

**Executive Summary****Hart Lake****2004**

A stocking assessment was conducted at Hart Lake on November 2, 2004 to determine the status of the fishery. Hart Lake is 56 ha and is situated 64 km north of Prince George within Crooked River Provincial Park. There is a large Provincial Campsite located within the Park. Hart Lake is suitable for float tubes and small boats as there is no boat launch. Hart Lake has special regulations with a daily quota of three rainbows, none exceeding 40 cm in length, single barbless hooks, a bait ban, and electric motors only. Hart Lake is also closed in the winter from November 1 to April 30. The management goal for Hart Lake is to maintain a trophy rainbow trout fishery. Two standard gillnets (one floating and one sinking) 90 m in length (standard mesh) were set in 2004. The total sampling effort was 14 hours resulting in a gillnet catch per unit effort (CPUE) of 1.93. At this time the rainbow trout population is providing for a quality angling experience with 67% of the 2004 catch exceeding 400 mm and 4% exceeding 500 mm in length. Based on the 2004 catch, the stocked cohort from 2003 may be missing, indicating a possible year class failure. Further evaluation of this problem may be completed through an angling survey in 2005. The weir installed at Hart Lake to prevent both immigration and emigration of non-game fish appears to be functioning well; however, recent reports from anglers indicate that there are non-game fish species present in Hart Lake. As a result, there is concern in the angling community that Hart Lake may now contain northern pikeminnow, however detailed descriptions presented to fisheries staff indicate that these fish are more than likely long-nose suckers which present little risk to the sports fishery. Furthermore northern pikeminnow were not captured in the nets deployed in 2004. The mature rainbow trout sampled in 2004 were spawnbound and there is no evidence of natural recruitment in Hart Lake. Blackwater strain rainbow trout will replace the naturalized rainbow trout (NRT) strain currently stocked in the lake. Additionally, 25% of these fish will be marked sterile (AF3N) stock to reduce the incidence of spawnbound fish and increase the fishery quality on Hart Lake. The next stocking assessment has been scheduled for 2008 to determine the effects of the stocking changes.



Figure 1. Rainbow trout captured during the Fall 2004 stock assessment of Hart Lake.

Omineca Region Stocked Lake Assessment Report

**OMINECA REGION  
LAKE STOCK ASSESSMENT REPORT**

**LAKE NAME:** Hart **BC WBID:** 00982crkd

**LAKE LOCATION:** *Nearest center:* 64 Km N of Prince George *Drainage:* FRASER  
*UTM:* 10.522029.6035923

**LAKE ATTRIBUTES:** *Surface Area:* 55.8 Ha *Elevation:* 715 m  
*Littoral Area:* 28.1 Ha *T.D.S.:* 100 ppm  
*Max Depth:* 8.7 m *Mean depth:* 4.9 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  MOE 1984; MOE 1985;  
 Year(s) Surveyed: 1984; 1985; 1990; 1994 Barry & Westcott 1990;  
 Barry & Van Schubert 1994

**STOCKING DATA:**

*Current Stocking Rate* 179 Fish/Ha Annually  
*Stock Type* **DRAGON**  
*Species* RB  
*Previous Stocking Rate* 179

**SURVEY METHODS:**

Method	Date (yy.mm.dd)	Survey Agency	Crew
Fish	sgn 2004-11-02	BCCF	Chad Roberston, Kevin Mernickle
Chem.	DO, pH 2004-11-02	BCCF	Chad Robertson, Kevin Mernickle
Physical	bathymetric 1982-07-29	MOE	B. Little, S. McNaughton
Temp.	profile 2004-11-02	BCCF	Chad Robertson, Kevin Mernickle

**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
<b>2004</b>	27	0	0	0	0	0	0	0	0	0
<b>1994</b>	27	0	0	0	0	0	0	0	0	0
<b>1990</b>	36	0	0	0	0	0	0	0	0	0
<b>1985</b>	35	0	0	0	0	0	0	0	0	0

