

ANGLER OPINIONS AND ATTITUDES TOWARD FISHERIES MANAGEMENT ON HEMLOCK AND CANADICE LAKES AND SPRINGWATER CREEK



Matthew J. Sanderson
Brad E. Hammers
Peter C. Austerman

NYS Department of Environmental Conservation
Region 8 Bureau of Fisheries
6274 East Avon-Lima Road
Avon, NY 14414



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ABSTRACT

An access creel census was conducted for one year on Hemlock and Canadice Lakes, beginning on April 1, 2005 and ending on March 31, 2006. A roving creel census was conducted for 1.5 months on Springwater Creek, the main tributary of Hemlock Lake, beginning on April 1, 2005 and ending on May 10, 2005. Angler interviews were conducted during the creel survey to get trip length, catch, and harvest information. Angler opinions concerning fishing satisfaction, current fishing regulations, potential management actions (i.e. walleye or brown trout stocking issues), stocking, and general management of Hemlock and Canadice Lakes and Springwater Creek were also solicited. Census agents interviewed 1,286 people at Hemlock Lake, 804 people at Canadice Lake, and 131 people at Springwater Creek.

Most of the anglers interviewed on Hemlock and Canadice Lakes, and Springwater Creek did not fish specifically to take home fish, but also did not exclusively practice catch and release fishing.

Most of the anglers using Hemlock and Canadice Lakes are not affiliated with a local or national fishing club or group. Non-club members and general club members rated their fishing trips to the lakes higher than local club members. Local fishing club members fished Hemlock and Canadice Lakes more frequently than general club members and non-club members. The opinion and creel survey results strongly suggest that most anglers would prefer to fish Hemlock and Canadice Lakes for, and actually do fish for, cold water species and black bass. While there are slight differences among the groups, overall results suggest that rainbow trout and brown trout are the two coldwater species that would be preferred in Hemlock and Canadice Lakes. Local club members would prefer to fish the lakes for lake trout and walleye more than the other two groups. There is no interest in landlocked salmon. The warm water fish species most anglers would prefer to fish Hemlock and Canadice Lakes for, and actually do fish for, are largemouth and smallmouth bass. Accordingly, most anglers would prefer that the current Hemlock Lake coldwater management strategy be continued, rather than allowing the local angling group be allowed to try and develop a walleye fishery in Hemlock Lake. The preference for the development of a walleye fishery in Hemlock Lake is expressed by anglers who are members of local fishing clubs.

The majority of the anglers using Springwater Creek are not affiliated with a local or national fishing club or group. Most of the anglers interviewed rated their Springwater Creek fishing trip excellent or good. However, members of fishing clubs/organizations generally rated their trip fair. Regardless of club membership, most of the anglers interviewed preferred to fish Springwater Creek for rainbow trout. There wasn't any consensus among anglers interviewed as to the status of the rainbow trout fishery in Springwater Creek. Opinions were evenly divided among those that thought it has increased, decreased, or remained the same over the last ten years, or no opinion. Fishing club members indicated that the rainbow trout fishery had declined at a higher rate than non-club members. Most anglers interviewed on Springwater Creek would prefer that the current Hemlock Lake coldwater management strategy be continued, rather than allowing the local angling group be allowed to try and develop a walleye fishery in Hemlock Lake. Local fishing club member's opinions from Springwater Creek were evenly divided among continuing the current Hemlock Lake coldwater management strategy, allowing the local angling group to try and develop a walleye fishery in Hemlock Lake, and no opinion. Slightly more than half of the national or state fishing club members support developing a brown trout fishery in Springwater Creek, but there is little support for developing a brown trout fishery from non-club members and local club members.

INTRODUCTION

Hemlock and Canadice Lakes, two of the smallest Finger Lakes in western New York, are owned entirely by the City of Rochester and serve as its primary water supply. The City also owns an approximately 7,000 acre buffer around these lakes which protects the watershed and provides a unique undeveloped lakeshore and aesthetically pleasing fishing experience. A cooperative agreement between the City of Rochester and New York State Department of Environmental Conservation (DEC) allows DEC to manage the fisheries resources in both lakes. In addition to the two lakes, Springwater Creek, a major tributary to Hemlock Lake, provides an important spawning and nursery area for lake-run rainbow trout (*Oncorhynchus mykiss*) as well as providing a moderate spring rainbow trout fishery. A description of the fish communities, past and present fisheries management activities, the current management plan, and the recreational fisheries of these waters are described in Sanderson et al. (2009).

A group of anglers have expressed interest in the current management of fishery resources, specifically in Hemlock Lake. Prior to 1950, Hemlock Lake reportedly supported a decent population of walleyes (*Sander vitreus*). Walleyes were believed to be stocked by sportsmen in the 1900's, however, no records exist and DEC did not sample the lake until 1957, after the demise of the walleye fishery (Chiotti 1980). This group is primarily interested in restoring the walleye fishery to Hemlock Lake. Restoring walleye to Hemlock Lake could result in negative impacts to the current salmonine fishery, especially rainbow and brown trout (*Salmo trutta*). Declines in angler diary cooperator catches of lake (*Salvelinus namaycush*), rainbow, and brown trout have been observed in Owasco Lake after the buildup of a walleye population primarily due to the efforts of a local angler walleye pond fingerling production and stocking program. It is believed that there are more predators in the lake than is good for the long term health and sustainability of the fishery (Dan Bishop and Jeff Robbins, NYSDEC, personal communication). Based on anecdotal reports of poor adult spring run rainbow trout fishing experienced in recent years, stocking brown trout in Springwater Creek has also been proposed. This proposal would provide year round fishing opportunities as opposed to the limited spring fishery for spawning adult lake-run rainbow trout that currently exists in Springwater Creek. The extent of the rainbow trout fishery in the lake is unknown. Although it appears that the natural production of rainbow trout is adequate to maintain the populations in Hemlock Lake and Springwater Creek, it is unknown how that relates to angler success for adults in both the lake and stream. A survey to estimate the effort, catch, and harvest of adult rainbow trout in both systems would provide additional information to determine the status of this fishery. Depending on the outcome of the survey, other management options such as a stocked brown trout fishery in Springwater Creek could be considered. Additionally, an opinion survey could also evaluate whether a more permanent year round brown trout stream fishery in addition to the rainbow trout lake and stream fishery would be more desirable to anglers. Overall, a survey of the opinions of constituents will identify the attitudes of anglers toward current and potential management options for Hemlock and Canadice Lakes, as well as Springwater Creek.

A survey of the recreational fishery of Hemlock and Canadice Lakes and Springwater Creek was recently conducted to provide current information regarding effort, catch, and harvest of cold water, cool water, and warm water fishes (Sanderson et al. 2009). This census included an opinion survey to provide information pertaining to the current salmonine fishery and to determine the extent of the Hemlock constituency that would desire a walleye fishery compared to those favoring current coldwater management, as well as constituent support for alternative management directions in Hemlock Lake and Springwater Creek. One objective of the opinion survey was to determine the fishing experiences and characteristics of anglers fishing both of the lakes and the tributary, and to summarize their opinions concerning current and proposed management scenarios within the lakes and tributary. Because the desire to restore a walleye fishery in Hemlock Lake was primarily

expressed by a local fishing club and we wanted to ascertain whether other angler groups shared this desire, another objective was to compare the opinions among non-club members, general fishing club members (i.e. those belonging to a national or state club), and local fishing club members (i.e., those belonging to a local sportsman's club, etc).

METHODS

An access creel census was conducted for one year on Hemlock and Canadice Lakes, beginning on April 1, 2005, and ending on March 31, 2006. A roving creel census was conducted for 1.5 months on Springwater Creek beginning on April 1, 2005, and ending on May 10, 2005. Survey days, time periods, strata, locations, and interview methods are described in Sanderson et al. (2009), and follow procedures outlined in Pollack et al. (1994). Angler interviews were conducted during the creel survey to get trip length, catch, and harvest information. Angler opinions concerning fishing satisfaction, current fishing regulations, potential management actions (i.e., walleye or brown trout stocking issues), stocking, and general management of Hemlock and Canadice Lakes and Springwater Creek were also solicited. Anglers were asked to provide opinions on selected topics for both lakes, regardless of where the interview took place. The survey questions are shown in Appendices A and B. Data from Hemlock and Canadice Lakes were recorded using a handheld Hewlett Packard iPAQ Pocket PC. Springwater Creek data were recorded on paper forms. All data were downloaded into a Microsoft Access database on a desktop PC, and manipulated using a Microsoft Excel spreadsheet.

Responses for the angler opinion survey questions regarding reason for fishing, rating of fishing trip, and age (general category) were summarized for all anglers interviewed. Only responses from anglers being interviewed for the first time were summarized for questions regarding number of days fished, fishing club membership, club type (general category), preferred species, potential lake management options (i.e., stock walleye), trout management options (i.e., stock brown trout), and ways to improve the fishery (management strategy category).

RESULTS

HEMLOCK AND CANADICE LAKES

Interview Statistics

From April 1, 2005 through March 31, 2006, census agents interviewed 1,286 people at Hemlock Lake and 804 people at Canadice Lake. On Hemlock Lake, 888 (69%) people agreed to provide responses to questions regarding reason for fishing, rating of fishing trip, and age; and 586 were interviewed for the first time and provided responses to all of the survey questions (Table 1). On Canadice Lake, 763 (95%) people agreed to provide responses to questions regarding reason for fishing, rating of fishing trip, and age, and 427 were interviewed for the first time and provided responses to all of the survey questions (Table 1).

General Category Questions: All Respondents (Table 1).

Reason for Fishing

On Hemlock Lake, 10% of the respondents said they were fishing to harvest fish, 30% said they practiced catch and release fishing, and most (60%) said they both kept fish and practiced catch and release fishing. Canadice Lake responses were similar, 6% of the respondents said they were

fishing to harvest fish, 39% said they practiced catch and release fishing, and most (55%) said they both kept fish and practiced catch and release fishing.

Trip Rating

On Hemlock Lake, 21% of the respondents said their fishing trip was excellent, 32% said it was good, 22% said it was fair, and 25% thought their trip was poor. On Canadice Lake, 16% of the respondents said their fishing trip was excellent, 29% said it was good, 36% said it was fair, and 19% thought their trip was poor. As compared with Hemlock Lake anglers, a smaller portion of Canadice Lake anglers rated their trip as poor, but a smaller portion of Canadice Lake anglers also gave their trip an excellent rating.

