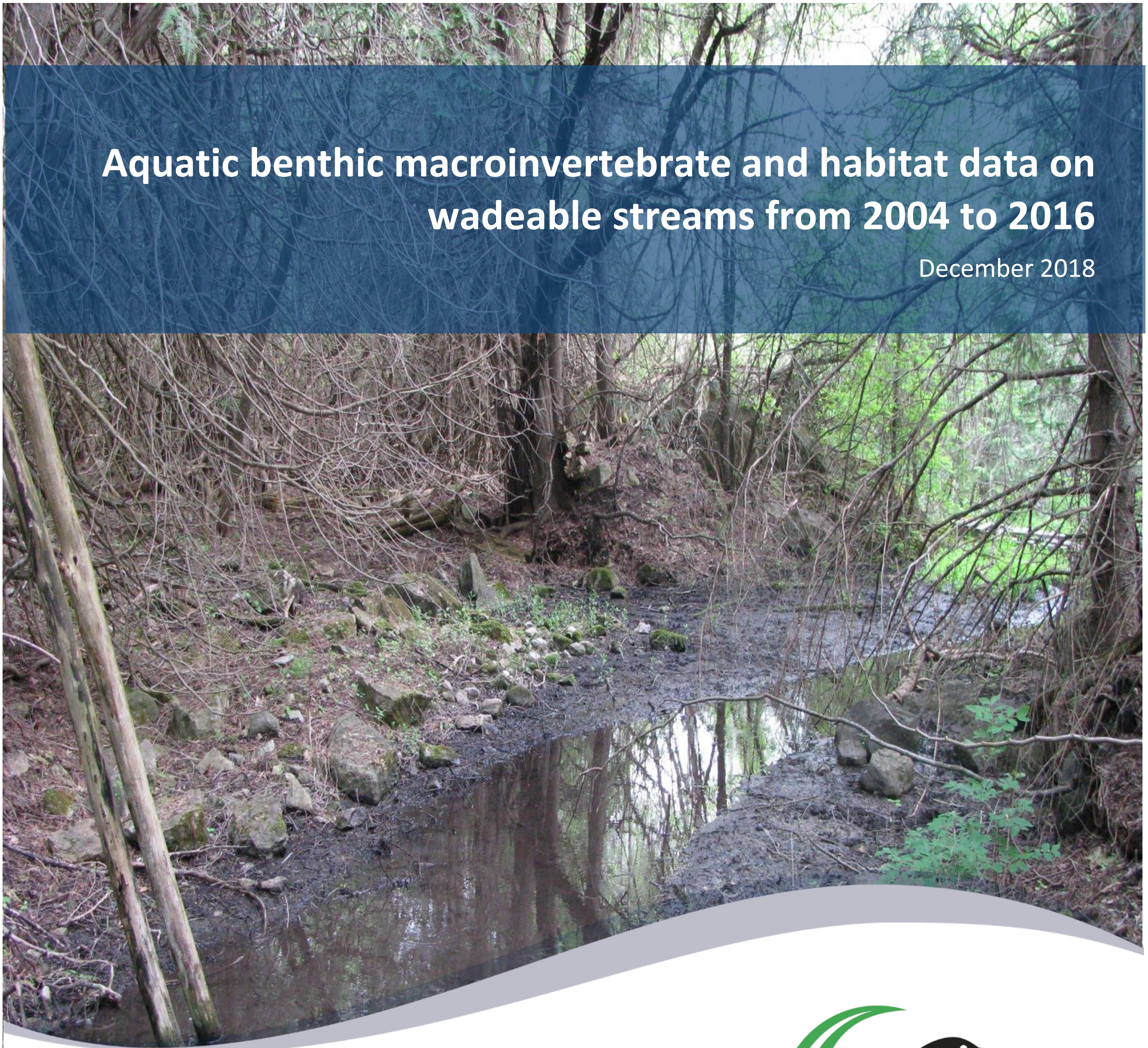
Aquatic benthic macroinvertebrate and habitat data on wadeable streams from 2004 to 2016

December 2018



KAWARTHA CONSERVATION

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About Kawartha Conservation

Who we are

We are a watershed-based organization that uses planning, stewardship, science, and conservation lands management to protect and sustain outstanding water quality and quantity supported by healthy landscapes.

Why is watershed management important?

Abundant, clean water is the lifeblood of the Kawarthas. It is essential for our quality of life, health, and continued prosperity. It supplies our drinking water, maintains property values, sustains an agricultural industry, and contributes to a tourism-based economy that relies on recreational boating, fishing, and swimming. Our programs and services promote an integrated watershed approach that balance human, environmental, and economic needs.

The community we support

We focus our programs and services within the natural boundaries of the Kawartha watershed, which extend from Lake Scugog in the southwest and Pigeon Lake in the east, to Balsam Lake in the northwest and Crystal Lake in the northeast – a total of 2,563 square kilometers.

Our history and governance

In 1979, we were established by our municipal partners under the *Ontario Conservation Authorities Act*.
The natural boundaries of our watershed overlap the six municipalities that govern Kawartha Conservation through representation on our Board of Directors. Our municipal partners include the City of Kawartha Lakes, Region of Durham, Township of Scugog, Township of Brock, Municipality of Clarington, Municipality of Trent Lakes, and Township of Cavan Monaghan.

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Executive Summary

Watercourses are considered regulated features by Kawartha Conservation and as such are routinely monitored through an Environmental Monitoring Program. Biomonitoring using a standard approach to collecting live bottom dwelling organisms, also known as benthic macroinvertebrates, on streams is a core program area. The specific purpose of this report is to summarize data collected from 218 sampling events on shallow streams from 2004 to 2016 to set expectations for what benthic macroinvertebrate communities would be typically encountered within wadeable streams within Kawartha Conservation's jurisdiction. This represents the largest dataset in the Kawartha Lakes region for which benthic macroinvertebrate data are summarized. In the absence of any other large published datasets, these taxa community summaries can serve as a benchmark, or average expected, against which data collected on streams of similar habitat conditions can be compared. Aquatic habitats in this dataset are mostly represented as small streams sampled in the spring. Results indicate that benthos taxa, including those considered sensitive, vary in presence and abundance throughout Kawartha Conservation's jurisdiction. Several taxa are relatively common and abundant while others are relatively rare and sparse. Descriptive statistics have been summarized for each taxa and certain taxa groupings that serve as benchmark values against which data collected by practitioners can be compared, including those involved in monitoring, habitat restoration, and/or education programming.

Acknowledgements

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1.1 Introduction

Aquatic benthic macroinvertebrates (hereafter referred to as benthos) are organisms such as insects, spiders, worms, crustaceans, mollusks, and other taxa that are visible with the naked eye and that dwell within the substrates in water-based environments. They require an aquatic environment for all or a significant part of their life cycle and contribute to functioning ecosystems upon which life depends. Benthos populations respond to changing environmental conditions, therefore they are also valued for their role as indicators of water resource health. Using living organism to monitor resource health is termed biomonitoring, the data from which represents exposure from multiple sources that originate on land, air, and in water.

Watercourses (i.e., lakes, rivers, and streams) are important landscape features that provide numerous environmental, socioeconomic, and cultural benefits and as such Kawartha Conservation is active in monitoring their ecological status through an Environmental Monitoring Program within their department of Integrated Watershed Management. There are approximately 2,876 km of flowing watercourses (e.g., streams and rivers) within Kawartha Conservation's jurisdiction. A significant portion of these are shallow wadeable streams, which are particularly susceptible to negative impacts associated with development (e.g., urbanization) and other disturbances (e.g., sedimentation).

Given that benthos respond to changing environmental conditions, water management organizations (including Kawartha Conservation), have for decades been collecting benthos data on streams to help support water management decisions. In spite of these efforts there remain two significant challenges when using these data to assess water resource health. Firstly, there is no consolidated and easy-to-access background information to help set expectations of what benthos would be present within streams in the Kawartha Lakes region. Secondly, no established benchmarks exist to determine what benthos would expected to be present within the spectrum from most-pristine, through to moderately-healthy, to severely-degraded streams. These challenges (i.e., lack of expectations), inherently limits to a certain degree the ability of practitioners to biomonitor our watercourses and determine if more or less management is needed because there are no published "point-of-references" or "benchmarks" against which to compare data.

The purpose of this report is to addresses the first challenge by making available existing benthos and aquatic habitat data on wadeable streams that have been recorded within Kawartha Conservation's jurisdiction using the now industry-standard Ontario Benthos Biomonitoring Network (OBBN) approach. These data, in the absence of any ecosystem health standards or criteria against which to compare the resident benthos community on a stream of interest, will at a minimum serve as a "point of reference" dataset that, for example, will allow comparisons to be made for major groups of benthos taxa against "expected abundance values". The second challenge (i.e., establishing benchmarks), will be addressed in a subsequent project.

Specifically, the objective of this report is to publish information within scope of the following questions:

- *What geographic locations, stream morphology, and aquatic habitat conditions are represented?*
- *What major types of aquatic invertebrates live within these streams and are certain taxa present more often or in higher numbers than others?*
- *What is the average abundance for each major type of aquatic invertebrate, including those that are considered sensitive, for the entire dataset and by major physiographic region?*
- *Is the abundance of sensitive aquatic invertebrates affected by the amount of natural, agricultural, and/or developed land use within their stream catchments or by geography?*

1.2 Methods

The dataset summarized in this report was obtained from Kawartha Conservation, and includes 218 sampling events within Kawartha Conservation's jurisdiction for which benthos and aquatic habitat data were collected via the Streams Module within the OBBN protocol (Jones et al. 2007). The selection of sampling sites and sampling frequency for any given sampling event varied on a project-specific basis and were either collected in a fixed, random, or opportune basis. Benthos were collected using a 0.5mm mesh D-net using the travelling kick-and-sweep method. Most sampling events (99% of total) consisted of three benthos collection areas along a meander sequence within a wadeable stream. Benthos specimens were typically preserved in 70% isopropyl alcohol and tallied under a microscope to a 27-Group Taxa level of taxonomy by, or in the presence of, a certified OBBN professional.

Geographical Information Systems (ESRI, 2018) were used to obtain additional data for each sampling event. Land cover within the upstream drainage area for each sampling event was calculated by interpreting 2013 orthophotography according to Ecological Land Classification methodology (Lee et al., 1997; Credit Valley Conservation, 1998), into one of the following three categories: Natural (e.g., forests, wetlands, grasslands, open water, etc.), Developed (e.g., urban and rural development, manicured lawn, aggregate, roads, etc.), or Agriculture (e.g., croplands, pasturelands, etc.). The major landscape feature, termed Physiographic Region, in which each sampling event was located was obtained from Chapman and Putnam (1984).

Summary statistics were calculated in MS Excel, and are summarized at the site-, collection area-, or upstream catchment-level of detail. Benthos data for each sampling event are an average of the three collection areas, whereas aquatic habitat data are at individual collection areas, or for the entire meander sequence, as per the OBBN protocol. **Table 1** provides a summary of terms used in the report to qualitatively describe benthos and aquatic habitat data.

All benthos data summarized in this report are located in **Appendix A**. All data were entered into the Ontario Benthos Biomonitoring Network Database (OMOECP, 2018) and are available for download.

Table 1: Definition of terms used to summarize data.

Term	Definition
Occurrence	The percentage of sampling events in which a taxa is present, relative to all sampling events.
Abundance	The percentage of organisms present within a taxa at a sampling event, relative to all other organisms present within that same sampling event.
Average Abundance	Abundance as averaged for all 218 sampling events.
Absolute Abundance	Values expressed as select percentiles, relative to 100%; >95% (Extremely High/Common), 75-95% (Very High/Common), 50-75% (Fairly High/Common), 25-50% (Fairly Low/Rare), 5-25% (Very Low/Rare), <5% (Extremely Low/Rare).
Relative Abundance	Values expressed as select percentiles, relative to their average abundance; >11.3% (>95th, Extremely High), 8.5-11.3% (75-95th, Very High), 2.0-8.5% (50-75th, Fairly High), 1.0-2.0% (25-50th, Fairly Low), 0.6-1.0% (5-25th, Very Low), <0.6% (<5th, Extremely Low).
Physiographic Region	CP (Carden Plain), GBF (Georgian Bay Fringe), ORM (Oak Ridges Moraine), PDF (Peterborough Drumlin Field), SCP (Schomberg Clay Plains)
Well represented	A relatively high number of sampling events contained these aquatic habitat features.
Not well represented	A relatively low number of sampling events contained these aquatic habitat features.
Not Represented	No sampling events contained these aquatic habitat features.
Normal Range	Between 5th and 95th percentile.
Atypical Range	Typically, between the 1st and 5th percentile and between the 95th and 99th percentile.

1.3 Results

Table 2 provides a summary of aquatic habitat data.

Date and Month Sampled

The data summarized in this report includes 218 sample events on wadeable streams between 2004 and 2016, and most (75% of total) occurred in 2006-2008 and 2012-2014. Sampling was undertaken between late spring and early fall, and most (61% of total) occurred in May. The data represent 149 unique site locations within the jurisdiction of Kawartha Conservation, and were sampled anywhere from one to seven times (average of 1.5). These data represent approximately 45% of all benthos sampling events known to exist in watercourses from 1975 to 2017 within or immediately adjacent to Kawartha Conservation's jurisdiction (**Figure 1**).

Stream Location

Sampling events exist on streams within all major subwatershed reporting units in Kawartha Conservation's jurisdiction **(Figure 2)**. East Cross Creek contains the majority of the sampling events (20% of total), which is almost double that of the next subwatershed. There is an apparent lack of sampling events on streams within central and north-east subwatersheds. The sampling events are located in all six physiographic regions (Peterborough Drumlin Field, Schomberg Clay Plains, Oak Ridges Moraine, Dummer Moraines, Georgian Bay Fringe, and Carden Plain), with most (76% of total) existing in the Peterborough Drumlin Field, and a lack of sampling events (1.4% of total) in the Carden Plain and Georgian Bay Fringe.

Catchment and Riparian Land Use

Agricultural land use was well represented, as the catchments upstream of each sampling event ranged from 0 to 90%, and averaged 45%, with most (as indicated by the 75th percentile) having 64% or lower. Natural land use was also well represented, ranging from 0 to 98%, and averaged 45%, with most having 63% or lower. Developed land use was not well represented, ranging from 0 to 100%, averaging 10%, with most having 10% or lower. Land use immediately adjacent to the sampling event was mostly natural (74 to 92%), with moderate amounts of agriculture (4 to 18%), and low amounts of development (4 to 9%).

Aquatic Habitat: catchment and channel size

Sampling events were located on 1st, 2nd, 3rd, and 4th order streams, with the majority (73% of total) being located on small streams (either 2nd or 3rd order). Upstream drainage areas ranged from 0.1 to 188 km^2, and averaged 13.8 km^2, and most were 15.8km^2 or smaller. Given that all streams were wadeable, they were relatively narrow (wetted widths ranged from 0.2 to 17m, and averaged 3.1m, and most were 3.7m or less) and shallow (maximum depths ranged from 20 to 1250mm, averaged 283mm, and most were 360mm or less).

Aquatic Habitat: instream conditions

The streams are slow-to-moderate in terms of velocity, as maximum hydraulic head ranged from 0 to 200mm, averaged 12mm, and most were 15mm or less. Fine particles including sand, silt, and clay comprise the majority (64 to 66%) of the dominant and subdominant stream substrates with sand being the most prevalent (35 to 42%). Coarse particles including gravel, cobble, and boulder are less prevalent (34 to 36%) with boulder and bedrock being significantly underrepresented. Given most sampling occurred in the spring, water temperatures were relatively cool (ranging from 5.9 to 26°C, averaging 14.1°C, with most being 17.1°C or less. Canopy cover was variable but was often low, with 40% of events being in the 0 to 25% range. Aquatic plants were typically sparse (>75% absent), and the plants that were present are either submerged (23% present, and occasionally abundant) and/or emergent (15% present, and occasionally abundant). Algae was noted as present in at least 55% of events, including moderate-to-high amounts of attached (32% present, and 13% abundant), and moderate amounts of filamentous (15% and 9% abundant).

Table 2: Aquatic habitat data collected in the field and through mapping.

