

Executive Summary

Emerald Lake 2004

A stocking assessment was conducted on Emerald Lake during the fall of 2004. The original management goal for Emerald Lake was to manage for a low-use fishery for rainbow trout up to three pounds. Both a standard sinking and a floating gillnet 90 m in length (standard mesh) were set on September 14, 2004. The total sampling effort was 42 hours resulting in a gillnet catch per unit effort (CPUE) of 1.19 fish per hour. The objective of this assessment was to document the status of the fishery. The rainbow trout sampled during the 2004 assessment had a mean length of 253 mm and a maximum length of 482 mm. The gillnet CPUE and the overall size of rainbow trout captured in Emerald Lake indicate that the management objective for this fishery is being maintained. In addition, 13% of the rainbow trout captured in Emerald Lake are >40 cm thus providing a quality angling experience. There are rainbow trout up to six years of age in Emerald Lake suggesting that anglers are not depleting age-classes of fish. Recommend that stocking is reduced to 3500 fall fry annually from 5000 fall fry annually, and changing the stock from NRT (naturalized rainbow trout) to Blackwater strain. This will help rainbow trout achieve a larger mean size and promote a better angling experience. The next stock assessment is scheduled for 2009 to allow for stocking changes to take effect before the lake is re-evaluated. It is also recommended that an angler creel/satisfaction survey be completed on Emerald Lake during the summer angling period of 2005 to complement the survey being conducted at neighbouring Crystal Lake.



Figure 1. Photo of Emerald Lake during the October 2004 lake assessment.

Omineca Region Stocked Lake Assessment Report

**OMINECA REGION
LAKE STOCK ASSESSMENT REPORT**

LAKE NAME: Emerald **BC WBID:** 01100crkd

LAKE LOCATION: *Nearest center:* 63 km N of Prince George *Drainage:* FRASER
UTM: 10.525667.6031046

LAKE ATTRIBUTES: *Surface Area:* 13.6 Ha *Elevation:* 727 m
Littoral Area: na Ha *T.D.S.:* na ppm
Max Depth: na m *Mean depth:* na 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 Philip 1986
 Year(s) Surveyed: 1986

STOCKING DATA:

Current Stocking Rate 368 Fish/Ha Annually
Stock Type **DRAGON**
Species RB
Previous Stocking Rate 368

SURVEY METHODS:

Method	Date (yy.mm.dd)	Survey Agency	Crew
Fish	SGN 2004-09-14	BCCF	Chad Robertson, Kevin Mernickle
Chem.	na		
Physical	na		
Temp.	na		

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

SURVEY RESULTS:

Catch

	RB	EB	RSC	LKC	LSU	CSU	NSC	CAS	BT	LT
2004	50	0	0	0	0	0	0	0	0	0
1985	24	0	0	0	0	0	0	0	0	0

Survey Year	2004	1985
Effort Hours	42	19.5
RB CPUE:	1.19	1.23
EB CPUE:	0.00	0.00
# of Sets:	2	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"/>	
3. Above Average	<input type="checkbox"/>	<input type="checkbox"/>	
4. Trophy	<input type="checkbox"/>	<input type="checkbox"/>	

RECOMMENDATIONS:

Assessment: Next assessment scheduled for 2009.

Management: The growth rate and condition factor of rainbow trout captured had decreased in 2004 when compared to the 1985 data. Reducing the stocking density to 3500 from 5000 may allow for better growth conditions.

Comments: The gillnet CPUE and the overall size of rainbow trout present in Emerald Lake indicate that the management objective of an average sport fishery is being met. In addition, 13% of the rainbow trout captured in Emerald Lake are >40 cm thus providing an above average angling experience.

Uncertainties:

Recent Brood Request Comments:

2005 Stocked annually. Angled in 98. Assessed in '04. Change stock from NRT to BW- reduce stocking rate to 3500.

History of Angling Regulations

Power boat restriction on Emerald 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	19	147	116	215	29.3	33	14	90	22.6	0.95	0.67	1.43	0.2	0.04
2004	2	3	245	241	252	6.4	175	145	210	32.8	1.19	1.04	1.31	0.1	0.02
1985	2	10	282	253	299	15.1	284	210	375	60.3	1.25	1.09	1.46	0.1	0.01
2004	3	3	326	321	330	4.7	367	345	395	25.7	1.05	1.00	1.12	0.1	0.00
1985	3	13	342	295	401	34.8	503	325	860	164.0	1.22	1.05	1.46	0.1	0.01
2004	4	8	380	318	426	33.4	578	400	720	108.2	1.05	0.93	1.24	0.1	0.01
1985	4	1	305				350				1.23				
2004	5	4	409	379	457	34.9	677	480	865	163.9	0.98	0.88	1.07	0.1	0.01
2004	6	1	482				925				0.83				

