

Carp Management Program Annual Report

2010-11



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This annual report details carp management activities for the financial year 2010 – 11, as part of the lakes Sorell and Crescent Carp Management Program.

The objective of the program is:- To eradicate carp from Tasmanian waters and, in the meantime, to minimise the impact of carp on Tasmania from economic, recreational and ecological points of view.

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Executive Summary

The unfortunate carp recruitment events in Lake Sorell during spring 2009 resulted in a review of the future of the Carp Management Program (CMP). What became clear was that the prospect of eradicating carp from Lake Sorell was going to require increased resources. It was identified that a further barrier net was required to block off the remaining wetlands, in particular Silver Plains Marsh and additional staffing was also needed to increase fishing pressure during the spawning period. Other issues identified were the containment of carp to Lake Sorell and prevention of a reintroduction into Lake Crescent.

In support of the program, the State Government made a one-time funding payment of an additional \$400 000 for the year. This enabled Lake Sorell to be flood proofed by raising the outlet by 600mm, and constructing levee banks. It also enabled the purchase of 2km of barrier netting and the employment of additional staff.

Significant inroads have been made into fishing out the 2009 cohort and even more importantly it appears that the removal of 14 mature carp, including 12 females, during spring/summer this year has prevented any further recruitment. The capital works were completed prior to consistent rainfall pushing both lakes above full supply.

The program worked with commercial eel fishermen, under strict permit conditions, targeting and catching juvenile carp as by-catch whilst fishing for eels. This resulted in further fishing pressure being placed on the carp population while they were at a stage particularly vulnerable to fyke netting. The eel fishermen also captured two adult female carp.

The program is in a precarious position for the coming year with very high water levels set to provide ideal spawning opportunity for the small number of carp (<10) that are expected to mature compounded by potential funding limitations. An application has been submitted to the Federal Government under the 2011/12 Caring for our Country grant and it is hoped that this may provide the added resources required to maintain pressure on the carp population and again prevent recruitment.

I.1 Carp Captures at a Glance

Table 1. Carp captures from Lake Sorell and Lake Crescent for the 2010-2011 financial year

Lake	Total 2010 / 2011	Adult / Juvenile	Total 1995 to present
Sorell	8,895	16/8,879	26,203
Crescent	0	0	7797

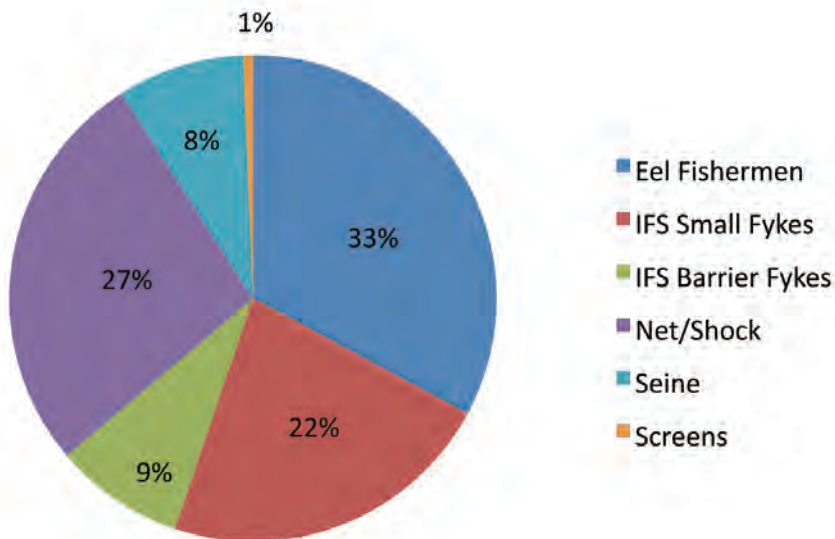


Figure 1. Proportion of carp captured per method (2010 / 2011)
 Note: "net/shock" includes carp captured using backpack shocker, electro-boat and gill & seine nets. In most circumstances a variety of methods were used in conjunction with each other for best results.

1.2 Lake Sorell

This year saw a dramatic change in methods and a massive increase in effort over the 2010 – 2011 spawning season with very successful results. Over 8800 juveniles were captured along with 14 adult carp and all evidence suggests that a carp spawning event was prevented. This was an enormous achievement for the carp team when considering the amount of work and dedication involved in eradicating a highly resilient pest fish species from such a large lake.

With the previous year's spawning event in mind, the carp team was extra vigilant and committed to preventing another spawning event from occurring during the 2010 – 11 season. Extra staff were employed and some new strategies were tested including the use of gill nets behind barrier nets. This strategy proved itself to be extremely important when a large ripe female was captured behind the Kemps marsh barrier net in early January by one of these deliberately positioned nets.

At the 2010 carp workshop the carp team decided that the adult male tracker fish would be removed over the 2010 -11 spawning season to eliminate any risk of the trackers spawning with the remaining adult females in the lake. All the tracker fish were removed by Christmas and replaced with 15 juvenile transmitter fish in January. These fish proved to be a very handy tool in the fish-down of the wild juvenile population and are continuing to give the carp team a useful insight into juvenile carp behavior over the seasons.

The colder months are always slower due to the decrease in water temperature and this year was no different. July to early September saw only a small number of juvenile carp captured with no adult captures. The majority of these juveniles were captured on the screens separating Lake Sorell from Lake Crescent. This put a lot of emphasis on the importance of the screens as Lake Crescent is thought to be carp free and the screens are the only thing preventing carp from re-establishing themselves in this lake.



