From: Don Paterson <nat.opc@xtra.co.nz>
Sent: Wednesday, October 17, 2018 2:30 PM
To: 'Pim De Monchy' <Pim.deMonchy@boprc.govt.nz>
Cc: 'Paul Baker' <paul.baker@jswap.co.nz>; 'Cc: David Swap' <david@jswap.co.nz>; 'Katrina Knill' <Katrina.Knill@boprc.govt.nz>
Subject: RE: Kaituna River Diversion Wasted Opportunity

Hi Pim

An improvement to the fishery from near zero will inevitably be able to be recorded from works that you are currently doing to return 20% of Kaituna River flow to Maketu Estuary at a total cost of $20 million but that could I believe be significantly and easily improved upon.

My hope is that you will improve on what you are doing for the fishery in the way that I have described and in addition to what is currently being constructed by also placing culverts under Ford Road Stop Bank and raising Maketu Road to allow some of the original ecosystem food chains to return with floods through Maketu Estuary.

“RM McDowall: There is a higher density of adults in the lower river and they are found in predominance in brackish backwaters. From the high fecundity (number of eggs) and the large size of fish living in them, lowland bush swamps with brown water appear to be the ideal habitat for Galaxius maculatus.”

Let’s now look to the land with the kahikatea trees near to the highway overbridge that BOPRC was I believe gifted for environmental enhancement and lets transplant the trees into rows and convert the area into north south running kahikatea, flax and raupo planted large deep v-drains with apex mounds between them supporting kahikatea and flax for nutrient stripping, shade and to dominate other plants without using agrochemicals and with raupo planted in the shallow edges of the v-drains to enhance galaxius habitat and with sills at their ends to maintain fresh water depth and interconnection during floods, and at their far north-eastern end connected to the lower Kaituna River as a first stage working model of how the fishery could be enhanced.

“Graham: Inanga will live in large areas of very slowly moving water, even in the most stagnant, swampy places that are growing raupo, rushes and toetoe grass, but there is always an outlet to a creek or river”

“D.H. McKenzie (1904); During the months of March and April may be seen at high water spring tides, countless myriads of small fish from 4 to 6 inches in length, making the water literally boil, wherever any rushes exist’.”

“RM McDowall: Galaxius maculatus spawns in tidal estuaries and either in salty or fresh water but usually in areas affected by an upstream tidal push.”

Let’s now convert all the lower Kaituna River edges within reach of the salt water wedge including all the available land that is going to be between two river courses into

maritime marsh galaxius spawning habitat that is only covered on spring tides. Previously existing marsh that had been used by Kaituna River catchment galaxius for spawning is pictured on www.wetlandsnz.com and is I believe what we could best be aiming at to regrow the local ecosystem and so fisheries production in connection with the Rotorua Lakes.

“Captain L. Hayes (1932); ‘Within tidal limits are mudflats bristling with salt rushes. Inanga spawn amongst rushes. Fairly long, thick growing grasses and rushes or similar vegetation is usually chosen. In March I noticed Inanga evidently spawning everywhere amongst the rushes.”

Let’s look to duplicating the kahikatea, flax and raupo planted v-drains onto Lawrence Oliver Park, Te Puke, around the Te Puke Borough Effluent Treatment Plant, on AFFCO Rangiuru lowlands and down both sides of the Kaituna River as land becomes available to purify water and strip nutrients while providing freshwater galaxius (whitebait) and tuna (eel) habitat to rebuild ecosystem food chains. The Tichmarsh farm was I believe competitively priced and could ideally have been a good place to start constructing kahikatea, flax and raupo planted v-drain wetlands to grow fisheries production.

“Graham: Sprats taken from the stomachs of 17 species of fish which had been feeding on them at varying depths down to 50 fathoms. Sprats were to be found up and down the coast in vast shoals. Pilchards were found in the stomachs of commercial fish caught down to 80 fathoms. They were also found in the stomachs of some bottom dwelling fish including flat fish. At times large shoals were so abundant one felt it might be possible to walk on them. They were observed in hundreds and perhaps thousands of tons, a sight which could only be described in superlatives. Shoals were seen a mile or more wide and almost continuous in length. So plentiful were they that the water with the sun shining brightly had the appearance as if heavy rain was falling. This was due to these small glistening fish jumping out of the water to escape the fish which were pursuing and devouring them. There was no more interesting sight than to be in a launch speeding ahead and to see shoals of pilchards, as far as the eye could see, swimming closely packed side by side, tier above tier, moving rapidly ahead darting hither and yon as they leapt and turned chasing food. They prey on minute sea forms and are in their turn the prey of every fish and many birds. These small fish play an important part in the food of larger fishes, including all surface and shoal fishes. Twenty-four species of fish were found to have been feeding on pilchards and no doubt many others would qualify as predators.”

“A.H. Hefford (1927); The amount of whitebait devoured by fish is a very small item indeed as against the huge number that whitebait netters take from the stream.”

In closing, glyphosate (round-up) that has recently been sprayed in Maketu Road drains, Arawa Avenue (photos attached) and everywhere else that some person could see to spray it will inevitably reach the fisheries food chains and will begin to do to fisheries production what has already happened to alligators, bald eagles and to the

people of the USA. That is, it will detrimentally affect their reproductive and intellectual ability: Reference Our Stolen Future, Are we threatening our Fertility, Intelligence and Survival, A Scientific Discovery Story by Theo Colborn, Dianne Dumanoski & John Peterson Myers Published 1996 ISBN 0 349 10878 1 and reference Dr Don M. Huber, Emeritus Professor of Plant Pathology at Purdue University, Eastern Ontario.

I have noticed in the last year that kahawai caught at the Kaituna Cut have been predominantly lighter in weight and a lot less vigorous than they have been in the previous 50 years of my occasionally fishing there and so I suspect that chemical contamination of the BOP is now starting to be noticed in the fish.

Kindest regards

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