

**Assessment of the Status
of the Sport Fishery for Walleye
at Lac La Biche, 1998.**

Conducted as part of the Sportfish
Monitoring Program, Northeast Region

Prepared by

Bill Patterson,
Fisheries Section,
Northeast Region,
Alberta Conservation Association

and

M. G. Sullivan,
Fisheries Section,
Natural Resources Service,
Alberta Environmental Protection

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Alberta Conservation
Association



ENVIRONMENTAL PROTECTION
Natural Resources Service

Bill Patterson
Fisheries
14515-122 Ave.
Edmonton, Alberta, T5L 2W4
Bill.Patterson@gov.ab.ca

Michael Sullivan
Fisheries
14515-122 Ave.
Edmonton, Alberta, T5L 2W4
michael.sullivan@env.gov.ab.ca

To: Attachment to the "Assessment of the Status of the Sport Fishery for Walleye at Lac La Biche, 1998 (Patterson and Sullivan 1999)"

Subject: Status of Sport Fishery for Pike.

Abstract

An intensive creel survey was conducted at Lac La Biche during the summer of 1998. The total number of anglers was estimated to be 2552 (fishing for a total of effort of 7411 angler-hours). The total angling pressure was extremely low: 0.32 hours / ha. A total of 1669 pike (2502 kg) was harvested. The harvest rate for pike was 0.39 pike / angler-hours. Based on the reference points used to classify pike fisheries in Alberta, this fishery is considered to be "vulnerable." Although young pike are relatively abundant, the absence of larger pike reduces the quality of the fishery. Excessive harvests of pike in the commercial fishery have resulted in a decline in quality of this once-popular fishery. Because of heavy commercial harvests and low angling pressure, changes to the sport fishing regulations at Lac La Biche will not restore this provincially important fishery. Restoration depends wholly on major reductions in the commercial harvest of pike.

Introduction and Methods

Following is an assessment of the status of the pike fishery at Lac La Biche. The information was collected by way of a creel survey conducted at Lac La Biche during the summer of 1998. The methodology and data may be found in Patterson and Sullivan (1999). The assessment follows the "Draft Strategy for Classifying Pike Fisheries" (Sullivan 1998).

Results and Discussion

From 16 May to 16 August 1998, 177 anglers (fishing for a total of 368.5 hours) and 95 anglers (fishing for a total of 176.5 hours) were interviewed at Churchill Provincial Park and Whitesands campground, respectively. An additional 700 anglers (fishing for a total of 3683.5 hours) were interviewed during the Pow-Wow Days Fish Derby. The total number of anglers at Lac La Biche was estimated to be 2552 (fishing for a total of 7411.3 hours), with a total estimated effort of 0.32 hours / ha (Table 1). This was the lowest angling pressure recorded in the NE Boreal Region during the intensive angler survey program (1984 to 1998, Figure 1).

During the creel survey at Lac La Biche (excluding the fish derby), the observed harvest of pike was 211 fish, with 485 pike reported to have been released. The extrapolated harvest of pike was 1426 fish. Based on the mean exaggeration rate for released fish in the NE Boreal Region (220%), the estimated number of released pike was 1508 fish. An additional 243 pike were harvested during the derby, with 1945 pike reported to have been released (an estimated 884 pike were released). The estimated total harvest of pike from Lac La Biche by anglers during the summer was 1669 fish (2503 kg, 0.11 kg / ha, Table 1).

Table 1. Angler survey summary, Lac La Biche, 1998.

