

Fish Populations on the Bitterroot National Forest Since Wildfires in 2000 (Plus some data on the 2011 fires)

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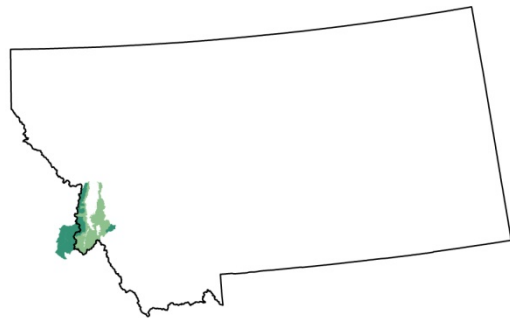
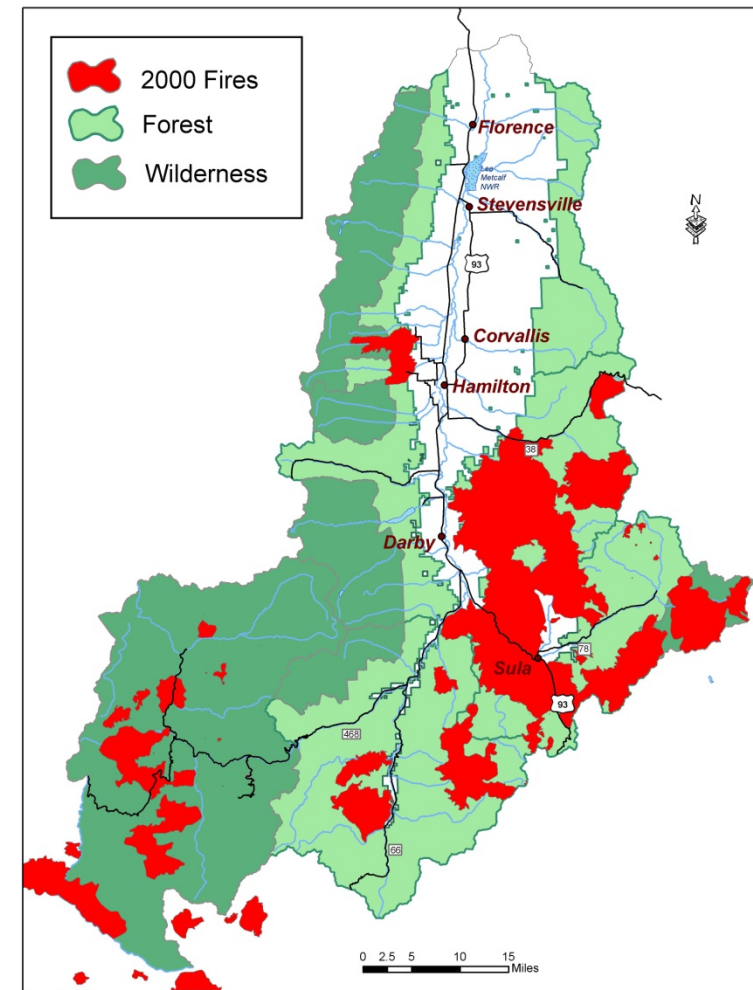
2000



2010

The 2000 Bitterroot Fires

307,000 acres burned- 22% of the Bitterroot National Forest land base





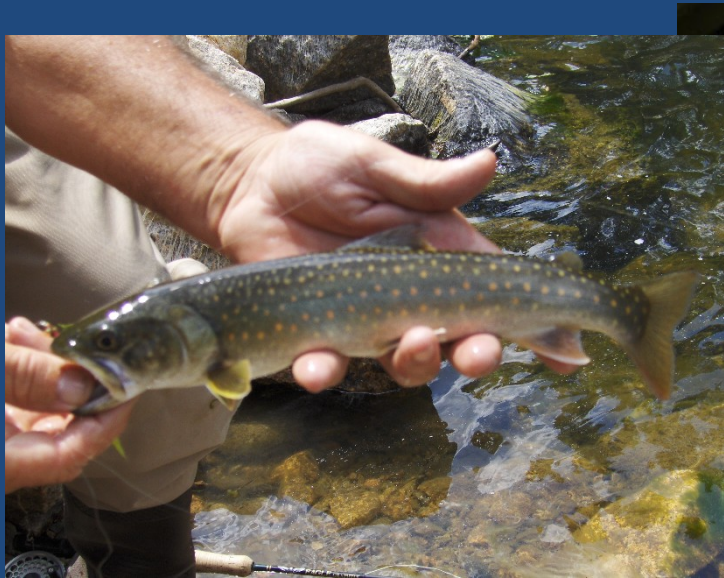
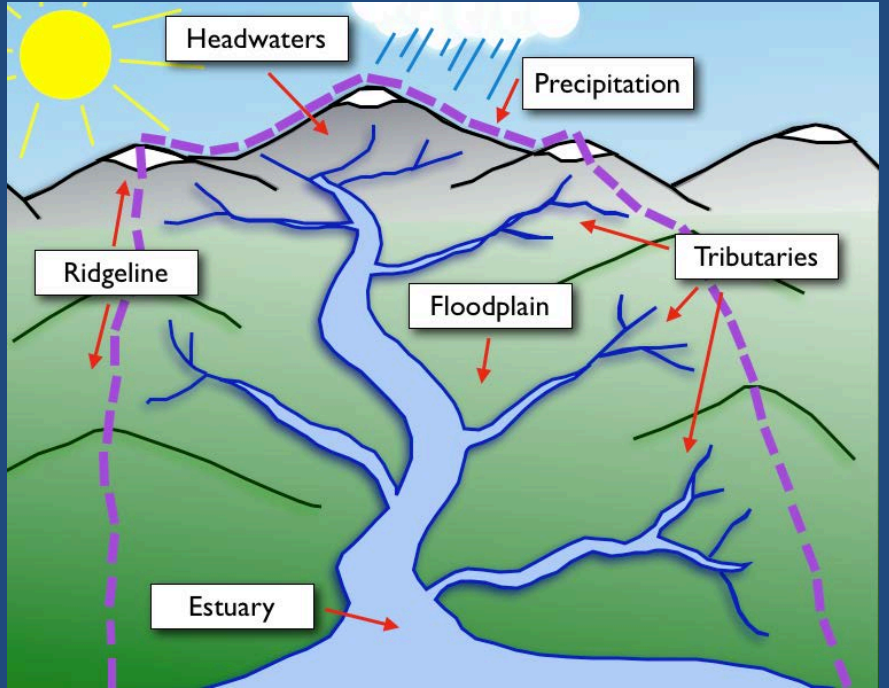
The Aftermath

126 fish streams burned

154 miles of fish streams burned at moderate to high severity

Major fish kills observed in seven streams

Widespread population declines



Debris Flows, July 2001



Laird Creek

Sestrich, Young, and McMahon

Does wildfire favor invasion of nonnative fish?

