

Inland Fisheries Service Carp Management Program

Quarterly Report



July to September 2016



Australian Government

Inland Fisheries Service



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This quarterly report details the Carp Management Program activities from July to September 2016.

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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Carp captures at a Glance

Lake Sorell

July – September 2016 (Total)	Adult*/Sub-adult/Juvenile*	Total 1995 to present
7	0/7/0	40,913

*These fish are not part of the 2009 cohort

Lake Crescent

July – September 2016 (Total)	Adult/Juvenile	Total 1995 to present
0	0 / 0	7797

Overview

Lake Sorell

Throughout July-September, maintenance was done at Lake Sorell ready for the peak carp spawning season (October to February). This involved checking and repairing the 14 kilometres of barrier netting used to stop carp from getting into their wetland spawning sites. Several kilometres of gillnet was also repaired in anticipation of warming waters and rain events. This included both gillnets used in active fishing operations, as well blocking gillnets which are used with barrier nets to stop carp from accessing marshes.

Despite cold water temperatures, fishing effort was maintained on a small scale. Transmitter fish remained spread across the lake, with most of the fish sitting in the same locations for weeks at a time. They began to move in line with rising lake levels, however no aggregating behaviour was seen. Gill nets were set in a range of spots, targeting both tracker fish as well as rocky reef structures in deep water (2m +). Seven carp were caught during this period, three of which were males suitable for radio-transmitter implants. These three carp were released back into the lake with transmitters ready for the

coming season. In mid-September, the big fyke nets were sewn into the barrier nets around the lake. The big fyke nets are stitched into the barrier nets in strategic locations where carp are known to want to enter the marshes. They target maturing carp which are pushing into the shallows seeking warm water and spawning habitat. The big fyke nets will also be an indicator of when the carp have moved inshore, allowing gill nets to be set to catch them.



Picture 1. One of the seven carp caught over the Jul-Sep period. The fish was caught in a multi-monofilament gill net set over deep rocky shores.

Significant rain events throughout the winter months elevated both lakes Sorell and Crescent to high levels. While this eases navigation within the shallow lake, it also increases the amount of marsh area within the lake. Compared to the 2015/16 season, there is now a greater opportunity to target carp pushing into the edges of the lake, although this also increases the risk of spawning. As a result, the current effort is to block potential spawning habitat, and to ensure carp have not been able to penetrate

the marshes. The lake Sorell and Crescent water control screens have been cleaned daily to get water from the lakes. The screens are a vital piece of infrastructure as they filter all of the water being released from Lake Sorell (where carp are present), into Lake Crescent which is now carp free. The screen heights were adjusted accordingly in response to the heavy rainfalls which resulted in the rapid increase in lake levels. The heights of the screens between the two lakes are managed carefully, so that water releases can be controlled and released when required. This can either be between the two water bodies or with water releases out of the whole system into the Clyde River.



Picture 2. Inspecting barrier nets for holes or any signs of wear.

Lake Crescent

Lake Crescent's water quality is also continuing to show signs of improvement (Figure 1). Since the extremely low water levels in 2008, the average total turbidity of Lake Crescent has improved considerably. This is the direct result of high water levels flushing the lake after large rainfall events. Currently, the water quality of Lake Crescent is the best it's been for the past 10 years. The annual carp

survey in Lake Crescent conducted in March 2016 found no sign of carp recruitment but revealed a healthy population of golden galaxias thriving around the lake. The effort of the commercial eel fishermen further supported that Lake Crescent is now carp free.



Picture 3. The striking markings of the golden galaxias are hard to appreciate in the turbid waters of Lake Crescent.

CMP staff presents work at the Australian Society for Fish Biology (ASFB) and Oceania Chondrichthyan Society (OCS) 2016 joint conference in Hobart

The 2016 ASFB and OCS conference was held from the 4th – 8th of September at Wrest Point, Hobart. Delegates from universities, environment, and fisheries bodies around Australia attended the conference. There were 200 oral presentations in total, focusing on a range of fisheries related topics. Chris Bowen, Jonah Yick, Chris Boon, and Raihan Mahmud from the Carp Management Program (CMP) presented work in the “Invasive species: impacts, detection and control” session. The team talked about the eradication of carp from Lake Crescent, the current status of carp in Lake Sorell, and the research being conducted into the jelly-like gonad syndrome (JGS) which is affecting a large proportion of the male carp in Lake Sorell. All presentations were well received by other delegates, and highlighted the need to carefully manage both recreational and invasive pest fish in Tasmania.



