



Corbicula fluminea collaborative long-term management plan

Context for this plan

Corbicula fluminea (“corbicula” or “Freshwater gold clam”) was detected in the Waikato River at Bob’s Landing in May 2023. This is a highly invasive species owing to its rapid growth, high reproductive rate, and adaptability.

It spreads very quickly in rivers using water flows and is easily transmitted to new waterways via human activity.

Corbicula is believed to have been present in the Waikato River for at least three years prior to detection. Populations are well established throughout the river from Lake Maraetai to the delta. Extensive surveillance elsewhere in the Waikato River and catchment, and at high-risk sites throughout New Zealand, has not resulted in further detections¹ at this stage although it is expected that corbicula will spread naturally throughout most of the catchment.

The initial response phase to the detection of corbicula is considered over. This first phase focused on understanding the spread of the organism, containing it to its known locations, and understanding options for its long-term management.

Eradication of corbicula is not considered feasible currently (it may be in the long-term with continued investment in research and development), but the clams present such a material threat environmentally and economically that on-going action is required. This paper sets out a high-level plan for that.

This plan has an immediate focus for directing activity through to spring 2025 but is also intended to set a platform for long-term action and collaboration.

Unchecked, corbicula will likely cause serious and widespread impacts

Most of Aotearoa’s rivers, lakes and many other freshwater bodies are considered habitable for corbicula. Its environmental and economic impacts² are potentially serious including:

- Significant impact on water infrastructure through clogging – the Waikato River alone contains multiple items of nationally significant hydroelectricity and municipal water (in total there are ninety-eight consented water offtakes from the infested part of the Waikato River alone).
- Displacement of native species that share the same ecological niche such as the native freshwater mussel (kākahi).
- Diminished water quality, corbicula will likely make nitrogen and phosphorus issues worse and have been known to rework sediments and have been known to cause a decline in dissolved oxygen levels.
- Te Ao Māori impacts including threatening mahinga kai, particularly the kākahi/kāeo/torewai (*Echyridella menziesii*) (freshwater mussel) which are already under threat and declining nationally.
- Potential for mass die-off events creating quality issues for drinking water and nutrient loading in water causing eutrophication.
- Degrading the tourism, professional sports, and recreational value of our rivers and lakes.

Some of these effects are already being observed and felt in the Waikato River.

Objectives for on-going management

Eradication (getting rid of corbicula completely and permanently from New Zealand) is not feasible for now; therefore, the overarching focus needs to be:

- containing corbicula to its current known range and areas of likely natural spread in the Waikato River catchment area;
- reducing the impact of corbicula where feasible;
- developing the tools to better achieve this.

“Containment” includes the notion of “excluding” corbicula from areas where it is not present. These are two sides of the same coin; however, different activities will be required to achieve both containment and exclusion. It is also recognised that exclusion activities are likely to be different between regions, reflecting their particular circumstances.

The model for managing this programme needs to evolve to one that enables strong local and regional participation and leadership, supported by national co-ordination. The role of iwi Māori as kaitiaki needs to be central to on-going management. The plan needs to enable strong collaboration between central and local government, iwi and hapū, infrastructure operators, recreationalists, communities, and others.



¹ A second species of corbicula (*C. Australis*) has been detected at the Taupō Aqua Park and nowhere else. Biosecurity New Zealand is undertaking activity to eliminate *C. australis* from the park. While this matter is of interest to the wider programme for managing *C. fluminea*, and learnings will be shared, it is discreet activity and sits outside this plan.

² *C. fluminea* has spread from its native range in east Asia and has become a significantly problematic invasive species in many parts of the world including North America, South America and Europe. These impacts are well documented and understood in many of these countries.

Immediate priorities

Re-shape programme governance and management – agree the purpose and objectives for long term management and drive better collaboration. Recognise national scope of the problem including working groups and regional co-ordination groups.

- 1. Surveillance** – co-ordinated and comprehensive surveillance to quickly identify new incursions. Develop a national surveillance strategy and delivery model.
- 2. Develop rapid assessment plan** – decision making tool for detections at new sites; outlining roles, responsibilities, and guidance
- 3. Expand awareness and behaviour change programmes as a pathway management approach** – comprehensive delivery of *Check Clean Dry* including strategic engagement at facilities, with event organisers, and active ambassadors/kaitiaki. Associated engagement to cover all water user groups, and targeted media campaigns. This will need national, regional, and local co-ordination.
- 4. Increased applied research and innovation** – Better understand the environmental and economic impacts. Develop an applied science and mātauranga plan. Explore new management tools, methods, techniques, and strategies for long-term management and understand best practice for impact management. Establish benthic mat suppression trial (key recommendation of TAG group and springboard for on-going work) on the back of recently completed depth and density survey – Biosecurity New Zealand in partnership with mana whenua at place. Understand the relative risks of pathways to better inform controls.
- 5. Improved policy integration** – explore regional and national regulatory options to improve pathway management and reduce risk of spread of corbicula between waterways and inter-regionally. Investigate interventions at the Cook Strait as a barrier of spread to the South Island.

