

# IMPACTS OF SEDIMENT ON PĀTIKI MOHOAO BLACK FLOUNDER



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

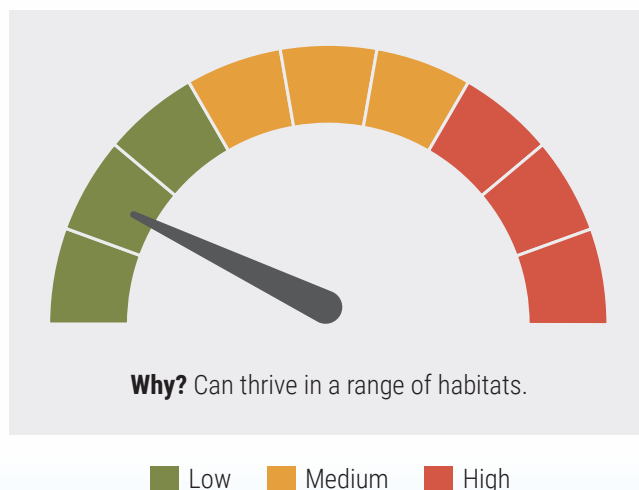
## Background on pātiki mohoao – black flounder (*Rhombosolea retiaria*)

Black flounder are endemic and found throughout Aotearoa New Zealand<sup>1</sup>. They are unique in the flatfish family because they spend the remainder of their life in freshwater after a marine larval phase<sup>2</sup>. They are primarily a coastal species inhabiting estuaries, lowland lakes and rivers<sup>3,4</sup> but they can penetrate long distances inland (>100 km) in rivers that are not too steep<sup>5</sup>. Black flounder are carnivorous and feed on a variety of bottom-dwelling aquatic insects<sup>6</sup> and molluscs; they are also known to feed on migrating whitebait<sup>7</sup>. Black flounder grow quickly. They are around 200 mm long when one year old and live for over three years<sup>8</sup>. Females mature after around two years<sup>9</sup>.

### Pātiki mohoao black flounder (*Rhombosolea retiaria*)



### Pātiki mohoao black flounder sensitivity to elevated sediment



Prepared by Mike Hickford, Michele Melchior and Melanie Mayall-Nahi from NIWA for Our Land and Water National Science Challenge, April 2023. Image of pātiki mohoao black flounder by Dr R M McDowall.

For references and further information see [niwa.co.nz/sediment-impacts](https://niwa.co.nz/sediment-impacts)

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## Effects of suspended sediment on black flounder

<b>Habitat</b>	The specific habitat requirements of black flounder are not known but their distribution includes highly turbid coastal lakes, such as Te Waihora/Lake Ellesmere, where they are very abundant <sup>9,10</sup> .
<b>Behaviour</b>	Direct effects unknown. However, highly turbid water does not prevent large numbers of black flounder fry (<15 mm) entering the outlet of a coastal lake when it is open to the sea <sup>2</sup> .
<b>Feeding</b>	Direct effects unknown. Flounder species are mostly nocturnal, and they are mainly ambush predators – they do not chase their prey, instead, they wait for it to come to them. Black flounder in a highly turbid coastal lake appear to be feeding effectively because their growth rates are like those elsewhere <sup>2,9,11</sup> .
<b>Growth</b>	Direct effects unknown. However, black flounder fry and adults grow quickly in a highly turbid coastal lake <sup>2,9</sup> .
<b>Survival</b>	Direct effects unknown. Nevertheless, large black flounder (>250 mm) are resident and abundant in a shallow coastal lake that has a long history of very high turbidity <sup>9</sup> .

## Effects of deposited sediment on black flounder

<b>Habitat</b>	Black flounder are mobile and are equally abundant over a broad range of substrate types (e.g., soft clay, mud, and sand) in a heavily sedimented coastal lake <sup>9</sup> .
<b>Behaviour</b>	Direct effects unknown.
<b>Feeding</b>	Direct effects unknown, but black flounder fry and adults appear to be feeding effectively in a coastal lake with a fine substrate bed because their growth rates are equivalent to elsewhere <sup>2,9</sup> .
<b>Growth</b>	Direct effects unknown. Nevertheless, black flounder fry and adults appear to grow equally quickly in a coastal lake with a fine substrate bed as elsewhere <sup>2,9</sup> .
<b>Survival</b>	Direct effects are unknown, but large populations of adult black flounder (>220 mm) have been recorded in a heavily sedimented coastal lake. This suggests that their survival is relatively unimpacted by deposited sediments.

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## Further information:

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