
W. Br. Farmington
Sampling 2009

1)What the sample number looked like for this year

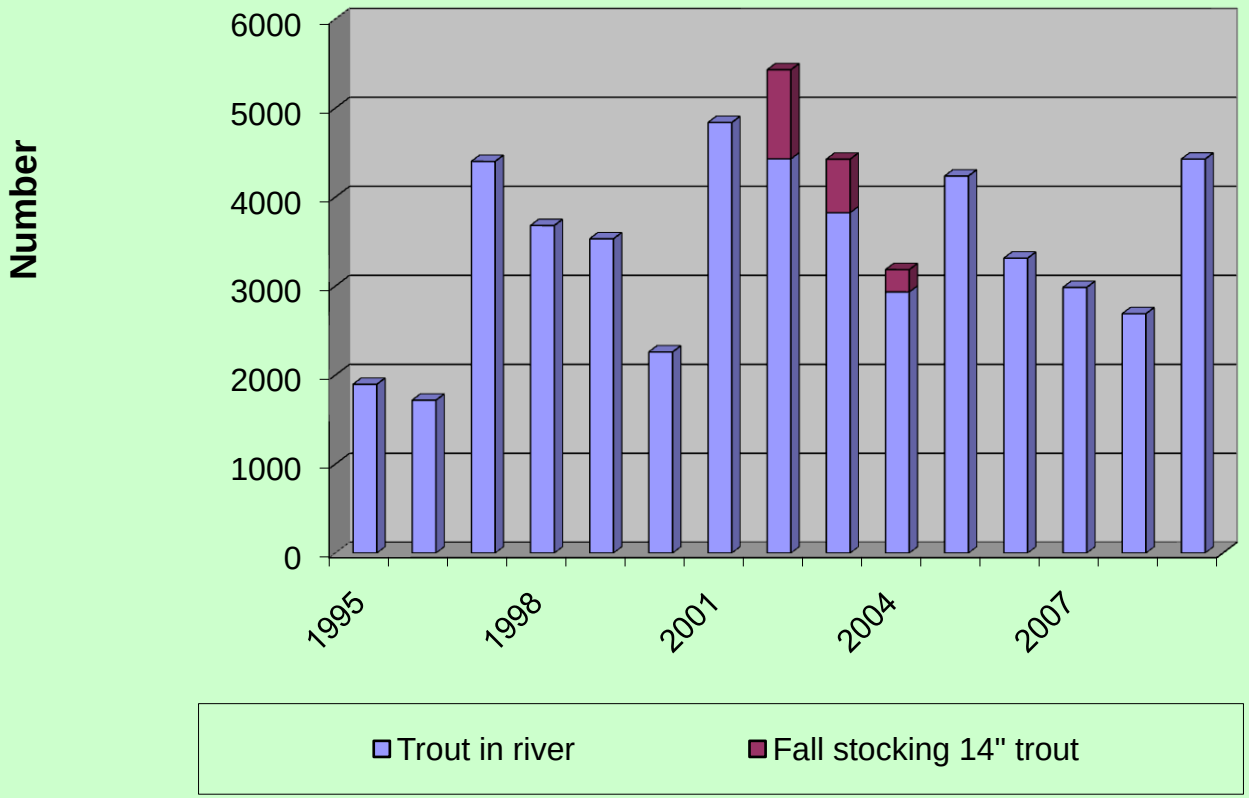
Highlights:

-Found more wild yearling and age 0 fish.

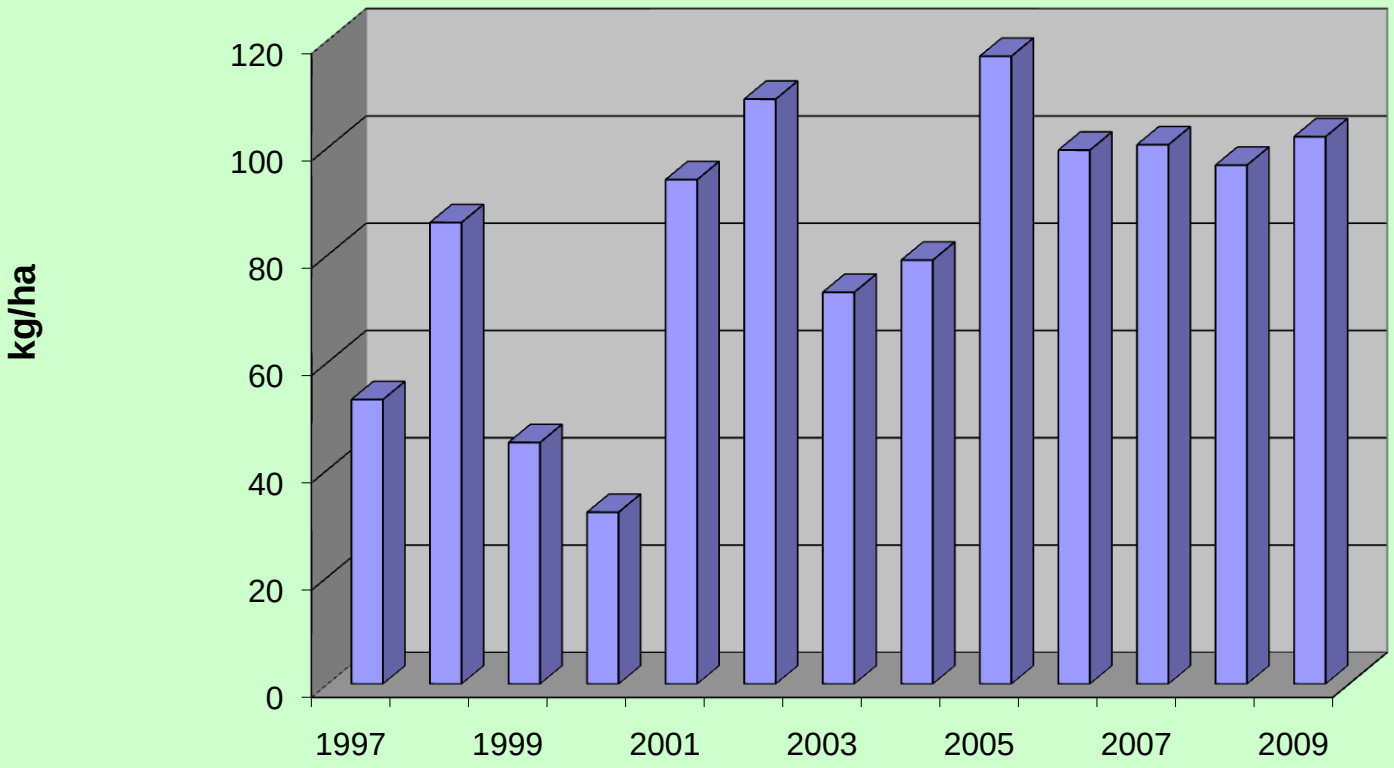
-good flows for much of summer and fall 2009


25% of trout sampled >13"
15% of trout sampled > 16"
24% of trout>16 " were wild fish

