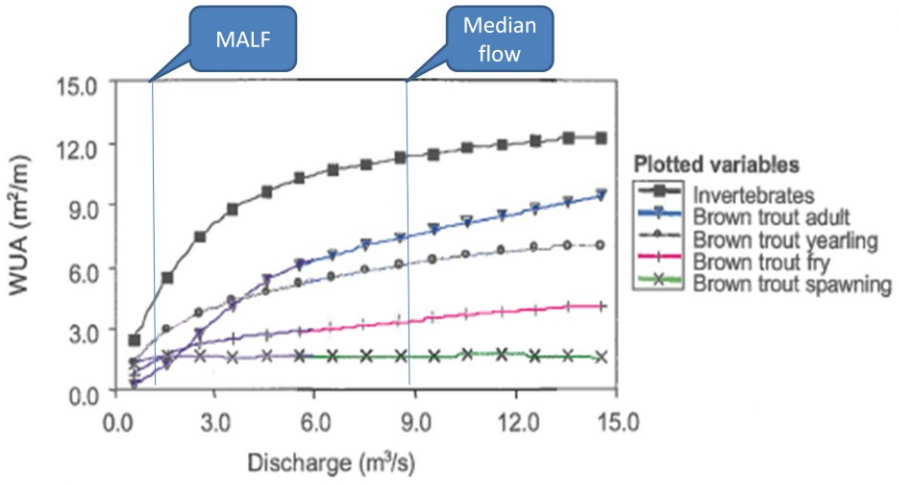
Ecological Values of Takaka River from Harwood's to Lindsay's Bridge

- Brown trout – "regionally significant"
- Native fish
  - IBI = 38 ("very good") & RiVAS = "moderate significance"
  - surveys over the last 10-20 years show low native fish abundance and diversity

Takaka River at Harwood's

Invertebrates and trout



Invertebrates:

• Different shaped curve to Lindsay's Br with sharp rise and then flattening off about 4-5 m3/sec with optimum invertebrate habitat occurring at 12-15 m3/sec ... showing high flows are desirable

• The percentage of available invertebrate habitat at median flow is 35% .... which places this reach at 27 of 63 rivers in the national dbase.

Adult trout:

• Showed a similar patter to invertebrates with largest increases in habitat availability occurring in the range from 0.5-5.5 m3.sec .... maximum feeding habitat at 15 m3/sec which is considerably higher than MALF (1.2 m3/sec)

• this suggests that this reach cannot naturally sustain optimum habitat for adult trout.

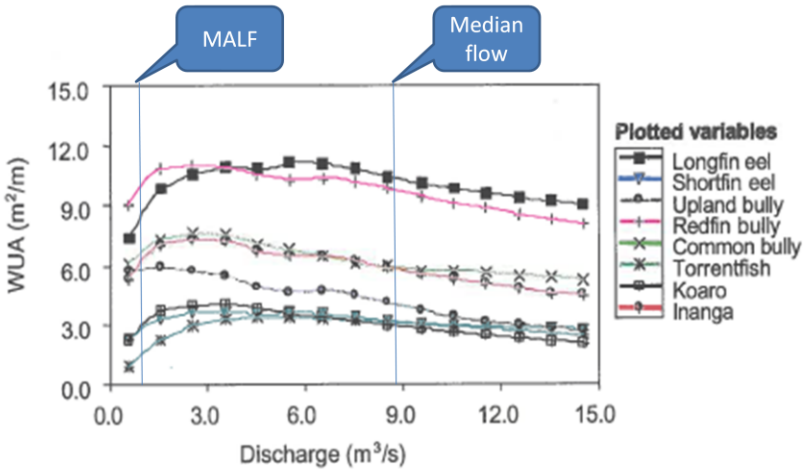
• feeding habitat at MALF is 6% of the river area .... which places this reach at 56 of 63 rivers compared in the national database.

Juvenile trout:

• habitat availability for trout fry and fingerlings mirror that of adult trout and continue to increase with increasing flows. Spawning habitat increased up to 1.5m3/sec and then remained steady.

