

Coldwater Streams Water Temperature Monitoring Report (2011 – 2015)

March 2017



**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

The Coldwater Streams Water Temperature Monitoring Program has been undertaken by Kawartha Conservation on a yearly basis since 2006. Coldwater streams are particularly sensitive to impacts associated with development and climate change, and are a regulated feature as per the *Conservation Authorities Act*.

This report summarizes water temperature data for 32 locations within or immediately downstream of sensitive coldwater streams within Kawartha Conservation's jurisdiction. Although data were not attainable for every-year at every-site over the 10-year period, enough exists to obtain a reasonable characterization of current conditions and to provide a preliminary dataset for trend detection.

Available data indicates that approximately half of all locations that exist directly within coldwater streams have relatively warm (degraded) water temperatures based on the following key indicators: Brook Trout Optimal Days, Brook Trout Lethal Days, and Thermal Regime. These locations have elevated water temperatures that are, or are likely to limit sensitive aquatic life such as Brook Trout. Several sites including those within Fleetwood Creek, Nonquon River, and Martin Creek North have particularly warm temperature profiles. The thermal properties of all streams are influenced by climatic conditions on a yearly basis and show distinct seasonal patterns. The warmest streams (Poor sites) are more variable and closely related to ambient air temperatures while the coldest streams (Good sites) are more stable, particularly in the summer months, and less-related to air temperatures.

Opportunities to enhance this Program to better characterize the condition of coldwater streams include: monitoring for sensitive aquatic life, continuing monitoring of existing sites to build long-term datasets for trend detection, increasing geographic coverage of sites, and better quality control of field data.



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1.1 Introduction

Of the approximately 2,876km of flowing watercourses (e.g., streams and rivers) that exist within Kawartha Conservation's jurisdiction, 588km or 21% of them are classified as sensitive coldwater aquatic ecosystems. These systems are significant in that they have been documented as supporting sensitive aquatic life such as Brook Trout (OMNR 2005, and OMNR 2006). Brook Trout are a native top predator fish within these systems and of particular management concern because their populations across southern Ontario are in widespread decline. Brook Trout are sensitive to human disturbances because they, along with many aquatic organisms living in coldwater streams (e.g., stoneflies), require continuous inputs of cold groundwater and clean highly oxygenated water to survive. As such, thriving Brook Trout populations indicate excellent aquatic ecosystem health within a coldwater stream.

Changes to the water temperature regime, specifically warming of the stream, has profound consequences on resident coldwater aquatic life. When temperatures within these streams rise beyond certain thresholds it places stress on, or completely eliminates, resident coldwater species and tends to shift the naturally-occurring sensitive and relatively uncommon aquatic community to one that is represented by common and tolerant species that colonize the stream after taking advantage of the degraded conditions. Stream warming and other land use disturbances that degrade or fragment aquatic habitat in these streams, along with the introductions of non-native competitor species and climate change, have been noted as key drivers of population declines of Brook Trout.

The purpose of the Coldwater Streams Water Temperature Monitoring Program is to evaluate how well coldwater streams are doing within Kawartha Conservation's jurisdiction, in terms of their existing thermal regime and whether or not they are likely to remain capable of supporting sensitive coldwater aquatic life. Water temperature data have been routinely collected at multiple locations along known coldwater streams since 2006. This report provides a summary of the data collected.

1.2 Methods

From 2006 to 2015, portable water temperature data loggers were deployed by Kawartha Conservation staff (with assistance from students attending Fleming College, and Lindsay Collegiate Vocational Institute and I.E. Weldon high schools) at 32 road-stream crossings within the following subwatersheds known to contain coldwater streams: South Lake Scugog Tributaries (5), Pigeon River (4), Nonquon River (4), Fleetwood Creek (4), East Cross Creek (4), Blackstock Creek (3), Martin Creek North (2), Pigeon Lake Tributaries (2), Janetville Creek (1), Emily Creek (1), Nogies Creek (1), and Mariposa Brook (1).

Hourly data were collected during the summer (June, July, and August) from 2006 to 2010 at most sites and year-round from 2011 to 2015 at all sites. Site selection was based on obtaining data within each of the subwatersheds containing coldwater streams, at more locations in relatively longer coldwater streams, and within locations where multiple years of data already exist. The majority of sites (27) were located directly within a coldwater stream, and some sites (5) were located immediately downstream of a coldwater stream at the first practical road-stream crossing. In terms of quality control all data were flagged when daily water temperatures were greater than 30°C, less than -1°C, fluctuated by more than 10°C, and best professional judgement was used to remove any suspected outliers. Data availability is not consistent among any given year at any given site due to circumstances such as: malfunctioning loggers, lost loggers, data quality control, among other factors. Air temperatures from 2006 to 2015 were obtained from the Blackstock Climate Station, operated by Environment Canada, which was chosen to represent climatic conditions.

All remaining data were used to summarize and rank the quality of Brook Trout habitat at each site according to its average thermal properties with a general premise of 'colder is better'. **Table 1** lists the various approaches and metrics that were used to evaluate the thermal properties of each site on a yearly basis where data was available.



Brook Trout habitat quality was determined using three primary criteria: Optimal Brook Trout Days, Lethal Brook Trout Days, and Thermal Regime. Optimal Brook Trout Days were considered acceptable if >50% and not acceptable if <50%, Lethal Brook Trout Days were considered acceptable if <5% and unacceptable if >5%, and Thermal Regime was considered acceptable if coldwater, cold-coolwater, or coolwater, and unacceptable if cool-warmwater, or warmwater. Brook Trout habitat quality at each of the 27 sites located directly on coldwater streams was then categorized as being 'Good: coldest temperatures that do not limit coldwater life' if average conditions of all three criteria were considered acceptable, 'FairToGood: relatively cold temperatures that likely do not limit coldwater life' if average conditions of two of the three criteria were considered acceptable; 'FairToPoor: relatively warm temperatures that likely limit coldwater life' if average conditions of two of three criteria were considered unacceptable; and 'Poor: warmest temperatures that limit coldwater life' if average conditions of all three criteria were considered unacceptable.

1.3 Results and Discussion

Site specific results including their location, data availability, annual thermal characteristics, and trend in thermal characteristics over time are summarized in **Appendix A**, field photographs of each site are provided in **Appendix B**, and aerial images of each site are provided in **Appendix C**.

The data indicates that approximately half (48%, or 13 sites) of all sites have relatively warm temperatures that are, or likely to, limit sensitive coldwater life within streams that should be capable of supporting them. Brook Trout Habitat Quality was categorized as Good at 26% of sites, FairToGood at 26% of sites, FairToPoor at 22% of sites, and Poor at 26% of sites (**Table 2** and **Figure 1**). Sites classified as 'Poor' are the warmest sites, having daily maximum water temperatures ranging from 26.5 to 29.3°C, average daily maximum water temperatures ranging from 21.4 to 23.6°C, average optimal brook trout days ranging from 1-6%, average lethal brook trout days ranging from 6-31%, and thermal regimes of cool-warmwater to warmwater. Poor sites are located in the subwatersheds of Fleetwood Creek, Nonquon River, and Martin Creek North. TLFC002 and TLFC003 stand out as having the warmest characteristics of all sites, and three of top four warmest sites are located in Fleetwood Creek. Reasons why these sites are Poor include: natural physiography where temperatures are naturally at the upper threshold for supporting Brook Trout (e.g., TLMCN001 where no major subwatershed impacts are apparent), land use disturbance and particularly thermal warming from on-line ponds (e.g., TLFC002 and TLFC003 are some of the warmest sites that are located not too far downstream of one of the coldest site and several on-line ponds exist in-between). Sites classified as 'Good' are the coldest sites, having maximum daily water temperatures ranging from 15.7 to 21.6°C, average daily maximum water temperatures ranging from 11.8 to 17.0°C, average optimal brook trout days ranging from 53 to 100%, average lethal brook trout days of 0%, and thermal regimes of coldwater to coolwater. Good sites are located in the subwatersheds of Pigeon River, East Cross Creek, Fleetwood Creek, and South Lake Scugog Tributaries. TLPR005, TLFC001, and TLECC011b stand out as the top three sites exhibiting the coldest characteristics of all sites, and three of the top five coldest sites are located in East Cross Creek.

Thermographs for all sites, presented as daily average maximums in **Figure 2**, exhibit common seasonal patterns. In the spring there is a general warming trend. At the beginning of March, temperatures between sites range from 0 to 5°C and increase to 11 to 22°C by the end of May. In the summer temperatures at each site typically reach their peak and range from 11 to 26°C. In the fall there is a general cooling trend. At the beginning of September, temperatures range from 11 to 22°C and decrease to 2 to 6°C by the end of November. In the winter, temperatures reach their lowest and many streams are apparently frozen with temperatures ranging from 0 to 5°C. Temperatures between sites are consistently closer together from October to April (a difference of approx. 5°C from the coldest site to the warmest site) whereas they are consistently further apart from June to August (a difference of approx. 15°C). During April, May, and September, temperatures between sites are more variable and not as consistently closer together or further apart from each other.



There are some distinctive properties of thermographs depending on Brook Trout Habitat Quality classifications (**Figure 3**), particularly during the summer period, when thermographs are consistently farther apart. In Good quality habitat thermographs (as represented on the figure by TLPR005), temperatures are not as variable (more stable) over the course of the year in terms of differences between maximum to minimum temperatures, as well as on a seasonal, and daily basis. It is evident that these colder sites buffer the direct influence of air temperatures as Good sites are much cooler than air temperatures in the summer and much warmer than air temperatures during the winter months. Typically these sites remain open and do not freeze for the entire winter. In Poor quality habitat thermographs, as represented on the figure by TLMCN001, are more variable (less stable) in terms of differences between maximum and minimum temperatures, as well as on a seasonal and daily basis. Water temperature patterns for these sites more closely follow air temperature patterns, and tend to freeze in winter months.

Figure 4 shows a comparison between summer (June, July, and August) thermal properties averaged for all sites within coldwater streams against data from coldwater streams in neighbouring subwatersheds outside of Kawartha Conservation's jurisdiction (Lynde Creek, Bowmanville Creek, and Oshawa Creek). The coldwater streams in Kawartha Conservation's jurisdiction are generally warmer, exhibiting higher maximum and average temperatures, and having less optimal days and more lethal days for Brook Trout. The reasons for this discrepancy has not been investigated and may be an accurate generalization or else related to other factors such as geographic location (i.e., sites in neighbouring streams might only be located in good coldwater streams that are known to support thriving Brook Trout populations), among others.

Figure 5 depicts a pattern in the percentage of sites within Good, and Poor, Brook Trout Habitat Quality classifications over time, when combining all sites. There is a trend approximately every five years whereby the dataset alternates between years that have the highest percentage of Poor sites and lowest percentage of Good sites (e.g., 2007, 2012), and years that have the highest percentage of Good sites and lowest percentage of Poor sites (2009, 2014). This trend is apparently related to air temperature fluctuations over time, with years that have the highest percentage of Good sites also having the hottest maximum air temperatures, and years that have the highest percentage of Poor sites also having the coolest maximum air temperatures. There is considerable variability over time in terms of percentage of sites in any given category, which may be due in part to fluctuations in air temperature but also may be reflective in the variability in the number of sites with data per year. For example prior to 2011 the average percentage of sites with data was only 14, compared to 24 sites during the period since 2011. In terms of trends over time for each site, data indicate most sites have either temperature profiles that have remained relatively stable or do not have enough data (5 years minimum) on which to speculate. Of the remaining sites, gradual decreases over time in water temperatures have occurred in TLBC008, and recent decreases have occurred in TLECC001, TLECC012, TLLST004, and TLPRgauge.

There are several opportunities to enhance the Coldwater Streams Water Temperature Monitoring Program to obtain a better characterization of the condition of coldwater streams. Ultimately, routine monitoring of aquatic life (e.g., fishes and invertebrates) is most desired for confirming whether or not these streams remain capable of supporting sensitive aquatic ecosystems. In the absence of such a program, water temperature monitoring remains the most reliable approach to inferring stream condition at this time. Continuing monitoring at sites directly on coldwater streams is necessary to ensure climatic variability is captured as well as to contribute to trend detection particularly on the following sites that have a limited data record: TLEC001, TLLST010, TLMCN002, TLNR014, TLPL006, and TLPR002. Relocating or adding sites in Mariposa Brook, Nogies Creek, and eastern South Lake Scugog Tributaries is needed to ensure sample locations exist directly within coldwater sections of those subwatersheds, rather than just at the closest downstream stream-road crossings. Increased geographic coverage of the program would also be beneficial in filling data gaps along the stream length through additional sites, particularly between existing sites that exhibit different classifications of Brook Trout Habitat Quality (e.g., between TLFC001 and TLFC003, and TLPRgauge and TLPR002) and upstream of existing Poor sites (e.g., upstream of TLMCN001, TLNR008, and TLNR004). Furthermore, enhanced data quality control should be undertaken by visiting sites periodically during low-flow periods to ensure water temperature and not air temperature is being recorded, as well as hiding and securing data loggers more strategically in-stream and tracking road construction projects to prevent the misplacement of data loggers.



1.4 References

Chu, C., N. Jones, A. Piggott, J. Buttle. 2009. Evaluation of a Simple Method to Classify the Thermal Characteristics of Streams Using a Nomogram of Daily Maximum Air and Water Temperatures. *N. Amer. Journ. Fish. Manage.* 29:1605–1619.

Eakins, R. J. 2016. Ontario Freshwater Fishes Life History Database. Version 4.73. Online database. (<http://www.ontariofishes.ca>), accessed 10 January 2017.

OMNR (Ontario Ministry of Natural Resources). 2005. Coldwater Stream Strategy Peterborough Area. French Planning Services Inc.

OMNR (Ontario Ministry of Natural Resources). 2006. Thermal designations and in-water work timing restrictions – Lake Scugog Watershed. Correspondence received February 27, 2006 by Kawartha Conservation from Aurora District Ministry of Natural Resources.



Table 1: List of indicators used to evaluate the temperature profile of each site.

Term	Definition	Significance
Daily maximum	The maximum recorded water temperature value in any day over a given time period.	An instantaneous measure of how warm a site gets over the summer. The higher the value, the warmer the site.
Average daily maximum	The average value of all daily maximum recorded water temperature values.	A continuous measure of how consistently warm a stream gets over the course of a summer. The higher the value, the warmer the site.
Optimal Brook Trout Days	The number of days in June, July, and August where the maximum daily temperature values are less than 17°C, expressed as a percentage of the total number of days having data over the same period.	A continuous measure of how often the stream is suitable for optimal Brook Trout growth. The higher the value the better the site is for Brook Trout populations.
Lethal Brook Trout Days	The number of days in June, July, and August where the maximum daily temperature values are greater than 25°C (Eakins, 2016), expressed as a percentage of the total number of days having data over the same period.	A continuous measure of how often the stream is unsuitable for Brook Trout growth. The higher the value the worse the site is for Brook Trout populations.
Thermal Regime Classification	Classified as coldwater, cold-coolwater, coolwater, cool-warmwater, or warmwater as defined by Chu et al. (2009) which is based on the relationship between maximum water temperatures and maximum air temperatures of streams in Ontario.	An instantaneous measure of thermal regime; coldwater, cold-coolwater, and coolwater are typically associated with streams that are capable of supporting Brook Trout.

Table 2: Brook Trout habitat quality and data summaries, expressed as averages.

Brook Trout Habitat Quality	SiteID	MapID	Subwatershed	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Avg Optimal Brook Trout Days (%)	Avg Lethal Brook Trout Days (%)	Thermal Regime Classification
Good	TLPR005	1	Pigeon River	15.7	11.8	99	0	coldwater
Good	TLFC001	2	Fleetwood Creek	15.7	13.3	100	0	coldwater
Good	TLECC011b	3	East Cross Creek	17.8	13.2	97	0	coldwater
Good	TLECC001	4	East Cross Creek	19.3	15.7	63	0	cold-coolwater
Good	TLECC012	5	East Cross Creek	19.5	16.1	69	0	cold-coolwater
N/A	TLLST009	6	South Lake Scugog Tributaries	20.0	15.8	78	0	cold-coolwater
Good	TLPRgauge	7	Pigeon River	20.1	16.6	62	0	coolwater
Good	TLLST003	8	South Lake Scugog Tributaries	21.6	17.0	53	0	cold-coolwater
N/A	TLLST010	9	South Lake Scugog Tributaries	21.5	17.3	43	0	coolwater
FairToGood	TLEC001	10	Emily Creek	22.2	18.5	18	0	coolwater
FairToGood	TLPL001	11	Pigeon Lake Tributaries	22.3	17.7	26	0	coolwater
FairToGood	TLNR014	12	Nonquon River	22.7	18.4	30	0	coolwater
FairToGood	TLLST004	13	South Lake Scugog Tributaries	22.7	18.7	33	0	coolwater
FairToGood	TLBC008	14	Blackstock Creek	23.1	18.7	21	0	coolwater
FairToGood	TLPL006	15	Pigeon Lake Tributaries	23.1	18.5	26	0	cold-coolwater
FairToGood	TLBC006	16	Blackstock Creek	23.3	19.0	18	0	coolwater
N/A	TLBCgauge	17	Blackstock Creek	23.6	19.4	13	1	cool-warmwater
FairToPoor	TLPR002	18	Pigeon River	23.9	18.8	22	1	cool-warmwater
FairToPoor	TLMCN002	19	Martin Creek North	24.4	19.4	14	1	cool-warmwater
FairToPoor	TLPR001	20	Pigeon River	25.6	20.1	9	3	cool-warmwater
FairToPoor	TLLST002	21	South Lake Scugog Tributaries	25.7	20.1	9	5	cool-warmwater
FairToPoor	TLECC002	22	East Cross Creek	26.1	21.3	4	5	cool-warmwater
FairToPoor	TLECC016	23	Janetville Creek	26.1	20.7	6	4	cool-warmwater
N/A	TLMB004	24	Mariposa Brook	26.3	21.1	6	8	warmwater
Poor	TLNR011	25	Nonquon River	26.5	21.4	4	8	cool-warmwater
Poor	TLNR008	26	Nonquon River	26.9	21.7	4	11	warmwater
N/A	TLNC001	27	Nogies Creek	26.9	21.8	1	6	cool-warmwater
Poor	TLMCN001	28	Martin Creek North	27.1	21.5	3	9	warmwater
Poor	TLFC004	29	Fleetwood Creek	27.1	21.9	3	10	warmwater
Poor	TLNR004	30	Nonquon River	27.7	22.5	3	17	warmwater
Poor	TLFC003	31	Fleetwood Creek	29.3	23.6	2	31	warmwater
Poor	TLFC002	32	Fleetwood Creek	29.3	23.6	2	31	warmwater



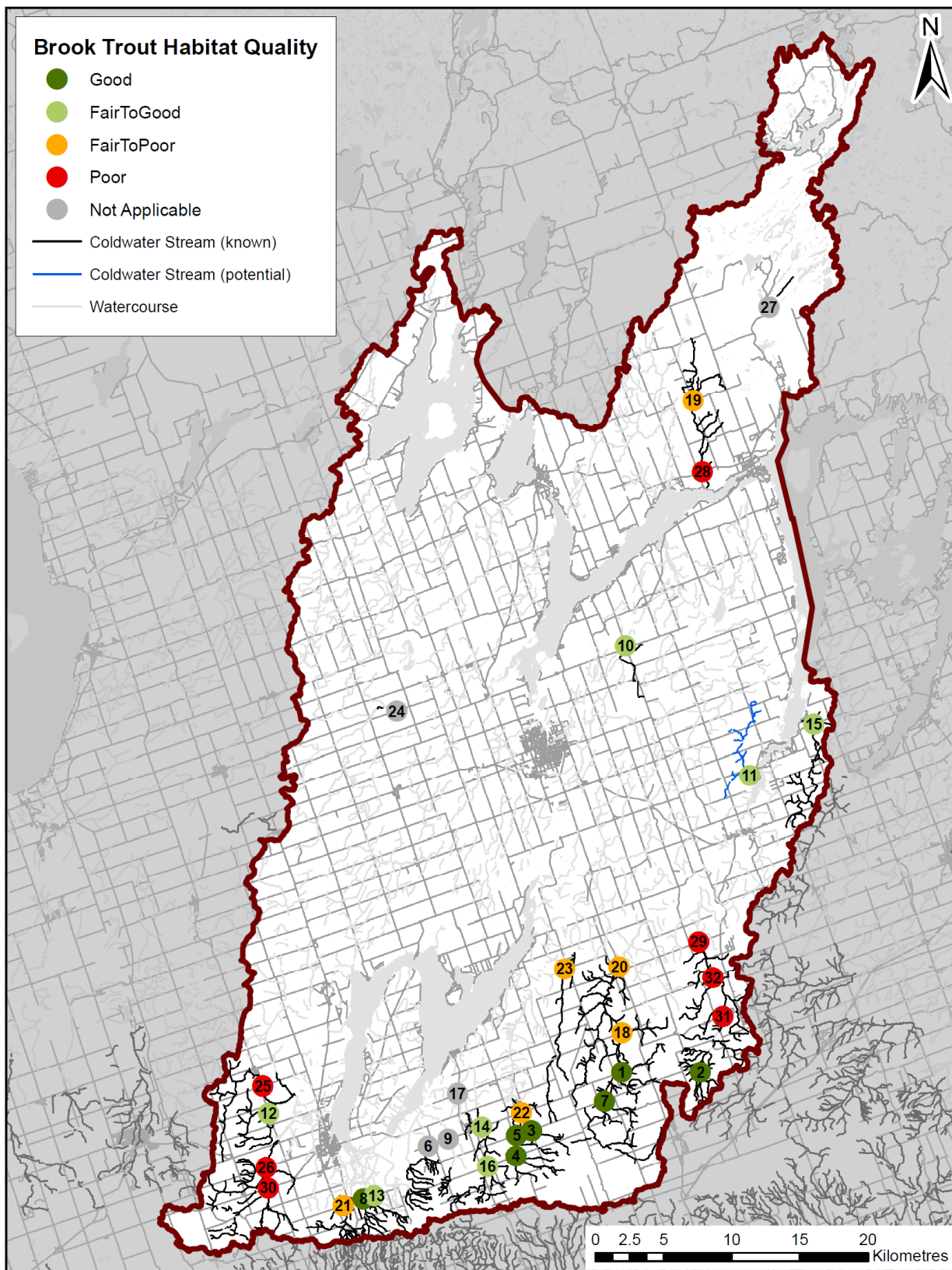


Figure 1: Location of coldwater streams with Kawartha Conservation’s jurisdiction, and Brook Trout Habitat Quality for each site.



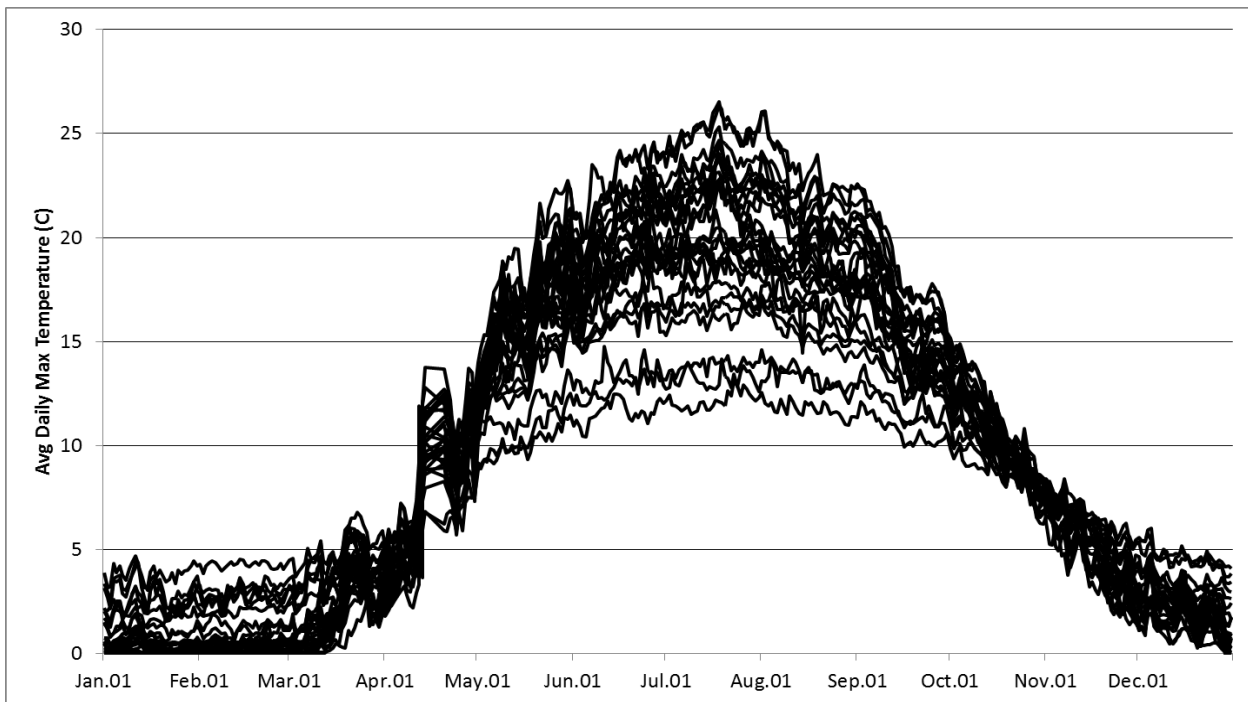


Figure 2: Annual thermographs for all sites, summarized as daily average maximum water temperature over the entire period of record for each site.

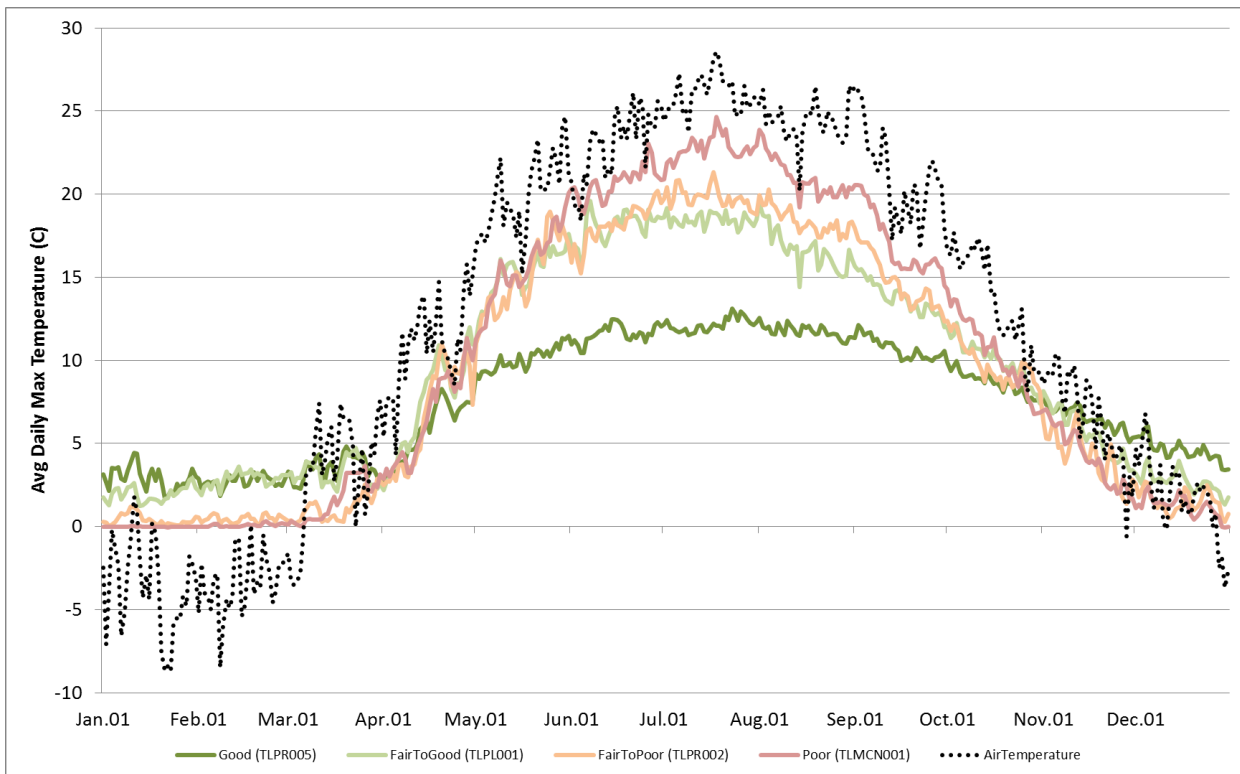


Figure 3: Representative annual thermographs for Good, FairToGood, PoorToFair, and Poor Brook Trout Habitat Quality locations.



