AN ASSESSMENT OF THE BULL TROUT POPULATION IN A LA PECHE LAKE; 2002

Alberta Conservation Association

By:

Mike Blackburn
Fisheries Biologist

&

Craig Johnson
Senior Fisheries Biologist

Alberta Conservation Association
East Slopes Region
Edson, Alberta

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ABSTRACT

A La Peche Lake is located in the Muskeg River Drainage, southeast of Grande Cache, Alberta. Historically, bull trout (*Salvelinus confluentus*) and rainbow trout (*Oncorynchus mykiss)* were found in this small, shallow lake, but no surveys have been conducted since 1979. In response to upcoming resource extraction the Alberta Conservation Association (ACA) surveyed A La Peche Lake in 2002 to determine the current fish stock status. In 2002, few fish were captured; and the small size of these fish suggests that A La Peche Lake could not support a significant sport-fishery. The lack of adult bull trout indicates that the spawning population resides elsewhere in the watershed, likely in the Muskeg River, and A La Peche Lake serves as juvenile rearing habitat for bull trout. Since no upstream migration barriers were found, fish were able to move between the lake and the river. Although summer habitats are suitable for trout survival, low dissolved oxygen levels in late-winter may limit trout production. Regardless, A La Peche Lake and its outlet stream to the Muskeg River provide important seasonal habitat for rainbow and bull trout. The significance of this seasonal rearing habitat to fish production in the Muskeg River is unknown. With human-use increasing in the watershed, the conservation of these habitats is likely important to sustaining fish stocks in the Muskeg River Watershed.

ACKNOWLEDGEMENTS

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Pat Wearmouth, of Weyerhaeuser Canada Ltd. and George Sterling, Area Fisheries Biologist of Alberta Sustainable Resource Development, Fisheries Management Division in Edson, provided advice and review of project design and support.

Rudy Hawryluk, Fisheries Biologist of Alberta Sustainable Resource Development, Fisheries Management Division in Hinton provided us with his extensive knowledge of the area and time in the field. Fisheries Management Division in Hinton also provided the field equipment required for the lake survey portions of the project.

Special thanks to Calvin McLeod, East Slopes Region Programs Manager in Rocky Mountain House, of the Alberta Conservation Association, George Sterling, Area Fisheries Biologist, Fisheries Management Division in Edson, and Kevin Gardiner, Senior Fisheries Technician, of the Alberta Conservation Association who each provided a critical review of this report.

An essential contribution to the project was the hard work of the ACA field technicians- D'Arcy Campbell, Emily Lemieux, Kyle Fluney, and Owen Watkins. These were the folks that collected most of the data for this project.

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INTRODUCTION

Understanding the current status of fish populations is essential to supporting sound fisheries management. Current fisheries information is also invaluable to planners from industry for incorporation into resource extraction planning processes. Unfortunately, data are not always up-to-date or available, especially for small lakes with low productivity. Such is the case with A La Peche Lake, Alberta.

The status of the fish populations in A La Peche Lake has not been well documented. Alberta Fish & Wildlife, now Alberta Sustainable Resource Development (ASRD), completed the only detailed survey of the lake, a gillnetting effort in 1979 when both bull trout (*Salvelinus confluentus*) and rainbow trout (*Oncorynchus mykiss*) were captured (Hawryluk 1980). As no subsequent work had been conducted on this lake in the past 23 years, it was important to re-evaluate the status of the fish populations in A La Peche Lake. This is especially important as the forest industry is developing plans for timber harvest in the immediate area. This development has the potential to create access for anglers to the lake, and to have an effect on fish habitats. With confirmation of the collapse of the Muskeg River bull trout population (ASRD 2000 unpubl. Data, and Sterling, pers. comm.), the Muskeg River Watershed and bull trout population is also a management priority for the provincial government. To achieve ASRD's goals of restoration and conservation of these stocks, stock-status assessments and monitoring of these stocks is necessary (Sterling, pers. comm.). Consequently, a stock status assessment of the fish populations in A La Peche Lake was identified as a priority for the Alberta Conservation Association (ACA) to complete during the 2002 field season. The proposal for this project is presented in Appendix 1.

The purpose of the study was to describe the present status of the fish community in A La Peche Lake, and to provide both ASRD and Weyerhaeuser Canada with information that would be useful for their respective management activities.

The specific objectives of this study are listed below.

1. Describe the fish community composition and status of the fish population in A La Peche Lake.
2. Describe the levels of dissolved oxygen during summer and winter.
3. Survey the outlet stream, A La Peche Creek, for fish species present.
4. Determine if there are any restrictions to the migration of fish (fish barriers) between the Muskeg River and A La Peche Lake.

Study Area

A La Peche Lake is a small, remote, sub-alpine lake situated 20 km southeast of Grande Cache, Alberta, and 4 km north of the Wilmore Wilderness Park boundary (Figure 1). It is a shallow, narrow, dystrophic lake with a surface area of 110 hectares, and maximum and mean depths of 2.5 m and 1.4 m (Hawryluk 1980), respectively (Figure 2). Two permanent inlet streams drain into the lake along with a number of intermittent drainages. The outlet stream, A La Peche Creek, is located at the east end of the lake and flows eastward for approximately 1 km to its confluence with the Muskeg River.

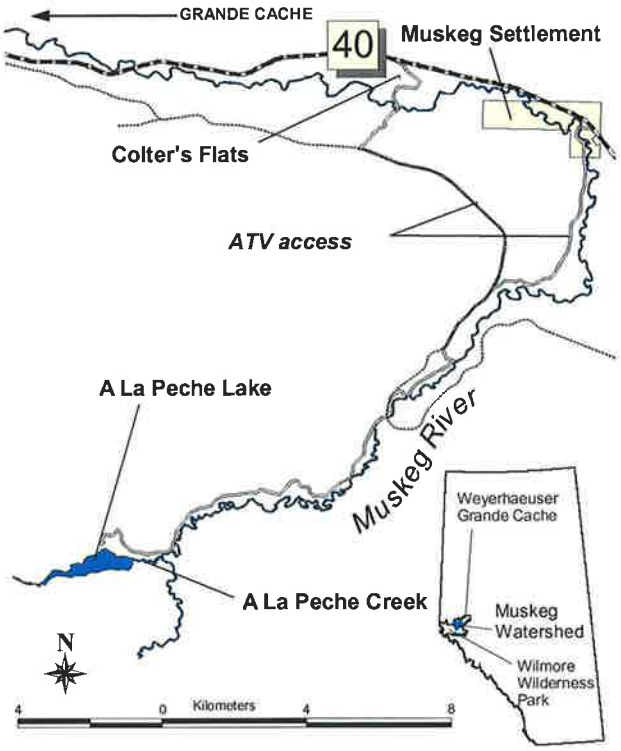

Figure 1. Location of A La Peche Lake and all terrain vehicle access from Highway 40.