	N	Average	Max	75th	Median	25th	Min	
Wetted Width (m)	647	3.1	17.0	3.7	2.4	1.3	0.2	
Max Depth (mm)	648	283	1250	360	230	150	20	
Water Temperature ($^{\circ}$C)	183	14.1	26.0	17.1	13.8	10.5	5.9	
Max Hydraulic Head (mm)	648	12	200	15	5	0	0	
Bankfull Width (m)	161	4.6	16.0	6.0	3.9	2.4	0.9	
	N	**0-24%**	**25-49%**	**50-74%**	**75-100%**			
Canopy Cover (%)	216	40.3	13.9	20.4	25.5			
	N	**Developed**	**Natural**	**Agriculture**				
Riparian: 1.5 to 10m (%)	434	4.1	91.9	3.9				
Riparian: 10 to 30m (%)	432	8.8	78.7	12.5				
Riparian: 30 to 100m (%)	429	7.9	74.1	17.9				
	N	**Bedrock**	**Boulder**	**Cobble**	**Gravel**	**Sand**	**Silt**	**Clay**
Substrate: Dominant (%)	643	0.5	0.2	7.9	25.5	42.3	19.8	3.9
Substrate: Subdominant (%)	641	0.0	2.3	15.8	17.9	34.5	22.3	7.2
	N	**Abundant**	**Present**	**Absent**				
Macrophytes: Emergent (%)	638	2.2	15.4	82.4				
Macrophytes: Rooted (%)	638	0.8	3.4	95.8				
Macrophytes: Submerged (%)	636	2.8	22.5	74.7				
Macrophytes: Freefloating (%)	636	0.5	3.8	95.8				
Algae: Floating (%)	644	0.0	1.6	98.4				
Algae: Filamentous (%)	644	8.5	14.8	76.7				
Algae: Attached (%)	644	12.6	32.1	55.3				
	Average	**Max**	**75th**	**Median**	**25th**	**Min**		
Catchment: Area (km^2)	13.8	188.0	15.8	6.3	2.6	0.1		
Catchment: Agriculture (%)	45.3	90.4	63.8	53.5	27.9	0.0		
Catchment: Natural (%)	44.7	98.4	62.8	38.0	26.9	0.4		
Catchment: Developed (%)	10.1	99.6	10.3	7.4	4.8	0.2		
	1st	**2nd**	**3rd**	**4th**	**5th**			
Stream Order (%)	7.3	33.9	39.0	18.8	0.9			
	CP	**DM**	**GBF**	**ORM**	**PDF**	**SCP**		
Physiographic Region (%)	0.5	6.0	0.9	7.8	76.1	8.7		

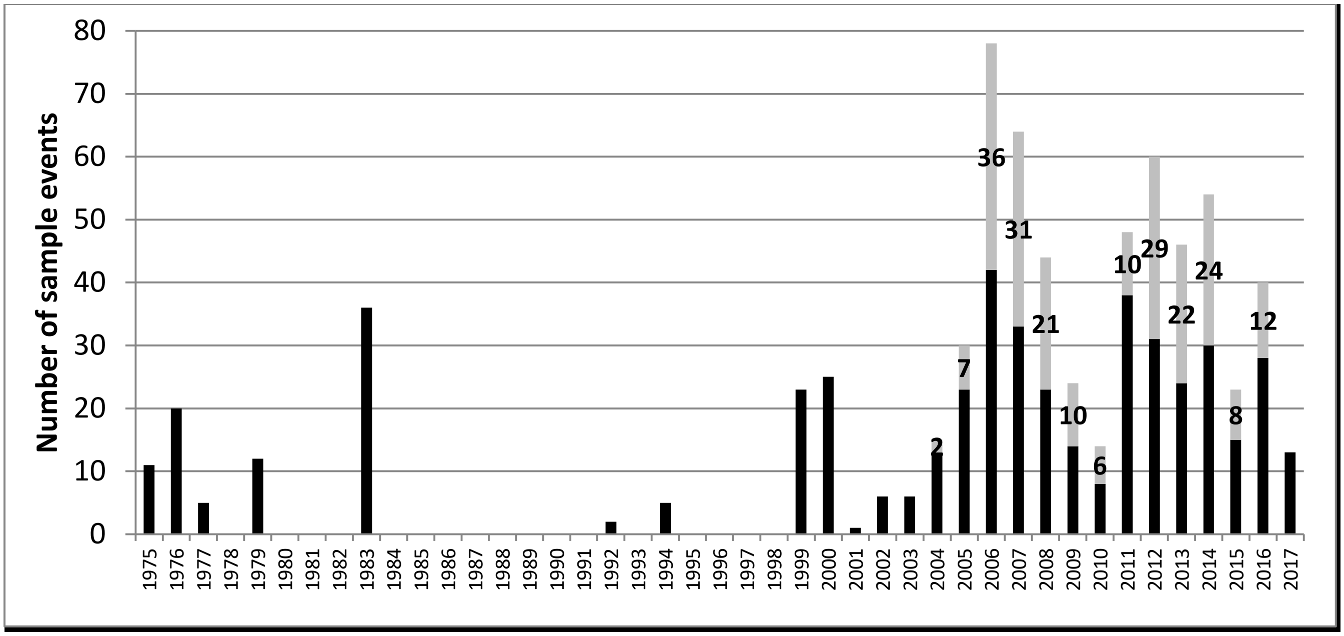

Figure 1: All known benthic macroinvertebrate sampling events undertaken by organizations in-and-around Kawartha Conservation's jurisdiction, by year. Grey bars indicate sampling events summarized in this report.

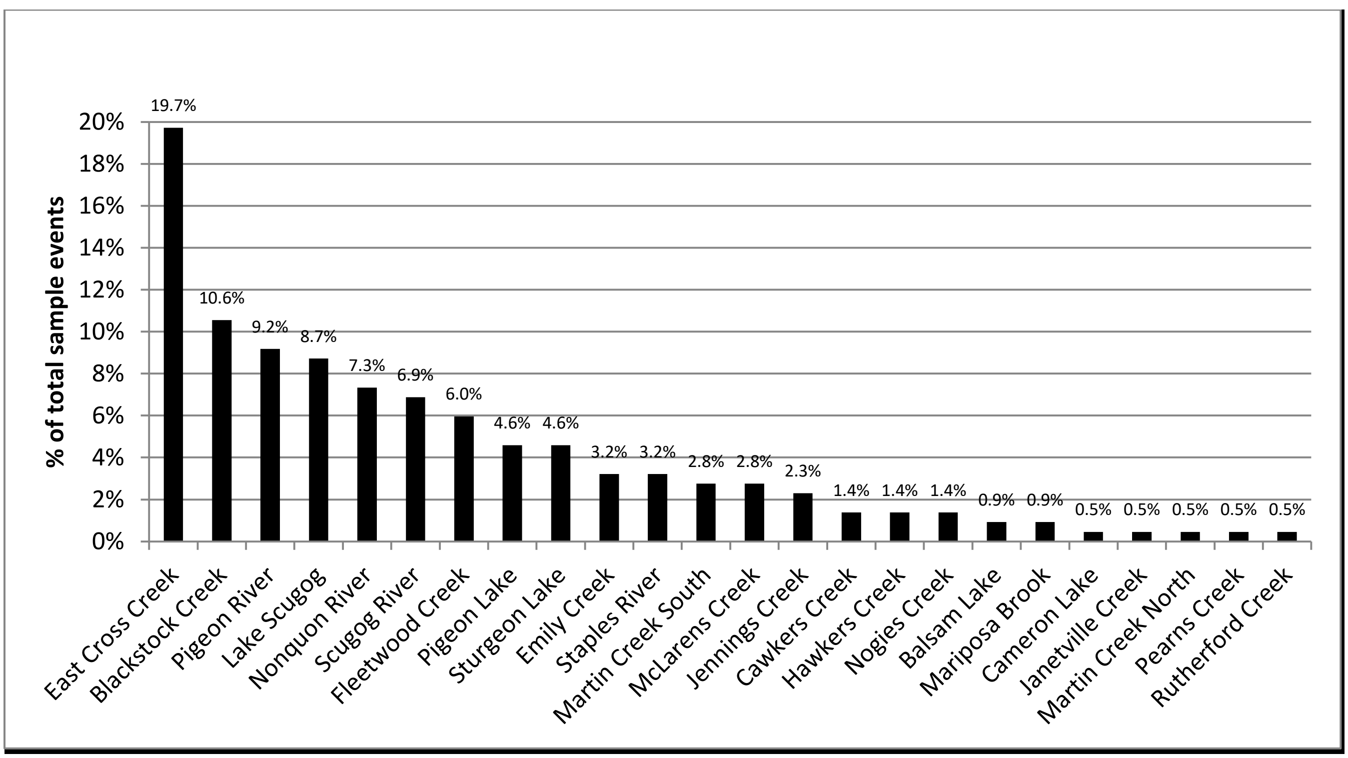

Figure 2: The percentage of sampling events within each major subwatershed reporting unit in Kawartha Conservation's jurisdiction.

Benthos Communities: 27-Group Taxa

Benthos 27-Group data are summarized in **Table 3** and **Table 4**. All taxa in the 27-Group level, as defined in the OBBN protocol, were recorded in this dataset. In terms of the presence at any given sampling event, the following taxa were either extremely common (greater than 95%) or very common (75 to 95%): Midges, Beetles, Caddisflies, Mussels, and Mayflies. The following taxa were either extremely rare (less than 5%) or very rare (5 to 25%): Hydras, Flatworms, Damselflies, Crayfish, Truebugs, Aquatic Moths, and Mosquitos. In terms of average abundance when present in an event relative to all other taxa, the following taxa were either extremely high (greater than 11.3%) or very high (8.5 to 11.3%): Midges, Aquatic Sowbugs, Caddisflies, Mussels, Mayflies, Stoneflies, and Scuds. The following taxa were either extremely low (less than 0.6%) or very low (0.6 to 1.0%): Crayfish, Hydras, Flatworms, Horse/Deerflies, Dragonflies, Nematodes, Helgrammites, Damselflies, and Aquatic Moths. All taxa except Midges were extremely low (less than 5%) or very low (5 to 25%), in terms of absolute abundance when present. In terms of maximum recorded abundance at any given site, no taxa were extremely high (greater than 95%) and the following taxa were very high (greater than 95%): Midges, Mussels, Snails, Scuds, and Aquatic Sowbugs. The following taxa were extremely low (less than 5%) or very low (5 to 25%): Helgrammites, Damselflies, Crayfish, Aquatic Moths, Hydras, Flatworms, Noseeums, Misc.Trueflies, Craneflies, Mites, Horse/Deerflies, Dragonflies, Nematodes, Leeches, Truebugs, and Mosquitos. Abundance values of zero (e.g., not present) are within the normal range of all taxa except Midges, as such higher values than normal for all other taxa are most appropriate for use for comparative analyses.

Benthos Communities: 5-Group Taxa

Benthos 5-Group data are summarized in **Table 3** and **Table 4.** Insects are extremely common (greater than 95%) in the dataset, in very high (75 to 95%) numbers in total, and at most in extremely high (greater than 95%) numbers. Crustaceans are very common (75 to 95%) in the dataset, in very low (5 to 25%) numbers in total, and at most in very high (75 to 95%) numbers. Mollusks are very common (75 to 95%) in dataset, and when present tend to be found in fairly high (50 to 75%) numbers relative to other taxa, and in very low (5 to 25%) numbers in total, and at most in fairly high (50 to 75%) numbers. Worms are very common (75 to 95%) in dataset, in very low numbers (5 to 25%) in total, and at most in very high (75 to 95%) numbers. All other taxa are fairly common (50 to 75%) in dataset, in extremely low (less than 5%) numbers in total, and at most in very low (5 to 25%) numbers. Abundance values of zero (e.g., not present) are within the normal range of all grouped taxa except Insects, as such higher values than normal for the other grouped taxa are most appropriate for use for comparative analyses.

Benthos Communities: Physiographic Distribution

Benthos community data by physiographic region are summarized in **Table 5**. When comparing the dataset to the four other physiographic regions with available data (excluding Carden Plains and Georgian Bay Fringe), the Dummer Moraines supported relatively higher numbers (as indicated by average abundances being more than twice the dataset) of Aquatic Sowbugs, Truebugs, Crayfish, Aquatic Moths, and Damselflies, and relatively lower numbers (as indicated by average abundances being less than twice the dataset) of Scuds, Aquatic Earthworms, Noseeums, Misc. Trueflies, Mites, Horse/Deerflies, Nematodes, Mostiquoes. The Oak Ridges Moraine supported relatively higher numbers of Caddisflies, Mayflies, Noseeums, Helgrammites, Crayfish, and Damselflies, and relatively lower numbers of Scuds, Snails, Aquatic Sowbugs, Horse/Deerflies, Leeches, Mosquitos, and Truebugs. The Schomberg Clay Plains supported relatively higher numbers of Blackflies, Nematoes, and Damselflies, and a relatively lower number of Caddisflies, Mayflies, Stoneflies, Craneflies, Helgrammites, Mosquitos, Truebugs, and Crayfish. The apparent and magnitude of differences observed should be interpreted with caution, given data are mostly represented in Peterborough Drumlin

Field and have not been tested to exclude the influence of other important drivers of benthos community (e.g., specific land use disturbances, natural differences in aquatic habitats, etc.).

Benthos Communities: Sensitive Taxa

Data for sensitive taxa, as represented by Stoneflies (the taxa considered the most sensitive of all 27-Group taxa) and the grouping of Mayflies, Stoneflies, and Caddisflies (the group of taxa considered the top-3 most sensitive of all 27-Group taxa) are summarized in **Table 3** and **Table 4.** Stoneflies were fairly common in the dataset, being present in 68% of sample events. Their abundance ranged from 0 to 65.7%, averaged 6.1%, and most (as represented by the 75th percentile) of the sample events had 7.4% or less. When these taxa were present at a site, their average community composition was 9.1% of all taxa in the sample. Their normal abundances are between 0 and 27.6%. In terms of physiographic region (excluding Carden Plains and Georgian Bay Fringe) higher numbers tend to be found in Dummer Moraines and significantly less were found in Schomberg Clay Plains (**Table 5**). The grouping of Mayflies, Stoneflies, and Caddisflies were extremely common in the dataset, with at least one of those taxa being present in nearly all (95%) sample events. Their grouped abundance ranged from 0 to 80.9%, averaged 20.9%, and most of the sampling events had 32.4% or less. When these grouped taxa were present at a site, their average community composition was average 22.0% of all taxa in sample. Their normal abundances are between 0 and 64.3%. In terms of physiographic region, higher numbers are found in Dummer Moraines and Oak Ridges Moraine, and significantly less in Schomberg Clay Plains (**Table 5**).

Figure 3 and **Figure 4** show a plot of the community composition of sensitive taxa compared to major land use categories (i.e., natural, agricultural, and developed) within the catchment of each sampling event. The relationship between land use and Stoneflies, as indicated by the trend lines, indicates a slightly positive or neutral correlation with natural and agricultural land use, and a negative correlation with developed land use. The relationship between land use and the grouping of Mayflies, Stoneflies, and Caddisflies, indicates a positive correlation with natural land use, and a negative correlation with agricultural and developed land use. With respect to developed land use and Stonefly abundance, there is an apparent threshold at 20% development given that above this value there are limited sites with Stoneflies. This should be interpreted with caution as sampling sites with high amounts of development within their catchments are relatively underrepresented, compared to natural and agricultural land use.

Figure 5 and **Figure 6** show the location and community composition values of Stoneflies and the grouping of Mayflies, Stoneflies, and Caddisflies. In terms of geography, sensitive taxa do not visually appear to be isolated to any given area but rather they are widely distributed within Kawartha Conservation jurisdiction. Locations with the highest (as represented by the top 3rd percentile) relative abundance of Stoneflies had an average value of 19.0%, and ranged between 8.3% and 65.7%. These sites were located in the Dummer Moraines, Oak Ridges Moraine, and Peterborough Drumlin Field, and in the subwatersheds of: Cameron Lake, East Cross Creek, Emily Creek, Fleetwood Creek, Hawkers Creek, Lake Scugog, Martin Creek South, Nonquon River, Pearns Creek, Pigeon Lake, Pigeon River, Staples River, and Sturgeon Lake.

Other Organisms

In addition to benthic macroinvertebrates, several other animal organisms were incidentally collected through sampling and documented in this dataset including: terrestrial or semi-aquatic invertebrates (Flies, Wasps, Ants, Spiders, Water Striders, Millipedes, Grasshoppers, *Collumbola*), fishes (Brook Trout, Brook Stickleback, Northern Redbelly Dace, Sculpin sp.), zooplankton (*Daphnia, Cladocera, Copepoda*), and amphibians (Anuran Tadpoles, and Salamanders).

Table 3: Categorical summaries of all taxa occurrence and abundance.

