Is there really a crisis in Hobbiton?

Mike Joy

Ecology (A&E)

Massey University Palmerston North

Massey University

Te Kunenga ki Pūrehuroa

"…for the most part, I think in comparison with the rest of the world we are 100 % pure" (John Key in BBC 'Hard-talk' interview with Steven Sackur)

"But what about the facts John?" - "scientists are like lawyers you can just go get another opinion"

The importance of tourism to New Zealand's economy was recognised in 2008 when Prime Minister John Key took the tourism portfolio; the industry employs 1 in 10 New Zealanders and earns around $8 billion per year.

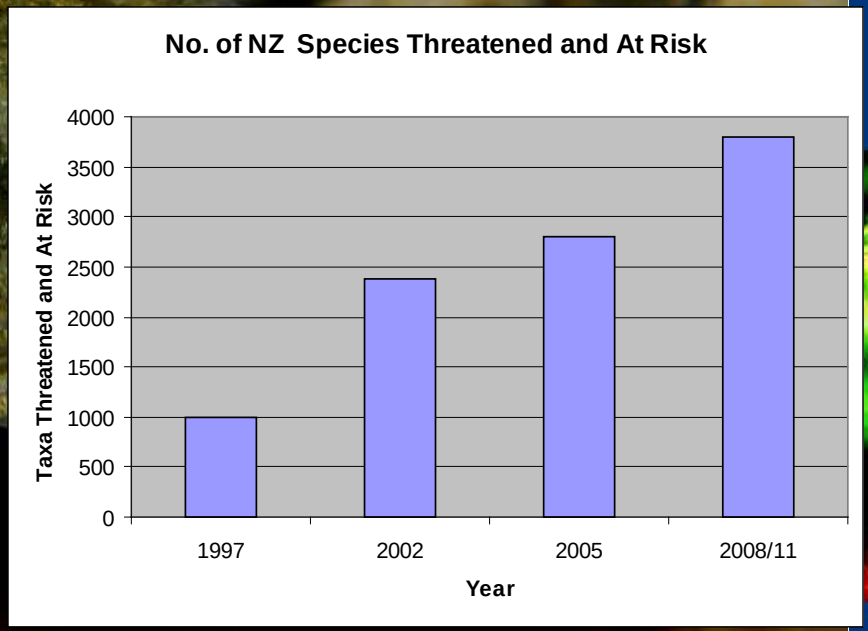
Massey University

Is there really a crisis in Hobbiton?

– the facts:

What we have lost – biodiversity

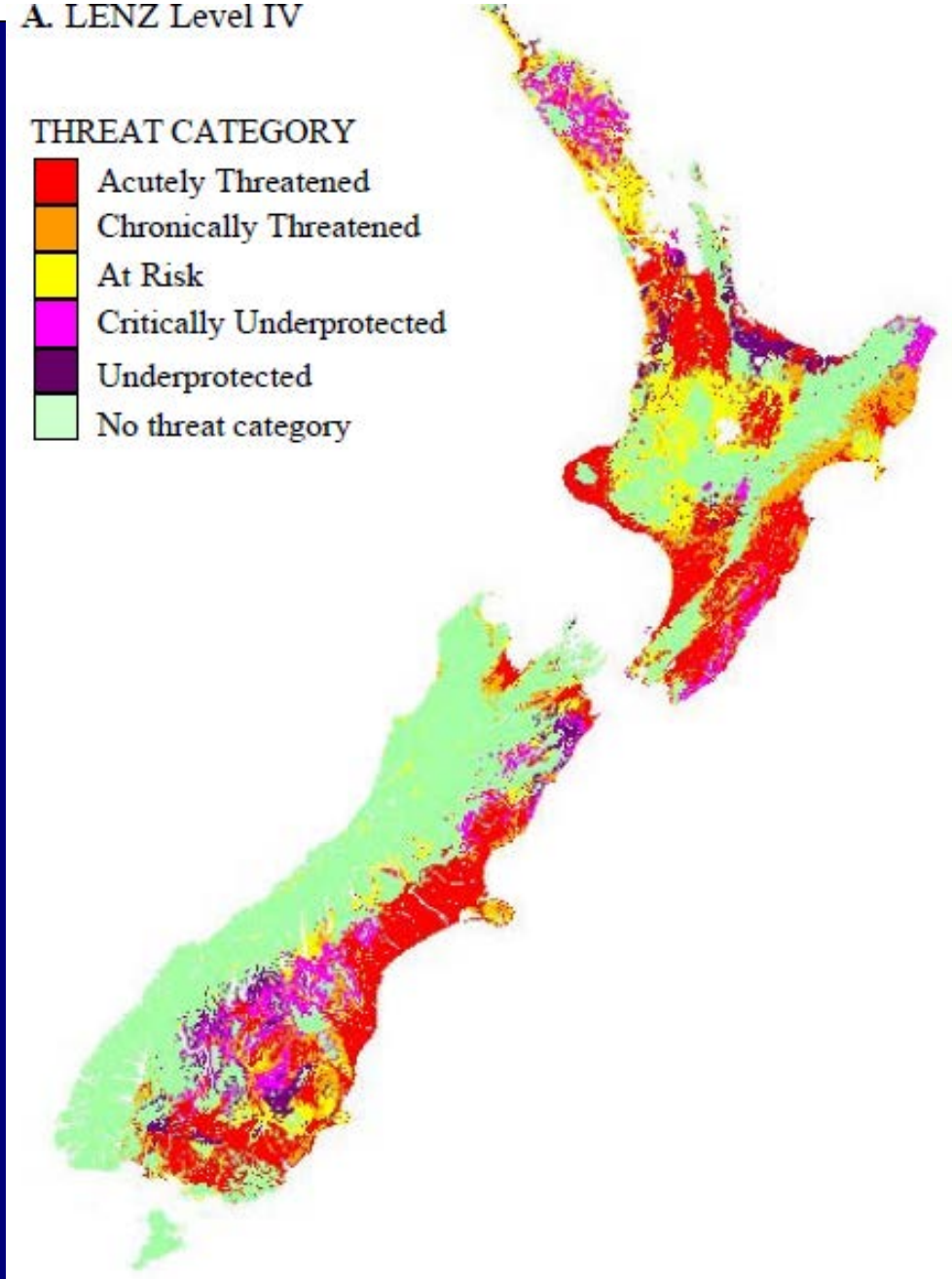
~ 30% (2788 spp.) of all our species are listed threatened or at risk