Survey Year	2004	1994	1990	1985	1984	
Effort Hours	14	2	5.5	21	27.5	
RB CPUE:	1.93	13.50	6.55	1.67	0.84	RB/Net Hour
EB CPUE:	0.00	0.00	0.00	0.00	0.00	EB/Net Hour
# of Sets:	2	1	1	1	1	

Next Assessment : 2008

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### ***SURVEY CONCLUSIONS:***

Objective	Objectives Achieved		Reason
	Yes	No	
1. Family	<input type="checkbox"/>	<input type="checkbox"/>	
2. Average	<input type="checkbox"/>	<input type="checkbox"/>	
3. Above Average	<input type="checkbox"/>	<input type="checkbox"/>	
4. Trophy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	in 2004 67% of rb sampled were >40 cm and 3.7% were >50 cm

### ***RECOMMENDATIONS:***

**Assessment:** Next assessment in 2008/09 to determine influence of changing stocking strain to BW from NRT and determine the effect of adding 25% marked AF3N fish.

**Management:** Manage as a trophy fishery with catch and release of any rainbow trout > 40cm. Stock annually with 10,000 fall fry.

**Comments:** Recent reports from anglers indicate that there are non-game fish species present in Hart Lake. There is concern in the angling community that there may be northern pikeminnow present in Hart Lake, however detailed descriptions presented to fisheries staff indicate that these fish are more than likely long-nose suckers which present little risk to the sports fishery.

**Uncertainties:** No fish under three years of age were caught, indicating a possible year class failure for the 2003 cohort.

### ***Recent Brood Request Comments:***

2005 Provincial Park. Assessed in '04. Large fish were spawnbound. Quality fishery- catch and release >40cm, Change stock to BW from NRT. Use 25% marked AF3N as test for three years. Assess in 08/09.

### ***History of Angling Regulations***

No fishing from Nov 1- Apr 30. Rainbow trout daily quota =3 (none over 40 cm), bait ban, single-barbless hook, electric motors only.

**Reported by:** Adrian Clarke

**Date:** Feb-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
1994	1	18	157	15	216	56.7	73	45	125	28.3	0.85	0.00	1.32	0.5	0.30
1994	2	5	332	242	371	52.7	480	175	700	197.2	1.24	1.18	1.37	0.1	0.01
1990	2	24	331	255	381	32.8	425	190	600	117.1	1.14	1.02	1.27	0.1	0.00
2004	3	12	383	331	434	26.8	749	503	995	123.7	1.33	1.09	1.46	0.1	0.01
1990	3	10	428	353	464	33.2	775	510	1000	161.2	0.98	0.82	1.16	0.1	0.01
2004	4	12	460	428	491	20.5	1095	765	1340	152.9	1.13	0.98	1.35	0.1	0.01
1994	4	4	450	399	505	51.7	1000	705	1350	319.2	1.07	1.05	1.11	0.0	0.00
2004	5	3	507	460	565	53.5	1682	1245	2000	391.2	1.31	1.00	1.65	0.3	0.11