Taxa	Occurrence	Average Abundance (relative, when present)	Abundance (absolute, when present)	Abundance (absolute, maximum)
27-Group Taxa				
Midges	Extremely Common	Extremely High	Fairly Low	Very High
Beetles	Very Common	Fairly High	Very Low	Fairly High
Caddisflies	Very Common	Very High	Very Low	Fairly High
Mussels	Very Common	Very High	Very Low	Very High
Mayflies	Very Common	Very High	Very Low	Fairly Low
Aquatic Earthworms	Fairly Common	Fairly High	Extremely Low	Fairly Low
Snails	Fairly Common	Fairly High	Very Low	Very High
Stoneflies	Fairly Common	Very High	Very Low	Fairly High
Scuds	Fairly Common	Very High	Very Low	Very High
Noseeums	Fairly Common	Fairly High	Extremely Low	Very Low
Misc. Trueflies	Fairly Common	Fairly High	Extremely Low	Very Low
Craneflies	Fairly Common	Fairly Low	Extremely Low	Very Low
Mites	Fairly Common	Fairly Low	Extremely Low	Very Low
Horse/Deerflies	Fairly Common	Very Low	Extremely Low	Very Low
Blackflies	Fairly Rare	Fairly High	Extremely Low	Fairly Low
Dragonflies	Fairly Rare	Very Low	Extremely Low	Very Low
Aquatic Sowbugs	Fairly Rare	Extremely High	Very Low	Very High
Nematodes	Fairly Rare	Very Low	Extremely Low	Very Low
Helgrammites	Fairly Rare	Very Low	Extremely Low	Extremely Low
Leeches	Fairly Rare	Fairly Low	Extremely Low	Very Low
Damselflies	Very Rare	Very Low	Extremely Low	Extremely Low
Crayfish	Very Rare	Extremely Low	Extremely Low	Extremely Low
Truebugs	Very Rare	Fairly Low	Extremely Low	Very Low
Aquatic Moths	Very Rare	Very Low	Extremely Low	Extremely Low
Mosquitos	Very Rare	Fairly Low	Extremely Low	Very Low
Hydras	Extremely Rare	Extremely Low	Extremely Low	Extremely Low
Flatworms	Extremely Rare	Extremely Low	Extremely Low	Extremely Low
5-Group Taxa				
Insects	Extremely Common	n/a	Very High	Extremely High
Crustaceans	Very Common	n/a	Very Low	Very High
Mollusks	Very Common	n/a	Very Low	Fairly High
Worms	Very Common	n/a	Very Low	Very High
Other	Fairly Common	n/a	Extremely Low	Very Low
Sensitive Taxa				
Stoneflies	Fairly Common	n/a	Very Low	Fairly High
Mayflies, Stoneflies, Caddisflies	Extremely Common	n/a	Very Low	Very High

Table 4: The normal range of taxa abundance (green) as defined as between the 5^{th} and 95^{th} percentile, the atypical range (red) as defined as below 5^{th} percentile and above 95^{th} percentile.

	Min	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	Max
27-Group Taxa																					
Scuds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.7	1.0	1.5	3.0	4.7	7.4	10.0	14.2	20.0	36.2	83.5
Dragonflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.6	0.7	1.0	1.5	2.0	6.8
Mussels	0.0	0.0	0.0	0.0	0.3	0.3	0.6	1.0	1.3	2.2	2.6	3.2	4.8	6.3	7.9	9.7	12.7	18.3	22.7	35.6	81.5
Noseeums	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.5	0.6	0.7	0.9	1.3	1.8	2.1	2.6	3.7	6.4	16.0
Midges	0.3	4.1	8.8	12.1	15.7	18.1	21.0	23.0	26.1	29.8	31.8	34.7	39.5	43.5	45.7	47.2	50.0	54.0	59.8	67.0	93.5
Hydras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Beetles	0.0	0.0	0.3	0.4	0.6	1.0	1.3	1.8	2.3	2.8	3.6	4.5	5.7	6.8	9.2	10.8	14.0	15.9	20.8	30.5	51.8
Mosquitos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2	5.9
Crayfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	2.1
Mayflies	0.0	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.3	1.8	2.3	3.2	4.1	5.0	6.5	9.0	11.4	16.0	21.1	34.2	45.3
Snails	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.4	0.6	0.9	1.3	1.7	2.4	3.5	6.2	9.4	14.7	26.0	77.7
Truebugs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.7	12.5
Leeches	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.9	1.6	11.0
Mites	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.6	0.7	0.9	1.1	1.7	2.5	3.6	10.8
AquaticSowbugs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.9	1.9	3.1	5.6	17.3	33.5	83.2
AquaticMoths	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.7	4.1
Helgrammites	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.9	1.3	4.2
Misc.Trueflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.6	0.6	0.9	1.0	1.3	1.6	2.3	2.6	3.8	5.3	21.8
Nematodes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5	0.6	1.0	1.8	5.8
AquaticEarthworms	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.6	0.7	0.9	1.0	1.3	1.6	2.5	2.8	3.7	6.9	12.6	47.2
Stoneflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.8	1.1	1.4	2.3	3.6	5.0	7.4	11.0	14.8	19.9	27.6	65.7
Blackflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	1.2	1.6	2.1	3.2	4.7	10.7	42.4
Horse/Deerflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.5	0.7	0.9	1.0	1.3	2.0	6.0
Craneflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.6	0.7	1.0	1.3	1.7	2.1	2.4	3.4	6.2	11.1
Caddisflies	0.0	0.0	0.0	0.2	0.5	0.7	1.0	1.6	2.5	2.9	3.7	4.5	6.4	7.8	9.1	11.8	15.3	18.0	21.7	25.3	51.0
Flatworms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Damselflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.9	3.2
5-Group Taxa																					
Insects	1.5	15.1	26.1	37.9	50.3	55.6	64.5	70.9	74.1	76.3	77.9	81.9	85.3	87.3	89.8	91.0	93.1	94.7	96.2	97.5	99.7
Crustaceans	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.8	1.0	1.8	3.1	4.4	7.3	12.0	16.4	19.8	30.2	40.8	59.3	89.1
Worms	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5	0.6	0.7	0.9	1.0	1.3	1.7	2.2	2.9	3.5	4.4	7.6	12.7	52.0
Mollusks	0.0	0.0	0.3	0.3	0.6	1.2	1.7	2.3	2.9	3.6	4.9	6.8	8.3	10.7	12.6	15.8	21.1	26.2	41.9	60.6	94.4
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.5	0.6	0.6	0.8	0.9	1.0	1.5	1.8	2.1	2.7	4.2	11.0
Sensitive Taxa																					
%Stoneflies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.8	1.1	1.4	2.3	3.6	5.0	7.4	11.0	14.8	19.9	27.6	65.7
%Mayflies,Stoneflies,Caddisflies	0.0	0.2	0.7	1.5	2.5	3.3	5.0	5.7	8.2	9.6	11.9	16.1	20.6	24.7	28.1	32.4	40.8	48.5	52.7	64.3	80.9

Table 5: Benthos average abundance relative to physiographic region. Bold indicates more than twice as high as dataset average or twice as low as dataset average.

Taxa	Dataset (N=218)	CP (N=1)	DM (N=13)	GBF (N=2)	ORM (N=17)	PDF (N=166)	SCP (N=19)
27-Group Taxa							
Midges	33.8	1.3	27.9	29.9	25.2	35.3	34.7
Mussels	8.0	1.3	5.5	4.0	4.3	8.1	13.2
Caddisflies	7.9	0.3	9.3	18.5	**17.4**	7.4	**2.2**
Beetles	7.6	0.6	9.5	23.7	14.5	6.8	6.1
Mayflies	6.9	0	8.3	2.2	**15.4**	6.4	**3.2**
Scuds	6.8	83.5	**1.4**	0.6	**3.2**	6.2	15.5
Stoneflies	6.1	0	11.3	0.5	7.0	6.3	**0.9**
Snails	5.3	1.0	8.3	0.2	**0.2**	5.8	3.9
AquaticSowbugs	5.2	5.6	**11.0**	0	**<0.1**	5.2	6.5
AquaticEarthworms	2.6	5.0	**1.0**	0.3	1.4	2.7	3.7
Blackflies	2.2	0	1.6	10.9	2.5	1.9	**4.4**
Noseeums	1.4	0	**0.5**	3.8	**2.9**	1.3	1.2
Misc.Trueflies	1.4	0	**0.5**	1.8	1.1	1.6	0.8
Craneflies	1.3	0.3	0.8	1.8	1.9	1.3	**0.5**
Mites	0.8	0	**0.3**	0.2	0.6	0.9	1.1
Dragonflies	0.5	0	0.9	0.3	0.5	0.5	0.4
Horse/Deerflies	0.5	0.3	**0.1**	0	**0.2**	0.6	0.4
Leeches	0.3	0.7	0.2	0.2	**<0.1**	0.4	0.2
Helgrammites	0.3	0	0.2	0.7	**0.6**	0.3	**<0.1**
Nematodes	0.3	0	**<0.1**	0	0.3	0.3	**0.6**
Mosquitos	0.2	0	**0.1**	0	**<0.1**	0.2	**0**
Truebugs	0.2	0	**0.8**	0	**0**	0.2	**0.1**
Crayfish	0.1	0	**0.3**	0	**0.2**	0.1	**<0.1**
AquaticMoths	0.1	0	**0.2**	0.5	<0.1	0.1	<0.1
Damselflies	0.1	0	**0.2**	0	**0.3**	0.1	**0.2**
Flatworms	<0.1	0	0	0	0	<0.1	0
Hydras	<0.1	0	0	0	<0.1	<0.1	0
5-Group Taxa							
Insects	70.5	2.9	72.1	94.6	89.6	70.3	55.2
Mollusks	13.3	2.4	13.8	4.1	**4.5**	13.9	17.1
Crustaceans	12.1	89.1	12.6	0.6	**3.4**	11.5	22.1
Worms	2.9	5.0	**1.0**	0.3	1.7	3.1	4.3
Other	1.2	0.7	**0.5**	0.3	0.7	1.3	1.3
Sensitive Taxa							
Stoneflies	6.1	0	11.3	0.5	7.0	6.3	**0.9**
Mayflies, Stoneflies, Caddisflies	20.9	0.3	28.9	21.2	39.9	20.1	**6.3**

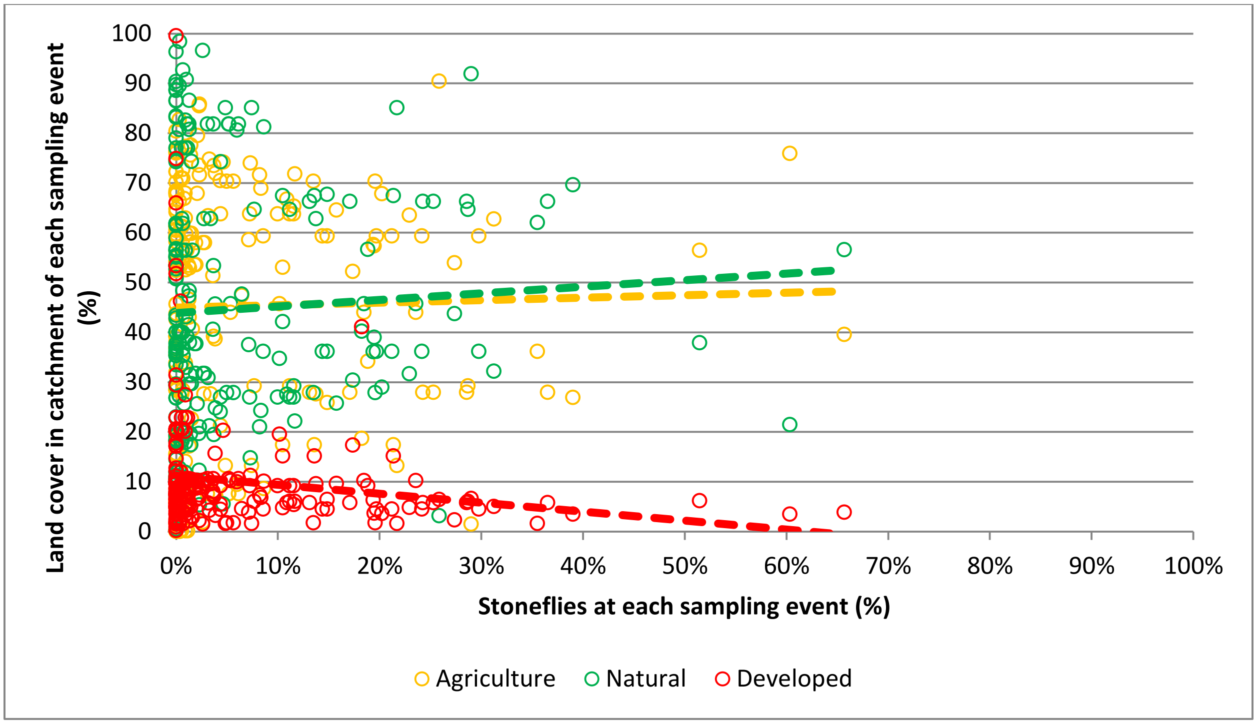

Figure 3: Relationship between abundance of Stoneflies and upstream land cover.

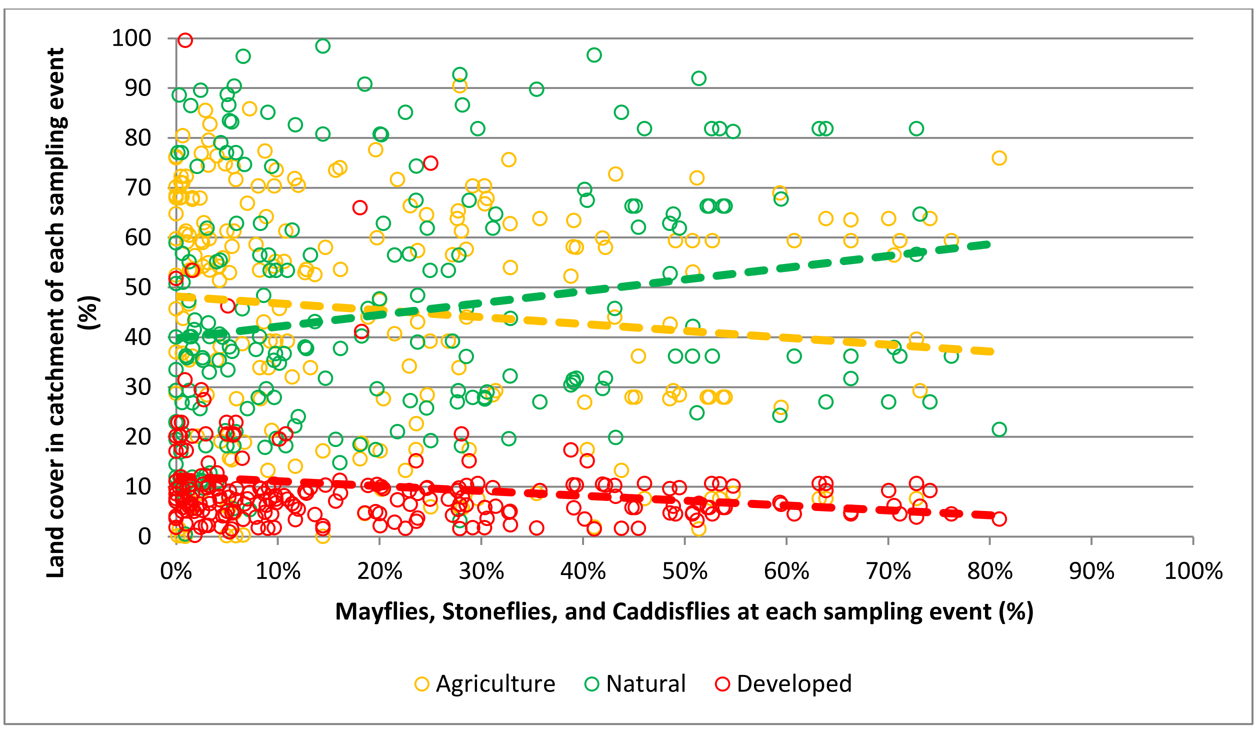

Figure 4: Relationship between abundance of Mayflies, Stoneflies, and Caddisflies, and upstream land cover.

