



Kettle River Streamflow Protection Plan

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Fishery Background

- Supports important fish stocks including rainbow trout, whitefish and 7 Species at Risk.
- Provides one of few river fishing opportunities in Region.
- Fishery focused on wild stocks.
- Deteriorated over last 2 decades.
- Issues such as water & land practices, overfishing, recruitment, & habitat availability attributed to decline.
- Listed as the most endangered river in BC (2010 & 2011).



Watershed History

- Numerous studies completed
- Key production bottleneck: lack of mainstem refuge habitat for adult & sub-adult fish
- History of severe low flows and high water temperatures
- Sub-lethal to lethal limits for fish (19-26 C)
- Fish kills concurrent with low flow periods: 2003, 2006, and 2009
- Water Use



Management Issues & Concerns

- Low Trout Production
- Habitat Impacts & Constraints
- Illegal Harvest
- Water & Land Practices
- Supply & Demand
- Economic value of Recreational Fishery ~27%

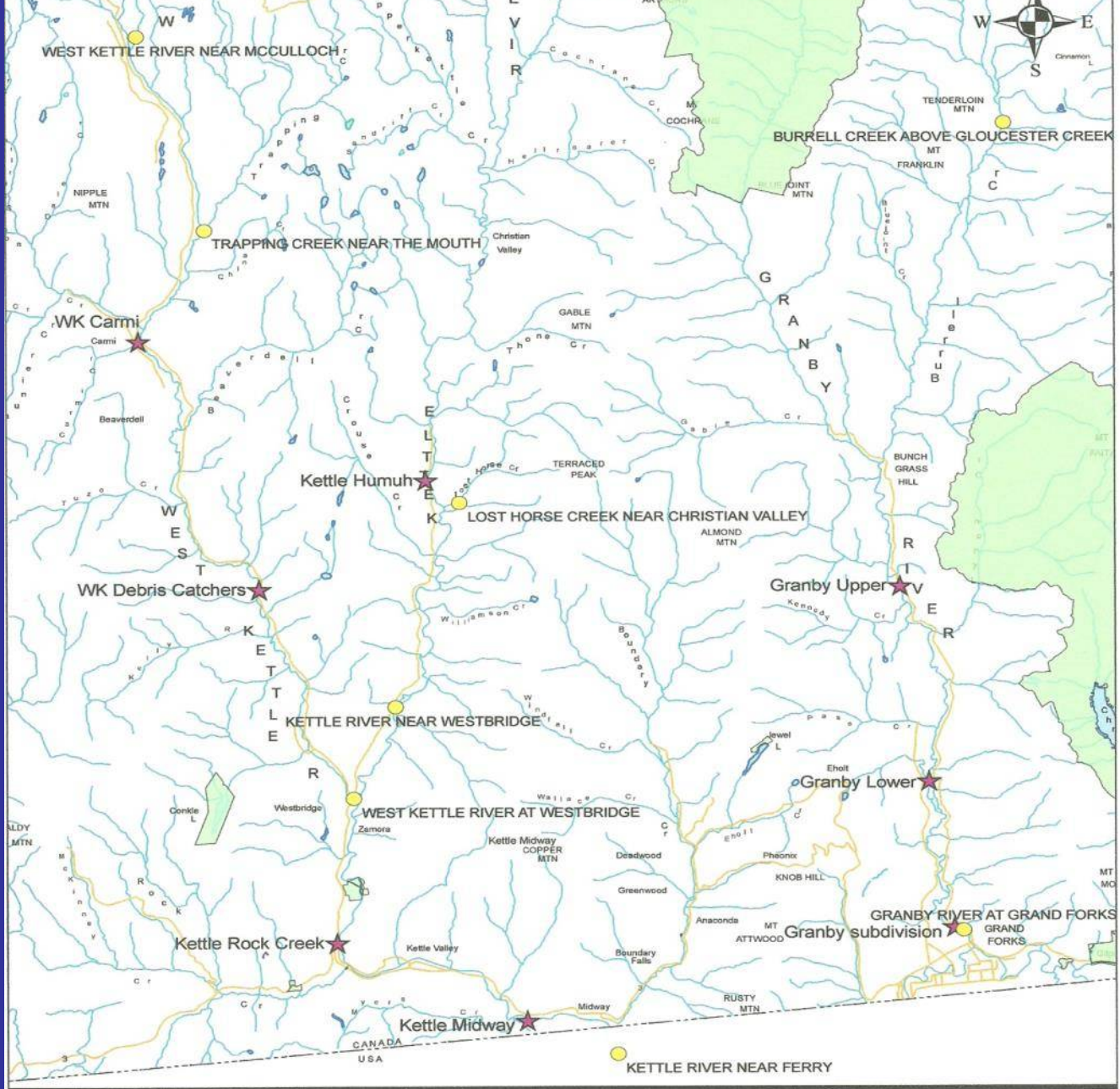


Project Goals & Objectives

“To conserve and restore wild fish stocks and their habitat”

