4 June 2025

Vipan Garg
National Green Steel Limited
By email

Dear Vipan,

Black mudfish and fish survey at 61 Hampton Downs Road

Background

Awa Ecology have been contracted by National Steel Limited to undertake a fish survey, with a particular emphasis on the presence or absence of black mudfish (*Neochanna diversus*), at 61 Hampton Downs Road. Black mudfish are classified as At Risk – Declining under the New Zealand Threat Classification System[1]. There are several known records of black mudfish in the surrounding area, and the species is often associated with drainage habitats underlain by peat soils, similar to those present at the site.

Site description

Several shallow ephemeral watercourses are present on the site. The watercourses are generally between 30 - 60 cm wide and c.5-10 cm deep. Aquatic vegetation is common within the channel and is comprised of water celery (*Apium nodiflorum*), water purslane (*Ludwigia palustris*), reed sweet grass (*Glyceria maxima*), floating sweet grass (*G. declinata*), water pepper (*Persicaria hydropiper*), starwort (*Callitriche stagnalis*), creeping bent (*Agrostis stolonifera*) and lesser spearwort (*Ranunculus flammula*). Long green filamentous algae was also present.

Photos are available in Attachment 1.

Methods

A fish survey was undertaken in the main watercourse and targeted mudfish surveys were undertaken in the upper catchment and a side branch of the main watercourse (Figure 1). Nets and traps were set overnight on 3 June 2025. The fish survey in the main watercourse (Site 1) was conducted following standard methodology, which typically involves the deployment of six fyke nets and twelve Gee minnow traps over a 150-metre reach[2]. However, due to limited water depth, fyke nets could only be set in two suitable locations, immediately upstream and downstream of a culvert, where sufficient depth was available.

[1] Dunn, N. R., Allibone, R. M., Closs, G. P., Crow, S. K., David, B. O., Goodman, J. M., Griffiths, M., Jack, D. C., Ling, N., Waters, J. M., & Rolfe, J. M (2018). 'Conservation status of New Zealand freshwater fish, 2017', New Zealand Threat Classification Series 24, Department of Conservation, Wellington.

[2] Joy M., David B. & Lake M. 2013. New Zealand Freshwater Fish Sampling Protocols: Wadeable Rivers & Streams. The Ecology Group - Institute of Natural Resources, Massey University, Palmerston North 4442.

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Sites 2 and 3 were surveyed using a modified method of the mudfish sampling methodology[3]. The method was modified so that it was in line with the proposed mudfish sampling methodology for the Rotokauri Catchment as follows:

- Trapping sites consisted of 100 m of channel length.
- Approximately 100m of channel between trapping sites.
- Ten fine mesh (1/8 inch) Gee minnow traps were set at each site. Traps were set evenly spaced where water levels allowed and were set partially submerged with an air gap.

Any fish captured were identified and indigenous fish were measured before being released back into the habitat from which they were captured. The watercourses onsite were ephemeral, and trapping was undertaken at this time of year when there was ample water in the channel. It should be noted that the ideal trapping time for mudfish is September to November when detection probabilities are the highest.

