

# Gillnetting Survey of the Brownlee Pond, Virgin Flat, Westport.

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## **Summary**

The success of a privately funded trout release undertaken at Brownlee Pond, Westport in October 2017 was assessed by Fish and Game staff using standardised gillnetting methods in October 2020. The size, growth rates, condition and relative abundance of the sports fish population were established. The three-rainbow trout caught averaged 582mm in length, 2377g in weight and were in very good condition.

## **Introduction**

Brownlee Pond is a small (~7.5 ha) man-made water body located on the Virgin Flat road close to Westport. The lake is relatively shallow (<10m) with an abundance of shallow riparian water and weed beds. One small inflowing tributary is present but there is limited spawning potential. The outlet stream is blocked to help form the pond and is a barrier to fish migration to the Okari River reducing recruitment potential.

It was recognised that pond was in an easily accessible location close to Westport and suitable for all kinds of anglers, particularly younger anglers wanting to learn how to catch fish and for kids fish out competitions. The landowner, George Brownlee was happy to pay for the release meaning there was no cost to F&G - hence the support of the release. On October 25<sup>th</sup>, 2017 270 Rainbow trout (300g average weight) were released into the Brownlee pond from the Montrose Hatchery, Canterbury. Subsequently, no angling was undertaken at the site as the landowner was keen to allow the fish to acclimatise. Fish & Game did not pursue the matter and subsequent staff turnover meant the site was not revisited to assess the success of the enhancement.

The aim of the current survey was to:

- 1) See if any rainbow trout released during the 2017 enhancement survived in Brownlee Pond using the standardised procedures established during previous West Coast Lake surveys.
- 2) Assess the size, growth, condition and relative abundance of any trout surviving in Brownlee Pond.

## **Survey Method**

Nine sites were selected to give good geographic coverage of the pond and surveyed by a 14ft alloy boat on October 23<sup>rd</sup>, 2020 (Appendix). Nine 20 m long sinking monofilament gill nets were used with stretched mesh sizes of 115mm (4.62") (3 nets), 87mm (3.5") (3 nets), and 70mm (2.75") (3 nets). Net size was randomly selected for each site. Nets were set at a right angle to the shoreline with one end attached to the shore meaning that online shoreline habitat was surveyed. Nets were set for two hours to avoid net saturation and decrease variability in the method (Hadland, 2002).

Fish caught were weighed to the nearest 5gms using electronic scales and measured (fork length) to the nearest 5mm using a slot board. Healthy fish were returned immediately to the water while dead fish were retained otoliths removed. Fish condition factor was calculated using the formula:

$$CF = \frac{W * 100,000}{L * L * L}$$

Where CF is condition factor, W is weight in grams and L is the fork length in millimetres.

Catch per unit effort (CPUE) was calculated for each net size and expressed as catch per 100m net per hour.

$$CPUE = N / T * 5$$

Where N is the number of fish caught and T is the time the net was set for in hours.

## Results

Table 1. Summary data of brown trout observed in Brownlee Pond October 2020.

Variable	2020 Survey
Mean Length (mm±SE)	582 ± 10
Mean Weight (g±SE)	2377 ± 132
Mean Condition (cf±SE)	1.21 ± 0.02
Mean CPUE (#/100m/hr±SE)	0.81 ± 0.61
Fish Caught (n)	3

All three fish caught were male and released when alive.



Figure 1. Fish & Game Ranger Baylee Kersten with one of the rainbow trout caught on Brownlee Pond, October 2020.

## Discussion

The survey showed that despite concerns around food supply, high summer water temperature and predation by the local shag population (G. Brownlee pers. obs.) some of the rainbow trout released into Brownlee Pond back in 2017 have survived for three years. Fish caught had grown on average more than 2kg and were in very good condition suggesting abundant food supply. Brownlee Pond has definite potential as a future put and take fishery and currently presents a unique opportunity for West Coast licence holders.

While the capture rate (CPUE) of fish in the pond was not high netting undertaken at other West Coast sites containing rainbow trout has had limited success and low capture rate (Adams 2015). This suggests the methodology used may be limited in ascertaining rainbow trout abundance as it targets shallow riparian margins when rainbow trout frequently use deeper water particularly when brown trout are also present. The two sites where trout were caught in the current survey were in parts of the pond with steeper shoreline and greater water depth close to shore.

One current issue with anglers utilising the pond is multiple people having ownership of the surrounding land. George Brownlee owns a significant part of the area surrounding the pond and is happy for an easement to be used by anglers to access his property. However, four other landowners own part of the pond or shoreline making it easy for anglers to move across multiple land titles while fishing at the pond. Work has begun to identify the best way to manage this if the site is to be promoted as a fishing location.

## Recommendation

- That the council receives the report.
- That Brownlee Pond is recognised as an easily accessible put and take fishery and promoted.

- That the availability of access to the pond is clarified with all landowners involved and an access arrangement reached allowing anglers access to the pond.

## **Acknowledgements**

Thanks goes to Baylee Kersten for helping undertake the surveys and to George Brownlee for access to the site and funding the release.

**Appendix 1 – Location of 2020 Brownlee Pond gillnetting sites.**

Site	NZTM E	NZTM N
001	1476390	5366975
002	1476288	5366858
003	1476239	5366762
004	1476264	5366874
005	1476252	5367026
006	1476418	5367156
007	1476561	5367244
008	1476603	5367198
009	1476545	5367087

**Appendix 2 – Summary catch data Brownlee Pond 2020.**

Date	Set #	Site #	Net #	Net size	Net length	Time set	Time in	Total hrs	# Trout	Catchrate
23/10/2020	1	1	6	s	20	11:05	12:57	1:52	0	0.00
23/10/2020	2	2	4	l	20	11:10	13:04	1:54	0	0.00
23/10/2020	3	3	5	m	20	11:14	13:08	1:54	0	0.00
23/10/2020	4	4	3	s	20	11:19	13:13	1:54	0	0.00
23/10/2020	5	5	1	l	20	11:22	13:17	1:55	2	5.22
23/10/2020	6	6	2	m	20	11:28	13:30	2:02	1	2.46
23/10/2020	7	7	8	m	20	11:33	13:42	2:09	0	0.00
23/10/2020	8	8	7	l	20	11:35	13:44	2:09	0	0.00
23/10/2020	9	9	9	s	20	11:41	13:48	2:07	0	0.00