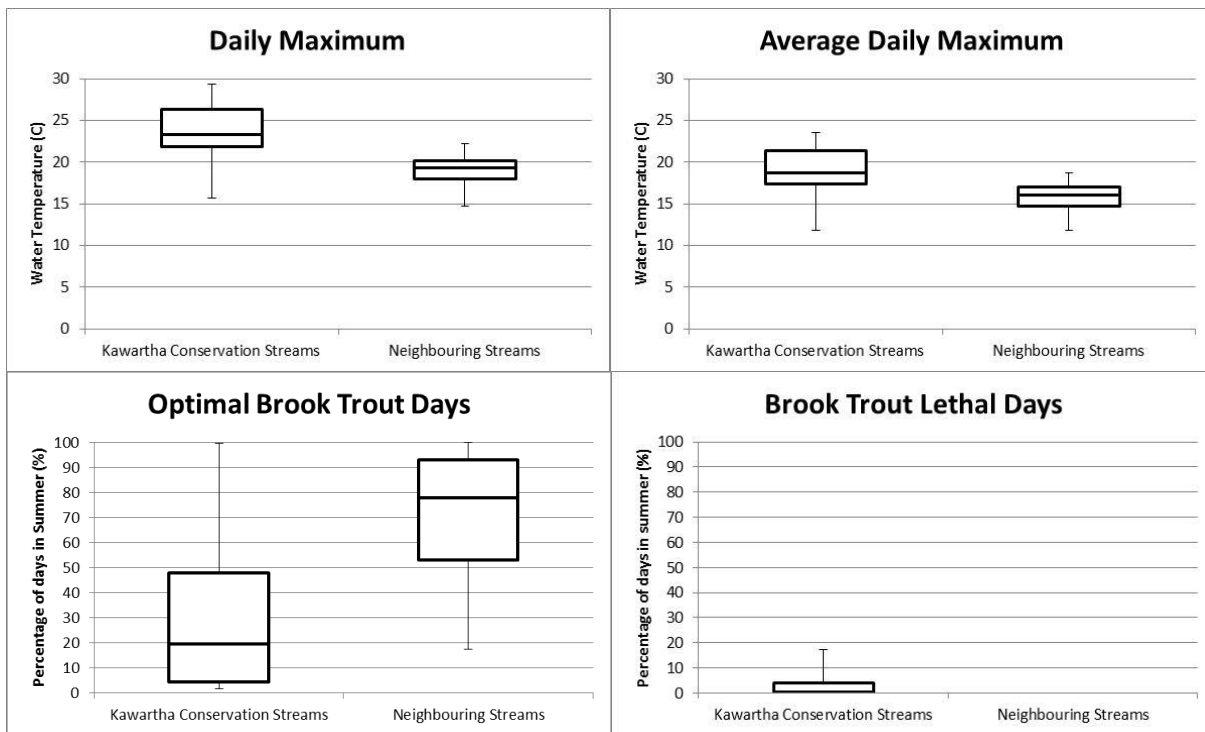


Figure 4: Comparison between Kawartha Conservation’s data that exist on coldwater streams against data within neighbouring coldwater streams.

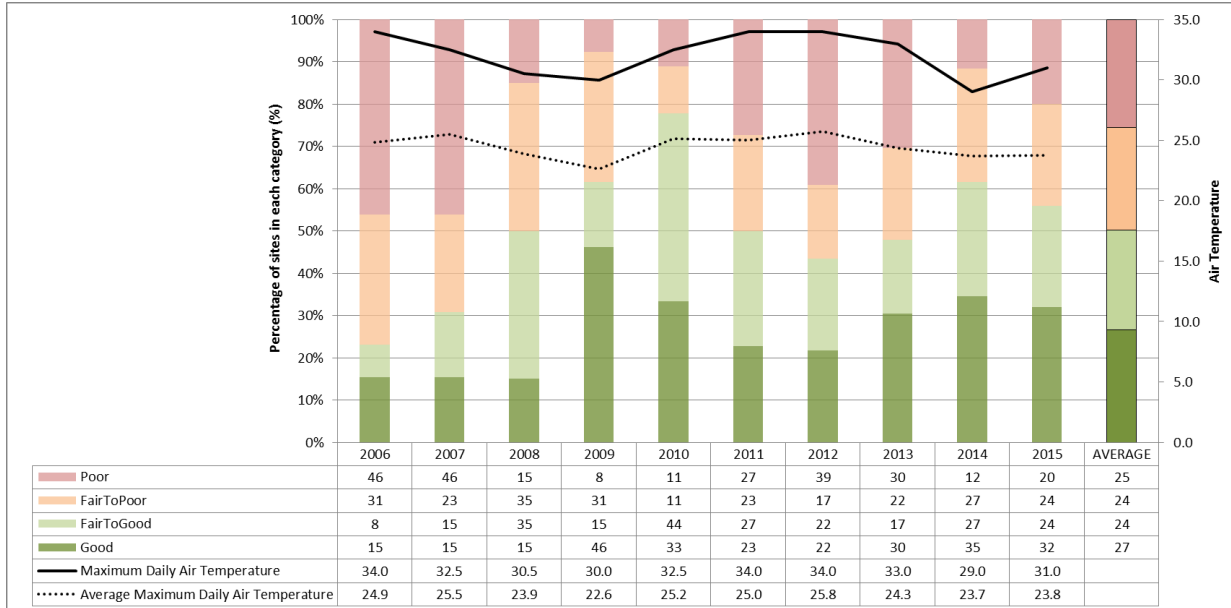


Figure 5: Annual summaries of Brook Trout Habitat Quality classifications for all sites on coldwater streams combined.





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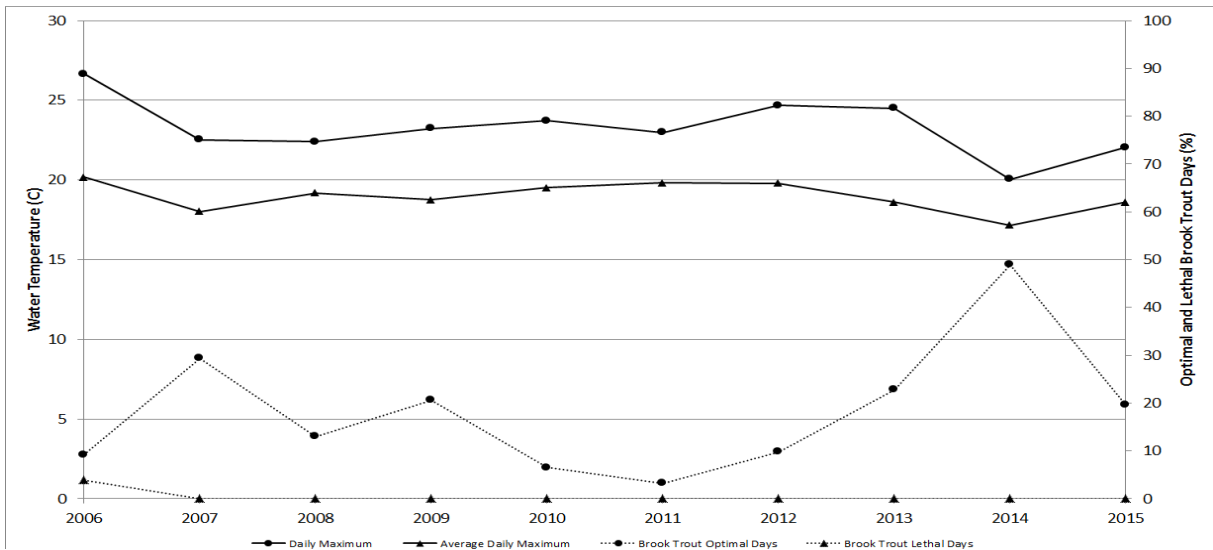
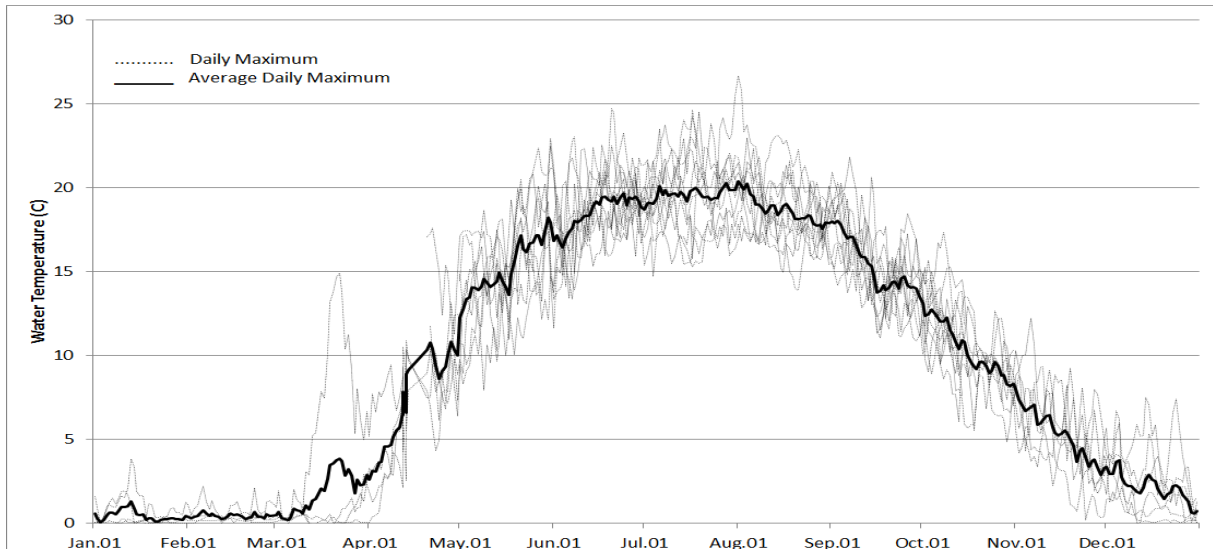
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLBC006

Stream Name: Blackstock Creek
 Subwatershed: Blackstock Creek
 Municipality: Region of Durham
 Road Location: Regional Rd. 17
 UTM Zone: 17
 Easting: 675866
 Northing: 4883514

Wetted width: 1.0m
 Maximum depth: 200mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	14	31	31	30	14	0	0	26.6	20.2	9	4	cool-warmwater	Aug.01	34.0	26.6
2007	0	0	0	0	0	30	31	31	30	15	0	0	22.5	18.0	29	0	coolwater	Aug.01	32.0	19.5
2008	0	0	0	11	31	30	31	31	30	15	0	0	22.4	19.2	13	0	coolwater	Jul.18	28.0	19.5
2009	0	0	0	0	31	30	31	31	30	31	0	0	23.2	18.8	21	0	cool-warmwater	Aug.15	29.0	22.9
2010	0	0	0	0	31	30	31	31	30	31	30	31	23.7	19.5	7	0	coolwater	Jul.05	32.5	21.4
2011	0	0	0	0	31	30	31	31	30	31	30	31	23.0	19.8	3	0	coolwater	Jul.21	34.0	22.4
2012	31	28	31	22	31	30	31	31	30	31	30	31	24.7	19.8	10	0	cool-warmwater	Jul.17	34.0	24.6
2013	31	28	31	30	31	30	31	31	30	31	30	31	24.5	18.6	23	0	cool-warmwater	Jul.17	33.0	22.9
2014	31	28	31	30	31	30	31	31	30	31	30	31	20.1	17.2	49	0	coolwater	Aug.26	27.0	19.5
2015	31	28	31	30	31	30	31	31	30	31	30	31	22.1	18.6	20	0	coolwater	Jul.28	31.0	21.5
AVG	12	11	12	12	25	28	31	31	30	26	18	19	23.3	19.0	18	0.4	coolwater	n/a	n/a	n/a



APPENDIX A: Water temperature data summaries for each site.

Site ID: TLBC008

Stream Name: Blackstock Creek
 Subwatershed: Blackstock Creek
 Municipality: Region of Durham
 Road Location: Edgerton Rd.

UTM Zone: 17

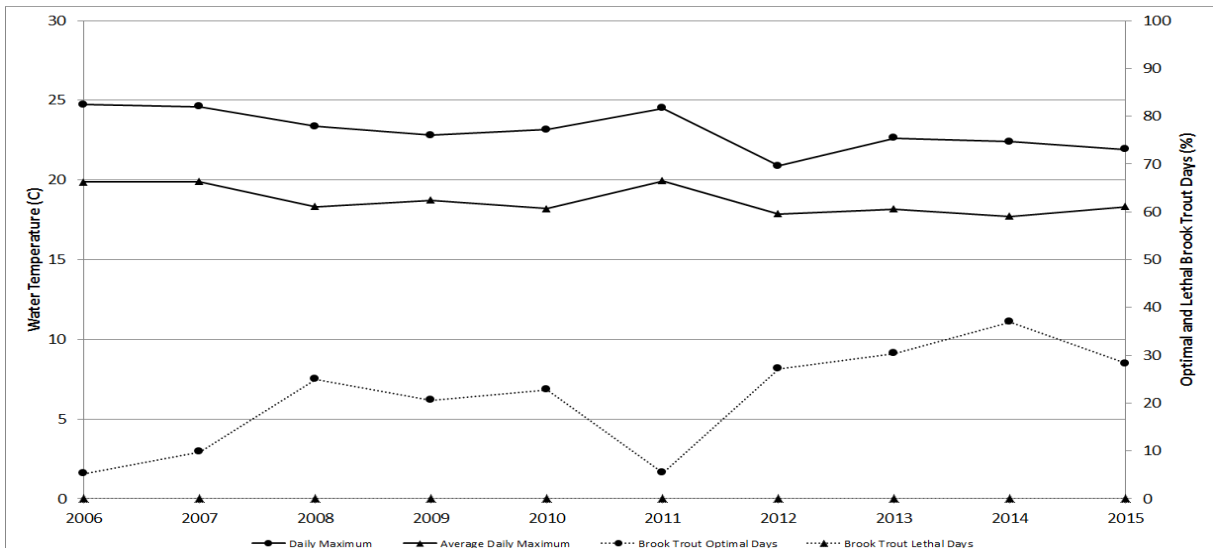
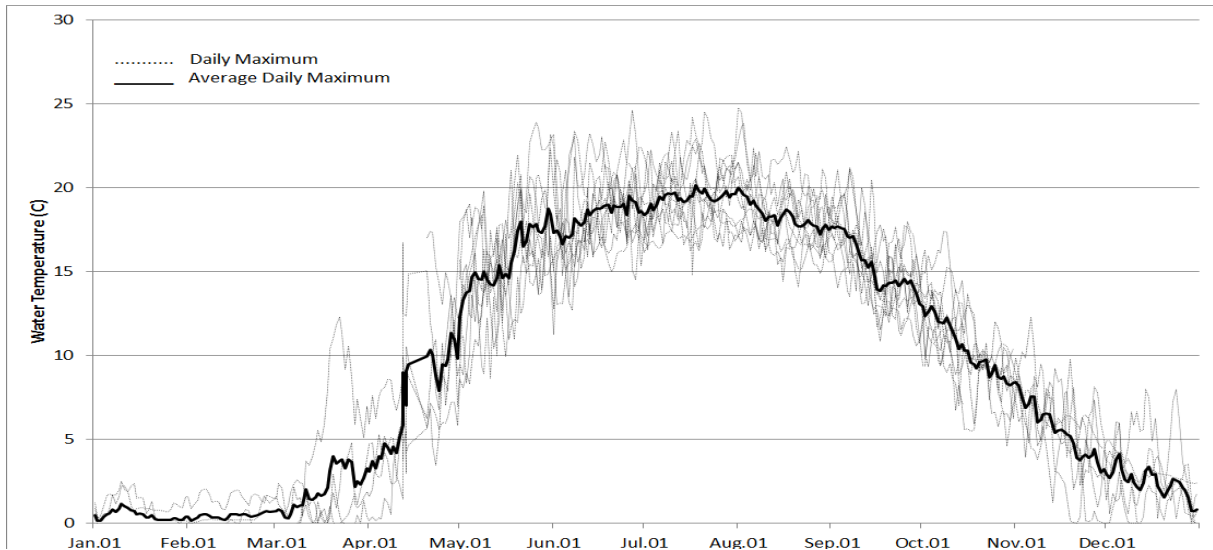
Easting: 675437

Northing: 4886406

Wetted width: 4.0m

Maximum depth: 150mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	14	31	31	30	14	0	0	24.7	19.9	5	0	cool-warmwater	Aug.01	34.0	24.7
2007	0	0	0	0	0	30	31	31	30	15	0	0	24.6	19.9	10	0	cool-warmwater	Aug.01	32.0	22.8
2008	0	0	0	11	31	30	31	31	30	15	0	0	23.4	18.3	25	0	cold-coolwater	Jul.18	28.0	17.4
2009	0	0	0	0	31	30	31	31	30	31	0	0	22.8	18.7	21	0	cool-warmwater	Aug.15	29.0	21.6
2010	0	0	0	0	31	30	31	31	30	31	30	31	23.2	18.2	23	0	coolwater	Jul.05	32.5	20.1
2011	0	0	0	0	31	30	31	31	30	31	30	31	24.5	19.9	5	0	cool-warmwater	Jul.21	34.0	24.5
2012	31	28	31	22	31	30	31	31	30	31	30	31	20.9	17.9	27	0	coolwater	Jul.17	34.0	20.2
2013	31	28	31	30	31	30	31	31	30	31	30	31	22.6	18.2	30	0	coolwater	Jul.17	33.0	22.5
2014	31	28	31	30	31	30	31	31	30	31	30	31	22.4	17.7	37	0	coolwater	Aug.26	27.0	20.0
2015	31	28	31	30	31	30	31	31	30	31	30	31	21.9	18.3	28	0	coolwater	Jul.28	31.0	21.8
AVG	12	11	12	12	25	28	31	31	30	26	18	19	23.1	18.7	21	0	coolwater	n/a	n/a	n/a



APPENDIX A: Water temperature data summaries for each site.

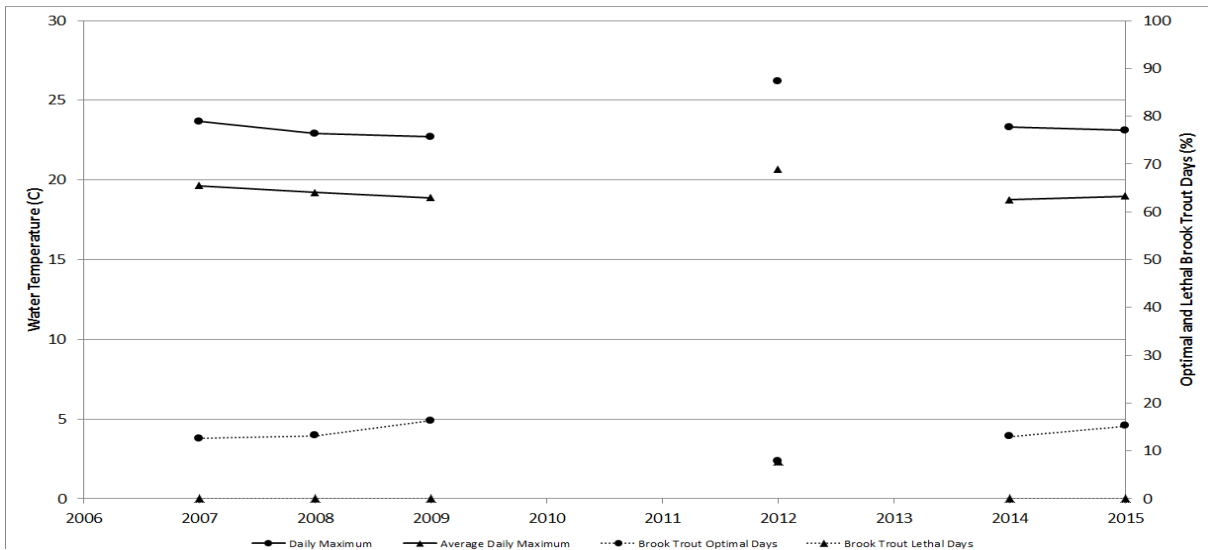
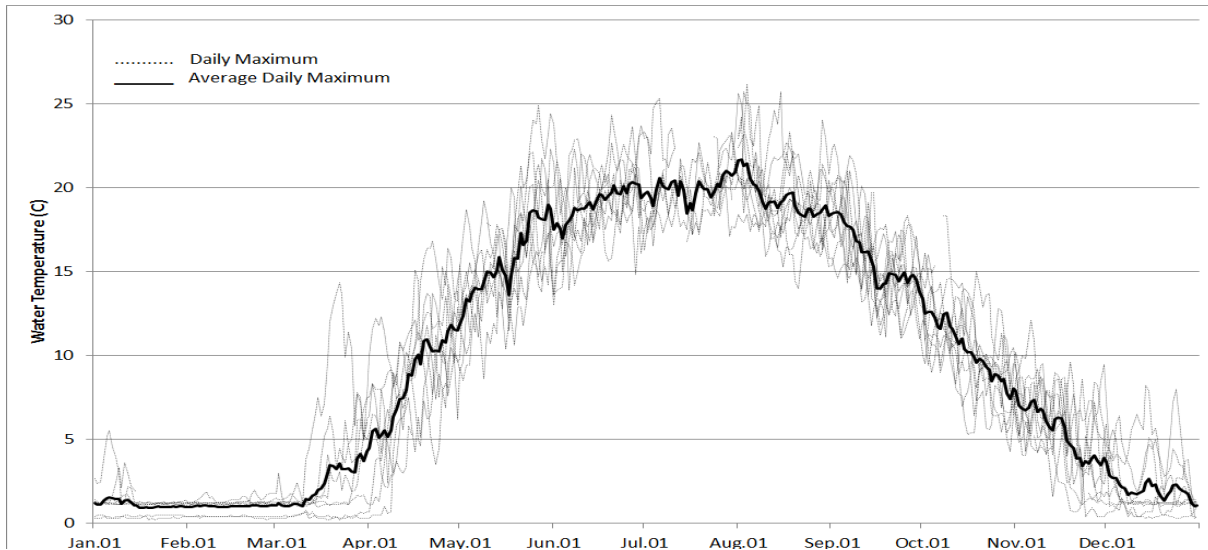
Site ID: TLBCgauge

Stream Name: Blackstock Creek
 Subwatershed: Blackstock Creek
 Municipality: Region of Durham
 Road Location: Beacock Rd.

UTM Zone: 17
 Easting: 673665
 Northing: 4888847

Wetted width: 4.0m
 Maximum depth: 150mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	6	31	30	31	30	31	n/a	n/a	n/a	n/a	cool-warmwater	Aug.01	34.0	25.6
2007	31	28	29	24	25	29	27	31	30	29	29	31	23.7	19.6	13	0	coolwater	Aug.01	32.0	22.4
2008	26	26	31	30	31	30	30	31	30	31	29	30	22.9	19.2	13	0	cool-warmwater	Jul.18	28.0	21.5
2009	31	28	31	30	31	30	31	31	30	31	30	31	22.7	18.9	16	0	cool-warmwater	Aug.15	29.0	21.8
2010	31	28	31	30	31	30	0	31	30	31	30	31	n/a	n/a	n/a	n/a	warmwater	Aug.03	29.0	25.7
2011	31	28	31	30	31	30	0	31	30	31	30	31	n/a	n/a	n/a	n/a	coolwater	Aug.19	27.0	19.6
2012	31	28	31	30	31	30	20	20	23	0	0	0	26.2	20.7	8	8	cool-warmwater	Aug.03	30.0	23.1
2013	0	0	0	0	0	0	0	24	30	31	30	31	n/a	n/a	n/a	n/a	coolwater	Aug.21	29.0	20.7
2014	31	28	31	30	31	30	31	31	30	31	30	31	23.3	18.8	13	0	coolwater	Aug.26	27.0	19.9
2015	31	28	31	30	31	30	31	31	30	31	30	31	23.1	19.0	15	0	cool-warmwater	Jul.28	31.0	22.8
AVG	24	22	25	23	24	24	18	29	29	28	27	28	23.6	19.4	13	1.3	cool-warmwater	n/a	n/a	n/a



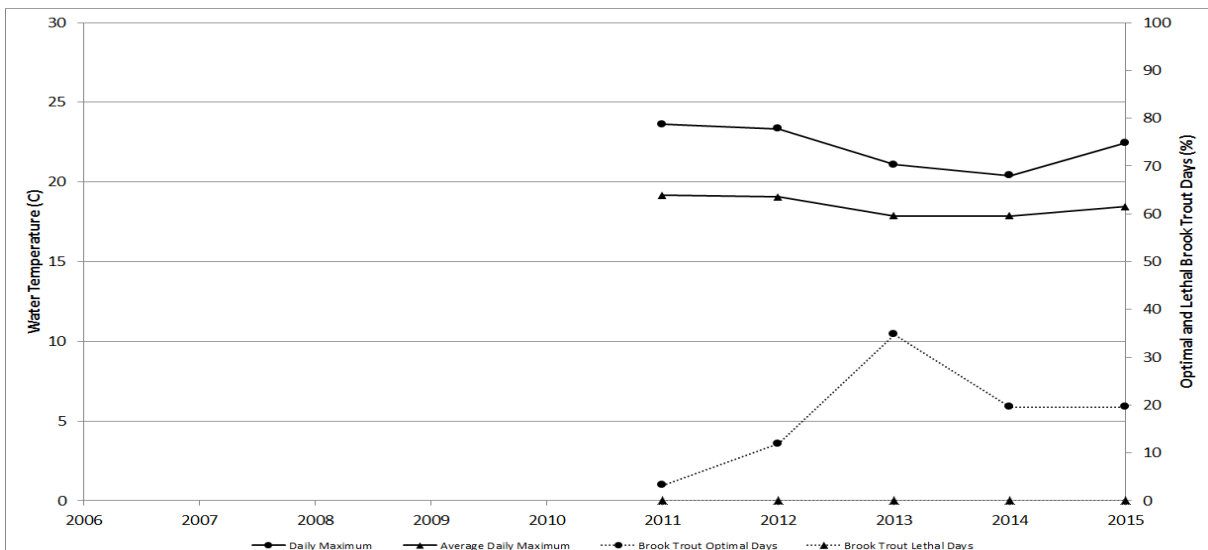
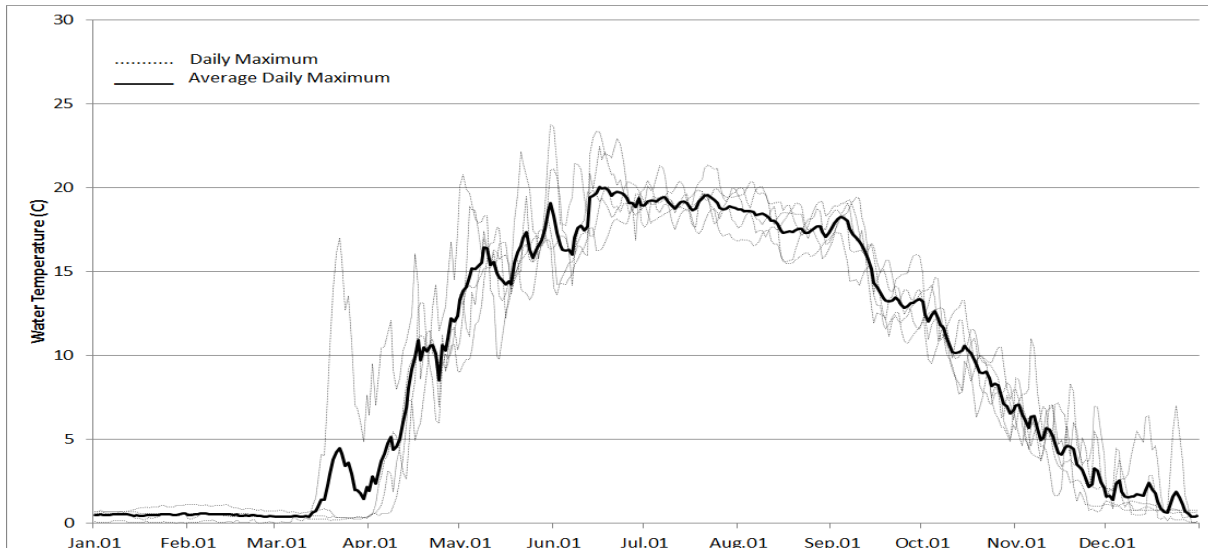
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLEC001

Stream Name: Emily Creek
 Subwatershed: Emily Creek
 Municipality: City of Kawartha Lakes
 Road Location: Heights Rd.
 UTM Zone: 17
 Easting: 686003
 Northing: 4921714

Wetted width: 6.0m (approx.)
 Maximum depth: 450mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	23.6	19.2	3	0	coolwater	Jul.21	34.0	21.1
2012	31	28	31	30	31	30	31	31	30	31	30	31	23.3	19.0	12	0	cold-coolwater	Jul.17	34.0	19.5
2013	31	28	31	30	31	30	31	31	30	31	30	31	21.1	17.9	35	0	cold-coolwater	Jul.17	33.0	18.9
2014	31	28	31	30	31	30	31	31	30	31	30	31	20.4	17.9	20	0	coolwater	Aug.26	27.0	18.2
2015	31	28	31	30	31	30	31	31	30	31	30	31	22.4	18.5	20	0	coolwater	Jul.28	31.0	19.1
AVG	12	11	12	12	16	15	16	16	15	16	15	16	22.2	18.5	18	0	coolwater	n/a	n/a	n/a



APPENDIX A: Water temperature data summaries for each site.

