

1. LAKE ROTOITI TROUT FISHERY SURVEY DATA

Trout Season Opening Day Survey data.

- Angler and fish data is collected on October 1 each season.
- Opening Day 2010. Data from Lake Rotoiti trout, approximately 29 months after diversion wall was completed.

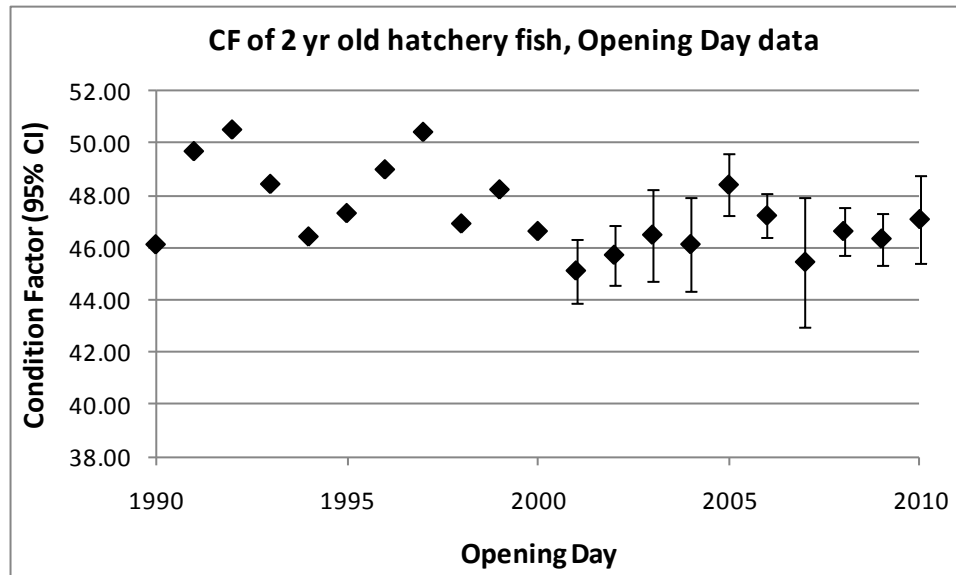
Summer Survey Data

- Continuous summer survey from November to April each year
- Trout characteristics collected from all fish measured – 30 to 35 months post wall completion

Possible wall Impacts?

A) It might be expected that effects to the trout fishery may be seen through affecting the smelt food supply in Lake Rotoiti – Changes may subsequently be seen in trout growth? Declining condition factor (weight loss) may precede a drop in trout length.

- Data from the 2010 Opening Day (Table 2 and figure below) showed that trout condition from the hatchery 2-year-old group was close to the long term average.
- An increase in condition factor was noted from Lake Rotoiti Opening Day data (2-yr-old fish)



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- The summer survey data for Lake Rotoiti (Table 1) shows that average trout condition over the 2010-11 summer was poorer than it was from the fish surveyed from the previous summer and below the last eleven-year average.

Table 1. Summer Survey Comparison of overall average fish lengths and weights. Significant differences between years are shown in bold. (P<0.05)

Lake	Feature	AVG	10-11	09-10	08-09	07-08	06-07	05-06	04-05	03-04	02-03	01-02	00-01
Rotoiti	Length (mm)	504	524	501	512	520	518	527	517	491	467	472	496
	Weight (kg)	1.73	1.83	1.68	1.83	1.75	1.71	1.98	2.12	1.74	1.43	1.3	1.68
	Cond' Factor	45.38	43.47	44.51	46.32	42.00	42.14	45.76	46.96	50.80	48.13	42.70	46.38
Rotoiti	Wild L	481	491	478	476	500	513	492	466	448	456	476	496
	% WILD	50%	45%	37%	30%	44%	62%	57%	54%	50%	76%	41%	58%
	Hatch L	517	552	515	526	536	520	539	516	476	496	510	503
	N (all fish)	115	128	159	161	86	89	90	218	60	78	113	80
Tarawera	Length (mm)	524	516	536	529	532	516	510	498	518	540	537	532
	Weight (kg)	1.68	1.49	1.71	1.70	1.63	1.57	1.54	1.49	1.72	1.94	1.84	1.83
Rotorua	Length (mm)	462	436	456	460	485	465	466	472	480	455	455	447
	Weight (kg)	1.22	0.80	1.10	1.10	1.36	1.21	1.2	1.49	1.54	1.24	1.21	1.21
Okataina	Length (mm)	550	553	552	545	534	522	533	571	593	589	504	
	Weight (kg)	1.93	2.00	2.05	1.98	1.70	1.56	1.54	2.16	2.55	2.23	1.56	
Rrua FF L		486	428	500	460	500	495	500	502	499	497	499	467
Rrua FF Wt		1.45	0.80	1.59	1.29	1.59	1.46	1.59	1.73	1.5	1.61	1.53	1.31
Rrua Tr L		463	445	477	455	477	456	477	464	460	467	453	458
Rrua Tr Wt		1.21	0.81	1.23	1.15	1.23	1.07	1.23	1.20	1.47	1.48	1.21	1.24

Possible wall Impacts?

B) Affect on trout migration/impact on wild fishery – Change in % wild fish in catch?

- Opening Day data from 2010 Opening (1st October 2010) showed 30.9% of the opening day catch (excluding fly fishing) was made up of wild trout (Table 2). This is a historically low percentage (for the third year running), but has been recorded at this level previously after the large increase in liberations from the 2001 trout releases.
- The Summer creel survey data (Table 1) shows that the percentage of wild trout in the catch measured during the 2010-11 summer creel survey was 50%. This was up from the 37% recorded over the 2009-10 summer and the 30% wild during the 2008-09 summer.
- Liberations of hatchery trout into Lake Rotoiti have increased slightly over the last two years and we would expect this to have a slight effect of decreasing the wild percentage in the catch (assuming wild recruitment was consistent)

It is possible that a low percentage of wild trout recorded may be an affect of the diversion wall, or may have been affected by an increase in hatchery liberations since 2009 to meet angling pressure.

We know that there is passage of adult trout between the lakes from the acoustic tagging done to monitor trout moving into cold water flows. Of the 30 adult trout tagged in Lake Rotorua at least three (?) were recorded as having moved into or through the Ohau Channel at some stage during the study.

Mature adult trout are known to migrate into the channel in autumn and early winter and pass through the channel to spawn in the channel or further afield in Lake Rotorua tributaries. After spawning these fish will return to the lake (October-December?) to recover.

At some time juvenile trout will emigrate downstream out of the Lake Rotorua tributaries and Lake Rotorua and travel back into Lake Rotoiti. We know from trout otolith micro-chemistry that juvenile trout from Lake Rotorua tributaries contribute to the wild Rotoiti fisheries.

If downstream migrating wild trout were diverted by the wall and travelled down the Kaituna River - as immature sub-adults or post spawned recovering mature adults – this would reduce the percentage of wild fish seen in the lake Rotoiti catch in years after the diversion.

The percentage of wild fish was very slightly elevated on opening day 2010 (30% wild). This total is similar to the 2008, 2009 openings and was similar to the 2001 Opening Day percentage.

We might also expect a decline in the ratio of younger wild fish to older wild fish if the returning immature fish have been differentially affected. This data from previous Opening Days has been compiled in Table 3 and shows that the percentage of younger trout in the wild catch has in past years been as low as 24%, and averages around 40%.

