

Steve Rice

From: Jim Cotman [cotmanj@xtra.co.nz]
Sent: Tuesday, September 17, 2019 1:01 PM
To: 'Steve Rice'
Subject: Answer to Question.
Attachments: Koi Carp Ohinewai.pdf

Hi Steve,

Thanks for fitting me in today.

Commissioner Morrison asked me a question on Koi Carp regarding my understanding of effect on water quality. Obviously farmers are adamant that it is so.

However Water Scientist's support our belief.

Please are you able to provide him with this extract from a documented Study on Koi Carp by a group of water Quality experts including Adam Danial (F & G) for clarity.

Regards
Jim Cotman

5.2 Removal of Invasive Fish and Exclusion of Koi Carp from Lake Ohinewai

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Management Issues

The lower Waikato River floodplain contains many shallow lakes. The floodplain has been highly developed for pastoral agriculture, primarily dairy farming, resulting in extensive drainage and flood control measures to regulate river and lake levels. Most lakes have degraded water quality as a result of nutrient and sediment enrichment, and the additional impacts of pest fish such as koi carp, goldfish, catfish and rudd have generally contribute⁹ to the total collapse of submerged macrophytes and progression to a highly eutrophic state. Of all New Zealand lakes monitored regularly for water quality, around 25% of those categorised as supertrophic or hypertrophic are on the Waikato River floodplain (Verburg et al. 2010).

Lake Ohinewai is a shallow (4.5 m depth), 16.8 ha lake on the floodplain. The lake has a 331 ha catchment that is primarily flat and dominated by intensive pastoral farming with several inlet drains. A single outlet drain leads to Lake Waikare via Lake Rotokawau and passes through a circular road culvert 930 m from the lake outlet. Lake Ohinewai deteriorated from a stable oligotrophic (macrophyte-dominated) state to a stable eutrophic (algal-dominated) state during the early 1990s, and now lacks aquatic macrophytes. In 1981, 80% of the lake was covered in aquatic macrophytes but by 1991 none remained (Edwards et al. 2005).

Invasion by koi carp over this period was implicated in this change of state.

Lessons Learned

It is highly likely that the biomass of koi carp in this lake contributed to persistently poor water quality and the algal-dominated eutrophic state.