

Executive Summary

Smith Lake 2006

A stocking assessment was conducted at Smith Lake on September 15 and 16, 2006. Smith Lake was last assessed in 1999, however, it was not possible to evaluate the relative contribution of wild or hatchery stock to the fishery at that time. The management goal for Smith Lake is to maintain an average quality fishery for a population of rainbow trout that is self-sustaining. Prior to this assessment it was unclear whether wild rainbow trout recruitment was sufficient or whether supplementation with hatchery fish was needed to support the fishery.

Smith Lake is 59 ha and is situated 57 km Southwest of Fraser Lake. The objective of the 2006 survey was to assess the contribution of wild rainbow trout to the fishery. Two gillnets (one floating and one sinking RISC standards) were set in Smith Lake on September 15 and 16, 2006. The total sampling effort was 34.9 hours, resulting in a high gillnet catch per unit effort (CPUE) of 10.6 rainbow trout per net-hour. Based on this assessment fishery appears to be providing an below average quality angling experience, as 64.4% of the fish sampled in the stock assessment were less than 250 mm in length and net catch rates were high at 10.6 rainbow trout per gill-net-hour. The mean rainbow trout size in the sub-sampled catch was 215 mm and 145 g. The contribution of stocked fish to this fishery was indeterminate, however multiple age classes in the presence of even-year stocking strongly suggests that natural recruitment has continued on an ongoing basis.

It is therefore recommended that stocking program for rainbow trout in Smith Lake be discontinued immediately as the original management objective for this lake has been achieved. It is also recommend that an angling based assessment be completed after five years time to evaluate performance of the fishery.



Figure 1. Photo of Smith Lake.

Omineca Region Stocked Lake Assessment Report

**OMINECA REGION
LAKE STOCK ASSESSMENT REPORT**

LAKE NAME: Smith **ALIAS:** Smith **BC WBID:** 00968CHES

LAKE LOCATION: *Nearest center:* 57 km SW Fraser Lake *Drainage:* FRASER
UTM: 10.342955.5945522

LAKE ATTRIBUTES: *Surface Area:* 59 Ha *Elevation:* 993 m
Littoral Area: 32 Ha *T.D.S.:* 68 ppm
Max Depth: 20 m *Mean depth:* 7.9 m

MANAGEMENT OBJECTIVE (mean length in gillnet (cm)):

- Objective 1 Family Fishery (High CPUE <30 cm)
- Objective 2 Average Quality (30-40 cm)
- Objective 3 Above Average (40-50 cm)
- Objective 4 Trophy (20% > 50 cm for RB, 20% > 40 cm for EB)

MANAGEMENT/SURVEY HISTORY :

Previous gill net assessment(s): no yes Prince George Lakes Files
 Year(s) Surveyed: 1977

STOCKING DATA:

Current Stocking Rate 85 Fish/Ha Annually
Stock Type **BLACKWATER DR**
Species RB
Previous Stocking Rate 85

SURVEY METHODS:

Method	Date (yy.mm.dd)	Survey Agency	Crew
Fish	SGN 2006-09-15	BCCF	Dawn Cowie, Marcel Macullo
Chem.	Profile/TDS 1977	Fish and Wildlife Branch	
Physical	Bathy. 1977	Fish and Wildlife Branch	
Temp.	Profile 1977	Fish and Wildlife Branch	

Netting Specs: *Net type:* Standard Experimental *Net length:* 90m (3x30m)
Setting: Sinking and Floating *Panel Mesh:* SGN

SURVEY RESULTS:

Catch

	RB	EB	RSC	LKC	LSU	CSU	NSC	CAS	BT	LT
2006	370	0	0	0	0	0	0	0	0	0
1977	36	0	0	0	0	0	0	0	0	0

Survey Year	2006	1977
Effort Hours	34.91	3.5
RB CPUE:	10.60	10.29
EB CPUE:	0.00	0.00
# of Sets:	2	1

Next Assessment : N/A

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SURVEY CONCLUSIONS:

Objective	Objectives Achieved		Reason
	Yes	No	
1. Family	<input type="checkbox"/>	<input type="checkbox"/>	
2. Average	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fishery is self-sustaining, stocking is no longer required.
3. Above Average	<input type="checkbox"/>	<input type="checkbox"/>	
4. Trophy	<input type="checkbox"/>	<input type="checkbox"/>	

RECOMMENDATIONS:

Assessment: High net CPUE and multiple year classes suggests strong likelihood of natural recruitment.

