.1	1.4	0.8	0.5	0.2	0.0	0.5	0.0	0.0	0.1	0.6
Total catch	1319	968	450	757	649	523	1564	734	545	618	268	286	959	1387	2037	871
Number of sets	86	88	40	30	29	29	29	41	48	60	60	60	60	60	60	

TABLE 2.3.5. Species-specific catch per gillnet set in the Kingston Basin Lake Ontario (deep sites), 1992-2006. Shown are the average catches in 4-8 gillnet gangs set at a single depth (approx. 30 m) during each of 3 visits to each of 2 sites (EB02 and EB06). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Sea lamprey	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake sturgeon	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alewife	298.8	183.7	50.7	122.5	60.0	20.0	491.2	629.4	157.3	110.2	2.7	3.4	37.7	11.9	22.9	146.8
Chinook salmon	0.3	0.3	0.3	0.3	0.0	0.0	0.3	0.3	0.4	0.8	0.0	0.1	0.1	0.3	0.0	0.2
Brown trout	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.1	0.0	0.1
Lake trout	276.6	244.5	207.5	166.9	147.8	78.9	51.3	41.4	22.7	10.4	10.1	11.8	12.1	8.1	13.0	86.9
Lake whitefish	51.5	71.3	28.8	37.8	26.6	33.4	24.4	16.4	6.2	2.7	2.7	1.1	8.9	1.0	1.9	21.0
Cisco (Lake herring)	1.9	0.5	2.2	0.8	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5
Rainbow smelt	12.9	4.4	5.5	4.9	1.6	0.3	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	2.2
American eel	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burbot	0.0	0.3	0.5	0.3	0.8	1.1	0.8	0.3	1.1	0.8	0.3	0.1	0.1	0.0	0.0	0.4
Trout-perch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White perch	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Yellow perch	1.4	0.0	0.0	0.0	0.0	0.5	0.0	0.3	0.5	0.0	0.9	0.3	9.6	1.6	2.3	1.2
Walleye	0.0	0.0	0.5	0.3	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
Round goby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	1.0	0.1
Freshwater drum	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slimy sculpin	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total catch	645	505	296	334	238	136	571	688	188	125	17	17	69	23	42	260
Number of sets	24	24	24	24	24	24	24	24	36	24	24	48	48	48	48	

Hay Bay

The most abundant species at Hay Bay, Bay of Quinte were yellow perch, white perch, freshwater drum, alewife, walleye and white sucker (Table 2.3.7). Of these species, alewife and freshwater drum were more abundant in 2006 than the 1992-2006 average. Yellow perch abundance in 2006 was lower than in any other year in the 1992-2006 time-period. Round goby, having been caught each year since 2002, were absent from the 2006 catches. Lake herring, which had been abundant in the mid to late 1990s, were absent in 2006.

Conway

The most abundant species at Conway, Bay of Quinte were yellow perch, alewife, walleye, freshwater drum, and lake trout (Table 2.3.7). Of these species only freshwater drum abundance was higher than the 1992-2006 average. Round goby, which were caught for the first time in 2002, and which had increased to a high abundance level by 2004, declined to very low levels in 2006.

Species Highlights

Lake Whitefish

Only 28 lake whitefish were caught in the 2006 index gillnets. Although these fish ranged in age from age-2 to 19 years, nearly one-half of these fish were from two year-classes. Nine fish were from the 2003 year-class (age-3) and five fish were from the 1992 year-class (age-14; Table 2.3.9). Too few female fish were caught to adequately assess age-at-maturity. Lake whitefish condition appears to have stabilized at a level lower than that observed in the early 1990s but significantly higher than that in 1996 and 1997 (e.g., 480 mm fish is approximately 3 lb; Fig. 2.3.2).

Walleye

The age distribution of walleye (Table 2.3.10) showed a broad range of age-classes from age-1 to age-21. Generally speaking, during the summer index gillnetting program young walleye were found in the Bay of Quinte (e.g., age-1 to age-5 fish comprised 89% of the Bay of Quinte walleye catch) while older walleye were present in eastern Lake Ontario (e.g.,

TABLE 2.3.6. Species-specific catch per gillnet set at Big Bay, Bay of Quinte, 1992-2006. Shown are the average catches in 2-4 gillnet gangs set at a single depth (5 m) during each of 2-4 visits (summer). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Longnose gar	5.5	5.5	1.1	23.0	4.9	11.5	0.0	44.4	4.9	6.6	6.6	1.1	6.6	9.9	19.7	10.1
Alewife	1.1	1.1	0.0	0.0	4.9	26.3	8.2	0.0	1.6	0.0	5.8	11.0	20.8	0.0	4.9	5.7
Gizzard shad	4.4	108.6	30.7	162.8	3.3	0.0	8.2	162.8	3.3	14.0	43.6	13.2	1.1	277.4	1.6	55.7
Northern pike	8.8	7.7	7.7	0.0	3.3	1.6	1.6	3.3	4.9	0.8	0.8	0.0	1.1	1.1	3.3	3.1
Mooneye	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
White sucker	63.6	53.7	54.8	59.2	47.7	54.3	54.3	24.7	24.7	23.0	60.9	15.4	35.1	16.4	32.9	41.4
Moxostoma sp.	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.8	0.0	1.1	0.0	0.0	0.0	0.3
Common carp	3.3	1.1	6.6	0.0	0.0	6.6	3.3	0.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	1.5
Brown bullhead	36.2	100.0	57.0	21.4	19.7	31.3	54.3	70.7	42.8	44.4	36.2	12.1	15.4	5.5	13.2	37.3
Channel catfish	3.3	3.3	5.5	1.6	1.6	1.6	4.9	1.6	0.0	0.0	0.8	0.0	1.1	0.0	1.6	1.8
Burbot	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
White perch	1235.7	758.5	1537.3	360.2	225.3	305.9	438.6	404.6	302.6	144.7	239.3	393.6	858.6	523.0	1294.4	601.5
White bass	3.3	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.4
Rock bass	0.0	1.1	0.0	0.0	3.3	11.5	0.0	0.0	3.3	0.0	0.0	0.0	0.0	1.1	0.0	1.4
Pumpkinseed	0.0	6.6	0.0	1.6	13.2	21.4	121.7	37.8	82.2	111.8	54.3	5.5	28.5	2.2	21.4	33.9
Bluegill	0.0	0.0	0.0	0.0	1.6	6.6	16.4	8.2	11.5	46.9	24.7	3.3	2.2	16.4	42.8	12.0
Smallmouth bass	0.0	2.2	0.0	0.0	8.2	49.3	18.1	3.3	4.9	3.3	0.0	0.0	0.0	0.0	3.3	6.2
Largemouth bass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.2
Black crappie	2.2	1.1	0.0	0.0	0.0	0.0	4.9	0.0	0.0	1.6	2.5	2.2	1.1	1.1	14.8	2.1
Yellow perch	118.4	380.0	62.5	350.3	1129.9	1432.6	1776.6	842.1	1044.4	1254.1	1203.1	758.8	721.5	677.6	782.9	835.7
Walleye	237.9	142.1	122.8	115.1	111.8	85.5	87.2	60.9	49.3	29.6	50.2	42.8	52.6	38.4	70.7	86.5
Round goby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	3.3	0.0	0.5
Freshwater drum	85.5	30.7	85.5	75.7	139.8	120.1	75.7	70.7	90.5	139.8	48.5	48.2	48.2	62.5	129.9	83.4
Total catch	1809	1605	1971	1173	1719	2173	2674	1737	1671	1822	1778	1311	1797	1636	2439	1821
Number of sets	6	6	6	4	4	4	4	4	4	8	8	6	6	6	4	

TABLE 2.3.7. Species-specific catch per gillnet set at Hay Bay, Bay of Quinte, 1992-2006. Shown are the average catches in 1-3 gillnet gangs set at each of 2 depths (7.5 and 12.5 m) during each of 1-2 visits (summer). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Alewife	119.5	42.8	52.1	117.6	31.3	48.5	17.3	20.6	28.8	126.6	53.5	0.0	8.2	1.6	49.3	47.8
Gizzard shad	2.2	13.2	0.5	0.8	0.0	4.9	0.8	6.6	8.2	0.0	1.6	0.0	0.0	0.0	3.3	2.8
Chinook salmon	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Brown trout	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake trout	3.8	0.0	0.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.6
Lake whitefish	2.2	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3
Cisco (Lake herring)	1.6	19.7	3.3	5.8	37.8	85.5	83.9	1.6	12.3	6.6	0.8	0.0	0.8	0.0	0.0	17.3
Coregonus sp.	0.0	0.0	0.0	0.8	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Rainbow smelt	2.2	0.0	4.9	2.5	0.0	0.8	0.8	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.8	0.9
Northern pike	3.8	3.3	15.9	5.8	7.4	3.3	2.5	3.3	4.1	5.8	0.8	2.5	0.0	3.3	2.5	4.3
White sucker	46.6	32.9	40.6	55.9	45.2	71.5	30.4	26.3	18.1	37.0	18.9	14.8	40.3	9.9	11.5	33.3
Common carp	1.6	16.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Spottail shiner	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Brown bullhead	1.1	16.4	4.9	10.7	0.0	0.8	10.7	5.8	5.8	5.8	0.8	1.6	1.6	2.5	5.8	5.0
Channel catfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.2
Burbot	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
White perch	25.8	118.4	48.8	182.6	27.1	41.1	25.5	175.2	19.7	3.3	35.4	55.1	95.4	0.8	198.2	70.2
Rock bass	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Pumpkinseed	0.0	0.0	0.0	0.8	0.0	1.6	18.9	51.8	1.6	7.4	6.6	4.1	14.0	2.5	4.1	7.6
Smallmouth bass	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.6	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.3
Yellow perch	1247.3	1144.7	808.8	1246.7	596.2	1150.5	884.0	1433.4	847.0	948.2	737.7	727.0	565.8	939.1	421.1	913.2
Walleye	15.9	52.6	7.7	26.3	18.9	30.4	32.1	43.6	9.9	16.4	24.7	18.1	14.0	5.8	11.5	21.9
Round goby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	0.8	0.0	0.4
Freshwater drum	1.6	13.2	0.5	8.2	4.1	6.6	8.2	11.5	9.9	1.6	20.6	8.2	43.6	16.4	54.3	13.9
Total catch	1476	1477	989	1666	771	1449	1117	1782	967	1160	905	836	786	983	762	1142
Number of sets	12	2	12	8	8	8	8	8	8	8	8	8	8	8	8	

age-6 and older fish comprised 83% and 94% of the catches in the Kingston Basin and the Northeast, respectively). Of the young walleye, age-3 and age-5 walleye were common, age-1 and age-2 walleye were of moderate abundance, and age-4 fish were uncommon. Older walleye, particularly year-classes produced from 1987-1994, were also abundant in eastern Lake Ontario. Female walleye first mature during the summer at age-4 to presumably spawn the following spring at age-5.

Round Goby

Only large round goby are susceptible to capture in assessments gillnets. Fish between about 125 and 155 (average 138 mm) are readily caught in the smallest gillnet mesh size (1½ inch mesh; Fig. 2.3.3). Round goby first appeared in assessment gillnets in the northeast and Bay of Quinte in 2002, Kingston Basin nearshore sites in 2003 (depth range 7.5 to 27.5 m), and in Kingston Basin deep sites (depth about 30 m) in 2004 (Table 2.3.11). No round goby were captured to date at Middle Ground or the Rocky Point deep sites (40-140 m). Overall, round goby abundance increased, peaked in 2004, and then decreased substantially over the next two years.

Lake Trout

The abundance of mature lake trout has remained very low since 2002, after a long decline that began in the early 1990s (Fig. 2.3.4). Early-life survival of the stocked fish has been very low since the late 1990s (Fig. 2.3.5), suggesting that the adult population will remain at the current low levels in the near future. The body condition of mature lake trout has improved for the second year in a row (Fig. 2.3.6), and appears to be climbing back to levels seen in the 1990s, although the statistical significance of this observation is marginal due to low numbers of fish caught in our survey.

TABLE 2.3.8. Species-specific catch per gillnet set at Conway, Bay of Quinte, 1993-2006. Shown are the average catches in 1-2 gillnet gangs set at each of 5 depths (range 5-40 m) during each of 2 visits (summer). The total number of sets each year is indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Sea lamprey		0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake sturgeon		0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Longnose gar		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Alewife		422.8	659.7	370.6	132.8	268.2	193.3	5.2	76.0	54.3	19.1	39.5	106.6	456.9	76.0	205.8
Gizzard shad		0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1
Chinook salmon		1.1	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.3	0.0	0.3	0.7	0.0	0.0	0.2
Rainbow trout		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Atlantic salmon		0.0	0.4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Brown trout		8.2	2.6	3.3	0.0	0.9	0.4	0.3	0.0	0.7	0.3	2.3	0.7	1.6	1.6	1.6
Lake trout		15.4	13.9	8.2	25.5	20.7	8.4	1.0	8.6	4.9	15.1	11.5	13.5	18.1	7.6	12.3
Lake whitefish		11.5	5.1	0.0	10.7	4.8	12.1	3.5	2.0	3.0	1.6	4.9	0.7	3.9	2.0	4.7
Cisco (Lake herring)		4.9	0.7	0.0	0.0	0.2	1.5	0.7	2.3	1.3	0.0	0.0	0.0	0.0	0.3	0.9
Coregonus sp.		0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Rainbow smelt		1.1	0.0	0.0	0.0	0.4	2.6	1.7	0.0	1.3	0.0	0.0	0.3	1.3	0.3	0.7
Northern pike		1.1	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.2
White sucker		19.2	16.4	15.1	11.1	8.1	8.8	22.5	23.0	21.7	17.1	14.1	6.9	3.9	3.0	13.6
Silver sedhorse		0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moxostoma sp.		0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Common carp		1.1	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Brown bullhead		1.6	0.7	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.7	1.3	1.0	5.9	0.8
Channel catfish		0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.3	0.0	0.2
Stonecat		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Burbot		0.0	0.0	0.0	0.0	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Trout-perch		0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White perch		70.3	6.9	19.7	0.4	1.1	0.0	5.9	0.3	0.0	0.3	5.6	17.4	0.0	5.6	9.5
Rock bass		42.8	8.8	16.4	5.8	8.3	18.6	18.0	7.2	3.0	5.9	1.0	1.0	3.3	6.3	10.5
Pumpkinseed		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.3	0.3	0.3	0.0	0.0	0.0	0.2
Smallmouth bass		4.4	1.1	1.6	1.6	1.3	1.8	5.9	1.6	0.3	0.0	0.0	0.0	0.3	1.0	1.5
Yellow perch		1219.2	466.0	546.1	377.5	264.3	324.2	682.1	656.2	430.9	509.9	320.1	218.1	184.2	376.6	469.7
Walleye		133.9	62.9	99.0	67.8	19.1	18.6	17.0	25.3	6.6	9.5	17.8	6.9	8.2	12.5	36.1
Round goby		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	72.4	204.3	5.3	1.0	20.7
Freshwater drum		9.9	2.9	4.4	1.2	4.8	1.1	1.7	3.3	0.3	0.7	1.0	4.3	3.3	7.9	3.3
Total catch		1970	1249	1085	634	604	594	767	808	531	587	492	583	692	508	793
Number of sets	0	2	12	8	8	8	8	8	8	8	8	8	8	8	8	

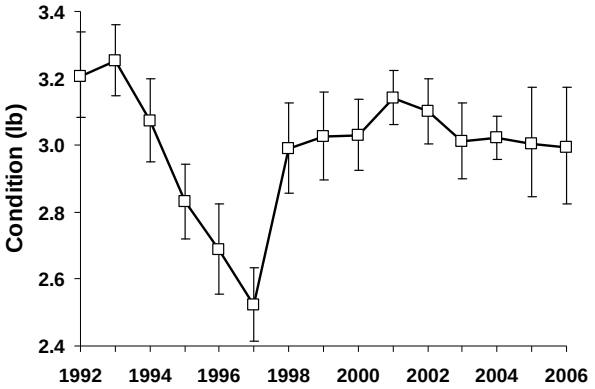

FIG. 2.3.2. Lake whitefish condition (lb) standardized for a fish of length 21 inches (480 mm fork length) caught in summer index gillnets, 1992-2006. Only fish >=age-5 years were included in the analysis.

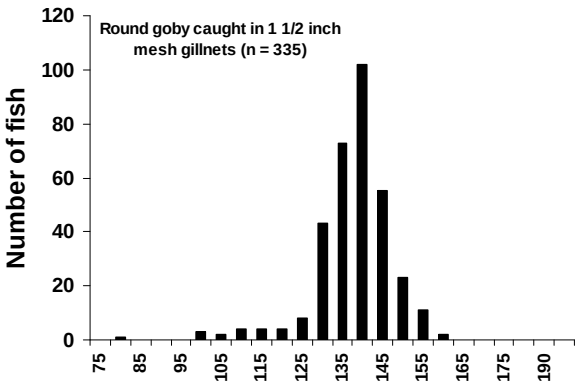

FIG. 2.3.3. Round goby size distribution for fish caught in 1 1/2 inch gillent mesh, 2006. Only 12 of 347 round goby were caught in larger mesh sizes.

TABLE 2.3.9. Age distribution of 28 lake whitefish sampled from summer index gillnets, by region, 2006. Also shown are mean fork length, mean weight, mean GSI (females), and percent mature (females). GSI = gonadal somatic index calculated for females only as log10(gonad weight + 1)/log10(weight). A GSI greater than approximately 0.25 indicates a mature female.

	Age (years) / Year class																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	
Bay of Quinte	0	2	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Kingston Basin (nearshore)	0	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Kingston Basin (offshore)	0	0	1	0	0	2	1	0	0	0	1	1	0	5	1	0	0	1	1	0	0	0	14
Northeast	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	2	9	0	0	3	3	0	1	0	1	1	0	5	1	0	0	1	1	0	0	0	28
Mean fork length (mm)		177	288			436	393		311		498	504		522	513			588	501				
Mean weight (g)		48	266			992	746		340		1455	1609		1907	1647			2741	1392				
GSI (females)		-0.69	-0.13			0.47	0.46					0.49		0.54	0.52			0.69					
% Mature (females)		0%	20%			100%	100%					100%		100%	100%			100%					

TABLE 2.3.10. Age distribution of 272 walleye sampled from summer index gillnets, by region, 2006. Also shown are mean fork length, mean weight, mean GSI (females), and percent mature (females). GSI = gonadal somatic index calculated for females only as log10(gonad weight + 1)/log10(weight).

	Age (years) / Year class																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	Total
Bay of Quinte	16	9	47	1	12	2	1	0	0	1	0	2	0	0	1	1	1	0	1	0	0	95
Kingston Basin (nearshore)	0	0	6	2	18	2	3	5	4	3	7	14	9	11	20	9	13	10	11	5	4	156
Middle Ground	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	5
Northeast	0	0	0	0	1	0	0	0	1	0	0	0	2	0	1	2	3	2	4	0	0	16
Total	16	9	55	3	32	4	4	5	5	4	7	16	11	11	22	12	17	13	16	6	4	272
Mean fork length (mm)	253	350	412	479	513	534	562	590	574	611	641	631	654	688	651	665	646	652	661	643	616	
Mean weight (g)	165	473	781	1305	1720	1977	2499	2936	2792	3170	3570	3328	3955	4150	3702	3704	3594	3792	3804	3596	3053	
GSI (females)	0.07	0.16	0.21	0.29	0.33	0.40	0.39	0.42	0.43	0.45	0.45	0.43	0.46	0.46	0.45	0.52	0.48	0.46	0.50			
% Mature (females)	0%	0%	8%	100%	89%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			

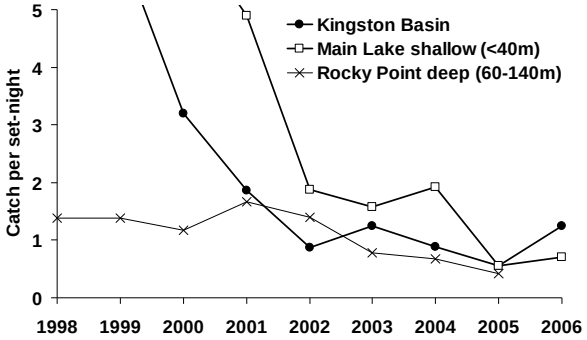

FIG. 2.3.4. Catch per unit effort of adult lake trout in bottom-set gillnets in three areas of eastern lake Ontario. Deep sets off Rocky Point were not fished in 2006.

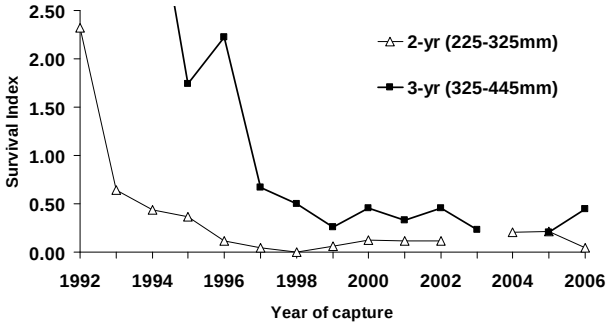

FIG. 2.3.5. Lake trout relative survival to ages 2 and 3. The survival index is the catch per unit effort of 2 and 3 year old fish, corrected for number stocked 2 or 3 years earlier; age determination is based on length-frequency data.

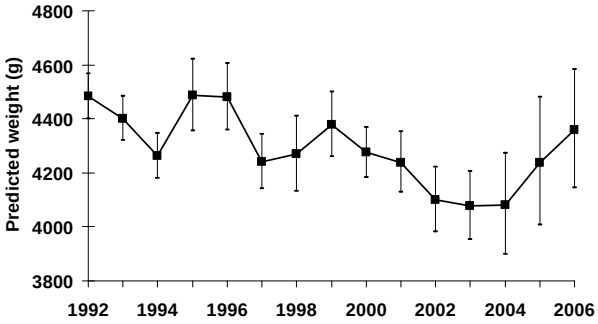

FIG. 2.3.6. Body condition of adult lake trout, indexed as the weight of 680 mm (fork length) fish predicted from length-weight regression of fish in the 655-704 mm size range; bars indicate 95% confidence limits on the prediction.

TABLE 2.3.11. Round goby catch-per-gillnet, by region, in eastern Lake Ontario and the Bay of Quinte, 1992-2006.

	Region									
	Middle Ground	Northeast	Rocky Point (deep sites)	Kingston Basin (nearshore sites)	Kingston Basin (deep sites)	Big Bay	Hay Bay	Conway	Lake Ontario	Bay of Quinte
1992	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	0.00	0.00	0.00	0.00	0.00	0.00	1.64	6.58	0.00	2.74
2003	0.00	1.09	0.00	2.90	0.00	2.19	1.64	72.37	0.80	25.40
2004	0.00	2.54	0.00	129.90	0.41	2.19	1.64	204.28	26.57	69.37
2005	0.00	71.31	0.00	42.25	0.27	3.29	0.82	5.26	22.77	3.13
2006	0.00	63.26	n/a	56.89	0.96	0.00	0.00	0.99	30.28	0.33

2.4 Eastern Lake Ontario and Bay of Quinte Fish Community Index Trawling

Bottom trawling at fixed sites (Fig. 1) in eastern Lake Ontario (ranging in depth from 21-100 m) and the Bay of Quinte (ranging in depth from 4 to 23 m) has occurred annually since 1972 (except 1989). Typically, ½ mile trawl drags using a three-quarter "Yankee Standard" No. 35 bottom trawl are made at Lake Ontario sites while ¼ mile drags using a three-quarter "Western" bottom trawl are made at Bay of Quinte sites. At the deep Rocky Point trawl site (100 m) the trawling distance is 1 mile but no trawling was completed at the Rocky Point deep site in 2006. Bottom trawling is used primarily to monitor the abundance of small fish species and the young (e.g. age-0) of larger species. Species-specific catches in the 2006 trawling program are shown in Tables 2.4.1-2.4.9.

