

Freshwater ecology monitoring programme: background



What is freshwater ecology?

Freshwater ecology is the study of relationships between freshwater creatures and the environment they live in (the ecosystem).

Freshwater ecosystems provide valuable benefits including recycling nutrients, supplying water for irrigation, recreation, supporting fisheries, and are significant for iwi and mahinga kai. However, they are constantly under pressure from land use change and urbanisation – including habitat loss, pollution from pesticides/fertilisers, invasive species, stream modification and water over-use. It is important we are constantly aware of the impact of these pressures on the ecology of our streams.

Why we monitor freshwater ecology

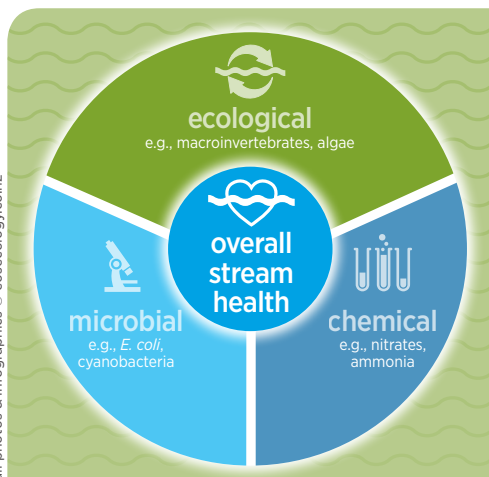
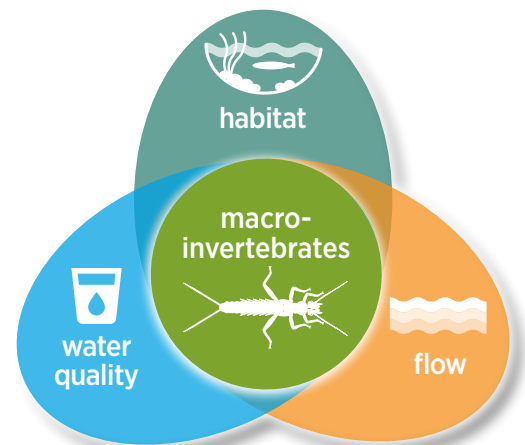
Freshwater ecology monitoring is one part of our broader water quality monitoring programme, undertaken to fulfil obligations under the Resource Management Act, and other environmental legislation. 'Monitoring' is when specially chosen sites undergo a planned programme of testing to check they are meeting desired quality levels.

Regular monitoring of freshwater ecology provides data which allows us to understand what a stream's current ecosystem state is (i.e., good/bad), and the long-term trend for each ecosystem (i.e., getting better/no change/getting worse). It also allows us to assess the effectiveness of any mitigation being implemented (e.g., streamside planting).

Why we use macroinvertebrates

We monitor macroinvertebrates to help assess freshwater ecological health. Macroinvertebrates include insects, worms and snails – all of which play a significant role in a healthy stream. As macroinvertebrates are sensitive to changes in their environment, the variety of species present or absent in a stream (and their population numbers) provide a good indication of the water quality, and general habitat health.

Macroinvertebrate monitoring results provide a broader picture of the quality of the water and surrounding environment. This is because the current state of macroinvertebrates is indicative of changes to their habitat, the stream's water quality, and the stream's flow (water speed/volume) over a period of time. Other parts of our water quality monitoring programme are mainly concerned with the chemical/microbial components within the water e.g., nitrates, *E. coli*, etc. Results of these chemical/microbial tests only provide a snapshot of the water quality at that specific site at the time the sample was taken.