Management: Cease stocking in light of natural recruitment and manage as a self-sustaining fishery as per original management objective.

Comments: Smith Lake is managed by the Omineca Region under agreement with the Skeena Region. The original objective was to manage for a self-sustaining rainbow trout fishery. Reconnaissance data from 1977 indicates a satisfactory fishery- it is unclear why stocking was undertaken.

Uncertainties: Stocked rainbow trout were not marked prior to this survey, therefore it is unclear the proportion of stocked fish in the fishery.

Recent Brood Request Comments:

2007 Brood Comments: Assessed in 2006, results suggest strong natural recruitment. Cease stocking pending review of data. EVEN year, 5000. Changed stock to BW for consistency (was NRT)

History of Angling Regulations

No special restrictions.

Reported by: Cory Williamson

Date: Mar-07

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Table 1. Rainbow trout physical attributes for all sample years by age:

Sample Year	Sample Age	Sample Size	Length (mm)				Weight (g)				Condition (k)			
			Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev
2006	1	10	125	112	146	9.8	23	17	32	4.0	1.18	1.03	1.49	0.2
2006	2	15	192	161	240	23.6	80	53	149	32.0	1.09	1.03	1.27	0.1
2006	3	9	271	222	296	25.5	222	132	310	61.5	1.09	0.91	1.21	0.1
2006	4	8	303	246	378	39.3	315	130	670	160.2	1.05	0.87	1.24	0.1
2006	5	1	307				320				1.11			

