

Executive Summary

Morfee Lake 2006

A stocking assessment was conducted at Morfee Lake on September 28 and 29, 2006. Morfee Lake was last assessed in 1991 by the Peace Williston Fish and Wildlife compensation Program. The management goal for Morfee Lake is to maintain a high-use average quality fishery for rainbow trout. Morfee Lake has been supplemented with hatchery rainbow trout annually since 1976, however, it is unclear how much the stocking program is contributing to the fishery. Morfee Lake is 279 ha and is situated less than 2 km North East of the town of Mackenzie. Morfee Lake also serves as the water supply for Mackenzie and is an important local rainbow trout fishery. Lake trout and three whitefish species are also present.

The objective of the 2006 survey was to assess the status of rainbow trout in Morfee Lake. Six gill nets (RISC standard mesh sizes) were set in Morfee Lake on September 28 and 29, 2006. The total sampling effort was 73.7 hours, resulting in a low gillnet catch per unit effort (CPUE) of 0.49 rainbow trout per net-hour. Based on this assessment, the fishery appears to be providing an average quality angling experience in terms of fish growth, as 38.9% of the fish sampled in the stock assessment were between 300 - 400 mm in length. The mean rainbow trout size in the sub-sampled catch was 222 mm and 258 g. Based on the low gill-net catch rate, it is likely that the fishery is not meeting the objective for a high use fishery for rainbow trout. This assessment was unable to determine the contribution of stocked fish to this fishery, therefore, it is recommended that a follow-up assessment using two marked cohorts of hatchery fish should be conducted to determine the contribution of these fish to the fishery. Depending on the outcome of the next assessment, the stocking rate could be increased to improve catch rates.

The 2006 assessment recorded one new fish species for Morfee Lake. Pygmy whitefish were not previously known to inhabit this system. One voucher specimen, a gravid female in the 120-130 mm, was verified from the 2006 catch and it is likely that a substantial proportion of the "juvenile" whitefish encountered in 2006 survey that were initially identified as either lake whitefish or mountain whitefish were actually adult pygmy whitefish. It is therefore recommended that future net surveys in the lake include one panel with 3/4 inch mesh on the deep end of the nets to increase the likelihood of pygmy whitefish capture and that more time be taken to identify the whitefish species in the catch.



Figure 1. Photo of Morfee Lake with a sample from the gillnet catch (inset).

**OMINECA REGION
LAKE STOCK ASSESSMENT REPORT**

LAKE NAME: Morfee **ALIAS:** **BC WBID:** 00821PARA

LAKE LOCATION: *Nearest center:* < 2km NW of Mackenzie *Drainage:* Peace
UTM: 10.495271.6134371

LAKE ATTRIBUTES: *Surface Area:* 279 Ha *Elevation:* 716 m
Littoral Area: 97.7 Ha *T.D.S.:* 131 ppm
Max Depth: 44 m *Mean depth:* 12.6 m

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

- Objective 1 Family Fishery (High CPUE <30 cm)
- Objective 2 Average Quality (30-40 cm) High Use
- 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 F&W Branch; PFWWCP
 Year(s) Surveyed: 1989 (Creel); 1991

STOCKING DATA:

Current Stocking Rate 36 Fish/Ha Annually
Stock Type BLACKWATER DR
Species RB/LT Mixed
Previous Stocking Rate 36

SURVEY DETAILS:

Date (yy.mm.dd) Survey Agency Crew
 2006-09-28 BCCF Dawn Cowie, Marcel Macullo

Netting Specifications: *Net type:* Standard Experimental *Net length:* 90m (3x30m)
Setting: Sinking and Floating *Panel Mesh:* RISC- Standard Gill Net
Duration: Overnight

CATCH COMPARISON:

Survey Date	28-Sep-06		10-Jun-91		16-Jun-89		-	
	Net Hours							
# of Sets:	73.7		16					
	6		1		Creel			
	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Rainbow	36	0.49	44	2.75	15		0	-
Eastern brook trout	0	-	0	-	0	-	0	-
Kokanee	0	-	0	-	0	-	0	-
Lake Trout	1	0.01	6	0.38	0	-	0	-
Bull Trout	0	-	0	-	0	-	0	-
Burbot	0	-	0	-	0	-	0	-
Red-side Shiner	2	0.03	0	-	0	-	0	-
Lake Chubb	0	-	0	-	0	-	0	-
Peamouth Chubb	69	0.94	0	-	0	-	0	-
Long Nose Sucker	22	0.30	0	-	0	-	0	-
Large Scale Sucker	0	-	0	-	0	-	0	-
Northern Pikeminnow	77	1.04	0	-	0	-	0	-
Mountain Whitefish	53	0.72	0	-	0	-	0	-
Lake Whitefish	90	1.22	0	-	0	-	0	-
Pygmy Whitefish	1	0.01	0	-	0	-	0	-