Figure 2. Inland fisheries staff with a mature female carp caught using the electro-boat in Lake Sorell

1.3 Lake Crescent

No carp were captured in Lake Crescent during the 2010 – 11 financial year. The last mature female carp was captured in 2007. Regardless of this fact the carp team continues to monitor Lake Crescent periodically using a variety of methods. This year concentrated backpack shocking was undertaken in the months following Christmas and a juvenile carp survey was undertaken in March. The survey consisted of 42 fyke nets set evenly around the lake and the nets were checked daily for a week. Despite the rigorous backpack shocking and the intensive fyke net survey no carp were found. A commercial eel fisherman also fished the lake between 6 January and 13 February using 44 fyke nets spread across the warm marshland along the eastern side of the lake and caught no carp. Juvenile carp are very susceptible to fyke nets and the eel fishermen's effort is an extremely valuable sampling tool.

2.

Cohorts/ Population Estimate

2.1 Lake Crescent

All indications are that carp have been eradicated from Lake Crescent. The last carp was caught in December 2007. Multiple recapture of transmitter implanted carp without any sign of accompanying wild carp continued for another 2 years before these "Judas" fish were removed from the lake. Ongoing systematic fyke surveys, gillnetting, electro-fishing, fish trap surveillance, outflow screen monitoring and spot rotenone treatments have all failed to turn up any sign of adult or juvenile carp. In the hypothetical situation of a small undetected number of carp surviving in the lake, it would be expected that the ideal spawning conditions of the past 2 years would have produced a population bounce in this highly fecund species. This has not occurred as evidenced by our juvenile monitoring systems which reliably detect even tiny cohorts (<20 fish) within two years of spawning. Monitoring will continue, however.

2.2 Lake Sorell

Recruitment from the 2009 spawning is now estimated to be in the vicinity of 30,000 carp. This figure will be more reliably known by the end of 2011 when comparative CPUE calculations become available from the coming season's fishing data. In less than 2 years, close to 24,000 of this cohort have been removed. There is still a window of 2 years to eradicate the remainder before they mature. Carp from the 2000 and 2003 spawnings numbering about 2,700 and 150 respectively have likely now been removed from the lake. With the success of the spawning sabotage techniques instigated last season we are confident in capturing the only other carp remaining (probably <10 from small spawnings in 2005 and 2007) as they mature over the next two seasons.

3.

Juvenile Carp Surveys

Juvenile carp fyke net surveys were conducted in Lake Sorell and Lake Crescent this year in conjunction with other comprehensive juvenile sampling techniques.

The Lake Sorell fyke net survey ran from 22 to 25 of March 2011 and consisted of 47 fyke nets. Fyke nets were placed in historical locations covering all areas of the lake and checked daily. See the results in Table 2.

The Lake Crescent fyke net survey ran from 7 to 11 of March 2011 and consisted of 40 fyke nets. Fyke nets were placed in historical locations covering all areas of the lake and checked daily. See the results in Table 3.

Table 2. Lake Sorell fyke net survey results 2011

Date	Rainbow trout	Brown trout	Eels	Golden galaxias
22/3/2011	0	17	14	31
23/3/2011	0	6	5	2
24/3/2011	1	57	25	27
25/3/2011	0	29	70	19

Table 3. Lake Crescent fyke net survey results 2011

Date	Rainbow trout	Brown trout	Eels	Golden galaxias
8/3/2011	15	7	122	0
9/3/2011	10	22	90	0
10/3/2011	5	3	249	0
11/3/2011	2	5	200	0

Intensive juvenile sampling was undertaken in Lakes Sorell and Crescent in the months following Christmas to guarantee there had been no juvenile recruitment over the 10-11 spawning season. All possible juvenile carp nursery habitat was comprehensively sampled using backpack shocking, spot rotenone treatments and fyke nets. No new cohorts were found. Refer to table 4 and 5 for juvenile sampling effort in Lakes Sorell and Crescent.

Table 4. Lake Crescent Juvenile Sampling Effort

Date	Method	Location	Effort	Carp	Comments
8/3/2011	Backpack	Northern Marsh (site1)	70min 2xBP	0	
8/3/2011	Backpack	Northern Marsh (site2)	60min 2xBP	0	
8/3/2011	Backpack	Northern Marsh (site3)	75min 2xBP	0	
9/3/2011	Backpack	Northern Marsh (Rat Hole)	45min 1xBP	0	
9/3/2011	Rotenone	Northern Marsh (Rat Hole)	10m x 6m	0	
9/3/2011	Backpack	Andrews Marsh (site1)	90min 3xBP	0	
9/3/2011	Rotenone	Andrews Marsh (site2)	20m x 15m	0	

Table 5. Lake Sorell Juvenile Sampling Effort

Date	Method	Location	Effort	Carp	Comments
7/2/2011	Backpack	Robertson's Marsh	35min 2x BP	0	Behind Barrier Net
7/2/2011	Backpack	Silver Plains (Main Drain)	40min 2x BP	0	
7/2/2011	Backpack	Silver Plains (South)	20min 2x BP	0	
17/2/2011	Backpack	Kermodes (Drain&Marsh)	90min 2x BP	0	
2/3/2011	Backpack	Robertson's Marsh (Drain)	30min 2xBP	0	
2/3/2011	Rotenone	Robertson's Marsh (Drain)	30m x 30m	0	
2/3/2011	Backpack	Robertson's Marsh	30min 2xBP	0	
2/3/2011	Rotenone	Robertson's Marsh	30m x 30m	0	