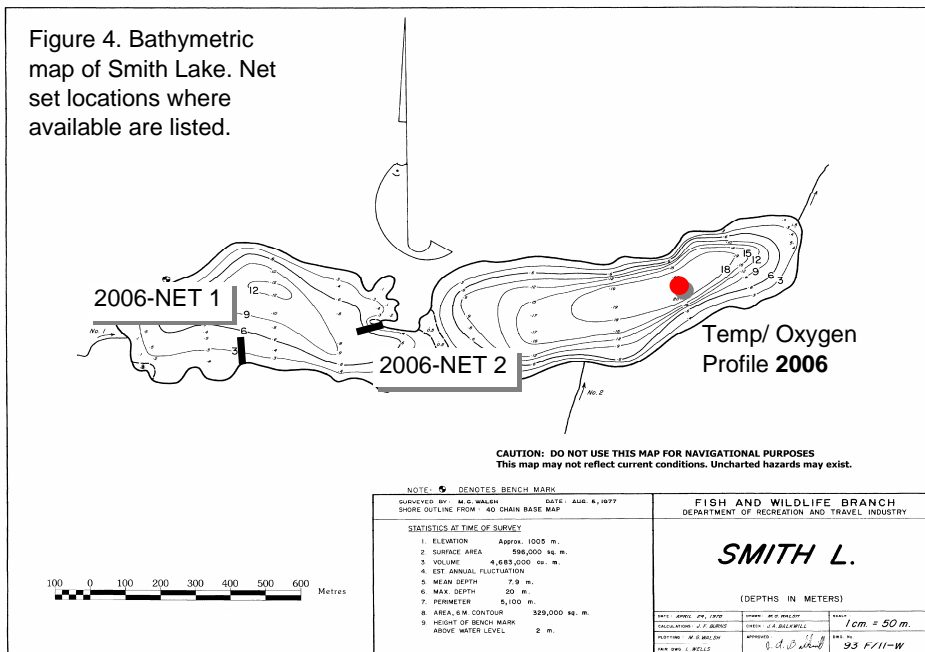
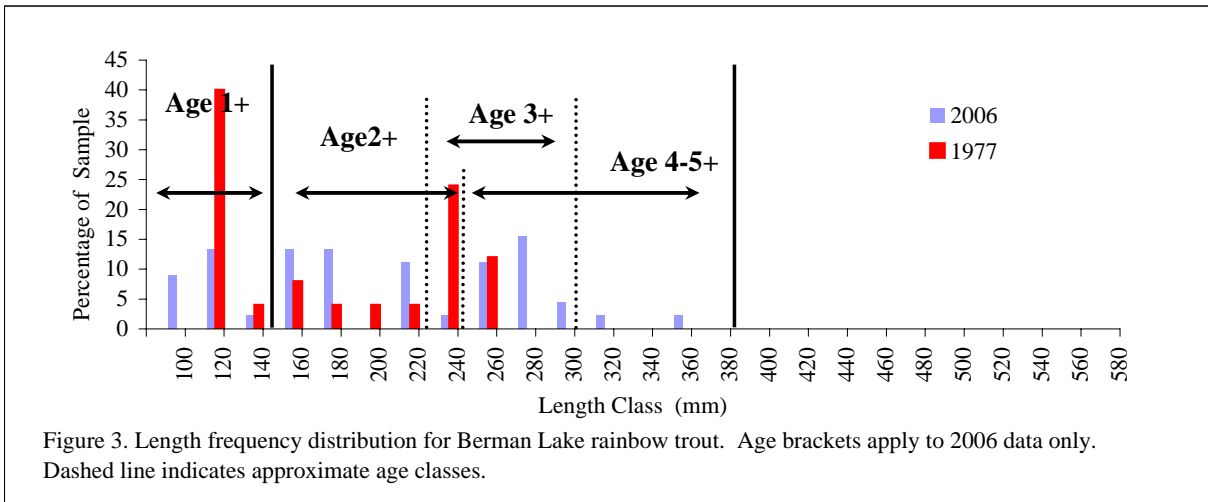
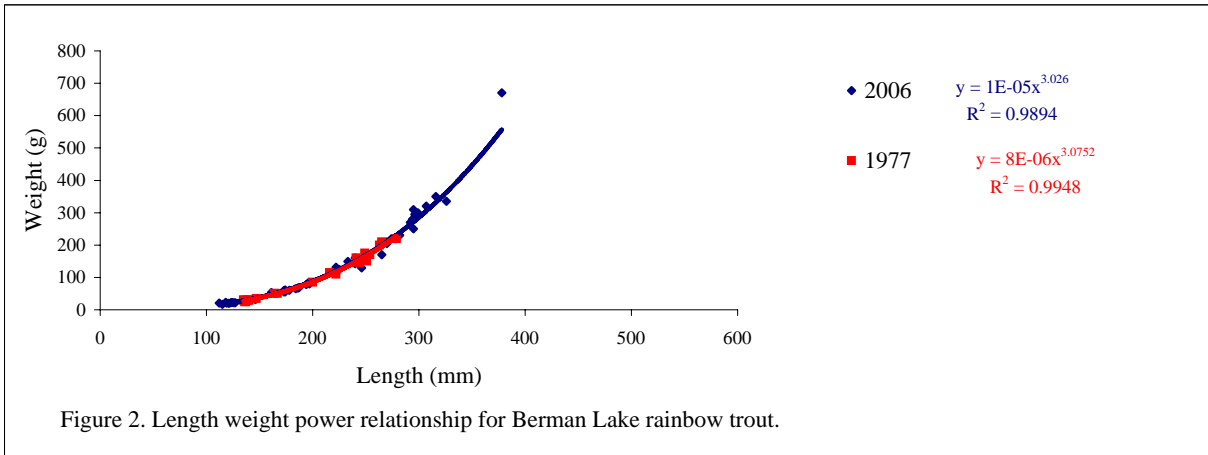
Table 2. Fish summary for 2006.

