



Takaka Water Management Zone: River Health Update

Trevor James

(Resource Scientist – Environmental Quality)



Important Swimming Holes



Paynes Ford



Anatoki River

Golden Bay's Native Fish – up there with NZ's most diverse & abundant streams

- Onekaka River has 13 species in one reach – the highest in NZ. Other similar coastal streams are not far behind
- Giant kokopu are rare in the district, but recorded at ~30 sites in GB
- Productive whitebait spawning areas



Banded kokopu



Giant kokopu



Outline

A scenic view of a stream flowing over mossy rocks in a lush forest. The water is clear and cascades over several large, dark rocks covered in vibrant green moss. The surrounding forest is dense with various green plants and trees, creating a vibrant and natural setting. The overall atmosphere is peaceful and serene.

1. Water quality

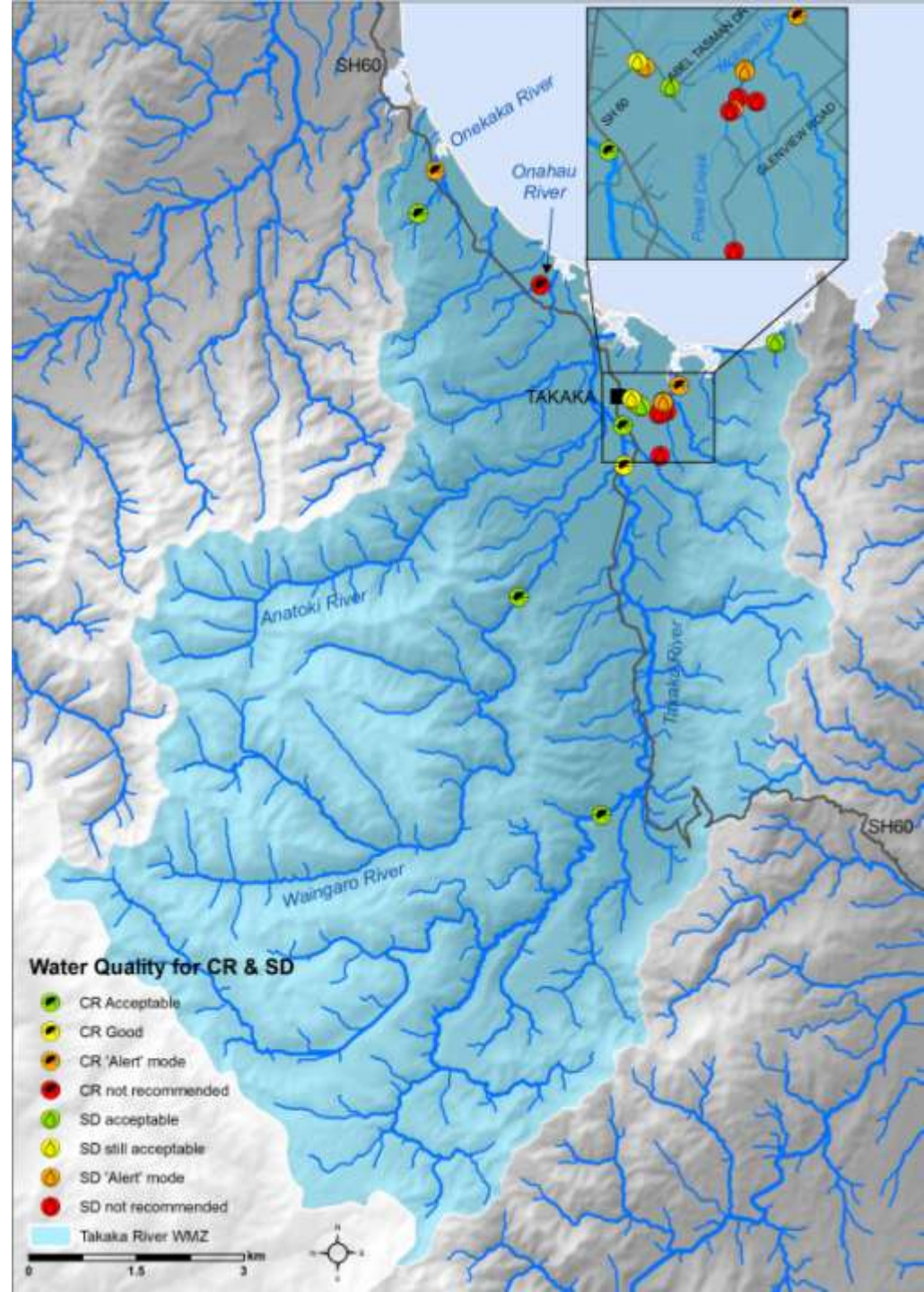
- Disease-causing organisms (*E.coli*)
- Fine sediment: water clarity and bed load
- Stream temperature
- Ammonia and nitrate
- Dissolved oxygen
- Nuisance algae (periphyton and planktonic)

