



Freshwater crayfish

**Sedimentation**, not industrial or sewage pollution, is **a major cause** of premature death of shellfish in Northland's harbours, and this has had flow on effects for harbour ecology and human harvesting of oysters, mussels, cockles, scallops, pipi, tuatua and more.

**But new subdivisions average only about 5 hectares – that's nothing compared with a whole river catchment of 20 – 30 kilometres, or 2-3000 hectares**



Axhead caddisfly

**True**, a typical 5 hectare new urban subdivision would cover only about 1% of a 5 – 6 square kilometre stream catchment. But sediment discharges from bare ground can be up to **2000 times** that from bush areas – so one subdivision can generate more sediment in one storm than the rest of the entire catchment. And in some rapidly expanding parts of the urban area, there can be several subdivisions going on in one catchment for several years in a row. In just one moderate storm, a 5 hectare urban development with no sediment control could easily discharge **500 tonnes** of sediment into a stream – that's 50 big truck loads! It doesn't take much to imagine the impact on the small streams draining the catchment – or on the estuarine area below it.

**Our harbours in particular are very sensitive to cumulative impacts of sediment pollution – one small development may not seem significant – but in any one year there are potentially hundreds of active earthwork sites all over the region.**

**Do your bit to keep the dirt on the land.**



Redfinned bull

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**CARING FOR NORTHLAND AND ITS ENVIRONMENT**



**What's wrong with a bit of good clean dirt?**



**How can sediment be a pollutant?**

"It's a natural substance and it's not poisonous." This may be true but sediment is a serious environmental pollutant. In the Northland region tens of thousands of tonnes of sediment enters our streams, lakes, estuaries and harbours every year!

**But it can't be as serious as industrial pollution, can it?**

Worldwide sediment is by volume the biggest single water pollutant! In the Northland region sediment is the biggest cause of shellfish losses in estuaries - not chemical spills.

**Sediment effects waterways in two main ways:**

- there are physical effects: smothering, reduced light penetration, scouring and abrasion; and
- sediment also provides particles for other pollutants to attach to, carrying them into our waterways.



Freshwater snails

**Nobody likes swimming, fishing or boating in dirty water.**

The effects of sediment pollution are not always obvious, but the effects are often felt far beyond the stream or beach where it ends up. Uncontrolled sediment run-off has a devastating impact on freshwater streams. It destroys the sheltered estuarine areas of our upper harbour



Longfinned eel

inlets. It affects our offshore fisheries, which depend on the estuaries. It spoils people's enjoyment of beaches and streams. It clogs up stormwater drains and stream beds, causing increased flooding.

## No-one uses that grotty little stream, anyway.



Mayfly

“What’s the point in keeping sediment out of a grotty little drain? It’s already polluted anyway. A bit of sediment can’t do any more harm. Nothing lives there.”

*Most people see our small rural and urban streams as so grubby and insignificant that they don’t need to be protected. Many might agree that white-water rivers or trout-fishing streams need protection but not Northland’s undersized little creeks, drains and streams.*

## Nothing could be further from the truth!

It is amazing how much life exists in our small rural and urban streams - they are home to plants (algae), insects and their larvae; invertebrates like shrimps, snails and native freshwater crayfish, (koura); native fish such as eels, bullies and kokopu (often referred to as native trout); and birdlife.

## HOW does sediment harm stream life?

- stream life can be smothered by a build up of sediment in the stream bed;
- animals not actually covered up by sediment can sustain damage to their gills and mouthparts and may ultimately die because they are unable to breathe or feed. Other stream animals may die because they cannot see their food in the murky water so they cannot feed.
- the food supply in the stream is wiped out when algae, (tiny plants - a major food source for stream life) are scoured off the rocks or when light is reduced to a level where algae cannot grow.
- sediment smothers the eggs of stream life, wiping out the next generation of fish and other stream animals.
- sediment transports other pollutants such as lead and carcinogenic (cancer-causing) hydrocarbons from our streets, or agricultural nutrients and poisons from our farms, into our streams, and then into our harbours. There they accumulate and progressively contaminate aquatic life - especially shellfish that people eat!
- sediment will smother the stream bed completely covering the stony niches and crevices and plant life - there is nowhere for animals and insects to live - it becomes a case of move house or die!

If successive storms bring down more sediment instead of flushing the stream out, a healthy ecosystem cannot re-establish. It may take years for the ecosystem to build up again. Sediment may permanently change the stream by making it more muddy, so that it is no longer suitable for some species.



Giant Kokopu & Banded Kokopu (top)



## What’s the worth of a few little native fish? – a successful annual whitebait run, that’s what!



Inanga

Some of the native fish found in even the smallest, most insignificant looking stream are galaxids such as inanga.

Every year when they hatch, young fish are washed out to sea where they grow. These little fish (whitebait), then swim back up into our small streams to grow into adults (inanga kokopu).

Not many Kiwis would like to see this annual whitebait run decline further than they already have. By protecting our rural and urban streams, we can maintain this resource and protect an integral part of our natural heritage.

By planting trees along our stream banks and keeping streams in a natural state rather than piping or culverting them, we can encourage native fish populations to return.

## Life Downstream.. .streams are not the last resting place for sediment.. all streams lead to the sea...

## How can a bit more sediment hurt an already muddy estuary?

True, estuaries are naturally muddy-looking. But excessive sediment discharges can do a lot of harm. Estuarine muds and sand flats support a fantastic variety of life in Northland’s harbours. The productive mangroves, together with algae, cockles, pipi, shrimps, crabs, worms, snails and oysters provide food and shelter to support our offshore and inshore fisheries. Fish such as flounder, grey mullet, trevally, shark, dogfish, mackerel, kahawai, kingfish and snapper use estuarine areas as nursery grounds.



Excessive sedimentation is extremely damaging to our highly productive estuaries. Uncontrolled sediment run-off smothers shell banks, sandbanks and mudflats with sediment, killing off the organisms that live there, and depriving the fish and birds dependent on them for their food. Any loss of food supplies has an impact on the survival, health and reproductive success of fish dependent on the harbours at various stages in their lives.