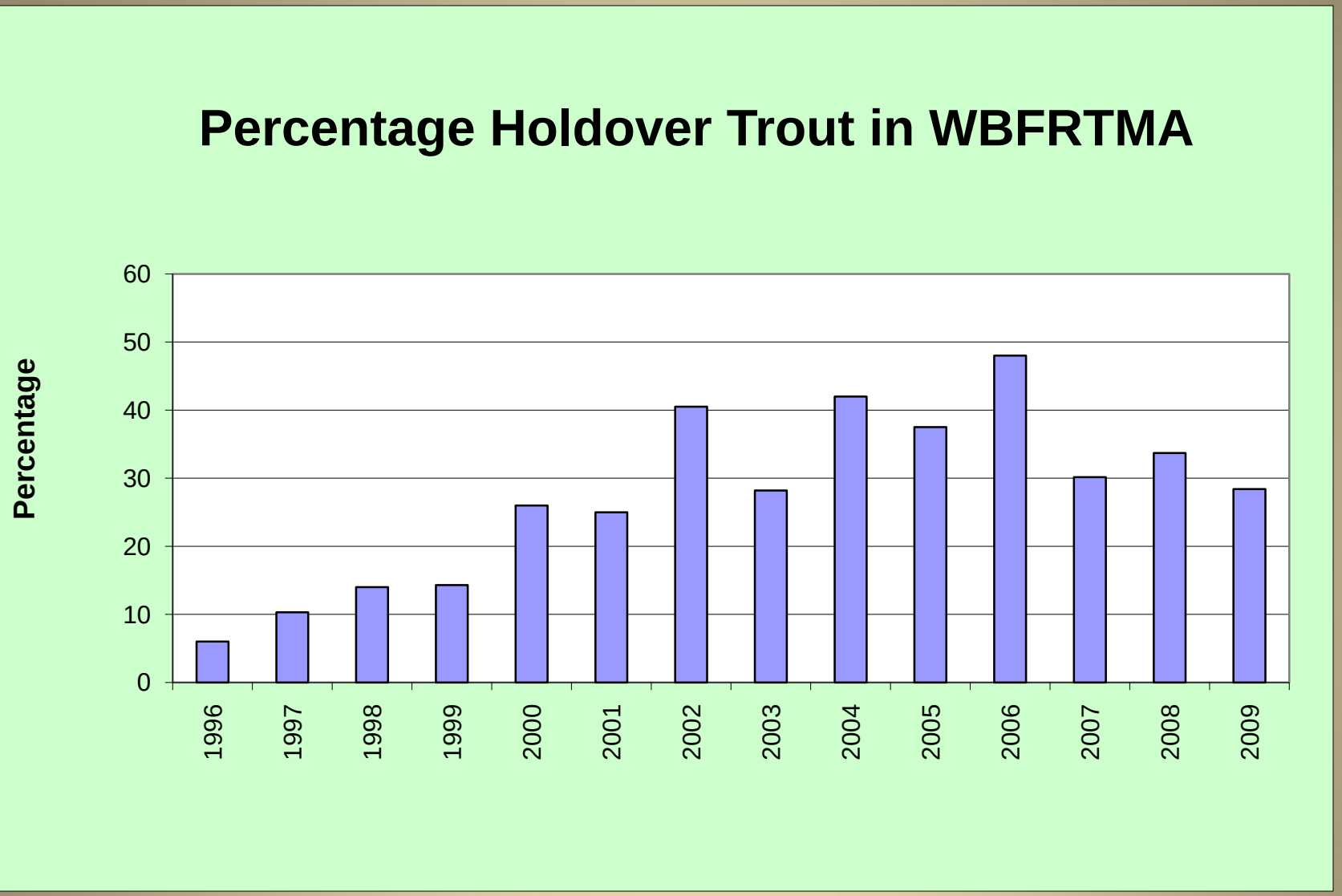
Fall Trout Numbers in WBFRTMA



Total numbers of trout sampled were up this year

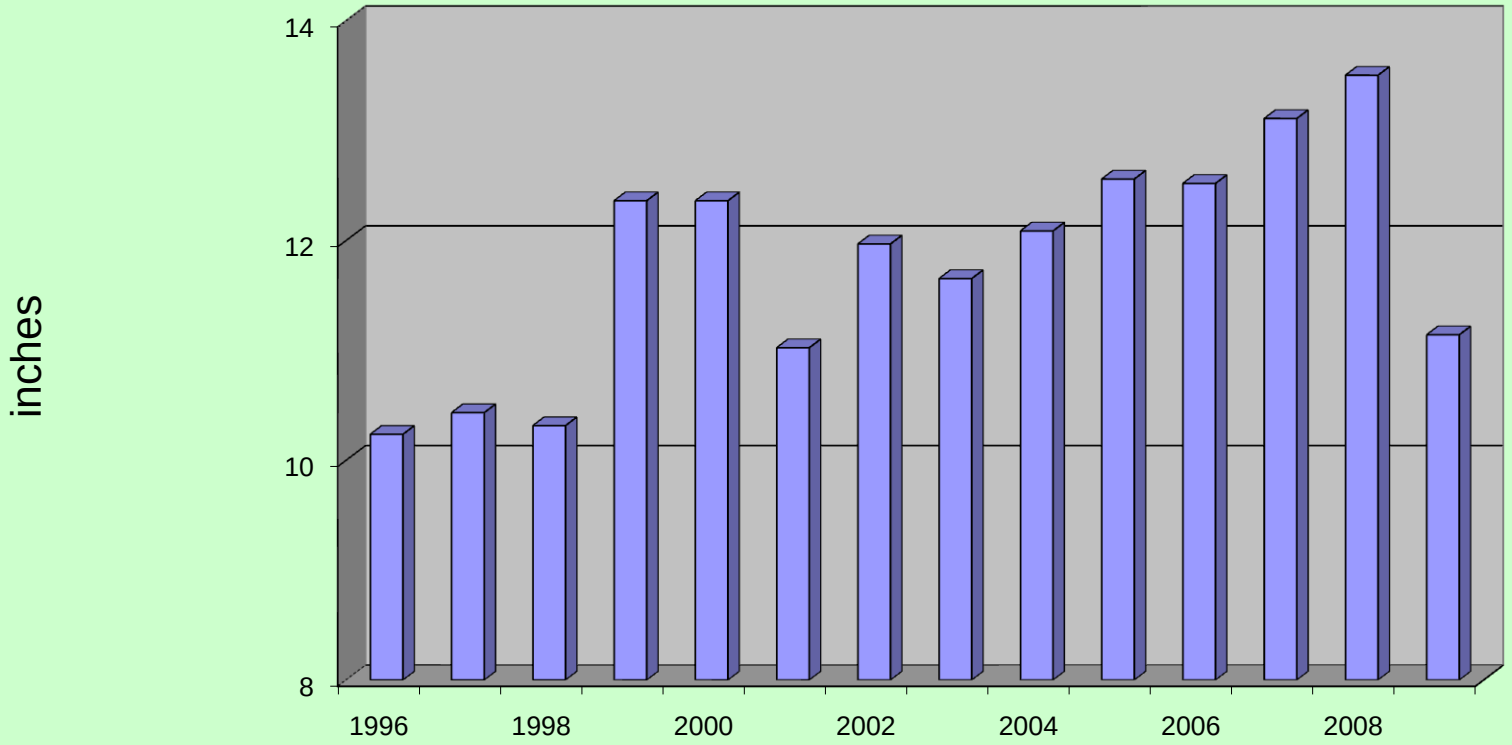


The total weight of fish in the TMA was similar to last year.



The percentage of holdover trout holding steady

Average Size of Trout in Fall Samples



The average size of fish decreased to11 inch due to large numbers of wild brown yearlings.