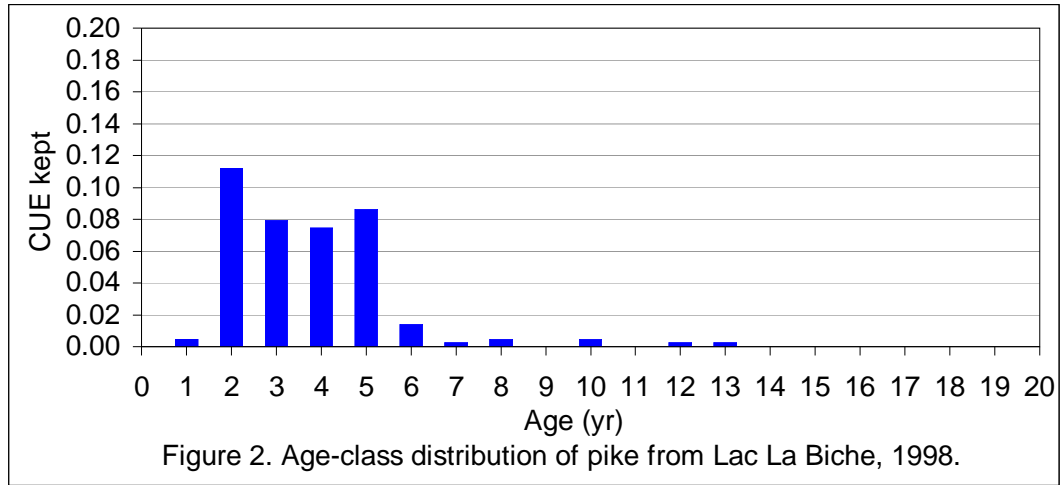
Parameter	Estimate	95% Confidence Limit
Number of anglers	2552	+ - 48%
Number of angler-hours	7411.3	+ - 50%
Angling pressure (hours / ha)	0.32	+ - 50%
Number of pike harvested	1669	+ - 48%

Biological samples were collected from 636 pike (166 during the regular creel survey, 186 during the Pow-Wow Days Derby, and 284 pike caught during the test fisheries). The metrics associated with the reference points for classifying pike fisheries are shown in Table 2. These metrics do not include information collected during the Pow-Wow Days Derby.

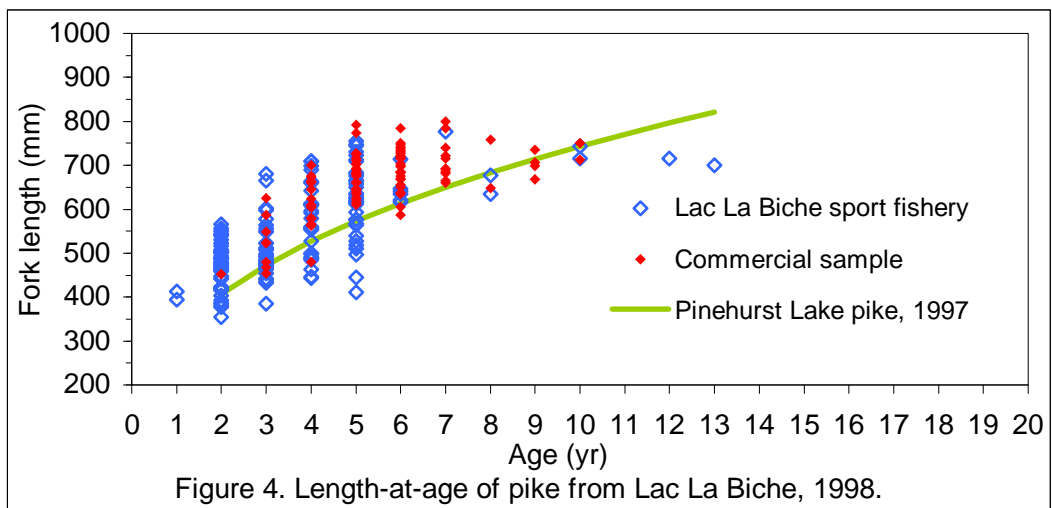
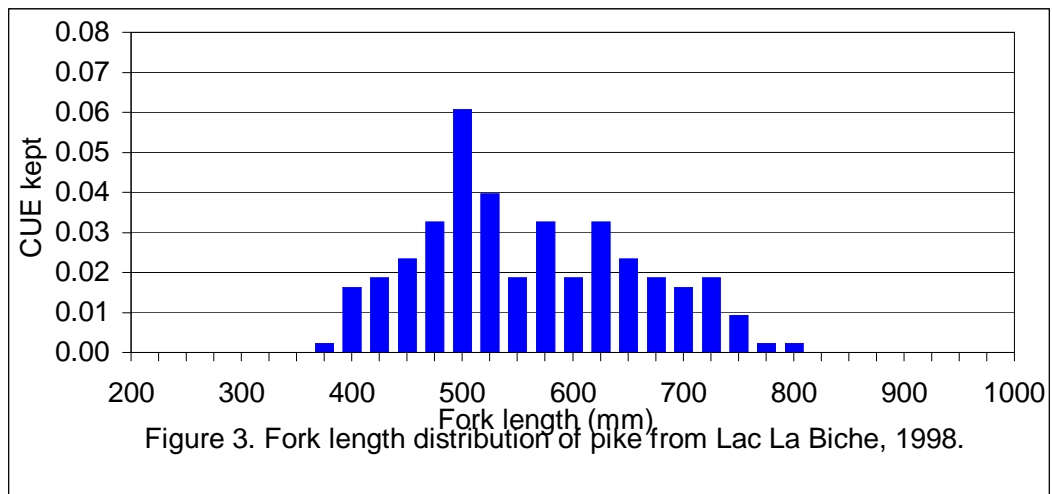
Table 2. Assessment of the status of the pike fishery at Lac La Biche, 1998.