METHODS

Access

A La Peche Lake is not accessible by truck or car, hence, all terrain vehicles (ATV) or other means of transportation are required to access the lake. For this study, we used ATVs to access A La Peche Lake from two different locations northeast of the lake via Highway 40 (Figure 1). One access point is approximately 30 km east of Grande Cache, where a staging area is located west of the highway and adjacent to the Muskeg River where fording the river is required. The second access point is a gravel road on the south side of Highway 40 approximately 25 km east of Grande Cache. The gravel road winds through an area, locally known as Colter Flats, to a gated bridge crossing the Muskeg River, and is an alternative route during high water periods. After crossing the river and staging at a well site at the end of the road, the lake can be accessed by a trail paralleling the railroad tracks (approximately 8.5 km) until the ATV trail is reached. It is approximately 23 km to reach the lake from each staging area. Data describing the UTM locations of these access points are described in Appendix 2.

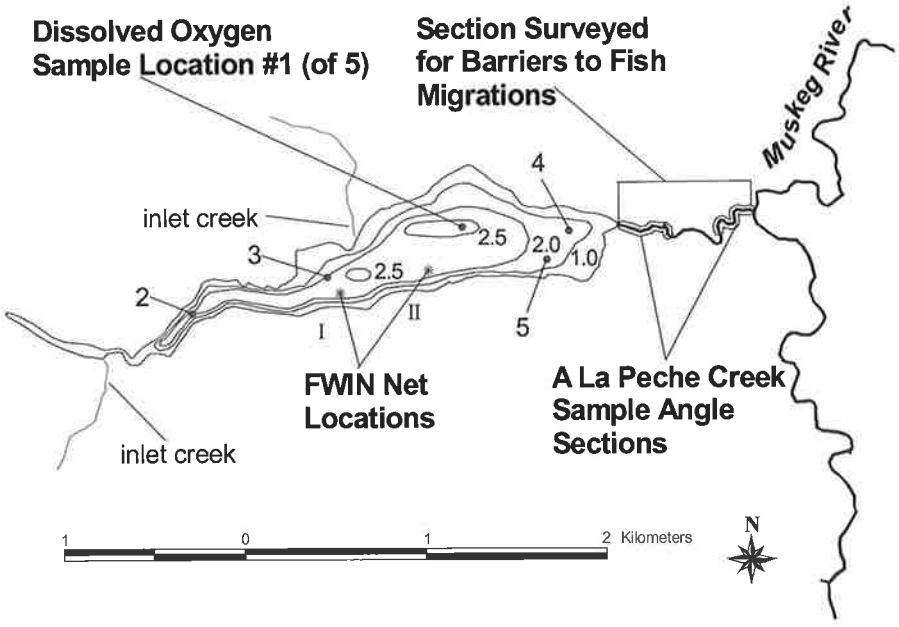

Figure 2. Location of 2002/2003 survey sites and bathymetric map of A La Peche Lake (modified from Hawryluk 1980); depth in meters. A La Peche Creek flows approximately 1 km until its confluence with the Muskeg River.

Survey Sites

Each survey site was geo-referenced in the field using a handheld Garmin™ 12 XL Global Positioning System (GPS) unit. Co-ordinate data were collected as UTMs (Universal Transverse Mercator units) and projected in the NAD 83 datum.

Fish Data

Gill nets were used to collect fish in 2002 to ensure results would be comparable to previous work. The nets used, specialized gill nets referred to as FEX-03 nets (Fipec Experimental Net), consisted of eight panels of different sized mesh (stretched measurements) fixed together in ascending order (25/1.0, 38/1.5, 51/2.0, 64/2.5, 76/3.0, 102/4.0, 127/5.0, and 152/6.0 mm/inches) (Morgan 2000). Each panel is 1.8 m (6 feet) deep and 7.6 m (25 feet) long. Two nets were set at a 45-degree angle from the shoreline in late afternoon, fished overnight, and lifted the next afternoon (Figure 2). Gillnet catch rates were calculated and expressed as the number of fish/100 m^2 of net fished/24 hours.

Data collected from each sampling event included species and number of fish captured in each net and mesh size. Complete necropsies were performed on all fish captured in the gill nets. Biological data collected and recorded included fork length (nearest millimeter), total weight (nearest gram), sex and state of maturity (when discernable), and stomach contents. Saggital otoliths were collected, prepared, and aged in the lab as outlined in Mackay et. al. (1990).

To compare the catch rates of bull trout from 2002 with those of 1979 (Hawryluk 1980), a Chi-square test was used. The null hypothesis was that the observed frequency (2002) was equal to the expected frequency (1979), accepting an alpha level of 0.05.

Outlet Stream

Backpack electrofishing was not possible in the outlet stream because it was too wide and deep. Instead, we angled from shore using spinning gear and barbless hooks without bait to capture fish. Sample sites were 300 meters in length and located at the outlet of the lake and the confluence with the Muskeg River (Figure 2). The entire stream was walked and any potential barriers to fish migration were identified, geo-referenced, and recorded.

Habitat Data

During the summer sampling event, dissolved oxygen and water temperature profile data were collected at sample location #1, one of the deepest locations in the lake (Figure 2). Measurements were recorded at 1-meter intervals using an Oxyguard Handy MK II dissolved oxygen meter (dissolved oxygen 0.1 mg/L; water temperature 0.1 ^{o}C). To verify the accuracy of the dissolved oxygen meter, measurements were also recorded using a Hach model Ox-2P test kit (high range test 1 mg/L) and a Kemmer bottle.