Lake Ontario Sites

EB02

Trawl catches were very low at EB02 in 2006 with round goby, which first appeared at EB02 in 2003, and rainbow smelt making up the bulk of the total catch (Table 2.4.1).

EB03

The abundance of all the major species, including alewife, rainbow smelt, three-spine stickleback, and trout-perch, was low in 2006. Round goby, having first appeared in the EB03 catches in 2004, dominated the 2006 total catch (Table 2.4.2).

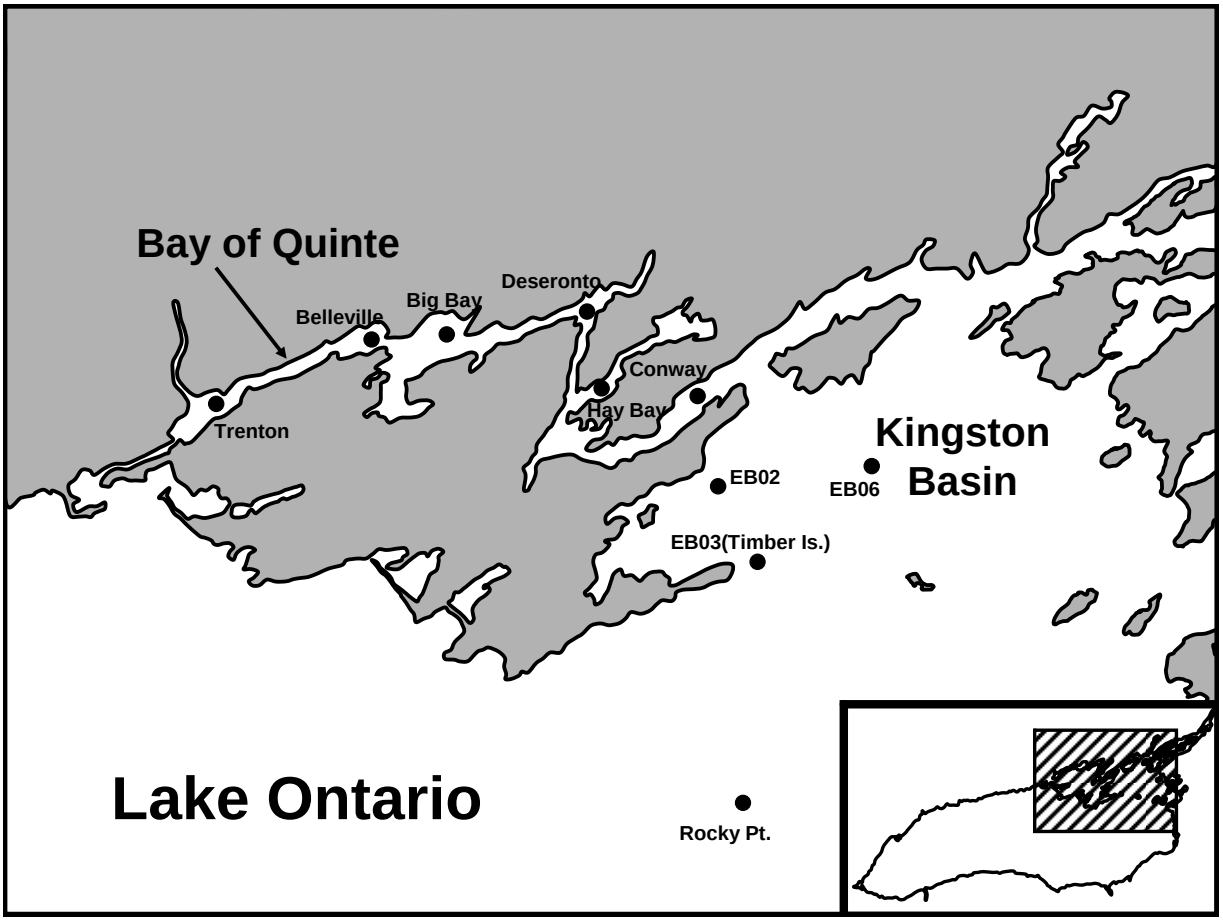

FIG. 4.2.1. Map of northeastern Lake Ontario. Shown are eastern Lake Ontario and Bay of Quinte fish community index bottom trawling site locations.

TABLE 2.4.1. Species-specific catch per trawl (12 min duration; 1/2 mile) by year in the fish community index bottom trawling program during summer at **EB02** (30 m depth), eastern Lake Ontario. Catches are the mean number of fish observed for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Alewife	4405.278	150.553	288.789	226.167	45.083	77.167	576.333	60.667	5152.700	203.333	20.917	19.500	27.100	0.000	0.455	750.3
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Rainbow trout	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Lake trout	0.278	0.765	0.278	0.417	0.000	0.000	0.000	0.000	0.083	0.000	0.083	0.083	0.000	0.700	0.182	0.2
Lake whitefish	4.056	1.353	3.167	6.083	7.083	5.167	1.500	0.250	0.167	0.167	0.000	0.583	0.400	0.300	0.000	2.0
Cisco (Lake herring)	0.778	0.176	2.056	0.167	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.2
Coregonus sp.	0.000	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Rainbow smelt	1244.817	593.971	397.306	1047.750	352.383	283.417	14.417	4.417	29.583	29.667	7.917	0.917	5.000	23.700	31.364	271.1
White sucker	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Common carp	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Emerald shiner	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Spottail shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
American eel	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Burbot	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Brook stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Threespine stickleback	0.056	0.000	0.000	0.083	0.750	4.583	14.500	25.167	75.417	18.750	34.417	49.500	6.200	10.800	0.182	16.0
Trout-perch	0.278	0.882	5.167	1.833	6.000	1.250	25.333	0.583	0.750	0.250	0.000	0.167	0.000	0.000	0.000	2.8
White perch	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Smallmouth bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Yellow perch	0.111	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.700	0.400	0.091	0.1
Walleye	0.056	0.059	0.389	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Johnny darter	0.056	0.000	0.556	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.000	0.400	0.000	0.000	0.1
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	250.100	29.800	43.727	21.6
Freshwater drum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Sculpin sp.	0.167	0.000	0.167	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Slimy sculpin	1.889	1.529	3.833	0.167	2.500	1.417	1.333	4.083	2.000	0.417	0.667	44.083	74.900	0.900	0.182	9.3
Deepwater sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Total	5657.8	749.3	701.8	1282.7	414.1	373.3	633.4	95.3	5260.7	252.6	64.0	114.9	364.8	66.6	76.2	1073.8
Number of trawls	18	17	18	12	12	12	12	12	12	12	12	12	10	10	11	

TABLE 2.4.2. Species-specific catch per trawl (12 min duration; 1/2 mile) by year in the fish community index bottom trawling program during summer at **EB03** (20 m depth), eastern Lake Ontario. Catches are the mean number of fish observed for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Alewife	2366.830	420.308	924.583	875.750	446.500	313.338	284.000	0.000	721.425	57.375	21.375	8.000	168.375	16.182	15.250	442.6
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.727	0.000	0.1
Rainbow trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Lake trout	1.083	0.083	4.583	1.375	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.5
Lake whitefish	0.917	4.750	89.417	20.250	3.750	10.625	0.000	0.000	0.000	0.000	0.000	43.938	2.333	54.545	3.000	15.6
Cisco (Lake herring)	0.000	0.333	1.667	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.2
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Rainbow smelt	59.000	20.333	927.450	1646.125	170.250	1729.200	98.125	0.875	5.125	20.000	207.488	109.231	1.917	28.000	20.625	336.2
White sucker	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1
Common carp	0.917	0.167	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Spottail shiner	354.917	22.917	3.833	0.000	0.000	0.125	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	25.5
American eel	0.000	0.000	0.250	0.000	0.125	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Brook stickleback	0.000	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Threespine stickleback	33.000	0.083	0.583	0.000	3.750	144.000	0.875	37.000	76.750	67.375	680.138	459.275	2781.625	126.636	8.500	294.6
Trout-perch	1663.200	938.017	2072.667	120.375	106.250	190.875	57.375	3.125	1049.800	175.000	592.200	56.294	255.083	3.727	3.750	485.8
White perch	0.000	0.083	0.083	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Smallmouth bass	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Yellow perch	0.583	0.167	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.083	0.000	0.500	0.1
Walleye	1.250	0.750	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.063	0.000	0.000	0.125	0.2
Johnny darter	4.667	0.500	2.083	0.000	0.250	0.125	0.000	0.000	0.250	0.000	0.000	9.875	32.833	0.182	0.000	3.4
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	798.936	850.325	110.0
Freshwater drum	0.250	0.083	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.125	0.0
Sculpin sp.	0.000	0.000	0.000	0.000	1.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.688	0.000	0.000	0.000	0.0
Slimy sculpin	0.833	0.083	1.417	0.125	0.125	0.625	0.000	0.000	0.125	0.000	0.250	6.750	10.833	0.091	0.000	1.4
Deepwater sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Total	4488.3	1408.7	4029.0	2664.6	733.4	2389.0	440.4	41.0	1854.1	319.8	1501.5	694.7	3253.5	1029.0	902.2	1716.6
Number of trawls	12	12	12	8	8	8	8	8	8	8	8	16	12	11	8	

TABLE 2.4.3. Species-specific catch per trawl (12 min duration; 1/2 mile) by year in the fish community index bottom trawling program during summer at **EB06** (36 m depth), eastern Lake Ontario. Catches are the mean number of fish observed for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Alewife	540.442	84.308	42.250	46.417	16.333	0.000	16.000	27.091	0.000	6.700	0.250	0.083	1.250	0.417	9.600	52.7
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Rainbow trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Lake trout	2.167	0.917	1.000	0.750	0.333	0.167	0.083	0.000	0.083	0.100	0.083	0.083	0.083	0.000	0.000	0.4
Lake whitefish	0.917	24.667	3.250	8.333	3.000	0.000	0.583	0.091	0.083	0.000	0.167	0.167	0.250	0.000	0.000	2.8
Cisco (Lake herring)	0.083	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Rainbow smelt	1294.233	697.400	383.167	2457.500	661.750	264.667	471.750	378.164	115.917	25.700	6.750	0.250	25.083	142.583	28.700	463.6
White sucker	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Common carp	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Spottail shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
American eel	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Brook stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.083	0.250	64.909	9.667	3.100	47.750	11.417	7.500	13.917	1.300	10.7
Trout-perch	0.250	0.917	1.917	3.667	0.667	0.750	0.667	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.6
White perch	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Smallmouth bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Yellow perch	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Walleye	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Johnny darter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.0
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.000	0.4
Freshwater drum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Sculpin sp.	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Slimy sculpin	0.000	0.000	0.083	0.000	0.000	0.583	0.000	0.091	0.000	0.100	0.000	3.583	399.158	15.750	0.300	28.0
Deepwater sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Total	1838.3	808.2	431.7	2516.8	682.1	266.3	489.3	470.3	125.9	35.7	55.0	15.6	433.7	172.7	45.9	559.2
Number of trawls	12	12	12	12	12	12	12	11	12	10	12	12	12	12	10	

EB06

Trawl catches at EB06 were very low in 2006. The most abundant species at the EB06 site were rainbow smelt, alewife and round goby (Table 2.4.3). This was the first year that round goby were caught at EB06 .

Bay of Quinte Sites

Trenton

The most abundant species at the Trenton site were white perch, yellow perch and alewife (Table 2.4.4). Pumpkinseed, which had increased in abundance throughout the 1990s and peaked in 2000, have now declined to the lowest level of abundance in more than a decade.

Belleville

White perch dominated the catch at Belleville in 2006 (Table 2.4.5). Other common species included gizzard shad, freshwater drum, spottail shiner, brown bullhead and yellow perch. As was the case at Trenton, pumpkinseed, which increased in abundance throughout the 1990s, declined to their lowest level in a decade.

Big Bay

The most abundant species at the Big Bay site were white perch, freshwater drum and yellow perch (Table 2.4.6).

Deseronto

The most abundant species at the Deseronto site were white perch, yellow perch and alewife (Table 2.4.7).

Hay Bay

The most abundant species at the Hay Bay site were yellow perch, white perch and alewife (Table 2.4.8).

Conway

The most abundant species at the Conway site were yellow perch, round goby and alewife (Table 2.4.9). For the last two years, lake herring catches were higher than at any point since 1994.

TABLE 2.4.4. Species-specific catch per trawl (6 min duration; 1/4 mile) by year in the fish community index bottom trawling program at **Trenton** (4 m depth), Bay of Quinte. Catches are the total number of fish observed at each site for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Silver lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sea lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Longnose gar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alewife	34.250	154.075	12.250	109.125	13.875	5.750	1.125	246.075	25.625	149.288	98.600	174.113	8.625	508.825	126.625	111.215
Gizzard shad	29.625	54.000	691.450	369.750	23.875	114.400	4.125	131.750	68.438	4.125	6.375	22.250	0.000	30.375	23.375	104.928
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brown trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake whitefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cisco (Lake herring)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rainbow smelt	0.000	0.000	0.125	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033
Northern pike	0.000	0.000	0.250	0.125	0.000	0.125	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.125	0.000	0.050
Mooneye	0.375	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033
White sucker	11.000	6.000	1.875	3.375	1.875	0.625	0.375	1.875	0.000	0.500	1.625	0.625	1.125	1.875	2.125	2.325
Moxostoma sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Minnow	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Lake chub	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common carp	1.250	1.000	0.000	0.000	0.000	0.000	0.125	0.125	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.200
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Spottail shiner	19.250	54.125	206.825	188.750	55.000	163.750	3.750	104.500	0.250	217.400	60.875	60.875	1.250	24.500	41.750	80.190
Brown bullhead	15.750	22.375	20.000	20.375	24.875	60.875	9.375	61.250	3.000	10.625	3.500	4.250	1.125	8.750	3.750	17.992
Channel catfish	0.000	0.625	0.000	0.000	0.125	1.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.142
Ictalurus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
American eel	0.125	0.250	1.375	0.125	0.250	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.008
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trout-perch	23.875	44.875	79.375	43.250	28.875	21.250	2.250	0.500	0.000	0.500	0.500	0.000	0.000	0.125	0.125	16.367
White perch	16.125	38.125	601.725	304.500	322.325	1457.650	21.375	126.250	1.500	54.250	19.875	240.000	80.775	278.988	388.213	263.445
White bass	0.125	0.250	0.750	0.750	0.375	1.250	0.000	0.125	0.000	0.000	0.125	0.000	0.000	0.000	1.250	0.333
Sunfish	0.000	3.875	0.750	93.375	0.000	0.000	0.750	25.125	0.000	33.250	0.000	22.375	0.000	0.000	11.500	12.733
Rock bass	0.000	0.000	0.625	0.500	2.500	0.125	0.125	0.000	4.125	0.625	0.625	0.125	0.000	0.500	2.250	0.808
Pumpkinseed	4.500	24.000	15.875	21.000	79.375	90.375	55.875	113.250	372.850	84.750	32.250	88.875	56.788	46.750	20.000	73.768
Bluegill	0.000	0.125	0.250	0.375	1.375	0.000	0.000	0.375	4.250	1.125	0.500	1.500	0.875	0.375	3.875	1.000
Smallmouth bass	0.000	0.375	0.000	0.000	0.625	2.000	0.250	0.250	1.500	0.375	0.250	0.500	0.500	0.125	0.000	0.450
Largemouth bass	0.000	0.000	0.000	4.375	1.000	7.750	0.625	5.375	1.000	2.375	2.875	4.625	0.125	6.625	4.250	2.733
Black crappie	0.250	1.750	9.000	2.875	1.000	0.250	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	1.017
Lepomis sp.	0.000	0.000	6.875	0.000	0.000	0.000	0.000	0.000	0.000	0.000	64.788	0.000	0.000	59.750	10.250	9.444
Yellow perch	63.000	293.838	526.525	960.625	122.613	523.263	33.375	101.625	234.800	200.625	239.000	544.613	186.375	340.825	130.125	300.082
Walleye	10.000	17.875	23.750	20.250	8.500	5.375	0.500	1.625	0.000	9.625	3.625	10.500	1.500	1.875	0.750	7.717
Johnny darter	0.000	1.375	1.250	34.750	8.625	2.625	0.375	0.125	0.000	2.500	7.250	7.625	0.375	0.000	0.000	4.458
Logperch	0.250	0.625	0.375	3.875	5.500	8.125	8.375	0.125	0.625	2.000	0.000	15.250	4.250	52.750	0.625	6.850
Brook silverside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.017
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.875	8.500	13.125	5.250	1.983
Freshwater drum	1.625	22.750	12.125	46.625	9.375	3.875	5.125	5.375	0.500	6.750	3.625	2.000	0.375	4.125	4.875	8.608
Sculpin sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slimy sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	231.5	742.4	2213.4	2228.8	711.9	2470.8	148.3	925.8	718.6	780.9	546.5	1203.2	352.6	1380.4	781.2	1029.1
Number of trawls	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

Species Highlights

Catches of age-0 fish in 2006 for selected species and locations are shown in Tables 2.4.10-2.4.13 for lake whitefish, lake herring, yellow perch and walleye respectively. Age-0 lake whitefish catches were relatively low at Timber Island and moderate at Conway in 2006 (Table 2.4.10). Age-0 lake herring catches at Conway were high, as they were in 2005 (Table 2.4.11). Age-0 catches of yellow perch were high (Table 2.4.12) while walleye were moderate (Table 2.4.13).

Age-0, age-1 and age-3 walleye were common while age-2 and age-4 walleye were uncommon (Table 2.4.14).

Site-specific round goby catches are summarized in Table 2.4.15. Round goby first appeared in bottom trawl catches in the Bay of Quinte in 2001 and in the

TABLE 2.4.5. Species-specific catch per trawl (6 min duration; 1/4 mile) by year in the fish community index bottom trawling program at **Belleville** (5 m depth), Bay of Quinte. Catches are the total number of fish observed at each site for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Silver lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sea lamprey	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Longnose gar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alewife	45.125	501.913	2.250	198.750	31.625	0.125	23.750	11.250	13.375	0.250	82.375	0.125	11.500	13.875	9.750	63.069
Gizzard shad	6.125	11.625	31.250	163.250	0.250	77.238	81.125	245.875	1762.000	99.200	234.363	46.025	581.775	50.563	88.325	231.933
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brown trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake whitefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cisco (Lake herring)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rainbow smelt	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067
Northern pike	0.250	0.250	0.125	0.125	0.125	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067
Mooneye	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
White sucker	3.000	1.000	11.250	1.250	3.375	2.125	0.375	0.750	0.500	0.375	0.375	0.500	0.125	0.000	0.750	1.717
Moxostoma sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Minnow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake chub	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common carp	0.500	0.125	1.125	0.375	0.250	0.000	0.000	0.500	0.000	0.125	0.125	0.625	0.000	0.500	0.625	0.325
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Spottail shiner	32.000	160.625	115.125	123.250	49.375	21.500	15.875	103.125	19.375	10.625	21.500	4.750	3.875	13.250	23.875	47.875
Brown bullhead	27.625	10.750	36.125	9.875	8.625	9.375	10.750	25.000	22.500	32.000	10.875	5.375	17.875	15.000	14.875	17.108
Channel catfish	0.000	0.000	0.250	0.000	0.250	0.000	0.125	0.000	0.000	0.000	0.125	0.125	0.000	0.375	0.000	0.083
Ictalurus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
American eel	0.375	0.375	0.750	0.125	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.117
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trout-perch	179.875	53.500	302.000	6.000	118.500	24.875	2.000	1.125	13.625	13.000	5.500	12.750	14.375	9.750	4.000	50.725
White perch	34.250	149.500	122.000	496.375	714.338	658.600	44.500	251.000	205.013	6.625	154.625	165.013	1929.950	475.900	880.563	419.217
White bass	0.250	0.250	0.125	1.250	0.750	8.250	0.250	0.375	0.000	0.125	3.000	1.625	3.625	2.000	6.000	1.858
Sunfish	0.000	0.000	0.250	0.000	0.000	0.000	21.875	18.125	0.000	48.125	0.000	14.625	0.000	0.000	14.500	7.833
Rock bass	1.000	0.125	0.375	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.142
Pumpkinseed	0.375	10.750	2.375	0.125	10.375	37.750	4.875	13.750	145.663	21.750	5.125	1.875	4.125	1.750	1.125	17.453
Bluegill	0.000	0.000	0.000	0.875	0.125	0.000	0.000	0.000	119.863	0.250	0.500	0.125	0.000	0.375	1.250	8.224
Smallmouth bass	0.000	0.250	0.000	0.000	0.875	0.500	0.000	0.000	0.875	0.125	0.125	0.000	0.000	0.000	0.000	0.183
Largemouth bass	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	1.250	0.125	0.375	0.250	0.625	0.375	0.000	0.208
Black crappie	2.125	1.750	0.375	22.125	0.250	0.375	0.250	0.500	2.625	0.375	0.000	0.000	0.250	0.125	2.000	2.208
Lepomis sp.	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	88.375	0.000	2.375	409.700	0.250	33.388
Yellow perch	8.500	46.375	50.625	176.375	190.875	63.875	38.125	29.000	429.625	37.875	53.250	14.250	66.250	47.375	14.625	84.467
Walleye	18.875	22.625	33.250	11.250	10.625	11.750	3.625	0.750	5.500	5.375	0.750	8.500	2.625	2.000	2.750	9.350
Johnny darter	0.125	0.125	0.000	0.250	5.750	1.750	4.500	0.000	0.250	12.500	2.125	0.125	0.000	0.000	0.000	1.833
Logperch	0.125	0.000	0.000	0.000	2.125	0.000	0.250	0.000	0.625	0.250	0.500	0.125	0.125	0.125	0.000	0.283
Brook silverside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.250	0.000	0.000	0.500	0.000	0.000	0.000	1.250	0.200
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.625	67.000	47.250	60.250	7.125	12.217
Freshwater drum	6.125	12.125	36.375	6.500	27.875	17.750	70.000	25.000	5.750	163.750	58.250	20.875	4.375	214.763	87.000	50.434
Sculpin sp.	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slimy sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	366.6	984.2	746.3	1218.1	1176.3	936.1	323.5	727.5	2749.0	452.8	724.4	364.7	2691.1	1318.1	1160.6	1062.6
Number of trawls	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

Kingston Basin of eastern Lake Ontario in 2003. This species was caught at all Bay of Quinte trawling sites by 2003, peaking in abundance, at each site, between 2003 and 2005. Catches declined precipitously in 2006. 2006 was the first year that round goby were taken in the relatively deep EB06 trawling site in the Kingston Basin. The bottom trawl catches indicate that round goby are now distributed throughout the Bay of Quinte and the Kingston Basin. Round goby from 40-90 mm total length (mean = 62 mm) were commonly taken in bottom trawls (Fig. 2.4.2).

