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PCBs and Organochlorine Pesticide Residues in Young-of-Year Fish from New and Traditional Near-shore Sampling Areas in the Eastern Portion of New York State's Great Lakes Basin, 2011 and 2012

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Eric A. Paul, Wayne Richter, Lawrence C. Skinner

Bureau of Ecosystem Health
Division of Fish and Wildlife
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

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Eric A. Paul
Aquatic Toxicant Research Unit, Rome Field Station, Rome, NY 13440

Wayne Richter
Environmental Monitoring Section, 625 Broadway, Albany, NY 12233-4756

Lawrence C. Skinner (retired)
Environmental Monitoring Section 625 Broadway, Albany, NY 12233-4756

Bureau of Habitat
Division of Fish and Wildlife
New York State Department of Environmental Conservation
Albany, NY

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ABSTRACT

During September and October of 2011 and 2012, composites of young-of-year (y-o-y) fish were collected by the New York State Department of Environmental Conservation (NYS DEC) from 24 near-shore locations in the eastern portion of New York's Great Lakes basin. Samples were collected as part of a continuing contaminant monitoring program that began in the 1980s for most sites, but eight of these sites were new. Composite y-o-y fish samples were analyzed for polychlorinated biphenyls (Aroclor 1242 and Aroclor 1254/1260), organochlorine pesticides, and mercury.

While mercury was detected in all fish composites, it was only present at low concentrations that are of little concern. The Great Lakes whole fish objective of no detectable mirex designed to protect piscivorus fish and wildlife was met in all fish samples analyzed. Additionally, all forms of chlordane were below detection, as were all other organochlorine pesticides except DDT.

DDT and its two metabolites DDE and DDD were detected in approximately 67% of the samples and at some detectable level at all sample sites. All total DDT values were very low, and even when above the detection limits, were well below the fish flesh criteria for DDT to sensitive piscivorous species by at least one order of magnitude. The parent product, DDT, was found in only two y-o-y fish composites, and when detected was barely above the detection level. DDE, the primary DDT metabolite and the third most commonly found chemical compound in y-o-y fish, was detected in 67% of the samples. DDD was only detected in 8% of the samples.

PCBs were the only chemical detected at concentrations of concern. Aroclor 1242 was detected in 95% of composites while Aroclor 1254/1260 was detected in 74% of these samples. The lower detection level available for Aroclor 1242 likely accounts for this difference. Total PCBs (sum of the two Aroclors) at 12 of the sites exceeded the International Joint Commission (IJC) objective of 0.10 mg/kg to protect sensitive piscivorous species.

By far the most highly contaminated fish were located at sites in the St. Lawrence River and the lower reaches of the Grasse and Raquette rivers in the Massena Area of Concern. The site on the St. Lawrence River adjacent to the General Motors Company had fish with the highest level of PCBs (highest fish composite total PCB was 15.6 mg/kg wet weight) and was the most contaminated. Approximately 75% of the PCBs at this site was Aroclor 1242. Most of the PCBs found in the other St. Lawrence River and Grasse River sites were around a 50-50 mix of the two Aroclors.

Another highly contaminated site on the St. Lawrence River was the newly sampled site just downstream of the Grasse River and immediately upstream of Reynolds Metals. This site seems be greatly affected by the PCB contamination of the Grasse River. PCB concentrations in young fish were very similar between this site and the site Grasse River near the mouth. These two sites were highly contaminated, with PCBs 17 times greater than the IJC objective.

Interspecies comparisons for PCBs indicate that different species of y-o-y fish usually had similar concentrations, though occasional exceptions occurred.

INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC) and its northern counterpart, the Ontario Ministry of the Environment and Climate Change (OMOECC) have used young-of-year (y-o-y) fish for monitoring persistent organic contaminants in the Great Lakes basin dating back into the 1970s (Preddice et al. 1998, 2002, 2006; Skinner et al. 1989, 1994; Suns et al. 1978, 1983, 1985, 1993). NYSDEC has continued this monitoring on an approximate five-year cycle. We report completion in 2011–2012 of the latest cycle for the eastern portion of New York State's Great Lakes basin, following Preddice et al. (2011) for the western portion.

Young-of-year fish are important food items for larger fish as well as many piscivorous birds, reptiles, and mammals. They function as an important pathway, moving contaminants up the food chain to higher trophic levels. These fish are excellent bio-monitors because they are ubiquitous, relatively abundant, are localized near shore in calm waters, and have a limited exposure period of only four to six months when sampled in the fall in New York State. During this short period they can bioaccumulate organic compounds of concern such as polychlorinated biphenyls (PCB) and organochlorine (OC) pesticides. For these reasons y-o-y fish are effective in monitoring long-term changes in environmental contaminants, for finding localized contamination, and determining the efficacy of cleanup efforts at specific hazardous waste sites. The sampling reported here completes the round begun in 2009 in the western portion of New York's Great Lakes (Preddice et al. 2011).

Round Gobies (*Neogobius melanostomus*) are an invasive species that have become quite common within the Great Lakes basin (Lederer et al. 2008, Krakowiak and Pennuto 2008, Johnson et al. 2010, Taraborelli et al. 2010, Kipp et al. 2012, Pennuto et al. 2012). Exactly how they may displace other species remains to be seen, but in many sites they are dominant. We collected gobies at a few sites to make comparisons to some of our traditional minnow collections.

METHODS

Sampling

In 2011 and 2012 we collected fish at 16 historically sampled sites extending from Rochester on Lake Ontario east to the St. Lawrence River and downstream on the St. Lawrence to the General Motors Company. in Massena, as well as from tributaries to the St. Lawrence in the Massena area. Sites included Sodus Bay, the Salmon River mouth, Black River Bay, the Oswegatchie River mouth, and several locations on the Grasse and Raquette Rivers (Figures 1 and 2). We also added eight new sites, based upon recommendations in an earlier report (Preddice and Skinner 2002), as well as those of a previous NYSDEC researcher (Timothy Preddice, personal communication). These sites are Lake Ontario at Sodus Point, the Salmon River above the lower reservoir, the St. Lawrence River just upstream of Reynolds Metal Company, the St. Lawrence River at Reynolds Metal Company in Dead Clam Cove, the St. Lawrence River just upstream of General Motors Company, the Grasse River at the Route 37 Bridge, the Raquette River off of

North Raquette River Road, and in the mouth of the St. Regis River. We collected 223 y-o-y fish composites from 16 traditional sites and five new near-shore sites in September and October 2011. To complete the project, we collected 25 additional composites in 2012 from one traditional site (revisited) and three new sites in the Massena area (Table 1).

Target Species: Because of great abundance, y-o-y Spottail Shiner, (*Notropis hudsonius*), was selected as the primary target species for contaminant monitoring studies through about 1992 (Preddice et al. 2011). In 1996, NYSDEC switched to the nearly ubiquitous Bluntnose Minnow, (*Pimephales notatus*), because the abundance of Spottail Shiner had decreased significantly at most traditional sampling locations. Since then, where Spottail Shiner and Bluntnose Minnow were sparse, other fairly common species such as Emerald Shiner (*Notropis atherinoides*) have been collected. We again targeted these species but, in a few cases where these primary species were not available, we collected other species including Spotfin Shiner (*Notropis spilopterus*), fallfish (*Semotilus corporalis)*, Gizzard Shad (*Dorosoma cepedianum*), Brook Silverside (*Labidesthes sicculus*), Banded Killifish (*Fundulus diaphanus*), Rock Bass (*Ambloplites rupestris*), Largemouth Bass (*Micropterus salmoides*), Bluegill (*Lepomis macrochirus*), Yellow Perch (*Perca flavescens*), Logperch (*Percina caprodes*), and Round Goby (*Neogobius melanostomus*). In some locations where a desired primary species was available, we also collected one or more secondary species so that we could better interpret contaminant concentrations when only secondary species were available.

Collection, Sample Targets and Handling: Young-of-year fish were collected with a 25-foot-long, 3/16-inch mesh haul seine equipped with center bag. The sampling goal was seven composites with 5-50 (depending on size) y-o-y fish of the same species from each site. During collection, live fish were carefully placed into a food-grade, one-gallon plastic bag with site water until sufficient numbers were obtained to achieve a preferred minimum sample mass of 10 grams and an absolute minimum mass of 5 grams. Composite mass of each sample is presented in Appendix 1. These fish were carried in a small cooler with ice to ensure freshness and to maintain sample integrity. Shortly after collection, individual fish were sorted to species and their total length was measured to the nearest millimeter. Fish were visually size matched for each composite. Where fish were abundant, representative individuals of about the same total length were selected for the composites to be analyzed, but we sometimes needed to make composites that differed in fish size. Each composite was weighed to the nearest 0.1 gram and placed into a hexane-rinsed aluminum foil envelope. Each envelope was folded shut and sealed within a labeled one-quart food-grade freezer bag. Composites from each site were collectively placed in a labeled one-gallon freezer bag and immediately frozen in a larger cooler with dry ice. All field data were recorded onto collection records and maintained with NYSDEC chain of custody forms. At the end of each sampling week, frozen samples were held in freezers at the Rome Field Station until transferred to a secure freezer (-20°C) located at NYSDEC's Hale Creek Field Station (HCFS), Gloversville, NY.

Sample Processing and Lipid Extraction

Chemical analyses of the y-o-y fish composites were performed by the Analytical Services Unit (ASU) at the Hale Creek Field Station. ASU personnel partially thawed samples, then chopped and homogenized the fish in each composite. Homogenized tissue samples were placed in clean glass jars and returned to the freezer. A sample of this tissue was taken and held for mercury analysis, which is determined on a wet weight basis. Later, frozen tissue samples were weighed

and freeze dried for approximately 20-24 hours and subsequently pulverized with a stainless-steel spatula. At this point samples were weighed and percent moisture was determined. To obtain the lipid portion of each composite, freeze dried samples were placed in a soxhlet extractor system for about seven hours. Soxhlet extraction was accomplished with 200 mL of a 1:1 hexane-acetone solution that was eventually roto-evaporated to dryness, enabling percent lipid to be determined. Prior to chemical analysis, approximately 0.1 g of sample lipid from each composite was dissolved in hexane and transferred to a glass clean-up column containing 10 g of activated Florisil and 5 g of anhydrous sodium sulfate. The sample was eluted with 200 mL of 6% ethyl ether/petroleum ether and dried with a rotary evaporator. The remaining fraction was diluted with iso-octane containing octachloronaphthalene as an internal standard.

Chemical Analysis

Samples were analyzed for total mercury, total PCBs as Aroclor 1242 and combined Aroclors 1254 and 1260, and 19 OC pesticides (five DDT metabolites, aldrin, alpha, beta and gamma hexachlorocyclohexane [HCH], chlordane metabolites, hexachlorobenzene [HCB], heptachlor, heptachlor epoxide, mirex, and photomirex). All but seven samples from the Grasse River above the Massena dam were also analyzed for dieldrin, octachlorostyrene and o,p'-DDD. Samples were analyzed for total mercury by cold vapor atomic absorption spectrometry, using a Leeman Labs AP/PS200II Mercury Analysis System. PCB and pesticide analysis were by capillary gas chromatography with an electron capture detector (GC-ECD) following Standard Operating Procedure OC1.107 (Gudlewski 2011). In addition, at least ten percent of selected samples with PCB and OC pesticides were qualitatively analyzed by gas chromatography-mass spectrophotometry (GC-MS) to confirm the presence of low level residues. Method Detection Limits (MDLs) are in Table 2.

Quality Control

Calibration of the GC was accomplished with a five-point external standard. For every 20 samples one method blank, one replicate (duplicate), one spiked matrix, and one fish tissue reference material (Hudson Reference Material [Schantz et al. 2004] or NIST SRM 1947) were analyzed. Criteria for control limits were obtained from *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories* (USEPA 2000). Control limits for accuracy were based on accepted percent recoveries that ranged from 50 to 150%. Control limits for precision were based on relative standard deviations (RSD) of less than or equal to 50% for matrix spikes, reference material and replicate analyses.

Data Reporting

Analytical data for each composite were reported in milligrams per kilogram (mg/kg) wet weight. Concentrations less than the MDL are reported as "< MDL" for individual analytes. We report means for mercury since all samples had concentrations greater than the MDL.

We report total DDT calculated as the sum of detected concentrations of DDT and DDT metabolites. We report medians rather than means for DDT as a more valid measure of central tendency with the high number non-detects. Lipid normalized concentrations were calculated by dividing the wet weight concentration by the percent lipid. They are most useful for temporal and interspecies comparisons.

We calculated total PCBs for an individual sample as the sum of Aroclor 1242 and combined Aroclors 1254 and 1260. If both were less than the MDL, the sample total is reported as less than the sum of the two MDLs (< 0.040 mg/kg). If only one Aroclor was less than the MDL, sample PCB is given as a range, with the lower limit being the concentration that was detected and the upper limit determined by adding the MDL of the other Aroclor. For example, if Aroclor 1242 was 0.022 mg/kg and the Aroclor 1254/60 was < 0.030 mg/kg, total PCB is reported as 0.022–0.052 mg/kg. We used the upper value of the range when calculating means for a site and species combination. Mean lipid normalized concentration is the mean of the individual lipid normalized total PCB results. If both Aroclors in a sample were below detection, we reported total PCB as non-detect, and did not calculate mean total PCB or mean lipid normalized PCB for the site and species combination.

Site means for total PCB were calculated by taking the mean of all fish sample composites from each site. If a site had seven samples from species #1, and two samples from species #2, the mean would be more heavily weighted toward species #1, since it had a higher number of samples.

To determine sites with contaminants that exceeded protective piscivorous wildlife criteria, individual composite values and site medians for each analyte detected in y-o-y fish were compared to water quality objectives for the Great Lakes (IJC 1988), and to the NYSDEC 1:100 dietary cancer risk and non-carcinogenic criteria designed to protect sensitive fish-eating wildlife species (Newell et al. 1987).

PCB Impairment Ratings

By use of environmental and human health criterion or objectives, the PCB concentrations in young-of-year fish can be placed into four categories of PCB contamination. While young-of-year fish are not routinely consumed by many people, some cultures may use small fish to create fish oils or pastes which may be consumed by people (Syni-An Hwang, Bureau of Environmental and Occupational Epidemiology, NYS Dept. of Health, personal communication). The categorization of PCB concentrations employs published (adopted) PCB concentrations currently in force or which were historically used but have since been superseded. The categories and a brief rationale for selection follow.

Category	Concentrations (mg/kg)	Rationale
Protects sensitive fish consumers	≤ 0.1	Concentrations in whole fish are below the IJC (1988) PCB objective. This is the most protective measure for all organisms in North America.
Contaminated	≥ 0.1 to 1.0	Within one order of magnitude of the IJC (1988) PCB objective. If consumed by humans, the concentrations are within the acceptance range for limited consumption. May be marginally protective of some sensitive fish consumers.
Highly contaminated	≥ 1.0 to 5.0	Significantly exceeds the IJC (1988) PCB objective.

		Concentrations may not be protective of human consumers of fish. Human consumption, if permitted, is highly restricted. Adverse effects on wildlife are also expected at these concentrations (Newell et al. 1987, Skinner et al. 1994).
Extremely contaminated	≥ 5.0	Unacceptable for consumption by people or fish and wildlife. The limit is the temporary tolerance for PCBs in fish for human consumption defined by the US Food and Drug Administration and in effect prior to August 20, 1984 (USFDA 1984).

RESULTS

Sampling

A species breakdown of fish sampled is presented in Table 3. Bluntnose Minnows and Emerald Shiners were the most commonly collected species, largely based on their availability. One of these two species was present at 19 of 24 sites (79%). Other species were used when these were not available. Mean lengths for all species ranged from 31.2 to 75.2 mm (Table 4). The larger values are still small enough to assure that most, if not all, fish were young-of-year.

Percent lipid values for y-o-y composites ranged from 1.03% to 6.18%, with Spotfin and Spottail Shiners having the highest lipid content (Table 5). Gizzard Shad and Yellow Perch had much lower lipid content. Bluntnose Minnow samples had the largest range of lipid content, including the highest single composite sample of 8.70% and the highest mean of composites (7.93%) from the St. Lawrence River at Cape Vincent site (Station #25).

Contaminants Detected in 2011–2012 Y-O-Y Fish

Mercury was detected in every sample, PCBs were detected in 97% of the samples, and DDT or metabolites were detected in two-thirds of the samples. We did not detect any of the other organochlorine pesticides.

Mercury – Mercury, while detected in every sample, was universally low in concentration (Table 6 and Appendix 2). The highest concentration was 0.116 mg/kg, with only 1% of the samples greater than 0.10 mg/kg, and 90% less than 0.075 mg/kg. The three sites with the highest mercury concentrations were Black River Bay Area B-1 (Station #23), St. Lawrence River just above Reynolds Metal Company (Station #53), and Raquette River at Reynolds Metal Company (Station #33).

DDT – All concentrations of p,p'-DDT and metabolites were < 0.05 mg/kg and many were below detection (Table 7, Appendix 3). All o,p' metabolites of DDT were below detection. The highest total DDT level of 0.0464 mg/kg was in a composite of Emerald Shiners from Lake Ontario at Sodus Point. Approximately 90% of composites had a total DDT concentration less than 0.01 mg/kg. Further, only two samples contained parent p,p'-DDT; these detections were barely above the MDL. The greatest p,p'-DDT concentration was 0.00244 mg/kg. The greatest

mean lipid normalized total DDT concentration was 1.306, with over 96% of samples having lipid normalized total DDT less than 1.00.

PCBs – Table 8 presents the summary of Aroclor 1242, Aroclor 1254/1260, and total PCB for composites of y-o-y fish. Appendix 4 contains the PCB data for the individual fish composites. Total PCB ranged from < MDL for Grasse River at Massena (Station #31) fallfish composites to over 15 mg/kg wet weight for a rock bass composite from St. Lawrence River at the General Motors Company. (Station #29). Table 9 groups total PCB for the various sites and fish species into the four impairment categories. Figures 3 and 4 give a geographical presentation of total PCB concentrations within the eastern Great Lakes basin.

Aroclor 1242 is the less chlorinated of the Aroclors. It was detected at all sites except the Grasse River at Massena Dam and in nearly all composites (Tables 2 and 8, Appendix 4). Aroclor 1242 alone was detected at three sites, and Aroclor 1254/1260 was only rarely detected at three other sites. The highest concentration of Aroclor 1242 was at St. Lawrence River at the General Motors Company (Station #29). Aroclor 1254/1260 was detected in 185 of the 248 composites. The site with the greatest mean concentration was St. Lawrence River at the General Motors Company. (Station #29).

DISCUSSION

PCBs

PCBs were the contaminant in greatest concentration and greatest concern in y-o-y fish. This has been true in past year's collections as well. In 1997, PCBs were detected at 16 of 17 sampling locations and in 76% of composites, for sites covering the same area as our study (Preddice et al. 2002). This compares well with our finding of detectable PCB Aroclors in 23 of 24 sites and 95% of the y-o-y composites.

Spottail Shiners, Bluntnose Minnows, and Emerald Shiners were the primary species of interest for monitoring PCBs. Many sites did not have these particular fish present in sufficient numbers to form the needed composites. Bluntnose Minnows and Emerald Shiners were the species most commonly used, making up at least a portion of the collection in a majority of the sampled sites. Other species were used to make up the needed collection of fish composites, or at least supplement the collections of Bluntnose Minnows or Emerald Shiners. We were, obviously, unable to make comparisons to our primary target species in sites where other species made up the entire collection.

We generally found only small differences and no consistent rank order in lipid normalized PCB concentrations among species within a site, consistent with the findings of Skinner et al. (1994), particularly at sites with low concentrations. Although Spotfin Shiners tended to have higher wet weight PCBs than other fish on the three Raquette River sites at which they were collected, this species tended to have a higher lipid content. Differences with other species largely disappeared when compared on a lipid adjusted basis. An exception was the Grasse River at the Route 37 bridge where Aroclor 1254/60 was not detected in the two Bluntnose Minnow composites but

was found at roughly twice the detection limit in the seven Emerald Shiners (Appendix 4). Most important, differences we observed among different species in wet weight concentrations rarely changed the PCB impairment category (Table 9).

PCB results for Round Gobies were generally similar to other species. Their lipid content tended to be lower than that of most other species. If Round Gobies come to dominate the near-shore areas, our limited number of comparisons suggest they would make a suitable species for monitoring PCB contamination. A more complete study could be conducted to determine how universal this might be to the y-o-y fish used in the Great Lakes near-shore monitoring.

Sites within the eastern Lake Ontario Drainage and upper St. Lawrence River - The eastern Lake Ontario sites were low in PCBs, with many at or just above detection levels (Figure 3 and Table 9). All but one of these sites was below the 0.11 mg/kg criteria that is protective of piscivorous wildlife. Likewise, the site in Sodus Bay (Station #19) had very low PCB concentrations, often below detection.

We found that the Lake Ontario site located at the mouth of Salmon River (Station #21) had mean total PCB which was just above 0.10 mg/kg. PCB concentrations at this location were very stable in samplings from 1987, 1992, and 1997 (Preddice et al. 2002). In contrast, we found a substantial decrease in lipid normalized PCBs compared to those years at this location (3.6 mg/kg compared to 5.3 mg/kg in 1997). Composites from the new site on the Salmon River just upstream of the first power dam (Station #50) had very low PCB concentrations. Preddice et al. (2002) postulated that PCBs and other organochlorine pesticides found in fish in the lower part of the Salmon River are transported by the substantial number of chinook and coho salmon that die in the river following spawning from Lake Ontario. The power dam prevents the movement of these salmon to upstream reaches of the Salmon River. The low concentrations of PCBs in the site above the dam is consistent with the hypothesis that the source of PCBs in the lower river is from salmon migration.