During the winter sampling event, dissolved oxygen and water temperature data were collected at five different locations in the lake, including the location sampled in the summer (Figure 2). Immediately after the first site was sampled the dissolved oxygen meter malfunctioned; therefore dissolved oxygen levels were measured using the HACH kit. Dissolved oxygen levels, less than 3 mg/L, were measured using a low range HACH test (0.2 mg/L), whereas higher levels (3 mg/L or greater) were measured using a high range HACH test (1 mg/L).

RESULTS

Fish Capture

Gill nets were set on the afternoon of September 25, 2002, at 16:15h. Coordinate data and fish species catch records are presented in Appendix 3. Nets were checked after 1 hour (17:15h) and no fish were captured. Both nets were left to continue fishing until they were lifted at 11:45h and 12:15h on September 26, 2002.

The sample sections on A La Peche Creek were angled September 6, 2002. Although the habitat appeared suitable for fish, no fish were captured or observed in the upstream section. However, two bull trout were caught in the downstream section nearest to the confluence of A La Peche Creek and the Muskeg River (Table 1).

Table 1. Number and catch rates of fish caught during sample angle survey; A La Peche Creek September 6, 2002.

Sample Section	Number of Anglers	Total Hours Angled (0.00)	Number of Fish Caught	Catch Rate (fish/angler hour)
Lake outlet	2	2.00	0	0.0
River confluence	1	0.75	2*	2.7

* Both fish were bull trout; fork lengths were 220 and 229 mm.

Fish Species Composition

In 2002, fish species composition in A La Peche Lake was similar to results reported by Hawryluk (1980) (Figure 3). In total, 32 fish were captured in 39.5 hours of gill netting. Of these, 31 were bull trout for a catch rate of 8.6 bull trout/100m^2/24h and 1 was a rainbow trout for a catch rate of 0.3 rainbow trout/100m^2/24h. When compared statistically, there was no significant difference between the relative abundance of bull trout from 1979 to 2002.

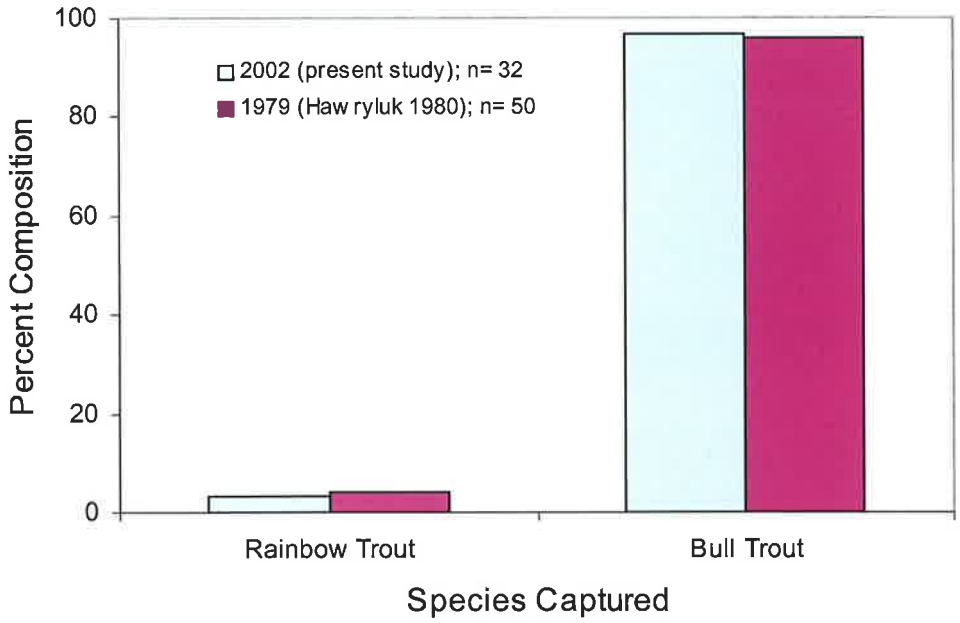

Figure 3. Percent species composition of fish captured in test nets at A La Peche Lake in 1979 and 2002.

Fish Biological Data

Of the 31 bull trout captured in 2002, two were mature and both were males compared to one mature male in 1979. Fork lengths of bull trout ranged from 169 to 400 mm with a

mean of 319 mm (Figure 4) and a mean total body weight of 427 g. The only rainbow trout captured was a mature female with a fork length of 398 mm and weight of 1032 g. Individual fish data are presented in Appendix 4.

In 2002, almost half (48%) of the bull trout captured were larger in fork length than those captured in 1979 (Figure 4). Similar results were observed with mean weights from 246 g in 1979 compared to 427 g in 2002.