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SURVEY CONCLUSIONS:

Objective	Objectives Achieved		Reason
	Yes	No	
1. Family	<input type="checkbox"/>	<input type="checkbox"/>	Yes based on growth, but uncertain whether RB are from wild fish or stocking.
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"/>	

Next Assessment : **2011**

NOTES/ RECOMMENDATIONS:

Assessment: Good growth, wide size ranges at age suggest a combination of wild recruitment and stocked fish are contributing to the fishery.

Management: A follow-up assessment is recommended to assess the contribution of the stocked fish to the fishery using clipped fish.

Comments: Low stocking rate for size of lake 33 fish / ha.
Stocked with lake trout in 1978, despite presence of lake trout prior to this time.

Uncertainties: Previous reporting has indicated that there is very little spawning habitat available for rainbow in this system. It is unclear however how much the stocking program contributes to the fishery as there is a large amount of overlap in age classes.

Recent Brood Request Comments:

- 2007 Annual, Assessed 2006. Natural Recruitment Likely, may request marked fish pending outcome of report.
- 2006 No changes. Requires assessment.

History of Angling Regulations

Electric Motors Only (Morfee Lake South)

Reported by: Cory Williamson
Date: Mar-07

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Table 1. Morefee Lake rainbow trout physical attributes for 1989, 1991 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	15	222	189	258	19.9	127	72	200	35.5	1.12	1.04	1.17	0.0
1991	1	13	122	109	139	8.6	19	14.6	28.8	4.2	1.03	0.95	1.14	0.1
2006	2	12	308	226	333	31.5	333	126	430	84.9	1.11	0.98	1.18	0.1
1991	2	16	248	110	294	43.7	180	16.7	270	63.8	1.11	0.94	1.33	0.1
2006	3	7	341	264	409	45.4	444	205	680	158.7	1.08	0.93	1.24	0.1
1991	3	14	278	248	316	21.4	239	170	345	52.0	1.11	0.96	1.28	0.1
1991	4	1	332				420				1.15			

* 1989 fish not sampled for age.