TABLE 2.4.6. Species-specific catch per trawl (6 min duration; 1/4 mile) by year in the fish community index bottom trawling program at **Big Bay** (5 m depth), Bay of Quinte. Catches are the total number of fish observed at each site for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Silver lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sea lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Longnose gar	0.375	0.250	0.125	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067
Alewife	10.375	93.500	2.250	173.000	1.875	0.625	0.000	19.625	0.500	0.000	224.938	0.000	407.363	35.750	13.000	65.520
Gizzard shad	92.375	73.000	11.500	1482.250	39.075	4.375	0.125	337.500	12.750	0.000	52.250	23.250	58.375	25.875	2.250	147.663
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brown trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake whitefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cisco (Lake herring)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rainbow smelt	0.000	0.000	0.000	0.000	0.000	0.500	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042
Northern pike	0.000	0.250	0.125	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.125	0.000	0.000	0.000	0.000	0.042
Mooneye	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
White sucker	2.250	2.125	6.750	8.250	5.125	1.875	9.625	3.250	0.375	0.750	2.875	1.125	1.375	0.875	0.125	3.117
Moxostoma sp.	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Minnow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake chub	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common carp	2.000	0.875	1.000	0.125	0.125	0.250	0.000	0.125	0.375	0.250	0.000	0.500	0.375	0.250	0.875	0.475
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
Common shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Spottail shiner	7.875	4.750	38.250	45.375	4.250	11.375	8.000	26.625	4.000	12.125	63.625	8.875	20.250	56.250	18.625	22.017
Brown bullhead	18.875	35.750	64.125	11.000	21.625	16.750	29.375	61.500	19.875	16.375	32.625	38.000	23.750	12.125	54.625	30.425
Channel catfish	0.000	0.000	0.625	0.375	0.125	0.000	0.250	0.000	0.000	0.000	0.125	0.000	0.000	0.125	0.375	0.133
Ictalurus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.025
American eel	0.250	0.375	0.875	0.375	0.625	0.375	0.375	0.000	0.000	0.125	0.125	0.000	0.000	0.000	0.000	0.233
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trout-perch	41.500	10.875	72.375	4.625	27.375	7.125	23.000	30.750	1.750	1.375	9.125	5.000	3.125	21.625	21.000	18.708
White perch	113.250	134.000	178.250	789.000	1310.425	851.063	399.500	329.500	368.075	18.250	793.025	145.125	1498.975	554.588	1252.238	582.351
White bass	0.125	0.125	0.750	2.000	3.250	7.375	0.250	0.375	0.000	0.000	2.125	0.000	0.250	2.625	3.875	1.542
Sunfish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.375	0.000	50.000	0.000	0.000	0.000	0.000	25.250	6.042
Rock bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.008
Pumpkinseed	0.125	13.125	1.125	0.375	15.250	19.750	39.625	2.000	87.625	83.875	64.125	67.625	36.625	3.750	6.875	29.458
Bluegill	0.000	0.000	0.000	0.250	0.250	4.750	3.875	0.125	11.625	124.875	13.625	14.625	0.750	9.625	6.750	12.742
Smallmouth bass	0.000	0.000	0.000	0.000	0.125	0.000	0.250	0.000	0.000	0.125	0.250	0.000	0.000	0.000	0.000	0.050
Largemouth bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.033
Black crappie	0.000	0.000	0.000	0.375	1.000	1.250	0.250	0.250	0.750	0.625	0.500	0.375	0.375	1.000	2.625	0.625
Lepomis sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	66.625	0.000	0.000	1060.175	0.000	75.120
Yellow perch	2.625	11.250	10.250	17.375	62.875	80.250	222.500	16.500	45.889	381.125	153.463	107.650	200.250	90.613	99.388	100.133
Walleye	18.875	8.625	18.625	8.625	14.750	10.250	10.125	3.125	2.875	7.500	6.125	19.250	16.875	6.500	8.125	10.683
Johnny darter	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	1.250	0.250	0.000	0.000	0.000	0.000	0.133
Logperch	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.125	0.000	0.250	0.000	0.000	0.125	0.042
Brook silverside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.050
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	1.375	15.750	9.500	4.750	2.100
Freshwater drum	2.500	15.000	20.375	4.250	7.125	12.375	24.375	9.500	10.250	21.750	24.375	9.000	15.625	125.500	178.450	32.030
Sculpin sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slimy sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	313.4	403.9	427.4	2547.9	1515.3	1030.4	772.1	857.1	567.0	720.9	1510.8	442.0	2300.3	2016.8	1699.5	1141.6
Number of trawls	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

TABLE 2.4.7. Species-specific catch per trawl (6 min duration; 1/4 mile) by year in the fish community index bottom trawling program at **Deseronto** (5 m depth), Bay of Quinte. Catches are the total number of fish observed at each site for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Silver lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sea lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Longnose gar	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Alewife	226.500	496.288	128.388	156.000	38.625	6.250	0.000	23.500	9.625	180.063	47.625	277.350	55.375	54.213	106.263	120.404
Gizzard shad	121.538	35.250	94.175	27.375	150.563	1.375	22.500	36.125	0.000	32.000	20.875	11.875	1.375	22.000	62.100	42.608
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brown trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake whitefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cisco (Lake herring)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rainbow smelt	0.125	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
Northern pike	0.000	0.125	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.025
Mooneye	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
White sucker	3.875	2.000	0.875	0.000	1.500	0.125	0.250	0.250	0.375	0.625	0.375	1.250	1.250	0.125	0.375	0.883
Moxostoma sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Minnow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake chub	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.008
Common carp	0.250	0.125	0.500	1.250	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.175
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Spottail shiner	28.125	23.000	38.250	115.625	7.125	14.125	6.875	29.625	0.000	25.250	25.000	35.625	1.500	18.875	54.750	28.250
Brown bullhead	21.875	47.500	41.125	9.625	43.875	13.250	15.375	21.875	3.750	69.250	10.625	21.500	37.000	12.500	11.625	25.383
Channel catfish	0.000	0.125	0.500	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.250	0.125	0.083
Ictalurus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.008
American eel	1.125	2.000	2.875	0.000	0.750	0.250	0.250	0.000	0.500	0.000	0.125	0.000	0.000	0.000	0.000	0.525
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trout-perch	92.500	54.125	89.500	39.125	10.250	0.125	15.125	0.875	14.500	4.750	7.500	0.125	4.500	6.000	12.375	23.425
White perch	147.000	29.375	141.125	481.625	87.875	249.300	73.750	544.413	703.788	10.250	194.863	306.238	3075.588	237.588	793.925	471.780
White bass	0.125	0.125	1.875	0.625	0.375	0.500	0.000	0.000	0.000	0.000	0.000	0.500	1.625	1.250	4.250	0.750
Sunfish	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.875	0.000	0.375	0.000	0.000	0.000	0.000	1.375	0.192
Rock bass	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	1.750	0.250	0.000	0.000	0.000	0.150
Pumpkinseed	0.125	2.750	0.875	0.375	33.250	18.625	12.625	17.125	49.625	118.088	17.500	67.500	19.500	14.750	15.500	25.881
Bluegill	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.500	0.125	4.500	0.000	0.125	0.875	0.417
Smallmouth bass	0.000	0.000	0.000	0.375	0.750	0.375	0.000	1.625	1.375	0.500	0.125	1.000	1.250	0.625	0.250	0.550
Largemouth bass	0.000	0.000	0.000	0.375	0.000	0.250	0.000	0.125	0.000	0.000	1.125	0.000	0.250	1.125	2.125	0.358
Black crappie	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.125	0.625	0.125	0.000	1.750	1.375	0.283
Lepomis sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	483.675	0.000	32.245
Yellow perch	20.625	100.738	101.500	916.000	224.000	171.788	373.413	803.563	176.663	412.700	555.388	683.425	152.138	1030.913	638.313	424.078
Walleye	51.375	20.625	39.625	22.250	12.125	3.375	2.625	3.250	2.125	12.500	2.875	7.500	15.125	5.000	5.250	13.708
Johnny darter	0.125	0.000	0.000	0.000	0.375	0.125	2.000	0.000	1.000	0.625	0.000	0.000	0.000	0.000	0.000	0.283
Logperch	0.000	0.000	0.000	0.000	1.625	0.375	0.000	0.000	0.500	1.000	0.125	0.375	0.000	3.625	0.125	0.517
Brook silverside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.750	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.233
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.250	11.500	16.125	20.625	117.300	4.625	11.428
Freshwater drum	7.250	7.625	23.625	3.250	21.000	6.750	6.125	1.250	5.125	16.500	1.875	15.375	15.625	8.250	22.000	10.775
Sculpin sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slimy sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	722.7	821.8	704.9	1773.9	634.6	487.2	531.2	1487.6	969.0	886.7	900.0	1450.8	3402.9	2020.8	1737.6	1235.4
Number of trawls	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

TABLE 2.4.8. Species-specific catch per trawl (6 min duration; 1/4 mile) by year in the fish community index bottom trawling program at **Hay Bay** (7 m depth), Bay of Quinte. Catches are the total number of fish observed at each site for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Silver lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sea lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Longnose gar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alewife	8.375	21.125	198.625	256.500	19.250	21.250	122.225	1051.200	466.556	565.963	21.125	1.750	67.063	72.088	394.425	219.168
Gizzard shad	0.000	0.250	2.500	39.875	2.250	0.000	0.000	0.750	46.000	2.625	0.125	0.000	0.125	0.000	0.375	6.325
Chinook salmon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brown trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake whitefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cisco (Lake herring)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.067
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rainbow smelt	2.000	1.000	0.000	0.250	0.000	0.125	0.000	0.125	0.125	0.000	0.000	0.000	0.000	0.000	0.125	0.250
Northern pike	0.125	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.050
Mooneye	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
White sucker	7.625	6.875	2.375	0.500	0.750	3.250	1.875	4.750	1.500	3.500	0.125	5.875	8.250	0.000	0.625	3.192
Moxostoma sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Minnow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake chub	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common carp	0.125	2.000	0.625	0.250	0.000	0.000	0.000	0.125	0.000	0.250	0.000	0.000	0.000	0.875	0.000	0.283
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.008
Spottail shiner	5.875	21.500	8.000	22.625	77.625	13.125	57.625	134.625	4.875	63.513	54.000	53.250	64.375	79.113	133.950	52.938
Brown bullhead	4.625	9.125	14.125	30.500	0.500	1.750	59.375	22.250	20.375	32.750	15.750	8.000	10.375	10.500	15.000	17.000
Channel catfish	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
Ictalurus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
American eel	4.375	0.875	6.375	0.125	1.875	0.250	0.250	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.950
Burbot	0.000	0.000	0.000	0.125	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trout-perch	119.000	34.625	82.875	10.750	249.500	19.500	2.250	18.500	1.625	5.750	2.750	3.750	77.500	1.750	3.000	42.208
White perch	26.000	85.875	34.875	59.125	6.125	297.563	6.625	565.213	59.250	9.250	132.563	14.750	495.163	24.625	504.113	154.741
White bass	0.000	0.000	1.375	0.000	0.000	0.250	0.000	0.000	0.125	0.000	0.000	1.750	0.125	0.125	1.375	0.342
Sunfish	0.000	0.375	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033
Rock bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.017
Pumpkinseed	0.000	1.000	2.250	7.875	0.125	2.750	4.875	76.875	24.500	19.625	11.875	0.750	4.625	1.125	44.500	13.517
Bluegill	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Smallmouth bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.250	0.000	0.000	0.000	0.000	0.083
Largemouth bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	1.750	0.000	0.000	0.000	0.000	0.133
Black crappie	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.375	0.875	0.150
Lepomis sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.375	0.000	0.892
Yellow perch	21.250	23.375	29.250	417.500	145.113	560.963	539.125	1488.375	658.125	726.475	856.588	119.200	551.850	278.638	580.700	466.435
Walleye	9.875	13.125	14.750	12.250	2.000	2.625	2.375	12.125	2.250	7.125	3.250	1.750	3.125	4.125	7.125	6.525
Johnny darter	0.000	0.000	0.000	0.000	0.625	0.125	0.000	0.000	0.000	0.000	1.750	0.000	0.000	0.000	0.000	0.167
Logperch	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.125	0.375	0.250	0.100
Brook silverside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	1.250	14.250	3.500	40.125	6.000	4.350
Freshwater drum	0.375	16.250	0.375	1.000	2.375	1.750	0.750	1.375	1.750	4.375	4.875	6.875	10.500	16.375	39.125	7.208
Sculpin sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Slimy sculpin	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Total	209.6	237.6	398.4	859.3	509.0	925.4	797.5	3376.8	1287.1	1442.8	1109.0	232.1	1296.8	544.6	1731.7	997.2
Number of trawls	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

TABLE 2.4.9. Species-specific catch per trawl (6 min duration; 1/4 mile) by year in the fish community index bottom trawling program at **Conway** (24m depth), Bay of Quinte. Catches are the total number of fish observed at each site for the number of trawls indicated.

	Year															
Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Silver lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.006
Sea lamprey	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Longnose gar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alewife	345.338	66.250	35.425	1.625	83.125	245.325	0.000	0.000	248.625	0.000	0.000	2.250	1.917	0.417	9.667	69.331
Gizzard shad	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.167	0.086
Chinook salmon	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.083	0.033
Brown trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.167	0.000	0.000	0.000	0.019
Lake trout	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.250	0.000	0.417	0.000	0.000	0.053
Lake whitefish	28.500	4.250	40.875	28.000	7.000	6.375	0.375	0.000	2.250	1.000	1.000	8.083	0.750	3.083	3.833	9.025
Cisco (Lake herring)	0.125	2.750	15.375	1.375	0.000	0.000	0.125	0.000	0.000	0.000	0.250	3.000	0.083	7.667	4.500	2.350
Coregonus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.006
Rainbow smelt	24.125	2.500	11.125	629.375	104.625	46.625	59.750	0.000	0.000	0.000	39.625	10.167	3.583	6.750	0.083	62.556
Northern pike	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mooneye	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
White sucker	19.250	2.250	1.250	0.125	1.500	1.375	1.000	0.750	15.250	134.825	28.750	6.667	7.417	4.750	3.167	15.222
Moxostoma sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.008
Minnow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lake chub	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common carp	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Emerald shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Spottail shiner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.042
Brown bullhead	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Channel catfish	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
Ictalurus sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
American eel	0.500	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042
Burbot	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.006
Threespine stickleback	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.006
Trout-perch	160.513	272.625	395.275	116.750	146.750	253.538	26.750	1.750	82.125	139.438	58.225	53.667	43.333	12.250	0.500	117.566
White perch	0.500	48.000	0.125	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.000	3.475
White bass	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.072
Sunfish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rock bass	0.125	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
Pumpkinseed	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bluegill	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Smallmouth bass	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Largemouth bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Black crappie	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lepomis sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Yellow perch	21.375	10.750	6.875	1.750	2.875	13.625	3.250	41.375	41.000	134.700	181.238	178.133	58.667	53.750	146.567	59.729
Walleye	4.875	23.250	13.625	3.500	1.625	0.125	1.250	0.125	0.000	1.250	0.000	0.250	1.000	0.083	0.417	3.425
Johnny darter	0.000	0.000	0.250	0.375	1.375	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.183
Logperch	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brook silverside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Round goby	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	282.225	79.167	127.208	40.833	35.329
Freshwater drum	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.250	0.000	0.083	0.500	0.089
Sculpin sp.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mottled sculpin	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Slimy sculpin	0.000	0.000	0.250	0.125	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042
Total	605.2	433.9	520.8	783.0	348.9	568.6	92.5	44.0	389.4	412.1	310.0	545.0	196.5	216.2	215.2	378.7
Number of trawls	8	8	8	8	8	8	8	8	8	8	8	12	12	12	12	

TABLE 2.4.10. Mean catch-per-trawl of age-0 **lake whitefish** at two sites, Conway in the lower Bay of Quinte and EB03 near Timber Island in eastern Lake Ontario, 1992-2006. Four replicate trawls on each of two to four visits during August and early September were made at each site. Distances of each trawl drag were 1/4 mile for Conway and 1/2 mile for EB03.

	Conway	N	EB03 (Timber Island)	N
1992	23.4	8	0.9	12
1993	3.1	8	4.7	12
1994	40.5	8	79.7	8
1995	27.1	8	17.1	8
1996	2.6	8	0.8	8
1997	5.1	8	6.0	8
1998	0.4	8	0.0	8
1999	0.0	8	0.0	8
2000	0.4	8	0.0	8
2001	0.1	8	0.0	8
2002	0.1	8	0.0	8
2003	8.1	12	44.9	16
2004	0.0	12	2.1	12
2005	2.8	12	49.8	12
2006	3.7	12	2.4	8

TABLE 2.4.11. Mean catch-per-trawl of age-0 **lake herring** at Conway in the lower Bay of Quinte, 1992-2006. Four replicate trawls on each of two to four visits during August and early September were made at the Conway site. Distances of each trawl drag was 1/4 mile.

	Conway	N
1992	0.0	8
1993	1.5	8
1994	7.7	8
1995	1.3	8
1996	0.0	8
1997	0.0	8
1998	0.1	8
1999	0.0	8
2000	0.0	8
2001	0.0	8
2002	0.1	8
2003	2.8	12
2004	0.1	12
2005	7.2	12
2006	4.5	12

TABLE 2.4.12. Mean catch-per-trawl of age-0 **yellow perch** at six Bay of Quinte sites, 1992-2006. Four replicate trawls on each of two to three visits during August and early September were made at each site. Distance of each trawl drag was 1/4 mile.

	Trenton	Belleville	Big Bay	Deseronto	Hay Bay	Conway	Mean	Number of trawls
1992	3.1	1.3	0.4	0.1	0.5	0.0	0.9	48
1993	203.7	14.0	0.4	36.3	1.6	0.3	42.7	48
1994	526.6	50.6	10.3	101.5	29.3	6.9	120.8	48
1995	730.4	101.1	9.5	764.5	268.9	0.0	312.4	48
1996	2.6	2.9	4.3	2.5	8.5	0.1	3.5	48
1997	302.0	4.0	36.0	135.0	526.0	0.0	167.2	48
1998	13.1	14.0	11.5	0.1	2.9	0.0	7.0	48
1999	24.5	7.0	4.9	638.7	900.3	0.0	262.6	48
2000	0.0	5.8	5.4	0.8	6.0	0.3	3.0	48
2001	158.0	27.6	16.8	71.8	127.0	0.0	66.9	48
2002	0.0	0.3	9.2	141.8	241.1	0.0	65.4	48
2003	228.5	3.8	0.9	9.2	1.6	0.5	40.8	52
2004	0.0	0.9	4.5	8.4	18.0	0.0	5.3	52
2005	202.8	37.5	24.8	444.7	61.9	0.0	128.6	52
2006	3.8	3.5	51.7	532.8	306.0	0.2	149.7	52

TABLE 2.4.13. Mean catch-per-trawl of age-0 **walleye** at six Bay of Quinte sites, 1992-2006. Four replicate trawls on each of two to three visits during August and early September were made at each site. Distance of each trawl drag was 1/4 mile.

	Trenton	Belleville	Big Bay	Deseronto	Hay Bay	Conway	Mean	Number of trawls
1992	6.8	12.4	14.0	37.9	6.1	0.8	13.0	48
1993	8.8	16.0	5.0	11.3	1.1	11.9	9.0	48
1994	17.0	21.0	15.0	23.8	11.5	12.5	16.8	48
1995	14.1	8.3	2.6	8.3	5.5	0.9	6.6	48
1996	4.3	7.6	4.9	1.1	0.0	1.1	3.2	48
1997	2.8	7.6	6.1	0.3	0.1	0.0	2.8	48
1998	0.1	0.4	0.6	0.1	0.0	0.0	0.2	48
1999	1.1	0.4	0.4	1.4	9.1	0.1	2.1	48
2000	0.0	3.8	1.0	0.0	0.1	0.0	0.8	48
2001	9.5	4.5	4.8	6.8	3.3	0.1	4.8	48
2002	0.0	0.0	1.1	0.1	0.0	0.0	0.2	48
2003	10.3	8.3	16.8	1.9	0.4	0.0	6.3	52
2004	0.0	0.6	11.4	1.4	0.9	0.0	2.4	52
2005	0.8	1.4	3.8	1.8	1.1	0.0	1.5	52
2006	0.0	1.0	3.0	2.8	5.9	0.3	2.1	52

TABLE 2.4.14. Age distribution of 173 **walleye** sampled from summer bottom trawls, Bay of Quinte, 2006. Also shown are mean fork length and mean weight. Fish of less than 160 mm fork length (n = 85) were assigned an age of 0 (young of the year) while those over 160 mm fork length (n = 88) were aged using otoliths.

	Age (years) / Year class								
	0	1	2	3	4	5	6	7	
	2006	2005	2004	2003	2002	2001	2000	1999	Total
Bay of Quinte	88	48	7	27	0	2	0	1	173
Mean fork length (mm)	132	253	363	413		494		489	
Mean weight (g)	24	169	502	777		1347		1418	

TABLE 2.4.15. Mean catch-per-trawl of round goby at three Ontario and six Bay of Quinte sites, 1992-2006.

	EB02	EB03	EB06	Trenton	Belleville	Big Bay	Deseronto	Hay Bay	Conway	Lake Ontario	Bay of Quinte	Number of trawls
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
2001	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.1	0.0	0.0	0.2	48
2002	0.0	0.0	0.0	0.0	1.6	0.1	11.5	1.3	0.5	0.0	2.5	48
2003	0.1	0.0	0.0	2.9	67.0	1.4	16.1	14.3	282.2	0.0	64.0	52
2004	250.1	0.3	0.0	8.5	47.3	15.8	20.6	3.5	79.2	83.5	29.1	52
2005	29.8	798.9	0.0	13.1	60.3	9.5	117.3	40.1	127.2	276.2	61.3	52
2006	43.7	850.3	6.0	5.3	7.1	4.8	4.6	6.0	40.8	300.0	11.4	52

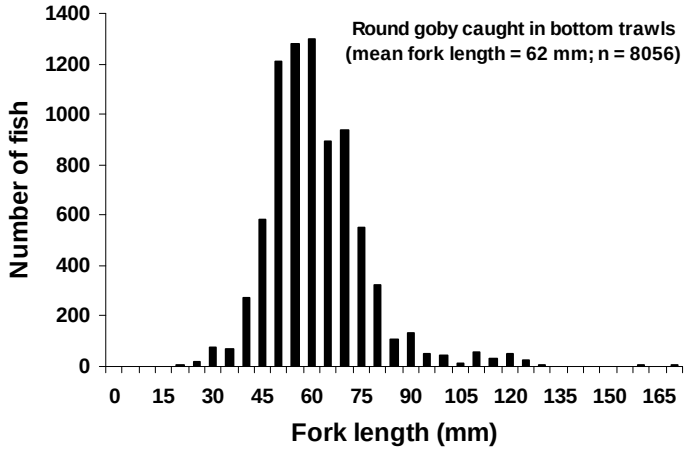

FIG. 2.4.2. **Round goby** size distribution for fish caught in bottom trawls, 2006.

2.5 Lake-wide Hydroacoustic Assessment of Prey Fish

The status of prey fish in Lake Ontario is assessed using hydroacoustic surveys conducted jointly since 1991 by Ontario Ministry of Natural Resources (OMNR) and New York State of Department of Environmental Conservation (NYSDEC). The surveys are conducted in mid-summer and cover the entire lake. The 2006 survey consisted of six transects in the main lake and one transect in the Kingston Basin. Acoustic data used to estimate population densities were collected using a Biosonics 120 kHz split-beam echosounder, and additionally midwater trawls were made to measure the species composition and biological attributes of the prey fish.

The alewife population estimate for 2006 is 1.03 billion yearling-and-older fish, which is a substantial increase over last year`s level (Fig. 2.5.1). Based on alewife size distribution in the trawls, the 2006 estimate translates into a biomass estimate of 19,800 MT. However we are not confident that yearling alewife were fully represented in the trawl catches in 2006, which would lead to an overestimate of biomass.

The smelt population estimate for 2006 was 127 million yearling-and-older fish, which, based on the size composition in the trawls, translates into a biomass estimate of 1,561 MT (Fig. 2.5.2). This represents a decrease in numbers from 2005 to low levels seen in 2004-2005. Yearling smelt were nearly absent from the trawl catches in 2006, and the resulting higher average weight of the fish buffered the decrease in biomass.