Large survivor browns

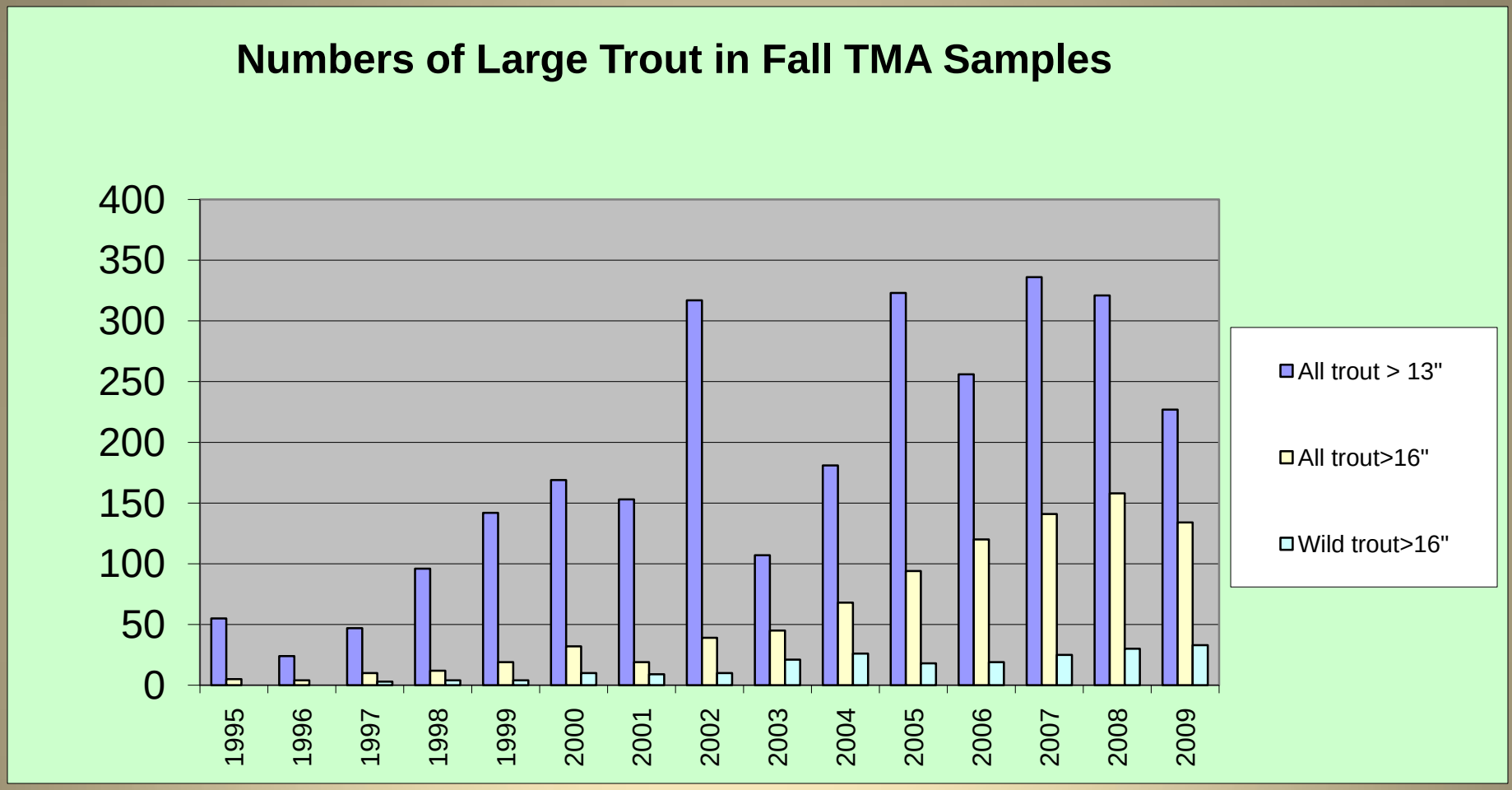
- The large survivor Browns have been Stocked from 2002-2009.
- From 2002-2005 these fish average 14inches at stocking
- The 2006-2009 Fish average 16 inches at stocking- some fish topped 18 inches.
- The 2009 Cohort survival was ok to the fall

How are the large survivor brown trout doing?

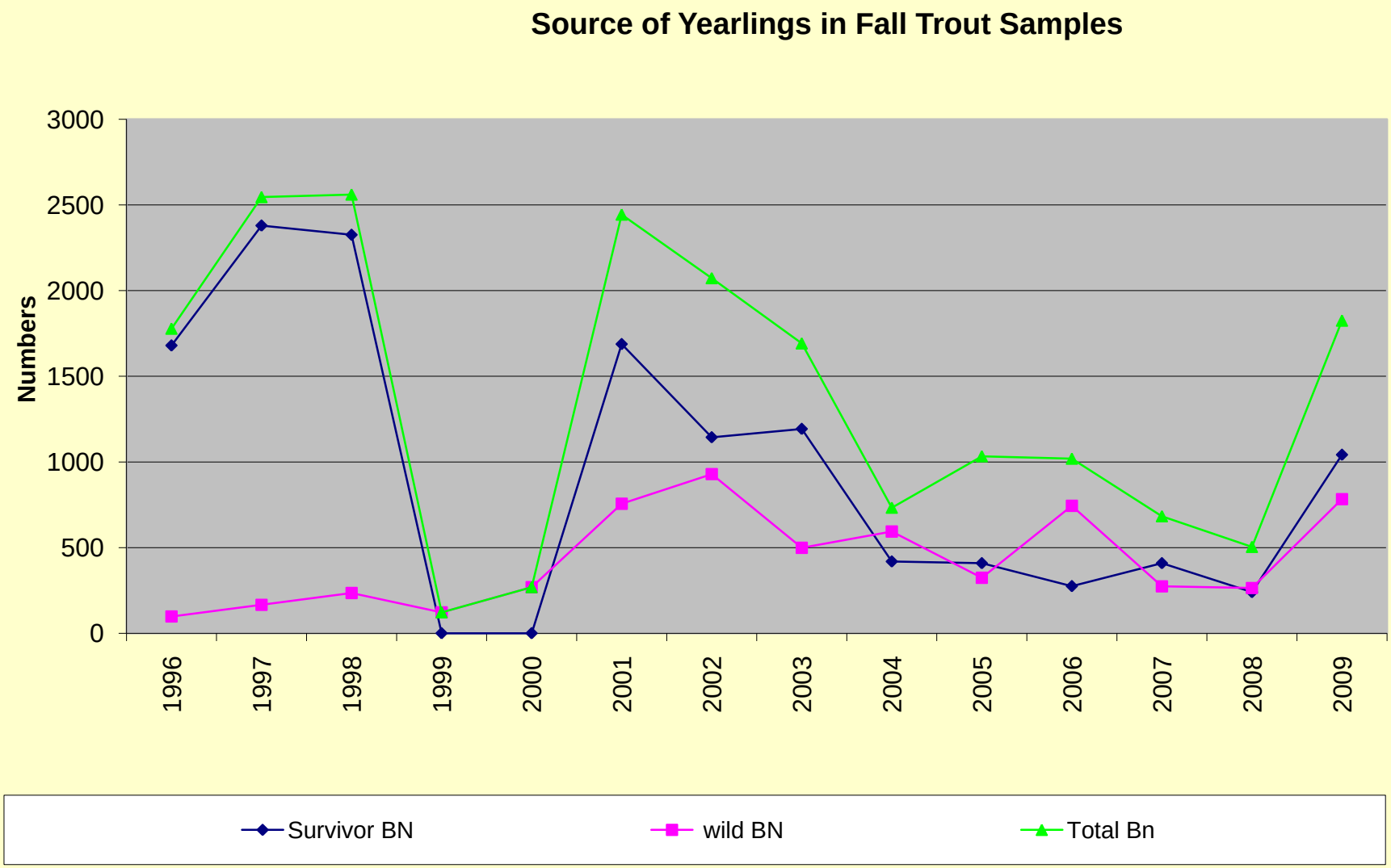
Spring stocked	Estimated number left at Fall Population sampling					
Big Fish Cohorts	2004	2005	2006	2007	2008	2009
2004-Yellow eye	345	90	105	25	0	
2005-Red eye		579	140	2	0	
2006-Green eye			444	67	25	20
2007-Blue eye				539	95	55
2008-Yellow eye					813	115
2009-Red eye						**499**
Totals	345	669	689	633	933	**689**
Survival		11.8%	33.7%	18.7%	13.4%	29.2%

The large browns average 16 1/2 inches in length.