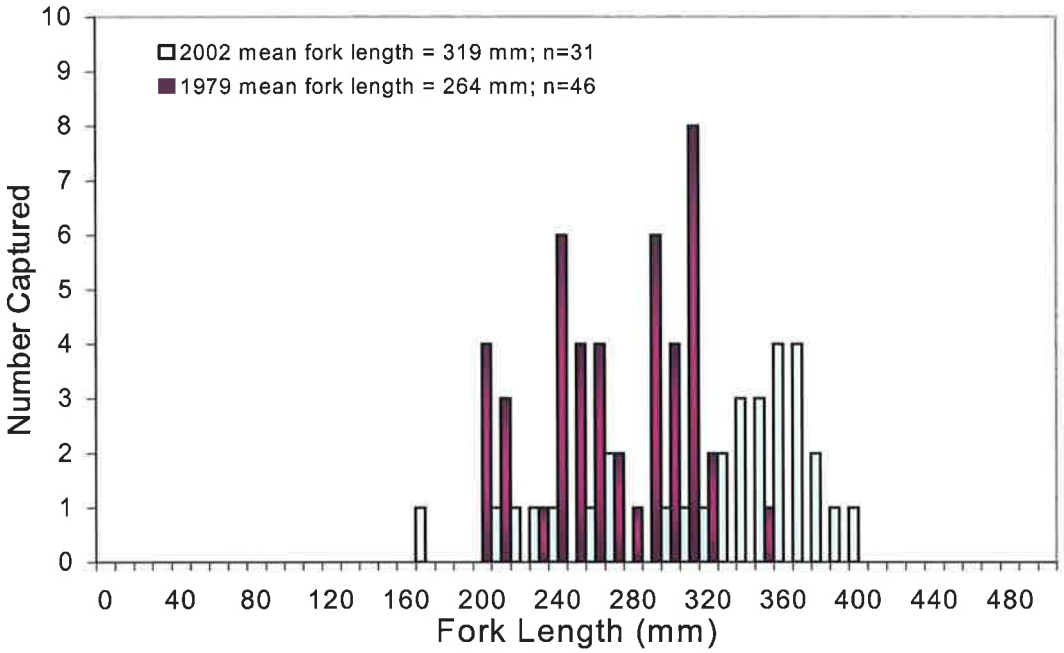

Figure 4. Bull trout fork length frequency distributions at A La Peche Lake in 2002 and 1979 (Hawryluk 1980).

Bull trout displayed a narrow age-class distribution, in both 1979 (Hawryluk 1980) and 2002, with the same four age-classes being represented (Figure 5). The mean age of bull trout was 4.1 (n=31) and 4.0 (n=40) in 2002 and 1979 respectively. Of the two mature male bull trout captured in 2002, the ages were determined to be 4 and 5 years. Similarly, the solitary mature bull trout captured in 1979 (Hawryluk 1980) was a 5 year old male.

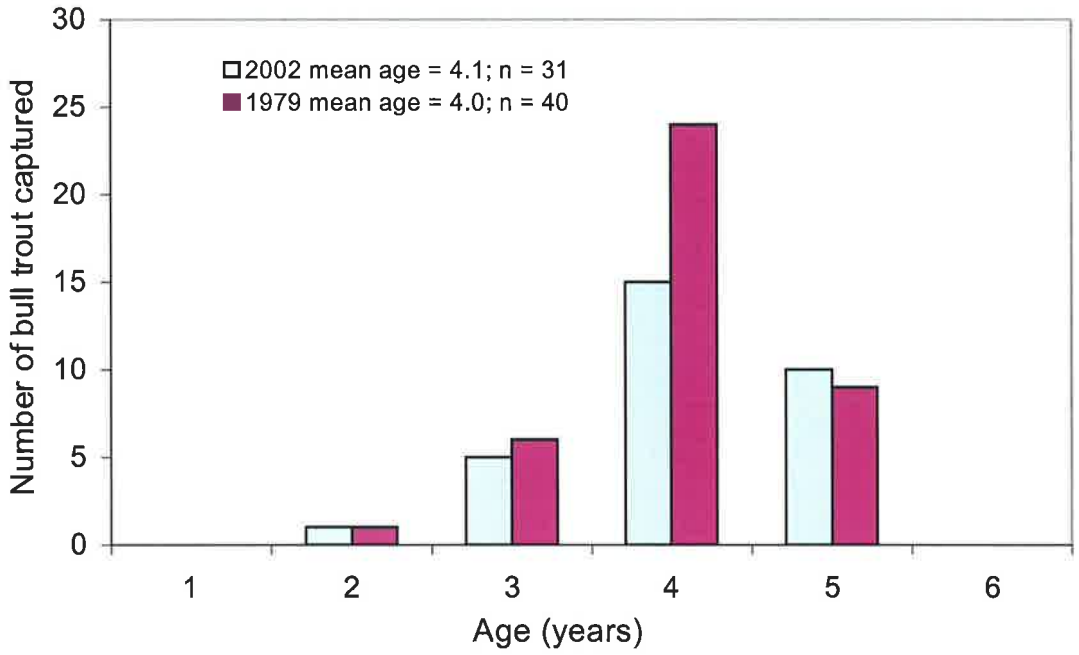

Figure 5. Bull trout age-class distributions at A La Peche Lake in 2002 and 1979 (Hawryluk 1980).

Habitat Data

On September 25, 2002, water temperature or dissolved oxygen levels did not vary appreciably from the water surface to the bottom of the lake in the deepest location (Table 2). As a result, only one site was sampled during the summer survey.

Table 2. Dissolved oxygen and water temperature profile data; A La Peche Lake, September 25, 2002 (UTM: easting 379850; northing 5962672); air temperature 8°C.

Depth (m)	Temperature (°C)	Dissolved Oxygen *Oxyguard* (mg/L)	Dissolved Oxygen *HACH* (mg/L)
0.0 (surface)	6.6	11.2	11
1.0	6.7	11.3	-
2.0	6.6	11.2	-

On March 13, 2003 dissolved oxygen levels were measured at five different locations (Figure 2). Of the five sites sampled, locations 4 and 5 produced dissolved oxygen levels that were suitable for salmonid survival (Table 3) and both were located at the east end of the lake.

Table 3. Dissolved oxygen and water temperature data; A La Peche Lake, March 13, 2003; air temperature 7.7 °C.

Site[1] #	Easting (UTM)	Northing (UTM)	Depth (m)	Temperature (°C)	Dissolved Oxygen *Oxyguard* (mg/L)	Dissolved Oxygen *HACH*[2] (mg/L)
1	379850	5962672	0.5	2.2	1.0	0.6
2	378360	5962205	0.5	1.8	-	0.2
3	379103	5962402	0.5	2.4	-	0.6
4	380443	5962655	0.5	2.4	-	10
5	380320	5962494	0.5	2.6	-	6

1 Site #1 is at the same coordinates as the site sampled on September 25, 2002.
2 Results reflect *high range test* (nearest mg/L) when dissolved oxygen levels were greater than 3 mg/L and *low range test* (nearest 0.2 mg/L) when levels were 3mg/L or less.

During the survey of the outlet stream on September 6, 2002, crews hiked along the shore of the entire stream (approximately 1 km) and described it as a wide, meandering, channel with the dominant riparian vegetation consisting of grasses (Appendix 5). No fish barriers were observed in the stream. Plates 1 and 2 in Appendix 6 show representative sections of A La Peche Creek.

