



Carp  
Management  
Program



# ANNUAL REPORT

2020-21



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This annual report details the Carp Management Program activities for the financial year 2020 – 21.

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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# Minister's Message

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Carp are on the cusp of being totally eradicated from Tasmania thanks to the dedicated work of Tasmania's Inland Fisheries Service (IFS) and positive input from anglers over many years. The techniques developed and implemented by the Carp Management Program have once again been successful in containing carp to Lake Sorell and stopping them from spawning.

The intensive fishing effort, focused across the 53 square kilometres of Lake Sorell, is looking very promising with only 3 carp being caught this year and estimates indicating few, if any carp remain. A total of 41 499 carp have now been removed from this lake.

Lake Sorell will be opened to trout fishing for the 2021-22 brown trout season. Surveys have found numerous juvenile brown trout indicating the trout fishery is naturally rebuilding.

Carp fishing will continue in 2021-22 and will focus on short periods of intensive fishing around key weather events during the spawning period.

The Tasmanian Government remains committed to the eradication effort that has gained recognition both nationally and internationally, and I look forward to further positive progress in the coming year.



A handwritten signature in blue ink, reading "Guy Barnett". The signature is stylized and cursive.

The Hon Guy Barnett MP  
Minister for Primary Industries and Water

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# Executive Summary

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Only three carp were captured from Lake Sorell this year and it appears that few, if any, now remain.

Intensive fishing effort was undertaken during the 2020/21 spring and summer period. Of the three carp removed, one was a female and the other two were male. The two male carp were affected with the jelly gonad condition (JGC), a naturally occurring condition which has become more prevalent in recent years. There appear to be no fertile males left in the lake.

Juvenile carp surveys during, and after, the spawning season did not find any sign of recruitment, despite extensive electrofishing and fyke net effort. All water released from Lake Sorell is still being screened as a precautionary measure. No carp were found in Lake Crescent or the River Clyde surveys.

The water level in Lake Sorell was high and there were extended periods of warm, sunny weather. These environmental factors are typically conducive to increased carp activity and therefore make fishing most effective. The ideal environmental conditions and low catch rates indicates a critically low remaining population.

The plan for the coming year is to allow Lake Sorell to remain open for public recreational use. Carp fishing effort will be focused on November and December.

# 1. Carp Captures and Fish-down Effort

## 1.1 Carp Captures at a Glance

Table 1. Carp Captures from lakes Sorell and Crescent (2020/21).

Lake	Total 2020/21	Adult / Juvenile	Total 1995 to present
Sorell	3	3 / 0	41,499
Crescent	0	0	7,797

## 1.2 Lake Sorell

### Overview

From July to September, maintenance was undertaken at Lake Sorell to prepare for the carp spawning season (October to March). This involved inspecting and repairing the barrier fyke nets, as well as the 14 kilometres of barrier net blocking the wetlands. 4.75 kilometres of monofilament gill net was also inspected, which was to be positioned behind barrier nets as a secondary measure to prevent carp from accessing the marshes. In mid-September, the big fyke nets were sewn into the barrier nets. These were placed in strategic locations to catch mature carp pushing into the shallows seeking spawning habitat. These fyke nets are also an indicator of when carp will begin to push inshore, allowing gill nets to be set to target these movements.

Additional gill nets were also set across and within key drainage areas in the marshes behind the barrier nets. Trammel gill nets, which are good at capturing carp of varying sizes, were used to block off these areas. No carp were caught behind the barrier nets over the 2020/21 season, which suggests all carp were prevented from accessing the spawning habitat.

Table 2. Total carp captured from all methods used in Lake Sorell (2020/21).

Gear Type	Jul-Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr-Jun	Grand Total
Gill nets	0	0	0	0	3	0	0	0	<b>3</b>
Barrier fyke nets	0	0	0	0	0	0	0	0	<b>0</b>
Backpack electro-fisher	0	0	0	0	0	0	0	0	<b>0</b>
Boat electro-fisher	0	0	0	0	0	0	0	0	<b>0</b>
Gill nets behind barrier nets	0	0	0	0	0	0	0	0	<b>0</b>
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>

Locating and catching carp this season was increasingly difficult, with a high level of fishing effort employed resulting in very few carp caught. The total number of carp caught this season was less than the 2019/20 season (Figure 1), despite increasing fishing effort (Figure 2). Over the 2020/21 season 3 carp were caught and removed from Lake Sorell, compared to 5 carp in 2019/20 (Figure 1). All three carp removed in 2020/21 were caught in trammel gill nets (Table 2). Trammel gillnets were the main type of gill net used for fishing, due to their ability to catch carp of a range of sizes effectively. As many as 77 trammel and monofilament gill nets (between 90 to 250m in length), were set each day during the peak spawning period. Gill nets were set over a wide area of the lake, with structure and habitat continuing to be a priority. The majority of nets this season were set in shallow regions of the lake in response to favourable environmental conditions.

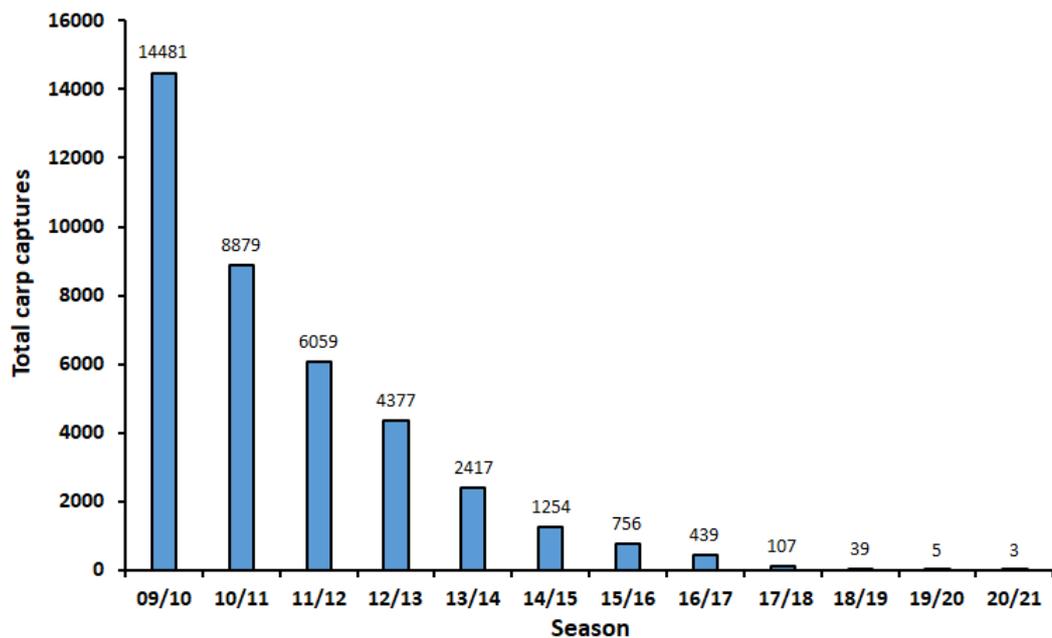


Figure 1. Total carp captures from Lake Sorell (2009-2021).

Most nets were set at right angles to the shoreline to target fish moving around the margins of the lake. Some nets were also set in deeper water over the rocky reefs where carp have historically been known to favor. Although intensive gill netting began in late October, a carp was not caught in the nets until mid-January (Table 2). This was similar to last season, where gill netting started in October; however the first carp caught in a net did not occur until late December. The timing and small number of carp caught this season indicates that there were no breeding pairs, and the resulting high likelihood of functional eradication.

