

IMPACTS OF SEDIMENT ON GIANT KŌKOPU



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

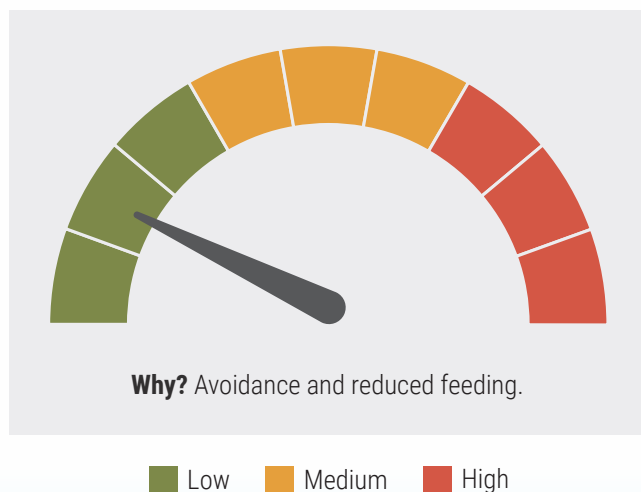
Background on giant kōkopu (*Galaxias argenteus*)

Giant kōkopu are one of six species in Aotearoa New Zealand's whitebait catch. They are endemic and diadromous – they spend about 4½ months in the ocean as larvae before entering rivers¹. Giant kōkopu make up less than 0.5% of the whitebait caught in rivers around the whole country, but they are slightly more common in whitebait catches in South Westland². Giant kōkopu are found in very variable habitats, often in wetlands and forested creeks, but also in lakes and gravelly streams. They do not penetrate very far inland. Giant kōkopu are found all around the country but are absent from large areas of the East Coast of both islands³. Giant kōkopu probably take two to three years to reach maturity. They are generalist feeders⁴, slow growing and are estimated to live for up to 30 years⁵.

Giant kōkopu (*Galaxias argenteus*)



Giant 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 giant kōkopu by Dave Allen, NIWA.

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

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Effects of suspended sediment on giant kōkopu

Habitat	Experimental restoration of giant kōkopu populations has shown that stocked juvenile fish are retained better at clear water sites than at turbid sites ⁶ . However, these results may be misleading because predatory shortfin eels were more abundant at the turbid sites.
Behaviour	Direct effects unknown. The very low abundance of giant kōkopu in whitebait catches, even in South Westland, has prevented any analysis of the effect of turbidity on upstream migrations ⁷ .
Feeding	Giant kōkopu are generalist feeders that eat a wide range of food with aquatic and terrestrial origins ⁴ . They have been described as a "skulking predator" ³ that use their powerful body shape and fin arrangement to ambush prey on the water surface ^{5, 8, 9} and lower in the water column. Small fish (e.g., īnanga and bullies) are also a common component of their diet ⁴ . As with the other kōkopu species, they are typically nocturnal and probably do not rely heavily on sight for feeding ¹⁰ . Instead, they use special pressure sensors along the side of their body to detect the movement of their prey ¹¹ . Given this, it is unlikely that the feeding of giant kōkopu will be affected by an increase in suspended sediments.
Growth	Direct effects unknown.
Survival	Direct effects unknown.

Effects of deposited sediment on giant kōkopu

Habitat	It appears that giant kōkopu may prefer areas with finer substrates, although the association with smaller substrate size may simply reflect their strong preference for low water velocity ¹² – this is where smaller substrate is likely to occur.
Behaviour	Direct effects unknown.
Feeding	Direct effects unknown. However, giant kōkopu are generalist feeders so may be capable of switching their diet entirely to terrestrial invertebrates or fishes if aquatic invertebrate abundance decreases because of deposited sediments.
Growth	Direct effects unknown.
Survival	Direct effects unknown.

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Further information:

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