Fish collected at the Black River Bay site (Station #23) were the most contaminated with PCBs of the sites in the eastern Lake Ontario drainage. Lipid normalized total PCB was little changed from 1997 (7.0 mg/kg compared to 7.7 mg/kg in 1997) (Preddice et al. 2002).

The upper portions of the St. Lawrence River (Stations #25 and 27) continued low in PCBs (Figure 3 and Table 9), with the exception of the site at the mouth of the Oswegatchie River (Station #26). When comparing the lipid normalized PCBs with data from 1997 (9.5 mg/kg compared to 1.4 mg/kg in 1997 mg/kg) (Preddice et al. 2002), there appears to be a substantial increase in y-o-y fish. However, in 1992 lipid normalized PCB concentrations were 13.9 mg/kg. Prior years also varied considerably (Preddice et al. 2002), making it difficult to determine any trend in the PCB concentrations in the fish from this site.

Sites within the St. Lawrence River at Massena Area of Concern - The St. Lawrence River at Massena Area of Concern (AOC) includes the New York State waters of the St. Lawrence River upstream of the Canadian boundary to the Massena public water supply intake, the Massena Power Canal, the Grasse River from the mouth upstream to the breached dam in the village of Massena, the Raquette River from the mouth upstream to the NYS route 420 bridge, and the St. Regis River from the mouth upstream to the dam at Hogansburg (Figure 5). Sites here have received various municipal and industrial discharges of a number of persistent contaminants over

a long period of time. Included in the contaminants released are PCBs. Three major contributors of these PCBs have been Aluminum Corporation of America (Alcoa, renamed Alcoa West, renamed Arconic Inc. in 2016), Reynolds Metals (Reynolds, currently owned by and renamed Alcoa East), and the General Motors Powertrain Division (GM, formerly GM Central Foundry Division, renamed GM Powertrain, closed in 2009, bankruptcy transfer to Racer Trust in 2011, facility razed). The AOC contained the greatest concentration of sites with elevated levels of PCBs, as well as the sites with highest PCB concentrations.

Alcoa West discharged PCBs principally to the Grasse River but other drainages (including the Massena Power Canal) were also affected by PCBs. Further, PCBs have contaminated the soil and groundwater on-site and have heavily contaminated the sediments of the lower 7 miles of the Grasse River. Lipid normalized PCBs ranged from 33 mg/kg to 52 mg/kg for three fish species collected from near the mouth of the Grasse River (Station #30). Past lipid normalized PCB concentrations at this site have been somewhat variable for y-o-y fish from 1979 until 1997, without showing a clear trend, and ranging from 31 mg/kg to 249 mg/kg (Preddice et al. 2002). PCB concentrations in y-o-y fish at the upstream breached dam in Massena (Station #31) were below detection, indicating that PCB contamination found in fish near the mouth is from the lower reaches of the river. Overall, the Grasse River remains highly contaminated near its mouth (Table 9).

Contamination from the Grasse River extends into the St. Lawrence River. At the new sampling site on the St. Lawrence River below mouth of the Grasse River and immediately upstream of Reynolds Metals (Station #53), we found young fish were highly contaminated with PCBs (total PCB = 1.8 mg/kg). The lipid normalized PCB concentration of 40 mg/kg was similar to the lower Grasse River site.

We collected fish from two sites on the St. Lawrence River associated with Reynolds Metals (Stations #28 and 54). Young fish collected from these two sites had similar PCB concentrations. The Reynolds sites have had discharges into the St. Lawrence River, as well as widespread soil and ground water contamination. Past remediation at Reynolds has greatly reduced PCB contamination. Lipid normalized PCBs decreased sharply from 199 mg/kg to 21 mg/kg between 1992 and 1997 at Station #28 (Preddice et al. 2002). We found lipid normalized PCB concentrations of 9 mg/kg to 17 mg/kg at Station #28, indicating that the improvements in PCBs observed in 1997 have continued. Although lipid normalized PCB concentrations at the two Reynolds Metal sites (Stations #28 and 54) were less than half of the concentrations found in fish sampled immediately upstream of Reynolds at the site (Station #53) influenced by the Grasse River, these stations remains highly contaminated (Table 9).

The General Motors Company site has had discharges into the St. Lawrence River, as well as widespread soil and ground water contamination. Extensive PCB contamination remains in the landfill and other areas on this property. Young fish collected here were extremely contaminated with PCBs (Table 9). Between 1986 and 1992 this site (Station #29) was sampled each year (Preddice et al. 2002). Lipid normalized total PCB levels were extremely high (ranging from 71 mg/kg to 2650 mg/kg). In 1994 there was a sharp decrease in lipid normalized total PCB to 3.7 mg/kg. Contaminated sediment had been removed from the St. Lawrence River including the cove immediately down river from the property (Station #29). Sampling in 1997 and 1998 showed an increase in lipid normalized PCB to 21 mg/kg (1997) and 79 mg/kg (1998) (Preddice et al. 2002). The current lipid normalized PCB range of 76 mg/kg to 211 mg/kg for the five

species collected at Station #29 demonstrates that potential improvements in PCBs observed in 1994 have not continued, and that the site remains extremely contaminated (Table 9).

The lower reaches of the Raquette River have received discharges and leachates from Reynolds and General Motors, and have had high levels of PCBs in the past. Fish from the site located just below Reynolds were still contaminated, but showed improvements, with PCB concentrations roughly half of 1997 levels (lipid normalized total PCB of 4.5 mg/kg compared to 9.0 mg/kg in 1997). In contrast, the fish from the site at the mouth of the Raquette River had PCB concentrations 50% greater than those in 1997 (lipid normalized total PCB of 3.6 mg/kg compared to 2.2 mg/kg in 1997). Fish from the lower reaches of the Raquette River are still far less contaminated than in 1992 when lipid normalized concentrations were between 128 and 161 mg/kg.

Aroclors

An initial look at the frequency of detection of Aroclor 1242 and Aroclor 1254/1260 gives the misleading impression that Aroclor 1242 was present in a higher percentage of samples. However, the detection limit (MDL) for Aroclor 1242 is 0.010 mg/kg versus the Aroclor 1254/1260 limit of 0.030 mg/kg. Scaling the Aroclor 1242 results to an MDL of 0.030 mg/kg, produces a detection frequency of 62.8%, similar to the 74.4% detection frequency for Aroclor 1254/1260. Further, Aroclor 1242 concentrations were not greater than Aroclor 1254/1260 concentrations when both were greater than their MDLs (sign test, $P \geq 0.38$).

When concentrations are low, the frequency of detection can be greatly influenced by changes in the MDL. To address this issue, a comparison of detection frequencies was conducted using data in Preddice et al. (2002). Preddice et al. (2002) reported lower chlorinated PCB concentrations as Aroclor 1016/1248 while this study reported Aroclor 1242. Since there is general similarity in the composition of these PCBs, especially in the degraded form encountered in environmental samples, the data are considered approximately comparable and can be used for illustrative purposes. Since there are differences in species at the sites, it is assumed, albeit not always correctly, that the PCB concentrations between species within a site are approximately comparable. Table 10 illustrates increasing the MDL can significantly reduce the frequency of detection of PCBs in composites at or above the MDL and may similarly affect the number of sites at which PCBs were detected.

When concentrations of Aroclor 1254/1260 and Aroclor 1242 were above the MDLs, approximately 40–55% of PCBs came from Aroclor 1254/1260 with a few exceptions. All sites on the Raquette River had 60–75% of PCBs from Aroclor 1254/1260, consistent with Aroclor composition from the 1980s and 1990s (Preddice et al. 2002). We also found that only 15–30% of PCBs came from Aroclor 1254/1260 at the St. Lawrence River at General Motors Company (Station #29). This result is in contrast to Aroclor data from the 1980s and 1990s when the percent of Aroclor 1254/1260 tended to be 45–60% (Preddice et al. 2002).

Comparison with IJC Objectives

Mercury was detected in all fish composites, but it was present only in relatively low concentrations. This is not surprising, since fish with elevated mercury concentrations are primarily larger, older fish that are feeding higher on the food chain. The mercury concentrations found in these fish were well below the 0.5 mg/kg objective for the protection of piscivorous fish (IJC 1988) and should not pose a risk for piscivorous wildlife.

All fish composites sampled met the IJC Great Lakes whole fish objective (IJC 1988) for organochlorine pesticides. Most were below detection, including mirex and chlordane which had been detected in the past. Young-of-year fish from three sites, the Salmon River near mouth (Station #21), Lake Ontario near the Oswego River (Station #20), and Lake Ontario near the Genesee River (Station #18), frequently had 2–8 µg/kg mirex in the mid-1980s through 1997 (Preddice et al. 2002). The Lake Ontario near Genesee River site had regular, albeit low, level detections of chlordanes and dieldrin in the mid-1980s through 1997 (Preddice et al. 2002). The absence of these contaminants in 2011 points to the success of clean-up programs and bans within the Great Lakes basin.

Only p,p'-DDE was detected regularly (in about 2/3 of fish composites), with p,p'-DDD found far less frequently (less than 10%). The parent compound p,p'-DDT was only detected in 2 samples, and at very low concentrations. Detected concentrations of all forms of DDT were below the fish flesh criteria of 0.2 mg/kg set for DDT to protect sensitive piscivorous species (Newell et al. 1987, IJC 1988) by at least one order of magnitude.

Of the contaminants analyzed, only PCBs were present at some sites at concentrations of concern. Aroclor 1242 was detected in 95% of the fish composites while Aroclor 1254/1260 was detected in 74%. PCBs at half of the sites exceeded the IJC objective IJC (1988) of 0.10 mg/kg to protect sensitive piscivorous species. Most of these sites were located on the St. Lawrence River and the lower reaches of the Grasse and Raquette rivers within the Massena AOC.

Most of the sites in eastern Lake Ontario and tributaries had much lower concentrations of PCBs, and were below the 0.10 mg/kg IJC objective (IJC 1988) for whole fish. The Lake Ontario site at the mouth of the Salmon River was less than 10% higher than the IJC objective. Only the Black River Bay (Station #23) site had PCB concentrations that substantially exceeded the 0.10 mg/kg objective. Likewise, sites on the upper St. Lawrence River down to Barnhart Island had low levels of PCBs. While fish from the St. Lawrence River at the mouth of the Oswegatchie River (Station #26) exceeded 0.10 mg/kg, fish from Cape Vincent and Barnhart Island were less than 0.10 mg/kg.

By far the most highly contaminated fish were located at sites in the St. Lawrence River and the mouths of the Grasse and Raquette Rivers Massena/Akwesasne AOC. The site on the St. Lawrence River adjacent to the General Motors Company (Station # 29) had fish with the highest levels of PCBs, averaging 6.6 mg/kg, nearly 66 times the IJC objective. This site had shown improvement in the past following some remedial activities, but since 1994 the trend has been increasing levels of PCBs in y-o-y fish. The change in Aroclor mixture noted previously, coupled with the increasing trend, suggests a continuing source of PCBs. New investigations are underway to understand how PCBs are migrating from the General Motors Company to result in contamination of the fish. Another highly contaminated site (mean PCB = 1.80 mg/kg, 18 times

greater than the IJC objective) is the St. Lawrence River just downstream of the Grasse River and immediately upstream of Reynolds Metals (Station #53). A site new to this study, it seems to be affected by the PCBs in the Grasse River, as concentrations were very similar to the Grasse River near the mouth (Station #30).

Two additional sites on the St. Lawrence River, both near Reynolds Metals, had mean PCBs just below the 1.00 mg/kg concentration used to define highly contaminated (Table 9). The site at Reynolds (Station #28), a traditional site, showed some significant improvements between 1992 and 1997 following remedial activities (Preddice et al. 2002). Since then, PCB levels at this site seem to have been stable. PCB concentrations were roughly half of those located closer to the confluence with the Grasse River. Since these sites are located just a little further downstream of the Grasse River, it is difficult to determine if the PCB contamination in fish is from Reynolds or the Grasse River, or both.

The St. Lawrence River just upstream of the General Motors site was also highly contaminated, with PCBs 20 times the IJC objective. This site was also a new site, so no previous data are available with which to make comparisons for trends. Fish at this site had lipid normalized PCBs that were three times greater than the fish just upstream at Reynolds.

The two sites on the lower reaches of the Raquette River remain contaminated with PCBs. They both experienced substantial declines in PCB concentrations in the mid-1990s (Preddice et al. 2002), and appear to have stabilized to new lower levels; most fish samples from these sites contained PCB concentrations above the IJC objective of 0.10 mg/kg.

In summary, using the contamination categories of Table 9, young-of-year fish from most eastern Lake Ontario sites, the St. Lawrence River upstream of Barnhart Island, and the reference sites on the tributaries meet the IJC objective and PCB levels are considered protective. Conversely, most young-of-year fish downstream of Barnhart Island were influenced by the three industrial sites are highly contaminated, and at General Motors are extremely contaminated by PCBs.

CONCLUSIONS

Young-of-year fish collections remain a useful method to monitor contaminants, particularly PCBs. Young fish have an advantage over older fish because of their limited home range. They are usually abundant and often easy to catch. These characteristics make y-o-y fish particularly helpful for isolating contaminant sources as well as for establishing trends in contaminant levels. This can help direct remediation and evaluate the efficacy of completed cleanup projects.

We found encouraging results with regard to mercury and organochlorine pesticides, with no concentrations at levels that were of concern. We also found that PCBs in eastern Lake Ontario were, in general, below the IJC objective. Only the Black River Bay site had concentrations that exceeded this objective. Similarly, we found the upper St. Lawrence River downstream to Barnhart Island to have low levels of PCBs. In contrast, the Massena AOC still has many sites with high concentrations of PCBs. Sites downstream of the three major sources of this

contamination remain highly contaminated. In some sites, we did find improving trends, though fish remained contaminated. Other sites showed no improvement. Additional remediation is needed in the AOC. Continued y-o-y fish monitoring remains an important part of evaluating future remediation projects in this area.

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Table 1. Sampling locations, species and number of y-o-y fish composites from new and traditional near-shore sites within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–12.

Sampling Site	Station Number and Year	Number of Composites	Description of Location
Lake Ontario, Genesee River	18 2011	7 Emerald Shiner 5 Gizzard Shad	Traditional Lake Ontario site east of the mouth of Genesee River in front of the USCG Station
Lake Ontario, Sodus Bay	19 2011	7 Brook Silverside 1 Round Goby	Traditional site within Sodus Bay near the Wayne County Water Quality Committee / NYSDEC boat launch and at private boat launch on way to Sodus Point.
Lake Ontario, Sodus Point	19A 2011	7 Emerald Shiner	New Lake Ontario beach site just west of the mouth to Sodus Bay.
Lake Ontario, Oswego River	20 2011	6 Gizzard Shad 3 Round Goby 3 Emerald Shiner	Traditional site within 500 yards west of the residence for the President of SUNY Oswego.
Lake Ontario, Salmon River at the mouth	21 2011	7 Killifish 2 Bluntnose Minnow	Traditional site on sandy beach area on the south side of the river inside the break wall at the river's mouth.
Salmon River, Lower Reservoir	50 2011	7 Bluegill	New site in Lighthouse Hill Reservoir (also called Lower Salmon River Reservoir) at the Hogs Back Road Day Use Area beach.
Black River, Bay Area B-1 (Middle)	23 2011	7 Bluntnose Minnow	Traditional site at the mouth of the river opposite Area A and along northern side of a sandy island with abandoned causeway posts.
St. Lawrence River, Cape Vincent	25 2011	7 Bluntnose Minnow	Traditional site 100 yards of shoreline just upstream of private homes/camps at the west edge of the Burnham Point State Park (about ¼ mile upstream of west edge of Burnham Point State Park, not same area sampled in 1992.

Table 1. (Continued)

Sampling Site	Station Number and Year	Number of Composites	Description of Location
St. Lawrence River, Oswegatchie River	26 2011	7 Yellow Perch 3 Round Goby	Traditional site east side of the peninsula near the light house at the river mouth.
St. Lawrence River, Barnhart Island (above dam)	27 2011	4 Emerald Shiner 7 Bluntnose Minnow 5 Spottail Shiner 4 Killifish	Traditional site at Barnhart Island State Park –H 150 yards east of the public beach in a small embayment.
St. Lawrence River, Upstream of Reynolds Metal Company	53 2012	7 Emerald Shiner	New site on south shoreline just above the Reynolds Metal Co, and just downstream of confluence with the Grasse River.
St. Lawrence River, Dead Clam Cove	54 2011	7 Emerald Shiner 5 Brook Silverside	New site in Dead Clam Cove – small cove located just upstream of site #28. Reynolds Metal has a discharge outfall here. Area has been remediated.
St. Lawrence River, Reynolds Metal Company	28 2011	5 Emerald Shiner 7 Spottail Shiner 4 Killifish	Traditional site 100 yards of south shoreline with two discharges from the Reynolds Metal Company
St Lawrence River, Upstream from General Motors Company	55 2012	5 Largemouth Bass 2 Round Goby	New site located just downstream of Seaway International Bridge and just upstream (150 yards) of General Motors Company. for 150 yards.
St. Lawrence River, General Motors Company	29 2011	2 Bluntnose Minnow 4 Rock Bass 3 Round Goby 3 Brook Silverside 4 Killifish	Traditional site embayment area adjacent to a remediated General Motors Company. landfill, and along the western shoreline for 150 yards.
Grasse River, just above mouth	30 2011 2012	7 Logperch 3 Rock Bass 5 Bluegill	Traditional site northwest side about 850 yards upstream from the river mouth, access via AmVets Post.

Table 1. (Continued)

Sampling Site	Station Number and Year	Number of Composites	Description of Location
Grasse River, above Massena Dam	31 2011	7 Fallfish	Traditional site north side about 175 yards above the Massena Dam (dam broken), upstream from Rt. 420 and across from the VFW boat launch.
Grasse River, Route 37 Bridge	51 2011	7 Emerald Shiner 2 Bluntnose Minnow	New site on southwest corner of State Route 37 bridge, just upstream of bridge. This site is the new "upstream most" site and is just upstream of Massena.
Raquette River, above mouth	32 2011	7 Bluntnose Minnow 2 Spotfin Shiner	Traditional site in small embayment on south shore about 1300–1400 yards upstream from river's mouth, access via boat.
Raquette River, Reynolds Metal Company	33 2011	7 Fallfish 6 Bluntnose Minnow 5 Brook Silverside	Traditional site on north shoreline at the Franklin/St. Lawrence Company Line, upstream from Rt. 37 bridge, access via field road off seasonal Indian Rd.
Raquette River, 1.0 Miles upstream from Reynolds Metal Company	34 2011	4 Bluntnose Minnow 3 Spotfin Shiner 2 Emerald Shiner	Traditional site about 100 yards downstream from the Rt. 37C bridge opposite North Raquette River Rd (South shoreline).
Raquette River, 1.9 Miles upstream from SR-37C bridge	52 2011	7 Spotfin Shiner 2 Bluntnose Minnow	New site about 1.9 miles upstream from the Rt. 37C bridge off North Raquette River Rd.
Raquette River, Massena	35 2011	6 Bluntnose Minnow 4 Rock Bass	Traditional site on north shoreline above the Rt. 420 bridge, just downstream from Trout Brook (Hutchins Creek).
St. Regis River, near mouth	56 2012	7 Bluntnose Minnow	New site near mouth of St. Regis River on southwest corner of small island, near United States–Canada border.

Table 2. NYSDEC method detection limits (MDL) and frequency of detection for PCBs, organochlorine pesticides, and mercury.

Analyte	MDL (µg/kg)	Frequency of Detection
Polychlorinated biphenyls		
Aroclor 1242	10	95.2%
Aroclor 1254/1260	30	74.4%
p,p'-DDT	2	0.8%
p,p'-DDE	2	66.8%
p,p'-DDD	2	8.4%
o,p'-DDT	5	0%
o,p'-DDE	5	0%
o,p'-DDD	15	0%
Aldrin	5	0%
α-HCH	5	0%
β-HCH	5	0%
γ-HCH	5	0%
cis-Chlordane	5	0%
trans-Chlordane	5	0%
Oxychlordane	5	0%
cis-Nonachlor	5	0%
trans-Nonachlor	5	0%
Dieldrin	5	0%
Heptachlor	5	0%
Heptachlor epoxide	5	0%
Hexachlorobenzene	2	0%
Mirex	2	0%
Photomirex	5	0%
Mercury	5.2	100%

Table 3. Species breakdown.

	Number of Composites	Percent of the Total Composites	Number of Sites	Percent of Sites
Bluntnose Minnow	59	23.6	12	50
Emerald Shiner	49	19.6	9	37.5
Brook Silverside	20	8	4	16.6
Killifish	19	7.6	4	16.6
Fallfish	14	5.6	2	8.3
Bluegill	12	4.8	2	8.3
Round Goby	12	4.8	5	20.8
Spotfin Shiner	12	4.8	3	12.5
Spottail Shiner	12	4.8	2	8.3
Gizzard Shad	11	4.4	2	8.3
Rock Bass	11	4.4	3	12.5
Log Perch	7	2.8	1	4.1
Yellow Perch	7	2.8	1	4.1
Largemouth Bass	5	2	1	4.1

Table 4. Summary of length and weight field data, by sampling location, for young-of-year fish from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012.