1. Determine minimum streamflow requirements (m³/s) & targets for protection of resident stocks & SAR
 - How low can you go?
2. Identify thresholds for regulation / closure of fishery
2. Specify operational strategies to protect fish & fish habitat **during low flow periods**





Legend

- WSC Hydrometric Stations
- ★ Flow-habitat Monitoring Transects
- Provincial Parks and Protected Areas

SCALE 1:350,000



Prepared on: December 13, 2011
 Prepared by: L. Tedesco
 Ministry of Forests, Lands and
 Natural Resource Operations

Approach

1. Fish Stock Assessment

- Conduct snorkel surveys
- Monitor rainbow trout stock status & habitat use

2. Habitat Monitoring

- Install gauges & monitor transects
- Streamflow & temperature fluctuations
- Availability & use in late summer

3. Stakeholder Communication & Outreach

- Hold public meetings , install signage & mail outs

4. Fish Protection & WUP

- Operational strategy to protect fish habitat and meet water user needs
- Considers drought & low flow scenarios



Mark-Recapture



The Volunteers....



Gearing up....



Tagging....



Fishing....

2012 Tagging with Volunteers



Kettle River 2012



Kettle River 2012



Granby River 2012



Granby River 2012

Outreach & Communication

1. Public Meetings

- Fish & Game clubs
- Agricultural sectors
- Local government
- Water users

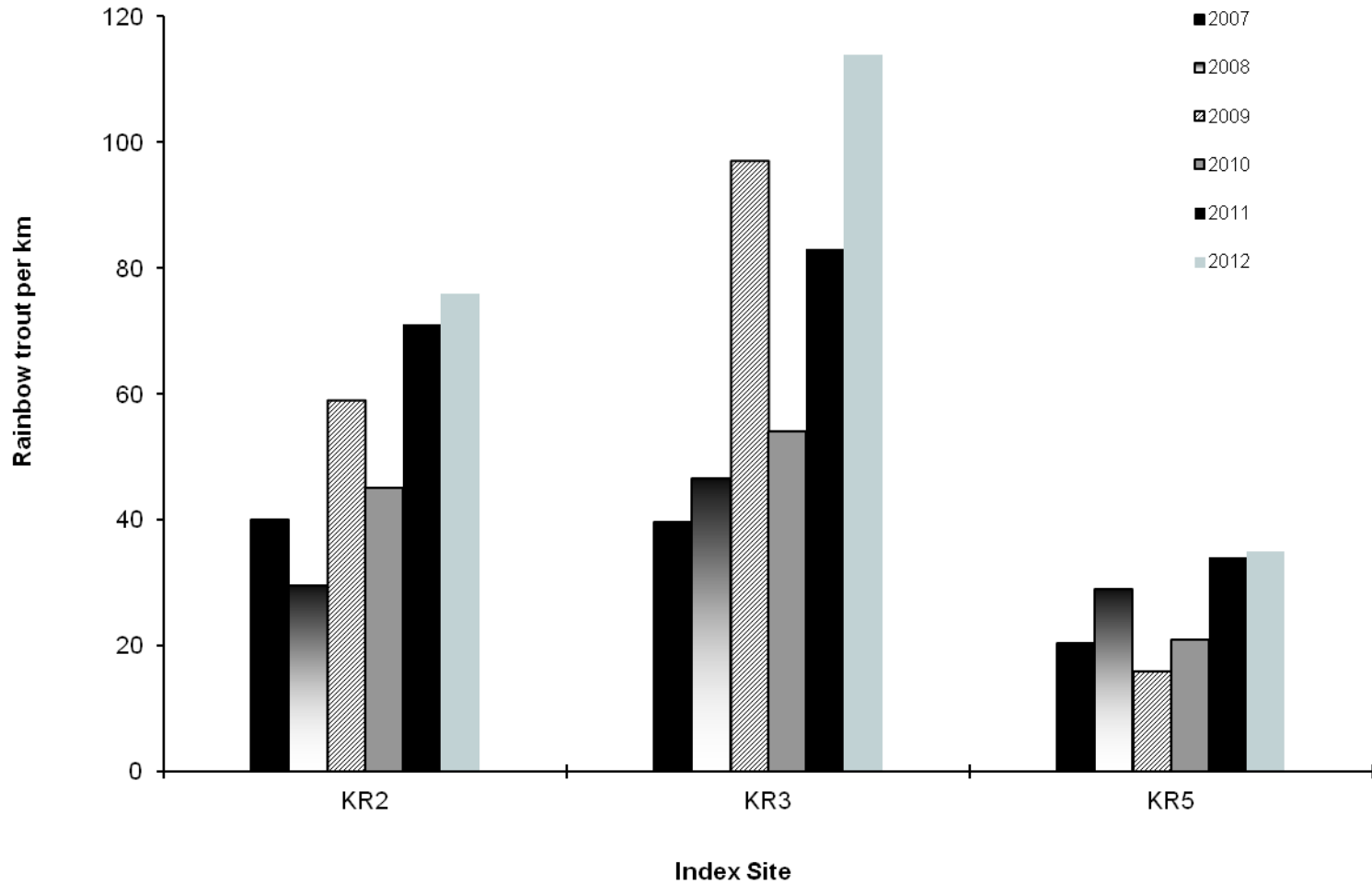


2. News Articles
3. Classroom Education
4. Events -TU Film Festival

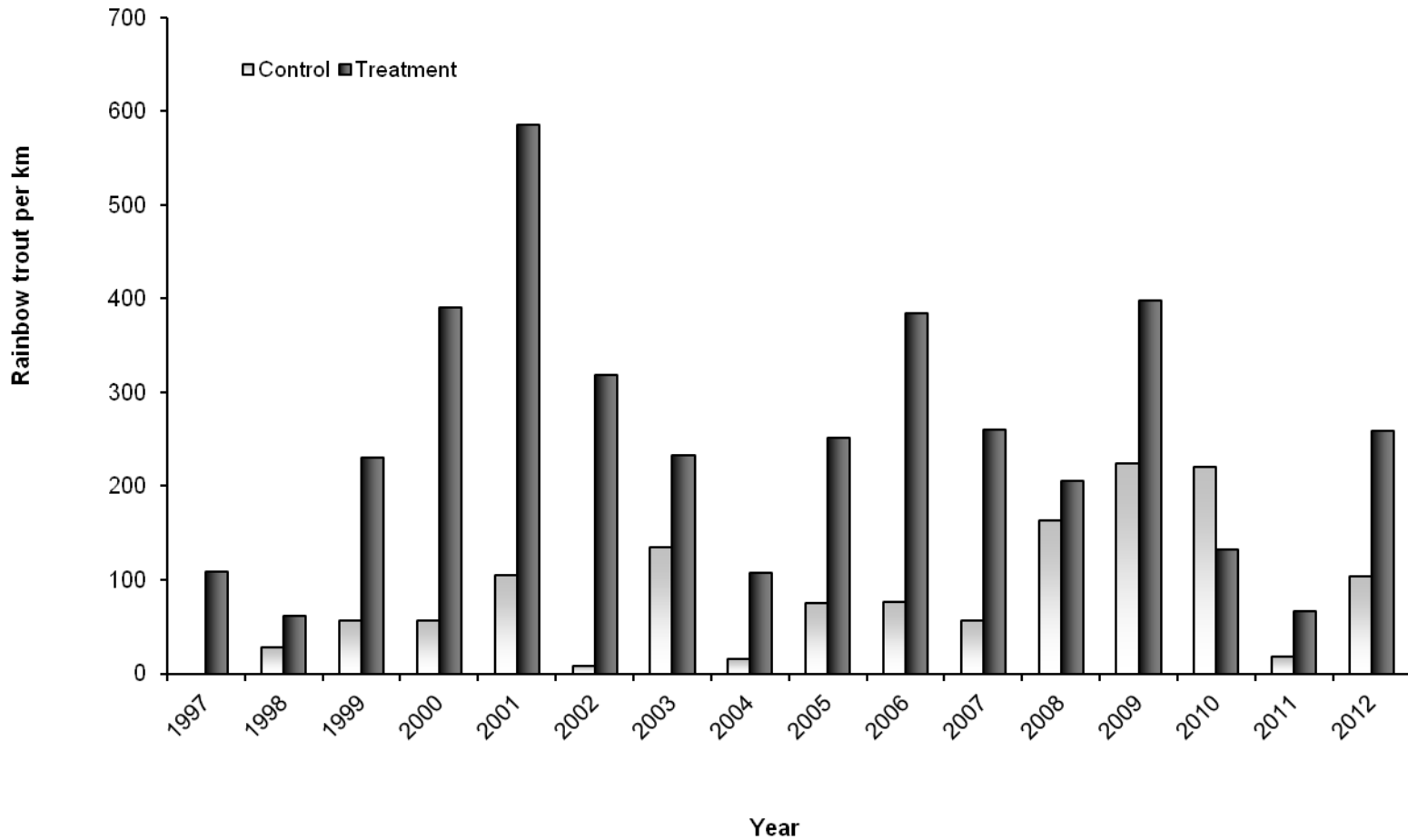
Stock Assessment Results

- Fish #'s gone up, however...
 - Not many large bodied fish
 - Still seeing illegal harvest
 - Fish moving long distance

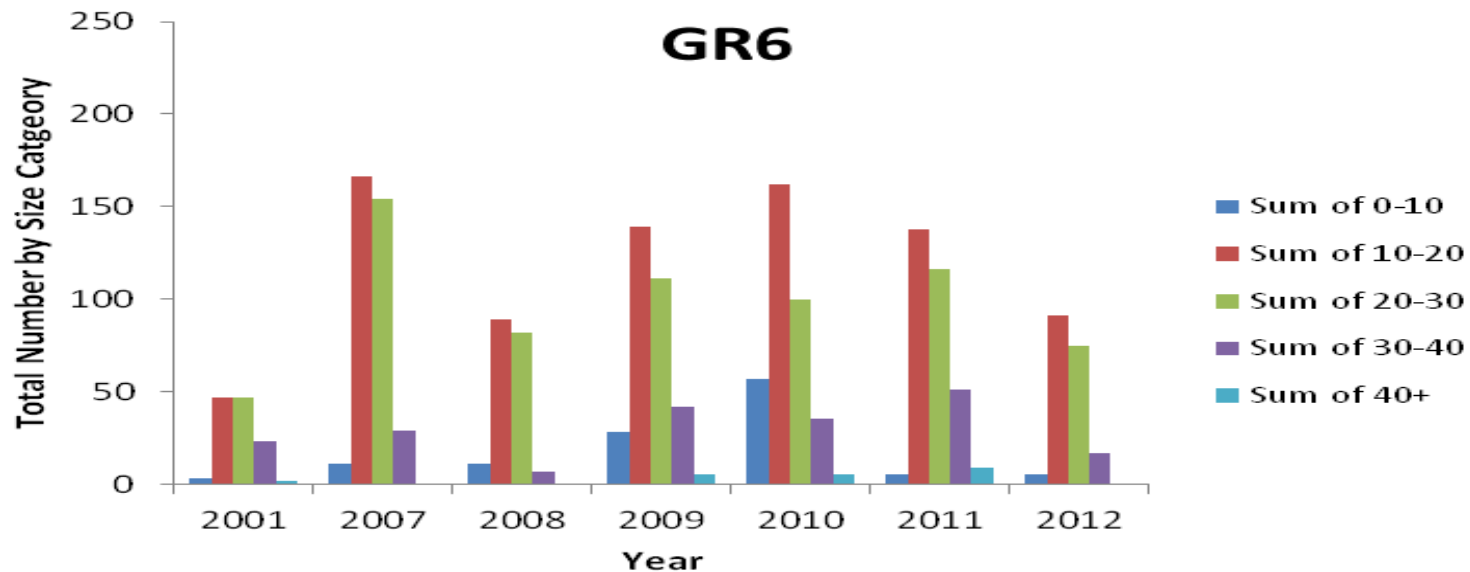
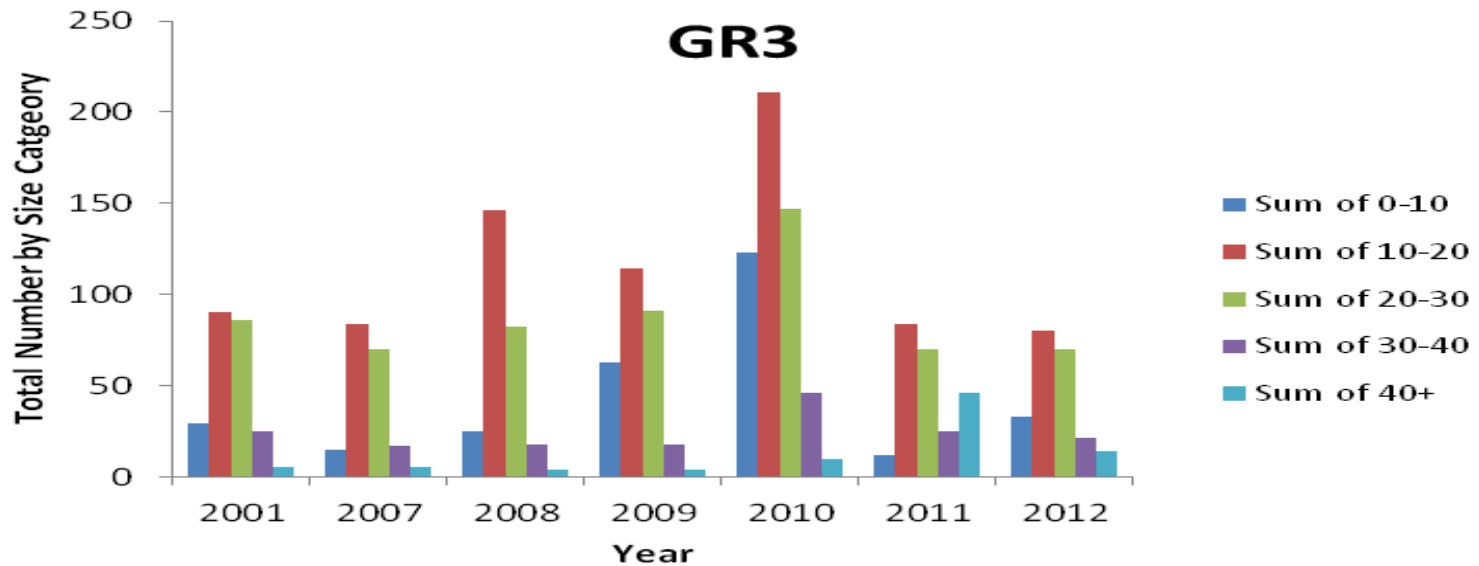
Kettle River Stock Assessment Results