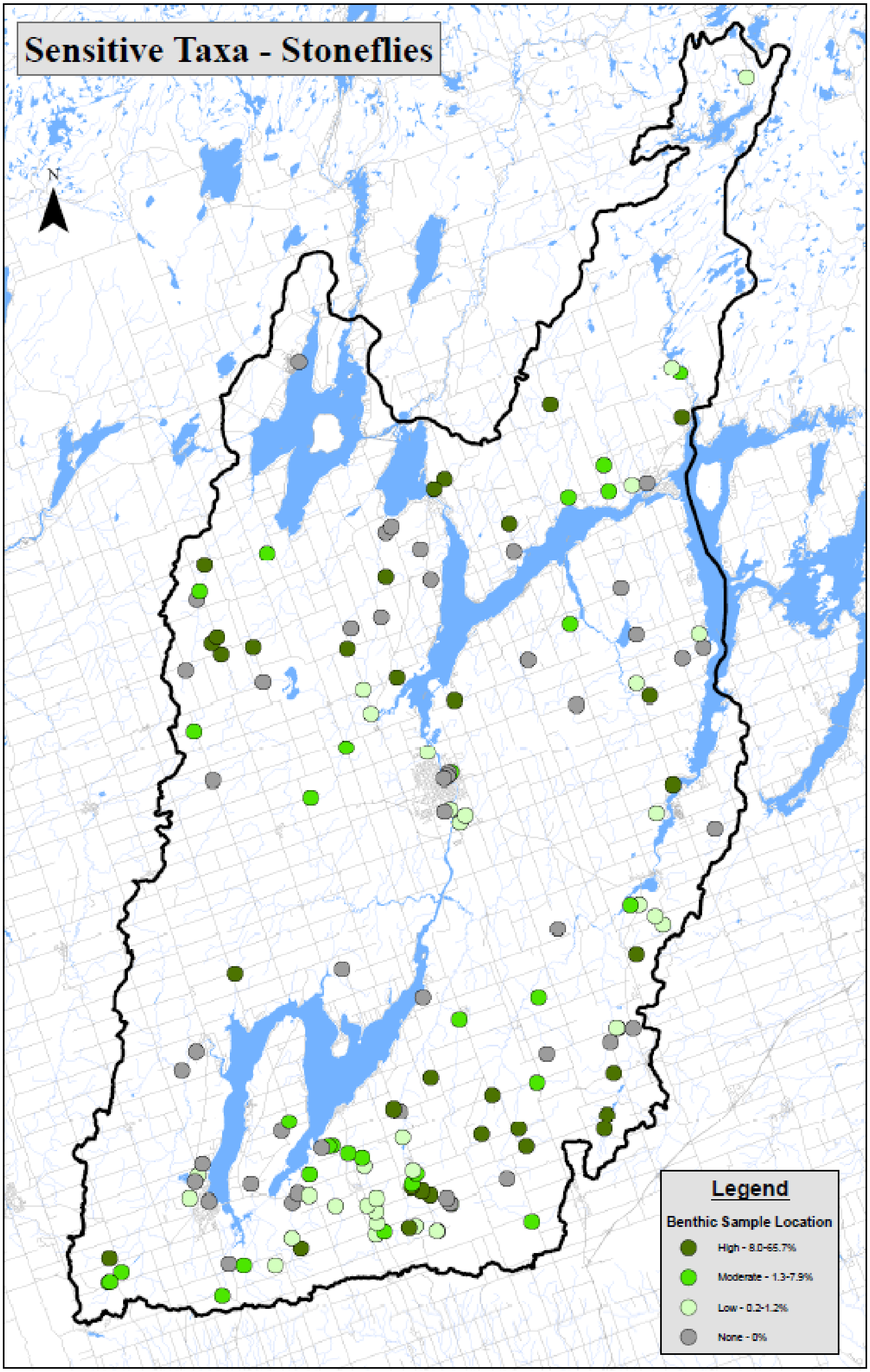

Figure 5: Location of sample sites, showing relative abundance of Stoneflies as High (top third percentile), Moderate (middle third percentile), Low (bottom third percentile), and None (none present).

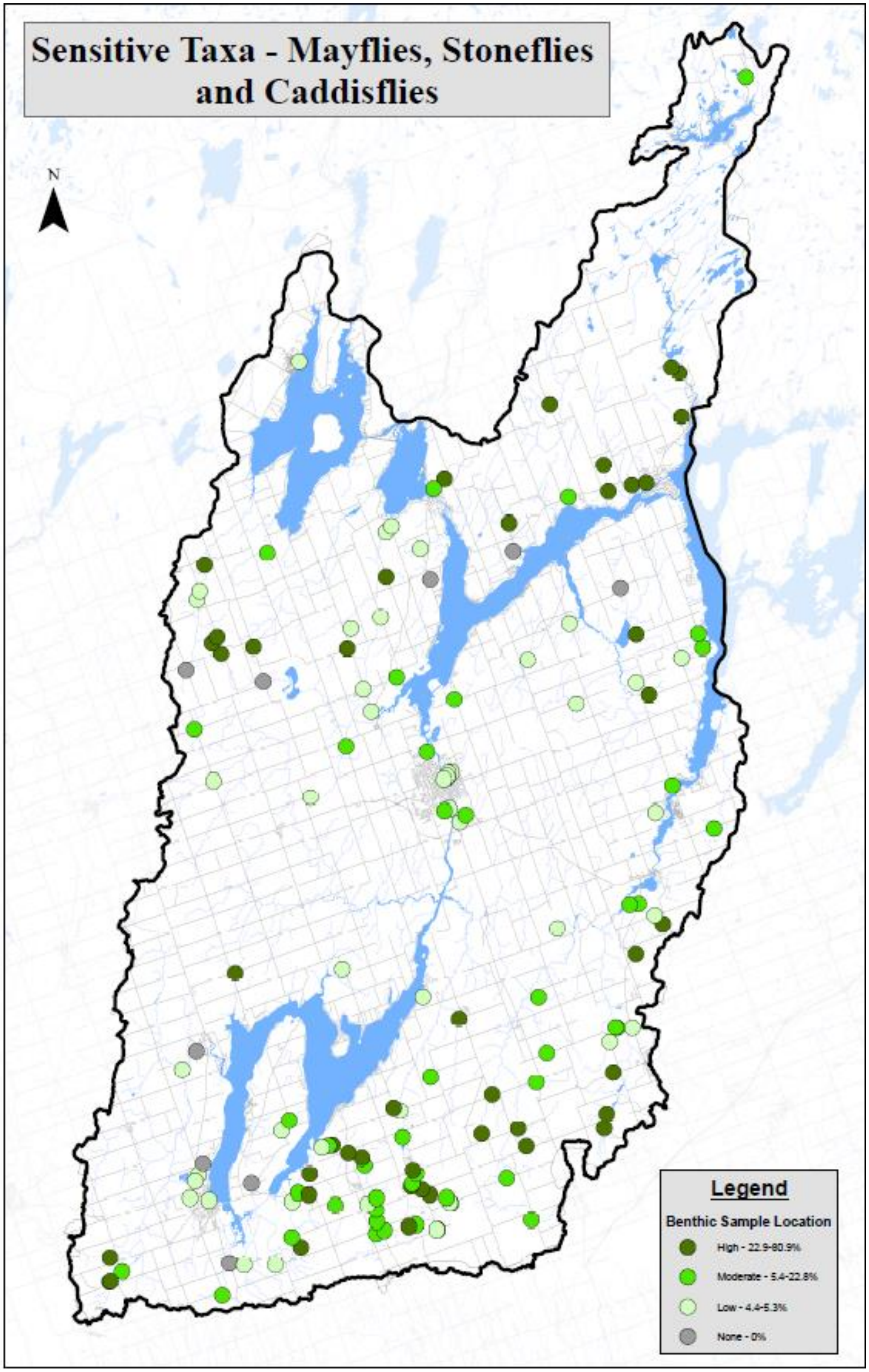

Figure 6: Location of sample sites, showing relative abundance of Mayflies, Stoneflies, and Caddisflies, as High (top third percentile), Moderate (middle third percentile), Low (bottom third percentile), and None (none present).

1.4 Discussion

This report provides published data to help address a key challenge associated with benthos monitoring by providing a summary of background information that sets expectations of what benthos would be present within wadeable streams in the Kawartha Lakes region. These data, in the absence of any other published dataset, serve as a useful "point-of-reference" against which future benthos monitoring data can be compared. This is the largest dataset in the Kawartha Lakes region for which benthic macroinvertebrate data have been published, and all data are now accessible via the Ontario Benthos Biomonitoring Network.

Aquatic resource managers and practitioners in the Kawartha Lakes region and beyond will find these data summaries useful, particularly in the disciplines of environmental monitoring (for example, by comparing the abundance of sensitive taxa found in sampled streams), habitat restoration (for example, by setting benthos presence expectations for rehabilitated streams), and education programming (for example, focusing identification skills on taxa that we expect to encounter).

Opportunities to make these data even more relevant and applicable include: increasing taxonomic precision (e.g., from 27-group to family-level), collecting data on minimally impacted through to severely impacted streams (e.g., to set benthos expectations for healthy and degraded streams), collecting data on highly urbanized streams (e.g., to fill data gaps within the development stressor category), and collecting data within aquatic habitats that are underrepresented in this dataset.

The following provides brief answers to the specific questions posed in the introduction.

What geographic locations, stream morphology, and aquatic habitat conditions are represented?

Table 6 provides a summary of the degree of representativeness for each of these variables. In general, the dataset does provide a good spectrum of aquatic habitats that are typically encountered on wadeable streams within the Kawartha Lakes region, however practitioners should take note of which types are more represented than others. Those that are well represented are likely best suited for benthic macroinvertebrate comparisons (e.g., sampling events located on small streams within the Peterborough Drumlin Field downstream of natural and agricultural landscapes, having relatively shallow and narrow channels with well vegetated riparian areas, etc.). Comparisons should be interpreted with caution for habitats that are not well represented (e.g., sampling events located within the Carden Plain downstream of developed catchments on bedrock substrates, etc.), and not recommended for comparisons on habitats that are not represented at all within the dataset (e.g., sampling events on large, deep, and wide streams in the winter).

Table 6: Aquatic habitat measurements and how well represented they are in dataset.

Aquatic Habitat Measurement	Well represented	Not well represented	Not Represented
Date and month sampled	• 2006, 2007, 2008, 2012, 2013, 2014 • May	▪ 2004 ▪ April	▪ January, February, March, November, December
Stream location	• East Cross Creek • Peterborough Drumlin Field	• Central jurisdiction • North-east jurisdiction • Carden Plain • Georgian Bay Fringe • Streams within Cameron Lake subwatershed • Janetville Creek • Martin Creek North • Pearns Creek • Rutherford Creek	

Aquatic Habitat Measurement	Well represented	Not well represented	Not Represented
Catchment and riparian land use	• Natural catchments • Agricultural catchments • Natural riparian areas	• Developed catchments • Developed riparian areas	
Aquatic Habitat: catchment and channel size	• 2nd and 3rd order streams • Catchments between 2.6 and 15.8km^2 • Wetted widths between 1.3 and 3.7m • Maximum depths between 150 and 360mm • Bankfull widths between 2.4 and 6.0m	• 5th order streams	• 6th order streams and larger • Catchments greater than 188km^2 • Wetted widths greater than 17m • Maximum depths greater than 1250mm • Bankfull widths greater than 16m
Aquatic Habitat: instream conditions	• Maximum velocities between 0 and 15mm hydraulic head • Water temperatures between 10.5 and 17.1^{o}C • Absent macrophytes	• Boulder substrates • Bedrock substrates • Abundant macrophytes	• Maximum velocities greater than 200mm • Water temperatures less than 5.9^{o}C and greater than 26^{o}C • Abundant floating algae

What major types of aquatic invertebrates live within these streams and are certain taxa present more often or in higher numbers than others?

All benthos within the 27-Group Taxa were recorded in the dataset, but not all taxa were equally represented. Some benthos were found more or less often, or in higher or lower numbers, than others. **Table 7** provides a summary of the benthos that are considered the most common or rare, and most abundant or sparse. Results indicate that taxa vary in presence and abundance and not all taxa are equally represented. Several taxa including Midges, Beetles, Caddisflies, Mussels, Stoneflies, and Scuds are most often encountered at sampling events, and when they are present occur in relatively high numbers compared to other taxa. In contrast, Flatworms, Hydras, Mosquitos, Aquatic Moths, Truebugs, Crayfish, Damselflies, Helgrammites, Nematodes, Dragonflies, and Horse/Deerflies are least often encountered and occur in relatively low numbers compared to other taxa. Midges were encountered at every sampling event and by far had the highest average abundance, whereas Hydras and Flatworms were almost never encountered and had the lowest average abundance.

Table 7: Benthos taxa summarized as common, rare, abundant, and/or sparse.

Common	Rare	Abundant	Sparse
Midges, Beetles, Caddisflies, Mussels, Mayflies	Flatworms, Hydras, Mosquitos, Aquatic Moths, Truebugs, Crayfish, Damselflies	Midges, Caddisflies, Mussels, Mayflies, Stoneflies, Scuds	Flatworms, Hydras, Crayfish, Aquatic Moths, Damselflies, Helgrammites, Nematodes, Dragonflies, Horse/Deerflies,

What is the average abundance for each major type of aquatic invertebrate, including those that are considered sensitive, for the entire dataset and by major physiographic region?

Table 8 provides numerical values that serve as “point-of-reference” expectations for comparison purposes. For example, results from this dataset indicate that average abundance for Aquatic Sowbugs is 5.2%, their normal abundance range is between 0 and 33.5%, and they are typically found in higher numbers in streams within Dummer Moraines and in lower numbers in streams within the Oak Ridges Moraine. If a site having comparable aquatic habitats was then sampled using OBBN, the obtained abundance values of Aquatic Sowbugs could be compared against these values to determine if they are within, or outside, of these expectations. If the taxa of interest are also considered an indicator organism (as is the case for Aquatic Sow Bugs where higher numbers typically indicate more degraded conditions) then higher or lower values relative to this dataset could indicate for example better or worse conditions than would be “expected”.

Table 8: Abundance values for each 27-Group Taxa. Sensitive taxa are in bold.

Benthos	Average Abundance (%)	Normal Range of Abundance (%)	Abundance is at least twice as high in the following physiographic region:	Abundance is at least twice as low in the following physiographic region:
AquaticEarthworms	2.6	0-12.6		DM
AquaticMoths	0.1	0-0.7	DM	
AquaticSowbugs	5.2	0-33.5	DM	ORM
Beetles	7.6	0-30.5		
Blackflies	2.2	0-10.7	SCP	
Caddisflies	**7.9**	**0-25.3**	**ORM**	
Craneflies	1.3	0-6.2		SCP
Crayfish	0.1	0-0.7	DM, ORM	SCP
Damselflies	0.1	0-0.9	DM, ORM	
Dragonflies	0.5	0-2.0		
Flatworms	<0.1	0-0.0		
Helgrammites	0.3	0-1.3	ORM	SCP
Horse/Deerflies	0.5	0-2.0		DM, ORM
Hydras	<0.1	0-0.0		
Leeches	0.3	0-1.6		ORM
Mayflies	**6.9**	**0-34.2**	**ORM**	
Midges	33.8	4.1-67.0		
Misc.Trueflies	1.4	0-5.3		DM
Mites	0.8	0-3.6		DM
Mosquitos	0.2	0-1.2		DM, ORM, SCP
Mussels	8.0	0-35.6		
Nematodes	0.3	0-1.8	SCP	DM
Noseeums	1.4	0-6.4	ORM	DM
Scuds	6.8	0-36.2		DM
Snails	5.3	0-26.0		ORM
Stoneflies	**6.1**	**0-27.6**		**SCP**
Truebugs	0.2	0-0.7	DM	ORM, SCP

Is the abundance of sensitive aquatic invertebrates affected by the amount of natural, agricultural, and/or developed land use within their stream catchments or by geography?

Results indicate that sensitive benthos in Kawartha region streams do respond to land use within their catchments. **Table 9** provides a summary of the response for each land use category. Sensitive taxa tend to respond positively with natural land use (e.g., higher natural cover equates to more sensitive taxa), negatively with developed land use (e.g., higher development equates to less sensitive taxa), and is variable for agriculture. There are indications that benthos communities vary by geography, for example relative to the entire dataset, sensitive taxa are found in higher abundance in the Oak Ridges Moraine than in the Schomberg Clay Plains. This observation however may simply be related to the level of disturbance for example there may be typically higher natural cover and fewer stressors in Oak Ridges Moraine streams. The usefulness of using Stoneflies, and the grouping of Mayflies, Stoneflies, and Caddisflies, as indicators of aquatic ecosystem condition within the Kawartha Lakes region has been somewhat verified given they have been demonstrated to respond to stressors (e.g., development), they are widely distributed within the Kawartha Lakes region, and they have a wide range of abundance values.

Table 9: The relationship between sensitive taxa and catchment land use.

Sensitive Taxa	Relationship with Increased Catchment Land Use Within the Following:		
	Natural	Developed	Agricultural
Stoneflies	Positive	Negative	Positive
Mayflies, Stoneflies, and Caddisflies	Positive	Negative	Negative

1.5 References

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Appendix A: Benthos data for each sampling event.