Date	Method	Location	Effort	Carp	Comments
2/3/2011	Backpack	Robertson's Marsh (west)	30min 2xBP	0	
2/3/2011	Rotenone	Robertson's Marsh (west)	30m×30m	0	
2/3/2011	Backpack	Kemps Marsh	45min 2xBP	0	
2/3/2011	Rotenone	Kemps Marsh	30m×30m	0	
2/3/2011	Fyke Net	Kemps Marsh	24hr soak x6 fykes	0	Many Galaxids
3/3/2011	Backpack	Meaghers Bay	45min 1xBP	0	
3/3/2011	Rotenone	Meaghers Bay	20m×20m	0	
3/3/2011	Backpack	Dogs Head Creek	60min 1xBP	0	
3/3/2011	Rotenone	Dogs Head Creek	30m×30m	0	
3/3/2011	Fyke Net	Duck Bay	24hr soak x6 fykes	0	
16/3/2011	Rotenone	Duck Bay	20m×30m x2applications	0	
8/2/2011	Backpack	Kermodes Marsh	35min 2xBP	0	
8/2/2011	Backpack	Duck Bay	60min 2xBP	0	
8/2/2011	Backpack	Grassy Point	25min 2xBP	0	
31/3/2011	Backpack	Kermodes Cut	60min 2xBP	0	

4.

Transmitters

4.1 Lake Sorell

The two remaining adult transmitter fish were removed from Lake Sorell in November 2010 due to limited battery life. In January 2011, the novel concept of juvenile transmitter fish was implemented, where 15 individuals were released at various locations around the lake. The benefit of using juvenile fish is that the chance of accidental recruitment is eliminated (reproductively immature), and the high juvenile to adult ratio within the lake suggests that juvenile transmitter fish are likely to be more effective at locating the major aggregations. Figure 3 represents a distribution of the areas favored by transmitter fish during the warmer months of early 2011. The juvenile transmitter fish preferred the deeper areas of the lake with a rocky substrate, but also formed aggregations over shallow mud bottoms on warm sunny afternoons. The high average rainfall during the winter of 2010 allowed many of the transmitter fish to access the marshy vegetative areas close to shore.

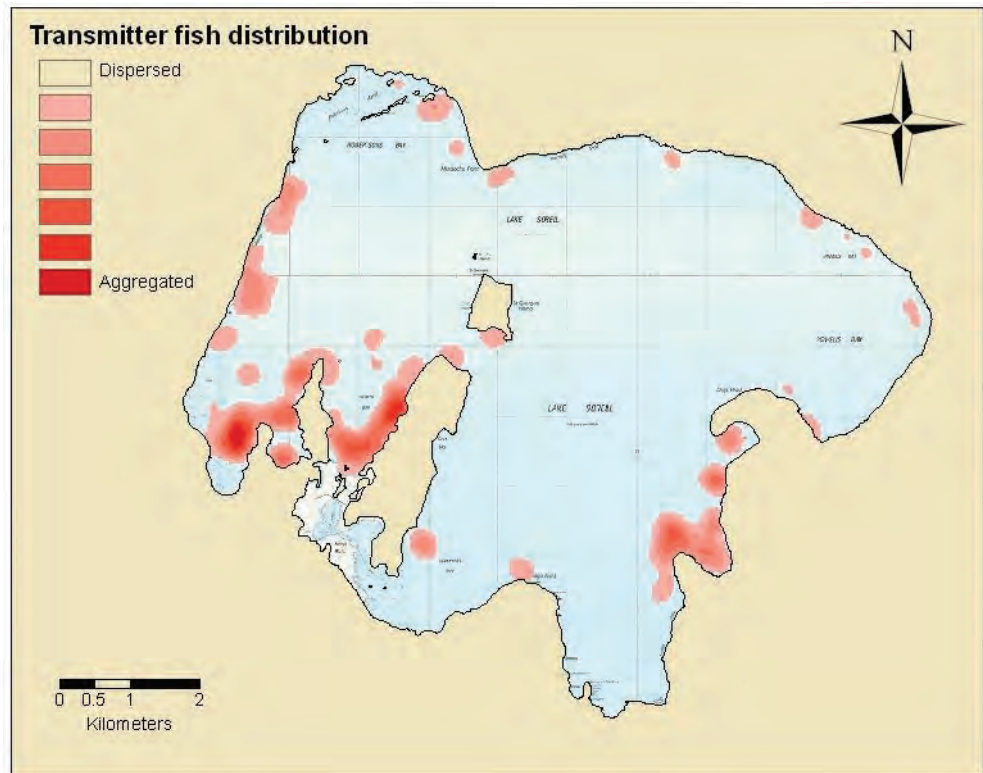


Figure 3. Lake Sorell summer transmitter fish distribution (2010 / 2011)

5.

Pheromone Trials

In conjunction with the CMP, an Invasive Animals Cooperative Research Centre (IACRC) funded pheromone trial project was undertaken in collaboration with Professor Peter Sorensen from the University of Minnesota. These trials were designed to investigate the feasibility of prostaglandin as a chemo attractant. The 2 year funded project also involved:

- A review of existing transmitter fish tracking, catch / effort and environmental data to identify patterns and correlations.
- The investigation of environmental triggers responsible for carp movement and aggregation events.
- The development of methods associated with environmental triggers in facilitating carp capture.
- The provision of support to existing IACRC projects.
- The demonstration of techniques or products arising from other IACRC projects.

