Executive Summary Casey Lake 1999

Casey Lake was initially stocked with rainbow trout in 1993 and was intended to be a special management lake and the focus of a long-term study involving the Fisheries branch of the Ministry of Environment, Lands and Parks and Fraser Lake Elementary-Secondary school. The original management goal for Casey Lake was for a moderate-use rainbow trout fishery regulated with restriction including: single-barbless hooks and a bait ban. The expectation for the lake was to achieve a fishery that provided opportunities for rainbow trout > 40 cm in length. Casey Lake was closed to sport fishing from 1993-1995 to allow for the rainbow trout to reach an adequate size for capture.

The first assessment post-stocking was conducted in 1995. The rainbow trout were growing well as some three-year old fish were > 40 cm in length and were very abundant as shown by the gillnet catch per unit effort (CPUE) of 4.61 fish per net hour. The second assessment conducted in 1999 found that the majority of the gillnet catch was comprised of rainbow trout 25-40 cm with no fish > 40 cm. The decline observed in the size distribution of Casey Lake rainbow trout between the stock assessments conducted in 1995 and 1999 is cause for some concern but is most likely due to the fact that this ws the first stocking event at this location. The lake is currently stocked at a moderate annual rate of 87 fish/hectare. The lake is relatively productive as shown by the measured filterable residue (TDS) value of 100 mg/l. The moderate stocking densities and adequate lake productivity suggest that the lack of fish >40 cm in length is due to increased angler effort.

It is recommended that Casey lake be reassessed in 2006 before any management action is taken as six years have passed since the 1999 assessment; moreover, there were data quality issues associated with the measured weights of rainbow trout in the 1999 assessment. If the size distribution is similar to the results of the 1999 assessment than the stocking density of Casey lake may be increased to allow more fish to escape the fishery or the effort may be reduced through catch restrictions. It is also recommended that an angler-creel/satisfaction survey be completed on Casey Lake to complement the stock assessment data.

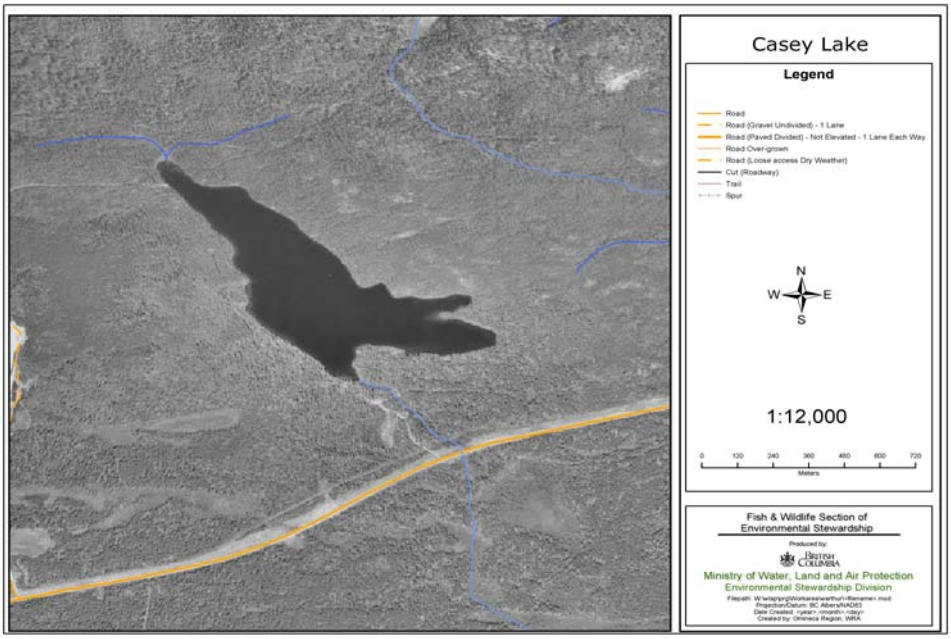


Figure 1. Orthophoto map of Casey Lake.