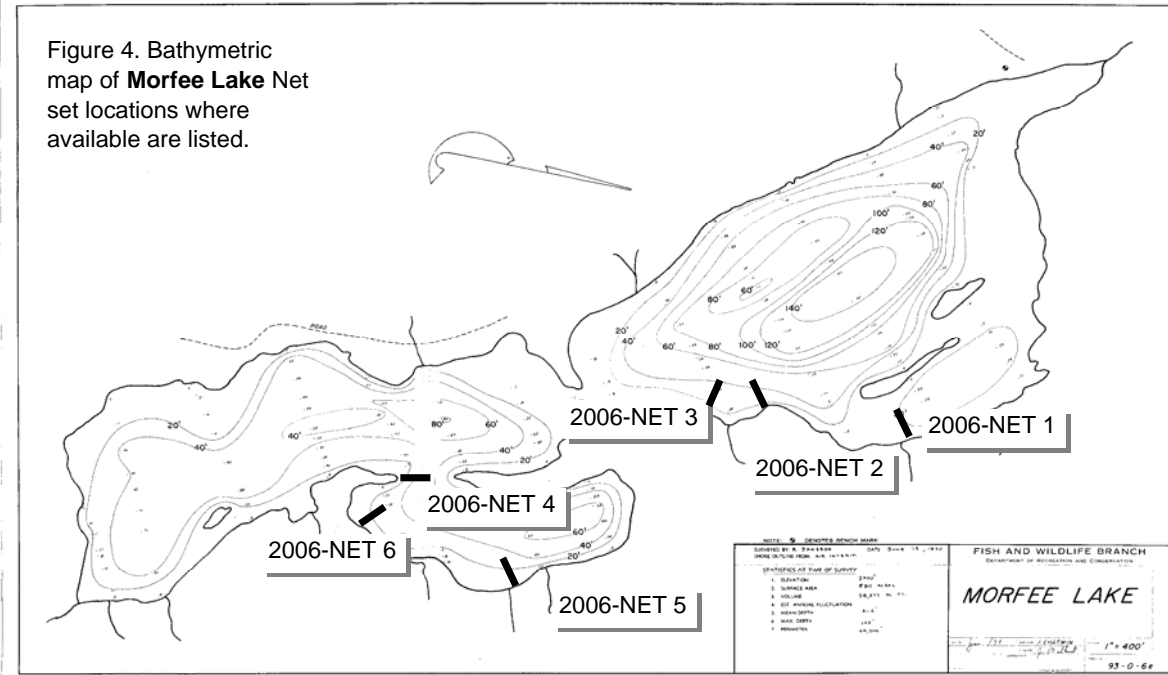
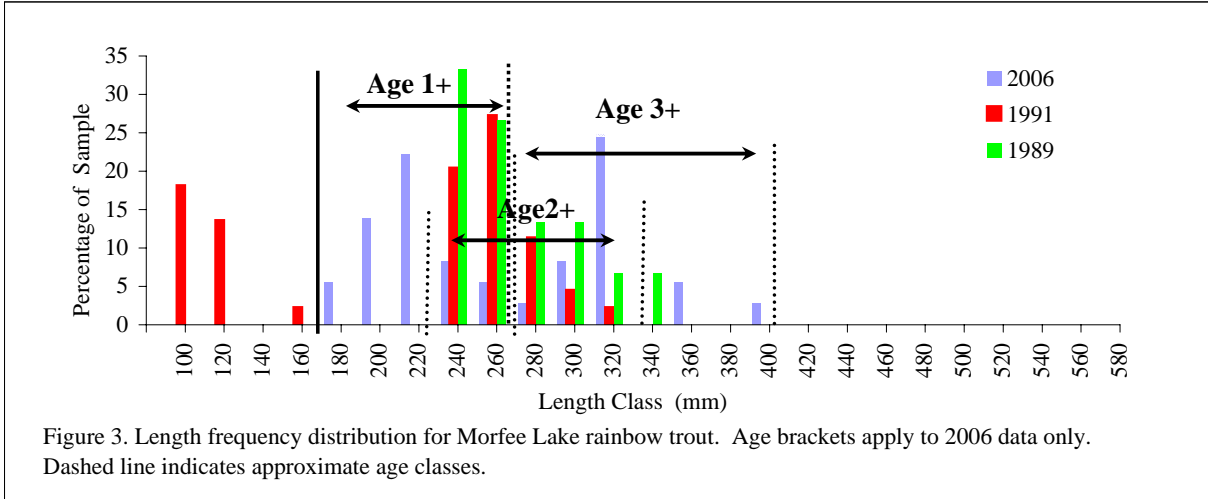
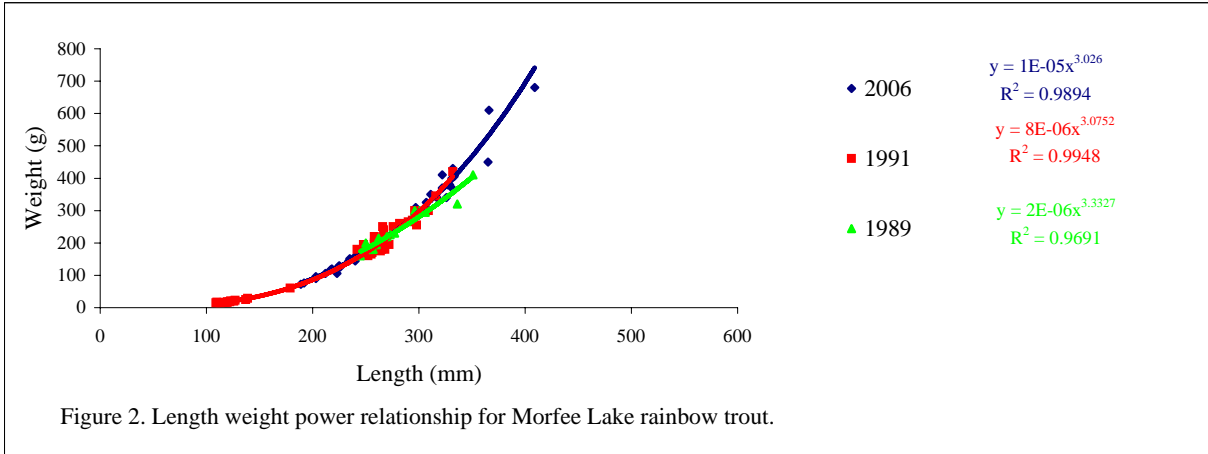
Table 2. Fish summary for all sample years.