The CMP has also been trialing its own chemo attractants including pituitary gland extracts from donor fish and Ovaprim. Thus far, trials have provided mixed results with a small number of carp being captured in traps placed in front of enclosures holding primed fish (Figure 4).

Summary of Trials 2010-2011.

Prostaglandin Trials.

A total of five experiments spanning 52 days using prostaglandin primed odour donor carp were conducted to attract and trap feral (wild) carp in Lake Sorell between October 2010 and January 2011 (Table 6). All odour donor females received two intraperitoneal prostaglandin implants except in one experiment, where only one of the fish received two implants and the other two received a single implant. In parallel male odour donor fish were primed by intramuscular implantation of Ovaplant (Syndel Labs, Canada), a slow releasing GnRH analogue.

The location of two radio-tagged male carp in the lake was also monitored; however no specific behavior in response to the placement of donor carp could be inferred. No feral or radio-tagged carp were caught in traps set close to the prostaglandin primed females. In contrast, two adult carp (a radio

tagged male and a feral female) were captured in a trap set in close proximity to the male odour donor fish.

Table 6. Summary of pheromone trails and their relative efficiencies in trapping feral or radio-tagged adult carp.

Approach	Location	No. Expt	No Days	No. Nets	No. Caught	CPUE
SFN (Oct-Feb)	Multiple	151	151	19	6(3F+3M)	0.0021
BFN (Oct-Dec)	Multiple	92	92	19	6(3F+3M)	0.0034
PGF _{2x}	DB	5	52	1	0	0.0000
Ovaplant	DB	5	52	1	2 (1M+1F)	0.0384
Pituitary/ Ovaprim	DB/MD	3	5	1	2 (F)	0.4000

NOTES: SFN = Single Fyke Net; BFN = Big Fyke Net; PGF_{2x} = Prostaglandin_{2x}

Pituitary Extract / Ovaprim Trials

A limited number of trials (three) were conducted over a period of 5 days, wherein the odour donor female fish were primed with either pituitary extract or Ovaprim (Table 6). In all instances only female carp were used as odour donor and were primed with either 1 ml or ~30 mg/kg body weight of either Ovaprim or pituitary extract respectively.

In all two female feral carp were caught in a fyke net set in close proximity of the primed odour donor fish (Figure 4). No radio-tagged male fish were present in the lake at the time of these experiments as it was necessary to remove these male carp due to the high risk of spawning.



Figure 4. Fyke net with two adult female carp trapped. The fyke net was set downstream of an enclosure holding primed (with pituitary extract) carp in the distance.

Overall the number of feral adult carp trapped using odour donor carp was low. However the results could still be significant given the low number of adult carp in the lake (as a result of the ongoing control program) as demonstrated by the capture of only 16 adult carp (including transmitter fish) during the year. The results are in agreement with previous captures of feral carp following deployment of either Ovaprim (a GnRH analogue) or pituitary extract primed females in Lake Crescent.

In conclusion it appears that no attraction was shown to the prostaglandin implanted fish. In contrast use of either GnRH analogue or the pituitary extract did produce fish captures. The latter are also simpler and less invasive to administer and will continue to form an integral part of the techniques being deployed.

6.

Carp Workshop 2011

On 10 -11 May the annual workshop was held at the Hobart Meeting and Conference Center. The aim of the workshop was to present the findings from the past year, review the progress of the Carp Management Program and plan for the coming year. Staff were involved in presenting the results and had the opportunity to develop an operational plan for the coming year. The commercial eel fishermen, Shane McHugh and Shaun Finlayson, attended on the first morning and were engaged in the discussion. Professor Nigel Forteach was engaged to provide independent review and comment and it was very helpful to have someone with his vast experience and knowledge present. At the end of the 2 days the findings and recommendations were presented to the Minister, Bryan Green MHA and there was an opportunity for open discussion about future plans.



7.

Male Carp Sterilisation

Male carp surgically implanted with radio-transmitters have been used in both lakes as "Judas fish" for tracking carp aggregation and their removal. This technique has been an integral tool for over 14 years and proven particularly powerful in assisting in the eradication of carp from Lake Crescent. Although equally useful in Lake Sorell, spawning activity was observed in the lake during spring of 2009-10, despite the limited number of adults remaining. Unfortunately the male radio-tagged carp in the lake have been implicated in this spawning and subsequent recruitment of thousands of carp. Therefore the continued use of non-sterile radio-tagged carp in the lake is considered very risky and the option of using sterile carp was identified as necessary.

With the assistance of the Department of Primary Industries, Parks, Water and Environment (DPIPWE) Senior Aquatic Vet, Kevin Ellard, two options have been investigated — chemical and surgical. Chemical sterilisation was attempted by injecting *Superlorin*, a commercially available GnRH agonist, whereas the surgical approach involved quarterisation of the testicular ducts (Figure 5).



Figure 5. Surgical ablation of male carp. A) exposed testicular duct about to be ablated and B) Kevin Ellard suturing the wound following the operation.

