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Contamination of fish and cockles in rivers and estuaries



Southland is known for its trout fishing and takes pride in its *Smahinga kai*. However, many of our rivers and estuaries are becoming increasingly contaminated by heavy metals and pesticides.

In 2013 Environment Southland scientists started testing fish, eels and cockles from two of our main estuaries and contributing rivers to see if they are safe to eat. They also tested to see if heavy metals and pesticides are accumulating in river and estuary sediments.

Where do we monitor?

Samples of sediment, fish (eels, trout, mullet) and cockles were taken from the Jacobs River and New River estuaries, and from the Oreti River, Waihopai River, Waikiwi Stream, Otepuni Creek and Kingswell Creek.

Where do contaminants come from?

Sediments in streams and rivers 'pick up' contaminants as they move through the landscape. For example, a river passing through farmland may accumulate chemicals associated with fertilisers and pesticides. If the river then passes through a town or city, it may pick up a further range of heavy metals and pesticide contamination.

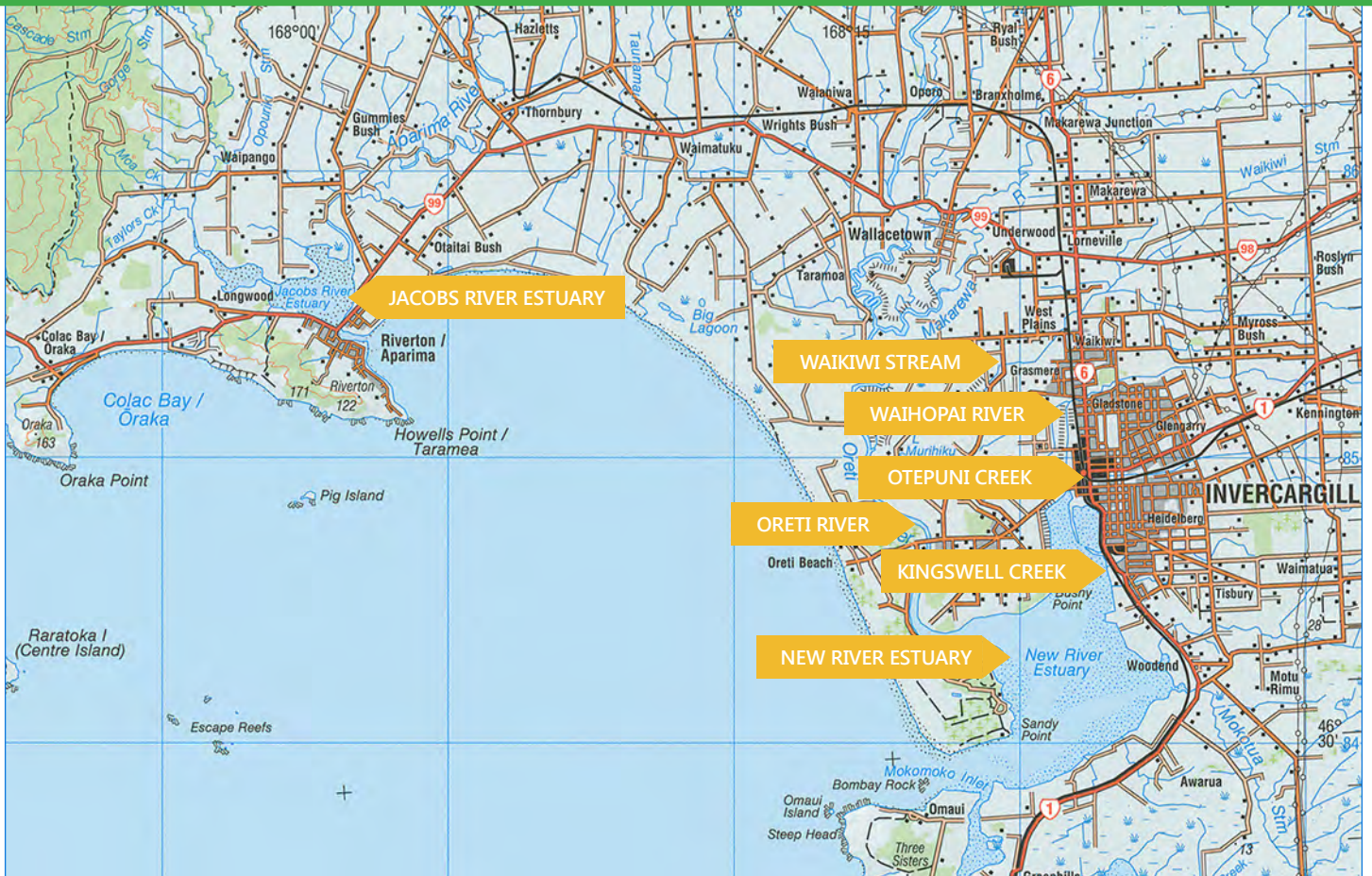
What do we look for?

Shellfish, fish and eels can accumulate contaminants such as mercury and organochlorine pesticides in their bodies. Some contaminants accumulate more in the meaty flesh of fish and eels (the part we eat), while others accumulate more in the internal organs.

Samples of sediment, fish, eels and shellfish were tested for a range of contaminants, including: Arsenic (As), Copper (Cu), Chromium (Cr), Lead (Pb), Zinc (Zn), Cadmium (Cd), Nickel (Ni), Mercury (Hg) and Organochlorine pesticides, such as DDT.

How do they affect our health?

Heavy metals such as cadmium and mercury, and other nasties such as arsenic and DDT, tend to accumulate in the food chain and can be very toxic to people. They are often associated with increased risk of cancer, heart disease, kidney failure and infertility. Other symptoms can include loss of bone density, joint pain and neurological damage.



Are fish, eels and cockles safe to eat?

We found that contamination levels were generally low in the fish, eels and cockles sampled. However, low levels of mercury, DDT, arsenic, cadmium and zinc were found in some samples.

Sediment contamination

In general we found that heavy metal contamination of sediments was low in both estuaries and surrounding rivers. Sediment collected from streams and rivers flowing through Invercargill had higher metal and DDT concentrations than those passing through agricultural catchments. This is likely to come from stormwater discharge.

What next?

It's important that we continue to monitor the health risk associated with eating fish and eels from the Jacobs River and New River estuaries and their rivers. Monitoring is likely to occur every two to five years, which will give us a better picture of contamination build-up over time. As we learn more about where these contaminants come from, we can better manage the health of our streams, rivers and estuaries and their life within.

Most of us will be able to eat trout, eels and cockles from the sites studied with minimal risk. However, we advise you take a precautionary approach.

Limit the amount of fish and eels consumed from these areas if you are susceptible to illness, are elderly or young, or have an impaired immune system.

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For further information, or to read the **Contaminants in Estuarine and Riverine Sediments and Biota in Southland** report (prepared for Environment Southland by Landcare Research), please contact Environment Southland.