

# ANGLER HARVEST SURVEY

## AISHIHIK LAKE 2006

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AISHIHIK LAKE 2006  
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## Key Findings

- We estimated 2,456 hours of angling effort were expended by 706 recreational anglers in 365 parties over the summer, for an average of 3.5 hours per angler. This is a moderate level of effort for a fishery on a large lake.
- Angler success, as measured by the number of lake trout caught per hour of angling, was above average compared to other Yukon fisheries surveyed to date and slightly higher than past surveys.
- An estimated 963 lake trout were caught by recreational anglers, but 80% were released, resulting in low harvest.
- Northern pike were rarely angled for and rarely caught; all were released. A few Arctic grayling were caught in the river at the outlet but almost all were released.
- Lake trout sampled from anglers' catches were younger than typical and small fish were more abundant in the sample than usual.
- We estimated 276 kilograms of lake trout were harvested by recreational anglers over the summer.



# Table of Contents

Introduction.....	1
Harvest Regulations .....	1
Methods.....	2
Survey .....	2
Analysis.....	3
Lake Productivity .....	3
2006 Aishihik Lake Survey.....	3
2006 Results: All Periods Combined .....	5
Effort .....	5
Fishing Methods .....	5
Methods of Access .....	5
Guided Anglers .....	6
Angler Origin .....	6
Visitor Type .....	6
Weather.....	7
Targeted Species .....	7
Catch and Harvest.....	7
2006 Results: Comparisons between Periods .....	8
Effort .....	8
Fishing Methods .....	9
Guided Anglers .....	9
Angler Origin .....	9
Visitor Type .....	10
Weather.....	10
Catch.....	10
Biological Data.....	10
Comparison with Previous Surveys.....	13
Effort .....	13
Fishing Methods .....	13
Methods of Access .....	13
Guided Anglers .....	13
Angler Origin .....	13
Visitor Type .....	14
Weather.....	14
Catch and Harvest.....	14
Fishery Sustainability .....	15
References .....	16



## Introduction

Aishihik Lake is in the southwest Yukon within the traditional territory of the Champagne and Aishihik First Nations. It is a large (145.0 km<sup>2</sup>), deep (mean depth 37.6 m) lake with its southern tip located 43 km north of the Alaska Highway along the Aishihik Road. The road continues parallel but not immediately adjacent to the east side of the lake for approximately 60 more kilometres to again access the lake in the small settlement of Aishihik Village. There is a government campground and boat launch located at the south end of the lake, and a boat launch at the north end. There are a few seasonal dwellings/cabins along the east shore, including a cabin regularly used by Dalton Trail Lodge, a local fishing guide operator. The area is windy, causing Aishihik Lake to often be rough and difficult for boating.

Aishihik Lake is used as a reservoir for hydroelectric generation by Yukon Energy Corporation. There is a water control structure on the outlet at the south end and water is controlled seasonally within operating guidelines set out in Yukon Energy's water use licence. These fluctuations have affected Aishihik Lake fish populations (de Graff, 1993), but do not directly affect angling effort.

Aishihik Lake has been identified as a priority by management agencies and advisory bodies. As a result, the recreational angling fishery has been assessed on two previous occasions, 1991 and 2001.

The 2006 survey was done to monitor

- effort by both tourist and resident anglers;
- characteristics of the fishery and patterns of use;
- success rate of anglers for all species of fish; and
- levels of harvest in relation to productive capacity.

In addition to collecting information about the fishery, contractors

- collected biological data from anglers' catches,
- provided anglers with information about regulations; and
- established a fisheries management presence.

## Harvest Regulations

Aishihik Lake has been under *high quality management or conservation water* angling regulations since 1991. These regulations protect the larger spawning fish and encourage the harvest of smaller fish while allowing the retention of a trophy fish if caught. Barbless hooks are required. Lake trout catch limits are 2 fish per day and in possession with all fish between 65 cm and 100 cm required to be released and only 1 lake trout larger than 100 cm allowed. Arctic grayling catch limits are 4 fish per day and in possession with all fish between 40 cm and 48 cm required to be released and only one Arctic

grayling larger than 48 cm allowed. Northern pike catch limits are 4 fish per day and in possession with all fish between 75 cm and 105 cm required to be released and only one Northern pike larger than 105 cm allowed. General catch and possession limits apply to all other species.

The regulation history for Aishihik Lake is detailed in Appendix 1.

## **Methods**

### **Survey**

Angler harvest surveys, also called creel surveys, are conducted on a number of Yukon recreational fisheries each year. These surveys, in combination with other fish- and fishery-related assessments are used to determine if the angler effort and harvest are sustainable under the existing regulation regime.