In all, 4 carp were treated with *Superlorin* implants and 11 carp were surgically sterilised. All fish were anaesthetised during the process of sterilisation and treated with antibiotics following the operation. Of the 11 surgically sterilised males 7 were also implanted with radio-transmitters. The fish were held in a recirculatory system, monitored regularly and assessed monthly. All the treated fish are still surviving. However, the *Superlorin* treatment did not appear to suppress milt production in any of the treated fish, suggesting that it is ineffective and perhaps needs optimisation of the administered dose.

Initially all surgically sterilised males did not produce any milt, suggesting successful sterilisation. However only one male was found to be milt free in subsequent assessments, suggesting that regeneration and reconnection of the testicular ducts to the urinogenital tract had occurred in all but one fish. Therefore further refinement of the technique is required and a follow up Fisheries Research Development Corporation (FRDC) funding application has been submitted to assist its development and more systematic assessment, with a view to have sterilised tracker fish ready for deployment by October 2012.

8.

Water Yields and Deficits

Rainfall of 864.5mm was recorded at the Lake Crescent field station from July 2010 to June 2010.

Table 7. Rainfall and release data (2010-2011).

Month	Rainfall (mm)	Sorell Release (ML)	Crescent Release (ML)
July	6	0	0
August	138.5	0	712.89
September	46	0	8.76
October	55	0	9.38
November	98.5	0	93.82
December	72.5	0	85.85
January	63.5	0	904.74
February	34.5	0	669.88
March	135.5	0	632.85
April	80	0	61.29
May	30.5	0	38.83
June	104	0	3826.83
Total	864.5	0	7045.12

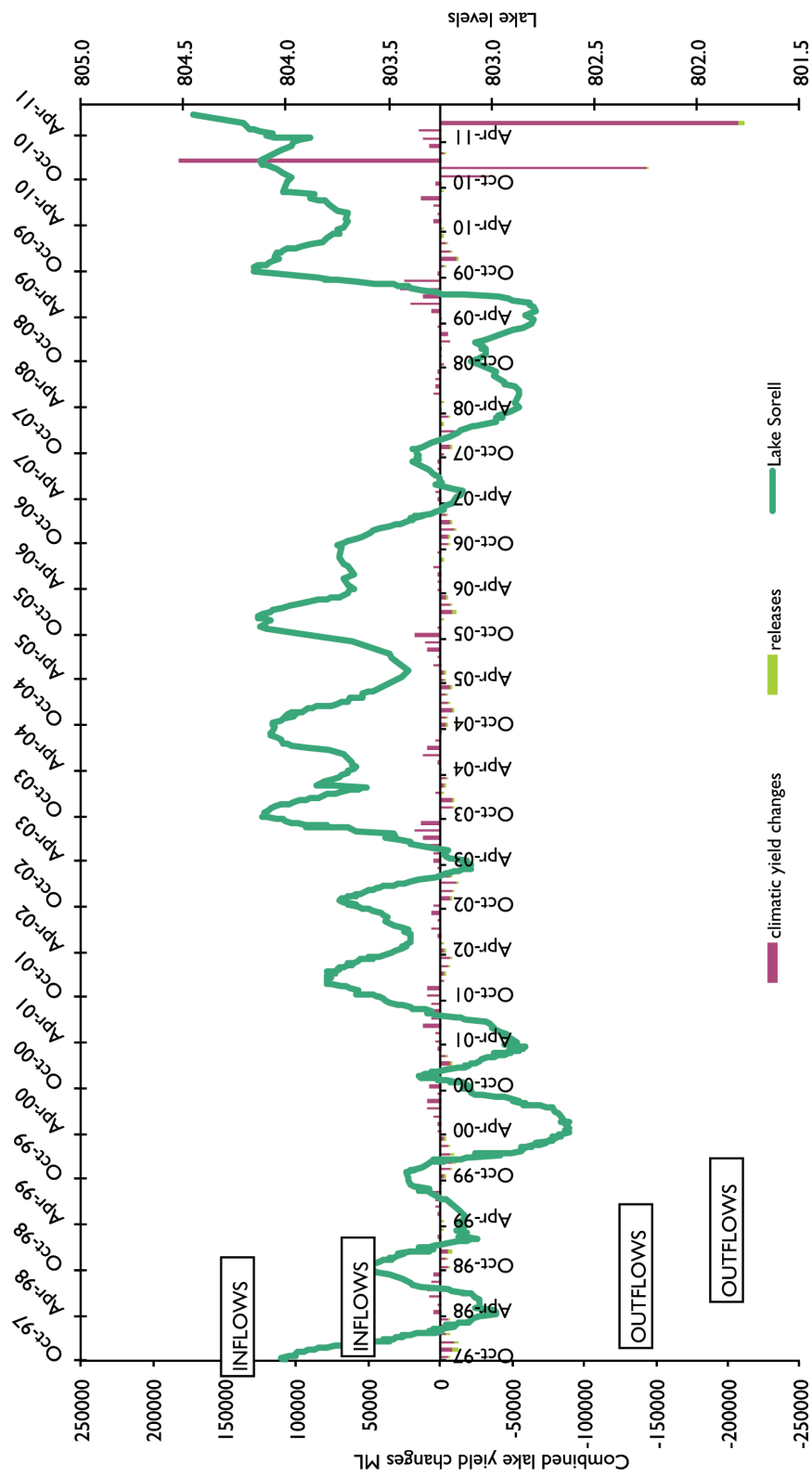


Figure 6. Lake Sorell lake levels, water yields and deficits (1997 - July 2011).

