

### Carp Captures at a Glance

#### Lake Sorell

October – December 2013 (Total)	Adult/Juvenile	Total 1995 to present
556	0-556	37,542

#### Lake Crescent

October – December 2013 (Total)	Adult/Juvenile	Total 1995 to present
0	0 - 0	7797

### Overview

#### Lake Sorell

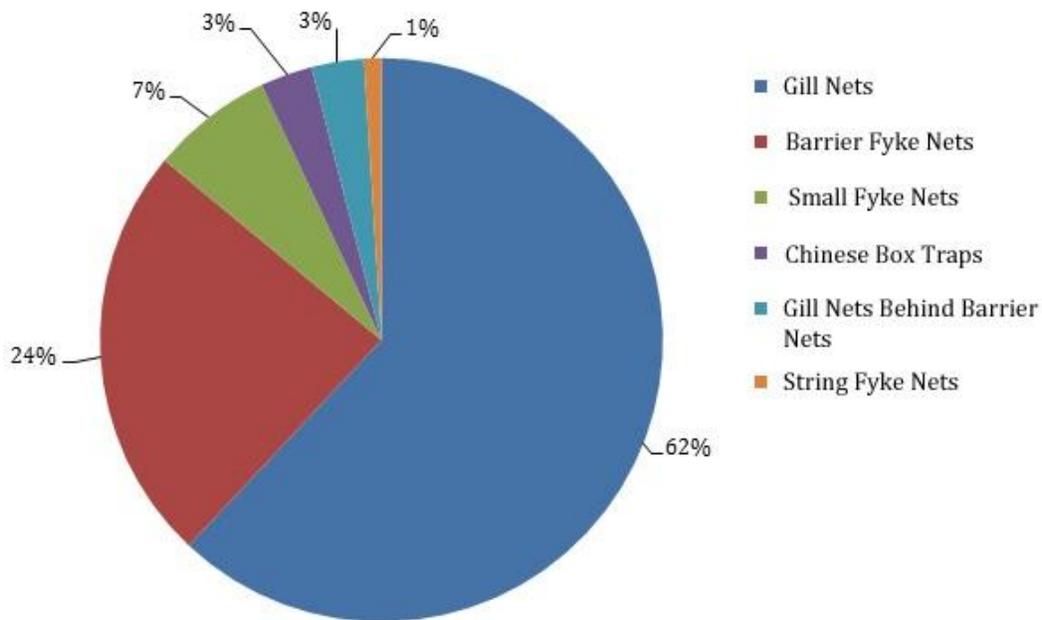


Figure 1. Proportion of carp captures during the October to December 2013 period per method

The beginning of the 2013-14 carp spawning season in October was much slower than previous years, which was attributed to cooler than average weather in spring and early summer. The large aggregations of carp (over 700 fish in a single targeting event) which were caught during this period last year were not observed this season. Changes in water temperature are particularly important triggers for seasonal aggregations of carp. The cool, unsettled weather over the last three months has therefore had an impact on the overall numbers of carp caught. However, carp management staff have adapted quickly to these conditions by using the tracking data from radio tagged carp in conjunction with an increased emphasis on overnight gill net sets to continue fishing down carp numbers. The data indicated that the carp were moving, and becoming more active during the night, and are thus more susceptible to being caught in gill nets. Fishing has been focused on shallow bays and natural bottlenecks in the lake where carp were observed to be moving through. This strategy has provided results at a time when other methods were not proving fruitful. Over the period between October and December, 80 gill net sets accounted for a large proportion of the carp captured (Figure 1), with an average of just over 4 carp per net shot. Fishing gear and techniques are being refined with an emphasis on increasing catch rates, and it is expected that the warmer weather at the start of 2014 will provide more opportunities to target carp using gill nets.

*Table 1: Carp captures by various fishing methods over the Oct-Dec 2013 quarter*

Method	October	November	December	Grand Total
Barrier Fyke Nets	4	75	57	136
Small Fyke Nets	2	15	22	39
Stringed Fyke Nets			4	4
Chinese Box Traps	1	7	9	17
Gill Nets	8	153	185	346
Gill Nets Behind Barrier Nets		4	10	14
<b>Grand Total</b>	<b>15</b>	<b>254</b>	<b>287</b>	<b>556</b>

Other fishing gear which has been used during this period include a range of underwater traps/fyke nets (Chinese box traps, stringed fyke nets), small fyke nets, and large barrier fyke nets which have all contributed to fishing down the carp population. The large barrier fyke nets consistently caught carp pushing into shallower parts of the lake, and also provides information on the movement of carp/ habitat use, which in turn can be used for targeted fishing. The catch from the large fyke nets set along

the barrier nets have been dominated by larger male carp. This was expected, as the first of the male carp from the 2009 cohort were predicted to mature this year, while the females still appear to have a few years to go. These results are also consistent with the biological data collected to date.