Programme workstreams

Surveillance	Operations	Pathway management	Engagement and behaviour change	Research	Policy and regulation
- Refine and bolster existing surveillance programmes. - Identify high risk sites for surveillance.	- Direct control at small, isolated, locations. - Investigate and facilitate action at those sites where the opportunity exists to contain or eradicate. - Collate and share ongoing control and management activities.	- Further investigation to understand relative risk of the pathways as an input to other workstreams. - Compliance and enforcement barriers with the controlled area notice. - Work with organisations on their Standard operating procedure and provide infrastructure and information as required.	- Develop and confirm an engagement strategy to support operations. - Work with water user groups to assist the adherence and acceptance of CCD by high-risk water users as a multi-species pathway management strategy.	- Develop an applied science and mātauranga plan focused on high priority needs to support objectives. - Understand which other parties are doing research and how this applies and/or can be aligned.	- Review the controlled area notices. - Explore transition to Pathway Management Plan. - Explore use of bylaws and RPMP levers.

Need for an investment plan

The funding environment for all entities involved in corbicula management is challenging and funding is expected to be tight for the short-term meaning:

- broad funding priorities will need to be agreed;
- parties will need to be realistic about what can be funded in the short-term;
- opportunities for new funding streams for a national programme need to be identified.

A robust cost benefit analysis needs to be developed to build a case for ongoing and additional funding.

Delivery model

It is important the delivery model comprises local and regional (at-place) effort, supported by national-level co-ordination.

Transition governance to the Freshwater Biosecurity Partnership Programme steering group (FWBPP). Recognising the national focus, not all central or regional government agencies or iwi can be represented.

Support regionally focused co-ordination groups with particular focus on operational activities, engagement, and awareness and to provide a pipeline to programme working groups. A Waikato specific working group for corbicula is to sit under the FWBPP, led by Waikato Regional Council.

Establish programme working groups for the programme workstreams.

Biosecurity New Zealand to lead nationally supporting the functioning of the governance and working groups with operational delivery led through mana whenua, councils and Department of Conservation working in partnership.

Work with the *Check Clean Dry* behaviour change programme and integrate corbicula into this programme in high-risk areas for pathway management.

Map of currently known range in the Waikato



Scaling our effort: options identified to support future investment

	Direction 1: Baseline – Integrate corbicula into <i>Check, Clean, Dry</i>	Direction 2: Slow the spread	Agreed collective national direction, as investment permits Direction 3: Containment
Goal	Slow the potential spread of corbicula by recreational water users.	Slow the potential spread of corbicula by recreational water users in the North Island and stop the spread to the South Island.	Contain corbicula to Waikato River system downstream of Lake Maraetai. Exclude from all other catchments.
Outcome	Corbicula rate of spread in both the North Island and South Island is reduced.	Corbicula rate of spread in the North Island is reduced. The South Island remains corbicula free.	Corbicula is contained to its current known range and to areas of likely natural spread in the Waikato River catchment. Impacts from corbicula are reduced where feasible.
Programme management and governance	Co-ordination and leadership by existing <i>Check, Clean, Dry</i> programme, with focus on corbicula in high-risk areas.	National programme established. Regional delivery with a key focus on the Waikato region. Enhance <i>Check, Clean, Dry</i> as part of a multi-species exclusion strategy across the rest of the North Island. Establish a South Island-focused exclusion programme.	National programme established. Regional delivery with focused operational programmes in areas of high risk. <i>Check, Clean, Dry</i> as key fit-for-purpose strategy.
Surveillance and monitoring	Utilise existing council and Department of Conservation surveillance programmes for water quality across New Zealand.	Refine existing council and Department of Conservation surveillance programmes to include high risk sites across New Zealand.	Refine and bolster corbicula-specific surveillance and expand nationwide.
Preparedness	No direct preparedness programme.	Reactive to new incursion, assessed on a case by case basis.	Preparedness for new site incursions, develop rapid assessment plan for new finds. May require new tools and understanding of relative risk pathways.
Pathway management	<i>Check, Clean, Dry</i> for high-risk recreational water users, comprising engagement with water user groups and event organisers, paid-media campaigns, and ambassadors/kaitiaki.	<i>Check, Clean, Dry</i> for high-risk recreational water users, comprising engagement with water user groups and event organisers, paid-media campaigns, and ambassadors/kaitiaki with a focus on high-risk areas. Minimal cleaning facilities in high-risk North Island and near inter-island port facilities in the South Island. Work on standard operating procedure for relevant businesses.	Higher level of resourcing to address all users of the Waikato River (commercial, sporting, and recreational) and high risks pathways. Increased wash stations, ambassador/kaitiaki engagement with water user groups and event organisers, and presence at facilities. Build a targeted compliance and enforcement programme. Event and geotargeted campaigns and other targeted media with the <i>Check, Clean, Dry</i> call to action.
Research	Research is ad hoc with no central funding or co-ordination.	Research into relative risk of conveyances to refine the <i>Check, Clean, Dry</i> protocols and organisational Standard operating procedures. Research into relative risk of pathways to refine the surveillance design.	Develop and implement a targeted research and mātauranga plan focused on surveillance and treatments.
Policy and regulations	Remove the controlled area notice and make <i>Check, Clean, Dry</i> voluntary. Maintain unwanted organism status.	Keep the controlled area notice and review boundary.	Transition controlled area notice to pathway management plan, investigate supporting bylaws and RPMP levers.
Programme communications, engagement and media	Communication channels such as a newsletters to inform interested parties and occasional community meetings.	Range of channels used to inform community about operational activities and reinforce the <i>Check, Clean, Dry</i> call to action. Guidance for those impacted by corbicula available.	Communications strategy developed by governance and working groups to support the operational work and maintain community social licence.
Direct control operations	No direct control programme.	Direct control in small contained and isolated aquatic systems where risk of human mediated spread exists.	Investigate and facilitate control at sites where the opportunity still exists to contain, supress, or eliminate. Eliminate small establishing populations from new areas if feasible.