West Kettle Stock Assessment Results



Granby River Stock Assessment



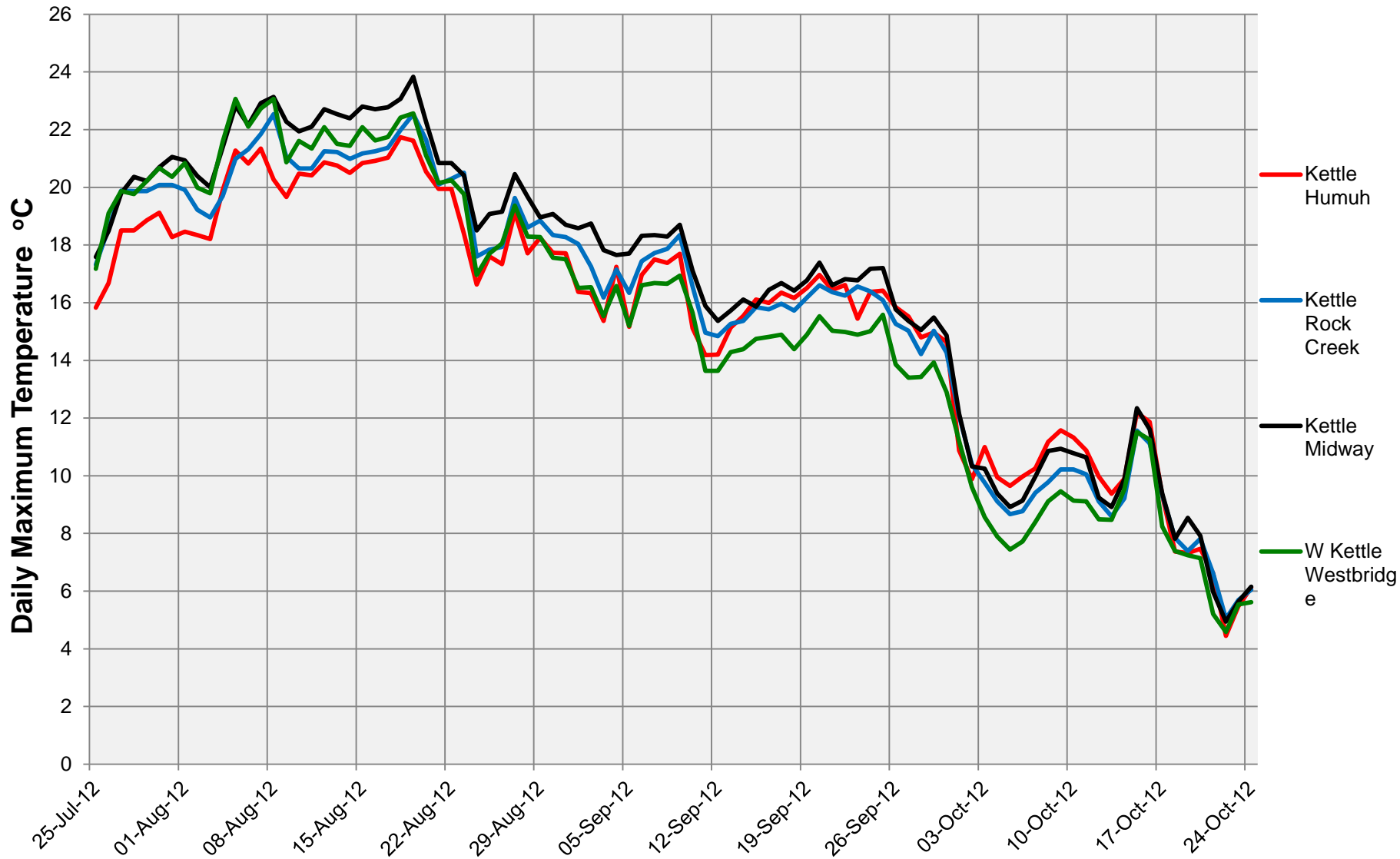
Results: Habitat Constraints

- Fish susceptible to high temp/low flow periods
- Water temp hits 25-26 C by late July
- Fish kills correlated with water temp
- Flow reach 10% MAD by August
 - Aug 5th on W. Kettle
 - Aug 26th on Kettle&7 Granby
- Two weeks later , flows= 5% MAD
- Fish easy targets to anglers/predators
 - Concentrated in pools (2.5%)
 - Stress tolerance low
 - Food production reduced