METRIC	TROPHY	STABLE	VULNERABLE (No Risk)	VULNERABLE (Low Risk)	COLLAPSED
Lac La Biche, 1998					
CUE (kept)	> 0.8	> 0.8	0.3 – 0.8	0.1 – 0.3	< 0.1
Lac La Biche, 1998			0.387		
CUE (total)	2	1 – 2	0.5 – 1	0.2 – 0.5	< 0.2
Lac La Biche, 1998			0.890		
SUCCESS (% anglers)	100	> 70	> 40	20 – 40	< 20
Lac La Biche, 1998				33	
GINI (total)	< 0.3	0.3	0.5 – 0.7	0.7 – 0.9	> 0.9
Lac La Biche, 1998				0.785	
MEAN WT (kg)	> 2	1 – 2	< 1	0.5 – 1.5	0.5 – 3.5
Lac La Biche, 1998				1.337	
# MEASURABLE AGE-CLASSES (> 0.02 / h)	> 10	7 – 12	3 – 7	1 – 2	Almost none
Lac La Biche, 1998			5		
GROWTH RATE	Slow	Slow	Increasing	Increasing	Fast
Lac La Biche, 1998					Very fast
PSD (%)	> 80	> 40	< 40	Variable (> 0.1 / h)	Variable (< 0.1 / h)
Lac La Biche, 1998		48.8			
RSD (stock – quality)	< 20	< 50	> 50	Variable (> 0.1 / h)	Variable (< 0.1 / h)
Lac La Biche, 1998			51.2		

Although the reported total catch rate (1.28 pike / h) was moderate to high, the total catch rate corrected for exaggeration was 0.79 pike / h. The observed harvest rate (0.39 pike / h) was low to moderate. Five age-classes of pike were represented by significant densities (> 0.02 kept / h) of fish (Figure 2). The harvest was composed of very young age-classes. Very few large, older