Table 2. Opening Day Data. Lake Rotoiti

Open day	Total lib	Spring lib	Aut lib	% Wild	2yr length	2yr weight	2yr CF	cpue	% Wild exFF	2yr (n)
1992	12500	6500	6000	53	540	2.20	50.53	0.15	53.0	
1993	12500	7000	5500	80	546	2.21	48.44	0.20	78.0	
1994	12000	6500	6100	60	534	1.96	46.42	0.38	60.0	
1995	12500	6500	6000	69	518	1.80	47.32	0.35	69.0	16
1996	13000	6500	6000	57	536	2.10	49.00	0.26	58.0	42
1997	14500	8500	6000	57	522	1.99	50.44	0.22	57.8	17
1998	14500	7500	7000	63	522	1.85	46.92	0.15	61.0	31
1999	14500	3500	11000	54	522	1.90	48.23	0.15	54.0	36
2000	14500	3500	11000	44	517	1.81	46.63	0.17	41.0	30
2001	27000	12500	14500	30	507	1.63	45.01	0.22	28.3	94
2002	25000	10500	14500	44	500	1.60	45.90	0.28	41.9	70
2003	25000	10500	14500	42	505	1.65	46.29	0.22	42.2	35
2004	24500	10000	14500	43	514	1.74	46.06	0.17	41.4	45
2005	15000	7500	7500	42	530	1.96	48.58	0.24	39.2	79
2006	23000	15500	7500	37	514	1.78	47.22	0.20	37.6	176
2007	25000	10500	14500	36	514	1.69	45.57	0.19	36.1	112
2008	25000	10500	14500	33	519	1.80	46.63	0.16	31.9	121
2009	25500	10500	14500	30	518	1.79	46.34	0.25	28.0	87
2010	29500	14500	14500	32	509	1.71	47.09	0.22	30.9	48

Table 2 Data summary statistics

	% Wild	2yr lgth	2yr wgt	2yr CF	cpue	% Wild exFF
Mean	47.68	520	1.85	47.30	0.22	46.8
Standard Error	3.23455	2.79851	0.04133	0.35264	0.01471	3.29551
Median	44	518	1.8	46.92	0.22	41.9
Mode	57	522	1.96	46.63	0.22	#N/A
Standard Deviation	14.0991	12.1984	0.1802	1.5371	0.0641	14.3648
Sample Variance	198.7836	148.8012	0.0325	2.3627	0.0041	206.3472
Kurtosis	-0.1760	-0.1920	-0.2429	0.1239	1.2762	-0.5160
Skewness	0.6523	0.5091	0.6959	0.8444	1.1943	0.5541
Range	50	46	0.61	5.52	0.23	50
Minimum	30	500	1.6	45.01	0.15	28
Maximum	80	546	2.21	50.53	0.38	78
Count	19	19	19	19	19	19
Confidence	6.34	5.48	0.08	0.69	0.03	6.46

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Table 3. Composition of Wild trout caught Opening Day by Age Cohort

Season start	AVG	10-11	09-10	08-09	07-08	06-07	05-06	04-05	03-04
Wild 1+	33	28	23	27	16	64	51	26	30
Wild 2& Older	45	25	50	32	52	58	53	68	19
All Wild	78	53	73	59	68	122	104	94	49
Wild 1+	43%	53%	32%	46%	24%	52%	49%	25%	61%
Wild 2& Older	56%	47%	68%	54%	76%	48%	51%	65%	39%

2. OHAU CHANNEL TROUT FISHERY SURVEY DATA

Fisheries Surveys at the Ohau Channel were completed under contract by a student in 2005-06, and subsequently by Aquatek Consultants in 2007-08, 2008-09, 2009-10 and 2010-11. The data collected provides 2 years of fisheries statistics pre-wall construction and 3 years post completion.

EXECUTIVE SUMMARY

- A total of 63 angler creel surveys were conducted at the Ohau Channel over the 2010-11 angling season. A lower number of anglers were encountered per survey than during the 2009-10 season but was on a par with the 2005-06 to 2008-09 surveys.
- The 2010-11 season within the Ohau Channel produced a significantly lower ($P<0.001$) average catch rate than the 2009-10 season. The 0.27 fish per hour recorded was poorer than all of the previously undertaken Ohau Channel creel survey averages.
- The average brown trout caught during the 2010-11 season was longer than those measured during the 2009-10 survey but smaller and in poorer condition. Only 5 brown trout were measured compared with 34 during 2009-10, 20 during 2008-09, 38 during 2007-08 and 48 during the 2005-06 survey. The average rainbow trout caught was significantly shorter ($P<0.001$), lighter ($P<0.001$) and in poorer condition ($P<0.001$) than those caught during the 2009-10 season.
- Anglers interviewed during the 2010-11 season felt that their catch rate, the size of the fish they were catching and their overall level of satisfaction were all significantly poorer ($P<0.001$) than during the 2009-10 season.
- Over the course of the 2010-11 survey, the perceived decline in the fishing was such that 19% of anglers said they were either satisfied or highly satisfied with their seasons fishing. This was a significant drop ($P<0.001$) from the 88% satisfied during the 2009-10 season.
- Over the 2010-11 season, 74% of surveyed anglers felt that nothing detracted from their angling experience in the Ohau Channel. Of those that voiced detractions, the poor condition of fish caught was the major factor (15%). The lack of fish or poor catch rates was the second highest factor (9%). A total of 5 responses (2% of anglers) were received regarding the presence of the wall having a possible affect on the fishery.

2.1 Data Collection

A total of 63 survey events were undertaken at the Ohau Channel over the 2010-11 season when anglers were present. Angler contacts encountered per survey were lower than the 2009-10 season but on a par with the surveys conducted during the 2005-06 and 2007-08 and 2008-09 seasons.

Table 1. Surveys conducted and anglers interviewed

	2005-06	2007-08	2008-09	2009-10	2010-11
Surveys	82	82	82	82	82
Survey events*	79	65	60	54	63
Total Anglers	576	496	373	518	412
Anglers per survey	7	8	6	10	7

*Survey events = surveys when anglers present

2.2 Angler catch rates

The angler catch information (CPUE = fish per rod hour) gathered during the surveys during the 2005-06, 2007-08, 2008-09, 2009-10 and 2010-11 seasons is summarized in Table 2.

Table 2. Catch rate data 2005-06, 2007-08, 2008-09, 2009-10 and 2010-11 seasons.

	2005-06	2007-08	2008-09	2009-10	2010-11
Hrs fished	1099.1	934.15	728.10	1015.5	826.5
Kept	349	371	212	394	125
OSRT	102	24	42	221	90
USRT	34	16	4	14	29
CPUE(sum)	0.41	0.42	0.35	0.60	0.26
HPUE(sum)	0.32	0.40	0.29	0.39	0.15
Avg indiv' cpue	0.42	0.40	0.30	0.61	0.27

CPUE = catch per unit effort (fish per hour and includes oversized returned)

HPUE = Harvest per unit effort (fish per hour kept)

(sum) is calculated from all fish caught/all hours fished – good for harvest calculations

Indiv' = average of all individual anglers catch rate – good for perception calculations

Mann Whitney tests of the average individual anglers catch rate show a significant statistical difference between the 2010-11 and 2009-10 seasons ($P < 0.001$). There was also a significant difference between the 2009-10 and 2008-09 seasons ($P < 0.001$). There was no significant difference between the 2007-08 and 2008-09 seasons catch rates ($P = 0.52$) whereas there was just a significant difference noted between the 2005-06 and 2007-08 catch rates ($P = 0.049$). This type of difference is typically due to the spread of catch rates between anglers although Figures 2.2-2.6 suggest little difference was apparent. Angler experience (Figure 2.7-2.11) may account for differences seen in catch rates as inexperienced anglers have lower catch rates generally. The frequency of individual anglers visiting the Ohau Channel during the 2010-11 season follows the same general trend as was seen in the 2009-10 season.

2.3 Seasonality of Catch Rates

Catch rates were low at the start of the season (October) then improved during November to be consistent with other seasons. Recorded catch rates during December 2010 were higher than other Decembers during seasons surveyed. Fishing during late summer early Autumn was very hard (low catch rates) before success improved during May and then dropped off as per other seasons during June.

During the 2010-11 season (3 years post wall) the anglers catch rates appeared to improve following the start of the season in contrast to the way they have done during the preceding surveys. The autumn of 2011 (April/ May) followed the trend seen in the 2005-06, 2007-08 and 2008-09 surveys (Table 4-8). This is reflected in the seasonality of catch rates shown in Figure 2.1 and Table 8.