Visitor Permit

It appears that users of the City of Rochester property are aware of the need for a permit, as nearly all of the respondents at both lakes had a visitor permit.

Angler's Age

Responses from both Hemlock and Canadice Lakes were similar. About three percent of the anglers were under the age of 16. Three quarters were between 16 and 55 years old, and 22% were above the age of 55.

General Category Questions: First-time Respondents (Table 1).

Number of Days Fished in 2004

From Hemlock Lake interviews, about 16% of the respondents said they never fished Hemlock or Canadice Lake before. Approximately 39% said they fished them from one to five times, 26% fished them between six and 20 times, and 19% said they fished the lakes more than 20 times. From Canadice Lake interviews, the responses were nearly evenly proportioned among the categories, about one-quarter each.

Organized Fishing Club or Group Member

On Hemlock and Canadice Lakes, a vast majority (88%) of the respondents were not members of an organized fishing club. Of those who responded that they were fishing club members, a little more than one-half said they were members of a local fishing club (i.e., Springwater Rod and Gun Club, Conesus Lake Sportsman's Club, local Trout Unlimited (TU) Chapter, etc.), only two percent were members of a state club (i.e., NYS TU, etc.), 35% were members of a national organization (i.e., B.A.S.S., National TU, etc.), and 9% belonged to a combination of clubs or groups.

Preferred Species to Fish For (Table 2).

Preferred Species to Fish Canadice Lake For

In response to the question, "If you had to choose only 1 species currently available in Canadice Lake to fish for, what species would it be?" about one half of the anglers interviewed at Hemlock Lake said they would prefer to fish for the trout species, 32% prefer to fish for the black bass species (*Micropterus spp*), 7% prefer to fish for chain pickerel (*Esox niger*), and 9% prefer to fish for yellow perch (*Perca flavescens*) or sunfish species (*Lepomis, Ambloplites, spp*). Of the anglers interviewed at Canadice Lake, 47% said they would prefer to fish for the trout species, 37% prefer to fish for the black bass species, 8% prefer to fish for yellow perch or sunfish species, and 6% prefer to fish for any fish species. Forty nine percent of the combined interviews said they would prefer to fish for the trout species, 34% prefer to fish for the black bass species, 8% prefer to fish for yellow perch or sunfish species, and 4% prefer to fish for chain pickerel. Rainbow trout was the most

preferred species, followed by largemouth (*Micropterus salmoides*) and smallmouth (*Micropterus dolomieu*) bass, and brown trout.

Preferred Species to Fish Hemlock Lake For

Of the anglers interviewed at Hemlock Lake, 44% said they would prefer to fish for the trout and salmon species, 40% prefer to fish for the black bass species, 10% prefer to fish for walleye and 4% prefer to fish for yellow perch or sunfish species. Of the anglers interviewed at Canadice Lake, 44% said they would prefer to fish for the trout species, 34% prefer to fish for the black bass species, 5% prefer to fish for walleye, and 6% prefer to fish for yellow perch or sunfish species. Forty four percent of the combined interviews said they would prefer to fish for the trout species, 37% prefer to fish for the black bass species, 8% prefer to fish for walleye, and 5% prefer to fish for yellow perch or sunfish species. Largemouth bass was the most preferred species, followed by smallmouth bass, rainbow trout, and brown trout.

Management Strategy Category Survey Questions (Table 3).

Management Strategy

In response to the question, “Currently DEC’s management strategy for Hemlock Lake centers on coldwater trout species. There is currently a proposal by an interested angler group to stock walleye in Hemlock Lake. Because of similar habitat and forage preferences, there is a potential for walleye to negatively impact rainbow and brown trout and landlocked salmon (*Salmo salar*). Which of the following would be your preferred management strategy?” 47% of the anglers interviewed at Hemlock Lake said they preferred that the current coldwater management strategy be continued. Almost one third said they would prefer that the local angling group be allowed to try and develop a walleye fishery, 19% had no opinion, and 2% had another opinion.

Sixty five percent of the anglers interviewed at Canadice Lake said they preferred that the current coldwater management strategy be continued. Twenty six percent said they would prefer that the local angling group be allowed to try and develop a walleye fishery, 8% had no opinion and 1% had another opinion.

Fifty five percent of the combined interviews said they preferred that the current coldwater management strategy be continued. Thirty percent said they would prefer that the local angling group be allowed to try and develop a walleye fishery, 14% had no opinion and 2% had another opinion. Some of the other management strategies offered by those with another opinion were allowing a moderate amount of walleye stocking, both coldwater species and walleye be managed for, walleye be stocked only if there is no impact to coldwater species, neither coldwater species or walleye be stocked, muskellunge (*Esox masquinongy*) be stocked, and walleye, lake trout, and rainbow trout, and no brown trout be stocked.

City of Rochester’s Management of Lake Watershed

Fifty eight percent of all interviewees said that the City’s management of the Hemlock/Canadice watershed was excellent, 34% said it was very good, 7% said it was good, 1% said it was fair, and only 0.2% said it was poor. Overall, it appears that nearly all of the people using the lakes and surrounding property are happy with the City’s management.

General Category Questions by Age (Table 4).

Reason for Fishing

A greater percentage of young (<16 years old) and older (>55 years old) anglers fishing at Hemlock Lake said they fished to keep fish than those that fished at Canadice Lake. Other than that, there was little difference in the reason for fishing among the age groups and lakes. Between 0% -

18% of the respondents in each age group fished to keep fish, between 30% - 42 % practiced catch and release, and between 50% - 63% did both.

Trip Rating

A greater percentage of young (<16 years old) anglers fishing at Hemlock and Canadice Lakes rated their trip excellent compared to older (>16 years old) anglers. A lower percentage of young (<16 years old) anglers fishing at Hemlock and Canadice Lakes rated their trip poor than older (>16 years old) anglers. Younger anglers were more satisfied with their fishing trip to Hemlock and Canadice Lakes than older anglers.

Number of Days Fished in 2004

A greater percentage of young (<16 years old) anglers fishing at Hemlock Lake said they had never fished at Hemlock Lake before, while a lower percentage of young (<16 years old) anglers fishing at Canadice Lake said they never fished at Canadice Lake before. Other than that, there was little difference in the number of days fished at each lake among the age groups and lakes.

Trip Rating Question by Number of Days Fished (Table 5).

Overall, there was little difference in the way anglers rated their fishing trip among the number of days fished. Responses were evenly distributed among excellent, good, fair, and poor ratings regardless of the number of days the respondents fished the lakes.

Select Survey Questions by Fishing Non-club members (Table 6).

Trip Rating

A greater percentage of non-club members (respondents who were not members of an organized fishing club) rated their Canadice Lake fishing trip excellent and a lower percentage rated it poor than those non-club members who rated fishing on Hemlock Lake.

Days Fished

From both Hemlock Lake and Canadice Lake interviews, non-club members had never fished Hemlock or Canadice Lakes before at the highest rates. A greater percentage of non-club members interviewed at Hemlock Lake had fished the lakes between one and five times a year than non-club members interviewed at Canadice Lake.

Preferred Species to Fish Canadice Lake For

According to the combined interviews from both Hemlock and Canadice Lakes, in descending order, non-club members preferred to fish Canadice Lake for rainbow trout, largemouth bass, smallmouth bass, brown trout, and lake trout.

Preferred Species to Fish Hemlock Lake For

The combined interviews from both Hemlock and Canadice Lakes, showed that in descending order, non-club members preferred to fish Hemlock Lake for largemouth bass, smallmouth bass, rainbow trout, lake trout, and brown trout.

Management Strategy

In descending order, the combined interviews from both Hemlock and Canadice Lakes showed that non-club members preferred that the current coldwater management strategy be continued (55%), followed by the local angling group be allowed to try and develop a walleye fishery (29%), no opinion (15%), and lastly, another opinion (2%).

Select Survey Questions by Fishing Club Members (Table 7).

Trip Rating

Fishing club members (national, state, or local organization) rated their Hemlock and Canadice Lake fishing trips evenly between excellent-good and fair-poor.

Days Fished

Fishing club members interviewed at Hemlock Lake fished Hemlock or Canadice Lakes greater than five times a year at a higher rate (53%) than non-club members (43%). Fishing club members interviewed at Canadice Lake fished Hemlock or Canadice Lakes greater than five times a year at a higher rate (66%) than non-club members (46%).

Preferred Species to Fish Canadice Lake For

The combined interviews from both Hemlock and Canadice Lakes showed that, in descending order, club members preferred to fish Canadice Lake for rainbow trout, brown trout, lake trout, smallmouth bass, largemouth bass, and yellow perch.

Preferred Species to Fish Hemlock Lake For

In descending order, the combined interviews from both Hemlock and Canadice Lakes showed that club members preferred to fish Hemlock Lake for brown trout, rainbow trout, smallmouth bass, largemouth bass, walleye, and lake trout.

Management Strategy

According to the combined interviews from both Hemlock and Canadice Lakes, in descending order, club members preferred that the current coldwater management strategy be continued (50%), followed by the local angling group be allowed to try and develop a walleye fishery (36%), no opinion (11%), and lastly, another opinion (3%).

Select Survey Questions by Local Fishing Club Members (Table 8).

Trip Rating

Local fishing club members rated their Hemlock Lake fishing trips poor at a greater rate (29%) than non-club (23%) and general club (i.e., national/state) members (24%). Local fishing club members rated their Canadice Lake fishing trips excellent at a lower rate (19%) than non-club (30%) and club members (21%). They also rated their Canadice Lake fishing trips poor at a lower rate (10%) than non-club (15%) and club members (15%).

Days Fished

Local fishing club members interviewed at Hemlock Lake had never fished Hemlock or Canadice Lakes before at a lower rate (5%) than non-club members (17%) and club members (10%). Local fishing club members interviewed at Canadice Lake also had never fished the lakes before at a lower rate (13%) than non-club members (27%) and club members (15%). Local fishing club members interviewed at Canadice Lake fished the lakes greater than 20 times a year at a higher rate (44%) than non-club members (24%) and club members (39%).

Preferred Species to Fish Canadice Lake For

In descending order the combined interviews from both Hemlock and Canadice Lakes showed that local club members preferred to fish Canadice Lake for rainbow trout, lake trout, largemouth bass, brown trout, smallmouth bass, and any bass.

Preferred Species to Fish Hemlock Lake For

According to the combined interviews from both Hemlock and Canadice Lakes, in descending order local club members preferred to fish Hemlock Lake for walleye, lake trout, brown trout, rainbow trout, smallmouth bass, and largemouth bass.