Repeated Pre-fire
Mark –Recapture
Surveys in 2001-03



Sestrich Study Reaches

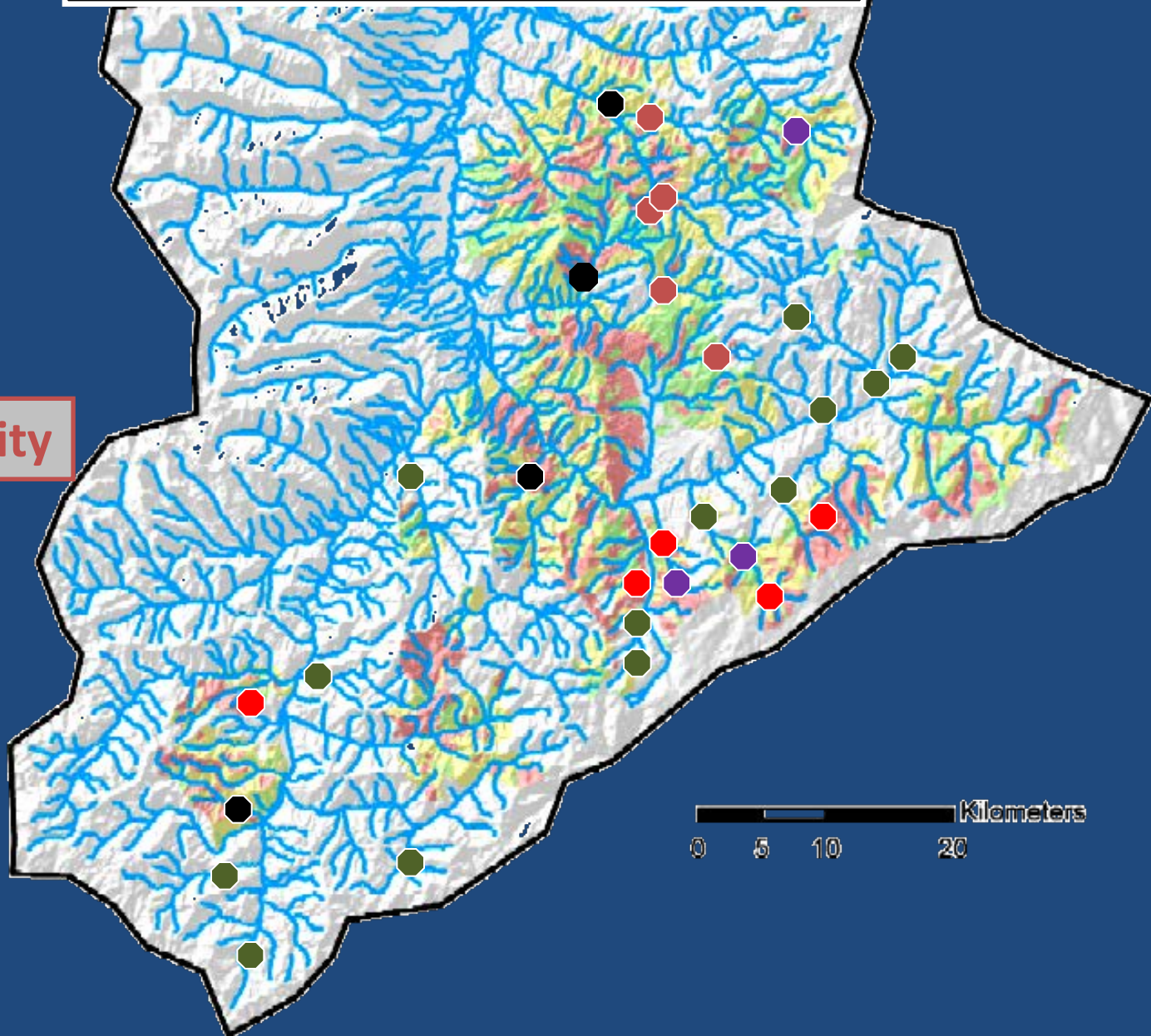
13 Unburned

3 low severity

5 moderate severity

5 high severity

4 debris flow



0 5 10 20 Kilometers

Findings of the Sestrich Study

Did the damaged westslope cutthroat trout and bull trout populations recover?

ANSWER: Yes. Most populations approached or exceeded their pre-fire abundance levels within three years post-fire.

Did brook trout increase in the burned streams and displace native trout?

ANSWER: In most streams, no. Brook trout recovery was suppressed in most of the burned streams. A notable exception was upper Rye Creek where brook trout invaded and increased post-fire.

Did non-native trout invade burned streams previously not occupied?

ANSWER: Yes. Non-native trout were detected for the first time in seven streams. Brown trout (5); brook and rainbow (1 each). **The number of invaders was low – usually 1 or 2 fish.** Invasion did not appear to be related to burn severity.

Reaches Sampled, 2004-2013

Stream	Treatment	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Laird Creek	Debris Flow	X	X				X			X	
North Rye Creek	Debris Flow	X	X	X				X		X	
Chicken Creek	Debris Flow	X			X			X			
Sleeping Child Cr	Debris Flow	X	X	X	X	X	X	X	X	X	X
Medicine Tree Cr	Debris Flow	X	X				X	X			
Little Blue Joint Cr	High Severity	X	X						X		
Meadow Creek	High Severity							X			
Prairie Creek	High Severity	X					X			X	
Reimel Creek	High Severity	X				X			X		
Rye Creek	Moderate	X	X	X		X	X			X	