OMINECA REGION
LAKE STOCK ASSESSMENT REPORT

LAKE NAME: Casey ***BC WBID:*** 0

LAKE LOCATION: *Nearest center:* 15 km west of Fraser lake *Drainage:* FRASER
UTM: 10.365103.5991478

LAKE ATTRIBUTES:

Surface Area:	28.6 Ha	*Elevation:*	930 m
Littoral Area:	25.8 Ha	*T.D.S.:*	100 ppm
Max Depth:	8.1 m	*Mean depth:*	2.7 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, > 40 cm for EB)	☐

MANAGEMENT/SURVEY HISTORY:

Previous gill net assessment(s): no ☐ yes ☒ M. J.. Hunter 1991
Year(s) Surveyed: 1991, 1995, 1998

STOCKING DATA:

Current Stocking Rate	87	Fish/Ha	Annually
Stock Type	**TUNKWA**		
Species	RB mixed		
Previous Stocking Rate	87		

SURVEY METHODS:

Method		Date (yy.mm.dd)	Survey Agency	Crew
Fish	SGN	1999-07-19	CSTC	Gary George & Clayton Charlie
Chem.	DO, pH, Cor	1991-09-20	MOE	Duane Jesson
Physical	bathymetric	1991-09-20	MOE	Duane Jesson
Temp.	profile	1991-09-20	MOE	Duane Jesson

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

SURVEY RESULTS:

Catch

	RB	EB	RSC	LKC	LSU	CSU	NSC	CAS	BT	LT
1999	20	0	167	0	0	0	0	0	0	0
1995	70	0	0	0	0	0	0	0	0	0
1900	0	0	2	0	0	0	0	0	0	0
1900	0	0	0	0	0	0	0	0	0	0

Survey Year	**1999**	**1995**
Effort Hours	16.5	15.2
RB CPUE:	1.21	4.61
EB CPUE:	0.00	0.00
# of Sets:	1	1

Next Assessment 2006

SURVEY CONCLUSIONS:

Objective	Objectives Achieved Yes	No	Reason
1. Family	☐	☐	
2. Average	☑	☐	Most fish sampled were between 30-40cm in length.
3. Above Average	☐	☐	
4. Trophy	☐	☐	

RECOMMENDATIONS:

Assessment: The next assessment is scheduled for 2006 to determine if any management changes are warranted.

Management: The size distribution of rainbow decreased significantly between the 1995 and 1999 assessments with no fish > 40 cm captured in 1999.

Comments: The objective of an average sport-fishery is being met; however, the expectation of rainbow trout > 40 cm is not being realized. Increasing the stocking density may allow more rainbow trout the opportunity to escape the fishery and reach a larger size.

Uncertainties: The amount of angling pressure that Casey Lake receives. The current status of the Casey Lake rainbow trout population is unknown as the last stock assessment was conducted in 1999.
The 1999 rainbow trout weights were suspect as Fulton's condition factor values ranged from 0.4-1. All weights were adjusted to a condition factor of 1 to allow for size class comparisons between 1995 and 1999 for the length weight power relationship. 1999 weights and condition factors were excluded from all other tables and figures.

Recent Brood Request Comments:

2005 Annual. Change stock to BW- RSS are present. Consider reduction in stocking rate for '06 after data review is complete.
2004 Assessed in 99. Fish to 36 cm captured; suggest reassess in 2003.

History of Angling Regulations

Bait-ban, single-barbless hook, and an engine power restriction of 75 Kw (10 hp). Closed to angling between 1993 and 1995.

Reported by: Adrian Clarke
Date: Jun-05

Table 1. Rainbow trout physical attributes for sample years:

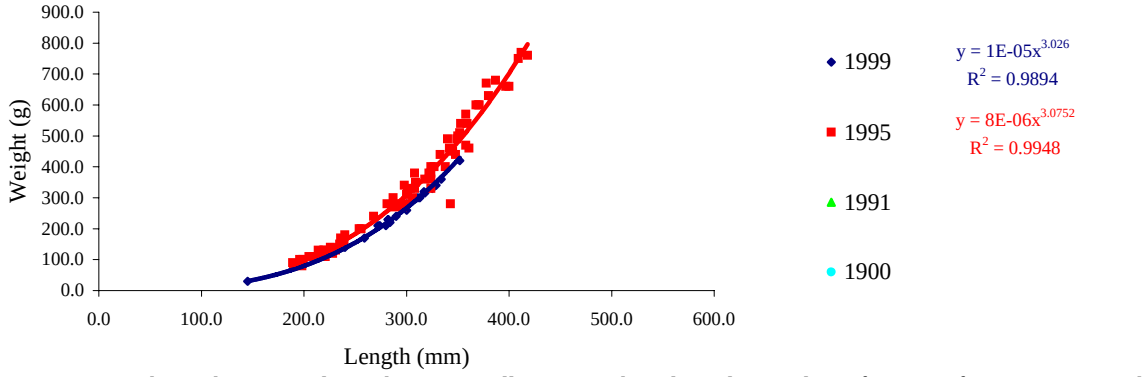
		Length (mm)				Weight (g)				Condition (k)				
Sample Year	Sample Size	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Var
1999	20	290	145	352	43.9									
1995	70	301	189	418	43.9	350	80	770	193.7	1.15	0.69	1.33	0.11	0.01