2. Stream habitat and fish passage

3. Estuaries

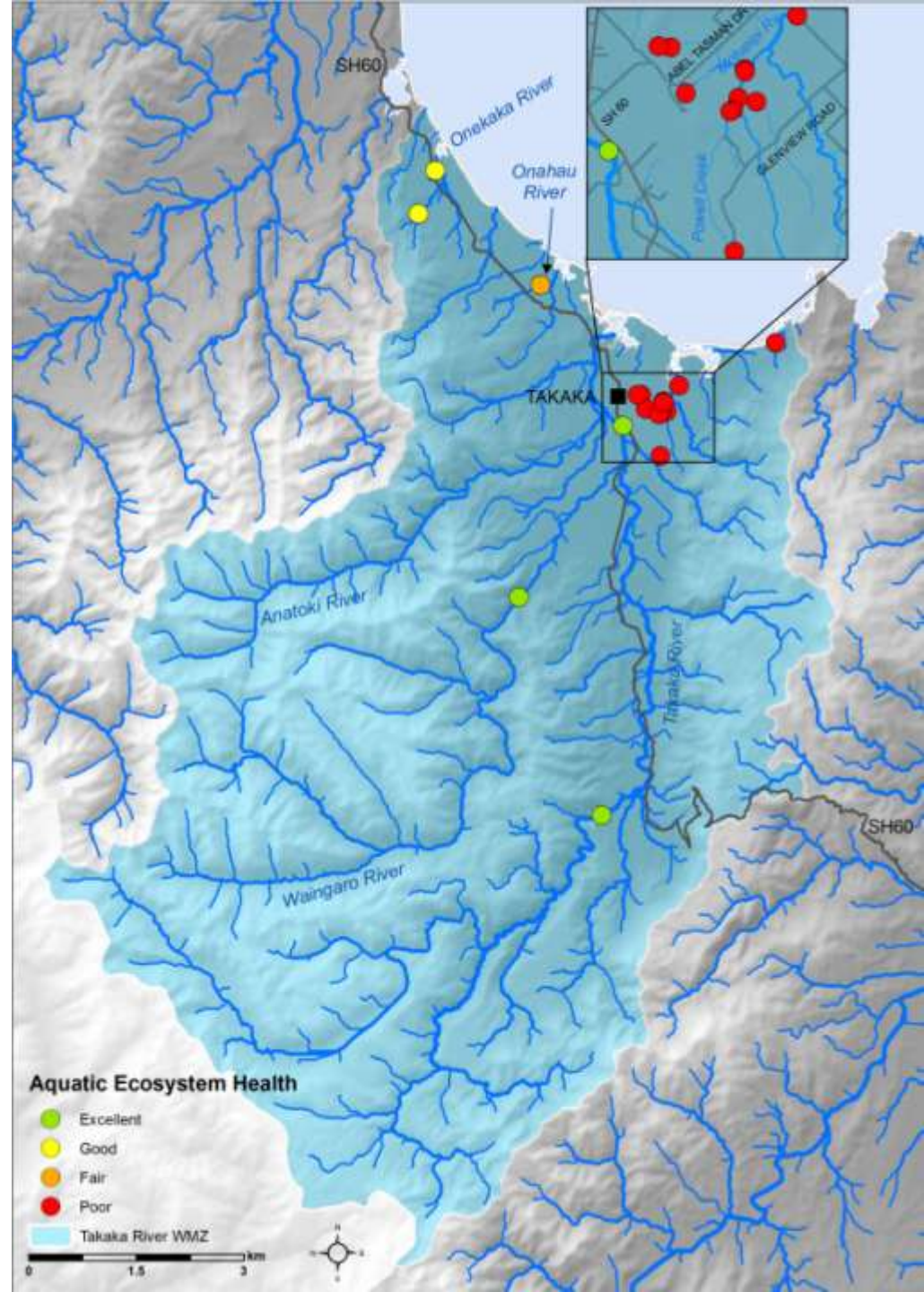
Water for Contact Recreation and Stock Drinking

(*E.coli*, slime & water
clarity)