Management Strategy

The combined interviews from both Hemlock and Canadice Lakes, showed that in descending order local club members preferred that the local angling group be allowed to try and develop a walleye fishery (44%), followed by the current coldwater management strategy be continued (34%), no opinion (15%), and lastly, another opinion (6%).

Fishing Club Members vs. Non-club members- Number of Days Fished (Figures 1-3).

Members of fishing clubs (national, state, or local) made more frequent fishing trips to Hemlock and Canadice Lakes than non-club members. They fished at Hemlock or Canadice Lakes six or more days a year more frequently than non-club members did. Non-club members also reported to have never fished Hemlock or Canadice Lakes more frequently than club members. The largest percentage of all interviews fished Hemlock or Canadice Lakes between one and five times a year (Table 1). These interviews slightly favored non-club members (34% vs. 31%).

Fishing Club Members vs. Non-club members- Hemlock Lake Management Strategy (Figures 4-6).

Fifty five percent of all interviews favored the continuation of the current management strategy for Hemlock Lake, which centers on coldwater species, while 30% favored the development of a walleye fishery (Table 3). While club members and non-club members from Hemlock Lake interviews equally favored the continuation of the current management strategy for Hemlock Lake (47%), slightly fewer club member interviews (41%) favored the development of a walleye fishery (Figure 4). Both non-club members (66%) and club members (56%) interviewed at Canadice Lake strongly favored continuation of the current management strategy for Hemlock Lake (Figure 5). From all interviews combined, a slightly greater percentage of non-club members (55%) favored this strategy than club members (50%, Figure 6).

SPRINGWATER CREEK

Interview Statistics

From April 1, 2005 through May 10, 2005, census agents interviewed 131 people at Springwater Creek. All 131 people provided responses to questions regarding reason for fishing, rating of fishing trip, and age; and 102 were interviewed for the first time and provided responses to all of the survey questions (Table 9).

General Category Questions: All Respondents (Table 9).

Trip Rating

The majority of the anglers interviewed (60%) rated their fishing trip excellent or good.

Reason for Fishing

Only 16% of the anglers interviewed said they were fishing to harvest fish. Most said they were fishing to release fish with the option of keeping fish (46%), or strictly catch and release fishing (39%).

Angler's Age

Most anglers interviewed were between the ages of 16 and 55. An equal portion of interviewees (8% each) were under 16 or over 55.

General Category Questions: First-time Respondents (Table 9).

Number of Days Fished in 2004

Nearly a quarter of the anglers interviewed had never fished Springwater Creek before, and only eight percent of the respondents said they fished Springwater Creek more than 20 times per year. Most of the interviewees fished from 1 to 20 times a year.

Organized Fishing Club or Group Member

The vast majority of the anglers interviewed were not members of a fishing club or organization. Those that were members belonged to a local club or a combination of organizations.

Preferred Species to Fish For (Table 10).

Preferred Species to Fish Springwater Creek For

Most of the anglers preferred to fish for rainbow trout (81%). Fifteen percent said they prefer to fish for any trout and only five percent said they prefer to fish for brown trout.

Management Strategy Category Survey Questions (Table 10).

Status of Springwater Creek Rainbow Trout Fishery

When asked what they felt the rainbow trout fishery has done over the past 10 years, 29% of the anglers interviewed had no opinion. They were nearly evenly divided on whether it had increased or increased slightly (32%), or declined or declined slightly (31%). Eight percent felt the rainbow fishery remained the same.

Hemlock Lake Management Strategy

In response to the question regarding DEC's Hemlock Lake management strategy, 63% of the anglers interviewed said they preferred that the current coldwater management strategy be continued, 27% said they would prefer that the local angling group be allowed to try and develop a walleye fishery, 9% had no opinion, and 2% had another opinion.

Develop Springwater Creek Brown Trout Fishery

About one half of the anglers interviewed had no support for the development of a brown trout fishery in Springwater Creek. An equal number (14 each) had little support or no opinion. Twenty two percent supported the development of a brown trout fishery.

General Category Questions by Age (Table 11).

Reason for Fishing

No young (<16 years old) anglers fishing at Springwater Creek said they fished to keep fish. Other than that, there was little difference in the reason for fishing among the age groups. About one-half of the respondents in each age group fished to both keep fish and practice catch and release.

Trip Rating

There was little difference how anglers rated their fishing trip among age groups. About 60% the <16 and 16-55 age groups rated their trip excellent or good. About one-half of the anglers in the >55 age group rated their trip excellent or good.

Number of Days Fished in 2004

A greater percentage of older (>55 years old) anglers said they had never fished at Springwater Creek before, and all young anglers (<16 years old) had fished Springwater Creek before. Most of the anglers in all age groups had fished between 1-20 times in 2004.

Trip Rating Question by Number of Days Fished (Table 12).

A higher percentage of anglers that fished Springwater Creek more than 20 times in 2004 rated their trip excellent compared to the other groups. Otherwise, there was little difference in the way anglers who fished Springwater Creek less than 20 times in 2004 rated their fishing trip. Responses in those groups were fairly evenly distributed among excellent, good, fair, and poor ratings.

Select Survey Questions by Fishing Club Non-members (Table 13).

Trip Rating

Most (58%) of the interview respondents fishing Springwater Creek who were non-club members rated their trip excellent or good.

Days Fished

About 60% of non-club members had never fished the creek or fished between one and five times in 2004.

Preferred Species to Fish For

Most non-club members said they preferred to fish for rainbow trout, followed by any salmonid and brown trout.

Status of Springwater Creek Rainbow Trout Fishery

When asked what they felt the rainbow trout fishery has done over the past 10 years, 30% of the non-club member anglers interviewed had no opinion. They were nearly evenly divided on whether it had increased or increased slightly (34%), or declined or declined slightly (28%). Nine percent felt the rainbow fishery remained the same.

Hemlock Lake Management Strategy

Sixty four percent of the non-club members said they preferred that the current coldwater management strategy be continued, 26% said they would prefer that the local angling group be allowed to try and develop a walleye fishery, 8% had no opinion, and 1% had another opinion.

Develop Springwater Creek Brown Trout Fishery

A little more than one half (54%) of the non-club member anglers interviewed did not support the development of a brown trout fishery in Springwater Creek. A nearly equal number had little support (13%) or no opinion (15%). Nineteen percent supported the development of a brown trout fishery.

Select Survey Questions by Fishing Club members (Table 14).

Only nine anglers interviewed were members of fishing clubs. Most of them rated their trip fair. While most fished between one and twenty times in 2004, two of the club members had never fished the creek and none fished more than 20 times. All club members interviewed said they preferred to fish for rainbow trout. When asked what they felt the rainbow trout fishery has done over the past 10 years, two had no opinion, six thought it declined or declined slightly, and one thought it had increased. Four club member anglers said they preferred that the current coldwater management strategy be continued, three said they would prefer that the local angling group be allowed to try and develop a walleye fishery, one had no opinion, and one had another opinion. Five anglers supported the development of a brown trout fishery in Springwater Creek, four had little or no support.

Select Survey Questions by Local Fishing Club members (Table 15).

Only three anglers interviewed were members of local fishing clubs. Two rated their trip fair and one rated his trip good. One local club member had never fished the creek, one fished between one five times, and one fished between six and twenty times in 2004. None fished more than 20 times. All local club members said they preferred to fish for rainbow trout. When asked what they felt the rainbow trout fishery has done over the past 10 years, two thought it declined or declined slightly; one thought it had increased. One local club member said he preferred that the current coldwater management strategy be continued, one preferred that the local angling group be allowed to try and develop a walleye fishery, and one had no opinion. Only one supported the development of a brown trout fishery in Springwater Creek.

DISCUSSION

HEMLOCK AND CANADICE LAKES

Overall, most of the anglers interviewed did not fish specifically to take home fish, but also did not exclusively practice catch and release fishing. The creel survey results show that harvest rates for all species on these lakes are low (Sanderson et al. 2009). Fishery management objectives contained in the Strategic Management Plan for Canadice Lake (Chiotti 1981) and Hemlock Lake (Chiotti 1980) are based on harvest. The results of the creel survey and this opinion survey show that anglers' primary objective is to catch fish, rather than to harvest fish. It is likely that anglers fishing trip ratings directly reflect the number of fish caught during their trip. Accordingly, new fisheries management objectives should be developed for these lakes that are based on catch rates, rather than harvest.

Most of the anglers using these lakes are not affiliated with a local or national fishing club or group. Non-club members and general club members rated their fishing trips to Hemlock and Canadice Lakes higher than local club members. They fished somewhat fewer times per year than local club members. They preferred that the current Hemlock Lake coldwater management strategy be continued, rather than allowing the local angling group to try and develop a walleye fishery in Hemlock Lake. Non-club members would prefer to fish Canadice Lake for rainbow trout, black bass, brown trout, and lake trout, and Hemlock Lake for black bass, rainbow trout, lake trout, and brown trout. Fishing club members would prefer to fish Canadice Lake for rainbow trout, brown trout, lake trout, and black bass, and Hemlock Lake for brown trout, rainbow trout, black bass, walleye, and lake trout. Local fishing club members fished Hemlock and Canadice Lakes more frequently than general club members and non-club members. Local fishing club members would prefer to fish Canadice

Lake for rainbow trout, lake trout, largemouth bass, brown trout, and smallmouth bass and Hemlock Lake for walleye, lake trout, brown trout, rainbow trout, and black bass. They also more highly opinioned that the local angling group be allowed to try and develop a walleye fishery in Hemlock Lake than general club members and non-club members did, but still not a majority. Non-club members would appear to mostly prefer fishing Hemlock and Canadice Lakes for rainbow trout and black bass, while fishing club members would mostly prefer to fish the lakes for rainbow trout, brown trout, and bass. Lake and rainbow trout were the salmonid species that most local club members would prefer to fish Hemlock and Canadice Lakes for.

The species preference results from the opinion survey are similar to the targeted effort and catch by species results of the creel survey. In Canadice Lake, the creel survey found that most boat fishing effort targeted largemouth bass, followed by lake trout and any fish. Most shore fishing effort targeted largemouth bass, followed by any fish and rainbow trout. In Canadice Lake, the catch consisted of 14% trout (brown trout, rainbow trout, and lake trout in order), and 30% warm water game fish (largemouth bass and smallmouth bass). Nearly all rainbow and lake trout caught on Canadice Lake were caught while fishing specifically for those species. Most brown trout were caught while fishing for either rainbow or lake trout. In Hemlock Lake, the creel survey found that most boat fishing effort targeted any salmonid, followed by any bass and any fish. Most shore fishing effort targeted any fish, followed by any salmonid and any bass. In Hemlock Lake the catch consisted of 13% trout (brown trout, lake trout, and rainbow trout in order), and 32% warm water game fish (smallmouth bass and largemouth bass). No walleye were caught when walleye was the species being fished for (Sanderson et al. 2009).