Te Kunenga ki Pūrehuroa

Massey University

68% of ecosystems classed as threatened

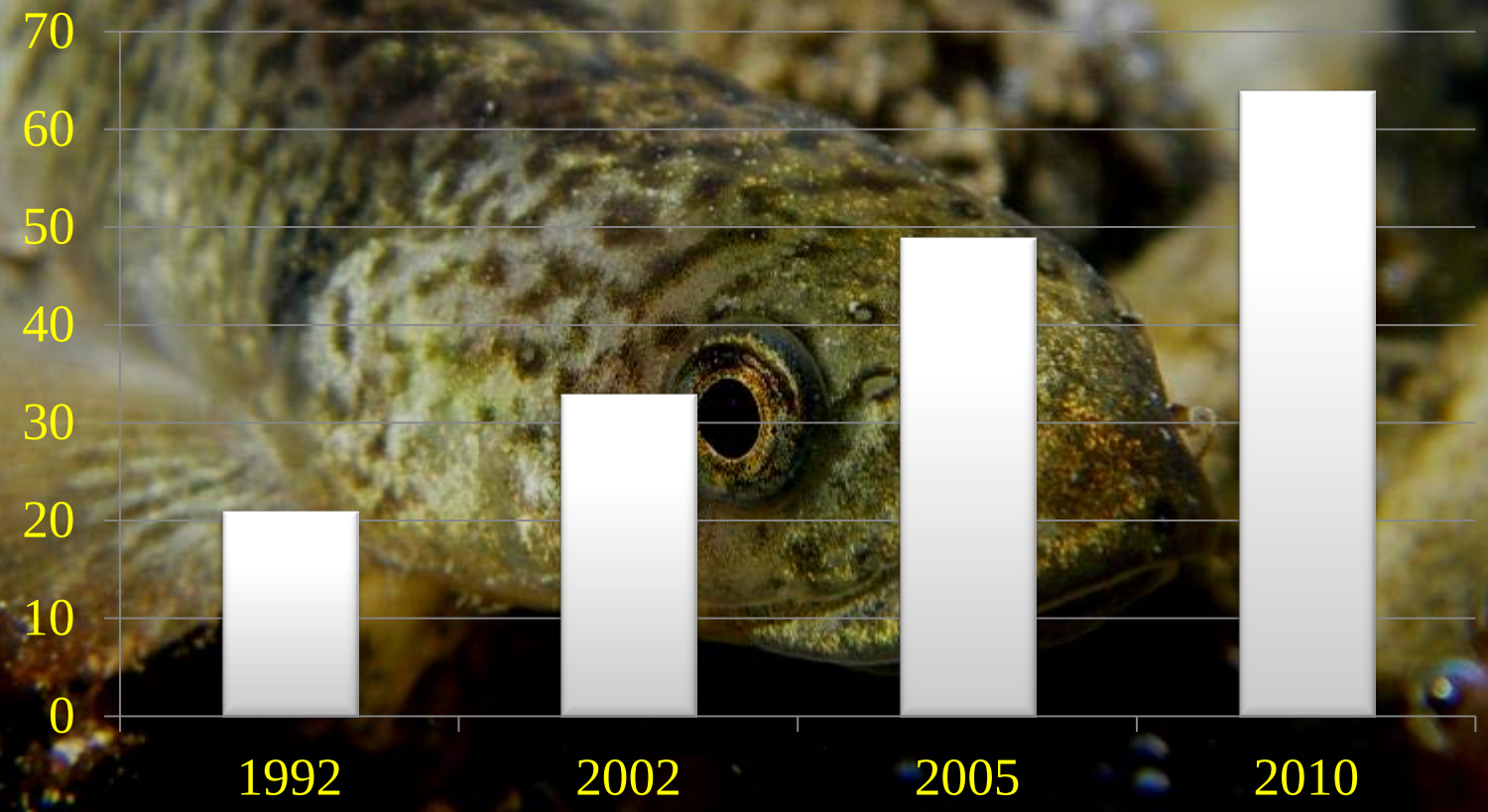


Te Kunenga ki Pūrehuroa

Massey University

- 68% of native fish + koura and kakahi threatened
- none protected except introduced trout > 5 species commercially fished

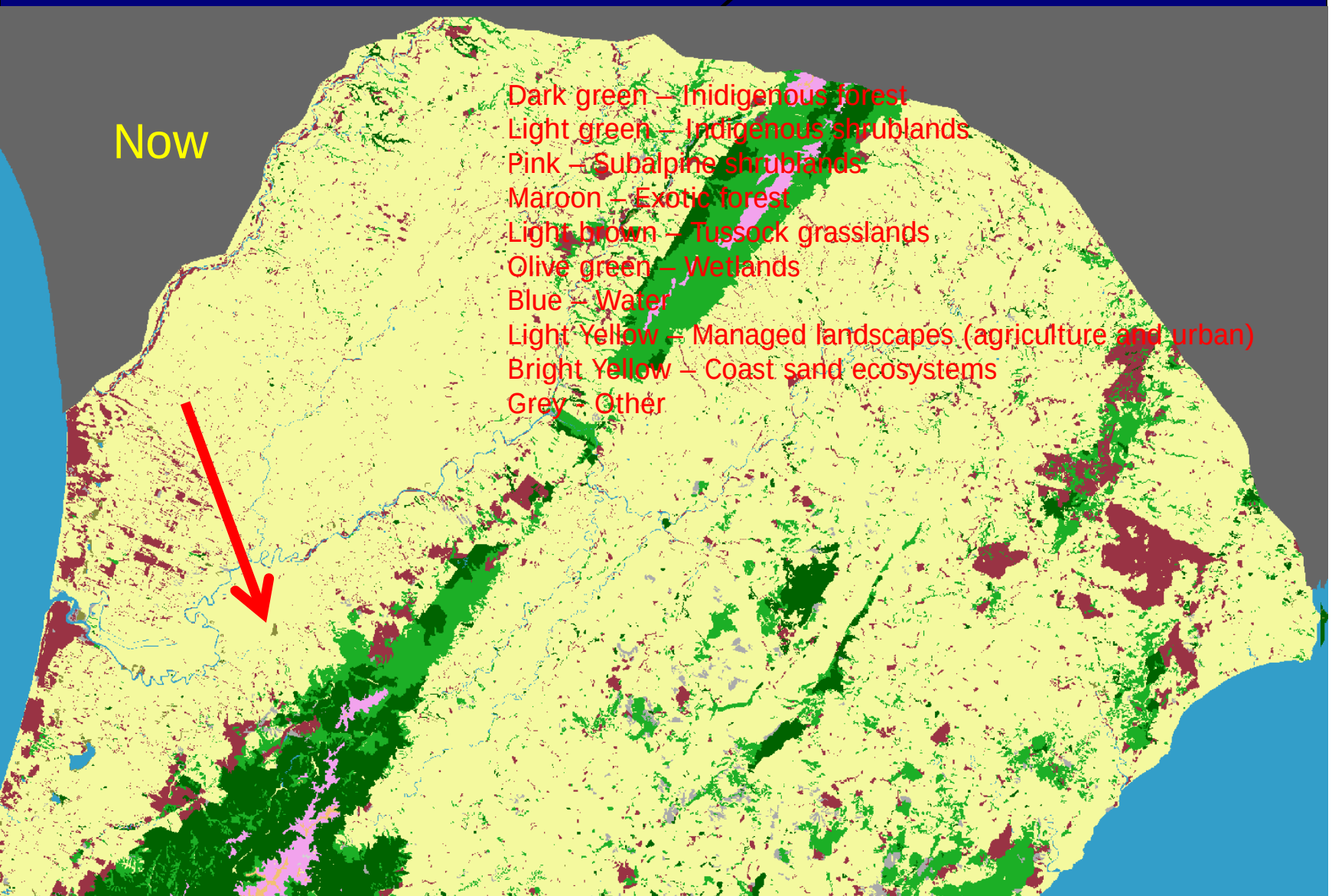
Percentage of fish species listed as threatened since 1992