Site	Species	Number of Composites	Total Length (mm)			Weight (g)	Range in Composite Weights
			Minimum	Maximum	Mean ± SD[1]	Mean ± SD[1]	
Lake Ontario-Genesee River	Emerald Shiner	7	28	45	36.7±3.99	0.43±0.13	5.4-9.4
	Gizzard Shad	5	47	62	54.4±3.48	1.58±0.29	6.2-10.0
Lake Ontario-Sodus Point	Emerald Shiner	7	27	55	39.6±6.19	0.47±0.21	6.2-8.9
Lake Ontario-Sodus Bay	Brook Silverside	7	44	61	54.9±3.05	0.94±0.15	6.7-11.0
	Round Goby	1	60	70	66.2	3.78	18.9
Lake Ontario-Oswego River	Gizzard Shad	6	33	65	54.1± 7.11	1.38±0.46	6.2-18.9
	Round Goby	3	33	74	51.7±12.67	1.9±1.3	4.8-13.1
	Emerald Shiner	3	40	57	49.8±5.25	0.91±0.24	6.5-10.3
Lake Ontario-Salmon River at the Mouth	Banded Killifish	7	20	38	31.2±3.10	0.31±0.08	5.1-6.2
	Bluntnose Minnow	2	39	67	53.9±6.08	1.47±0.49	5.6-9.1
Salmon River-Lower Reservoir	Bluegill	7	22	45	31.7±7.34	0.56±0.39	5.1-19.1
Black River Bay	Bluntnose Minnow	7	40	72	59.4±10.26	1.99±0.88	6.9-39.5
St. Lawrence River-Cape Vincent	Bluntnose Minnow	7	47	69	60±2.96	1.97±0.33	22.8-35.1
St. Lawrence River-Oswegatchie River	Yellow Perch	7	47	88	71.7±8.99	4±1.36	32.3-63.6
	Round Goby	3	36	56	45±0.45	1.31±0.03	19.3-20.3
St. Lawrence River-Barnhart Island	Emerald Shiner	4	18	61	40.4±15.01	0.68±0.60	5.7-14.0
	Spottail Shiner	5	27	68	49.1±13.18	1.17±0.83	5.3-15.2
	Bluntnose Minnow	7	21	64	42.7±11.96	0.76±0.55	5.9-16.1
	Banded Killifish	4	23	42	35.1±3.62	0.44±0.12	5.6-8.7
St. Lawrence River-Upstream of Reynolds Metal Company	Emerald Shiner	7	41	60	53±3.37	1.16±0.21	6.3-8.9
St. Lawrence River-Dead Clam Cove	Emerald Shiner	7	32	58	46.7±6.63	0.72±0.28	5.5-10.6
	Brook Silverside	5	49	68	61±4.64	1.01±0.20	7.2-12.2
St. Lawrence River-Reynolds Metal Company	Emerald Shiner	5	40	59	50.5±4.54	0.95±0.24	5.9-12.0
	Spottail Shiner	7	24	56	48.9±7.38	1.06±0.36	4.4-13.0
	Banded Killifish	4	36	44	43.5±1.70	0.79±0.12	6.6-8.5

Table 4. (Continued)

Site	Species	Number of Composites	Total Length (mm)			Weight (g)	Range in Composite Weights
			Minimum	Maximum	Mean ± SD[1]	Mean ± SD[1]	
St. Lawrence River- Upstream from General Motors Company.	Largemouth Bass	5	66	81	75.2±5.12	5.56±1.19	15.9-26.2
	Round Goby	2	38	65	54.8±11.03	2.25±1.20	5.6-24.6
St. Lawrence River- General Motors Company.	Bluntnose Minnow	2	26	44	34.3±4.60	0.37±0.13	4.6-5.3
	Rock Bass	4	35	67	48.1±11.43	2.30±1.59	5.5-18.6
	Round Goby	3	44	52	48.8±1.76	1.50±0.24	5.3-7.2
	Brook Silverside	3	57	72	65.7±1.71	1.34±0.11	12.2-14.2
	Banded Killifish	4	34	50	42±2.66	0.71±0.13	5.8-8.8
Grasse River- Just Above Mouth	Logperch	7	57	76	66.9±5.09	2.53±0.54	17.4-26.0
	Rock Bass	3	37	64	52.7±9.88	3.19±1.59	9.2-20.1
	Bluegill	5	26	53	39.1±6.52	1.06±0.52	5.2-7.4
Grasse River- Dam	Fallfish	7	52	75	65.5±4.64	2.77±0.59	12.4-16.9
Grasse River- Route 37 Bridge	Emerald Shiner	7	31	57	44.5±4.71	0.58±0.14	6.4-11.5
	Bluntnose Minnow	2	47	54	50.8±1.98	1.14±0.22	4.9-6.0
Raquette River- Above Mouth	Bluntnose Minnow	7	22	49	33±5.88	0.32±0.19	5.0-7.3
	Spotfin Shiner	2	51	61	55.3±3.25	1.34±0.23	8.2-10.5
Raquette River- Reynolds Metal Company	Fallfish	7	29	56	48±5.24	0.86±0.24	5.2-10.7
	Bluntnose Minnow	6	39	63	52.2±4.21	1.17±0.31	9.3-13.4
	Brook Silverside	5	42	71	66.5±5.42	1.41±0.29	5.5-7.7
Raquette River- 1.0 miles upstream from Reynolds Metal Company	Bluntnose Minnow	4	36	69	55.9±8.67	1.51±0.65	5.6-11.5
	Spotfin Shiner	3	27	63	48.2±12.23	0.91±0.53	5.6-9.6
	Emerald Shiner	2	38	56	49.9±4.31	1.04±0.28	7.6-8.7
Raquette River- 1.9 miles upstream from State Route 37c Bridge	Spotfin Shiner	7	25	56	39.7±7.32	0.46±0.22	5.0-11.3
	Bluntnose Minnow	2	25	45	34.9±6.72	0.31±0.18	5.2-6.4
Raquette River- Massena	Rock Bass	4	22	42	36.1±5.03	0.74±0.26	5.6-10.7
	Bluntnose Minnow	2	25	45	34.9±6.72	0.98±0.67	5.2-9.3
St. Regis River- Mouth	Bluntnose Minnow	7	30	73	45.8±10.73	0.93±0.89	5.0-8.6

[1] Mean and standard deviation (SD) are calculated from mean lengths and weights of fish composites, not individual fish.

Table 5. Range and mean percent lipid (and standard deviation) by species.

	Mean Percent Lipid	Standard Deviation	Range
Bluntnose Minnow	4.32	1.80	2.09 – 8.70
Emerald Shiner	4.04	1.36	1.71 – 6.83
Brook Silverside	4.20	1.35	2.18 – 5.85
Killifish	4.22	1.26	2.69 – 7.43
Fallfish	4.28	1.14	2.78 – 5.90
Bluegill	2.87	0.97	1.77 – 4.14
Round Goby	2.68	0.68	1.73 – 3.64
Spotfin Shiner	4.93	0.90	3.43 – 6.18
Spottail Shiner	4.80	1.18	2.89 – 6.10
Gizzard Shad	1.35	0.29	1.03 – 1.83
Rock Bass	3.50	0.71	2.83 – 4.84
Log Perch	4.38	0.31	3.90 – 4.78
Yellow Perch	1.82	0.29	1.33 – 2.21
Largemouth Bass	4.61	0.64	3.76 – 5.40

Table 6. Summary of total mercury (mg/kg wet weight) in young-of-year fish composites from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012.

Location	Species	Number of Composites	Total Hg			
			Min	Max	Mean	SD
Lake Ontario-Genesee River Station #18	Emerald Shiner	7	0.021	0.025	0.022	0.001
	Gizzard Shad	5	0.020	0.021	0.021	0.001
Lake Ontario-Sodus Point Station #19A	Emerald Shiner	7	0.021	0.021	0.022	0.001
Lake Ontario-Sodus Bay Station #19	Brook Silverside	7	0.019	0.030	0.025	0.004
	Round Goby	1	0.022	0.022	0.022	0.000
Lake Ontario-Oswego River Station #20	Round Goby	3	0.020	0.024	0.022	0.002
	Gizzard Shad	6	0.012	0.020	0.016	0.003
	Emerald Shiner	3	0.020	0.023	0.022	0.002
Lake Ontario-Salmon River at the Mouth Station #21	Banded Killifish	7	0.034	0.052	0.042	0.006
	Bluntnose Minnow	2	0.030	0.050	0.040	0.014
Salmon River-Lower Reservoir Station #50	Bluegill	7	0.062	0.083	0.069	0.007
Black River-Bay Station #23	Bluntnose Minnow	7	0.032	0.088	0.072	0.021

Table 6. (Continued)

Location	Species	Number of Composites	Total Hg			
			Min	Max	Mean	SD
St. Lawrence River- Cape Vincent Station #25	Bluntnose Minnow	7	0.032	0.040	0.038	0.003
St. Lawrence River- Oswegatchie River Station #26	Yellow Perch	7	0.027	0.035	0.032	0.004
	Round Goby	3	0.007	0.014	0.010	0.004
St. Lawrence River- Barnhart Island Station #27	Emerald Shiner	4	0.024	0.051	0.035	0.012
	Spottail Shiner	5	0.027	0.035	0.031	0.004
	Bluntnose Minnow	7	0.019	0.039	0.026	0.008
	Banded Killifish	4	0.020	0.026	0.023	0.003
St. Lawrence Upstream, of Reynolds Metal Company Station #53	Emerald Shiner	7	0.071	0.101	0.083	0.012
St. Lawrence River- Dead Clam Cove Station #54	Emerald Shiner	7	0.028	0.064	0.048	0.014
	Brook Silverside	5	0.026	0.036	0.030	0.005
St. Lawrence River- Reynolds Metal Company Station #28	Spottail Shiner	7	0.036	0.055	0.042	0.007
	Banded Killifish	4	0.016	0.021	0.019	0.002
	Emerald Shiner	5	0.047	0.066	0.055	0.009

Table 6. (Continued)

Location	Species	Number of Composites	Total Hg			
			Min	Max	Mean	SD
St. Lawrence River- Upstream from General Motors Company. Station #55	Largemouth Bass	5	0.013	0.021	0.0177	0.003285
	Round Goby	2	0.02	0.106	0.0629	0.060953
St. Lawrence General Motors Company. Station #29	Brook Silverside	3	0.025	0.035	0.030267	0.004842
	Banded Killifish	4	0.015	0.023	0.018925	0.003744
	Bluntnose Minnow	2	0.021	0.021	0.021	0.000
	Rock Bass	4	0.020	0.036	0.026	0.007
	Round Goby	3	0.015	0.022	0.019	0.003
Grasse River- Route 37 Bridge Station #51	Emerald Shiner	7	0.064	0.082	0.072	0.007
	Bluntnose Minnow	2	0.045	0.046	0.046	0.001
Grasse River- Dam Station #31	Fallfish	7	0.036	0.060	0.043	0.009
Grasse River- Just Above Mouth Station #30	Rock Bass	3	0.035	0.058	0.047	0.012
	Bluegill	5	0.015	0.041	0.023	0.010
	Logperch	7	0.076	0.090	0.083	0.006

Table 6. (Continued)

Location	Species	Number of Composites	Total Hg			
			Min	Max	Mean	SD
Raquette River-Massena Station #35	Rock Bass	4	0.036	0.043	0.040	0.003
	Bluntnose Minnow	6	0.025	0.042	0.037	0.009
Raquette River-1.9 Miles Upstream from SR-37C Bridge Station #52	Spotfin Shiner	7	0.028	0.086	0.051	0.026
	Bluntnose Minnow	2	0.041	0.050	0.045	0.006
Raquette River- 1.9 Mile Upstream from Reynolds Metal Company Station #34	Spotfin Shiner	3	0.030	0.052	0.045	0.013
	Emerald Shiner	2	0.050	0.058	0.054	0.006
	Bluntnose Minnow	4	0.039	0.116	0.071	0.036
Raquette River-Reynolds Metal Company Station #33	Fallfish	7	0.048	0.066	0.058	0.006
	Bluntnose Minnow	6	0.058	0.102	0.078	0.017
	Brook Silverside	5	0.021	0.039	0.031	0.006
Raquette River-Above Mouth Station #32	Spotfin Shiner	2	0.050	0.060	0.055	0.007
	Bluntnose Minnow	7	0.038	0.049	0.044	0.004
St. Regis River-Mouth Station #56	Bluntnose Minnow	7	0.036	0.055	0.046	0.007

Table 7. Summary of total p,p'-DDT and metabolites concentrations (mg/kg wet weight and lipid adjusted) in young-of-year fish composites from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011-2012. Total DDT presented is the sum of all detected p,p'-DDT and metabolites. All o,p-DDT and metabolites concentrations were below detection.

Location	Species	Number of Composites	p,p'-DDE				p,p'-DDD				p,p'-DDT				Median % Lipid	Median Total DDT	
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Wet Wt.	Lipid Wt.
Lake Ontario - Genesee River Station #18	Emerald Shiner	7	0	0.005	0.010	0.007	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	2.110	0.007	0.348
	Gizzard Shad	5	0	0.004	0.005	0.004	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	1.340	0.004	0.318
Lake Ontario- Sodus Point Station #19A	Emerald Shiner	7	0	0.019	0.043	0.026	0	0.002	0.003	0.003	7	0.002	0.002	< 0.002	3.180	0.028	0.959
Lake Ontario- Sodus Bay Station #19	Brook Silverside	7	0	0.019	0.024	0.021	0	0.003	0.005	0.004	7	0.002	0.002	< 0.002	2.440	0.025	1.306
	Round Goby	1	0	0.025	0.025	0.025	0	0.004	0.004	0.004	1	0.002	0.002	< 0.002	2.690	0.029	1.075
Lake Ontario- Oswego River Station #20	Round Goby	3	1	0.002	0.009	0.007	3	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	2.370	0.004	0.192
	Gizzard Shad	6	0	0.002	0.004	0.003	6	0.002	0.002	< 0.002	6	0.002	0.002	< 0.002	1.080	0.003	0.217
	Emerald Shiner	3	0	0.006	0.012	0.010	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	2.850	0.010	0.349

Table 7. (Continued)

Location	Species	Number of Composites	p,p'-DDE				p,p'-DDD				p,p'-DDT				Median % Lipid	Median Total DDT	
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Wet Wt.	Lipid Wt.
Lake Ontario - Salmon River at the Mouth Station #21	Banded Killifish	7	0	0.006	0.010	0.009	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	2.880	0.009	0.310
	Bluntnose Minnow	2	0	0.009	0.013	0.011	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	3.450	0.011	0.319
Salmon River- Lower Reservoir Station #50	Bluegill	7	4	0.002	0.003	< 0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	2.120	<0.002	0.097
Black River- Bay Station #23	Bluntnose Minnow	7	0	0.003	0.007	0.005	2	0.002	0.003	0.002	6	0.002	0.002	< 0.002	6.880	0.008	0.108
St. Lawrence River - Cape Vincent Station #25	Bluntnose Minnow	7	0	0.004	0.007	0.005	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	8.270	0.005	0.065
St. Lawrence River- Oswegatchie River Station #26	Yellow Perch	7	4	0.002	0.003	< 0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	1.850	<0.002	0.114
	Round Goby	3	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	1.750	<0.002	0.114

Table 7. (Continued)

Location	Species	Number of Composites	p,p'-DDE				p,p'-DDD				p,p'-DDT				Median % Lipid	Median Total DDT	
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Wet Wt.	Lipid Wt.
St. Lawrence River-Barnhart Island Station #27	Emerald Shiner	4	2	0.002	0.003	0.003	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	3.900	0.003	0.060
	Spottail Shiner	5	3	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	3.580	< 0.002	0.056
	Bluntnose Minnow	7	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	3.600	< 0.002	0.056
	Banded Killifish	4	3	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	4.415	< 0.002	0.047
St. Lawrence-Upstream, of Reynolds Metal Company Station #53	Emerald Shiner	7	0	0.002	0.003	0.003	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	4.130	0.003	0.058
St. Lawrence River-Dead Clam Cove Station #54	Emerald Shiner	7	3	0.002	0.003	0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	5.100	0.002	0.048
	Brook Silverside	5	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	5.300	< 0.002	0.038
St. Lawrence River-Reynolds Metal Company Station #28	Spottail Shiner	7	0	0.003	0.004	0.003	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	5.770	0.003	0.062
	Banded Killifish	4	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	5.060	< 0.002	0.040
	Emerald Shiner	5	3	0.002	0.004	< 0.002	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	6.310	< 0.002	0.035

Table 7. (Continued)

Location	Species	Number of Composites	p,p'-DDE				p,p'-DDD				p,p'-DDT				Median % Lipid	Median Total DDT	
			# of Com	Min	Max	Median	# of Comp's	Min	Max	Median	# of Comp's	Min	Max	Median		Wet Wt.	Lipid Wt.
St. Lawrence River- Upstream from General Motors Company. Station #55	Large-mouth bass	5	2	0.002	0.003	0.002	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	4.420	0.002	0.053
	Round Goby	2	0	0.002	0.004	0.003	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	3.425	0.003	0.091
St. Lawrence General Motors Company. Station #29	Brook Silverside	3	1	0.002	0.003	0.003	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	5.020	0.003	0.051
	Banded Killifish	4	0	0.002	0.003	0.003	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	5.100	0.003	0.058
	Blunt-nose Minnow	2	0	0.006	0.011	0.008	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	4.570	0.008	0.182
	Rock Bass	4	0	0.005	0.012	0.006	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	4.335	0.006	0.136
	Round Goby	3	0	0.004	0.006	0.006	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	3.210	0.006	0.193
Grasse River- Route 37 Bridge Station #51	Emerald Shiner	7	0	0.003	0.009	0.006	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	4.280	0.006	0.139
	Blunt-nose Minnow	2	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	2.870	0.002	0.070

Table 7. (Continued)

Location	Species	Number of Composites	p,p'-DDE				p,p'-DDD				p,p'-DDT				Median % Lipid	Median Total DDT	
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Wet Wt.	Lipid Wt.
Grasse River-Dam Station #31	Fallfish	7	1	0.002	0.003	0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	3.010	0.002	0.076
Grasse River- Just Above Mouth Station #30	Rock Bass	3	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	3.110	< 0.002	0.064
	Bluegill	5	2	0.002	0.003	0.002	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	3.910	0.002	0.053
	Logperch	7	0	0.003	0.005	0.004	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	4.420	0.004	0.090
Raquette River-Massena Station #35	Rock Bass	4	3	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	3.040	< 0.002	0.068
	Bluntnose Minnow	6	0	0.002	0.003	0.003	6	0.002	0.002	< 0.002	6	0.002	0.002	< 0.002	3.870	0.003	0.077
Raquette River-1.9 Miles Upstream from SR-37C Bridge Station #52	Spotfin Shiner	7	2	0.002	0.003	0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	4.800	0.002	0.049
	Bluntnose Minnow	2	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	3.305	< 0.002	0.062

Table 7. (Continued)

Location	Species	Number of Composites	p,p'-DDE				p,p'-DDD				p,p'-DDT				Median % Lipid	Median Total DDT	
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Wet Wt.	Lipid Wt.
Raquette River- 1.9 Mile Upstream from Reynolds Metal Comany Station #34	Spotfin Shiner	3	0	0.002	0.003	0.003	3	0.002	0.002	< 0.002	3	0.002	0.002	< 0.002	5.140	0.003	0.049
	Emerald Shiner	2	1	0.002	0.002	0.002	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	3.625	0.002	0.056
	Bluntnose Minnow	4	3	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	4	0.002	0.002	< 0.002	3.055	< 0.002	0.066
Raquette River- Reynolds Metal Company. Station #33	Fallfish	7	0	0.002	0.003	0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	5.080	0.002	0.046
	Bluntnose Minnow	6	4	0.002	0.003	< 0.002	6	0.002	0.002	< 0.002	6	0.002	0.002	< 0.002	4.245	< 0.002	0.051
	Brook Silverside	5	4	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	5	0.002	0.002	< 0.002	4.980	< 0.002	0.040
Raquette River- Above Mouth Station #32	Spotfin Shiner	2	0	0.005	0.005	0.005	2	0.002	0.002	< 0.002	2	0.002	0.002	< 0.002	5.455	0.005	0.088
	Bluntnose Minnow	7	4	0.002	0.003	< 0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	3.140	< 0.002	0.065
St. Regis River- Mouth Station #56	Bluntnose Minnow	7	6	0.002	0.003	< 0.002	7	0.002	0.002	< 0.002	7	0.002	0.002	< 0.002	3.550	< 0.002	0.063

Table 8. Summary of Aroclor 1242 and Arcolor 1254/1260 concentrations (mg/kg wet weight and lipid normalized) in young-of-year fish composites from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012.