Table 2. Catch summary for all sample years.

			Length (mm)				Weight (g)				Condition (k)				
Sample Year	Age	Sample Size	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Var
1999	2	1	145												
1995	2	16	334	189	400	50.3	436	90	660	163.9	1.12	0.69	1.33	0.1	0.02
1999	3	11	283	240	329	24.6									
1995	3	12	316	196	412	70.1	412	100	770	229.7	1.17	1.06	1.33	0.1	0.00
1999	4	7	320	300	352	18.7									
1995	4	1	418				760				1.04				

Table 3. Proportion of Catch (by survey year)

Survey Year	1999	1995
Less than 250 mm	10.0 %	28.6 %
Between 250-350 mm	85.0 %	47.1 %
Between 250-400 mm	90.0 %	67.1 %
Greater than 400 mm	0.0 %	5.7 %
Greater than 500 mm	0.0 %	0.0 %



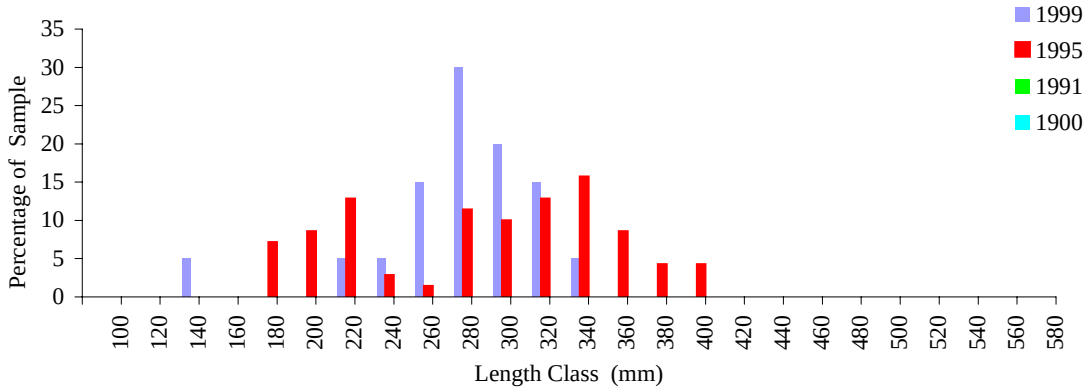


Figure 3. Length frequency distribution.