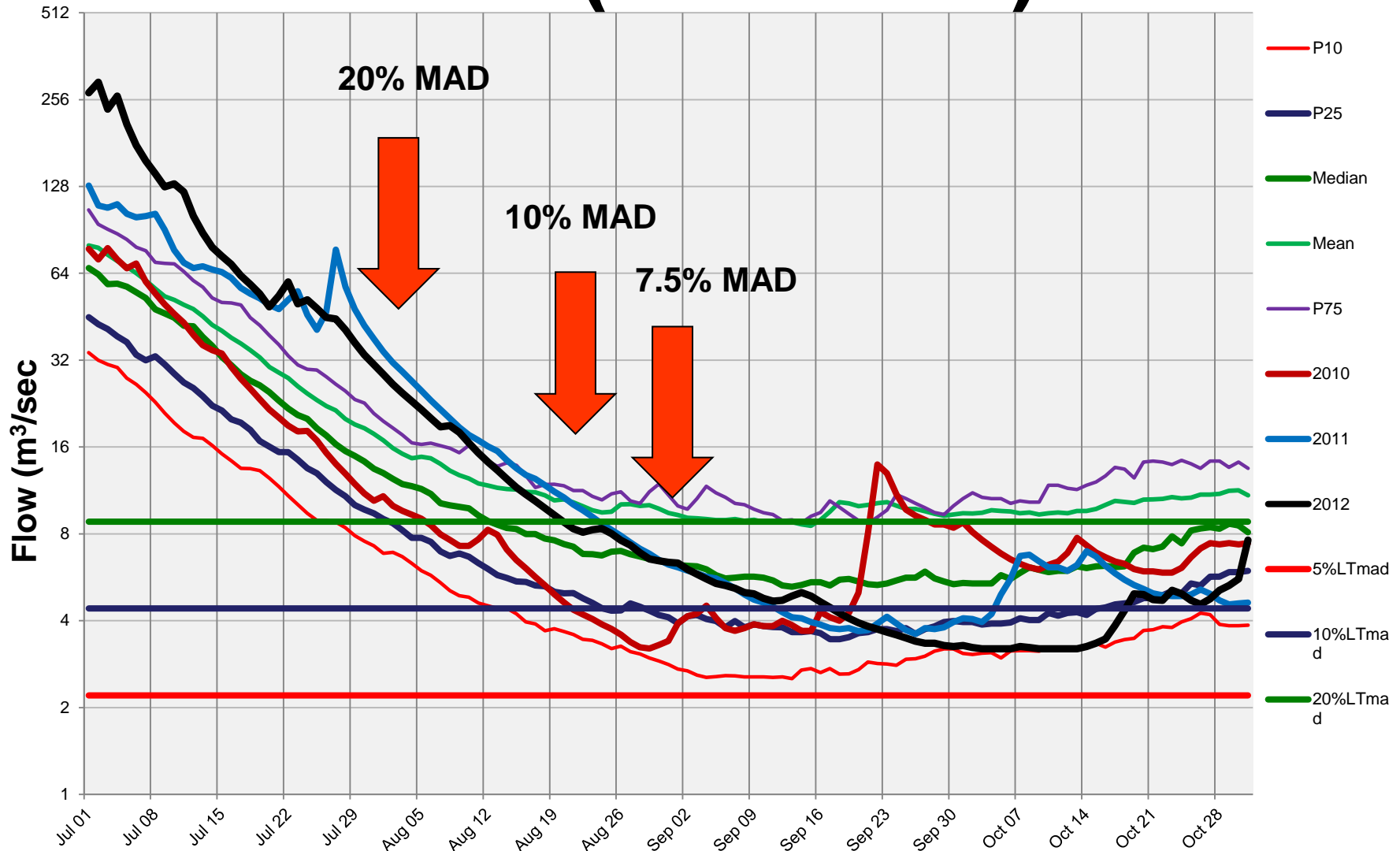
Results: Habitat Constraints

- River flows do not recharge => Oct rains
- 5% MAD = < 50% useable habitat for trout
- Big fish = die, harvested or left in river
- Water use
 - irrigation (surface water use) shuts off Sept 30th
 - Groundwater use does not
 - Over 40% water use in Kettle is from groundwater (wells)