The opinion and creel survey results strongly suggest that most anglers would prefer to fish Hemlock and Canadice Lakes for, and actually do fish for, cold water species and black bass. While there are slight differences among the groups, overall results suggest that rainbow trout and brown trout are the two coldwater species that would be preferred in Hemlock and Canadice Lakes. Local club members would prefer to fish the lakes for lake trout more than the other two groups. The objectives of the Strategic Management Plan for Hemlock and Canadice Lakes put emphasis on lake and rainbow trout, and landlocked salmon in Hemlock Lake (Chiotti 1980, 1981). Brown trout were not stocked in either lake at the time the management plans were developed. Present day anglers appear to prefer to fish for a different mix of salmonids than anglers of the late 1970's. Because of these preferences and our concerns about predator density, the lakes' salmonid stocking rates and proportions should be re-evaluated. There is no interest in landlocked salmon. Since the statewide production of landlocked salmon comes from the Adirondack Fish Hatchery, located 275 miles from Hemlock Lake, it would be fiscally prudent to discontinue stocking landlocks into Hemlock Lake.

The warm water fish species most anglers would prefer to fish Hemlock and Canadice Lakes for, and actually do fish for, are largemouth and smallmouth bass. Local club members would prefer to fish Hemlock Lake for walleye more than the other two groups. Accordingly, most anglers would prefer that the current Hemlock Lake coldwater management strategy be continued, rather than allowing the local angling group be allowed to try and develop a walleye fishery in Hemlock Lake. The preference for the development of a walleye fishery in Hemlock Lake is expressed by anglers who are members of local fishing clubs who, despite making the most number of fishing trips to the lakes, makes up the smallest group of anglers fishing the lakes. Because the support for a walleye fishery is limited, the support for coldwater fisheries management is widespread, impacts to salmonid fisheries have been observed in Owasco Lake, and the existence of excellent walleye fisheries in nearby lakes, walleye stocking in Hemlock Lake should be discontinued.

SPRINGWATER CREEK

The majority of the anglers using Springwater Creek are not affiliated with a local or national fishing club or group. Most of the anglers interviewed rated their Springwater Creek fishing trip excellent or good. However, members of fishing clubs/organizations (national, state, or local) rated their trip fair. Overall, most of the anglers interviewed did not fish specifically to take home fish, but also did not exclusively practice catch and release fishing. The creel survey results show that release rates on Springwater Creek are high, with almost all of the released fish being sub-legal sized (Sanderson et al. 2009).

Regardless of club membership, most of the anglers interviewed preferred to fish for rainbow trout. Almost all of the anglers identified rainbow trout as their target in the creel survey (Sanderson et al. 2009). Comments of the interviewed anglers suggested they placed a high value on the uniqueness of the Finger Lakes rainbow trout fishery, and that they could fish other nearby waters for both stocked and wild brown trout (Dan Mulhall, NYSDEC, personal communication). There wasn't any consensus among anglers interviewed as to the status of the rainbow trout fishery in Springwater Creek. Opinions were evenly divided among those that thought it has increased, decreased, remained the same, or no opinion. Fishing club members indicated that the fishery had declined at a higher rate than non-club members. Most anglers interviewed on Springwater Creek would prefer that the current Hemlock Lake coldwater management strategy be continued, rather than allowing the local angling group be allowed to try and develop a walleye fishery in Hemlock Lake. Local fishing club member's opinions were evenly divided among continuing the current Hemlock Lake coldwater management strategy, allowing the local angling group to try and develop a walleye fishery in Hemlock Lake, and no opinion. Slightly more than half of the national or state fishing club members support developing a brown trout fishery in Springwater Creek, but there is little support for developing a brown trout fishery from non-club members and local club members. Given that the support for developing a brown trout fishery is small and the brown trout production capability of the hatchery system is currently at its maximum level, a brown trout policy for Springwater Creek should not be pursued at this time.

RECOMMENDATIONS

1. Revise Hemlock and Canadice Lake and Springwater Creek management objectives (Chiotti 1980, Chiotti 1981) that place emphasis on catch rates, rather than harvest.
2. Given the angler preferences expressed by this survey, re-evaluate Hemlock and Canadice Lakes' salmonid stocking rates and proportions. Discontinue landlocked salmon stocking.
3. Develop management objectives for brown trout.
4. Evaluate the predator-prey balance in the lakes and competitive interactions between rainbow, lake, and brown trout. Revise the management objectives for these species accordingly.
5. Discontinue permitting walleye fingerling stocking by the local fish and game club.
6. Based on the results of this angler opinion survey, consider the development of a brown trout fishery in Springwater Creek only if the rainbow trout fishery in Hemlock Lake and Springwater Creek declines despite current and future management actions.

7. Continue current fishing regulations on open seasons, minimum size limits, creel limits, and gear restrictions.
8. Continue monitoring cold and warm water fish population trends via stock assessments every five years, annual rainbow trout production surveys, annual spring adult rainbow trout surveys, and annual cooperating angler diaries.

LITERATURE CITED

- Chiotti, T. L. 1980. A strategic fisheries management plan for Hemlock Lake. New York State Department of Environmental Conservation, Avon, NY. 30 pp.
- Chiotti, T. L. 1981. A strategic fisheries management plan for Canadice Lake. New York State Department of Environmental Conservation, Avon, NY. 30 pp.
- Pollock, K. H., C. M. Jones, and T. L. Brown. 1994. Angler survey methods and their applications in fisheries management. American Fisheries Society Special Publication 25, Bethesda, Maryland.
- Sanderson, M. J., B. E. Hammers, and P. C. Austerman. 2009. A recreational fishery survey on Hemlock and Canadice Lakes and Springwater Creek. NYS Department of Environmental Conservation. Avon, NY 14414. 41pp.

Figure 1. Number of days Hemlock or Candice Lakes fished from Hemlock Lake interviews.

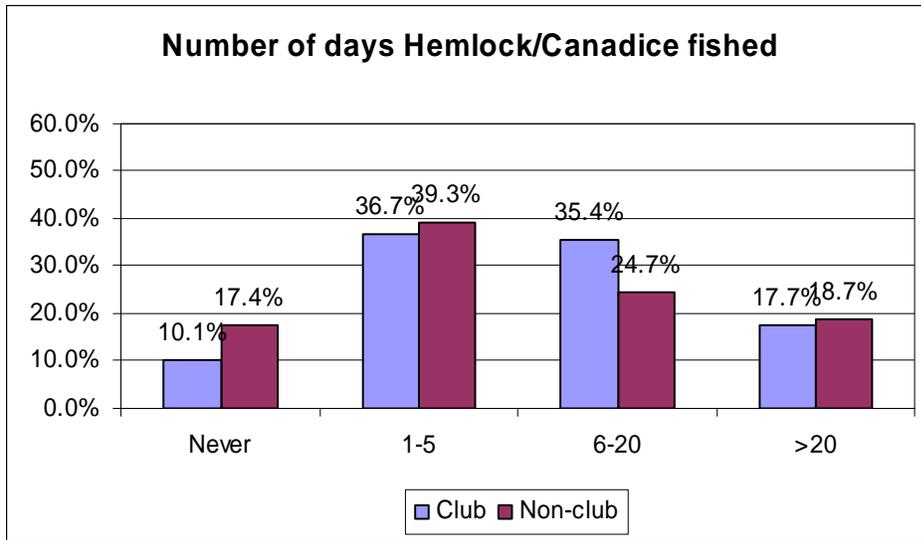


Figure 2. Number of days Hemlock or Candice Lakes fished from Candice Lake interviews.

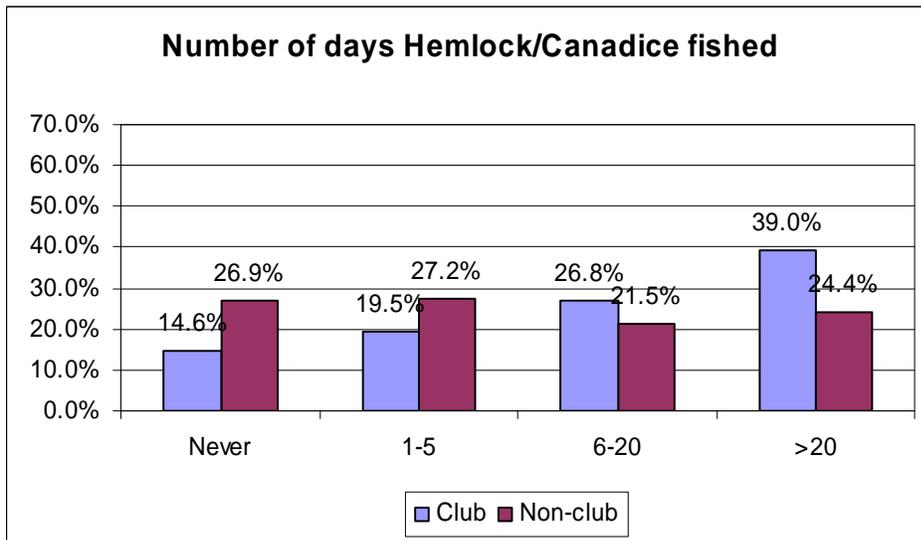


Figure 3. Number of days Hemlock or Candice Lakes fished from combined interviews.

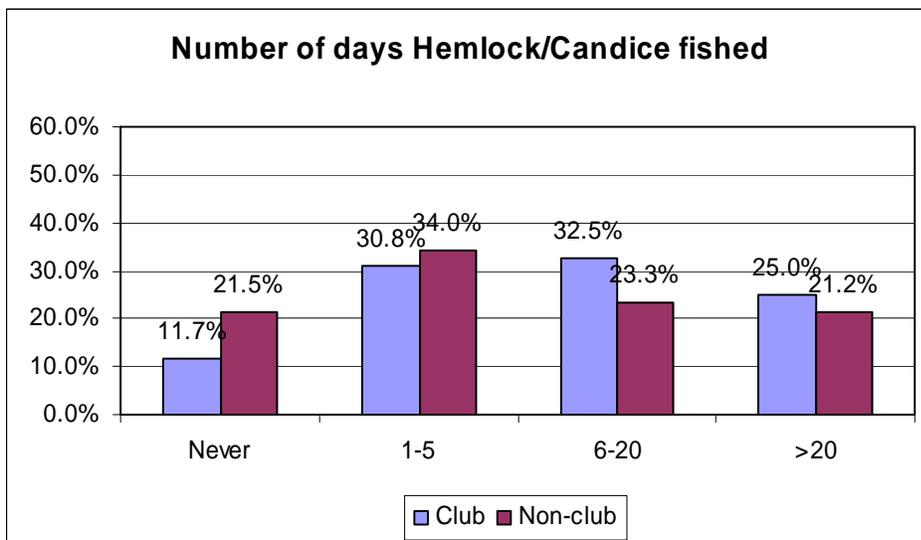


Figure 4. Preferred Hemlock Lake management strategy from Hemlock Lake interviews.

