

Executive Summary

Gantahaz Lake 2006

A stocking assessment was conducted at Gantahaz Lake on September 29, 2006. This was the third assessment completed since the inception of stocking in 1976. The management goal for Gantahaz Lake is to maintain a high-yield fishery for eastern brook trout. Gantahaz Lake is an 40.1 ha lake and is situated 10.5 km north-west of Mackenzie. Two multi-mesh floating (RISC standard mesh sizes) gillnets (one floating and one sinking) were set at Gantahaz Lake in 2006. The total sampling effort was 40 hours, resulting in a low gillnet catch per unit effort (CPUE) of 0.98 fish per net-hour. The objectives of this assessment were to: 1) document the status of the fishery 2) document the presence (if any) of fertile eastern brook trout that may have residualized following stocking prior to 1997.

Based on the average fish size in this assessment, Gantahaz Lake is providing an average to slightly above average angling experience, as 81.6% of the fish sampled were between 300 - 400 mm length. The mean fish size was 331 mm and 475 g. Three of six age classes were missing from the catch, however, indicating potential year class failures for fish stocked in 2003, 2004 and 2006. Lack of fish in other year classes is a likely compromise of fishery quality in term of catch rates. Further assessment will be required to determine what happened to these missing fish.

Gantahaz Lake was also evaluated as part of ongoing assessments across the region that are evaluating the presence and relative population sizes of fertile diploid eastern brook trout that have residualized in some Omineca Lakes. Brook trout that were potentially fertile were found during this assessment, however, it is unclear at what level fertile brook trout are contributing to the fishery. Due to the lack of tributary streams in Gantahaz Lake, it is unlikely that diploid eastern brook trout in this lake represent a significant risk to native char populations within the Williston Watershed. Further assessment will, however, be required to establish the relative level of natural recruitment in this lake. Fifty-one percent of the catch (predominately age-2) were maturing males. It is unclear whether these fish are wild recruits or stocked hatchery fish. The next scheduled stocking is for spring 2007, therefore it is recommended that two cohorts of adipose fin marked, AF3N EB should be stocked and that the lake re-assessed in fall 2008 to better understand the relative contribution of the hatchery program versus wild recruits to this fishery.



Figure 1. Representative catch of eastern brook trout from Gantahaz Lake showing a 45 cm measuring board for scale.

Omineca Region Stocked Lake Assessment Report

**OMINECA REGION
LAKE STOCK ASSESSMENT REPORT**

LAKE NAME: Gantahaz **ALIAS:** Leech lake **BC WBID:** 00762PARA

LAKE LOCATION: *Nearest center:* 10.5 km WNW Mackenzie *Drainage:* Peace

UTM: 10.490386.6137173

LAKE ATTRIBUTES: *Surface Area:* 40.1 Ha *Elevation:* 722 m
Littoral Area: 37.4 Ha *T.D.S.:* 81 ppm
Max Depth: 11.6 m *Mean depth:* 3.2 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, 20% > 40 cm for EB)

MANAGEMENT/SURVEY HISTORY :

Previous gill net assessment(s): no yes PFWFPC; Lakes Files
 Year(s) Surveyed: 1982; 1991

STOCKING DATA:

Current Stocking Rate 374 Fish/Ha Annually
Stock Type **AYLMER AF3N**
Species EB mixed
Previous Stocking Rate 200

SURVEY METHODS:

Method	Date (yy.mm.dd)	Survey Agency	Crew
Fish	SGN 2006-09-29	BCCF	Marcel Macullo, Dawn Cowie
Chem.	TDS; Profile 1970	Fish & Wildlife Branch	
Physical	Bathymetric 1970	Fish & Wildlife Branch	
Temp.	Profile 1970	Fish & Wildlife Branch	

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

SURVEY RESULTS:

Catch

	RB	EB	MW	LKC	LSU	PCC	NSC	CAS	BT	LT
2006	0	39	241	7	18	4	0	0	0	0
1991	0	30	0	0	0	0	0	0	0	0
1982	0	15	0	0	0	0	0	0	0	0
1993	0	23	0	0	0	0	0	0	0	0

Note: 1982 and 1993 data are from creel surveys.

