

IMPACTS OF SEDIMENT ON KANAE GREY MULLET

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

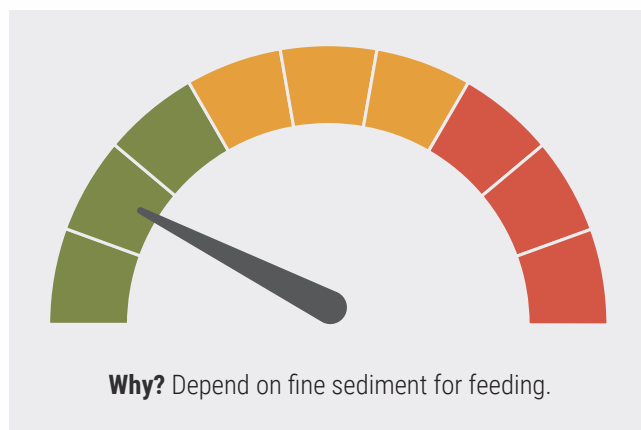
Background on kanae grey mullet (*Mugil cephalus*)

Kanae grey mullet are a globally distributed species that are found throughout temperate and sub-tropical areas in both hemispheres¹. They are more common in northern New Zealand in sheltered bays and harbours and in the mouths and estuaries of rivers^{2,3}. They can also penetrate long distances inland (≤ 160 km) in larger rivers⁴. Grey mullet are usually herbivorous and feed on organic material which they sift from sediments sucked from the substrate^{5,7}. They filter and remove carbon from large volumes of sediment while feeding^{6,8} and up to half of their gut contents is very fine sediment ($<25 \mu\text{m}$)⁶. This sediment is important for breaking down food in the stomach and assisting with digestion^{9,10}. Grey mullet mature at three years (at around 340 mm) and live for up to 14 years².

Kanae grey mullet (*Mugil cephalus*)



Kanae grey mullet sensitivity to elevated sediment



Low Medium High

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Effects of suspended sediment on kanae grey mullet

Habitat The direct effects of increased suspended sediments on the habitat of grey mullet are unknown. However, they are very common in a highly turbid lake and there are no differences in their length or condition compared to the population in a nearby, less turbid river⁷

Behaviour Direct effects unknown.

Feeding Grey mullet are opportunistic feeders and include live plant material¹¹, probably for the attached microflora¹², and gastropods⁷ in their diet when they are available. However, when grey mullet are feeding in more turbid, muddy areas they rely mainly on microorganisms that they filter from bottoms sediments⁸.

Growth Turbidity does not appear to affect the growth of grey mullet; there were no differences in the length or condition of fish caught in a highly turbid lake and those caught in a nearby, less turbid river⁷.

Survival Turbidity does not appear to affect the survival of grey mullet; there were no differences in the length or condition of fish caught in a highly turbid lake and those caught in a nearby, less turbid river⁷.

Effects of deposited sediment on kanae grey mullet

Habitat It is unlikely that an increase in deposited sediments will affect the preferred habitat of grey mullet. They are large, mobile fish yet they were equally abundant in a turbid lake with a soft organic mud substrate as in a nearby river with coarser substrate (0.5-1 mm) despite there being open access between the two areas^{7, 13}.

Behaviour Direct effects unknown.

Feeding It is unlikely that the feeding of grey mullet will be affected by an increase in deposited sediments. Grey mullet appear to preferentially select and ingest fine sediment¹⁰ and expel coarser material through their gills after filtering^{14, 15}. As long as any deposited sediment contains appropriate organic material, then grey mullet are likely to continue feeding.

Growth Deposited sediment does not appear to affect the growth of grey mullet; there were no differences in the length or condition of fish caught in a turbid lake with a soft organic mud substrate compared to fish caught in a nearby river with coarser substrate⁷.

Survival Deposited sediment does not appear to affect the survival of grey mullet; there were no differences between the length or condition of fish caught in a turbid lake with a soft organic mud substrate and those caught in a nearby river that had coarser substrate⁷.

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