There was little or no growth since stocking



We estimated there were 670 trout over 16 inches in the TMA at the fall sampling, 1 every 25 ft.



We got a bounce in yearling brown trout numbers

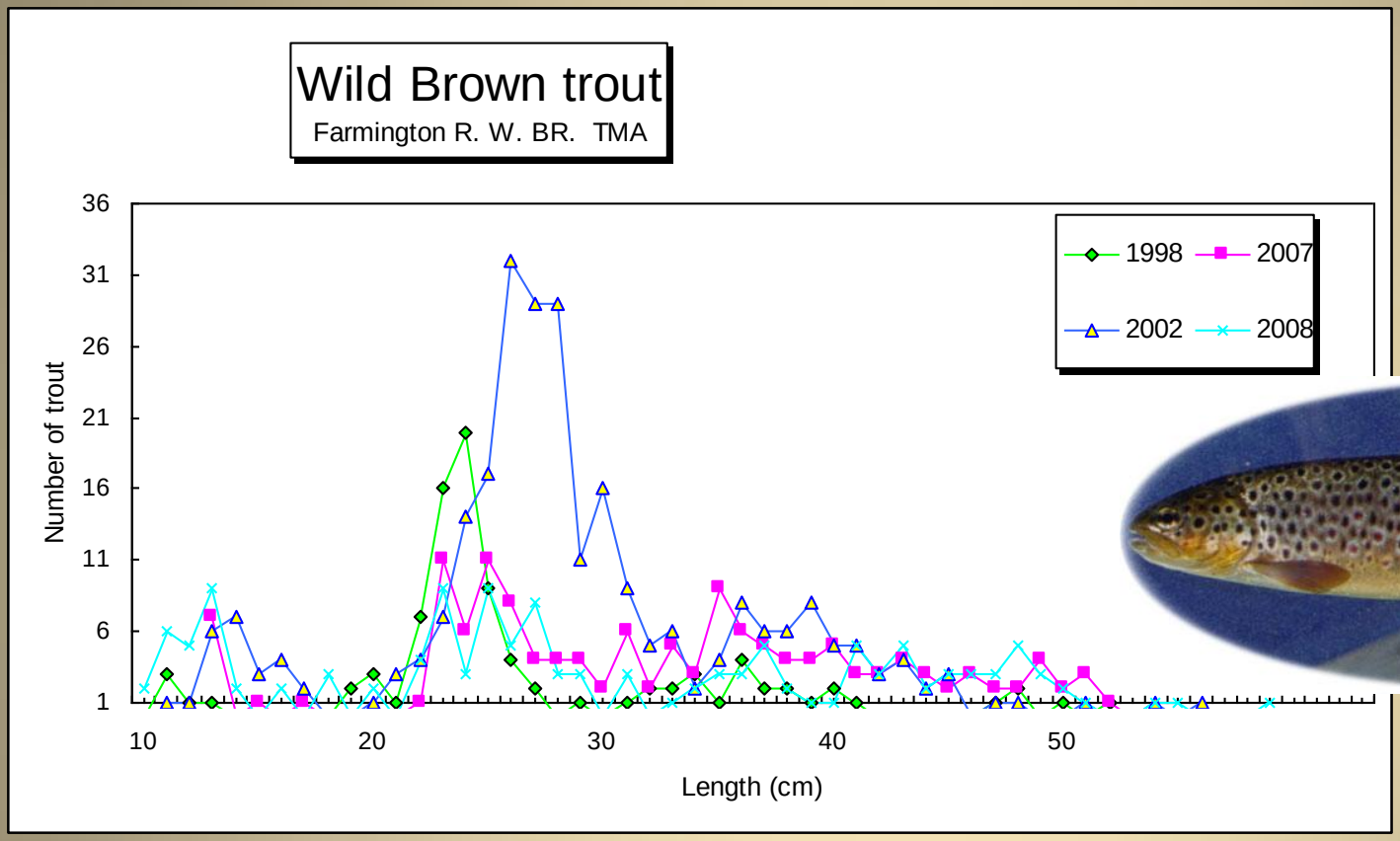
Other topics

Where the Wild Trout Are:

Historical sources-FRAA?

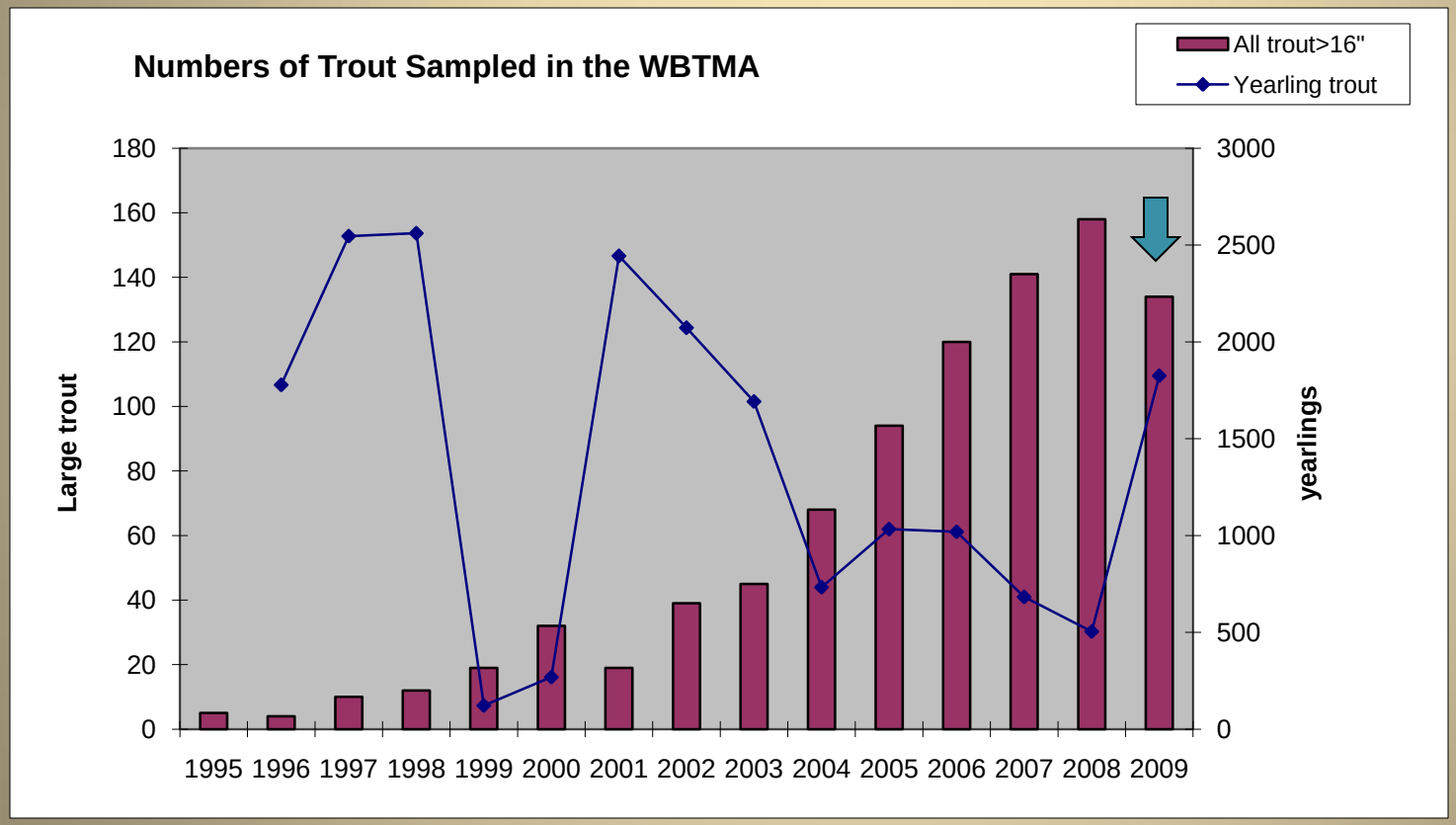
- Wild browns:
  - Genes flow and selection
  - Factors effecting spawning
- Redd surveys
- How to improve catch rates

What is happening to wild browns ?

