

IMPACTS OF SEDIMENT ON SHORTJAW KŌKOPU



Sediment can affect māhinga kai by influencing habitat, behaviour, feeding, growth and survival.

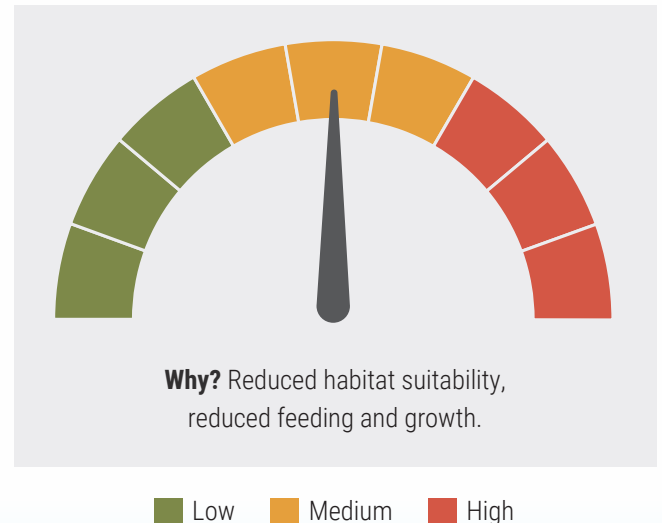
Background on shortjaw kōkopu (*Galaxias postvectis*)

Shortjaw kōkopu are the least common species in Aotearoa New Zealand's whitebait catch¹. They are diadromous – they spend a few months of their early life in the ocean as larvae and the remainder of their life in rivers as juveniles and adults. Shortjaw kōkopu are endemic to New Zealand and have a patchy distribution; they are more widespread in the North Island but are absent from large areas of the East Coast². Adults have specific habitat preferences of bouldery streams covered by native forest^{3,4}, and are solitary and nocturnal⁵. They are thought to reach maturity after two to three years⁶. Their diet is dominated by aquatic insect larvae as well as terrestrial invertebrates such as spiders, ants, moths and cicadas⁷.

Shortjaw kōkopu (*Galaxias postvectis*)



Shortjaw kōkopu sensitivity to elevated sediment



Prepared by Mike Hickford, Michele Melchior and Melanie Mayall-Nahi from NIWA for Our Land and Water National Science Challenge, March 2023. Image of shortjaw kōkopu by Dr R M McDowall.

For references and further information see niwa.co.nz/sediment-impacts

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Effects of suspended sediment on shortjaw kōkopu

Habitat	Direct effects unknown.
Behaviour	It is unknown whether the upstream migration of shortjaw kōkopu whitebait is reduced by increased turbidity like it is for banded kōkopu and inanga whitebait ⁸⁻¹⁰ .
Feeding	Shortjaw kōkopu mainly feed by grazing invertebrates from the substrate ⁷ but are also known to take terrestrial prey from the surface ¹¹ or from the mid-water column ¹² . Because they are typically nocturnal ² , shortjaw kōkopu probably do not rely heavily on sight for feeding. Instead, they probably use their lateral line (pressure sensors along the side of their body) to detect prey movement in the water ¹³ . This makes it unlikely that the feeding of shortjaw kōkopu will be affected by an increase in suspended sediments.
Growth	Direct effects unknown, but if turbidity reduces feeding over long periods this will affect growth.
Survival	Direct effects unknown.

Effects of deposited sediment on shortjaw kōkopu

Habitat	Shortjaw kōkopu are more abundant in stream reaches with large substrate (cobbles and boulders) ¹⁴ or plentiful, instream debris ⁵ . The debris and interstitial spaces between substrate particles provide refuge spaces during the day, but shortjaw kōkopu often move to pools to feed at night ¹⁴ . An increase in deposited sediment that fills these refuge spaces is likely to have negative effects on resident shortjaw kōkopu.
Behaviour	Direct effects unknown.
Feeding	Shortjaw kōkopu preferentially feed on cased caddisflies when they are present ⁷ , but readily switch to eating terrestrial invertebrates ¹⁵ . Cased caddisflies (e.g., <i>Helicopsyche</i>) are absent from areas of stream with sedimentation or filamentous algae ¹⁶ so an increase in deposited sediments may cause a diet shift in shortjaw kōkopu.
Growth	Direct effects unknown, but if deposited sediment reduces feeding over long periods this will affect growth.
Survival	Direct effects unknown.

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Further information:

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