In 1990 Environment Yukon adopted survey methodology and related analysis software developed by the Ontario Ministry of Natural Resources (Lester and Trippel, 1985). Environment Yukon endeavors to conduct this type of survey on key Yukon fisheries every 5 years or as angler patterns and management concerns dictate. This frequency is appropriate to detect significant changes in either harvest or effort and to be able to take any necessary management actions in a timely manner.

Surveys consist of a field worker conducting face to face interviews with anglers on selected sample days throughout the summer. Anglers are asked a standard set of questions used to characterize the social and biological aspects of the fishery. Data gathered includes such things as:

- How much time did anglers spend fishing?
- What fishing methods did anglers use?
- How did anglers fish (boat, shore, etc...)?
- Were anglers guided?
- Where were anglers from?
- What type of visitor were anglers (day users, campers, etc...)?
- What kinds of fish were anglers trying to catch?
- How many fish did anglers catch?
- How many fish did anglers release?

Any additional information offered by anglers relating to any aspect of their experience is also recorded.

Results of the survey directly contribute to management decisions that ensure fisheries are sustainable over the long term.

The field worker also collects biological data from the catch of cooperative anglers. Biological data gathered includes: length (mm), mass (g), sex, maturity, the collection of an ageing structure appropriate to the species, as well as the collection of stomachs for diet analysis. Any additional information as to

general health and condition of the fish is recorded by the field worker (for example, abnormalities, disease, or lesions).

Weather over the entire sample day is subjectively assessed by the field worker as to its effect on angling activity (no possible adverse effect, possible adverse effect, definite adverse effect).

Survey timing varies depending on management objectives, key species and the nature of the fishery, but typically runs from ice out in the spring until either just after Labour Day or to the end of September. The survey is subdivided into several related subsets or periods, rather than pooling across the entire survey, to allow more detailed assessment of the data. For example, data are typically subdivided into several seasonal periods (usually 3 or 4) which are further partitioned into weekends and weekdays. Sample days are selected from the total number of available days within the survey period to ensure that sample size in each period is sufficient to allow analysis and to weight sampling toward the periods with the greatest angler use based on previous surveys and knowledge of the fishery. We attempt to sample at least 20% of the survey days.

Sample days are 14 hours long, 8:00 a.m. to 10:00 p.m. On sample days, all agreeable angling parties are interviewed by the field worker and angling parties observed but not interviewed are recorded.

### ***Analysis***

At the completion of the survey, the data is entered and analyzed utilizing the computer program CREESYS (1985) developed by the Ontario Ministry of Natural Resources. Laboratory analysis is conducted on samples to determine stomach contents and ages.

### ***Lake Productivity***

Waterbody productivity estimates are calculated using physical characteristics of the lake; average depth and total dissolved solids, along with average annual air temperature at the lake. Ryder's morphoedaphic index (1974) is used and incorporated into Schlesinger and Regier's (1982) equation for calculation of maximum sustained yield (MSY) for all species. Calculation of MSY for individual species is based on partitioning the biomass by species based on the most recent population survey data. Following O'Connor (1982), 15% of MSY provides an "optimum" sustained yield which maintains high quality fisheries on light to moderately exploited lakes.

## **2006 Aishihik Lake Survey**

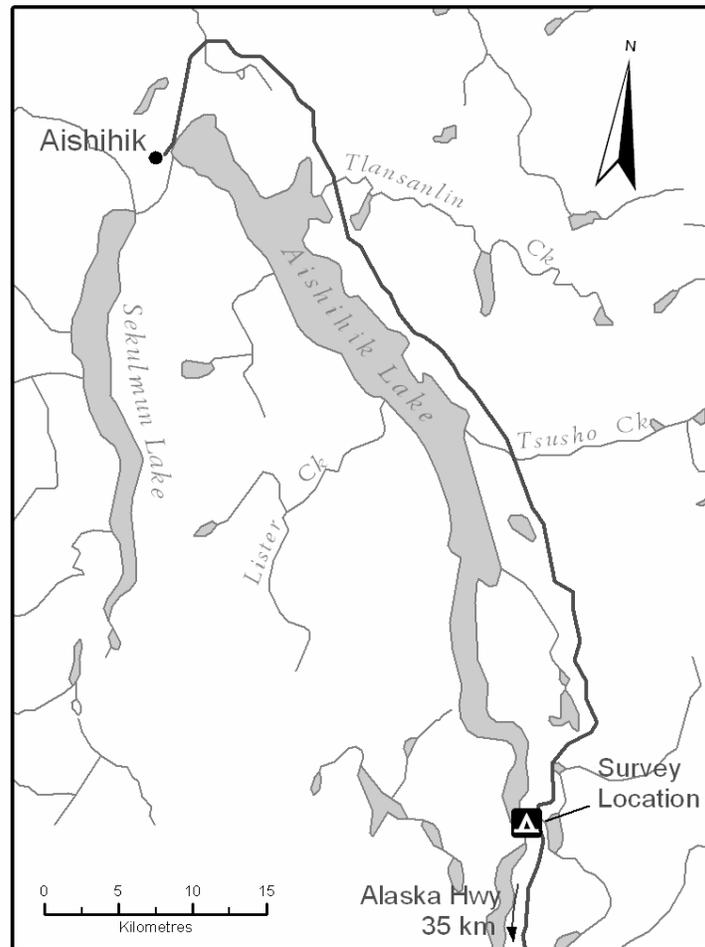
The survey began June 1 (ice out) and concluded September 15, 2006.