Sample Year	Sample Size	Length (mm)				Weight (g)				Condition (k)			
		Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev
2006	45	215	112	378	71.7	145	17	670	132.5	1.11	0.87	1.49	0.11
1977	25	191	135	279	54.6	93	25	220	70.0	1.08	0.95	1.22	0.08

Table 3. Proportion of Catch (by survey year)

<i>Survey Year</i>	2006	1977
Less than 250 mm	64.4 %	80.0 %
Between 250-300 mm	26.7 %	20.0 %
Between 300-400 mm	8.9 %	0.0 %
Greater than 400 mm	0.0 %	0.0 %
Greater than 500 mm	0.0 %	0.0 %

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Table 4. Complete stocking History for Smith Lake (1986-2006).

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
5-Sep-06	RB	5000	BLACKWATER DR		1.2	FF
7-Sep-04	RB	5000	DRAGON		1.9	FF
25-Sep-02	RB	5000	DRAGON		1.4	FF
21-Sep-00	RB	5000	DRAGON NRT		1.7	FF
15-Sep-99	RB	5000	NRT DRAGON		1.4	FF
10-Sep-97	RB	3400	BADGER TUNKWA		0.8	FF
10-Sep-97	RB	1600	NRT DRAGON		1	FF
4-Sep-96	RB	5000	NRT DRAGON		0.9	FF
8-Sep-94	RB	5000	PREMIER DR		1.7	FF
1-Sep-92	RB	5000	DRAGON		0.9	FF
29-Aug-90	RB	5000	DRAGON		0.6	FF
1-Aug-86	RB	2500	TUNKWA		0.6	FF

Table 5. Dissolved oxygen/ temperature profiles for Smith Lake.

05-Aug-77			15-Sep-06 Station UTM N/A					
Depth (m)	DO	Temp. °C	Depth (m)	DO mg/L	DO %sat	Temp. °C	pH	Cond (25°C)
0	10	20.6	0	13.4	n/a	11.7	8.17	n/a
1	n/a	20.2	1	13.2	n/a	11.63	8.05	n/a
2	n/a	19.1	2	13.0	n/a	11.51	7.91	n/a
3	n/a	17.2	3	13.0	n/a	11.47	7.92	n/a
4	n/a	14.4	4	13.4	n/a	11.47	7.57	n/a
5	n/a	13.5	5	13.1	n/a	11.44	7.25	n/a
6	n/a	12.9	6	13.8	n/a	11.25	6.86	n/a
7	n/a	11.7	7	13.1	n/a	7.58	6.08	n/a
8	n/a	10	8	13.2	n/a	6.45	5.6	n/a
9	n/a	8.8	9	13.2	n/a	5.94	5.11	n/a
10	n/a	7.6	10	13.2	n/a	5.61	4.71	n/a
11	n/a	7	11	13.1	n/a	5.45	4.66	60
12	n/a	6.9	12	13.0	n/a	5.34	4.62	56
13	n/a	6.8	13	13.0	n/a	5.26	4.5	56
14	n/a	6.5	14	12.7	n/a	5.17	4.55	59
15	n/a	6.4	15	12.4	n/a	5.11	4.5	62
16	n/a	6.3	16	11.9	n/a	5.08	4.45	n/a
17	n/a	6.1	17	11.4	n/a	5.07	4.49	11.4
18	n/a	n/a	18	11.2	n/a	5.07	4.56	n/a
19	5	6						

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Table 6. Stock assessment data for Smith Lake in 2006 (see lake files for additional survey data).