Laird Creek (debris flow reach) B4 channel, 16' bkf, partially isolated

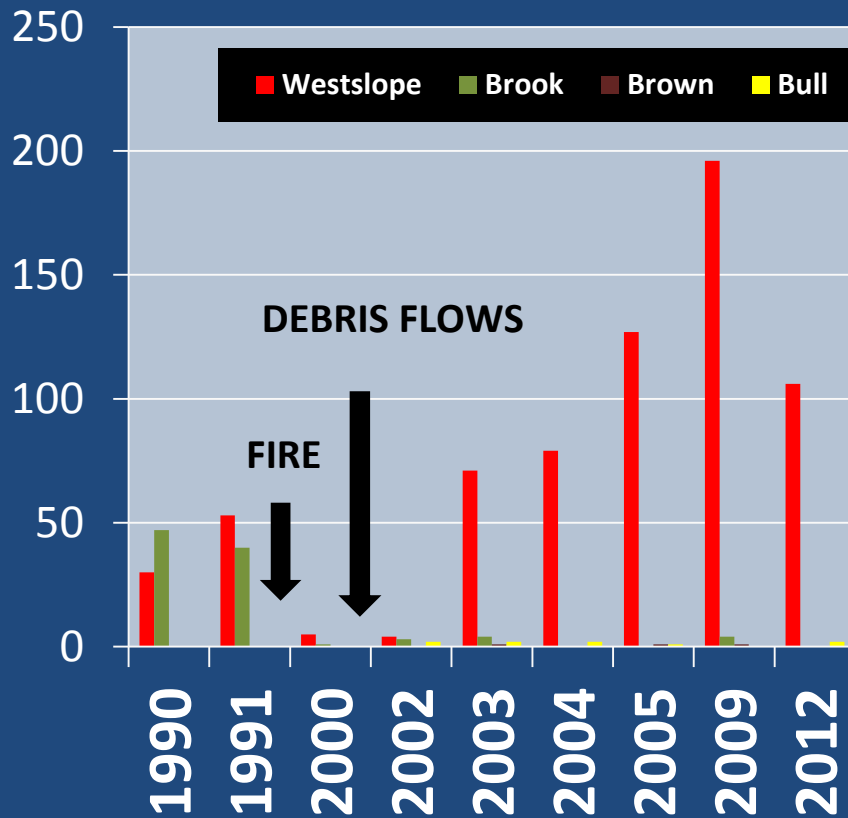


**Sleeping Child Cr (debris flow reach)
B3 channel, 35' bkf, connected**

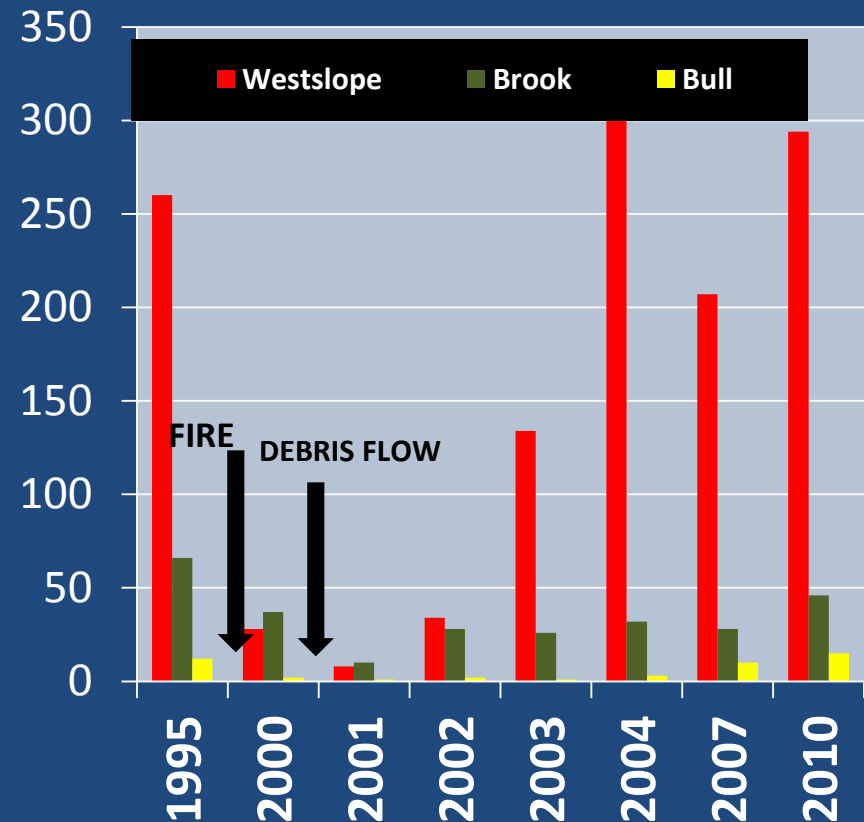


Laird and Chicken Creeks

fish > 3 inches per 700 feet

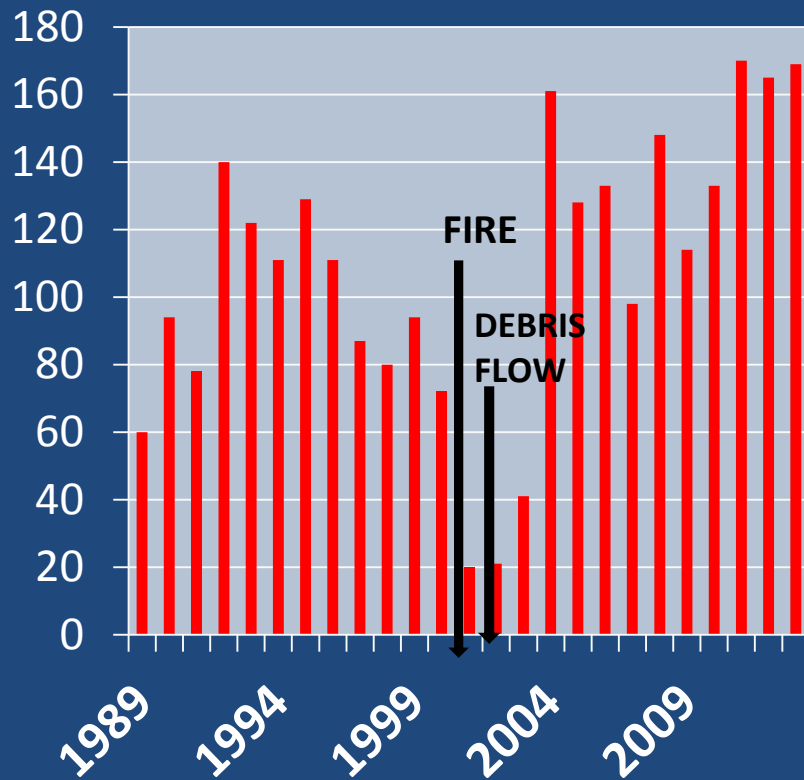


fish > 3 inches per 1000 feet

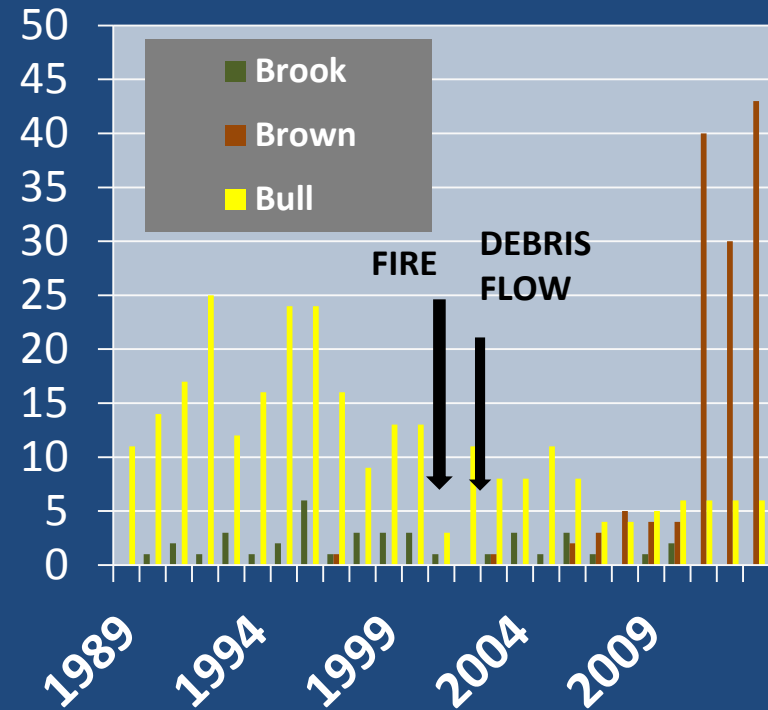


Sleeping Child Creek

westslope > 3 inches per 1000 feet

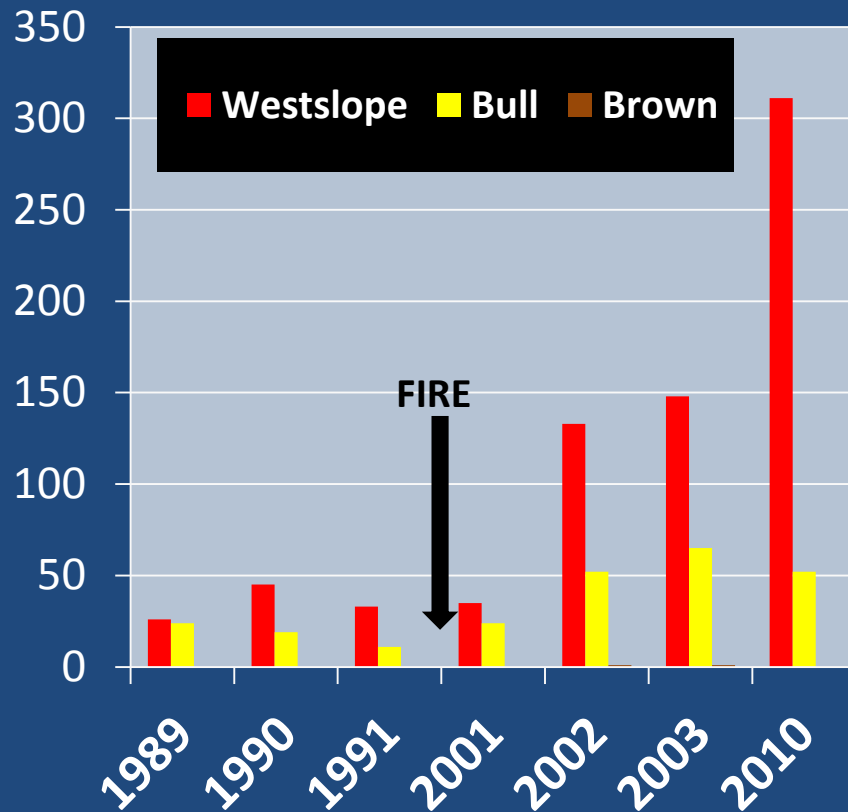


bull, brook, & brown > 3" per 1000 feet

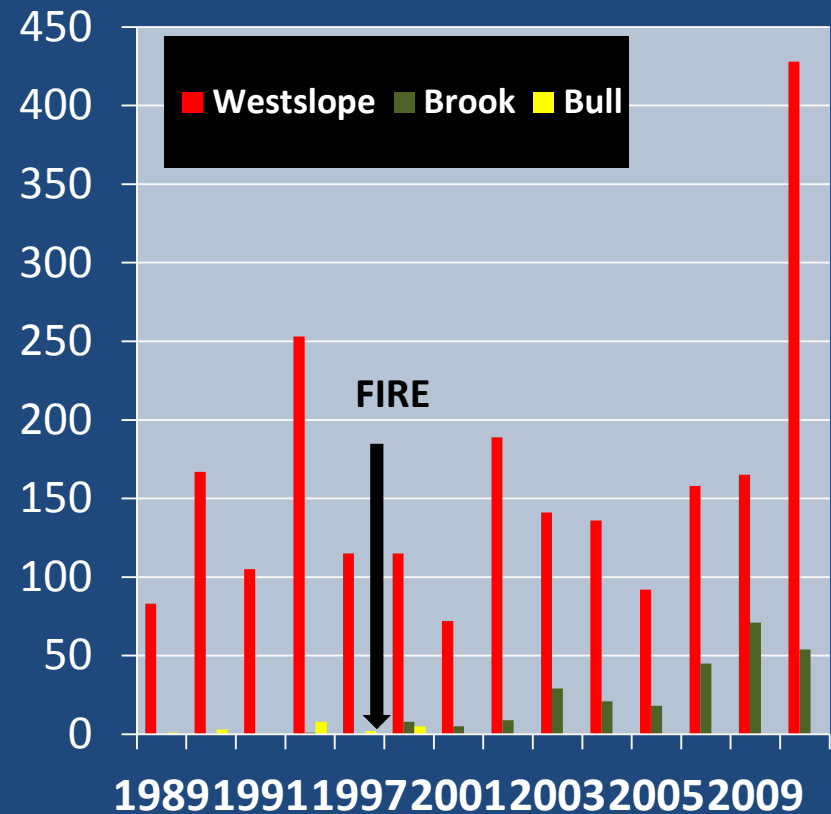