DISCUSSION

A La Peche Lake is a small, shallow lake that likely provides seasonal habitat for bull and rainbow trout. The outlet stream, A La Peche Creek, provides good connectivity to the Muskeg River where both fish species can be found (Boag and Hvenegaard 1993, Brewin 1996). Barriers to fish were absent in the stream at the time of the survey, therefore fish were able to move freely between the lake and Muskeg River. Since habitat diversity and connectivity enable the expression of different life history strategies (McCart 1997), fish in the vicinity of A La Peche Lake are able to exploit important habitats in the lake, stream, and river as required.

Hawryluk (1980) reported low winter dissolved oxygen levels in A La Peche Lake and this was supported by the present study. Although the present study recorded favorable

levels of dissolved oxygen in a localized area, the depth and extremely low dissolved oxygen levels (less than 1 mg/L) found throughout the rest of the lake, suggests that poor winter habitat in the lake may be a factor limiting trout production. When dissolved oxygen levels drop below 3 mg/L for sustained periods of time, rainbow and bull trout are unable survive (Barton and Taylor 1994). Although the entire lake may not provide suitable habitat during winter, it does provide seasonal fish habitat during open-water periods.

Data collected in 2002 suggests little has changed with respect to the fish species present, species composition, or relative abundance from 1979. Both the historical and present survey shows that bull and rainbow trout are present in relatively low numbers during the mid to late summer in A La Peche Lake. The increased mean size of bull trout seen in 2002 has not affected population status from 1979, as most fish were relatively small and immature in both surveys. This increased mean size of bull trout is likely a result of the time of year at which each sample was collected. In 2002, fish sampling was conducted in late September, compared to mid August in 1979. This suggests that in 2002 the bull trout size benefited from an extra 43 days of summer growth. Back calculation of ageing structures should be used to compare growth rates, but this is not possible, as comparable ageing structures were not available from the 1979 survey. Although the lake and stream likely provides important rearing habitat for juvenile bull trout, it is doubtful that A La Peche Lake could support much of a sport fishery. It is possible however that these conclusions may be incorrect because of two assumptions made with data from the 1979 survey. Two parameters, the dimension of net depth and the length of time, were not reported for the work completed in 1979 (Hawryluk 1980). To compare gillnet catch rates to 1979, we assumed that the net was set for 15.5 hours and was 1.8 m deep (Hawryluk, pers comm.) Although unlikely, this may have biased the comparison of catch between 1979 and 2002.

Although A La Peche Lake may not provide year-round habitats or a significant sport fishery, its importance as summer rearing habitat to bull trout is clear. Bull trout are using the lake and A La Peche Creek during the open-water periods. Bull trout tend to

seek well-connected, structurally diverse streams that offer refuge from high or low flows, high water temperatures, freezing, and the loss of cover (Cross and Everest 1997). A La Peche Lake and A La Peche Creek likely provide these important refugia for bull trout, and other species, in the Muskeg River. It is important to the bull trout that inhabit the Muskeg River near A La Peche Creek that these habitats remain intact and connected, without barriers to upstream fish movements.

SUMMARY

- The fish species composition and population status in A La Peche Lake has not changed from 1979 to 2002.
- A La Peche Lake provides seasonal habitat for bull and rainbow trout.
- Low winter dissolved oxygen levels may be limiting year-round trout production in A La Peche Lake.
- There were no barriers to fish movement on A La Peche Creek between A La Peche Lake and the Muskeg River.
- The conservation of fish habitat in both A La Peche Creek and A La Peche Lake are likely important to the successful recovery of bull trout in the Muskeg River watershed.

RECOMMENDATIONS FOR FUTURE WORK

- Repeat survey in late June or early July, prior to bull trout spawning, to determine if adult bull trout reside in the lake.
- Monitor fish movements on A La Peche Creek to determine if fish are using the creek as a migration corridor between A La Peche Lake and the Muskeg River.
- Conduct an aerial survey of A La Peche Lake in late winter to identify any springs that may be present and measure dissolved oxygen levels in these areas to identify potential overwintering areas.
- Consider including A La Peche Lake and Muskeg River in a multi-year monitoring program to evaluate the effects of land-use activities on fish populations.

LITERATURE CITED

Barton, B.A. and B.R. Taylor. 1994. Dissolved oxygen requirements for fish of the Peace, Athabasca, and Slave River Basins. Northern Rivers Basins Study Project Report No. 29. Prepared by Environmental Management Associates, Edmonton, AB Prepared for the Northern Rivers Basins Study

Boag. T.D. and P.J. Hvenegaard. 1993. Fish population inventory of the Muskeg River. Prepared by D.A. Westworth and Associates Ltd., Edmonton, AB. Prepared for the Grande Cache Fish and Game Club, Grande Cache, AB and Environmental Protection, Edmonton, AB. 29p.

Brewin, M.K. 1996. Identification of bull trout populations in the McLeod, Wildhay, Berland and Muskeg River systems, Alberta. Prepared for Trout Unlimited Canada, Calgary, AB, the Foothills Model Forest Program, Hinton, AB, and Fisheries Management Enhancement Program, Alberta Environmental Protection, Edmonton, AB. Prepared by Trutta Environments and Management, Cochrane, AB. 54p. +app.

Cross, D. and L. Everest. 1997. Fish habitat attributes of reference and managed watersheds, with special reference to location of bull trout (*Salvelinus confluentus*) spawning sites in the upper Spokane River ecosystem, northern Idaho. Pages 381-386 in Friends of the Bull Trout Conference Proceedings (Mackay, W.C., M.K. Brewin, and M. Monita eds.). Bull Trout Task Force (Alberta), c/o Trout Unlimited Canada, Calgary, AB.

Hawryluk, R. Fisheries Biologist. Alberta Sustainable Resource Development, Fish and Wildlife Division, Hinton, Alberta. Personal communication. March 2003.

Hawryluk, R. 1980. A La Peche Lake Survey, 1979. Fish and Wildlife Division, Unpubl. Report. 24p. +app.

Mackay, W.C., G.R. Ash, and H.J. Norris (eds.). 1990. Fish aging methods for Alberta.RL&L Environmental Services Ltd. In assoc. with Alberta Fish and Wildlife Div. and University of Alberta, Edmonton. 113p.

