

Executive Summary

Nelson Lake 2004

A stocking assessment was conducted on Nelson Lake during the fall of 2004. The original management goal for Nelson Lake was to manage for a low-use high-yield fishery for rainbow trout. Nelson Lake is 10.9 ha and is situated 42 km south of Prince George. Aerial surveys conducted in 2001 indicated that belly boat use was very high on Nelson Lake when compared to other lakes in the Omineca Region.

A floating gillnet was deployed on September 25, 2004. The total sampling effort was 17 hours resulting in a gillnet catch per unit effort (CPUE) of 2.06 fish per hour. The objectives of this assessment were to document the status of the fishery. In 2000 an angling assessment determined that on average the rainbow trout were too small to provide for a quality angling experience. At that time the stocking rate for Nelson Lake was reduced to 2500 (Pennask AF) yearlings in alternate years. The reduced stocking rate appears to have been successful in providing for a better fishery as the rainbow trout sampled during the 2004 assessment had a mean length of 306 mm and a maximum length of 369 mm, however this data must be interpreted with caution as the survey methods were different. In 2005, to further enhance the angling quality, Pennask AF3N (sterile) strain will replace the Pennask AF stock currently being used. The stocking rate will be reduced by 25% to 1800 yearlings in alternate years to accommodate the longer lived sterile fish. It is also recommended that an angler creel/satisfaction survey be completed on Nelson Lake during the summer angling period to complement the proposed angler creel/satisfaction surveys scheduled for the spring and summer of 2005.



Figure 1. Aerial view of Nelson Lake.

**OMINECA REGION
LAKE STOCK ASSESSMENT REPORT**

LAKE NAME: Nelson Lake **BC WBID:** 01162LCHL

LAKE LOCATION: *Nearest center:* 42 km S of Prince George *Drainage:* FRASER
UTM: 10.502720.5937620

LAKE ATTRIBUTES: *Surface Area:* 10.9 Ha *Elevation:* 868 m
Littoral Area: 7 Ha *T.D.S.:* na ppm
Max Depth: 10 m *Mean depth:* 4.3 m

MANAGEMENT OBJECTIVE:

- 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 Cadden and Wilson 1997; CSTC 1999
 Year(s) Surveyed: 1988; 1997; 2000 Zimmerman 2000

STOCKING DATA:

Current Stocking Rate 229 Fish/Ha Even years
Stock Type **PENNASK AF**
Species RB
Previous Stocking Rate 229

SURVEY METHODS:

Method	Date (yy.mm.dd)	Survey Agency	Crew
Fish	SGN 2004-09-24	BCCF	Chad Robertson, Kevin Mernickle
Chem.	DO 1988-10-12	MOE	R.G. Westcott, D. Cadden, M. French
Physical	Bathymetric 1988-10-13	MOE	R.G. Westcott, D. Cadden, M. French
Temp.	Profile 1988-10-12	MOE	R.G. Westcott, D. Cadden, M. French

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

SURVEY RESULTS:

Catch

	RB	EB	RSC	LKC	LSU	CSU	NSC	CAS	BT	LT
2004	35	0	0	0	0	0	0	0	0	0
1999	55	0	0	0	0	0	0	0	0	0
1997	12	0	0	0	0	0	0	0	0	0

Survey Year	2004	1999	1997	
Effort Hours	17	na	na	
RB CPUE:	2.06	na	na	RB/Net Hour
EB CPUE:	0.00	na	na	EB/Net Hour
# of Sets:	1	1	1	

Next Assessment 2009

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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"/>	83% of rainbow trout are between 250-400mm.
3. Above Average	<input type="checkbox"/>	<input type="checkbox"/>	
4. Trophy	<input type="checkbox"/>	<input type="checkbox"/>	

RECOMMENDATIONS:

Assessment: The next assessment is scheduled for 2009.

Management: In 2000 it was noted that only 36% of angler catch exceeded 250mm in fork length. It was recommended that the frequency of stocking be reduced to alternate-year releases of 2500 yearlings. This strategy appears to have worked well as rainbow trout in Nelson Lake are exhibiting good growth rates. The 2004 gill net survey determined that 83% of the sample was between 250-400mm in fork length. It is recommended that the stocking rate be further reduced to 1800 yearlings (Pennask AF3N) in alternate years.

