

# Peel River Fish Study 2002



**GRRB Report # 03-02**

**prepared by  
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## Introduction

Inconnu (coney, *Stenodus leucichthyes*), broad whitefish (whitefish, *Coregonus nasus*), lake whitefish (crooked back, *Coregonus clupeaformis*), least cisco (herring, *Coregonus sardinella*), and arctic cisco (herring, *Coregonus autumnalis*) are important fish species for people living in the Mackenzie Delta, especially in Fort McPherson. The Peel River Fish Study was initiated in 1998 due to community concerns that potential development on or near the Peel River would affect the fish. This year, 2002, was the final year of the study. The goals of the study are to record when each species migrate up the Peel River to spawn, and to collect biological information about these fish. This report provides a brief summary of the results for 2002.



Map of Peel River indicating monitoring station (X).

## Methods

This year, one Gwich'in beneficiary, Fred Koe, was hired to be the fish-monitor for the study.

The monitor worked from his camp near Fort McPherson from July 16<sup>th</sup> until November 16<sup>th</sup>. He fished using a 5-inch gill net and an experimental gill net with mesh sizes ranging from 1.5 inch to 5 inch.

All the fish caught were sampled for length, weight, sex, maturity stage, and gonad weight. Otoliths (small bones in the head) were collected to determine the age of the fish. Gonads (reproductive organs) from mature females were collected to determine fecundity (the potential number of offspring).

Environmental information, such as air temperature and water temperature, was also recorded.

Over the summer, 5 youth were hired through the GRRB's Youth Work Experience program. They went to the monitor's camp and learned about fish monitoring, the environment, and Gwich'in history.

An analysis to determine fish ages and fecundity is being completed for all samples collected from 1998 – 2002. This will provide important baseline information for future monitoring.

## Results

### Broad whitefish

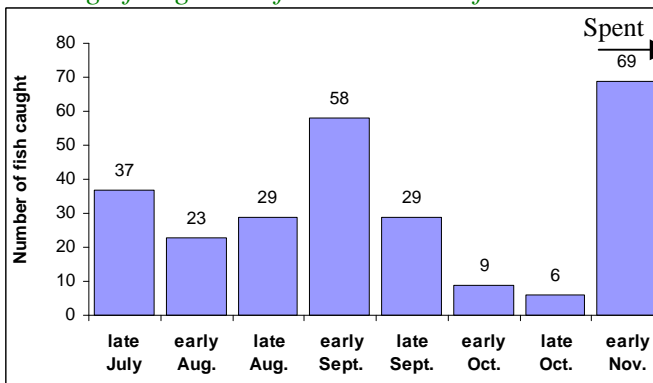


#### Summary information for broad whitefish

Length & Weight				
	Min	Max	Mean	St.Dev
Length (cm)	25	64	52	4
Weight (kg)	0.79	4.05	2.20	0.55

Sex Ratio			
Total	Females	Male	unknown
260	118 (45%)	142 (55%)	0

#### Timing of migration for broad whitefish



- Broad whitefishes were caught throughout the summer and fall.
- Peak catches occurred in early September and early November.
- The Peel River froze between October 8 – 14. Nets were removed from the water during that time.

#### Timing of spawning for broad whitefish

- All female broad whitefishes caught from July through October (73 fish) were in pre-spawning condition (they still had eggs).
- In November, 45 female broad whitefishes were caught, 36 (80%) of which were spent (no eggs left).

## Lake whitefish

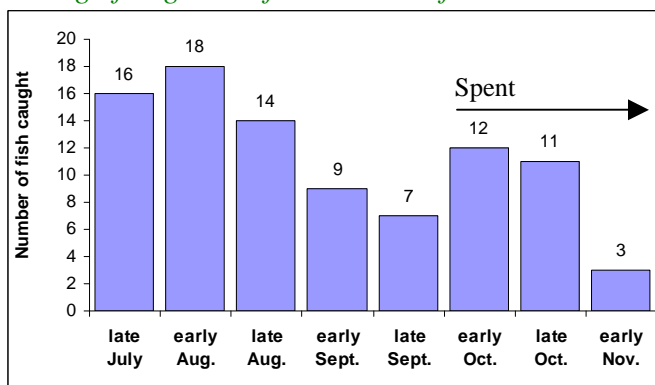


### Summary information for lake whitefish

Length & Weight				
	Min	Max	Mean	St.Dev
Length (cm)	24	57	43	4
Weight (kg)	0.20	2.05	1.13	0.36

Sex Ratio			
Total	Females	Male	unknown
90	45 (50%)	45 (50%)	0

### Timing of migration for lake whitefish



- Lake whitefishes were also caught throughout the summer and fall.
- Peak catches occurred in late July and August.
- Catches decreased in September, but then increased again in October after the river froze.