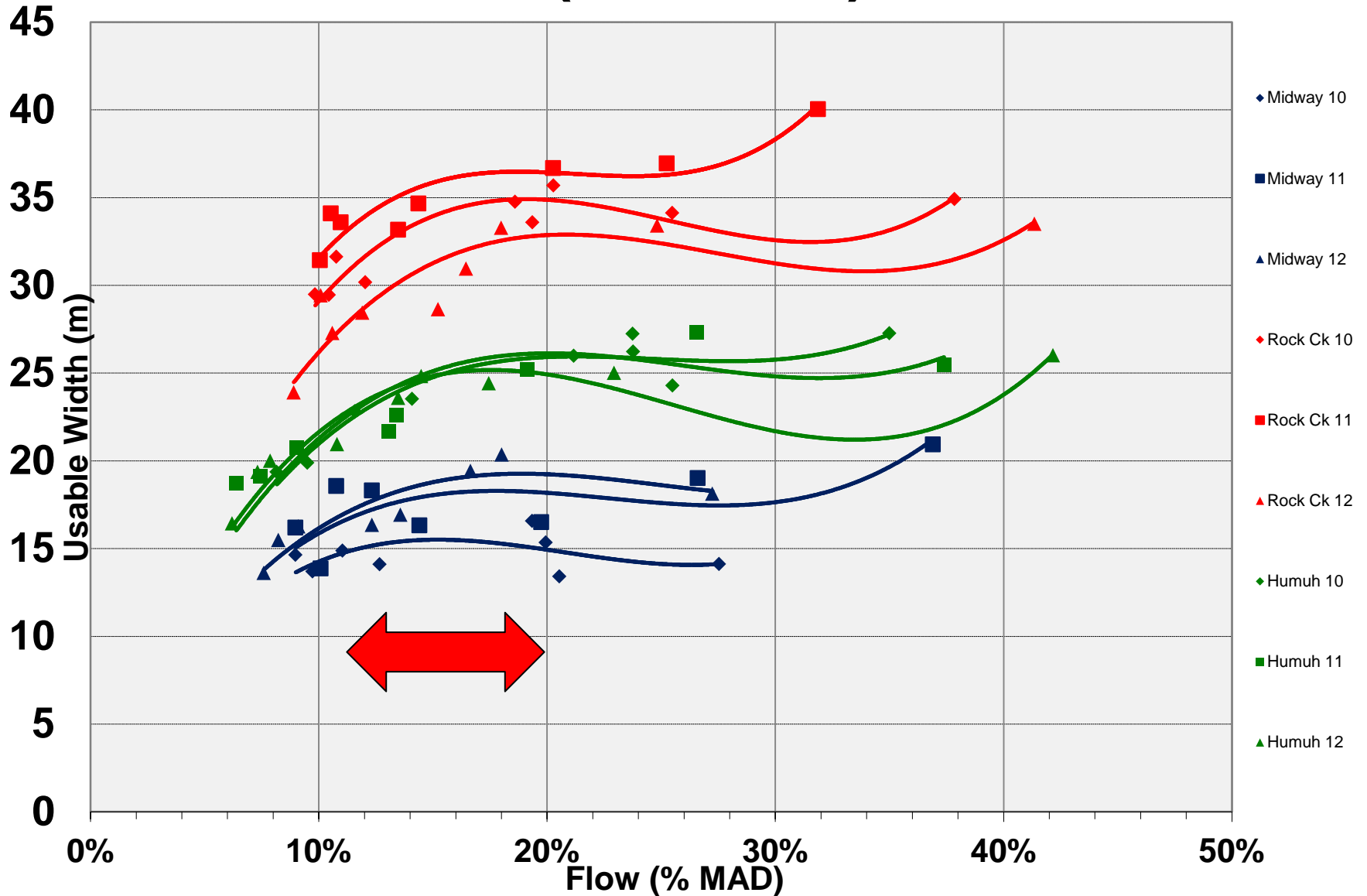
Kettle River Daily Max Temperatures



Reference Flows vs Kettle Ferry Flows (2010-2012)



Kettle Weighted Usable Widths (%LTmad)



Recommendations for Fish Protection

- Designate Watershed as Fully Recorded
- Regulate Water Use When Flows Drop to 5%LT mad
- Regulate Groundwater Use
- Develop Off-Stream Storage to Support Water Use
- Investigate Unexplained Low Flow Fluctuation in Granby
- Designate Kettle as Environmentally Sensitive Watershed under the Fish Protection Act
- Fishing Regulation Changes
 - Consider in-season closure (July 15th-Sept 15th)
 - Implement 'Catch and Release' Only

Management Options: Water Regulation/Conservation

Option 1 – staged approach

- 30-40% MAD = 3 weeks to think about cutting back
- 20% MAD = notify users
- 10% MAD = start curtailing use (25% user reduction)
- 7.5 % MAD = additional 25% water use reduction
- 5% MAD = 50%

Option 2 – cut off all water use at 5% MAD

Considerations:

- Resource requirements
- Timing & growing season
- Impact on water users
- Users may switch from surface water to groundwater

Acknowledgments

- Habitat Conservation Trust Foundation (HCTF)
- Wild BC
- Castlegar Fish & Game
- Kelowna Fish & Game
- Lonely Loons
- Penticton Flyfishers
- Trout Unlimited (TU- Ok Chapter & Canada)
- Kevin Argue, Shaun Lockhart & Jason Webster
- Grand Forks Secondary School