Meadow and Rye Creeks

B3 channel, 18' bkf, connected



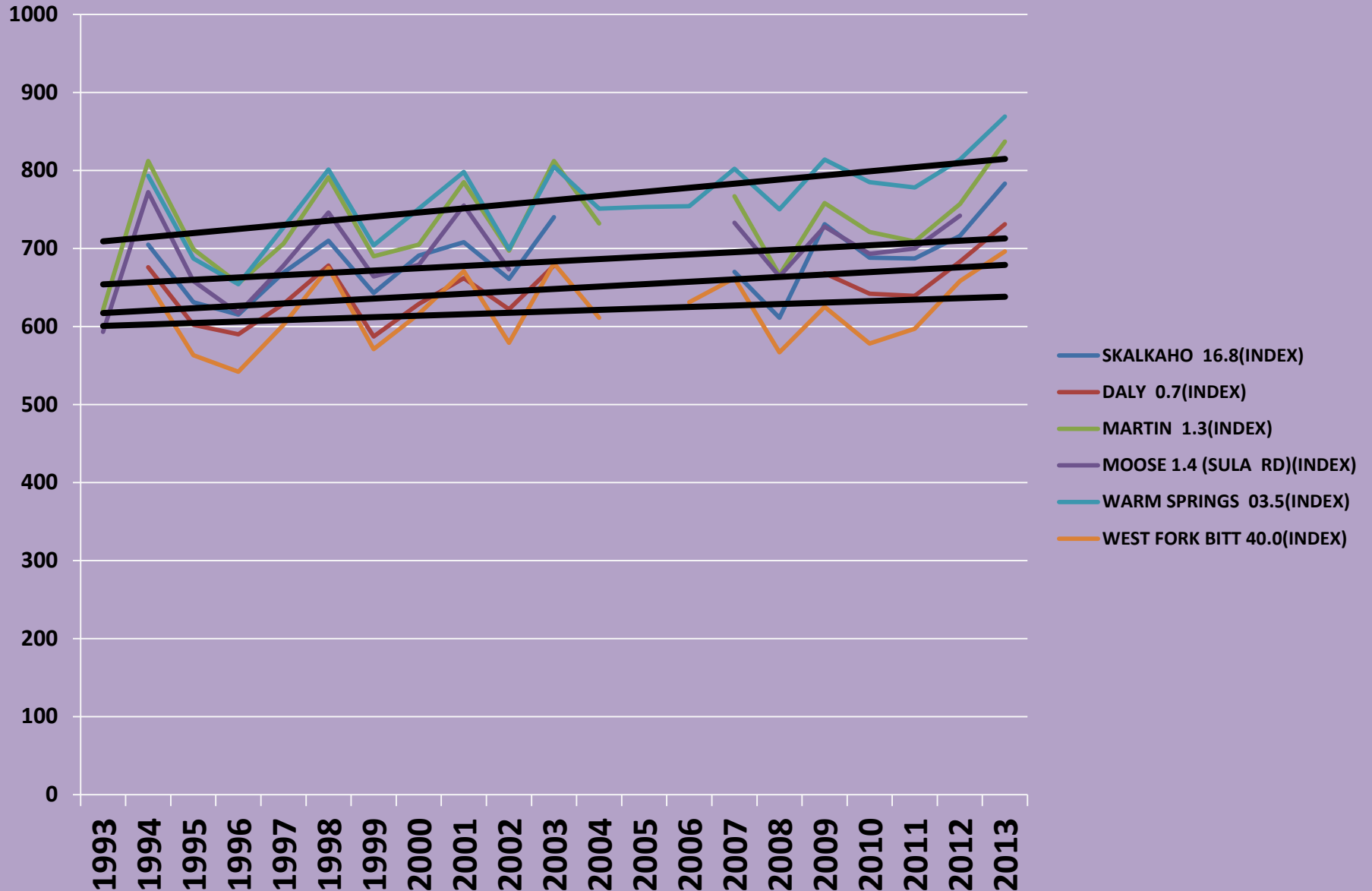
B5 channel, 15' bkf, connected



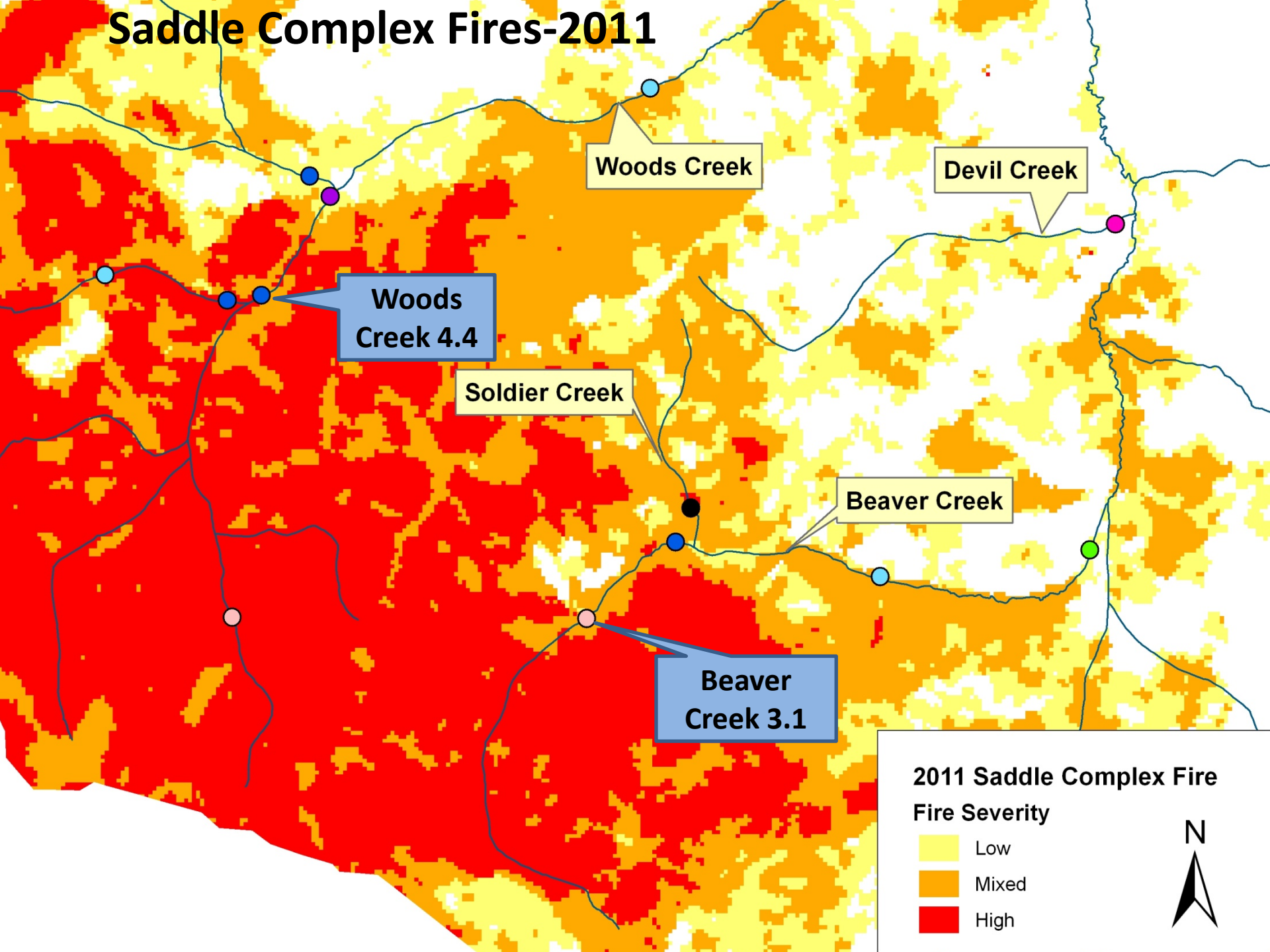
Summary of Population Changes

Stream	Treatment	Westslope	Brook	Bull	Brown
Laird Creek	Debris Flow				YES
North Rye Creek	Debris Flow			Absent	NO
Chicken Creek	Debris Flow				NO
Sleeping Child Creek	Debris Flow				YES
Medicine Tree Creek	Debris Flow		Absent	Absent	NO
Little Blue Joint Cr	High				NO
Meadow Creek	High		Absent		YES
Prairie Creek	High			Absent	NO
Reimel Creek	High			Absent	YES
Rye Creek	Moderate				NO