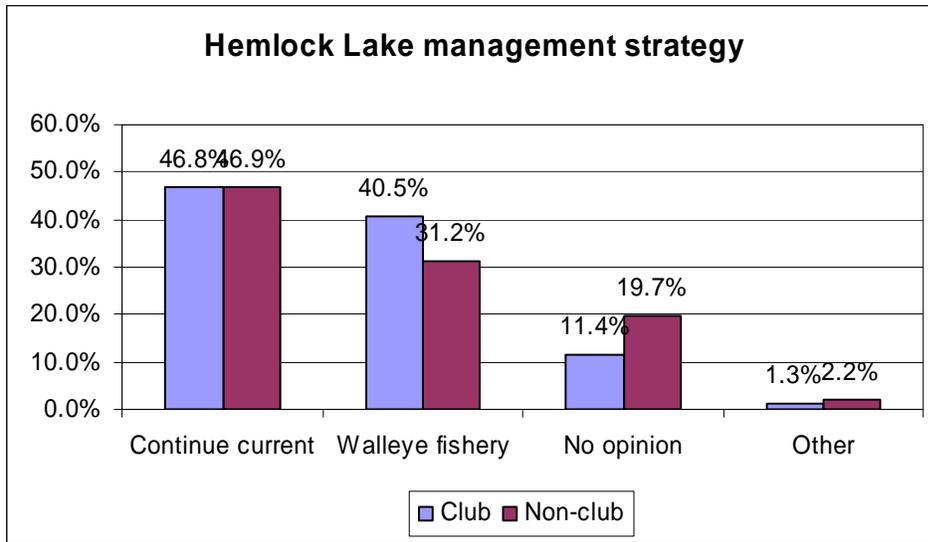


Figure 5. Preferred Hemlock Lake management strategy from Canadice Lake interviews.

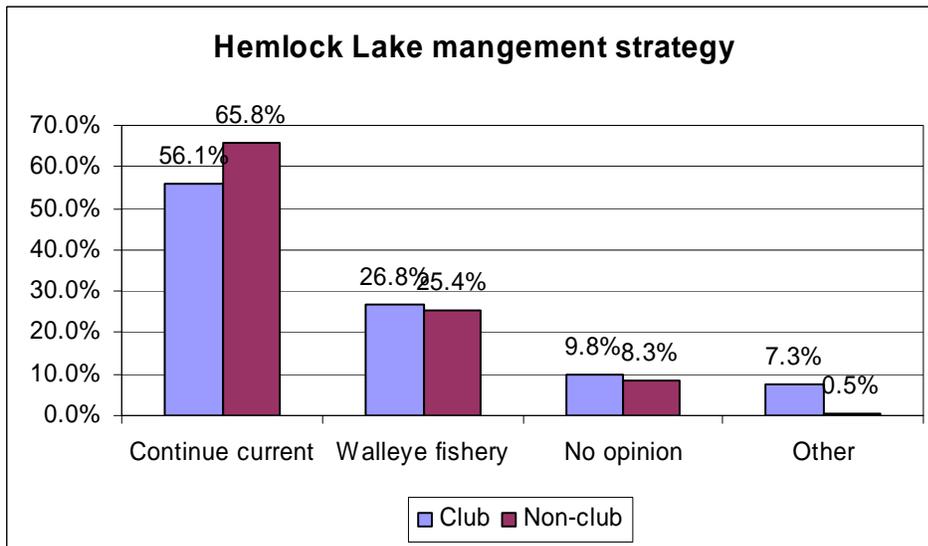


Figure 6. Preferred Hemlock Lake management strategy from combined interviews.

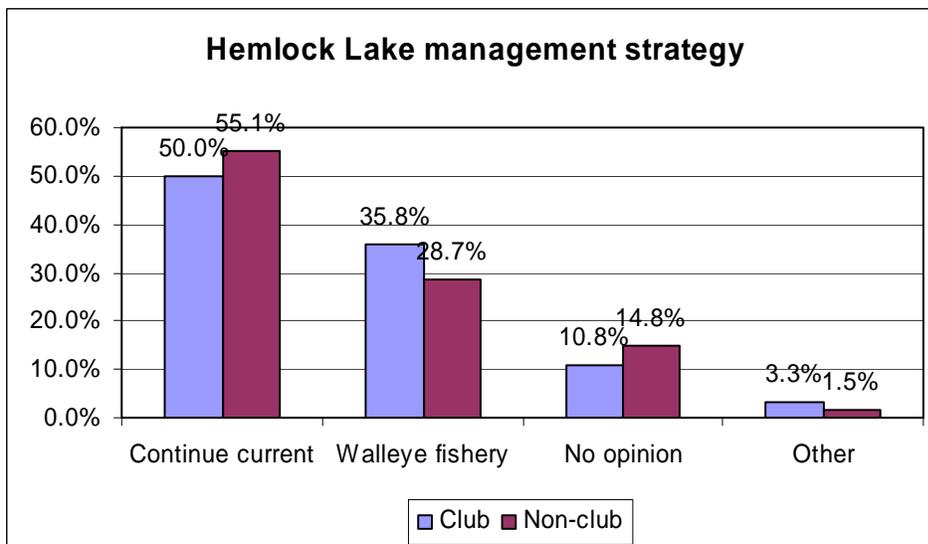


Table 1. Interview responses to the general category survey questions.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
	Number	Percent	Number	Percent	Number	Percent
1. Interviewed before?						
Yes	301	33.9%	337	44.2%	638	38.6%
No	587	66.1%	426	55.8%	1013	61.4%
Total	888	100.0%	763	100.0%	1651	100.0%
2. Fishing Reason?						
Keep fish	86	9.7%	47	6.2%	133	8.1%
Catch/release	266	30.0%	297	38.9%	563	34.1%
Both	536	60.4%	419	54.9%	955	57.8%
Total	888	100.0%	763	100.0%	1651	100.0%
3. Trip Rating						
Excellent	186	20.9%	125	16.4%	311	18.9%
Good	282	31.8%	220	28.9%	502	30.5%
Fair	195	22.0%	273	35.9%	468	28.4%
Poor	225	25.3%	142	18.7%	367	22.3%
Total	888	100.0%	760	100.0%	1648	100.0%
4. Visitor Permit?						
Yes	856	96.4%	741	97.1%	1597	96.7%
No	32	3.6%	22	2.9%	54	3.3%
Total	888	100.0%	763	100.0%	1651	100.0%
5. Angler's Age						
<16	20	2.3%	30	3.9%	50	3.0%
16-55	693	78.0%	550	72.1%	1243	75.3%
>55	175	19.7%	183	24.0%	358	21.7%
Total	888	100.0%	763	100.0%	1651	100.0%
6. Number Days Fished						
Never	96	16.4%	110	25.8%	206	20.3%
1-5	228	38.9%	113	26.5%	341	33.7%
6-20	153	26.1%	94	22.0%	247	24.4%
>20	109	18.6%	110	25.8%	219	21.6%
Total	586	100.0%	427	100.0%	1013	100.0%
7a. Club Member?						
Yes	79	13.5%	41	9.6%	120	11.8%
No	507	86.5%	386	90.4%	893	88.2%
Total	586	100.0%	427	100.0%	1013	100.0%
7b. Club Type						
Local	42	53.2%	23	59.0%	65	55.1%
State	2	2.5%	0	0.0%	2	1.7%
National	29	36.7%	12	30.8%	41	34.7%
Combination	6	7.6%	4	10.3%	10	8.5%
Total	79	100.0%	39	100.0%	118	100.0%

Table 2. Interview responses to the preferred species to fish for category survey questions.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
	Number	Percent	Number	Percent	Number	Percent
8. Canadice fish species preference						
Lake trout	48	14.5%	44	10.3%	92	12.2%
Brown trout	52	15.8%	44	10.3%	96	12.7%
Rainbow trout	50	15.2%	70	16.4%	120	15.9%
Atlantic Salmon	0	0.0%	3	0.7%	3	0.4%
Any Salmonid	17	5.2%	39	9.2%	56	7.4%
Smallmouth bass	44	13.3%	59	13.8%	103	13.6%
Largemouth bass	48	14.5%	57	13.4%	105	13.9%
Any Bass	14	4.2%	39	9.2%	53	7.0%
Chain Pickerel	23	7.0%	9	2.1%	32	4.2%
Walleye	1	0.3%	0	0.0%	1	0.1%
Yellow perch	10	3.0%	14	3.3%	24	3.2%
Black crappie	14	4.2%	5	1.2%	19	2.5%
Sunfish	5	1.5%	13	3.1%	18	2.4%
Bullhead	2	0.6%	3	0.7%	5	0.7%
Smelt	1	0.3%	0	0.0%	1	0.1%
Any Warmwater	0	0.0%	0	0.0%	0	0.0%
Any Fish	1	0.3%	27	6.3%	28	3.7%
Total	330	100.0%	426	100.0%	756	100.0%
9. Hemlock fish species preference						
Lake trout	62	11.6%	42	9.9%	104	10.8%
Brown trout	65	12.2%	40	9.4%	105	10.9%
Rainbow trout	69	12.9%	61	14.3%	130	13.6%
Atlantic Salmon	23	4.3%	6	1.4%	29	3.0%
Any Salmonid	14	2.6%	36	8.5%	50	5.2%
Smallmouth bass	76	14.3%	55	12.9%	131	13.7%
Largemouth bass	108	20.3%	52	12.2%	160	16.7%
Any Bass	28	5.3%	38	8.9%	66	6.9%
Chain Pickerel	13	2.4%	2	0.5%	15	1.6%
Walleye	51	9.6%	22	5.2%	73	7.6%
Yellow perch	10	1.9%	7	1.6%	17	1.8%
Black crappie	6	1.1%	7	1.6%	13	1.4%
Sunfish	5	0.9%	11	2.6%	16	1.7%
Bullhead	2	0.4%	5	1.2%	7	0.7%
Smelt	0	0.0%	0	0.0%	0	0.0%
Any Warmwater	0	0.0%	0	0.0%	0	0.0%
Any Fish	1	0.2%	42	9.9%	43	4.5%
Total	533	100.0%	426	100.0%	959	100.0%