Picture 4. Chris Bowen, Jonah Yick, Dr. Jawahar Patil, Chris Boon, and Raihan Mahmud at the ASFB conference.

CMP staff attend Smith-Root electrofishing training course

In late July, Jonah Yick, Brock Cuthbertson, and Chris Bowen from the CMP attended the Smith-Root Introduction to electrofishing training course, organised by the Soldiers Point Marine Centre at Port Stephens, NSW. Electrofishing with backpack and boat units are fundamental techniques used on the CMP to not only catch carp in shallow water, but to also herd carp into gill nets set adjacent to shorelines. Electrofishing techniques are also used in other sections of IFS, which include the collection of native and pest fish, and general fish surveys. 14 people attended from a range of departments around the country, including staff from Sydney Water, Arthur Rylah Institute in Victoria, and a range of environmental consultants from Victoria, Sydney, and Brisbane. Patrick Cooney, the Director of Electrofishing Science for Smith-Root flew over from Vancouver, WA to run the training course, which consisted of a day in the classroom and a day out in the field. The theory component detailed the science behind electrofishing, safe equipment usage, as well as the ability to use the equipment as effectively as possible, causing minimal harm to the fish. The field trip was based at a small lagoon in Port Stephens, and allowed the group to apply the techniques and information learnt in the classroom. A range of fish species were caught including eels, gambusia, gudgeons, gobies, and Australian bass. Although the staff from the IFS were already proficient with electrofishing use, this training course provided additional information in regards to troubleshooting in the field, improved electrofishing techniques, understanding the fundamentals behind electrofishing, as well as increased accuracy in reporting electrofishing effort.



Picture 5. The electrofishing class at Blue Lagoon, Port Stephens undertaking the practical component of the course.

Work experience

The Inland Fisheries Service (IFS) receives regular requests from schools, universities, and interested graduates looking for work experience in the freshwater fisheries field. The CMP is especially sought after, as the work the students are involved in is very diverse. William Ertler is a year 11 student from Don College in Devonport. Will has always had a keen interest in the aquatic environment and trout fishing, and decided to organise a week of work experience with the IFS to get an insight into the career path he could potentially be taking. The majority of his time was spent with the CMP at Lake Sorell, although he also assisted with a brown trout tagging survey at Arthurs Lake. Not only did Will gain practical experience and workplace skills, but he was also able to apply some of his data handling skills to some of the tasks he was designated. While working with the CMP at Lake Sorell, Will was involved in a range of activities which included general boating activities, operation of a hydraulic net reel, checking and setting of gill nets, repairing barrier nets, using telemetry receivers to pin point the locations of the radio transmitter carp, and the maintenance of the Lake Sorell water control screen structures. However, working with a fisheries department isn't all about catching fish and driving around

in boats! Will was also involved in the collection, management, and recording of biological fish data into a database. This is one aspect of fisheries work which is often not seen in the public eye. When Will completes his secondary education he hopes to enrol into a university and undertake a science degree, most likely relating to fisheries management. His experience at the IFS was perfect for gaining firsthand experience of where he could potentially be in five years' time!



Picture 6. CMP Technical officer Chris Boon assisting Will Ertler with data entry at the IFS New Norfolk head office.

Transmitter fish implants

In late September, four carp were caught in gill nets and kept to be used as transmitter fish. Last season a likely factor to the high mortality rate of transmitter fish was the overall small size of the fish being used, which resulted in the inability to retain the 14g transmitter. In the past most of fish used for implantation were 1 to 1.5kg, while currently the average size of fish being caught now is between 450 and 800gm in weight. In an attempt to overcome this issue 7g transmitters were ordered. Although these had a reduced battery life compared to the 14g transmitters (182 days vs 502 days), they were

more suited for the smaller sized fish. These transmitters also have a function which is able to tell CMP staff whether a fish has died prematurely or has managed to shed the tag. The four transmitter carp were released back into Lake Sorell in preparation for the start of the carp spawning season, which brings the total number of transmitter fish in Lake Sorell to 12. These transmitter fish will allow us to gain a better understanding of the movements of the carp population, indicate when the carp begin to move close to shore to look for spawning habitat, and hopefully result in more opportunities to target shallow water aggregations.



Picture 7. One of the 500gm adult male transmitter carp prior to release back into Lake Sorell.