Survey Year	2006	1991	1982	1993
Effort Hours	40	4	n/a	n/a
RB CPUE:	0.00	0.00		RB/Net Hour
EB CPUE:	0.98	7.50		EB/Net Hour
# 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 type="checkbox"/>	<input checked="" type="checkbox"/>	Several missing year-classes and low net catch (CPUE)
3. Above Average	<input type="checkbox"/>	<input type="checkbox"/>	
4. Trophy	<input type="checkbox"/>	<input type="checkbox"/>	

RECOMMENDATIONS:

Assessment: Age 1, 3 and 4 year classes are missing. Net CPUE is low in consideration of stocking rate. Mark two years and reassess.

Management: Recommend follow up assessment in 2009 with marked fish to assess survival of AF3N and to determine the level of natural recruitment.

Comments: Missing year classes and high abundance of mountain whitefish.

Uncertainties: Three missing year classes. Difficult to assess growth with only one age class. Maturity assessments inconclusive due to poor recording by contractors (i.e. few comments recorded). There is a possibility of 2N recruitment, considering the high incidence of maturing males in the catch.

Recent Brood Request Comments:

Annual 15000; High priority for assessment.

History of Angling Regulations

Electric motors only.

Reported by: Cory Williamson

Date: Mar-05

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Table 1. Eastern brook trout physical attributes for Casey Lake in 2006, 1991,1982 and 1993 creel survey.

Sample Year	Age	Sample Size	Length (mm)				Weight (g)				Condition (k)						
			Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev			
2006	1	1	167.0				49							1.05			
2006	2	36	331.1	275	385	28.1	451	205	690	117.2	1.22	0.83	1.48	0.1			
1991	2	10	253.0	221	305	22.9	257	145	475	95.6	1.52	1.25	1.87	0.2			
1991	3	11	312.5	263	357	25.2	569	315	880	173.4	1.81	1.56	2.21	0.2			
1982	3	6	353.7	343	362	8.7	640	480	800	101.6	1.44	1.19	1.69	0.2			
1993	3	5	331.0	290	360	27.0	425	312	539	89.7	1.16	1.03	1.28	0.1			
1991	4	4	407.3	379	441	27.2	1125	950	1440	216.7	1.66	1.43	1.98	0.2			
1982	4	2	393.5	387	400	9.2	1100	1000	1200	141.4	1.80	1.73	1.88	0.1			
1993	4	5	369.0	365	370	2.2	578	482	652	73.8	1.15	0.95	1.29	0.1			
2006	5	1	490.0				1770				1.50						
1991	5	5	424.2	396	452	20.1	1269	1175	1435	120.7	1.67	1.55	1.93	0.2			
1982	5	1	425.0				1000				1.30						
1993	5	10	390.5	370	435	20.2	712	596	1134	157.7	1.19	0.97	1.40	0.1			
1993	6	3	411.7	390	425	18.9	832	709	909	107.9	1.19	1.15	1.23	0.0			

Table 2. Catch summary for 2006, 1991, 1992 and 1993.

Sample Year	Sample Size	Length (mm)				Weight (g)				Condition (k)			
		Mean	Min	Max	StdDev	Mean	Min	Max	StdDev	Mean	Min	Max	StdDev
2006	38	331	167	490	46.5	475	49	1770	252.6	1.22	0.83	1.50	0.13
1991	30	324	221	452	70.6	656	145	1440	416.1	1.67	1.25	2.21	0.22
1982	15	392	343	476	42.8	987	480	1850	406.7	1.55	1.19	1.88	0.19
1993	23	376	290	435	32.8	636	312	1134	180.0	1.17	0.95	1.40	0.12

Table 3. Proportion of catch in each management category listed by survey year.

