

# **Overview - Shannon Lagoon Fisheries Assessment Survey: April 2014 and May 2014**

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## **Introduction**

As part of the feasibility review for establishing Shannon Lagoon as a viable fishery, the Service undertook a survey to gain information on the trout and native fish populations of the lagoon. Over a three day period 7-9 April 2014, a combination of 28 box trap sets and 40 course mesh fyke net sets were used to capture trout. In addition, electrofishing for juvenile trout and native fish was conducted on 9 April 2014 and 9 May 2014.

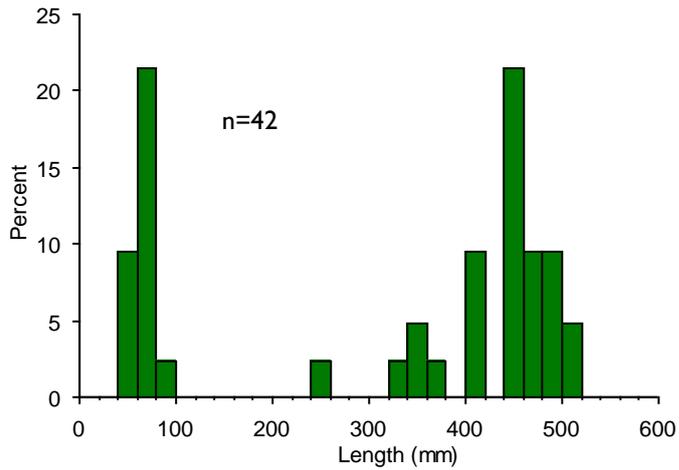
## **Brown Trout**

In total, 42 brown trout were captured during the survey 7-9 April; however, just 28 of these were adult fish, the remainder (14) were young of the year fry between 55-82 mm length (see fig 1). The catch rate for brown trout was very low at 0.64 fish per box trap for each overnight set and 0.25 fish per course mesh fyke net for each overnight set. This low CPUE likely reflects the low abundance of brown trout within the lagoon. The CPUE for electrofishing was considerably higher at a standardised 23.1 fish per 20 minutes of electrofisher on-time, this result is somewhat inflated however, as most fish were YOY fry collected from the inflow creek that offered ideal fry habitat.

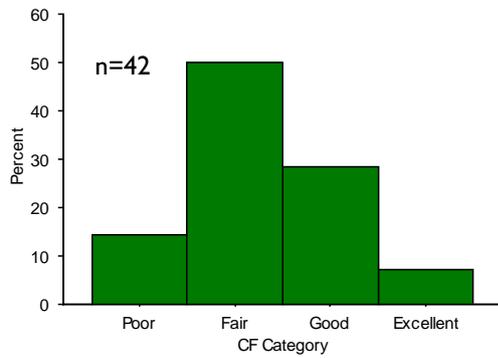
Of the 28 adult fish captured, the average weight was 942 grams with the average length 433 mm. Fifty four percent of fish were nevertheless, 1 kg or over, with the largest fish being 1.32 kg (see fig 3). The majority of fish (86%) were in good to excellent condition (see fig 2) with only 4 fish being classified as poor. No rainbow trout were evident.

There was only one brown trout captured in the 100-320 mm length range, suggesting one to two years of minimal recruitment (see figure 1).

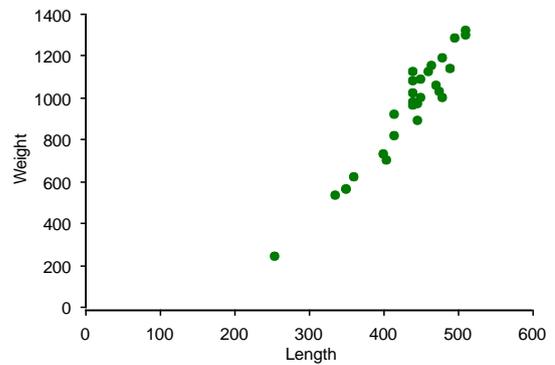
The max depth of the lagoon is 1.26 m with the vast majority of the lagoon being just 0.66 m deep or less (see fig 4). Sediments depth ranged from 0.3 m to 1.3 m plus, with most areas being at least 0.5 m.



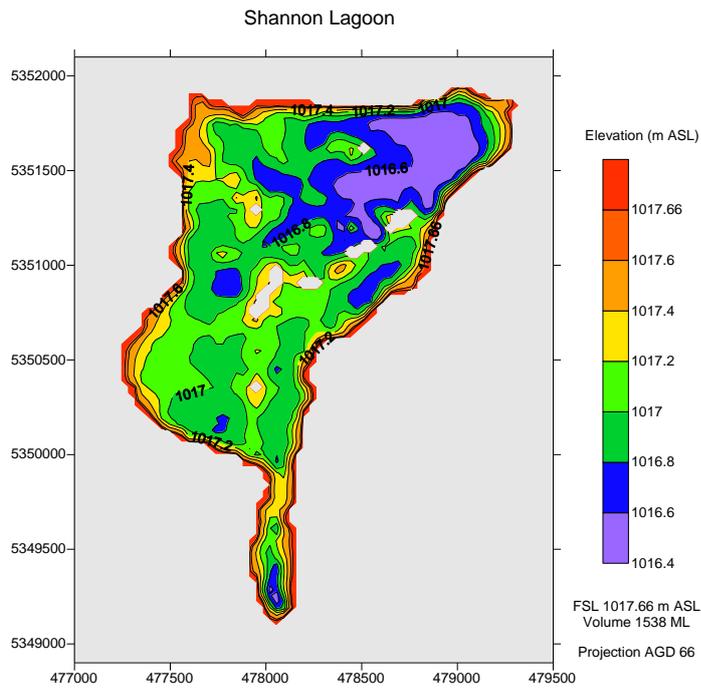
**Figure 1:** Percentage of brown trout in each 20 mm length range – Shannon Lagoon 7-9 April.