Sample Year	Sample Size	Length (mm)				Weight (g)				Condition (k)			
		Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev
2006	36	275	189	409	57.9	258	72	680	155.3	1.11	0.93	1.24	0.07
1991	44	222	109	332	73.3	157	15	420	109.4	1.08	0.94	1.33	0.10
1989	15	282	245	351	31.5	247	160	410	68.1	1.09	0.84	1.28	0.10

Table 3. Proportion of Catch (by survey year)

Survey Year	2006	1991	1989
Less than 250 mm	44.4 %	38.6 %	13.3 %
Between 250-300 mm	13.9 %	54.5 %	60.0 %
Between 300-400 mm	38.9 %	6.8 %	26.7 %
Greater than 400 mm	2.8 %	0.0 %	0.0 %
Greater than 500 mm	0.0 %	0.0 %	0.0 %

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Table 4. Complete stocking History for Morfee Lake (1976 - 2006).

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
08/06/2006	RB	10000	BLACKWATER DR		19.8	YE
06/06/2005	RB	10000	BLACKWATER DR		22.1	YE
14/06/2004	RB	10000	BLACKWATER DR		22.9	YE
09/06/2003	RB	10000	BLACKWATER DR		22.5	YE
10/06/2002	RB	10000	BLACKWATER DR		21.5	YE
31/05/2001	RB	10000	BLACKWATER DR		19.7	YE
19/06/2000	RB	10000	BLACKWATER DR		25.6	YE
22/06/1999	RB	10000	BLACKWATER DR		28.9	YE
02/06/1998	RB	10000	BLACKWATER DR		23.7	YE
13/06/1997	RB	10000	BLACKWATER		10.4	YE
04/06/1996	RB	10000	BADGER TUNKWA		6	YE
31/05/1995	RB	10000	BLACKWATER GE		12.9	YE
01/06/1994	RB	10000	TUNKWA		10.4	YE
29/05/1993	RB	10000	TUNKWA		2.9	YE
29/05/1992	RB	10592	TUNKWA		13.6	YE
26/05/1991	RB	10000	BADGER		9.6	YE
09/06/1990	RB	15000	BADGER		16.6	YE
01/06/1989	RB	15000	TUNKWA		10.6	YE
01/05/1988	RB	6222	TUNKWA		9.9	UN
01/05/1988	RB	8778	TUNKWA		11	UN
01/05/1987	RB	15000	TUNKWA		12.8	UN
01/06/1986	RB	13800	DRAGON		31.9	UN
01/06/1985	RB	10000	BEAVER		18.2	UN
01/06/1984	RB	15000	NRT PREMIER		11.6	UN
01/05/1983	RB	20000	NRT PREMIER		4	UN
01/06/1982	RB	10000	NRT PREMIER		4	UN
01/06/1981	RB	10000	NRT PREMIER		5.7	UN
01/06/1980	RB	10000	BADGER		6.3	UN
01/01/1979	RB	15000	SPAHOMIN		27.8	UN
01/01/1978	LT	271	MOAT	LV	220	UN
01/01/1978	LT	30000	MOAT		8.4	UN
01/01/1978	LT	154	MOAT	RV	714	UN
01/01/1978	RB	30000	SPAHOMIN		20	UN
01/01/1976	RB	15000	PENNASK		13.7	UN

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Table 5. Dissolved Oxygen/ Temperature Profile

16-Jun-70			28-Sep-06 Station UTM N/A					
Depth (m)	DO	Temp. °C	Depth (m)	DO mg/L	DO %sat	Temp. °C	pH	Cond (25°C)
0.0		16.1	0	7.9	0.8	12.62	9.4	131
1.8		15.6	1	7.2	0.8	12.62		131
2.4		15.0	2	7.2	0.8	12.59		131
3.0		14.4	3	7.3	0.8	12.48		131
4.0		11.7	4	7.5	0.8	12.39		131
5.5		11.1	5	7.6	0.8	12.33		131
5.8		10.6	6	7.8	0.8	12.22		131
6.1		10.0	7	8.1	0.9	12.17		132
6.4		8.9	8	8.3	0.9	12.08		132
7.6		7.2	9	8.5	0.9	12.08		132
9.1		6.7	10	9.4	1.1	10.09		134
11.6		6.1	11	10.4	1.2	7.89		136
12.5		5.6	12	11.1	1.33	7.37		137
18.6		5.0	13	11.2	1.37	6.68		137
30.5		4.4	14	11.3	1.41	6.01		138
			15	11	1.38	5.81		138
			16	10.9	1.37	5.34		139
			17	10.7	1.37	4.94		140
			18	10.4	1.34	4.79		140

Table 6. Stock Assessment Data for 2006 (see lake files for additional survey data).

