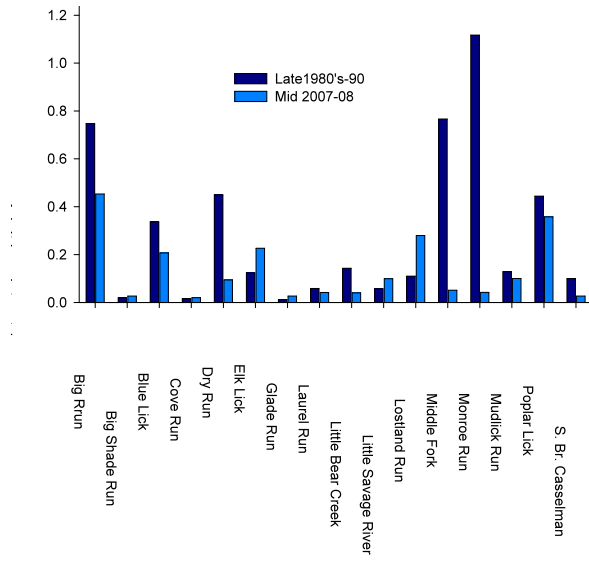


160 Kilometers



Local brook trout appear to be decreasing



Need for action

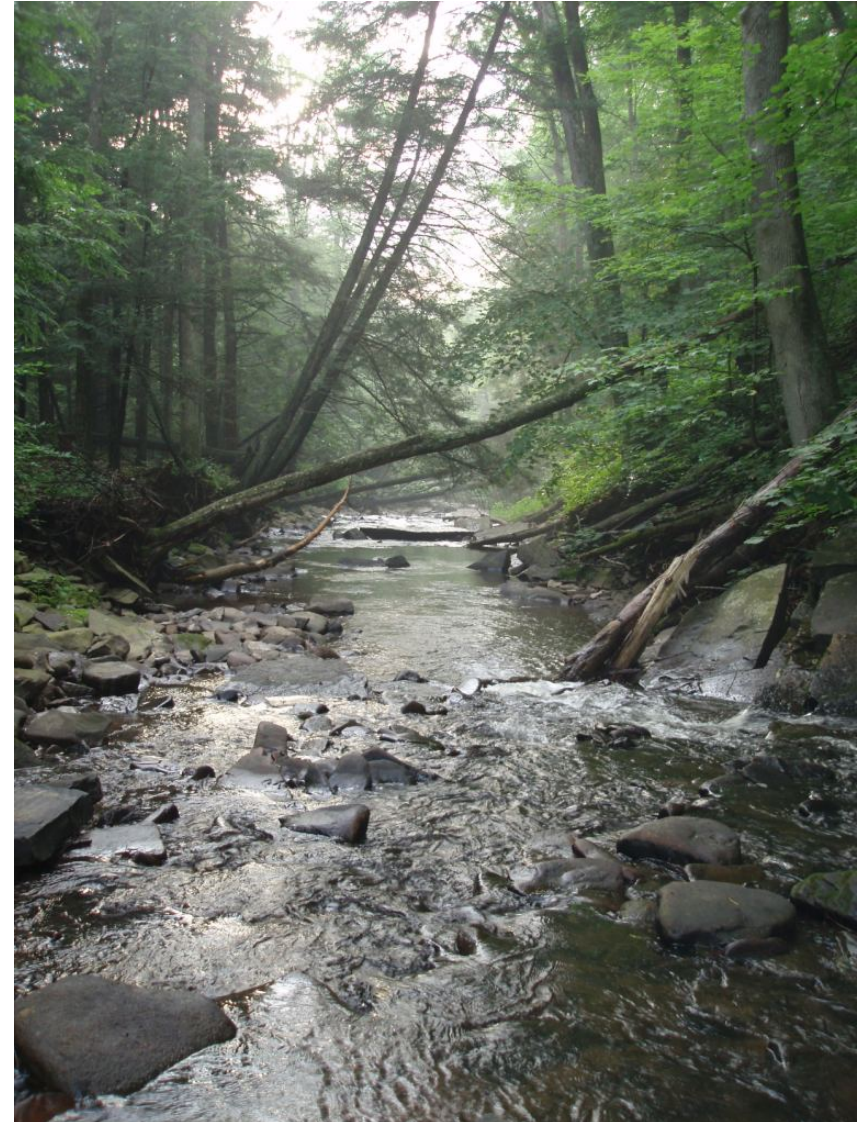
- Regulations implemented in 2007
 - No harvest of brook trout in upper Savage watershed (aside from short section of the mainstem Savage River).
 - No use of bait in C&R areas
- Monitoring study designed to assess population responses