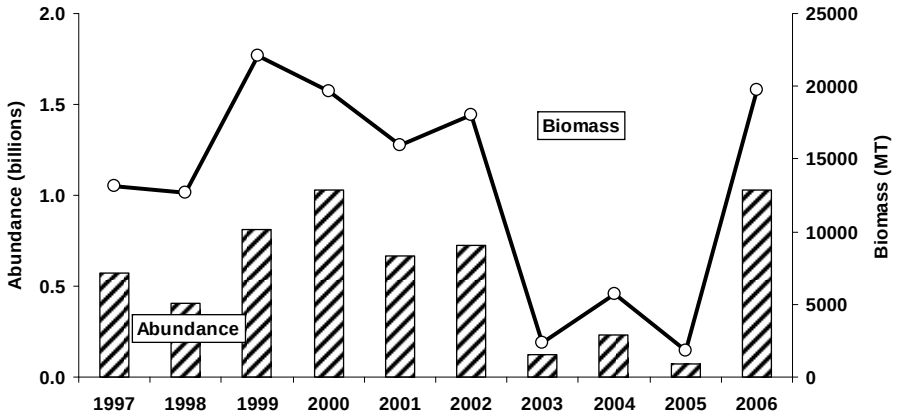

FIG. 2.5.1. Abundance and biomass of yearling-and-older alewife. Abundance estimates were obtained directly from hydroacoustic surveys, biomass estimates were obtained by applying average weights measured in midwater trawls to abundance estimates. Average weights used in biomass calculations in 2002, 2004 and 2005 were based on pooled data from other years.

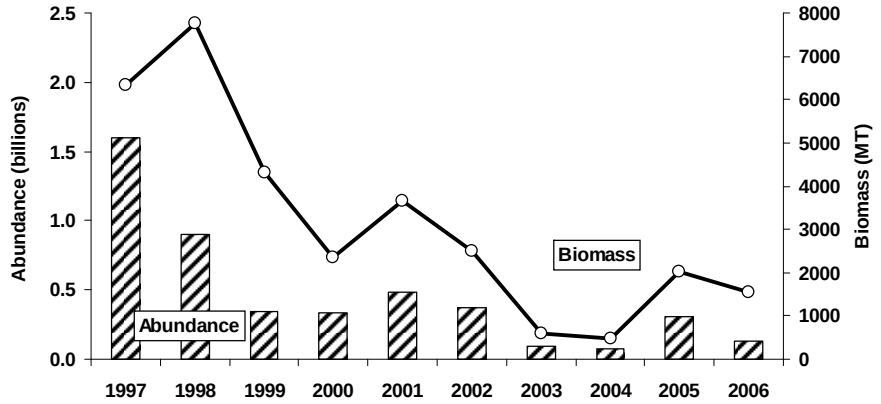

FIG. 2.5.2. Abundance and biomass of yearling-and-older rainbow smelt. Abundance estimates were obtained directly from hydroacoustic surveys, biomass estimates were obtained by applying average weights measured in midwater trawls to hydroacoustic abundance estimates. Average weights used in biomass calculations in 2002 through 20054 were based on pooled data from other years.

2.6 Hamilton Harbour and Toronto Waterfront Nearshore Community Index Netting

The provincial standard nearshore community index netting program (NSCIN) was initiated on the upper Bay of Quinte (Trenton to Deseronto) in 2001, and was expanded to include the lower Bay of Quinte (Deseronto to Lake Ontario) in 2002. Both upper and lower Bay of Quinte were sampled from 2002-2005.

In 2006, the NSCIN program was conducted on Hamilton Harbour and the Toronto waterfront area thanks to partnerships developed with the Department of Fisheries and Oceans Canada and the Toronto Region Conservation Authority (see Section 9.1).

The NSCIN program utilized 6-foot trapnets and was designed to evaluate the abundance and other biological attributes of fish species that inhabit the littoral area. Suitable trapnet sites were chosen from randomly selected UTM grids that contained shoreline in Hamilton Harbour or the Toronto waterfront.

Hamilton Harbour

Nineteen trapnet sites were sampled from Aug 15-25 with water temperatures ranging from 20.0-24.0 ^{o}C (Table 2.7.1). Nearly 10,000 fish comprising 27 species were captured (Table 2.7.2). The most abundant species by number were brown bullhead (7,235), white perch (920) and channel catfish (662).

Walleye
Of the 18 walleye aged (Table 2.7.3), six were age-3 (2003 year-class) and seven were age-8 (1998 year-class).

Largemouth Bass
Of the five largemouth bass aged, there were four different year-classes present (Table 2.7.4).

Toronto Waterfront

Twenty-four trapnet sites were sampled from September 18-29 with water temperatures ranging from 9.0-20.0 ^{o}C (Table 2.7.1). Over 1,400 fish comprising 24 species were captured (Table 2.7.2). The most abundant species by number were brown bullhead (783), pumpkinseed (175), white sucker (100) and alewife (91).

Walleye
Of the 9 walleye aged (Table 2.7.3), seven were age-3 (2003 year-class).

Largemouth Bass
Seventeen of 25 largemouth bass aged were age-1 (Table 2.7.4).

TABLE 2.6.1. Survey information for the 2006 NSCIN trapnet program on Hamilton Harbour and the Toronto waterfront area.

	Hamilton Harbour	Toronto Waterfront
Survey dates	Aug 15-25	Sep 18-29
Water temperature (^{o}C)	Mean = 21.9 (range = 20.0-24.0)	Mean = 16.7 (range = 9.0-20.0)
No. of trapnet lifts	19	24
No. sites by depth (m):		
Target (2-2.5 m)	4	10
> Target (max)	4 (3.4 m)	10 (3.3 m)
< Target (min)	11 (1.7 m)	4 (1.8 m)
No. sites by substrate:		
boulder/rubble/cobble	1	1
gravel/pebble/sand	0	2
sand	15	14
soft	3	7
No. sites by cover:		
None	1	2
1-25%	18	13
25-75%	0	7
>75%	0	2

TABLE 2.6.2. Species-specific catch in the 2006 NSCIN trapnet program on Hamilton Harbour and the Toronto waterfront area. Statistics shown total catch, arithmetic mean catch-per-trapnet (CUE), and percent relative standard error of mean log10(catch+1). %RSE = 100*SE/mean.

	Hamilton Harbour				Toronto Islands			
Species	Total catch	CUE	RSE (%)	Mean length (mm)	Total catch	CUE	RSE (%)	Mean length (mm)
Brown bullhead	7235	380.79	16	305	783	32.63	18	301
White perch	920	48.42	21	203	1	0.04	98	220
Channel catfish	662	34.84	27	504	1	0.04	98	530
Common carp	85	4.47	20	402	38	1.58	27	594
Bluegill	77	4.05	35	141	13	0.54	56	143
Gizzard shad	65	3.42	18	215	65	2.71	25	284
Black crappie	44	2.32	43	217	20	0.83	41	206
White bass	38	2.00	34	225	8	0.33	52	240
Freshwater drum	26	1.37	40	365	26	1.08	26	506
Northern pike	21	1.11	47	620	28	1.17	24	679
Walleye	20	1.05	43	581	9	0.38	31	519
Pumpkinseed	13	0.68	45	121	175	7.29	34	138
Bowfin	11	0.58	36	592	8	0.33	64	651
Rock bass	11	0.58	45	181	8	0.33	45	173
Longnose gar	9	0.47	42	750	4	0.17	46	810
Goldfish	6	0.32	47	330	1	0.04	98	
Largemouth bass	5	0.26	47	286	26	1.08	42	227
White sucker	2	0.11	97	305	100	4.17	20	301
Yellow perch	2	0.11	67	213	26	1.08	58	161
Shorthead redhorse	2	0.11	97	470	1	0.04	98	400
Smallmouth bass	2	0.11	67	415	1	0.04	98	350
Rainbow trout	1	0.05	97	300	0	0.00		
Lake trout	1	0.05	97	440	0	0.00		
Bigmouth buffalo	1	0.05	97	760	0	0.00		
Black bullhead	1	0.05	97	340	0	0.00		
Green sunfish	1	0.05	97	140	0	0.00		
Round goby	1	0.05	97	180	0	0.00		
Alewife	0	0.00			91	3.79	42	150
Chinook salmon	0	0.00			2	0.08	68	625
Brown trout	0	0.00			1	0.04	98	570
Total	9262	487			1436	60		
Number of species	27				24			

TABLE 2.6.3. Age distribution and mean length and weight of walleye sampled from NSCIN trapnets in Hamilton Harbour (n = 18) and the Toronto waterfront area (n = 9), 2006.

	Age																			
Age (years)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Year-class	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986
Hamilton Harbour:																				
Number	0	0	6	0	1	0	2	7	0	1	1	0	0	0	0	0	0	0	0	0
Mean fork length (mm)			475		568		604	617		606	630									
Mean weight (g)			1556		2775		3289	3401		3550	3725									
Toronto Waterfront:																				
Number	0	0	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Mean fork length (mm)			468			576														736
Mean weight (g)			1513			2664														5052

TABLE 2.6.4. Age distribution and mean length and weight of largemouth bass sampled from NSCIN trapnets in Hamilton Harbour (n = 5) and the Toronto waterfront area (n = 25), 2006.

	Age																			
Age (years)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Year-class	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986
Hamilton Harbour:																				
Number	1	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Mean fork length (mm)	162	226			340				445											
Mean weight (g)	73	211			771				1311											
Toronto Waterfront:																				
Number	17	0	2	2	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Mean fork length (mm)	175		257	264	294	300			384											
Mean weight (g)	89		330	342	433	536			1001											

2.7 St. Lawrence River Fish Community Index Netting – Lake St. Francis

Over 70 species of fish have been observed in Lake St. Francis during the course of various monitoring and fisheries research projects. Species that support significant fisheries in Lake St. Francis include: yellow perch, northern pike, walleye, smallmouth bass, brown bullhead and sunfish. Other less abundant, but important, fish species include walleye, lake sturgeon, and muskellunge.

Every other year in early fall, the Lake Ontario Management Unit conducts an index gillnet survey in Lake St. Francis. The catches are used to estimate abundance, measure biological attributes, as well as to collect age interpretation structures, stomach contents and tissues for pathological examination for selected species. This survey is part of a larger effort to monitor changes in the fish communities in four distinct sections of the St. Lawrence River (Thousand Islands, Middle Corridor, Lake St. Lawrence, and Lake St. Francis), and it is coordinated with the New York State Department of Environmental Conservation (NYSDEC) to provide river-wide coverage of fisheries resources.

In 2006 the survey was funded by Environment Canada and conducted in the period of September 11-28. Standard gillnets with meshes ranging from 1.5 to 6 inches were fished for 24 hour periods. This was the first year that monofilament nets were used exclusively, marking the end of a period of transition from multi- to monofilament nets, during which we fished both types of nets to assess differences in their fishing power. Thirty-six sets were made in Lake St. Francis proper, and additional 4 sets off Cornwall to collect contaminant samples. Only the results from Lake St. Francis are presented here to maintain comparability with data from recent years.

The overall catch from the 36 Lake St. Francis sets was 1,123 fish comprising 14 species (complete summary in Table 2.7.1). The average number of fish per set was 31.2 which is approximately double the number

Table 2.7.1 Summary of catches per standard gillnet set in lake St. Francis surveys 1984-2006. All catches prior to 2001 were adjusted by a factor of 1.58 to be comparable to the new netting standard initiated in 2002. No survey was conducted in 1996.

	1984	1986	1988	1990	1992	1994	1998	2000	2002	2004	2006
Lake sturgeon	-	-	-	-	-	-	-	0.04	-	0.03	-
Longnose gar	-	0.23	0.09	-	0.66	0.26	0.14	0.13	0.40	-	0.06
Bowfin	0.04	-	-	-	-	-	-	-	-	-	-
Alewife	0.04	-	-	-	-	-	-	-	0.03	0.06	0.22
Salvelinus sp.	-	-	0.04	-	-	-	-	-	-		-
Northern pike	4.18	3.93	4.44	3.82	4.13	3.91	3.71	3.34	1.23	1.45	1.67
Muskellunge	-	-	0.04	-	-	-	-	-	-	0.03	-
White sucker	1.71	2.17	1.01	1.71	1.41	1.67	1.99	1.63	0.74	1.06	0.97
Moxostoma sp.	-	-	0.04	0.18	0.04	0.09	0.18	0.09	-	-	0.11
Common carp	0.13	-	-	0.09	-	-	-	-	0.09	-	0.25
Golden shiner	-	-	-	-	-	0.04	-	-	0.03	-	-
Creek chub	-	-	-	-	-	-	0.09	-	-	-	-
Fallfish	-	-	-	0.09	-	-	-	-	-	-	-
Brown bullhead	1.14	1.27	0.62	0.40	0.70	0.44	0.95	3.25	0.54	1.38	2.81
Rock bass	3.52	3.48	2.81	1.36	2.15	2.11	2.58	1.85	2.26	2.17	5.69
Pumpkinseed	4.97	1.72	0.84	0.75	1.49	1.76	1.54	1.06	0.41	0.41	0.89
Bluegill	-	-	-	-	-	-	0.05	0.04	0.10	-	-
Smallmouth bass	0.88	0.63	0.26	0.26	0.62	0.62	1.40	0.44	1.02	0.59	1.17
Largemouth bass	0.04	-	0.09	0.09	-	0.04	0.09	0.13	0.20	-	0.61
Black crappie	0.04	0.09	0.04	0.04	0.09	0.13	-	0.09	0.07	-	-
Yellow perch	21.45	16.32	20.88	16.57	15.83	13.72	11.89	9.36	6.49	7.45	16.36
Walleye	0.48	0.45	0.97	0.35	0.35	0.26	0.36	0.31	0.16	0.41	0.39
Freshwater drum	-	-	-	-	-	-	-	-	0.04	-	-
All species	38.64	30.30	32.18	25.72	27.48	25.06	24.96	21.76	13.81	15.04	31.19
Count of species	13	10	14	13	11	13	13	14	16	11	14
No. of nets set	36	35	36	36	36	36	35	36	36	36	36

caught in the previous survey in 2004. The overall catches have declined steadily since the start of the series in 1984, and the 2006 catch is comparable to those observed in the mid-1980s (Fig. 2.7.1). The dominant species in the catch were yellow perch, rock bass, brown bullhead, northern pike and smallmouth bass (Fig. 2.7.2).

Yellow perch

There has been a dramatic decline in the abundance of yellow perch between the start of the series in 1984 and 2002 (Fig. 2.7.3). The decline was especially evident in large perch (>220 mm) indicating increased mortality of older fish. In 2006 the catches increased, and while the large yellow perch are still well below the 1980s level, the catches of small yellow perch were higher than ever seen in the data series.

Northern pike

The northern pike remained relatively stable through the period of 1984-1992 (Fig. 2.7.4). A decline in abundance of small fish (<500 mm) was observed in 1994, followed by a sharp decline in abundance of all sizes in 2002. This pattern is the opposite of the one observed in yellow perch, and it suggests a recruitment problem. The abundance of all sizes has rebounded slightly in 2006, but remained well below the 1980s levels.

Smallmouth bass and walleye

These game fish are popular with anglers, but are not very abundant in Lake St. Francis. Smallmouth bass appear to have become more abundant since the mid-1990s, and the 2006 catches were the second highest in the data series. The catches of walleye have remained fairly steady since the beginning of the series in 1984.

Other species

Several species showed unusual shifts in abundances in 2006. Alewife are not an abundant species in Lake St. Francis, but after a long period of absence since 1984, they started appearing in the catches in 2002, and increased sharply in 2006. Other species also showed a sharp increase in 2006: common carp, rock bass and largemouth bass. The significance of these observations is limited at this time due to high sampling error associated with these less common species, as well as natural annual variability. Nevertheless, these simultaneous noticeable changes could be the sign of a fish community shift that should be monitored closely in future years.

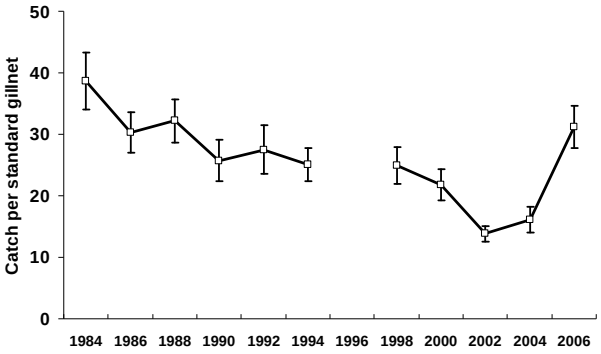

FIG. 2.7.1. Catches (± 1SE) of all species combined, Lake St. Francis, 1984-2006.

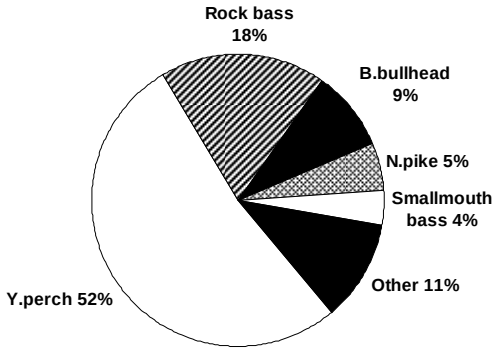

FIG. 2.7.2. Species composition in the 2006 survey in Lake St. Francis.

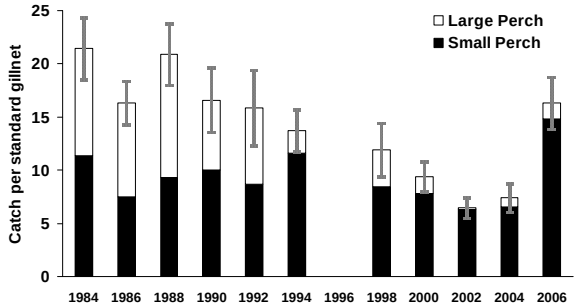

FIG. 2.7.3. Catches of yellow perch, Lake St. Francis, 1984-2006. Error bars (± 1SE) apply to the total catch (small + large).

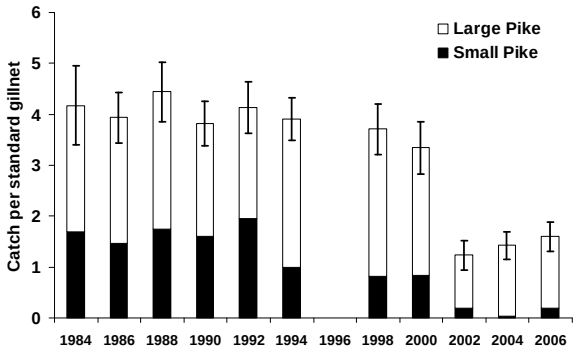

FIG. 2.7.4. Catches of northern pike, Lake St. Francis, 1984-2006. Error bars (± 1SE) apply to the total catch (small + large).

2.8 Credit River Chinook Assessment

Chinook salmon growth and condition were monitored during the fall spawning run in the Credit River at the Reid Milling dam in Streetsville. The salmon were captured by electrofishing during routine spawn collection activities by the Ringwood Fish Culture Station. LOMU crews measured fish for length and weight, and collected otoliths for age interpretation. The body condition of Chinook salmon in the Credit River was determined as the estimated weight of a 900 mm fish.

Condition of male and female Chinook salmon in the Credit River recovered somewhat in 2006 compared with the past two years but still remained among the lowest observed since 1989 (Fig. 2.8.1). Length of Chinook salmon has also increased in the Credit River, but remains lower than the period from 1996 to 2003 (Fig. 2.8.2).

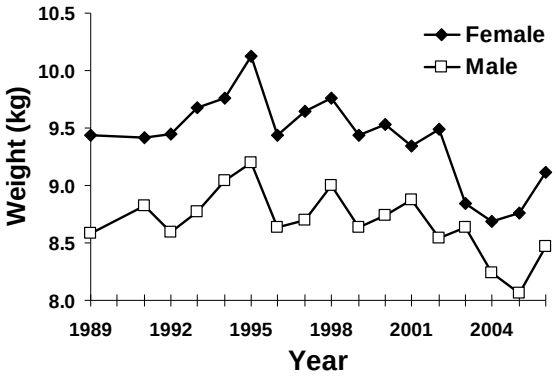

FIG. 2.8.1. Mean weight of a 900 mm Chinook salmon in the Credit River, 1989-2006, during the spawning run (approx. October 1).

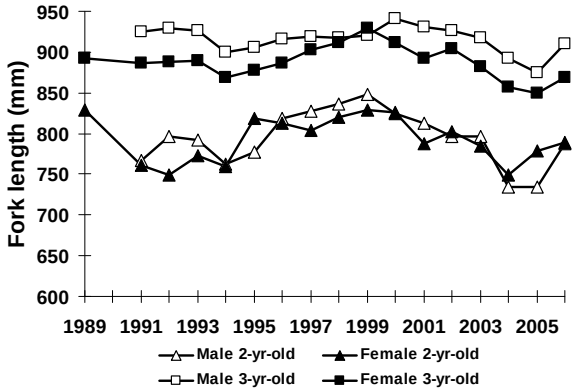

FIG. 2.8.2. Fork length of Chinook salmon in the Credit River, 1989-2006, during the spawning run (approx. October 1).

3. Recreational Fishing Surveys

3.1 Bay of Quinte Recreational Fishery

The Bay of Quinte recreational angling survey was conducted only during the month of May in 2006. The survey was conducted from Trenton to just east of Glenora. Angling effort was measured using a combination of aerial and on-water counts. Boat angler interviews provide information on catch/harvest rates and biological characteristics of the harvest.

Open-water fishery

Over 900 anglers were interviewed by field crews during May. Forty percent of anglers interviewed were local, 52% were from Ontario (outside the local area), 8% were from the US and less than 1% was from elsewhere in Canada. Fourteen different species were caught during May (Table 3.1.1). Angling effort was targeted nearly exclusively at walleye (98%). Fishing effort in May 2006 was 70,789 angler hours for all anglers and 70,704 hours for anglers targeting walleye (Table 3.1.2). Numbers of walleye caught and harvested were 21,711 and 14,119 respectively. Numbers of walleye caught and harvested per hour by anglers targeting walleye were 0.307 and 0.200 respectively. Over 70% of harvested walleye were age-3 (Fig. 3.1.1) from the 2003 year-class. Other species caught included over 39,000 yellow perch and 3,000 northern pike (Table 3.1.1).

TABLE 3.1.1. Numbers of fish caught during May in the Bay of Quinte open-water fishery, 2006.

	Catch
Northern pike	3,196
Brown bullead	1,250
Channel catfish	137
White perch	1,961
Rock bass	1,469
Pumpkinseed	1,733
Blugill	96
Sunfish	889
Smallmouth bass	1,705
Largemouth bass	602
Yellow perch	39,212
Walleye	21,711
Round goby	5,801
Freshwater drum	1,665

TABLE 3.1.2. Angling effort (anglers hours) by all anglers and those targeting walleye and walleye catch, harvest, CUE (fish caught per hour) and HUE (fish harvested per hour), 1993-2006, during May in the Bay of Quinte.