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
Lake Ontario - Genesee River Station #18	Emerald Shiner	7	0	0.020	0.034	0.024	5	<0.030	0.034	0.030	2.110	0.032-0.062	0.048	2.245
	Gizzard Shad	5	0	0.015	0.021	0.019	5	<0.030	<0.030	< 0.030	1.340	0.019-0.049	0.033	2.433
Lake Ontario-Sodus Point Station #19A	Emerald Shiner	7	0	0.016	0.026	0.021	1	<0.030	0.042	0.035	3.180	0.056	0.051	1.644
Lake Ontario-Sodus Bay Station #19	Brook Silverside	7	2	<0.010	0.015	0.012	7	<0.030	<0.030	< 0.030	2.440	0.012-0.042	NA	NA
	Round Goby	1	0	0.033	0.033	0.033	1	<0.030	<0.030	< 0.030	2.690	0.033-0.063	0.048	1.784
Lake Ontario-Oswego River Station #20	Round Goby	3	1	<0.010	0.018	0.014	1	<0.030	0.049	0.031	2.370	0.031-0.041	0.044	1.730
	Gizzard Shad	6	3	< 0.010	0.028	< 0.010	6	<0.030	<0.030	< 0.030	1.080	< 0.040	NA	NA
	Emerald Shiner	3	0	0.019	0.026	0.022	1	<0.030	0.045	0.035	2.850	0.061	0.054	1.952

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
Lake Ontario - Salmon River at the Mouth Station #21	Banded Killifish	7	0	0.038	0.119	0.057	0	0.031	0.051	0.043	2.880	0.103	0.107	3.728
	Bluntnose Minnow	2	0	0.046	0.069	0.058	0	0.048	0.06	0.054	3.450	0.112	0.112	3.220
Salmon River-Lower Reservoir Station #50	Bluegill	7	0	0.014	0.049	0.036	7	<0.030	<0.030	< 0.030	2.120	0.036-0.066	0.047	2.326
Black River-Bay Station #23	Bluntnose Minnow	7	0	0.076	0.332	0.218	0	0.097	0.277	0.201	6.880	0.419	0.397	6.984
St. Lawrence River -Cape Vincent Station #25	Bluntnose Minnow	7	0	0.011	0.020	0.016	0	0.043	0.068	0.046	8.270	0.063	0.064	0.811

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
St. Lawrence River-Oswegatchie River Station #26	Yellow Perch	7	0	0.066	0.144	0.120	0	0.042	0.074	0.070	1.850	0.180	0.167	9.150
	Round Goby	3	0	0.059	0.085	0.070	0	0.039	0.054	0.050	1.750	0.120	0.119	6.674
St. Lawrence River-Barnhart Island Station #27	Emerald Shiner	4	0	0.016	0.019	0.017	2	<0.030	0.036	< 0.035	3.900	0.017-0.052	0.043	1.085
	Spottail Shiner	5	1	<0.010	0.021	0.013	5	<0.030	<0.030	< 0.030	3.580	0.013-0.043	NA	NA
	Bluntnose Minnow	7	0	0.012	0.028	0.016	7	<0.030	<0.030	< 0.030	3.600	0.016-0.046	0.035	0.957
	Banded Killifish	4	0	0.015	0.022	0.018	4	<0.030	<0.030	< 0.030	4.415	0.018-0.048	0.033	0.757

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
St. Lawrence-Upstream, of Reynolds Metal Company Station #53	Emerald Shiner	7	0	0.667	1.430	0.820	0	0.644	1.150	0.860	4.130	1.680	1.796	39.632
St. Lawrence River- Dead Clam Cove Station #54	Emerald Shiner	7	0	0.225	0.854	0.385	0	0.228	0.592	0.334	5.100	0.741	0.788	15.939
	Brook Silverside	5	0	0.454	0.767	0.692	0	0.254	0.360	0.315	5.300	1.007	0.956	17.666
St. Lawrence River- Reynolds Metal Company Station #28	Spottail Shiner	7	0	0.112	0.698	0.155	0	0.107	0.639	0.169	5.770	0.324	0.509	9.313
	Banded Killifish	4	0	0.450	0.749	0.593	0	0.289	0.456	0.371	5.060	0.964	0.968	17.961
	Emerald Shiner	5	0	0.324	0.584	0.458	0	0.352	0.612	0.493	6.310	0.964	0.966	15.668

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
St. Lawrence River-Upstream from General Motors Company. Station #55	Largemouth Bass	5	0	0.987	1.910	1.590	0	0.483	0.976	0.666	4.420	2.307	2.182	47.673
	Round Goby	2	0	1.230	1.970	1.600	0	0.700	1.260	0.980	3.425	2.580	2.580	74.430
St. Lawrence-General Motors Company. Station #29	Brook Silverside	3	0	2.900	3.620	3.050	0	0.575	0.861	0.797	5.020	3.847	3.934	79.497
	Banded Killifish	4	0	3.460	3.690	3.600	0	0.820	1.040	0.904	5.100	4.566	4.505	87.630

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
St. Lawrence-General Motors Company. Station #29 Continued	Bluntnose Minnow	2	0	6.440	7.860	7.150	0	2.100	2.990	2.545	4.570	9.695	9.695	211.659
	Rock Bass	4	0	4.210	11.300	5.475	0	1.540	4.290	1.725	4.335	7.200	8.935	235.531
	Round Goby	3	0	3.520	5.380	3.900	0	1.470	2.090	1.920	3.210	5.820	6.093	190.046
Grasse River- Route 37 Bridge Station #51	Emerald Shiner	7	0	0.013	0.043	0.034	0	0.032	0.076	0.058	4.280	0.101	0.087	1.956
	Bluntnose Minnow	2	0	0.015	0.020	0.018	2	<0.030	<0.030	< 0.030	2.870	0.018-0.048	0.033	1.133
Grasse River- Dam Station #31	Fallfish	7	7	<0.010	<0.010	< 0.010	7	<0.030	<0.030	< 0.030	3.010	< 0.040	NA	NA

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
Grasse River- Just Above Mouth Station #30	Rock Bass	3	0	0.480	0.726	0.526	0	0.476	0.650	0.508	3.110	1.034	1.034	33.248
	Bluegill	5	0	0.828	1.250	0.919	0	0.427	0.564	0.484	3.910	1.375	1.446	36.766
	Logperch	7	0	0.780	1.370	1.270	0	0.767	1.260	1.200	4.420	2.480	2.290	52.066
Raquette River- Massena Station #35	Rock Bass	4	0	0.021	0.029	0.023	0	0.060	0.071	0.065	3.040	0.089	0.089	2.914
	Bluntnose Minnow	6	0	0.024	0.035	0.031	0	0.059	0.072	0.066	3.870	0.097	0.095	2.496

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
Raquette River-1.9 Miles Upstream from SR-37C Bridge Station #52	Spotfin Shiner	7	0	0.027	0.044	0.036	0	0.052	0.120	0.082	4.800	0.109	0.118	2.678
	Bluntnose Minnow	2	0	0.022	0.031	0.026	0	0.045	0.052	0.049	3.305	0.075	0.075	2.264
Raquette River- 1.9 Mile Upstream from Reynolds Metal Company Station #34	Spotfin Shiner	3	0	0.031	0.043	0.041	0	0.074	0.087	0.086	5.140	0.117	0.121	2.457
	Emerald Shiner	2	0	0.018	0.027	0.023	0	0.054	0.077	0.066	3.625	0.088	0.088	2.432
	Bluntnose Minnow	4	0	0.021	0.040	0.030	0	0.052	0.082	0.067	3.055	0.096	0.097	3.274

Table 8. (Continued)

Location	Species	# of Comp's.	AR1242				AR1254/1260				Mean % Lipid	Total PCB		
			# of Comp's. <MDL	Min	Max	Median	# of Comp's. <MDL	Min	Max	Median		Median Total PCB	Mean Total PCB	Mean Lipid Adj.
Raquette River-Reynolds Metal Company Station #33	Fallfish	7	0	0.059	0.178	0.107	0	0.111	0.208	0.143	5.080	0.256	0.258	5.032
	Bluntnose Minnow	6	0	0.046	0.095	0.055	0	0.073	0.126	0.110	4.245	0.171	0.168	3.992
	Brook Silverside	5	0	0.053	0.185	0.093	0	0.071	0.175	0.102	4.980	0.196	0.216	4.341
Raquette River-Above Mouth Station #32	Spotfin Shiner	2	0	0.073	0.127	0.100	0	0.151	0.220	0.186	5.455	0.286	0.286	5.182
	Bluntnose Minnow	7	0	0.029	0.043	0.036	0	0.055	0.071	0.065	3.14	0.101	0.099	3.164
St. Regis River-Mouth Station #56	Bluntnose Minnow	7	0	0.036	0.071	0.041	6	<0.030	0.047	< 0.030	3.55	0.041-0.071	0.067	2.314

Table 9. Level of PCB contamination of sampling locations and species of y-o-y fish composites from new and traditional near-shore sites within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012. The categories are: present but meeting the IJC objectives (≤ 0.10 mg/kg), contaminated (0.11 to 1.00 mg/kg), highly contaminated (> 1.00 to 5.00 mg/kg), and extremely contaminated (>5.00 mg/kg).

			Total PCB (mg/kg) wet weight			
Sampling Site	Station Number	Species	≤ 0.10 Meet IJC Objective	0.11 to 1.0 Contaminated	≥ 1.0 to 5.0 Highly Contaminated	≥ 5.0 Extremely Contaminated
Lake Ontario, Genesee River	18	Emerald Shiner	✖			
		Gizzard Shad	✖			
Lake Ontario, Sodus Bay	19	Brook Silverside	✖			
		Round Goby	✖			
Lake Ontario, Sodus Point	19A	Emerald Shiner	✖			
Lake Ontario, Oswego River	20	Gizzard Shad	✖			
		Round Goby	✖			
		Emerald Shiner	✖			
Lake Ontario, Salmon River at the Mouth	21	Killifish		✖		
		Bluntnose Minnow		✖		
Salmon River, Lower Reservoir	50	Bluegill	✖			
Black River, Bay Area B-1 (Middle)	23	Bluntnose Minnow		✖		
St. Lawrence River, Cape Vincent	25	Bluntnose Minnow	✖			

Table 9. (Continued)

			Total PCB (mg/kg) wet weight			
Sampling Site	Station Number	Species	≤ 0.10 Meet IJC Objective	0.11 to 1.0 Contaminated	≥ 1.0 to 5.0 Highly Contaminated	≥ 5.0 Extremely Contaminated
St. Lawrence River, Oswegatchie River	26	Yellow Perch		✖		
		Round Goby		✖		
St. Lawrence River, Barnhart Island (above dam)	27	Emerald Shiner	✖			
		Spottail Shiner	✖			
		Bluntnose Minnow	✖			
		Killifish	✖			
St. Lawrence River, Upstream of Reynolds Metal Company	53	Emerald Shiner			✖	
St. Lawrence River, Dead Clam Cove	54	Emerald Shiner		✖		
		Brook Silverside		✖		
St. Lawrence River, Reynolds Metal Company	28	Spottail Shiner		✖		
		Killifish		✖		
		Emerald Shiner		✖		
St Lawrence River, Upstream from General Motors Company.	55	Largemouth Bass				
		Round Goby			✖	
St. Lawrence River, General Motors Company.	29	Brook Silverside			✖	
		Killifish			✖	
		Bluntnose Minnow				✖
		Rock Bass				✖
		Round Goby				✖
Grasse River,	30	Logperch			✖	

Table 9. (Continued)

Just Above Mouth		Rock Bass			✖	
		Bluegill			✖	

			Total PCB (mg/kg) wet weight			
Sampling Site	Station Number	Species	≤ 0.10 Meet IJC Objective	0.11 to 1.0 Contaminated	≥ 1.0 to 5.0 Highly Contaminated	≥ 5.0 Extremely Contaminated
Grasse River, Route 37 Bridge	51	Emerald Shiner	✖			
		Bluntnose Minnow	✖			
Grasse River Dam	31	Fallfish	✖			
Raquette River, Above Mouth	32	Bluntnose Minnow	✖			
		Spotfin Shiner		✖		
Raquette River, Reynolds Metal Company	33	Fallfish		✖		
		Bluntnose Minnow		✖		
		Brook Silverside		✖		
Raquette River, 1.9 Miles Upstream from Reynolds Metal Company	34	Bluntnose Minnow	✖			
		Spotfin Shiner		✖		
		Emerald Shiner	✖			
Raquette River, 1.9 Miles Upstream from SR-37C Bridge	52	Spotfin Shiner	✖			
		Bluntnose Minnow	✖			
Raquette River, Massena	35	Bluntnose Minnow	✖			
		Rock Bass	✖			
St. Regis River, Near Mouth	56	Bluntnose Minnow	✖			

Table 10: Differences in frequency of detection of PCBs in young-of-year fish in two studies[1].

Study	PCB as Aroclor	MDL (ng/g)	Composites ≥ MDL (%)	Sites where a composite is ≥ MDL (%)	If Aroclor MDL for: 1242 was 20 ng/g	1254/60 was 30 ng/g
Preddice et al. (2002)	1016/1248	20	28.9	35.7		
	1254/1260	20	66.1	92.8		47.9 (64.2)[2]
This study	1242	10	92.4	92.8	72.3 (92.8)[2]	
	1254/1260	30	74.2	92.8		

[1] The 14 sites common to both studies were selected. N = 121 composite samples for Preddice et al. (2002) and N = 159 composite samples for this study.
[2] Parenthetic values are the percent of sampling sites with at least one sample ≥ MDL.

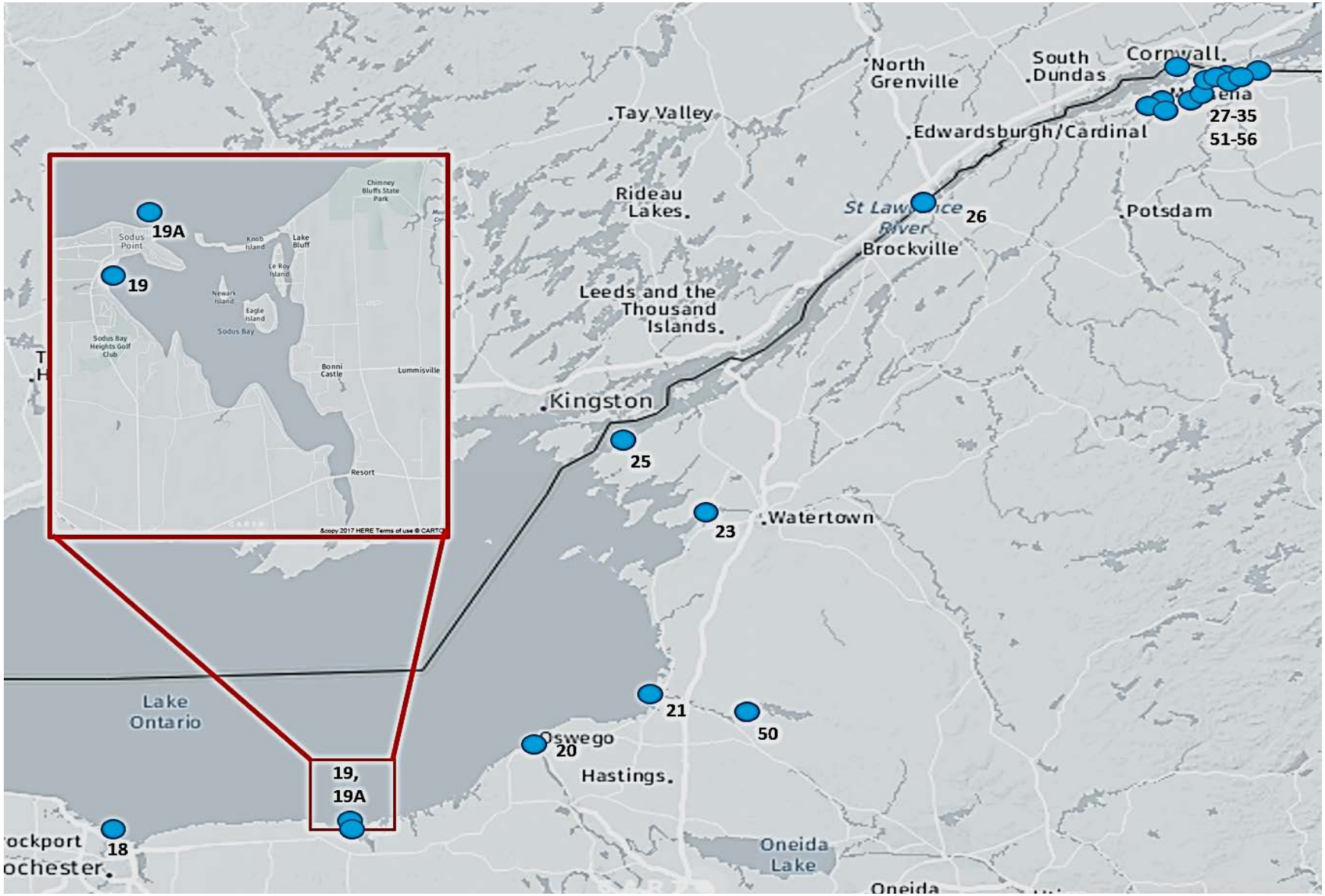

Figure 1. Young-of-year fish sampling locations from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012

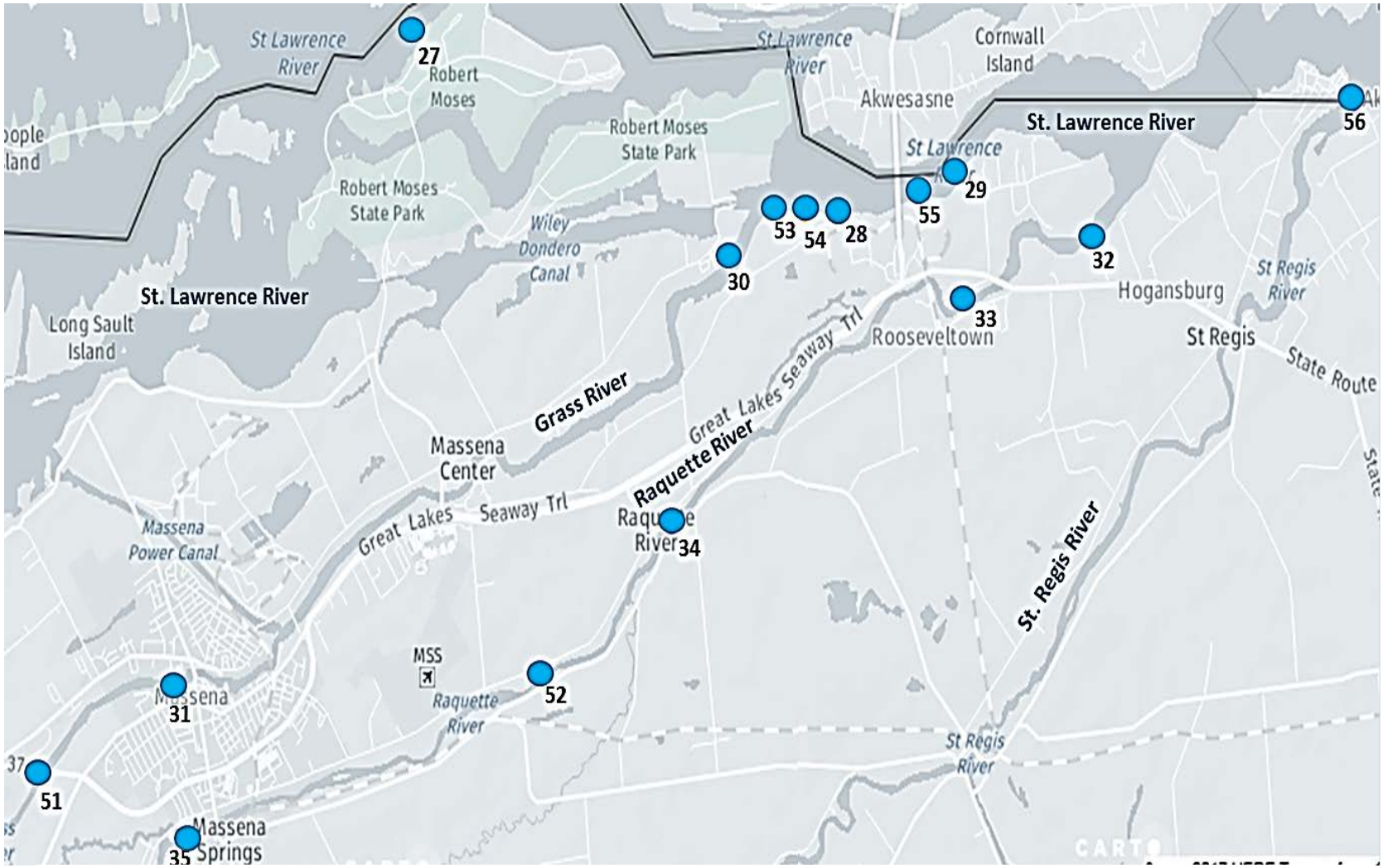

Figure 2. Detailed map of young-of-year fish sampling locations from near-shore areas within Massena Area of Concern (AOC), Massena, NY, 2011–2012.

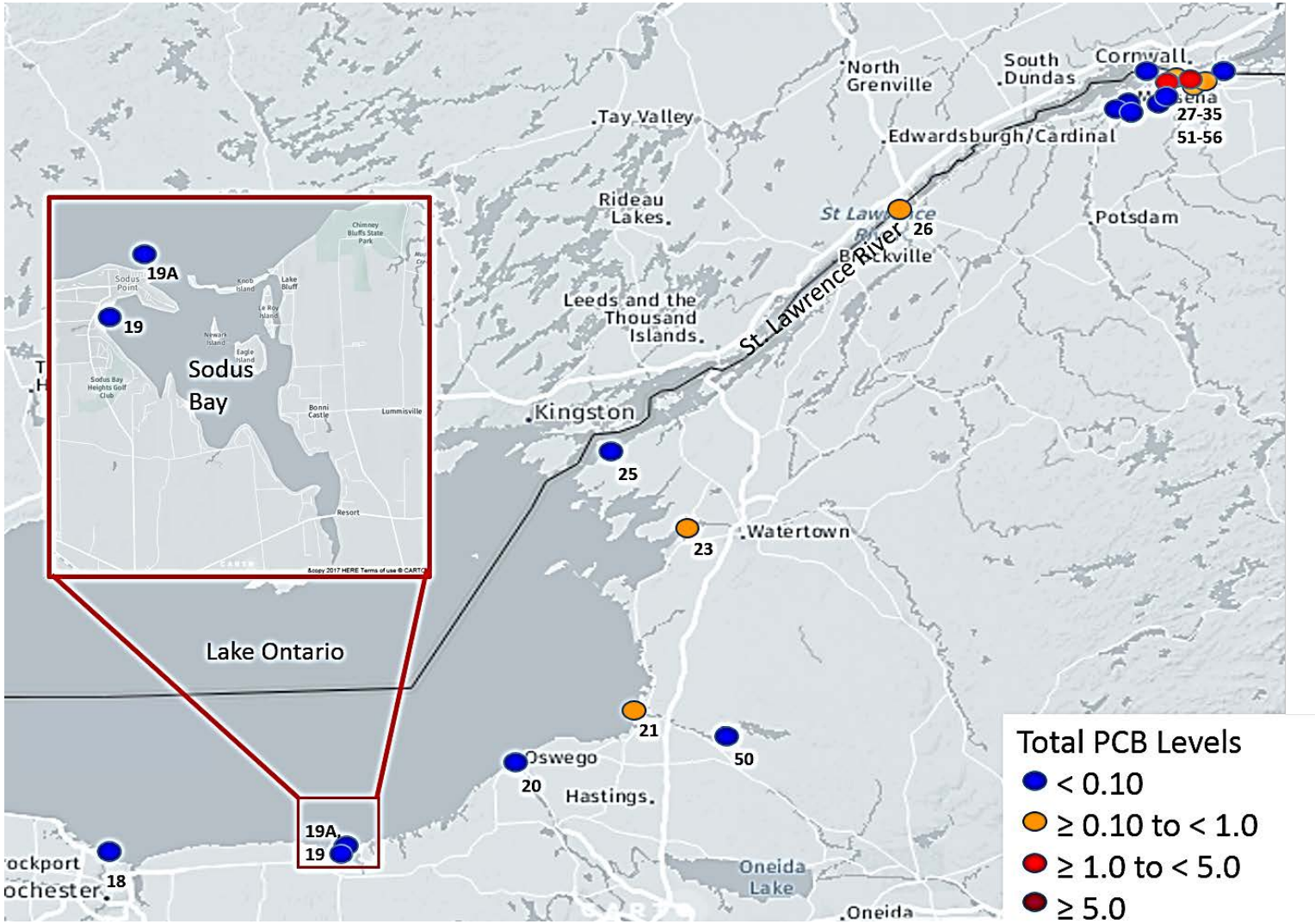

Figure 3. Mean total PCB concentration (mg/kg) in young-of-year fish from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012.