**Figure 2:** Percentage of brown trout in each condition factor category – Shannon Lagoon 7-9 April.



**Figure 3:** Length/Weight relationship for adult brown trout – Shannon Lagoon 7-9 April.



**Figure 4:** Bathymetric map of Shannon Lagoon (*Manser and Uytendaal unpublished*).

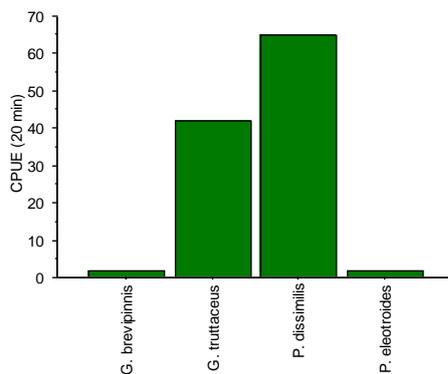
## Native Fish

A large number of the spotted galaxias ( $n=113$ ) and the threatened the Shannon paragalaxias ( $n=39$ ) along with two climbing galaxias were captured while electrofishing the inflow stream on the 9 April. In addition, a further 123 galaxids were collected by electrofishing on the 9 May. The May capture consisted of 114 Shannon paragalaxias, 7 spotted galaxias and 2 Great Lake paragalaxias, with no climbing galaxias present. The results of the pooled captures from April and May are presented below. In addition, 5 brown trout fry were also captured during electrofishing on 9 May.

CPUE was highest for the Shannon galaxias at 105.6 fish captured per 20 minutes (1200 seconds) electrofishing on time. The next most abundant species was the spotted galaxias at 82.8 fish captured per 20 minutes (1200 seconds) electrofishing on time, while just two individuals of both the climbing galaxias and the threatened Great Lake paragalaxias were collected (see table 1 & figure 5). Interestingly the one female Great Lake Paragalaxias captured was gravid with eggs easily extruded from the fish.

Species	Mean (mm)	Std Dev (mm)	No. fish measured	Count total	*CPUE (20 min)
<i>G. brevipinnis</i>	102.5		2	2	1.3
<i>G. truttaceus</i>	83.9	20.1	61	119	82.8
<i>P. dissimilis</i>	50.3	9.9	94	153	105.6
<i>P. electroides</i>	63.0		2	2	1.3

**Table 1:** Summary Statistics for all native fish captured by electrofishing 9 April and 9 May survey (\*CPUE expressed as standardised number of fish captured per 20 minutes electrofisher on-time).



**Figure 5:** CPUE for all galaxids captured by electrofishing.

The length frequency histogram for the Shannon galaxias (see fig 6) suggests the presence of YOY cohort in the 30-45 mm range. A strong modal peak around 50 mm suggests a second length cohort, with longer (older) fish up to 77 mm present in the population.

The length frequency histogram for the spotted galaxias (see fig 7) does not display any strong evidence of individual cohorts. There appears to be a small cohort of juvenile spotted galaxias in the 50-60 mm length range with another possible cohort of older fish around 90-105 mm. The maximum length for an individual fish was 128 mm with a small number of fish occurring in the 115-130 mm range.

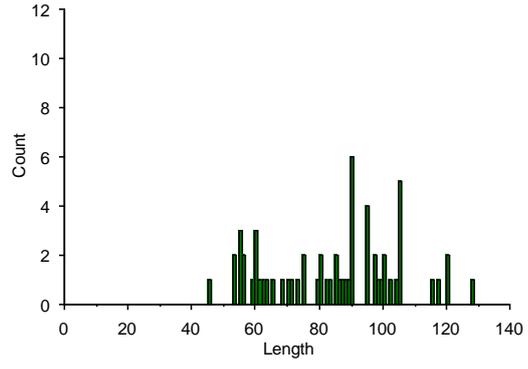
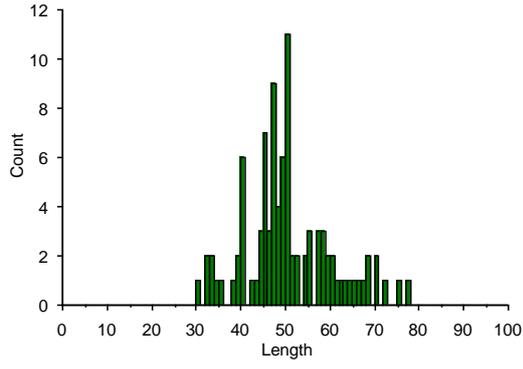


Figure 6: Length frequency for Shannon paragalaxias. Figure 7: Length frequency for Spotted galaxias.