McCart, P. 1997. Bull trout in Alberta: a review. Pages 191-208. in Friends of the Bull Trout Conference Proceedings (Mackay, W.C., M.K. Brewin, and M. Monita eds.). Bull Trout Task Force (Alberta), c/o Trout Unlimited Canada, Calgary, AB.

Morgan, G.E. 2000. Fall Walleye Index Netting (FWIN) Manual. Ontario Ministry of Natural Resources. Fish and Wildlife Branch. 26p. +app.

Sterling, G. Fisheries Biologist. Alberta Sustainable Resource Development, Fish and Wildlife Division, Edson, Alberta. Personal communication. February 2003.

APPENDICIES

Appendix 1. 2002/2003 project proposal for A La Peche Lake fish stock assessment.

PROJECT TITLE: A La Peche Lake – fish stock status assessment

CONTACT INFORMATION:

Name: Craig Johnson
Organization: Alberta Conservation Association
Mailing Address: Bag 9000
#203, Provincial Building
111 – 54 Street
Edson, AB T7E 1T2
Email:craig.johnson@gov.ab.ca
Phone: (780) 723 - 8524 Fax: (780) 723-7963

PROJECT BACKGROUND:

In discussions with Pat Wearmouth, it was identified that describing the present status of the fish community and population in A La Peche Lake was a priority for 2002. This project was also discussed with George Sterling, Area Biologist, Alberta Sustainable Resource Development (ASRD) in Edson and he agreed with the importance of this work.

Little is known of the fish community and populations in A La Peche Lake. Rudy Hawryluk (Fisheries Technician, ASRD) completed the only detailed survey of the lake in 1979. This survey showed that both rainbow and bull trout were present in the lake (Hawryluk 1980). Although several bull trout were captured, none of these were sexually mature.

Several water quality parameters were also measured during this survey, including dissolved oxygen. During the summer survey, the dissolved oxygen level was high enough to support salmonids. However, during the late winter survey, the dissolved oxygen had dropped to levels that were likely borderline for survival of bull trout.

It is unknown if populations of bull and rainbow trout are resident in A La Peche Lake or whether they use the lake seasonally for different life histories like rearing or feeding. The short (less than 2 km) outlet stream may provide access for fish from the Muskeg River to the lake but it is unknown whether this is the case.

This work will provide Weyerhaeuser Canada with data that will be important while planning their future forest harvest activities in Muskeg River watershed. It will also be useful to compare these data to the work completed 23 years ago. This will provide fisheries managers with an update to the initial survey and will assist them with the management of fish stocks in this important watershed.

Specific Objectives:

1. To describe the fish community composition and status of these populations in A La Peche Lake
2. To describe the levels of dissolved oxygen during summer and winter
3. To survey the outlet stream for fish species present
4. To identify any barriers to fish that may exist in the outlet stream

Methods:

A La Peche Lake

Fish

Fish will be sampled using gill nets and possibly angling. Efforts will be made to minimize mortalities on most fish captured. To achieve this, gill nets with small mesh and sets of short duration will be used. Beach seines and minnow traps may also be used in an attempt to capture small fish.

The following data that will be collected from each fish captured: species, fork-length, weight, and sex and state of maturity if possible. Age is an important parameter to characterize a population. As a result, a representative sample of sizes from each species will be sacrificed for ageing structures.

Habitat

The only habitat parameters that we will collect are water depth and dissolved oxygen. As dissolved oxygen is highly variable between seasons, these data will be collected during both the summer survey and again during late winter. Late winter is the period when we expect dissolved oxygen to be the lowest. This will provide us with some insight to a potential limiting factor in A La Peche Lake.

Outlet Stream

A minimum of 2 sites will be surveyed on the outlet stream, likely near the outlet to the lake and the confluence with the Muskeg River. These surveys will be completed using the same protocols that will are employed during regular fish inventories. The entire stream will also be walked and examined for potential barriers to fish movement. Any potential barriers will be identified and described (type, height, etc.). The locations of these barriers will also be noted.

PLANNED ACTIVITIES:

Activity	Completion date
Data Cogllection (fish, summer dissolved oxygen, outlet stream	30 September 2002
Data analyses, entry, etc.	October-December 2002
Winter dissolved oxygen sampling	March 2003
Final report	31 March 2003

DELIVERABLES:

1. Data that are collected as part of this project will be entered into the provincial Fisheries Management Information System.
2. Report describing the fish community and their population status in A La Peche Lake.

DETAILED PROJECT SUMMARY:

Description	Aug-02	Dec-02	Jan-03	Total
Senior Fisheries Technician	$ 680		$ 680	**$ 1,360**
Biotechnician	$ 570	$ 570		**$ 1,140**
Small-mesh gill nets	$ 1,500			**$ 1,500**
Dissolved oxygen meter	$ 1,000			**$ 1,000**
	$	**$**		
Total	**3,750**	**570**	**$ 680**	**$ 5,000**

Budget Commentary

We intend to couple this work with our proposed inventory sampling in the Muskeg River watershed. Doing so will allow for efficiencies with equipment including quads, trucks, etc. Additional specialized pieces of equipment including gill nets and an oxygen meter are required for this work. These items are identified within the budget.

Literature Cited

Hawryluk, R. 1980. A La Peche Lake Survey, 1979. Fish and Wildlife Division, Unpubl. Report. 24 pp + appendicies

Appendix 2. UTM coordinates of access points to A La Peche Lake from highway 40.

Access Point Description	Easting	Northing
Muskeg River ford access from highway 40 (30 km east of Grande Cache)	393514	5974922
Muskeg River ford	393108	5975049
Muskeg River bridge crossing access from highway 40 (25 km east of Grande Cache)	387911	5977024
Muskeg River bridge crossing	388042	5975607
Well site (staging area)	387304	5974759

Appendix 3. Test net locations and fish species catch records at A La Peche Lake.

Set Number	Easting (UTM)	Northing (UTM)	Set Net Date	Set Net Time	Lifted Net Date	Lifted Net Time	Number of fish/net BLTR	Number of fish/net RNTR
I	379173	5962314	25-Sep-02	16:15	26-Sep-02	11:45	13	0
II	379664	5962437	25-Sep-02	16:15	26-Sep-02	12:15	18	1

Appendix 4. Raw data for fish captured at A La Peche Lake; September 26, 2002.