Lake	Sample#	Site	Number	Species Caught	Age	Length (mm)	Weight (grams)	Condition (k)	Calendar Age	Age Structure	Ageing Confidence		Sex	Maturity
											(0-9)	Clip		
Morfee	mor1	1	1	rb	3+	366	610	1.2	3	ot	8		m	maturing
Morfee	mor2	1	1	rb	2++	307	325	1.1	2	ot	7		f	maturing
Morfee	mor3	1	1	rb	3++	322	410	1.2	3	ot	7		f	maturing
Morfee	mor4	1	1	rb	2++	322	370	1.1	2	ot	7		m	maturing
Morfee	mor5	1	1	rb	2++	311	350	1.2	2	ot	6		f	maturing
Morfee	mor6	1	1	rb	1++	258	200	1.2	1	ot	8		f	maturing
Morfee	mor7	1	1	rb	1++	235	151	1.2	1	ot	7		m	maturing
Morfee	mor8	1	1	rb	1++	217	117	1.1	1	ot	7		m	immature
Morfee	mor9	2	1	rb	3++	409	680	1.0	3	ot	7		f	maturing
Morfee	mor10	2	1	rb	2++	332	430	1.2	2	ot	8		f	maturing
Morfee	mor11	2	1	rb	2+	333	405	1.1	2	ot	7		m	maturing
Morfee	mor12	2	1	rb	3+	329	380	1.1	3	ot	7		m	maturing
Morfee	mor13	2	1	rb	3++	264	205	1.1	3	ot	8		f	maturing
Morfee	mor14	3	1	rb	1++	225	130	1.1	1	ot	9		m	maturing
Morfee	mor15	3	1	rb	n/a	223	106	1.0		ot	-		m	maturing
Morfee	mor16	3	1	rb	1++	192	76	1.1	1	ot	8		f	maturing
Morfee	mor17	4	1	rb	2++	331	400	1.1	2	ot	7		f	maturing
Morfee	mor19	4	1	rb	1++	203	96	1.1	1	ot	9		m	maturing
Morfee	mor20	4	1	rb	2++	317	340	1.1	2	ot	7		m	maturing
Morfee	mor21	4	1	rb	1++	240	144	1.0	1	ot	8		m	maturing
Morfee	mor22	4	1	rb	2+	326	340	1.0	2	ot	7		m	maturing
Morfee	mor23	6	1	rb	3++	331	370	1.0	3	ot	8		m	maturing
Morfee	mor24	6	1	rb	1++	234	144	1.1	1	ot	8		f	maturing
Morfee	mor25	6	1	rb	1++	189	72	1.1	1	ot	8		f	maturing
Morfee	mor26	6	1	rb	1++	243	168	1.2	1	ot	8		m	maturing
Morfee	mor27	6	1	rb	2++	297	310	1.2	2	ot	8		f	maturing
Morfee	mor28	6	1	rb	1++	218	120	1.2	1	ot	8		f	maturing
Morfee	mor29	6	1	rb	2++	271	220	1.1	2	ot	8		m	maturing
Morfee	mor30	6	1	rb	3++	365	450	0.9	3	ot	7		f	maturing
Morfee	mor31	6	1	rb		257	190	1.1		ot			f	maturing
Morfee	mor32	5	1	rb	2++	327	380	1.1	2	ot	6		f	maturing
Morfee	mor34	5	1	rb	2++	226	126	1.1	2	ot	8		m	maturing
Morfee	mor35	5	1	rb	1++	224	126	1.1	1	ot	8		f	maturing
Morfee	mor36	5	1	rb	1++	203	90	1.1	1	ot	9		f	maturing
Morfee	mor37	5	1	rb	1++	240	158	1.1	1	ot	9		f	maturing
Morfee	mor38	5	1	rb	1++	212	106	1.1	1	ot	8		f	maturing