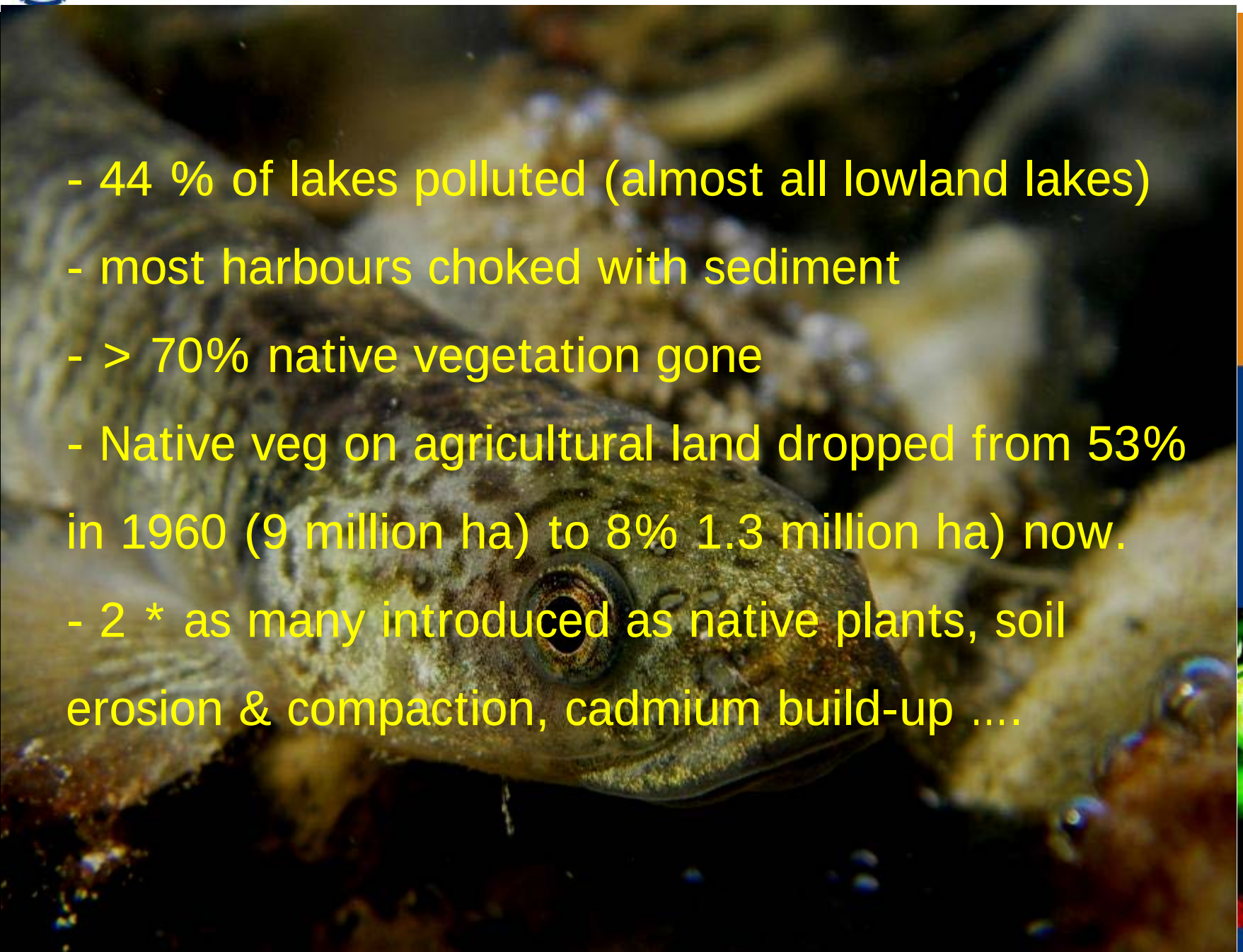
Te Kunenga ki Pūrehuroa

Massey University

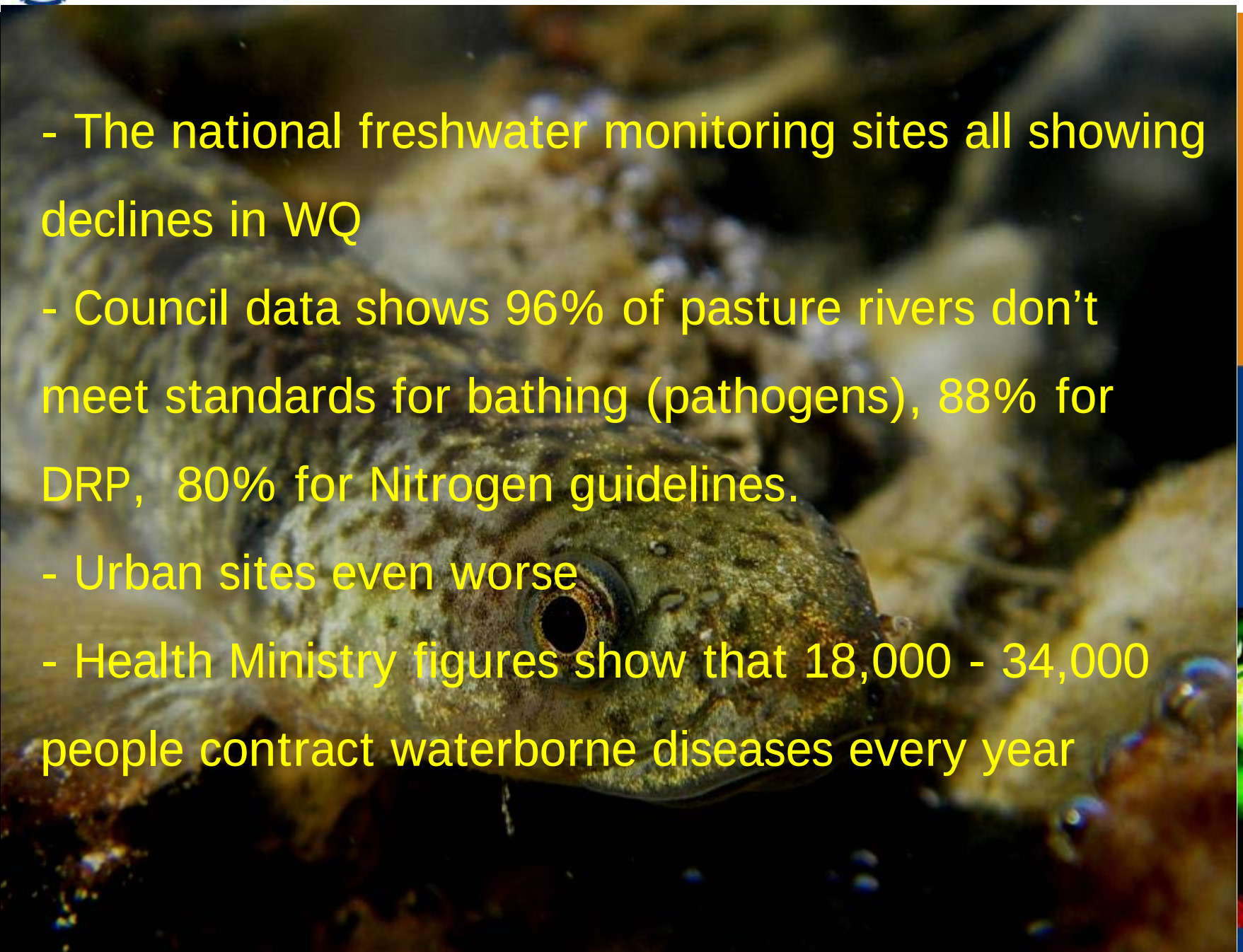
gone - more than all 90% of wetlands



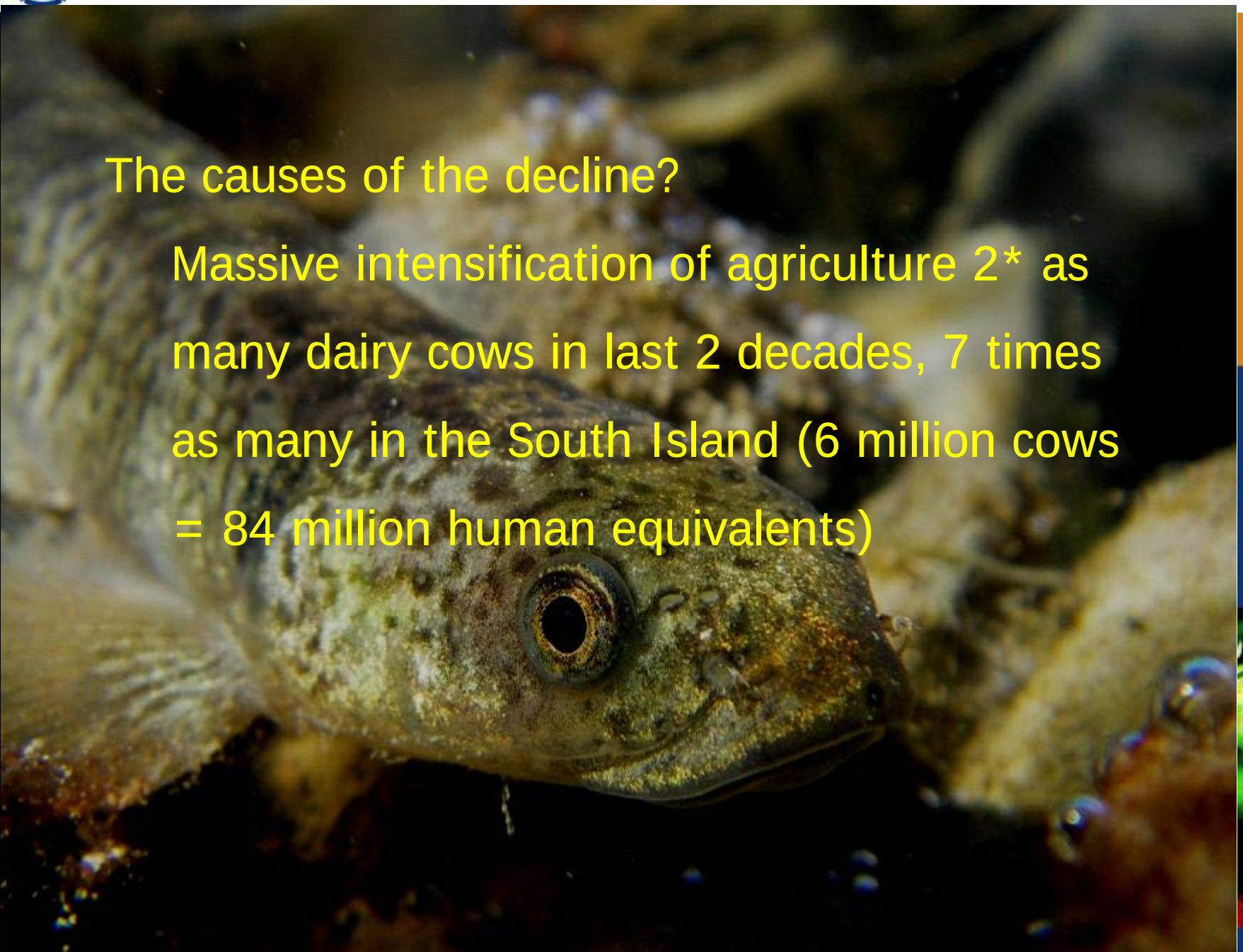
Te Kunenga ki Pūrehuroa



- 44 % of lakes polluted (almost all lowland lakes)
- most harbours choked with sediment
- > 70% native vegetation gone
- Native veg on agricultural land dropped from 53% in 1960 (9 million ha) to 8% 1.3 million ha) now.
- 2 * as many introduced as native plants, soil erosion & compaction, cadmium build-up ....



- The national freshwater monitoring sites all showing declines in WQ
- Council data shows 96% of pasture rivers don't meet standards for bathing (pathogens), 88% for DRP, 80% for Nitrogen guidelines.
- Urban sites even worse
- Health Ministry figures show that 18,000 - 34,000 people contract waterborne diseases every year