	May					
	Effort		Walleye			
Year	All anglers	Walleye	Catch	Harvest	CUE	HUE
1993	367,694	365,720	177,243	94,579	0.485	0.259
1994	400,607	399,676	159,067	88,474	0.398	0.221
1995	292,061	287,893	96,603	56,074	0.336	0.195
1996	357,847	357,718	100,344	61,390	0.281	0.172
1997	241,937	241,937	44,707	30,083	0.185	0.124
1998	245,169	244,608	31,688	24,603	0.130	0.101
1999	196,734	196,734	27,927	21,034	0.142	0.107
2000	156,774	156,764	14,293	11,817	0.091	0.075
2001	119,565	118,113	18,129	14,308	0.153	0.121
2002	72,977	71,950	7,089	4,863	0.099	0.068
2003	67,830	67,830	15,360	8,452	0.226	0.125
2004	73,022	72,509	19,639	12,722	0.271	0.175
2005	101,539	100,783	17,200	10,193	0.171	0.101
2006	70,789	70,704	21,711	14,119	0.307	0.200

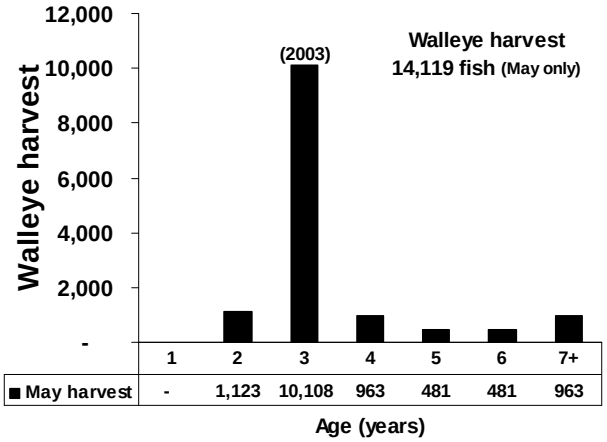

FIG. 3.1.1. Walleye harvest, by age, during May in the Bay of Quinte recreational fishery. The 2003 walleye year-class is indicated in brackets.

4. Commercial Fishery

4.1 Quota and Harvest Summary

Lake Ontario supports a locally important commercial fish industry. The commercial harvest comes primarily from the Canadian waters of Lake Ontario east of Brighton (including the Bay of Quinte) and the St. Lawrence River (Fig. 4.1.1). Commercial harvest statistics for 2006 were obtained from the Ontario Commercial Fisheries Association (OCFA) which, in partnership with the Ontario Ministry of Natural Resources, manages the Province of Ontario's commercial harvest database. Commercial quota and harvest statistics for Lake Ontario and the St. Lawrence River for 2006 are shown in Tables 4.1.1 (base quota), 4.1.2 (issued quota), and 4.1.3 (harvest).

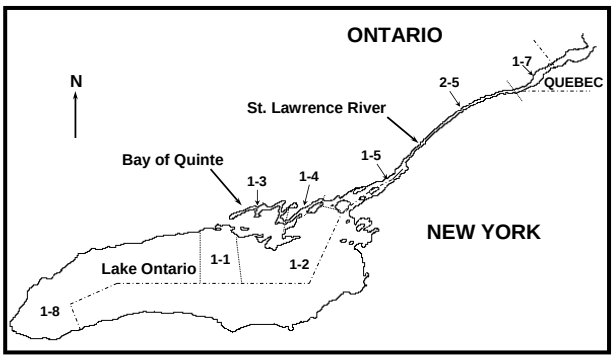

FIG. 4.1.1. Map of Lake Ontario and the St. Lawrence River showing commercial fishing quota zones in Canadian waters.

Lake Ontario

The total harvest of all species was 579,738 lb ($521,910) in 2006, up 184,373 lb (47%) from 2005 to its highest level since 2002 (Fig. 4.1.2, Table 4.1.4).

Lake whitefish

Lake whitefish harvest was 125,697 lb, 53% of base quota, and an increase of 73,508 lb (141%) from the previous year. Seasonal whitefish harvest as well as

TABLE 4.1.1. Commercial fish base quota (lb) in the Canadian waters of Lake Ontario, 2006. See Fig. 1 for a map of the quota zones.

	Base quota by quota zone (lb)								Quota by waterbody (lb)	
	1-1	1-2	1-3	1-4	1-8	1-5	2-5	1-7	Lake Ontario	St. Lawrence River
Alewife	-	-	-	-	-	-	600	-	-	600
American eel	5,198	27,895	8,702	3,897	900	4,327	3,063	15,679	46,592	23,069
Black crappie	4,540	2,500	14,810	800	2,800	18,590	18,365	4,840	25,450	41,795
Bowfin	-	-	-	-	500	-	-	-	500	-
Brown bullhead	36,200	-	-	-	-	-	-	-	36,200	-
Common carp	-	-	1,000	-	-	-	-	-	1,000	-
Lake whitefish	14,545	152,032	31,719	40,615	416	-	-	-	239,327	-
Lepomis	28,130	-	-	-	-	-	-	-	28,130	-
Walleye	4,510	39,620	-	8,217	800	-	-	-	53,147	-
Yellow perch	35,589	182,508	96,128	126,170	13,000	66,676	83,174	5,760	453,395	155,610
Total	128,712	404,555	152,359	179,699	18,416	89,593	105,202	26,279	883,741	221,074

TABLE 4.1.2. Commercial fish issued quota (lb) in the Canadian waters of Lake Ontario, 2006. See Fig. 1 for a map of the quota zones.

	Issued quota by quota zone (lb)								Quota by waterbody (lb)	
	1-1	1-2	1-3	1-4	1-8	1-5	2-5	1-7	Lake Ontario	St. Lawrence River
Alewife	-	-	-	-	-	-	600	-	-	600
American eel	-	-	-	-	-	-	-	-	-	-
Black crappie	2,270	1,250	19,770	400	1,400	18,425	9,183	2,420	25,090	30,028
Bowfin	-	-	-	-	250	-	-	-	250	-
Brown bullhead	18,100	-	-	-	-	-	-	-	18,100	-
Common carp	-	-	500	-	-	-	-	-	500	-
Lake whitefish	7,275	158,298	20,754	19,290	208	-	-	-	205,825	-
Lepomis	14,065	-	-	-	-	-	-	-	14,065	-
Walleye	2,756	18,056	-	10,309	400	-	-	-	31,521	-
Yellow perch	17,795	132,161	87,472	145,713	6,500	41,918	41,587	6,720	389,641	90,225
Total	62,261	309,765	128,496	175,712	8,758	60,343	51,370	9,140	684,992	120,853

TABLE 4.1.3. Commercial harvest (lb) and value ($) for fish species harvested from the Canadian waters of Lake Ontario and the St. Lawrence River, 2006. [1] Price per lb is a weighted average.

	Quota zone								Harvest (lb) and value by water body					
									Lake Ontario			St. Lawrence River		
Species	1-1	1-2	1-3	1-4	1-8	1-5	2-5	1-7	Harvest (lb)	Price per lb	Value	Harvest (lb)	Price per lb	Value
Black crappie	29	40	12,081	1	723	14,059	1,384	491	12,873	$ 2.06	$ 26,576	15,934	$ 2.49	$ 39,689
Bowfin	4,864	118	2,832	17	216	2,887	540	456	8,046	$ 0.31	$ 2,486	3,883	$ 0.44	$ 1,719
Brown bullhead	2,172	3,600	64,992	3,492	3,699	21,500	5,199	55,890	77,955	$ 0.42	$ 32,575	82,589	$ 0.31	$ 25,438
Channel catfish	-	-	2	-	2,059	-	-	-	2,061	$ 0.45	$ 924	-		$ -
Common carp	15	340	1,023	593	4,934	43	-	-	6,905	$ 0.21	$ 1,435	43	$ 0.20	$ 9
Freshwater drum	87	636	15,725	10,670	225	7	-	-	27,342	$ 0.09	$ 2,521	7	$ 0.05	$ 0
Lake herring	16	66	1,132	544	-	1	-	-	1,757	$ 0.28	$ 498	1	$ 0.50	$ 1
Lake whitefish	6	120,234	5,194	263	-	-	-	-	125,697	$ 0.53	$ 66,204	-		$ -
Northern pike	504	448	2,783	135	-	-	-	-	3,870	$ 0.31	$ 1,211	-		$ -
Rock bass	1,170	3,262	7,771	2,216	19	1,032	407	-	14,438	$ 0.43	$ 6,177	1,439	$ 0.45	$ 653
Suckers	23	421	5,627	876	1,110	-	-	-	8,057	$ 0.10	$ 837	-		$ -
Sunfish	2,602	1,175	42,648	55	116	57,966	11,543	17,985	46,597	$ 0.64	$ 29,686	87,494	$ 0.85	$ 73,936
Walleye	907	2,674	-	7,379	244	-	-	-	11,203	$ 1.49	$ 16,732	-		$ -
White bass	-	-	-	19	315	-	-	-	334	$ 0.80	$ 268	-		$ -
White perch	4	173	8,273	1,397	145	6,196	-	-	9,992	$ 0.29	$ 2,891	6,196	$ 0.43	$ 2,663
Yellow perch	1,853	51,692	58,964	109,555	546	24,053	5,054	3,507	222,609	$ 1.49	$ 330,889	32,614	$ 1.43	$ 46,711
Totals[1]	14,252	184,878	229,046	137,212	14,351	127,744	24,128	78,329	579,738	$ 0.90	$ 521,910	230,201		$ 190,819

TABLE 4.1.4. Commercial harvest (lb; 1960-2006) and landed value ($; 1985-2006) trends for the Canadian waters of Lake Ontario, including the Bay of Quinte.

	Harvest (lb)		Harvest (lb)	Value ($)
1960	1,834,000			
1961	2,026,000			
1962	1,620,000	1985	1,497,000	$ 906,879
1963	1,847,000	1986	1,759,000	$ 1,577,086
1964	1,814,000	1987	756,000	$ 993,609
1965	2,226,000	1988	1,190,000	$ 896,481
1966	1,347,000	1989	1,211,000	$ 989,563
1967	1,617,000	1990	1,165,000	$ 907,409
1968	1,829,000	1991	1,210,000	$ 1,003,909
1969	2,130,000	1992	1,191,000	$ 1,039,892
1970	2,798,000	1993	1,103,000	$ 746,892
1971	2,804,000	1994	1,243,097	$ 1,277,262
1972	2,455,000	1995	1,218,508	$ 1,322,557
1973	2,279,000	1996	1,284,022	$ 1,456,736
1974	2,299,000	1997	1,078,250	$ 996,383
1975	2,664,000	1998	973,006	$ 1,059,212
1976	2,935,000	1999	964,743	$ 1,067,904
1977	2,456,000	2000	914,014	$ 990,544
1978	2,469,000	2001	840,557	$ 861,978
1979	2,042,000	2002	602,338	$ 475,262
1980	1,982,000	2003	447,633	$ 324,320
1981	2,387,000	2004	404,236	$ 249,444
1982	1,999,000	2005	395,365	$ 310,084
1983	2,263,000	2006	579,738	$ 521,910
1984	2,050,000			

TABLE 4.1.5. Commercial harvest (lb; 1988-2006) and landed value ($; 1989-1994 and 1996-2006) trends for the Canadian waters of the St. Lawrence River.

	Harvest (lb)	Value ($)
1988	318,000	
1989	273,800	$ 217,000
1990	305,100	$ 237,000
1991	247,600	$ 328,100
1992	292,700	$ 257,300
1993	237,000	$ 171,900
1994	262,240	$ 257,900
1995	375,763	
1996	445,052	$ 399,856
1997	353,838	$ 397,494
1998	378,729	$ 424,111
1999	368,035	$ 438,581
2000	341,672	$ 407,647
2001	272,523	$ 352,551
2002	266,817	$ 241,817
2003	211,254	$ 203,710
2004	143,845	$ 102,646
2005	221,294	$ 206,479
2006	230,201	$ 190,819

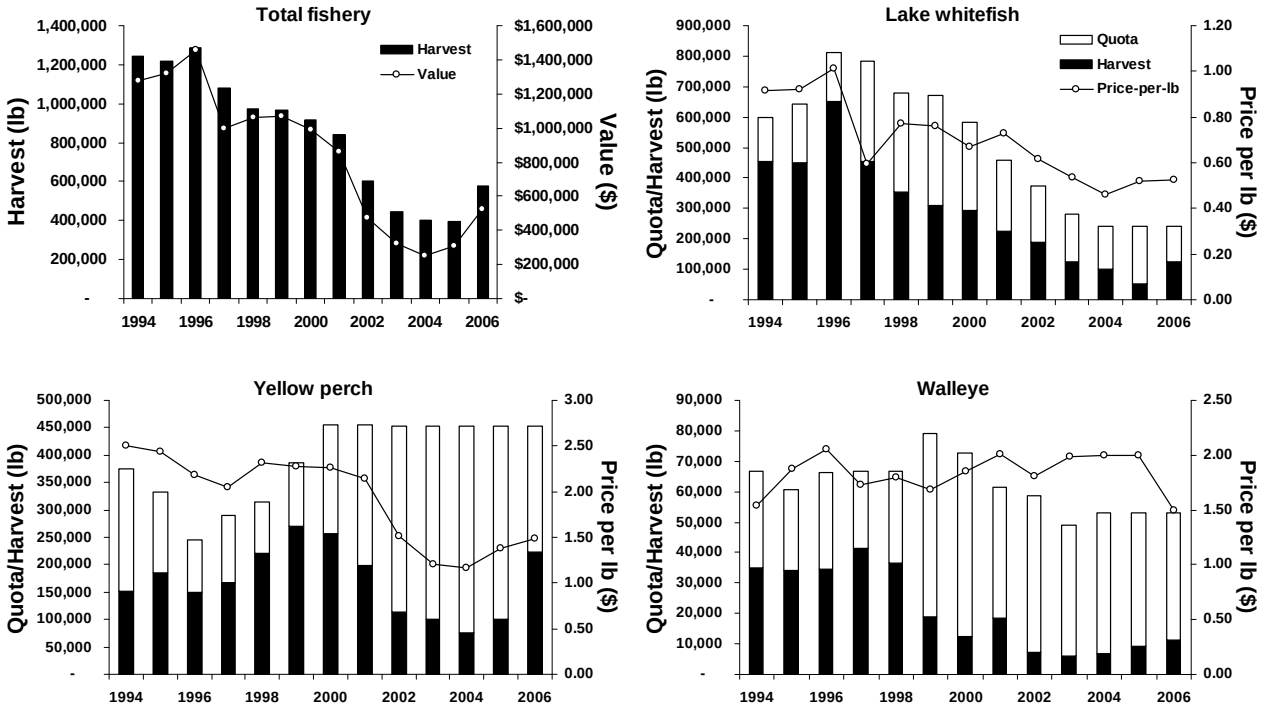

FIG. 4.1.2. Total harvest and value for the Lake Ontario commercial fishery and quota, harvest and price-per-lb for lake whitefish, yellow perch and walleye, 1994-2006.

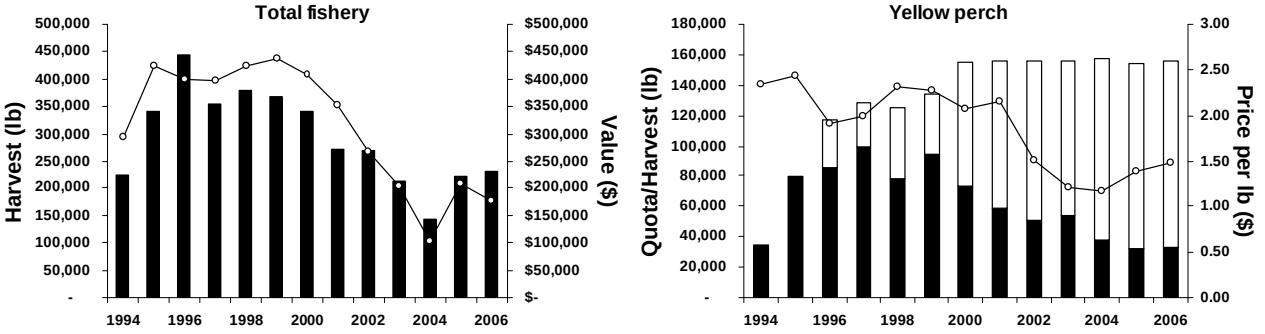

FIG. 4.1.3. Total harvest and value for the St. Lawrence River commercial fishery and quota, harvest and price-per-lb for yellow perch, 1994-2006.

biological attribute (e.g., size and age structure) information is reported in Section 4.2.

Yellow perch
Yellow perch harvest was 222,609 lb, 49% of the base quota, and an increase of 123,148 lb (124%) from the previous year to its highest level since 2000.

Walleye
Walleye harvest was 11,203 lb, 21% of the base quota, and an increase of 1,890 lb (20%) from the previous year.

St. Lawrence River

The total harvest of all species was 230,201 lb ($190,819) in 2006 (Fig. 4.1.3, Table 4.1.5).

Yellow perch
Yellow perch harvest was 32,614 lb, 21% of base quota.

4.2 Lake Whitefish Commercial Catch Sampling

Sampling of commercially harvested lake whitefish for biological attribute information occurs annually. While total lake whitefish harvest can be determined from commercial fish Daily Catch Reports (DCRs; see section 4.1), biological sampling of the catch is necessary to break-down total harvest into size and age-specific harvest. Age-specific harvest data can then be used in catch-age modeling to estimate population size and mortality schedule.

Commercial lake whitefish harvest and fishing effort by gear type, month and quota zone (QZ) for 2006 is reported in Table 4.2.1. Most of the harvest was taken in gillnets (93% by weight); only 7% of the harvest was taken in impoundment gear. Gillnet fishing during November in QZ 1-2 accounted for 54% of the total harvest, for this gear type, and 28% of the effort). Significant harvest and effort also occurred in this QZ during the summer months. Most impoundment gear harvest and effort occurred in October and November in QZ 1-3.

Biological sampling focused on the November spawning-time gillnet fishery on the south shore of Prince Edward County (QZ 1-2) and the October/ November spawning-time impoundment gear fishery in the Bay of Quinte (QZ 1-3). Age-specific harvest from these two components (representing 53% of total harvest in 2006) of the fishery is reported here (Table 4.2.2). The lake whitefish sampling design involves obtaining large numbers of length tally measurements and a smaller length-stratified sub-sample for more detailed biological sampling. In total, fork length was measured for 2,389 fish and age was interpreted using otoliths for 338 fish (Fig. 4.2.1).

TABLE 4.2.1. Lake whitefish harvest (lb) and fishing effort (yards of gillnet or number of impoundment nets) by gear type, month and quota zone. Harvest and effort value in bold italic represent months and quota zones where whitefish biological samples were collected.

		Harvest (lb)				Effort (yards or number of nets)			
Gear type	Month	1-1	1-2	1-3	1-4	1-1	1-2	1-3	1-4
Gillnet	Jan	-	-	-	9	-	-	-	300
	Feb	-	-	-	4	-	-	-	100
	Mar								
	Apr	-	142	-	3	-	600	-	800
	May	-	2,463	-	15	-	13,100	-	5,320
	Jun	-	8,148	-	-	-	48,450	-	-
	Jul	-	18,769	-	-	-	70,150	-	-
	Aug	-	12,122	-	-	-	32,310	-	-
	Sep	-	10,192	-	1	-	25,100	-	1,500
	Oct	-	1,331	-	25	-	3,520	-	5,240
	Nov	-	***63,542***	-	-	-	***81,460***	-	-
	Dec	-	16	-	10	-	200	-	400
Impoundment	Jan	-	-	3	-	-	-	3	-
	Feb								
	Mar	-	146	42	-	-	4	52	-
	Apr	-	2,507	16	77	-	20	52	3
	May	-	659	8	22	-	22	31	6
	Jun	-	48	-	29	-	7	-	7
	Jul								
	Aug								
	Sep	-	-	40	6	-	-	98	1
	Oct	6	40	1,629	-	2	8	462	-
	Nov	-	118	***3,458***	100	-	1	***519***	4
	Dec	-	-	-	4	-	-	-	1

TABLE 4.2.2. Age-specific vital statistics of lake whitefish sampled and harvested including number aged, number lengthed (determined by age-length key), and proportion by number of fish sampled, harvest by weight and number, and mean weight and length of the harvest for Quota Zones 1-2 and 1-3.

	Quota zone 1-2							Quota zone 1-3						
	Sampled		Havested					Sampled		Havested				
Age (years)	Number aged	Number lengthed[1]	Prop.	Number	Weight (kg)	Mean weight (kg)	Mean length (mm)	Number aged	Number lengthed[1]	Prop.	Number	Weight (kg)	Mean weight (kg)	Mean length (mm)
1	-	-	0.000	-	-			-	-	0.000	-	-		
2	-	-	0.000	-	-			-	-	0.000	-	-		
3	-	-	0.000	-	-			2	-	0.000	-	-	0.233	281
4	-	-	0.000	-	-			1	-	0.000	-	-	0.526	363
5	2	14	0.007	306	279	0.912	445	2	-	0.000	-	-	0.381	340
6	2	13	0.007	278	273	0.983	444	4	7	0.015	29	23	0.785	420
7	24	140	0.073	2,999	2,765	0.922	441	44	99	0.208	402	318	0.790	421
8	5	64	0.033	1,368	1,410	1.031	463	30	59	0.124	241	189	0.784	420
9	1	16	0.008	342	466	1.363	482	7	24	0.049	96	108	1.128	463
10	4	70	0.037	1,499	2,130	1.421	516	2	6	0.012	23	20	0.869	445
11	22	313	0.164	6,690	8,324	1.244	491	14	47	0.098	190	242	1.273	489
12	19	314	0.164	6,699	8,643	1.290	495	14	51	0.106	205	269	1.312	498
13	13	222	0.116	4,753	6,375	1.341	502	5	14	0.030	57	62	1.081	461
14	24	369	0.193	7,874	11,250	1.429	518	10	26	0.054	105	166	1.583	522
15	14	208	0.109	4,449	6,693	1.504	521	41	107	0.225	435	684	1.572	526
16	5	77	0.040	1,650	2,351	1.425	507	4	10	0.022	42	75	1.791	537
17	2	7	0.004	153	385	2.517	573	2	4	0.008	16	28	1.782	548
18	5	54	0.028	1,160	2,046	1.764	543	3	7	0.014	28	59	2.120	557
19	4	25	0.013	524	986	1.879	552	3	8	0.016	31	49	1.553	534
20	-	-	0.000	-	-			3	9	0.018	35	65	1.854	562
21	1	4	0.002	85	166	1.947	562	-	-	0.000	-	-		
22	-	-	0.000	-	-			-	-	0.000	-	-		
Total	146	1,911	1.000	40,827	54,541			192	478	1.000	1,935	2,356		
Weighted mean						**1.336**							**1.217**	

Lake Ontario November Gillnet Fishery (QZ 1-2)

Mean fork length and age were 500 mm and 12.4 years, respectively (Fig. 4.2.1). Fish ranged from ages 5 to 21 years. Age-14 (1992 year-class), age-12 (1994 year-class), and age-11 (1995 year-class) fish were the most common, collectively representing 52% of the harvest. Fish age-10 to 15 comprised 83% of the harvest.

Bay of Quinte November Impoundment Gear Fishery (QZ 1-3)

Mean fork length and age were 486 mm and 11.4 years, respectively (Fig. 4.2.2). Fish ranged from ages 6 to 20 years. Age-15 (1991 year-class) fish were the most abundant followed closely by age-7 fish (1999 year-class). This represents the thirteenth consecutive year that the 1991 year-class was the most common year-class in the Quota Zone 1-3 commercial harvest (ranging from 22-62% of the harvest during the 13-year time period).