Site ID: TLECC001

Stream Name: East Cross Creek
 Subwatershed: East Cross Creek
 Municipality: Region of Durham
 Road Location: Devitts Rd.

UTM Zone: 17

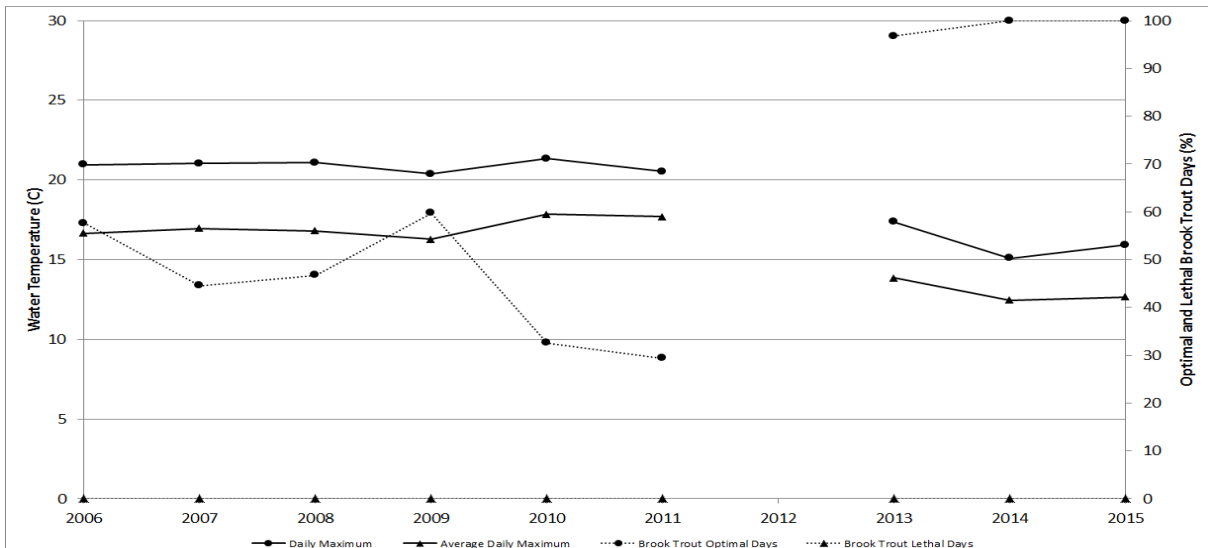
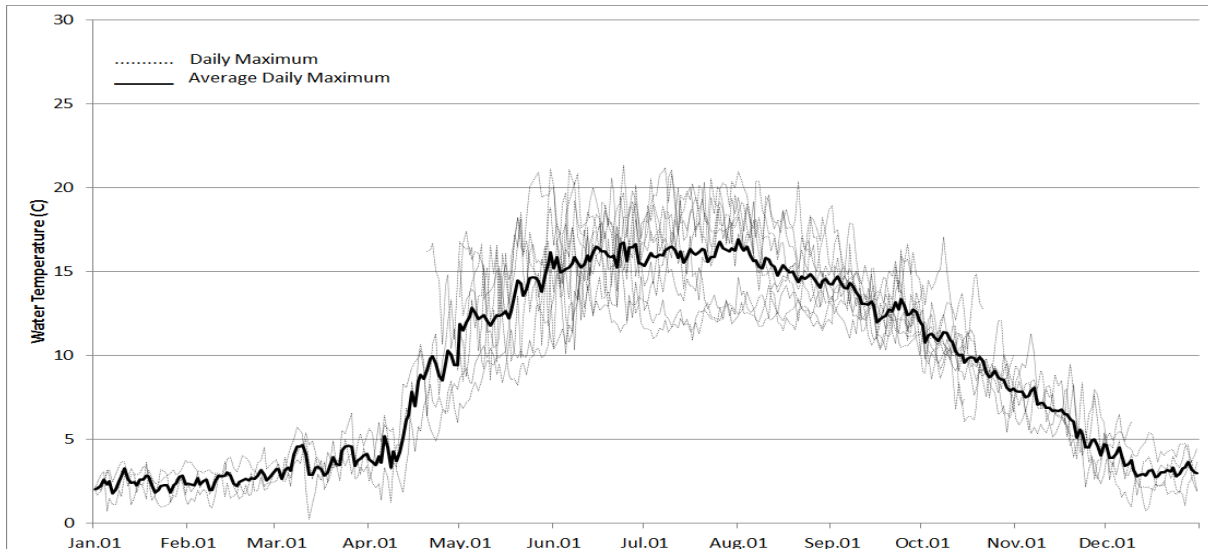
Easting: 677952

Northing: 4884256

Wetted width: 3.0m

Maximum depth: 400mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	21.0	16.7	58	0	coolwater	Aug.01	34.0	21.0
2007	0	0	0	0	0	30	31	31	30	15	0	0	21.0	17.0	45	0	cold-coolwater	Aug.01	32.0	18.4
2008	0	0	0	11	31	30	31	31	30	22	0	0	21.1	16.8	47	0	cold-coolwater	Jul.18	28.0	17.4
2009	0	0	0	0	31	30	31	31	30	31	0	0	20.4	16.3	60	0	cold-coolwater	Aug.15	29.0	18.0
2010	0	0	0	0	31	30	31	31	30	31	30	31	21.3	17.8	33	0	coolwater	Jul.05	32.5	19.5
2011	0	0	0	0	31	30	31	31	30	31	30	31	20.5	17.7	29	0	coolwater	Jul.21	34.0	20.3
2012	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2013	31	28	31	30	31	30	31	31	30	31	30	31	17.4	13.9	97	0	coldwater	Jul.17	33.0	14.1
2014	31	28	31	30	31	30	31	31	30	31	30	31	15.1	12.5	100	0	coldwater	Aug.26	27.0	12.6
2015	31	28	31	30	31	30	31	31	30	31	30	9	15.9	12.7	100	0	coldwater	Jul.28	31.0	12.9
AVG	9.3	8.4	9.3	10	22	27	28	28	27	24	15	13	19.3	15.7	63	0	cold-coolwater	n/a	n/a	n/a



APPENDIX A: Water temperature data summaries for each site.

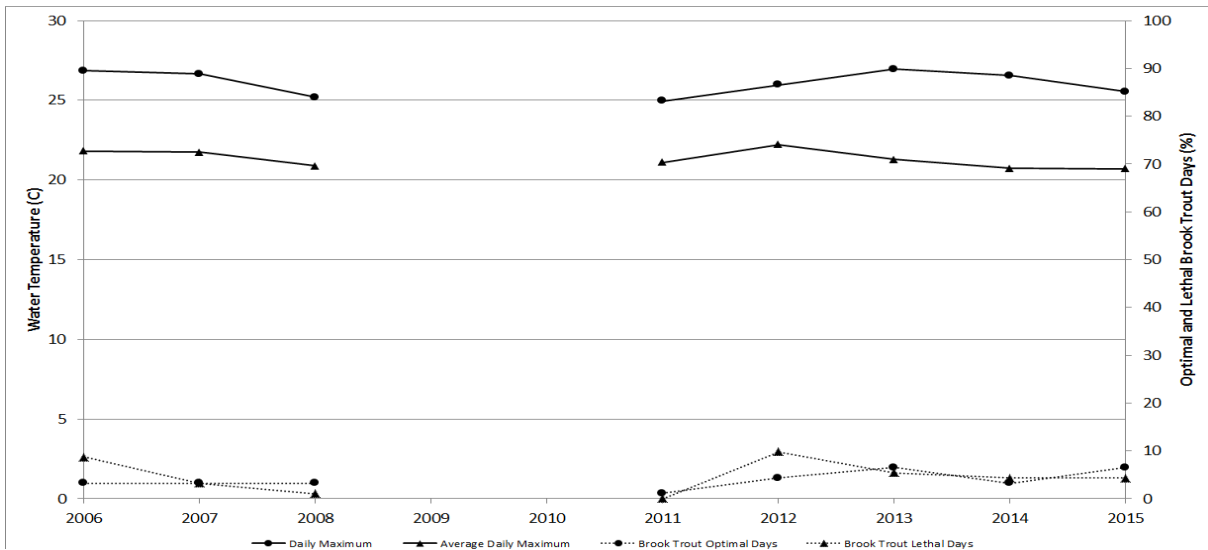
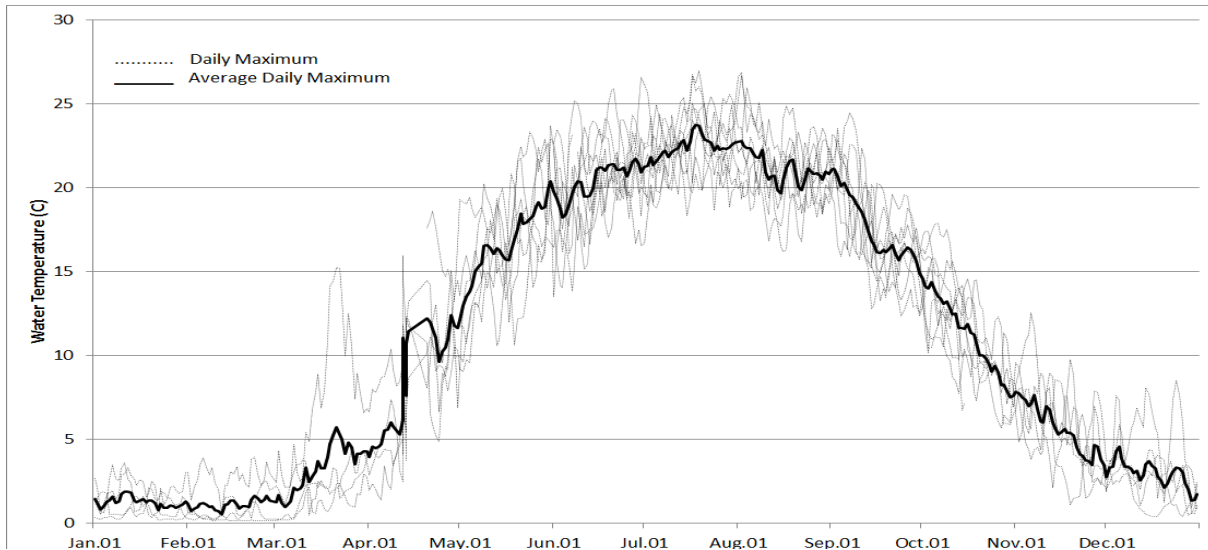
Site ID: TLECC002

Stream Name: East Cross Creek
 Subwatershed: East Cross Creek
 Municipality: Region of Durham
 Road Location: Edgerton Rd.

UTM Zone: 17
 Easting: 678369
 Northing: 4887461

Wetted width: 5.5m
 Maximum depth: 520mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	26.8	21.8	3	9	cool-warmwater	Aug.01	34.0	26.6
2007	0	0	0	0	0	30	31	31	30	15	0	0	26.6	21.7	3	3	cool-warmwater	Aug.01	32.0	25.3
2008	0	0	0	11	31	30	31	31	30	22	0	0	25.2	20.9	3	1	warmwater	Jul.18	28.0	24.7
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	29	31	31	30	31	30	31	25.0	21.1	1	0	cool-warmwater	Jul.21	34.0	25.0
2012	31	28	31	30	31	30	31	31	30	31	30	31	26.0	22.2	4	10	cool-warmwater	Jul.17	34.0	25.0
2013	31	28	31	30	31	30	31	31	30	31	30	31	27.0	21.3	7	5	warmwater	Jul.17	33.0	26.6
2014	31	28	31	30	31	30	31	31	30	31	30	31	26.5	20.7	3	4	cool-warmwater	Aug.26	27.0	22.6
2015	31	28	31	30	31	30	31	31	30	31	30	31	25.6	20.7	7	4	cool-warmwater	Jul.28	31.0	25.0
AVG	12	11	12	13	19	24	25	25	24	21	15	16	26.1	21.3	3.9	4.6	cool-warmwater	n/a	n/a	n/a



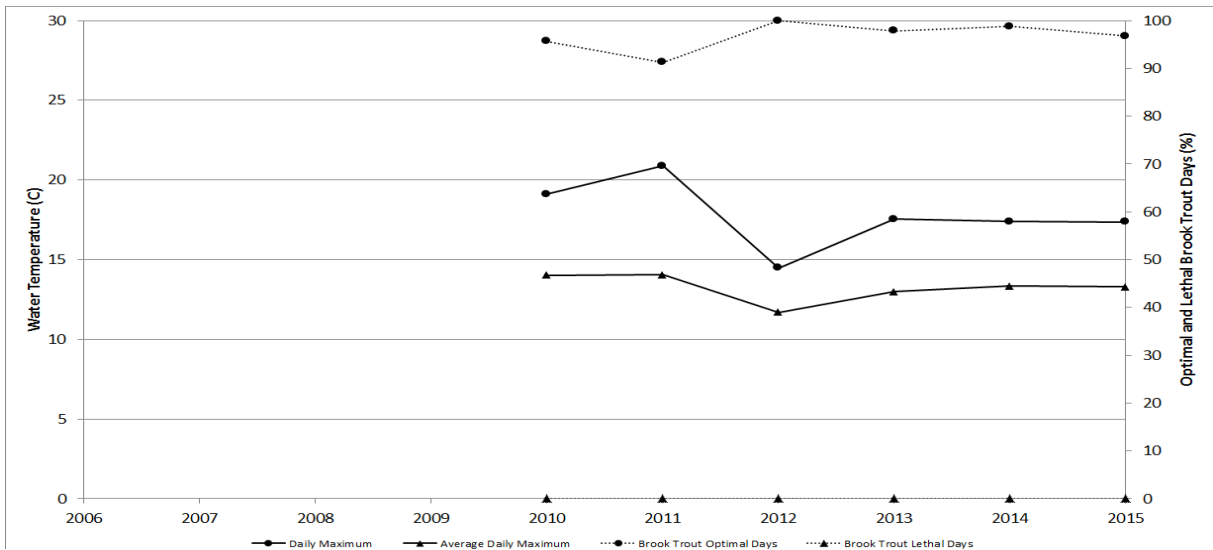
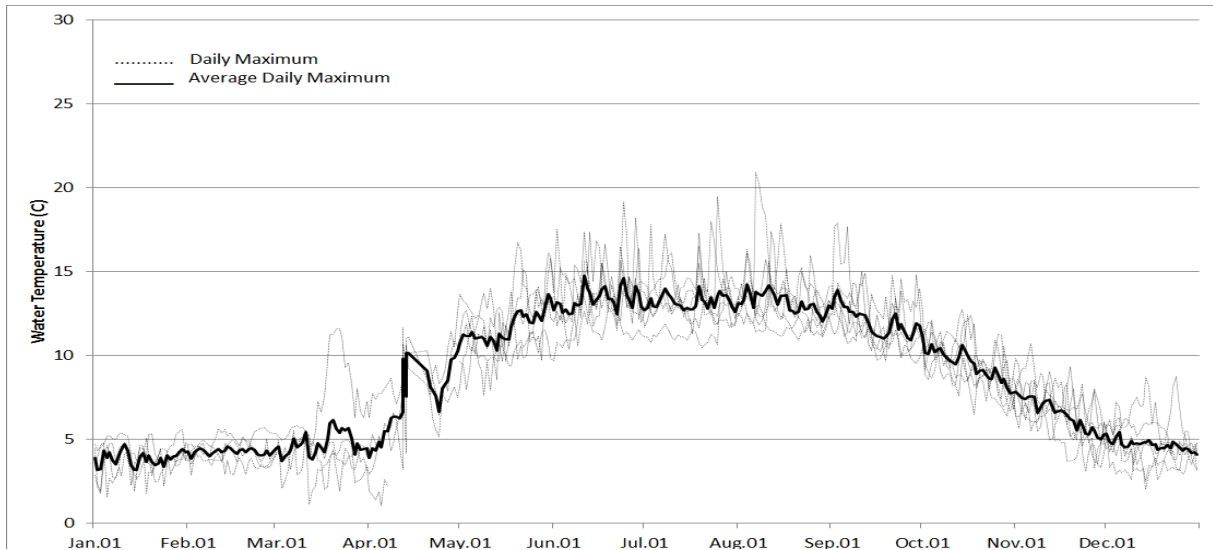
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLECC011b

Stream Name: East Cross Creek
 Subwatershed: East Cross Creek
 Municipality: Region of Durham
 Road Location: Cartwright E. Qtr. Ln.
 UTM Zone: 17
 Easting: 679100
 Northing: 4886143

Wetted width: 2.3m
 Maximum depth: 300mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max Air Temp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	31	30	31	30	31	30	31	31	19.1	14.0	96	0	coldwater	Jul.05	32.5	14.3
2011	0	0	0	0	31	30	31	31	30	31	30	31	20.9	14.1	91	0	coldwater	Jul.21	34.0	14.6
2012	31	28	31	30	31	30	31	31	30	31	30	31	14.5	11.7	100	0	coldwater	Jul.17	34.0	11.5
2013	31	28	31	30	31	30	31	31	30	31	30	31	17.5	13.0	98	0	coldwater	Jul.17	33.0	13.9
2014	31	28	31	7	0	18	31	31	30	31	30	31	17.4	13.4	99	0	coldwater	Aug.26	27.0	14.1
2015	31	28	31	30	31	30	31	31	30	31	30	31	17.4	13.3	97	0	coldwater	Jul.28	31.0	13.0
AVG	12	11	12	9.7	16	17	19	19	18	19	18	19	17.8	13.2	97	0	coldwater	n/a	n/a	n/a



APPENDIX A: Water temperature data summaries for each site.

Site ID: TLECC012

Stream Name: East Cross Creek
 Subwatershed: East Cross Creek
 Municipality: Region of Durham
 Road Location: McKee Rd.

UTM Zone: 17

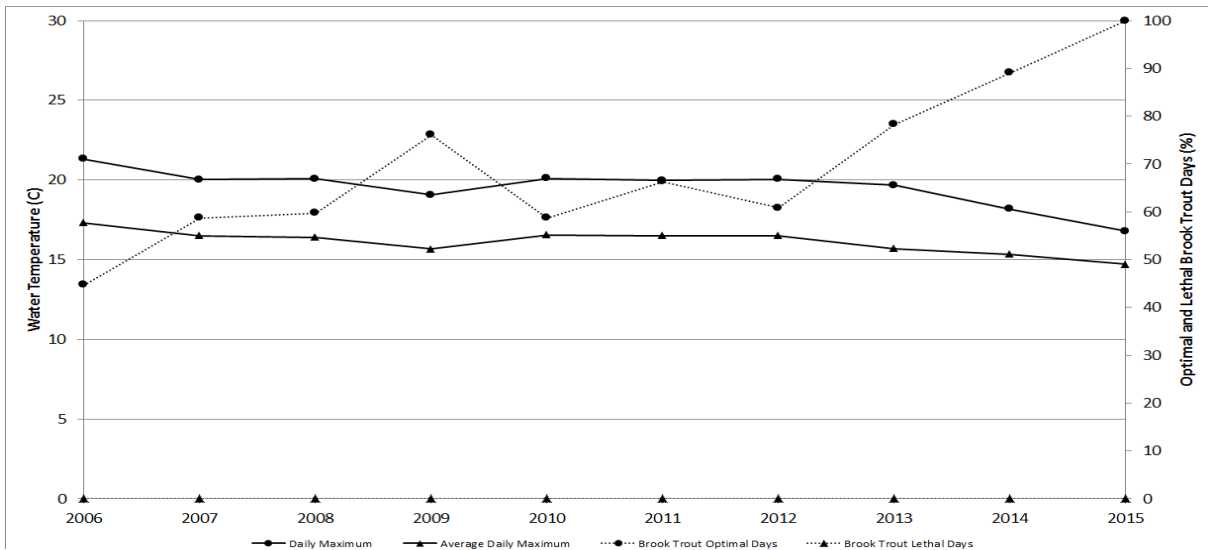
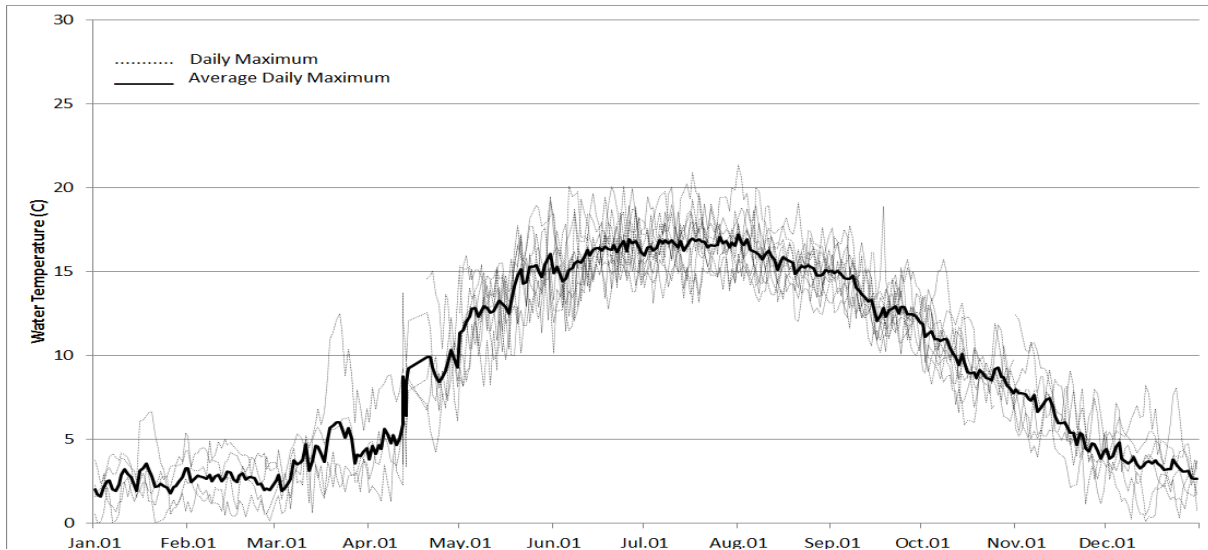
Easting: 678002

Northing: 4885808

Wetted width: 4.5m

Maximum depth: 160mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	14	31	31	30	25	0	0	21.3	17.3	45	0	coolwater	Aug.01	34.0	21.3
2007	0	0	0	0	0	30	31	31	30	15	0	0	20.0	16.5	59	0	cold-coolwater	Aug.01	32.0	18.2
2008	0	0	0	11	31	30	31	31	30	15	0	0	20.1	16.4	60	0	cold-coolwater	Jul.18	28.0	17.0
2009	0	0	0	0	31	30	31	31	30	31	0	0	19.1	15.7	76	0	cold-coolwater	Aug.15	29.0	17.6
2010	0	0	0	0	31	30	31	31	30	31	30	31	20.1	16.6	59	0	cold-coolwater	Jul.05	32.5	18.9
2011	0	0	0	0	31	30	31	31	30	31	30	31	20.0	16.5	66	0	cold-coolwater	Jul.21	34.0	19.0
2012	31	28	31	30	31	30	31	31	30	31	30	31	20.1	16.5	61	0	cold-coolwater	Jul.17	34.0	19.2
2013	31	28	31	30	31	30	31	31	30	12	29	31	19.7	15.7	78	0	cold-coolwater	Jul.17	33.0	18.3
2014	31	28	31	30	31	30	31	31	30	31	30	31	18.2	15.3	89	0	cold-coolwater	Aug.26	27.0	16.5
2015	31	28	31	30	31	30	31	31	30	31	30	31	16.8	14.7	100	0	cold-coolwater	Jul.28	31.0	16.1
AVG	12	11	12	13	25	28	31	31	30	25	18	19	19.5	16.1	69	0	cold-coolwater	n/a	n/a	n/a



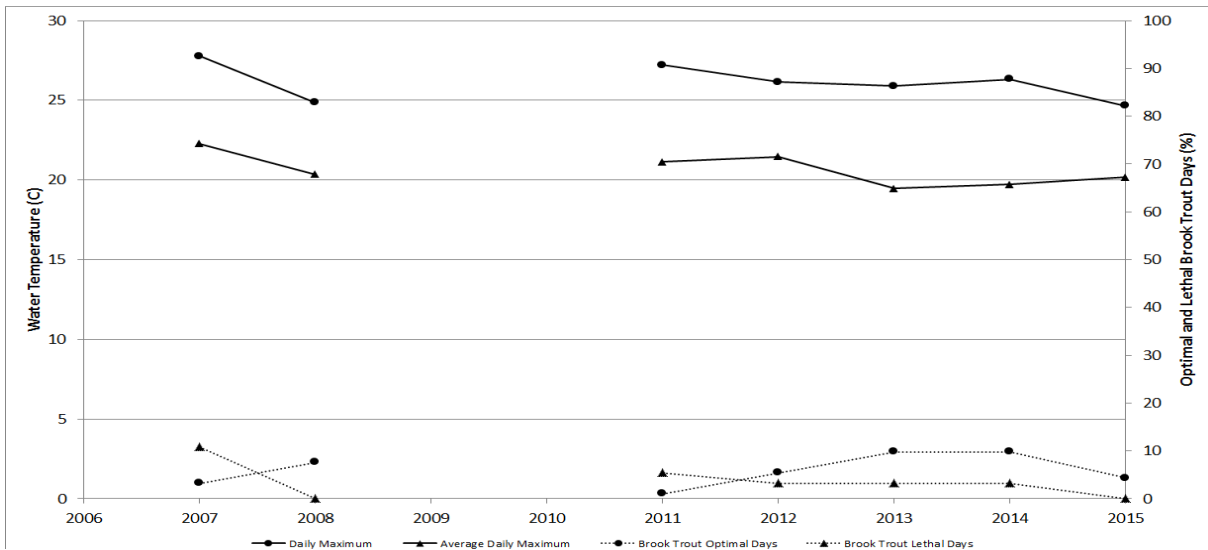
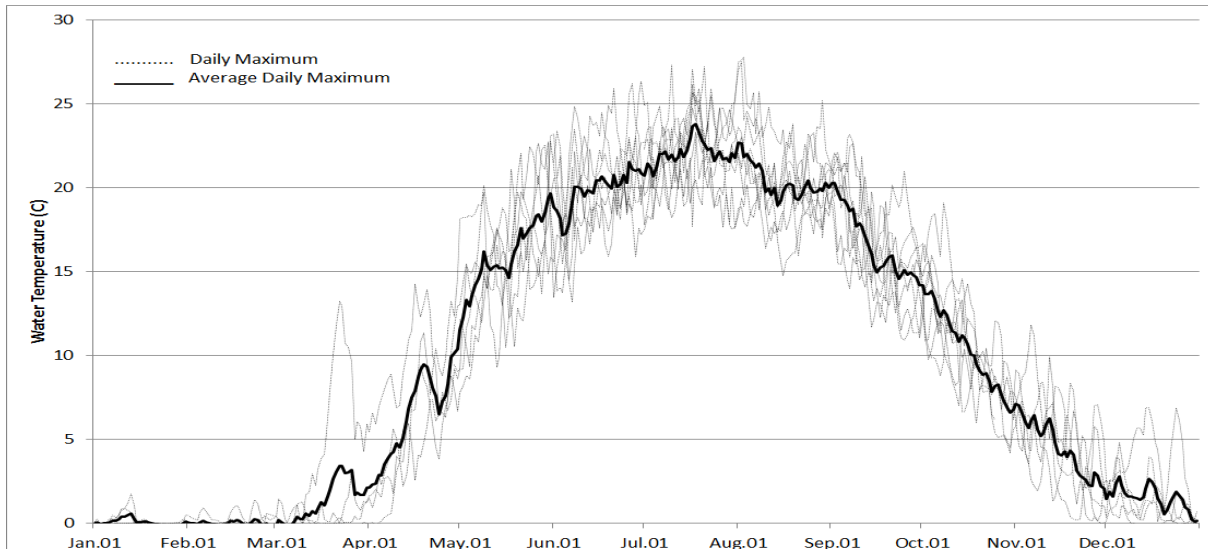
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLECC016