In addition to gillnets, other fishing methods were also used (Table 2). These included big fyke nets stitched into barrier nets, the boat electro-fisher and backpack electro-fishers. All these methods select for adult and any potential juvenile carp (which are not susceptible to gillnet capture), however none were caught this season (Table 2).



*Picture 1. CMP staff celebrate after catching the first carp for the 2020/21 season.*

From October through until February, the lake level in Lake Sorell declined steadily (Figure 12), however the average level was high, which meant that the marshes were inundated for the period. When combined with the increasing water temperature (Figure 10), favourable environmental cues were present to stimulate carp to move around the lake. As a result, the high level of netting effort (100m net hours) was maintained (Figure 2). The intensive netting strategy begun in the last week of October. The netting effort in November and December this season was higher than the effort put in last season for these two months (Figure 3). With the water temperature peaking in January 2021 (Figure 10), as well as prolonged warm weather and settled winds, the netting effort was further increased (Figure 3). In line with hot weather and netting effort, all carp were caught in January this season. The netting effort in January 2021 was marginally less than in January 2020, as a result of the earlier opening date of Lake Sorell to the public (Figure 3). Due to the low catch rates and falling lake level, Lake Sorell was reopened to the public on the 6 February 2021. Consequently, all fishing gear was removed from the lake before this date.

The overall catch per unit effort (CPUE) for carp this season was less than last season, given a higher total netting effort was undertaken (Figure 2), but less carp were caught (Figure 1). The total higher netting effort for this season is especially significant in comparison with last season, given fishing was undertaken over a much shorter period.

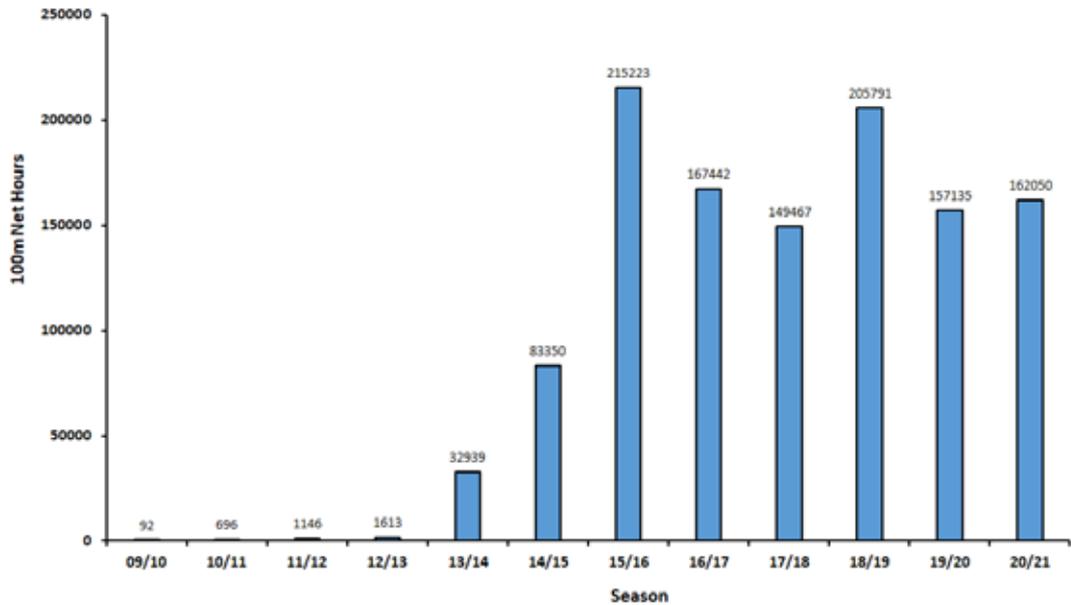


Figure 2. Total non-targeted netting effort used in Lake Sorell (2009-2021).

Note: Non-targeted netting effort refers to gill net effort not associated with targeting transmitter fish, permanent set gill nets, and gill nets set behind barrier nets.

Overall, the proportion of carp caught by gill nets has continued to increase (CMP Annual reports 2016-17, 2017-18, 2018-19, 2019-20), despite the total number of carp caught decreasing. A high level of gill net effort has been maintained for the past six years (Figure 2). This is strong evidence which supports that the number of remaining carp is critically low.

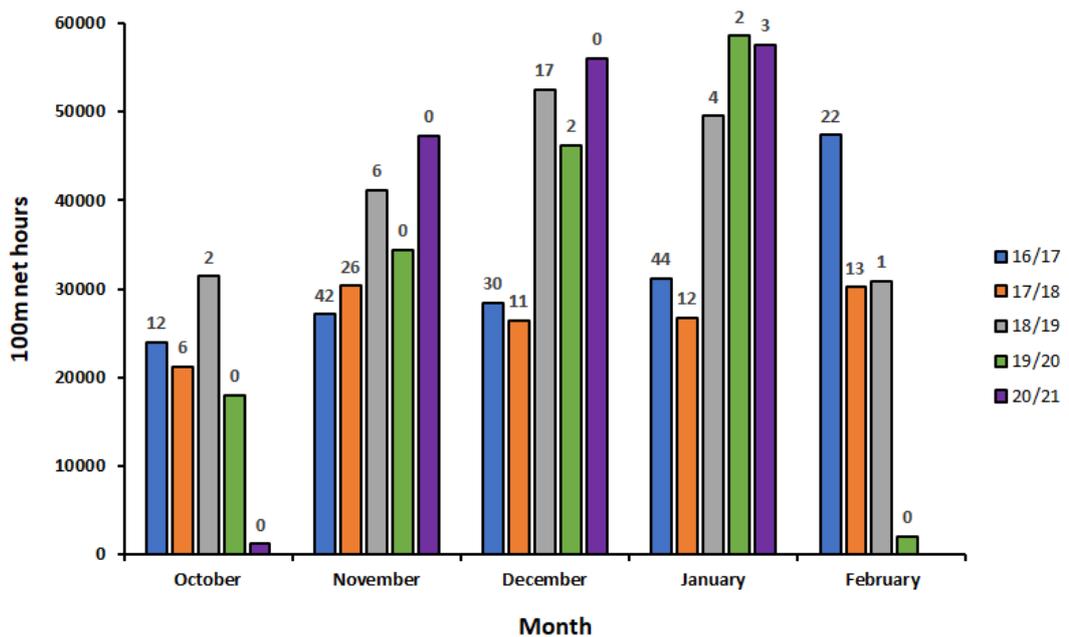


Figure 3. Monthly non-targeted netting effort used in Lake Sorell during the carp season (2016-21).

Note: Actual carp catches for each month are listed above each bar, non-targeted netting effort refers to gill net effort not associated with targeting transmitter fish, permanent set gill nets, and gill nets set behind barrier nets.