Access survey methodology was used, meaning the field worker was stationed at the campground and boat launch at the south end of the lake (Figure 1) for the entire sample day and interviewed angling parties at the end

of their fishing trip. Previous surveys and local knowledge indicated that most anglers access Aishihik Lake from this location, although a limited amount of angling activity has been reported to originate from the north end of the lake at Aishihik Village. The contractor casually monitored road usage and made a few exploratory trips to the north end but never encountered any angling activity. Other boaters who travelled up the lake were asked if they saw any activity and it was seldom reported. Therefore, whatever limited effort may have originated from the north end of Aishihik Lake is not included in this survey.

The survey period was partitioned into 6 time periods, weekends and weekdays in June, July and August/September. Of the 107 day survey period, 38 days were sampled, resulting in a sampling effort of 36%.

Data analysis was divided into two parts. In the first part, data were combined across all 6 time periods, and in the second part results were compared between time periods. All data were analyzed at the group level.



**Figure 1.** Location of 2006 Aishihik Lake angler harvest survey.

## 2006 Results: All Periods Combined

### *Effort*

We estimated a total of 2,456 hours of angler effort were expended by 706 anglers in 365 parties on Aishihik Lake over the 2006 survey period. This worked out to an average of 22.9 angler hours per day, or an average of 3.5 hours per angler.

### *Fishing Methods*

Trolling was by far the most popular method of fishing in Aishihik Lake in 2006, followed by spin casting and then combinations of methods (Table 1). A few anglers drift fished and one party jigged. Most fly fishing took place in the river below the control structure at the outlet.

**Table 1. Fishing Methods, Aishihik Lake Angler Harvest Survey 2006.**

<b>Method of Fishing</b>	<b>Percent of Parties</b>
Trolling	67%
Spin casting	17%
Combinations	10%
Fly casting	5%
Drift fishing	1%
Jigging	<1%

### *Methods of Access*

Most anglers accessed the Aishihik Lake fishery from motorboats in 2006 (Table 2). Some anglers accessed the lake from shore, with most shore anglers were positioned along the river below the control structure at the outlet. Canoes were the only other access method used.

**Table 2. Angler Access Methods, Aishihik Lake Angler Harvest Survey 2006.**

<b>Access Method</b>	<b>Percent of Parties</b>
Motorboat	76%
Shore	23%
Canoe	1%

**Guided Anglers**

Seven percent of anglers on Aishihik Lake in 2006 were formally guided, which is slightly higher than the Yukon average. All of these anglers were clients of Dalton Trail Lodge which operated out of a cabin on the east shore of Aishihik Lake for a few days each week. As will be discussed in the comparison between periods, the randomization of sample days resulted in not recording any of this activity in the later summer periods. The actual percentage of guided anglers is likely higher than 7%.

**Angler Origin**

Whitehorse anglers were the most frequent fishers at Aishihik Lake in 2006, followed by American anglers (primarily from Alaska; Table 3). The local angler category includes only immediate residents, not Otter Falls or Haines Junction residents – these anglers would fall under the *Yukon* category. The few *Yukon* anglers may be an underestimate because we did not formally survey the north end of the lake where Haines Junction residents who are also members of Champagne and Aishihik First Nations may have fished.

**Table 3. Angler Origin, Aishihik Lake Angler Harvest Survey 2006.**

Origin	Percent of Parties
Whitehorse	59%
U.S	27%
Other (mostly Europeans)	6%
Non-resident Canadians	5%
Yukon	3%
Local	0%

**Visitor Type**

Most anglers at Aishihik Lake in 2006 stayed in the government campground (Table 4). Other categories were a relatively even split. Most of the Crown land campers were Dalton Trail Lodge guides and clients who stayed in a cabin on the east shore.

**Table 4. Angler Visitor Type, Aishihik Lake Angler Harvest Survey 2006.**

User Type	Percent of Parties
Day users	8%
Camper – Government campground	81%
Camper – Crown Land	5%
Camper – Private campground	6%

## **Weather**

Weather at Aishihik Lake in 2006 had an adverse effect on fishing activity (Table 5). Almost all of the effect was from wind.