- Perly Elementary
- FLNRO Ecosystems Branch
- FLNRO Water Stewardship Division
- Ministry of Agriculture
- Conservation Officers Service
- Christina Lake Stewardship Society
- Local Ranchers and Stakeholders

A scenic river with a red inflatable raft in the foreground and people wading in the background. The raft is a red Achilles brand, equipped with a white cooler, a yellow life vest, and several blue oars. The river is surrounded by tall evergreen trees and a rocky shoreline. In the background, three people are wading in the water. The sky is blue with some clouds.

Thanks to Volunteers...



Kettle River 2012



RB caught by Phil Rogers
Kettle River 2012



Caught by Dean Marchand = 40+ cm
Kettle River 2012



Ken Baker- 33 cm RB
Kettle River 2012



Dean Marchand
Kettle River 2012



Kettle River 2012



Kettle River 2012







Dean Marchand - 42 cm RB
Kettle River 2012



Doug Collins - 43 cm RB
Kettle River 2012



Granby River 2012
Shawn Lockhart – 55 cm RB



Granby River 2012
Kevin Argue – 45+cm RB



Granby River 2012
Shawn Lockhart – 51 cm RB

Jimmy Prudomme
Fishing the West Kettle River, 2011



Relaxing after a hard day fishing....



Some of the Kettle River gang....



Questions ?

“The dollars spent on an ounce of prevention for habitat protection are worth a pound of cure for habitat restoration” Montana Land Reliance – 1991.