*Figure 2: An early season haul of carp from a multi-mono gill net*

In conjunction with the population reduction of carp in Lake Sorell, another key factor is spawning prevention which is where the barrier nets come into play. For added security, gill nets are installed behind the barrier nets during the carp spawning season to ensure that any fish which jump the barrier nets are not able to penetrate into the marsh. The importance of these gill nets was especially clear this season, where 14 carp were caught behind the barrier net in November and December. Regular inspection of barrier nets and monitoring of these gill nets for any breaches continues.

### **Lake Crescent**

The capture a lone female carp in an aggregation with a number of “Judas” transmitter fish in December 2007 proved significant. Despite extensive fishing effort and monitoring over the past seven years no carp have been captured and no evidence of recruitment has been found in the lake. This indicates that

Lake Crescent is carp free. The native golden galaxias is now once again abundant and despite proving difficult to catch, large trout in excess of 7kg have also been seen in recent surveys. Timely rains over the spring period and inflows from Lake Sorell have returned the lake to full supply level, allowing the extensive marshlands to fully recover the macrophytes, invertebrates, and amphibians lost during the drought.



*Figure 3: The lake crescent screen structures with associated high water levels*

## **Bait and hook trials for European carp using static rod and lines.**

European carp (*Cyprinus carpio*) were targeted in suburban Melbourne lakes using rod and line, as a preliminary test for determining the most effective hook type, size, and bait for catching carp using a long line. This study was conducted as an honours project for the Australian Maritime College (AMC). The long lines will be trailed in Lake Sorell, where it is hoped that this technique will be able to assist in the eradication of carp, and consequently the species from Tasmania. Melbourne was chosen as a venue for the preliminary trials due to the ease of access of locations, and the high abundance of European carp in relatively small lakes. A combination of two hook types in two sizes (J-hook and circle hook in sizes 1 and 4) were tested, while a flavoured artificial bait known as a boilie were compared against corn

kernels. A total of 346 hook-hours were fished, with 39 carp hooked and 28 landed. 11 fish were lost due to hooks pulling, or line breakage by abrasion on snags (rocks/logs) while being reeled in. Fish size ranged from 1.5 to 7 kg. Both baits showed similar success with boilies and corn kernels accounting for 21 and 17 fish respectively. Circle hooks accounted for 21 of the 39 fish hooked. 15 of the 24 fish landed had the hook firmly penetrated in the corner of the mouth, which is a preferential and strong hook placement. Of the 15 corner-hooked samples it is interesting to note that 10 of these were with circle hooks. The development of the long lines for use in Lake Sorell has now commenced and will hopefully be deployed in the following weeks. The complete report can be viewed at this link:

<http://www.ifs.tas.gov.au/publications/carp-baits-trial-1>



*Figure 4: A circle hook/boilie hair rig firmly secured in the hinge of the jaw*

## Commercial eel fishing in Lake Sorell and Crescent

The commercial eel fishers provide a valuable carp monitoring service with their large number of fyke nets set in marsh areas, which are checked on a daily basis. No presence of carp was detected in Lake Crescent and no new cohorts were found in Lake Sorell.

Brad Finlayson commenced fishing in Lake Crescent on December 11 with 55 nets and set another 21 the next day to make a total of 76 fyke nets. This number in the lake was consistent for the duration. During December there were 30-36 nets in the Interlaken Marsh and 40-46 along the Clyde Marsh and in Andrews Bay. By-catch averaged 10-20 trout a day. These were released unharmed and comprised of large fish in very good condition and weighing up to 7kg. Up to the New Year a total of 3 tonnes of eels were caught. No carp were detected.