**Table 5. Sample Day Weather, Aishihik Lake Angler Harvest Survey 2006.**

<b>Did Weather Effect Angling?</b>	<b>Percent of Parties</b>
No possible adverse effect	32%
Possible adverse effect	55%
Definite adverse effect	13%

## **Targeted Species**

Anglers targeting a particular species were more successful than those that did not (Table 6). Arctic grayling data were the most notable in this category. Although only 7% of anglers specifically targeted Arctic grayling, those anglers were responsible for 86% of the Arctic grayling catch and 100% of the Arctic grayling harvest. Seventy six percent of anglers were targeting lake trout, and were responsible for 95% of the catch and 95% of the lake trout harvest. Only 1% of anglers were targeting Northern pike, and they were responsible for 25% of the Northern pike catch. There was no Northern pike harvest.

**Table 6. Catch and Harvest by Anglers Targeting Specific Species, Aishihik Lake Angler Harvest Survey 2006.**

	<b>Percent of Parties</b>	<b>Percent of Total Catch</b>	<b>Percent of Total Harvest</b>
Lake trout	76%	95%	95%
Arctic grayling	7%	86%	100%
Northern pike	1%	25%	No Harvest

## **Catch and Harvest**

Lake trout were by far the most heavily caught and harvested species in spite of a low retention rate (Table 7). A reasonable number of Arctic grayling were caught, but nearly all were released. The few lake whitefish caught were incidental to the Arctic grayling fishery in the river below the control structure at the outlet, and all were released. Very few Northern pike were caught, and none were retained.

Estimated angler success rates, calculated over the entire survey as numbers of fish caught per hour of angling effort (CPUE), is presented for *all anglers* (regardless of target species) and *species anglers* (those targeting a specific species) in Table 8. As expected, anglers targeting a specific species were more successful than general anglers for all species, but particularly for Arctic grayling, as they were targeted in prime habitats in which they aggregate, usually in the river below the control structure at the outlet. Lake trout results for both categories are slightly above Yukon averages. Anglers targeting Arctic grayling had excellent results, and both lake whitefish and Northern pike were seldom angled for and rarely caught.

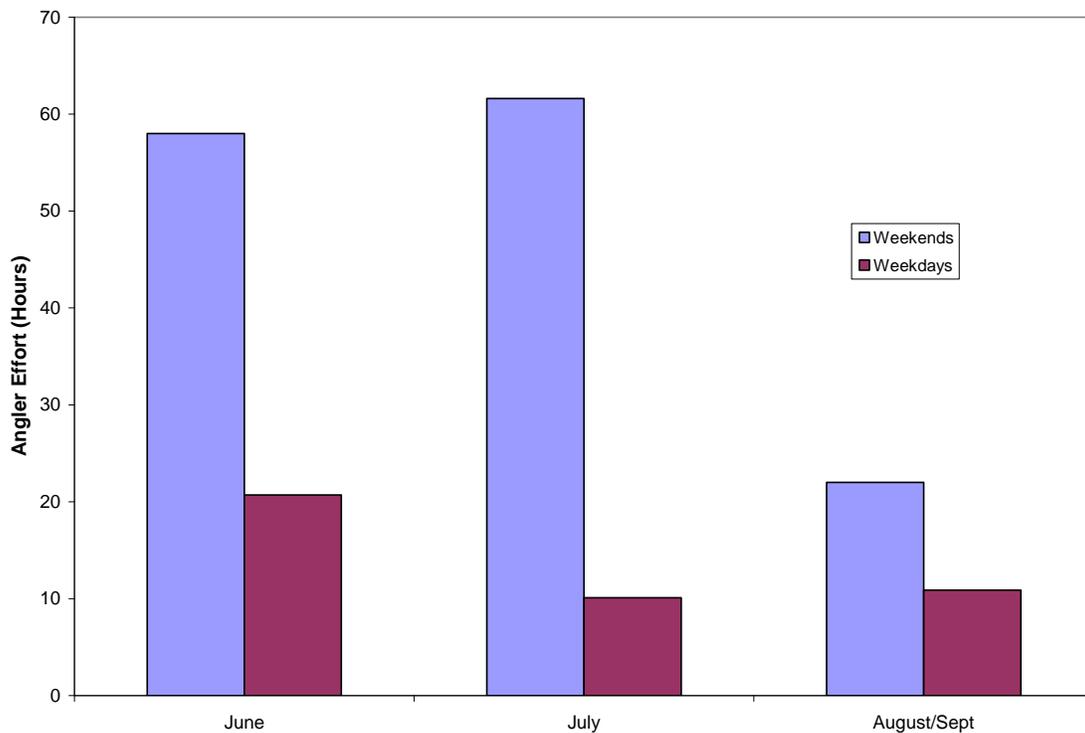
**Table 8. Estimated Catch per Unit of Effort (Fish/Hour), Aishihik Lake Angler Harvest Survey 2006.**

	<b>All Anglers CPUE</b>	<b>Species Anglers CPUE</b>
Lake trout	0.39	0.42
Lake whitefish	0.01	n/a
Arctic grayling	0.09	2.33
Northern pike	0.002	0.08

## **2006 Results: Comparisons between Periods**

### ***Effort***

Mean daily angler effort on weekends was very high in both June and July with a substantial drop in August/September (Figure 2). Weekday effort was also highest in June, dropping by about half in July and August/September. This is a typical pattern in Yukon lake trout fisheries.