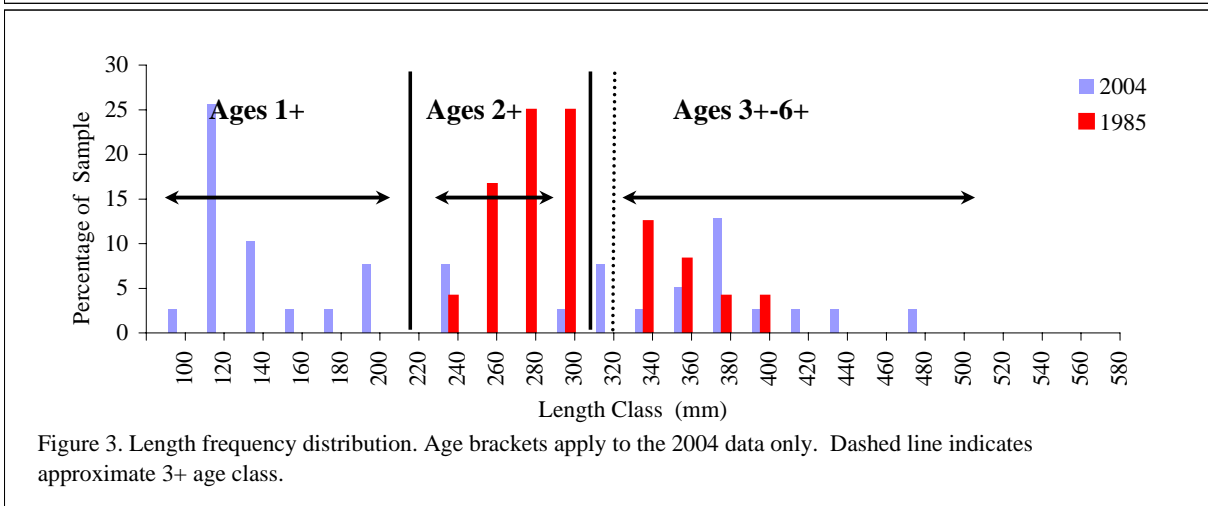
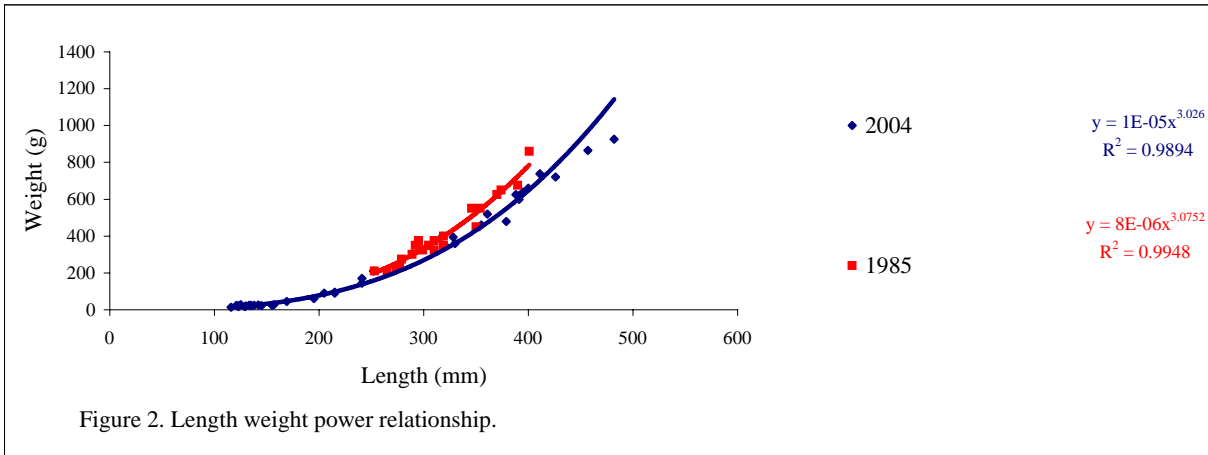
Table 2. Catch summary for all sample years.

Sample Year	Sample		Length (mm)				Weight (g)				Condition (k)			
	Size	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Var
2004	39	253	116	482	118.8	272	14	925	289.2	1.00	0.67	1.43	0.16	0.03
1985	24	315	253	401	118.8	405	210	860	165.5	1.23	1.05	1.46	0.11	0.01

Table 3. Proportion of Catch (by survey year)

<i>Survey Year</i>	2004	1985
Less than 250 mm	56.4 %	0.0 %
Between 250-350 mm	12.8 %	79.2 %
Between 350-400 mm	33.3 %	95.8 %
Greater than 400 mm	12.8 %	4.2 %
Greater than 500 mm	0.0 %	0.0 %

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Table 4. Stocking History for Emerald Lake to 2004.