Shaun Finlayson commenced in Lake Sorell on December 16 with 97 fykes and fished this number of nets for the rest of the month. He began with nets at Kermodes Bay, Duck Bay, Boathouse Bay, Silver Plains and Robertson's both inside and outside the barrier nets. For the rest of the month the fykes were constantly moved within these same areas. 6 tonne of eels have been caught. 4 carp were caught by the end of the month, 2 outside the barrier net at Robertson's Bay and 2 outside at Silver Plains. All these carp were from the 2009 cohort.



Figure 5: The flat-bottom eel punt used by the commercial eel fishermen

## Work experience

The Inland Fisheries Service receives regular requests from schools looking for work experience placements for their students that are interested in pursuing a career in fisheries research and management activities around Tasmania. The Carp Management Program is especially sought after, as the work the students are involved in is very diverse. Chris Boon, a second year AMC university student studying a Bachelor of applied science (Marine environment) majoring in fisheries management, has been a long-time volunteer of the Inland Fisheries Service. His first involvement with the IFS was in 2008, through a work experience program in year 10, while he was at Taroona High School. However, due to a lifelong passion and interest for fisheries and fishing, he continued to volunteer himself whenever possible for various activities in different departments of the Inland Fisheries Service. He eventually developed a strong interest for the carp management work being conducted at Lake Sorell, and as a result of his perseverance and exceptional work ethic, he was able to secure casual employment with the team. He is currently involved in a range of activities, from general boat operation to tracking tagged transmitter carp, setting gill nets, dissecting and examining the gonads of carp, setting and checking various traps and fyke nets, as well as a range of data entry. Chris is definitely on his way into fulfilling his dream as a fisheries scientist!



*Figure 6: Chris Boon examining a carp caught in a multi-mono gill net*

## Chemical and surgical sterilisation of carp (FRDC TRF 2012/039)

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As previously reported the sterilisation project (FRDC TRF 2012/039) is progressing well. Summarised below are the activities and achievements for the period October to December 2013.

### Deployment and monitoring of sterile Judas carp in Lake Sorell

A select subset (n=7) of chemically and surgically sterilized fish (along with controls) were fitted with radio-transmitters and deployed into Lake Sorell on 15 [October](#). Daily radio-telemetry tracking of the Judas carp deployed in Lake Sorell suggests that the fish have assimilated well into the feral population. Significantly the fish have already contributed to location of feral carp aggregations and their capture. The movement, behavior and utility of the “Judas fish” will be monitored throughout the summer and compared between the groups.



Figure 7: A sterile carp implanted with a radio transmitter with antennae visible

## Sexing of wild caught carp using ultrasound

Encouraged by our earlier success in sexing sub adult carp (from a single cohort) using ultrasound, an experiment was conducted to determine its utility and accuracy when applied to wild population with mixed (unknown) cohorts. The fish were caught from the La Trobe River Gippsland, Victoria using an electrofishing boat operated by K&C Fisheries Cobains, Victoria. The harvest was transported to the K&C Fisheries fish processing facility and the fish were individually weighed, measured and sexed using multiple methods, including ultrasound. The results suggest that the ultrasound technique was able to accurately sex all the fish (n= 52) captured, including an ability to detect gonadal abnormalities.



*Figure 8: Collection of large adult carp on the K & C Fisheries electro-boat from the La Trobe River, Victoria*

## Transmitter fish behind barrier nets

As mentioned previously in the Lake Sorell section, numerous carp were found to have breached the barrier nets in an attempt to gain access to the marsh. These carp also included transmitter fish, some of which were the newly implanted trial sterile male carp. The information gained from these interactions was noteworthy, in that this behavior had not been observed by previous tracker-fish of this cohort. This suggests that as the carp are coming close to maturity, the drive to enter the marshes to look for a mate/spawning habitat is increasing.



*Figure 9: An active transmitter-implanted sterile carp which has breached the barrier net and become caught in the gill net. **Note:** Photo has been taken on the inside of the barrier net looking out onto the main lake.*

## Employment and funding

In early November, the Carp Management Program was notified that it had been successful in its application for funding from the Federal Governments Caring for Our Country Targeted Area Grants.. The funding amounts to \$820 000 over 2 years, and allows the Inland Fisheries Service to maintain the resources on the Carp Management Program. As a result, Amos Mapleston and Chris Bowen have both been appointed as technical officers. Amos commenced work in December while Chris starts work in early January. Some casual staff will also be used to assist throughout the summer period.