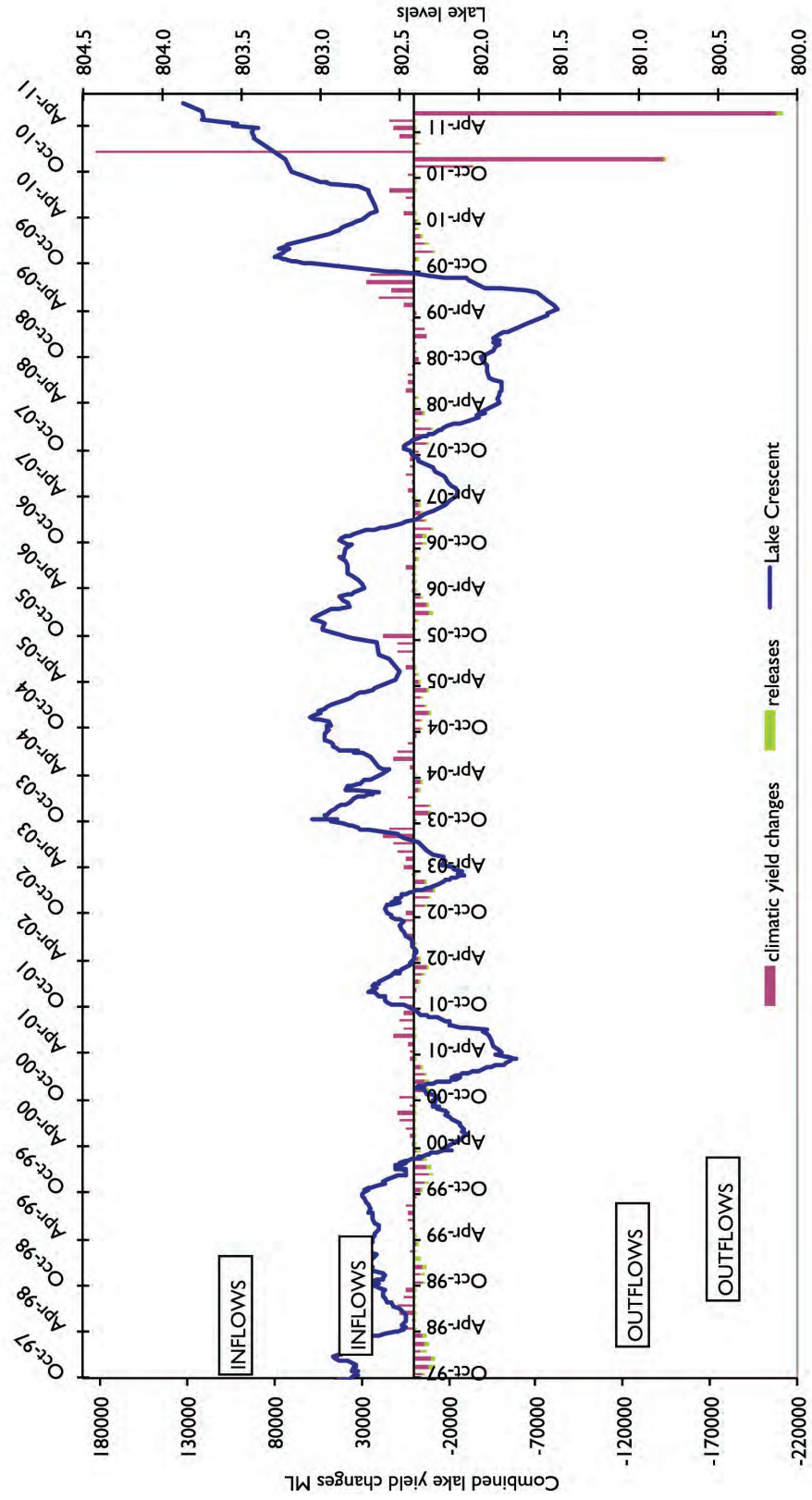


Figure 7. Lake Crescent lake levels, yields and deficits (1997 - June 2011).

9.1 Staff Positions

In July Robert Keeley was successful in his application for the position of Technical Officer and Jonah Yick and Brock Cuthbertson were also employed. To assist with fishing during the spawning period Mike Johnson and Grant Houniet were employed through the Spring and Summer period. Bernard Creed undertook casual work as required.

In October Andrew Taylor resigned from his position as Scientific Officer on the IACRC project. This left the project somewhat up in the air but the work was taken over by consulting scientist Dr Jawahar Patil.

Table 8. Staff positions (2010 - 2011).

Technical Officers	Robert Cordwell (1fte) Terry Byard (0.5fte) Robert Keeley (1fte) Brock Cuthbertson (1fte) Jonah Yick (1fte)
Field Officers	Mike Johnston (0.5fte), Grant Houniet (0.25fte)
Casual Staff	Bernard Creed, Reece Pennicott
Senior Technical Officer	Paul Donkers (0.8fte)
Consulting Scientist	Dr Jawahar Patil
Section Manager	Chris Wisniewski (1fte)

9.2 Staff Requirements as per Industrial Agreement

IFS staff are required to undertake weekend work and hours beyond general conditions of service as part of the industrial agreement. The following table outlines the work undertaken by CMP staff for the year:

Table 9. Weekend work, public holidays and extra hours.