Employment and funding

Two casual workers were employed in August and September to assist with the repair of gillnets, maintenance, and preparation of equipment.

Table 1. Volunteer positions (July – September 2016)

Name	Background	Timeline
Will Ertler	Don College	4 th – 8 th July
Angus Robinson	University of Adelaide	12 th – 20 th September
Storm Eastley	Rosny College	22 nd August – 21 st September
Samuel Copleman	Oatlands District High School	19 th – 23 rd September
Helen O'Neill	Bangor University, Wales	26 th – 28 th September
Andrew Pickworth	Arthur Rylah Institute for Environmental Research	19 th – 20 th September

Table 2. Casual positions (July – September 2016)

Name	Background	Timeline
Storm Eastley	Rosny College	22 nd August – 21 st September
Chris Boon	Australian Maritime College	19 th – 21 st September

Water Management

Table 3. Water Release data (July – September 2016)

Month	Lake Sorell release (ML)	Lake Crescent release (ML)
July	-	125.62
August	-	979.99
September	-	5388.02
TOTAL	-	6493.64

* Note: There is no continuous flow monitoring on the Lake Sorell release, only spot checks are done. However release from Lake Sorell into Lake Crescent commenced in late June, but the total release volume was not determined.

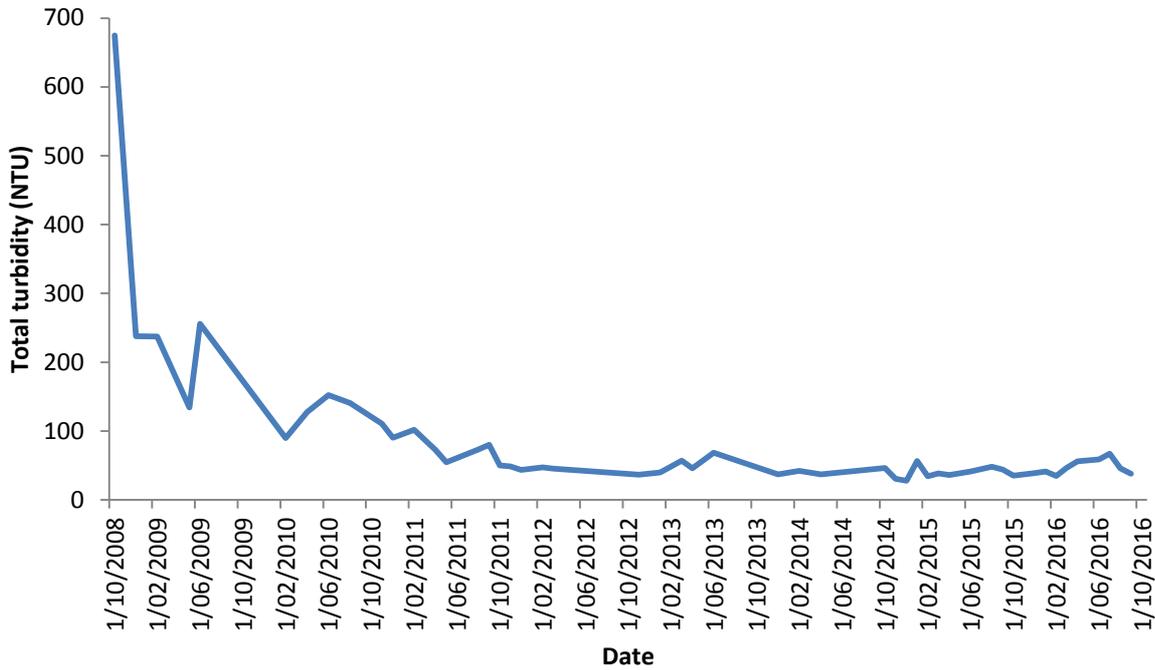


Figure 1. Turbidity levels in Lake Crescent from October 2008 to September 2016

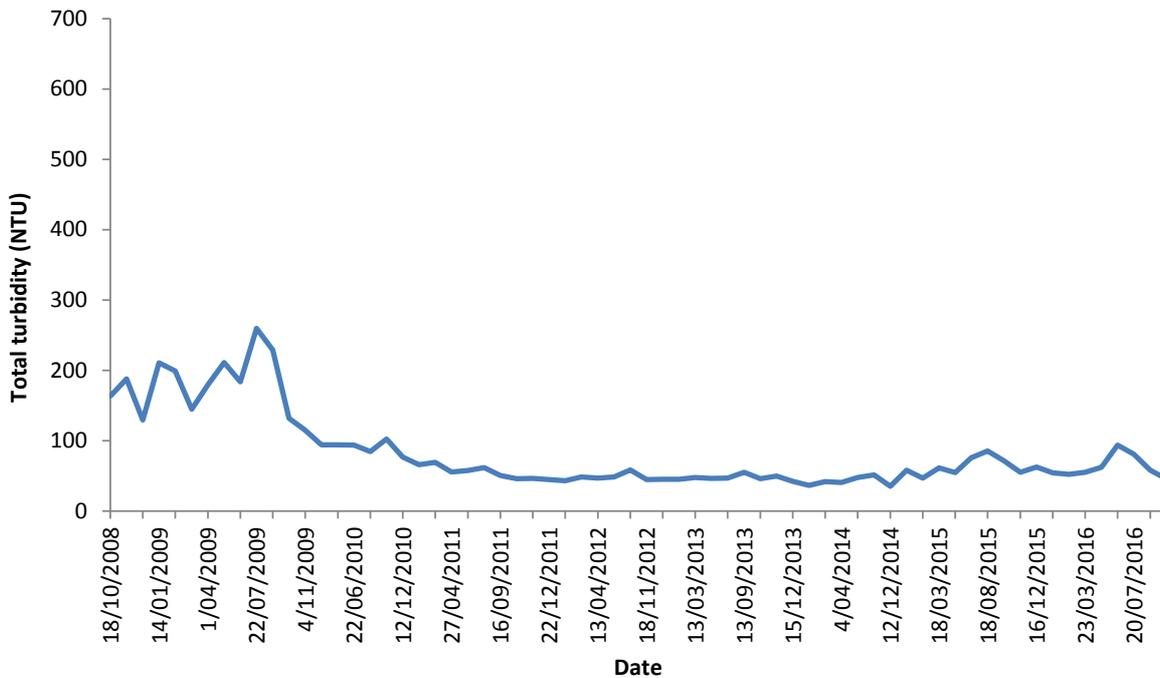
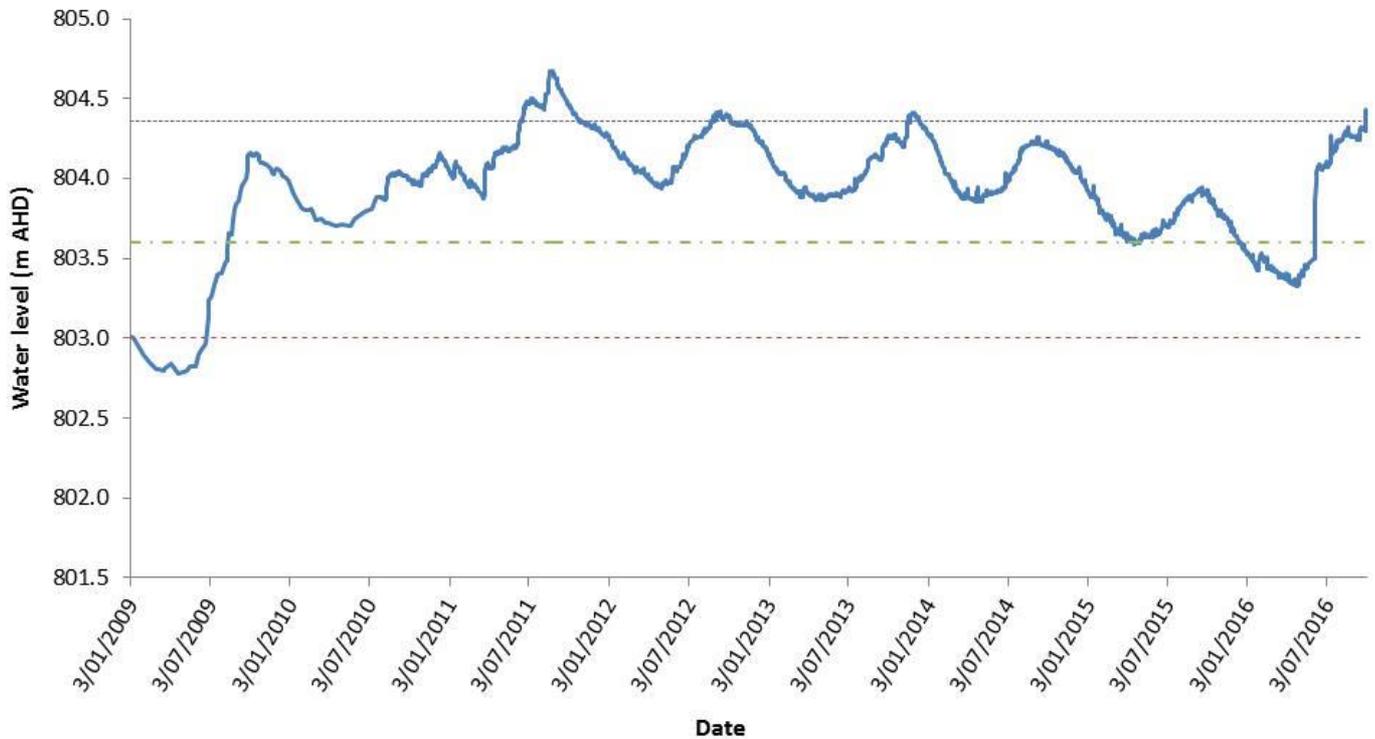