Set #	Sample #	Mesh Size (mm)	Species[1]	Fork Length (mm)	Weight (g)	Sex[2]	Maturity[3]	Age	Stomach Contents[4]
1	1	51	BLTR	370	639	F	Imm	4	Amphipoda (100%)
1	2	51	BLTR	374	648	U	Imm	5	Amphipoda (100%)
1	3	51	BLTR	266	235	U	Imm	3	Amphipoda (100%)
1	4	51	BLTR	357	563	U	Imm	5	Hirudinea (100%)
1	5	51	BLTR	329	418	F	Imm	4	Hirudinea (100%)
1	6	51	BLTR	347	470	F	Imm	4	Hirudinea (90%); Amphipod (10%)
1	7	64	BLTR	220	127	U	Imm	3	Hirudinea (100%)
1	8	64	BLTR	224	122	U	Imm	4	Amphipoda (100%)
1	9	64	BLTR	314	361	U	Imm	3	Amphipoda (100%)
1	10	76	BLTR	331	369	U	Imm	4	Amphipoda (100%)
1	11	76	BLTR	369	570	U	Imm	4	Amphipoda (100%)
1	12	76	BLTR	334	466	U	Imm	3	Amphipoda (100%)
1	13	76	BLTR	356	592	F	Imm	4	Amphipoda (100%)
2	1	38	BLTR	169	49	U	Imm	4	Amphipoda (100%)
2	2	38	BLTR	205	86	F	Imm	2	Amphipoda (100%)
2	3	38	BLTR	400	704	M	M	5	Amphipoda (100%)
2	4	38	BLTR	363	646	F	Imm	5	Hirudinea (100%)
2	5	51	BLTR	234	141	U	Imm	5	Hemiptera (40%); Hirudinea (40%); Amphipod (20%)
2	6	51	BLTR	260	174	U	Imm	4	Amphipoda (95%); Hirudinea (5%)
2	7	64	BLTR	364	555	U	Imm	5	Odonata (100%)
2	8	64	BLTR	345	495	U	Imm	3	Amphipoda (80%); Hirudinea (15%); Hemiptera (5%)
2	9	64	BLTR	269	244	U	Imm	5	Hirudinea (100%)
2	10	64	BLTR	344	525	U	Imm	5	Hirudinea (100%)
2	11	64	BLTR	356	567	U	Imm	4	Hirudinea (100%)
2	12	76	BLTR	298	333	U	Imm	4	Hirudinea (100%)
2	13	76	BLTR	354	458	F	Imm	5	Empty
2	14	76	BLTR	323	426	U	Imm	4	Amphipoda (50%); Hirudinea (50%)
2	15	76	BLTR	310	377	U	Imm	4	Hirudinea (100%)
2	16	76	BLTR	331	446	M	M	4	Amphipoda (100%)
2	17	102	BLTR	380	758	F	Imm	4	Hirudinea (100%)
2	18	102	BLTR	387	680	F	Imm	5	Amphipoda (100%)
2	19	102	RNTR	398	1032	F	M	5	Amphipoda (100%)

[1]Species Codes: BLTR = bull Trout, RNTR = rainbow trout
[2]Sex Codes: F = female, M = male, U = unknown
[3]Maturity Codes: Imm = immature, M = mature, S = spent, R = ripe
[4]Stomach Contents: Aquatic invertebrates identified to Order; exception Hirudinea = Class

Appendix 5. Output reports produced from the provincial database (FMIS) displaying data collected from sample angling sections.

25-FEB-2003 16:16:49 **Stream Inventory Report** Page 1 of 2 fm-rrstr.rep

Stream Name: **A LA PECHE CREEK** Project ID: 1574
Waterbody ID: 1
Survey Location - UTM X: **381432.532** Habitat Assessment Id: **238**
UTM Y: **5962758.976** Survey Date: **06-SEP-2002**
Reference meridian: **-117 (Zone 11)** Location ID: **51820**

Channel Characteristics

Number of Transects: 5

	Mean	Min	Max
Depth(m):	**1.05**	**0.55**	**1.5**
Rooted Width:	**5.26**	**4.5**	**7**
Wetted Width:	**5.64**	**5**	**7.21**
Discharge (m^3/S):			

Channel Profile: **U-shaped**

Substrate Composition

(Avg of all Stations)	(%)
Fine (< 2 mm)	100
mm) 0	
Large Gravel (17-64 mm)	0
Cobble (65-256 mm)	0
Boulders (> 256 mm)	0
Bedrock	0

Bank Stability(Avg of all Segments)
(4=High, 3=Moderate,
2=Slightly, 1=Stable)

Left Upstream Bank:	**1**
Upstream Bank:	**1**

Water Quality Averages

Temperature	**9.1**	deg.C
pH	**7.3**	
Conductivity	**176**	mhos
Dissolved Oxygen		ppm
Dissolved Solids	ppm	
Bottom Depth		m
Secchi Depth		m

Habitat Potential

Habitat Type: For Habitat
Species: Rank: Small Gravel (2-16

Spawning RNTR Low
Substrate composition consists of fines throughout the survey section.

Spawning BKTR Low
Substrate composition consists of fines throughout the survey section. Clean gravels and cobbles are present near the mouth of the creek.

Spawning BLTR Low
Substrate composition consists of fines throughout the survey section. Right Clean gravels and cobbles are present near the mouth of the creek.

Rearing BKTR Moderate
The channel is open, with little habitat variety. Cover is provided by depth, aquatic vegetation, and undercut banks.

Rearing BLTR Moderate
The channel is open, with little habitat variety. Cover is provided by depth, aquatic vegetation, and undercut banks.

Rearing RNTR Moderate
The channel is open, with little habitat variety. cover is provided by depth, aquatic vegetation, and undercut banks.

Overwintering BKTR Moderate
There is low flow and abundant depth available. The site is in close proximity to both the Muskeg River and A La Peche Lake.

Overwintering BLTR Moderate
There is low flow and abundant depth available. The site is in close proximity to both the Muskeg River and A La Peche Lake.

Overwintering RNTR Moderate
There is low flow and abundant depth

available. The site is in close proximity to both the Muskeg River and A La Peche Lake.