Table 3. Interview responses to the management strategy category survey questions.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
	Number	Percent	Number	Percent	Number	Percent
10. Management Strategy						
Continue current	275	46.9%	277	64.9%	552	54.5%
Walleye fishery	190	32.4%	109	25.5%	299	29.5%
No opinion	109	18.6%	36	8.4%	145	14.3%
Other	12	2.0%	5	1.2%	17	1.7%
Total	586	100.0%	427	100.0%	1013	100.0%
10d. Other						
allow moderate amount	4	33.3%			4	23.5%
manage for both	5	41.7%			5	29.4%
no stocking of either	1	8.3%			1	5.9%
stock musky	1	8.3%			1	5.9%
stock WAE, LT, RT, but no BT	1	8.3%			1	5.9%
dumb question			1	20.0%	1	5.9%
need more info			1	20.0%	1	5.9%
only if no impact			2	40.0%	2	11.8%
only if walleye don't impact on trout			1	20.0%	1	5.9%
Total	12	100.0%	5	100.0%	17	100.0%
11. Rate City's management						
Excellent	327	58.5%	242	57.8%	569	58.2%
Very good	180	32.2%	152	36.3%	332	33.9%
Good	45	8.1%	21	5.0%	66	6.7%
Fair	7	1.3%	2	0.5%	9	0.9%
Poor	0	0.0%	2	0.5%	2	0.2%
Total	559	100.0%	419	100.0%	978	100.0%

Table 4. Interview responses to general category survey questions by respondent's age.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
Angler's Age/Fishing Reason	Number	Percent	Number	Percent	Number	Percent
<16						
Keep fish	3	15.0%	0	0.0%	3	6.0%
Catch/release	6	30.0%	12	40.0%	18	36.0%
Both	11	55.0%	18	60.0%	29	58.0%
	20	100.0%	30	100.0%	50	100.0%
16-55						
Keep fish	51	7.4%	41	7.5%	92	7.4%
Catch/release	205	29.6%	207	37.6%	412	33.1%
Both	437	63.1%	302	54.9%	739	59.5%
	693	100.0%	550	100.0%	1243	100.0%
>55						
Keep fish	32	18.3%	6	3.3%	38	10.6%
Catch/release	55	31.4%	78	42.6%	133	37.2%
Both	88	50.3%	99	54.1%	187	52.2%
Total	175	100.0%	183	100.0%	358	100.0%
All	888		763		1651	
Angler's age/Trip Rating						
<16						
Excellent	7	35.0%	7	23.3%	14	28.0%
Good	5	25.0%	11	36.7%	16	32.0%
Fair	5	25.0%	12	40.0%	17	34.0%
Poor	3	15.0%	0	0.0%	3	6.0%
	20	100.0%	30	100.0%	50	100.0%
16-55						
Excellent	150	21.6%	86	15.7%	236	19.0%
Good	213	30.7%	153	28.0%	366	29.5%
Fair	147	21.2%	203	37.1%	350	28.2%
Poor	183	26.4%	105	19.2%	288	23.2%
	693	100.0%	547	100.0%	1240	100.0%
>55						
Excellent	29	16.6%	32	17.5%	61	17.0%
Good	64	36.6%	56	30.6%	120	33.5%
Fair	43	24.6%	58	31.7%	101	28.2%
Poor	39	22.3%	37	20.2%	76	21.2%
Total	175	100.0%	183	100.0%	358	100.0%
All	888		760		1648	
Angler's age/Days fished						
<16						
Never	5	27.8%	3	12.5%	8	19.0%
1-5	6	33.3%	7	29.2%	13	31.0%
6-20	4	22.2%	9	37.5%	13	31.0%
>20	3	16.7%	5	20.8%	8	19.0%
	18	100.0%	24	100.0%	42	100.0%
16-55						
Never	75	16.4%	86	27.2%	161	20.8%
1-5	179	39.1%	80	25.3%	259	33.5%
6-20	120	26.2%	66	20.9%	186	24.0%
>20	84	18.3%	84	26.6%	168	21.7%
	458	100.0%	316	100.0%	774	100.0%
>55						
Never	16	14.5%	21	24.1%	37	18.8%
1-5	43	39.1%	26	29.9%	69	35.0%
6-20	29	26.4%	19	21.8%	48	24.4%
>20	22	20.0%	21	24.1%	43	21.8%
Total	110	100.0%	87	100.0%	197	100.0%
All	586		427		1013	

Table 5. Interview response to the trip rating survey question by the number of days the respondent fished Hemlock or Canadice Lakes.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
Days fished/Trip rating	Number	Percent	Number	Percent	Number	Percent
Never						
Excellent	19	19.8%	31	28.4%	50	24.4%
Good	38	39.6%	33	30.3%	71	34.6%
Fair	18	18.8%	24	22.0%	42	20.5%
Poor	21	21.9%	21	19.3%	42	20.5%
	96	100.0%	109	100.0%	205	100.0%
1-5						
Excellent	40	17.5%	39	34.8%	79	23.2%
Good	75	32.9%	33	29.5%	108	31.8%
Fair	53	23.2%	26	23.2%	79	23.2%
Poor	60	26.3%	14	12.5%	74	21.8%
	228	100.0%	112	100.0%	340	100.0%
6-20						
Excellent	38	24.8%	24	25.5%	62	25.1%
Good	51	33.3%	35	37.2%	86	34.8%
Fair	34	22.2%	23	24.5%	57	23.1%
Poor	30	19.6%	12	12.8%	42	17.0%
	153	100.0%	94	100.0%	247	100.0%
>20						
Excellent	27	24.8%	30	27.5%	57	26.1%
Good	36	33.0%	47	43.1%	83	38.1%
Fair	21	19.3%	17	15.6%	38	17.4%
Poor	25	22.9%	15	13.8%	40	18.3%
Total	109	100.0%	109	100.0%	218	100.0%
All	586		424		1010	

Table 6. Responses to select survey questions by respondents who are not members of a fishing club.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
	Number	Percent	Number	Percent	Number	Percent
Non-club member/Trip Rating						
Excellent	108	21.3%	116	30.1%	224	25.1%
Good	177	34.9%	135	35.1%	312	35.0%
Fair	105	20.7%	78	20.3%	183	20.5%
Poor	117	23.1%	56	14.5%	173	19.4%
Total	507	100.0%	385	100.0%	892	100.0%
Non-club member/Days fished						
Never	88	17.4%	104	26.9%	192	21.5%
1-5	199	39.3%	105	27.2%	304	34.0%
6-20	125	24.7%	83	21.5%	208	23.3%
>20	95	18.7%	94	24.4%	189	21.2%
Total	507	100.0%	386	100.0%	893	100.0%
Non-club member/Canadice fish species preference						
Lake trout	39	13.7%	39	10.1%	78	11.6%
Brown trout	42	14.8%	39	10.1%	81	12.1%
Rainbow trout	43	15.1%	61	15.8%	104	15.5%
Atlantic Salmon	0	0.0%	2	0.5%	2	0.3%
Any Salmonid	16	5.6%	34	8.8%	50	7.5%
Smallmouth bass	40	14.1%	54	14.0%	94	14.0%
Largemouth bass	42	14.8%	55	14.2%	97	14.5%
Any Bass	11	3.9%	37	9.6%	48	7.2%
Chain Pickerel	21	7.4%	8	2.1%	29	4.3%
Walleye	1	0.4%	0	0.0%	1	0.1%
Yellow perch	7	2.5%	10	2.6%	17	2.5%
Black crappie	13	4.6%	5	1.3%	18	2.7%
Sunfish	5	1.8%	12	3.1%	17	2.5%
Bullhead	2	0.7%	3	0.8%	5	0.7%
Smelt	1	0.4%	0	0.0%	1	0.1%
Any Warmwater	0	0.0%	0	0.0%	0	0.0%
Any Fish	1	0.4%	27	7.0%	28	4.2%
Total	284	100.0%	386	100.0%	670	100.0%
Non-club member/Hemlock fish species preference						
Lake trout	56	12.1%	37	9.6%	93	11.0%
Brown trout	48	10.4%	36	9.3%	84	9.9%
Rainbow trout	60	13.0%	54	14.0%	114	13.5%
Atlantic Salmon	22	4.8%	5	1.3%	27	3.2%
Any Salmonid	13	2.8%	33	8.5%	46	5.4%
Smallmouth bass	64	13.9%	51	13.2%	115	13.6%
Largemouth bass	97	21.0%	49	12.7%	146	17.2%
Any Bass	25	5.4%	36	9.3%	61	7.2%
Chain Pickerel	12	2.6%	1	0.3%	13	1.5%
Walleye	42	9.1%	18	4.7%	60	7.1%
Yellow perch	9	2.0%	4	1.0%	13	1.5%
Black crappie	6	1.3%	6	1.6%	12	1.4%
Sunfish	5	1.1%	10	2.6%	15	1.8%
Bullhead	1	0.2%	5	1.3%	6	0.7%
Smelt	0	0.0%	0	0.0%	0	0.0%
Any Warmwater	0	0.0%	0	0.0%	0	0.0%
Any Fish	1	0.2%	41	10.6%	42	5.0%
Total	461	100.0%	386	100.0%	847	100.0%
Non-club member/Management strategy						
Continue current	238	46.9%	254	65.8%	492	55.1%
Walleye fishery	158	31.2%	98	25.4%	256	28.7%
No opinion	100	19.7%	32	8.3%	132	14.8%
Other	11	2.2%	2	0.5%	13	1.5%
Total	507	100.0%	386	100.0%	893	100.0%

Table 7. Responses to select survey questions by members of fishing clubs.