Survey Year	2006	1991	1982	1993
Less than 250 mm	2.6 %	13.3 %	0.0 %	0.0 %
Between 250-300 mm	13.2 %	26.7 %	0.0 %	4.3 %
Between 300-400 mm	81.6 %	40.0 %	66.7 %	78.3 %
Greater than 400 mm	2.6 %	20.0 %	33.3 %	17.4 %
Greater than 500 mm	0.0 %	0.0 %	0.0 %	0.0 %

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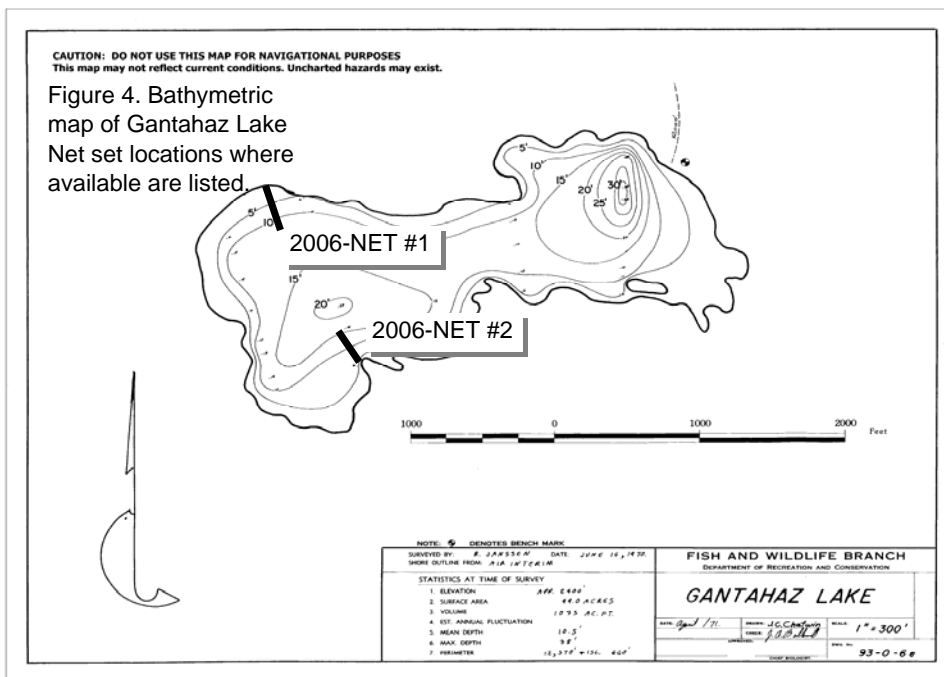
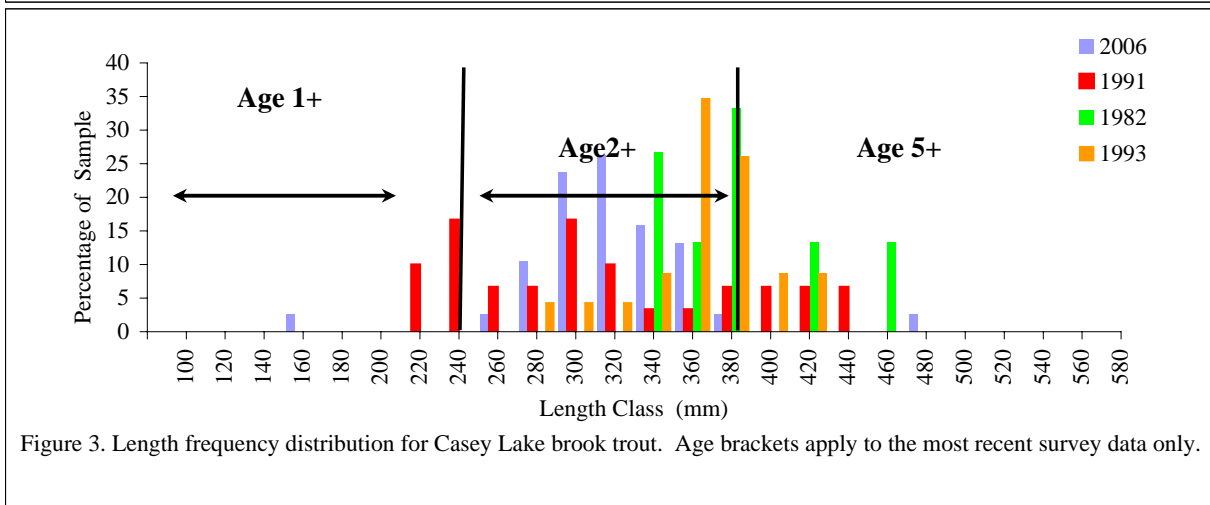
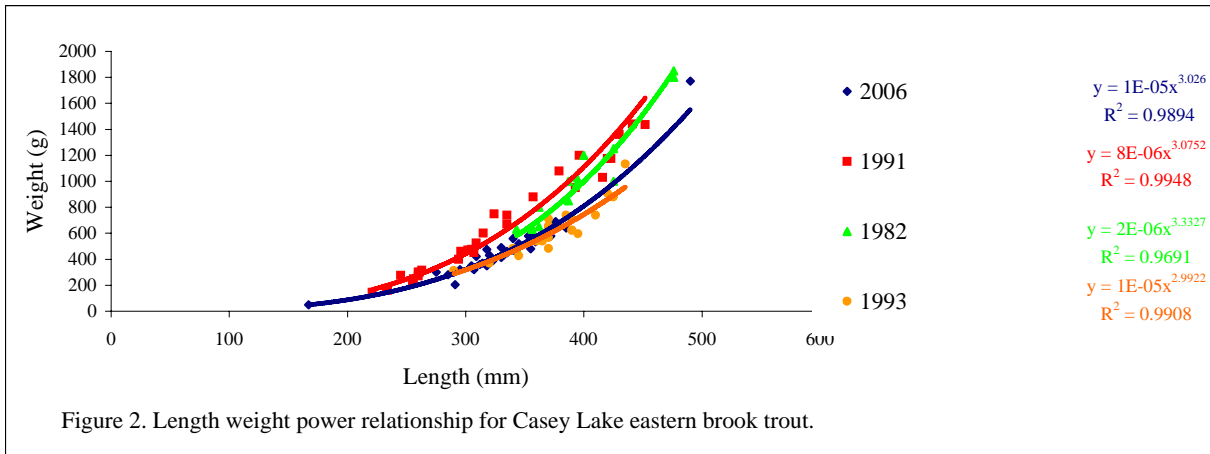