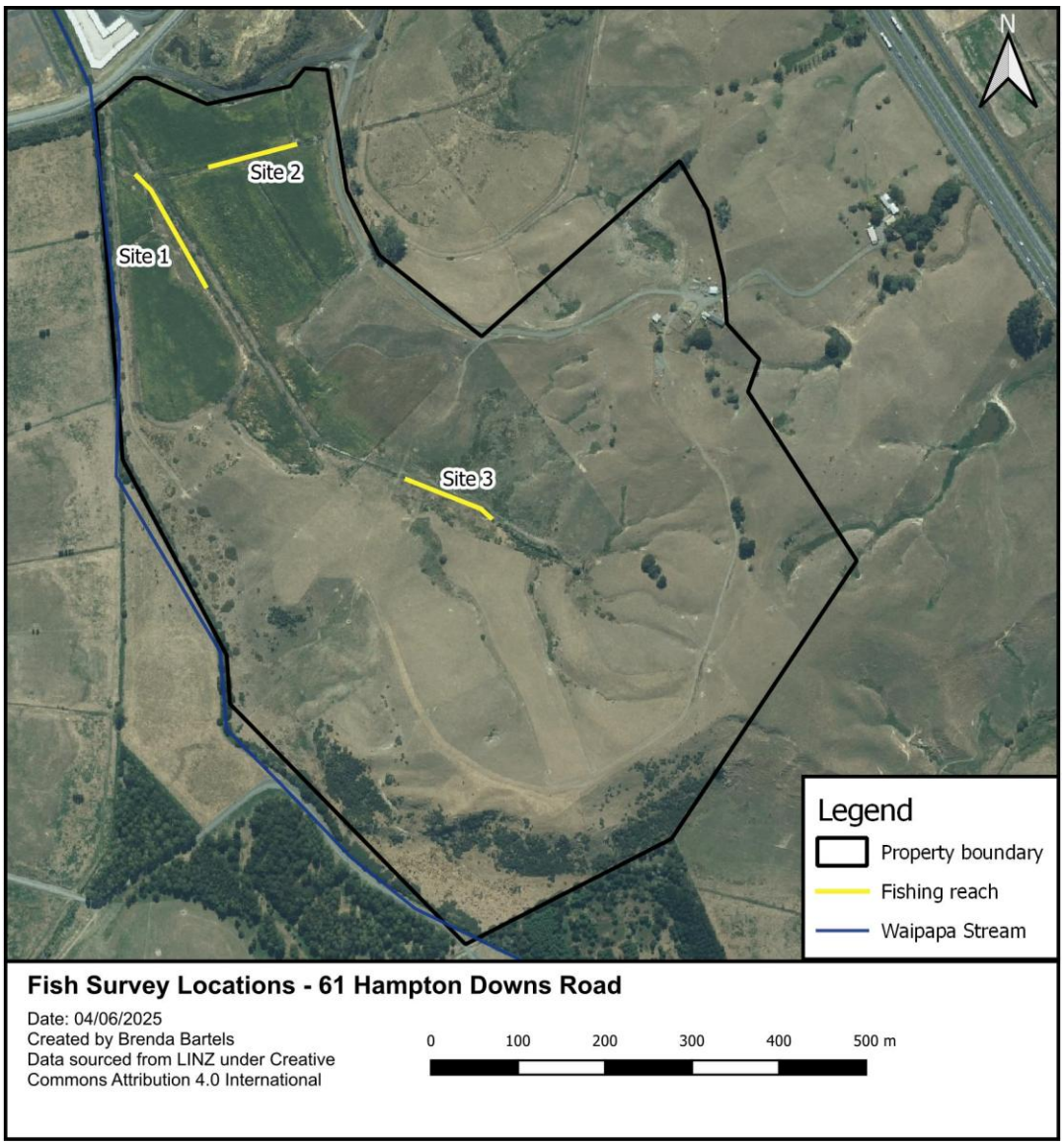

Figure 1: Fishing reaches at 61 Hampton Downs Road.

[3] Ling, N.; O'Brien, L.K.; Miller, R.; Lake, M. 2013: A revised methodology to survey and monitor New Zealand mudfish. Department of Conservation, Wellington (unpublished).

Results

Over 200 *Gambusia affinis* and a single shortfin eel (*Anguilla australis*) measuring 530 mm in length, were captured in the nets and traps deployed overnight at 61 Hampton Downs Road (raw data in Attachment 2). Gambusia is an introduced species, and shortfin eels are a common indigenous species. No black mudfish (*Neochanna diversus*) were detected. Given the site's connectivity to the Waipapa Stream and the presence of gambusia, which are known to compete with mudfish, and eels, which can prey on mudfish, it is unlikely that black mudfish are present at this location.

Table 1: Results of the fish and mudfish surveys at 61 Hampton Downs Road.

Species	Scientific name	Site 1	Site 2	Site 3
Gambusia	*Gambusia affinis*	71	120	198
Shortfin eel	*Anguilla australis*	1		

Summary

Awa Ecology was contracted by National Steel Limited to undertake a fish survey, with a particular emphasis on the presence or absence of black mudfish at 61 Hampton Downs Road. Nets and traps were set overnight on June 3, 2025, and gambusia and a single shortfin eel were captured. These species are known to compete with and prey on black mudfish, and it is unlikely that black mudfish are present at this location.

The presence of shortfin eel, an indigenous species, indicates that fish recovery and relocation will be required before any in-channel works if water is present. Fish recovery and relocation may not be required if the watercourses are dry at the time of works, which is a possibility, as the watercourses are ephemeral.

Yours sincerely

Brenda Bartels
Senior Ecologist/Director
Awa Ecology

Attachment 1: Site Photos

Attachment 2: Raw fish results

Site	Net/trap	Species	Number	Length (mm)
1	GMT 1	No species	0	
1	GMT 2	No species	0	
1	GMT 3	Gambusia	4	
1	GMT 4	Gambusia	5	
1	GMT 5	Gambusia	3	
1	GMT 6	Gambusia	25	
1	GMT 7	Gambusia	1	
1	GMT 8	Gambusia	1	
1	GMT 9	No species	0	
1	GMT 10	Gambusia	4	
1	GMT 11	No species	0	
1	GMT 12	Gambusia	20	
1	Fyke 1	No species	0	
1	Fyke 2	Shortfin eel		530
1	Fyke 2	Gambusia	8	
2	GMT 1	Gambusia	9	
2	GMT 2	Gambusia	13	
2	GMT 3	Gambusia	5	
2	GMT 4	No species	0	
2	GMT 5	Gambusia	3	
2	GMT 6	Gambusia	29	
2	GMT 7	Gambusia	9	
2	GMT 8	Gambusia	12	
2	GMT 9	Gambusia	15	
2	GMT 10	Gambusia	25	
3	GMT 1	Gambusia	35	
3	GMT 2	Gambusia	45	
3	GMT 3	Gambusia	6	
3	GMT 4	Gambusia	60	
3	GMT 5	Gambusia	2	
3	GMT 6	Gambusia	20	
3	GMT 7	Gambusia	30	
3	GMT 8	No species	0	
3	GMT 9	No species	0	
3	GMT 10	No species	0	