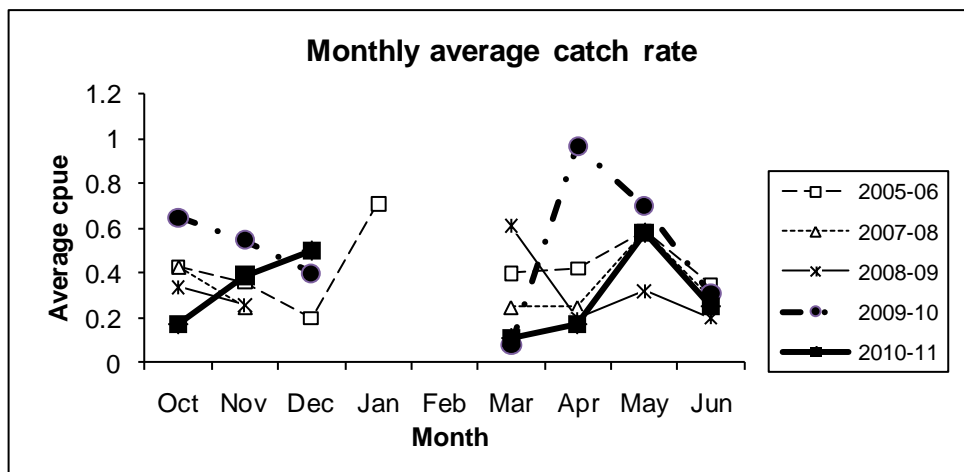


Figure 2.1 Angler catch rates by year during the season

This seasonality of catch rates in past seasons tends to mirror the encounter rate during the season (Figures 2.12-2.16). Basically if catch rates were higher then the interviewers tended to encounter more anglers, when they were lower they encountered less anglers. During the 2010-11 season angler encounter rates were highest at the start (October) and the end of the season (June) when expectations of catching fish were highest. The start of the season usually has high catch rates after being rested for 3 months and the end of the season traditionally sees fish move into the channel when the Lake Rotorua’s temperature that feeds the channel cools.

Changes in catch rate can often be related also to a change in the level of experience of anglers. Anglers were asked about their experience (Figures 2.7-2.11) and this varied little between the four surveys.

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Table 4. 2005-06 Catch rates during the season

	Hrs	Kept	OSRT	USRT	cpue Sum	cpue indi'v
Opening Weekend	238.5	88	11	3	0.42	0.44
All October	536.95	173	46	6	0.41	0.43
November	177.25	46	25	8	0.40	0.36
December	71.25	10	5	7	0.21	0.20
Jan & Feb	12.75	7	2	0	0.71	0.71
March	49.45	11	6	0	0.34	0.40
April	130.95	52	7	6	0.45	0.42
May	100.75	43	11	5	0.54	0.59
June	19.75	7	0	2	0.35	0.35

Table 5. 2007-08 Catch rates during the season

	Hrs	Kept	OSRT	USRT	cpue Sum	cpue indi'v
Opening Weekend	226.5	95	3	2	0.43	0.64
All October	433.65	230	8	5	0.55	0.47
November	100.0	13	0	1	0.13	0.08
December	5.25	2	0	0	0.38	0.67
Jan & Feb						
March	10.0	1	0	0	0.10	0.14
April	80.0	17	0	0	0.21	0.24
May	173.0	83	16	9	0.57	0.66
June	132.25	25	0	1	0.18	0.29

Table 6. 2008-09 Catch rates during the season

	Hrs	Kept	OSRT	USRT	cpue Sum	cpue indi'v
Opening Weekend	186.3	100	4	0	0.56	0.55
All October	408.6	141	12	0	0.37	0.34
November	66.75	14	5	1	0.28	0.26
December						
Jan & Feb						
March	27.0	10	5	1	0.56	0.61
April	41.0	2	6	0	0.20	0.20
May	67.0	25	10	2	0.52	0.32
June	117.75	20	4	0	0.20	0.20

Table 7. 2009-10 Catch rates during the season

	Hrs	Kept	OSRT	USRT	cpue Sum	cpue indi'v
Opening Weekend	304.25	198	24	0	0.73	0.67
All October	596.25	307	103	2	1.87	0.65
November	137	27	38	1	0.48	0.55
December	12.5	7	0	0	0.56	0.40
Jan & Feb						
March	25.5	1	0	1	0.04	0.08
April	56	11	40	2	0.91	0.97
May	56	21	18	7	0.70	0.70
June	132.25	20	22	1	0.32	0.31

Table 8. 2010-11 Catch rates during the season

	Hrs	Kept	OSRT	USRT	cpue Sum	cpue indi'v
Opening Weekend	270.75	51	11	9	0.23	0.35
All October	449	62	17	11	0.18	0.17
November	55.5	7	10	3	0.31	0.39
December	7.5	1	3	0	0.53	0.5
Jan & Feb						
March	16	2	0	0	0.13	0.11
April	30.75	6	1	3	0.23	0.17
May	98	27	39	2	0.67	0.58
June	165.5	20	18	10	0.23	0.25

2.4 Catch Rate Distribution

Plots of catch rate distribution across anglers from one year to the next showed little real difference with typically 60% of anglers not having caught a fish when interviewed. (Figures 2.2-2.6)