**Figure 2.** Estimated angler effort per day, Aishihik Lake Angler Harvest Survey 2006.

### ***Fishing Methods***

Fishing methods were relatively consistent across weekends in the survey with most anglers trolling, a few spin casting, and others using a scattering of other methods. Weekdays showed much more variation. In June there were nearly as many spin casters as trollers; in July there was no spin casting observed and in August/September most people used combinations of methods.

### ***Guided Anglers***

The guided parties surveyed were evenly distributed through both June periods and July weekends, but not encountered during other periods. Based on reports from operators, guided trips happened in all periods, they were just not captured by the random survey days in the late summer periods.

### ***Angler Origin***

Origin of anglers was relatively consistent over the survey, with the following variations. Yukon anglers (from areas other than Whitehorse) were present only on weekends, non-resident Canadians were not present on July weekdays or in the August/September periods. *Other* anglers were not present on July weekdays or August/September weekends.

## Visitor Type

Government campground users were by far the dominant users in all periods. Day users were most abundant on weekends in June and July. Private campground users and campers staying on Crown land were not present on July weekdays or August/September periods. The Crown land campers are directly related to the guided anglers, as a majority of these campers were staying at the cabin used by Dalton Trail Lodge.

## Weather

The influence of weather on angling activity was not analyzed by period.

## Catch

Lake trout CPUE was good over the summer: higher in June than July and highest on August/September weekdays (Table 10). Arctic grayling CPUE was low in most periods, but high on July weekdays, the period in which they were targeted most heavily. Lake whitefish and Northern pike were only incidentally or infrequently angled for in a couple of periods with very low CPUE (Table 9).

Catch per unit effort patterns for lake trout are consistent with typical Yukon summer patterns. Success is high in the spring following ice out and then drops as water temperatures warm. Fall increases are usually related to the onset of spawning and cooling water temperatures. These fluctuations are not dramatic on Aishihik Lake as CPUE remained fairly consistent over the summer other than the high result in late summer. Effort was lowest in this period and a few very skilled anglers heavily influenced the result.

**Table 9. Estimated Catch per Unit of Effort (Fish/Hour) by Period, Aishihik Lake Angler Harvest Survey 2006.**

	Lake Trout	Lake Whitefish	Arctic Grayling	Northern Pike
June weekends	0.42			0.01
June weekdays	0.50		0.03	
July weekends	0.20	0.01	0.02	
July weekdays	0.37		0.75	
August/September weekends	0.37			0.00
August/September weekdays	0.76	0.02	0.06	