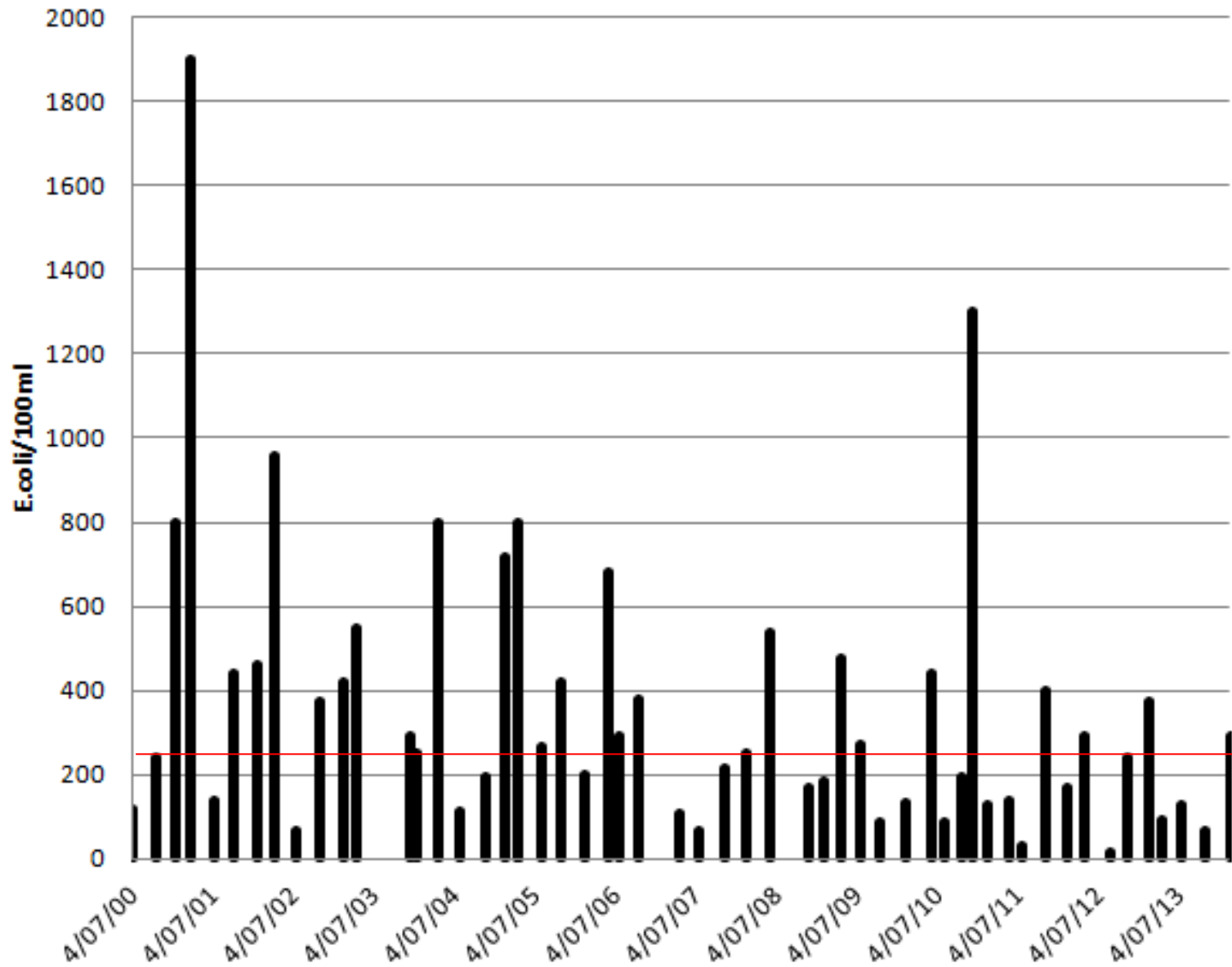


Water for Ecosystem Health

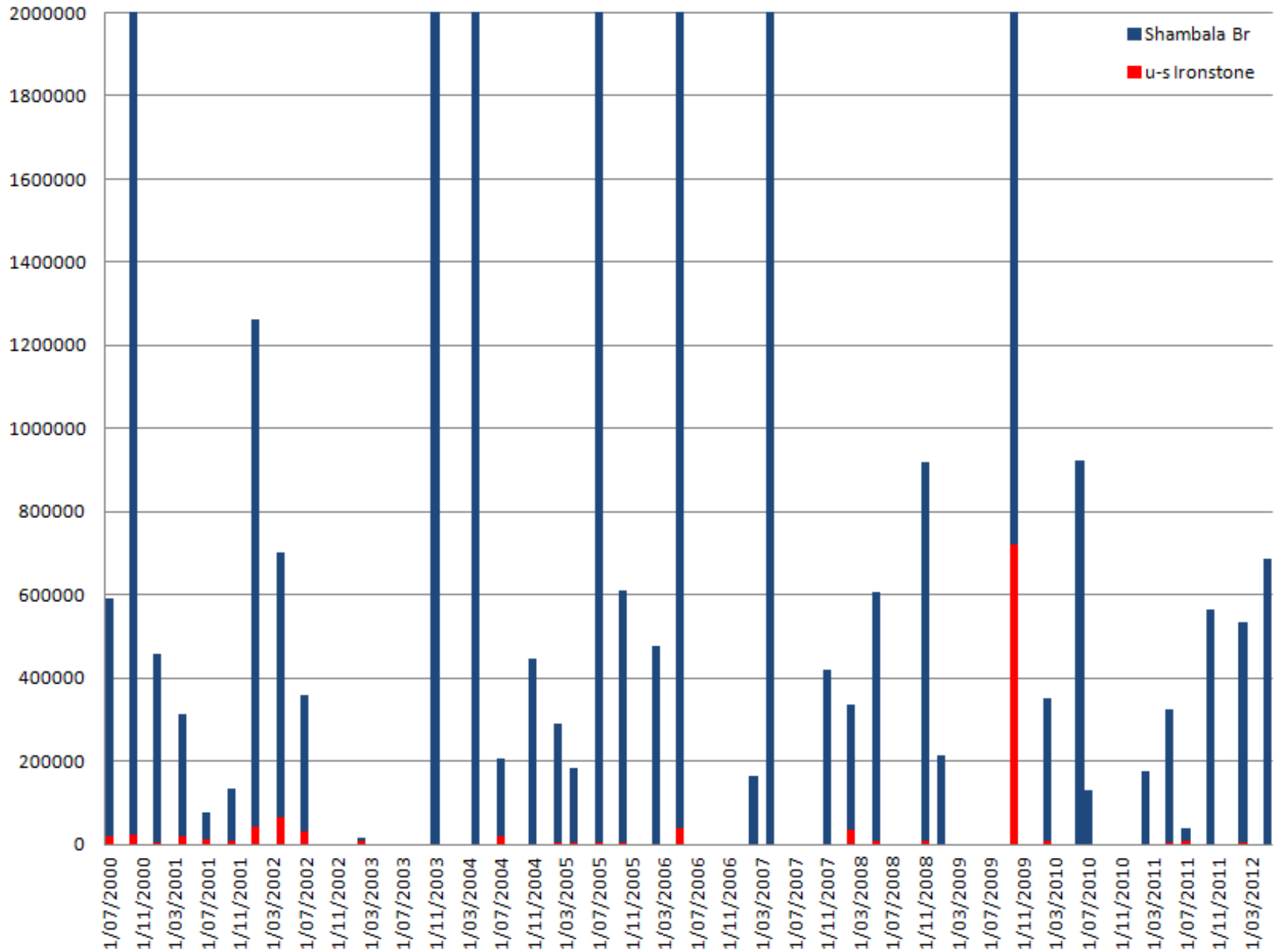
Dissolved oxygen, nitrate,
ammonia, Invertebrates,
fine sediment bedload.