Staff Member	Saturday	Sunday	Public Holidays	Extra Hours
Robert Cordwell	4	4		125
Paul Donkers	4	4		109.88
Jonah Yick	4	4		125.35
Brock Cuthbertson	5	4		115.82
Robert Keeley	4	4		126
Terry Byard	8	7		
Chris Wisniewski	9	9		134.20

10.

Activities

10.1 Carp Sightings

29 November 2010 – Pittwater Golf Club – Large goldfish

10.2 Public Presentations

During the course of the year staff from the CMP gave presentations to the following organisations.

Table 10. CMP Presentations 2010 - 2011

Date	Organisation
14 August	Westbury Anglers Club
16 September	Deloraine Anglers Association
21-22 May	Trout Weekend Liawenee
20-23 June	Australasian Vertebrate Pest Conference

10.3 Timeline of Major Events

Table 11. Timeline of major events 2010 - 2011

Date	Event
1 Oct 2010	Eel fishermen commences fishing in Lake Sorell
15 Oct 2010	First adult female carp captured
27 Oct 2010	First Prostaglandin trial
7 - 12 Dec 2010	Pituitary extract / Ovaprim trial
6 Jan 2011	Eel fishermen removes gear from Lake Sorell
6 Jan 2011	Eel fishermen commences fishing in Lake Crescent
13 February 2011	Eel fishermen removes gear from Lake Crescent
22 - 25 March 2011	Lake Sorell juvenile carp fyke net survey
7 - 11 March 2011	Lake Crescent juvenile carp fyke net survey
10 - 11 May 2011	Carp workshop
May 2011	Raised concrete height at Sorell Screens
June 2011	Raised and extended levee bank at Kermodes Cut

10.4 Media Articles

9 November 2010 – ABC News Online – “Sex trap the next weapon against carp”

14 December 2010 – Journal Sentinel Online – “Lakes Adrift: Invasion demands leadership, action”

23 November ABC TV Landline - “Scaling Back”

26 December 2010 – The Sunday Examiner – “Program sees results in carp eradication”.

Issue 55 Dec-Jan 2010-2011 – Australian Fishing Tackle Retailer (AFTR) – “Pheromones fool carp”

Issue 55 Dec-Jan 2010-2011 – Australian Fishing Tackle Retailer (AFTR) – “Not enough lobster, too many carp”

Jan/Feb 2011 – Freshwater Fishing Australia – “Investigating new ways to control carp”

Natural Account	Total Prds	Period 0	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11	Period 12	Period 13
1201 - Motor Vehicles	48,280.22	0.00	0.00	0.00	0.00	(27,097.73)	0.00	0.00	0.00	0.00	0.00	0.00	113,993.95	(38,616.00)	0.00
1202 - MV Acc Dep	46,806.37	0.00	0.00	0.00	0.00	8,190.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38,616.00	0.00
1210 - Asset Clearing	33,863.64	0.00	56,128.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13,636.36	0.00	(47,037.09)	0.00	11,136.37
4201 - Annual Cont	(400,000.00)	0.00	(400,000.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4307 - Reimbursements	(50.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(50.00)	0.00	0.00
4529 - Misc Rev	(150.00)	0.00	0.00	0.00	0.00	(100.00)	0.00	0.00	0.00	0.00	0.00	(50.00)	0.00	0.00	0.00
4601 - Gross disposals	(35,158.64)	0.00	0.00	(19,195.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(15,963.64)	0.00
5101 - Salaries	311,046.83	0.00	13,709.57	17,587.82	32,324.96	18,574.44	16,503.69	18,517.75	15,423.57	16,437.25	32,356.50	14,645.95	98,545.89	16,419.44	0.00
5102 - Lump Sum Leave	21,107.81	0.00	1,221.00	4,809.99	1,671.38	3,145.64	1,663.31	51,639	485.82	1,022.59	1,958.45	5,247.05	51,453	348.66	0.00
5106 - Superannuation	38,871.05	0.00	1,670.70	2,454.66	3,765.88	2,384.25	1,893.22	2,179.34	2,092.51	1,975.12	4,201.06	2,304.26	12,018.61	1,931.44	0.00
5107 - Otime-Penalties	6,527.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,593.39	0.00	3,265.40	668.83	0.00	0.00	0.00
5109 - Allowances	23,994.72	0.00	1,474.76	2,239.78	3,221.62	1,831.47	1,667.02	1,731.72	1,739.51	1,738.80	2,642.96	2,142.76	1,782.16	1,782.16	0.00
5111 - Payroll Tax	25,100.95	0.00	58.22	2,287.5	187.21	295.64	539.60	286.78	419.45	229.50	189.53	99.64	22,511.62	55.01	0.00
5112 - Work Comp Prem	1,729.69	0.00	0.00	1,904.5	0.00	0.00	0.00	0.00	485.82	0.00	0.00	0.00	0.00	1,053.42	0.00
5113 - Staff Recruit	1,350.00	0.00	0.00	0.00	0.00	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5201 - Market & Promo	16.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.62	0.00
5203 - Training	4,357.48	0.00	0.00	976.15	789.98	278.02	0.00	0.00	0.00	0.00	0.00	1,130.45	168.64	1,014.24	0.00
5205 - Prof Fees	6,570.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6,570.00	0.00	0.00	0.00	0.00
5207 - Equip Hire/Lea	19,259.18	0.00	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	1,547.18	2,240.20	0.00
5208 - Equipment Maint	708.60	0.00	0.00	0.00	0.00	0.00	202.73	0.00	0.00	145.00	336.82	0.00	24.05	0.00	0.00
5209 - General Ins	754.99	0.00	23.88	0.00	0.00	489.58	0.00	0.00	0.00	0.00	0.00	0.00	241.53	0.00	0.00
5212 - Printing/Pubs	1,097.55	0.00	0.00	0.00	1,097.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5214 - Vehicle Fuel	297,389.1	(1,279.18)	1,920.08	1,106.49	1,798.68	2,351.01	3,209.02	4,019.88	1,641.09	3,526.83	2,157.25	2,855.29	1,577.90	3,390.76	1,463.81
5217 - Vehicle Maint	5,058.08	0.00	0.00	2,137.5	873.82	714.85	341.55	77.24	0.00	25.00	639.80	756.14	1,359.58	56.35	0.00
5218 - Phones & Fax	895.06	(804.1)	80.41	78.55	117.78	117.52	88.80	74.28	62.87	67.56	66.74	71.63	82.61	66.72	0.00
5219 - Postage/Freight	552.84	0.00	0.00	0.00	0.00	10.54	0.00	0.00	542.30	0.00	0.00	0.00	0.00	0.00	0.00
5220 - Comp Hardware	144.55	0.00	0.00	0.00	0.00	0.00	0.00	144.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5222 - Comp Software	153.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	153.64	0.00	0.00
5223 - Network Costs	225.78	0.00	0.00	0.00	0.00	0.00	15.78	0.00	30.00	0.00	90.00	0.00	60.00	30.00	0.00
5224 - Office Req	203.92	0.00	0.00	0.00	0.00	0.00	203.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5227 - Gas & Oxygen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5228 - Mob Phones Rads	4,902.39	(253.86)	253.86	247.46	748.81	307.99	336.61	455.20	337.47	431.59	591.24	338.01	320.37	787.64	0.00
5229 - Equip Purchases	45,548.36	0.00	0.00	0.00	22,250.00	0.00	0.00	0.00	8,240.91	14,938.00	63.45	0.00	56.00	0.00	0.00
5231 - MV Deprn	11,509.71	0.00	0.00	0.00	0.00	399.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11,110.67	0.00