Site ID	Date	Northing (UTM Zone17)	Easting (UTM Zone 17)	Scuds	Dragonflies	Mussels	Noseeums	Midges	Hydras	Beetles	Mosquitos	Crayfish	Mayflies	Snails	Truebugs	Leeches	Mites	AquaticSowbugs	AquaticMoths	Helgrammites	Misc.Trueflies	Nematodes	AquaticEarthworms	Stoneflies	Blackflies	Horse/Deerflies	Craneflies	Caddisflies	Flatworms
2HF5957	May 13, 2013	4934430	679800	0.4%	0.0%	0.0%	0.0%	40.0%	0.0%	10.1%	0.0%	0.8%	3.5%	0.9%	0.0%	0.0%	0.0%	20.0%	0.3%	0.0%	0.3%	0.0%	1.3%	18.8%	3.1%	0.0%	0.0%	0.6%	0.0%
2HG4598	May 7, 2014	4890970	669872	0.9%	0.0%	13.8%	2.1%	25.6%	0.0%	0.3%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.6%	2.7%	7.2%	42.1%	0.3%	0.9%	0.7%	0.0%
2HG4704	May 22, 2012	4883510	680061	0.0%	0.0%	6.5%	0.0%	42.2%	0.0%	3.0%	0.0%	0.0%	23.5%	6.8%	0.0%	0.0%	0.4%	0.3%	2.1%	0.4%	0.0%	0.0%	0.0%	0.0%	1.0%	1.0%	0.4%	12.0%	0.4%
2HG5347	May 7, 2014	4901120	666135	21.1%	0.0%	0.3%	0.0%	23.1%	0.0%	10.9%	0.0%	0.0%	0.0%	2.4%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	1.6%	19.4%	10.7%	0.3%	0.3%	9.1%	0.0%
2HG5375	May 19, 2015	4901410	673509	8.3%	0.0%	39.0%	6.3%	12.6%	0.0%	10.9%	0.0%	0.0%	0.0%	5.8%	0.0%	0.0%	10.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	4.7%	0.0%	0.9%	0.0%
2HG5752	May 17, 2013	4880680	658347	7.9%	0.9%	0.0%	0.0%	25.5%	0.0%	33.9%	0.0%	0.0%	4.7%	0.6%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%	1.2%	0.0%	0.0%	6.0%	5.4%	0.0%	3.1%	9.6%	0.0%
2HG5836	May 11, 2012	4914360	664639	40.4%	0.0%	21.6%	0.3%	2.9%	0.0%	5.4%	0.0%	0.0%	0.0%	21.0%	3.6%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	1.0%	0.0%	0.7%	0.0%
2HG5906	May 31, 2011	4899480	679049	4.3%	0.3%	0.6%	2.7%	20.0%	0.0%	3.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	66.8%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
2HG5942	May 17, 2013	4886640	667262	0.0%	0.0%	2.6%	0.0%	89.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%	0.0%	0.9%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%
2HG6080	May 14, 2015	4880000	657559	0.0%	0.3%	0.0%	0.6%	19.3%	0.0%	15.2%	0.0%	0.3%	38.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	2.4%	0.0%	0.0%	5.2%	4.7%	0.0%	3.4%	10.0%	0.0%
2HG6270	May 24, 2011	4917820	663327	10.0%	0.0%	21.2%	0.7%	44.7%	0.0%	11.2%	0.0%	0.0%	0.0%	2.0%	0.0%	0.3%	1.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	4.6%	0.0%	1.6%	0.0%	1.0%	0.0%
2HG6287	May 14, 2014	4890280	669324	2.4%	0.5%	60.1%	0.0%	11.6%	0.0%	2.3%	0.0%	0.0%	0.0%	15.3%	0.0%	0.5%	5.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
2HG6456	May 14, 2015	4885380	680915	3.9%	0.0%	2.9%	1.9%	59.8%	0.0%	0.0%	0.0%	0.5%	1.4%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.5%	0.5%	0.0%	26.0%	0.0%	0.0%	0.0%	0.0%
2HH3852	May 17, 2013	4934800	693402	0.0%	0.3%	0.3%	0.6%	57.8%	0.0%	6.3%	0.0%	0.0%	6.5%	3.3%	0.0%	0.0%	1.0%	6.4%	0.3%	0.0%	1.7%	0.0%	0.0%	3.7%	6.4%	0.0%	0.0%	5.4%	0.0%
2HH4133	May 24, 2012	4962680	701279	1.2%	0.6%	0.0%	1.4%	31.1%	0.0%	47.3%	0.0%	0.0%	1.7%	0.0%	0.0%	0.3%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.3%	2.3%	0.0%	0.3%	12.4%	0.0%
2HH4257	May 27, 2011	4942790	696156	0.0%	0.0%	8.0%	6.3%	28.8%	0.0%	0.0%	0.0%	0.0%	2.6%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	1.3%	3.6%	0.0%	0.7%	0.7%	19.6%	0.0%	3.3%	24.6%	0.0%
2HH4566	May 15, 2015	4924420	697998	7.5%	0.0%	0.0%	0.0%	17.8%	0.0%	3.0%	0.0%	0.0%	9.2%	13.7%	0.0%	0.0%	0.0%	3.0%	0.0%	0.0%	0.6%	0.3%	1.0%	0.9%	30.2%	0.0%	11.1%	1.6%	0.0%
2HH4575	May 27, 2011	4923470	698306	0.6%	0.3%	36.9%	7.2%	25.7%	0.0%	5.9%	0.0%	0.0%	3.0%	8.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	6.6%	0.0%	1.8%	2.7%	0.0%
2HH4588	May 14, 2014	4914900	681010	5.2%	0.0%	0.0%	0.0%	31.8%	0.0%	1.4%	0.0%	0.0%	1.1%	0.3%	0.0%	6.9%	3.5%	45.5%	0.0%	0.0%	0.0%	0.0%	0.3%	2.1%	1.4%	0.0%	0.4%	0.0%	0.0%
2HH4599	May 16, 2011	4914590	680722	0.0%	0.0%	1.3%	2.2%	50.6%	0.0%	4.6%	0.0%	0.0%	0.0%	1.2%	0.3%	1.6%	0.0%	19.3%	0.0%	0.0%	13.2%	0.0%	0.0%	0.0%	0.9%	1.3%	0.3%	3.2%	0.0%
2HH4756	May 18, 2012	4914850	680797	0.0%	0.0%	0.0%	1.9%	64.7%	0.0%	4.3%	0.0%	0.0%	0.0%	0.2%	0.0%	0.7%	0.0%	23.3%	0.0%	0.0%	0.9%	0.0%	0.8%	0.0%	0.0%	0.0%	0.6%	2.5%	0.0%
2HH4764	May 15, 2015	4914060	696224	55.0%	0.0%	1.2%	0.3%	20.5%	0.0%	1.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.2%	0.0%	0.3%	0.0%	0.0%	0.0%
2HH4822	May 19, 2015	4925560	676158	0.4%	0.0%	0.0%	16.0%	25.4%	0.0%	4.2%	0.0%	0.0%	3.2%	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.0%	0.0%	2.0%	0.0%	1.6%	0.0%	0.0%
2HH4930	May 12, 2014	4920220	694611	13.9%	0.6%	10.5%	0.3%	23.6%	0.0%	4.6%	0.0%	0.3%	0.9%	0.3%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	1.6%	39.0%	3.2%	0.0%	0.0%	0.3%	0.0%
2HH4942	May 25, 2011	4921140	668074	2.0%	0.0%	37.9%	7.2%	46.7%	0.0%	2.6%	0.0%	0.0%	0.0%	0.3%	0.3%	1.3%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
2HH5091	May 26, 2011	4905900	693911	0.0%	0.6%	42.6%	0.6%	20.5%	0.0%	16.9%	0.0%	0.0%	0.3%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	1.6%	0.0%	0.0%	1.0%	0.0%	0.6%	0.0%	12.4%	0.0%
2HH5185	May 18, 2012	4924380	693729	0.3%	0.0%	0.0%	0.0%	14.6%	0.0%	32.1%	0.0%	0.0%	44.1%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.3%	0.3%	0.0%	3.2%	0.0%	0.0%	4.5%	0.0%
2HH5212	May 26, 2011	4905120	695009	0.0%	0.0%	12.7%	1.3%	39.4%	0.0%	37.8%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	1.0%	0.0%	0.0%	0.7%	0.0%	0.0%	2.0%	2.3%	0.0%
2HH5552	May 16, 2011	4914650	680725	0.3%	0.0%	0.0%	1.6%	47.1%	0.0%	9.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	15.8%	0.0%	0.0%	15.5%	0.0%	0.3%	0.0%	1.9%	0.3%	1.6%	4.0%	0.0%
2HH5559	May 15, 2013	4896400	691914	0.4%	0.0%	23.8%	1.8%	56.5%	0.0%	3.0%	0.0%	0.0%	1.2%	7.8%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.4%	0.0%	2.8%	0.3%	0.0%	0.6%	0.0%
2HH5697	May 16, 2011	4925120	689143	4.6%	0.3%	31.9%	3.2%	26.2%	0.0%	2.0%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	3.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	3.6%	20.6%	0.0%	0.7%	0.7%	0.0%
2HH5966	May 18, 2012	4922740	696853	14.6%	0.0%	10.8%	0.4%	8.2%	0.0%	2.9%	0.4%	0.0%	5.0%	54.2%	0.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
2HH6216	May 22, 2012	4895610	687576	1.3%	0.0%	1.0%	4.8%	36.6%	0.0%	37.6%	0.0%	0.3%	0.0%	2.2%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	11.4%	0.0%
2HH6284	May 27, 2015	4927570	692643	1.4%	0.0%	2.8%	7.1%	74.8%	0.0%	3.2%	0.0%	0.0%	0.0%	6.4%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	2.8%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
2HH6562/PL234-09	May 27, 2014	4887000	684818	0.0%	0.4%	2.8%	0.0%	52.4%	0.0%	23.3%	0.0%	0.0%	3.7%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.0%	0.0%	1.2%	3.0%	0.0%
2HH6634/SL234-19	May 9, 2012	4940250	687782	0.3%	0.7%	11.9%	1.5%	22.0%	0.0%	12.1%	0.0%	0.0%	1.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	27.4%	3.6%	0.7%	1.2%	4.4%	0.0%
2HH6690	May 22, 2012	4897360	693469	2.7%	0.0%	8.0%	0.3%	63.2%	0.0%	2.6%	0.0%	0.0%	2.9%	11.7%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	4.1%	0.6%	0.0%	2.4%	0.0%
ASD01	May 26, 2010	4912410	680903	2.1%	0.0%	0.0%	0.0%	4.2%	0.0%	0.2%	0.4%	0.2%	0.2%	0.2%	0.9%	0.3%	0.3%	83.2%	0.0%	0.0%	0.0%	0.0%	1.0%	1.1%	0.0%	0.0%	1.7%	3.6%	0.0%
ASD01	June 19, 2012	4912410	680903	0.0%	1.0%	0.0%	0.0%	54.5%	0.0%	15.2%	0.0%	0.0%	0.0%	1.4%	0.0%	0.4%	0.0%	23.1%	0.0%	0.0%	1.0%	0.0%	0.0%	0.5%	1.8%	0.0%	0.9%	0.0%	0.0%
ASD01	June 4, 2014	4912410	680903	0.3%	0.3%	0.3%	0.3%	65.3%	0.0%	6.1%	0.0%	0.0%	0.0%	0.7%	0.0%	1.3%	0.0%	16.1%	0.0%	0.0%	0.7%	0.0%	0.0%	0.9%	1.8%	0.9%	0.0%	5.0%	0.0%
ASD01	June 16, 2016	4912410	680903	0.0%	0.3%	0.0%	1.3%	17.9%	0.0%	1.7%	0.5%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	72.7%	0.0%	0.0%	0.3%	1.2%	3.3%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
BC030	May 29, 2009	4889110	672112	58.2%	0.3%	2.5%	0.0%	16.7%	0.0%	0.9%	0.0%	0.3%	0.3%	1.3%	0.0%	0.0%	0.0%	2.9%	0.0%	0.3%	0.3%	1.6%	13.2%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
BCL234-08	May 14, 2013	4923520	667394	0.0%	0.0%	2.6%	0.3%	45.4%	0.0%	9.7%	0.0%	0.3%	2.0%	4.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.5%	25.9%	5.3%	2.0%	0.0%	0.0%	0.0%
BCL234-10	May 13, 2013	4923400	673847	1.2%	0.0%	9.2%	0.6%	2.6%	0.3%	1.1%	0.0%	0.0%	18.5%	10.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	51.5%	2.5%	0.0%	0.3%	0.6%	0.0%
BCL234-11	May 27, 2013	4926760	663516	5.6%	1.6%	30.2%	1.7%	21.5%	0.0%	2.0%	0.0%	0.0%	0.5%	22.4%	0.0%	0.0%	0.5%	13.3%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BCL234-12	May 10, 2013	4931830	676893	50.7%	1.0%	1.0%	3.3%	16.8%	0.0%	1.7%	0.0%	0.0%	4.3%	14.4%	0.0%	0.0%	0.7%	1.9%	0.0%	0.0%	0.7%	0.0%	1.1%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%
BCL234-16	May 23, 2013	4923040	665175	11.8%	0.0%	5.6%	0.3%	19.9%	0.0%	6.6%	0.0%	0.0%	9.7%	5.8%	0.0%	0.0%	0.0%	3.3%	0.0%	0.0%	0.0%	0.9%	4.2%	20.2%	10.1%	0.6%	0.3%	0.6%	0.0%
BCL234-20	May 23, 2013	4929170	664038	2.0%	0.3%	4.7%	1.7%	15.0%	0.0%	30.2%	0.0%	0.0%	19.1%	7.9%	0.0%	0.4%	0.3%	2.4%	0.0%	0.0%	0.6%	0.4%	1.3%	10.9%	1.1%	0.4%	1.0%	0.4%	0.0%
BCL234-21	May 10, 2013	4943180	670544	83.5%	0.0%	1.3%	0.0%	1.3%	0.0%	0.6%	0.0%	0.0%	0.0%	1.0%	0.0%	0.7%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%	0.3%	0.3%	0.3%	0.0%
BCL234-24	May 15, 2013	4924200	664908	2.7%	0.0%	0.6%	0.0%	1.5%	0.0%	1.4%	0.0%	0.0%	16.4%	10.6%	0.0%	0.0%	0.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.9%	60.3%	0.0%	0.0%	0.0%	4.2%	0.0%
BCL234-26	May 21, 2013	4924800	674104	0.3%	0.0%	81.5%	0.3%	4.3%	0.0%	0.3%	0.0%	0.0%	0.3%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.8%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%
BCL234-28	April 10, 2013	4931430	676510	13.4%	0.9%	12.6%	0.0%	4.7%	0.0%	0.0%	0.0%	0.0%	0.6%	62.2%	0.0%	0.0%	0.9%	3.7%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BCL234-29	May 21, 2013	4928340	676521	3.3%	0.0%	1.6%	0.7%	14.4%	0.0%	1.4%	0.0%	0.0%	42.1%	0.7%	0.0%	0.0%	0.0%	2.1%	3.3%	0.0%	0.0%	0.3%	1.0%	22.9%	4.6%	0.3%	0.0%	1.3%	0.0%
BCL234-32	May 14, 2013	4921910	662770	0.5%	0.0%	4.5%	0.5%	93.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BCL234-36	May 14, 2013	4927360	663699	3.0%	0.0%	22.5%	0.0%	51.8%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	1.2%	0.7%	3.8%	0.0%	0.0%	0.0%	0.0%	10.6%	3.3%	0.7%	0.0%	0.7%	0.0%	0.0%
BCL234-40	May 23, 2013	4923790	664555	0.0%	0.0%	21.4%	0.0%	38.7%	0.0%	5.3%	0.0%	0.0%	0.8%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	31.2%	0.0%	0.3%	0.0%	0.8%	0.0%
BCL234-44	May 29, 2013	4935090	680527	0.0%	0.9%	2.5%	0.9%	8.7%	0.0%	6.5%	0.0%	0.0%	6.8%	0.3%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	1.9%	65.7%	0.0%	0.6%	0.0%	0.3%	0.0%
BCL234-47	May 21, 2013	4929990	668349	1.0%	0.0%	6.0%	3.8%	51.8%	0.0%	3.8%	0.0%	0.0%	3.2%	21.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.3%	4.4%	1.2%	0.0%	0.0%	1.9%	0.0%
BMI_FC-001	October 12, 2005	4890440	691525	1.0%	0.3%	0.6%	9.5%	32.2%	0.0%	0.0%	0.3%	0.0%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.8%	0.0%	4.3%	21.7%	1.8%	0.3%	3.4%	7.8%	0.0%
BMI_FC-001	October 12, 2006	4890440	691525	0.3%	0.0%	19.6%	12.2%	34.4%	0.0%	0.0%	0.0%	0.0%	9.0%	0.3%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	2.6%	1.6%	4.2%	7.4%	1.3%	0.0%	0.3%	6.1%	0.0%
BMI_FC-001	September 19, 2007	4890440	691525	0.6%	0.0%	25.9%	11.3%	49.3%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.3%	1.3%	0.3%	4.8%	0.3%	0.3%	0.7%	2.3%	0.0%
BMI_FC-002	October 11, 2005	4897390	692330	0.3%	0.0%	0.6%	0.0%	32.1%	0.0%	24.7%	0.0%	0.3%	23.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%	0.0%	12.5%	0.0%	0.0%	0.3%	0.6%	3.3%	0.0%
BMI_FC-002	October 12, 2006	4897390	692330	0.3%	0.3%	3.3%	0.3%	57.1%	0.0%	4.9%	0.0%	0.3%	15.0%	1.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	1.1%	0.0%	2.9%	3.7%	0.3%	0.3%	0.6%	6.3%	0.0%
BMI_FC-002	September 25, 2007	4897390	692330	15.7%	0.0%	6.2%	0.7%	39.0%	0.0%	17.8%	0.0%	0.7%	9.1%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.3%	0.7%	0.0%	6.8%	0.0%	0.0%	1.4%	0.0%	0.7%	0.0%
BMI_FC-002	October 10, 2008	4897390	692330	43.3%	0.0%	2.7%	0.5%	21.4%	0.0%	16.6%	0.0%	0.3%	3.9%	0.6%	0.0%	0.0%	0.6%	0.0%	0.0%	0.3%	0.3%	0.0%	3.1%	0.0%	0.0%	0.2%	0.8%	5.3%	0.0%
BMI_NQN-001	October 17, 2005	4879970	657498	0.0%	2.1%	0.0%	0.9%	0.3%	0.0%	20.2%	0.0%	0.0%	20.5%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	1.2%	1.2%	0.0%	0.0%	1.2%	0.0%	0.0%	0.6%	51.0%	0.0%
BMI_NQN-001	October 13, 2006	4879970	657498	0.0%	0.3%	2.6%	5.1%	13.2%	0.0%	18.1%	0.0%	0.3%	10.3%	0.5%	0.0%	0.0%	0.3%	0.0%	0.0%	0.5%	4.1%	0.0%	1.3%	5.1%	0.3%	0.3%	0.0%	37.2%	0.0%
BMI_NQN-001	May 18, 2007	4879970	657498	0.0%	0.5%	1.0%	0.0%	14.6%	0.0%	15.9%	0.0%	0.0%	34.3%	0.3%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	1.0%	0.0%	1.3%	6.1%	0.8%	0.0%	0.0%	23.4%	0.0%
BMI_NQN-001	September 20, 2007	4879970	657498	0.0%	1.5%	2.0%	3.0%	12.2%	0.0%	21.7%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	2.4%	0.0%	0.3%	0.5%	0.0%	0.3%	2.6%	3.1%	0.0%	0.3%	4.0%	42.6%	0.0%
BMI_NQN-001	May 29, 2008	4879970	657498	0.0%	0.6%	1.3%	0.6%	35.7%	0.0%	25.4%	0.0%	0.0%	7.1%	0.3%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.0%	0.2%	1.4%	1.1%	0.0%	0.6%	3.9%	21.5%	0.0%
BMI_NQN-001	October 10, 2008	4879970	657498	0.0%	0.0%	0.0%	2.0%	4.1%	0.0%	22.7%	0.0%	0.0%	18.7%	0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	1.6%	0.4%	0.0%	0.6%	3.7%	0.0%	0.0%	3.6%	40.9%	0.0%
BMI_NQN-002	October 21, 2004	4881620	657528	0.0%	0.3%	0.0%	0.0%	12.1%	0.0%	7.2%	0.0%	0.0%	39.5%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.3%	11.5%	0.0%	0.6%	3.3%	23.1%	0.0%
BMI_NQN-002	October 17, 2005	4881620	657528	0.0%	2.0%	0.3%	0.3%	6.3%	0.0%	10.4%	0.0%	0.0%	22.0%	1.3%	0.0%	0.0%	1.8%	0.0%	0.0%	1.6%	2.6%	0.0%	0.6%	10.0%	0.0%	1.0%	1.6%	38.1%	0.0%
BMI_NQN-002	October 13, 2006	4881620	657528	0.0%	1.4%	3.2%	1.6%	16.3%	0.0%	6.8%	0.0%	0.0%	34.2%	1.3%	0.0%	0.0%	1.5%	0.0%	0.0%	0.5%	1.7%	0.0%	0.4%	7.2%	0.0%	0.0%	1.4%	22.5%	0.0%
BMI_NQN-002	September 25, 2007	4881620	657528	0.0%	6.8%	9.1%	2.8%	28.1%	0.0%	11.5%	0.0%	0.0%	8.1%	2.5%	1.2%	0.0%	0.3%	0.0%	0.0%	0.9%	2.4%	0.0%	3.4%	4.4%	0.0%	0.3%	2.8%	15.2%	0.0%
BMI_NQN-002	October 10, 2008	4881620	657528	1.0%	1.7%	8.2%	1.7%	21.0%	0.0%	12.8%	0.0%	0.0%	3.2%	3.0%	0.0%	0.0%	2.7%	0.0%	0.0%	0.9%	0.2%	0.6%	3.0%	11.2%	0.0%	1.2%	6.3%	21.5%	0.0%
BMI_NQN0503	May 11, 2005	4880230	657722	0.3%	0.0%	0.0%	0.6%	20.1%	0.0%	15.9%	0.3%	0.0%	36.2%	0.0%	0.0%	0.0%	0.9%	0.3%	0.0%	3.5%	1.3%	0.0%	1.0%	8.6%	0.6%	0.0%	0.3%	9.9%	0.0%
BMI_PL-001	October 20, 2005	4912170	695068	12.7%	0.0%	0.0%	4.2%	9.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	0.0%	0.0%	2.2%	32.9%	0.0%	0.0%	1.5%	0.6%	32.7%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%
BMI_PL-001	October 17, 2006	4912170	695068	15.7%	0.0%	3.7%	1.6%	46.6%	0.0%	0.6%	0.0%	0.0%	0.0%	2.7%	0.0%	0.0%	0.8%	3.8%	0.0%	0.0%	0.6%	0.5%	21.0%	0.3%	0.5%	0.5%	0.0%	1.1%	0.0%
BMI_PL-001	September 19, 2007	4912170	695068	25.2%	0.0%	6.6%	3.7%	46.7%	0.0%	1.2%	0.0%	0.0%	0.3%	1.0%	0.3%	0.0%	0.4%	1.1%	0.0%	0.0%	0.0%	0.4%	8.7%	0.5%	0.3%	0.7%	0.6%	2.5%	0.0%
BMI_PL-001	October 9, 2008	4912170	695068	64.4%	0.0%	6.3%	0.3%	6.6%	0.0%	4.0%	0.0%	0.0%	0.3%	4.0%	0.0%	0.0%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.9%	0.0%	7.7%	0.0%
BMI_PR-001	October 22, 2004	4890440	685609	0.0%	0.0%	0.3%	0.6%	9.0%	0.0%	0.3%	0.0%	0.0%	29.2%	0.0%	0.0%	0.0%	8.8%	0.0%	0.0%	0.3%	3.1%	0.0%	0.6%	14.9%	0.0%	0.3%	0.3%	32.1%	0.0%
BMI_PR-001	May 10, 2005	4890440	685609	0.0%	0.0%	0.0%	0.3%	9.0%	0.0%	0.3%	0.7%	0.0%	36.6%	0.0%	0.0%	0.0%	8.2%	0.0%	0.0%	0.7%	3.4%	0.0%	1.2%	14.4%	1.3%	0.3%	2.3%	20.2%	1.1%
BMI_PR-001	October 12, 2006	4890440	685609	0.0%	0.3%	0.0%	1.2%	33.7%	0.0%	0.7%	0.2%	0.0%	11.7%	0.0%	0.0%	0.0%	5.1%	0.5%	0.0%	0.3%	1.9%	0.3%	0.8%	21.2%	0.2%	0.2%	1.8%	19.8%	0.0%
BMI_PR-001	May 18, 2007	4890440	685609	0.0%	0.0%	0.0%	0.6%	37.7%	0.0%	0.2%	0.0%	0.0%	12.0%	0.0%	0.0%	0.0%	4.1%	0.5%	0.0%	0.3%	3.2%	0.6%	1.3%	19.7%	0.0%	0.3%	2.1%	17.4%	0.0%
BMI_PR-001	September 19, 2007	4890440	685609	0.0%	0.0%	0.9%	0.6%	32.3%	0.0%	0.9%	0.0%	0.0%	21.9%	0.3%	0.5%	0.0%	4.1%	0.0%	0.0%	0.0%	0.9%	2.5%	2.3%	8.6%	1.8%	0.3%	1.7%	20.3%	0.0%
BMI_PR-001	May 29, 2008	4890440	685609	0.0%	0.6%	0.0%	0.3%	16.0%	0.0%	0.0%	0.0%	0.0%	15.8%	0.3%	0.0%	0.0%	5.1%	0.3%	0.0%	0.6%	0.9%	3.9%	3.7%	29.8%	1.5%	0.0%	6.0%	15.2%	0.0%
BMI_PR-001	October 9, 2008	4890440	685609	0.0%	0.0%	0.0%	0.9%	17.0%	0.0%	2.6%	0.0%	0.0%	20.7%	0.3%	0.0%	0.0%	2.6%	0.9%	0.0%	0.0%	0.6%	1.7%	3.9%	24.2%	0.0%	0.9%	2.4%	21.4%	0.0%
HC01	May 26, 2010	4933870	689054	0.6%	1.2%	0.5%	0.0%	9.5%	0.0%	0.0%	0.0%	2.1%	11.4%	0.2%	3.2%	0.0%	0.7%	58.4%	0.0%	0.8%	0.0%	0.0%	0.0%	1.6%	0.0%	0.2%	0.2%	8.5%	0.0%
JC1	May 27, 2010	4897960	681549	0.6%	0.7%	1.6%	0.0%	45.7%	0.0%	0.6%	1.2%	0.7%	19.1%	0.5%	0.5%	0.0%	0.0%	1.2%	0.0%	2.1%	0.0%	0.0%	0.0%	3.2%	0.0%	0.5%	1.8%	16.8%	0.0%
JC2	May 28, 2010	4916280	679343	8.3%	2.0%	0.0%	0.0%	17.2%	0.0%	1.4%	0.7%	0.3%	3.0%	0.3%	2.4%	0.0%	10.8%	24.6%	1.0%	1.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	25.0%	0.0%
JC2	May 23, 2012	4916280	679343	18.9%	0.0%	0.0%	0.0%	40.2%	0.0%	4.2%	0.0%	0.0%	1.9%	0.0%	0.4%	0.0%	0.0%	22.7%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	8.9%	0.0%
JC2	June 13, 2013	4916280	679343	7.0%	0.0%	0.3%	0.0%	22.3%	0.0%	3.4%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	1.8%	62.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%
JC2	June 3, 2014	4916280	679343	15.6%	0.0%	0.2%	0.0%	48.9%	0.0%	7.6%	0.0%	0.2%	1.8%	0.0%	0.2%	0.0%	1.0%	18.6%	0.0%	0.0%	0.7%	0.0%	0.0%	0.5%	1.2%	0.2%	0.6%	2.7%	0.0%
JC2	June 9, 2016	4916280	679343	1.5%	0.0%	0.0%	0.0%	5.0%	0.0%	9.4%	0.3%	0.0%	1.8%	0.0%	0.5%	0.0%	0.6%	74.8%	0.0%	0.0%	1.1%	0.0%	0.0%	0.6%	0.6%	0.3%	0.3%	3.3%	0.0%
LST030	May 8, 2009	4887290	671261	0.0%	0.3%	6.3%	0.0%	28.3%	0.0%	12.6%	0.0%	0.0%	27.2%	15.9%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	1.0%	0.0%	0.3%	1.4%	0.9%	0.0%	1.1%	4.1%	0.0%
LST031	May 15, 2009	4886020	670470	18.0%	0.0%	10.0%	0.3%	28.3%	0.0%	29.5%	0.0%	0.0%	0.6%	1.9%	0.0%	0.3%	0.3%	0.3%	0.0%	0.0%	1.5%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	8.3%	0.0%
LST034	May 19, 2009	4885440	670078	32.9%	0.0%	11.2%	0.0%	9.9%	0.0%	26.5%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	9.6%	0.0%	0.3%	4.4%	0.0%
LST035	May 29, 2009	4881120	666748	3.9%	0.9%	65.7%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	13.6%	0.0%	0.0%	0.9%	0.3%	0.0%	0.3%	0.3%	3.7%	0.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix A: Benthos data for each sampling event.