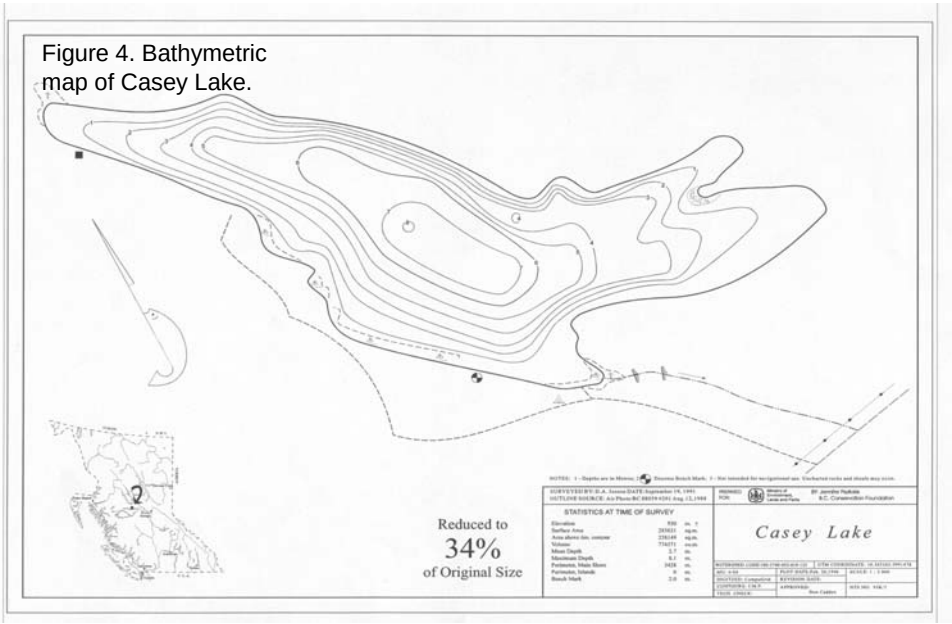


Figure 4. Bathymetric map of Casey Lake.

Table 4. Stocking History for Casey Lake to 2004.

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
1-Jun-04	RB	2500	TUNKWA		9.02	YEARLING
5-Jun-03	RB	2500	BADGER TUNKWA		8.4	YEARLING
19-Jun-02	RB	2500	BADGER TUNKWA		15.87	YEARLING
30-May-01	RB	2500	NRT DRAGON		9.52	YEARLING
31-May-00	RB	2500	NRT PREMIER		9.13	YEARLING
2-Jun-99	RB	2500	PENNASK		6.52	YEARLING
29-May-98	RB	2500	BADGER TUNKWA		7.75	YEARLING
19-Jun-97	RB	5000	BADGER TUNKWA		8.33	YEARLING
31-May-96	RB	2500	BADGER TUNKWA		8.13	YEARLING
12-Jun-95	RB	2500	BLACKWATER GE		11.76	YEARLING
9-Jun-94	RB	5000	TUNKWA		10.41	YEARLING
28-May-93	RB	5000	TUNKWA		2.94	YEARLING

Table 5. Dissolved Oxygen/ Temperature Profile

19-Sep-91 Station UTM **10.365103.5991478**					
Depth (m)	**DO mg/L**	**DO %sat**	**Temp. ^{0}C**	**pH**	**Cond (25^{o}C)**
0	9		13.8	8.1	102
1	8.3		13.8		
2	8.6		13.7		
3	8.6		13.5		
4	8.1		13.4		
5	7.7		13.1		
6	7.6		13		
7	7.1		13	8.0	102
7.5	5.5		12.3		
8	bottom				

Table 6. Stock Assessment Data for1999 (see lake files for additional survey data).

Lake	Sample#	Species Caught	Age	Length (mm)	Weight (grams)	Condition (k)	Scale Age	Structure	Sex	Maturity
Casey	1	rb	3	318.0	316.0	1.0	3+	scale	F	m
Casey	2	rb	3	240.0	110.0	0.8	3+	scale	M	im
Casey	3	rb	4	300.0	175.0	0.6	4+	scale	F	im
Casey	4	rb	4	352.0	326.0	0.7	4+	scale	M	im
Casey	5	rb	3	280.0	100.0	0.5	3+	scale	M	im
Casey	6	rb	3	329.0	292.0	0.8	3+	scale	F	m
Casey	7	rb	3	272.0	100.0	0.5	3+	scale	M	im
Casey	8	rb	4	325.0	310.0	0.9	4+	scale	F	im
Casey	9	rb	3	282.0	100.0	0.4	3+	scale	M	im
Casey	10	rb	4	334.0	316.0	0.8	4+	scale	F	im
Casey	11	rb	MF	311.0	130.0	0.4	MF	scale	F	m
Casey	12	rb	4	313.0	222.0	0.7	4+	scale	M	im
Casey	13	rb	4	300.0	172.0	0.6	4+	scale	F	im
Casey	14	rb	4	317.0	242.0	0.8	4+	scale	F	m
Casey	15	rb	3	290.0	115.0	0.5	3+	scale	F	im
Casey	16	rb	3	274.0	92.0	0.4	3+	scale	M	im
Casey	17	rb	3	282.0	122.0	0.5	3	scale	F	m
Casey	18	rb	3	259.0	86.0	0.5	3+	scale	M	im
Casey	19	rb	3	284.0	93.0	0.4	3+	scale	F	im
Casey	20	rb	2	145.0	29.8	1.0	2+	scale		im