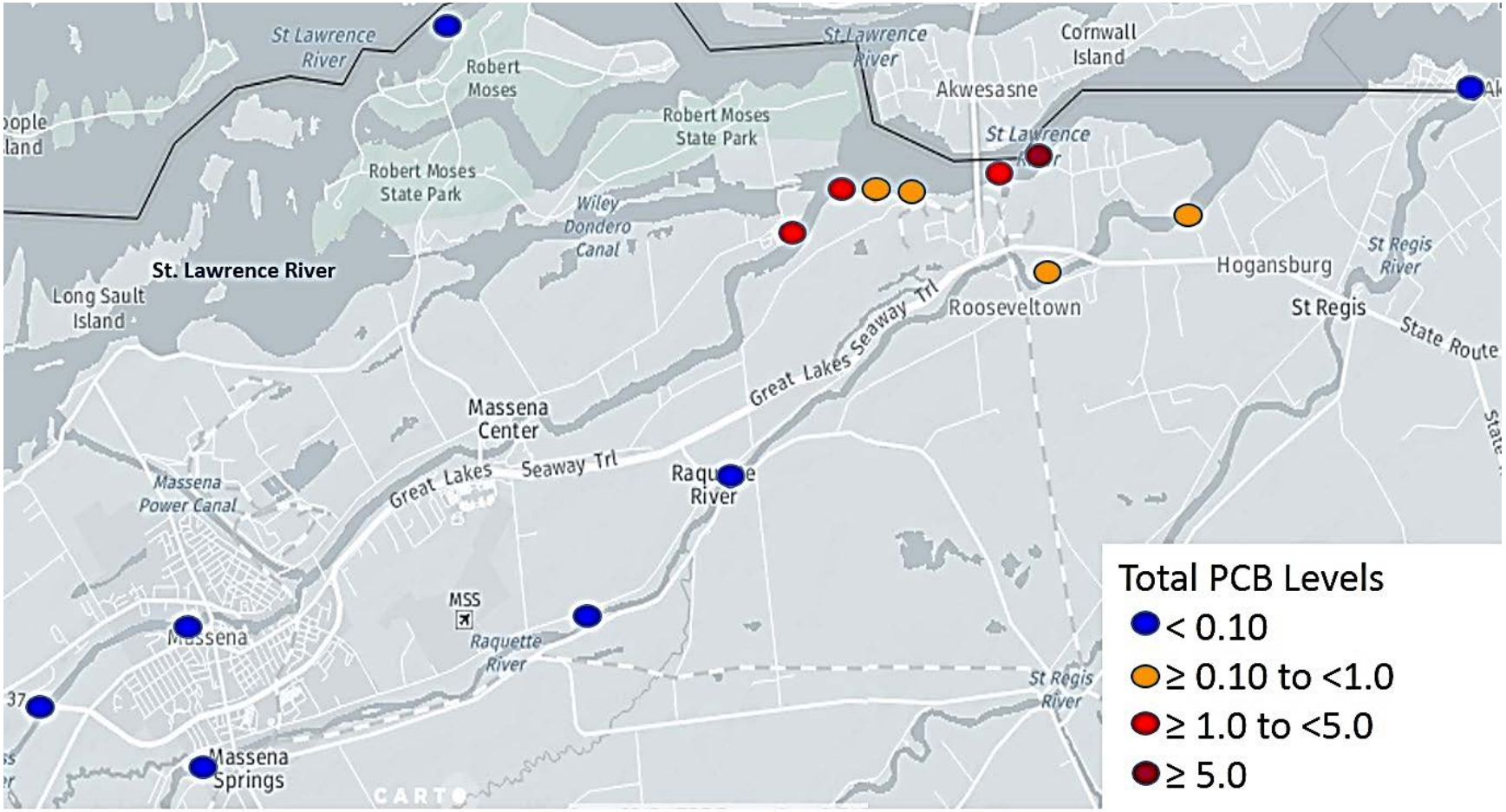

Figure 4. Detailed map showing mean total PCB concentration(mg/kg) in young-of-year fish from near-shore areas within Massena Area of Concern (AOC), Massena, NY, 2011–2012.

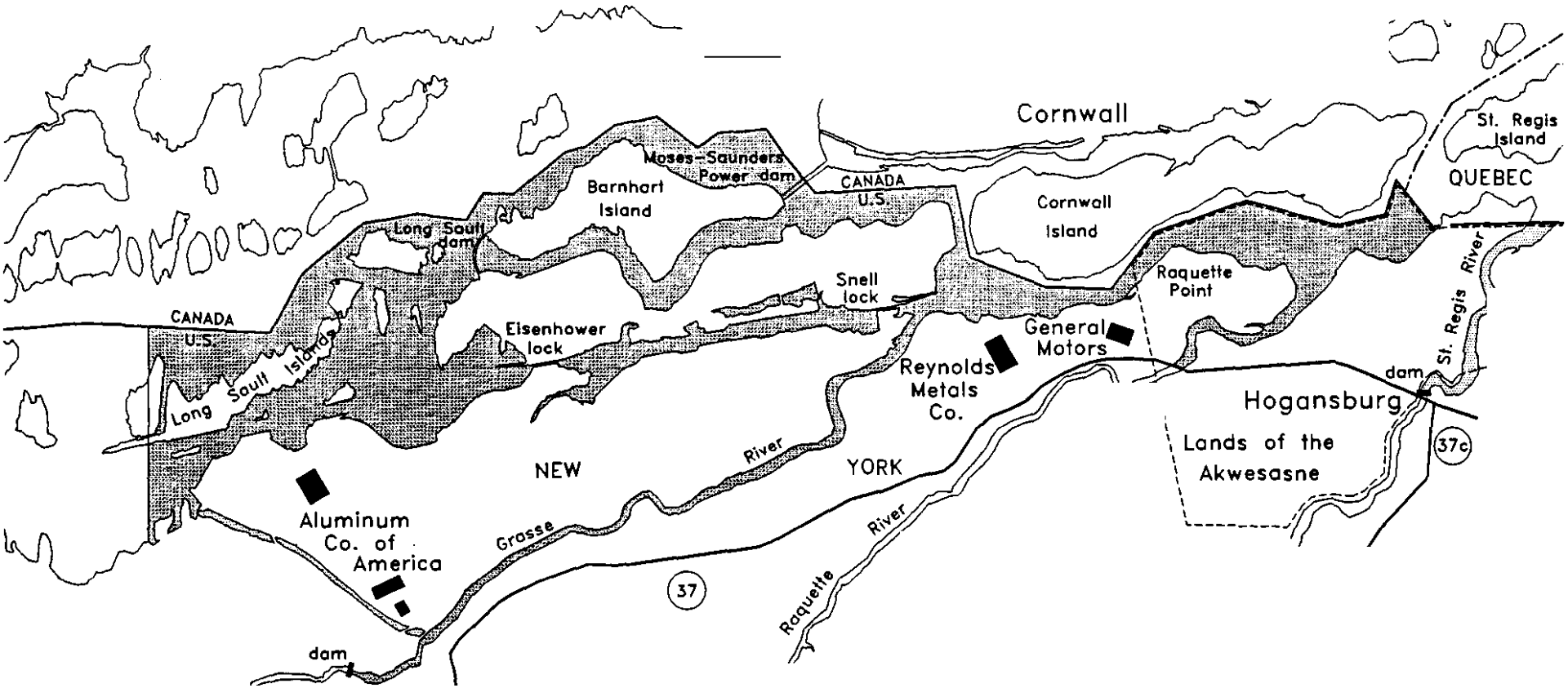

Figure 5. The Massena/Akwesasne Area of Concern (from NYSDEC 1990).

Appendix 1. Individual length (mm), mean and composite weight (g) field data for young-of-year fish from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Lake Ontario-Genesee River	A	11-0820-H	20 Emerald Shiner	28	35	31.5	1.82	0.27	5.4
	B	11-0821-H	20 Emerald Shiner	29	35	32.3	1.78	0.29	5.8
	C	11-0822-H	15 Emerald Shiner	32	38	35.1	1.72	0.37	5.6
	D	11-0823-H	15 Emerald Shiner	35	50	37.3	1.16	0.43	6.5
	E	11-0824-H	15 Emerald Shiner	32	40	37.7	2.25	0.45	6.8
	F	11-0825-H	15 Emerald Shiner	40	44	41.8	1.37	0.63	9.5
	G	11-0826-H	15 Emerald Shiner	39	45	41.1	1.49	0.56	8.4
	H	11-0827-H	5 Gizzard Shad	47	52	50.2	1.92	1.24	6.2
	I	11-0828-H	5 Gizzard Shad	50	55	52	1.87	1.4	7.0
	J	11-0829-H	5 Gizzard Shad	53	58	55.6	1.95	1.6	8.0
	K	11-0830-H	5 Gizzard Shad	52	57	55.2	1.92	1.64	8.2
	L	11-0831-H	5 Gizzard Shad	52	62	59.2	2.59	2	10.0
Lake Ontario-Sodus Point	A	11-0832-H	25 Emerald Shiner	27	35	31.8	2.18	0.25	6.3
	B	11-0833-H	16 Emerald Shiner	31	37	35.3	1.78	0.33	5.3
	C	11-0834-H	15 Emerald Shiner	32	40	38.1	2.07	0.4	6.0
	D	11-0835-H	15 Emerald Shiner	32	42	38.1	2.6	0.41	6.2
	E	11-0836-H	15 Emerald Shiner	37	44	40	2.36	0.47	7.1
	F	11-0837-H	15 Emerald Shiner	39	45	42.2	2.08	0.53	8.0
	G	11-0838-H	10 Emerald Shiner	44	55	51.4	2.17	0.89	8.9
Lake Ontario-Sodus Bay	A	11-0904-H	10 Brook Silverside	44	52	49.2	2.74	0.67	6.7
	B	11-0905-H	10 Brook Silverside	47	57	52.7	2.75	0.82	8.2
	C	11-0906-H	10 Brook Silverside	52	58	54.3	2.05	0.91	9.1
	D	11-0907-H	10 Brook Silverside	51	60	56.8	2.78	1.03	10.3
	E	11-0908-H	10 Brook Silverside	53	61	56.7	2.5	1	10.0
	F	11-0909-H	10 Brook Silverside	52	60	56.6	2.55	1.03	10.3
	G	11-0910-H	10 Brook Silverside	53	60	57.8	2.53	1.1	11.0
	H	11-0911-H	5 Round Goby	60	70	66.2	4.27	3.78	18.9

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Lake Ontario-Oswego River	A	11-0814-H	7 Round Goby	33	45	38.7	4.11	0.69	4.8
	B	11-0815-H	6 Round Goby	50	55	52.5	2.07	1.72	10.3
	C	11-0816-H	4 Round Goby	57	74	64	7.16	3.28	13.1
	D	11-0808-H	10 Gizzard Shad	33	48	41.9	5.24	0.62	6.2
	E	11-0809-H	10 Gizzard Shad	45	53	49.9	3.48	1.05	10.5
	F	11-0810-H	10 Gizzard Shad	52	63	55.4	3.1	1.47	14.7
	G	11-0811-H	10 Gizzard Shad	54	61	57.7	2	1.64	16.4
	H	11-0812-H	10 Gizzard Shad	54	61	57.6	1.84	1.61	16.1
	I	11-0813-H	10 Gizzard Shad	56	65	61.8	2.53	1.89	18.9
	J	11-0817-H	10 Emerald Shiner	40	48	44.4	2.37	0.67	6.7
	K	11-0818-H	7 Emerald Shiner	47	52	50	1.63	0.93	6.5
	L	11-0819-H	9 Emerald Shiner	54	57	54.9	0.93	1.14	10.3
Lake Ontario-Salmon River at the mouth	A	11-0983-H	30 Banded Killifish	20	30	25.8	2.38	0.18	5.4
	B	11-0984-H	25 Banded Killifish	25	31	28.7	1.79	0.23	5.8
	C	11-0985-H	20 Banded Killifish	26	33	30.8	2.05	0.3	6.0
	D	11-0986-H	15 Banded Killifish	30	34	32.1	0.99	0.34	5.1
	E	11-0987-H	15 Banded Killifish	30	37	32.9	2.1	0.34	5.1
	F	11-0988-H	15 Banded Killifish	31	36	33.5	1.36	0.38	5.7
	G	11-0989-H	15 Banded Killifish	33	38	34.8	1.42	0.41	6.2
	H	11-0990-H	5 Bluntnose Minnow	39	57	49.6	6.88	1.12	5.6
	I	11-0991-H	5 Bluntnose Minnow	54	61	58.2	2.59	1.82	9.1
Salmon River-lower reservoir	A	11-0992-H	20 Bluegill	23	29	25.5	1.76	0.26	5.2
	B	11-0993-H	25 Bluegill	22	27	24.5	1.58	0.22	5.5
	C	11-0994-H	25 Bluegill	22	29	24.4	1.85	0.23	5.8
	D	11-0995-H	15 Bluegill	32	42	35.5	2.97	0.69	10.4
	E	11-0996-H	14 Bluegill	29	37	31.4	1.99	0.44	6.2
	F	11-0997-H	15 Bluegill	36	38	37.2	0.67	0.83	12.5
	G	11-0998-H	15 Bluegill	42	45	43.3	1.1	1.27	19.0

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Black River-Bay	A	11-0765-H	15 Bluntnose Minnow	40	55	44.8	3.88	0.73	11.0
	B	11-0766-H	10 Bluntnose Minnow	40	48	44.1	2.96	0.69	6.9
	C	11-0767-H	15 Bluntnose Minnow	52	69	64.7	4.39	2.35	35.3
	D	11-0768-H	15 Bluntnose Minnow	59	69	65.1	2.52	2.43	36.5
	E	11-0769-H	15 Bluntnose Minnow	63	72	66.1	2.41	2.55	38.3
	F	11-0770-H	15 Bluntnose Minnow	63	70	66	2.17	2.63	39.5
	G	11-0771-H	15 Bluntnose Minnow	61	70	65.3	2.41	2.58	38.7
St. Lawrence River- Cape Vincent	A	11-0932-H	15 Bluntnose Minnow	47	60	55.5	3.2	1.52	22.8
	B	11-0933-H	15 Bluntnose Minnow	51	61	57.4	2.8	1.66	24.9
	C	11-0934-H	15 Bluntnose Minnow	52	64	58.7	2.97	1.77	26.6
	D	11-0935-H	15 Bluntnose Minnow	57	64	60.1	2.23	1.99	29.9
	E	11-0936-H	15 Bluntnose Minnow	59	69	63.2	3.03	2.34	35.1
	F	11-0937-H	15 Bluntnose Minnow	58	67	62.8	2.4	2.28	34.2
	G	11-0938-H	15 Bluntnose Minnow	57	63	62.4	2.59	2.26	33.9
St. Lawrence River- Oswegatchie River	A	11-0839-H	15 Yellow Perch	47	70	61	7.65	2.39	35.9
	B	11-0840-H	15 Yellow Perch	54	71	58.3	4.3	2.15	32.3
	C	11-0841-H	15 Yellow Perch	72	79	74.3	2.13	4.23	63.5
	D	11-0842-H	15 Yellow Perch	70	80	74.7	3.37	4.24	63.6
	E	11-0843-H	10 Yellow Perch	76	88	80.5	3.6	5.49	54.9
	F	11-0844-H	10 Yellow Perch	76	86	81.6	3.06	5.65	56.5
	G	11-0845-H	15 Yellow Perch	64	78	71.8	4.62	3.88	58.2
	H	11-0846-H	15 Round Goby	36	50	44.5	3.66	1.29	19.4
	I	11-0847-H	15 Round Goby	37	51	45	4.33	1.29	19.4
	J	11-0848-H	15 Round Goby	38	56	45.4	5.11	1.35	20.3

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
St. Lawrence River- Barnhart Island	A	11-0912-H	50 Emerald Shiner	18	30	24.1	3.12	0.11	5.5
	B	11-0913-H	50 Emerald Shiner	26	43	31.9	5.06	0.28	14.0
	C	11-0926-H	8 Emerald Shiner	42	55	48.5	5.48	0.93	7.4
	D	11-0927-H	10 Emerald Shiner	53	61	56.9	2.28	1.4	14.0
	E	11-0914-H	21 Spottail Shiner	27	37	31.9	2.71	0.25	5.3
	F	11-0915-H	14 Spottail Shiner	37	45	40.5	2.65	0.52	7.3
	G	11-0916-H	10 Spottail Shiner	47	57	51.5	3.44	1.22	12.2
	H	11-0917-H	10 Spottail Shiner	52	60	56.4	2.55	1.52	15.2
	I	11-0918-H	5 Spottail Shiner	61	68	65.4	2.97	2.34	11.7
	J	11-0919-H	35 Bluntnose Minnow	21	31	27	3	0.17	6.0
	K	11-0920-H	25 Bluntnose Minnow	29	36	32.2	1.62	0.28	7.0
	L	11-0921-H	15 Bluntnose Minnow	33	38	36	1.31	0.4	6.0
	M	11-0922-H	15 Bluntnose Minnow	37	44	40.2	1.97	0.56	8.4
	N	11-0923-H	10 Bluntnose Minnow	49	55	52.3	2.11	1.15	11.5
	O	11-0924-H	10 Bluntnose Minnow	46	57	52.8	3.74	1.16	11.6
	P	11-0925-H	10 Bluntnose Minnow	53	64	58.7	3.47	1.61	16.1
	Q	11-0928-H	20 Banded Killifish	23	35	30.3	3.31	0.28	5.6
	R	11-0929-H	15 Banded Killifish	33	39	35.2	1.74	0.43	6.5
	S	11-0930-H	15 Banded Killifish	31	41	35.7	2.74	0.45	6.8
	T	11-0931-H	15 Banded Killifish	36	42	39.1	2.02	0.58	8.7

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
St. Lawrence River- Upstream of Reynolds Metal Company	A	12-0119-H	10 Emerald Shiner	41	51	47.1	2.81	0.8	8.0
	B	12-0120-H	8 Emerald Shiner	49	54	51.9	2.1	1.1	8.8
	C	12-0121-H	6 Emerald Shiner	51	54	52.3	1.21	1.1	6.6
	D	12-0122-H	6 Emerald Shiner	56	60	57.5	1.64	1.5	9.0
	E	12-0123-H	6 Emerald Shiner	50	54	52.2	1.33	1.1	6.6
	F	12-0124-H	6 Emerald Shiner	54	58	56.2	1.47	1.3	7.8
	G	12-0125-H	6 Emerald Shiner	51	56	53.7	1.86	1.2	7.2
St. Lawrence River- Dead Clam Cove	A	11-0939-H	15 Emerald Shiner	32	42	37	2.85	0.37	5.6
	B	11-0940-H	15 Emerald Shiner	39	44	41.2	1.61	0.49	7.4
	C	11-0941-H	10 Emerald Shiner	42	47	44.5	1.72	0.59	5.9
	D	11-0942-H	10 Emerald Shiner	43	47	45.3	1.57	0.64	6.4
	E	11-0943-H	10 Emerald Shiner	47	52	49.4	1.64	0.8	8
	F	11-0944-H	10 Emerald Shiner	50	57	54.1	2.28	1.06	10.6
	G	11-0945-H	9 Emerald Shiner	52	58	55.1	2.57	1.11	10.0
	H	11-0946-H	10 Brook Silverside	49	59	54.3	3.13	0.72	7.2
	I	11-0947-H	10 Brook Silverside	56	63	58.8	2.53	0.91	9.1
	J	11-0948-H	10 Brook Silverside	55	66	61.2	3.68	1.03	10.3
	K	11-0949-H	10 Brook Silverside	62	68	65.6	2.12	1.22	12.2
	L	11-0950-H	10 Brook Silverside	51	68	64.9	2.42	1.17	11.7