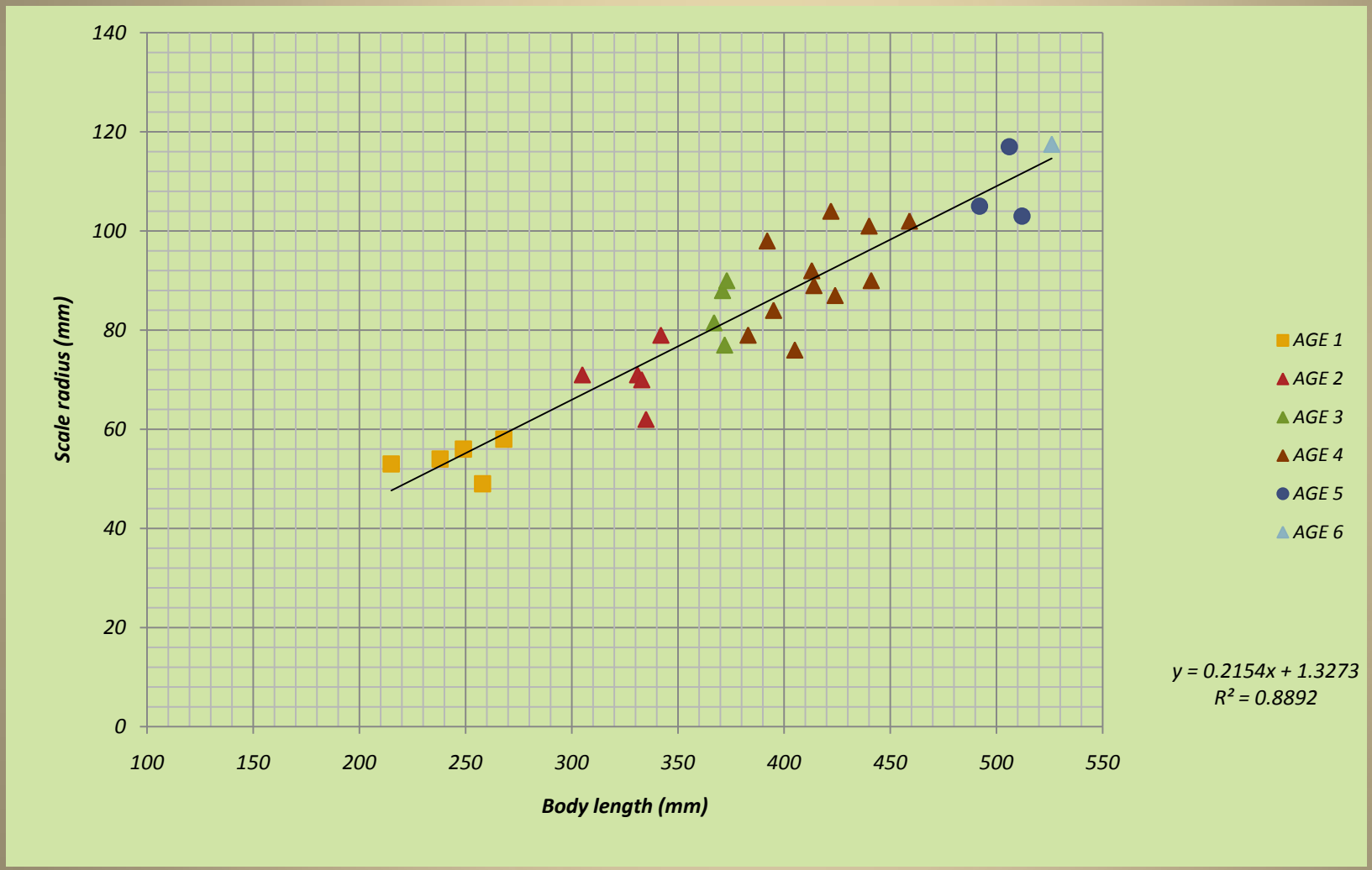


What controls the success of
the wild brown population?
Predation?Survival?Growth?Reproduction?

Had been thinking the big browns were eating the smaller trout. But that may not be all…



We looked at the wild browns age structure



Using the age structure we estimated growth rates and survival rates.

wild brown trout

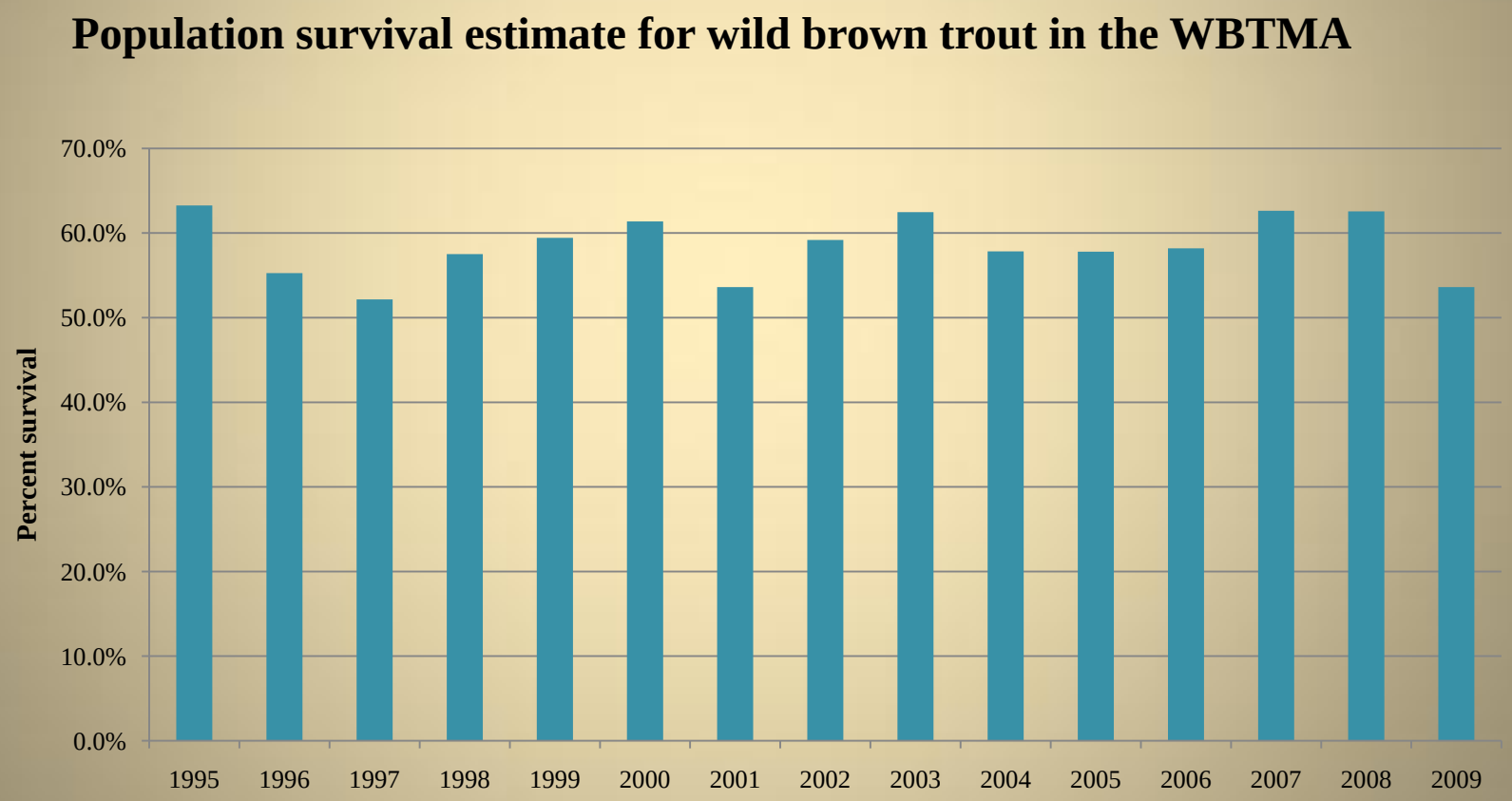
Length(cm)	Age 1-2nd fall	Age 2-3rd fall	Age 3- 4th fall	Age 4-5th fall	Age 5-6th fall
Wild brown trout	22.8	31.7	36.9	43.4	48.6