Question	Interview Location					
	Hemlock Lake		Canadice Lake		Combined	
Club member/Trip Rating	Number	Percent	Number	Percent	Number	Percent
Excellent	16	20.3%	8	20.5%	24	20.3%
Good	23	29.1%	13	33.3%	36	30.5%
Fair	21	26.6%	12	30.8%	33	28.0%
Poor	19	24.1%	6	15.4%	25	21.2%
Total	79	100.0%	39	100.0%	118	100.0%
Club member/Days fished						
Never	8	10.1%	6	14.6%	14	11.7%
1-5	29	36.7%	8	19.5%	37	30.8%
6-20	28	35.4%	11	26.8%	39	32.5%
>20	14	17.7%	16	39.0%	30	25.0%
Total	79	100.0%	41	100.0%	120	100.0%
Club member/Canadice fish species preference						
Lake trout	9	19.6%	5	12.5%	14	16.3%
Brown trout	10	21.7%	5	12.5%	15	17.4%
Rainbow trout	7	15.2%	9	22.5%	16	18.6%
Atlantic Salmon	0	0.0%	1	2.5%	1	1.2%
Any Salmonid	1	2.2%	5	12.5%	6	7.0%
Smallmouth bass	4	8.7%	5	12.5%	9	10.5%
Largemouth bass	6	13.0%	2	5.0%	8	9.3%
Any Bass	3	6.5%	2	5.0%	5	5.8%
Chain Pickerel	2	4.3%	1	2.5%	3	3.5%
Walleye	0	0.0%	0	0.0%	0	0.0%
Yellow perch	3	6.5%	4	10.0%	7	8.1%
Black crappie	1	2.2%	0	0.0%	1	1.2%
Sunfish	0	0.0%	1	2.5%	1	1.2%
Bullhead	0	0.0%	0	0.0%	0	0.0%
Smelt	0	0.0%	0	0.0%	0	0.0%
Any Warmwater	0	0.0%	0	0.0%	0	0.0%
Any Fish	0	0.0%	0	0.0%	0	0.0%
Total	46	100.0%	40	100.0%	86	100.0%
Club member/Hemlock fish species preference						
Lake trout	6	8.3%	5	12.5%	11	9.8%
Brown trout	17	23.6%	4	10.0%	21	18.8%
Rainbow trout	9	12.5%	7	17.5%	16	14.3%
Atlantic Salmon	1	1.4%	1	2.5%	2	1.8%
Any Salmonid	1	1.4%	3	7.5%	4	3.6%
Smallmouth bass	12	16.7%	4	10.0%	16	14.3%
Largemouth bass	11	15.3%	3	7.5%	14	12.5%
Any Bass	3	4.2%	2	5.0%	5	4.5%
Chain Pickerel	1	1.4%	1	2.5%	2	1.8%
Walleye	9	12.5%	4	10.0%	13	11.6%
Yellow perch	1	1.4%	3	7.5%	4	3.6%
Black crappie	0	0.0%	1	2.5%	1	0.9%
Sunfish	0	0.0%	1	2.5%	1	0.9%
Bullhead	1	1.4%	0	0.0%	1	0.9%
Smelt	0	0.0%	0	0.0%	0	0.0%
Any Warmwater	0	0.0%	0	0.0%	0	0.0%
Any Fish	0	0.0%	1	2.5%	1	0.9%
Total	72	100.0%	40	100.0%	112	100.0%
Club member/Management strategy						
Continue current	37	46.8%	23	56.1%	60	50.0%
Walleye fishery	32	40.5%	11	26.8%	43	35.8%
No opinion	9	11.4%	4	9.8%	13	10.8%
Other	1	1.3%	3	7.3%	4	3.3%
Total	79	100.0%	41	100.0%	120	100.0%

Table 8. Responses to select survey questions by members of local fishing clubs.

Question	Interview Location								
	Hemlock Lake			Canadice Lake			Combined		
Local Club mem/Trip Rating	Number	% Group	% All	Number	% Group	% All	Number	% Group	% All
Excellent	8	19.0%	1.4%	4	19.0%	0.9%	12	19.0%	1.2%
Good	14	33.3%	2.4%	9	42.9%	2.1%	23	36.5%	2.3%
Fair	8	19.0%	1.4%	6	28.6%	1.4%	14	22.2%	1.4%
Poor	12	28.6%	2.0%	2	9.5%	0.5%	14	22.2%	1.4%
Total	42	100.0%		21	100.0%		63	100.0%	
All	586			427			1013		
Local club member/Days fished									
Never	2	4.8%	0.3%	3	13.0%	0.7%	5	7.7%	0.5%
1-5	14	33.3%	2.4%	5	21.7%	1.2%	19	29.2%	1.9%
6-20	16	38.1%	2.7%	5	21.7%	1.2%	21	32.3%	2.1%
>20	10	23.8%	1.7%	10	43.5%	2.3%	20	30.8%	2.0%
Total	42	100.0%	7.2%	23	100.0%	5.4%	65	100.0%	6.4%
All	586			427			1013		
Local Club member/Canadice fish species preference									
Lake trout	4	19.0%	1.2%	5	22.7%	1.2%	9	20.9%	1.2%
Brown trout	2	9.5%	0.6%	2	9.1%	0.5%	4	9.3%	0.5%
Rainbow trout	5	23.8%	1.5%	5	22.7%	1.2%	10	23.3%	1.3%
Atlantic Salmon	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Any Salmonid	0	0.0%	0.0%	3	13.6%	0.7%	3	7.0%	0.4%
Smallmouth bass	2	9.5%	0.6%	2	9.1%	0.5%	4	9.3%	0.5%
Largemouth bass	4	19.0%	1.2%	1	4.5%	0.2%	5	11.6%	0.7%
Any Bass	2	9.5%	0.6%	1	4.5%	0.2%	3	7.0%	0.4%
Chain Pickerel	1	4.8%	0.3%	1	4.5%	0.2%	2	4.7%	0.3%
Walleye	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Yellow perch	0	0.0%	0.0%	1	4.5%	0.2%	1	2.3%	0.1%
Black crappie	1	4.8%	0.3%	0	0.0%	0.0%	1	2.3%	0.1%
Sunfish	0	0.0%	0.0%	1	4.5%	0.2%	1	2.3%	0.1%
Bullhead	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Smelt	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Any Warmwater	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Any Fish	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Total	21	100.0%	6.4%	22	100.0%	5.2%	43	100.0%	5.7%
All	330			426			756		
Local Club member/Hemlock fish species preference									
Lake trout	5	12.5%	0.9%	5	22.7%	1.2%	10	16.1%	1.0%
Brown trout	7	17.5%	1.3%	2	9.1%	0.5%	9	14.5%	0.9%
Rainbow trout	4	10.0%	0.8%	4	18.2%	0.9%	8	12.9%	0.8%
Atlantic Salmon	1	2.5%	0.2%	0	0.0%	0.0%	1	1.6%	0.1%
Any Salmonid	0	0.0%	0.0%	1	4.5%	0.2%	1	1.6%	0.1%
Smallmouth bass	6	15.0%	1.1%	1	4.5%	0.2%	7	11.3%	0.7%
Largemouth bass	6	15.0%	1.1%	1	4.5%	0.2%	7	11.3%	0.7%
Any Bass	3	7.5%	0.6%	0	0.0%	0.0%	3	4.8%	0.3%
Chain Pickerel	0	0.0%	0.0%	1	4.5%	0.2%	1	1.6%	0.1%
Walleye	7	17.5%	1.3%	4	18.2%	0.9%	11	17.7%	1.1%
Yellow perch	1	2.5%	0.2%	0	0.0%	0.0%	1	1.6%	0.1%
Black crappie	0	0.0%	0.0%	1	4.5%	0.2%	1	1.6%	0.1%
Sunfish	0	0.0%	0.0%	1	4.5%	0.2%	1	1.6%	0.1%
Bullhead	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Smelt	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Any Warmwater	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Any Fish	0	0.0%	0.0%	1	4.5%	0.2%	1	1.6%	0.1%
Total	40	100.0%		22	100.0%		62	100.0%	
All	533			426			959		
Local club member/Management strategy									
Continue current	14	33.3%	2.4%	8	34.8%	1.9%	22	33.8%	2.2%
Walleye fishery	20	47.6%	3.4%	9	39.1%	2.1%	29	44.6%	2.9%
No opinion	7	16.7%	1.2%	3	13.0%	0.7%	10	15.4%	1.0%
Other	1	2.4%	0.2%	3	13.0%	0.7%	4	6.2%	0.4%
Total	42	100.0%	7.2%	23	100.0%	5.4%	65	100.0%	6.4%
All	586			427			1013		

Table 9. Interview responses to the general category survey questions from Springwater Creek.

Question	Number	Percent
1. Interviewed before?		
Yes	29	22.1%
No	102	77.9%
	131	100.0%
2. Trip Rating		
Excellent	19	14.7%
Good	59	45.7%
Fair	26	20.2%
Poor	25	19.4%
	129	100.0%
3. Fishing Reason?		
Keep fish	20	15.5%
Catch/release	50	38.8%
Both	59	45.7%
	129	100.0%
4. Angler's Age		
<16	11	8.4%
16-55	110	84.0%
>55	10	7.6%
	131	100.0%
5. Number Days Fished		
Never	25	24.0%
1-5	39	37.5%
6-20	32	30.8%
>20	8	7.7%
	104	100.0%
6a. Club Member?		
Yes	9	8.7%
No	95	91.3%
	104	100.0%
6b. Club Type		
Local	3	37.5%
State	0	0.0%
National	0	0.0%
Combination	5	62.5%
	8	100.0%

Table 10. Interview responses to preferred species to fish for and management strategy category survey questions from Springwater Creek.

Question	Number	Percent
7. Springwater Fish Species		
Brown trout	5	4.9%
Rainbow trout	83	80.6%
Any Salmonid	15	14.6%
	103	100.0%
8. Springwater Rainbow trout Fishery		
Increased	6	5.8%
Slightly increased	27	26.2%
Declined	17	16.5%
Slightly declined	15	14.6%
Remained the same	8	7.8%
No Opinion	30	29.1%
	103	100.0%
9. Hemlock Management Strategy		
Continue current	65	62.5%
Walleye fishery	28	26.9%
No opinion	9	8.7%
Other	2	1.9%
	104	100.0%
10. Develop Springwater Brown trout Fishery		
Strongly support	15	14.4%
Support	8	7.7%
No opinion	14	13.5%
Little support	14	13.5%
No support	53	51.0%
	104	100.0%

Table 11. Interview responses to general category questions by respondent's age from Springwater Creek.