Degree Days at Control Sites

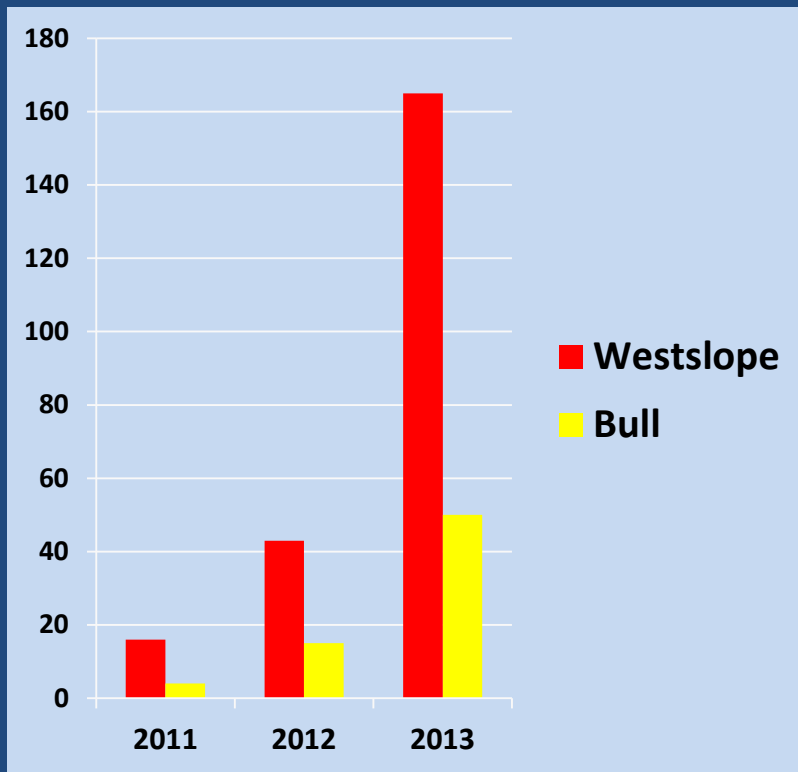


Saddle Complex Fires-2011

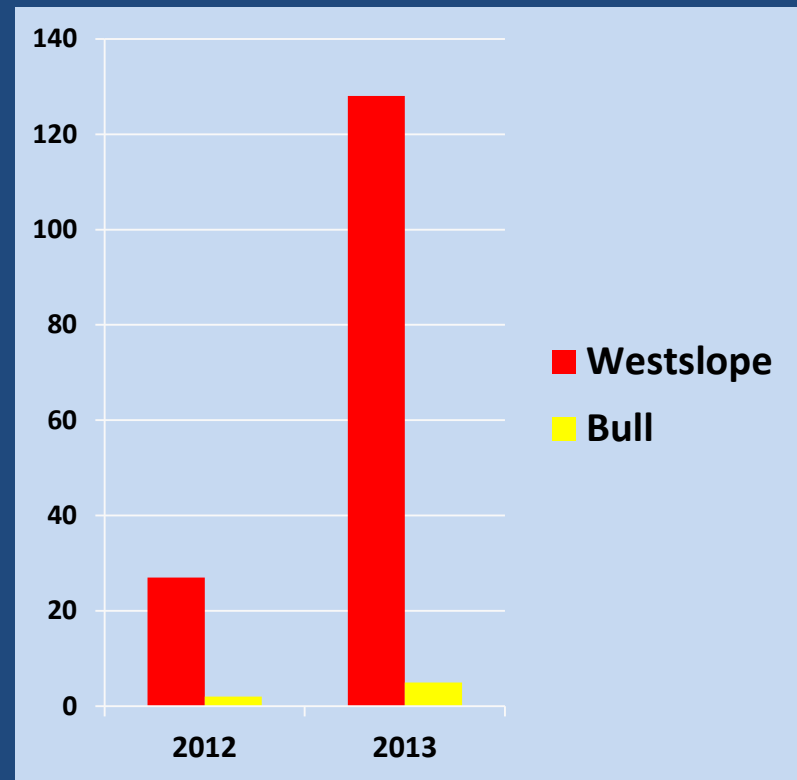


Post Fire 2011

Woods Creek 4.4

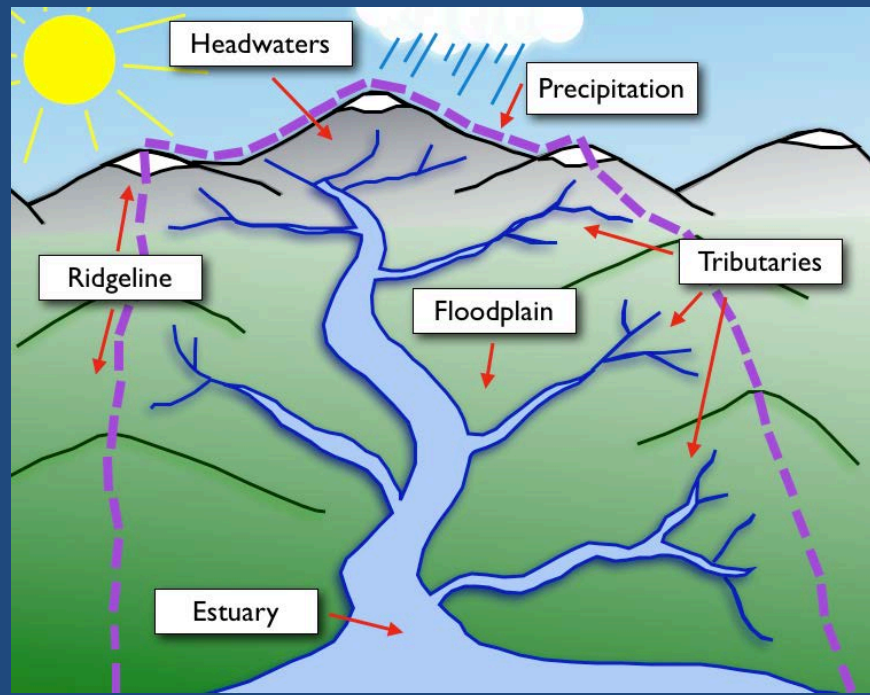


Beaver Creek 3.1



Results

- Westslope cutthroat at these elevations and latitude are telling us they can tolerate wildfire
- Bull trout are giving us a mixed message
- If water temperatures continue to warm, the story could change in the future



Key Contributors

- **Clint Sestrich, Kootenai National Forest**
- **Mike Young, Rocky Mountain Research Station**
- **Tom McMahon, Montana State University**
- **Rob Brassfield, Bitterroot National Forest**
- **Chris Clancy, MT Fish, Wildlife, and Parks**
- **Leslie Nyce, MT Fish, Wildlife, and Parks**