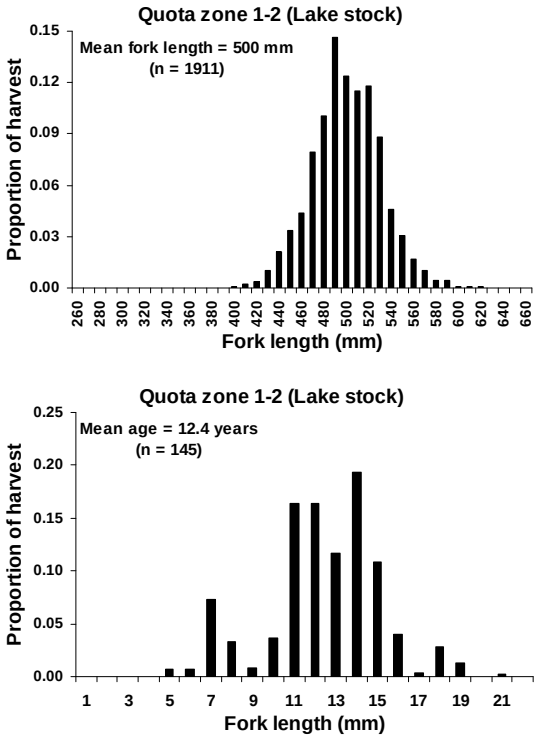

FIG. 4.2.1. Size and age distribution (by number) of lake whitefish sampled in QZ 1-2 during the 2006 commercial catch sampling program.

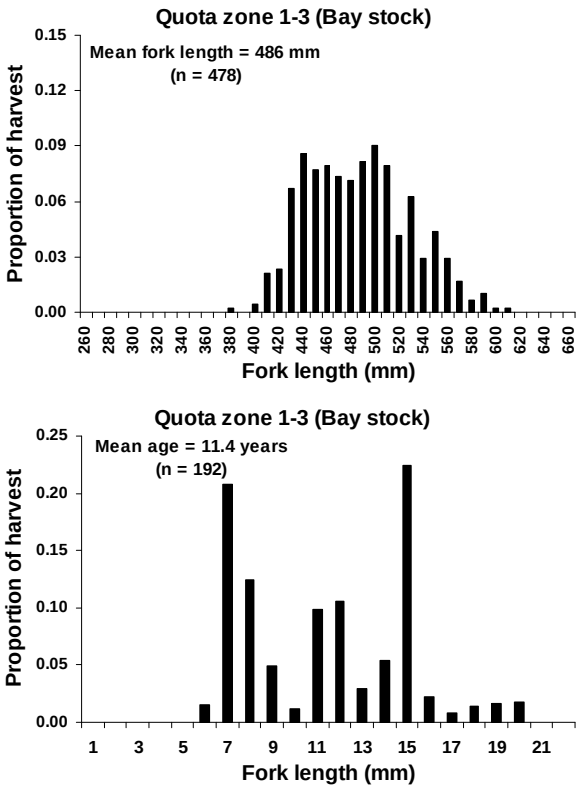

FIG. 4.2.2. Size and age distribution (by number) of lake whitefish sampled in QZ 1-3 during the 2006 commercial catch sampling program.

Condition

Lake whitefish (Lake Ontario and Bay of Quinte spawning stocks and sexes combined) condition (lb) standardized for a fish of total length 21 inches (480 mm fork length) is shown in Figure 4.2.3. Condition declined markedly in 1994 and has remained low.

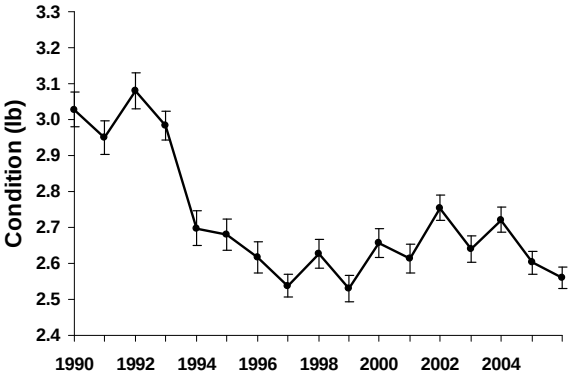

FIG. 4.2.3. Lake whitefish (Lake Ontario and Bay of Quinte spawning stocks and sexes combined) condition (lb) standardized for a fish of total length 21 inches (480 mm fork length), 1990-2006.

5. Age & Growth Summary

Biological sampling of fish from Lake Ontario Management Unit field projects routinely involves collection and archival of structures used for such purposes as age interpretation and validation, origin determination (e.g. stocked versus wild), life history characteristics and other features of fish growth. In 2006, a total of 7,840 structures were collected and 1,607 were processed for age interpretation from 29 different fish species and 11 different field projects (Table 5.1) .

TABLE 5.1. Species-specific summary of age and growth structures collected/archived (n = 7,840) and interpreted for age (1,607) in support of 11 different Lake Ontario Management Unit field projects, 2006.

	Cleithra		Opercula		Otoliths		Scales		Spines	
Species	Collected / archived	Interpreted for age	Collected / archived	Interpreted for age	Collected / archived	Interpreted for age	Collected / archived	Interpreted for age	Collected / archived	Interpreted for age
Alewife	0	0	0	0	136	0	0	0	0	0
American eel	0	0	0	0	218	0	0	0	0	0
Atlantic salmon	0	0	0	0	1	0	1	0	0	0
Black crappie	0	0	0	0	0	0	144	0	0	0
Bluegill	0	0	0	0	0	0	133	0	0	0
Brown bullhead	0	0	0	0	0	0	0	0	25	0
Brown trout	0	0	0	0	19	0	27	0	0	0
Burbot	0	0	0	0	6	0	0	0	0	0
Channel catfish	0	0	0	0	0	0	0	0	7	0
Chinook salmon	0	0	0	0	417	280	378	0	0	0
Cisco (Lake herring)	0	0	0	0	82	0	82	0	0	0
Coho salmon	0	0	0	0	9	0	13	0	0	0
Coregonus sp.	0	0	0	0	2	0	2	0	0	0
Freshwater drum	0	0	0	0	439	0	330	0	0	0
Gizzard shad	0	0	0	0	0	0	31	0	0	0
Lake trout	0	0	0	0	173	150	195	0	0	0
Lake whitefish	0	0	0	0	536	358	506	18	0	0
Largemouth bass	0	0	41	0	41	0	92	30	5	0
Northern pike	130	130	0	0	2	0	47	0	0	0
Pumpkinseed	0	0	0	0	0	0	207	0	0	0
Rainbow smelt	0	0	0	0	226	0	0	0	0	0
Rainbow trout	0	0	0	0	110	0	412	100	0	0
Rock bass	0	0	0	0	1	0	132	0	0	0
Round goby	0	0	0	0	140	0	12	0	0	0
Slimy sculpin	0	0	0	0	108	0	0	0	0	0
Smallmouth bass	0	0	0	0	1	0	200	67	36	0
Threespine stickleback	0	0	0	0	20	0	0	0	0	0
Walleye	0	0	0	0	453	388	666	150	9	0
White bass	0	0	0	0	0	0	35	0	0	0
White perch	0	0	0	0	0	0	159	0	0	0
White sucker	0	0	57	0	0	0	0	0	0	0
Yellow perch	0	0	0	0	132	313	1262	427	70	0
Total	130	130	98	0	3272	1489	5066	792	152	0

6. Contaminant Monitoring

Lake Ontario Management Unit cooperates annually with several agencies to collect fish samples for contaminant testing. In 2006, 450 contaminant samples were collected for the Ministry of the Environment and Energy's (MOEE) Sport fish Monitoring program (Tables 6.1). Samples were primarily obtained from existing fisheries assessment programs on Lake Ontario, Bay of Quinte, Ganaraska River and the St. Lawrence River. In addition, fish samples were supplied to LOMU, for MOEE, by the Port Whitby Sport Fishing Association.

A summary of the number of fish samples collected, by species, for contaminant analysis by the Ministry of Environment and Energy (MOEE), 2001-2006 (2002 not available) is shown in Table 6.2.

TABLE 6.1. Number of fish samples collected, by region and species, for contaminant analysis by the Ministry of Environment and Energy (MOEE), 2006.

Region	Species	Number of samples
Northwestern Lake Ontario	Chinook salmon	20
	Rainbow trout	8
Ganaraska River	Rainbow trout	20
Northeastern Lake Ontario	Brown trout	13
	Chinook salmon	9
	Lake trout	20
	Rainbow trout	1
	Walleye	13
	Yellow perch	16
Middle Bay of Quinte	Brown bullhead	20
	Northern pike	2
	Pumpkinseed	20
	Walleye	12
	White perch	20
	Yellow perch	13
Lower Bay of Quinte/Eastern Lake Ontario	Brown bullhead	13
	Brown trout	9
	Freshwater drum	13
	Lake trout	18
	Rock bass	20
	Smallmouth bass	14
	Walleye	20
	Yellow perch	20
Lake St. Francis	Largemouth bass	8
	Northern pike	20
	Pumpkinseed	3
	Smallmouth bass	20
	Walleye	17
	Yellow perch	20
Lake St. Francis site 53	Rock bass	7
	Silver redhorse	1
	Smallmouth bass	1
	White perch	1
	White sucker	1
	Yellow perch	17

TABLE 6.2. Summary of the number of fish samples collected, by species, for contaminant analysis by the Ministry of Environment and Energy (MOEE), 2001-2006 (2002 not available).

	Year						
Species	2000	2001	2002	2003	2004	2005	2006
Black crappie				20	3	20	
Bluegill		26		20	10	23	
Brown bullhead		40		40	25	30	33
Brown trout	40	3			31		22
Channel catfish	20	20		23		17	
Chinook salmon	40	3			48		29
Coho salmon		1					
Common carp				7			
Freshwater drum					16		13
Lake trout					54		38
Lake whitefish	20						
Largemouth bass		4		28	20	9	8
Northern pike		53		60	22	40	22
Pumpkinseed		60		57	8	11	23
Rainbow trout	40	37		20	37	20	29
Rock bass		36		38	11	21	27
Silver redhorse							1
Smallmouth bass		20		22	21	28	35
Walleye		42		40	61	30	62
White perch		40		40	40	14	21
White sucker							1
Yellow perch	20	60		58	75	40	86
Total	180	445	571	473	482	303	450

Not available

7. Management Activities

7.1 Stocking

In 2006, OMNR stocked about 1.7 million salmon and trout into Lake Ontario (Table 7.1.1). Figure 7.1.1 shows stocking trends in Ontario waters from 1968 to 2006. The New York State Department of Environmental Conservation (NYSDEC) also stocked 3.3 million salmon and trout into the lake in 2006.

Just over 400,000 Chinook salmon spring fingerlings were stocked at various locations to provide put-grow-and-take fishing opportunities. A shortfall of about 130,000 fish can be attributed, in part, to high stream water temperatures during part of the run which resulted in poor eye-up, and minor losses to early mortality syndrome (EMS). About 20,000 Chinook salmon were held in pens at two embayment sites in eastern Lake Ontario for a short period of time prior to stocking. This ongoing project is being done in partnership with a local community group to determine whether these fish successfully imprint on the embayments. It is hoped that pen-imprinting will help improve returns of mature adults to this area in the fall, thereby enhancing local nearshore and shore fishing opportunities. Follow-up monitoring is ongoing through the use of angler diaries.

TABLE 7.1.1. Fish stocked into Province of Ontario waters of Lake Ontario, 2006, and target for 2007.

		Number Stocked	
Species		**2006**	**2007**
American eel	Advanced elvers	144,300	
	Spring elvers		3,000,000
Atlantic salmon	Fry	244,456	400,000
	Fall fingerlings	100,999	100,000
	Spring yearlings		50,000
		345,455	**500,000**
Brown trout	Spring yearlings	**91,811**	**165,000**
Chinook salmon	Spring fingerlings	**406,806**	**540,000**
Lake trout	Spring yearlings	**438,249**	**440,000**
Rainbow trout	Fry	20,000	
	Fall fingerlings	122,000	
	Spring yearlings	109,545	140,000
		251,545	**140,000**
Total		**1,678,166**	**4,785,000**

OMNR increased stocking targets for Atlantic salmon in 2006, in support of an ongoing program to restore self-sustaining populations of this native species to the Lake Ontario watershed. Almost 250,000 Atlantic salmon advanced fry and 100,000 fall fingerlings were stocked into the Credit River, Duffins Creek and Cobourg Brook. These three streams were selected as a focus for restoration because of their abundance of spawning and nursery habitat and strong community interest in the program. OMNR is working cooperatively with partners to plan and deliver the next phase of Atlantic salmon restoration. Any changes in stocking rates will be consistent with restoration goals and objectives. This program supports the principles set out in Ontario's Biodiversity Strategy.

Almost 440,000 lake trout yearlings were also stocked as part of an established, long-term rehabilitation program. Lake trout stocking is focused in eastern Lake Ontario where most of the historic spawning shoals are found. The Mishibishu strain of lake trout has been phased out of the provincial hatchery system. The remaining Mishibishu fish were stocked out in the spring of 2006 as yearlings. This strain will be replaced by Slate Islands strain in Lake Ontario. We do not anticipate that this change will significantly affect lake trout restoration efforts.

To help address significant financial and capacity issues in the provincial fish culture system, a number of cost-saving measures were taken within the Lake Ontario stocking program in 2005. This meant that approximately 40% of the brown trout and rainbow trout ear-marked for stocking as yearlings in the spring of 2006 were stocked out early as fingerlings in the fall of 2005. Rainbow trout and brown trout are stocked at various locations to provide shore and boat fishing opportunities. A portion of the rainbow trout target is stocked into streams with a potential to establish wild populations.

For the first time, almost 150,000 young American eel were stocked into the upper St. Lawrence River, as short-term measure to offset mortalities experienced in hydro electric generation turbines during downstream migration. This is part of a broad, bi-national, multi-agency effort to reverse the serious decline in abundance of this globally significant species.

Detailed information about OMNR's 2006 stocking activities is found in Appendix C.

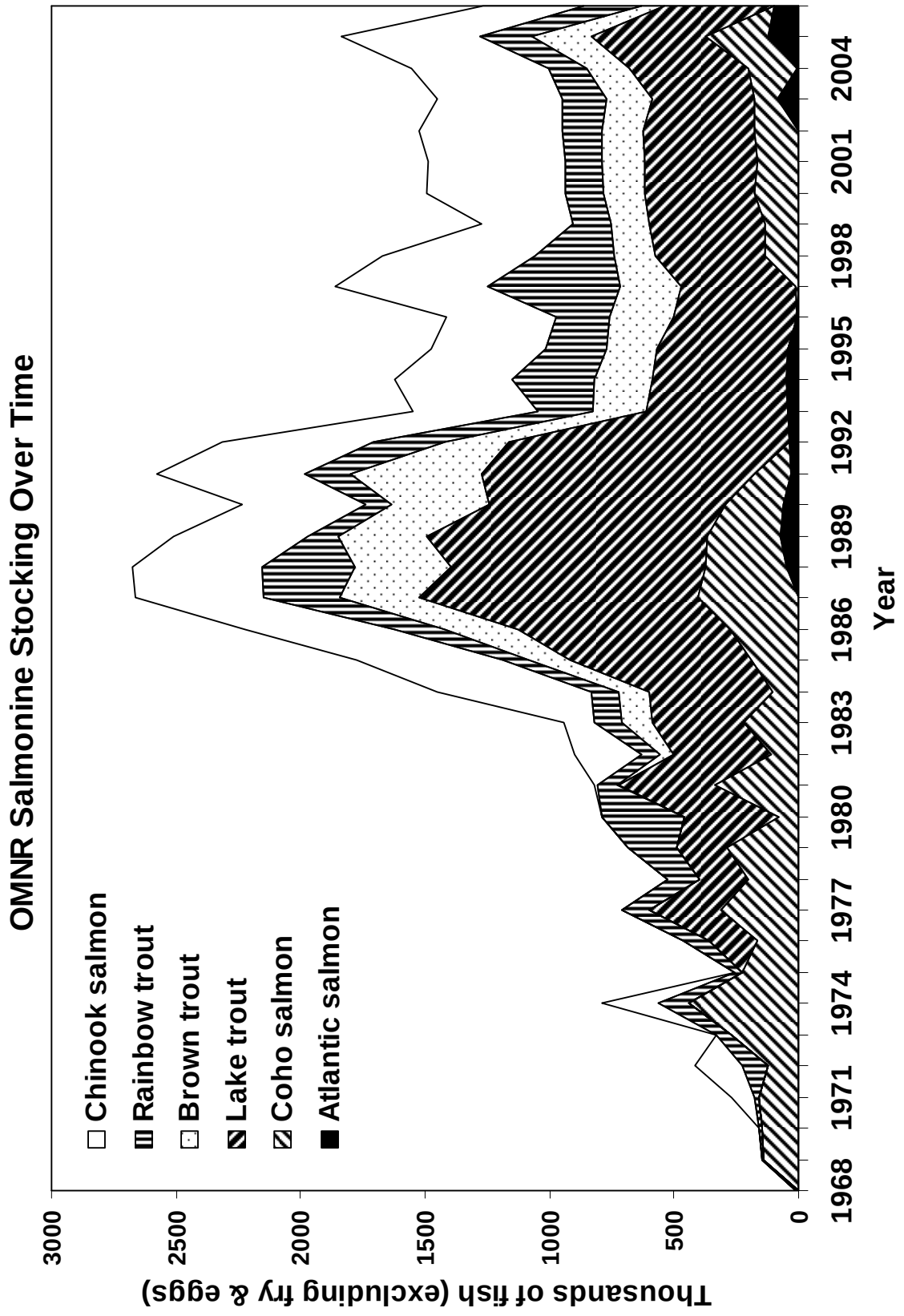

FIG. 7.1.1. Trends in salmon and trout stocking in Ontario water of Lake Ontario, 1968-2006.

7.2 Fisheries Management Plans

Lake St. Francis Fisheries Management Plan

A Fisheries Management Plan (FMP) is currently being developed for Lake St. Francis. The FMP will outline values and concerns expressed by the public, MNR, and other agencies, groups, and stakeholders. The FMP will take into account the various input gathered during public consultations and develop management strategies that will help guide fisheries management over the next five years.

During 2005, two public meetings were held to provide background information on the Lake St. Francis fish community and solicit public input on the objectives and management techniques. The multi-agency Steering Committee reviewed the public input and developed a draft Fisheries Management Plan. The draft plan, including proposed management actions and objectives, was presented to the public at the third open house, held in Cornwall on January 25, 2006. The FMP will posted on the Environmental Bill of Rights web site (http://www.ene.gov.on.ca/samples/search/Ebrquery_REG.htm) during the spring of 2007, and the document finalized after public review.

Concurrently with FMP development, a Fish Habitat Management Plan (FHMP) was being written by the Raisin Region Conservation Authority. The FHMP will form an important component of the FMP, and overall management of Lake St. Francis. The FHMP is being developed in order to address concerns identified by the International Joint Commission (IJC) at the Cornwall Area of Concern (AOC).

Bay of Quinte Fisheries Management Plan

The Ministry of Natural Resources, along with multi-agency, government, and stakeholder partners, is undertaking the development of a Fisheries Management Plan for the Bay of Quinte (BQFMP). The plan will focus on the sustainable use of the fish communities in the Bay of Quinte and improving communications among government agencies and stakeholders by providing a framework for coordinated and cooperative management. The Bay of Quinte is a very dynamic ecosystem; the BQFMP will have the capacity to respond to its many changes. The BQFMP will provide direction for the management of the fisheries resource in the Bay of Quinte for a period of five years.

An initial series of open houses were held in the fall of 2005. These events focused on identifying issues related to the state of the fisheries and on the future direction of fisheries management within the Bay. A survey developed by the BQFMP planning team, Bay of Quinte Fisheries Advisory Committee (BQFAC), and French Planning Services was distributed to those in attendance. Both the open houses and the survey were successful at capturing the perspectives of the public. Results of the survey were shared with the public at an open house held in May 2006.

Survey Results

A total of 116 surveys were returned, including 47 from participants at the Spring Fishing Show in February 2006 and 40 from the Toronto Sportsmen's Show in March 2006; the remaining 29 surveys were collected at the Bay of Quinte FMP open house and via mail response. Ninety percent of the respondents were recreational anglers. Other interests included: recreational boater; environmentalist or naturalist; shoreline property owner; and commercial fishers. Forty percent of the respondents resided in the Toronto and GTA area.

French Planning Services and OMNR summarized the results of the plan into three types of concerns or issues, primary, secondary and tertiary. Primary issues are those that are both within the scope of the management plan and have been identified by the public as a high priority concern. Issues were identified as secondary or tertiary in nature if they were of lower importance or if they would be better addressed in other planning initiatives (e.g., Remedial Action Plan and the Bay of Quinte Fish Habitat Management Plan). For example, the management of walleye and non-compliance to regulations and enforcement efforts were identified as primary concerns while increasing stakeholder and agency partnerships and fish habitat and water quality were identified as secondary and tertiary concerns respectively. The plan uses the survey results, OMNR's management objectives, and the history and status of fish species to set direction for future management and to help prioritize implementation strategies.

Next Steps

Public input from open houses and the survey were used as the foundation of the BQFMP. A draft fisheries management plan has been completed and comments are being incorporated. Public response will be solicited during another open house scheduled for April 2007. Further public response will be

obtained following posting of the plan on the Environmental Bill of Rights website in spring 2007. A completed plan is expected by summer 2007.

Hamilton Harbour Fisheries Management Plan

The MNR and Royal Botanical Gardens are developing a Fisheries Management Plan for Hamilton Harbour and its watersheds (HHFMP) in partnership with the federal and municipal governments, Hamilton and Halton Region Conservation Authorities, several regional conservation groups, and a number of local stakeholders. All parties are represented in the Steering Committee, Science and Technical Committee, or Anglers Working Group. The HHFMP will provide direction for the management of the fisheries resource in Hamilton Harbour and its watersheds.

A draft of the HHFMP was sent out for review by the Steering and Technical Committees in June 2006. The draft HHFMP integrates well with the Remedial Action Plan (RAP) for Hamilton Harbour by incorporating and building on many of the goals, recommendations, and targets of the RAP. Highlights from the draft HHFMP include plans to:

- Mitigate the impacts of barriers to fish migration on several Hamilton Harbour tributaries,
- Restore shoal habitats for spawning and living space for warmwater and coldwater fish communities (e.g. smallmouth bass, walleye, yellow perch, lake herring, and lake whitefish),
- Restore cisco populations to Hamilton Harbour and western Lake Ontario.

Comments on the draft plan are being incorporated and a public review will be conducted on the Environmental Bill of Rights website in spring 2007. A completed plan is expected by summer 2007.

7.3 Native Species Restoration

Species at Risk

The Ministry of Natural Resources (MNR) works with many partners—government agencies, non-government organizations and interested individuals—at local, provincial and national levels to protect and recover species at risk.

There are two committees that assess the status of Ontario species, the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the provincial Committee on the Status of Species at Risk in Ontario (COSSARO).

Established in 1977, COSEWIC is made up of species experts from across Canada that identify candidate species, review species' status reports and recommend national species status designations. COSEWIC also maintains and publishes a national list of species designations. At the provincial level, COSSARO members review the COSEWIC status reports and assessments for those species that occur in Ontario. COSSARO then makes recommendations to MNR on the appropriate provincial status of the species. Provincial status designations are then identified on the MNR's Species at Risk in Ontario (SARO) List. A list of fishes at risk in Lake Ontario is included in Table 7.3.1.

Species at risk status designations used by both Canada and Ontario include:

- Extinct—a species that no longer exists anywhere,
- Extirpated—a native species that no longer exists in the wild in Ontario, but still occurs elsewhere,
- Endangered—any native species facing extinction or extirpation in Ontario,
- Threatened—a native species that is at risk of becoming endangered in Ontario such,
- Special Concern—a native species that is sensitive to human activities or natural events.