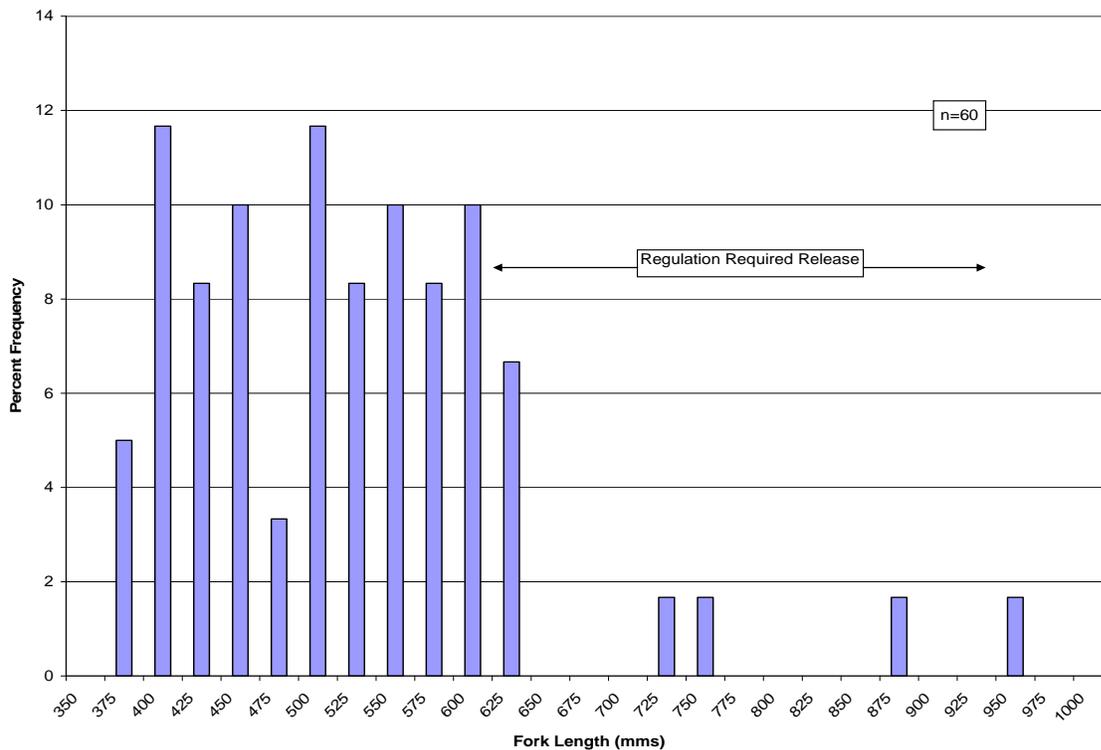
## Biological Data

Sixty lake trout were sampled for biological data. Mean fork length was 512 mm, and mean weight was 1,660 g, equivalent to a mean condition factor of 1.23. This is a very good condition factor (relationship between length and weight) for lake trout in Yukon and indicates “fat” fish. The sex ratio was 3 females for every 2 males. A similar number of lake trout were harvested across

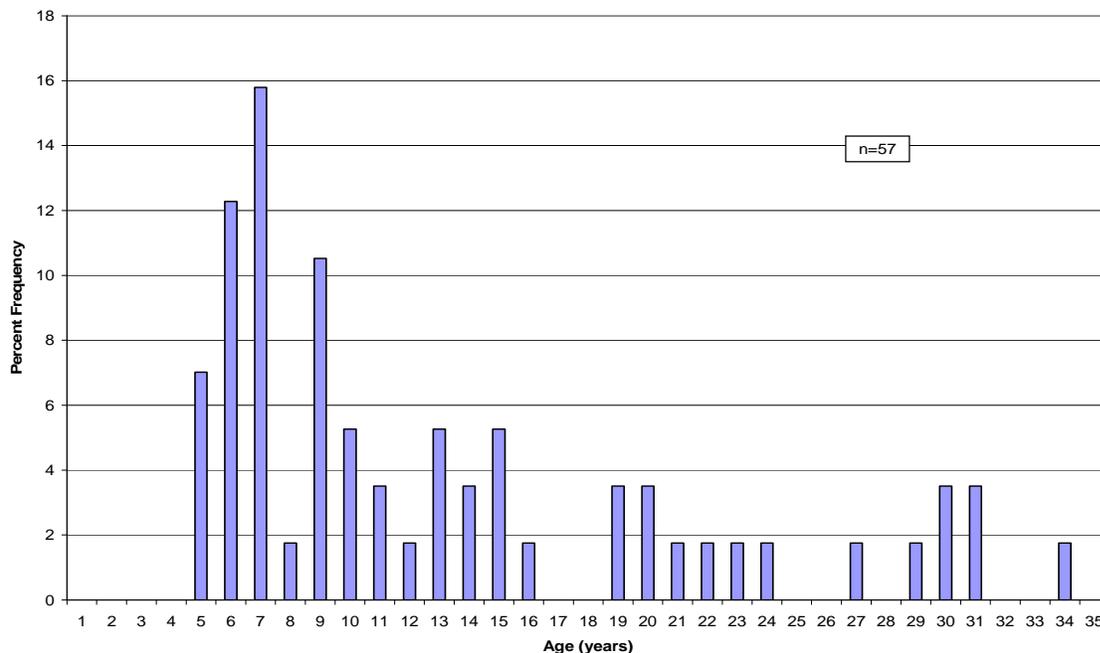
a wide range of size classes from 375 to 650 mm, the bottom of the slot limit (a few slot limit fish were harvested by First Nation anglers; Figure 3). This abundance of smaller lake trout (<450 mm) in the sample is unusual in Yukon fisheries.

Estimated weight of lake trout harvested by anglers over the summer (harvest estimate x mean weight) was 276 kg.

Ages are available from 57 of the sampled lake trout. Average age was 13 years (ranging from 5 to 34 years) and the most common age was 7 years (Figure 4). Average age is younger than typical Yukon results, and the dominance of young lake trout is very unusual and indicative of rapid growth. Note that young fish (less than 5 years in this lake) are not vulnerable to angling gear and regulation does not allow harvest of larger fish (with the exception of one very large trophy). These portions of the population are therefore under represented in the sample.



**Figure 3.** Sampled Lake Trout Fork Length Frequency Distribution, Aishihik Lake Angler Harvest Survey 2006.



**Figure 4.** Sampled lake trout age frequency distribution, Aishihik Lake Angler Harvest Survey 2006.

Diet analysis was conducted on 48 lake trout stomachs. Of these, 11 were empty and the remaining 37 averaged 46% full. Fish were the most common diet item identified, although invertebrates comprised 72% of the lake trout diet (Table 10).