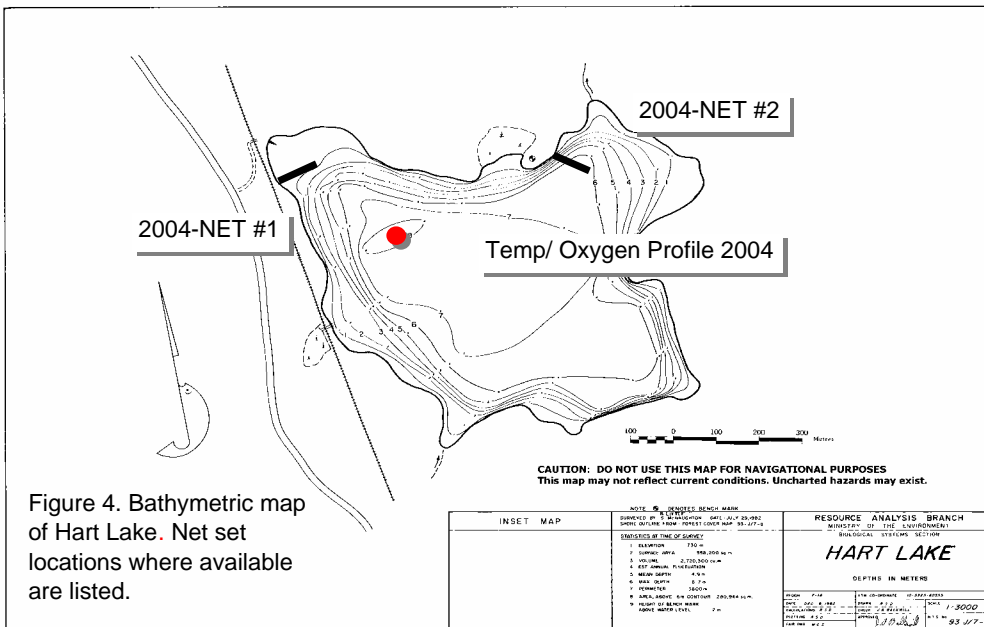
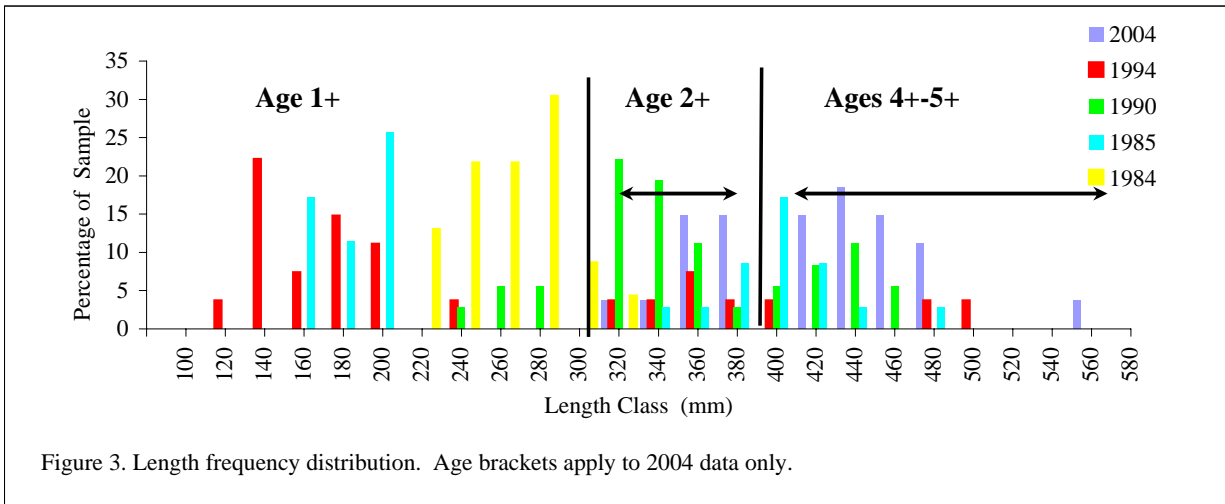
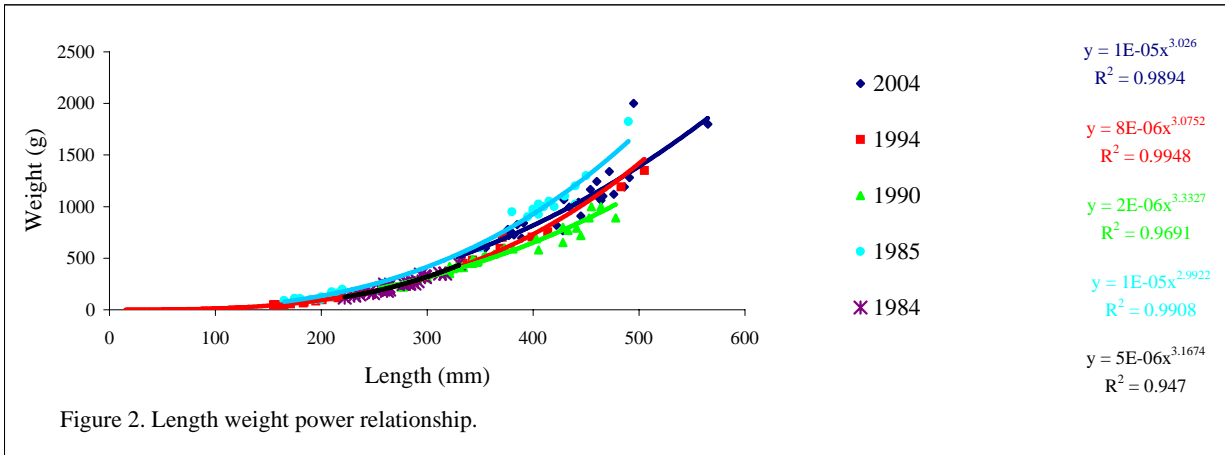
**Table 2. Catch summary for all sample years.**