Takaka River at Harwood's

Native Fish



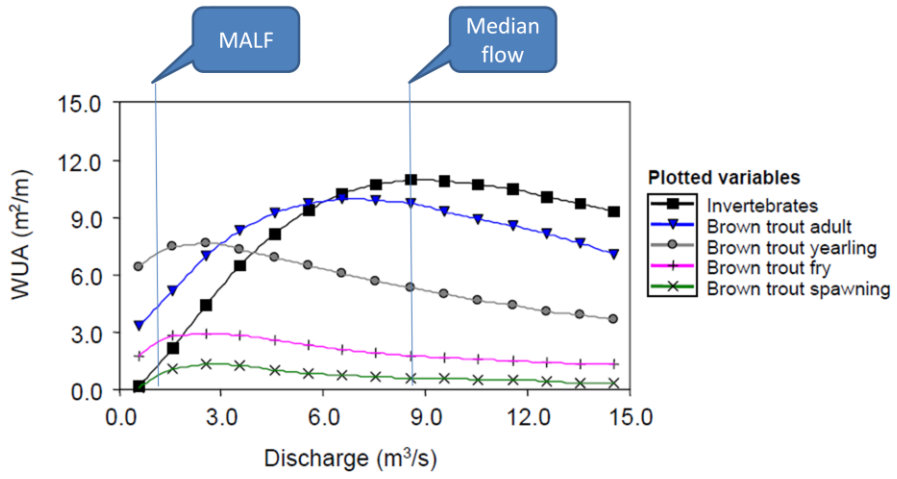
Split native fish into 3 types depending on habitat preferences:

1. Fast water species: Torrentfish and koaro. Have highest flow demands and therefore peak at highest flows (higher than 10 m3/sec). Habitat increased relatively quickly from 0.5-1.5m3/sec, peaked at 3.5 m3/sec and then habitat availability declined slowly as flow increased.
2. Generalists: Long-fin and short-fin eel, and inanga. Found in runs, riffles and pools. Displayed little variation of the range of flows simulated.
3. Edgewater species: Upland, red-fin and common bullies. Found in margins in shallow and slow water. Had optimum habitat at relatively low flows (0.5-2.5m3/sec) and then habitat availability declined reasonably rapidly as flow increased.

Higher flows due to the Cobb scheme at the Harwoods reach reduced the habitat availability for all native fish species.

Takaka River at Lindsay's Bridge

- Invertebrates and trout



Invertebrates:

• Optimum invertebrate habitat occurred at 8.5 m3/sec (very close to and in between the recorded and natural median flows in the reach)

• The percentage of available invertebrate habitat at median flow is 41.5% .... which places this reach within the top 20% in NZ.

Adult trout:

• maximum feeding habitat at ~6.5 m3/sec which is considerably lower at MALF (1.2 m3/sec)

• this suggests that this reach cannot naturally sustain optimum habitat for adult trout.

• feeding habitat at MALF is 22% of the river area .... which places this reach within the top 15% in NZ.

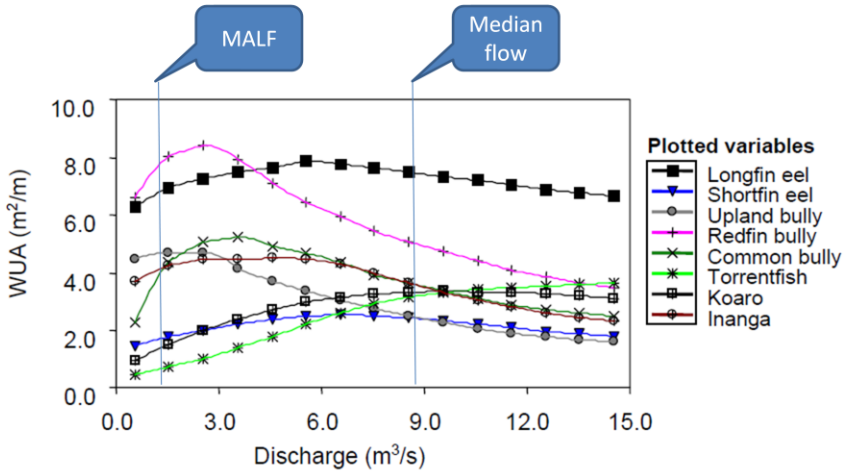
Juvenile trout:

• Higher median flows provided by Cobb HEPS reduces habitat for trout spawning, fry and fingerlings. However, occasional floods are more likely to control the abundance of juvenile trout.

• MALF's for natural and recorded are very similar at this reach → minimal effect from the Cobb HEPS

Takaka River at Lindsay's Bridge

- 8 native fish



1. Fast water species: Higher median flows have increased habitat for these species (by 14%)
2. Generalists: Peak at 6 m3/sec. (*Only a small decrease for these species due to Cobb HEPS*)
3. Edgewater species: Peak at 2-3 m3/sec. (*Habitat decrease of 15-19% for these species due to Cobb HEPS)*

Very different at the Harwoods reach where habitat availability has decreased for all native fish species.