The capture of the three carp this season occurred over a four day period in mid January, where the water temperature in Lake Sorell reached its peak of approximately 18-20°C (Figure 10). Of the three carp caught, one was a female while the other two were males. All three fish were small (839 to 1400gm) for their age, given they are likely to be over 11 years old. The female carp had 230gm of eggs, however they were completely intact indicating she had not spawned, while the two males were both affected with advanced stages of the jelly gonad condition (JGC). Not only are the carp in poor reproductive condition, but the presence of the JGC in male carp dominates (Figure 4). In the advanced stage of the condition, the fish become reproductively unviable. This increasing presence of the JGC in male carp is playing an important positive role in the final stages of eradication. Given the last healthy, mature male carp was caught on 16 December 2018 and there hasn't been a significant successful spawning event since 2009, it is increasingly likely that the current carp population is unable to breed.

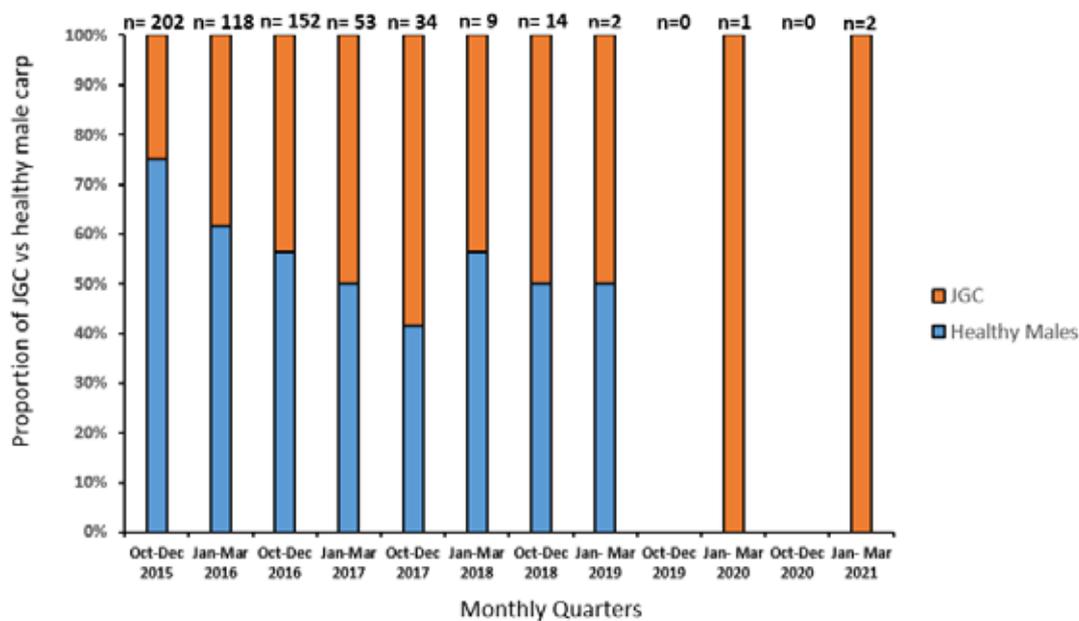


Figure 4. The change in proportion of jelly gonad condition (JGC) males to healthy males from 2015-21, compared by October to December and January to March quarters.

Note: Actual numbers of male carp caught for each quarter are listed above each bar.

After 26 years the Tasmanian carp battle is finally drawing to a close. It is estimated that there are few, if any carp remaining from the 2009 population. Taking into account the stunted average size, poor general condition, and high level of males affected with JGC, the carp population appears to be functionally eradicated. The risk of transfer of carp from this water is now deemed to be highly unlikely, therefore since February 2020, Lake Sorell has been reopened intermittently to the public. Screens are being maintained on the outflow. Eradication and monitoring efforts will continue over the next few years, however the strategy will focus on targeted fishing effort around key weather events.



*Picture 2. The gonads of one of the male carp showing large watery blisters, which is an indication of the JGC and associated sterility.*

Water turbidity in Lake Sorell has been steadily decreasing since 2009, however over the last few years there have been various short-term spikes and decreases in the total turbidity. This can be attributed to changes in lake level, combined with wind conditions during the time the water samples were taken. Wind fetch on the lakes can cause a spike of natural silt re-suspension in the water column. Despite the increase in total turbidity at times, the associated colloidal component of the turbidity is relatively stable, and is still declining slowly.

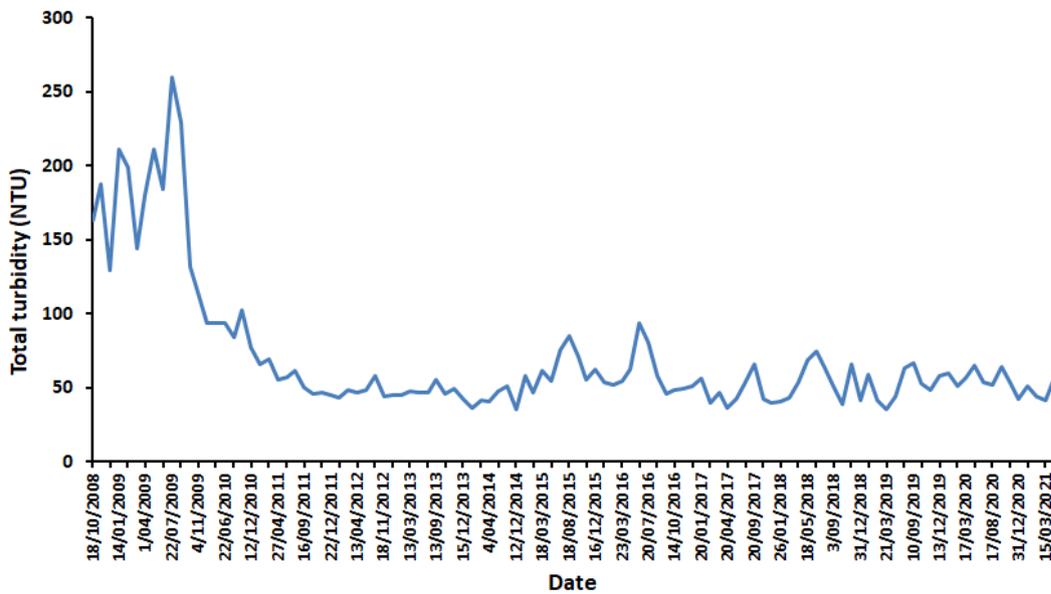


Figure 5. Total turbidity levels in Lake Sorell (2008 to 2021).

### 1.3 Lake Crescent

No carp were captured in Lake Crescent this year despite continued annual sampling, with the last carp caught in 2007. Since the extremely low water levels in 2008, the average total turbidity of Lake Crescent has improved considerably. This is the direct result of higher water levels flushing the lake after large rainfall events. The various short-term spikes and drops in the total turbidity are driven by the same factors as Lake Sorell.