Budget continued

Natural Account	Total Prds	Period 0	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11	Period 12	Period 13
5232 - Vessel Depn	4,452.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4,452.68	0.00
5234 - Op Supplies	55,488.21	0.00	1,633.05	10,374.40	25,137.45	90.59	2,363.78	718.23	6,622.35	1,549.45	2,071.95	0.00	4,870.41	1,526.55	0.00
5236 - Cont Services	42,114.41	0.00	0.00	425.00	980.00	0.00	2,075.00	1,050.00	2,763.00	1,543.00	1,300.00	0.00	1,925.00	29,340.91	712.50
5237 - Fish Transport	209.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	209.41	0.00	0.00	0.00	0.00
5238 - OH & S	707.72	0.00	0.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	305.45	0.00	52.27	0.00	0.00
5240 - Meetings & Conf	4,254.78	0.00	0.00	0.00	0.00	0.00	195.36	43.94	1,539.7	293.60	0.00	0.00	2,177.27	1,390.64	0.00
5242 - Entermnt NO FBT	734.99	0.00	21.77	0.00	0.00	0.00	0.00	232.36	480.86	0.00	0.00	0.00	0.00	0.00	0.00
5243 - Misc Expenditur	1,448.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,448.79	0.00	0.00	0.00	0.00	0.00
5246 - Prop Maint	170.89	0.00	0.00	0.00	0.00	0.00	157.25	0.00	0.00	0.00	13.64	0.00	0.00	0.00	0.00
5250 - Building Depn	4,546.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4,546.87	0.00
5253 - Vessel Maint	7,219.99	(3,090.00)	97.50	2,304.09	0.00	0.00	399.32	266.40	3,263.66	885.87	1,059.92	601.55	888.15	35.00	508.53
5255 - Intrastate Trav	45,225.35	0.00	1,143.00	3,750.80	3,342.27	4,846.50	8,846.10	4,426.95	6,876.10	3,762.65	3,251.86	1,734.86	1,392.35	1,080.84	771.07
5258 - Prot Clothing	9,050.77	0.00	600.57	946.96	340.61	2,133.89	619.72	363.45	1,672.41	406.04	518.92	68.19	360.76	996.52	22.73
5267 - Vessel Outboard	2,181.27	0.00	0.00	0.00	600.00	0.00	818.18	0.00	373.64	14.45	375.00	0.00	0.00	0.00	0.00
5268 - Staff Fuel Allo	228.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	228.00	0.00	0.00
5269 - Office Printing	120.87	0.00	0.00	0.00	0.00	14.12	0.00	20.25	0.00	66.09	10.86	0.00	0.00	9.55	0.00
5270 - WDV Disp Assets	18,508.32	0.00	0.00	0.00	0.00	18,508.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5280 - Signage	991.20	0.00	896.00	0.00	0.00	0.00	0.00	0.00	95.20	0.00	0.00	0.00	0.00	0.00	0.00
	452,672.44	-4,703.45	-3,189,904.45	30,287.28	100,795.18	40,733.23	42,190.14	36,671.89	57,943.08	52,054.36	79,429.75	341,617.9	2,197,653.38	6,771,925	146,150.1





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