For comparison

Survivor strain brown trout by size at stocking

Length at stocking (cm)	At 1st fall	At 2nd fall	At 3rd fall	At 4th fall	At 5th fall	At 6th Fall
Yearlings	26.8	33.5	40.5	41.4	45.3	47.6
Large (14< inches)	41.2	41.8	42.8	45.0		

Checked the survival rates of the wild browns- looks good



Where are they spawning

Redd Surveys:

04-09 The survey crews worked from UpCountry to the Gas Line.

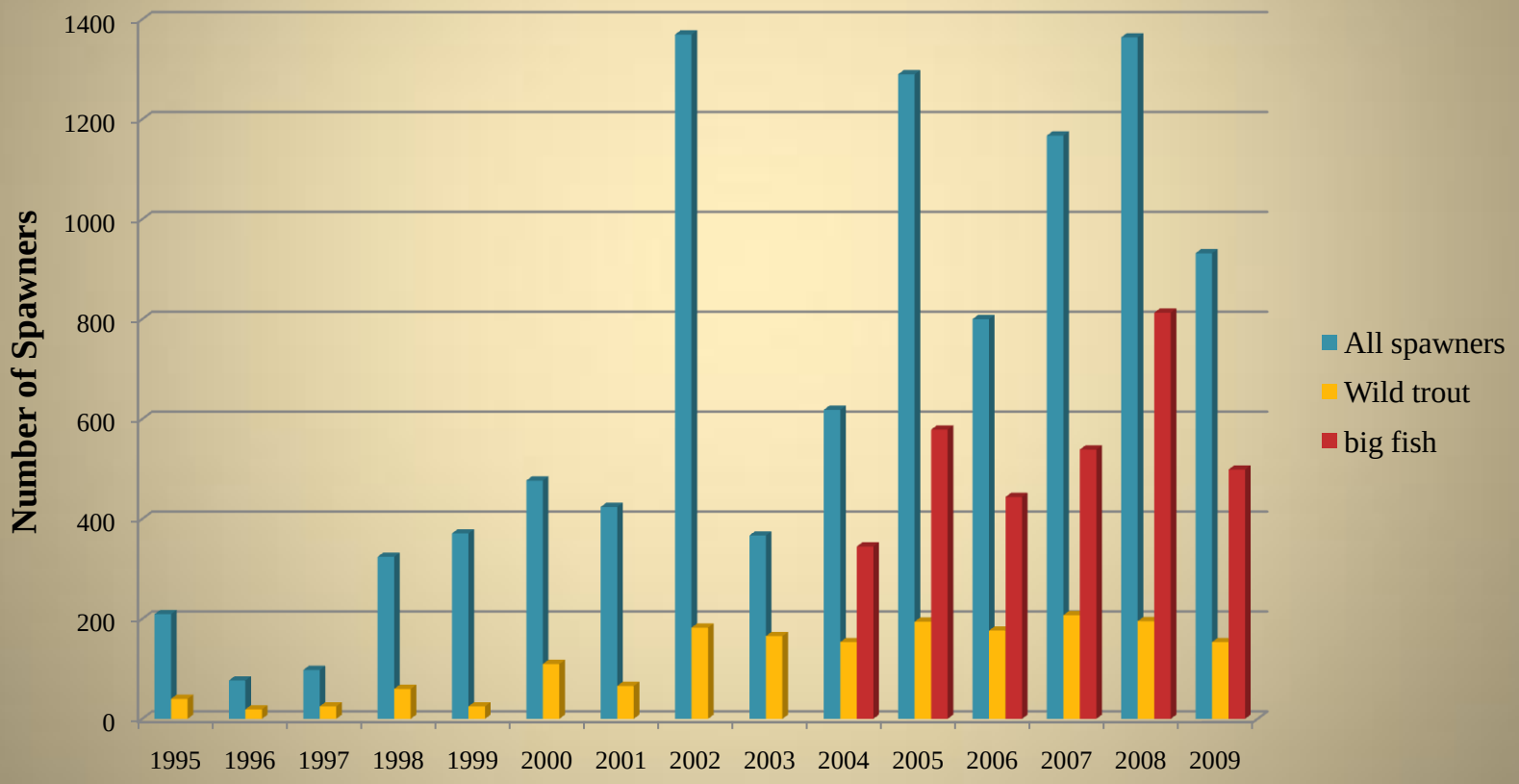
Found: One major set of redds was identified along with several minor sites.

Still need one more good year to complete

Who was spawning?

1. Looked at the number of available spawners each fall.
2. Defined spawners as fish over 13 inches in good shape.
3. Did not count fish taken back to the hatchery.