Figure 2.2

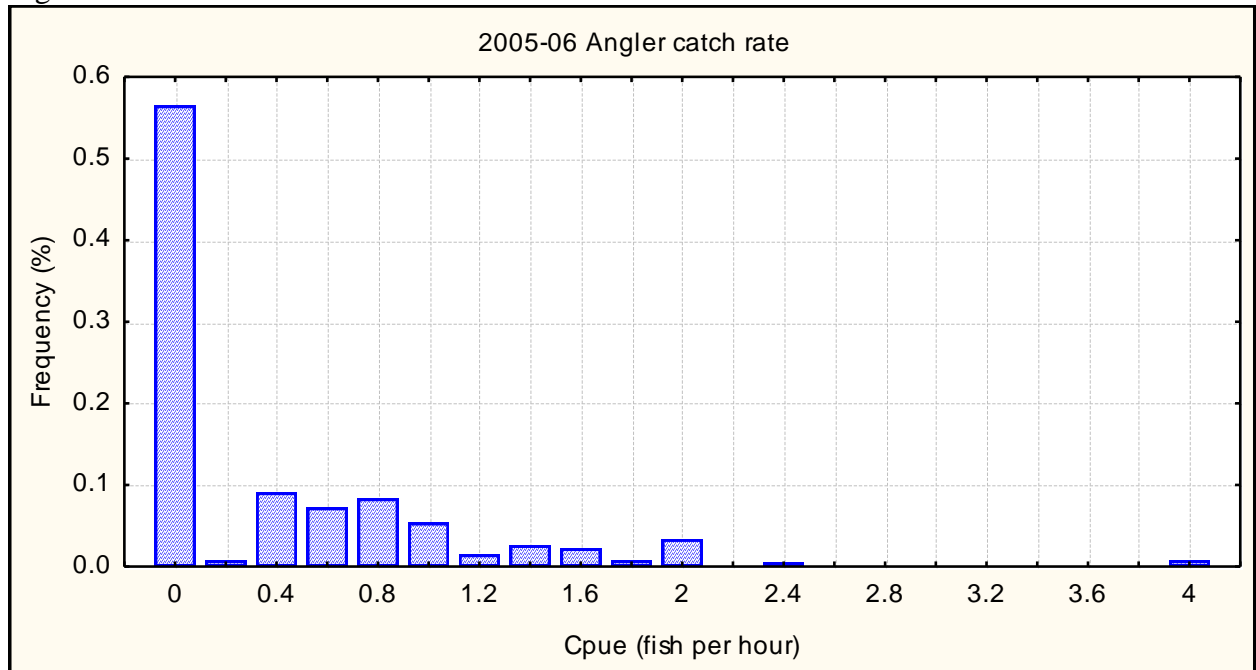


Figure 2.3

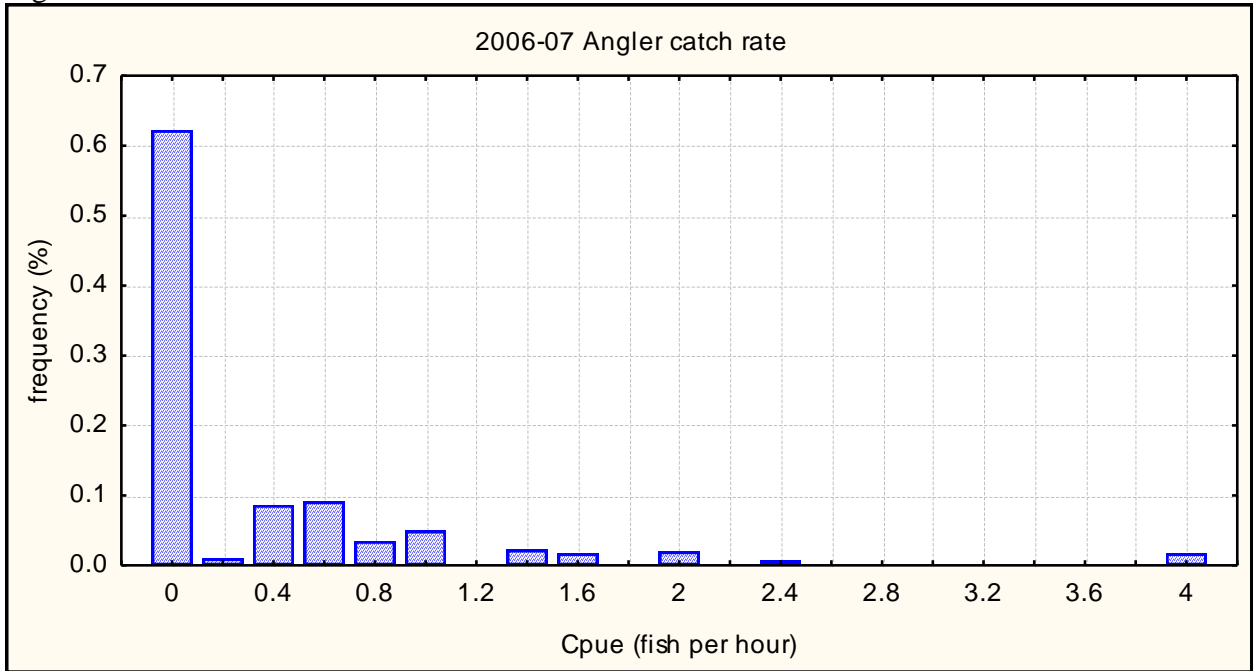


Figure 2.4

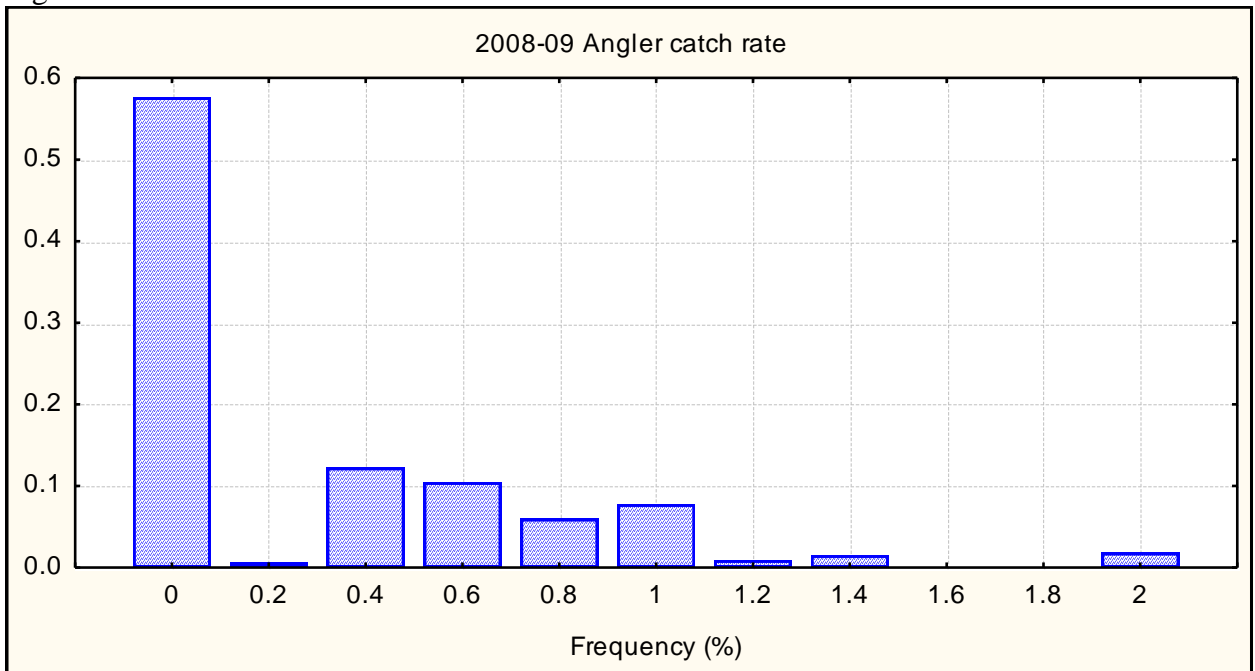


Figure 2.5

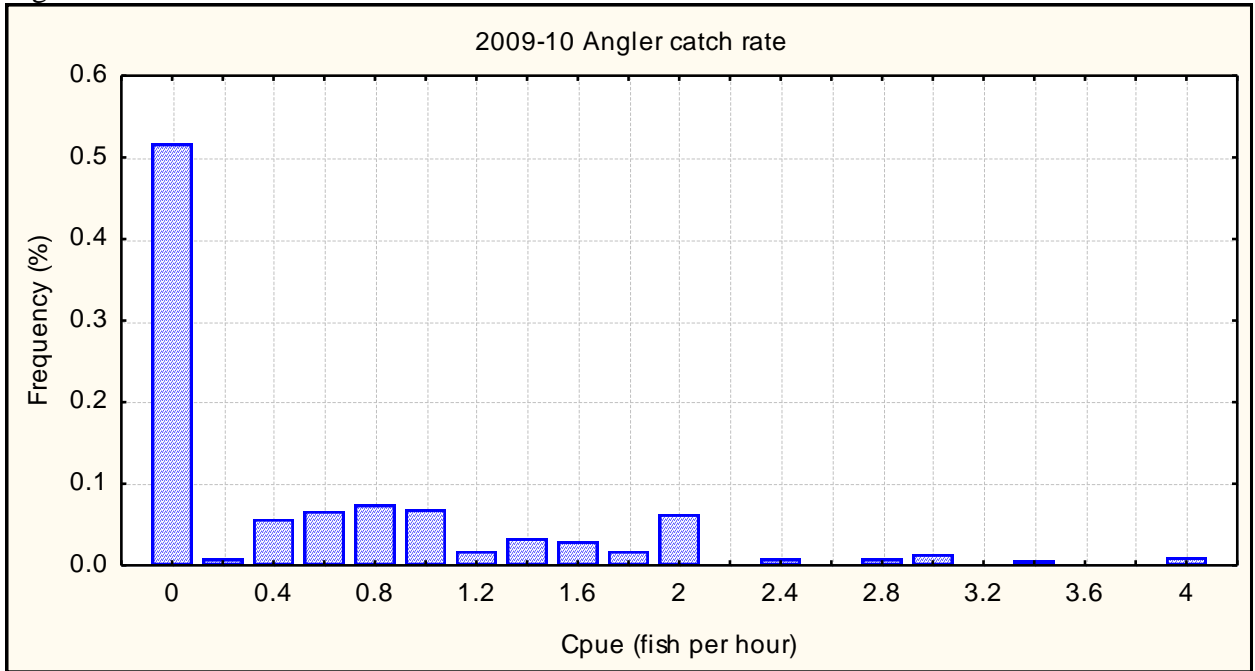
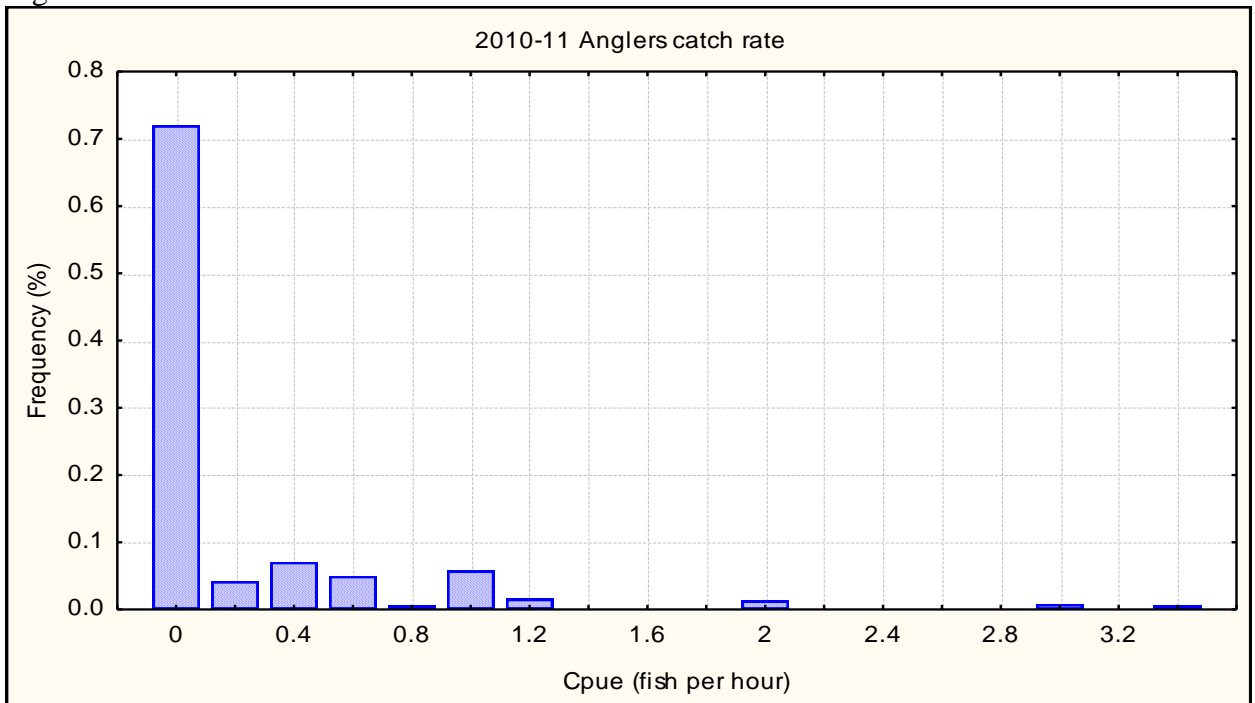