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
St. Lawrence River- Reynolds Metal Company	A	11-0967-H	16 Spottail Shiner	24	37	32.3	3.44	0.28	4.5
	B	11-0973-H	10 Spottail Shiner	48	53	49.9	1.29	1.04	10.4
	C	11-0974-H	10 Spottail Shiner	49	54	52.1	1.73	1.23	12.3
	D	11-0975-H	10 Spottail Shiner	49	55	52.1	2.13	1.27	12.7
	E	11-0976-H	10 Spottail Shiner	49	56	52.5	1.84	1.25	12.5
	F	11-0977-H	10 Spottail Shiner	51	55	52.7	1.49	1.3	13.0
	G	11-0978-H	10 Spottail Shiner	48	54	50.4	1.71	1.08	10.8
	H	11-0979-H	10 Banded Killifish	37	44	41.1	2.42	0.66	6.6
	I	11-0980-H	9 Banded Killifish	42	47	44.6	1.81	0.92	8.3
	J	11-0981-H	10 Banded Killifish	42	48	44.8	1.87	0.85	8.5
	K	11-0982-H	10 Banded Killifish	36	48	43.3	3.86	0.74	7.4
	L	11-0968-H	10 Emerald Shiner	45	52	49.1	2.28	0.84	8.4
	M	11-0969-H	10 Emerald Shiner	40	46	43.3	2.06	0.59	5.9
	N	11-0970-H	10 Emerald Shiner	48	58	53.2	2.82	1.09	10.9
	O	11-0971-H	10 Emerald Shiner	49	56	52.2	1.87	1.02	10.2
	P	11-0972-H	10 Emerald Shiner	52	59	54.8	1.99	1.2	12.0
St. Lawrence River- Upstream from General Motors Company	A	12-0126-H	4 Largemouth Bass	66	71	68	2.16	4	16.0
	B	12-0127-H	4 Largemouth Bass	70	74	72.3	1.71	4.8	19.2
	C	12-0128-H	4 Largemouth Bass	73	79	76.3	2.75	5.6	22.4
	D	12-0129-H	4 Largemouth Bass	77	80	78.8	1.5	6.6	26.4
	E	12-0130-H	3 Largemouth Bass	80	81	80.7	0.577	6.8	20.4
	F	12-0131-H	4 Round Goby	38	60	47	9.31	1.4	5.6
	G	12-0132-H	8 Round Goby	60	65	62.6	1.92	3.1	24.8

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
St. Lawrence River- General Motors Company	A	11-0960-H	10 Brook Silverside	57	69	63.7	3.97	1.22	12.2
	B	11-0961-H	10 Brook Silverside	62	72	66.8	2.74	1.42	14.2
	C	11-0962-H	10 Brook Silverside	58	72	66.5	4.35	1.38	13.8
	D	11-0951-H	20 Bluntnose Minnow	26	34	31	1.93	0.27	5.4
	E	11-0952-H	10 Bluntnose Minnow	34	44	37.5	2.84	0.46	4.6
	F	11-0953-H	6 Rock Bass	35	41	38	2	1.12	6.7
	G	11-0954-H	4 Rock Bass	42	45	44	1.41	1.6	6.4
	H	11-0955-H	3 Rock Bass	44	48	46	2	1.83	5.5
	I	11-0956-H	4 Rock Bass	60	67	64.5	3.11	4.65	18.6
	J	11-0957-H	5 Round Goby	44	50	47.2	2.95	1.3	6.5
	K	11-0958-H	5 Round Goby	46	52	48.6	2.19	1.44	7.2
	L	11-0959-H	3 Round Goby	50	52	50.7	1.15	1.77	5.3
	M	11-0963-H	10 Banded Killifish	34	43	39	2.83	0.58	5.8
	N	11-0964-H	10 Banded Killifish	38	46	42.3	2.54	0.71	7.1
	O	11-0965-H	10 Banded Killifish	36	44	41.2	2.25	0.67	6.7
	P	11-0966-H	10 Banded Killifish	41	50	45.4	2.8	0.88	8.8

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Grasse River-Just Above Mouth	A	11-0789-H	6 Rock Bass	37	46	42	3.46	1.53	9.2
	B	11-0790-H	6 Rock Bass	51	56	54.5	1.87	3.35	20.1
	C	11-0791-H	4 Rock Bass	58	64	61.5	2.65	4.7	18.8
	D	12-0133-H	10 Bluegill	26	36	31.5	3.66	0.5	5.0
	E	12-0133-H	7 Bluegill	34	37	35.7	1.11	0.8	5.6
	F	12-0133-H	6 Bluegill	37	41	38.5	1.52	1	6.0
	G	12-0133-H	5 Bluegill	39	42	40.6	1.14	1.1	5.5
	H	12-0133-H	4 Bluegill	42	53	49	4.83	1.9	7.6
	I	11-0782-H	10 Logperch	57	61	58.8	1.4	1.74	17.4
	J	11-0783-H	10 Logperch	59	65	61.9	2.08	1.99	19.9
	K	11-0784-H	10 Logperch	63	70	66.5	2.59	2.45	24.5
	L	11-0785-H	10 Logperch	66	71	68	1.76	2.54	25.4
	M	11-0786-H	9 Logperch	63	74	68	3.46	2.68	24.1
	N	11-0787-H	7 Logperch	70	74	71.9	1.46	3.09	21.6
	O	11-0788-H	8 Logperch	71	76	73	1.85	3.25	26.0
Grasse River-Dam	A	11-0792-H	9 Fallfish	52	60	56.3	2.92	1.6	14.4
	B	11-0793-H	5 Fallfish	64	68	66	1.58	2.9	14.5
	C	11-0794-H	5 Fallfish	60	68	64.2	3.03	2.48	12.4
	D	11-0795-H	5 Fallfish	60	69	65.8	3.56	2.9	14.5
	E	11-0796-H	5 Fallfish	66	70	68.6	1.52	3.24	16.2
	F	11-0797-H	5 Fallfish	65	67	66.2	1.1	2.88	14.4
	G	11-0798-H	5 Fallfish	67	75	71.2	3.35	3.38	16.9

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Grasse River-Route 37 Bridge	A	11-0799-H	15 Emerald Shiner	36	46	41.1	2.63	0.45	6.8
	B	11-0800-H	20 Emerald Shiner	31	41	36.9	2.47	0.43	8.6
	C	11-0801-H	15 Emerald Shiner	39	48	43.8	2.78	0.52	7.8
	D	11-0802-H	15 Emerald Shiner	39	47	43	2.27	0.5	7.5
	E	11-0803-H	15 Emerald Shiner	44	53	48.2	2.57	0.69	10.4
	F	11-0804-H	15 Emerald Shiner	44	57	49.7	3.61	0.77	11.6
	G	11-0805-H	15 Emerald Shiner	46	53	49	2.33	0.72	10.8
	H	11-0806-H	5 Bluntnose Minnow	50	54	52.2	1.79	1.29	6.5
	I	11-0807-H	5 Bluntnose Minnow	47	54	49.4	2.88	0.98	4.9
Raquette River-Above mouth	A	11-0856-H	7 Spotfin Shiner	51	56	53	1.64	1.17	8.2
	B	11-0857-H	7 Spotfin Shiner	54	61	57.6	2.51	1.5	10.5
	C	11-0849-H	30 Bluntnose Minnow	22	30	27	1.93	0.16	4.8
	D	11-0850-H	25 Bluntnose Minnow	25	31	28.5	1.64	0.2	5.0
	E	11-0851-H	25 Bluntnose Minnow	26	33	30.2	1.79	0.23	5.8
	F	11-0852-H	20 Bluntnose Minnow	30	34	32.1	1.02	0.27	5.4
	G	11-0853-H	20 Bluntnose Minnow	32	37	33.5	1.28	0.31	6.2
	H	11-0854-H	15 Bluntnose Minnow	33	37	35.3	1.28	0.35	5.3
	I	11-0855-H	10 Bluntnose Minnow	42	49	44.7	2.36	0.73	7.3

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Raquette River-Reynolds Metal Company	A	11-0858-H	12 Fallfish	29	44	37.9	4.48	0.43	5.2
	B	11-0859-H	10 Fallfish	43	48	45.7	1.57	0.72	7.2
	C	11-0860-H	10 Fallfish	42	51	46.6	2.46	0.79	7.9
	D	11-0861-H	10 Fallfish	45	52	49.2	2.44	0.91	9.1
	E	11-0862-H	10 Fallfish	49	54	51.8	1.87	1.06	10.6
	F	11-0863-H	10 Fallfish	49	55	51.7	1.89	1.05	10.5
	G	11-0864-H	10 Fallfish	49	56	53.1	2.28	1.07	10.7
	H	11-0865-H	12 Bluntnose Minnow	39	50	46.3	3.36	0.78	9.4
	I	11-0866-H	12 Bluntnose Minnow	42	52	49.3	2.86	0.93	11.2
	J	11-0867-H	10 Bluntnose Minnow	49	56	53	2.21	1.17	11.7
	K	11-0868-H	9 Bluntnose Minnow	51	54	52.6	1.02	1.2	10.8
	L	11-0869-H	8 Bluntnose Minnow	50	57	53.3	2.71	1.25	10.0
	M	11-0870-H	8 Bluntnose Minnow	56	63	58.9	2.38	1.68	13.4
	N	11-0871-H	6 Brook Silverside	42	64	57	7.95	0.92	5.5
	O	11-0872-H	5 Brook Silverside	65	71	68.8	2.68	1.5	7.5
	P	11-0873-H	5 Brook Silverside	68	70	69.2	0.84	1.54	7.7
	Q	11-0874-H	5 Brook Silverside	63	69	67	2.55	1.4	7.0
	R	11-0875-H	4 Brook Silverside	69	71	70.3	0.96	1.68	6.7
Raquette River-1.0 miles upstream from Reynolds Metal Company	A	11-0880-H	17 Spotfin Shiner	27	49	34.5	6.23	0.33	5.6
	B	11-0881-H	8 Spotfin Shiner	50	53	51.9	0.99	1.04	8.3
	C	11-0882-H	7 Spotfin Shiner	54	63	58.1	3.18	1.37	9.6
	D	11-0883-H	9 Emerald Shiner	38	51	46.8	4.06	0.84	7.6
	E	11-0884-H	7 Emerald Shiner	49	56	52.9	2.67	1.24	8.7
	F	11-0876-H	5 Bluntnose Minnow	55	60	57.8	1.92	1.54	7.7
	G	11-0877-H	8 Bluntnose Minnow	36	50	44	5.15	0.7	5.6
	H	11-0878-H	5 Bluntnose Minnow	55	60	57	1.87	1.48	7.4
	I	11-0879-H	5 Bluntnose Minnow	60	69	64.8	4.08	2.3	11.5

Appendix 1. (Continued)

Site	Comp.	Lab. No.	No. & Species	Length				Mean Weight	Total Sample Weight
				Minimum	Maximum	Mean	SD		
Raquette River-1.9 miles upstream from State Route 37c Bridge	A	11-0895-H	15 Spotfin Shiner	41	56	48.3	3.77	0.75	11.3
	B	11-0896-H	15 Spotfin Shiner	43	51	47.9	2.47	0.73	11.0
	C	11-0897-H	15 Spotfin Shiner	31	39	35.9	1.87	0.33	5.0
	D	11-0898-H	20 Spotfin Shiner	25	42	34.1	4.52	0.27	5.4
	E	11-0899-H	25 Spotfin Shiner	25	39	32.3	3.66	0.29	7.3
	F	11-0900-H	15 Spotfin Shiner	41	51	45.9	3.36	0.61	9.2
	G	11-0901-H	30 Spotfin Shiner	28	39	33.3	2.48	0.26	7.8
	H	11-0902-H	15 Bluntnose Minnow	35	45	39.6	2.87	0.43	6.5
	I	11-0903-H	29 Bluntnose Minnow	25	37	30.1	3.39	0.18	5.2
Raquette River-Massena	A	11-0885-H	10 Rock Bass	34	43	37	3.26	0.76	7.6
	B	11-0886-H	15 Rock Bass	22	35	29.8	3.02	0.43	6.5
	C	11-0887-H	10 Rock Bass	37	50	42	4.06	1.07	10.7
	D	11-0888-H	8 Rock Bass	33	38	35.4	1.6	0.7	5.6
	E	11-0889-H	5 Bluntnose Minnow	53	64	59	4.24	1.86	9.3
	F	11-0890-H	5 Bluntnose Minnow	57	60	58.6	1.51	1.5	7.5
	G	11-0891-H	5 Bluntnose Minnow	50	61	57	4.18	1.32	6.6
	H	11-0892-H	15 Bluntnose Minnow	39	47	43.9	2.83	0.59	8.9
	I	11-0893-H	15 Bluntnose Minnow	34	41	37.3	2.55	0.35	5.3
	J	11-0894-H	25 Bluntnose Minnow	27	38	32.2	3.38	0.23	5.8
St. Regis River-Mouth	A	12-0112-H	8 Bluntnose Minnow	42	45	43.8	0.886	0.6	4.8
	B	12-0113-H	15 Bluntnose Minnow	30	39	33.7	3.33	0.3	4.5
	C	12-0114-H	10 Bluntnose Minnow	39	42	40.5	0.85	0.5	5.0
	D	12-0115-H	9 Bluntnose Minnow	40	43	41.6	1.24	0.6	5.4
	E	12-0116-H	7 Bluntnose Minnow	43	45	44	0.577	0.7	4.9
	F	12-0117-H	6 Bluntnose Minnow	46	53	49.2	2.64	0.9	5.4
	G	12-0118-H	3 Bluntnose Minnow	65	73	67.7	4.62	2.9	8.7

Appendix 2. Total mercury (mg/kg wet weight) in young-of-year fish composites from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012.

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
Lake Ontario-Genesee River Station #18	Emerald Shiner	A	84.270	0.023
		B	84.080	0.023
		C	83.330	0.023
		D	83.090	0.021
		E	83.060	0.025
		F	80.980	0.021
		G	82.670	0.023
	Gizzard Shad	H	83.210	0.023
		I	83.180	0.021
		J	83.920	0.020
		K	84.270	0.020
		L	83.430	0.022
Lake Ontario-Sodus Point Station #19A				
	Emerald Shiner	A	81.640	0.022
		B	80.630	0.022
		C	81.090	0.023
		D	80.090	0.021
		E	80.410	0.022
		F	80.270	0.023
		G	78.480	0.022
Lake Ontario-Sodus Bay Station #19				
	Brook Silverside	A	82.480	0.019
		B	82.110	0.023
		C	81.620	0.024
		D	82.180	0.030
		E	82.450	0.025
		F	82.030	0.028
		G	81.940	0.028
	Round Goby	H	76.530	0.022

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
Lake Ontario-Oswego River Station #20	Round Goby	A	77.980	0.020
		B	77.490	0.020
		C	75.890	0.024
	Gizzard Shad	D	81.980	0.012
		E	82.120	0.018
		F	83.560	0.020
		G	84.080	0.016
		H	83.330	0.016
		I	83.380	0.016
	Emerald Shiner	J	80.980	0.020
		K	78.830	0.023
		L	79.170	0.023
Lake Ontario-Salmon River at the Mouth Station #21				
	Banded Killifish	A	80.440	0.034
		B	80.210	0.040
		C	79.330	0.045
		D	79.660	0.037
		E	78.850	0.052
		F	78.350	0.039
		G	78.670	0.046
	Bluntnose Minnow	H	78.060	0.050
		I	78.150	0.030
Salmon River-Lower Reservoir Station #50				
	Bluegill	A	81.730	0.062
		B	81.110	0.067
		C	81.950	0.063
		D	78.980	0.070
		E	79.660	0.066
		F	80.530	0.083
		G	79.840	0.073

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
Black River-Bay Station #23	Bluntnose Minnow	A	79.820	0.032
		B	79.020	0.056
		C	74.560	0.077
		D	75.290	0.088
		E	74.840	0.084
		F	74.900	0.083
		G	74.950	0.084
St. Lawrence River- Cape Vincent Station #25				
	Bluntnose Minnow	A	72.630	0.040
		B	73.470	0.032
		C	73.220	0.039
		D	73.640	0.038
		E	72.160	0.040
		F	72.610	0.038
		G	72.340	0.039
St. Lawrence River- Oswegatchie River Station #26				
	Yellow Perch	A	79.780	0.032
		B	80.230	0.035
		C	78.950	0.035
		D	78.090	0.027
		E	78.110	0.031
		F	77.790	0.027
		G	78.880	0.035
	Round Goby	H	80.190	0.007
		I	79.900	0.014
		J	79.220	0.007
St. Lawrence River- Barnhart Island Station #27				
	Emerald Shiner	A	80.050	0.024
		B	78.930	0.027
		C	75.400	0.036
		D	75.710	0.051
	Spottail Shiner	E	79.180	0.028
		F	77.610	0.029
		G	78.330	0.035
		H	77.810	0.034
		I	76.910	0.027

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
St. Lawrence River- Barnhart Island Station #27 Continued	Bluntnose Minnow	J	82.540	0.021
		K	80.580	0.021
		L	79.190	0.019
		M	78.830	0.020
		N	77.270	0.025
		O	76.220	0.035
		P	75.970	0.039
	Banded Killifish	Q	76.330	0.020
		R	76.300	0.026
		S	76.840	0.024
		T	76.180	0.022
St. Lawrence River- Upstream of Reynolds Metal Company Station #53				
	Emerald Shiner	A	80.000	0.074
		B	78.410	0.088
		C	77.490	0.101
		D	75.380	0.072
		E	78.800	0.095
		F	76.320	0.082
		G	77.620	0.071
St. Lawrence River- Dead Clam Cove Station #54				
	Emerald Shiner	A	76.830	0.060
		B	76.860	0.035
		C	76.390	0.042
		D	78.120	0.062
		E	78.450	0.028
		F	76.150	0.047
		G	76.010	0.064
	Brook Silverside	H	75.580	0.027
		I	76.400	0.036
		J	76.040	0.035
		K	75.910	0.027
		L	75.860	0.026

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
St. Lawrence River-Reynolds Metal Company Station #28	Spottail Shiner	A	77.850	0.036
		B	77.000	0.039
		C	75.550	0.039
		D	75.510	0.040
		E	75.650	0.042
		F	75.210	0.047
		G	74.960	0.055
	Banded Killifish	H	74.000	0.016
		I	75.190	0.019
		J	73.490	0.020
		K	75.520	0.021
	Emerald Shiner	L	76.230	0.049
		M	75.680	0.063
		N	76.090	0.047
		O	75.410	0.053
		P	75.230	0.066
St. Lawrence River-Upstream from General Motors Company Station #55				
	Largemouth Bass	A	76.510	0.021
		B	75.810	0.017
		C	75.610	0.017
		D	74.690	0.013
		E	75.000	0.020
	Round Goby	F	76.660	0.020
		G	75.960	0.106
St. Lawrence River-General Motors Company Station #29				
	Brook Silverside	A	76.500	0.025
		B	76.210	0.035
		C	76.100	0.031
	Banded Killifish	D	74.610	0.021
		E	73.930	0.023
		F	74.630	0.015
		G	74.330	0.017

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
St. Lawrence River-General Motors Company Station #29 Continued	Bluntnose Minnow	H	79.020	0.021
		I	76.670	0.021
	Rock Bass	J	75.210	0.020
		K	74.350	0.025
		L	76.400	0.024
		M	75.580	0.036
	Round Goby	N	75.590	0.022
		O	76.530	0.020
		P	76.470	0.015
Grasse River-Route 37 Bridge Station #51				
	Emerald Shiner	A	76.780	0.075
		B	77.090	0.082
		C	78.040	0.076
		D	77.700	0.077
		E	77.400	0.066
		F	77.640	0.065
		G	78.240	0.064
	Bluntnose Minnow	H	76.320	0.045
		I	76.840	0.046
Grasse River-Dam Station #31				
	Fallfish	A	77.960	0.060
		B	78.240	0.037
		C	77.580	0.050
		D	78.730	0.036
		E	78.420	0.037
		F	77.900	0.041
		G	78.270	0.039

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
Grasse River-Just Above Mouth Station #30	Rock Bass	A	77.840	0.049
		B	76.500	0.035
		C	76.260	0.058
	Bluegill	A	77.970	0.041
		B	76.600	0.022
		C	76.760	0.020
		D	78.030	0.015
		E	75.750	0.020
	Logperch	F	75.860	0.079
		G	75.140	0.076
		H	74.370	0.085
		I	74.730	0.085
		J	74.430	0.076
		K	73.790	0.089
		L	73.710	0.090
Raquette River-Massena Station #35				
	Rock Bass	A	77.400	0.040
		B	77.360	0.036
		C	76.510	0.043
		D	77.140	0.040
	Bluntnose Minnow	E	76.060	0.032
		F	74.690	0.050
		G	74.240	0.042
		H	75.950	0.025
		I	75.350	0.031
		J	74.780	0.041
Raquette River-1.9 Miles Upstream from SR-37C Bridge Station #52				
	Spotfin Shiner	A	76.210	0.056
		B	76.350	0.086
		C	73.460	0.031
		D	73.900	0.032
		E	75.070	0.037
		F	76.220	0.086
		G	76.170	0.028
	Bluntnose Minnow	H	78.440	0.041
		I	77.600	0.050

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
Raquette River- 1.9 Mile Upstream from Reynolds Metal Company Station #34	Spotfin Shiner	A	76.140	0.030
		B	75.760	0.052
		C	76.100	0.052
	Emerald Shiner	D	79.370	0.050
		E	77.940	0.058
	Bluntnose Minnow	F	78.510	0.039
		G	79.000	0.044
		H	78.870	0.086
		I	78.120	0.116
Raquette River- Reynolds Metal Company Station #33				
	Fallfish	A	78.700	0.062
		B	78.320	0.063
		C	77.250	0.053
		D	77.580	0.053
		E	77.440	0.066
		F	76.310	0.048
		G	76.590	0.058
	Bluntnose Minnow	H	78.170	0.062
		I	78.230	0.069
		J	77.840	0.058
		K	78.040	0.091
		L	78.250	0.085
		M	76.800	0.102
	Brook Silverside	N	77.630	0.032
		O	77.450	0.031
		P	77.020	0.039
		Q	77.180	0.021
		R	75.890	0.032

Appendix 2. (Continued)

Location	Species	Comp.	% Moisture	Total Hg Wet Wt.
Raquette River-Above Mouth	Spotfin Shiner	A	75.400	0.060
		B	74.370	0.050
	Bluntnose Minnow	C	80.170	0.046
		D	78.990	0.043
		E	78.780	0.044
		F	78.460	0.049
		G	77.970	0.046
		H	78.190	0.041
		I	77.260	0.038
St. Regis River-Mouth				
	Bluntnose Minnow	A	76.450	0.043
		B	81.420	0.043
		C	78.610	0.049
		D	77.260	0.055
		E	77.700	0.052
		F	77.960	0.036
		G	79.180	0.043

Appendix 3. Total p,p'-DDT and metabolites concentrations (mg/kg wet weight and lipid adjusted) in young-of-year fish composites from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012. Total DDT presented is the sum of all detected p,p' DDT and metabolites. All o,p'-DDT and metabolites concentrations were below detection.

