7 November 2022

Kate Attwood
Surface Waters Environmental Engineer
Selwyn District Council

Dear Kate,

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

Sampling conditions during October–November 2022 were similar to 2021 when the Osbornes Drain system had water levels that were higher compared with previous years. It appears this was due to higher water levels in Te Waihora, and/or less pumping activity during the sampling period. We also noted that water levels in the forebay dropped by approximately 300 mm between the time nets were set in November, and when they were collected the following morning. In the Branch Drain, water had backed up for more than 150 m from the confluence with the forebay Pond, and flow was undetectable. It was also noted, by the piles of sediment on the banks, that the sump pond had been dredged at some stage during the last 12 months.

There were 10 nets set during each sampling trip. Except for the two nets set in Branch Drain, all were set in the area required by the consent. Nets were set from the bank because the water level this year was too high in the main drain and forebay pond to allow wading. As in previous years, Gee-minnow traps were not used as the fine-meshed fyke nets used capture both small and large fish have compartments to separate the smaller fishes from larger eels. Following the removal of all the nets from the waterways and subsequent catch being measured (length) and recorded, all captured eels were released into the Halswell Canal (at the boat ramp). Electric fishing was also attempted in Branch Drain but due to high water conductivity was abandoned, as the methodology and fish capture success is significantly compromised under these conditions.

A total of 122 eels were captured during the 2022 monitoring, compared with 111 fish captured during the monitoring in 2021. This is the greatest number caught to date with 109 fish caught in 2020, 43 fish caught in 2019, 83 fish caught in 2018, and 103 during 2017 (sampling was conducted at a similar time each year). This year, 50 eels were captured during the first sampling event and 72 eels during the second. Previous surveys have recorded inanga (2019), common bully (2017) and also pest fish species (rudd and tench) in 2018. Only eels were captured during the 2022 survey. Four longfin eels were recorded during the 2022 survey (size range: 580–660 mm), compared to three longfin eels in 2021, and a single one longfin eel during each of the 2018 and 2019 surveys. Shortfin eels were again the most abundant fish comprising 96.7% of the total catch (size range: 330–850 mm). There were incidental findings of bully species,

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however, they had clearly been dead for some time, and likely regurgitated by the eels during their time in the fyke nets.

A full breakdown of the fish species captured, fish length measurements, and catch per net, during this year's monitoring is provided in Appendix A. Location data are available upon request.

Yours sincerely

Alex Rose
Freshwater Ecology Technician

Appendix A. Catch data from Osbornes Drain sampling in October – November 2022.

Date	Drain	Net number	Fish species	Number caught	Min fish size (mm)	Max fish size (mm)
27.10.2022	Main	1	Shortfin	6	360	560
27.10.2022	Forebay	2	Shortfin	13	340	660
27.10.2022	Forebay	3	Longfin	2	600	660
27.10.2022	Forebay	3	Shortfin	5	390	600
27.10.2022	Forebay	4	Shortfin	4	380	650
27.10.2022	Forebay	5	Shortfin	3	480	700
27.10.2022	Forebay	6	Shortfin	3	600	700
27.10.2022	Forebay	7	Shortfin	4	600	700
27.10.2022	Forebay	8	Longfin	1	800	800
27.10.2022	Forebay	8	Shortfin	1	500	500
27.10.2022	Branch	9	Shortfin	3	400	450
27.10.2022	Main	10	Shortfin	5	450	650
3.11.2022	Main	1	Shortfin	3	350	470
3.11.2022	Forebay	2	Shortfin	6	340	670
3.11.2022	Forebay	3	Longfin	1	580	580
3.11.2022	Forebay	3	Shortfin	9	390	650
3.11.2022	Forebay	4	Shortfin	3	370	570
3.11.2022	Forebay	5	Shortfin	3	400	480
3.11.2022	Forebay	6	Shortfin	6	450	620
3.11.2022	Forebay	7	Longfin	1	660	660
3.11.2022	Forebay	7	Shortfin	6	460	740
3.11.2022	Forebay	8		0	na	na
3.11.2022	Branch	9	Shortfin	25	330	850
3.11.2022	Main	10	Shortfin	9	450	680