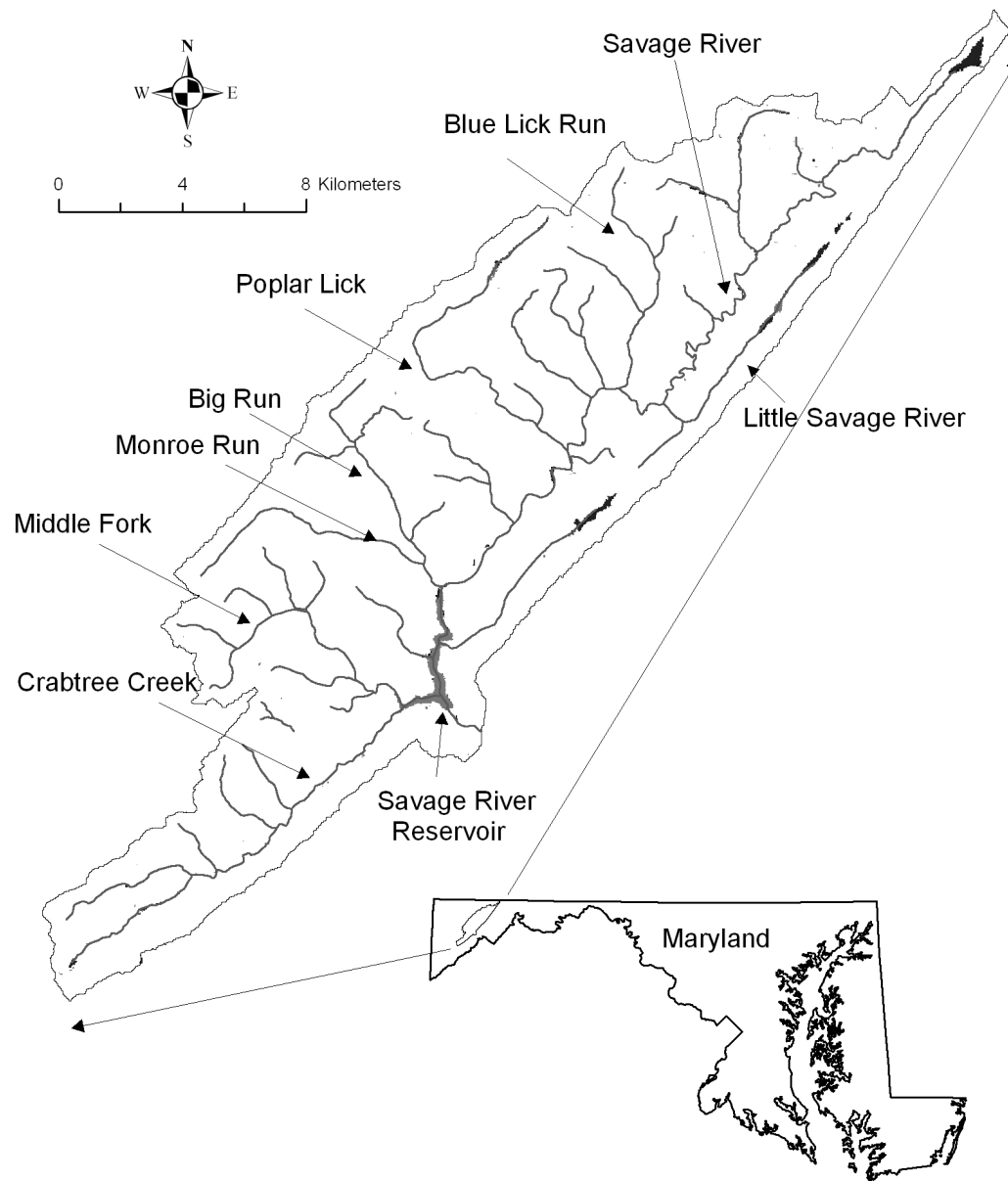
Regulation Objectives

- 1) Restore the number of larger fish (>200 mm) in the system for biological and angling value
- 2) Restore overall trout population densities
- 3) Reduce angler related mortality, particularly of larger fish
- 4) Protect the only intact brook trout system in Maryland while still optimizing angling use.