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Lake Ontario -Genesee River	Emerald Shiner	A	1.770	0.005	0.307	< 0.002	NA	< 0.002	NA	0.005	0.307
		B	1.710	0.007	0.427	< 0.002	NA	< 0.002	NA	0.007	0.427
		C	2.100	0.008	0.366	< 0.002	NA	< 0.002	NA	0.008	0.366
		D	2.110	0.007	0.348	< 0.002	NA	< 0.002	NA	0.007	0.348
		E	2.280	0.006	0.272	< 0.002	NA	< 0.002	NA	0.006	0.272
		F	2.930	0.010	0.335	< 0.002	NA	< 0.002	NA	0.010	0.335
		G	2.310	0.008	0.362	< 0.002	NA	< 0.002	NA	0.008	0.362
	Gizzard Shad	A	1.340	0.004	0.319	< 0.002	NA	< 0.002	NA	0.004	0.319
		B	1.540	0.004	0.233	< 0.002	NA	< 0.002	NA	0.004	0.233
		C	1.260	0.004	0.318	< 0.002	NA	< 0.002	NA	0.004	0.318
		D	1.340	0.005	0.387	< 0.002	NA	< 0.002	NA	0.005	0.387
		E	1.410	0.004	0.303	< 0.002	NA	< 0.002	NA	0.004	0.303
Lake Ontario-Sodus Point	Emerald Shiner	A	2.630	0.023	0.859	0.003	0.100	< 0.002	NA	0.025	0.959
		B	3.210	0.030	0.944	0.003	0.098	< 0.002	NA	0.033	1.042
		C	2.590	0.019	0.741	0.002	0.089	< 0.002	NA	0.022	0.831
		D	3.180	0.021	0.657	0.003	0.092	< 0.002	NA	0.024	0.749
		E	3.210	0.029	0.910	0.003	0.092	< 0.002	NA	0.032	1.001
		F	3.140	0.026	0.812	0.003	0.089	< 0.002	NA	0.028	0.902
		G	3.550	0.043	1.223	0.003	0.083	< 0.002	NA	0.046	1.306

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Lake Ontario-Sodus Bay	Brook Silverside	A	2.180	0.021	0.963	0.004	0.161	< 0.002	NA	0.025	85.679
		B	2.440	0.023	0.934	0.004	0.174	< 0.002	NA	0.027	84.320
		C	2.650	0.024	0.917	0.005	0.176	< 0.002	NA	0.029	83.880
		D	2.420	0.016	0.661	0.003	0.126	< 0.002	NA	0.019	84.034
		E	2.330	0.019	0.815	0.004	0.171	< 0.002	NA	0.023	82.645
		F	2.530	0.021	0.814	0.004	0.164	< 0.002	NA	0.025	83.266
		G	2.550	0.019	0.753	0.004	0.162	< 0.002	NA	0.023	82.297
	Round Goby	A	2.690	0.025	0.926	0.004	0.149	< 0.002	NA	0.029	1.075
Lake Ontario-Oswego River											
	Round Goby	A	2.370	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	2.280	0.004	0.192	< 0.002	NA	< 0.002	NA	0.004	0.192
		C	2.840	0.009	0.332	< 0.002	NA	0.002	0.086	0.012	0.418
	Gizzard Shad	A	1.830	0.004	0.237	< 0.002	NA	< 0.002	NA	0.004	0.237
		B	1.830	0.004	0.241	< 0.002	NA	< 0.002	NA	0.004	0.241
		C	1.030	0.004	0.399	< 0.002	NA	< 0.002	NA	0.004	0.399
		D	1.070	0.002	0.187	< 0.002	NA	< 0.002	NA	0.002	0.187
		E	1.050	0.002	0.198	< 0.002	NA	< 0.002	NA	0.002	0.198
		F	1.090	0.002	0.183	< 0.002	NA	< 0.002	NA	0.002	0.183
	Emerald Shiner	A	2.330	0.006	0.270	< 0.002	NA	< 0.002	NA	0.006	0.270
		B	2.980	0.010	0.349	< 0.002	NA	< 0.002	NA	0.010	0.349
		C	2.850	0.012	0.418	< 0.002	NA	< 0.002	NA	0.012	0.418

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Lake Ontario -Salmon River at the Mouth	Banded Killifish	A	2.890	0.006	0.220	< 0.002	NA	< 0.002	NA	0.006	0.220
		B	2.690	0.007	0.256	< 0.002	NA	< 0.002	NA	0.007	0.256
		C	3.130	0.010	0.310	< 0.002	NA	< 0.002	NA	0.010	0.310
		D	2.950	0.010	0.335	< 0.002	NA	< 0.002	NA	0.010	0.335
		E	2.790	0.006	0.230	< 0.002	NA	< 0.002	NA	0.006	0.230
		F	2.790	0.009	0.338	< 0.002	NA	< 0.002	NA	0.009	0.338
		G	2.880	0.010	0.347	< 0.002	NA	< 0.002	NA	0.010	0.347
	Bluntnose Minnow	A	3.010	0.009	0.307	< 0.002	NA	< 0.002	NA	0.009	0.307
		B	3.890	0.013	0.332	< 0.002	NA	< 0.002	NA	0.013	0.332
Salmon River- Lower Reservoir											
	Bluegill	A	1.770	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	1.820	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	1.820	0.002	0.135	< 0.002	NA	< 0.002	NA	0.002	0.135
		D	2.430	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	2.120	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		F	2.230	0.002	0.097	< 0.002	NA	< 0.002	NA	0.002	0.097
		G	2.600	0.003	0.096	< 0.002	NA	< 0.002	NA	0.003	0.096
Black River- Bay											
	Bluntnose Minnow	A	2.410	0.003	0.106	< 0.002	NA	< 0.002	NA	0.003	0.106
		B	2.480	0.003	0.108	< 0.002	NA	< 0.002	NA	0.003	0.108
		C	7.380	0.007	0.101	0.003	0.047	0.002	0.030	0.013	0.178
		D	6.320	0.006	0.102	0.003	0.042	< 0.002	NA	0.009	0.144
		E	6.880	0.005	0.079	0.003	0.037	< 0.002	NA	0.008	0.116
		F	7.470	0.005	0.070	0.002	0.031	< 0.002	NA	0.008	0.101
		G	7.210	0.005	0.071	0.002	0.029	< 0.002	NA	0.007	0.101

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence River -Cape Vincent	Bluntnose Minnow	A	8.500	0.006	0.065	< 0.002	NA	< 0.002	NA	0.006	0.065
		B	7.050	0.005	0.067	< 0.002	NA	< 0.002	NA	0.005	0.067
		C	7.610	0.005	0.064	< 0.002	NA	< 0.002	NA	0.005	0.064
		D	6.970	0.004	0.063	< 0.002	NA	< 0.002	NA	0.004	0.063
		E	8.700	0.007	0.084	< 0.002	NA	< 0.002	NA	0.007	0.084
		F	8.270	0.005	0.058	< 0.002	NA	< 0.002	NA	0.005	0.058
		G	8.380	0.005	0.066	< 0.002	NA	< 0.002	NA	0.005	0.066
St. Lawrence River- Oswegatchie River											
	Yellow Perch	A	1.570	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	1.330	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	1.950	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	2.000	0.002	0.102	< 0.002	NA	< 0.002	NA	0.002	0.102
		E	1.830	0.002	0.114	< 0.002	NA	< 0.002	NA	0.002	0.114
		F	2.210	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		G	1.850	0.003	0.151	< 0.002	NA	< 0.002	NA	0.003	0.151
	Round Goby	A	1.750	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	1.730	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	1.910	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence River-Barnhart Island	Emerald Shiner	A	3.200	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.490	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	4.310	0.003	0.071	< 0.002	NA	< 0.002	NA	0.003	0.071
		D	4.460	0.002	0.051	< 0.002	NA	< 0.002	NA	0.002	0.051
	Spottail Shiner	A	4.200	0.002	0.052	< 0.002	NA	< 0.002	NA	0.002	0.052
		B	4.330	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	2.890	0.002	0.070	< 0.002	NA	< 0.002	NA	0.002	0.070
		D	3.050	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	3.580	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Bluntnose Minnow	A	2.230	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.050	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	3.170	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	3.600	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	3.870	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		F	4.510	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		G	4.990	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Banded Killifish	A	4.570	0.002	0.047	< 0.002	NA	< 0.002	NA	0.002	0.047
		B	4.370	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	4.130	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	4.460	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence-Upstream, of Reynolds Metal Company	Emerald Shiner	A	3.730	0.002	0.061	< 0.002	NA	< 0.002	NA	0.002	0.061
		B	3.860	0.003	0.084	< 0.002	NA	< 0.002	NA	0.003	0.084
		C	4.130	0.003	0.073	< 0.002	NA	< 0.002	NA	0.003	0.073
		D	6.720	0.003	0.046	< 0.002	NA	< 0.002	NA	0.003	0.046
		E	3.800	0.002	0.053	< 0.002	NA	< 0.002	NA	0.002	0.053
		F	5.220	0.003	0.058	< 0.002	NA	< 0.002	NA	0.003	0.058
		G	4.450	0.002	0.056	< 0.002	NA	< 0.002	NA	0.002	0.056
St. Lawrence River- Dead Clam Cove											
	Emerald Shiner	A	4.950	0.003	0.053	< 0.002	NA	< 0.002	NA	0.003	0.053
		B	5.350	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	5.910	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	3.780	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	5.100	0.002	0.045	< 0.002	NA	< 0.002	NA	0.002	0.045
		F	6.010	0.003	0.048	< 0.002	NA	< 0.002	NA	0.003	0.048
		G	4.860	0.003	0.065	< 0.002	NA	< 0.002	NA	0.003	0.065
	Brook Silverside	A	5.850	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	5.350	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	5.300	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	5.260	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	5.230	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence River-Reynolds Metal Company	Spottail Shiner	A	5.660	0.004	0.064	< 0.002	NA	< 0.002	NA	0.004	0.064
		B	4.610	0.003	0.073	< 0.002	NA	< 0.002	NA	0.003	0.073
		A	5.770	0.004	0.068	< 0.002	NA	< 0.002	NA	0.004	0.068
		B	5.920	0.003	0.057	< 0.002	NA	< 0.002	NA	0.003	0.057
		C	5.790	0.004	0.062	< 0.002	NA	< 0.002	NA	0.004	0.062
		D	6.100	0.003	0.052	< 0.002	NA	< 0.002	NA	0.003	0.052
		E	5.710	0.003	0.057	< 0.002	NA	< 0.002	NA	0.003	0.057
	Banded Killifish	A	7.430	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	4.790	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	5.330	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	4.390	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Emerald Shiner	A	5.720	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	6.830	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	5.660	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	6.330	0.003	0.043	< 0.002	NA	< 0.002	NA	0.003	0.043
		E	6.310	0.004	0.063	< 0.002	NA	< 0.002	NA	0.004	0.063
St. Lawrence River-Upstream from General Motors Company	Largemouth Bass	A	3.760	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	4.410	0.003	0.061	< 0.002	NA	< 0.002	NA	0.003	0.061
		C	4.420	0.002	0.047	< 0.002	NA	< 0.002	NA	0.002	0.047
		D	5.400	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	5.070	0.003	0.053	< 0.002	NA	< 0.002	NA	0.003	0.053
	Round Goby	A	3.210	0.002	0.073	< 0.002	NA	< 0.002	NA	0.002	0.073
		B	3.640	0.004	0.110	< 0.002	NA	< 0.002	NA	0.004	0.110

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence-General Motors Company	Brook Silverside	A	4.630	0.003	0.060	< 0.002	NA	< 0.002	NA	0.003	0.060
		B	5.020	0.003	0.051	< 0.002	NA	< 0.002	NA	0.003	0.051
		C	5.340	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Banded Killifish	A	5.150	0.003	0.063	< 0.002	NA	< 0.002	NA	0.003	0.063
		B	5.350	0.003	0.056	< 0.002	NA	< 0.002	NA	0.003	0.056
		C	5.050	0.002	0.049	< 0.002	NA	< 0.002	NA	0.002	0.049
		D	5.020	0.003	0.060	< 0.002	NA	< 0.002	NA	0.003	0.060
	Bluntnose Minnow	A	4.460	0.006	0.137	< 0.002	NA	< 0.002	NA	0.006	0.137
		B	4.680	0.011	0.226	< 0.002	NA	< 0.002	NA	0.011	0.226
	Rock Bass	A	4.810	0.005	0.107	< 0.002	NA	< 0.002	NA	0.005	0.107
		B	4.840	0.005	0.109	< 0.002	NA	< 0.002	NA	0.005	0.109
		C	3.860	0.006	0.162	< 0.002	NA	< 0.002	NA	0.006	0.162
		D	3.200	0.012	0.388	< 0.002	NA	< 0.002	NA	0.012	0.388
	Round Goby	A	3.590	0.004	0.123	< 0.002	NA	< 0.002	NA	0.004	0.123
		B	2.990	0.006	0.202	< 0.002	NA	< 0.002	NA	0.006	0.202
		C	3.210	0.006	0.193	< 0.002	NA	< 0.002	NA	0.006	0.193

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Grasse River-Route 37 Bridge	Emerald Shiner	A	5.370	0.004	0.081	< 0.002	NA	< 0.002	NA	0.004	0.081
		B	5.600	0.004	0.071	< 0.002	NA	< 0.002	NA	0.004	0.071
		C	4.180	0.007	0.175	< 0.002	NA	< 0.002	NA	0.007	0.175
		D	4.380	0.009	0.211	< 0.002	NA	< 0.002	NA	0.009	0.211
		E	4.280	0.007	0.160	< 0.002	NA	< 0.002	NA	0.007	0.160
		F	4.230	0.006	0.139	< 0.002	NA	< 0.002	NA	0.006	0.139
		G	3.940	0.003	0.077	< 0.002	NA	< 0.002	NA	0.003	0.077
	Bluntnose Minnow	A	3.120	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	2.620	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
Grasse River-Dam											
	Fallfish	A	4.400	0.003	0.074	< 0.002	NA	< 0.002	NA	0.003	0.074
		B	2.800	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	4.090	0.003	0.078	< 0.002	NA	< 0.002	NA	0.003	0.078
		D	2.780	0.002	0.081	< 0.002	NA	< 0.002	NA	0.002	0.081
		E	2.960	0.002	0.073	< 0.002	NA	< 0.002	NA	0.002	0.073
		F	3.200	0.003	0.085	< 0.002	NA	< 0.002	NA	0.003	0.085
		G	3.010	0.002	0.076	< 0.002	NA	< 0.002	NA	0.002	0.076

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Grasse River-Just Above Mouth	Rock Bass	A	3.110	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.380	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	3.070	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Bluegill	A	3.910	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.810	0.002	0.061	< 0.002	NA	< 0.002	NA	0.002	0.061
		C	3.910	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	3.840	0.003	0.075	< 0.002	NA	< 0.002	NA	0.003	0.075
		E	4.140	0.002	0.053	< 0.002	NA	< 0.002	NA	0.002	0.053
	Logperch	A	3.900	0.003	0.067	< 0.002	NA	< 0.002	NA	0.003	0.067
		B	4.060	0.003	0.079	< 0.002	NA	< 0.002	NA	0.003	0.079
		C	4.780	0.005	0.108	< 0.002	NA	< 0.002	NA	0.005	0.108
		D	4.420	0.004	0.090	< 0.002	NA	< 0.002	NA	0.004	0.090
		E	4.510	0.004	0.087	< 0.002	NA	< 0.002	NA	0.004	0.087
		F	4.610	0.004	0.095	< 0.002	NA	< 0.002	NA	0.004	0.095
		G	4.350	0.004	0.101	< 0.002	NA	< 0.002	NA	0.004	0.101
Raquette River-Massena	Rock Bass	A	3.050	0.002	0.075	< 0.002	NA	< 0.002	NA	0.002	0.075
		B	3.030	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	2.830	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	3.340	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Bluntnose Minnow	A	3.520	0.003	0.075	< 0.002	NA	< 0.002	NA	0.003	0.075
		B	3.700	0.003	0.091	< 0.002	NA	< 0.002	NA	0.003	0.091
		C	4.050	0.002	0.057	< 0.002	NA	< 0.002	NA	0.002	0.057
		D	4.040	0.003	0.077	< 0.002	NA	< 0.002	NA	0.003	0.077
		E	3.490	0.003	0.091	< 0.002	NA	< 0.002	NA	0.003	0.091
		F	4.040	0.003	0.078	< 0.002	NA	< 0.002	NA	0.003	0.078

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Raquette River-1.9 Miles Upstream from SR-37C Bridge	Spotfin Shiner	A	3.880	0.003	0.079	< 0.002	NA	< 0.002	NA	0.003	0.079
		B	3.430	0.002	0.069	< 0.002	NA	< 0.002	NA	0.002	0.069
		C	6.180	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	5.710	0.002	0.038	< 0.002	NA	< 0.002	NA	0.002	0.038
		E	4.800	0.002	0.049	< 0.002	NA	< 0.002	NA	0.002	0.049
		F	3.720	0.003	0.069	< 0.002	NA	< 0.002	NA	0.003	0.069
		G	5.780	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Bluntnose Minnow	A	2.860	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.750	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
Raquette River- 1.0 Mile Upstream from Reynolds Metal Company											
	Spotfin Shiner	A	5.210	0.002	0.040	< 0.002	NA	< 0.002	NA	0.002	0.040
		B	5.140	0.003	0.049	< 0.002	NA	< 0.002	NA	0.003	0.049
		C	4.440	0.003	0.059	< 0.002	NA	< 0.002	NA	0.003	0.059
	Emerald Shiner	A	3.660	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.590	0.002	0.057	< 0.002	NA	< 0.002	NA	0.002	NA
	Bluntnose Minnow	A	2.920	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	3.190	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	2.560	0.002	0.094	< 0.002	NA	< 0.002	NA	0.002	0.094
		D	3.320	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Raquette River-Reynolds Metal Company	Fallfish	A	4.840	0.002	0.051	< 0.002	NA	< 0.002	NA	0.002	0.051
		B	4.810	0.003	0.073	< 0.002	NA	< 0.002	NA	0.003	0.073
		C	5.080	0.003	0.062	< 0.002	NA	< 0.002	NA	0.003	0.062
		D	5.610	0.002	0.042	< 0.002	NA	< 0.002	NA	0.002	0.042
		E	4.780	0.002	0.046	< 0.002	NA	< 0.002	NA	0.002	0.046
		F	5.900	0.002	0.040	< 0.002	NA	< 0.002	NA	0.002	0.040
		G	5.650	0.002	0.044	< 0.002	NA	< 0.002	NA	0.002	0.044
	Bluntnose Minnow	A	4.970	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	4.010	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	4.480	0.003	0.057	< 0.002	NA	< 0.002	NA	0.003	0.057
		D	3.800	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	3.710	0.002	0.062	< 0.002	NA	< 0.002	NA	0.002	0.062
		F	4.500	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
	Brook Silverside	A	4.980	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	4.940	0.002	0.041	< 0.002	NA	< 0.002	NA	0.002	0.041
		C	5.080	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	4.660	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	5.260	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA

Appendix 3. (Continued)

Location	Species	Comp.	% Lipid	p,p'-DDE		p,p'-DDD		p,p'-DDT		Total DDT	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Raquette River-Above Mouth	Spotfin Shiner	A	5.100	0.005	0.090	< 0.002	NA	< 0.002	NA	0.005	0.090
		B	5.810	0.005	0.087	< 0.002	NA	< 0.002	NA	0.005	0.087
	Bluntnose Minnow	A	2.880	0.002	0.075	< 0.002	NA	< 0.002	NA	0.002	0.075
		B	3.090	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	3.140	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	2.910	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	3.390	0.002	0.059	< 0.002	NA	< 0.002	NA	0.002	0.059
		F	3.410	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		G	3.300	0.003	0.077	< 0.002	NA	< 0.002	NA	0.003	0.077
St. Regis River-Mouth											
	Bluntnose Minnow	A	4.060	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		B	2.260	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		C	3.180	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		D	3.550	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		E	3.850	0.003	0.074	< 0.002	NA	< 0.002	NA	0.003	0.074
		F	3.910	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA
		G	2.090	< 0.002	NA	< 0.002	NA	< 0.002	NA	< 0.002	NA

Appendix 4. PCB concentrations (mg/kg wet weight and lipid adjusted) in young-of-year fish composites from near-shore areas within New York State's Great Lakes basin, Rochester to Massena, NY, 2011–2012.