### Timing of spawning for lake whitefish

- All female lake whitefishes caught from July through September (28 fish) were in pre-spawning condition.
- From October to the end of the study, 17 female lake whitefishes were caught, 14 (82%) of which were spent.

## Inconnu

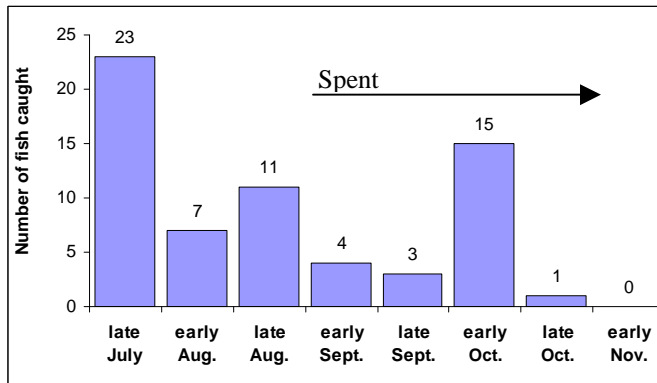


### Summary information for inconnu

Length & Weight				
	Min	Max	Mean	St.Dev
Length (cm)	49	91	75	8
Weight (kg)	1.05	8.35	4.42	1.61

Sex Ratio			
Total	Females	Male	unknown
64	31 (48%)	32 (50%)	1 (2%)

### Timing of migration for inconnu



- Inconnus were caught from late July to late October.
- Catches were most abundant in late July.
- Fewer were caught in August and September.
- Catches increased again in early October.

### Timing of spawning for inconnu

- All female inconnus caught from July to the end of August (18 fish) were in pre-spawning condition.
- All female inconnus caught from September to the end of the study (13 fish) were spent.

## Least cisco

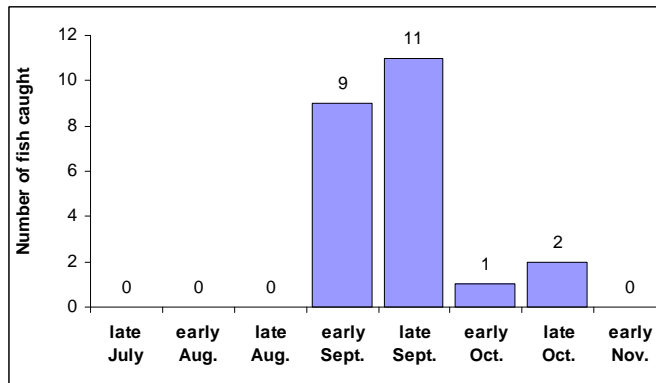


### Summary information for least cisco

Length & Weight				
	Min	Max	Mean	St.Dev
Length (cm)	21	29	26	2
Weight (kg)	0.08	0.25	0.15	0.05

Sex Ratio			
Total	Females	Male	unknown
23	2 (9%)	18 (78%)	3 (13%)

### Timing of migration for least cisco



- Least ciscoes were caught from early September through late October.
- However, 87% were caught in September.

### Timing of spawning for least cisco

- Only 2 female least ciscoes were caught.
- Both were caught in September.
- Both were in pre-spawning condition.