Question	Number	% Age Group	% All
Angler's Age/Fishing Reason			
<16			
Keep fish	0	0.0%	0.0%
Catch/release	5	50.0%	3.9%
Both	5	50.0%	3.9%
	10	100.0%	7.8%
16-55			
Keep fish	17	15.6%	13.2%
Catch/release	43	39.4%	33.3%
Both	49	45.0%	38.0%
	109	100.0%	84.5%
>55			
Keep fish	3	30.0%	2.3%
Catch/release	2	20.0%	1.6%
Both	5	50.0%	3.9%
	10	100.0%	7.8%
	129		100.0%
Angler's age/Trip Rating			
<16			
Excellent	1	9.1%	0.8%
Good	6	54.5%	4.7%
Fair	0	0.0%	0.0%
Poor	4	36.4%	3.1%
	11	100.0%	8.5%
16-55			
Excellent	16	14.5%	12.4%
Good	51	46.4%	39.5%
Fair	25	22.7%	19.4%
Poor	18	16.4%	14.0%
	110	100.0%	85.3%
>55			
Excellent	2	25.0%	1.6%
Good	2	25.0%	1.6%
Fair	1	12.5%	0.8%
Poor	3	37.5%	2.3%
	8	100.0%	6.2%
	129		100.0%
Angler's age/Days fished			
<16			
Never	0	0.0%	0.0%
1-5	4	50.0%	3.8%
6-20	4	50.0%	3.8%
>20	0	0.0%	0.0%
	8	100.0%	7.7%
16-55			
Never	21	24.1%	20.2%
1-5	33	37.9%	31.7%
6-20	25	28.7%	24.0%
>20	8	9.2%	7.7%
	87	100.0%	83.7%
>55			
Never	4	44.4%	3.8%
1-5	2	22.2%	1.9%
6-20	3	33.3%	2.9%
>20	0	0.0%	0.0%
	9	100.0%	8.7%
	104		100.0%

Table 12. Interview responses to the trip rating survey question by the number of days the respondent fished Springwater Creek.

Question	Number	% Days Group	% All
Days fished/Trip rating			
Never			
Excellent	5	20.0%	4.9%
Good	11	44.0%	10.8%
Fair	4	16.0%	3.9%
Poor	5	20.0%	4.9%
	25	100.0%	24.5%
1-5			
Excellent	5	12.8%	4.9%
Good	16	41.0%	15.7%
Fair	10	25.6%	9.8%
Poor	8	20.5%	7.8%
	39	100.0%	38.2%
6-20			
Excellent	3	10.0%	2.9%
Good	10	33.3%	9.8%
Fair	8	26.7%	7.8%
Poor	9	30.0%	8.8%
	30	100.0%	29.4%
>20			
Excellent	5	62.5%	4.9%
Good	2	25.0%	2.0%
Fair	0	0.0%	0.0%
Poor	1	12.5%	1.0%
	8	100.0%	7.8%
	102		100.0%

Table 13. Interview responses to select survey questions by respondents who are not members of a fishing club from Springwater Creek.

Question	Number	Percent
Non-club member/Trip Rating		
Excellent	16	17.2%
Good	38	40.9%
Fair	16	17.2%
Poor	23	24.7%
	93	100.0%
Non-club member/Days fished		
Never	23	24.2%
1-5	36	37.9%
6-20	28	29.5%
>20	8	8.4%
	95	100.0%
Non-club member/Springwater fish species		
Brown trout	5	5.3%
Rainbow trout	74	78.7%
Any Salmonid	15	16.0%
	94	100.0%
Non-club member/Springwater Rainbow fishery		
Increased	5	5.3%
Slightly increased	27	28.7%
Declined	13	13.8%
Slightly declined	13	13.8%
Remained the same	8	8.5%
No Opinion	28	29.8%
	94	100.0%
Non-club member/ Hemlock management strategy		
Continue current	61	64.2%
Walleye fishery	25	26.3%
No opinion	8	8.4%
Other	1	1.1%
	95	100.0%
Non-club member/Develop Springwater Brown trout fishery		
Strongly support	13	13.7%
Support	5	5.3%
No opinion	14	14.7%
Little support	12	12.6%
No support	51	53.7%
	95	100.0%

Table 14. Interview responses to select survey questions by respondents who are members of a fishing club from Springwater Creek.

Question	Number	Percent
Club member/Trip Rating		
Excellent	2	22.2%
Good	1	11.1%
Fair	6	66.7%
Poor	0	0.0%
	9	100.0%
Club member/Days fished		
Never	2	22.2%
1-5	3	33.3%
6-20	4	44.4%
>20	0	0.0%
	9	100.0%
Club member/Springwater fish species		
Brown trout	0	0.0%
Rainbow trout	9	100.0%
Any Salmonid	0	0.0%
	9	100.0%
Club member/Springwater Rainbow fishery		
Increased	1	11.1%
Slightly increased	0	0.0%
Declined	4	44.4%
Slightly declined	2	22.2%
Remained the same	0	0.0%
No Opinion	2	22.2%
	9	100.0%
Club member/Hemlock Management strategy		
Continue current	4	44.4%
Walleye fishery	3	33.3%
No opinion	1	11.1%
Other	1	11.1%
	9	100.0%
Club member/Develop Springwater Brown trout fishery		
Strongly support	2	22.2%
Support	3	33.3%
No opinion	0	0.0%
Little support	2	22.2%
No support	2	22.2%
	9	100.0%

Table 15. Interview responses to select survey questions by respondents who are members of a local fishing club from Springwater Creek.

Question	Number	Percent
Local Club member/Trip Rating		
Excellent	0	0.0%
Good	1	33.3%
Fair	2	66.7%
Poor	0	0.0%
Total	3	100.0%
Local Club member/Days fished		
Never	1	33.3%
1-5	1	33.3%
6-20	1	33.3%
>20	0	0.0%
Total	3	100.0%
Local Club member/Springwater fish species		
Brown trout	0	0.0%
Rainbow trout	3	100.0%
Any Salmonid	0	0.0%
Total	3	100.0%
Local club member/Springwater Rainbow fishery		
Increased	1	33.3%
Slightly increased	0	0.0%
Declined	1	33.3%
Slightly declined	1	33.3%
Remained the same	0	0.0%
No Opinion	0	0.0%
	3	100.0%
Local club member/Hemlock management strategy		
Continue current	1	33.3%
Walleye fishery	1	33.3%
No opinion	1	33.3%
Other	0	0.0%
Total	3	100.0%
Local club member/Develop Springwater Brown trout fishery		
Strongly support	0	0.0%
Support	1	33.3%
No opinion	0	0.0%
Little support	1	33.3%
No support	1	33.3%
	3	100.0%

Appendix A. Hemlock and Canadice Lakes Survey Questionnaire

Hemlock/Canadice Creel Survey

1. Have you been interviewed before? Y Or N
2. Are you fishing to: (A) keep fish (B) catch/release (C) Both
3. How would you rate your fishing trip today?
(E)xcellent (G)ood (F)air (P)oor
4. Do you currently have a City of Rochester Watershed Visitor Permit? Y or N
5. Age of angler: (A) under 16 (B) 16 to 55 (C) Over 55

If interviewed before, the following questions do not need to be asked

6. Approximately how many days did you fish Hemlock/Canadice Lakes in 2004?
(A) Never (B) 1-5 (C) 6-20 (D) >20
7. Are you presently a member of an organized fishing club or group? Y Or N
7a. Local State or National Combination
8. If you had to choose only 1 species currently available in **Canadice Lake** to fish for, what species would it be? (Choose 1)

Lake trout	Largemouth bass	Bluegill/sunfish	Bullhead
Rainbow trout	Smallmouth bass	Yellow perch	Other _____
Brown trout	Pickrel	Crappie	Not applicable

9. If you had to choose only 1 species currently available in **Hemlock Lake** to fish for, what species would it be? (Choose 1)

Lake trout	Largemouth bass	Bluegill/sunfish	Bullhead
Rainbow trout	Smallmouth bass	Yellow perch	Other _____
Brown trout	Pickrel	Crappie	Not applicable
Landlocked salmon	Walleye	Smelt	

10. Currently, DEC's management strategy for Hemlock Lake centers on coldwater trout species. There is currently a proposal by an interested angler group to stock walleye in Hemlock Lake. **Because of similar habitat and forage preferences**, there is a potential for walleye to negatively impact rainbow and brown trout and landlocked salmon. Which of the following would be your preferred management strategy:

A) Continue current coldwater management strategy B) Allow local angling group to try and develop a walleye fishery C) No opinion D) Other (please specify)_____

11. On a scale of 1 to 5 with 1 being poor and 5 being excellent, how do you rate the City of Rochester's management of the Hemlock/Canadice Watershed?

1 2 3 4 5

12. What do you recommend to improve your overall enjoyment of your trip to Hemlock/Canadice Lake?

Appendix B. Springwater Creek Survey Questionnaire

Springwater Creel Survey

1. Have you been interviewed before? Y Or N
2. How would you rate your fishing trip today?
(E)xcellent (G)ood (F)air (P)oor
3. Are you fishing to: (A) keep fish (B) catch/release (C) Both
4. Age of angler: (A) under 16 (B) 16 to 55 (C) Over 55

If interviewed before, the following questions do not need to be asked

5. Approximately how many days did you fish Springwater Creek from April 1, 2004 to December 31, 2004?
(A) Never (B) 1-5 (C) 6-20 (D) >20

6. Are you presently a member of an organized fishing club or group? Y Or N
6a. Local State or National Combination

7. What is your favorite species to fish for in Springwater Creek?

Rainbow trout Brown trout Other (Please record)_____

8. Do you feel the Spring rainbow trout fishery in Springwater Creek has increased, slightly increased, declined, slightly declined, remained the same, or no opinion over the last 10 years?

Increased slightly increased declined slightly declined remained the same
No opinion

9. Currently, DEC's management strategy for Hemlock Lake centers on coldwater trout species. There is currently a proposal by an interested angler group to stock walleye in Hemlock Lake. **Because of similar habitat and forage preferences**, there is a potential for walleye to negatively impact rainbow and brown trout and landlocked salmon. Which of the following would be your preferred management strategy:

A) Continue current coldwater management strategy B) Allow local angling group to try and develop a walleye fishery C) No opinion D) Other (please specify)_____

10. It is possible to create a year round brown trout fishery in Springwater Creek. Because of similar habitat and forage preferences, there is a potential for brown trout to negatively impact rainbow trout in Springwater Creek/Hemlock Lake. Given this potential, on a scale of 1 to 5 with 1 being no support, 3 no opinion, and 5 strong support, how would you feel about developing a brown trout fishery in Springwater Creek?

1 2 3 4 5

11. What do you recommend to improve your overall enjoyment of your fishing trip to Springwater Creek?