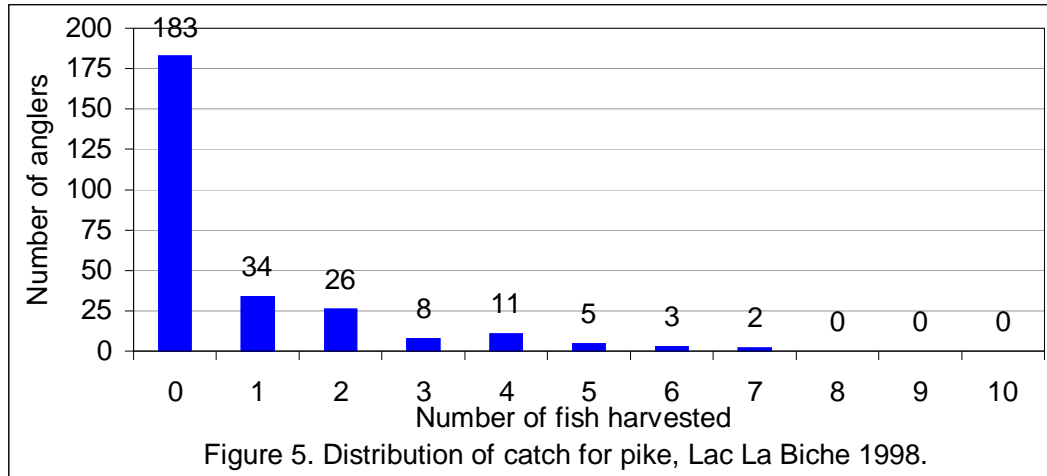
fish were harvested. Recruitment of pike into the fishery appears to be moderate but pike larger than 700 mm (FL) are very rare (Figure 3). The growth rate of pike is extremely fast (Figure 4).



This pike population shows classic symptoms of growth overfishing.

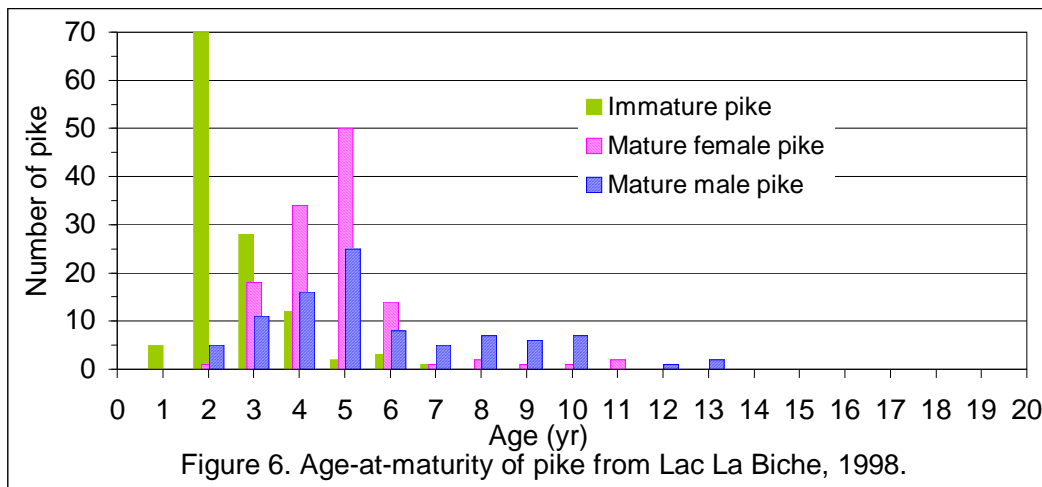
The quality of the pike fishery was poor, with a few anglers catching the majority of the

fish. Sixty-seven percent of all anglers failed to catch a pike (Figure 5). Over half of the pike



(52%) were taken by anglers catching 3 or fewer fish. Forty percent of the anglers interviewed were local, yet they harvested 65% of the pike.