Stream Name: Janetville Creek
 Subwatershed: Janetville Creek
 Municipality: City of Kawartha Lakes
 Road Location: Pigeon Creek Rd.
 UTM Zone: 17
 Easting: 681529
 Northing: 4897993

Wetted width: 3.5m
 Maximum depth: 100mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	31	31	30	25	0	0	n/a	n/a	n/a	n/a	warmwater	Aug.01	34.0	27.0
2007	0	0	0	0	0	30	31	31	30	15	0	0	27.8	22.3	3	11	warmwater	Aug.01	32.0	27.5
2008	0	0	0	2	31	30	31	31	30	15	0	0	24.8	20.3	8	0	cool-warmwater	Jul.18	28.0	24.0
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	27.2	21.1	1	5	warmwater	Jul.21	34.0	27.2
2012	31	28	31	30	31	30	31	31	30	31	30	31	26.1	21.5	5	3	cool-warmwater	Jul.17	34.0	26.1
2013	31	28	31	30	31	30	31	31	30	31	30	31	25.9	19.5	10	3	cool-warmwater	Jul.17	33.0	25.7
2014	31	28	31	30	31	30	31	31	30	31	30	31	26.3	19.7	10	3	coolwater	Aug.26	27.0	20.6
2015	31	28	31	30	31	30	31	31	30	31	30	31	24.6	20.2	4	0	cool-warmwater	Jul.28	31.0	23.8
AVG	12	11	12	12	19	21	25	25	24	21	15	16	26.1	20.7	5.9	3.7	cool-warmwater	n/a	n/a	n/a



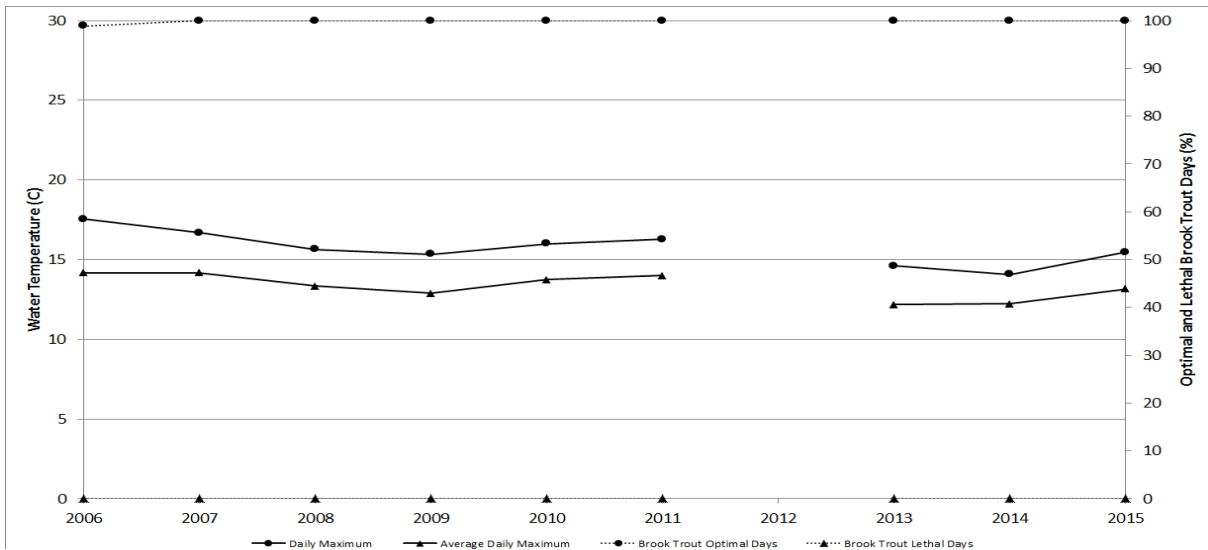
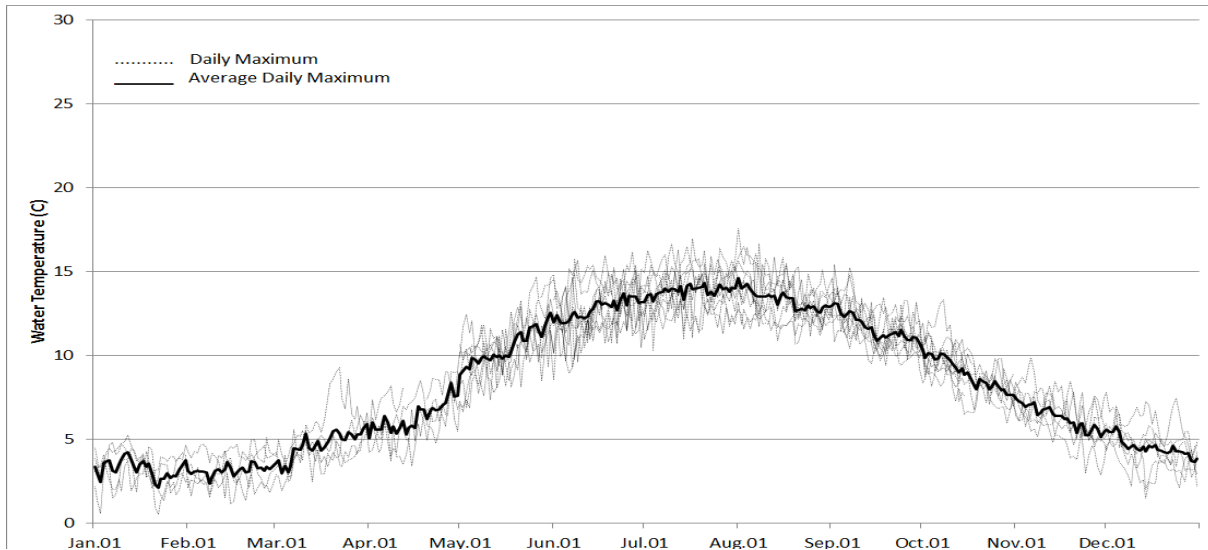
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLFC001

Stream Name: Fleetwood Creek
 Subwatershed: Fleetwood Creek
 Municipality: City of Kawartha Lakes
 Road Location: Solanum Rd.
 UTM Zone: 17
 Easting: 691508
 Northing: 4890403

Wetted width: 3.5m
 Maximum depth: 450mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	17.5	14.2	99	0	cold-coolwater	Aug.01	34.0	17.5
2007	0	0	0	0	0	30	31	31	30	15	0	0	16.7	14.2	100	0	coldwater	Aug.01	32.0	15.8
2008	0	0	0	11	31	30	31	31	30	15	0	0	15.7	13.3	100	0	coldwater	Jul.18	28.0	13.7
2009	0	0	0	0	31	30	31	31	30	31	0	0	15.3	12.9	100	0	coldwater	Aug.15	29.0	14.4
2010	0	0	0	0	31	30	31	31	30	31	30	31	16.0	13.7	100	0	coldwater	Jul.05	32.5	14.7
2011	0	0	0	0	31	30	31	31	30	31	30	31	16.3	14.0	100	0	coldwater	Jul.21	34.0	16.2
2012	31	28	31	12	0	0	0	0	12	30	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2013	31	28	31	30	31	30	31	31	30	31	30	31	14.6	12.2	100	0	coldwater	Jul.17	33.0	14.0
2014	31	28	31	30	31	30	31	31	30	31	30	31	14.1	12.2	100	0	coldwater	Aug.26	27.0	13.3
2015	31	28	31	30	31	30	31	31	30	31	30	31	15.5	13.2	100	0	coldwater	Jul.28	31.0	14.7
AVG	12	11	12	11	22	27	28	28	27	24	18	19	15.7	13.3	100	0	coldwater	n/a	n/a	n/a



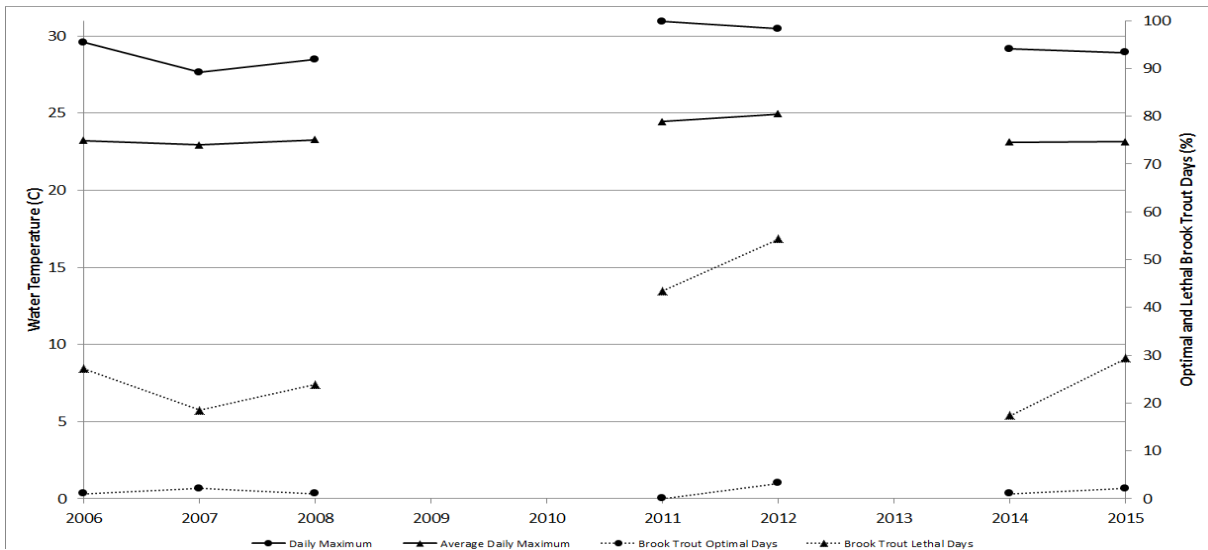
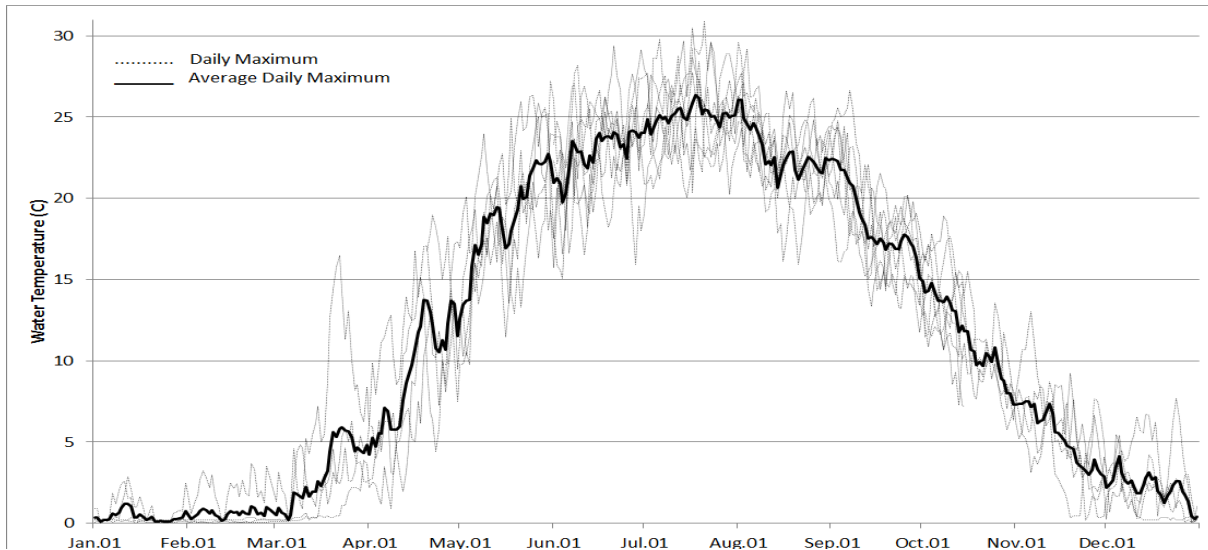
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLFC002

Stream Name: Fleetwood Creek
 Subwatershed: Fleetwood Creek
 Municipality: City of Kawartha Lakes
 Road Location: Lifford Rd.
 UTM Zone: 17
 Easting: 692408
 Northing: 4897370

Wetted width: 5.0m
 Maximum depth: 700mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	29.6	23.2	1	27	warmwater	Aug.01	34.0	29.6	
2007	0	0	0	0	0	30	31	31	30	15	0	27.7	23.0	2	18	warmwater	Aug.01	32.0	25.9	
2008	0	0	0	11	31	30	31	31	30	15	0	28.5	23.3	1	24	warmwater	Jul.18	28.0	26.2	
2009	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2010	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2011	0	0	0	0	31	30	31	31	30	31	30	31.0	24.5	0	43	warmwater	Jul.21	34.0	31.0	
2012	31	28	31	30	31	30	31	31	30	31	30	30.5	24.9	3	54	warmwater	Jul.17	34.0	30.5	
2013	31	28	31	17	0	0	0	0	0	15	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2014	31	28	31	30	31	30	31	31	30	31	30	29.2	23.1	1	17	warmwater	Aug.26	27.0	24.8	
2015	31	28	31	30	31	30	31	31	30	31	30	28.9	23.2	2	29	warmwater	Jul.28	31.0	28.9	
AVG	12	11	12	12	16	21	22	22	21	17	14	29.3	23.6	1.6	31	warmwater	n/a	n/a	n/a	



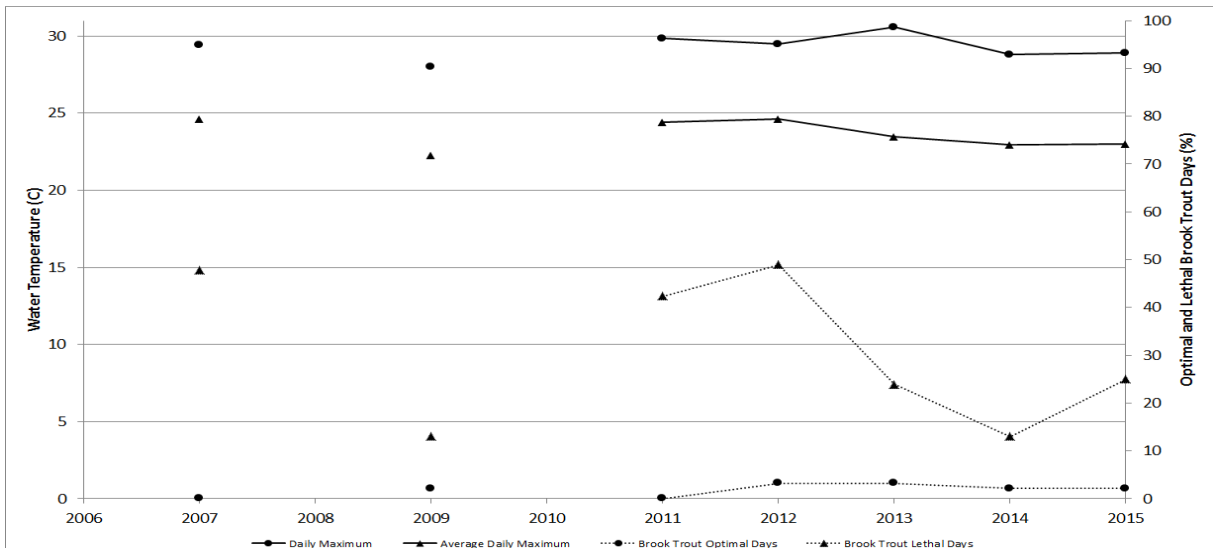
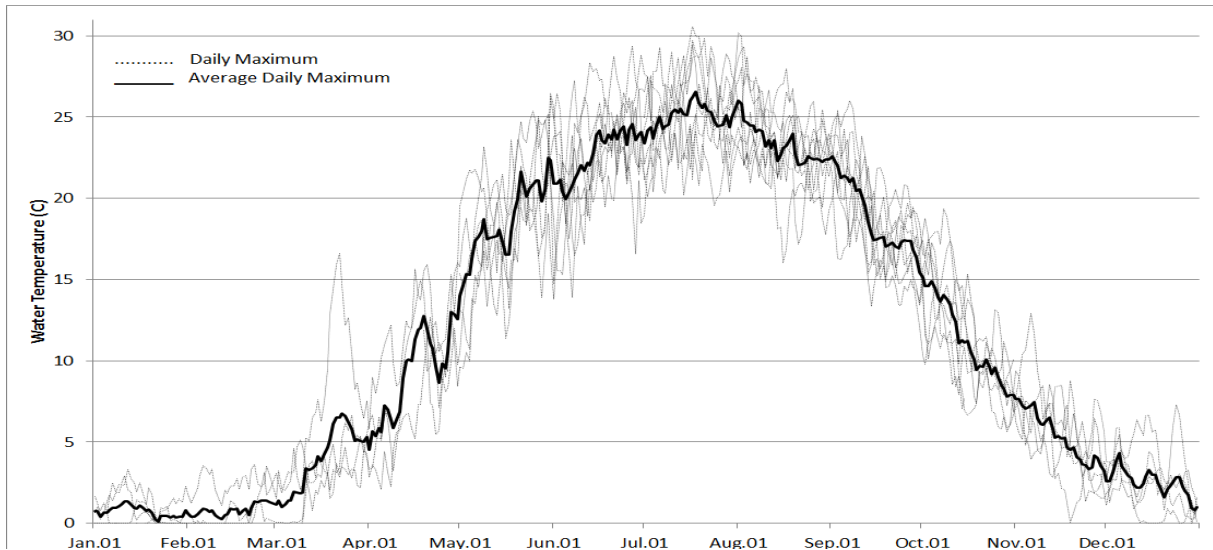
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLFC003

Stream Name: Fleetwood Creek
 Subwatershed: Fleetwood Creek
 Municipality: City of Kawartha Lakes
 Road Location: Hwy. 7A
 UTM Zone: 17
 Easting: 693160
 Northing: 4894528

Wetted width: 3.5m
 Maximum depth: 550mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	31	31	30	15	0	0	n/a	n/a	n/a	n/a	warmwater	Aug.01	34.0	30.2
2007	0	0	0	0	0	30	31	31	30	15	0	0	29.4	24.6	0	48	warmwater	Aug.01	32.0	28.7
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	0	0	0	0	31	30	31	31	30	31	0	0	28.0	22.2	2	13	warmwater	Aug.15	29.0	27.0
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	29.8	24.4	0	42	warmwater	Jul.21	34.0	29.8
2012	31	28	31	30	31	30	31	31	30	31	30	31	29.5	24.6	3	49	warmwater	Jul.17	34.0	29.5
2013	31	28	31	19	31	30	31	31	30	31	30	31	30.6	23.5	3	24	warmwater	Jul.17	33.0	30.6
2014	31	28	31	30	31	30	31	31	30	31	30	31	28.8	22.9	2	13	warmwater	Aug.26	27.0	24.3
2015	31	28	31	30	31	30	31	31	30	31	30	31	28.9	23.0	2	25	warmwater	Jul.28	31.0	28.9
AVG	12	11	12	11	19	21	25	25	24	22	15	16	29.3	23.6	1.9	31	warmwater	n/a	n/a	n/a



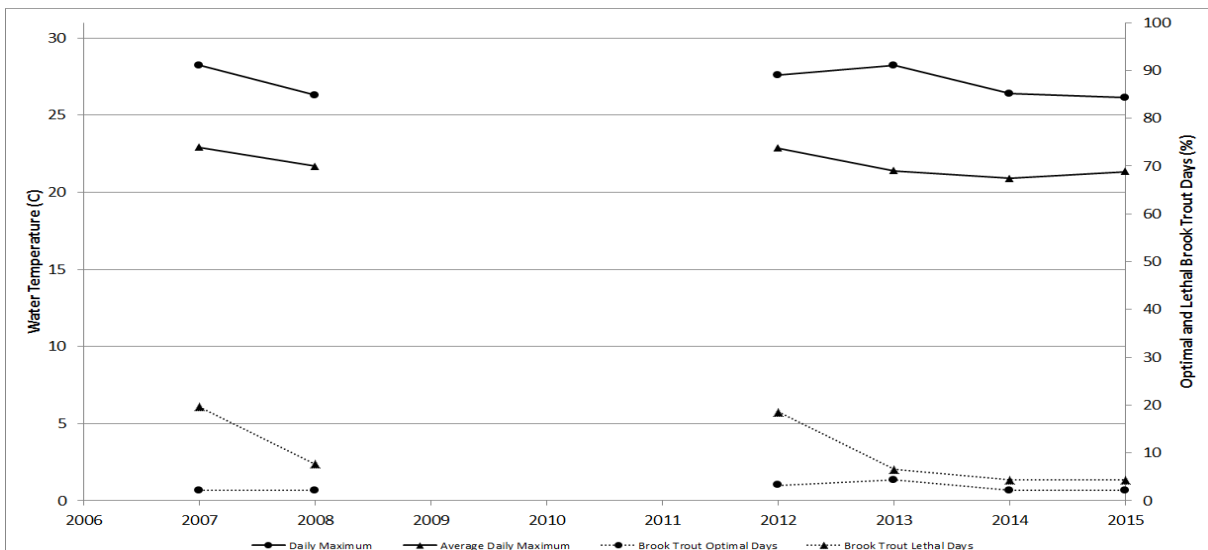
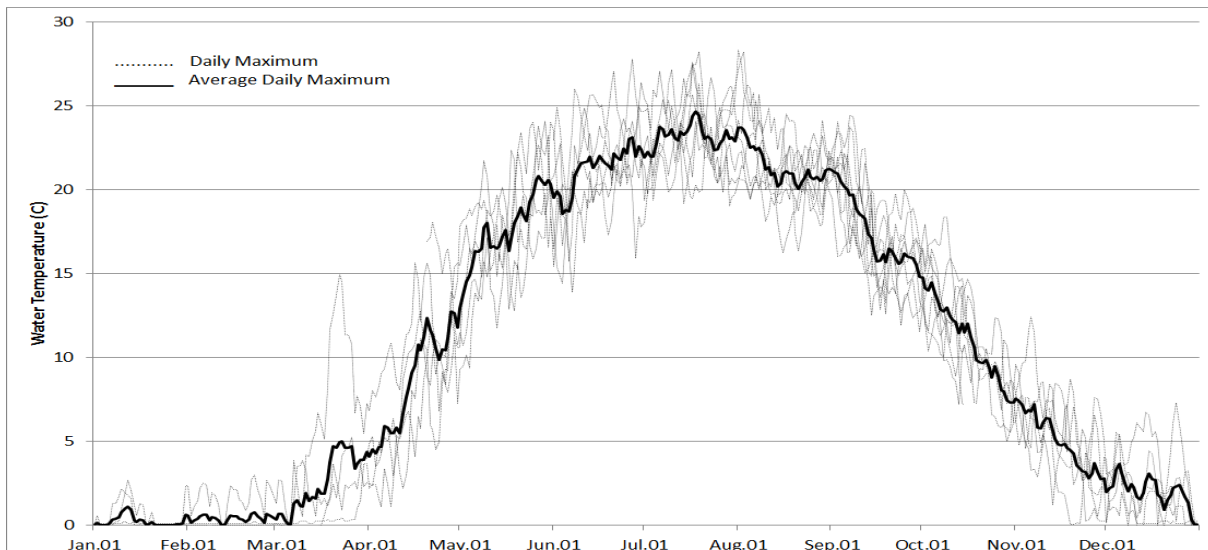
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLFC004

Stream Name: Fleetwood Creek
 Subwatershed: Fleetwood Creek
 Municipality: City of Kawartha Lakes
 Road Location: Fleetwood Rd.
 UTM Zone: 17
 Easting: 691374
 Northing: 4899995

Wetted width: 7.0m
 Maximum depth: 500mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	20	31	30	15	0	0	n/a	n/a	n/a	n/a	warmwater	Aug.01	34.0	28.3
2007	0	0	0	0	0	30	31	31	30	15	0	0	28.2	22.9	2	20	warmwater	Aug.01	32.0	27.1
2008	0	0	0	11	31	30	31	31	30	15	0	0	26.3	21.7	2	8	warmwater	Jul.18	28.0	24.6
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	Aug.15	29.0	0.0
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	Jul.05	32.5	0.0
2011	0	0	0	0	0	0	0	0	30	31	30	31	n/a	n/a	n/a	n/a	n/a	Jul.21	34.0	0.0
2012	31	28	31	30	31	30	31	31	30	31	30	31	27.6	22.9	3	18	warmwater	Jul.17	34.0	27.6
2013	31	28	31	30	31	30	31	31	30	31	30	31	28.2	21.4	4	7	warmwater	Jul.17	33.0	27.5
2014	31	28	31	30	31	30	31	31	30	31	30	31	26.4	20.9	2	4	cool-warmwater	Aug.26	27.0	22.3
2015	31	28	31	30	31	30	31	31	30	31	30	31	26.1	21.3	2	4	warmwater	Jul.28	31.0	25.6
AVG	12	11	12	13	16	18	21	22	24	20	15	16	27.1	21.9	2.7	10	warmwater	n/a	n/a	n/a