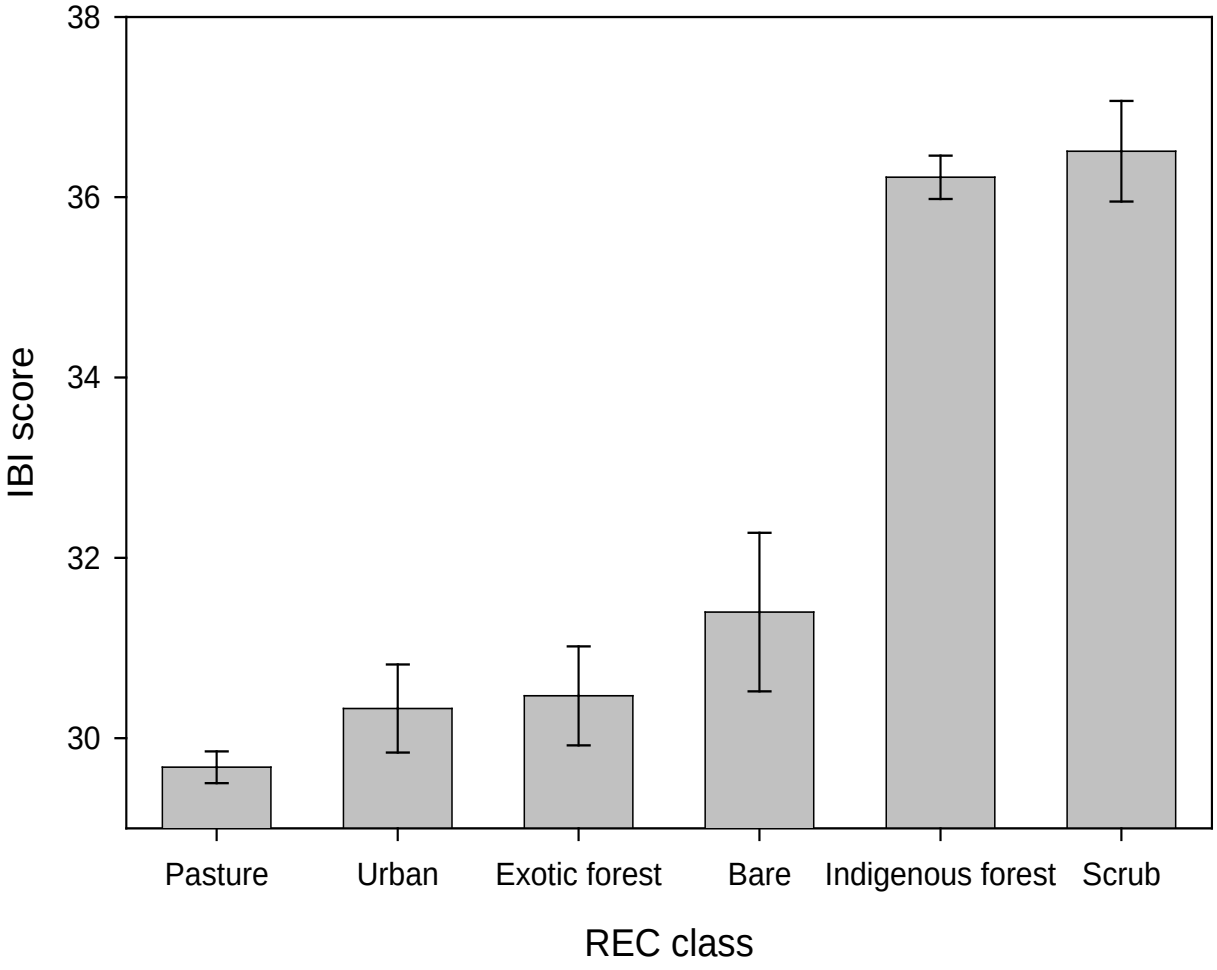


The causes of the decline?

Massive intensification of agriculture 2* as many dairy cows in last 2 decades, 7 times as many in the South Island (6 million cows = 84 million human equivalents)