Figure 2.6



2.5 Anglers perceptions and Satisfaction

Anglers were asked to rate (Table 7) how they felt about their catch rates and the size and condition of the fish they were catching this summer compared to previous summers. Anglers were also asked to rate their level of satisfaction with the summers fishing.

Table 7. Rating scales for assessing angler perceptions and satisfaction.

Ratings for CPUE and Size.		Rating for level of Satisfaction.	
Value	Description	Value	Description
1	Excellent	1	Highly satisfied
2	Good	2	Satisfied
3	Average/Acceptable	3	Dissatisfied
4	Poor	4	Strongly dissatisfied
5	Terrible		

The average rating used in the following tables and figures is the average calculated from all anglers perceptions on catch rate, fish size and condition, and satisfaction. The average rating should be considered to be the answer given by a hypothetical "average angler". Size and condition are grouped into the same question as past surveys have found anglers most often group these characteristics together. Satisfaction is also assessed by the percentage of anglers who responded that they were satisfied (highly satisfied or satisfied) with their summers fishing.

The rating for the average angler for catch rate (cpue), fish size and angler satisfaction, including percentage of satisfied anglers is shown in Table 8.

Table 8. Angler perceptions (1=excellent, 5=terrible)

	2005-06	2007-08	2008-09	2009-10	2010-11
Cpue	2.9	2.94	3.89	2.23	4.06
Size	2.28	2.98	3.87	2.32	4.05
Satisfaction	1.75	2.44	3.28	2.02	3.16
% satisfied	98%	66%	16%	88%	19%

Anglers interviewed during the 2010-11 season felt that their catch rate, the size of the fish they were catching and their overall level of satisfaction were all significantly poorer ($P < 0.001$) than during the 2009-10 season.

The marked decline in angler perceptions was supported by measured catch rate and by fish characteristics. Actual measured catch rate during the 2010-11 season was significantly worse ($P < 0.001$) than measured during the 2009-10 season.

A decline in angler perceptions was noted between the 2005-06 season and the 2007-08 season for catch rate, and a significant decline for fish size and satisfaction ($P < 0.001$). Perceptions were further lowered during the 2008-09 season when angler perceptions for all 3 characteristics (catch rate, fish size and satisfaction) were again significantly lower compared with the 2007-08 season ($P < 0.001$). Where anglers felt fish size was significantly poorer, actual measured fish were larger, although brown trout were slightly lighter and rainbows significantly lighter meaning trout condition was poorer.

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The percentage of anglers that expressed they were either satisfied or extremely satisfied with their angling has changed significantly over the course of the 5 completed surveys. A total of 98% of anglers stated they were satisfied with their Ohau Channel angling during the 2005-06 season. This dropped significantly ($P < 0.001$) during the 2007-08 season to 66% of anglers. Through the 2008-09 season only 16% of anglers felt that they were satisfied with their angling experience. This figure had dramatically dropped away over the first 3 seasons surveyed ($P < 0.001$ Binomial Comparative Trial). To have only 16% of anglers saying they were satisfied or highly satisfied was **very low**. Typically angler satisfaction on F&G surveys gets to a low point of 70%.

During the course of the 2009-10 survey, the perceived improvement in the fishing was such that 88% of anglers said they were either satisfied or highly satisfied with their seasons fishing. This was a significant improvement ($P < 0.001$ Binomial Comparative Trial).

Following on from the 2009-10 season, poor catch rates and fish size measured during the 2010-11 changed anglers perceptions in such a way that a total of 19% of anglers said that they felt they were either satisfied or highly satisfied with their angling in the Ohau Channel. This was significantly poorer than the level achieved during the 2009-10 season ($P < 0.001$ Binomial Comparative Trial).

2.6 Angler Detractions

In order to attempt to quantify what real issues are facing anglers fishing the Ohau Channel they are asked "what, if anything, detracts from their angling experience?" The percentage responses this year are shown in Table 9.

Table 9. Stated detractions to angling experience

DETRACTION	2005-06	2007-08	2008-09	2009-10	2010-11
Crowds	9%	2.5%			
Shags	5%				
Quality Water	5%		3.9%	3%	
Boats	4%				
Rude anglers	3%	1%			
Limited access	3%				
Weir*	2%				2%
Snags	2%		1.3%		
Other users	2%	2.5%			
Few fish	2%			4%	9%
Technology	1%				
Poor conditioned fish	1%		1.3%	8%	15%
Pollution	1%		1.3%		
Poachers	1%			7%	
No Toilet	1%				
No regulation signs	1%				
Nil	55%	94%	92.1%	78%	74%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Over the 2010-11 season, 74% of surveyed anglers felt that nothing detracted from their angling experience in the Ohau Channel. Of those that voiced detractions, the poor size and condition of fish caught was the major factor (15%). Lack of fish or poor catch rates drew the second highest number of responses (9%) which also included a lack of smelt (2%). The presence of the wall was also mentioned by 2% of respondents.

During the 2008-09 survey, the surveyors noted that “The Wall” was the most common topic of discussion during the survey yet no anglers actually mentioned it as a detraction to their fishing. On discussing this with surveyors further, they felt the anglers considered the more immediate detractions when asked this question so responses typically related to what they could see or what was affecting them directly at the time they were interviewed.