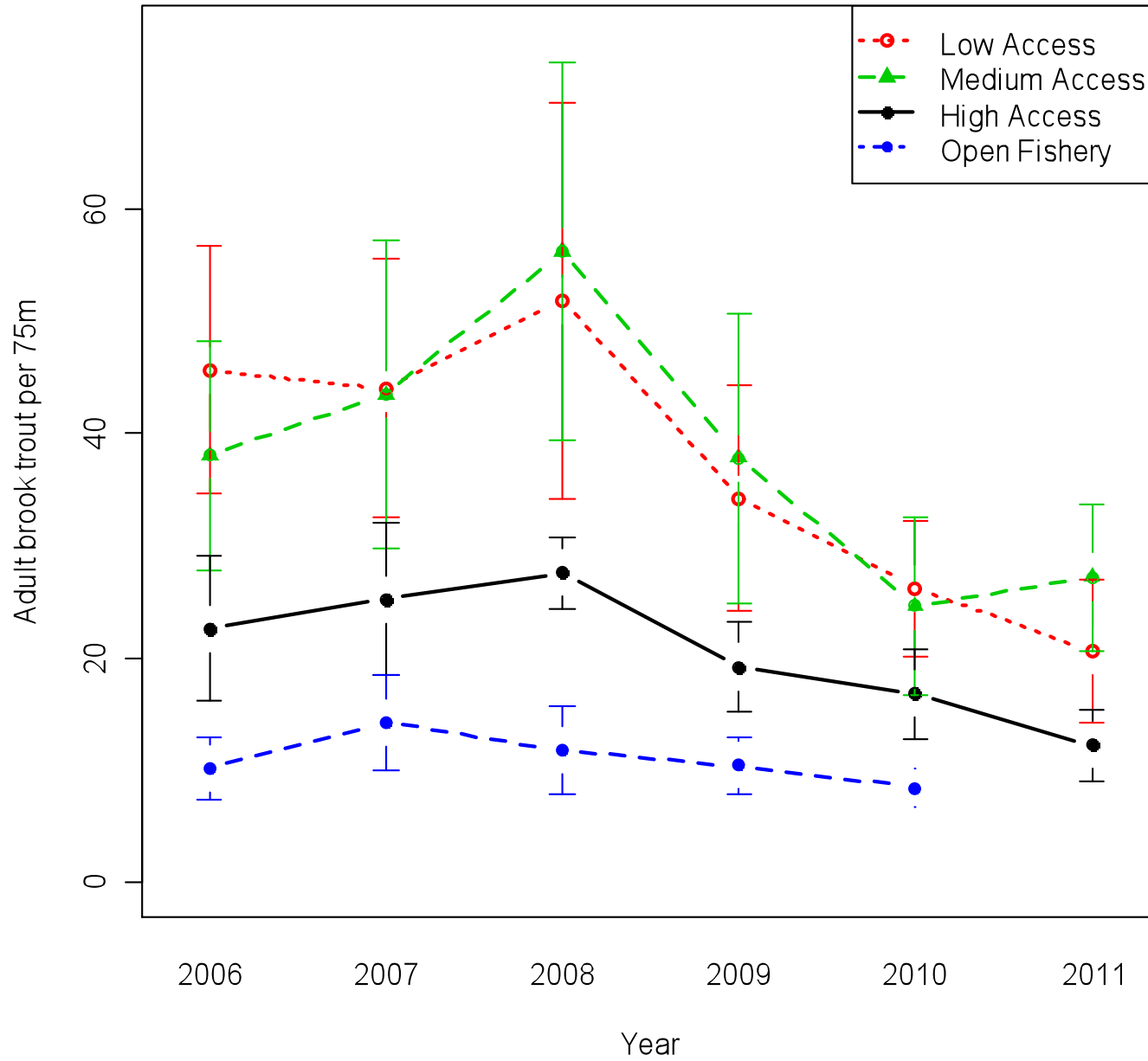
Study design

- 8 streams
- Sampled annually since 2006 (pre-regulations)
- 3 sections per stream
 - 75 m long sections
 - 3 pass electrofishing
- Sections stratified by:
 - Angler access:
 - Low, medium, high
 - Distance:
 - lower, middle, upper