new fish per m/r survey

=

fish marked on marking run

plus

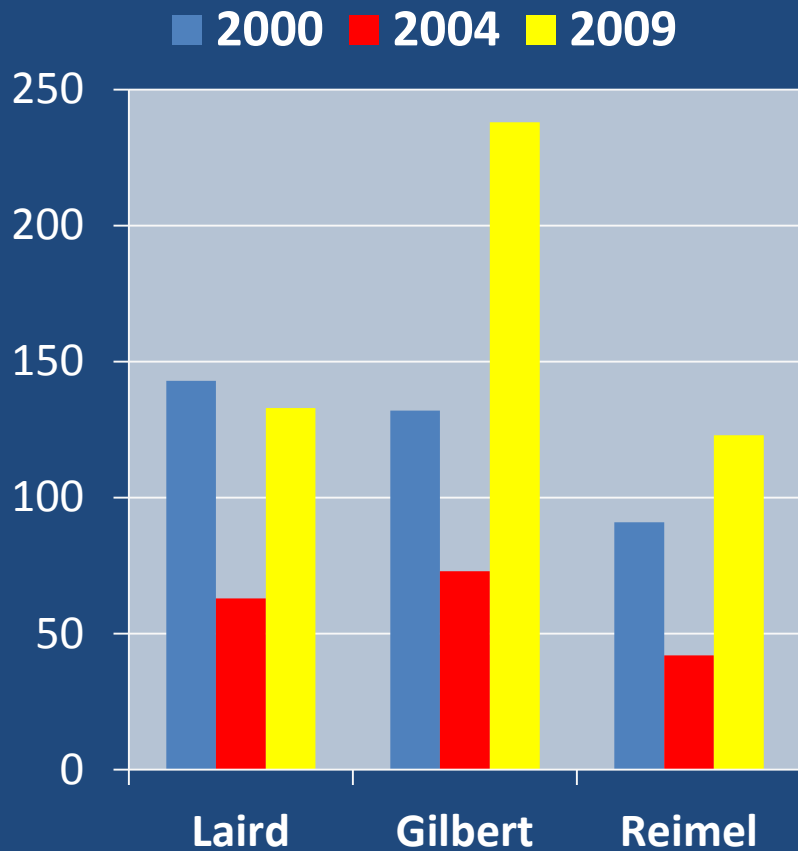
fish captured on the recapture
run

minus

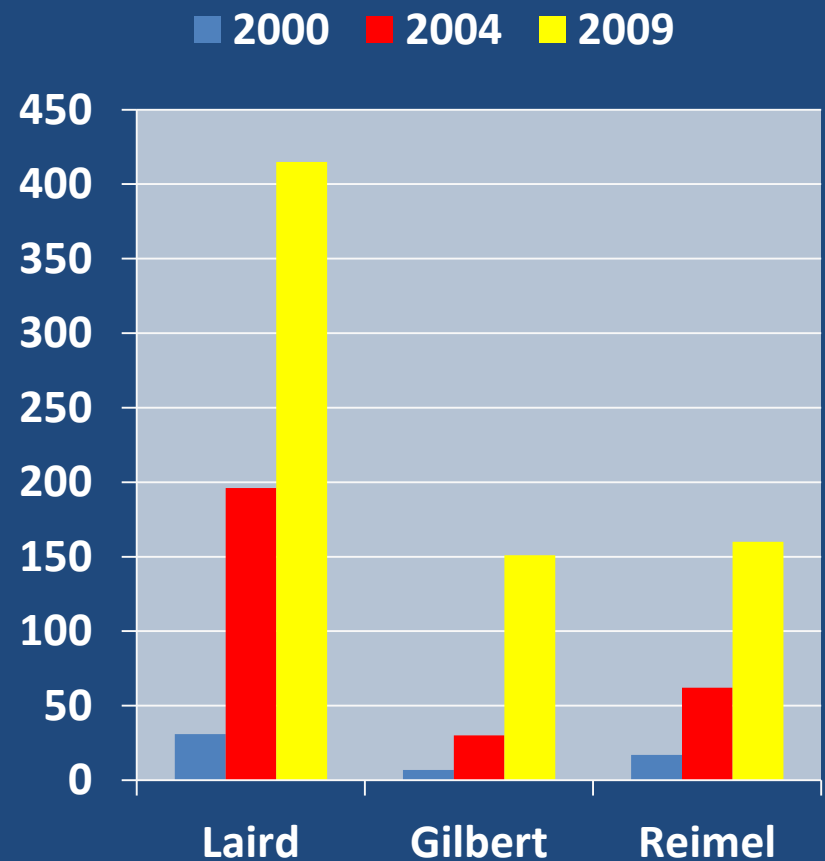
marked fish

Changes in pools and large wood over the past decade

Pools Per Mile



Large Wood Per Mile





Medicine Tree Creek Culvert Barriers

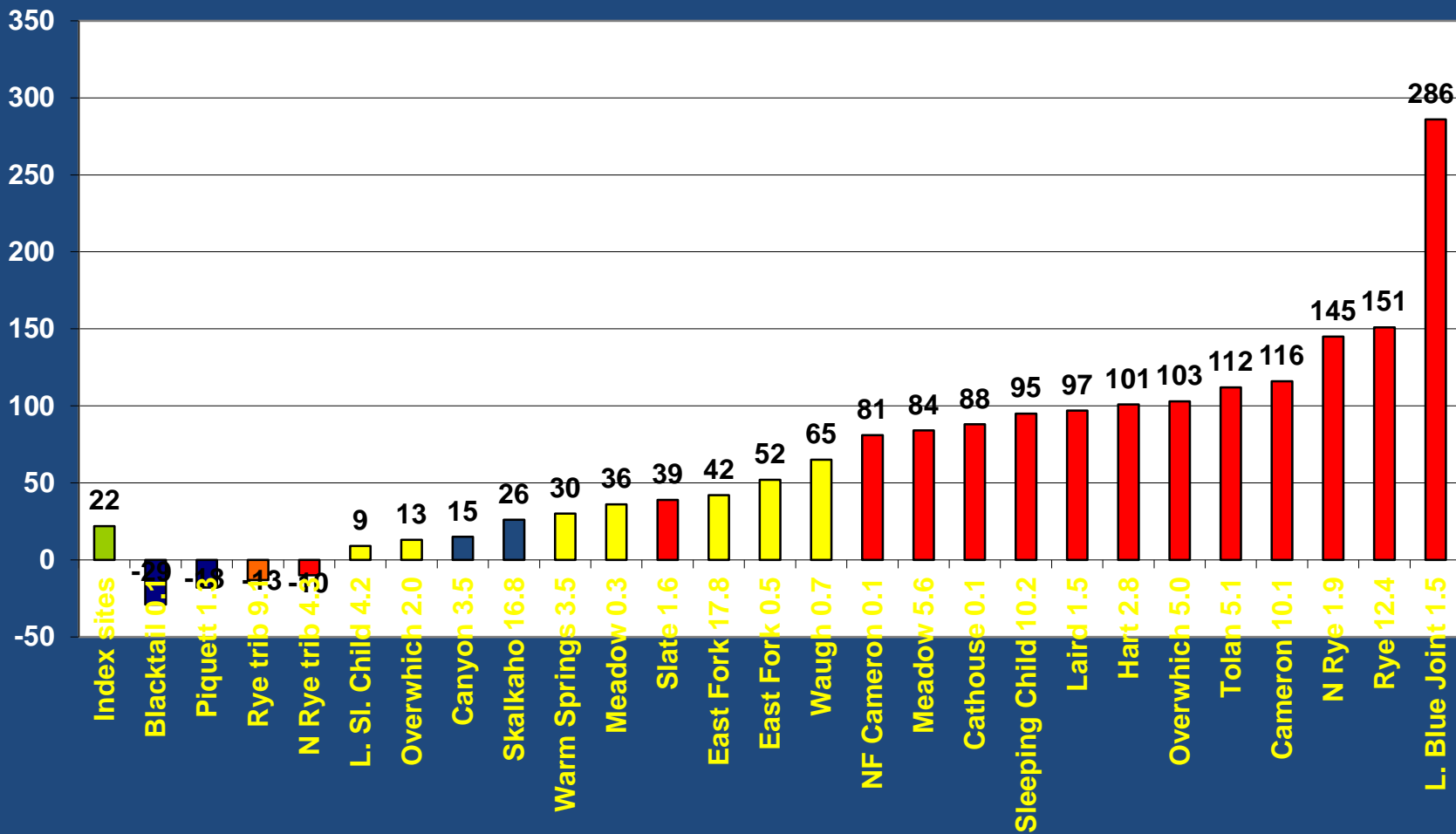


Mouth, US Hwy 93

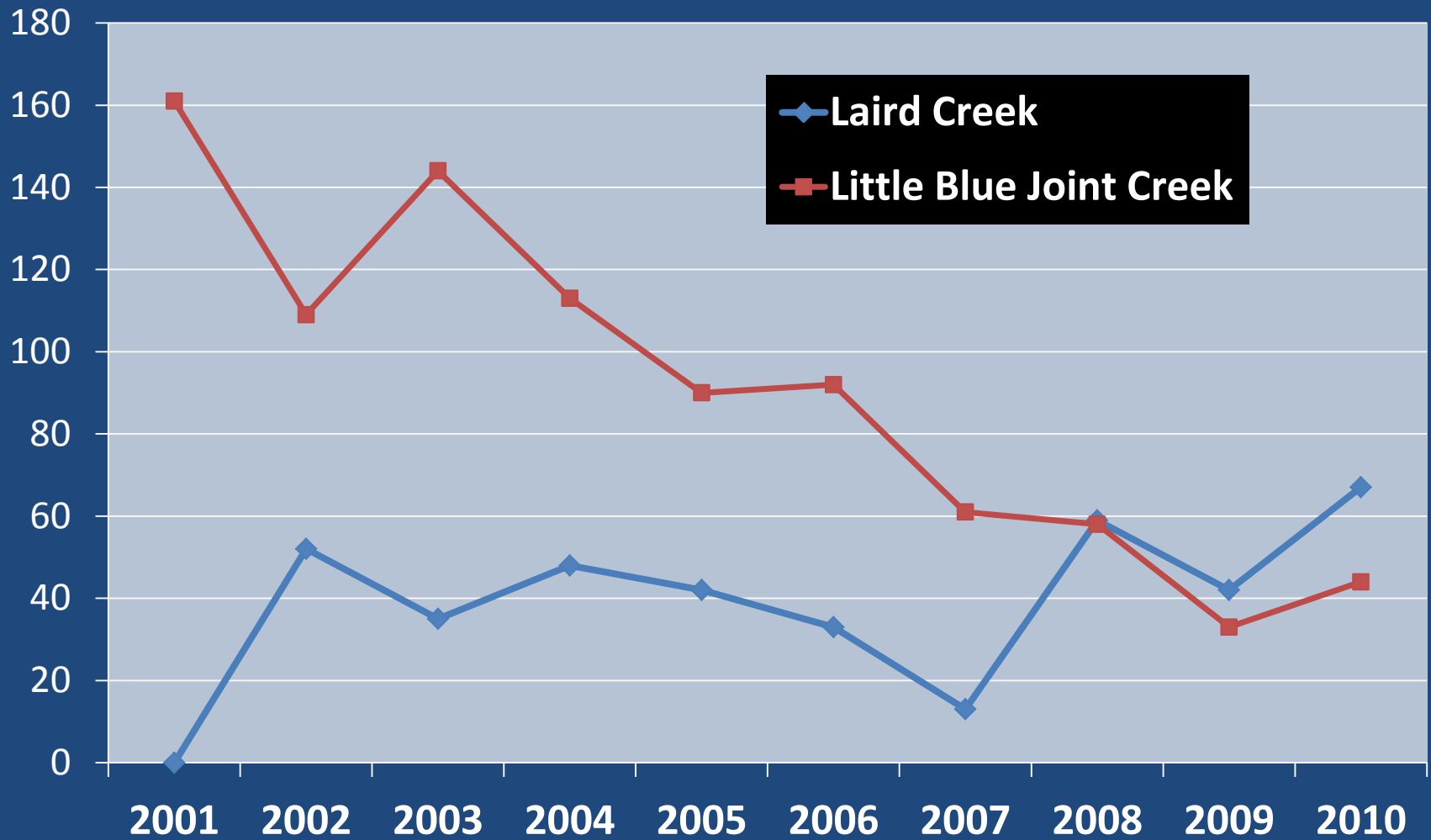


100 feet above mouth

Change in Degree Days in Burned Streams (2001-2005)