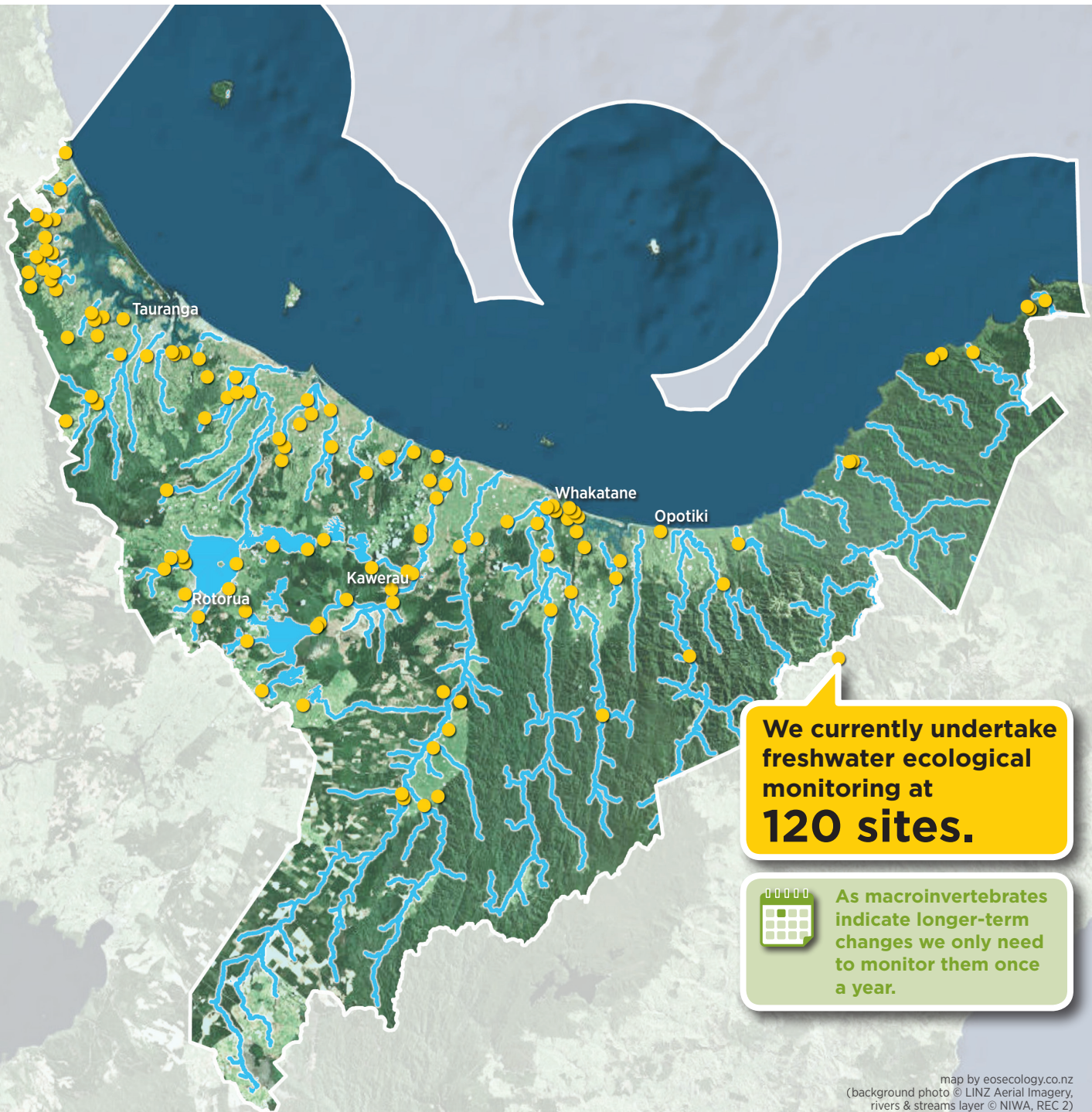
You can find more detailed information about freshwater ecology monitoring using macroinvertebrates in our *Freshwater ecology monitoring programme: measuring stream health* information sheet.



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Where we monitor freshwater ecology

Sites are chosen to cover the broad range of freshwater environments and ecosystems found within our region. What the land that the stream flows through is used for has a significant impact on its freshwater ecology. This is why it's important we monitor sites which cover a range of different stream environments, e.g., urban, agricultural, native forest and exotic forest.



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For more information on freshwater ecological monitoring undertaken by Bay of Plenty Regional Council, contact us on 0800 884 880.