## Water Management

**Table 1. Water Release data (October – December 2013)**

Month	Lake Sorell release (ML)	Lake Crescent release (ML)
October	600	99
November	500	4590
December	400	3627
<b>TOTAL</b>	<b>1500</b>	<b>8316</b>

\* Note: There is no continuous flow monitoring on the Lake Sorell release. Only spot checks are done.



*Figure 10. Lake Sorell at Dago Point boat ramp showing higher than average water levels in summer*

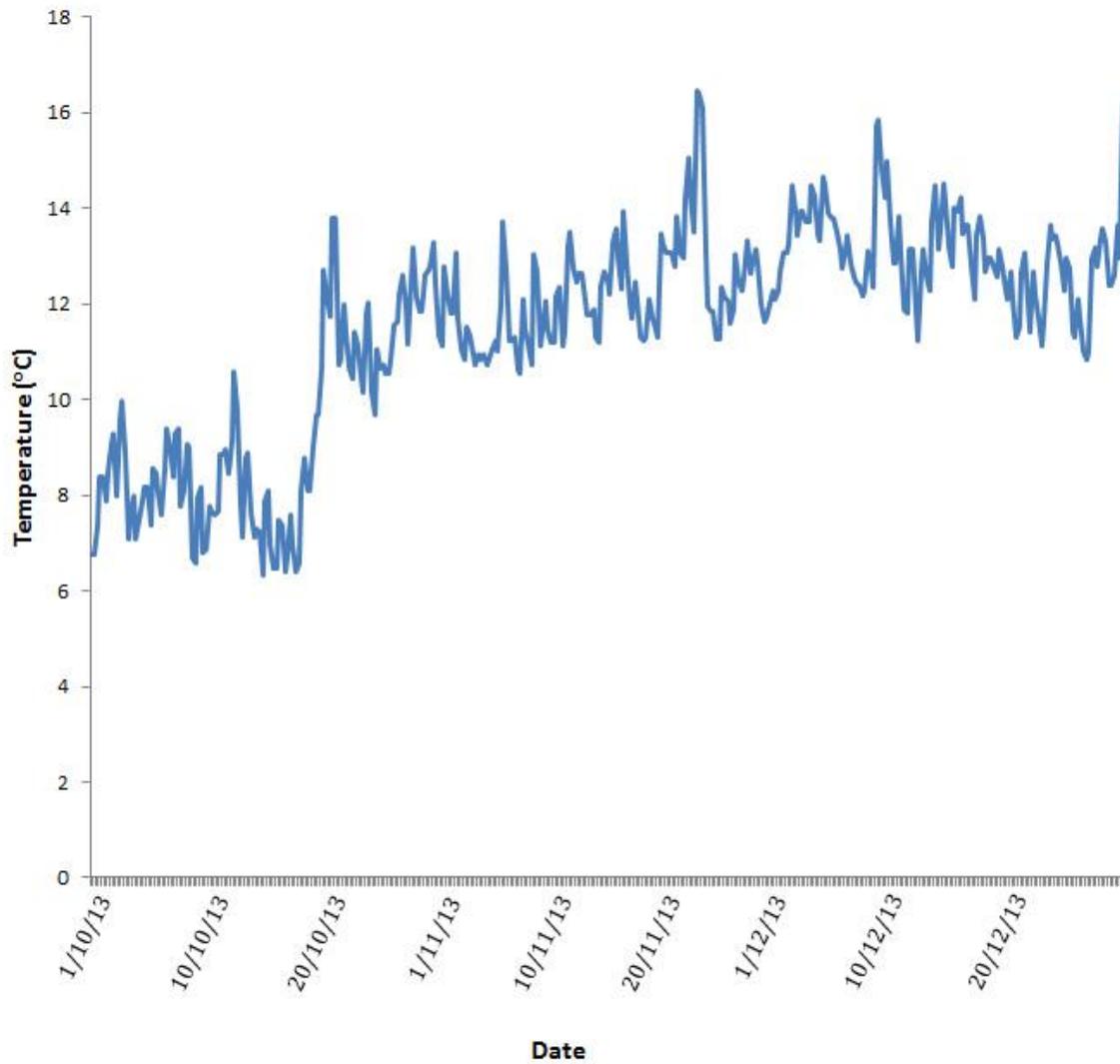


Figure 11. Open water temperature in Lake Sorell from October to December 2013