Pike are first reaching the proposed 63 cm TL minimum size limit by age 3. Approximately half of 4 year old pike, and the majority of 5 year old pike would be vulnerable to harvest using this new size restriction. Female pike in Lac La Biche are first mature by age 2 (Figure 6). Few immature

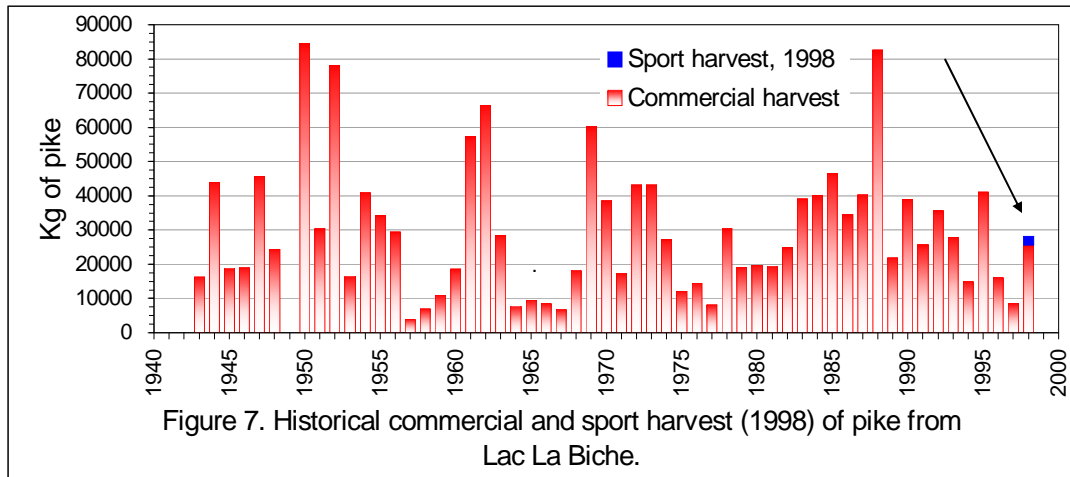


fish older than 4 years were observed. The proposed size limit would allow a small number of female pike to spawn up to 4 times before being vulnerable to harvest, although most females would be protected for only 1 or 2 years.

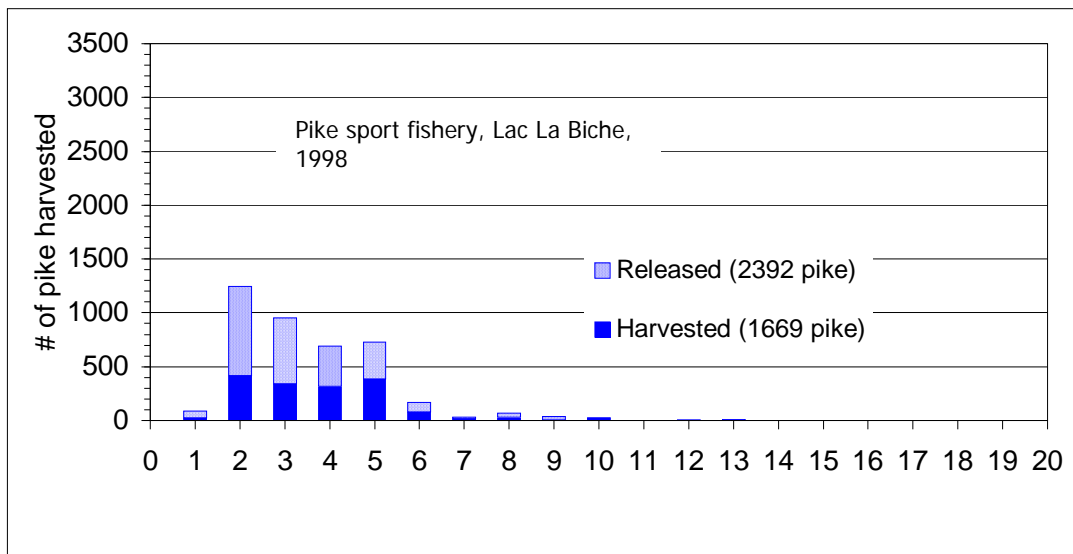
Based on these reference points and the strategy for classifying pike fisheries in Alberta, the pike population in Lac La Biche is vulnerable. Recruitment of young pike into the fishery is adequate to maintain the population, but heavy mortality is resulting in a lack of medium to large-sized pike. Because of this, the pike fishery in Lac La Biche is of relatively poor quality, resulting in low angling pressure. The regulation recommended for a vulnerable pike fishery is a

63 cm (TL) minimum size limit, with a bag limit of 1 pike / day.