Motupipi at Reilly Bridge



Comparison of *E.coli* at TDC's Onekaka River Monitoring Sites

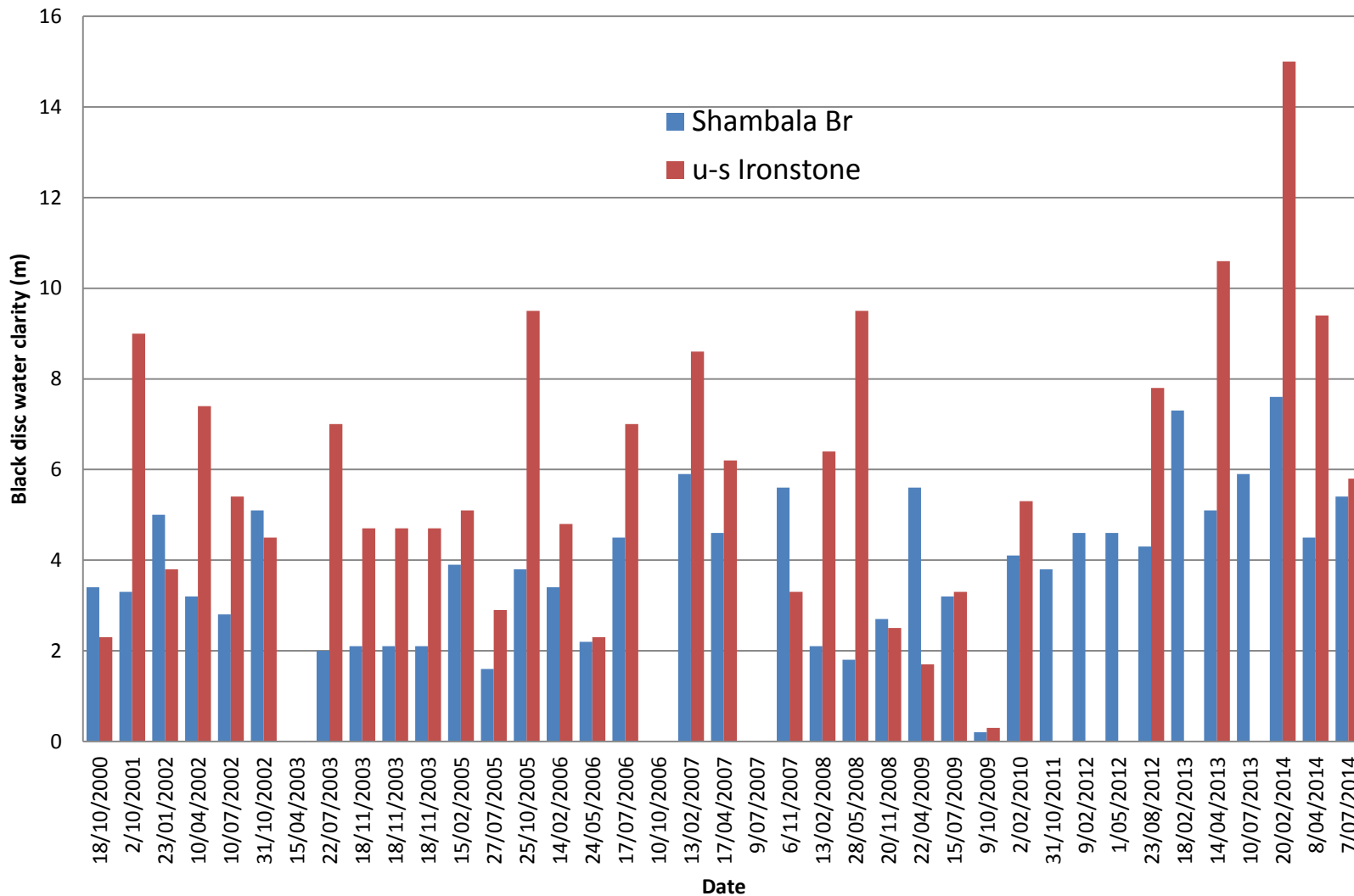


Effects of Fine Sediment



Powell Creek

Comparison of Water Clarity at Onekaka River Monitoring sites



Shambala has 64% of the clarity

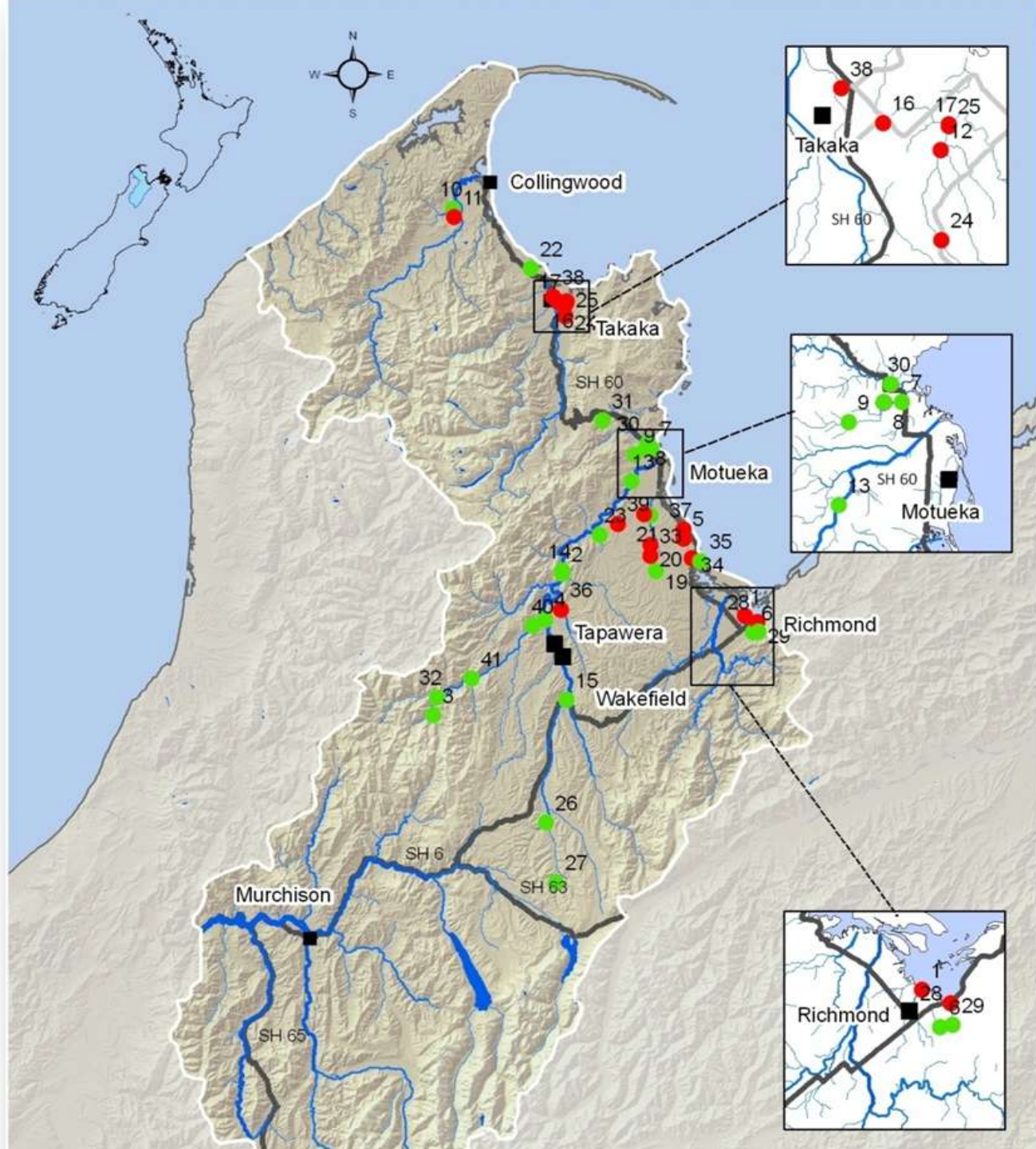


Motupipi



- Turbidity (murkiness) shows significant improvement (decrease) from 2006-2010. 97.5% of the records were within ANZECC guidelines.
- Since the flood in November 2008, complaints about unsightly algal blooms have been few until this summer.
- Karst spring water that delivers high nitrogen load to the Motupipi aged at 6-7 years.
- Stable isotope analysis by GNS says “dominance of effluent sources appears most likely.”