LST036	May 25, 2009	4881230	665733	3.2%	0.0%	8.5%	0.8%	75.2%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MCN01	May 26, 2010	4934250	691809	0.0%	2.4%	3.3%	0.0%	27.5%	0.0%	0.0%	1.6%	0.3%	11.6%	2.5%	6.1%	0.0%	0.0%	1.0%	0.0%	0.3%	0.0%	0.0%	0.7%	3.9%	0.0%	0.0%	2.1%	35.7%	0.0%
NR7	May 21, 2009	4894470	662497	11.3%	0.0%	5.4%	0.6%	5.4%	0.0%	32.4%	0.0%	0.0%	2.3%	40.6%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%
NR8	May 22, 2009	4895740	663467	12.2%	0.0%	2.7%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	75.4%	0.0%	0.0%	0.0%	8.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PL234-07	May 29, 2014	4897360	692418	59.2%	0.0%	0.0%	0.0%	13.7%	0.0%	14.5%	0.0%	0.0%	8.7%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	2.2%	0.0%
PL234-10	May 14, 2014	4889210	686171	0.0%	1.6%	1.3%	1.3%	11.6%	0.0%	32.5%	0.0%	0.0%	18.4%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.6%	0.0%	17.4%	0.9%	1.3%	7.5%	3.1%	0.0%
PL234-12	May 23, 2014	4911110	699095	18.3%	3.7%	1.9%	2.2%	35.3%	0.0%	1.5%	0.0%	0.0%	4.7%	25.1%	4.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.4%	0.0%	0.8%	0.0%
PL234-14	May 15, 2014	4892760	683815	0.0%	3.4%	9.5%	3.8%	28.1%	0.0%	5.6%	0.0%	0.0%	9.3%	8.4%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	11.6%	1.0%	2.3%	8.7%	6.9%	0.0%
PL234-18	May 27, 2014	4904190	688320	0.0%	0.5%	13.2%	14.6%	50.2%	0.0%	3.6%	0.0%	0.0%	1.6%	13.2%	0.5%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
PL234-22	May 8, 2014	4891420	691700	0.0%	0.0%	0.0%	0.0%	2.0%	0.7%	34.2%	0.0%	0.0%	36.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.2%	0.0%	0.3%	14.8%	1.3%	0.0%	1.3%	8.7%	0.0%
PL234-25	May 26, 2014	4905840	693277	1.3%	2.4%	2.8%	0.4%	41.4%	0.0%	25.8%	0.0%	0.0%	11.6%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	1.0%	0.0%	0.0%	6.4%	0.0%	0.4%	2.2%	2.0%	0.0%
PL234-30	May 27, 2014	4899460	687008	0.0%	0.0%	12.9%	2.8%	66.3%	0.0%	1.4%	0.0%	0.0%	2.7%	0.7%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.1%	0.0%	2.2%	1.1%	1.5%	1.0%	4.9%	0.0%
PL234-34	May 26, 2014	4890070	683096	0.0%	0.7%	12.8%	0.7%	17.5%	0.0%	3.9%	0.0%	0.0%	45.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.6%	1.0%	0.0%	8.3%	0.3%	0.3%	1.9%	5.7%	0.0%
PL234-37	May 2, 2014	4884140	686522	0.0%	0.4%	6.3%	6.7%	36.5%	0.0%	0.0%	0.0%	0.0%	1.1%	6.2%	0.0%	0.0%	4.2%	0.0%	0.0%	0.0%	0.6%	0.0%	0.8%	3.8%	29.7%	0.0%	2.2%	1.6%	0.0%
PL234-39	May 8, 2014	4894280	692158	0.0%	1.0%	2.6%	1.0%	48.1%	0.0%	8.0%	0.0%	0.0%	6.5%	0.3%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	15.7%	1.2%	0.3%	10.1%	2.4%	0.0%
PL234-42	May 2, 2014	4893610	686865	0.0%	0.0%	0.0%	0.0%	27.6%	0.0%	5.7%	0.0%	0.0%	4.1%	1.4%	0.0%	0.8%	0.4%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	7.3%	42.4%	0.0%	5.1%	4.6%	0.0%
PL234-45	May 15, 2014	4902450	693721	0.8%	1.7%	5.3%	0.0%	23.0%	0.0%	6.0%	0.0%	0.0%	5.0%	0.4%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	35.5%	13.8%	0.8%	1.1%	5.0%	0.0%
PL234-47	May 12, 2014	4939360	696838	0.8%	0.0%	0.0%	0.0%	48.1%	0.0%	5.0%	0.0%	0.0%	1.5%	3.2%	0.5%	0.0%	1.6%	0.0%	0.0%	0.0%	2.1%	0.4%	7.3%	19.5%	5.2%	0.0%	2.1%	2.8%	0.0%
PL234-48	May 12, 2014	4904520	695547	0.0%	0.8%	1.2%	0.0%	29.3%	0.0%	32.3%	0.0%	0.0%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.1%	0.0%	0.0%	0.5%	1.1%	6.5%	0.0%	0.3%	19.6%	0.0%
PLMP-01	May 26, 2015	4942370	696704	1.3%	3.7%	0.0%	0.0%	32.1%	0.0%	12.8%	0.0%	0.0%	35.6%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	1.3%	2.3%	0.0%	0.0%	2.6%	1.6%	0.0%	3.1%	2.9%	0.0%
SL234-01	May 11, 2012	4913210	671334	0.6%	0.0%	58.6%	0.0%	3.9%	0.0%	0.6%	0.0%	0.0%	0.0%	27.2%	0.0%	0.6%	0.0%	2.6%	0.0%	0.0%	0.3%	0.0%	1.9%	2.3%	0.0%	0.3%	0.3%	0.6%	0.0%
SL234-05	May 7, 2012	4930280	678881	0.4%	0.4%	30.9%	2.1%	37.2%	0.4%	2.0%	0.0%	0.0%	0.4%	15.8%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.4%	0.0%	0.4%	0.0%	1.2%	5.7%	0.7%	1.2%	0.0%
SL234-07	May 11, 2012	4932020	684986	0.0%	0.0%	1.3%	0.3%	24.0%	0.0%	18.1%	0.0%	0.8%	32.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.3%	10.5%	2.5%	0.3%	0.3%	8.2%	0.0%
SL234-09	May 11, 2012	4919050	675500	42.9%	1.0%	9.8%	0.0%	18.7%	0.0%	0.0%	0.0%	1.0%	1.6%	18.7%	0.0%	0.0%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%	0.3%	1.0%	0.0%	0.9%	0.0%	0.7%	0.0%
SL234-11	May 9, 2012	4931380	681796	1.3%	0.0%	16.7%	1.3%	1.3%	0.0%	0.3%	0.0%	0.0%	0.0%	77.7%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SL234-12	May 31, 2012	4934680	693425	1.6%	1.9%	0.3%	0.0%	30.8%	0.0%	14.5%	0.0%	0.0%	18.5%	0.3%	0.0%	0.0%	0.0%	5.6%	1.0%	0.0%	0.0%	0.0%	0.3%	0.7%	0.3%	0.0%	0.0%	24.1%	0.0%
SL234-13	May 9, 2012	4921420	677252	9.7%	0.0%	39.3%	0.0%	14.7%	0.0%	1.3%	0.0%	0.0%	0.0%	20.5%	0.0%	0.6%	0.0%	2.8%	0.3%	0.0%	0.3%	0.0%	0.0%	10.2%	0.0%	0.0%	0.3%	0.0%	0.0%
SL234-16	May 17, 2012	4919590	689620	18.2%	0.0%	4.8%	2.5%	46.3%	0.0%	1.8%	0.0%	0.0%	0.6%	11.2%	0.3%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SL234-17	May 7, 2012	4916650	673776	9.0%	0.3%	6.1%	0.0%	22.8%	0.0%	20.5%	0.0%	1.8%	10.3%	2.1%	12.5%	0.3%	0.0%	1.3%	2.9%	0.0%	0.0%	0.0%	0.6%	1.5%	0.0%	0.0%	0.3%	7.9%	0.0%
SL234-23	May 31, 2012	4930110	685271	7.8%	0.0%	30.3%	2.3%	3.5%	0.0%	1.2%	0.0%	0.0%	0.0%	18.9%	0.0%	0.0%	0.0%	35.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%
SL234-25	May 7, 2012	4920610	674955	8.9%	0.0%	35.4%	1.9%	29.6%	0.0%	0.3%	0.0%	0.0%	0.0%	11.0%	0.0%	1.8%	0.0%	0.0%	0.3%	0.0%	2.4%	0.0%	2.8%	1.2%	3.5%	0.3%	0.0%	0.6%	0.0%
SL234-26	May 9, 2012	4942250	689124	0.0%	0.0%	19.1%	1.2%	14.7%	0.0%	0.6%	0.0%	0.0%	0.0%	62.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.3%	0.0%
SL234-36	May 17, 2012	4919900	681225	5.0%	0.0%	0.6%	0.0%	0.3%	0.0%	18.6%	0.0%	0.0%	0.0%	9.4%	0.0%	0.3%	0.0%	51.2%	0.0%	0.0%	0.0%	0.0%	2.2%	11.7%	0.3%	0.3%	0.0%	0.0%	0.0%
SL234-38	May 23, 2012	4936050	691487	0.0%	0.0%	2.5%	0.0%	18.7%	0.0%	51.8%	0.0%	0.3%	11.3%	0.3%	0.0%	0.0%	0.6%	0.0%	0.6%	0.3%	0.3%	0.0%	0.0%	1.5%	0.0%	0.0%	1.1%	10.8%	0.0%
SL234-44	May 17, 2012	4921050	693726	3.0%	0.3%	37.6%	0.3%	16.6%	0.0%	0.3%	0.0%	0.0%	0.0%	38.9%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%	1.0%	0.0%	0.0%	0.0%
SL234-47	May 17, 2012	4922630	686272	0.0%	0.4%	26.6%	2.1%	22.6%	0.0%	1.2%	0.0%	0.0%	1.1%	43.2%	0.4%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%
SL234-49	May 7, 2012	4928170	679576	5.3%	0.0%	17.6%	0.9%	9.4%	0.0%	1.0%	0.0%	0.0%	0.0%	25.8%	0.0%	1.6%	0.0%	33.1%	0.0%	0.0%	0.3%	0.0%	1.3%	0.0%	1.8%	0.9%	1.0%	0.0%	0.0%
SS_BC-004	May 17, 2006	4883260	675844	0.0%	1.0%	23.3%	0.3%	44.2%	0.0%	3.7%	1.0%	0.0%	1.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.7%	5.3%	0.0%	3.4%	0.7%	2.0%	6.0%	0.0%	7.0%	0.0%
SS_BC-004	June 29, 2006	4883260	675844	0.0%	1.9%	7.9%	0.0%	45.6%	0.0%	4.7%	0.3%	0.0%	5.0%	0.3%	0.0%	0.7%	1.3%	0.6%	0.0%	0.0%	5.0%	0.3%	0.3%	1.3%	4.1%	2.2%	0.7%	17.5%	0.0%
SS_BC-005	July 7, 2006	4884040	675887	0.3%	1.6%	10.4%	0.0%	61.3%	0.0%	2.6%	1.2%	0.0%	4.4%	0.3%	0.3%	0.0%	0.0%	2.6%	0.0%	1.3%	2.0%	0.0%	0.7%	0.3%	0.3%	2.0%	0.3%	8.0%	0.0%
SS_BC-005	May 14, 2007	4884040	675887	1.0%	1.0%	8.8%	2.3%	62.0%	0.0%	6.3%	1.3%	0.0%	1.3%	1.6%	0.0%	0.0%	0.3%	2.0%	0.0%	0.3%	2.3%	1.0%	0.7%	1.3%	0.7%	1.0%	2.3%	2.6%	0.0%
SS_BC-006	July 7, 2006	4884820	675840	0.3%	0.0%	7.7%	2.6%	49.0%	0.0%	0.6%	0.3%	0.0%	0.6%	2.9%	0.0%	0.3%	1.6%	3.2%	0.0%	0.0%	5.2%	1.0%	0.3%	1.9%	7.7%	1.0%	0.0%	13.6%	0.0%
SS_BC-006	October 16, 2006	4884820	675840	0.0%	0.3%	19.9%	2.0%	53.2%	0.0%	2.3%	0.0%	0.0%	9.8%	0.0%	0.0%	0.0%	1.6%	1.3%	0.0%	0.0%	2.6%	2.0%	0.7%	0.3%	0.0%	1.0%	0.3%	2.6%	0.0%
SS_BC-006	May 14, 2007	4884820	675840	1.9%	0.3%	26.1%	0.6%	46.4%	0.0%	1.9%	0.0%	0.0%	3.5%	0.0%	0.0%	0.0%	0.3%	1.3%	0.0%	0.0%	3.2%	0.0%	0.0%	1.8%	1.6%	1.6%	1.9%	7.5%	0.0%
SS_BC-006	May 8, 2009	4884820	675840	0.0%	0.0%	30.9%	0.0%	63.5%	0.0%	1.0%	0.0%	0.0%	1.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.3%	0.0%	0.0%	0.3%	0.3%	0.7%	0.0%
SS_BC-007	May 26, 2006	4885690	675858	0.0%	0.0%	17.0%	0.6%	57.6%	0.0%	0.3%	3.5%	0.0%	2.2%	1.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	4.8%	0.0%	0.6%	0.6%	1.0%	1.6%	0.6%	7.7%	0.0%
SS_BC-007	August 15, 2006	4885690	675858	0.0%	0.0%	6.8%	2.0%	75.3%	0.0%	2.3%	0.0%	0.0%	5.5%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.3%	0.0%	0.7%	0.0%	0.3%	0.0%	0.0%	4.2%	0.0%
SS_BC-009	July 24, 2006	4887870	675047	30.2%	0.0%	2.3%	3.0%	31.7%	0.0%	2.0%	0.0%	0.0%	3.7%	0.6%	0.3%	2.0%	1.7%	0.0%	0.0%	0.0%	0.3%	0.3%	19.7%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%
SS_BC-009	May 14, 2007	4887870	675047	4.9%	0.2%	0.0%	2.4%	30.1%	0.0%	4.5%	0.0%	0.0%	1.7%	0.0%	0.2%	1.8%	0.3%	0.0%	0.0%	0.0%	0.4%	4.8%	47.2%	0.7%	0.0%	0.0%	0.0%	0.3%	0.0%
SS_BC-009	May 8, 2009	4887870	675047	10.0%	0.0%	7.2%	0.8%	55.3%	0.0%	6.3%	0.0%	0.0%	1.9%	0.0%	0.0%	1.1%	3.3%	0.0%	0.0%	0.0%	0.3%	0.0%	4.2%	0.0%	0.0%	0.0%	1.4%	7.7%	0.0%
SS_BC-010	May 25, 2006	4888420	674867	0.3%	0.6%	2.9%	0.0%	55.5%	0.0%	15.6%	1.2%	0.3%	8.5%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	2.8%	0.0%	3.9%	2.8%	0.0%	0.3%	0.6%	3.4%	0.0%
SS_BC-010	July 25, 2006	4888420	674867	0.7%	0.7%	1.3%	0.0%	34.1%	0.0%	10.2%	0.0%	0.0%	17.3%	0.3%	0.0%	0.0%	2.6%	0.0%	0.0%	3.8%	2.2%	0.0%	0.8%	2.7%	0.0%	0.5%	0.0%	22.3%	0.0%
SS_BC-010	October 16, 2006	4888420	674867	0.0%	0.3%	21.9%	1.5%	15.5%	0.0%	15.1%	0.0%	0.2%	22.0%	0.7%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	2.7%	0.0%	0.7%	1.9%	0.0%	0.0%	0.9%	15.4%	0.0%
SS_BC-011	August 8, 2006	4889230	672569	12.5%	2.9%	7.7%	0.6%	38.4%	0.0%	7.0%	0.0%	0.0%	6.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	6.1%	0.0%	0.9%	1.3%	0.3%	0.3%	0.3%	12.4%	0.0%
SS_BC-011B	May 15, 2007	4889280	672842	0.3%	0.0%	0.8%	1.0%	42.0%	0.0%	7.7%	0.0%	0.0%	35.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	1.3%	0.0%	3.9%	1.5%	0.3%	0.0%	0.5%	5.2%	0.0%