Massey University

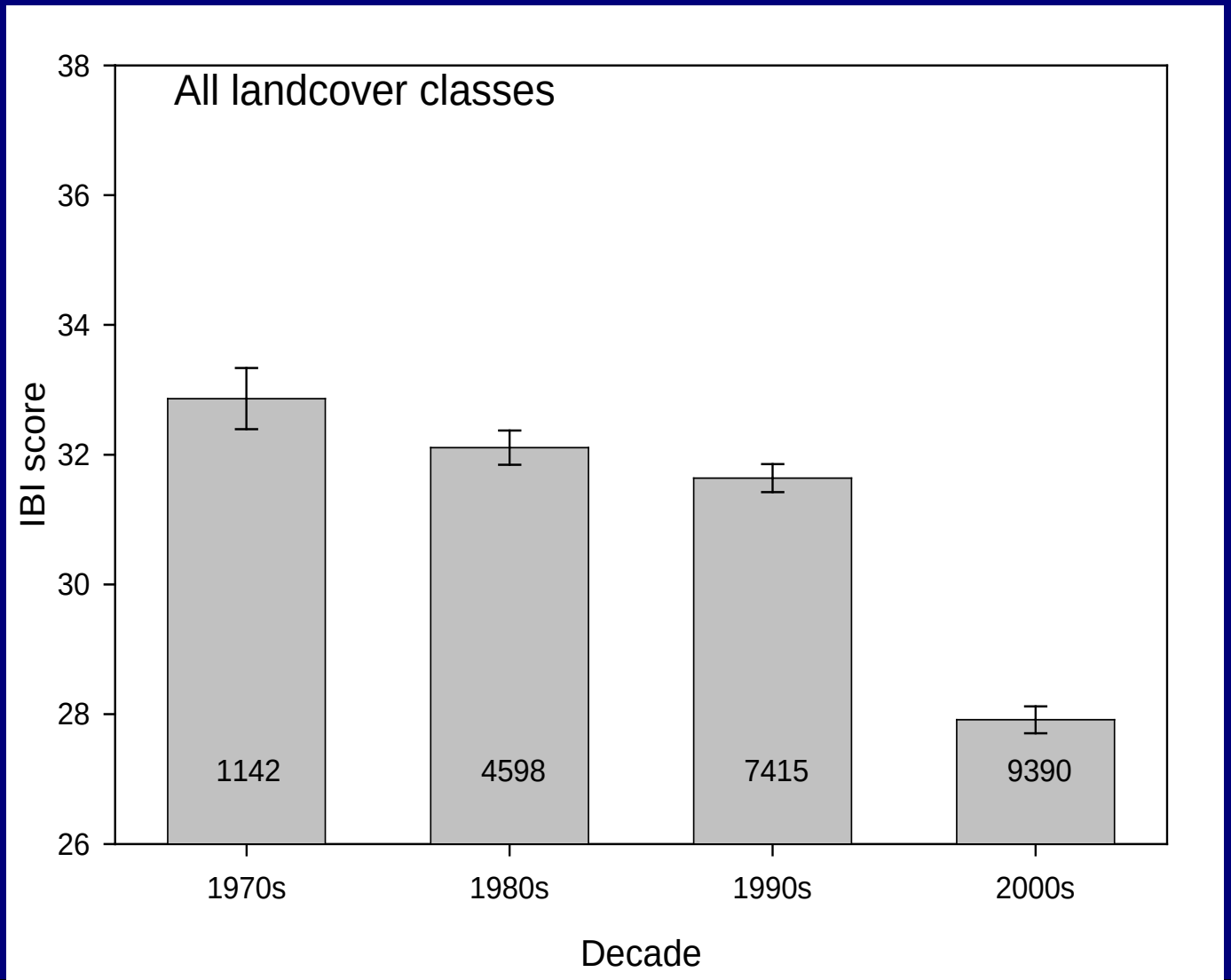
Landuse impacts – fish communities



Te Kunenga ki Pūrehuroa

Massey University

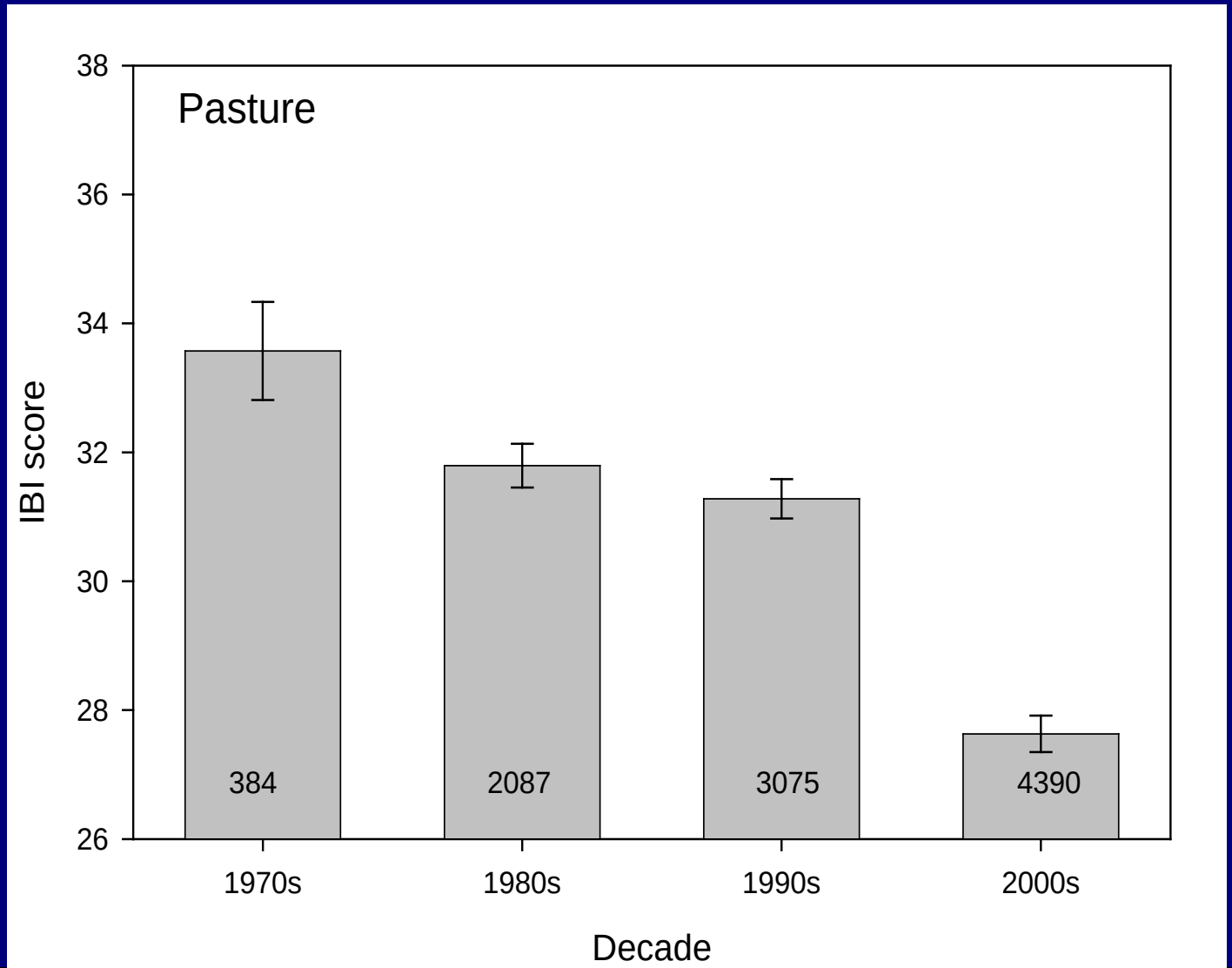
Fish community trends



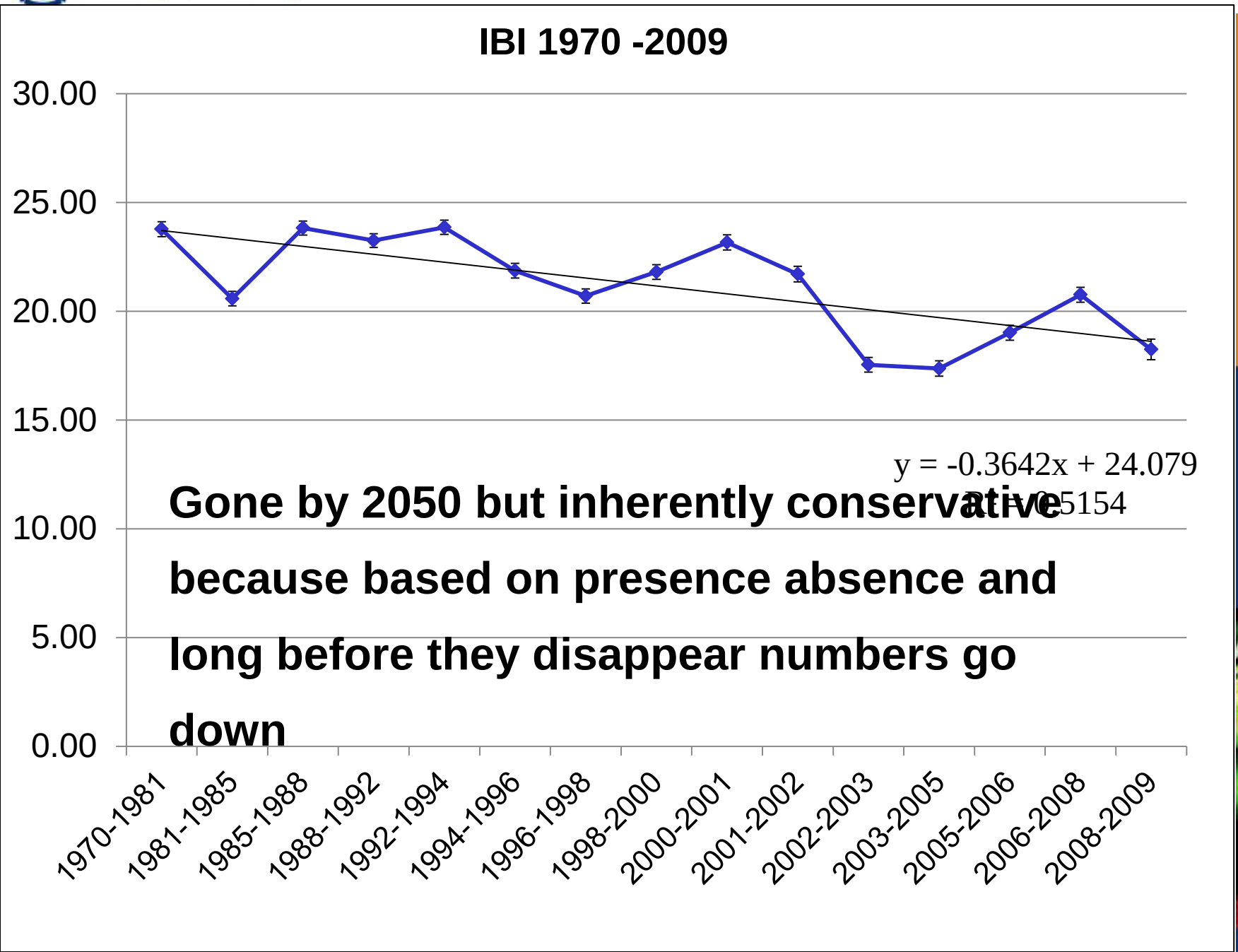
Te Kunenga ki Pūrehuroa

Massey University

Landuse impacts - fish community trends



Te Kunenga ki Pūrehuroa



Gone by 2050 but inherently conservative because based on presence absence and long before they disappear numbers go down