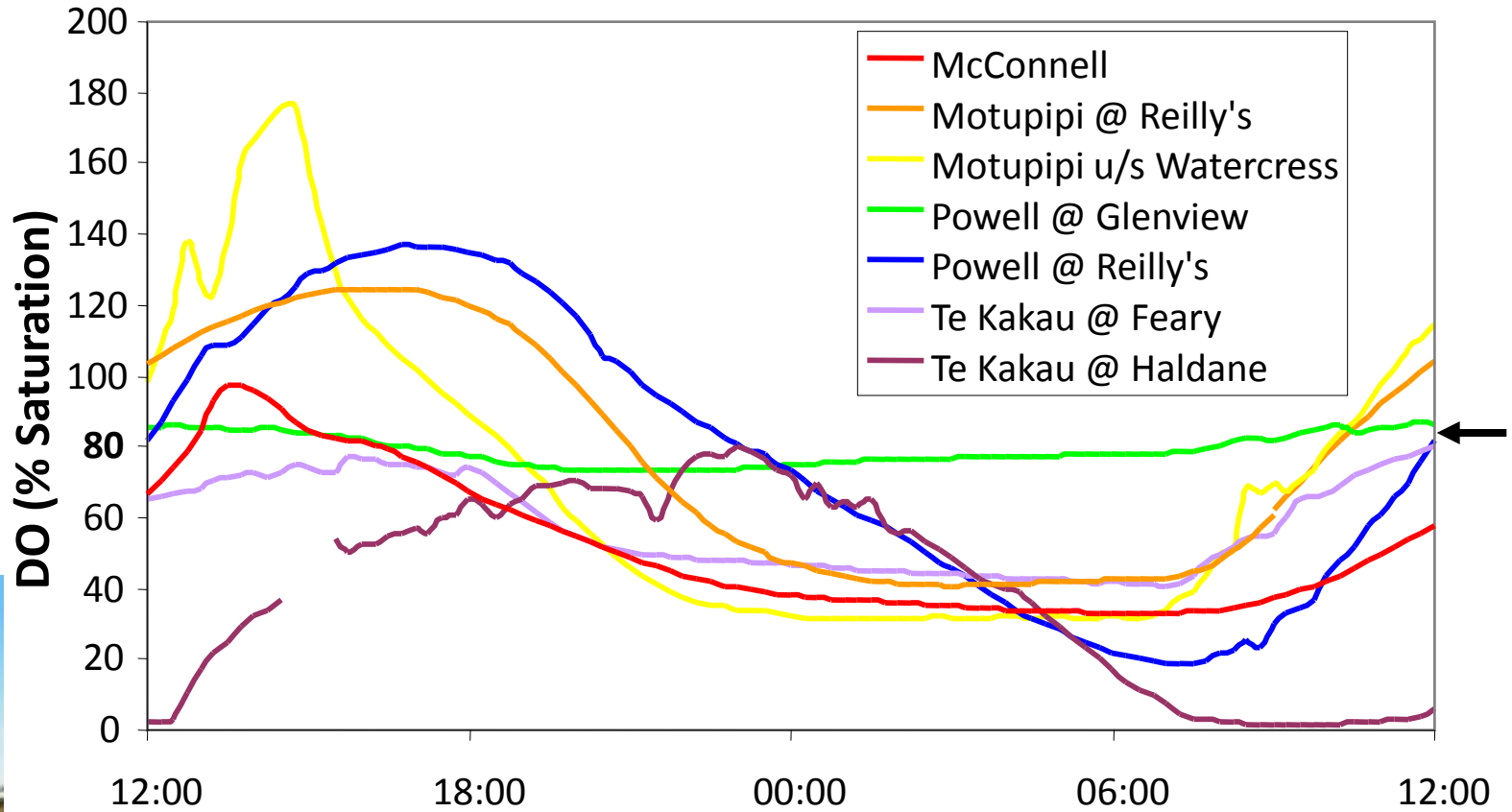
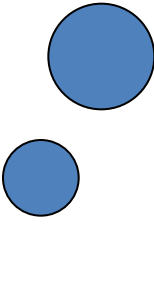
Dissolved oxygen



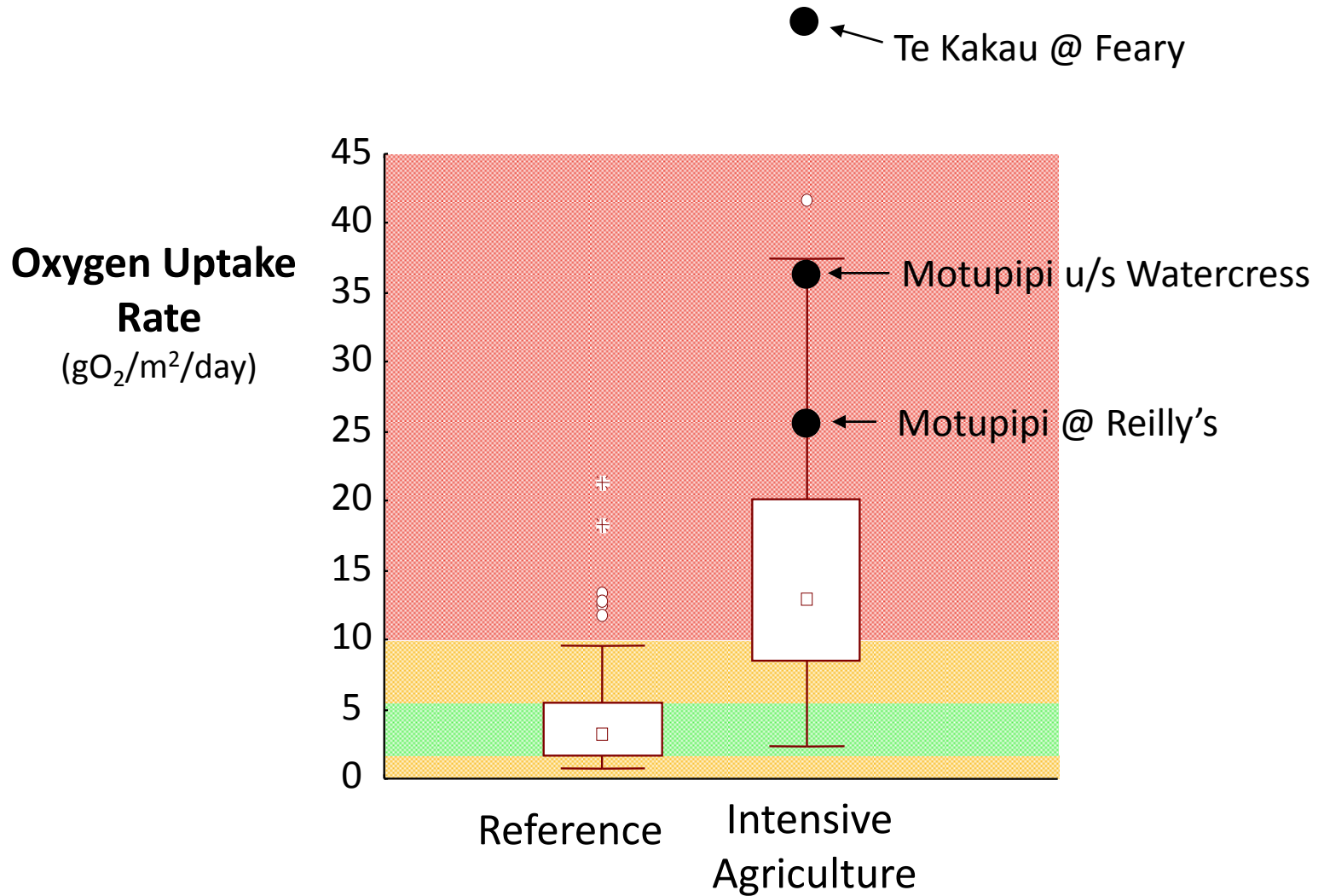
Motupipi and Te Kakau Streams ..