Comments:

Uncertainties:

Recent Brood Request Comments:

2005 Even year stocking. Skipped 2000 & 2001 release. Aerial survey 01, belly boat use per ha. high. Assessed in '04, prelim results indicate v-good growth. Changed stock to Pennask AF3N vs AF for 2006 in consultation with FFSBC.

History of Angling Regulations

No special angling regulations for Nelson Lake.

Reported by: Adrian Clarke

Date: Mar-05

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Table 1. Rainbow trout physical attributes for sample years:

Sample Year	Sample		Length (mm)				Weight (g)				Condition (k)				
	Age	Size	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Var
2004	1	5	191	176	201	11.0	74	62	87	11.0	1.05	0.98	1.14	0.1	0.00
2004	2	1	231				210				1.70				
2004	3	28	327	281	369	18.3	391	260	520	55.4	1.12	0.99	1.23	0.1	0.00
2004	4	1	365				480				0.99				
1999	4	10	300	252	380	50.2	210	50	500	156.0	0.66	0.31	0.91	0.2	0.03

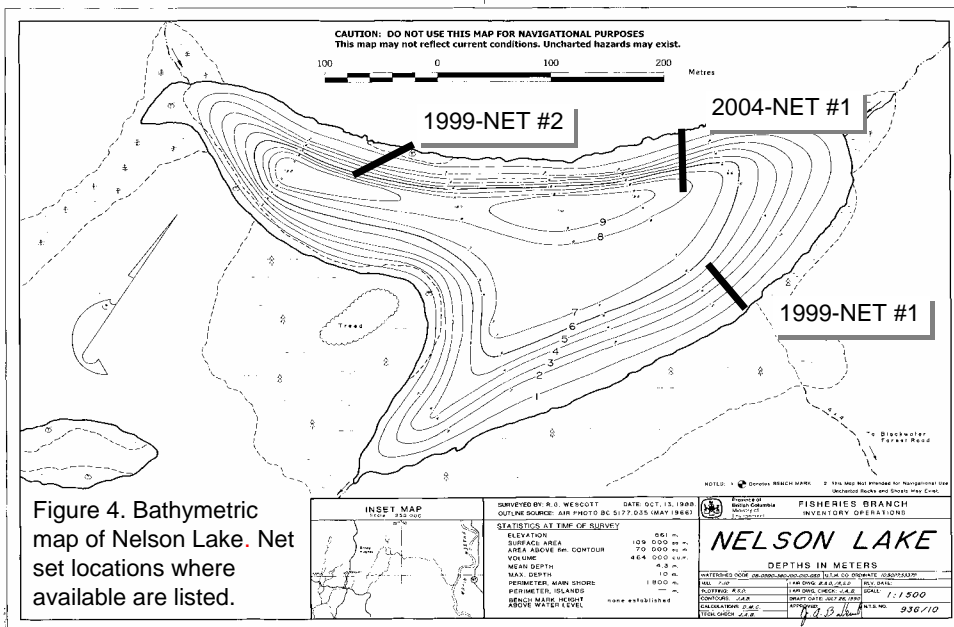
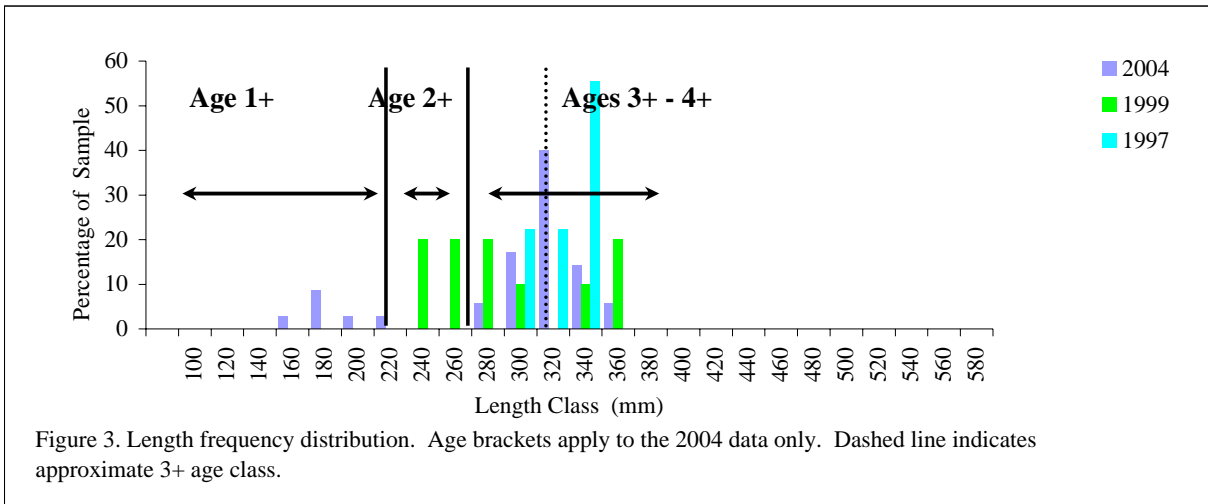
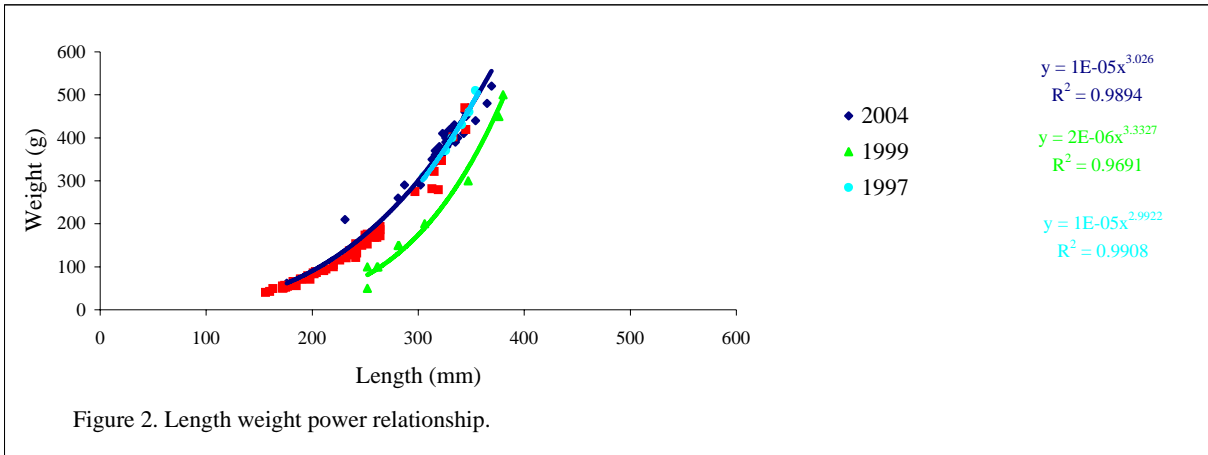
Table 2. Catch summary for all sample years.