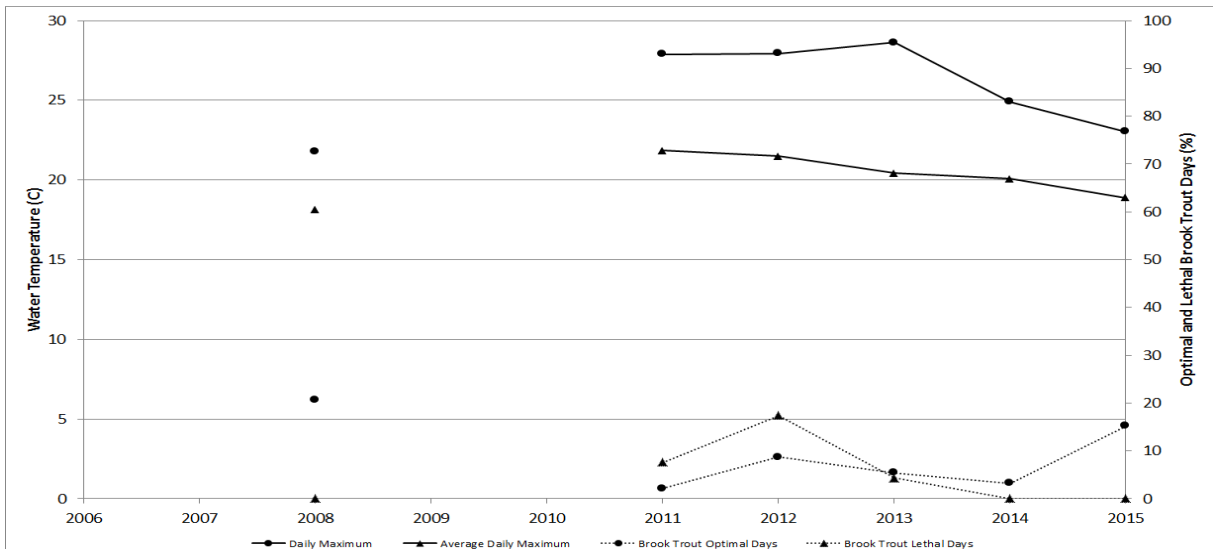
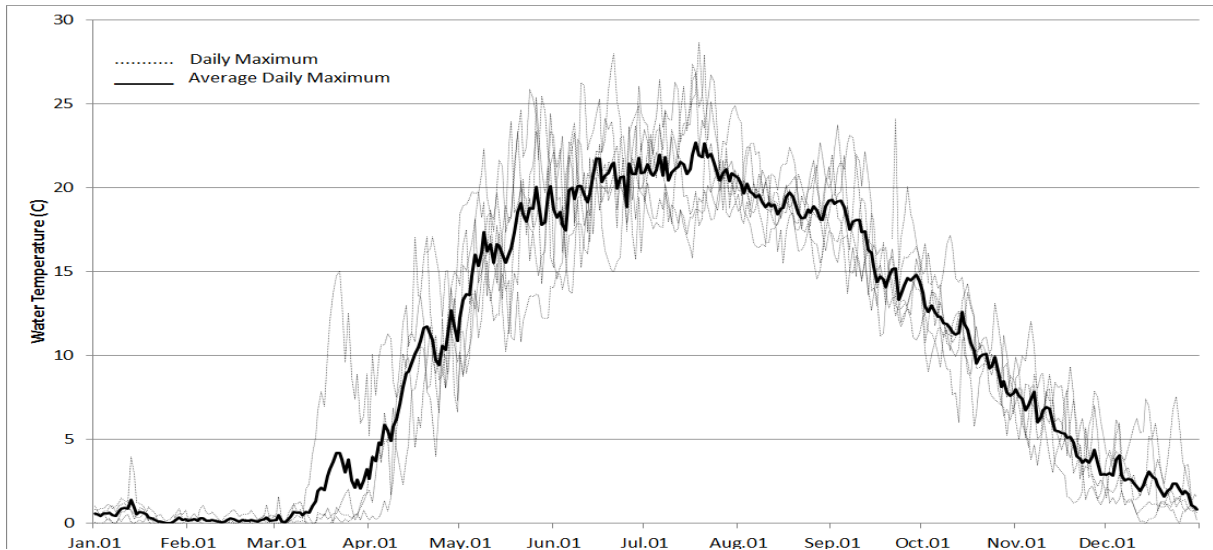
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLLST002

Stream Name: Unnamed
 Subwatershed: South Lake Scugog
 Municipality: Region of Durham
 Road Location: Scugog Ln. 3
 UTM Zone: 17
 Easting: 665263
 Northing: 4880630

Wetted width: 0.7m
 Maximum depth: 105mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	21.8	18.1	21	0	coolwater	Jul.18	28.0	18.7
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	29	31	30	31	27.9	21.9	2	8	warmwater	Jul.21	34.0	27.9
2012	31	28	31	30	31	30	31	31	30	31	30	31	27.9	21.5	9	17	warmwater	Jul.17	34.0	27.4
2013	31	28	31	30	31	30	31	31	30	31	30	31	28.6	20.4	5	4	cool-warmwater	Jul.17	33.0	25.3
2014	31	28	31	30	31	30	31	31	30	31	30	31	24.9	20.1	3	0	cool-warmwater	Aug.26	27.0	21.6
2015	31	28	31	30	31	30	31	31	30	31	30	31	23.0	18.9	15	0	coolwater	Jul.28	31.0	20.9
AVG	12	11	12	13	19	18	19	19	18	17	15	16	25.7	20.1	9.2	4.9	cool-warmwater	n/a	n/a	n/a



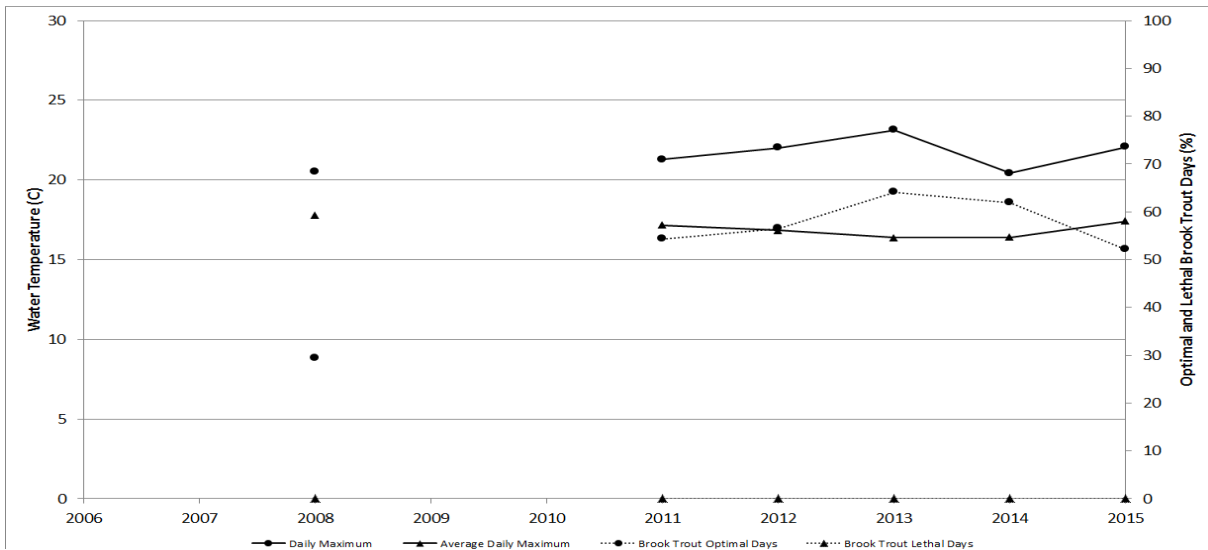
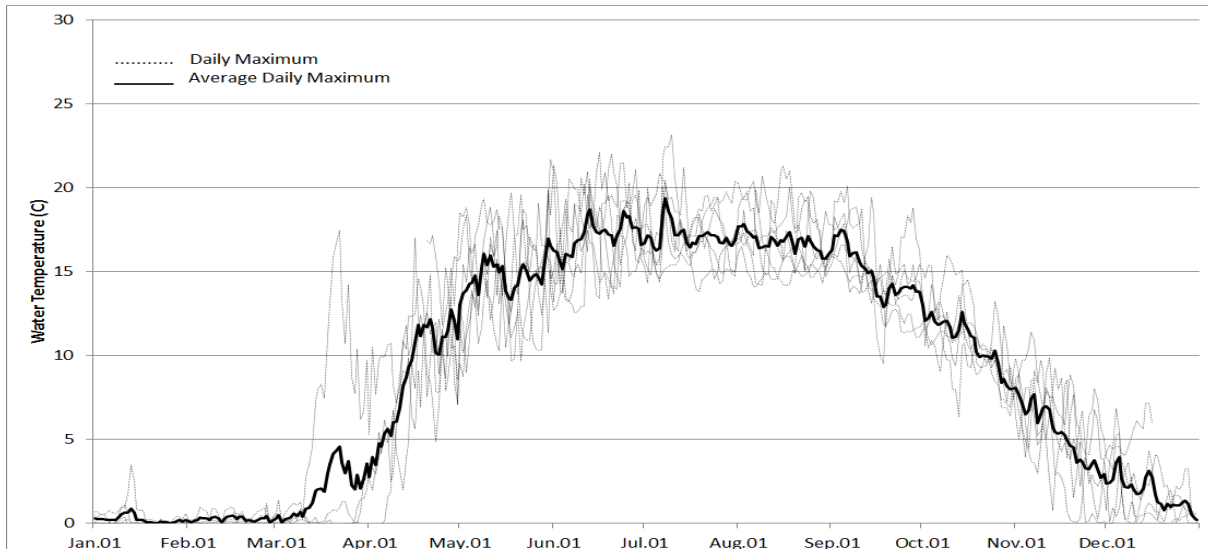
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLLST003

Stream Name: Unnamed
 Subwatershed: South Lake Scugog
 Municipality: Region of Durham
 Road Location: Scugog Ln. 3
 UTM Zone: 17
 Easting: 666760
 Northing: 4881120

Wetted width: 0.5m
 Maximum depth: 100mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	20.5	17.8	29	0	cold-coolwater	Jul.18	28.0	18.1
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	21.3	17.2	54	0	cold-coolwater	Jul.21	34.0	18.4
2012	31	28	31	30	31	30	31	31	30	31	30	31	22.0	16.8	57	0	cold-coolwater	Jul.17	34.0	18.0
2013	31	28	31	30	31	30	31	31	30	31	30	31	23.1	16.4	64	0	cold-coolwater	Jul.17	33.0	17.1
2014	31	28	31	30	31	30	31	31	30	31	30	31	20.4	16.4	62	0	cold-coolwater	Aug.26	27.0	17.9
2015	31	28	31	30	31	30	31	31	30	31	30	16	22.1	17.4	52	0	cold-coolwater	Jul.28	31.0	16.5
AVG	12	11	12	13	19	18	19	19	18	17	15	14	21.6	17.0	53	0	cold-coolwater	n/a	n/a	n/a



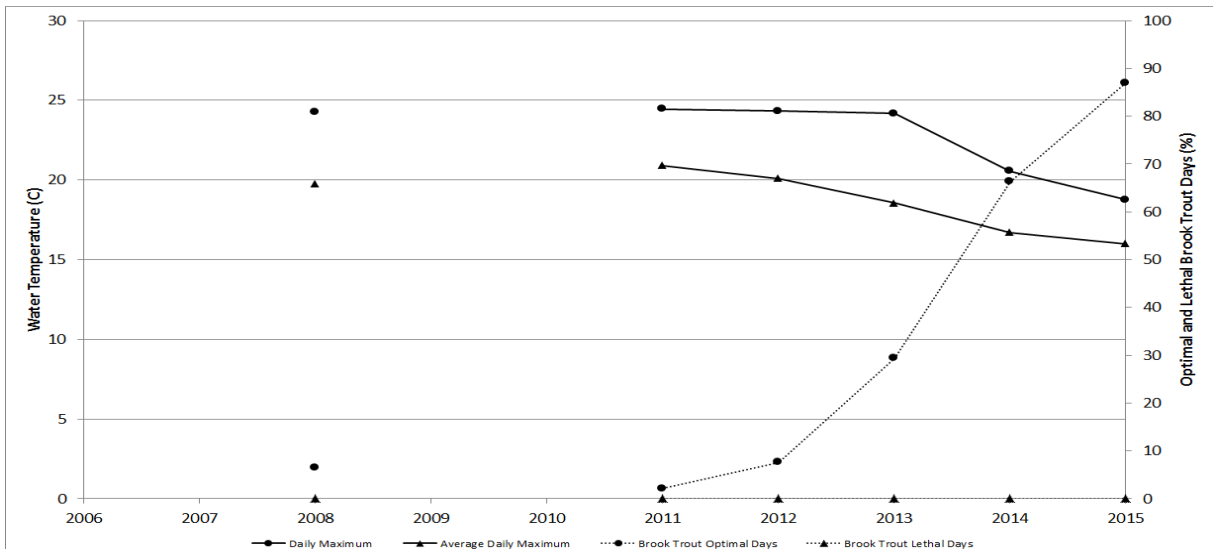
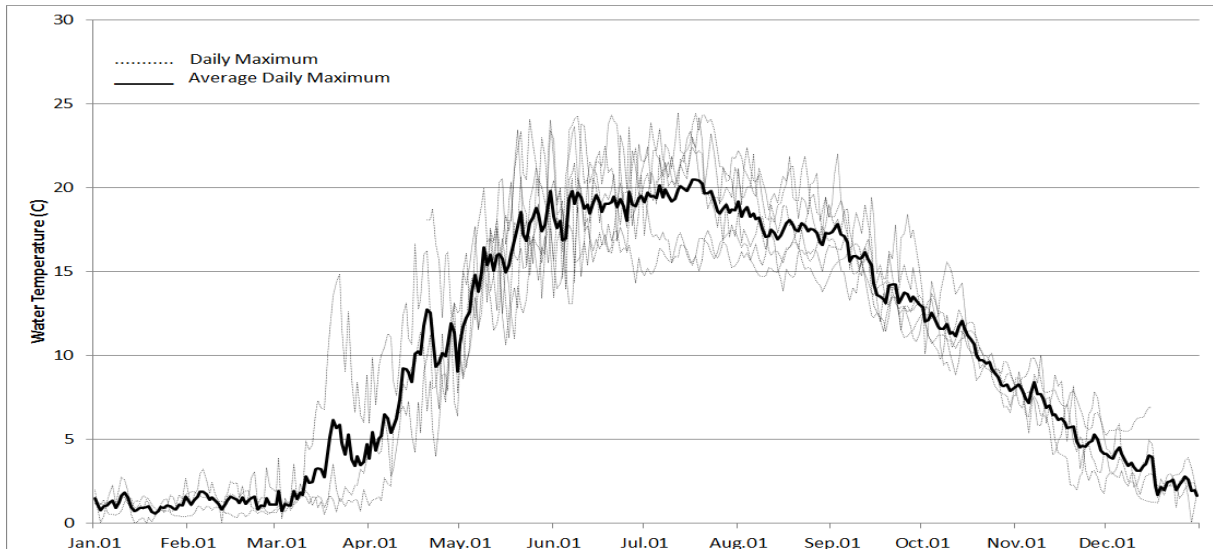
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLLST004

Stream Name: Unnamed
 Subwatershed: South Lake Scugog
 Municipality: Region of Durham
 Road Location: Scugog Ln. 3
 UTM Zone: 17
 Easting: 667552
 Northing: 4881378

Wetted width: 0.6m
 Maximum depth: 275mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	24.2	19.8	7	0	cool-warmwater	Jul.18	28.0	22.0
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	24.5	20.9	2	0	cool-warmwater	Jul.21	34.0	24.3
2012	31	28	31	30	31	30	31	31	30	10	0	0	24.3	20.1	8	0	coolwater	Jul.17	34.0	23.0
2013	0	0	0	0	22	30	31	31	30	31	30	31	24.2	18.6	29	0	coolwater	Jul.17	33.0	22.7
2014	31	28	31	30	31	30	31	31	30	31	30	31	20.6	16.7	66	0	cold-coolwater	Aug.26	27.0	16.3
2015	31	28	31	30	31	30	31	31	30	31	30	16	18.7	16.0	87	0	cold-coolwater	Jul.28	31.0	17.2
AVG	9.3	8.4	9.3	10	18	18	19	19	18	15	12	11	22.7	18.7	33	0	coolwater	n/a	n/a	n/a



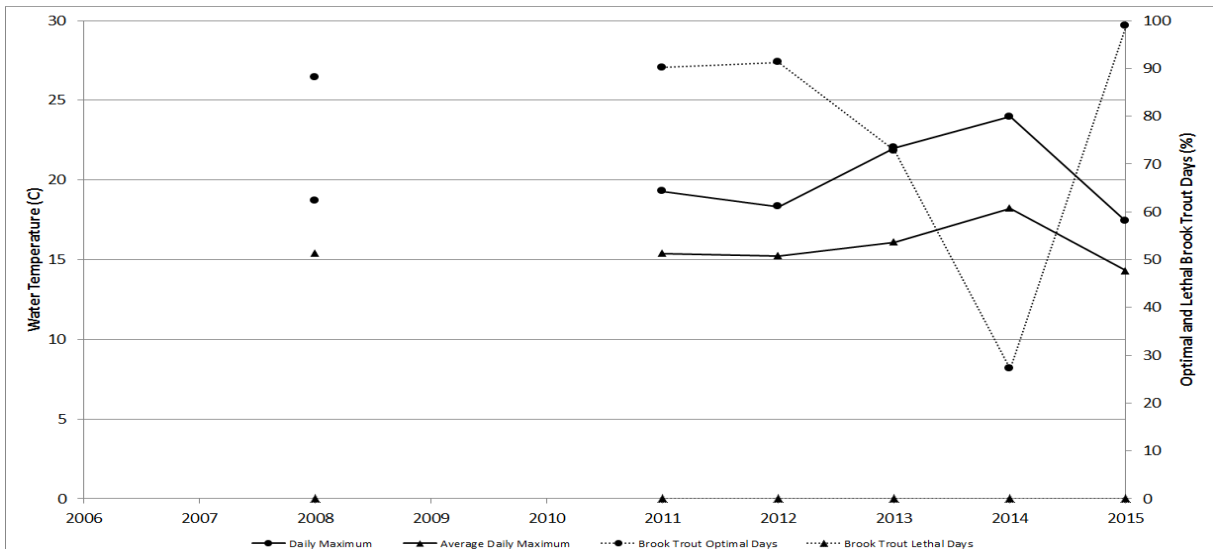
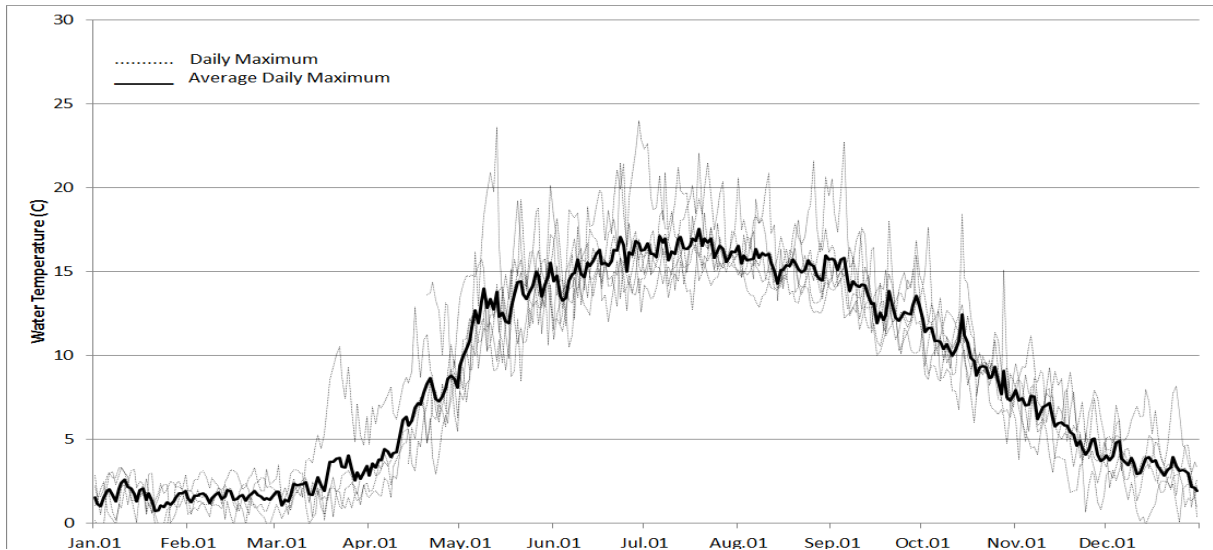
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLLST009

Stream Name: Unnamed
 Subwatershed: South Lake Scugog
 Municipality: Region of Durham
 Road Location: Church St.
 UTM Zone: 17
 Easting: 671496
 Northing: 4884990

Wetted width: 1.6m
 Maximum depth: 160mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	18.7	15.4	88	0	cold-coolwater	Jul.18	28.0	16.1
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	19.3	15.4	90	0	cold-coolwater	Jul.21	34.0	18.5
2012	31	28	31	30	31	30	31	31	30	31	30	31	18.3	15.3	91	0	cold-coolwater	Jul.17	34.0	18.3
2013	31	28	31	26	31	30	31	31	30	31	30	31	22.0	16.1	73	0	coolwater	Jul.17	33.0	20.2
2014	31	28	31	30	31	30	31	31	30	31	30	31	24.0	18.2	27	0	cool-warmwater	Aug.26	27.0	21.6
2015	31	28	31	30	31	30	31	31	30	31	30	31	17.4	14.3	99	0	coldwater	Jul.28	31.0	15.6
AVG	12	11	12	13	19	18	19	19	18	17	15	16	20.0	15.8	78	0	cold-coolwater	n/a	n/a	n/a



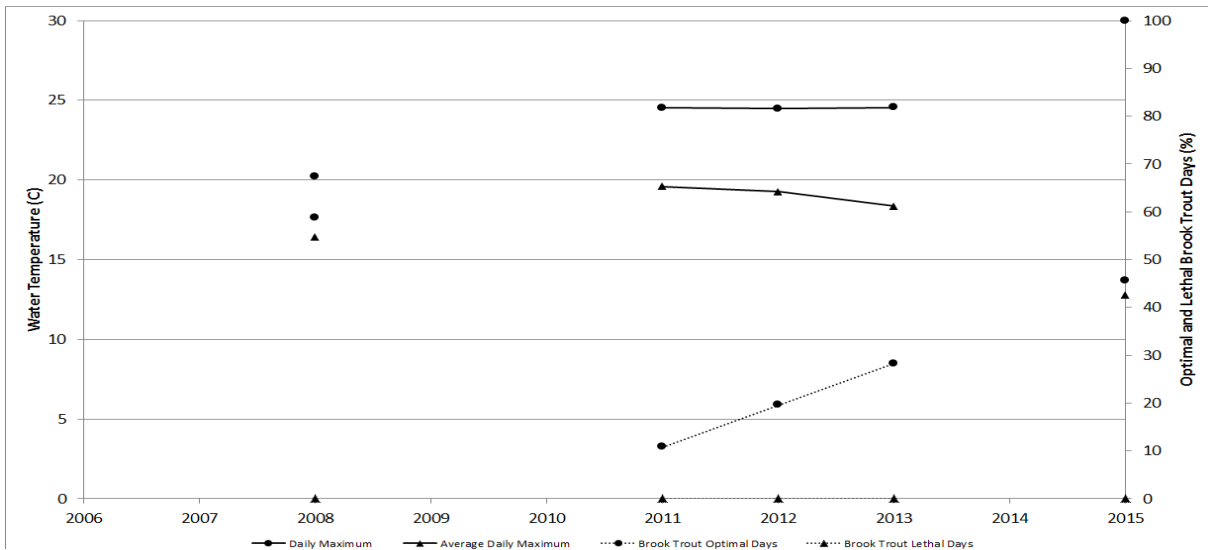
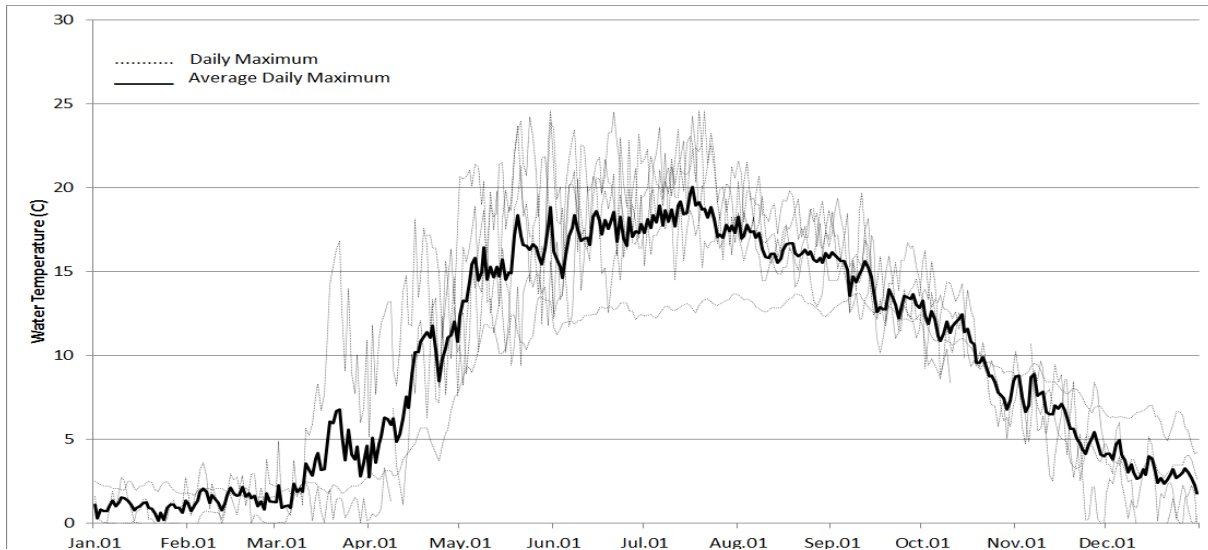
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLLST010

Stream Name: Unnamed
 Subwatershed: South Lake Scugog
 Municipality: Region of Durham
 Road Location: Church St.
 UTM Zone: 17
 Easting: 672982
 Northing: 4885525

Wetted width: 3.2m
 Maximum depth: 200mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	20.2	16.4	59	0	cold-coolwater	Jul.18	28.0	17.1
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	24.5	19.6	11	0	cool-warmwater	Jul.21	34.0	24.5
2012	31	28	31	30	31	30	31	31	30	10	0	0	24.5	19.3	20	0	cool-warmwater	Jul.17	34.0	24.2
2013	0	0	0	22	31	30	31	31	30	31	30	31	24.6	18.4	28	0	coolwater	Jul.17	33.0	22.6
2014	31	28	31	8	0	0	0	0	0	25	31	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2015	31	28	31	30	31	30	31	31	30	31	30	31	13.7	12.8	100	0	coldwater	Jul.28	31.0	13.3
AVG	9.3	8.4	9.3	10	16	15	16	16	15	12	12	12	21.5	17.3	43	0	coolwater	n/a	n/a	n/a