- Choked with aquatic weed
- Bed moderately silted
- Very low dissolved oxygen in summer

Dissolved Oxygen Over a Typical Day



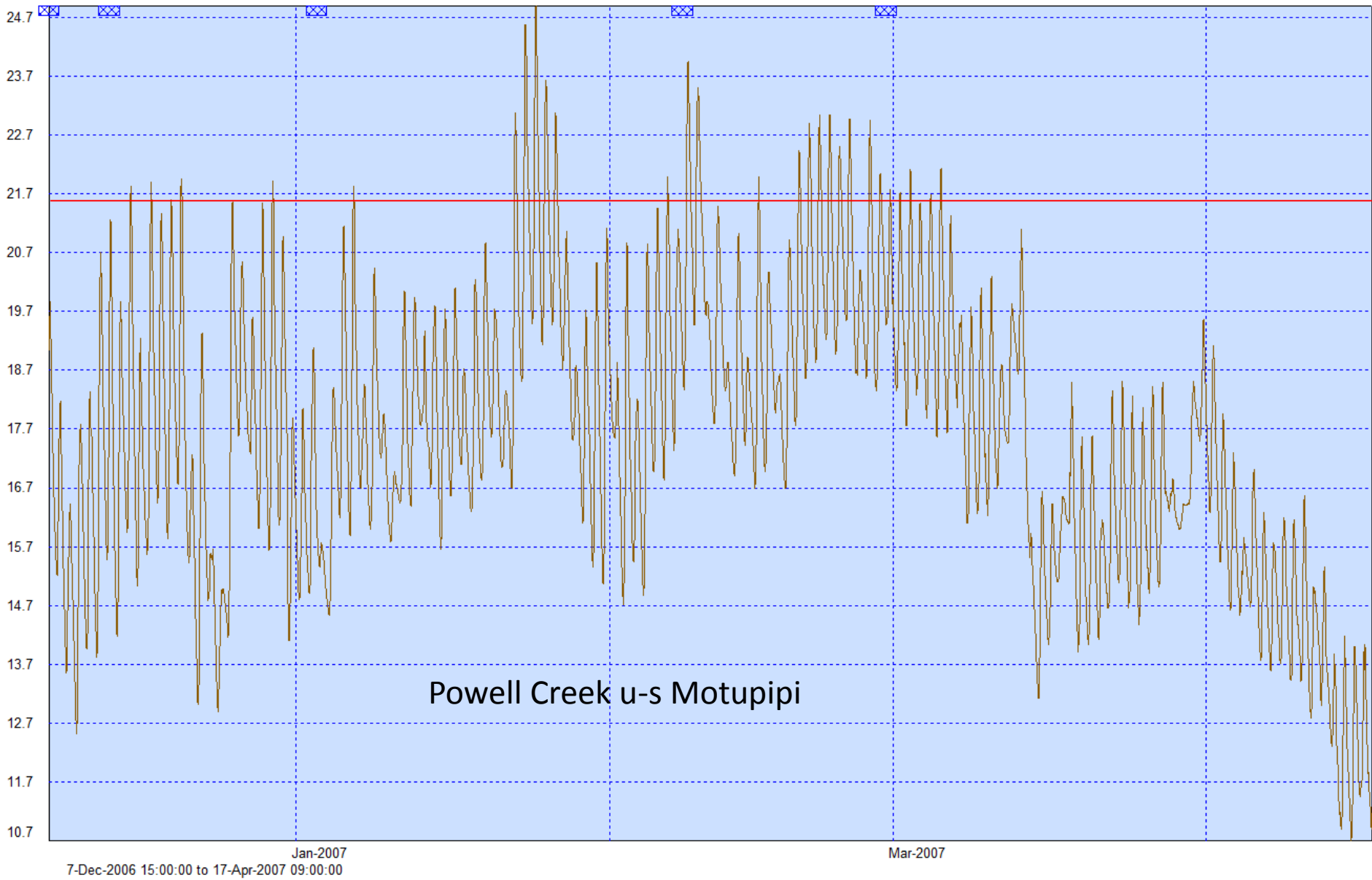
Comparison with other rivers



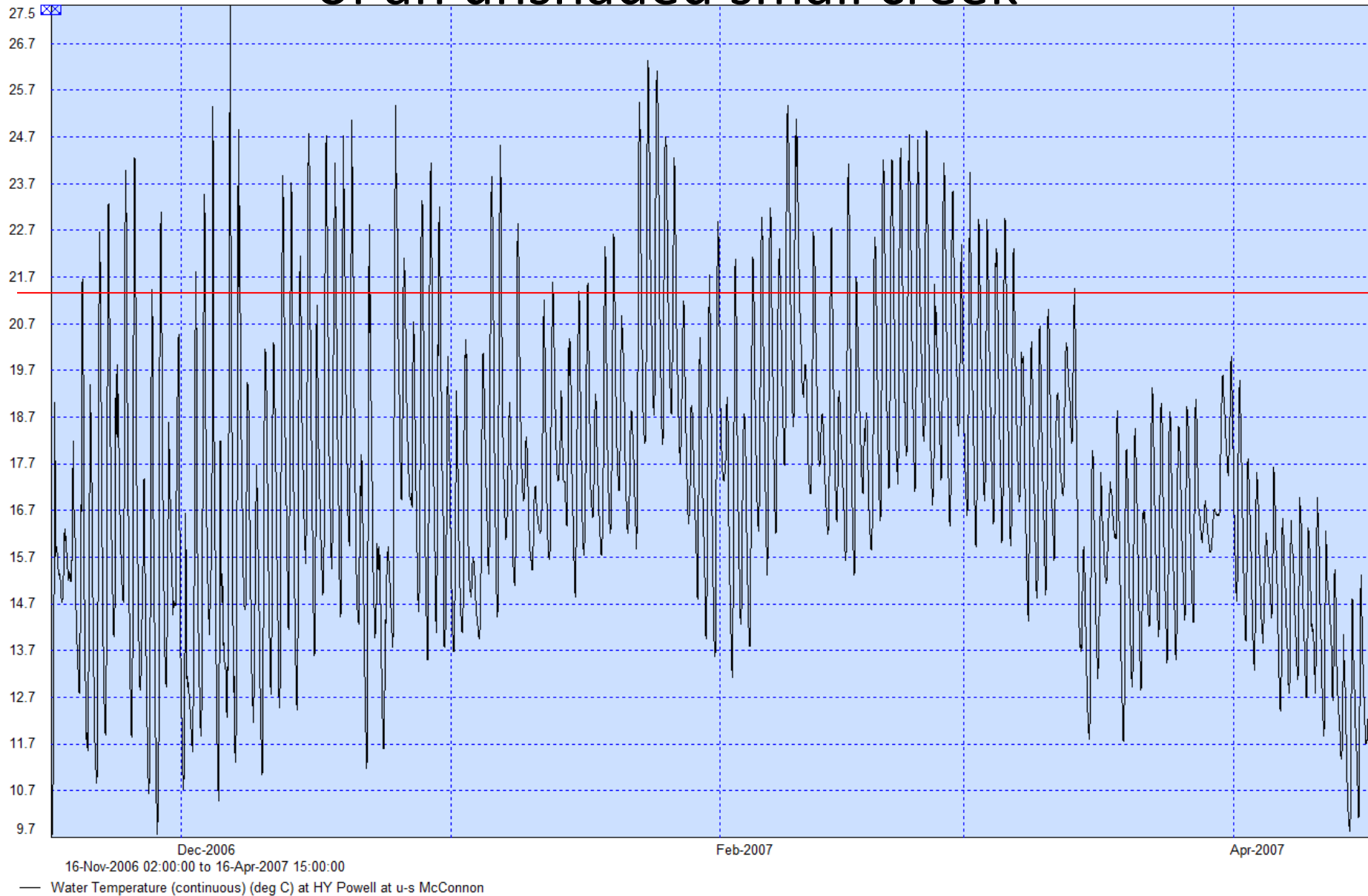