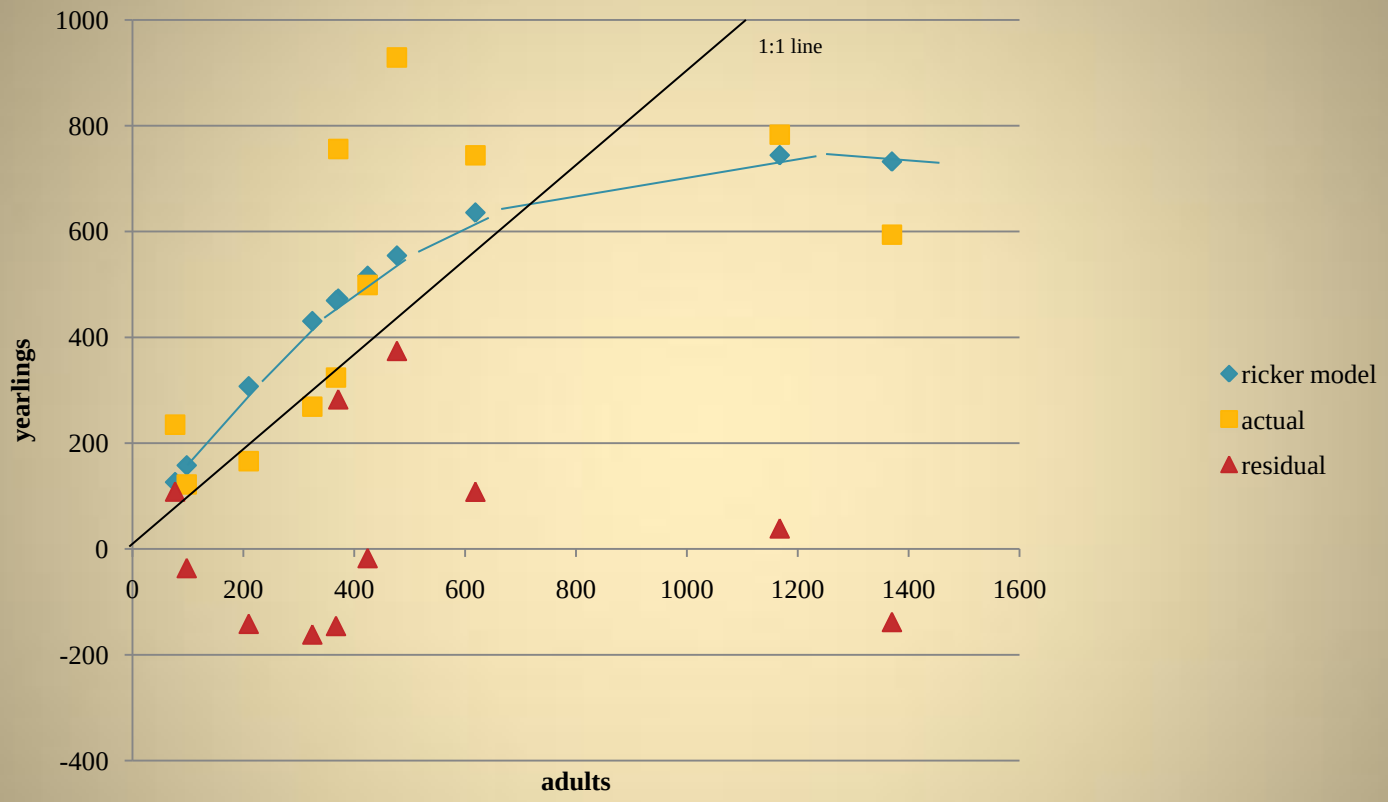
Do big survivor browns swamp the gene pool and limit improvements to the wild trout genes?



How to gauge spawning success

- Need an index of success
- We can not accurately access young-of-year
- We get good estimates of age 1(yearling fish)
- Compared the number of spawners with yearlings found 2 years later in fall samples.

Looked at a stock-recruit model, Ricker 1975



R=P*exp(0.5658(1-(P/650)) R=yearlings, P=Adults

Replacement number is 650 spawners- level where population is self-sustaining.

Other than numbers of spawners, flow is the most likely factor to effect spawning success.

We used **model residuals** (red triangles above) to looks at effects of flow on spawning

Flow effects on spawning

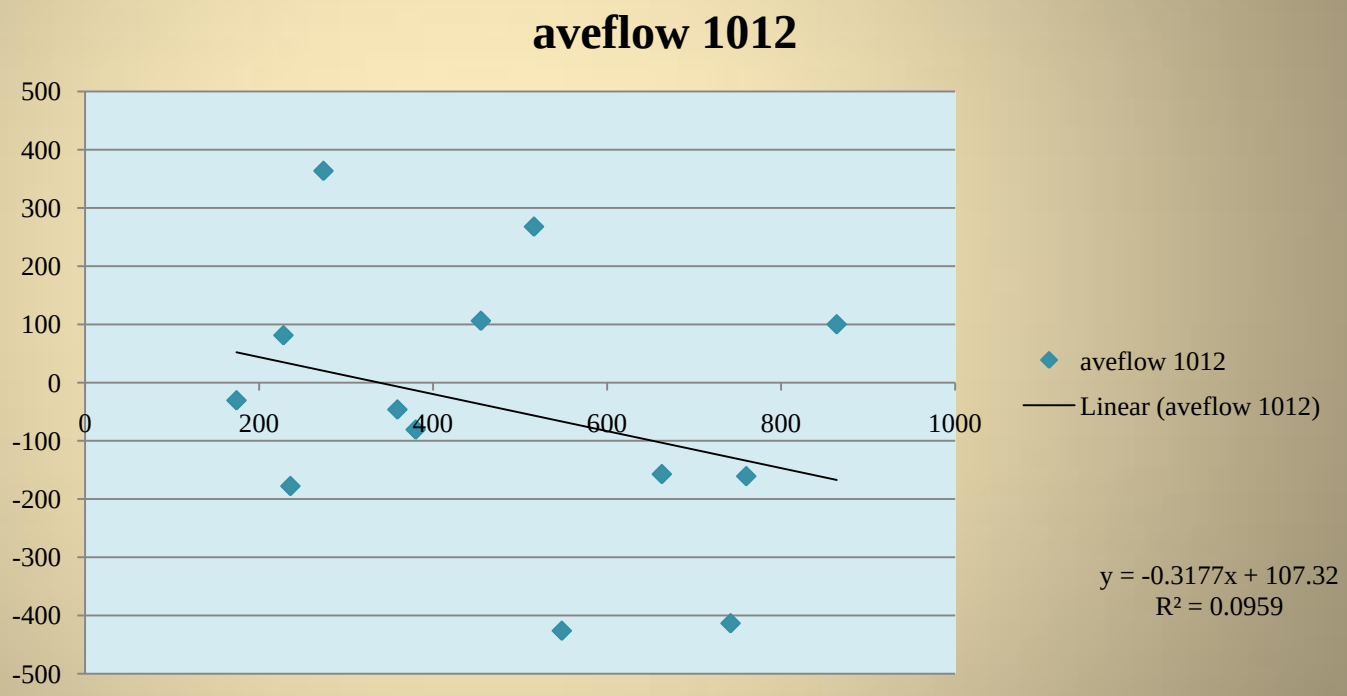
Does it matter what the water level is during the spawning season?

How much does a change in the flows effect spawning success?