Temperature recovery over the past decade in two high severity streams



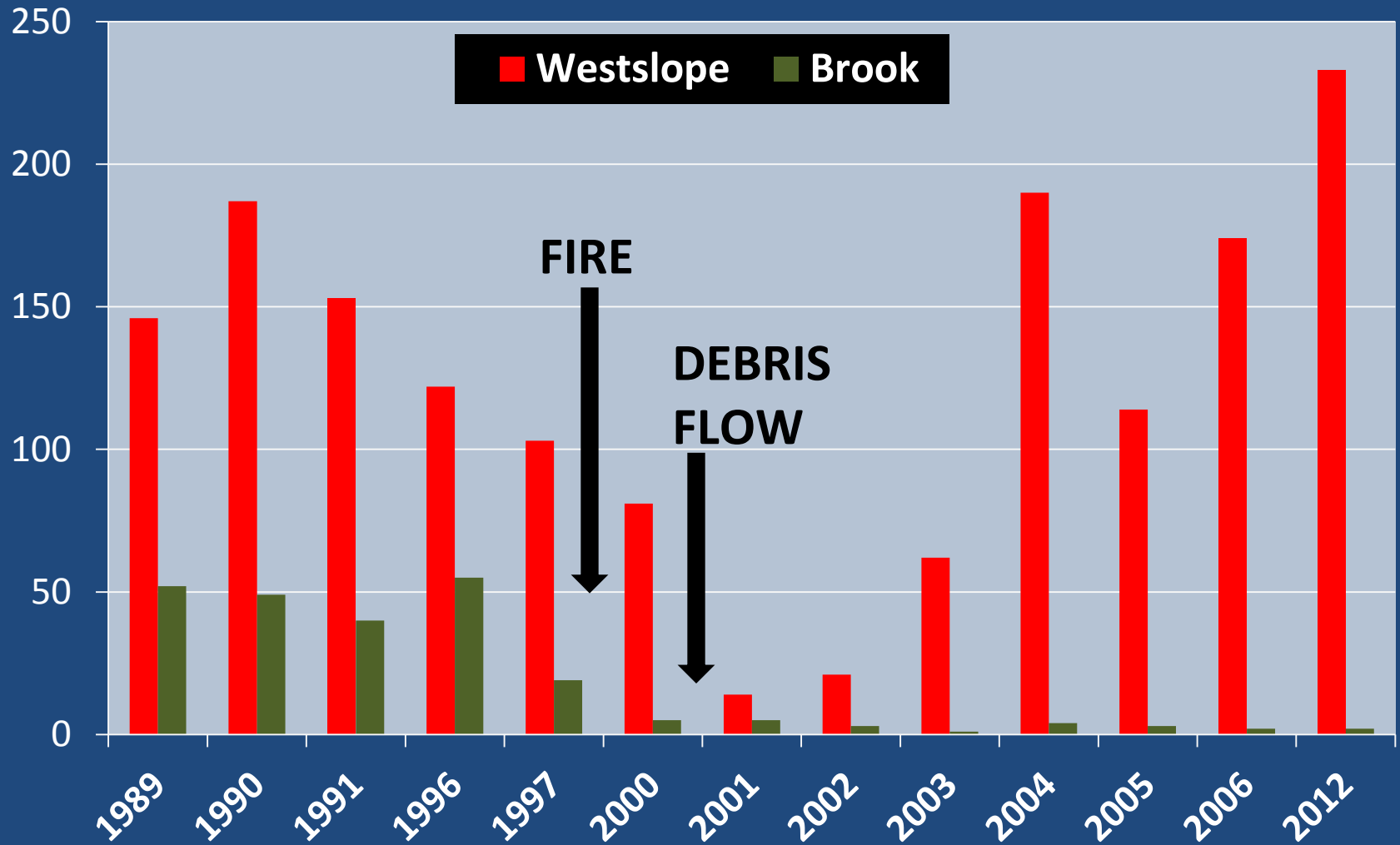
**North Rye Creek (debris flow reach)
B4 channel, 14' bkf, fragmented**