Stream Temperature

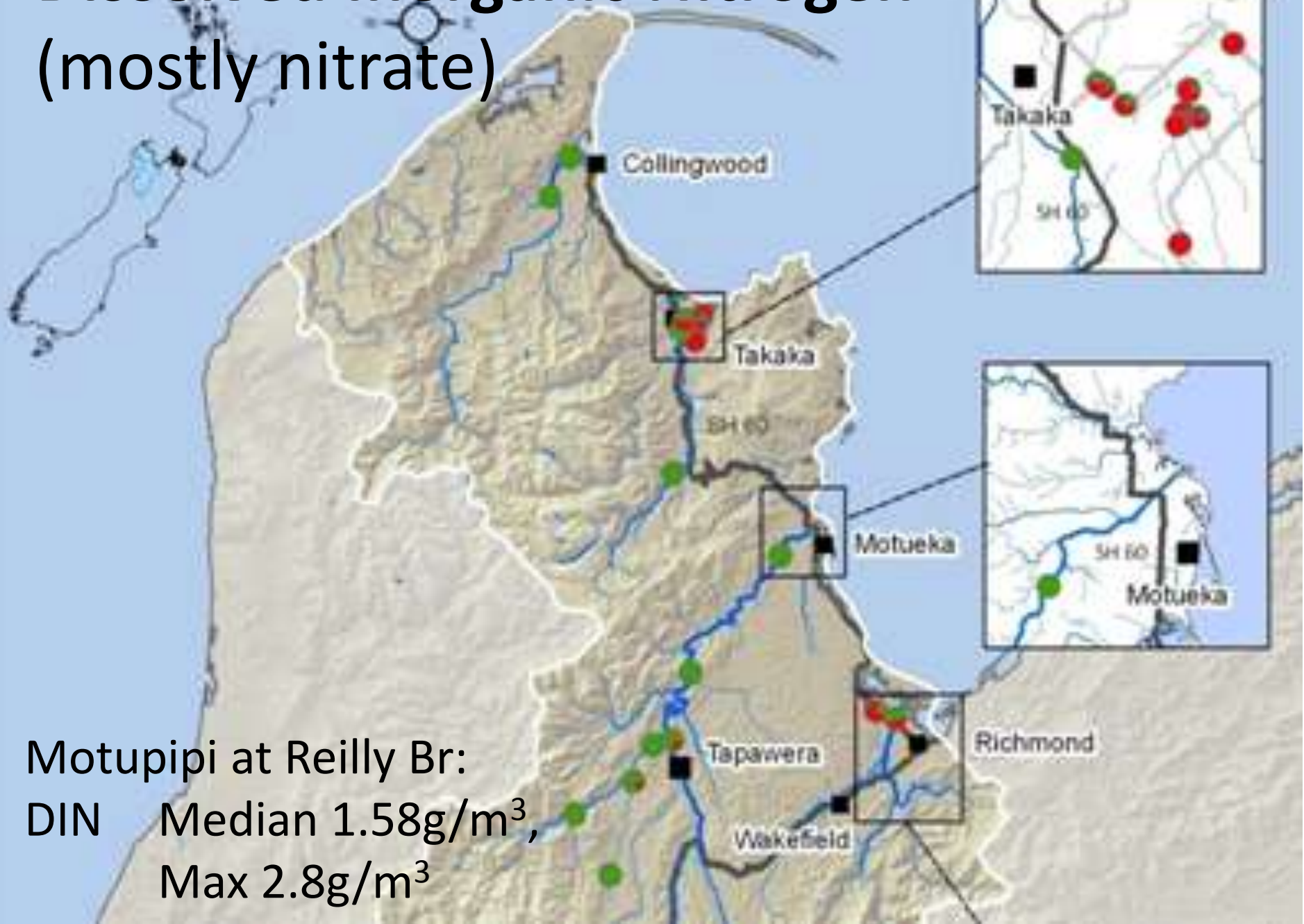
case studies in the Motupipi catchment



Stream Temperature – another typical example of an unshaded small creek



Dissolved Inorganic Nitrogen (mostly nitrate)