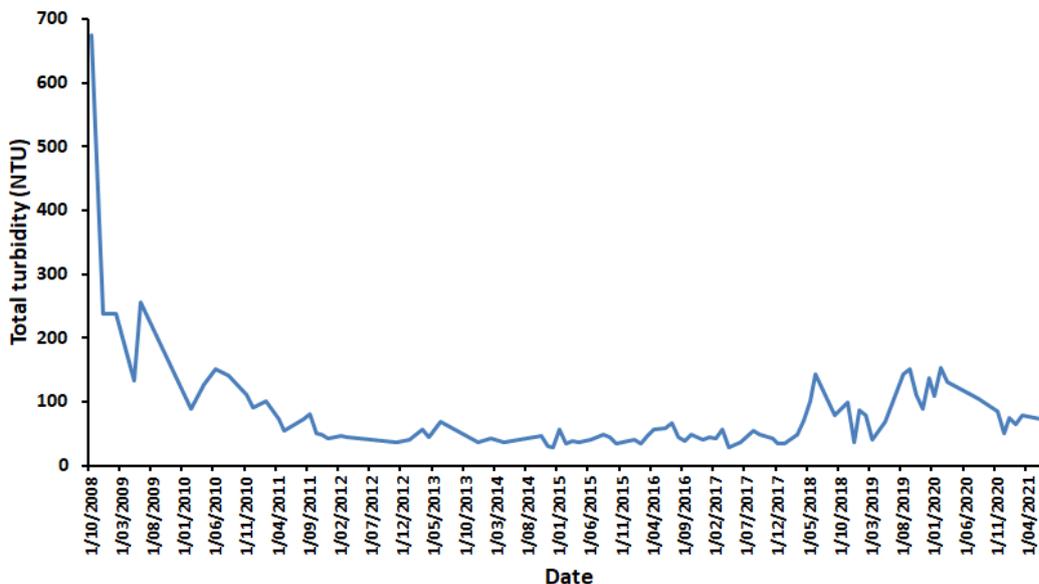


Figure 6. Total turbidity levels in Lake Crescent (2008 to 2021).

## 2. Juvenile Carp Surveys

The annual Lake Crescent juvenile carp survey took place on 1 - 2 March 2021. The aim of this survey was to make sure that carp had not made their way back into Lake Crescent, and to look for any sign of spawning. We have not seen a carp in Lake Crescent since 2007, but we have done surveys every year to check. We focused on areas where carp are likely to be found. These include rocky or sandy shores and areas with lots of aquatic plants. We fished 13 areas around the lake using backpack electro-fishers for a minimum of 10 minutes at each location. A total of 184 electrofishing minutes was done, with short-fin eels and golden galaxias making up the majority of the catch. There was no sign of any carp in Lake Crescent.



*Picture 3. Fyke nets are set around the margins of the lake to survey for juvenile carp.*

The Lake Sorell juvenile carp survey was conducted from 15 – 19 March 2021. The aim of this survey was to check for carp spawning. Using the backpack electro-fishers and fine-mesh dip nets, shallow areas were thoroughly surveyed. Fyke nets were set behind and in front of barrier nets, wherever there was suitable habitat. 66 fyke nets were set at 22 locations around the lake, while backpack electro-fishing was also done across 18 sites around the lake. Both fine mesh and standard mesh fyke nets were used to target carp in the 30 to 100mm size range. Electrofishing was done for a minimum of 15 minutes at each location. In total, 6068 fyke net hours were put in over the survey, as well as a total of 398 electrofishing minutes. This resulted in short-fin eels, golden galaxiids, shrimps, and brown trout fry being caught, but no sign of any small carp.

In addition to the March juvenile survey, monthly surveys were also undertaken in January and February. Each survey was done over two days and involved backpack electrofishing (total of 440 electrofishing minutes), as well as fine mesh dip netting weedy areas, from the barrier net back to the shoreline. The marshes were the main locations surveyed, which included Kermodes, Silver Plains, Duck Bay, and Robertsons. No juvenile carp were found on any of the surveys.



*Picture 4. One of the brown trout fry caught in Lake Sorell this year, which is a positive sign for the upcoming seasons.*

## 3. The River Clyde Survey

In addition to the lakes Sorell and Crescent juvenile carp surveys, a downstream carp survey of the River Clyde was also done. The survey looks at sites with ideal carp habitat around Bothwell and Hamilton. The survey has been done for the last 26 years. Backpack electrofishing was done at three sites on the Clyde River which includes the Nant Bridge (400m stretch), the Bothwell sewage works (100m stretch), and the Hamilton Weir (100m stretch). 36 redbfin perch, 1 tench, 26 brown trout, and 8 short-fin eels were shocked in total. Most importantly, no carp were found, which shows that the containment strategy used since 1995 has been successful.



*Picture 5. A tench electrofished in shallow water amongst the weeds, during the River Clyde survey.*

## 4. Golden Galaxias Survey

The annual golden galaxias (*Galaxias auratus*) monitoring survey was conducted during March 2021. This is the 16th consecutive year this action from the lakes Sorell and Crescent Water Management Plan 2005 has been completed.

At both lakes Sorell and Crescent, twelve fine-mesh fyke nets were set overnight at three locations. Sets consisted of four fyke nets at each location, with the number of golden galaxias captured per fyke net recorded (Table 3). In addition, the fork lengths of 103 golden galaxias from Lake Crescent and 101 from Lake Sorell were recorded.

Table 3. Captures of golden galaxias in fyke nets, set at three locations in lakes Crescent and Sorell (2021).

Lake	Location	No. Fyke Nets	Number Captured
Crescent	Site 1 Agnew Creek Shore	4	3,035
	Site 2 Boathouse Shore	4	1,065
	Site 3 Lower Clyde Marsh	4	1,110
	<b>Total</b>	<b>12</b>	<b>5,210</b>
Sorell	Site 1 East side of Island	4	487
	Site 2 Inside Grassy Point	4	1,836
	Site 3 Dogshead Point	4	456
	<b>Total</b>	<b>12</b>	<b>2,779</b>

The total catch of golden galaxias in Lake Crescent was 5,210 (Table 3), for an average catch effort of 434 fish per net. This result was significantly higher than the 2020 catch where a large decline was recorded (Figure 7).

At Lake Sorell, 2,779 golden galaxias were captured (Table 3), for an average catch effort of 232 fish per net. The Grassy Point site as previously seen, held significantly more fish compared to other sites. Like the Lake Crescent result, the total number of golden galaxias captured increased markedly following a significant decline during 2020 (Figure 7).

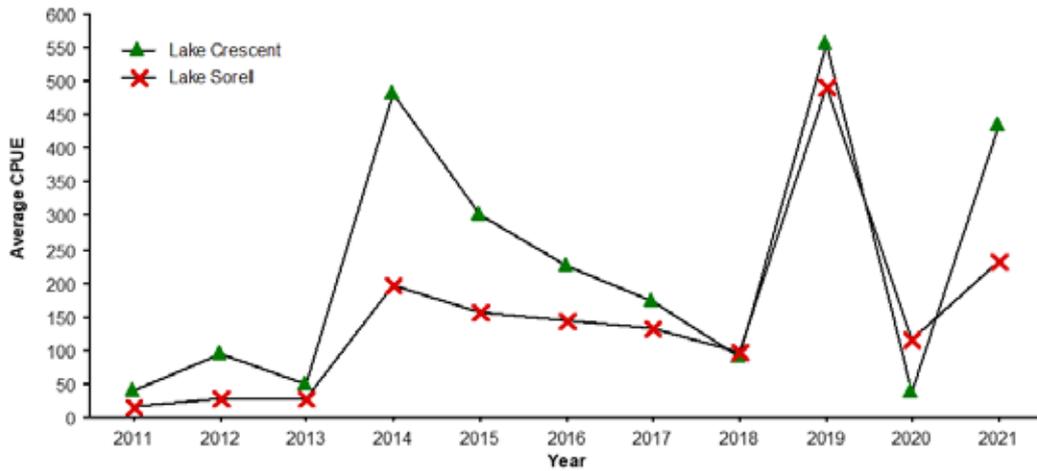


Figure 7. Average (mean) CPUE of golden galaxias for lakes Crescent and Sorell (2011-2021).