Over the course of the 2009-10 interviews, anglers were asked whether they were satisfied or dissatisfied with their summers fishing and then why? This was done to tease out whether anglers felt the wall itself was having a negative (or positive) effect upon the fishery. Only 1 angler out of 55 (1.8% of respondents) said that there were no fish running through the channel perhaps due to the presence of the wall. During the 2010-11 season 5 anglers out of 226 (2% of respondents) mentioned the wall as a causative factor that led to their poor fishing. This was the only mention (good or bad) collected during the surveys of the wall in relation to angling.

2.7 Characteristics of fish caught

Table 3. Brown trout and rainbow trout average length and weight data surveyed from Ohau Channel during the 2005-06, 2007-08, 2008-09, 2009-10 and 2010-11 seasons. Significant differences shown in bold.

	2005-06	2007-08	2008-09	2009-10	2010-11
Brown length	662	675	702	650	672
Brown weight	4.32	4.71	4.63	4.12	3.91
Brown c.f.	52.96	53.63	47.79	53.49	45.45
Rainbow length	541	543	554	541	507
Rainbow weight	2.25	2.30	2.22	2.11	1.56
Rainbow c.f.	50.09	50.98	46.1	47.19	41.55

The average brown trout caught during the 2010-11 season was longer than the average brown measured during the 2009-10 survey but lighter and in poorer condition. Only 5 brown trout were measured compared with 34 during 2009-10, 20 during 2008-09, 38 during 2007-08 and 48 during the 2005-06 survey. The average rainbow trout caught was significantly shorter ($P < 0.001$), lighter ($P < 0.001$) and in poorer condition ($P < 0.001$) than those caught during the 2009-10 season.

Fish & Game Trout Fishery Data – Ohau Channel Diversion Wall Fisheries Panel
Meeting August 2011

Additional Figures

Angler Experience

Seasonality of Interviews

Angler Experience

Figure 2.7 – 2.11 Angler frequency (days fished per season by individual anglers)
Figure 2.7