Table 4. Complete stocking History for Gantahaz Lake to 1976 to 2006.

Release Date	Species Name	Fish Count	Stock	Mark	Average Size (gm)	Life Cycle Stage
8-Jun-06	Brook Trout	15000	AYLMER AF3N		6	FINGERLING
6-Jun-05	Brook Trout	15000	AYLMER AF3N		5.7	FINGERLING
2-Jun-04	Brook Trout	15000	AYLMER AF3N		7	FINGERLING
11-Jun-03	Brook Trout	15000	AYLMER AF3N		6.59	FINGERLING
21-Jun-02	Brook Trout	15000	AYLMER AF3N		11.04	FINGERLING
31-May-01	Brook Trout	15000	AYLMER AF3N		6.6	FINGERLING
3-Jun-00	Brook Trout	15000	AYLMER AF3N		4.78	FINGERLING
6-Jun-99	Brook Trout	15000	AYLMER AF3N		5.9	FINGERLING
3-Jun-98	Brook Trout	15000	AYLMER 3N		4.73	FINGERLING
13-Jun-97	Brook Trout	8000	AYLMER		3.33	FINGERLING
7-Jun-96	Brook Trout	15000	AYLMER		3.85	FINGERLING
27-May-95	Brook Trout	15000	AYLMER		3.79	FINGERLING
1-Jun-94	Brook Trout	15000	AYLMER		3.91	FINGERLING
29-May-93	Brook Trout	15000	AYLMER		3.42	FINGERLING
29-May-92	Brook Trout	15000	AYLMER		2.38	FINGERLING
5-Jun-91	Brook Trout	15000	AYLMER		3.12	FINGERLING
9-Jun-90	Brook Trout	15000	AYLMER		4.2	FINGERLING
2-Jun-89	Brook Trout	15000	AYLMER		2.5	FRY
1-Jun-88	Brook Trout	15000	AYLMER		2.7	UNKNOWN
1-Jun-87	Brook Trout	15000	AYLMER		1.9	UNKNOWN
1-May-86	Brook Trout	15000	AYLMER		1.4	UNKNOWN
1-May-85	Brook Trout	15000	AYLMER		2.4	UNKNOWN
1-Jun-84	Brook Trout	15000	AYLMER		3.9	UNKNOWN
1-May-83	Brook Trout	15000	AYLMER		2.4	UNKNOWN
1-Jun-82	Brook Trout	10000	AYLMER		3.5	UNKNOWN
1-May-81	Brook Trout	15000	AYLMER		2.6	UNKNOWN
1-Jun-80	Brook Trout	20000	AYLMER		3.4	UNKNOWN
1-Jan-79	Brook Trout	20000	AYLMER		3.2	UNKNOWN
1-Jan-78	Brook Trout	20000	AYLMER		3	UNKNOWN
1-Jan-76	Brook Trout	15000	KTH		1.6	UNKNOWN