Figure 2. Turbidity levels in Lake Sorell from October 2008 to September 2016

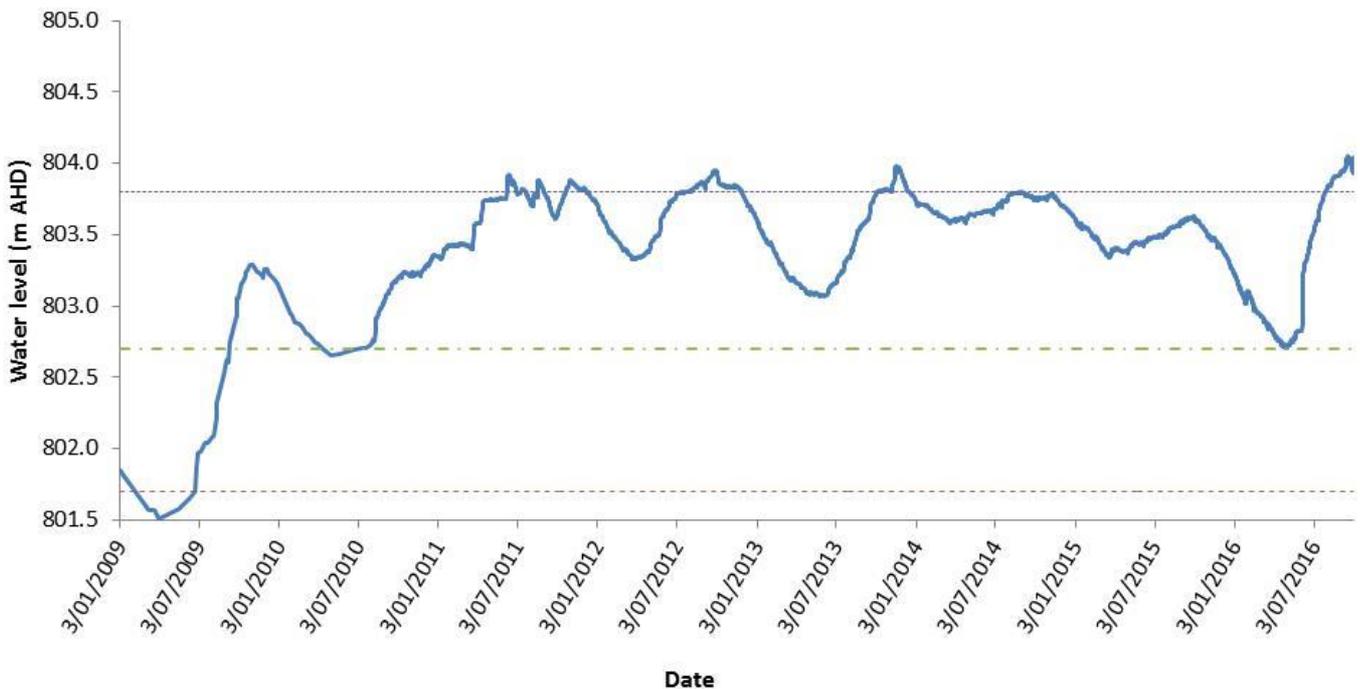


Picture 8. The Lake Crescent spillway screens overflowing with water as a result of the high lake levels at the start of winter.

Lake Sorell



Lake Crescent



— Water level (m AHD) - - - - Sill - - - - Wetlands ····· Full supply