**Table 10. Sampled Lake Trout Stomach Contents, Aishihik Lake Angler Harvest Survey 2006.**

	Percent Volume
Fish (unidentified)	28%
Invertebrates (unidentified)	23%
Shrimp ( <i>Amphipoda spp.</i> )	18%
Water Fleas ( <i>Cladocera spp.</i> )	13%
Midges ( <i>Chironomidae spp.</i> )	8%
Ants ( <i>Formicidae spp.</i> )	5%
Caddisflies ( <i>Tricoptera spp.</i> )	2%
Snails ( <i>Limnaea spp.</i> )	2%
Wasps ( <i>Hymenoptera spp.</i> ), Clams ( <i>Pelecypodia spp.</i> ), Stoneflies ( <i>Plecoptera spp.</i> ), Flies ( <i>Diptera spp.</i> ), Beetles ( <i>Coleoptera spp.</i> ), Vegetation	Trace

No other species were sampled for biological data over the survey.

## **Comparison with Previous Surveys**

Angler harvest surveys were previously completed on Aishihik Lake in 1991 and 2001. These surveys used the same methodology and design and are directly comparable with the 2006 survey. The only notable difference was that previous surveys ended in the first part of September while the 2006 survey continued to September 15.

### ***Effort***

Estimated summer open water angler effort over the past 15 years has remained similar on Aishihik Lake and moderate compared to other Yukon waterbodies (Table 11). We estimate 2,456 angler hours of effort over the 2006 survey. This estimate is very similar to the first survey in 1991 and increased by about 550 hours from the most recent survey in 2001.

**Table 11. Total Estimated Angler Hours, Aishihik Lake Angler Harvest Surveys.**

<b>Year</b>	<b>Hours</b>
2006	2,476
2001	1,917
1991	2,456

### ***Fishing Methods***

Fishing methods have shifted slightly since the 2001 survey (this information is not available from 1991). Trolling increased in popularity while spin casting decreased. Other methods remain similar.

### ***Methods of Access***

Methods of access have been dominated by motorboats in all surveys, most heavily in 2006 (76%). There was a corresponding drop in shore anglers in 2006 from their high of 48% in 2001 to 23% in 2006. Canoes continue to be infrequently used.

### ***Guided Anglers***

Formally guided parties have accounted for 7–10% of the angler effort in all surveys.

### ***Angler Origin***

There has been a steady increase in Whitehorse- and U.S.-origin anglers over the surveys, and a corresponding decrease in other categories (in particular local anglers; Table 12). Whitehorse-origin anglers have been dominant in all years.

	<b>2006</b>	<b>2001</b>	<b>1991</b>
Local	0%	7%	16%
Whitehorse	59%	53%	36%
Yukon	3%	3%	8%
Non-resident Canadians	5%	4%	11%
U.S.	27%	20%	14%
Other (usually Europeans)	6%	12%	15%

### **Visitor Type**

Visitor type at Aishihik Lake has been dominated by government campground users in all years. There was a decrease in the percentage of Crown land campers and a slight decrease in day users in 2006. These data were not collected in 1991.

### **Weather**

The field worker's subjective assessment of weather effects on angling activity over entire sample day indicates that weather was much poorer in 2006 than in 2001 (Table 13). Sample day weather data was not collected in 1991.

	<b>2006</b>	<b>2001</b>	<b>1991</b>
No possible adverse effect	32%	59%	n/a
Possible adverse effect	55%	35%	n/a
Definite adverse effect	13%	6%	n/a

### **Catch and Harvest**

Lake trout catch estimates for 2006 are the highest to date and more than double the 2001 estimates (Table 14) but the number of lake trout harvested only increased slightly as anglers release an increasing percentage of their catch.

Lake whitefish catch was not reported in 1991, and more recent estimates show that catches are incidental with lake whitefish only being retained in 2001.

Arctic grayling catches have declined over the surveys (Table 14) and retention has dropped to the point where only 4 fish were retained in 2006.

Northern pike catches have only been reported with any number in 1991 (Table 14). None were reported caught in 2001 and only 4 in 2006, with none

retained. This may be partially due to 2001 and 2006 lacking survey coverage of the north end of the lake where a majority of the Northern pike fishing takes place.

**Table 14. Estimated Number of fish caught and kept, Aishihik Lake Angler Harvest Surveys.**

	2006		2001		1991	
	Caught	Kept	Caught	Kept	Caught	Kept
Lake trout	963	166	432	124	610	156
Lake whitefish	13	0	61	25	0	0
Arctic grayling	213	4	272	80	418	125
Northern pike	4	0	0	0	253	65

Estimated CPUE (number of fish per angler hour) over the entire survey is the statistic that most truly reflects the changes in the fishery. Dramatic decreases in CPUE for a particular species could indicate problems in terms of the health or status of the fish species in question.