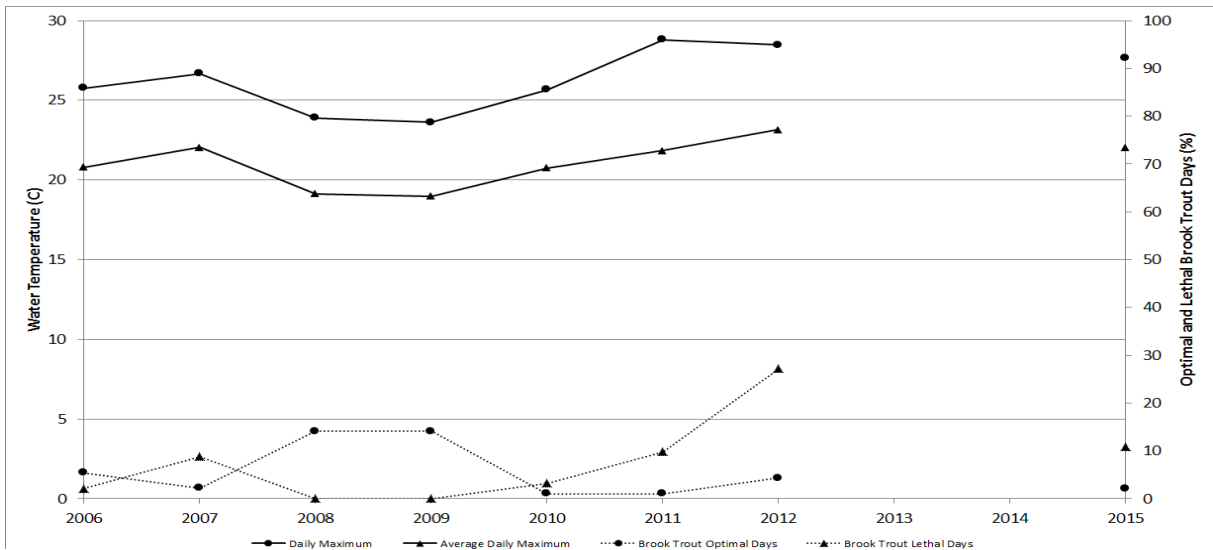
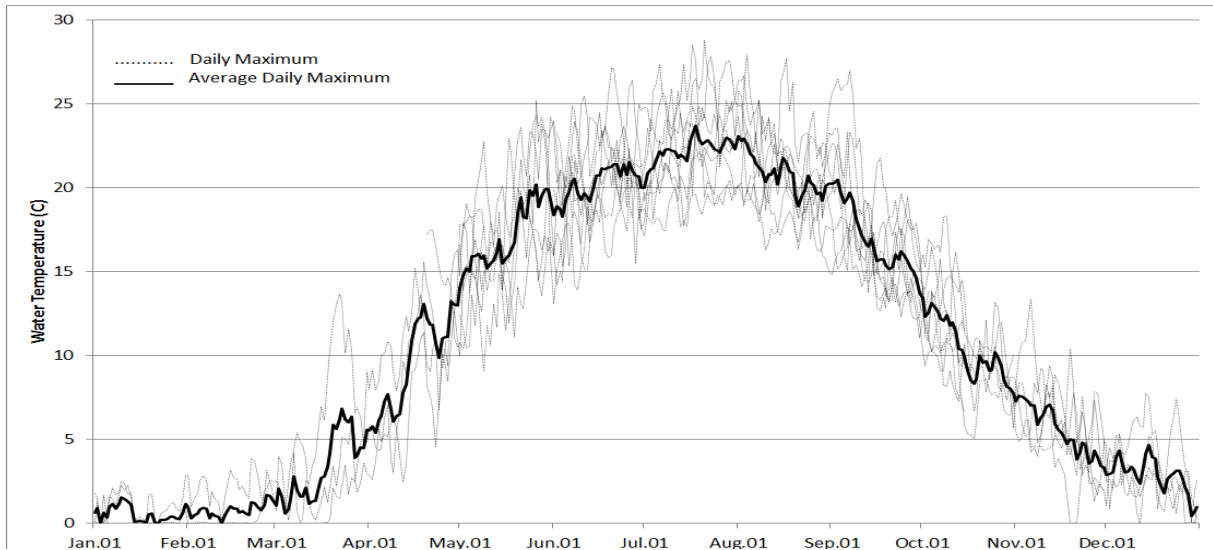
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLMB004

Stream Name: Mariposa Brook
 Subwatershed: Mariposa Brook
 Municipality: City of Kawartha Lakes
 Road Location: Black School Rd.
 UTM Zone: 17
 Easting: 669208
 Northing: 4916926

Wetted width: 3.5m
 Maximum depth: 310mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	25.8	20.8	5	2	cool-warmwater	Aug.01	34.0	25.8
2007	0	0	0	0	0	29	31	31	30	15	0	0	26.7	22.1	2	9	warmwater	Aug.01	32.0	26.4
2008	0	0	0	11	31	30	31	31	30	15	0	0	23.9	19.1	14	0	cool-warmwater	Jul.18	28.0	21.8
2009	0	0	0	0	31	30	31	31	30	31	0	0	23.6	19.0	14	0	cool-warmwater	Aug.15	29.0	21.5
2010	0	0	0	0	31	30	31	31	30	31	0	0	25.7	20.8	1	3	cool-warmwater	Jul.05	32.5	24.1
2011	0	0	0	0	31	30	31	31	30	31	30	31	28.8	21.8	1	10	warmwater	Jul.21	34.0	28.8
2012	31	28	31	30	31	30	31	31	30	31	30	31	28.5	23.2	4	27	warmwater	Jul.17	34.0	28.5
2013	31	28	31	30	9	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2014	0	0	0	0	0	0	0	0	0	26	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2015	31	28	31	30	31	30	31	31	30	31	30	31	27.7	22.0	2	11	warmwater	Jul.28	31.0	27.5
AVG	9.3	8.4	9.3	10	20	24	25	25	24	20	15	12	26.3	21.1	5.6	7.8	warmwater	n/a	n/a	n/a



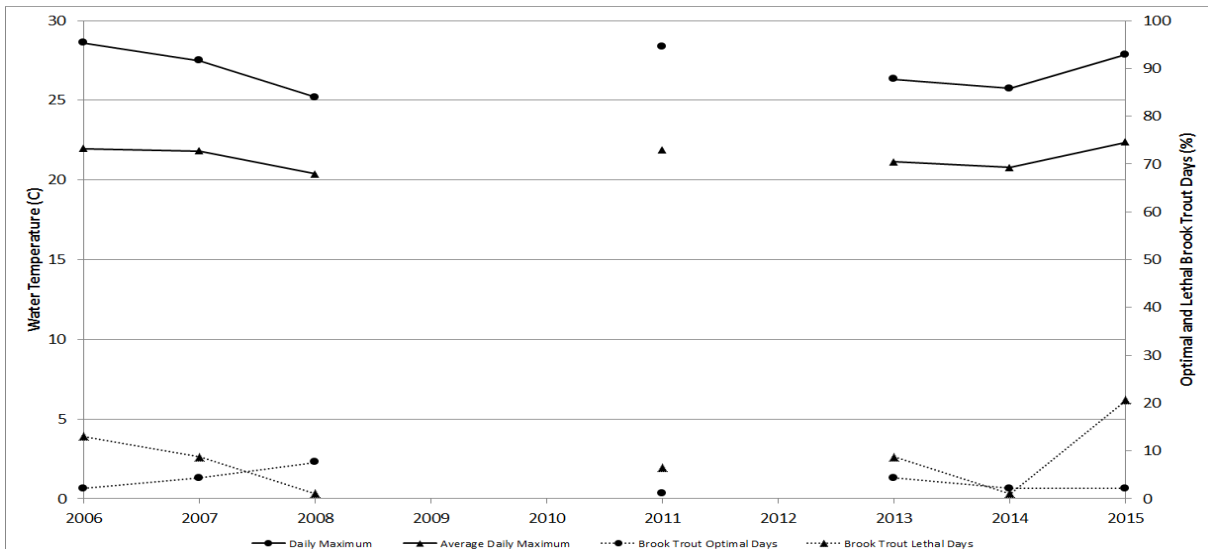
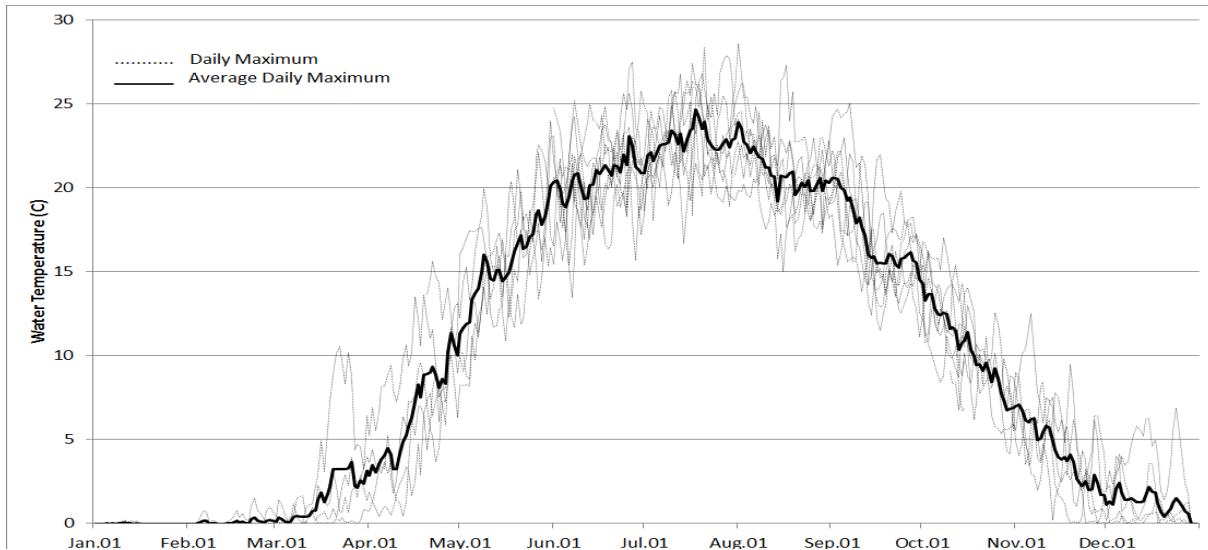
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLMCN001

Stream Name: Martin Creek North
 Subwatershed: Martin Creek North
 Municipality: City of Kawartha Lakes
 Road Location: County Rd. 8
 UTM Zone: 17
 Easting: 691641
 Northing: 4934513

Wetted width: 6.2m
 Maximum depth: 190mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	28.6	22.0	2	13	warmwater	Aug.01	34.0	28.6
2007	0	0	0	0	0	30	31	31	30	15	0	0	27.5	21.8	4	9	cool-warmwater	Aug.01	32.0	25.7
2008	0	0	0	11	31	30	31	31	30	15	0	0	25.2	20.4	8	1	cool-warmwater	Jul.18	28.0	23.2
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	28.3	21.9	1	7	warmwater	Jul.21	34.0	28.3
2012	31	28	31	26	0	0	0	0	0	22	30	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2013	31	28	31	30	31	30	31	31	30	31	30	31	26.3	21.1	4	9	warmwater	Jul.17	33.0	26.3
2014	31	28	31	30	31	30	31	31	30	31	30	31	25.7	20.8	2	1	cool-warmwater	Aug.26	27.0	23.0
2015	31	28	31	30	31	30	31	31	30	31	30	31	27.9	22.4	2	21	warmwater	Jul.28	31.0	27.9
AVG	12	11	12	13	16	21	22	22	21	19	15	16	27.1	21.5	3.4	8.5	warmwater	n/a	n/a	n/a



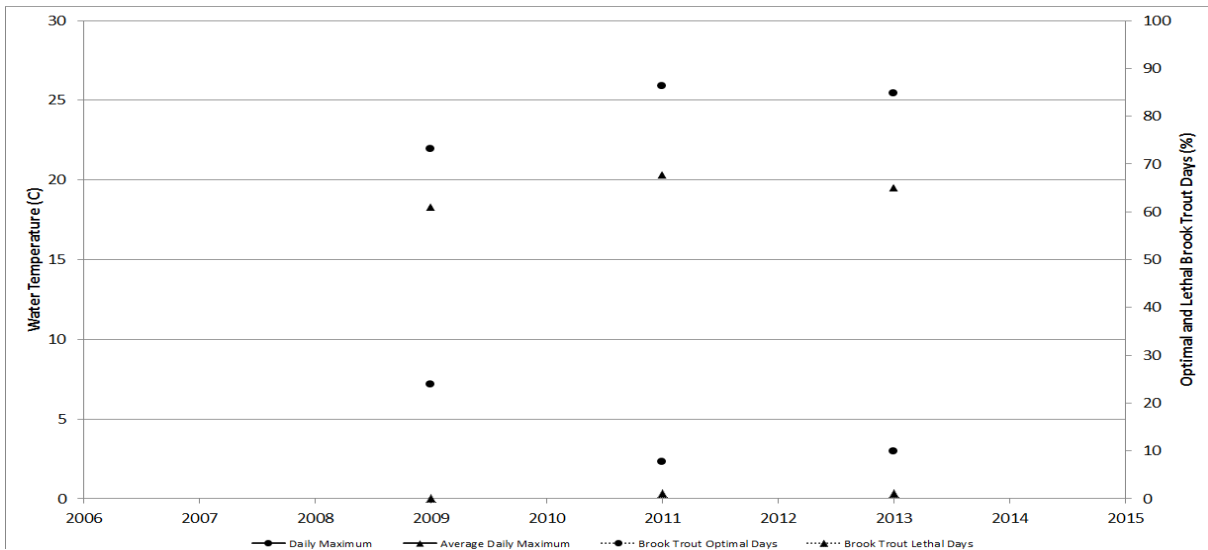
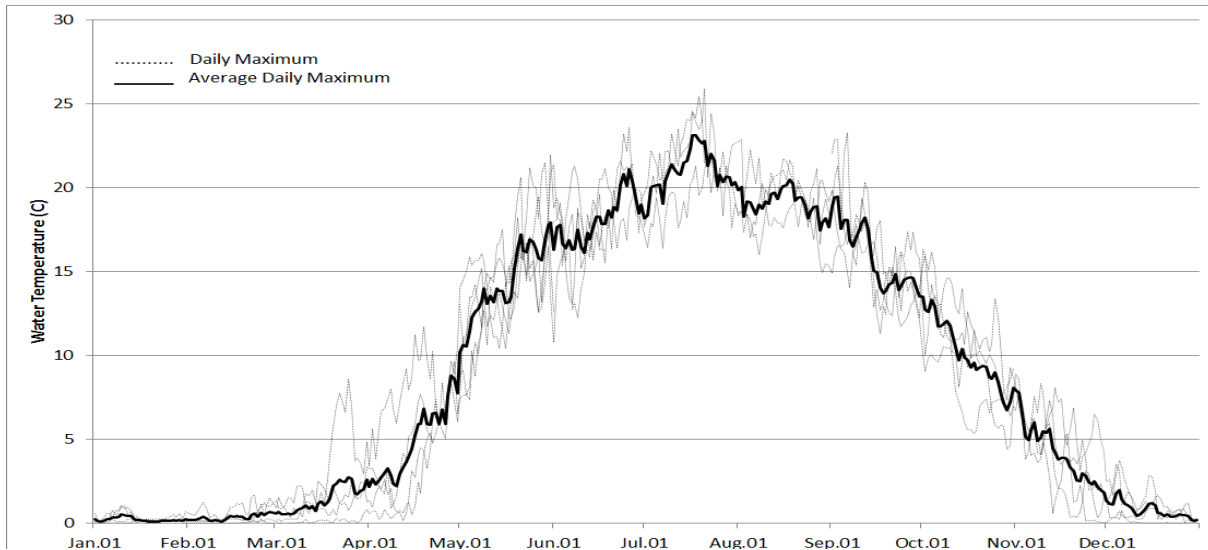
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLMCN002

Stream Name: Martin Creek North
 Subwatershed: Martin Creek North
 Municipality: City of Kawartha Lakes
 Road Location: Devitts Rd.
 UTM Zone: 17
 Easting: 690980
 Northing: 4939720

Wetted width: 2.0m
 Maximum depth: 250mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	0	0	0	0	31	30	31	31	30	31	0	0	21.9	18.3	24	0	coolwater	Aug.15	29.0	21.0
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	25.9	20.3	8	1	cool-warmwater	Jul.21	34.0	25.9
2012	31	28	31	30	31	1	0	0	30	31	30	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2013	31	28	31	30	31	30	31	31	30	31	30	31	25.4	19.5	10	1	cool-warmwater	Jul.17	33.0	24.5
2014	31	28	31	30	31	18	0	0	0	25	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2015	31	28	31	22	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AVG	12	11	12	11	16	11	9.3	9.3	12	12	12	12	24.4	19.4	14	0.7	cool-warmwater	n/a	n/a	n/a



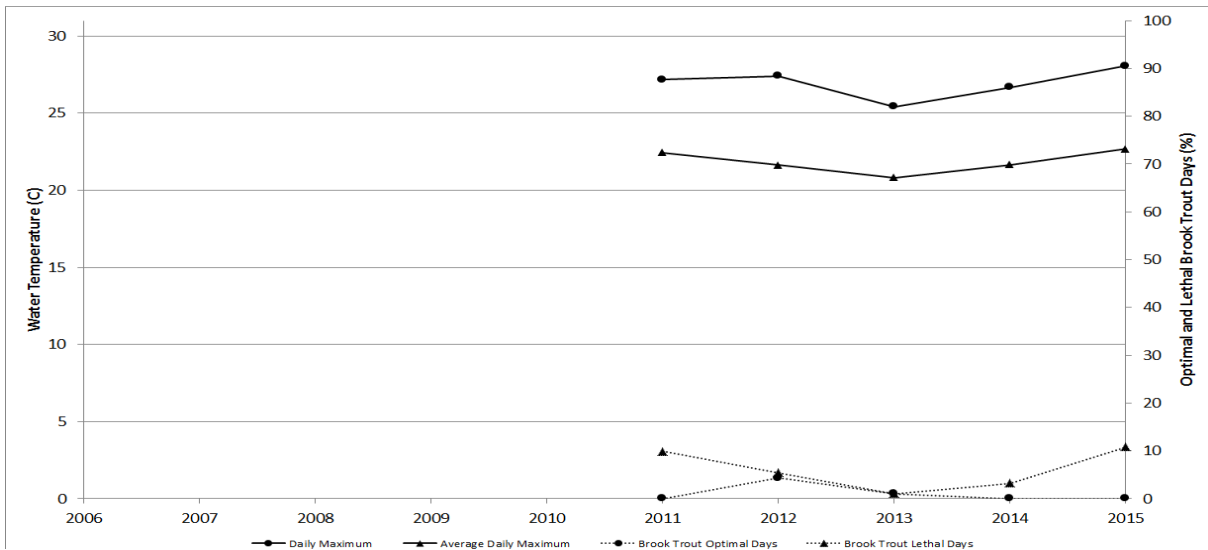
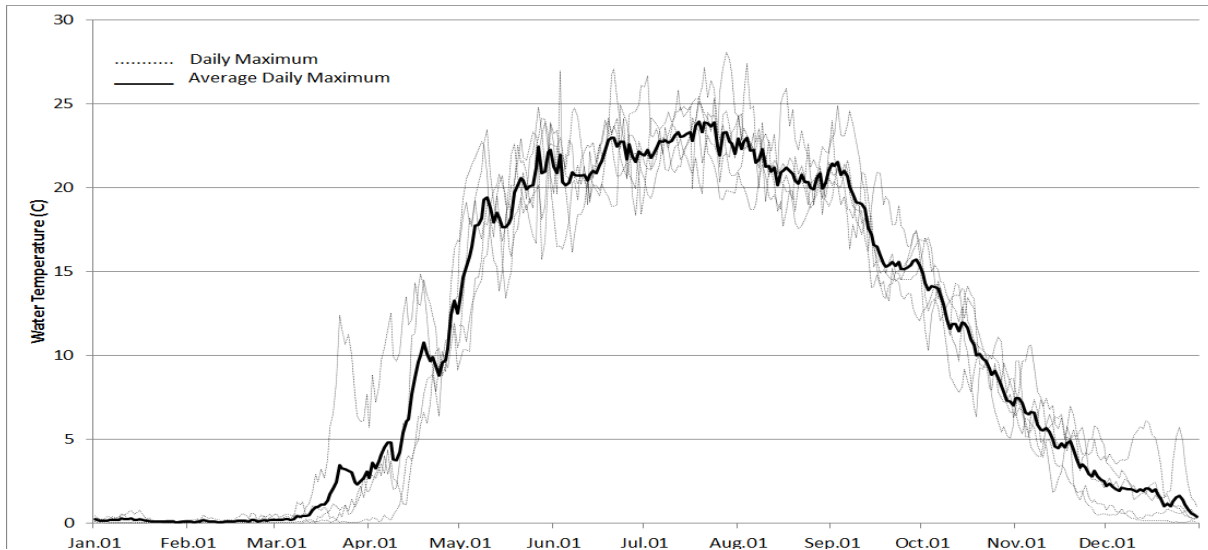
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLNC001

Stream Name: Nogies Creek
 Subwatershed: Nogies Creek
 Municipality: Peterborough County
 Road Location: Bass Lake Rd.
 UTM Zone: 17
 Easting: 696546
 Northing: 4946551

Wetted width: 7.0m (approx.)
 Maximum depth: 350mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	27.2	22.4	0	10	warmwater	Jul.21	34.0	27.2
2012	31	28	31	30	31	30	31	31	30	31	30	31	27.4	21.6	4	5	cool-warmwater	Jul.17	34.0	24.2
2013	31	28	31	30	31	30	31	31	30	31	30	31	25.4	20.8	1	1	cool-warmwater	Jul.17	33.0	23.8
2014	31	28	31	30	31	30	31	31	30	31	30	31	26.7	21.6	0	3	cool-warmwater	Aug.26	27.0	21.7
2015	31	28	31	30	31	30	31	31	30	31	30	31	28.1	22.7	0	11	warmwater	Jul.28	31.0	28.1
AVG	12	11	12	12	16	15	16	16	15	16	15	16	26.9	21.8	1.1	6.1	cool-warmwater	n/a	n/a	n/a



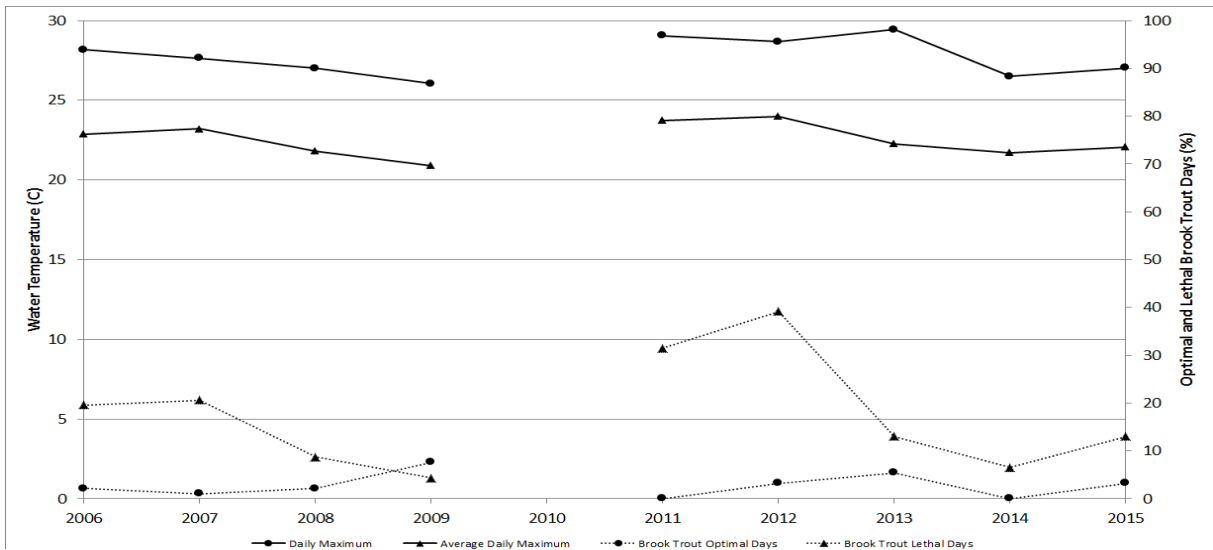
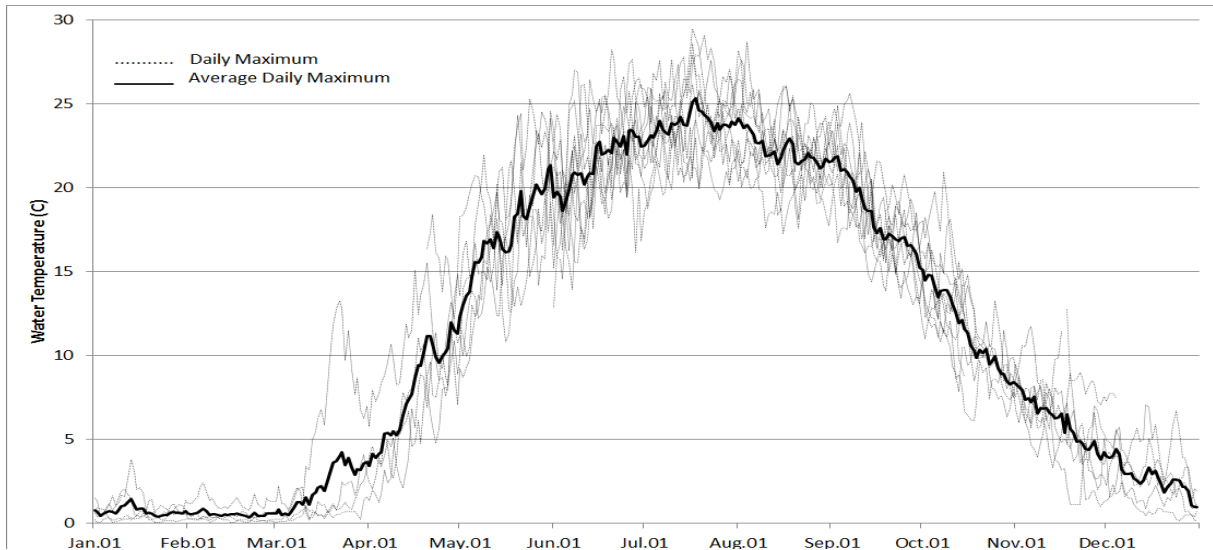
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLNR004

Stream Name: Nonquon River
 Subwatershed: Nonquon River
 Municipality: Region of Durham
 Road Location: Regional Rd. 21
 UTM Zone: 17
 Easting: 659770
 Northing: 4881930

Wetted width: 3.5m
 Maximum depth: 450mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	28.2	22.9	2	20	warmwater	Aug.01	34.0	28.2
2007	0	0	0	0	0	30	31	31	30	15	0	0	27.6	23.2	1	21	warmwater	Aug.01	32.0	27.0
2008	0	0	0	11	31	30	31	31	30	15	0	0	27.0	21.8	2	9	warmwater	Jul.18	28.0	24.9
2009	0	0	0	0	0	30	31	31	30	31	29	4	26.0	20.9	8	4	warmwater	Aug.15	29.0	25.6
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	29.1	23.8	0	32	warmwater	Jul.21	34.0	29.1
2012	31	28	31	30	31	30	31	31	30	31	30	31	28.7	24.0	3	39	warmwater	Jul.17	34.0	28.6
2013	31	28	31	30	31	30	31	31	30	31	30	31	29.4	22.3	5	13	warmwater	Jul.17	33.0	29.4
2014	31	28	31	30	31	30	31	31	30	31	30	31	26.5	21.7	0	7	cool-warmwater	Aug.26	27.0	22.9
2015	31	28	31	30	31	30	31	31	30	31	30	31	27.0	22.1	3	13	warmwater	Jul.28	31.0	26.3
AVG	12	11	12	13	19	27	28	28	27	23	18	16	27.7	22.5	2.8	17	warmwater	n/a	n/a	n/a