09.16.2008 10:37

North Rye Creek

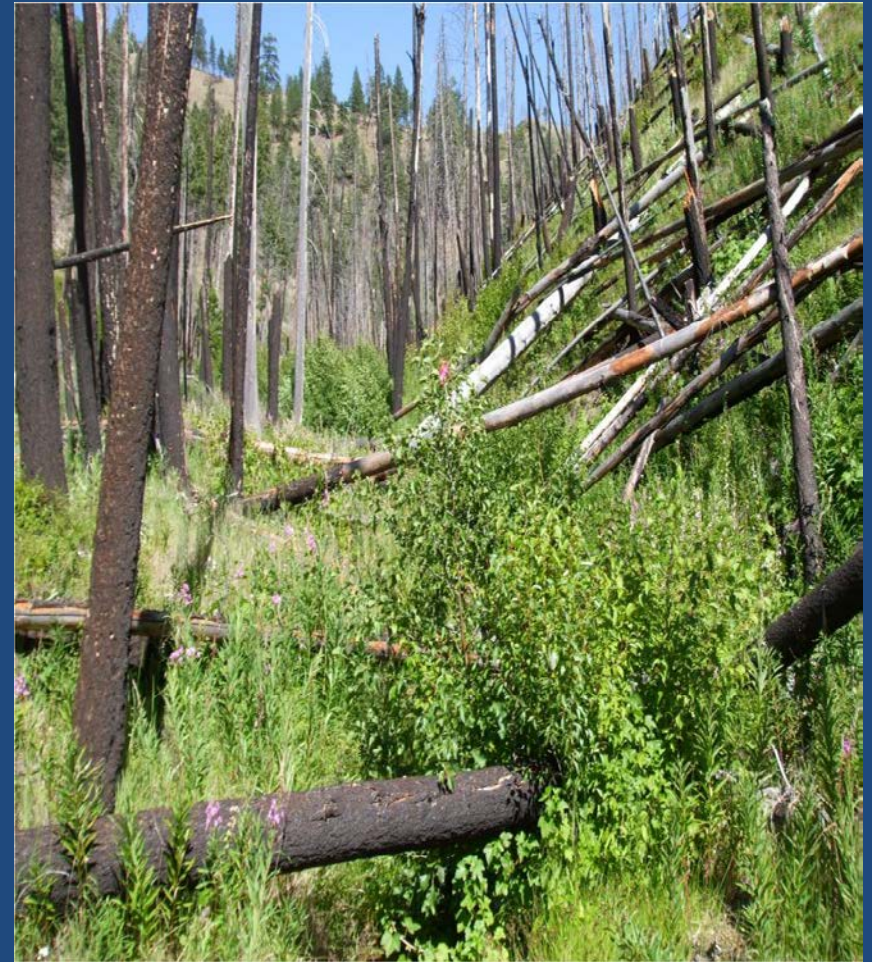
fish > 3 inches per 800 feet



Medicine Tree Cr (debris flow reach) B5 channel, 5' bkf, isolated



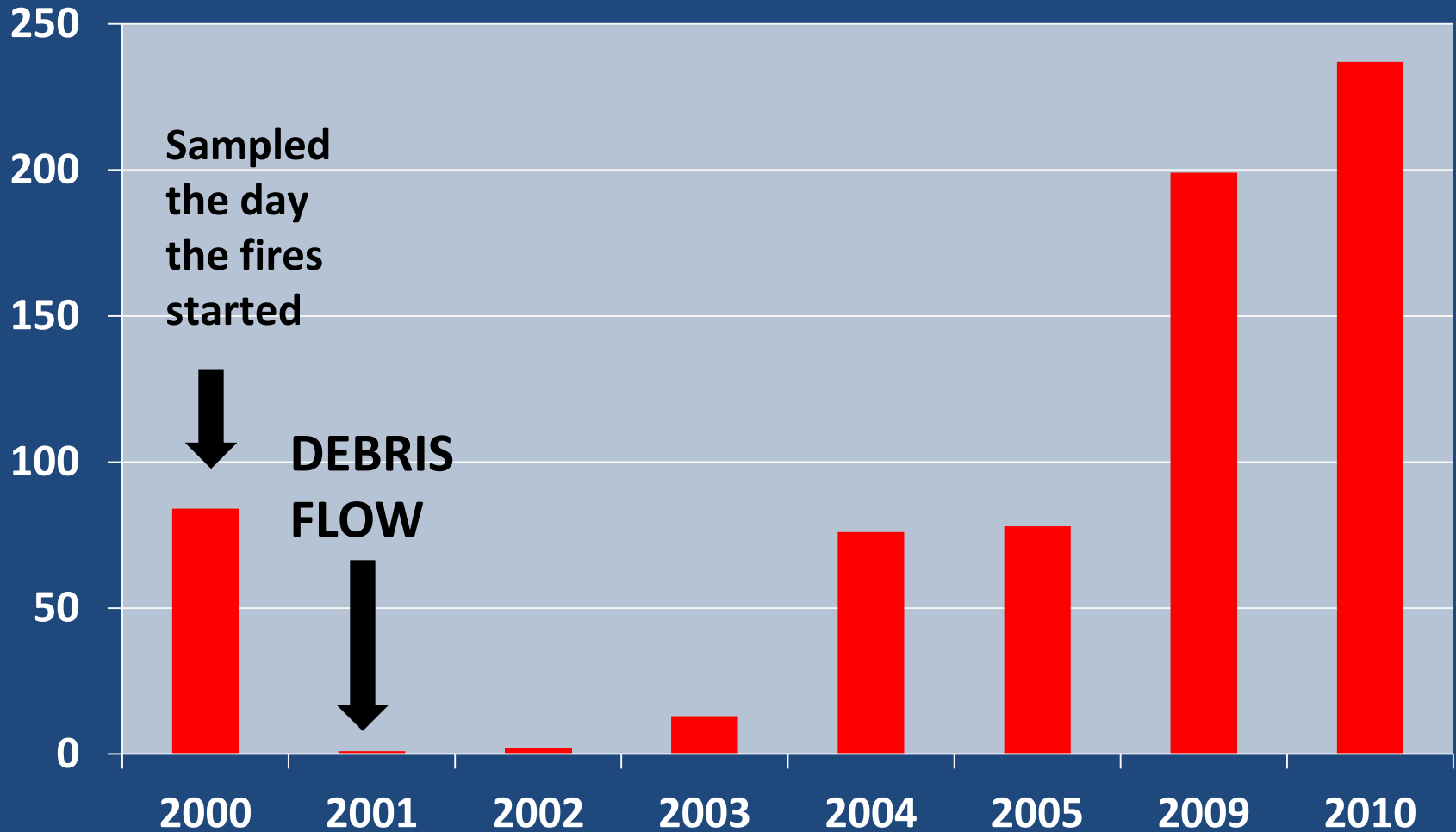
2000



2010

Medicine Tree Creek

westslope > 3 inches per 1000 feet



Little Blue Joint Cr (high severity reach) B4 channel, 12' bkf, connected



2000



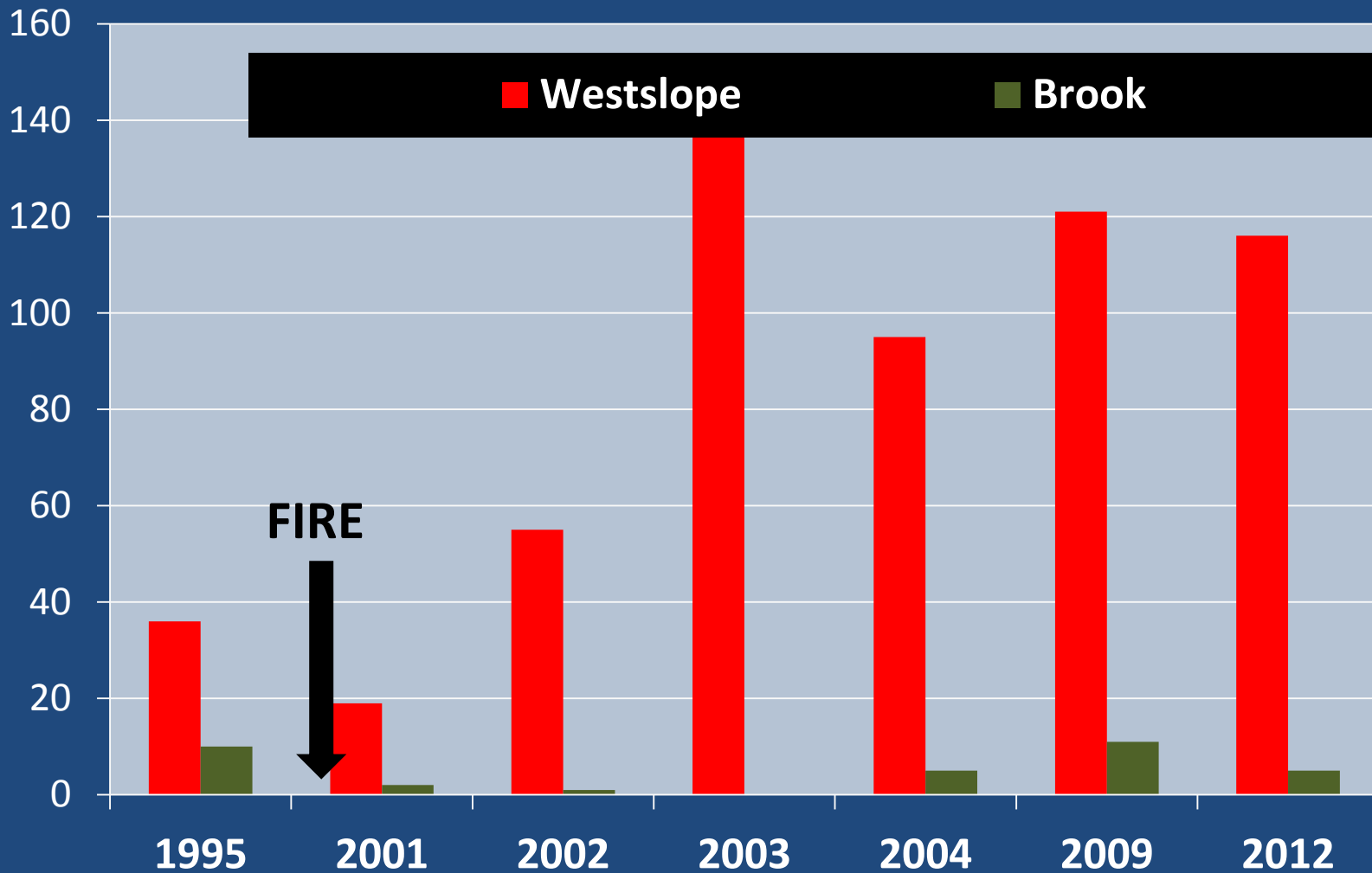
2008

**Praine Creek (high severity reach)
B4 channel, 8' bkf, partially isolated**



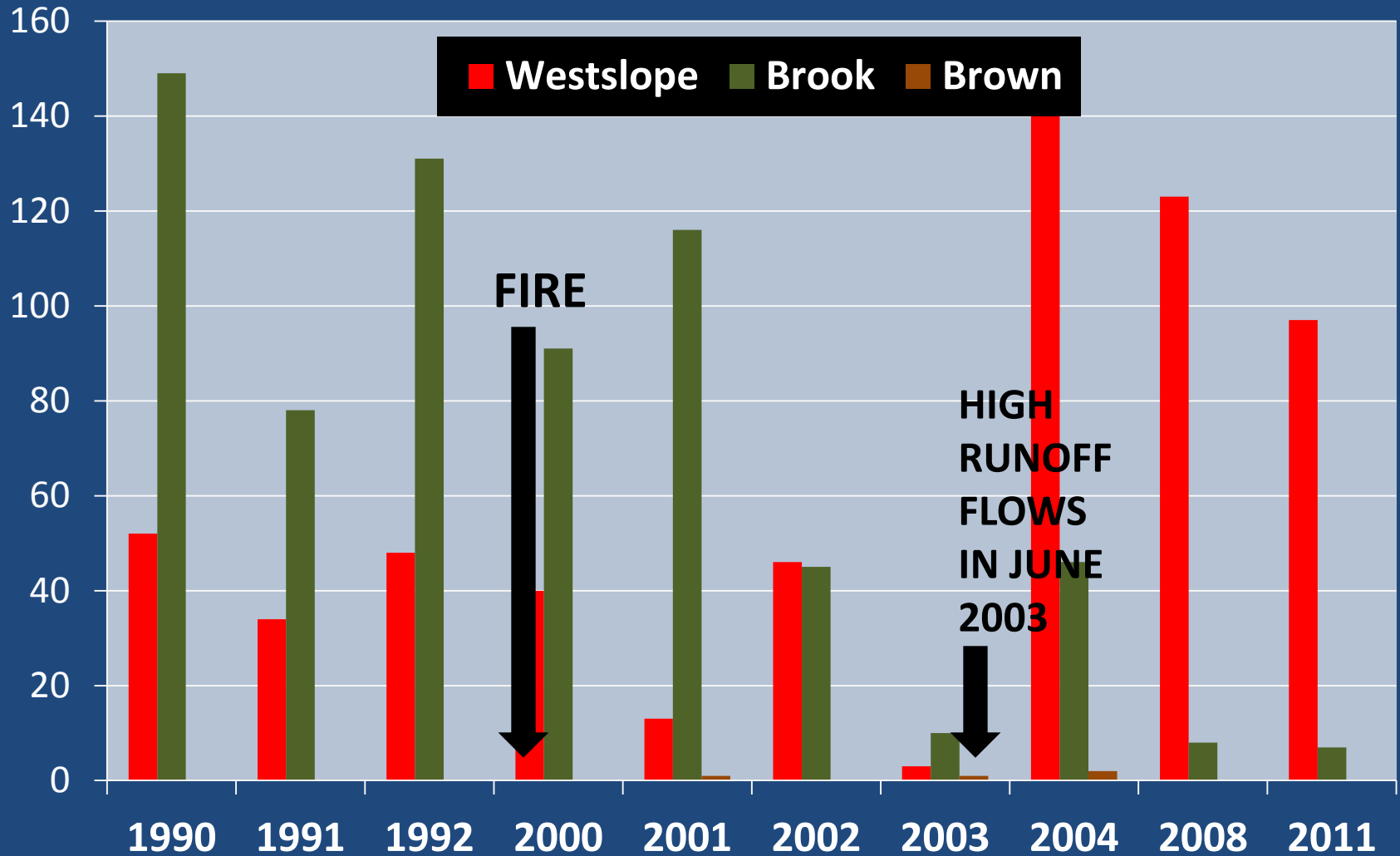
Praine Creek

fish > 3 inches per 400 feet



Reimel Creek

fish > 3 inches per 600 feet



**Reimel Creek (high severity reach)
C4 channel, 8' bkf, isolated**

