

New Zealand

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'Like you're in a horror movie': pollution leaves New Zealand wetlands irreversibly damaged

Ecologists say some bodies of water may already have passed the tipping points from which they may never recover



Tess McClure *in Whangamarino*

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As David Klee nosed his boat out into the channels of Whangamarino, he saw the birds were dying. Hundreds were already dead, floating, the sheen of their feathers dulling in the scum near the banks of the river. Others, he could tell, would be dead soon: flocks that should have been sent flapping in alarm by the boat's passage sat placid, unmoving in the water.

Often, the bird's legs go first, says Klee, the local game bird manager for Fish & Game New Zealand. Instead of paddling, they start scooping their wings through the water to propel themselves forward, a grotesque butterfly stroke. The poison works on the extremities, attacking nerves that thread down the limbs and wingspan. Then, the muscles of the neck weaken and seize: unable to hold the weight of the head, they droop forward, slip underwater, and the birds drown.

"This wetland is slowly dying around us," Klee says. "We've seen these massive shifts occurring." As he stands in the thick grass of the river shoreline, the yellow-brown water runs slow and opaque. Downstream, a dead koi is floating, the sheen of orange and white scales starting to peel upward as it bloats.

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Thousands of birds have died at Whangamarino wetland during a botulism outbreak, caused by mass fish deaths that in turn were caused by high pollution levels. Photograph: Fish & Game

The birds of Whangamarino, a freshwater wetland covering 7,000 hectares in Waikato, in New Zealand's North Island, are being killed by a botulism outbreak, a consequence of mass fish deaths, which in turn are prompted by flooding, algal blooms and high levels of pollutants including heavy nutrient load from farming. This summer, the birds died in their thousands: swans, ducks, geese, spoonbills. As the season drew to a close, teams of volunteers fished the feathered bodies from the water and piled them hundreds-high in boats and pickup trucks.

The Waikato region is considered the dairy powerhouse of New Zealand, producing more than 25% of the country's milk supply. That industry has been long connected to high levels of nitrogen in waterways - runoff from the fertiliser used to cultivate year-round grass, and the effluent of the cows that graze it.

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'This lake water may be unsafe to touch'

"It's not just the bird life and fisheries," says Haydn Solomon of Ngāti Naho Trust. "The saddest part for us is to see the water die, if that makes sense. Because it's the water that gives life."

Ngāti Naho are mana whenua (a tribal group with customary rights to the area), and this summer Solomon spent days out on the water, pulling dead birds from the swamp. "You feel like you're in a horror movie," he says. "To see that - to see any creature, any living being drown itself - it's not a pleasant sight to see. You've got all these floating carcasses around you and you can't see the bottom. The water, it's almost pitch black."

The summer botulism outbreak came in the wake of mass die-offs of fish a few weeks earlier, Klee says, after flooding had sent heavily polluted water channelling through to the wetlands. Just before Christmas, monitoring had shown a "black water event" - where higher temperatures, heavy rainfall and excess levels of nutrients or algal blooms remove oxygen from the water. "Parts of this wetland and some of the rivers leading into it were without oxygen for the best part of three months - they literally flatlined," Klee says. Botulism, the toxin that kills the birds, requires high levels of protein to survive, and the mass fish deaths provide an ideal environment. "Basically three to four weeks later - you can almost set your clock by it - you get a botulism outbreak".

"The fish [were] just floating in the water - you could see that they'd been floating for days and they're just decimated," Solomon says. "You pick them up and they just fall apart in your hands."

For Māori, these waterways and wetlands were a source not only of food, weaving materials and medicine but of "strong spiritual sustenance", he says. "My mum would say: if there's something wrong, just go down to the river. Bless yourself with the water."

Now, in parts of the Waikato, that water has turned to poison. Up the road from the wetland, on the shores of Lake Waikare, a formal warning has been erected. "This lake water may be unsafe to touch," it reads. "Avoid any activity which involves skin contact with the water." Locals call it "Lake Fanta", for the toxic algal blooms that often turn the surface a bright, lurid shade of orange.

Waikare is ranked as one of the most polluted lakes in the world, and its waters channelled into wetlands including Whangamarino every time there was a storm. "The lake is really saturated with plant nutrients like phosphorus and nitrogen," says Associate Prof Deniz Özkundakci, a freshwater ecologist at the University of Waikato. It is not only farming runoff seeping into the lake - human wastewater has been released into it for decades, and from 2019, Waikato district council allowed non-compliant wastewater - laced with E.coli, nitrogen and phosphorus - to be pumped into the water.



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pastoral land are contaminated by pollutants, effluent or excess nutrients. The existing problems are being exacerbated by the climate crisis, which causes heavier rainfalls, more floods and higher temperatures, all of which increase chances of toxic algal blooms and mass fish deaths. "Climate change will exacerbate some of the existing problems," says Özkundakci. "There needs [to be] some discussion around what should be done."

Waikato district council said in a statement that it had taken action at Whangamarino, including "financial support of $5,000 to help crews working in the wetland pick up dead birds and fish to lessen the environmental effect", and was developing a multi-agency response to try to anticipate and reduce blackwater events. "We are continuously looking for ways to improve our freshwater environments," it said.

The groups working in the wetland and rivers, however, say more is needed.



Corina Jordan, Fish & Game's chief executive. She says humans have overloaded the wetlands 'to the point where they are finding it really difficult to recover'. Photograph: Fish & Game

"There have been long-term systemic failures in freshwater policies and a lack of implementation that has caused severe degradation in our freshwater ecosystems," Jordan says. "While there's no quick fix, the Waikato regional council needs to take a really hard look at how the system is managed."

On the shoreline of Lake Waikare, the banks are quiet and still, waves lapping grime over the *toetoe* grasses at the water's edge. No birds fly over the water.

"I think you've already seen irreversible change in the wetland," says Klee. "It's going to take hundreds, if not thousands, of years to correct itself."

He scuffs his gumboots over the gravel at the water's edge.

"A lake in this state - I'm not aware of any lake, anywhere, that's been recovered from this."

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