TABLE 7.3.1. Fishes at risk, as of December 31, 2006, that are on the SARO and/or COSEWIC lists and that occur or formerly occurred in the Lower Niagara River, Lake Ontario or upper St. Lawrence River drainage basin.

Name	SARO Status	COSEWIC Status	Location in watershed	Extant in watershed	Comments
Blue Pike, *Sander vitreus glaucus*	Extinct	Extinct	western Lake Ontario, Niagara River	no	
Atlantic Salmon (Great Lakes population), *Salmo salar*	Extirpated	proposed as Extirpated	throughout Lake Ontario and major tributaries	no	Restoration actions being undertaken section 7.3, stocked fish present, but no substantive natural reproduction
Shortnose Cisco, *Coregonus reighardi*	Extirpated	Endangered	Lake Ontario	no	proposed for Endangered status
Pugnose Shiner, *Notropis anogenus*	Endangered	Endangered	St. Lawrence River	yes	Specimens captured during 2006, see Section 9.2
Black Redhorse, *Moxostoma duquesnei*	Threatened	Threatened	Spencer Creek	yes	
Channel Darter, *Percina copelandi*	Threatened	Threatened	Moira River and Salmon River	yes	
Cutlip Minnow, *Exoglossum maxillingua*	Threatened	Not at Risk	St. Lawrence River and tributaries	yes	limited distribution in Ontario, but secure in Quebec (thus national 'Not at Risk' status)
Deepwater Sculpin (Great Lakes population), *Myoxocephalus thompsonii*	Threatened	Special Concern	Lake Ontario	yes	proposed for de-listing provincially
Redside Dace, *Clinostomus elongatus*	Threatened	Special Concern	tributaries from Oshawa to Hamilton	yes	Restoration actions being undertaken.
Spotted Gar, *Lepisosteus oculatus*	Threatened	Threatened	One Bay of Quinte record (introduction?)	?	
Bigmouth Buffalo, *Ictiobus cyprinellus*	Special Concern	Special Concern	Lake Ontario	yes	
Bridle Shiner, *Notropis bifrenatus*	Special Concern	Special Concern	St. Lawrence River and tributaries, Napanee River, Bay of Quinte	yes	
Kiyi, *Coregonus kiyi*	Special Concern	Extinct (Lake Ontario subspecies)	Lake Ontario	no	Lake Ontario subspecies (*Coregonus kiyi orientalis*) proposed for Extinct Status
River Redhorse, *Moxostoma carinatum*	Special Concern	Special Concern	Bay of Quinte, Trent River	yes	
Silver Shiner, *Notropis photogenis*	Special Concern	Special Concern	Bronte Creek	yes	
American Eel, *Anguilla rostrata*	proposed as Endangered	proposed as Special Concern	Lake Ontario, lower Niagara River, upper St. Lawrence River and tributaries	yes	Specimens captured during 2006, see Section 2.2 and 7.3. Restoration action being undertaken see Section 7.3
Lake Sturgeon, *Acipenser fulvescens*	proposed as Special Concern	proposed as Threatened	Lake Ontario, lower Niagara River and upper St. Lawrence River	yes	SARO status applies to all of Ontario, COSEWIC status to Great Lakes-Upper St. Lawrence population
Grass Pickerel, *Esox americanus vermiculatus*	proposed as Special Concern	Special Concern	St. Lawrence River, Lake Consecon, Wellers Bay, others?	yes	Specimens captured during 2006, see Section 9.2

Atlantic Salmon Restoration Program

Atlantic salmon were extirpated from Lake Ontario by the late 1800s, primarily as a result of the loss of spawning and nursery habitat in streams. They were a valued resource for First Nations communities and early European settlers. As a top predator, they played a key ecological role in the offshore fish community. Atlantic salmon are recognized as an important part Ontario's natural and cultural heritage. Restoring a native species like Atlantic salmon would be a significant milestone in improving Ontario's biodiversity. This species is also a good indicator of environmental health and is highly valued by anglers.

A significant partnership to advance restoration of Atlantic salmon to Lake Ontario was announced in the spring of 2006. This partnership brings together the Ministry of Natural Resources, the Ontario Federation of Anglers and Hunters (OFAH), Australia's Banrock Station wine company and the Liquor Control Board of Ontario (LCBO). OMNR and OFAH have collaborated successfully on other provincial species restoration efforts, including wild turkey and elk. The LCBO has adopted Atlantic salmon as the "flagship" species for its new Natural Heritage Fund, established to protect Ontario's natural heritage by preserving and expanding wildlife habitat. Banrock supports conservation projects world-wide and has a presence here through the Banrock Station Wetland Foundation Canada.

OFAH has also engaged a long list of dedicated, conservation-minded groups in this project. Other partners and sponsors include the Canadian Sportfishing Industry Association, Trout Unlimited Canada, Fleming College, Trees Ontario Foundation, Fishing Forever Foundation, the World Fishing Network as well as local conservation authorities and community groups.

Progress was made on updating our existing Atlantic salmon restoration plan, including the development of action plans for:

- fish production,
- community involvement,
- research and assessment priorities, and
- habitat enhancement.

Restoration will be focused on three "best-bet" stream—the Credit River, Duffins Creek and Cobourg Creek. These systems offer good quality spawning and nursery habitat for Atlantic salmon and strong community support. Other suitable streams may be considered for restoration in the future. We have begun to increase stocking levels to allow us to meet restoration targets in the selected streams, and more effectively assess the rate of adult returns and production of wild juveniles. Fall surveys showed that spring-stocked fry were growing and surviving well in all three streams.

We have designed a study to compare stocking of various life stages of Atlantic salmon (fry, fall fingerlings and yearlings) to determine which is most effective for the purpose of restoration. Genetic profiles have been developed for each individual brood fish in the hatchery to help us track their progeny in the streams and in the lake. To complement the existing broodstock, which originated from the LaHave River (Nova Scotia), we plan to introduce two additional Atlantic salmon stocks with desirable characteristics for restoration. Hatchery broodstocks will be developed and the performance of their progeny will be evaluated. A land-locked strain from Sebago Lake (Maine) was acquired in the fall of 2006 and is currently being reared in quarantine at OMNR's Normandale Fish Culture Station. We hope to bring in a sea-run strain next year. Performance of Atlantic salmon in the lake phase of their life cycle will be an important component of our assessment program, particularly in light of the dramatic changes to the Lake Ontario ecosystem in recent years. Efforts to address other potential challenges to restoration will continue.

American Eel

The number of eel migrating upstream at the ladder, located at the R.H. Saunders Hydroelectric Dam on the St. Lawrence River, remains at a very low level (see Section 2.2). The low levels of upstream eel migration suggest that the abundance of large eel in the upper St. Lawrence River and Lake Ontario will remain low for at least the next decade.

Yellow eel abundance in the upper St. Lawrence River and eastern Lake Ontario were measured with two assessment programs during 2006. Bottom trawling in the Bay of Quinte has been conducted since 1974 as part of the fish community index program (Section 2.4). The average catch of American eel for 1974 to 1994 was 0.94 eels per trawl; however no eels were captured in the 208 trawls conducted between 2003 and 2006. This suggests that eels are at a very low abundance in the Bay of Quinte.

Quantitative electrofishing has been conducted at in the upper St. Lawrence River in the Mallorytown area and in the east end of Lake Ontario (Main Duck Island and Yorkshire Bar) for 13 years and 23 years, respectively. Fishing is conducted during both the day-time and the night-time. During 2006, fishing was conducted by Dr. J. Casselman, L. Marcogliese and J. Rorabeck of Queens University with funding supplied by Ontario Power Generation, Ontario Commercial Fisheries Association and Ontario Ministry of Natural Resources. During 2006, 58 electrofishing runs (20.6 hours) were completed and a total of 11 eels were captured. At both locations and times of day, the catch rates were not statistically different than the previous year, and were not statistically different than 0. These low catch rates continue the trend of decreasing abundance of American eel in these locations (Fig. 7.3.1).

The Committee on the Status of Endangered Wildlife in Canada recommended that American eel be identified as a species of 'Special Concern' under the Canadian Species at Risk Act (Table 7.3.1). This recommendation has lead to additional efforts to protect American eel in Canada.

Actions taken by the Lake Ontario Management Unit during 2006 to address the declining abundance of eel included:

- Collaborated with Ontario Power Generation on the operation of the eel ladder at the R.H. Saunders Hydroelectric Dam,
- Supported and participated in Decision Analysis workshops that identified alternative management actions to address eel mortality in hydro generation turbines in the St. Lawrence River,
- Participated in the development of a management plan for American eel in Canadian waters in cooperation with the Department of Fisheries and Oceans Canada and the Province of Quebec,
- Participated in the development of a restoration plan for American eel in the waters of Lake Ontario and the upper St. Lawrence River in cooperation with the Great Lakes Fisheries Commission, New York State Department of Environmental Conservation, United States Fish and Wildlife Service, Department of Fisheries and Oceans Canada and the Province of Quebec,
- Negotiating with Ontario Power Generation to develop an action plan to improve eel abundance in Lake Ontario and the upper St. Lawrence River and improve passage of eel around hydroelectric generating facilities in the St. Lawrence River,
- Promoted a bi-national approach to eel management by participating in the American Fisheries Society symposium on 'Governance of Fisheries Issues' and participating in meetings with the Atlantic States Marine Fisheries Commission,
- Participated with Ontario Power Generation and the Ontario Commercial Fishers Association in the stocking of American eel in the waters of the upper St. Lawrence River (see Section 7.1).

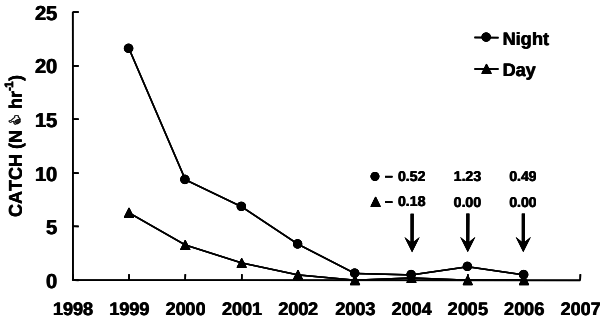

FIG. 7.3.1. Electrofishing catch of American eel (numbers caught per hr) in eastern Lake Ontario, separated by day and night for a recent period of 1999-2006.

8. Research Activities

8.1 Offshore Food Web

Effects of Exotic Species On The Potential For Lake Ontario To Support A Re-Introduced Bloater Population

Investigator: T. J. Stewart, Lake Ontario Management Unit and University of Toronto

Lake Ontario has had a long-history of aquatic species extirpations and introductions; and food web structures continue to respond and change. During the late 1990s, the Lake Ontario offshore food web was dramatically altered. The recently established *Bythotrephes* sp. was joined by three new invasive invertebrates, including *Cercopagis pengoi*. *Diporeia*, previously the dominant offshore benthic invertebrate, all but disappeared and dreissenid mussels expanded to ever greater depths. Offshore prey fish populations changed with the expansion of the invasive round goby, a recovery of the native threespine stickleback, and a shift in the depth distribution of exotic alewife and rainbow smelt. The Lake Ontario Management Unit is investigating the re-introduction of the bloater (*Coregonus hoyi*) into a food web substantially changed from its historical state. This project is assembling information to quantitatively assess trophic interactions to better understand the recent Lake Ontario offshore food web. The eventual aim will be to use this information to describe past, present and possible future food web structures and to predict the likely ecological consequences of bloater re-introduction.

In 2006, we continued to assemble and analyze information to quantify the components of the Lake Ontario food web. Here we report on recent analysis of offshore prey fish diets and a re-assessment of the bioenergetics of Lake Ontario Chinook salmon.

In 2006, the analysis of alewife stomachs from the 2005 collection were completed and confirmed the changes in diet we observed in 2004. There continues to be a much higher reliance on Mysids, as prey, compared to the 1990s. We also observed that the dominance of Mysids versus zooplankton in the diet of adult alewife was strongly related to the distance from shore that alewife were captured. Fish caught further offshore relied on *Mysis* while fish caught closer to shore relied primarily on zooplankton. Fish caught closer to shore also had much lower rations. This spatial variation in diet composition and ration size was not evident in the early 1990s. A comparison of the whole-lake spatial distribution and abundance of zooplankton in 1990 and 2003 is ongoing and may provide some insight into why we are now seeing this prey-switching behaviour in adult alewife with depth.

Analysis of the 2004 slimy sculpin stomachs was also completed in 2006. Despite recent declines in *Diporeia* abundance, they were still common in the diet of sculpin but the proportions varied with depth. In shallow sites (<35 m) the diet was dominated by Chronomids and *Gammarus* and no *Diporeia* were observed. At deeper depth strata *Diporeia* comprised from 30-60% of the sculpin diet. Sculpin also increased their reliance on Mysids compared to the 1990s.

In 2006, we developed and evaluated statistical models describing the temperature of Lake Ontario water at depth in coastal regions (less than 116 m sounding depth) for the years 1967-2001. We applied these models to data on depth of Chinook salmon captured by anglers to describe changes in the seasonal thermal distribution of foraging salmon. The results suggest that Chinook salmon are foraging at temperatures warmer than their preferred temperature even when it is available. We used these thermal distributions and updated descriptions of Chinook growth and diet in a bioenergetic model, coupled with an Hg mass-balance model, to estimate levels of active metabolism and alewife consumption. Preliminary findings indicate that levels of active metabolism and alewife consumption may be higher than we previously thought.

This research is beginning to change our understanding of trophic relationships in offshore Lake Ontario food web and will have implications to the future rehabilitation and management of the fish community.

This research relied on cooperation of the United States Geological Survey (USGS), New York State Department of Environmental Conservation (NYDEC), and the Department of Fisheries and Oceans. Support for the project was provided by the Canada-Ontario Agreement, the Great Lakes Fish and Wildlife Restoration Act, the Great Lakes Fishery Commission, and the National Sciences and Engineering Research Council.

8.2 Trophic role of the round goby (*Neogobius melanostomus*) in the Bay of Quinte

A two year study of round goby in the Bay of Quinte has been completed. The study was conducted in partnership with Trent University, where Dr. M. Fox supervised an MSc. candidate, Ms. A. C. Taraborelli, in a study designed to quantify the role of the round

goby in the Bay of Quinte ecosystem. The measured parameters included densities, growth, predation by the round goby, as well as predation on the round goby by other fish species. The field work and data analysis have been completed, and a report in form of a MSc. thesis will be completed in the spring 2007.

During the study period (2004-2005) the colonization of the bay was still in progress, and preliminary results from 2005 indicate that the densities in the upper bay were generally still below 1 fish per m^2, while in the lower bay the densities exceeded 3 fish per m^2 in the shallow water (<3 m, Fig. 8.2.1). All potential predators examined with the exception of the bowfin consumed gobies, with yellow perch and largemouth bass showing the highest frequency of occurrence in the diet (Fig. 8.2.2).

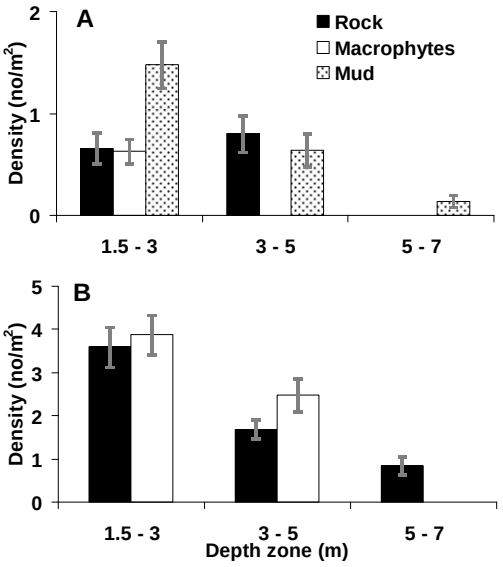

FIG. 8.2.1. Densities (± 1SE) of round gobies in the upper (A) and lower (B) Bay of Quinte in 2005, estimated through counts from underwater camera.

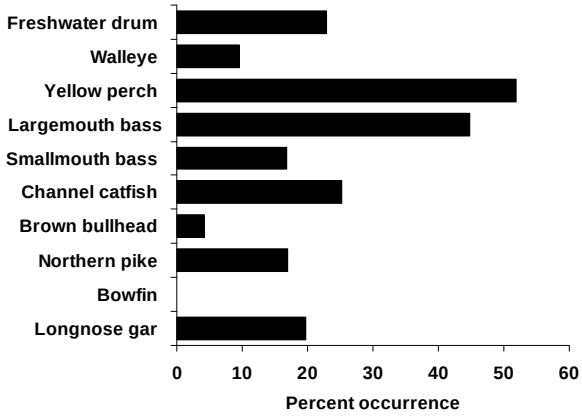

FIG. 8.2.2. Frequency of occurrence of round goby in the stomachs of predators in 2005, all areas of the bay, and all seasons combined.

8.3 Round Goby Control

The Development of a Novel Pheromone Based Strategy to Control an Invasive Fish

Investigators: T.B. Johnson, Aquatic Research Development Section, L.D. Corkum, B.S. Zielinski, S. Loeb, University of Windsor, J.D. Ackerman, University of Guelph, A.P. Scott, Centre for Environment, Fisheries, and Aquaculture Science, U.K., W. Li, Michigan State University

To date, there is no mechanism to control teleost fishes that have already invaded the Great Lakes. The invasive round goby (*Neogobius melanostomus*) is the fastest spreading vertebrate ever reported. The species has reached densities of up to 100 fish/m^2 on preferred rocky substrates. Reasons for the success of the round goby is its broad diet and availability of molluscan prey (adult round gobies eat mainly dreissenids), aggressiveness, multiple spawning habits and male parental care. In a laboratory flume, the male round goby releases a sex attractant to which gravid females respond (Belanger et al. 2004, Corkum 2004, Gammon et al. 2004). Gravid females spent more time near the odour source and swam to the source significantly faster to male donor water (i.e., male conditioned water) than to non-reproductive male odours. Moreover, the female stayed right at the inflow where male odours entered the tank. We are now ready to test if known sex attractants from reproductive male round gobies can be used to capture gravid females in the field. Previously, MacInnis & Corkum (2000) showed that one nesting male round goby may attract up to 15 gravid females. We will develop and test a pheromone trap that targets round gobies (and no other species). Although teleosts share specific steroids, it is unlikely that different species will be attracted to species-specific blends of steroids (Wyatt 2003). We hypothesize that round goby male sex attractants will direct gravid females to traps in the field. These 'pheromone traps' will target round gobies, enabling a reduction in their abundance in either critical habitats (i.e., spawning and nursery areas for lake sturgeon, smallmouth bass, lake trout, or species-at-risk, etc.) or limiting, and possibly preventing their spread into new waterways (i.e., Pefferlaw Brook, a tributary of Lake Simcoe).

Between May 5 and Jun 19, 2006 three sets of six mesh traps each containing one of six treatments (1 reproductive male round goby (1RM), 3 reproductive males (3RM), 1 reproductive female (RF), 1 non-reproductive male (NRM), food (ground yellow perch), and an empty control) were fished simultaneously on 10 separate occasions. Similar

experiments using only four treatments (1RM, 1RF, food, empty) were conducted in a 5 m diameter pool providing greater control of other stimulus (no predators, constant temperature, no "wild" reproductive gobies, etc.). Our hypothesis was that traps containing reproductive males would capture more females than the other treatments. Contrary to our expectations, round gobies did not show any clear preference for treatment type (Figs. 8.2.1 and 8.2.2). One possible explanation for the lack of preference was our inability to accurately verify sexual state (reproductive vs non-reproductive individuals). All captive fish were sacrificed and examined, post mortem. Previous research (Marentette and Corkum, under review) has suggested only males with a gonadosomatic index (GSI, ratio of testes weight to whole body weight) > 1.5% elicit attraction. When we only used treatments containing males with GSI > 1.5%, preference for these treatments was only marginally improved. Additional experiments are planned for 2007 to better understand why female to male attraction is so much weaker under field conditions.

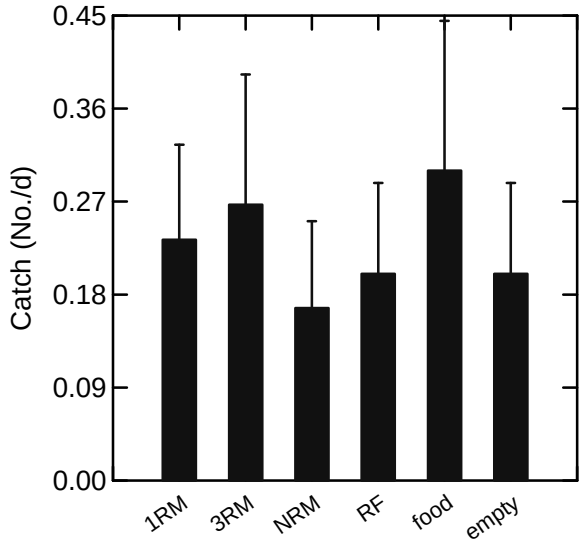

FIG. 8.2.1. Mean (+ standard error) number of round gobies caught in traps. There was no significant difference in numbers of round gobies caught in the traps representing different treatments (R=reproductive, NR=non-reproductive, M=male, F=female).

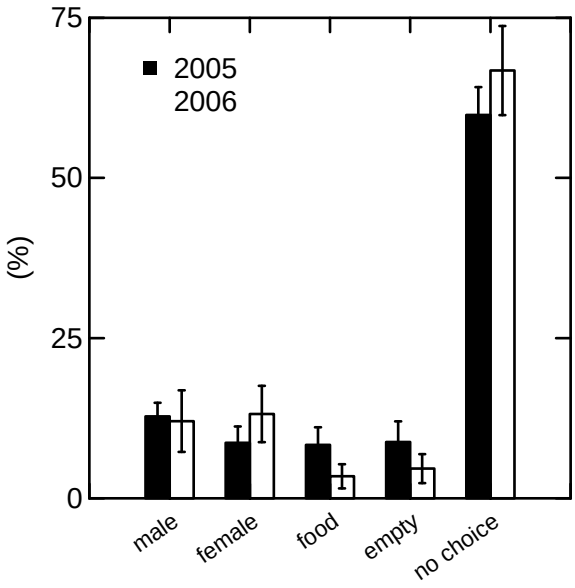

FIG. 8.2.2. Percent of round gobies that occupied traps seeded with odours (live male, live female, food, empty) in 2005 and 2006.

8.4 Lake Whitefish Health

Essential Fatty Acid Signatures of Lake Whitefish in Eastern Lake Ontario

Investigators: T.B. Johnson, Aquatic Research Development Section, J.A. Hoyle, Lake Ontario Management Unit, M.T. Arts, Environment Canada

Following two decades of progressive increases in catch rate, eastern Lake Ontario lake whitefish abundance precipitously declined in the mid-1990s, coincident with the disappearance of the deepwater amphipod *Diporeia* (Hoyle 2005). Also during the mid-1990s, condition (mass per unit length) was very poor. In 1997 and 1998, dead and emaciated juvenile and adult lake whitefish were collected during routine bottom trawls. A glimpse of recovery was seen in 2003 when a strong year-class of lake whitefish was observed. However, individuals from this new cohort are growing slower and maturing later indicating a fundamental change in life history.

During routine lake whitefish commercial harvest assessment in November 2006, we obtained dorsal muscle samples from 68 lake whitefish (age 3-19) for analysis of essential fatty acids (EFA). The utility of EFA as an unbiased indicator of health and reproductive potential has recently gained much attention in freshwater fisheries science (Snyder and Hennessey 2003). Relative proportions of different classes of fatty acids are indicative of trophic pathways (source of food) and therefore low levels of certain EFA may indicate a critical nutritive deficiency. The samples collected in 2006 will be analysed during 2007 and reported in a future report.