Migration
N/A

Stream Name: **A LA PECHE CREEK** Project ID: **1574**
Waterbody ID: **1**
Survey Location - UTM X: **381432.532** Habitat Assessment Id: **238**
UTM Y: **5962758.976** Survey Date: **06-SEP-2002**
Reference Meridian: **-117 (Zone 11)** Location ID: **51820**

Comments
Transect 0 is located 30m upstream from the mouth of the creek. The water is clear, and the channel is u-shaped, wide, and deep, with slow-moving water, grassy banks and a fines bottom. Abundant aquatic vegetation is present, as well as woody debris and overhanging grass. Depth provides the majority of the cover available. Widths and depths were measured at transect 4, all others are estimates due to excessive depth. The gradient may be closer to 0.5%; an accurate measurement is difficult due to hummocky ground. Curly- leaved pond weed is among the types of submergent vegetation present, the others could not be identified from the banks. Riparian vegetation consists of grasses, dwarf birch and willows. Upland vegetation found in the surrounding area consists of white and black spruce, although there are few large trees found along the creek.

Summarized Fisheries Data

Fish Collection Methods: **SAMPANG** Fish Inventory ID: **213**
Effort: 75Hour(s) fished
1 Angler (s)

Species	Total	CUE	Forklength Class(mm) <100	100-250	>250	Forklength Statistics(mm) Min	Max	Mean
BLTR	**2**	2.667/hour	**0**	**2**	**0**	**220**	**229**	**224**

05-MAR-2003 16:49:34 **Stream Inventory Report** Page 1 of 2 fm-rrstr.rep

Stream Name: **A LA PECHE CREEK** Project ID: **1574**
Waterbody ID: **1**
Survey Location - UTM X: **381170.005** Habitat Assessment Id: **239**
UTM Y: **5962642.298** Survey Date: **06-SEP-2002**
Reference Meridian: **-117 (Zone 11)** Location ID: **51821**

Channel Characteristics
Number of Transects: **5**

	Mean	Min	Max
Depth(m):	**0.50**	**0.25**	**0.8**
Rooted Width:	**9.8**	**6**	**15**
Wetted Width:	**9.8**	**6**	**15**
Discharge (m^3/s):			

Channel Profile: **U-shaped**

Substrate Composition

(Avg of all Stations)	(%.)
Fine (< 2 mm)	100
Small Gravel (2-16 mm)	0
Large Gravel (17-64 mm)	0
Cobble (65-256 mm)	0
Boulders (> 256 mm)	0
Bedrock	0

Bank Stability (Avg of all Segments)
(4=High, 3=Moderate, 2=Slightly, 1=Stable)
Left Upstream Bank: **1**
Right Upstream Bank: **1**

Water Quality Averages

Temperature	**9**	deg.C
PH	**8.09**	
Conductivity	**180**	mhos
Dissolved oxygen		ppm
Dissolved Solids		ppm
Bottom Depth		m
Secchi Depth		m

Habitat Potential

Habitat Type:	For Species:	Habitat Rank:
Spawning	**BKTR**	**Low**

Substrate composition consists of fines throughout the survey section.

Spawning	**BLTR**	**Low**

Substrate composition consists of fines throughout the survey section.

Spawning	**RNTR**	**Low**

Substrate composition consists of fines throughout the survey section.

Rearing	**BKTR**	**Moderate**

Deep sections are present, but very little canopy or large woody debris cover is available.

Rearing	**BLTR**	**Moderate**

Deep sections are present, but very little canopy or large woody debris cover is available.

Rearing	**RNTR**	**Moderate**

Deep sections are present, but very little canopy or large woody debris cover is available.

Overwintering	**BKTR**	**Low**

Water flow is low, but depth is available.

Overwintering	**BLTR**	**Low**

Water flow is low, but depth is available.

Overwintering	**RNTR**	**Low**

Water flow is low, but depth is available.

Migration N/A

05-MAR-2003 16:49:34	**Stream Inventory Report**	Page 2 of 2 fm rrstr.rep

Stream Name:	**A LA PECHE CREEK**	Project ID:	**1574**
Waterbody ID:	**1**		
Survey Location -	UTM X: **381170.005**	Habitat Assessment Id:	**239**
	UTM Y: **5962642.298**	Survey Date:	**06-SEP-2002**
	Reference Meridian: **-117 (Zone 11)**	Location ID:	**51821**

Comments

Transect 6 is located approximately 50m from A La Peche Lake. A wide, u- shaped channel is present, with slow-moving water and a soft bottom. Muskeg surrounds the creek. The bottom is too soft, and the channel too wide to electrofish, therefore the site was sample angled. Widths and depths are estimates due to the excessive depth of the channel. Substrate consists of fines, and there are mosses found on the bottom as well. The creek is open, with cover provided by aquatic vegetation and depth. Aquatic vegetation consists of mosses, Chara species, and millfoil. The creek was observed from A La Peche Lake to the mouth, and was found to have no change in stream morphology starting from approximately five metres upstream from the mouth. In areas closer to the lake the channel is wider, with more shallow areas where the bottom is visible. No beaver dams are present between A La Peche Lake and the Muskeg River. Floating mats of vegetation make up the banks in areas near the lake.

Summarized Fisheries Data

Fish Collection Methods: **SAMPANG** Fish Inventory ID: **214**

Effort:	1 hour(s) fished	Forklength Class(mm)			Forklength Statistics(mm)		
	2 Angler (s)						
Species Total	CUE	<100	100-250	>250	Min	Max	Mean

Appendix 6. Photos of A La Peche Creek and Lake.

Plate 1. Looking upstream A La Peche Creek showing a wide, slow moving channel flowing through a muskeg.

Plate 2. Looking upstream A La Peche Creek showing a wide channel, less available depth, and some mature spruce.

Plate 3. Looking downstream A La Peche Creek at the confluence with the Muskeg River.

Plate 4. Looking upstream A La Peche Creek from the confluence with the Muskeg River. Note the good connection with the Muskeg River.

Plate 5. Looking across A La Peche Lake from the north shore.

Plate 6. Beginning of A La Peche Creek flowing from A La Peche Lake.