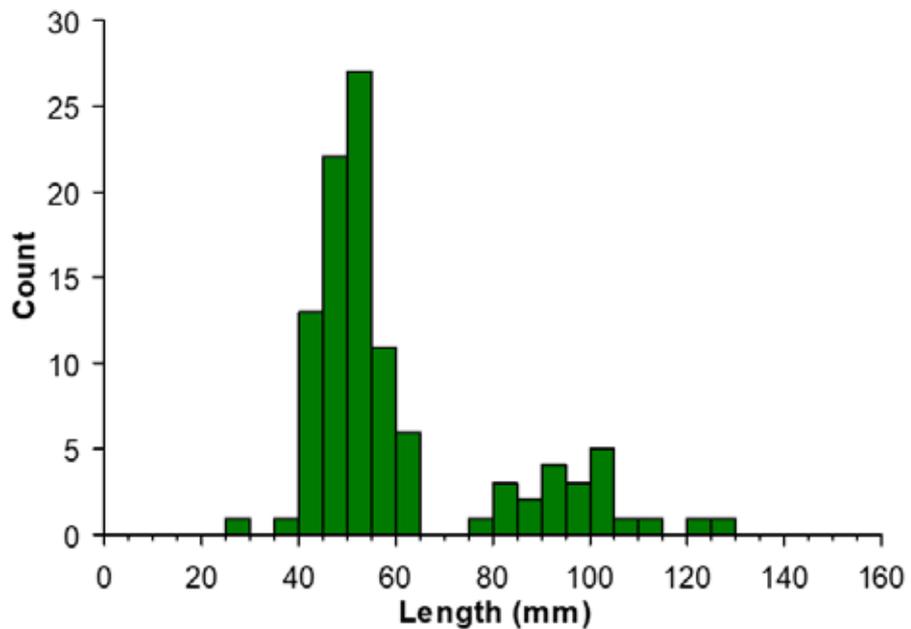


Figure 8. Length frequency of golden galaxias sampled from Lake Crescent 2021 (n=103).

While there was a large increase in total numbers of golden galaxias captured at Lake Crescent, the increase was mainly due to a large cohort of juvenile fish in the 30-60 mm length range (Figure 8). This group accounted for almost 80 percent of the catch from this water, while fish in the 80-120 mm range represented just under 20 percent. Moreover, compared to Lake Sorell, there were very few fish in the 60-90 mm length range.

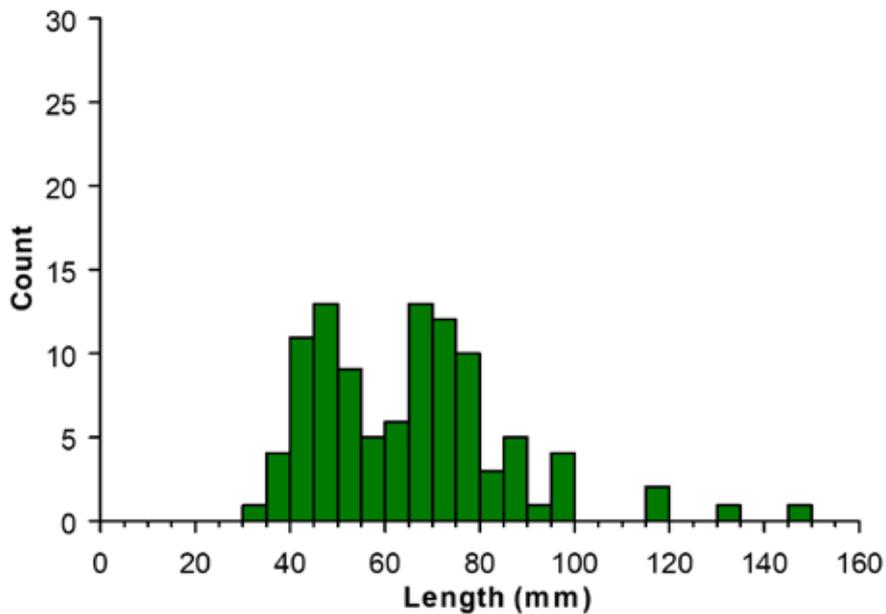


Figure 9. Length frequency of golden galaxias sampled from Lake Sorell 2021 (n=101).

The length frequency plot for Lake Sorell (Figure 9) shows a robust population structure with two significant length classes present. Natural recruitment of juvenile golden galaxias was strong with 60 percent of fish in the 30-70 mm length range. Larger fish in the 70-100 mm range represented 35 percent of the catch.

Based on catch effort, the relative abundance of golden galaxias within lakes Crescent and Sorell has shown a marked increase compared to the 2020 result. This is especially true for Lake Crescent. However, the population structure within Lake Crescent does not appear to be as robust as the Lake Sorell population, with low numbers of fish in the 60 – 90mm length range.



Picture 6. Monitoring of the golden galaxias population in Lake Sorell.

## 5. Carp Workshop

The Carp Management Program held its yearly workshop on 24 – 25 March at the IFS New Norfolk office. Alex Schaap, formerly the director of the Environment Protection Authority (EPA), and a long time facilitator of the CMP, provided an independent review of the workshop and helped develop the plan for the coming year. The two days involved presentations and discussions of different aspects of the data collected during the 2020-21 season. This gave us an understanding of how the carp removal is progressing, whether we can increase catch efficiency, the findings for the season, and what else can be done to complete the eradication of carp from Tasmania.

### **Key findings:**

- The fishing effort was kept at a high level but we only caught three carp.
- Of the three carp caught, one was a small female, the other two were small males affected with the jelly gonad condition.
- 41 499 carp have been removed from Lake Sorell since 1995.
- Carp are contained to Lake Sorell.
- No spawning or small carp were found in Lake Sorell.
- We now estimate that there are few, if any carp remaining in Lake Sorell.
- Numerous juvenile (fry) brown trout were caught in Lake Sorell, indicating the trout fishery is naturally rebuilding.
- No carp were found in Lake Crescent.

### **Future strategies:**

- Lake Sorell will be open to the public for the 2021/22 brown trout season.
- Continue to block the carp spawning areas with barrier nets.
- Actively target key weather events in November and December to see if any carp remain.
- In order to rebuild the Lake Sorell trout fishery we will monitor and maintain access to the primary trout spawning grounds at Mountain and Silver Plains creeks. Intensive gill netting for carp is not planned for the coming year so the trout fishery will continue to recover.



Picture 7. Presenting the findings of the 2020/21 carp season to Minister Guy Barnett, during the annual Carp Management Program workshop.

# 6. Water Yields and Deficits

Total rainfall of 767.4 mm was recorded at the Lake Crescent field station from 1 July 2020 to 30 June 2021.

Table 4. Rainfall and release data (2020/21).