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	27	27	431	331	565	53.0	1007	503	2000	339.1	1.24	0.98	1.65	0.17	0.03
1994	27	27	232	15	505	53.0	334	45	1350	392.6	0.95	0.00	1.37	0.47	0.22
1990	36	36	365	255	478	58.1	542	190	1000	210.5	1.08	0.81	1.27	0.12	0.01
1985	35	35	297	165	490	112.8	552	80	1825	495.1	1.58	1.20	2.05	0.22	0.05
1984	27	27	431	331	565	53.0	1007	503	2000	339.1	1.24	0.98	1.65	0.17	0.03

**Table 3. Proportion (%) of Catch (by survey year)**

Survey Year	2004	1994	1990	1985	1984
Less than 250 mm	0.0	70.4	0.0	54.3	18.5
Between 250-350 mm	3.7	7.4	83.3	2.9	66.7
Between 350-400 mm	37.0	18.5	69.4	14.3	66.7
Greater than 400 mm	63.0	11.1	30.6	37.1	0.0
Greater than 500 mm	3.7	3.7	0.0	0.0	0.0

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**Table 4. Stocking History for Hart Lake to 2004.**

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
7-Sep-04	RB	10000	DRAGON		1.87	FALL FRY
10-Sep-03	RB	10000	DRAGON		1.48	FALL FRY
26-Sep-02	RB	10000	DRAGON		1.36	FALL FRY
4-Sep-01	RB	10000	BADGER TUNKWA		1.26	FALL FRY
11-Sep-00	RB	10000	BADGER TUNKWA		1.05	FALL FRY
28-Sep-99	RB	10000	NRT DRAGON		1.66	FALL FRY
30-Sep-98	RB	10000	NRT DRAGON		2.03	FALL FRY
16-Sep-97	RB	10000	TZENZAICUT DR		0.79	FALL FRY
3-Sep-96	RB	10000	NRT DRAGON		0.94	FALL FRY
5-Sep-95	RB	30000	PREMIER DR		1.41	FALL FRY
7-Sep-94	RB	30000	PREMIER DR		1.69	FALL FRY
30-Aug-93	RB	30000	DRAGON		1.48	FRY
31-Aug-92	RB	30000	DRAGON		0.88	FALL FRY
3-Sep-91	RB	30000	DRAGON		0.68	FALL FRY
28-Aug-90	RB	30000	DRAGON		0.6	FALL FRY
1-Jun-89	RB	10000	TUNKWA		9.9	YEARLING
1-Aug-88	RB	5000	DRAGON		0.9	UNKNOWN
1-May-88	RB	5000	TUNKWA		11	UNKNOWN
1-May-87	RB	5000	TUNKWA		11.9	UNKNOWN
1-Jun-86	RB	5000	NRT PREMIER		6.2	UNKNOWN
1-May-85	RB	5000	NRT PREMIER		4	UNKNOWN
1-Jun-84	RB	5000	NRT PREMIER		6.6	UNKNOWN
1-Sep-83	RB	15000	BEAVER		0.8	UNKNOWN
1-Jan-63	RB	5000	WASHINGTON		2.5	FRY
1-Jan-62	RB	5000	OREGON		2.5	FRY