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Table 5. Dissolved oxygen, temperature and chemistry profiles.

16-Jun-70			29-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		17.8	0	7.3	0.8	12.44		
3.4		16.7	1	7.1	0.8	12.43		
4.0		16.1	2	6.8	0.7	12.43		
4.6		15.0	3	6.8	0.7	12.43		
5.2		14.4	4	6.8	0.7	12.43		
5.5		13.9	5	7	0.8	12.45		
5.8		12.8	6	7.1	0.8	12.44		
6.1		12.2	7	7.2	0.8	12.34		
6.7		11.7	8	7.4	0.8	12.26		
7.3		11.1	9	7.2	0.8	12.27		89.0
7.9		8.9	10	6.9	0.7	12.28		90.0
8.2		8.3	11	6.7	0.7	12.29		94.0
8.8		7.8	12					
10.1		7.8	13					
			14					

Table 6. Stock Assessment Data for 2004 (see lake files for additional survey data).

Lake	Sample#	Site	Number	Species		Length (mm)	Weight (grams)	Condition (k)	Calendar Age	Age Structure	Ageing Confidence		Sex	Maturity
				Caught	Age						(0-9)	Clip		
Gantahaz	g11	1	1	eb	2++	318	475	1.5	2	ot	9		m	maturing
Gantahaz	g12	1	1	eb	2++	376	690	1.3	2	ot	9		f	maturing
Gantahaz	g13	1	1	eb	2++	372	580	1.1	2	ot	9		u	immature
Gantahaz	g14	1	1	eb	2++	385	640	1.1	2	ot	7		f	maturing
Gantahaz	g15	1	1	eb	2++	353	580	1.3	2	ot	8		m	immature
Gantahaz	g16	1	1	eb	2++	330	415	1.2	2	ot	8		m	immature
Gantahaz	g17	1	1	eb	2++	314	370	1.2	2	ot	9		f	immature
Gantahaz	g18	1	1	eb	2++	358	580	1.3	2	ot	9		m	maturing
Gantahaz	g19	1	1	eb	2++	340	560	1.4	2	ot	9		f	immature
Gantahaz	g20	1	1	eb	2++	340	470	1.2	2	ot	9		u	immature
Gantahaz	g21	1	1	eb	2++	335	460	1.2	2	ot	8		f	immature
Gantahaz	g22	1	1	eb	2++	320	430	1.3	2	ot	9		m	immature
Gantahaz	g23	1	1	eb	2++	365	570	1.2	2	ot	9		m	maturing
Gantahaz	g24	1	1	eb	2++	366	590	1.2	2	ot	9		m	immature
Gantahaz	g25	1	1	eb	2++	290	300	1.2	2	ot	9		f	immature
Gantahaz	g34	1	1	eb	2++	335	450	1.2	2	ot	9		f	immature
Gantahaz	g35	1	1	eb	2++	321	400	1.2	2	ot	9		m	immature
Gantahaz	g36	1	1	eb	2++	306	330	1.2	2	ot	9		u	immature
Gantahaz	g37	1	1	eb	2++	291	205	0.8	2	ot	9		f	immature
Gantahaz	g38	1	1	eb	2++	307	320	1.1	2	ot	9		m	immature
Gantahaz		1	1	eb									ns	not sampled
Gantahaz	g26	2	1	eb	5+	490	1770	1.5	5	ot	8		m	maturing
Gantahaz	g27	2	1	eb	2++	359	535	1.2	2	ot	9		m	maturing
Gantahaz	g28	2	1	eb	2++	275	300	1.4	2	ot	9		m	maturing
Gantahaz	g29	2	1	eb	2++	323	390	1.2	2	ot	9		m	maturing
Gantahaz	g30	2	1	eb	2++	309	420	1.4	2	ot	9		m	maturing
Gantahaz	g31	2	1	eb	2++	345	520	1.3	2	ot	9		m	maturing
Gantahaz	g32	2	1	eb	2++	355	480	1.1	2	ot	9		f	maturing
Gantahaz	g33	2	1	eb	2++	318	350	1.1	2	ot	9		u	immature
Gantahaz	g1	2	1	eb	2++	295	320	1.2	2	ot	9		m	maturing
Gantahaz	g2	2	1	eb	2++	377	670	1.3	2	ot	9		m	maturing
Gantahaz	g3	2	1	eb	2++	341	470	1.2	2	ot	9		f	maturing
Gantahaz	g4	2	1	eb	2++	332	430	1.2	2	ot	9		f	maturing
Gantahaz	g5	2	1	eb	2++	312	360	1.2	2	ot	9		u	immature
Gantahaz	g6	2	1	eb	2++	335	450	1.2	2	ot	8		m	maturing
Gantahaz	g7	2	1	eb	2++	330	490	1.4	2	ot	9		m	maturing
Gantahaz	g8	2	1	eb	2++	305	350	1.2	2	ot	9		m	maturing
Gantahaz	g9	2	1	eb	2++	285	280	1.2	2	ot	8		u	immature
Gantahaz	g10	2	1	eb	1++	167	49	1.1	1	ot	9		f	immature