Lake trout CPUE demonstrated stability between 1991 and 2001, and has experienced a moderate increase for 2006 (Table 15). Results are good and slightly above the Yukon average for lakes surveyed to date.

**Table 15. Estimated Catch per Unit of Effort (Fish/Hour), Aishihik Lake Angler Harvest Surveys.**

	2006	2001	1991
Lake trout	0.39	0.23	0.25
Lake whitefish	0.01	0.03	n/a
Arctic grayling	0.09	0.14	0.17
Northern pike	0.00	n/a	0.10

The CPUE data for species other than lake trout is confused when the small amount of effort expended for that species is diluted in the overall survey effort. For example, Arctic grayling CPUE appears to be decreasing in the overall picture, yet we know from 2006 targeted CPUE that catchability of Arctic grayling was very high, much higher than in 2001. Lake whitefish are an incidental catch, and Northern pike were only angled for seriously in 1991.

## Fishery Sustainability

Angling regulations on Aishihik Lake have remained unchanged since 1991 with the exception of the 2004/05 season when *slot limits* were changed to a maximum size limit for one season before being changed back (Appendix 1).

Productivity calculations predict Aishihik Lake could sustainably support a total annual lake trout harvest of about 800 kilograms while maintaining a high quality fishery.

The estimated lake trout harvest from 2006 summer angling is 276 kilograms. This is higher than the estimated harvest in 2001 and slightly below the 1991 estimate (Table 16).

**Table 16. Estimated Summer Lake Trout Harvest by Anglers, Aishihik Lake Angler Harvest Surveys.**

	<b># of Lake Trout</b>	<b>Mean Wt (kg)</b>	<b>Harvest Estimate (kg)</b>
2006	166	1.66	276
2001	124	1.34	166
1991	156	1.90	296

A minimal ice fishery occurs on Aishihik Lake but it has never been formally monitored. Anecdotal information suggests that effort and harvest are minimal.

Champagne and Aishihik First Nations subsistence harvest occurs on Aishihik Lake both in the open water and ice covered seasons. There are several weekends throughout the year which are traditional times for community members to set nets and harvest fish. Levels of harvest are not known with any level of precision, but in 2005 Champagne and Aishihik First Nations, Yukon Energy Corporation and Yukon Government cooperated on surveys to characterize and quantify this harvest (Environment Yukon internal files). The survey was never fully completed.

The status of the Aishihik Lake fishery is scheduled to be assessed again in 2011.

## References

- de Graff, Nick. 1992. Fish Stock Assessment of Aishihik, Canyon and Sekulmun Lakes, 1991–1992. YTG Technical Report TR-93-1.
- Lester, N. P. and E.A. Trippel. 1985. CREESYS Users Manual. Second Edition. Ontario Ministry of Natural Resources.
- O’Conner, J. 1982. Unpublished data from Manitoba Government files. Department of Natural Resources, Winnipeg, Manitoba.
- Osborne, Clive. 1993. Angler Harvest Survey of Aishihik Lake Yukon Territory 1991. YTG Technical Report TR-93-2.
- Ryder, R.A, S.R. Kerr, K.H. Loftus, and H.A. Regier. 1974. The Morphoedaphic Index. A Fish Yield Estimator – Review and Evaluation. Journal of the Fisheries Research Board of Canada, Vol. 31: 663–668.

Schlesinger, D.A., and H.A. Regier. 1982. Climatic and Morphoedaphic Indices of Fish Yields from Natural Lakes. Transactions of the American Fisheries Society 111:141-150.

Sheepway, Darryl. 2006. Angler Harvest Survey for Aishihik Lake 2006. Contractor's Field Work Report. Environment Yukon Internal Files.

**Appendix 1.** Aishihik Lake angling regulation changes 1989 to 2006.

<b>Year</b>	<b>Species</b>	<b>Catch limit</b>	<b>Possession limit</b>	<b>Size restrictions</b>
1989/90*	Lake trout	5	10	none
	Arctic grayling	5	10	none
	Northern pike	5	10	none
	Whitefish	5	10	none
1990/91	Lake trout	3 1 only over 80cm	6	Only one fish over 80cm
1991/92	Lake trout	2 none between 65 and 100cm	2	Only one fish over 100cm
	Arctic grayling	4 none between 40 and 48cm	4	Only one fish over 48cm
	Northern pike	4 none between 75 and 105cm	4	Only one fish over 105cm
2004/05	Lake trout	2	2	Release all fish over 65cm
	Arctic grayling	4	4	Release all fish over 40cm
	Northern pike	4	4	Release all fish over 75cm
2005/06	Lake trout	2 none between 65 and 100cm	2	Only one fish over 100cm
	Arctic grayling	4 none between 40 and 48cm	4	Only one fish over 48cm
	Northern pike	4 none between 75 and 105cm	4	Only one fish over 105cm

\* Yukon Government obtained responsibility for freshwater fisheries management from the Federal Government in 1989.