International comparisons

- highest % threatened spp overall + fw fish
- worst measured river health GPP
- NZ Lakes better than USA same as Europe
- International comparison (Bradshaw et al 2010) NZ is the 18th worst environmental performer in the world (161 places below best)

International comparisons

- highest % threatened spp overall + fw fish
- worst measured river health GPP
- NZ Lakes better than USA = ~ Europe
- International comparisons (Bradshaw et al 2010) NZ 8th worst environmental performer in the world (161 places below best) 47th worst overall

Massey University

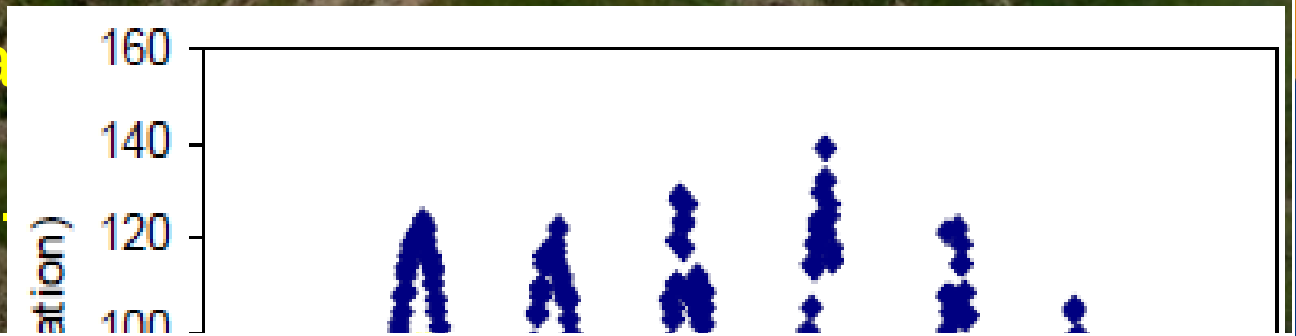
Te Kunenga ki Pūrehuroa

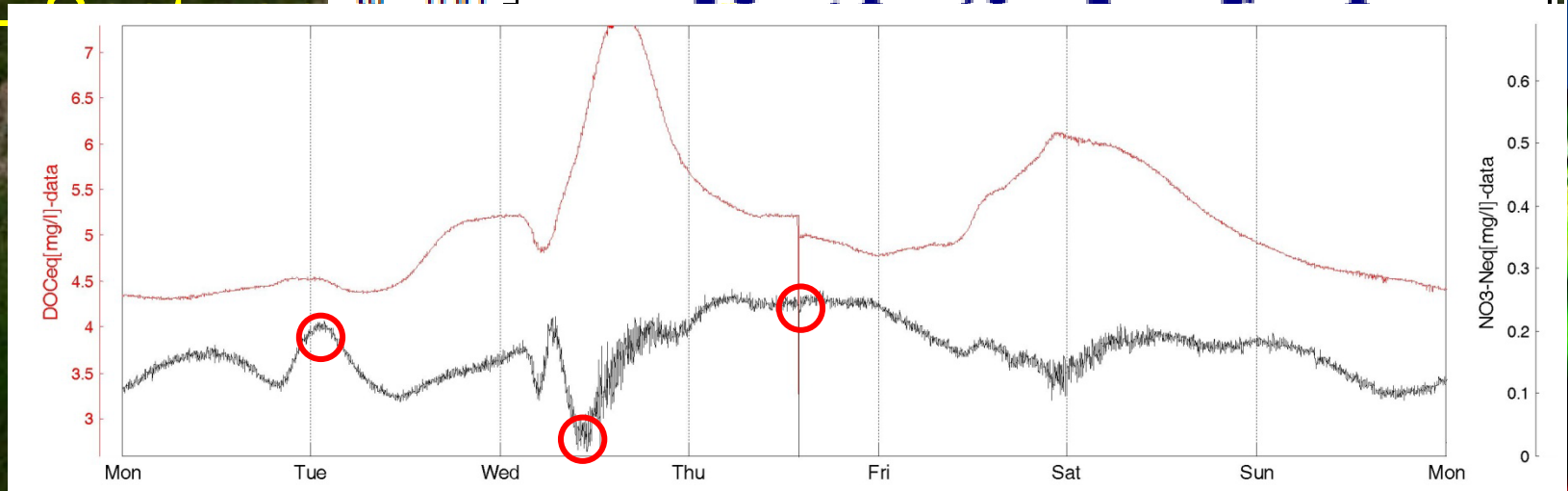
a crisis in Hobbiton?

its very likely an underestimation because we

are mea

way e.g.





Massey University

Te Kunenga ki Pūrehuroa

a crisis in Hobbiton?

its very likely an underestimation because we are measuring the wrong things the wrong way e.g.:

- Spot sampling

- lake Rotorua example ~ 50% of P loading came in 15% of the time and sediment around 1% of the time

Massey University

a crisis in Hobbiton?