This proposed regulation for the sport fishery however will have little or no effect on the recovery of the pike fishery in Lac La Biche. The commercial fishery on this lake took 91% of the total harvest of pike during 1998 (25,644 kg commercial harvest: 2502 kg sport harvest, Figure 7).



The high mortality on 4 - 7 year old pike is caused by heavy harvests in the commercial fishery (Figure 8). This excessive mortality results in a lack of pike larger than 75 cm (Figure 9).



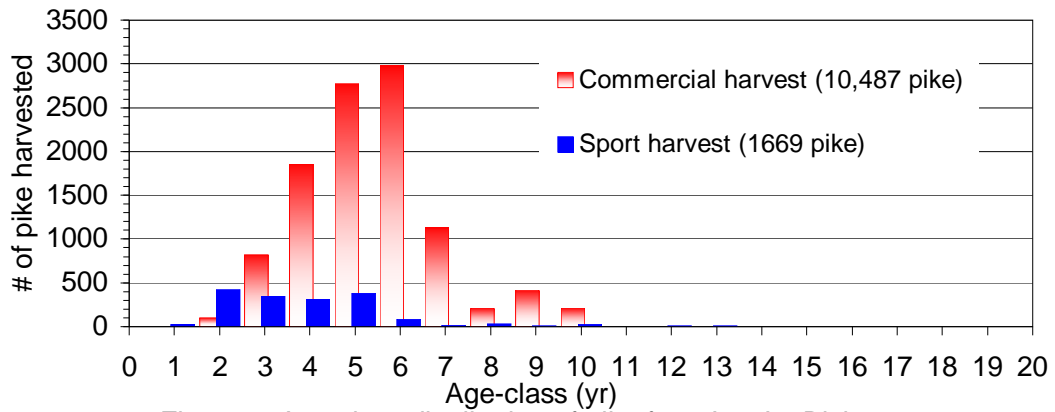


Figure 8. Age-class distribution of pike from Lac La Biche, 1998.