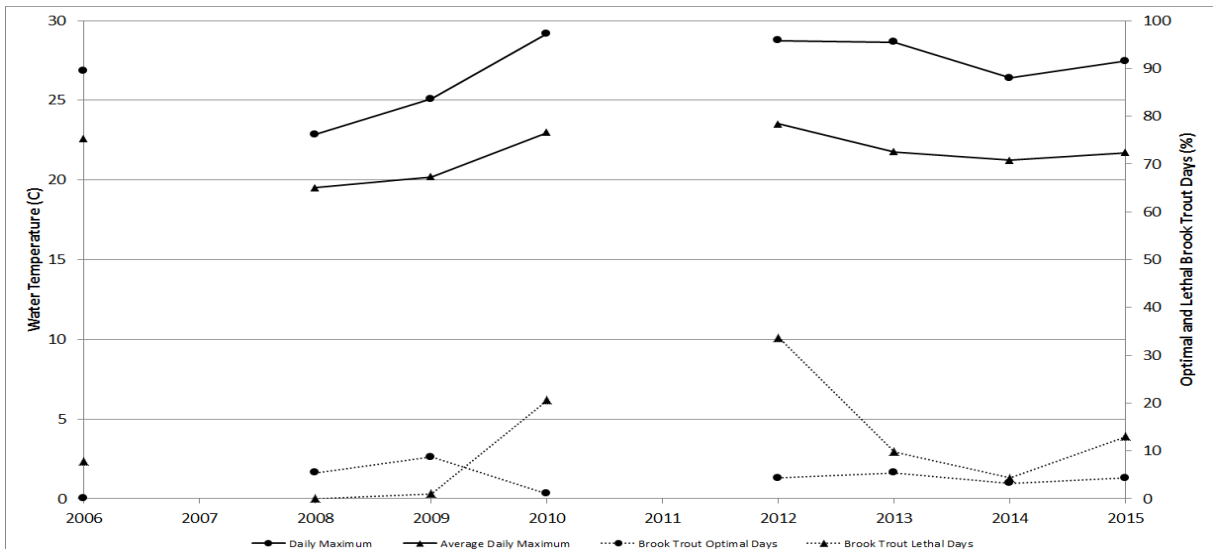
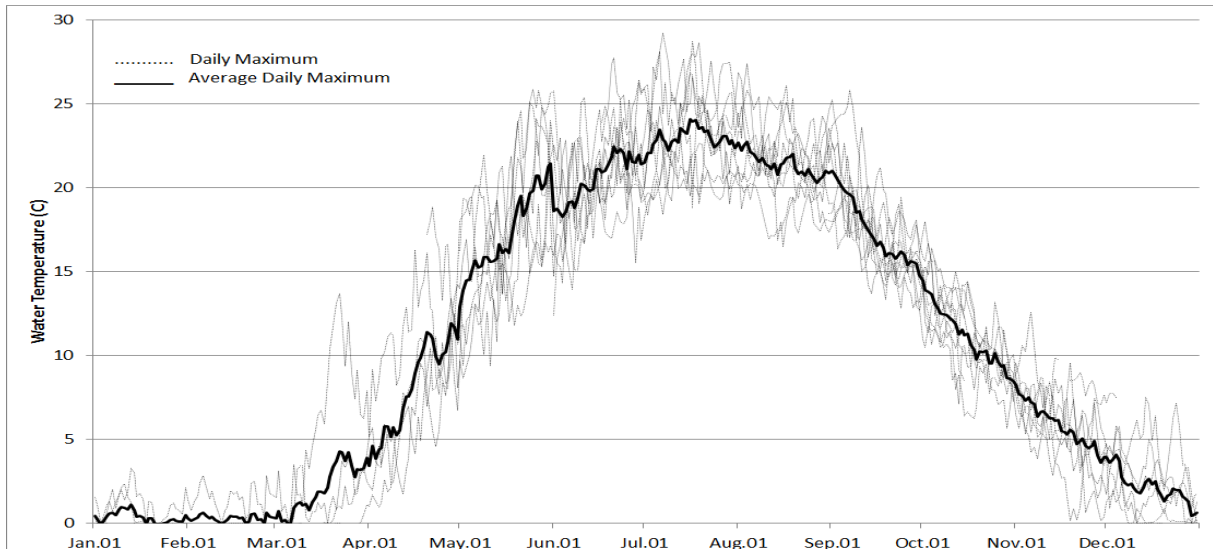
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLNR008

Stream Name: Nonquon River
 Subwatershed: Nonquon River
 Municipality: Region of Durham
 Road Location: Scugog Ln. 6
 UTM Zone: 17
 Easting: 659610
 Northing: 4883441

Wetted width: 3.8m
 Maximum depth: 350mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	14	31	31	30	15	0	0	26.8	22.6	0	8	warmwater	Aug.01	34.0	26.8
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	22.8	19.5	5	0	cool-warmwater	Jul.18	28.0	22.1
2009	0	0	0	0	0	30	31	31	30	31	27	4	25.1	20.2	9	1	cool-warmwater	Aug.15	29.0	23.7
2010	0	0	0	0	31	30	31	31	30	31	30	31	29.2	23.0	1	21	warmwater	Jul.05	32.5	27.3
2011	0	0	0	0	31	0	0	1	30	31	30	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2012	31	28	31	30	31	30	31	31	30	31	30	31	28.7	23.5	4	34	warmwater	Jul.17	34.0	28.7
2013	31	28	31	30	31	30	31	31	30	31	30	31	28.7	21.8	5	10	warmwater	Jul.17	33.0	28.0
2014	31	28	31	30	31	30	31	31	30	31	30	31	26.4	21.2	3	4	cool-warmwater	Aug.26	27.0	22.6
2015	31	28	31	30	31	30	31	31	30	31	30	31	27.5	21.7	4	13	warmwater	Jul.28	31.0	27.4
AVG	12	11	12	13	22	22	25	25	27	25	21	19	26.9	21.7	4.1	11	warmwater	n/a	n/a	n/a



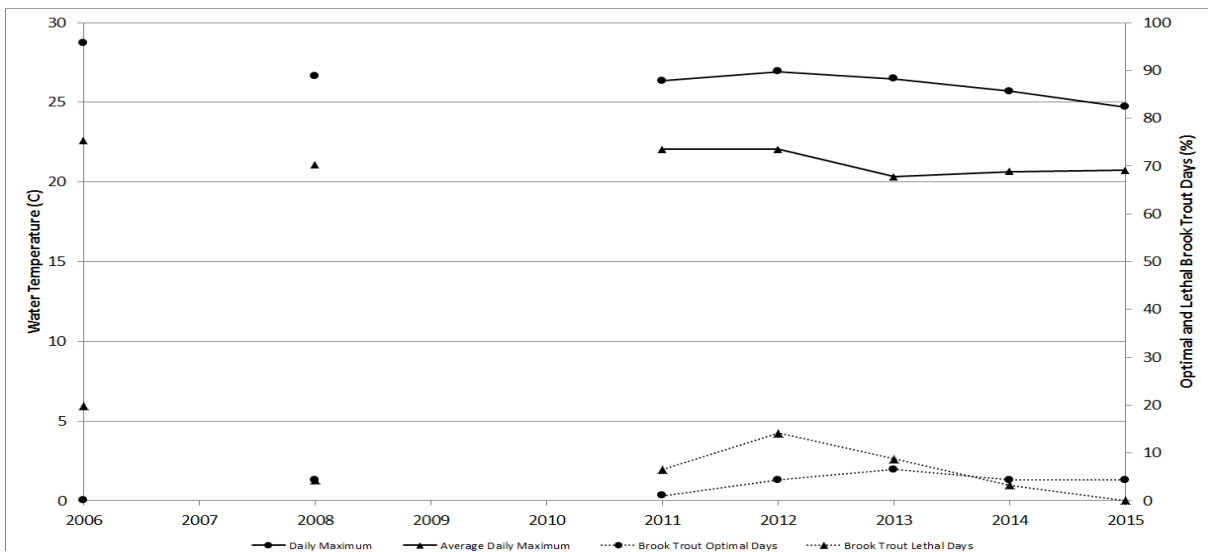
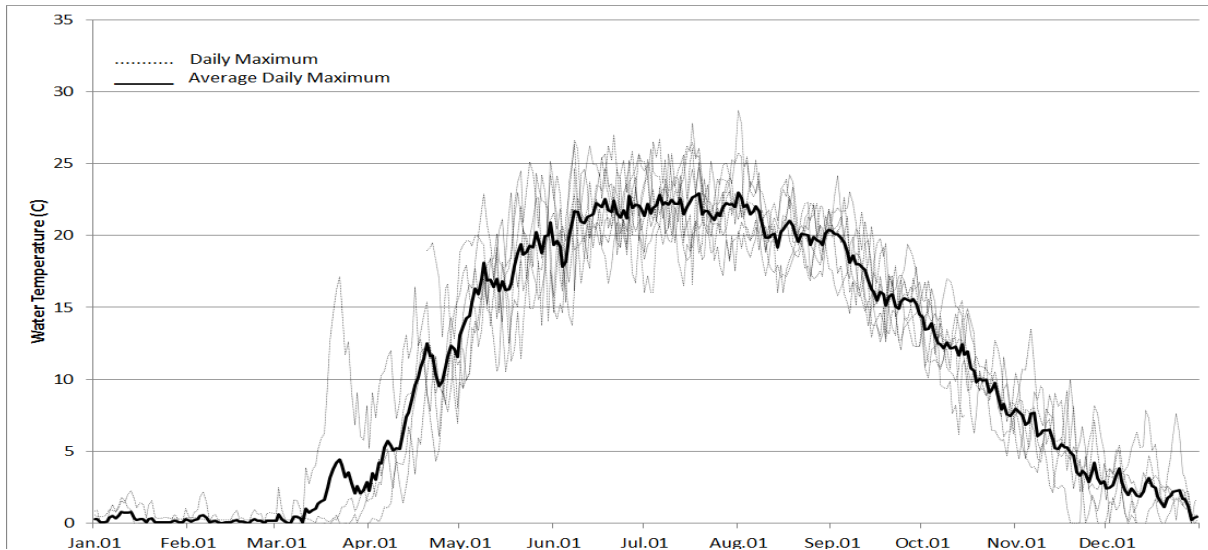
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLNR011

Stream Name: Nonquon River
 Subwatershed: Nonquon River
 Municipality: Region of Durham
 Road Location: Scugog Ln. 10
 UTM Zone: 17
 Easting: 659376
 Northing: 4889386

Wetted width: 2.3m
 Maximum depth: 160mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	14	31	31	30	15	0	0	28.7	22.6	0	20	warmwater	Aug.01	34.0	28.7
2007	0	0	0	0	0	30	31	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	26.6	21.1	4	4	cool-warmwater	Jul.18	28.0	22.9
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	26.4	22.0	1	7	coolwater	Jul.21	34.0	22.9
2012	31	28	31	30	31	30	31	31	30	31	30	31	26.9	22.0	4	14	cool-warmwater	Jul.17	34.0	26.1
2013	31	28	31	30	31	30	31	31	30	31	30	31	26.5	20.3	7	9	warmwater	Jul.17	33.0	26.5
2014	31	28	31	30	31	30	31	31	30	31	30	31	25.7	20.7	4	3	cool-warmwater	Aug.26	27.0	22.2
2015	31	28	31	30	31	30	31	31	30	31	30	31	24.7	20.7	4	0	cool-warmwater	Jul.28	31.0	23.8
AVG	12	11	12	13	19	22	25	22	21	19	15	16	26.5	21.4	3.6	8.1	cool-warmwater	n/a	n/a	n/a



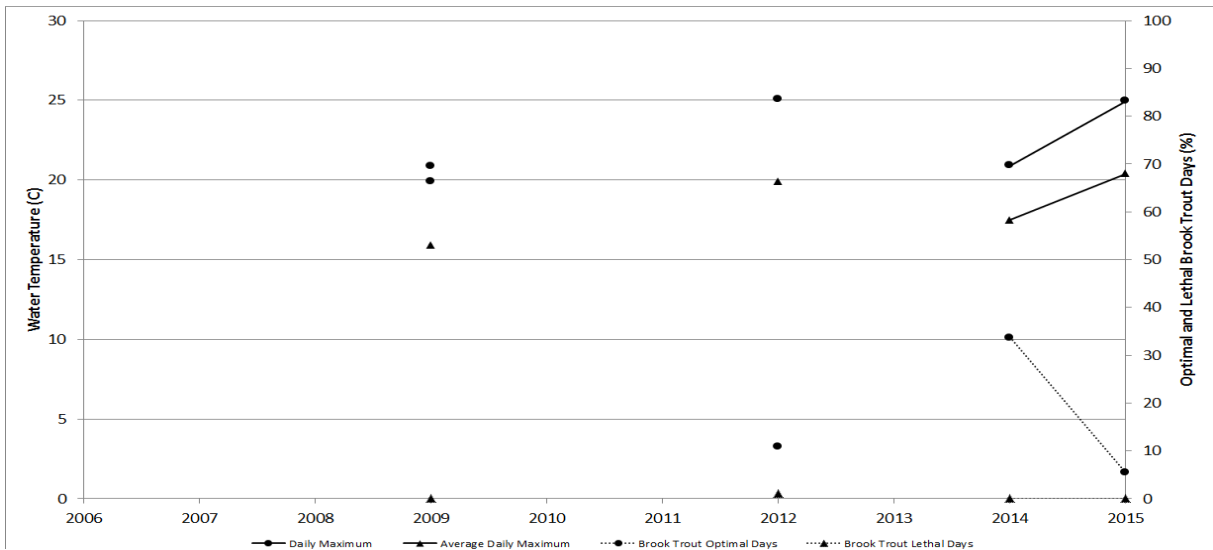
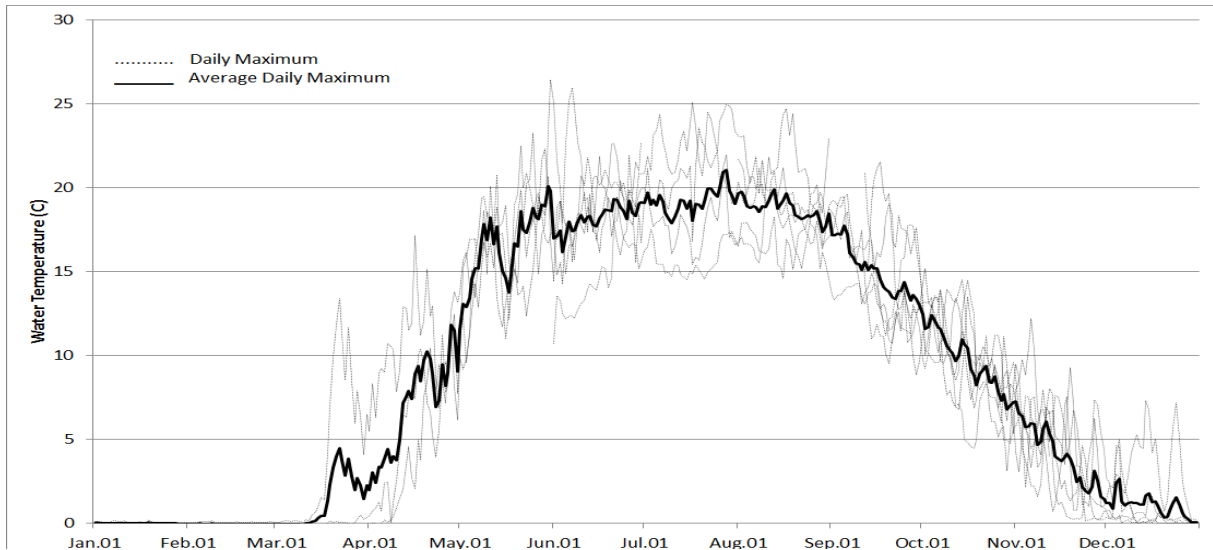
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLNR014

Stream Name: Nonquon River
 Subwatershed: Nonquon River
 Municipality: Region of Durham
 Road Location: Hwy. 7/12
 UTM Zone: 17
 Easting: 659802
 Northing: 4887384

Wetted width: 2.0m
 Maximum depth: 100mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	Aug.01	34.0	0.0
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	Aug.01	32.0	0.0
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	Jul.18	28.0	0.0
2009	0	0	0	0	0	30	31	31	30	31	12	0	19.9	15.9	70	0	cold-coolwater	Aug.15	29.0	17.8
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	Jul.05	32.5	0.0
2011	0	0	0	0	31	30	0	31	30	31	30	31	n/a	n/a	n/a	n/a	coolwater	Aug.18	27.0	19.6
2012	31	28	31	30	31	30	31	31	30	31	30	31	25.1	19.9	11	1	cool-warmwater	Jul.17	34.0	25.1
2013	0	0	0	0	0	0	0	0	19	31	30	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2014	31	28	31	30	31	30	31	31	30	31	30	31	20.9	17.5	34	0	cold-coolwater	Aug.26	27.0	16.7
2015	31	28	31	30	31	30	31	31	19	31	30	31	24.9	20.4	5	0	cool-warmwater	Jul.28	31.0	24.9
AVG	9.3	8.4	9.3	9	12	15	12	16	16	19	16	16	22.7	18.4	30	0.3	coolwater	n/a	n/a	n/a



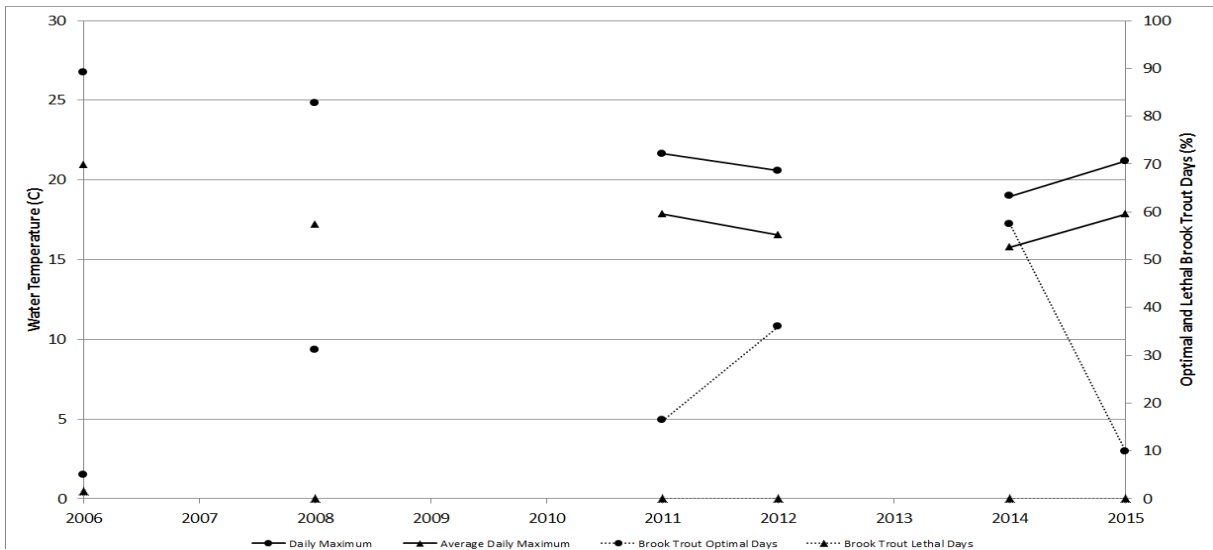
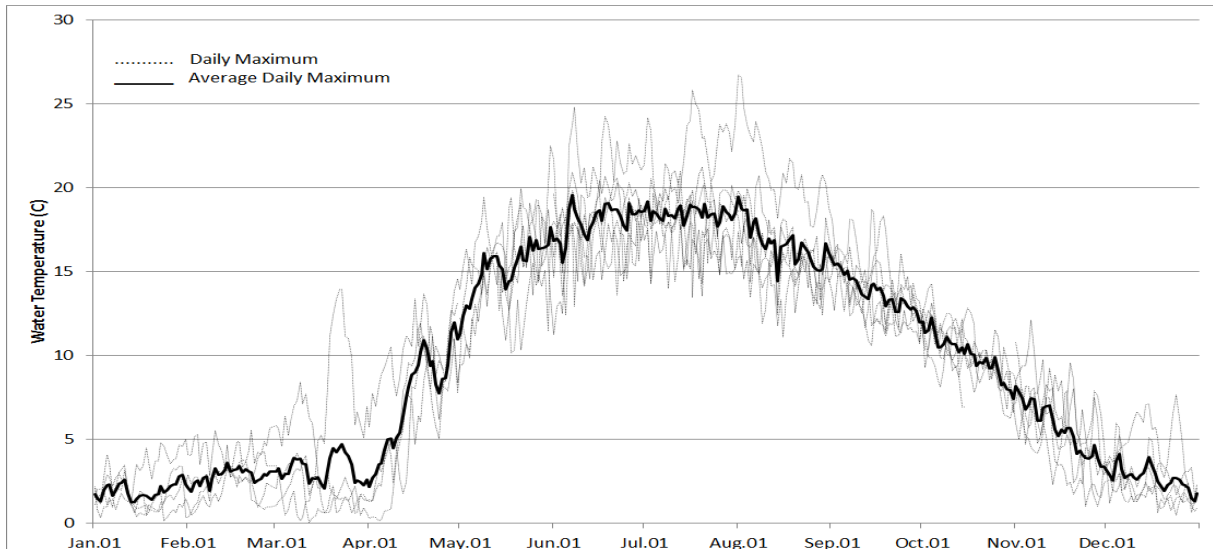
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLPL001

Stream Name: Reforestation Creek
 Subwatershed: Pigeon Lake
 Municipality: City of Kawartha Lakes
 Road Location: n/a (Emily Tract)
 UTM Zone: 17
 Easting: 665113
 Northing: 4912198

Wetted width: 3.0m
 Maximum depth: 250mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	26.7	21.0	5	2	warmwater	Aug.01	34.0	26.7
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	19	30	31	31	30	15	0	0	24.8	17.2	31	0	cold-coolwater	Jul.18	28.0	16.1
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	21.7	17.9	16	0	coolwater	Jul.21	34.0	20.2
2012	31	28	31	30	31	30	31	31	30	31	30	31	20.6	16.5	36	0	cold-coolwater	Jul.17	34.0	19.2
2013	31	28	31	30	0	0	0	0	0	0	30	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2014	31	28	31	30	31	30	31	31	30	31	30	31	19.0	15.8	57	0	coolwater	Aug.26	27.0	14.8
2015	31	28	31	30	31	30	31	31	30	31	30	31	21.2	17.9	10	0	coolwater	Jul.28	31.0	19.9
AVG	12	11	12	12	14	18	19	19	18	15	15	16	22.3	17.7	26	0.3	coolwater	n/a	n/a	n/a



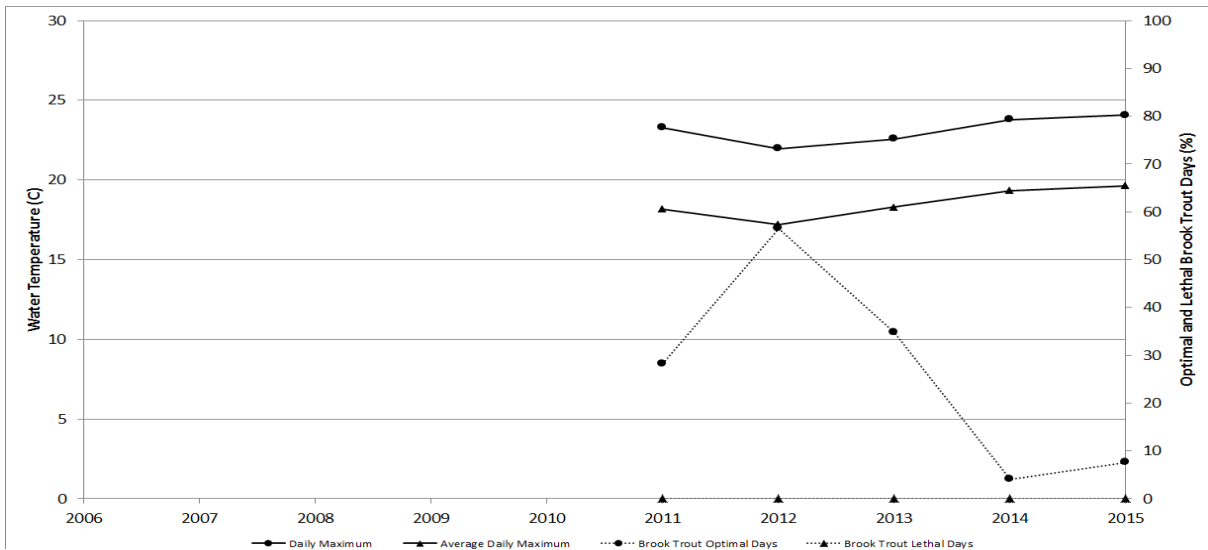
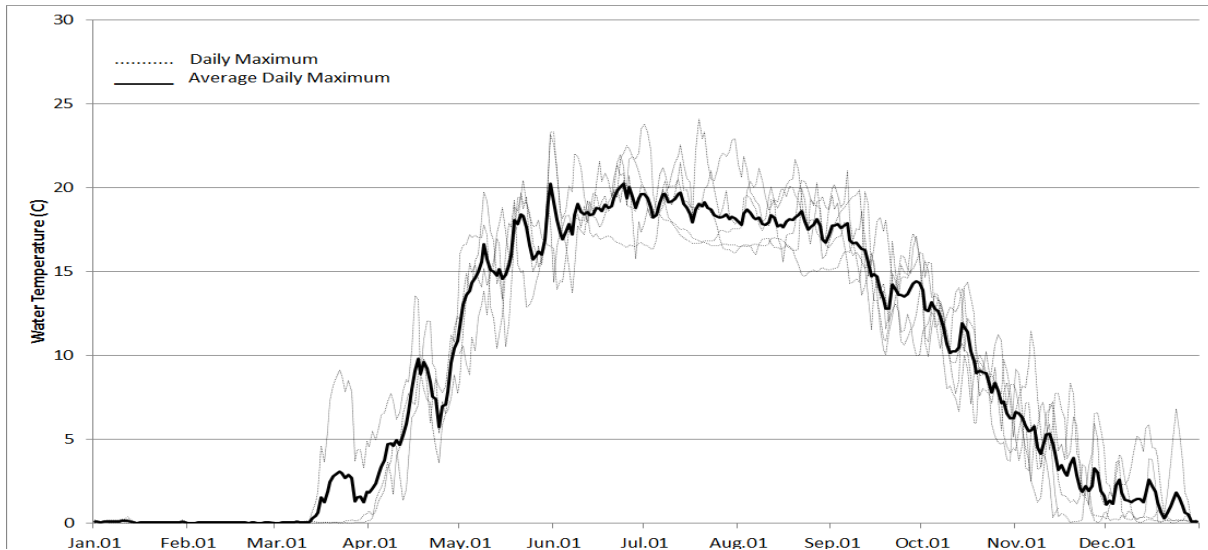
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLPL006

Stream Name: Potash Creek
 Subwatershed: Pigeon Lake
 Municipality: City of Kawartha Lakes
 Road Location: Yankee Ln.
 UTM Zone: 17
 Easting: 699825
 Northing: 4915956

Wetted width: 2.0m
 Maximum depth: 200mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	23.3	18.2	28	0	cold-coolwater	Jul.21	34.0	16.8
2012	31	28	31	30	31	30	31	31	30	31	30	31	22.0	17.2	57	0	cold-coolwater	Jul.17	34.0	16.7
2013	31	28	31	30	31	30	31	31	30	31	15	0	22.6	18.3	35	0	cold-coolwater	Jul.17	33.0	18.8
2014	0	0	0	0	0	11	31	31	30	31	30	31	23.8	19.3	4	0	coolwater	Aug.26	27.0	18.9
2015	31	28	31	30	31	30	31	31	30	31	30	31	24.1	19.7	8	0	coolwater	Jul.28	31.0	21.9
AVG	9.3	8.4	9.3	9	12	13	16	16	15	16	14	12	23.1	18.5	26	0	cold-coolwater	n/a	n/a	n/a



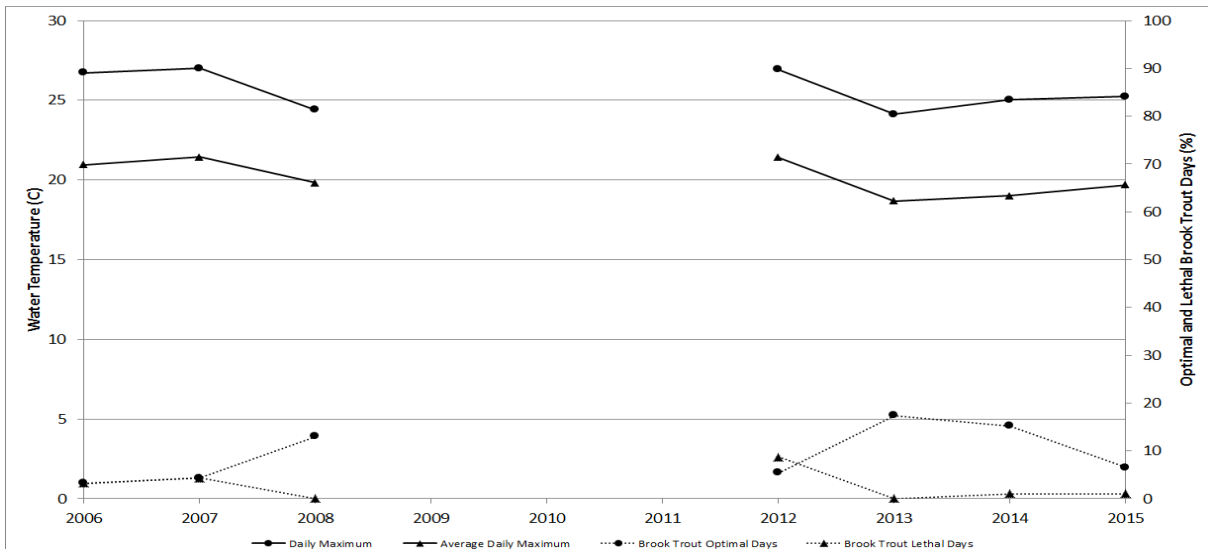
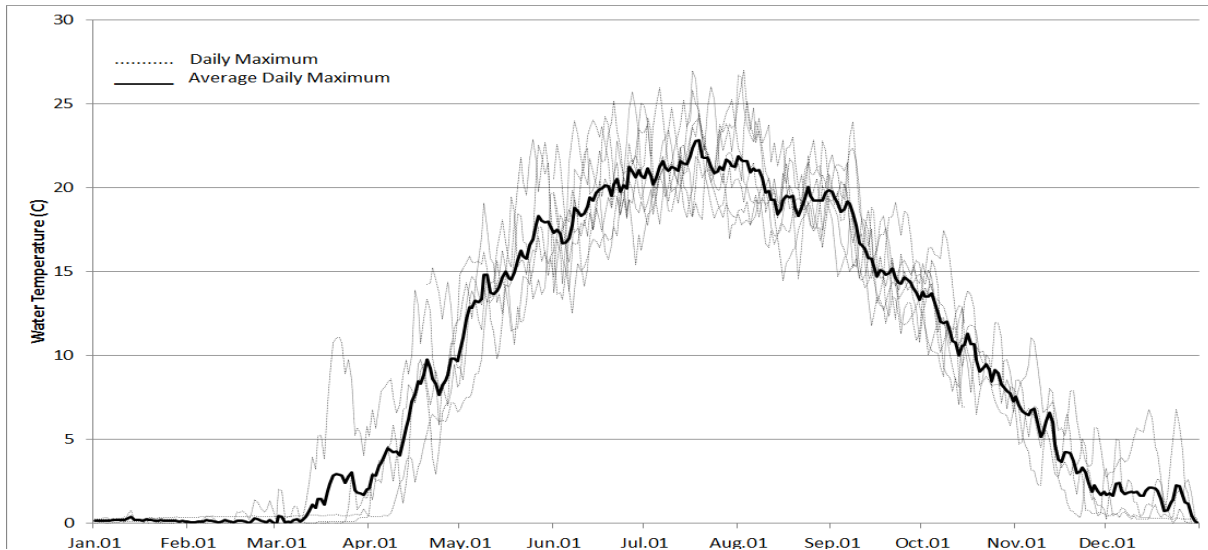
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLPR001

Stream Name: Pigeon River
 Subwatershed: Pigeon River
 Municipality: City of Kawartha Lakes
 Road Location: Hwy. 35
 UTM Zone: 17
 Easting: 685544
 Northing: 4898171

Wetted width: 10.0m (approx.)
 Maximum depth: 1000mm (approx.)