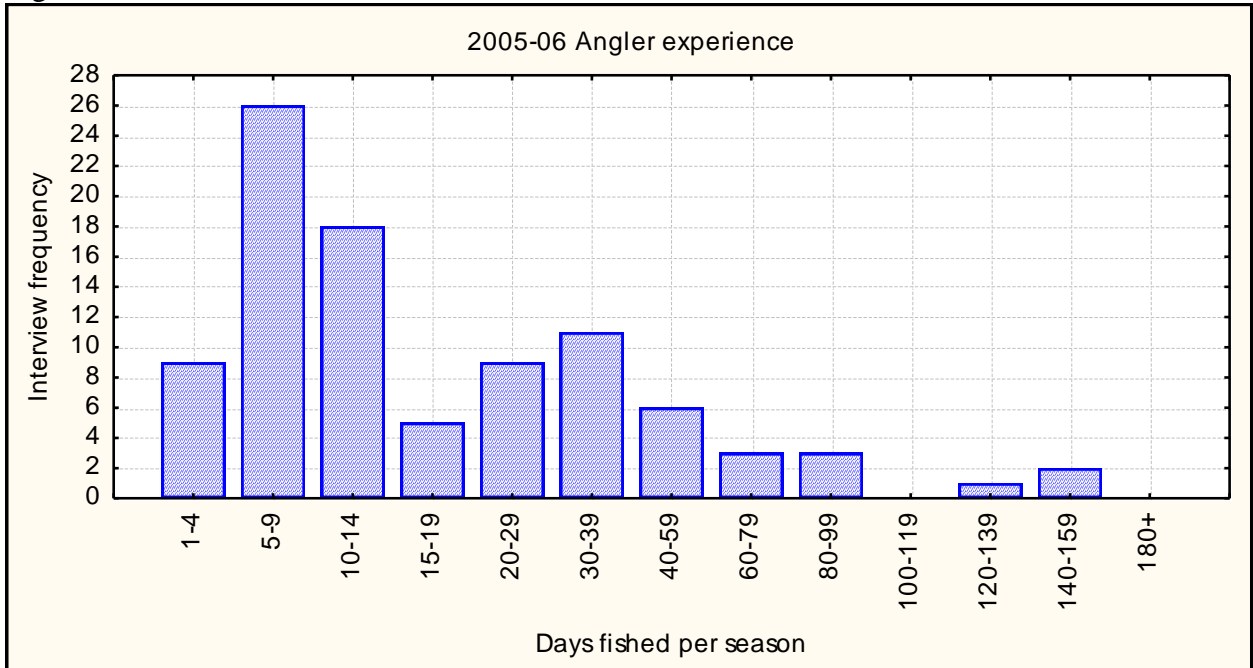


Figure 2.8

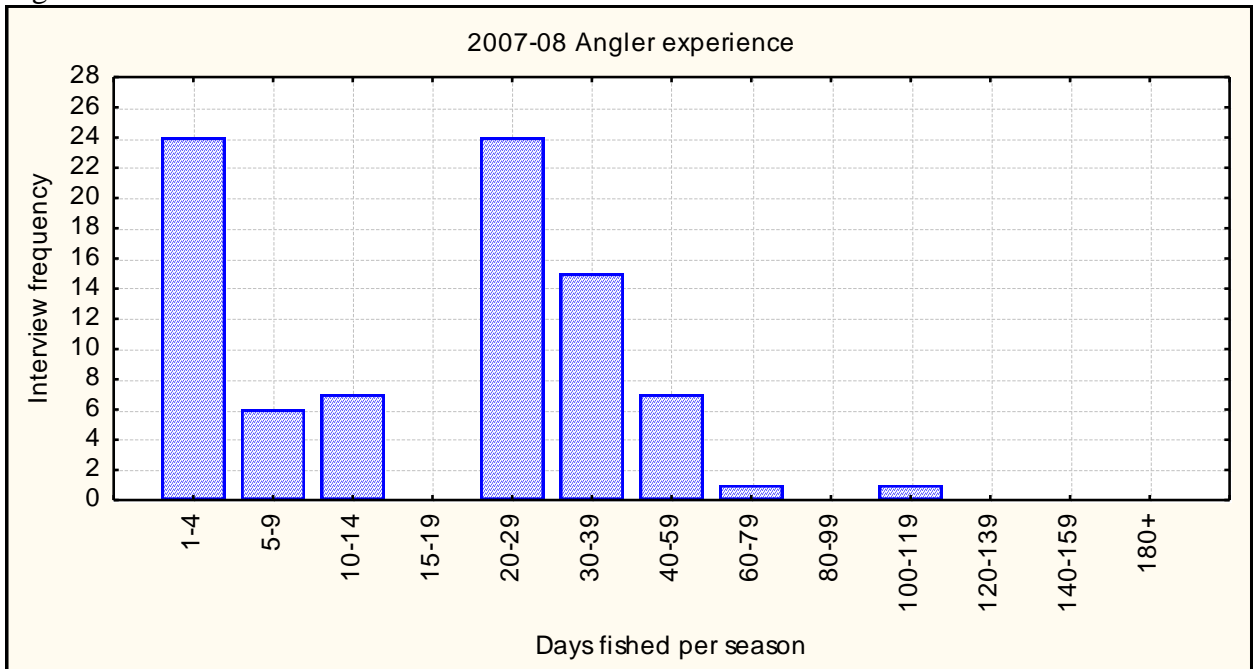


Figure 2.9

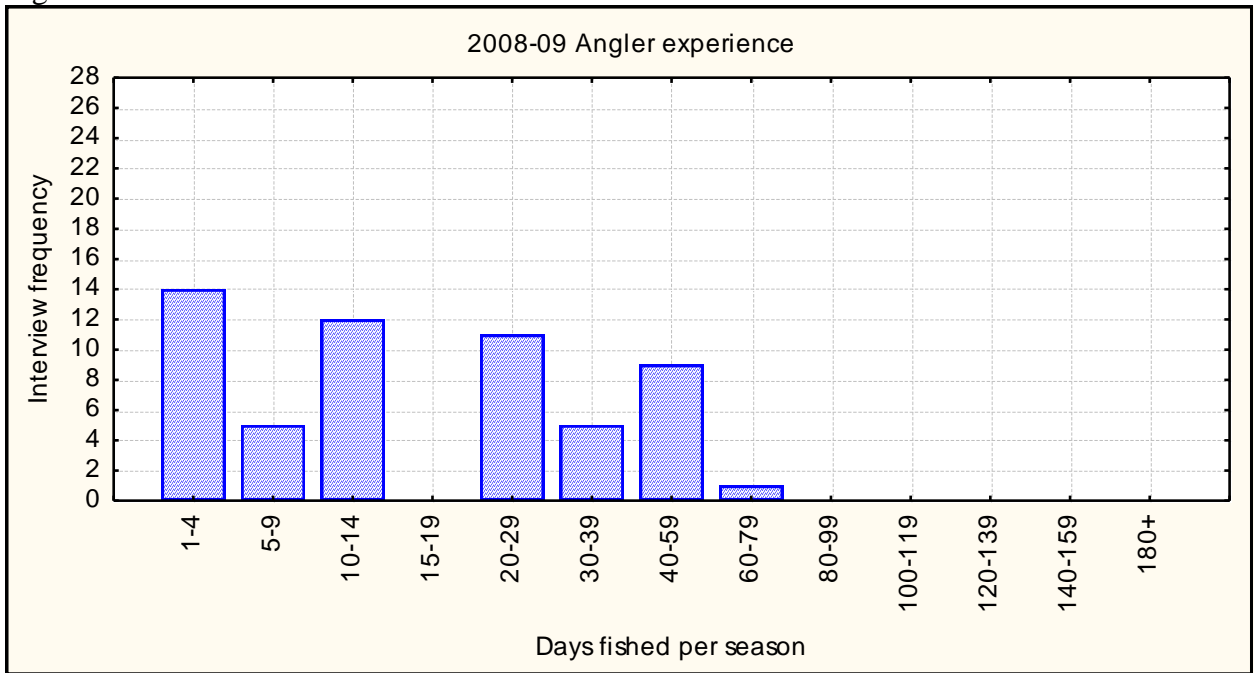


Figure 2.10

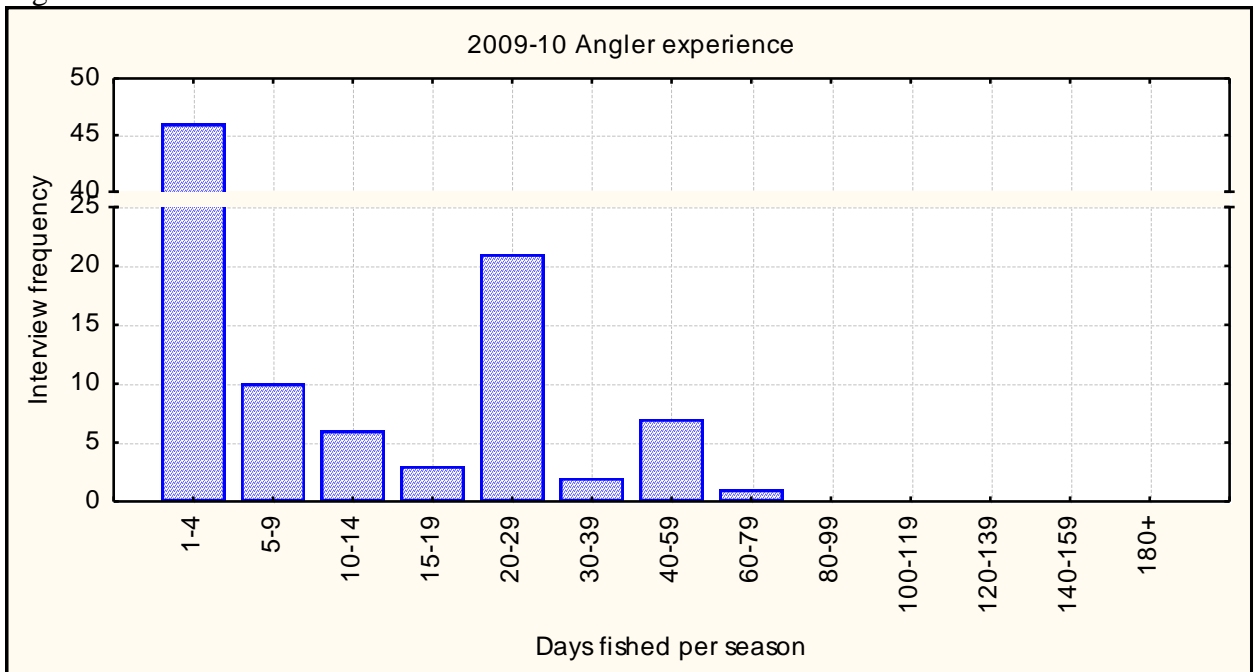
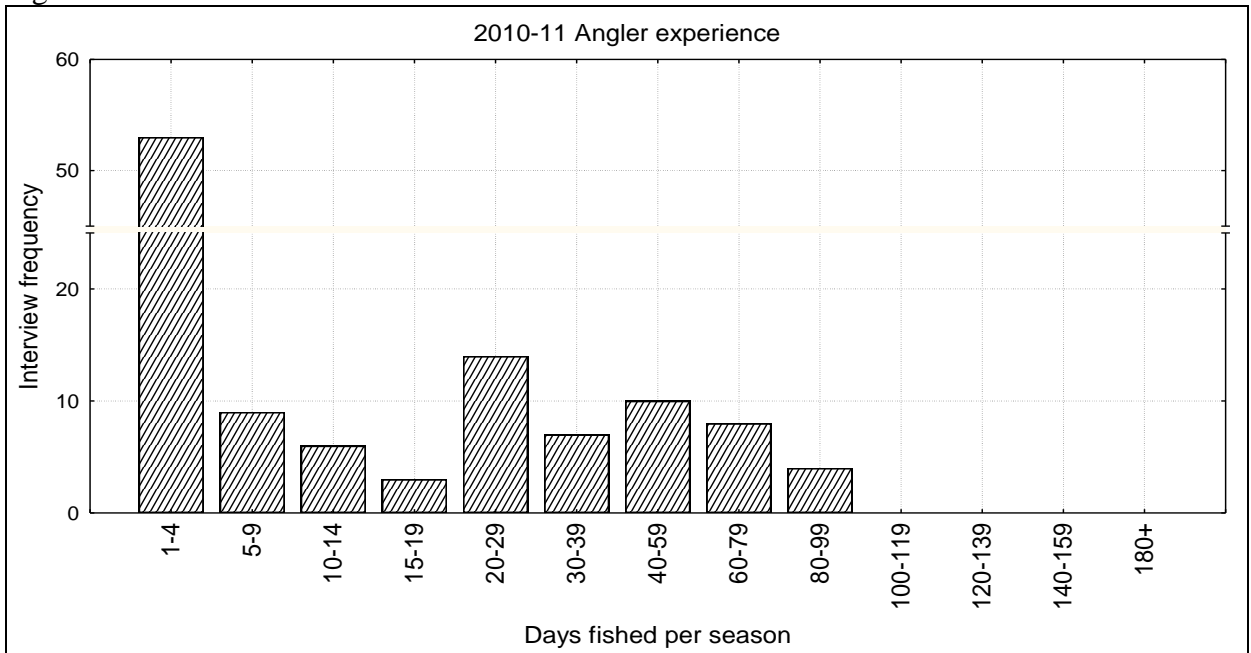