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
10-Sep-03	RB	5000	DRAGON		1.48	FALL FRY
26-Sep-02	RB	5000	DRAGON		1.36	FALL FRY
4-Sep-01	RB	5000	BADGER TUNKWA		1.26	FALL FRY
11-Sep-00	RB	5000	BADGER TUNKWA		1.05	FALL FRY
28-Sep-99	RB	5000	NRT DRAGON		1.66	FALL FRY
30-Sep-98	RB	5000	NRT DRAGON		2.03	FALL FRY
16-Sep-97	RB	5000	TZENZAICUT DR		0.79	FALL FRY
3-Sep-96	RB	5000	NRT DRAGON		0.94	FALL FRY
5-Sep-95	RB	5000	PREMIER DR		1.41	FALL FRY
7-Sep-94	RB	5000	PREMIER DR		1.7	FALL FRY
30-Aug-93	RB	5000	DRAGON		1.48	FRY
31-Aug-92	RB	5000	DRAGON		0.88	FALL FRY
3-Sep-91	RB	10000	DRAGON		0.68	FALL FRY
28-Aug-90	RB	10000	DRAGON		0.6	FALL FRY
3-Jun-89	RB	2500	TUNKWA		9.1	YEARLING
1-May-88	RB	2500	TUNKWA		11	UNKNOWN
1-May-87	RB	2500	TUNKWA		14.2	UNKNOWN
1-May-86	RB	2500	NRT PREMIER		4.5	UNKNOWN
1-Aug-85	RB	5000	NRT PREMIER		0.8	UNKNOWN
1-Jun-84	RB	5000	NRT PREMIER		6.6	UNKNOWN
7-Sep-04	RB	5000	DRAGON		1.87	FALL FRY

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Table 5. 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
Emerald	1	2	rb	4	318	400	1.2	4+	ot	m	m
Emerald	2	2	rb	5	379	480	0.9	5+	ot	f	im
Emerald	3	2	rb	3	321	345	1.0	3+	ot	f	im
Emerald	4	2	rb	6	482	925	0.8	6+	ot	f	m
Emerald	5	2	rb	1	195	60	0.8	1+	ot	f	im
Emerald	6	2	rb	1	157	28	0.7	1+	ot	f	im
Emerald	7	2	rb	2	241	170	1.2	2+	ot	f	im
Emerald	8	2	rb	1	205	90	1.0	1+	ot	f	im
Emerald	9	2	rb	1	138	25	1.0	1+	ot	f	im
Emerald	10	2	rb	4	395	640	1.0	4+	ot	f	im
Emerald	11	2	rb	1	123	18	1.0	1+	ot	u	u
Emerald	12	2	rb	5	388	625	1.1	5+	ot	f	im
Emerald	13	2	rb	1	130	20	0.9	1+	ot	f	im
Emerald	14	2	rb	4	391	600	1.0	4+	ot	f	im
Emerald	15	2	rb	4	355	460	1.0	4+	ot	m	mt
Emerald	16	2	rb	1	155	25	0.7	1+	ot	f	im
Emerald	17	2	rb	1	135	22	0.9	1+	ot	f	im
Emerald	18	2	rb	3	330	360	1.0	3+	ot	m	m
Emerald	19	2	rb	1	135	25	1.0	1+	ot	f	im
Emerald	20	2	rb	1	129	18	0.8	1+	ot	f	im
Emerald	21	2	rb	2	252	210	1.3	2+	ot	f	im
Emerald	22	2	rb	3	328	395	1.1	3+	ot	f	im
Emerald	23	2	rb		215	95	1.0	n/a	ot	f	im
Emerald	24	2	rb	1	125	28	1.4	1+	ot	f	im
Emerald	25	2	rb	1	215	90	0.9	1+	ot	f	im
Emerald	26	2	rb	1	169	45	0.9	1+	ot	f	im
Emerald	27	2	rb	2	241	145	1.0	2+	ot	f	im
Emerald	28	2	rb	1	142	26	0.9	1+	ot	f	im
Emerald	29	2	rb	1	121	24	1.4	1+	ot	f	im
Emerald	30	2	rb	4	391	620	1.0	4+	ot	f	mt
Emerald	31	2	rb	5	411	738	1.1	5+	ot	m	mt
Emerald	32	1	rb	1	123	20	1.1	1+	ot	f	im
Emerald	33	1	rb	1	116	14	0.9	1+	ot	f	im
Emerald	34	1	rb	1	133	24	1.0	1+	ot	f	im
Emerald	35	1	rb	5	457	865	0.9	5+	ot	f	mt
Emerald	36	1	rb	4	361	520	1.1	4+	ot	f	mt
Emerald	37	1	rb	1	145	22	0.7	1+	ot	f	im
Emerald	38	1	rb	4	400	660	1.0	4+	ot	f	mt
Emerald	39	1	rb	4	426	720	0.9	4+	ot	f	mt