8 November 2018

Daniel Meehan
Surface Waters Operations Engineer
Selwyn District Council

Dear Daniel,

As required as a condition of Resource Consent CRC172231 (discharge of Stormwater and Land Drainage Water from the Osbornes Drain Catchment into Lake Ellesmere), NIWA has completed monitoring and fish relocation in Osbornes Drain, Pump Forebay and Branch Drain.

NIWA set 10 fine-meshed fyke nets in the required area on 24th October and 2nd November 2018. No nets were set in Branch Drain on either date because it was dry. Gee-minnow traps were not set as the fine-meshed fyke nets we used capture both small and large fish and have compartments to separate the smaller fishes from larger eels. Electrofishing surveys were not possible because Branch Drain was effectively dry and the conductivity of the water was extremely high[1].

A total of 83 fish were caught during the monitoring in 2018 compared to 103 fish caught during 2017 (sampling was conducted at the same time). There were 46 fish caught on the first night of sampling and 37 fish on the second night over a week later. Whilst all captured fish were released into the Halswell Canal in 2017, only 57 fish (69% of the total number caught) were released in 2018. This was because two pest fish species (rudd and tench[2]) were captured during sampling and these fish were euthanised.

In 2017, there were three species captured (shortfin eel, inanga and common bully) whereas in 2018 five fish species were caught in the fyke nets (shortfin eel, longfin eel, inanga, tench and rudd). Shortfin eel were again the most abundant fish in 2018 comprising 65% of the total catch but rudd were the next most common fish making up 29% of the catch. No common bully were caught in 2018. The length of shortfin eels caught were estimated (to the nearest 10 mm) and varied between 180 and 800 mm; this shortfin eel size range was almost identical to the catch from 2017.

A full breakdown of the fish captured during the monitoring is provided in Appendix A. Location data (i.e., GPS co-ordinates) of where each net was set are available upon request.

Kind regards,

Phillip Jellyman

Dr Phillip Jellyman
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[1] When the conductivity of the water is extremely high (it was measured at well in excess of 2000 µS cm^{-1}) the amount of electrical current (amps) that would be put into the water at the lowest voltage setting possible (100 volts) is very unsafe. The internal safety features of the electric fishing machine will not permit this to occur so the machine does not work.

[2] Whilst both species have been recorded in the Te Waihora catchment previously, this is the first record of either rudd or tench in close proximity to the lake since 2002.

Appendix A. Catch data from Osbornes Drain sampling in October – November 2018.

Date	Drain	Net number	Fish species	Number caught	Min fish size (mm)	Max fish size (mm)
24/10/2018	Sump by pump	1	Shortfin eel	1		440
24/10/2018	Sump by pump	2	Rudd	3	54	70
24/10/2018	Sump by pump	2	Shortfin eel	2	220	250
24/10/2018	Sump by pump	3	Rudd	1		52
24/10/2018	Sump by pump	3	Shortfin eel	6	380	720
24/10/2018	Sump by pump	4	Rudd	9	45	63
24/10/2018	Sump by pump	5	Shortfin eel	3	450	750
24/10/2018	Main drain	6	Shortfin eel	3	420	780
24/10/2018	Main drain	7	Shortfin eel	12	320	520
24/10/2018	Main drain	8	Shortfin eel	2	500	700
24/10/2018	Main drain	9	Shortfin eel	3	400	470
24/10/2018	Main drain	10	Tench	1		56
24/10/2018	Branch drain	DRY				
2/11/2018	Sump by pump	1	No fish			
2/11/2018	Sump by pump	2	Rudd	1		58
2/11/2018	Sump by pump	3	Rudd	10	42	80
2/11/2018	Sump by pump	3	Tench	1		50
2/11/2018	Sump by pump	3	Shortfin eel	3	180	800
2/11/2018	Sump by pump	4	Shortfin eel	1	620	620
2/11/2018	Sump by pump	5	Shortfin eel	3	280	650
2/11/2018	Main drain	5	Longfin eel	1		420
2/11/2018	Main drain	6	Shortfin eel	2	350	420
2/11/2018	Main drain	7	Inanga	2	100	120
2/11/2018	Main drain	7	Shortfin eel	4	450	800
2/11/2018	Main drain	8	Shortfin eel	3	300	780
2/11/2018	Main drain	9	Shortfin eel	2	200	340
2/11/2018	Main drain	10	Shortfin eel	4	420	700
2/11/2018	Branch drain	DRY				