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Lake Ontario - Genesee River	Emerald Shiner	A	1.770	0.032	1.808	<0.030	NA	0.032-0.062	1.808-3.503
		B	1.710	0.024	1.404	<0.030	NA	0.024-0.054	1.404-3.158
		C	2.100	0.020	0.952	<0.030	NA	0.020-0.050	0.952-2.381
		D	2.110	0.034	1.611	0.031	1.469	0.065	3.081
		E	2.280	0.023	1.009	<0.030	NA	0.023-0.053	1.009-2.325
		F	2.930	0.028	0.956	0.034	1.160	0.062	2.116
		G	2.310	0.021	0.909	0.031	1.342	0.052	2.251
	Gizzard Shad	H	1.340	0.021	1.567	<0.030	NA	0.021-0.051	1.567-3.806
		I	1.540	0.020	1.299	<0.030	NA	0.020-0.050	1.299-3.247
		J	1.260	0.017	1.349	<0.030	NA	0.017-0.047	1.349-3.73
		K	1.340	0.019	1.418	<0.030	NA	0.019-0.049	1.418-3.657
		L	1.410	0.015	1.064	<0.030	NA	0.015-0.045	1.064-3.191
Lake Ontario-Sodus Point									
	Emerald Shiner	A	2.630	0.025	0.951	0.042	1.597	0.067	2.548
		B	3.210	0.026	0.810	0.037	1.153	0.063	1.963
		C	2.590	0.020	0.772	0.031	1.197	0.051	1.969
		D	3.180	0.021	0.660	0.035	1.101	0.056	1.761
		E	3.210	0.025	0.779	0.039	1.215	0.064	1.994
		F	3.140	0.019	0.605	0.032	1.019	0.051	1.624
		G	3.550	0.016	0.451	<0.030	NA	0.016-0.046	0.451-1.296

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Lake Ontario-Sodus Bay	Brook Silverside	A	2.180	0.015	0.665	<0.030	NA	0.015-0.045	0.665-2.041
		B	2.440	0.012	0.488	<0.030	NA	0.012-0.042	0.488-1.717
		C	2.650	<0.010	NA	<0.030	NA	NA	NA
		D	2.420	<0.010	NA	<0.030	NA	NA	NA
		E	2.330	0.012	0.515	<0.030	NA	0.012-0.042	0.515-1.803
		F	2.530	0.013	0.514	<0.030	NA	0.013-0.043	0.514-1.7
		G	2.550	0.015	0.588	<0.030	NA	0.015-0.045	0.588-1.765
	Round Goby	H	2.690	0.033	1.227	<0.030	NA	0.048	1.784
Lake Ontario-Oswego River									
	Round Goby	A	2.370	0.018	0.759	<0.030	NA	0.033-0.063	1.227-2.342
		B	2.280	<0.010	NA	0.031	1.360	0.036	1.579
		C	2.840	0.014	0.493	0.049	1.725	0.063	2.218
	Gizzard Shad	D	1.830	0.028	1.530	<0.030	NA	0.028-0.058	1.53-3.169
		E	1.830	0.016	0.874	<0.030	NA	0.016-0.046	0.874-2.514
		F	1.030	0.010	0.971	<0.030	NA	0.010-0.040	0.971-3.883
		G	1.070	<0.010	NA	<0.030	NA	NA	NA
		H	1.050	<0.010	NA	<0.030	NA	NA	NA
		I	1.090	<0.010	NA	<0.030	NA	NA	NA

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Lake Ontario-Oswego River Continued	Emerald Shiner	J	2.330	0.019	0.815	<0.030	<1.288	0.019-0.049	0.815-2.103
		K	2.980	0.026	0.872	0.035	1.174	0.061	2.047
		L	2.850	0.022	0.772	0.045	1.579	0.067	2.351
Lake Ontario - Salmon River at the Mouth									
	Banded Killifish	A	2.890	0.055	1.903	0.032	1.107	0.087	3.010
		B	2.690	0.119	4.424	0.036	1.338	0.155	5.762
		C	3.130	0.057	1.821	0.046	1.470	0.103	3.291
		D	2.950	0.079	2.678	0.043	1.458	0.122	4.136
		E	2.790	0.038	1.362	0.031	1.111	0.069	2.473
		F	2.790	0.075	2.688	0.045	1.613	0.120	4.301
		G	2.880	0.039	1.354	0.051	1.771	0.090	3.125
	Bluntnose Minnow	H	3.010	0.046	1.528	0.048	1.595	0.094	3.123
		I	3.890	0.069	1.774	0.060	1.542	0.129	3.316
Salmon River-Lower Reservoir									
	Bluegill	A	1.770	0.037	2.090	<0.030	NA	0.037-0.067	2.09-3.785
		B	1.820	0.049	2.692	<0.030	NA	0.049-0.079	2.692-4.341
		C	1.820	0.036	1.978	<0.030	NA	0.036-0.066	1.978-3.626
		D	2.430	0.025	1.029	<0.030	NA	0.025-0.055	1.029-2.263
		E	2.120	0.044	2.075	<0.030	NA	0.044-0.074	2.075-3.491
		F	2.230	0.018	0.807	<0.030	NA	0.018-0.048	0.807-2.152
		G	2.600	0.014	0.538	<0.030	NA	0.014-0.044	0.538-1.692

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Black River- Bay	Bluntnose Minnow	A	2.410	0.079	3.278	0.097	4.025	0.176	7.303
		B	2.480	0.076	3.065	0.098	3.952	0.174	7.016
		C	7.380	0.332	4.499	0.277	3.753	0.609	8.252
		D	6.320	0.256	4.051	0.236	3.734	0.492	7.785
		E	6.880	0.253	3.677	0.246	3.576	0.499	7.253
		F	7.470	0.218	2.918	0.201	2.691	0.419	5.609
		G	7.210	0.212	2.940	0.197	2.732	0.409	5.673
St. Lawrence River -Cape Vincent									
	Bluntnose Minnow	A	8.500	0.016	0.188	0.048	0.565	0.064	0.753
		B	7.050	0.013	0.184	0.044	0.624	0.057	0.809
		C	7.610	0.011	0.145	0.043	0.565	0.054	0.710
		D	6.970	0.020	0.287	0.043	0.617	0.063	0.904
		E	8.700	0.015	0.172	0.068	0.782	0.083	0.954
		F	8.270	0.016	0.193	0.046	0.556	0.062	0.750
		G	8.380	0.016	0.191	0.051	0.609	0.067	0.800
St. Lawrence River- Oswegatchie River									
	Yellow Perch	A	1.570	0.071	4.522	0.045	2.866	0.116	7.389
		B	1.330	0.066	4.962	0.042	3.158	0.108	8.120
		C	1.950	0.115	5.897	0.066	3.385	0.181	9.282
		D	2.000	0.122	6.100	0.067	3.350	0.189	9.450
		E	1.830	0.120	6.557	0.061	3.333	0.181	9.891
		F	2.210	0.144	6.516	0.068	3.077	0.212	9.593
		G	1.850	0.117	6.324	0.074	4.000	0.191	10.324
	Round Goby	H	1.750	0.073	4.171	0.047	2.686	0.120	6.857
		I	1.730	0.085	4.913	0.054	3.121	0.139	8.035
		J	1.910	0.059	3.089	0.039	2.042	0.098	5.131

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence River-Barnhart Island	Emerald Shiner	A	3.200	0.018	0.563	<0.030	NA	0.018-0.048	0.563-1.5
		B	3.490	0.016	0.458	<0.030	NA	0.016-0.046	0.458-1.318
		C	4.310	0.019	0.441	0.035	0.812	0.054	1.253
		D	4.460	0.016	0.359	0.036	0.807	0.052	1.166
	Spottail Shiner	E	4.200	0.019	0.452	<0.030	NA	0.019-0.049	0.452-1.167
		F	4.330	0.021	0.485	<0.030	NA	0.021-0.051	0.485-1.178
		G	2.890	0.013	0.450	<0.030	NA	0.013-0.043	0.45-1.488
		H	3.050	<0.010	NA	<0.030	NA	NA	NA
		I	3.580	0.011	0.307	<0.030	NA	0.011-0.041	0.307-1.145
	Bluntnose Minnow	J	2.230	0.012	0.538	<0.030	NA	0.012-0.042	0.538-1.883
		K	3.050	0.014	0.459	<0.030	NA	0.014-0.044	0.459-1.443
		L	3.170	0.012	0.379	<0.030	NA	0.012-0.042	0.379-1.325
		M	3.600	0.017	0.472	<0.030	NA	0.017-0.047	0.472-1.306
		N	3.870	0.016	0.413	<0.030	NA	0.016-0.046	0.413-1.189
		O	4.510	0.019	0.421	<0.030	NA	0.019-0.049	0.421-1.086
		P	4.990	0.028	0.561	0.034	0.681	0.062	1.242
	Banded Killifish	Q	4.570	0.022	0.481	<0.030	NA	0.022-0.052	0.481-1.138
		R	4.370	0.015	0.343	<0.030	NA	0.015-0.045	0.343-1.03
		S	4.130	0.015	0.363	<0.030	NA	0.015-0.045	0.363-1.09
		T	4.460	0.021	0.471	<0.030	NA	0.021-0.051	0.471-1.143

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence-Upstream, of Reynolds Metal Company	Emerald Shiner	A	3.730	0.667	17.882	0.644	17.265	1.311	35.147
		B	3.860	0.793	20.544	0.823	21.321	1.616	41.865
		C	4.130	0.886	21.453	1.02	24.697	1.906	46.150
		D	6.720	1.43	21.280	1.15	17.113	2.580	38.393
		E	3.800	0.817	21.500	0.859	22.605	1.676	44.105
		F	5.220	0.983	18.831	1.00	19.157	1.983	37.989
		G	4.450	0.700	15.730	0.803	18.045	1.503	33.775
St. Lawrence River- Dead Clam Cove									
	Emerald Shiner	A	4.950	0.854	17.253	0.592	11.960	1.446	29.212
		B	5.350	0.432	8.075	0.334	6.243	0.766	14.318
		C	5.910	0.385	6.514	0.356	6.024	0.741	12.538
		D	3.780	0.511	13.519	0.413	10.926	0.924	24.444
		E	5.100	0.333	6.529	0.228	4.471	0.561	11.000
		F	6.010	0.278	4.626	0.271	4.509	0.549	9.135
		G	4.860	0.225	4.630	0.306	6.296	0.531	10.926
	Brook Silverside	H	5.850	0.767	13.111	0.352	6.017	1.119	19.128
		I	5.350	0.733	13.701	0.360	6.729	1.093	20.430
		J	5.300	0.538	10.151	0.313	5.906	0.851	16.057
		K	5.260	0.454	8.631	0.254	4.829	0.708	13.460
		L	5.230	0.692	13.231	0.315	6.023	1.007	19.254

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence River- Reynolds Metal Company	Spottail Shiner	A	5.660	0.698	12.332	0.639	11.290	1.337	23.622
		B	4.610	0.353	7.657	0.409	8.872	0.762	16.529
		C	5.770	0.121	2.097	0.153	2.652	0.274	4.749
		D	5.920	0.155	2.618	0.169	2.855	0.324	5.473
		E	5.790	0.112	1.934	0.107	1.848	0.219	3.782
		F	6.100	0.134	2.197	0.132	2.164	0.266	4.361
		G	5.710	0.161	2.820	0.220	3.853	0.381	6.673
	Banded Killifish	H	7.430	0.656	8.829	0.399	5.370	1.055	14.199
		I	4.790	0.529	11.044	0.343	7.161	0.872	18.205
		J	5.330	0.749	14.053	0.456	8.555	1.205	22.608
		K	4.390	0.450	10.251	0.289	6.583	0.739	16.834
	Emerald Shiner	L	5.720	0.324	5.664	0.352	6.154	0.676	11.818
		M	6.830	0.458	6.706	0.493	7.218	0.951	13.924
		N	5.660	0.566	10.000	0.477	8.428	1.043	18.428
		O	6.330	0.584	9.226	0.612	9.668	1.196	18.894
		P	6.310	0.429	6.799	0.535	8.479	0.964	15.277
St. Lawrence River-Upstream from General Motors Company									
	Largemouth Bass	A	3.760	0.987	26.250	0.483	12.846	1.470	39.096
		B	4.410	1.910	43.311	0.976	22.132	2.886	65.442
		C	4.420	1.700	38.462	0.666	15.068	2.366	53.529
		D	5.400	1.320	24.444	0.559	10.352	1.879	34.796
		E	5.070	1.590	31.361	0.717	14.142	2.307	45.503
	Round Goby	F	3.210	1.230	38.318	0.700	21.807	1.930	60.125
		G	3.640	1.970	54.121	1.260	34.615	3.230	88.736

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
St. Lawrence-General Motors Company	Brook Silverside	A	4.630	3.620	78.186	0.861	18.596	4.481	96.782
		B	5.020	3.050	60.757	0.797	15.876	3.847	76.633
		C	5.340	2.900	54.307	0.575	10.768	3.475	65.075
	Banded Killifish	D	5.150	3.690	71.650	0.916	17.786	4.606	89.437
		E	5.350	3.650	68.224	0.892	16.673	4.542	84.897
		F	5.050	3.460	68.515	0.820	16.238	4.280	84.752
		G	5.020	3.550	70.717	1.040	20.717	4.590	91.434
	Bluntnose Minnow	H	4.460	6.440	144.395	2.100	47.085	8.540	191.480
		I	4.680	7.860	167.949	2.990	63.889	10.850	231.838
	Rock Bass	J	4.810	4.210	87.526	1.540	32.017	5.750	119.543
		K	4.840	5.510	113.843	1.670	34.504	7.180	148.347
		L	3.860	5.440	140.933	1.780	46.114	7.220	187.047
		M	3.200	11.300	353.125	4.290	134.063	15.590	487.188
	Round Goby	N	3.590	3.520	98.050	1.470	40.947	4.990	138.997
		O	2.990	5.380	179.933	2.090	69.900	7.470	249.833
		P	3.210	3.900	121.495	1.920	59.813	5.820	181.308

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Grasse River-Route 37 Bridge	Emerald Shiner	A	5.370	0.016	0.298	0.039	0.726	0.055	1.024
		B	5.600	0.025	0.446	0.052	0.929	0.077	1.375
		C	4.180	0.042	1.005	0.071	1.699	0.113	2.703
		D	4.380	0.034	0.776	0.076	1.735	0.110	2.511
		E	4.280	0.036	0.841	0.073	1.706	0.109	2.547
		F	4.230	0.043	1.017	0.058	1.371	0.101	2.388
		G	3.940	0.013	0.330	0.032	0.812	0.045	1.142
	Bluntnose Minnow	H	3.120	0.020	0.641	<0.030	NA	0.020-0.050	0.641-1.603
		I	2.620	0.015	0.573	<0.030	NA	0.015-0.045	0.573-1.718
Grasse River-Dam									
	Fallfish	A	4.400	<0.010	NA	<0.030	NA	NA	NA
		B	2.800	<0.010	NA	<0.030	NA	NA	NA
		C	4.090	<0.010	NA	<0.030	NA	NA	NA
		D	2.780	<0.010	NA	<0.030	NA	NA	NA
		E	2.960	<0.010	NA	<0.030	NA	NA	NA
		F	3.200	<0.010	NA	<0.030	NA	NA	NA
		G	3.010	<0.010	NA	<0.030	NA	NA	NA

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Grasse River- Just Above Mouth	Rock Bass	A	3.110	0.526	16.913	0.508	16.334	1.034	33.248
		B	3.380	0.726	21.479	0.650	19.231	1.376	40.710
		C	3.070	0.480	15.635	0.476	15.505	0.956	31.140
	Bluegill	D	3.910	0.965	24.680	0.503	12.864	1.468	37.545
		E	3.810	0.828	21.732	0.484	12.703	1.312	34.436
		F	3.910	0.919	23.504	0.456	11.662	1.375	35.166
		G	3.840	0.835	21.745	0.427	11.120	1.262	32.865
		H	4.140	1.250	30.193	0.564	13.623	1.814	43.816
	Logperch	I	3.900	0.780	20.000	0.767	19.667	1.547	39.667
		J	4.060	1.020	25.123	0.933	22.980	1.953	48.103
		K	4.780	1.270	26.569	1.190	24.895	2.460	51.464
		L	4.420	1.240	28.054	1.260	28.507	2.500	56.561
		M	4.510	1.370	30.377	1.210	26.829	2.580	57.206
		N	4.610	1.300	28.200	1.210	26.247	2.510	54.447
		O	4.350	1.280	29.425	1.200	27.586	2.480	57.011
Raquette River- Massena	Rock Bass	A	3.050	0.022	0.721	0.061	2.000	0.083	2.721
		B	3.030	0.021	0.693	0.060	1.980	0.081	2.673
		C	2.830	0.024	0.848	0.071	2.509	0.095	3.357
		D	3.340	0.029	0.868	0.068	2.036	0.097	2.904
	Bluntnose Minnow	E	3.520	0.024	0.682	0.060	1.705	0.084	2.386
		F	3.700	0.033	0.892	0.072	1.946	0.105	2.838
		G	4.050	0.032	0.790	0.065	1.605	0.097	2.395
		H	4.040	0.035	0.866	0.069	1.708	0.104	2.574
		I	3.490	0.025	0.716	0.059	1.691	0.084	2.407
		J	4.040	0.029	0.718	0.067	1.658	0.096	2.376

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Raquette River-1.9 Miles Upstream from SR-37C Bridge	Spotfin Shiner	A	3.880	0.040	1.031	0.120	3.093	0.160	4.124
		B	3.430	0.044	1.283	0.107	3.120	0.151	4.402
		C	6.180	0.036	0.583	0.057	0.922	0.093	1.505
		D	5.710	0.040	0.701	0.089	1.559	0.129	2.259
		E	4.800	0.034	0.698	0.070	1.465	0.104	2.163
		F	3.720	0.027	0.728	0.082	2.191	0.109	2.919
		G	5.780	0.027	0.469	0.052	0.905	0.079	1.374
	Bluntnose Minnow	H	2.860	0.022	0.752	0.045	1.577	0.067	2.329
		I	3.750	0.031	0.813	0.052	1.387	0.083	2.200
Raquette River-1.9 Mile Upstream from Reynolds Metal Company									
	Spotfin Shiner	A	5.210	0.041	0.787	0.074	1.420	0.115	2.207
		B	5.140	0.043	0.837	0.087	1.693	0.130	2.529
		C	4.440	0.031	0.698	0.086	1.937	0.117	2.635
	Emerald Shiner	D	3.660	0.018	0.492	0.054	1.475	0.072	1.967
		E	3.590	0.027	0.752	0.077	2.145	0.104	2.897
	Bluntnose Minnow	F	2.920	0.028	0.959	0.061	2.089	0.089	3.048
		G	3.190	0.040	1.254	0.082	2.571	0.122	3.824
		H	2.560	0.031	1.211	0.072	2.813	0.103	4.023
		I	3.320	0.021	0.633	0.052	1.566	0.073	2.199

Appendix 4. (Continued)

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Raquette River-Reynolds Metal Company	Fallfish	A	4.840	0.138	2.851	0.174	3.595	0.312	6.446
		B	4.810	0.178	3.701	0.208	4.324	0.386	8.025
		C	5.080	0.107	2.106	0.185	3.642	0.292	5.748
		D	5.610	0.113	2.014	0.143	2.549	0.256	4.563
		E	4.780	0.077	1.611	0.122	2.552	0.199	4.163
		F	5.900	0.059	1.000	0.111	1.881	0.170	2.881
		G	5.650	0.081	1.434	0.111	1.965	0.192	3.398
	Bluntnose Minnow	H	4.970	0.060	1.207	0.124	2.495	0.184	3.702
		I	4.010	0.072	1.796	0.097	2.419	0.169	4.214
		J	4.480	0.095	2.121	0.118	2.634	0.213	4.754
		K	3.800	0.046	1.211	0.126	3.316	0.172	4.526
		L	3.710	0.048	1.294	0.102	2.749	0.150	4.043
		M	4.500	0.049	1.089	0.073	1.622	0.122	2.711
	Brook Silverside	N	4.980	0.053	1.064	0.071	1.426	0.124	2.490
		O	4.940	0.093	1.883	0.090	1.822	0.183	3.704
		P	5.080	0.185	3.642	0.175	3.445	0.360	7.087
		Q	4.660	0.117	2.511	0.102	2.189	0.219	4.700
		R	5.260	0.081	1.540	0.115	2.186	0.196	3.726

Location	Species	Comp.	% Lipid	AR1242		AR1254/1260		Total PCB[1]	
				Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.	Wet Wt.	Lipid Adj.
Raquette River-Above Mouth	Spotfin Shiner	A	5.100	0.073	1.431	0.151	2.961	0.224	4.392
		B	5.810	0.127	2.186	0.220	3.787	0.347	5.972
	Bluntnose Minnow	C	2.880	0.036	1.250	0.067	2.326	0.103	3.576
		D	3.090	0.029	0.939	0.063	2.039	0.092	2.977
		E	3.140	0.036	1.146	0.065	2.070	0.101	3.217
		F	2.910	0.041	1.409	0.066	2.268	0.107	3.677
		G	3.390	0.043	1.268	0.071	2.094	0.114	3.363
		H	3.410	0.032	0.938	0.057	1.672	0.089	2.610
		I	3.300	0.035	1.061	0.055	1.667	0.090	2.727
St. Regis River-Mouth									
	Bluntnose Minnow	A	4.060	0.041	1.010	<0.030	NA	0.041-0.071	1.01-1.749
		B	2.260	0.048	2.124	<0.030	NA	0.048-0.078	2.124-3.451
		C	3.180	0.039	1.226	<0.030	NA	0.039-0.069	1.226-2.17
		D	3.550	0.036	1.014	<0.030	NA	0.036-0.066	1.014-1.859
		E	3.850	0.059	1.532	<0.030	NA	0.059-0.089	1.532-2.312
		F	3.910	0.037	0.946	<0.030	NA	0.037-0.067	0.946-1.714
		G	2.090	0.071	3.397	0.047	2.249	0.118	5.646

[1] Total PCB = AR1242 + AR1254/1260. If both Aroclors < MDL, total PCB < 0.040 mg/kg (the sum of the MDLs). If one value is less than MDL, total PCB is presented as a range, with the lower limit being the value of the detected Aroclor, and the upper limit being the sum of the lower limit and the MDL of the undetected Aroclor