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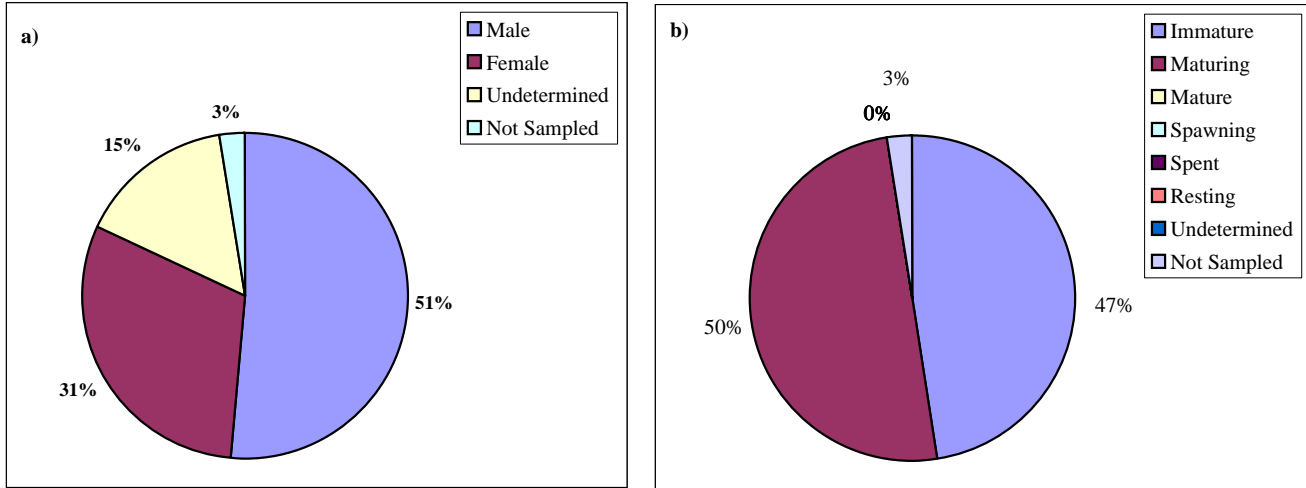


Figure 4. Sex ratios (a) and maturity (b) of eastern brook trout captured in the 2006 Gantahaz Lake assessment.



Figure 5. Gonads of a maturing-male eastern brook trout from Gantahaz Lake in 2006.