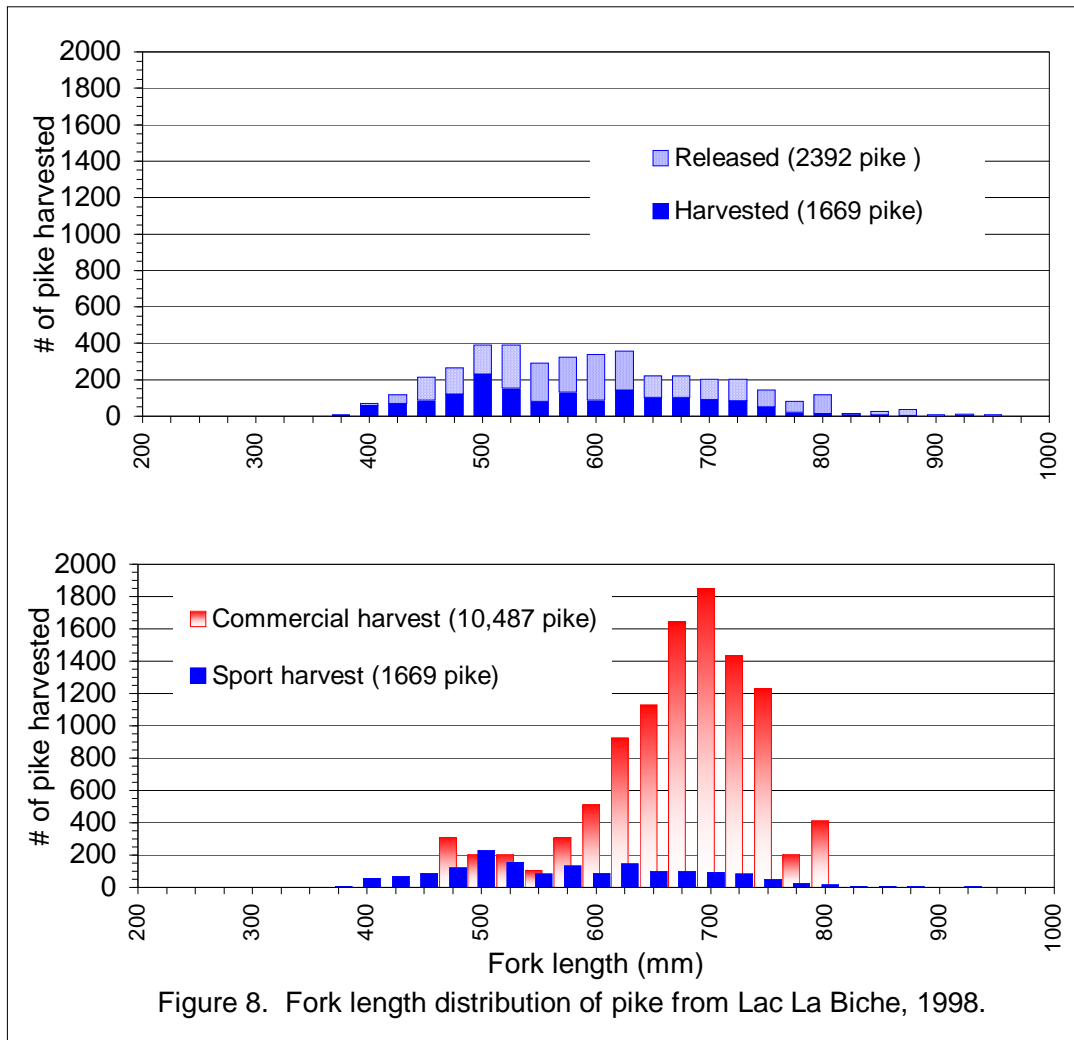


Figure 8. Fork length distribution of pike from Lac La Biche, 1998.

Lac La Biche was once famous for producing large pike. Chipeniuk (1975) wrote that La Biche was an "excellent" pike fishery and that pike of 15 to 20 pounds were "still plentiful" as recently as the 1970s. Valastin and Sullivan (1997) quote numerous local fishermen who described the historical abundance of large pike in Lac La Biche, and the obvious decline in the

number and size of pike. Valastin and Sullivan also present quotes from archival material (including newspaper articles, books, and promotional information for tourists) that described the popularity of the sport fishery at Lac La Biche and its important place amongst Alberta fisheries. As an indication of the degradation of this fishery, the 1998 pike fishery at Lac La Biche attracted the lowest density of anglers measured in the NE Boreal Region (out of 69 intensive surveys conducted since 1984). This represents the loss of a major economic stimulus to the communities surrounding Lac La Biche. The recovery of this once high-quality fishery is of obvious importance.

Conclusions

The assessment of the data collected in the 1998 Sportfish Monitoring Program at Lac La Biche shows that the pike population is vulnerable. Small pike are abundant, but large, quality-sized fish are absent. The sport fishing regulation that is recommended for a vulnerable pike fishery is a 63 cm (TL) minimum size and a 1-fish daily bag limit. This regulation would have no effect in restoring this provincially important fishery. Angling pressure is extremely low and the sport harvest is minor compared to the excessive harvests of pike in the commercial fishery. Recovery of this fishery would have huge social and economic benefits for the surrounding communities. This recovery is wholly dependent upon major reductions in the commercial pike harvest.

Bill Patterson and Mike Sullivan