Periphyton

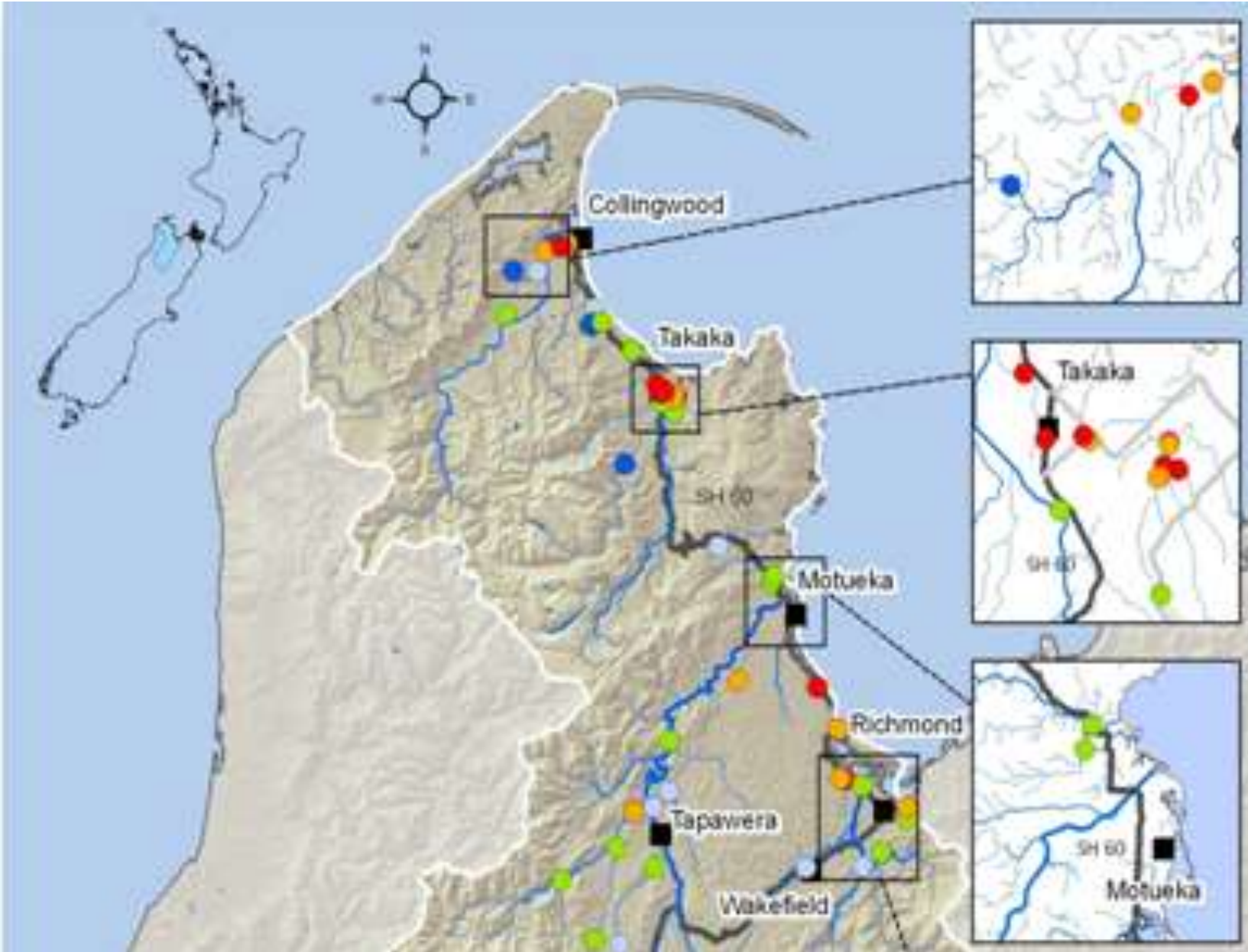


Motupipi River's summer algal blooms...

elevated nitrate gets
'caught' in the upper
tidal 'pools' and
flushing by floods is
now limited



Macro-invertebrate Community Index



2. Stream Habitat & Fish Migration Barriers



Herbicide on stream banks



Great shape – just need to add trees



Stream Vegetation Clearance

‘Maintenance’ - Root-raking of Gorse & Regenerating Native Trees



2% wetlands in key locations on farms →
huge water quality & ecology benefit



Fencing Point-source Paddock Runoff



Fine sediment discharge from unfenced dry-stock farming





Fish Passage

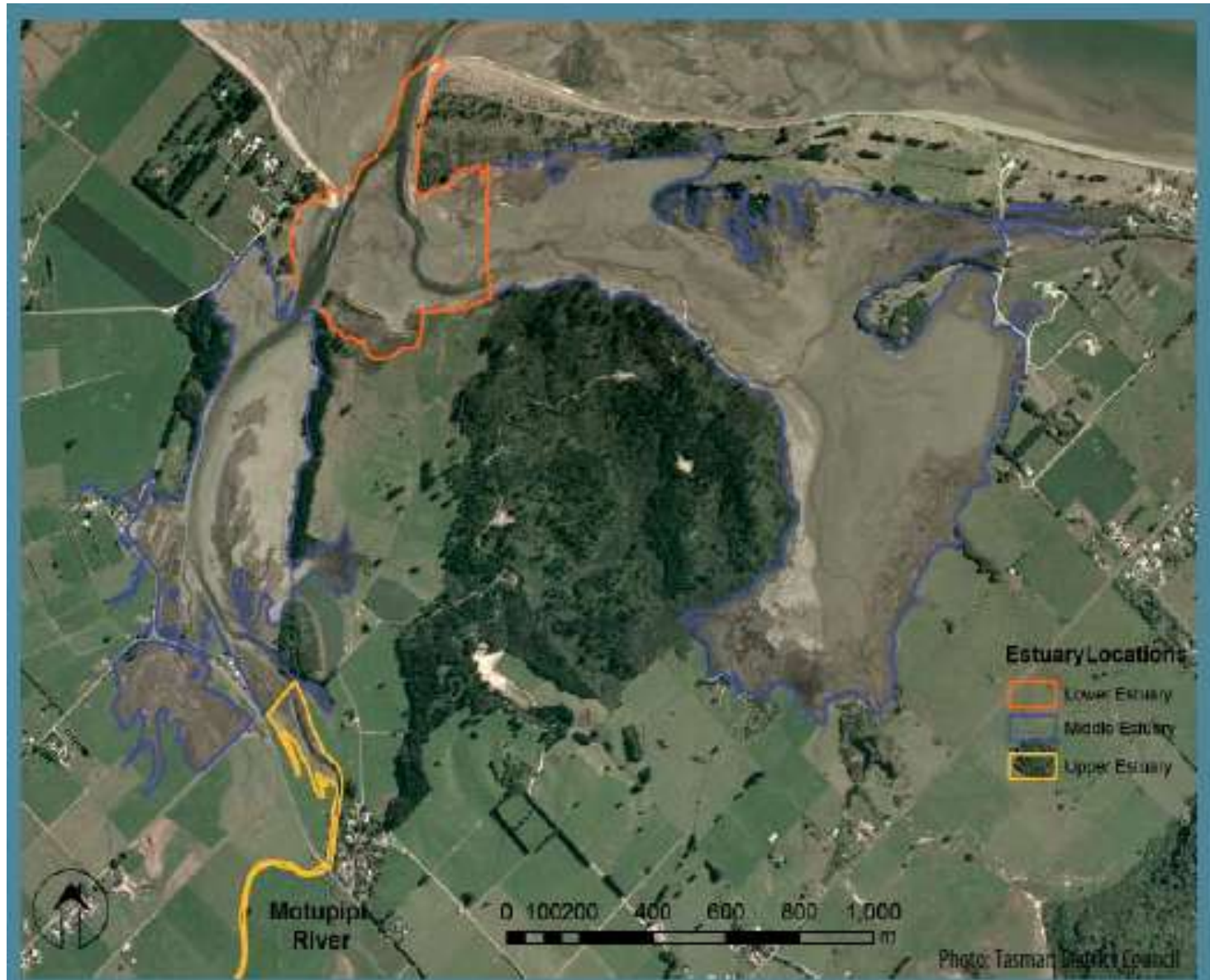




Sinkholes – discharge to Puppu Springs?



4. Estuaries



Fine Sediment Discharge to Estuaries

Proportion of Estuary in Soft mud

- Parapara – 27%
- Onekaka – 0%
- Onahau – 0%
- Waitapu – 6%
- Motupipi – 24%
- Tata – 35%
- Wainui Inlet – 13%



Seagrass remaining (ha/%)

- Parapara – 1.1/0.5%
- Onekaka – 0
- Onahau - 0
- Waitapu – 15/3%
- Motupipi – 2.5/0.15%
- Tata – 0.9/5%
- Wainui Inlet – 0



Macro Algae Cover

- Parapara – 0%
- Onekaka – 0%
- Onahau – 0%
- Waitapu – 0%
- Motupipi – 3.6ha/4%
- Tata – 0%
- Wainui Inlet – 5ha/2.6%



Enteromorpha in the middle and upper reaches of the western arm of the Motupipi Estuary.

Motupipi Main Spring