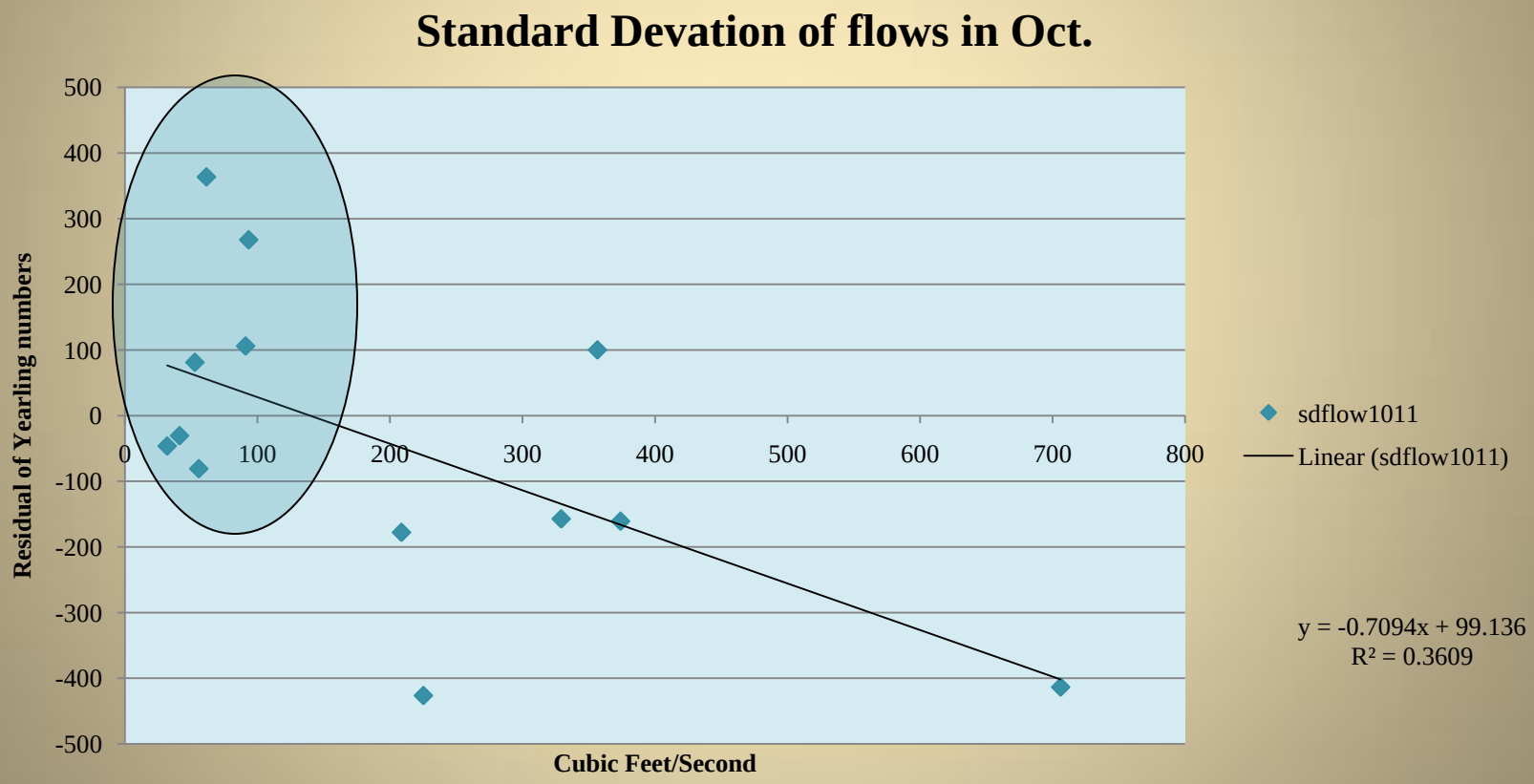
Are there extreme limiting flows(levels where there are sudden impacts: redds scour or dry out).


What is the right level?
Arrows indicate redd locations

The average height of the river didn't matter that much. The fish pick the best possible spawning site at the time of spawning. What matters is what happens once the eggs are in the gravel

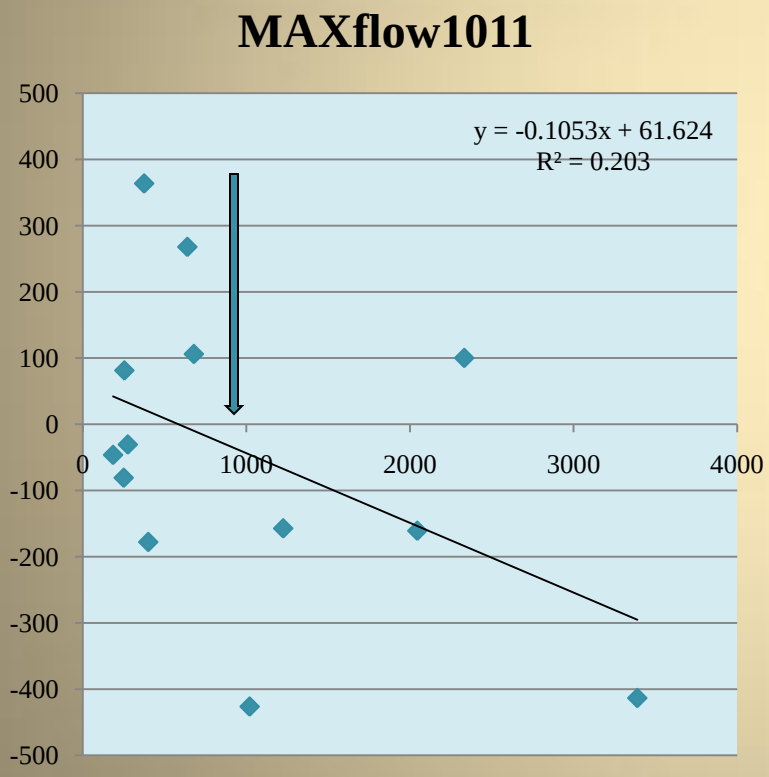


The more flows go up and down the more impact on spawning.

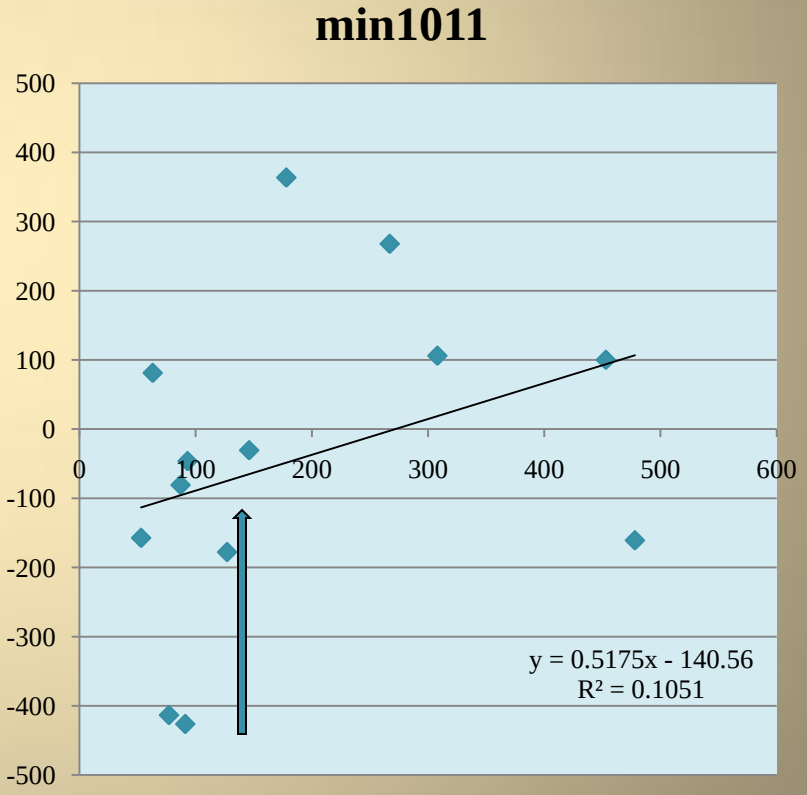


Limiting flows

Too high



Too low



Option for possibly improving big fish catch rates

- There are concerns about too many large survivors causing predation problems, and swamping the gene pool
- Rainbow trout are more easily caught than browns (2006 creel data)
- CT rainbow strains are insectivorous (more likely to go for dry flys.)

Proportion of RW vs. BN catch events per stocked trout
5.13- spring
2.68- summer
1.63-Fall
2.61-overall

If you were 5x more likely to catch this than a large brown, could you live with no more (fewer) large stocked brown trout?

Consideration

Pros

- Big rainbows 2-5x more catchable.
- Easier to produce
- No predation problem on small wild brown trout
- No genetics limitations
- Free up production space at Burlington

Cons

- Rainbow will move on high flows and cold temperatures
- Will be general production fish, not as pretty
- Unlikely to hold over, so limited numbers would be in river until the April Stocking.

We will stock 1,000 large survivors in the Spring-2010.

Questions?
comments/other ideas