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**Table 5. Dissolved Oxygen/ Temperature Profile**

21-Nov-04 Station UTM 10.522825.6035950						
Depth (m)	DO mg/L	DO %sat	Temp. °C	pH	Cond (25°C)	
0	9.92	76	4.11	7.7	150	
1	9.64	74.4	4.1	7.9	150	
2	9.48	72.7	4.09	8.0	151	
3	9.66	73.6	3.83	8.1	153	
4	9.21	71.7	4.23	8.1	151	
5	9.24	70.8	4.2	8.2	151	
6	9.23	71.4	4.22	8.2	151	
7	9.09	69.8	4.23	8.3	151	
8	9.05	69.9	4.24	8.3	156	
9	7.26	55.2	5.56	8.0	175	
10	6.02	49.6	5.08	7.7	173	

**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	Comments
Hart	1	2	rb	4	486	1190	1.0	4+	ot	f	mt	SLENDER/LONG
Hart	2	2	rb	3	434	995	1.2	3+	ot	f	mt	
Hart	3	2	rb	5	495	2000	1.6	5+	ot	m	mt	LARGE TEETH/HEAD
Hart	4	2	rb	4	476	1120	1.0	4+	ot	f	mt	
Hart	5	2	rb	4	466	1100	1.1	4+	ot	m	mt	HOOK IN LIP
Hart	6	2	rb	3	376	778	1.5	3++	ot	f	im	THICK
Hart	7	2	rb	4	443	1042	1.2	4+	ot	f	mt	
Hart	8	2	rb	4	464	1060	1.1	4+	ot	f	mt	
Hart	9	2	rb	5	565	1800	1.0	5+	ot	f	st	SLENDER/NO EGGS
Hart	10	2	rb	4	445	910	1.0	4+	ot	m	mt	SLENDER
Hart	11	2	rb	3	377	720	1.3	3+	ot	m	mt	
Hart	12	2	rb	4	428	765	1.0	4+	ot	m	mt	SLENDER/LARGE HEAD
Hart	13	2	rb	5	460	1245	1.3	5+	ot	u	u	HEALTHY/NO GONADS
Hart	14	2	rb	3	422	820	1.1	3+	ot	f	mt	
Hart	15	2	rb	3	389	695	1.2	3+	ot	f	im	
Hart	16	2	rb	3	391	840	1.4	3+	ot	f	im	THICK
Hart	17	2	rb	4	454	1166	1.2	4+	ot	m	mt	THICK HEALTHY
Hart	18	1	rb	4	472	1340	1.3	4+	ot	f	m	THICK HEALTHY
Hart	19	1	rb	3	379	760	1.4	3++	ot	f	im	
Hart	20	1	rb	4	460	1105	1.1	4+	ot	f	m	LARGE EGGS
Hart	21	1	rb	4	429	1067	1.4	4++	ot	m	m	LARGE GONADS
Hart	22	1	rb	4	491	1280	1.1	4+	ot	m	m	BRIGHT RED
Hart	23	1	rb	3	331	503	1.4	3+	ot	m	m	THICK
Hart	24	1	rb	3	385	825	1.4	3+	ot	f	mt	THICK
Hart	25	1	rb	3	373	725	1.4	3+	ot	f	im	
Hart	26	1	rb	3	382	725	1.3	3+	ot	f	im	
Hart	27	1	rb	3	355	600	1.3	3++	ot	f	im	