Month	Rainfall (mm)	Sorell Release (ML)	Crescent Release (ML)
July	26	-	3.18
August	93	-	23.04
September	36	-	9.57
October	134.6	-	32.18
November	24.6	-	216.02
December	83.4	-	876.24
January	44.4	-	1128.83
February	84.2	-	964.44
March	92.2	-	872.28
April	22.4	-	95.35
May	36.4	-	163.15
June	90.2	-	52.22
<b>Total</b>	<b>767.4</b>	<b>-</b>	<b>4436.5</b>

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

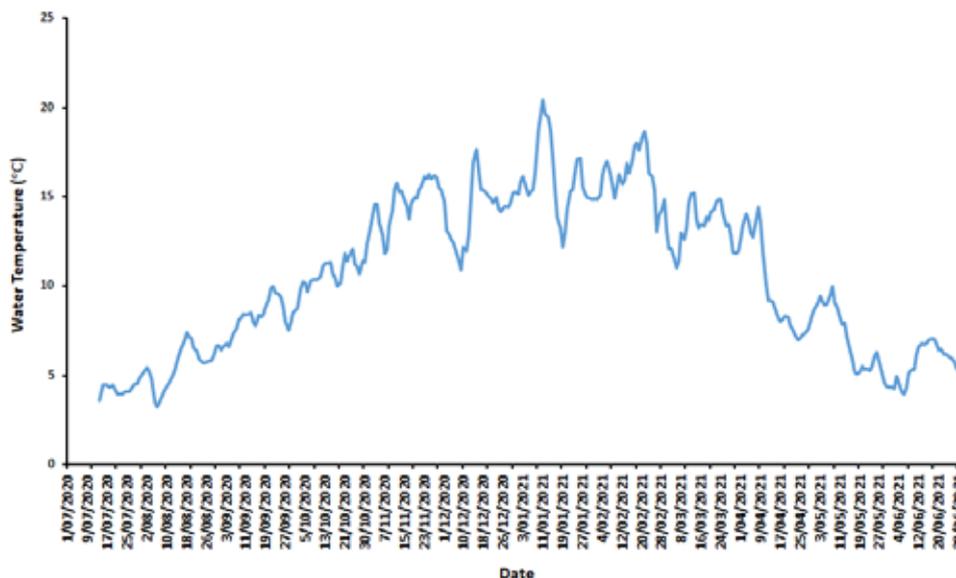


Figure 10. Lake Sorell water temperature from Diamond Shore deep site (July 2020 – June 2021).

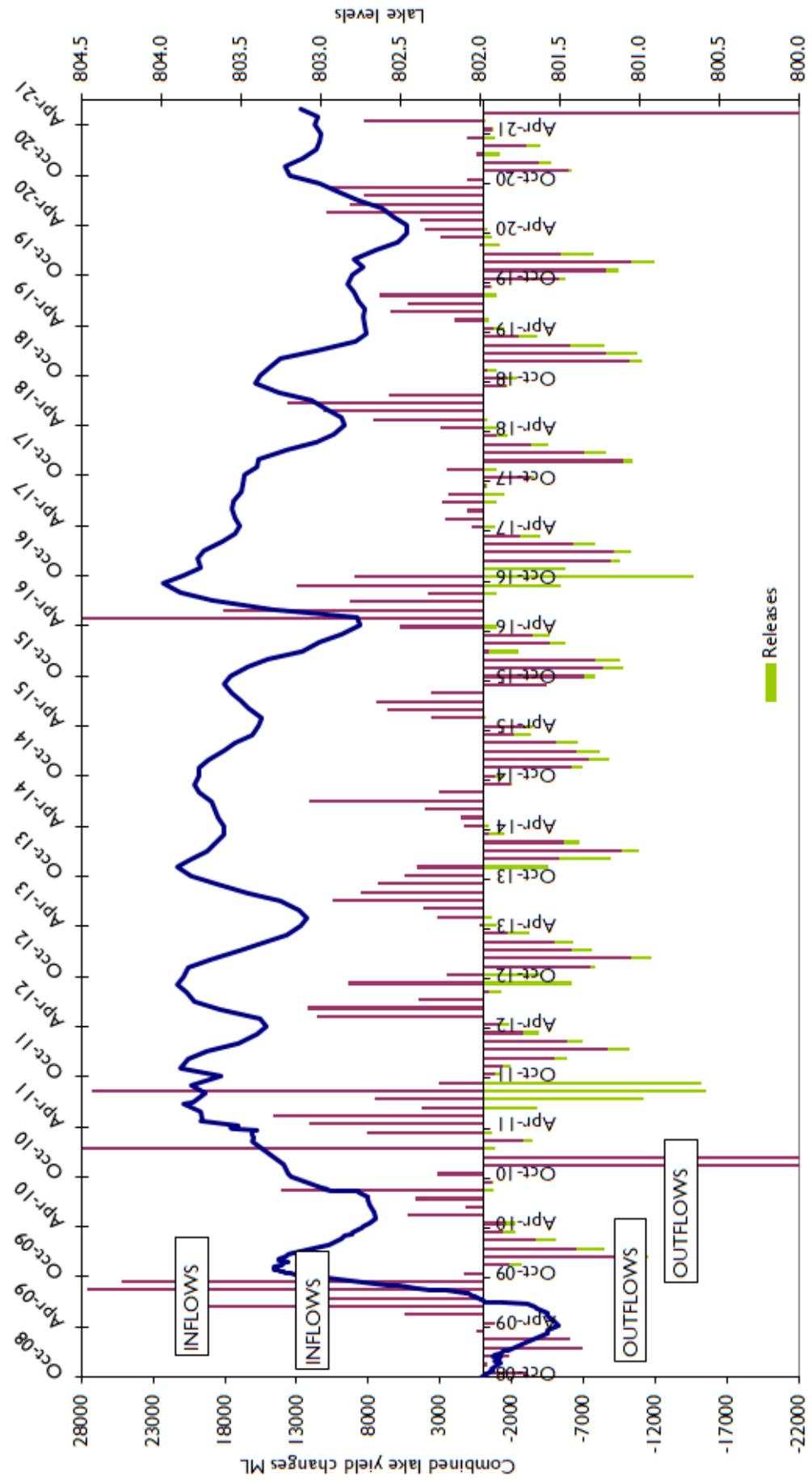


Figure 11. Lake Crescent lake levels, water yields and deficits (2008 – June 2021).