Lake	Sample#	Site	Haul	Species Caught	Age	Length (mm)	Weight (grams)	Condition (k)	Calender Age	Age Structure	Ageing		Sex	Maturity
											Confidence (0-9)	Clip		
Smith	sm1	1	1	rb	1++	118	23	1.4	1	otolith	9		m	immature
Smith	sm2	1	1	rb	n/a	119	21	1.2			-		u	immature
Smith	sm3	1	1	rb	1++	146	32	1.0	1	ot	8		u	immature
Smith	sm4	1	1	rb	1++	124	23	1.2	1	ot	8		f	immature
Smith	sm5	1	1	rb	1++	112	21	1.5	1	ot	9		u	immature
Smith	sm6	1	1	rb	1++	127	22	1.1	1	ot	8		u	immature
Smith	sm7	1	1	rb	1++	121	20	1.1	1	ot	9		f	immature
Smith	sm8	1	1	rb	2++	184	65	1.0	2	ot	8		m	spawn
Smith	sm9	1	1	rb	2++	178	60	1.1	2	ot	9		u	immature
Smith	sm10	1	1	rb	2++	194	78	1.1	2	ot	9		u	immature
Smith	sm11	1	1	rb	2++	173	59	1.1	2	ot	8		u	immature
Smith	sm12	1	1	rb	2++	187	68	1.0	2	ot	9		u	immature
Smith	sm13	1	1	rb	2++	233	149	1.2	2	ot	7		u	immature
Smith	sm14	1	1	rb	4++	378	670	1.2	4	ot	8		m	maturing
Smith	sm15	1	1	rb	4++	326	335	1.0	4	ot	7		f	maturing
Smith	sm16	1	1	rb	3+	292	270	1.1	3	ot	8		m	maturing
Smith	sm17	1	1	rb	3++	278	220	1.0	3	ot	7		m	maturing
Smith	sm18	1	1	rb	3++	282	230	1.0	3	ot	8		u	immature
Smith	sm19	1	1	rb	3++	296	295	1.1	3	ot	8		m	maturing
Smith	sm20	1	1	rb	3++	295	310	1.2	3	ot	8		m	maturing
Smith	sm21	1	1	rb	4++	299	300	1.1	4	ot	8		f	spawnbound
Smith	sm22	1	1	rb	4++	295	250	1.0	4	ot	8		f	maturing
Smith	sm23	1	1	rb	4++	270	205	1.0	4	ot	5		m	maturing
Smith	sm24	1	1	rb	3+	265	170	0.9	3	ot	7		f	maturing
Smith	sm25	1	1	rb	2+	161	53	1.3	2	ot	7		m	maturing
Smith	sm26	1	1	rb	4++	246	130	0.9	4	ot	8		m	maturing
Smith	sm27	1	1	rb	4+	316	350	1.1	4	ot	7		f	maturing
Smith	sm28	1	1	rb	3++	222	132	1.2	3	ot	8		m	maturing
Smith	sm29	1	1	rb	2+	186	67	1.0	2	ot	7		f	maturing
Smith	sm30	1	1	rb	4+	294	280	1.1	4	ot	7		m	maturing
Smith	sm31	1	1	rb	2++	197	80	1.0	2	ot	8		u	immature
Smith	sm32	1	1	rb	2++	174	55	1.0	2	ot	8		m	maturing
Smith	sm33	1	1	rb	2+	173	55	1.1	2	ot	8		f	maturing
Smith	sm34	1	1	rb	2++	174	61	1.2	2	ot	8		u	immature
Smith	sm35	1	1	rb	2++	196	84	1.1	2	ot	9		u	immature
Smith	sm36	1	1	rb	2++	240	142	1.0	2	ot	9		m	maturing
Smith	sm37	1	1	rb	3++	240	160	1.2	3	ot	8		f	maturing
Smith	sm38	1	1	rb	2++	225	125	1.1	2	ot	7		m	maturing
Smith	sm39	1	1	rb	1++	126	22	1.1	1	ot	9		m	maturing
Smith	sm40	1	1	rb	1++	134	26	1.1	1	ot	9		f	maturing
Smith	sm41	1	1	rb	1++	115	17	1.1	1	ot	9		m	immature
Smith	sm42	1	1	rb	1++	123	22	1.2	1	ot	8		u	immature
Smith	sm43	1	1	rb	5++	307	320	1.1	5	ot	6		m	maturing
Smith	sm44	1	1	rb	3++	270	210	1.1	3	ot	7		m	maturing
Smith	sm45	1	1	rb	n/a	274	220	1.1			-		f	maturing