SS_BC-014	September 21, 2007	4888740	673923	0.2%	0.0%	1.7%	0.7%	31.1%	0.0%	21.7%	0.0%	1.2%	15.0%	0.5%	0.0%	0.0%	0.4%	0.0%	0.0%	0.7%	0.0%	0.0%	0.1%	1.4%	0.0%	0.0%	2.2%	22.6%	0.0%
SS_BC-015	September 21, 2007	4885240	675232	0.0%	0.0%	13.3%	0.7%	70.3%	0.0%	0.3%	0.0%	0.0%	1.3%	0.3%	0.0%	0.0%	1.0%	0.0%	0.7%	0.0%	0.6%	0.6%	1.3%	0.3%	0.6%	1.9%	5.2%	1.7%	0.0%
SS_BC-016	September 21, 2007	4883440	676394	0.0%	0.7%	16.7%	3.6%	52.8%	0.0%	3.3%	0.0%	0.0%	0.6%	0.0%	0.0%	0.7%	1.0%	0.3%	0.0%	0.3%	9.8%	0.3%	0.0%	2.3%	0.0%	2.0%	1.3%	4.3%	0.0%
SS_ECC-001	May 17, 2006	4883710	678090	3.9%	0.0%	1.6%	0.0%	53.8%	0.0%	0.0%	4.3%	0.0%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	1.0%	1.0%	13.6%	0.0%	3.3%	0.0%	10.9%	0.0%
SS_ECC-001	October 10, 2006	4883710	678090	1.0%	0.0%	5.8%	3.9%	31.8%	0.0%	0.3%	0.0%	0.0%	4.9%	0.3%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	4.9%	1.0%	2.6%	21.4%	0.0%	2.3%	5.1%	14.2%	0.0%
SS_ECC-001	July 3, 2007	4883710	678090	1.0%	0.7%	3.9%	0.0%	54.2%	0.0%	0.3%	0.0%	0.0%	6.5%	0.3%	0.0%	0.0%	2.3%	0.0%	0.7%	0.0%	5.2%	2.0%	1.3%	10.5%	3.6%	0.7%	0.3%	6.6%	0.0%
SS_ECC-002	May 15, 2006	4883830	678578	4.3%	1.0%	4.6%	0.3%	47.1%	0.0%	5.9%	5.9%	0.0%	3.6%	0.3%	0.0%	0.7%	0.0%	0.0%	0.0%	4.2%	2.3%	0.0%	0.3%	0.3%	4.6%	3.6%	0.0%	10.5%	0.0%
SS_ECC-002	June 27, 2006	4883830	678578	9.7%	1.6%	0.6%	0.6%	58.3%	0.0%	3.5%	0.0%	0.0%	1.0%	0.6%	0.0%	0.0%	0.6%	0.0%	0.0%	1.6%	1.3%	0.3%	0.3%	1.3%	0.3%	0.3%	0.0%	17.8%	0.0%
SS_ECC-004	July 19, 2006	4885350	680974	21.5%	1.3%	4.4%	0.0%	52.9%	0.0%	12.2%	0.3%	1.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.9%	1.3%	0.0%	0.0%	0.0%	3.2%	0.0%
SS_ECC-004	August 15, 2008	4885350	680974	19.5%	0.0%	5.8%	0.0%	30.4%	0.0%	9.8%	0.0%	0.3%	24.4%	0.3%	0.0%	0.3%	0.0%	0.3%	0.0%	0.9%	0.6%	0.0%	2.6%	0.0%	0.0%	0.9%	0.3%	3.7%	0.0%
SS_ECC-005	September 25, 2007	4885690	680692	7.2%	1.6%	8.4%	2.6%	49.0%	0.0%	12.5%	0.0%	0.0%	5.5%	0.3%	0.6%	3.9%	0.3%	0.0%	0.0%	0.0%	1.6%	0.3%	2.5%	0.0%	0.0%	1.0%	0.3%	1.3%	0.0%
SS_ECC-006	July 27, 2006	4885910	679533	0.6%	0.0%	0.6%	0.2%	33.3%	0.0%	2.8%	0.3%	0.0%	0.2%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	2.5%	2.5%	0.0%	0.3%	36.5%	2.7%	0.0%	0.2%	15.4%	0.0%
SS_ECC-006	October 10, 2006	4885910	679533	0.0%	0.3%	1.7%	0.3%	35.9%	0.0%	2.3%	0.0%	0.0%	6.2%	2.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.3%	0.9%	0.7%	1.3%	25.3%	0.0%	0.0%	1.1%	21.0%	0.0%
SS_ECC-006	May 15, 2007	4885910	679533	0.0%	0.9%	3.1%	0.9%	22.5%	0.0%	4.7%	0.0%	0.0%	9.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	2.8%	0.6%	0.9%	28.6%	3.2%	1.2%	4.6%	16.2%	0.0%
SS_ECC-006	August 3, 2007	4885910	679533	0.0%	0.0%	2.3%	0.3%	30.0%	0.0%	3.4%	0.0%	0.0%	31.2%	0.6%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	3.0%	0.3%	0.3%	13.1%	1.8%	0.3%	2.2%	9.7%	0.0%
SS_ECC-006	July 17, 2008	4885910	679533	0.3%	0.0%	0.3%	0.6%	45.4%	0.0%	0.9%	0.6%	0.0%	11.4%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	24.3%	3.4%	0.3%	1.9%	9.5%	0.0%
SS_ECC-006	October 6, 2008	4885910	679533	0.3%	0.3%	2.5%	2.2%	27.4%	0.0%	3.8%	0.0%	0.0%	4.6%	4.2%	0.0%	0.0%	1.0%	0.0%	0.6%	0.0%	0.0%	2.6%	3.2%	17.1%	0.3%	0.0%	6.4%	23.1%	0.0%
SS_ECC-008	September 24, 2007	4886460	678242	0.3%	1.3%	17.2%	5.2%	24.0%	0.0%	10.5%	0.0%	0.0%	8.5%	0.6%	0.0%	0.0%	0.6%	0.6%	0.0%	0.0%	4.7%	0.0%	0.6%	3.4%	0.0%	4.4%	9.6%	8.5%	0.0%
SS_ECC-008	October 6, 2008	4886460	678242	0.9%	0.2%	0.5%	1.8%	24.3%	0.0%	14.0%	0.0%	0.0%	16.1%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.7%	0.5%	1.0%	13.7%	0.0%	0.3%	6.3%	18.7%	0.0%
SS_ECC-009	September 24, 2007	4886640	678312	0.0%	0.0%	8.2%	3.0%	66.6%	0.0%	9.8%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	1.6%	0.0%	0.3%	0.6%	0.0%	0.0%	3.0%	2.9%	0.0%
SS_ECC-009	October 7, 2008	4886640	678312	0.0%	0.3%	19.5%	13.0%	49.7%	0.0%	1.3%	0.0%	0.0%	1.9%	0.9%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.3%	0.0%	2.3%	2.7%	0.0%	1.0%	2.5%	3.7%	0.0%
SS_ECC-010	May 24, 2006	4887310	678589	0.0%	0.0%	0.0%	0.0%	69.4%	0.0%	2.6%	4.1%	0.0%	3.6%	1.3%	0.0%	0.0%	0.0%	0.7%	0.7%	0.0%	11.6%	0.6%	2.5%	2.3%	0.0%	0.3%	0.3%	0.0%	0.0%
SS_ECC-010	August 1, 2006	4887310	678589	5.4%	0.5%	0.3%	0.2%	59.8%	0.0%	0.9%	0.9%	0.0%	5.3%	0.3%	0.6%	0.0%	0.0%	0.6%	0.0%	1.1%	5.4%	0.5%	0.3%	8.2%	0.3%	0.3%	0.8%	8.3%	0.0%
SS_ECC-011	May 18, 2006	4887530	678361	0.0%	0.0%	0.3%	0.3%	46.8%	0.0%	15.5%	1.3%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	4.4%	0.0%	23.0%	0.0%	3.9%	0.8%	0.0%	2.7%	0.0%
SS_ECC-011	August 17, 2006	4887530	678361	0.0%	0.0%	0.3%	0.0%	44.7%	0.0%	14.0%	2.3%	0.3%	4.2%	0.3%	0.0%	0.7%	0.3%	0.0%	0.0%	0.0%	0.9%	0.0%	3.9%	0.0%	0.6%	0.0%	0.6%	27.0%	0.0%
SS_ECC-011	August 8, 2007	4887530	678361	0.0%	0.0%	1.0%	0.0%	42.6%	0.0%	15.9%	0.0%	0.0%	5.8%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	4.8%	0.3%	7.7%	0.0%	1.5%	0.0%	0.0%	18.9%	0.0%
SS_ECC-011	July 11, 2008	4887530	678361	0.3%	0.3%	2.5%	0.0%	19.8%	0.0%	7.4%	0.0%	1.7%	2.9%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	13.1%	0.7%	1.6%	0.8%	2.1%	45.9%	0.0%
SS_ECC-013	May 16, 2006	4889830	677647	12.2%	0.3%	0.0%	0.7%	47.3%	0.0%	2.6%	0.0%	0.0%	1.0%	0.0%	0.0%	2.6%	0.0%	0.6%	0.0%	0.0%	1.6%	1.0%	9.8%	0.0%	12.4%	0.6%	0.0%	7.3%	0.0%
SS_ECC-013	August 10, 2006	4889830	677647	35.5%	1.6%	1.6%	0.0%	31.0%	0.0%	3.8%	0.0%	1.9%	1.9%	0.0%	0.0%	11.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%	7.2%	0.0%
SS_ECC-013	August 8, 2007	4889830	677647	16.9%	0.0%	9.3%	0.0%	33.6%	0.0%	6.9%	0.0%	0.6%	2.2%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	3.2%	0.9%	0.0%	0.0%	0.0%	24.7%	0.0%
SS_ECC-013	July 25, 2008	4889830	677647	1.1%	0.0%	36.9%	0.3%	33.1%	0.3%	2.2%	0.0%	0.3%	0.0%	0.3%	0.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.3%	1.9%	8.2%	0.6%	0.2%	0.0%	0.3%	12.6%	0.0%
SS_ECC-014	August 21, 2006	4891640	677476	28.9%	0.0%	0.3%	0.0%	41.1%	0.0%	6.5%	0.0%	0.0%	0.3%	0.0%	0.0%	0.6%	0.0%	1.3%	0.0%	1.0%	0.7%	0.0%	17.3%	0.0%	0.3%	0.3%	0.0%	1.0%	0.0%
SS_ECC-014	August 11, 2008	4891640	677476	17.3%	0.0%	4.5%	0.0%	42.4%	0.0%	5.0%	0.0%	0.0%	0.3%	0.3%	1.1%	0.0%	0.9%	17.1%	0.0%	0.6%	0.0%	1.5%	2.6%	0.0%	0.0%	2.1%	0.6%	3.6%	0.0%
SS_ECC-015	May 24, 2006	4891840	677037	0.0%	0.6%	2.3%	1.6%	66.5%	0.0%	0.6%	1.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.7%	0.0%	0.9%	5.3%	0.7%	0.0%	1.0%	13.2%	0.0%
SS_ECC-015	August 9, 2006	4891840	677037	0.0%	0.0%	0.3%	0.3%	30.8%	0.0%	1.3%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	21.8%	0.0%	0.7%	23.6%	0.0%	0.0%	0.3%	17.9%	0.0%
SS_ECC-015	July 15, 2008	4891840	677037	0.3%	0.3%	0.3%	1.0%	48.7%	0.0%	0.6%	0.0%	0.0%	1.2%	0.0%	0.7%	0.0%	1.3%	1.9%	0.0%	0.0%	3.6%	0.3%	2.5%	18.5%	0.0%	1.9%	7.9%	8.9%	0.0%
SS_ECC-019	August 22, 2006	4893980	679588	2.0%	0.0%	0.3%	0.0%	54.3%	0.0%	1.6%	0.7%	0.0%	4.1%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	6.4%	0.3%	0.3%	19.6%	2.7%	0.3%	1.3%	5.5%	0.0%
SS_ECC-019	October 11, 2006	4893980	679588	5.8%	0.3%	4.8%	1.9%	30.5%	0.0%	0.6%	0.3%	0.0%	1.3%	6.2%	0.0%	0.0%	0.6%	0.0%	0.3%	0.6%	7.7%	0.0%	2.2%	13.5%	0.0%	0.0%	7.7%	15.5%	0.0%
SS_ECC-019	July 23, 2008	4893980	679588	6.3%	0.0%	3.0%	0.0%	60.9%	0.0%	0.6%	0.3%	0.0%	0.0%	0.6%	0.0%	0.0%	2.1%	0.7%	0.0%	0.0%	4.3%	2.2%	7.2%	5.6%	0.7%	0.0%	2.9%	2.5%	0.0%
SS_ECC-019	October 7, 2008	4893980	679588	4.2%	0.3%	9.7%	0.3%	40.9%	0.0%	0.6%	0.0%	0.0%	1.2%	27.5%	0.0%	0.0%	0.6%	0.0%	0.6%	0.0%	0.0%	0.3%	1.6%	5.0%	0.0%	1.3%	2.2%	3.5%	0.0%
SS_ECC-022	October 7, 2008	4883480	680000	0.9%	0.9%	0.0%	6.5%	74.9%	0.0%	0.9%	0.0%	0.0%	0.3%	7.6%	0.9%	0.3%	1.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%	0.3%	0.0%	1.4%	0.3%	1.8%	0.0%
SS_ECC-024	September 24, 2007	4886240	678981	0.0%	6.6%	6.9%	0.3%	22.0%	0.0%	2.9%	0.3%	0.0%	14.4%	1.4%	0.0%	0.0%	2.8%	0.0%	0.0%	0.0%	2.2%	0.0%	1.7%	7.7%	0.0%	0.8%	3.0%	26.8%	0.0%
SS_ECC-024	July 23, 2008	4886240	678981	0.3%	0.0%	11.5%	0.9%	44.8%	0.0%	0.6%	0.0%	0.0%	3.5%	0.6%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	0.9%	0.0%	0.3%	11.2%	2.9%	0.6%	2.4%	16.8%	0.0%
SS_ECC-024	October 6, 2008	4886240	678981	0.3%	0.3%	1.0%	2.8%	9.5%	0.0%	0.6%	0.0%	0.0%	11.4%	1.3%	0.0%	0.0%	3.2%	0.3%	0.3%	0.0%	0.0%	0.0%	1.0%	28.7%	0.0%	0.0%	6.1%	33.1%	0.0%
SS_LST-003	May 24, 2007	4879040	665253	0.3%	0.0%	0.0%	3.1%	44.9%	0.0%	1.9%	0.0%	0.0%	6.5%	0.0%	0.0%	0.0%	1.9%	0.3%	0.0%	0.0%	0.6%	0.0%	2.8%	4.3%	32.0%	0.0%	0.0%	1.2%	0.0%
SS_LST-011	May 24, 2007	4881120	668910	0.9%	0.0%	0.7%	0.8%	47.3%	0.0%	1.8%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	5.8%	37.3%	0.5%	0.0%	1.0%	0.0%	0.0%	0.0%
SS_LST-016	September 17, 2007	4882310	670657	0.0%	0.3%	7.5%	1.0%	23.0%	0.0%	1.0%	0.0%	0.0%	4.3%	0.3%	0.0%	0.0%	3.6%	0.0%	0.0%	0.0%	0.3%	0.7%	2.6%	29.0%	0.0%	0.3%	7.9%	18.1%	0.0%
SS_LST-018	September 20, 2007	4885890	671214	0.0%	2.2%	1.9%	0.3%	43.5%	0.0%	14.9%	0.0%	0.0%	10.0%	3.9%	0.0%	0.0%	2.6%	0.2%	0.0%	3.9%	0.5%	0.0%	1.0%	0.3%	0.0%	0.0%	1.6%	12.7%	0.0%
SS_LST-020	May 22, 2007	4885180	673037	27.5%	0.0%	21.9%	2.5%	19.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.3%	9.5%	0.0%	0.5%	0.3%	0.5%	7.1%	1.0%	0.0%	0.0%	0.8%	7.8%	0.0%
SS_LST-021	September 17, 2007	4883010	670035	0.0%	1.4%	20.8%	0.3%	44.8%	0.0%	0.7%	0.0%	0.0%	7.4%	2.7%	0.0%	0.0%	0.7%	0.0%	0.7%	0.0%	1.0%	0.0%	2.3%	1.0%	0.0%	1.0%	5.1%	10.1%	0.0%
SS_LST-022	September 17, 2007	4884450	669994	10.0%	0.3%	12.2%	4.9%	46.2%	0.0%	14.9%	0.0%	0.0%	2.6%	1.3%	0.0%	0.0%	0.0%	0.0%	0.3%	0.7%	0.6%	0.6%	0.3%	0.0%	0.0%	0.0%	1.3%	2.8%	0.0%
SuC01	May 26, 2010	4911530	681605	50.8%	0.2%	0.4%	0.0%	8.9%	0.0%	0.9%	0.0%	0.0%	0.2%	0.9%	0.2%	0.0%	0.2%	36.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.5%	0.0%