## Arctic cisco

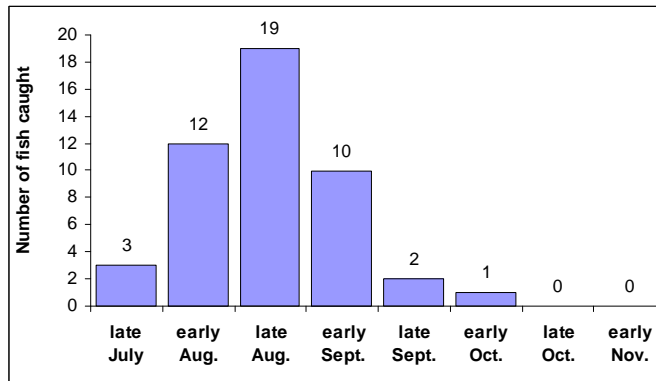
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### Summary information for arctic cisco

Length & Weight				
	Min	Max	Mean	St.Dev
Length (cm)	26	44	35	3
Weight (kg)	0.18	0.90	0.48	0.13

Sex Ratio			
Total	Females	Male	unknown
47	19 (40%)	28 (60%)	0

### Timing of migration for arctic cisco



- Arctic ciscoes were caught from late July to early October.
- However, 87% were caught from early August through early September.

### Timing of spawning for arctic cisco

- Female arctic ciscoes were caught from late July to early September (19 fish).
- All were in pre-spawning condition.

## Discussion

The study went smoothly again this year. Valuable information about the fish in the Peel River was collected. However, one problem with the information has been identified. Some of the weights of the smaller fish (ciscoes) seem to be incorrect; they are much lighter than in any previous year. This may be the result of equipment malfunctions. Northern pike (88 fish) were also sampled during the study; however, this species has not been analyzed and is not included in this report.

The next step is to collectively analyze the information gathered from 1998 through 2002. Between-species and yearly within-species analyses may be performed. Information on growth, fecundity, size distribution, sex ratio, migration timing, etc, will be summarized in a final report, which is expected to be completed in 2003.

## Acknowledgements



**Fred Koe**

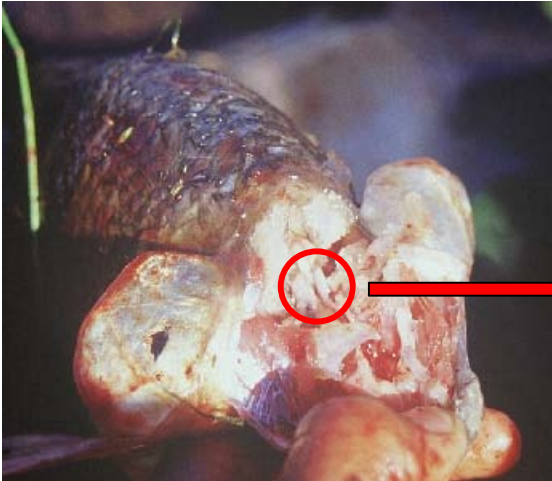
We thank Fred Koe for his many years of hard work as a fish monitor, it was much appreciated. Special thanks to Peter Koe for his unending help over the years. We also thank the Tetlit Renewable Resource Council and all the beneficiaries who helped with the study in many ways. We are grateful to the Gwich'in Renewable Resource Board and the NWT Cumulative Impact Monitoring Program, DIAND, for their financial contributions, and to the Polar Continental Shelf Program, NRCAN for supplying logistical support.



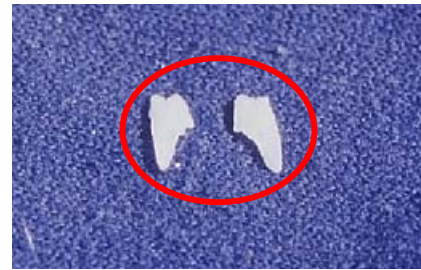
**Peter Koe**

## Appendix: Fish Names

Common name 1	Common name 2	Gwich'in	Latin
whitefish	broad whitefish	Luk digaii, Luk zheii	<i>(Coregonus nasus)</i>
crooked back	lake whitefish	Dalts'an	<i>(Coregonus clupeaformis)</i>
herring	arctic cisco	Treeluk	<i>(Coregonus autumnalis)</i>
herring, little coney	least cisco	Treeluk	<i>(Coregonus sardinella)</i>
coney	inconnu	Sruh	<i>(Stenodus leucichthyes)</i>
jackfish	northern pike	Eltin	<i>(Esox lucius)</i>



Head of fish showing location of 2 otoliths.



Close-up of fish otoliths.



Fred Koe putting label in fish's mouth.



Youth, Robbie Itsy, weighing fish.



Youth, James William Wilson, removing fish otoliths.