its very likely an under

are measuring the w

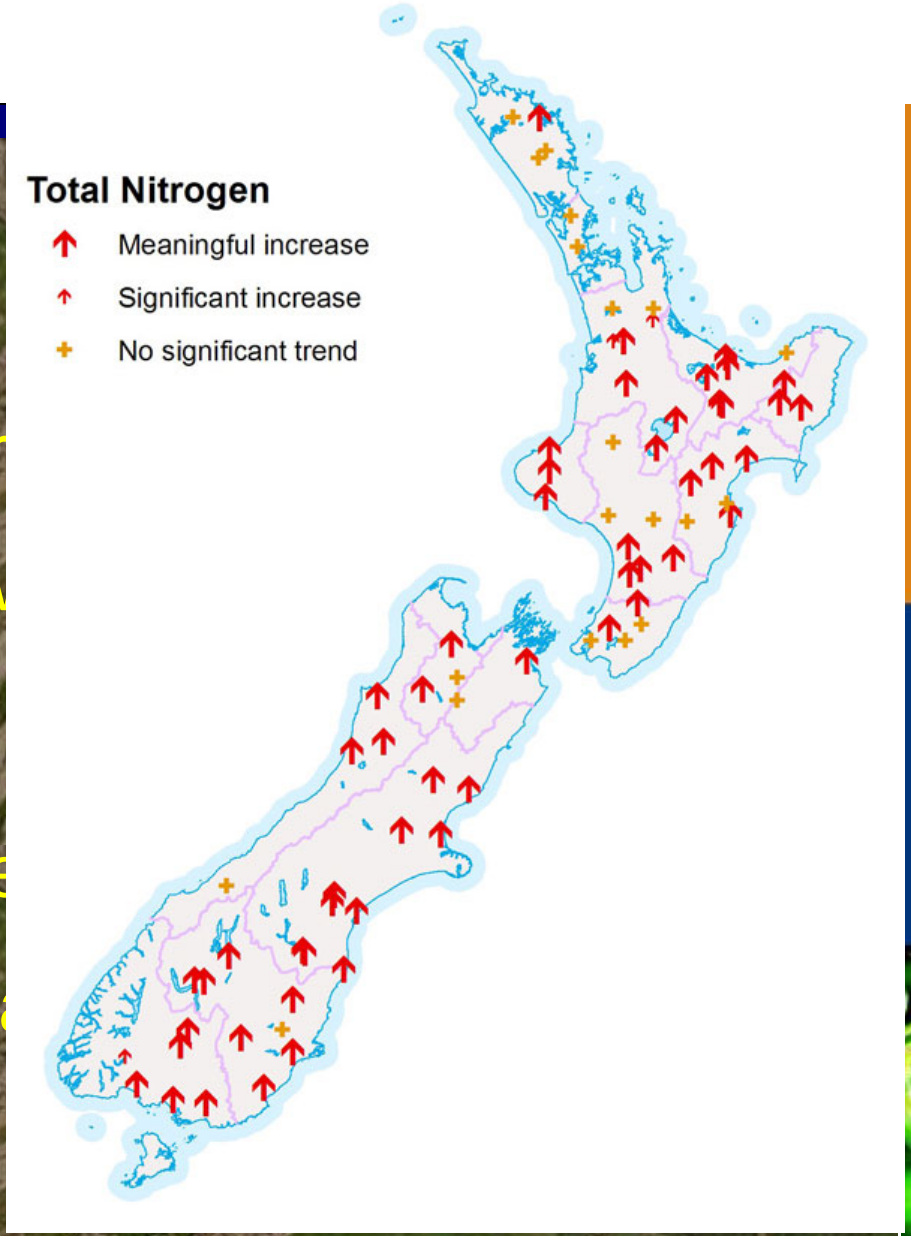
way e.g.:

- Making it sound bette

for lowland sites, cha

in indices

- Averaging away the problem (NRWQN)



Te Kunenga ki Pūrehuroa

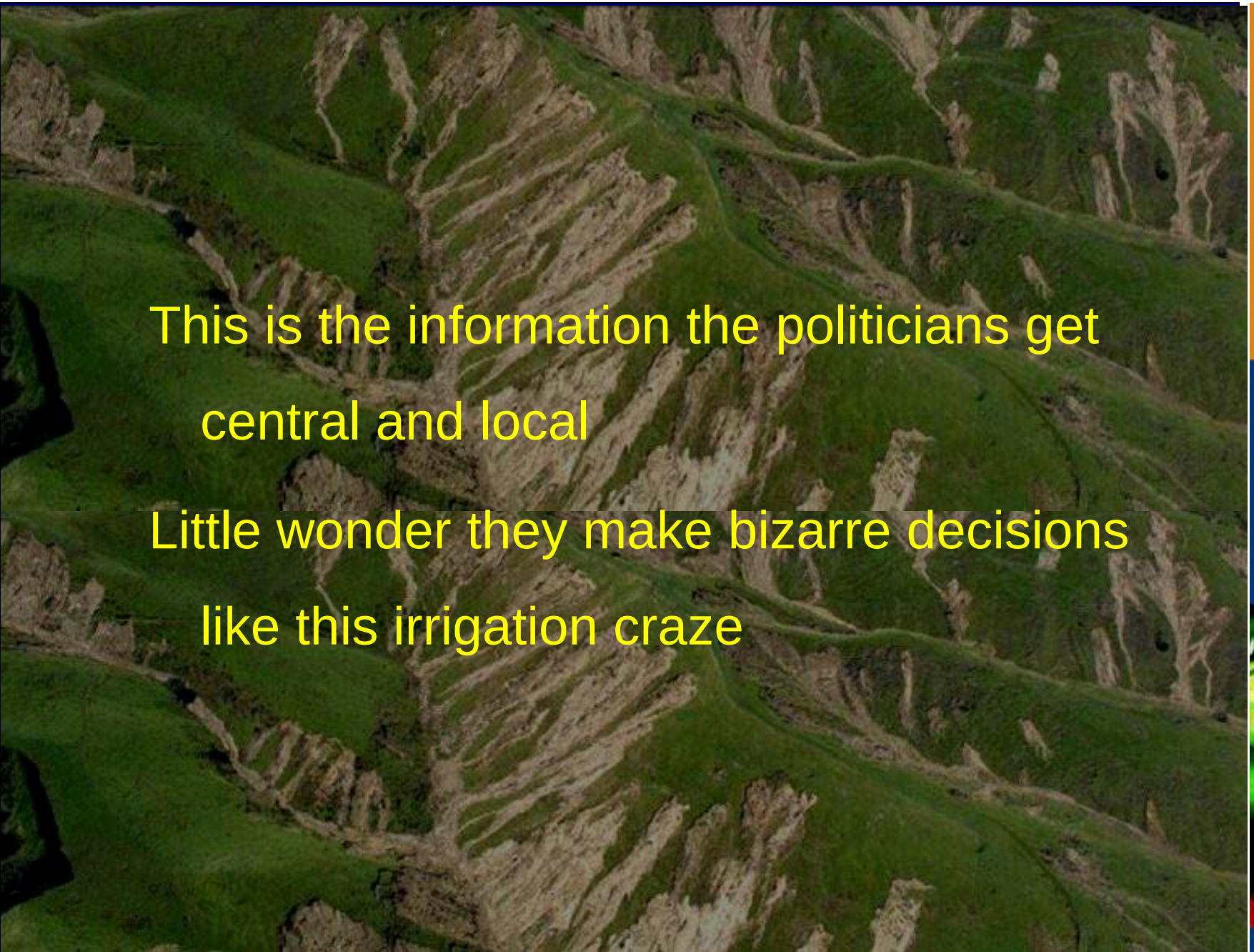
Massey University

Is it even worse though? – we are not measuring the important things apart from missing the variability and peaks in what we do measure at a national level not measuring:

- Deposited sediment

- River engineering (flood control, stopbanking, culverting, piping straightening ….)

Te Kunenga ki Pūrehuroa



This is the information the politicians get

central and local

Little wonder they make bizarre decisions

like this irrigation craze

Massey University

Measuring the wrong things the wrong way leads to:

- public lack of awareness of environmental reality

- allows vested interests get to keep *status quo*

Te Kunenga ki Pūrehuroa

Massey University

Te Kunenga ki Pūrehuroa

Solutions:

- Science/technology
- Measuring the right things the right way
- Reporting the reality (crucial in a democracy) not just for public pressure on government but so that politicians hear the reality
- Capital gains tax?
- Nitrogen/phosphorous loss tax? ($100/kg to remove P from lakes 25 cents/kilo to buy)


So is there really a crisis in Hobbiton?
Glass half full vs. glass half empty