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	30	31	31	30	15	0	0	26.7	21.0	3	3	warmwater	Aug.01	34.0	26.7
2007	0	0	0	0	0	30	31	31	30	15	0	0	27.0	21.4	4	4	cool-warmwater	Aug.01	32.0	25.2
2008	0	0	0	11	31	30	31	31	30	15	0	0	24.4	19.8	13	0	cool-warmwater	Jul.18	28.0	23.0
2009	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2012	31	28	31	30	31	30	31	31	30	31	30	31	26.9	21.4	5	9	warmwater	Jul.17	34.0	26.9
2013	31	28	31	30	31	30	31	31	30	31	30	31	24.1	18.7	17	0	cool-warmwater	Jul.17	33.0	23.7
2014	31	28	31	30	31	30	31	31	30	31	30	31	25.0	19.0	15	1	coolwater	Aug.26	27.0	19.9
2015	31	28	31	30	31	30	31	31	30	31	30	31	25.2	19.7	7	1	cool-warmwater	Jul.28	31.0	24.4
AVG	12	11	12	13	16	21	22	21	17	12	12	12	25.6	20.1	9.3	2.6	cool-warmwater	n/a	n/a	n/a



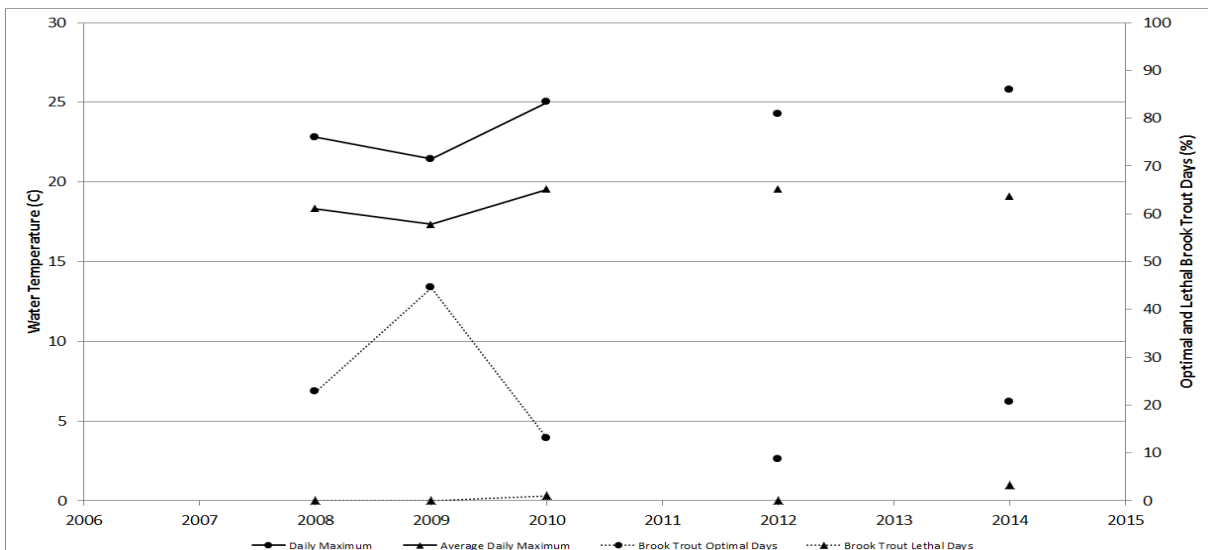
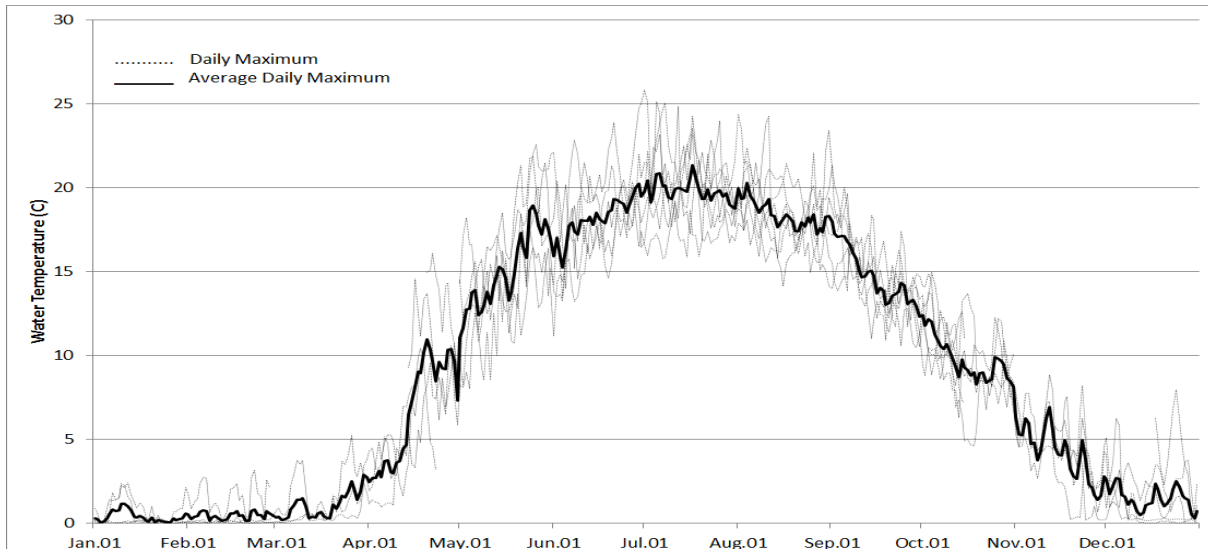
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLPR002

Stream Name: Pigeon River
 Subwatershed: Pigeon River
 Municipality: City of Kawartha Lakes
 Road Location: Hwy. 7A
 UTM Zone: 17
 Easting: 685738
 Northing: 4893334

Wetted width: 4.5m
 Maximum depth: 280mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	31	31	30	15	0	0	n/a	n/a	n/a	n/a	cool-warmwater	Aug.01	34.0	24.4
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	22.8	18.3	23	0	coolwater	Jul.18	28.0	20.3
2009	0	0	0	0	31	30	31	31	30	31	0	0	21.4	17.3	45	0	coolwater	Aug.15	29.0	20.0
2010	0	0	0	0	31	30	31	31	30	31	30	31	25.0	19.6	13	1	cool-warmwater	Jul.05	32.5	22.8
2011	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2012	31	28	0	17	31	30	31	31	30	31	30	31	24.2	19.5	9	0	cool-warmwater	Jul.17	34.0	24.2
2013	31	28	31	18	0	0	0	0	0	16	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2014	31	28	31	30	31	30	31	31	30	31	30	31	25.8	19.1	21	3	cool-warmwater	Aug.26	27.0	22.1
2015	31	28	31	23	0	0	0	0	0	0	15	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AVG	12	11	9.3	9.9	16	15	19	19	18	15	11	14	23.9	18.8	22	0.9	cool-warmwater	n/a	n/a	n/a



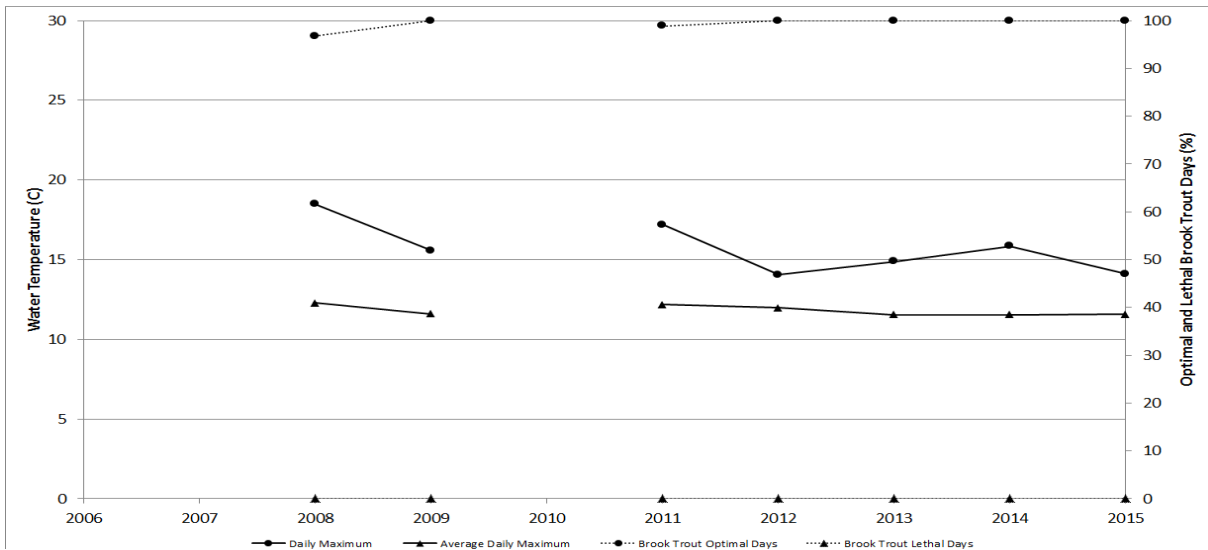
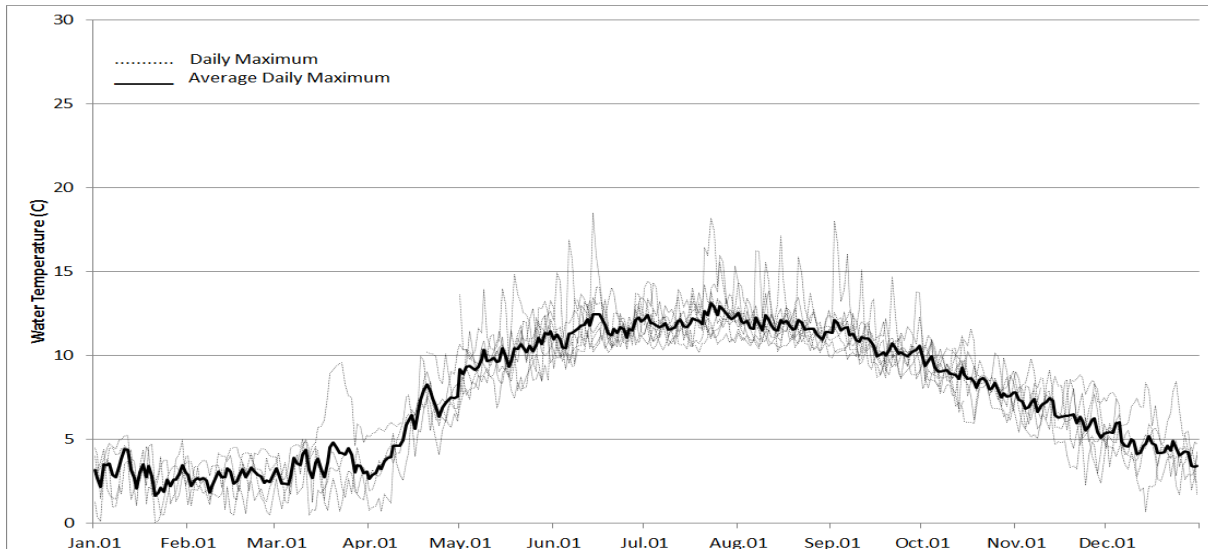
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLPR005

Stream Name: Pigeon River
 Subwatershed: Pigeon River
 Municipality: City of Kawartha Lakes
 Road Location: Gray Rd.
 UTM Zone: 17
 Easting: 685728
 Northing: 4890410

Wetted width: 2.3m
 Maximum depth: 400mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	31	31	30	15	0	0	n/a	n/a	n/a	n/a	coldwater	Aug.01	34.0	14.3
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	11	31	30	31	31	30	15	0	0	18.5	12.3	97	0	coldwater	Jul.18	28.0	12.2
2009	0	0	0	0	31	30	31	31	30	31	21	4	15.6	11.6	100	0	coldwater	Aug.15	29.0	12.0
2010	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	0	0	0	0	31	30	31	31	30	31	30	31	17.2	12.2	99	0	coldwater	Jul.21	34.0	14.2
2012	31	28	31	25	31	30	31	31	30	31	30	31	14.1	12.0	100	0	coldwater	Jul.17	34.0	14.1
2013	31	28	31	30	31	30	31	31	30	31	29	31	14.9	11.6	100	0	coldwater	Jul.17	33.0	12.7
2014	31	28	31	30	31	30	31	31	30	31	30	31	15.8	11.6	100	0	coldwater	Aug.26	27.0	12.8
2015	31	28	31	30	31	30	31	31	30	31	30	31	14.1	11.6	100	0	coldwater	Jul.28	31.0	12.1
AVG	12	11	12	13	22	21	25	25	24	22	17	16	15.7	11.8	99	0	coldwater	n/a	n/a	n/a



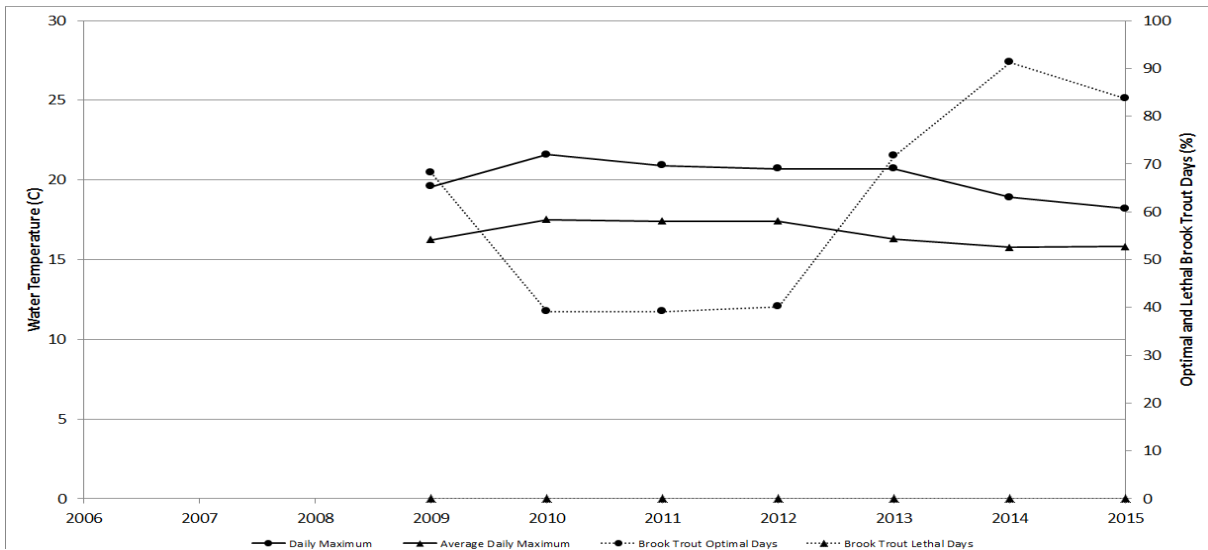
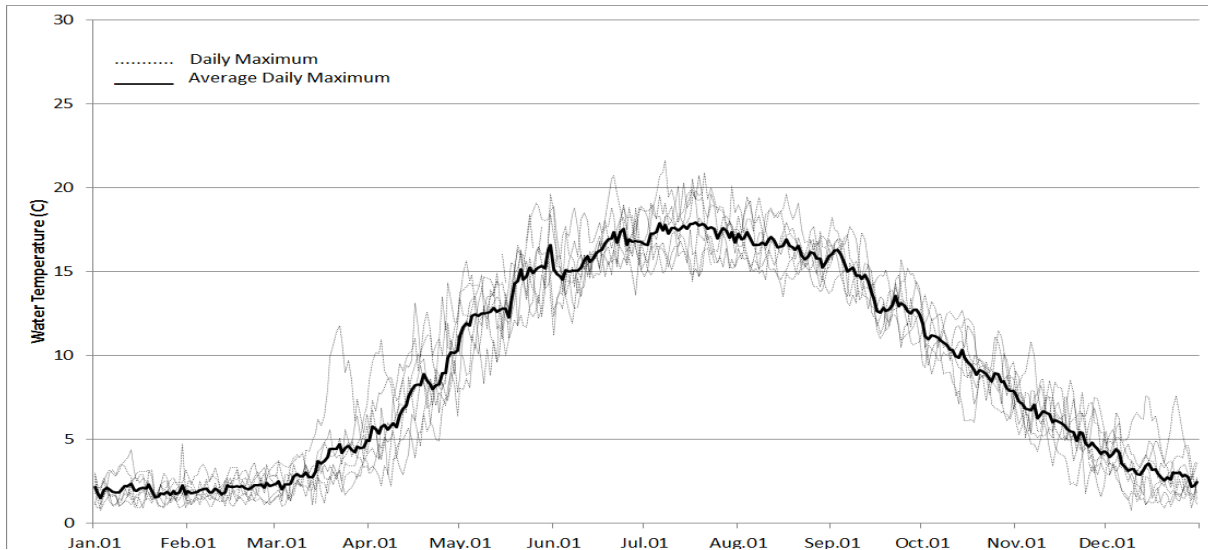
APPENDIX A: Water temperature data summaries for each site.

Site ID: TLPrgauge

Stream Name: Pigeon River
 Subwatershed: Pigeon River
 Municipality: City of Kawartha Lakes
 Road Location: Ballyduff Rd.
 UTM Zone: 17
 Easting: 684458
 Northing: 4888281

Wetted width: 4.0m
 Maximum depth: 200mm

Year	Data Availability (# of days of data in each month)												Summer Stats				Thermal Regime			
	January	February	March	April	May	June (summer)	July (summer)	August (summer)	September	October	November	December	Max Daily Max WaterTemp (C)	Avg Daily Max WaterTemp (C)	Optimal Brook Trout Days (%)	Lethal Brook Trout Days (%)	Classification	Date Meeting Criteria	Daily Max AirTemp (C)	Daily Max WaterTemp (C)
2006	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	0	0	0	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	0	0	0	0	0	0	0	0	0	6	31	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2009	31	28	31	30	31	30	27	31	30	31	30	31	19.6	16.3	68	0	coolwater	Aug.15	29.0	18.6
2010	31	28	27	30	31	30	31	31	30	31	30	31	21.6	17.5	39	0	coolwater	Jul.05	32.5	19.6
2011	31	28	31	30	31	30	31	31	30	31	30	31	20.9	17.4	39	0	coolwater	Jul.21	34.0	20.9
2012	31	28	31	30	20	30	31	31	30	31	30	31	20.7	17.4	40	0	coolwater	Jul.17	34.0	20.5
2013	31	28	31	30	31	30	31	31	30	31	30	31	20.7	16.3	72	0	coolwater	Jul.17	33.0	19.9
2014	31	28	31	30	31	30	31	31	4	18	30	31	18.9	15.8	91	0	cold-coolwater	Aug.26	27.0	16.7
2015	31	28	31	29	31	30	31	31	30	31	30	31	18.2	15.8	84	0	cold-coolwater	Jul.28	31.0	17.4
AVG	22	20	21	21	21	21	22	18	20	22	25	20.1	16.6	62	0	coolwater	n/a	n/a	n/a	



APPENDIX B: Field photographs of each site.



TLBC006 – looking u/s (July 2016)



TLBC008 – looking u/s (July 2016)



TLBCgauge – looking u/s (January 2001)



TLECC001 – looking d/s (October 2016)



TLECC001 – looking d/s (July 2016)



TLECC002 – looking d/s (July 2016)

APPENDIX B: Field photographs of each site.



TLECC011b – looking u/s (July 2016)



TLECC012 – looking u/s (July 2016)



TLECC016 – looking d/s (July 2016)



TLFC001 – looking u/s (October 2016)



TLFC002 – looking d/s (October 2016)



TLFC003 – looking u/s (October 2016)

APPENDIX B: Field photographs of each site.



TLFC004 – looking d/s (October 2016)



TLLST002 - looking d/s (July 2016)



TLLST003 – looking d/s (July 2016)



TLLST004 – looking d/s (July 2016)



TLLST009 – looking d/s (July 2016)



TLLST010 – looking d/s (July 2016)

APPENDIX B: Field photographs of each site.



TLMB004 – looking u/s (July 2016)



TLMCN001 - looking u/s (October 2016)



TLMCN002 – looking d/s (October 2016)



TLNC001 – looking u/s (October 2016)



TLNR004 – looking u/s (July 2016)



TLNR008 – looking d/s (July 2016)

APPENDIX B: Field photographs of each site.



TLNR011 – looking u/s (July 2016)



TLNR014 – looking d/s (July 2016)



TLPL001 - looking d/s (October 2016)



TLPL006 – looking u/s (October 2016)



TLPR001 – looking d/s (October 2016)



TLPR002 – looking u/s (July 2016)

APPENDIX B: Field photographs of each site.



TLPR005 – looking d/s (July 2016)



TLPRgauge – looking d/s (November 2001)

APPENDIX C: Aerial imagery of each site.



TLBC006 –



TLBC008 -



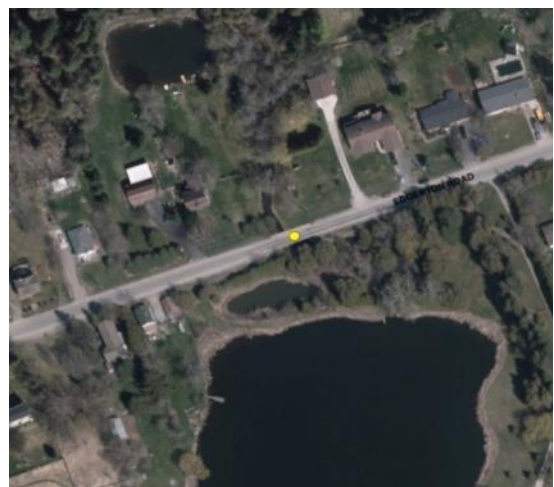
TLBCgauge –



TLECC001 –



TLECC001 –



TLECC002 –

APPENDIX C: Aerial imagery of each site.



TLECC011b –



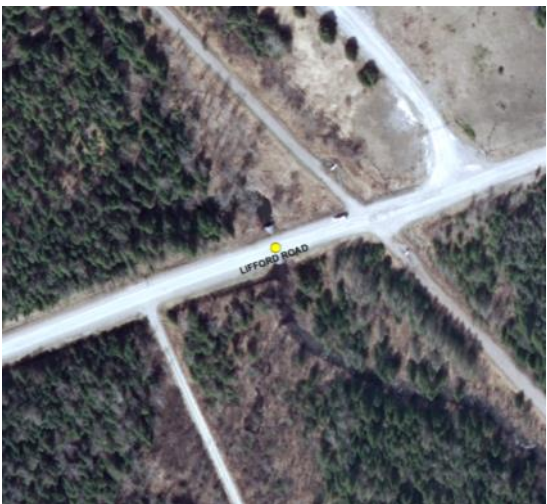
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TLECC016 –



TLFC001 –



TLFC002 –



TLFC003 –

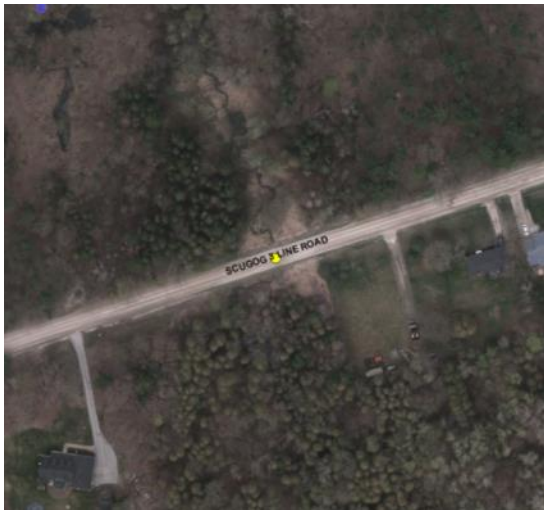
APPENDIX C: Aerial imagery of each site.



TLFC004 –



TLLST002 -



TLLST003 –



TLLST004 –



TLLST009 –



TLLST010 –

APPENDIX C: Aerial imagery of each site.



TLMB004 -



TLMCN001 -



TLMCN002 -



TLNC001 -



TLNR004 -

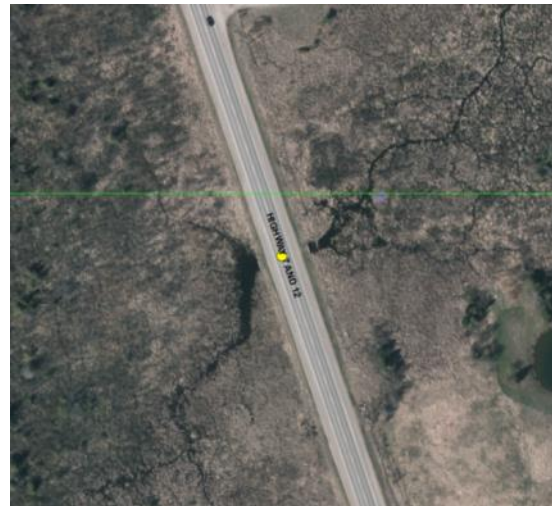


TLNR008 -

APPENDIX C: Aerial imagery of each site.



TLNR011 -



TLNR014 -



TLPL001 -



TLPL006 -



TLPR001 -



TLPR002 -

APPENDIX C: Aerial imagery of each site.



TLPR005 –



TLPRgauge -