

# IMPACTS OF SEDIMENT ON KANAE GREY MULLET

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

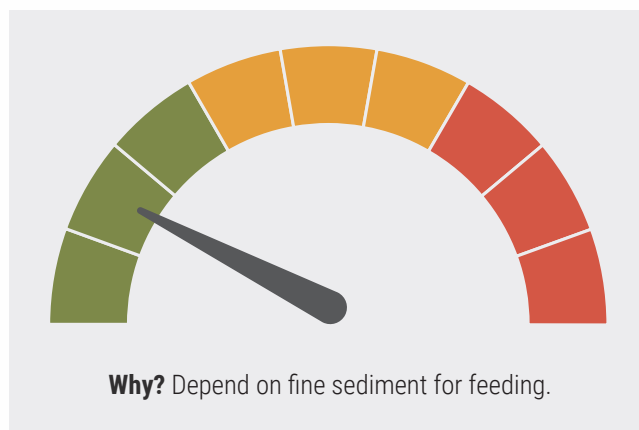
## Background on kanae grey mullet (*Mugil cephalus*)

Kanae grey mullet are a globally distributed species that are found throughout temperate and sub-tropical areas in both hemispheres<sup>1</sup>. They are more common in northern New Zealand in sheltered bays and harbours and in the mouths and estuaries of rivers<sup>2,3</sup>. They can also penetrate long distances inland ( $\leq 160$  km) in larger rivers<sup>4</sup>. Grey mullet are usually herbivorous and feed on organic material which they sift from sediments sucked from the substrate<sup>5,7</sup>. They filter and remove carbon from large volumes of sediment while feeding<sup>6,8</sup> and up to half of their gut contents is very fine sediment ( $<25 \mu\text{m}$ )<sup>6</sup>. This sediment is important for breaking down food in the stomach and assisting with digestion<sup>9,10</sup>. Grey mullet mature at three years (at around 340 mm) and live for up to 14 years<sup>2</sup>.

## 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 river<sup>7</sup>

**Behaviour** Direct effects unknown.

**Feeding** Grey mullet are opportunistic feeders and include live plant material<sup>11</sup>, probably for the attached microflora<sup>12</sup>, and gastropods<sup>7</sup> 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 sediments<sup>8</sup>.

**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 river<sup>7</sup>.

**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 river<sup>7</sup>.

## 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<sup>7, 13</sup>.

**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 sediment<sup>10</sup> and expel coarser material through their gills after filtering<sup>14, 15</sup>. 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 substrate<sup>7</sup>.

**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 substrate<sup>7</sup>.

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## Further information:

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