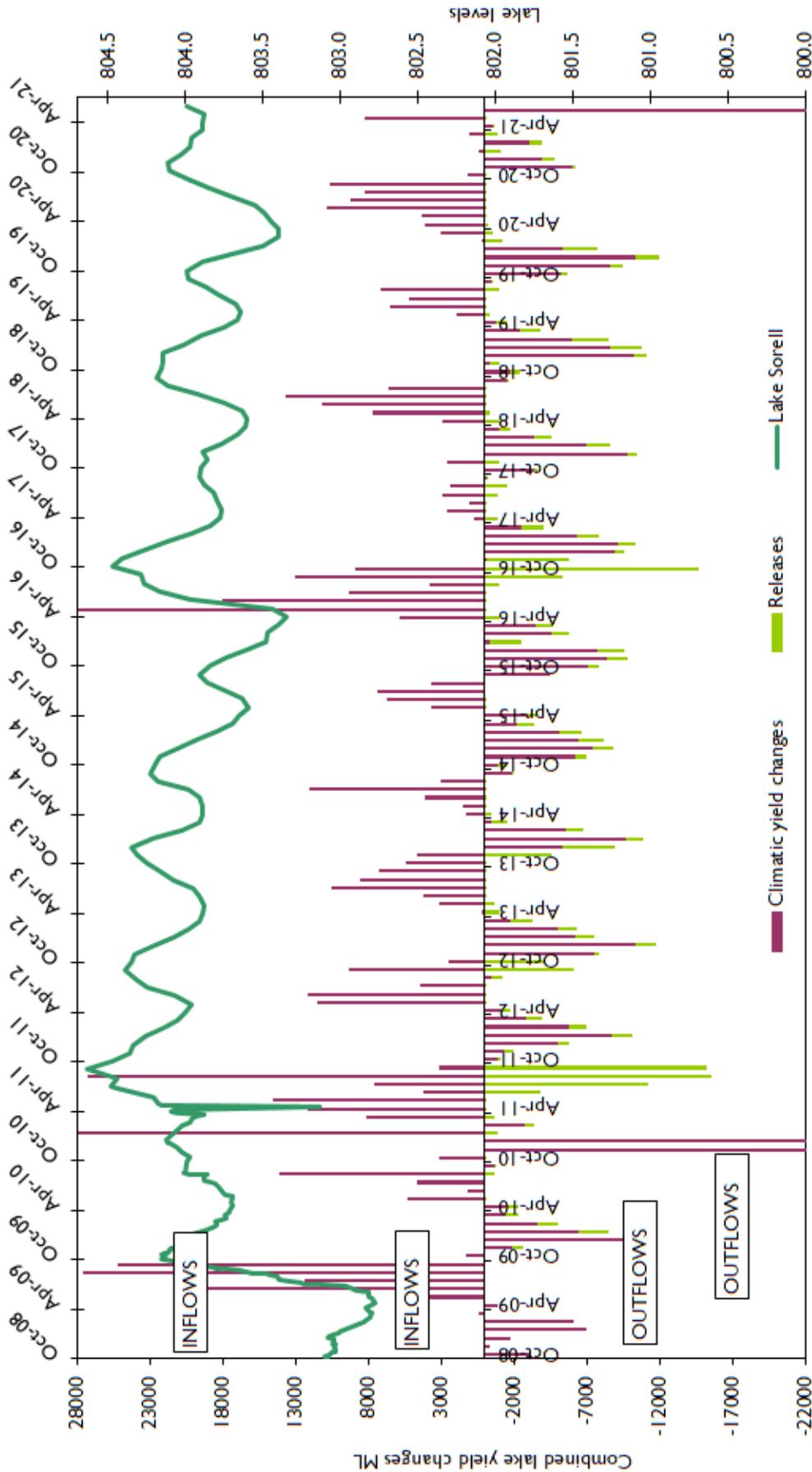


Figure 12. Lake Sorell lake levels, water yields and deficits (2008 – June 2021).

# 7. Staffing

## 7.1 Staff Positions

Two casual workers were employed to assist with carp management activities during the season.

Table 5. Staff positions (2020/21).

<b>Field Officers</b>	Robert Cordwell (0.6fte) Terry Byard (0.5fte)
<b>Technical Officers</b>	Brock Cuthbertson (1fte)
<b>Program Leader</b>	Jonah Yick (1 fte)
<b>Section Manager</b>	Chris Wisniewski (1fte)

Table 6. Casual positions (2020/21).

<b>Name</b>	<b>Background</b>	<b>Timeline</b>
Kim Clark	Interlaken Shack Owner	31st Oct – 17th Mar
Craig Burgess	Huon Aquaculture	21st Dec – 19th Mar

## 7.2 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 7. Weekend work, public holidays and extra hours (2020/21).

<b>Staff Member</b>	<b>Saturdays</b>	<b>Sundays</b>	<b>Public Holidays</b>	<b>Extra Hours</b>
Jonah Yick	5	4	3	203.75
Brock Cuthbertson	13	12	2	222.22
Terry Byard	7	4	1	-
Robert Cordwell	3	3	2	114.42

# 8. Activities

## 8.1 Carp Sightings

8 July 2020 – River Clyde – Brown trout

29 September 2020 – Lake Binney – Tench

14 October 2020 – Meander River – Tench

29 January 2021 – South Esk River – Goldfish

## 8.2 Public Presentations

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

Table 8. Public presentations (2020/21).

Date	Organisation
17 May 2021	Tasmanian Fly Tyers' Club

## 8.3 Timeline of Major Events

Table 9. Timeline of major events (2020/21).

Date	Event
July	
13th	Started checking and repairing barrier nets for holes and tears
27th	Remaining JGC carp held in captivity are transferred to Sale, Victoria
August	
24th- 26th	Lake Crescent shack inventory and clean up
26th	All barrier net checks and repairs completed
September	
14th - 16th	Big fyke nets installed into barrier nets but left closed

Date	Event
<b>October</b>	
7th	CMP Event with Minister Guy Barnett at IFS, New Norfolk
9th	First fishing gill nets of the season set
10th	Lake Sorell screen structures lowered, releasing approx. 200ML per day
25th	Lake Sorell closed to the public
27th – 28th	Big fyke nets in barrier nets opened up
27th – 30th	Permanent gill nets installed behind barrier nets in Lake Sorell
30th	Lake Sorell field station site inspection
<b>January</b>	
7th- 8th	Monthly Lake Sorell juvenile carp survey
9th – 14th	The water temperature in Lake Sorell peaked, during a five day warm weather event
9th – 17th	All permanent gill nets behind barrier nets removed from Lake Sorell
11th	First carp caught for the season: trammel gill net, 425mm, 1400gm, female
12th	Second carp caught for the season: trammel gill net, 305mm, 499gm, male, JGC
14th	Third carp caught for the season: trammel gill net, 330mm, 839gm, male, JGC
29th	All fishing gill nets removed from the lake
<b>February</b>	
1st- 2nd	All big fyke nets removed from barrier nets
6th	Opening of Lake Sorell to the public
22nd-23rd	Monthly Lake Sorell juvenile carp survey
<b>March</b>	
1st – 2nd	Annual Lake Crescent juvenile carp survey
15th – 17th	Annual Lake Crescent and Sorell golden galaxias survey
15th – 19th	Annual Lake Sorell juvenile carp survey
25th	Carp Workshop
31st	River Clyde downstream survey
<b>April</b>	
27th	Lake Sorell field station site inspection

## 8.4 Media Articles

- July 2020 – Australian Society for Fish Biology Newsletter; Lateral lines – “State Reports: Tasmania, Inland Fisheries Service: Carp Management Program”.
- 17th July 2020 – The Examiner – “Carp study’s unusual findings”.
- 30th July 2020 – Inland Fisheries Service website – “Lake Sorell 2020-21”.
- 13th August 2020 – The Examiner – “Brown Dun”.
- 19th October 2020 – Inland Fisheries Service website – “Temporary closure of Lake Sorell to finish off carp”.
- 24th October 2020 – The Mercury – “Public Notices: Notification of Closure of Lake Sorell”.
- 24th October 2020 – The Advocate – “Public Notices: Notification of Closure of Lake Sorell”.
- 24th October 2020 – The Examiner – “Public Notices: Notification of Closure of Lake Sorell”.
- 27th October 2020 – Inland Fisheries Service website – “Carp Management Program Annual Report 2019-20”.
- 28th October 2020 – DPIPWWE Pod news and events – “Happy ending in Carp Management Program 2019/20 Annual Report”.
- 4th November 2020 – The Derwent Valley Gazette– “Carp free (ish)”.
- 6th November 2020 – The Mercury– “Carl Hyland”.
- December 2020 – Australian Society for Fish Biology Newsletter; Lateral lines – “State Reports: Tasmania, Inland Fisheries Service: Carp Management Program”.