Sample Year	Sample Size	Length (mm)				Weight (g)				Condition (k)				
		Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Var
2004	35	306	176	369	53.4	343	62	520	126.9	1.12	0.98	1.70	0.12	0.01
2000	55	233	156	345	53.4	146	40	470	99.1	1.01	0.86	1.15	0.06	0.00
1999	10	300	252	380	50.2	210	50	500	156.0	0.66	0.31	0.91	0.17	0.03
1997	9	335	304	357	19.7	413	310	510	70.0	1.10	1.07	1.15	0.03	0.00

Table 3. Proportion of Catch (by survey year)

Survey Year	2004	1999	1997
Less than 250 mm	17.1 %	65.5 %	0.0 %
Between 250-350 mm	74.3 %	34.5 %	80.0 %
Between 250-400 mm	82.9 %	34.5 %	100.0 %
Greater than 400 mm	0.0 %	0.0 %	0.0 %
Greater than 500 mm	0.0 %	0.0 %	0.0 %

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Table 4. Stocking History for Nelson Lake to 2004.

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
3-Jun-04	RB	2500	PENNASK AF		21.76	YEARLING
19-Jun-02	RB	2500	PENNASK BV AF		10	YEARLING
19-Sep-99	RB	2555	PENNASK AF	Adipose	35	YEARLING
4-Oct-98	RB	2485	PENNASK AF	Adipose	35.8	YEARLING
6-Sep-97	RB	2000	PENNASK AF	Adipose	60	YEARLING
5-Sep-97	RB	1100	PENNASK AF	Adipose	60	YEARLING
4-Jun-96	RB	1500	PENNASK HATH AF		17.24	YEARLING
2-Jun-94	RB	1500	PENNASK AF		25.64	YEARLING
30-May-92	RB	2500	NRT PREMIER		6.58	YEARLING
1-May-88	RB	12000	TUNKWA		9.9	UNKNOWN

Table 5. Dissolved Oxygen/ Temperature Profile

16-Dec-88		
Depth (m)	DO	Temp. °C
0	10	9
1	10.2	8.5
2	9.4	8
3	5	7
4	4.3	7
5	3.5	6.5
6	0.7	6
7	0.5	5
8	bottom	

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Table 6. Stock assessment data for 2004 (see lakes files for additional survey data).

Lake	Sample#	Site	Species Caught	Age	Length (mm)	Weight (grams)	Condition (k)	Scale Age	Structure	Sex	Maturity	Ageing Comments
Nelson	1	1	RB	3	330	420	1.2	3+	OT	F	MT	
Nelson	2	1	RB	3	327	380	1.1	3+	OT	F	MT	translucent
Nelson	3	1	RB	3	345	450	1.1	3+	OT	F	MT	translucent
Nelson	4	1	RB	3	334	420	1.1	3+	OT	F	MT	
Nelson	5	1	RB	3	343	410	1.0	3+	OT	F	MT	translucent
Nelson	6	1	RB	3	347	470	1.1	3+	OT	F	MT	translucent
Nelson	7	1	RB	3	313	350	1.1	3+	OT	F	MT	
Nelson	8	1	RB	4	365	480	1.0	4+	OT	F	ST	
Nelson	9	1	RB	3	354	440	1.0	3+	OT	F	MT	translucent
Nelson	10	1	RB	3	334	430	1.2	3+	OT	F	MT	translucent
Nelson	11	1	RB	3	322	360	1.1	3+	OT	F	MT	translucent
Nelson	12	1	RB	3	326	400	1.2	3+	OT	F	MT	
Nelson	13	1	RB	3	326	410	1.2	3+	OT	F	MT	translucent
Nelson	14	1	RB	3	330	390	1.1	3+	OT	F	MT	translucent
Nelson	15	1	RB	3	337	400	1.0	3+	OT	F	MT	
Nelson	16	1	RB	3	344	460	1.1	3+	OT	F	MT	
Nelson	17	1	RB	3	323	410	1.2	3+	OT	F	MT	translucent
Nelson	18	1	RB	3	327	400	1.1	3+	OT	F	MT	
Nelson	19	1	RB	3	302	290	1.1	3+	OT	F	MT	translucent
Nelson	20	1	RB	3	320	380	1.2	3+	OT	F	MT	translucent
Nelson	21	1	RB	3	316	370	1.2	3+	OT	F	MT	
Nelson	22	1	RB	3	325	370	1.1	3+	OT	F	MT	translucent
Nelson	23	1	RB	3	281	260	1.2	3+	OT	F	MT	tip broken
Nelson	24	1	RB	3	369	520	1.0	3+	OT	F	MT	translucent
Nelson	25	1	RB	3	335	390	1.0	3+	OT	F	MT	translucent
Nelson	26	1	RB	3	316	360	1.1	3+	OT	F	MT	translucent
Nelson	27	1	RB	3	287	290	1.2	3+	OT	F	IM	
Nelson	28	1	RB	3	315	340	1.1	3+	OT	F	IM	
Nelson	29	1	RB	1	198	81	1.0	1++	OT	F	MT	
Nelson	30	1	RB	1	183	63	1.0	1++	OT	F	IM	
Nelson	31	1	RB	2	231	210	1.7	2+	OT	F	MT	
Nelson	32	1	RB	1	201	87	1.1	1++	OT	F	IM	
Nelson	33	1	RB	1	198	76	1.0	1+	OT	F	IM	
Nelson	34	1	RB	1	176	62	1.1	1+	OT	F	IM	
Nelson	35	1	RB	3	326	390	1.1	3+	OT	F	MT	