Appendix A: Benthos data for each sampling event.

SuC01	July 17, 2012	4911530	681605	29.1%	0.0%	3.3%	0.0%	22.5%	0.0%	23.3%	0.0%	0.2%	0.0%	9.3%	2.3%	0.2%	0.0%	7.7%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.4%	0.0%
SuC01	June 5, 2014	4911530	681605	47.6%	0.0%	0.5%	0.0%	41.7%	0.0%	7.1%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	0.5%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
SuC01	July 14, 2016	4911530	681605	29.6%	0.0%	0.5%	0.3%	53.5%	0.0%	6.9%	0.0%	0.0%	0.0%	3.5%	0.0%	0.0%	0.0%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%
URB-020	May 19, 2016	0	0	0.0%	0.0%	0.0%	0.0%	52.6%	0.0%	0.5%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	18.0%	0.0%	0.0%	0.6%	0.0%	26.4%	0.0%	0.7%	0.0%	0.0%	0.9%	0.0%
URB-023	May 17, 2016	0	0	25.8%	0.0%	0.7%	0.0%	23.3%	0.0%	36.2%	0.0%	0.0%	0.6%	1.6%	0.0%	0.0%	3.7%	0.9%	0.0%	0.0%	0.3%	0.3%	0.0%	0.9%	2.1%	0.6%	1.9%	1.2%	0.0%
URB-025	May 30, 2016	0	0	10.4%	0.0%	0.5%	0.0%	75.6%	0.0%	7.6%	0.0%	0.0%	0.2%	1.7%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.2%	0.2%	2.3%	0.0%
URB-032	May 20, 2016	0	0	13.8%	0.3%	0.8%	0.0%	46.4%	0.0%	9.3%	0.0%	0.0%	0.9%	5.2%	0.0%	0.5%	0.3%	3.7%	0.0%	0.0%	0.0%	0.2%	8.6%	0.4%	4.2%	0.5%	0.8%	3.8%	0.0%
URB-038	May 20, 2016	0	0	0.3%	0.0%	0.0%	0.3%	78.3%	0.0%	9.4%	0.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	1.0%	0.0%	1.7%	0.0%	0.0%
URB-048	May 31, 2016	0	0	2.1%	0.3%	0.0%	0.5%	43.8%	0.0%	19.0%	0.0%	0.9%	6.0%	0.3%	0.0%	0.0%	0.2%	25.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.8%	0.4%	0.0%	0.0%	0.2%	0.0%
URB-050	May 25, 2016	0	0	0.0%	0.0%	0.0%	0.0%	17.0%	0.0%	1.7%	0.0%	0.0%	0.3%	0.3%	0.0%	2.5%	0.0%	59.6%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.3%	17.8%	0.0%
URB-066	May 25, 2016	0	0	0.4%	0.0%	0.0%	0.0%	71.8%	0.0%	2.4%	0.0%	1.1%	0.0%	2.1%	0.4%	0.4%	1.4%	13.8%	0.0%	0.0%	0.7%	0.7%	3.1%	0.0%	0.7%	0.0%	0.3%	1.0%	0.0%
URB-095	May 26, 2016	0	0	4.7%	0.0%	0.6%	0.0%	49.3%	0.0%	2.5%	0.0%	0.0%	0.3%	3.7%	0.0%	2.1%	0.0%	11.2%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	24.7%	0.0%