9. Partnerships

9.1 Nearshore Fish Communities

Nearshore community index netting (NSCIN), a provincially standardized trapnet program designed originally on inland lakes to evaluate littoral zone fish communities, was initiated on Lake Ontario in the Bay of Quinte from 2001-2005. In 2006, the NSCIN program was conducted on Hamilton Harbour and the Toronto Waterfront area (see Section 2.6) with partnerships involving Ontario Ministry Natural Resources, Fisheries and Oceans Canada, and Toronto Region Conservation Authority. The Ministry of Natural Resources' Lake Ontario Management Unit (LOMU) provided equipment and expertise with the NSCIN program while partners provided experienced staff with local knowledge. The partnerships proved very successful.

These locations are Areas of Concern (AOC) with ongoing Remedial Action Plans (RAP). As well, Fisheries Management Plans (FMP) are planned or being written for these AOCs, and NSCIN is being considered as a method for setting and evaluating the success of fish community targets. Results of the program (see Section 2.6 and previous LOMU Annual Reports) indicate that NSCIN may provide a good method for monitoring fish community restoration in AOCs such as Hamilton Harbour, Toronto Harbour and the Bay of Quinte, and for comparing with other lakes and embayments.

9.2 St. Lawrence River Muskellunge Spawning and Nursery Site Identification

The muskellunge (*Esox masquinongy*) is the largest game fish in Ontario waters. Its scattered provincial distribution is made up of several genetically distinct populations. The St. Lawrence River population produces the largest individuals in the province, and supports an important sport fishery. Concern regarding this population led to the creation of The St. Lawrence River Esocid Working Group under the supervision of the Lake Ontario Committee, of the Great Lakes Fishery Commission. The Esocid Working Group consists of members from New York State Department of Environmental Conservation (NYSDEC), the Ontario Ministry of Natural Resources (OMNR), SUNY College of Environmental Science and Forestry and the Royal Ontario Museum (ROM).

In the past the Esocid Working Group produced management plans pertaining to St. Lawrence River muskellunge, the most recent being the Update of the Strategic Plan For Management of The St. Lawrence River Muskellunge Population and Sport Fishery Phase III: 2003-2010. One objective outlined in the report was the protection of muskellunge spawning and nursery habitats. However, these habitats were not well documented or identified within the St. Lawrence River. Consequently the OMNR conducted a young-of-the-year seining program from 1989-1995 in an effort to identify nursery sites within the Canadian waters of the St. Lawrence River. Efforts were discontinued following this period.

In both 2005 and 2006, efforts to identify muskellunge nursery habitats were renewed through a partnership between Muskies Canada Inc. (MCI - Gananoque Chapter), Parks Canada (St. Lawrence Islands National Park), Kemptville District MNR, Fisheries and Oceans Canada (Prescott), and the Lake Ontario Management Unit (LOMU). During 2006, sampling occurred from August 14-23 during which 55 seining events were completed. In total, 4,874 fish were captured, representing 27 species. Yellow perch were the most abundant species (46% of the catch), followed by banded killifish (12%), bluntnose minnow (7%), round goby (7%), and rock bass (6%). Pugnose shiner (*Notropis anogenus*), listed as endangered by COSEWIC and SARO (see Table 7.3.1), were captured during this program at four sites. In addition, Grass pickerel (*Esox americanus vermiculatus*), listed as special concern by COSEWIC and proposed as special concern by SARO (see Table 7.3.1) were captured at two sites. These important observations highlight the importance of seining programs to the identification of biological diversity of the St. Lawrence River.

Of the 9 Esocids captured during 2006, 2 were muskellunge, 5 were northern pike and 2 were grass pickerel (*Esox americanus vermiculatus*). YOY muskellunge were captured at two sites; both of these sites were not previously confirmed as muskellunge nursery areas (Table 9.2.1). These data are being incorporated into NRVIS mapping of muskellunge nursery habitats by MNR - Kemptville District Office and shared with partner agencies.

TABLE 9.2.1. Muskellunge nursery sites identified during the 2006 seining project.

Site ID	Year Identified	Description
234	2006	NE corner of Endymion Island (near Mallorytown Landing)
235	2006	SE corner of McDonald Island (near Gananoque)

9.3 Atlantic Salmon Restoration

A significant partnership to advance restoration of Atlantic salmon to Lake Ontario (see Section 7.3) was announced in the spring of 2006. This partnership brings together the Ministry of Natural Resources, the Ontario Federation of Anglers and Hunters (OFAH), Australia's Banrock Station wine company and the Liquor Control Board of Ontario (LCBO). OMNR and OFAH have collaborated successfully on other provincial species restoration efforts, including wild turkey and elk. The LCBO has adopted Atlantic salmon as the "flagship" species for its new Natural Heritage Fund, established to protect Ontario's natural heritage by preserving and expanding wildlife habitat. Banrock supports conservation projects world-wide and has a presence here through the Banrock Station Wetland Foundation Canada.

OFAH has also engaged a long list of dedicated, conservation-minded groups in this project. Other partners and sponsors include the Canadian Sportfishing Industry Association, Trout Unlimited Canada, Fleming College, Trees Ontario Foundation, Fishing Forever Foundation, the World Fishing Network as well as local conservation authorities and community groups.

9.4 American Eel

American eel populations show evidence of decline in many areas of eastern Canada and particularly in Lake Ontario and the upper St. Lawrence River (LOSLR). Eels spawn in the Sargasso Sea. Juvenile eel migrate into many freshwater systems between Labrador and the Caribbean where they mature. Eel reside in LOSLR for approximately twenty years before migrating back to the sea. American eels are widely thought to be a panmictic species (i.e. there is no genetic structure to the stock). As a result of this aspect of their life history, fisheries management can only be effective when addressed on a global scale.

Annually since 1974, LOMU has worked with Ontario Power Generation to operate the eel ladder at the R.H. Saunders Hydroelectric Dam (see Section 2.2). During 2006, LOMU has worked with Ontario Power Generation and the Ontario Commercial Fishers Association to rehabilitate eel in the LOSLR by stocking (see Section 7.1).

LOMU has worked to investigate options to address mortality of eels in hydro electric generation turbines in the LOSLR with a wide variety of partners including:

- Fisheries and Oceans Canada (DFO - both habitat, and fisheries management),
- Environment Canada,
- Ministère des Ressources naturelles et de la Faune du Québec (Québec MRN),
- Ontario Power Generation,
- Hydro Québec,
- New York Power Authority,
- New York State Department of Environmental Conservation (NYSDEC),
- United States Fish and Wildlife Service (USFWS), and
- Ontario Commercial Fishers Association.

To encourage broad scale management of American eel, LOMU has taken part in several planning initiatives. LOMU has worked with DFO and Québec MRN to develop an Eel Management Plan for Canada. The national plan has a long-term goal of rebuilding eel abundance across Canadian range to mid-1980s levels and short-term goal of reducing anthropogenic eel mortality by 50% relative to the 1997-2002 average.

In addition, LOMU has contributed to the drafting of the Great Lakes Fisheries Commission's American eel recovery framework for Lake Ontario and the St. Lawrence River which includes representatives from the GLFC, NYSDEC, USFWS, DFO, Québec MRN. This framework will establish recovery goals and objectives, establish of research and stock assessment priorities, coordinate funding, identify and manage important sources of mortality and lost habitat, and oversee implementation.

LOMU staff have also taken part in discussions with the Atlantic States Marine Fisheries Commission to encourage coordination of eel management between the US east coast, LOSLR and the Canadian Maritime provinces.

Appendix A:
Lake Ontario Management Unit Staff, 2006

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Bruce Morrison – Assessment Supervisor and A/Operations Supervisor
Tom Stewart – Project Coordinator
Jim Bowlby – Assessment Biologist
Jim Hoyle – Assessment Biologist
Ted Schaner – Assessment Biologist
Kelly Sarley – Database Technician, Computer Operator
Dale Dewey – Operations Coordinator
Wayne Miller – Senior Technician, Base Operations
Charles Wood – Senior Marine and Fisheries Technician
Dave Goodfellow – Great Lakes Technician
Tom Lawrence – Great Lakes Technician
Steve McNevin – Great Lakes Technician
Unclassified Staff:
Jason Dietrich – Assessment Biologist
Randy Gurnsey – Great Lakes Fisheries Technician
Rob Slapkauskas – A/Great Lakes Fisheries Technician
Alan McIntosh – Boat Captain
Shannon Kelly – Student Fisheries Technician
Amy McPherson – Student Fisheries Technician
Casey Melbourne – Student Fisheries Technician
Elizabeth Miller – Student Fisheries Technician
Tony McCambridge – Commercial Fish Assistant (DCO)

AQUATIC RESEARCH AND DEVELOPMENT SECTION – GLENORA
Dr. Tim Johnson – Research Scientist
Les Stanfield – Research Biologist
Laurie Allin – Research Technician

Appendix B. Lake Ontario Management Unit 2006 Operational Staff Field and Lab Schedule

Field or lab project	Dates	Species assessed, monitored or stocked	Length of data series (yrs)	Lead biologist
Ganaraska Fishway - Rainbow Trout Assessment	Mar 27 - Apr 28	Adult rainbow trout	33	Bowlby
Lake Trout Tug Stocking	Apr 10 - May 10	Juvenile lake trout	n/a	Daniels
Bay of Quinte Open Water Creel	May 6 - Jun 4	Walleye, smallmouth bass, largemouth bass, northern pike	30	Hoyle
Whitefish Commercial Catch Sampling	Seasonal	Lake whitefish	20	Hoyle
Juvenile Atlantic Salmon Stocking	May 16 - 18	Juvenile atlantic salmon	n/a	Daniels
Moses Saunders Eel Ladder Monitoring	May 23 - Oct 28	Migrating American eel	33	Mathers
Eastern Lake Ontario and Bay of Quinte Community Index Netting	Jun 26 - Sep 12	Eastern Lake Ontario and the Bay of Quinte fish community	48	Hoyle
Round Goby Pheromone project	May 1 - Jun 16	Rond Goby	1	Johnson
Lake Whitefish Test Netting - Partnership with OCFA	Jul 1 - Oct 31	Lake Whitefish and incidentally caught fish	4	Dietrich
Lake Ontario Hydroacoustics	Jul 24 - Aug 4	Alewife, rainbow smelt and three-spine stickleback	16	Schaner
Hamilton Harbour Nearshore Community Index Netting	Aug 15 - 26	Nearshore fish community	1	Hoyle
Toronto Islands Nearshore Community Index Netting	Sep 18 - 29	Nershore fish community	1	Hoyle
St. Lawrence River Indexing Netting - Lake St. Francis	Sep 11 - 28	St. Lawrence River fish community	22	Schaner
Credit River Chinook Assessment and Egg Collection	Oct 2 - 6	Adult chinook salmon	32	Bowlby
Age and Growth	Year-round	Multiple species	n/a	Multiple

Appendix C. Atlantic salmon stocked in the Province of Ontario waters of Lake Ontario, 2006.

SITE NAME	MONTH STOCKED	YEAR SPAWNED	HATCHERY	STRAIN/ EGG SOURCE	AGE (MONTHS)	MEAN WT (G)	MARKS	NUMBER STOCKED
ATLANTIC SALMON - ADVANCED FRY								
COBOURG BROOK								
Ball's Mill	5	2005	Ringwood	LaHave/Normandale	6	1.3	None	30,000
Dale Rd.	5	2005	Ringwood	LaHave/Normandale	6	1.3	None	30,556
								60,556
CREDIT RIVER								
Belfountain	5	2005	Ringwood	LaHave/Normandale		1.1	None	40,000
Forks of the Credit - Dominion St.	5	2005	Ringwood	LaHave/Normandale	6	1.1	None	40,000
Forks of the Credit Prov. Park	5	2005	Ringwood	LaHave/Normandale	6	1.3	None	43,900
								123,900
DUFFIN CREEK								
East Duffin Cr. - Claremont	5	2005	Ringwood	LaHave/Normandale	6	1.1	None	7,500
East Duffin Cr. - Greenwood	5	2005	Ringwood	LaHave/Normandale	6	1.1	None	12,300
East Duffin Cr. - Paulynn Park	5	2005	Ringwood	LaHave/Normandale	6	1.1	None	200
West Duffin Cr. - Reesor Cr.	5	2005	Ringwood	LaHave/Normandale	6	1.1	None	10,000
West Duffin Cr.	5	2005	Ringwood	LaHave/Normandale	6	1.3	None	30,000
								60,000
ATLANTIC SALMON - FALL FINGERLINGS								
COBOURG BROOK								
Danforth Rd.	10	2005	Normandale	LaHave/Normandale	11	10.1	None	**25,005**
CREDIT RIVER								
Black Cr.	11	2005	Partnership	LaHave/Normandale	12	10.0	None	350
Forks of the Credit - Dominion St.	11	2005	Normandale	LaHave/Normandale	12	10.0	None	16,659
Grange Sideroad	10	2005	Normandale	LaHave/Normandale	11	10.4	None	16,670
McLaren Rd.	11	2005	Normandale	LaHave/Normandale	12	10.0	None	16,671
West Credit - Collins Property	11	2005	Partnership	LaHave/Normandale	12	8.0	None	112
								50,462
DUFFIN CREEK								
East Duffin Cr. - 5th Concession	10	2005	Normandale	LaHave/Normandale	11	10.4	None	12,500
E. Duffin Cr. - Taunton Rd. W.	11	2005	Partnership	LaHave/Normandale	12	10.4	None	522
West Duffin Cr. - Wixon Cr.	10	2005	Normandale	LaHave/Normandale	11	10.2	None	12,510
								25,532
TOTAL - ATLANTIC SALMON ADVANCED FRY								**244,456**
TOTAL - ATLANTIC SALMON FALL FINGERLINGS								**100,999**
TOTAL - ATLANTIC SALMON								**345,455**

Appendix C. Brown trout stocked in the Province of Ontario waters of Lake Ontario , 2006.

SITE NAME	MONTH STOCKED	YEAR SPAWNED	HATCHERY	STRAIN/ EGG SOURCE	AGE (MONTHS)	MEAN WT (G)	MARKS	NUMBER STOCKED
BROWN TROUT - SPRING YEARLINGS								
LAKE ONTARIO								
Ashbridge's Bay Ramp	5	2004	Harwood	Ganaraska/Normandale	18	65.1	Ad	10,032
Athol Bay	5	2004	Harwood	Ganaraska/Normandale	18	88.2	RP	2,100
	5	2004	Harwood	Ganaraska/Normandale	18	56.0	Ad	4,299
Bluffer's Park	5	2004	Harwood	Ganaraska/Normandale	18	63.4	Ad	10,093
Burlington Canal	4	2004	Normandale	Ganaraska/Normandale	15	35.0	Ad	15,019
Fifty Point CA	4	2004	Normandale	Ganaraska/Normandale	15	35.5	Ad	15,064
Lakefront Promenade	4	2004	Normandale	Ganaraska/Normandale	15	31.6	Ad	10,132
Millhaven Wharf	4	2004	White Lake	Ganaraska/Normandale	16	30.0	Ad	14,843
Oshawa Harbour	5	2004	Harwood	Ganaraska/Normandale	18	59.5	Ad	10,229
TOTAL - BROWN TROUT								**91,811**

Appendix C. Chinook salmon stocked in the Province of Ontario waters of Lake Ontario, 2006.

SITE NAME	MONTH STOCKED	YEAR SPAWNED	HATCHERY	STRAIN/ EGG SOURCE	AGE (MONTHS)	MEAN WT (G)	MARKS	NUMBER STOCKED
CHINOOK - SPRING FINGERLINGS								
BOWMANVILLE CREEK								
CLOCA Ramp	4	2005	Ringwood	Wild - Credit R.	5	3.8	None	20,000
BRONTE CREEK								
2nd Side Road Bridge	4	2005	Ringwood	Wild - Credit R.	5	3.0	None	23,500
5th Side Road Bridge	4	2005	Ringwood	Wild - Credit R.	5	3.9	None	13,500
								37,000
CREDIT RIVER								
Eldorado Park	4	2005	Ringwood	Wild - Credit R.		3.0	None	26,500
Huttonville	4	2005	Ringwood	Wild - Credit R.	5	3.5	None	26,500
Norval	4	2005	Ringwood	Wild - Credit R.	5	3.7	None	27,000
								53,500
DON RIVER								
Donalda Golf Club	5	2005	Ringwood	Wild - Credit R.	6	4.3	None	**15,297**
HIGHLAND CREEK								
Colonel Danforth Park	4	2005	Ringwood	Wild - Credit R.	5	3.9	None	**15,000**
HUMBER RIVER								
East Branch Islington	4	2005	Ringwood	Wild - Credit R.	5	3.0	None	**15,000**
LAKE ONTARIO								
Ashbridge's Bay Ramp	5	2005	Ringwood	Wild - Credit R.	6	4.1	None	10,000
Barcovan	5	2005	Ringwood*	Wild - Credit R.	6	5.9	Ad	9,995
Beacon Inn	5	2005	Ringwood	Wild - Credit R.	6	4.3	None	20,000
Bluffer's Park	5	2005	Ringwood	Wild - Credit R.	6	4.1	None	26,000
Burlington Canal	4	2005	Ringwood	Wild - Credit R.	5	3.5	None	37,000
Consecon Robinson Pt	5	2005	Ringwood	Wild - Credit R.	6	5.5	LV	15,008
Lakeport	4	2005	Ringwood	Wild - Credit R.	5	3.8	None	15,000
Oshawa Harbour	4	2005	Ringwood	Wild - Credit R.	5	3.7	None	20,000
Port Dalhousie East	5	2005	Ringwood	Wild - Credit R.	6	4.2	None	73,000
Wellington Channel	5	2005	Ringwood	Wild - Credit R.	6	5.5	LV	15,008
	5	2005	Ringwood*	Wild - Credit R.	6	5.6	Ad	9,998
Whitby Harbour	4	2005	Ringwood	Wild - Credit R.	5	3.7	None	20,000
								271,009
TOTAL - CHINOOK SALMON								**406,806**

* Pen-Imprinted

Appendix C. Lake trout stocked in the Province of Ontario waters of Lake Ontario, 2006.

SITE NAME	MONTH STOCKED	YEAR SPAWNED	HATCHERY	STRAIN/ EGG SOURCE	AGE (MONTHS)	MEAN WT (G)	MARKS	NUMBER STOCKED
				LAKE TROUT - SPRING YEARLINGS				
LAKE ONTARIO								
Cobourg Harbour Pier	4	2004	Harwood	Seneca Lake/Harwood	16	28.2	AdLV	39,786
Fifty Point CA	4	2004	Harwood	Seneca Lake/Harwood	16	27.7	AdLV	59,912
	4	2004	Harwood	Slate Islands/Dorion	18	32.6	AdLV	12,967
North of Main Duck Sill	4	2004	Harwood	Michipicoten Island/Dorion	18	37.4	AdLV	65,380
	4	2004	Harwood	Mishibishu Lakes/Tarentorus	17	35.5	AdLV	18,749
	5	2004	Harwood	Mishibishu Lakes/Tarentorus	18	32.2	AdLV	48,932
	4	2004	Harwood	Seneca Lake/Harwood	16	32.4	AdLV	13,462
	5	2004	Harwood	Seneca Lake/Harwood	17	34.1	AdLV	1,331
	5	2004	Harwood	Slate Islands/Dorion	19	35.2	AdLV	27,202
Pigeon Island	5	2004	Harwood	Slate Islands/Dorion	19	37.7	AdLV	12,057
South of Long Point	4	2004	Harwood	Seneca Lake/Harwood	16	31.3	AdLV	85,297
	5	2004	Harwood	Seneca Lake/Harwood	17	31.4	AdLV	53,174
TOTAL - LAKE TROUT								**438,249**

Appendix C. Rainbow trout stocked in the Province of Ontario waters of Lake Ontario, 2006.

SITE NAME	MONTH STOCKED	YEAR SPAWNED	HATCHERY	STRAIN/ EGG SOURCE	AGE (MONTHS)	MEAN WT (G)	MARKS	NUMBER STOCKED
RAINBOW TROUT - FRY								
LAKE ONTARIO								
Millhaven Cr.		2006	Partnership	Ganaraska/Normandale			None	**20,000**
RAINBOW TROUT - FALL FINGERLINGS								
CREDIT RIVER								
Papermill Dam	11	2006	Partnership	Wild - Credit R.		7.5	None	**42,000**
ROUGE RIVER								
Bruce Cr.	9	2006	Partnership	Wild - Duffin Cr.		1.0	None	20,000
Little Rouge R.	9	2006	Partnership	Wild - Duffin Cr.		1.0	None	20,000
Edward Ave.	9	2006	Partnership	Wild - Duffin Cr.		1.0	None	20,000
Cedarhurst Dr.	9	2006	Partnership	Wild - Duffin Cr.		1.0	None	20,000
								80,000
RAINBOW TROUT - SPRING YEARLINGS								
BRONTE CREEK								
2nd Side Road Bridge	4	2005	Normandale	Ganaraska/Normandale	12	21.1	RV	5,307
Lowville Park	4	2005	Normandale	Ganaraska/Normandale	12	21.1	RV	5,344
								10,651
CREDIT RIVER								
Huttonville	4	2005	Normandale	Ganaraska/Normandale	12	20.2	RV	4,586
	4	2005	Normandale	Ganaraska/Normandale	13	37.5	RV	784
Norval	4	2005	Normandale	Ganaraska/Normandale	12	20.2	RV	5,207
								5,991
HUMBER RIVER								
East Branch Islington	4	2005	Harwood	Ganaraska/Normandale	15	33.4	RV	7,682
King Vaughan Line	4	2005	Harwood	Ganaraska/Normandale	15	29.8	RV	8,309
								15,991
LAKE ONTARIO								
Glenora	5	2005	Harwood	Ganaraska/Normandale	14	31.7	RV	8,799
Jordan Harbour	4	2005	Normandale	Ganaraska/Normandale	12	18.6	RV	20,099
Millhaven Wharf	5	2005	Harwood	Ganaraska/Normandale	14	31.3	RV	9,700
North of Main Duck Sill	5	2005	Harwood	Ganaraska/Normandale	15	25.6	RV	8,027
Port Dalhousie East	4	2005	Normandale	Ganaraska/Normandale	12	20.1	RV	20,187
								66,812
ROUGE RIVER								
Berczy Cr.	4	2005	Partnership	Wild - Duffin Cr.			None	5,100
Bruce Cr.	4	2005	Partnership	Wild - Duffin Cr.			None	5,000
								10,100
TOTAL - RAINBOW TROUT FRY								**20,000**
TOTAL - RAINBOW TROUT FALL FINGERLINGS								**122,000**
TOTAL - RAINBOW TROUT SPRING YEARLINGS								**109,545**
TOTAL - RAINBOW TROUT								**251,545**

Appendix C. American eel stocked in the Province of Ontario waters of Lake Ontario, 2006.

SITE NAME	MONTH STOCKED	YEAR SPAWNED	HATCHERY	STRAIN/ EGG SOURCE	AGE (MONTHS)	MEAN WT (G)	MARKS	NUMBER STOCKED
AMERICAN EEL - ADVANCED ELVERS								
ST. LAWRENCE RIVER								
Mouth of Jones Creek	10	2005	Private	Wild - Jordan R., Salmon R., Annapolis R. (NS)	19	0.7	Tetracycline	**72,150**
Adelaide Island	10	2005	Private	Wild - Jordan R., Salmon R., Annapolis R. (NS)	19	0.7	Tetracycline	**36,075**
Squaw Island	10	2005	Private	Wild - Jordan R., Salmon R., Annapolis R. (NS)	19	0.7	Tetracycline	**36,075**
TOTAL - AMERICAN EEL								**144,300**

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