Figure 2.11



Seasonality of angler encounters Figure 2.12-2.16

Figure 2.12

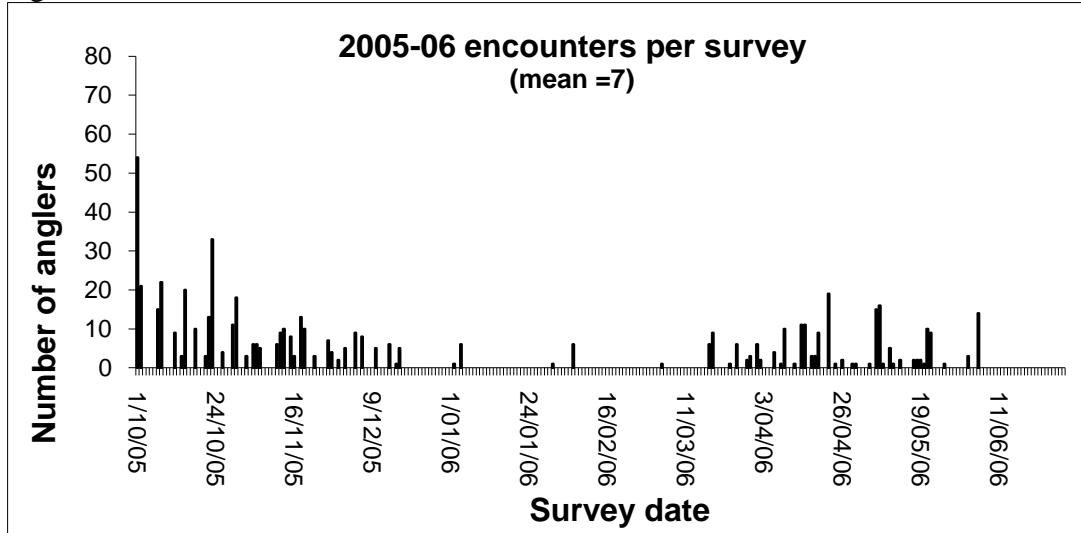


Figure 2.13

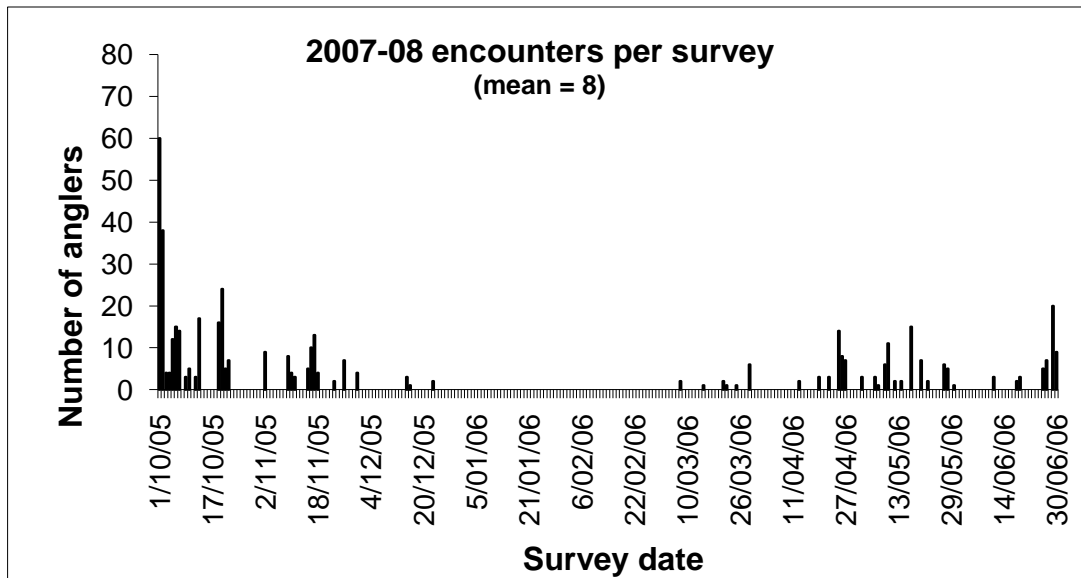


Figure 2.14

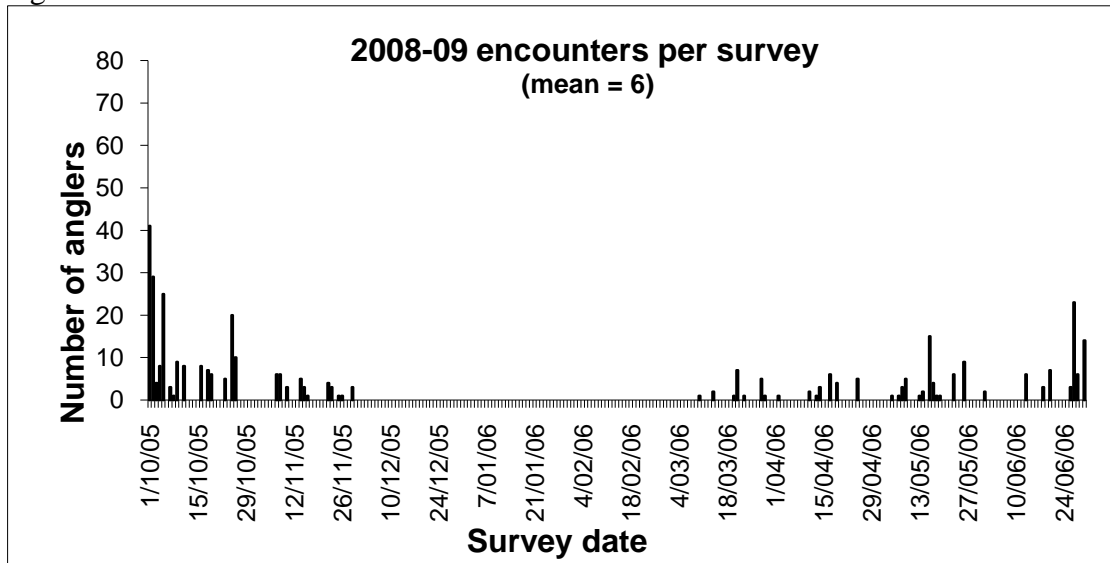


Figure 2.15

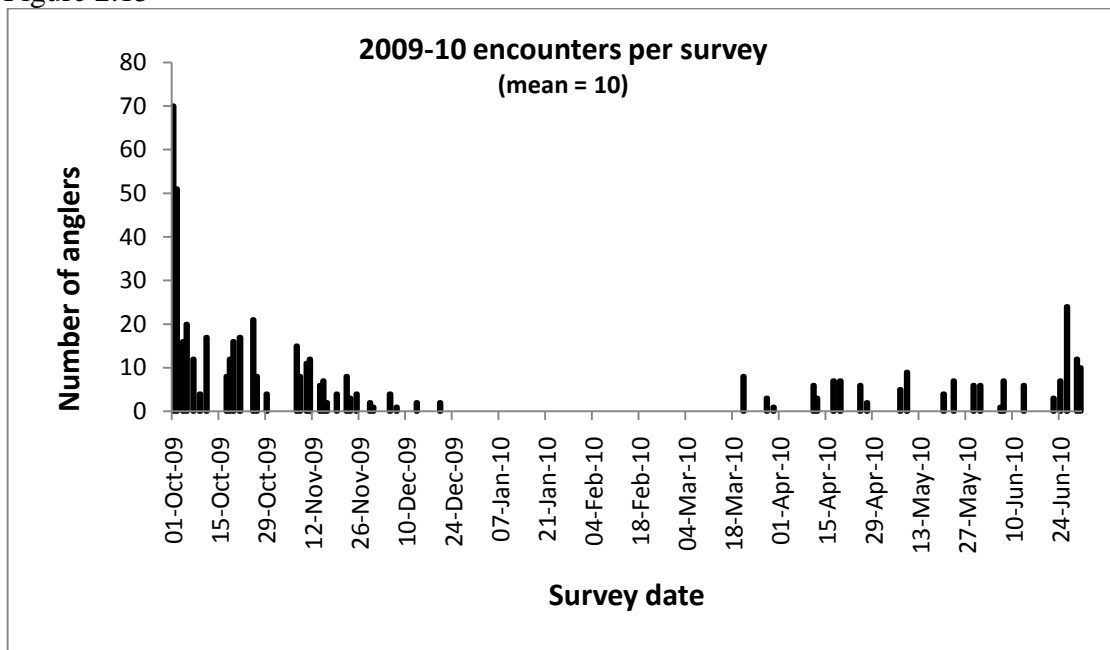


Figure 2.16