- 4th February 2021 – Inland Fisheries Service website – “Lake Sorell to reopen”.
- 4th February 2021 – The Advocate – “Lake Sorell to Reopen”.
- 4th February 2021 – The Examiner – “Lake Sorell open again”.
- 4th February 2021 – The Mercury– “Lake Sorell back in play”.
- 6th February 2021 – The Mercury – “Public Notices: Notification of the opening of Lake Sorell”.
- 6th February 2021 – The Advocate – “Public Notices: Notification of the opening of Lake Sorell”.
- 6th February 2021 – The Examiner – “Public Notices: Notification of the opening of Lake Sorell”.
- 9th February 2021 – Inland Fisheries Service website – “Carp almost gone!”.
- 10th February 2021 – DPIPWE Pod news and events – “Carp in Lake Sorell going, going...gone?”.
- 10th February 2021 – The Derwent Valley Gazette – “Carp free”.
- 11th February 2021 – The Examiner – “Anglers take to the lake as carp era ends”.
- 23rd February 2021 – Fishes – “Eradication of the Invasive Common Carp, *Cyprinus carpio* from a Large Lake: Lessons and Insights from the Tasmanian Experience”.
- 3rd March 2021 – Inland Fisheries Service website – “Manuscript published on the eradication of carp from Lake Crescent”.
- 9th March 2021 – DPIPWE Pod news and events – “Carp Management Program team leader Jonah Yick has manuscript published internationally”.
- 29th March 2021 – Inland Fisheries Service website – “Carp findings!”.
- June 2021 – Australian Society for Fish Biology Newsletter, Lateral lines – “State Reports: Tasmania, Inland Fisheries Service: Carp Management Program”.

# 9. Budget

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
5101 - Salaries	178,339.00	(2,744.60)	13,821.38	13,139.92	24,235.52	11,908.06	14,758.76	16,555.06	13,969.40	15,559.48	22,122.82	13,281.34	8,312.50	13,419.36	0.00
5102 - Lump Sum Leave	17,986.48	0.00	0.00	779.88	336.16	2,850.70	0.00	0.00	2,393.46	0.00	(54.94)	4,159.54	6,190.20	1,331.48	0.00
5106 - Superannuation	29,162.82	(403.08)	2,029.42	2,043.48	3,554.18	2,162.98	2,162.98	2,575.90	2,497.48	2,387.91	3,333.27	2,537.13	2,124.52	2,156.65	0.00
5107 - Otime-Penalties	4,303.57	0.00	0.00	0.00	0.00	0.00	0.00	1,369.74	934.16	934.16	817.38	248.13	0.00	0.00	0.00
5109 - Allowances	24,566.00	(367.91)	1,849.74	1,859.94	2,873.81	1,943.84	1,943.84	1,966.20	1,988.56	1,945.65	2,854.11	1,902.74	1,902.74	1,902.74	0.00
5203 - Training	309.09	0.00	0.00	0.00	0.00	0.00	309.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5207 - Equip Hire/Use	5,494.18	0.00	457.85	457.85	457.85	457.85	457.85	457.85	457.85	457.85	457.85	457.85	457.85	457.85	0.00
5208 - Equipment Maint	687.50	0.00	0.00	0.00	0.00	687.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5209 - General Ins	6,422.28	0.00	0.00	0.00	0.00	6,422.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5212 - Printing/Pubs	884.63	0.00	0.00	0.00	275.00	576.63	0.00	0.00	0.00	33.00	0.00	0.00	0.00	0.00	0.00
5214 - Vehicle Fuel	4,855.41	(100.15)	100.15	217.65	179.00	89.17	840.95	335.45	514.28	1,219.77	207.87	260.82	236.05	585.40	169.00
5215 - Vehicle Hire	27.65	0.00	0.00	27.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5217 - Vehicle Maint	6,478.74	0.00	0.00	0.00	13.00	1,716.97	2,589.1	920.00	350.10	0.00	507.27	0.00	790.02	1,922.47	0.00
5219 - Postage/Freight	(57.31)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(57.31)	0.00	0.00	0.00	0.00
5223 - Network Costs	668.66	0.00	54.50	0.00	109.00	2.96	54.50	54.50	54.50	54.50	112.70	2.20	54.50	114.80	0.00
5228 - Mob Phones Rads	3,624.65	0.00	291.89	137.13	190.00	828.74	204.02	241.37	240.63	244.81	389.61	173.53	295.35	387.57	0.00
5230 - Equipment Depn	9,088.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9,088.75	0.00
5231 - MV Depn	12,607.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12,607.48	0.00
5232 - Vessel Depn	8,288.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8,288.99	0.00
5234 - Op Supplies	662.78	0.00	0.00	6.60	(10.00)	211.35	60.35	60.35	97.29	104.55	59.08	15.00	115.76	2.80	0.00
5235 - Analysis	103.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	103.32	0.00	0.00	0.00
5236 - Cont Services	14,299.01	0.00	0.00	0.00	0.00	241.05	1,636.08	1,541.71	6,613.31	2,004.73	2,101.43	96.42	0.00	64.28	0.00
5237 - Fish Transport	(2.44)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(2.44)	0.00
5238 - OH & S	3,933.84	0.00	1,035.15	0.00	90.00	171.00	0.00	451.82	90.00	90.00	90.00	90.00	430.14	1,395.73	0.00
5240 - Meetings & Conf	142.34	0.00	54.55	0.00	0.00	0.00	29.60	0.00	0.00	0.00	0.00	0.00	3.64	54.55	0.00
5250 - Building Depn	7,142.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7,142.86	0.00
5253 - Vessel Maint	6,104.28	0.00	0.00	290.67	324.19	235.24	1,295.66	991.07	1,329.55	321.21	405.04	281.27	0.00	630.38	0.00
5255 - Intrastate Trav	12,928.50	0.00	897.45	1,062.85	763.70	1,196.60	1,906.40	2,404.00	1,710.35	764.35	677.80	141.05	0.00	1,403.95	0.00
5258 - Prot Clothing	455.03	0.00	0.00	0.00	0.00	265.48	111.82	0.00	0.00	0.00	72.73	0.00	5.00	0.00	0.00
5267 - Vessel Outboard	7,864.63	0.00	0.00	0.00	441.00	0.00	335.36	646.18	592.00	0.00	4,467.27	1,192.00	180.00	1082	0.00
5269 - Office Printing	482.18	0.00	0.00	23.35	470.00	0.00	(18.80)	0.00	7.63	0.00	0.00	0.00	0.00	0.00	0.00
5271 - Advert & Pub	1,532.40	0.00	0.00	0.00	163.64	780.47	0.00	0.00	0.00	588.29	0.00	0.00	0.00	0.00	0.00
5280 - Signage	178.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	118.09	0.00	0.00	60.00	0.00
5288 - Infrastruc Depr	571.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	571.43	0.00
State/IFS Contribution	370,136.82														
<b>Total Expenditure</b>	<b>370,136.82</b>	<b>(3,615.74)</b>	<b>20,592.08</b>	<b>20,046.97</b>	<b>34,476.05</b>	<b>32,527.52</b>	<b>26,498.37</b>	<b>30,571.20</b>	<b>33,840.55</b>	<b>26,710.26</b>	<b>38,682.07</b>	<b>24,942.34</b>	<b>21,098.26</b>	<b>63,597.89</b>	<b>169.00</b>





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