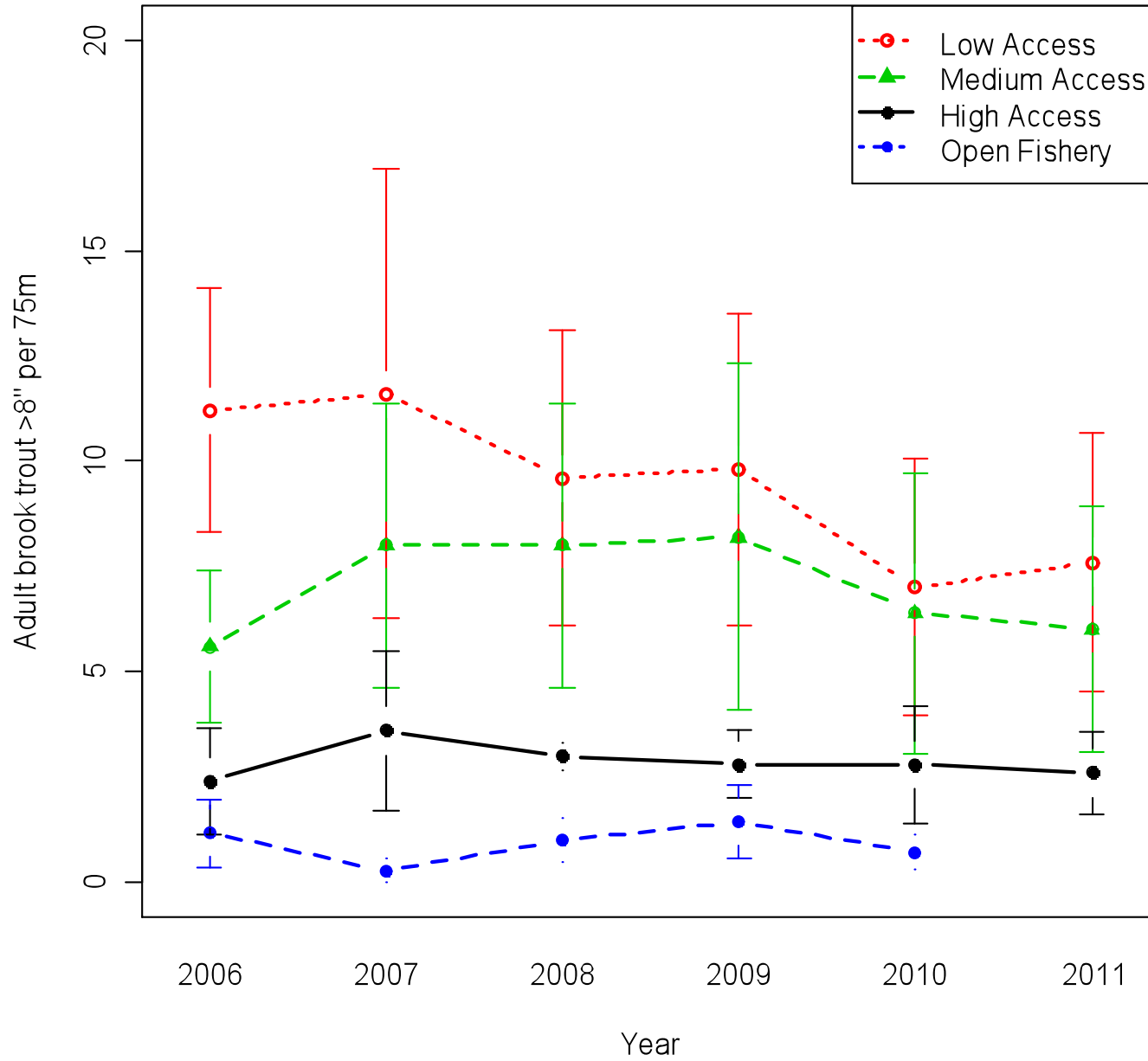




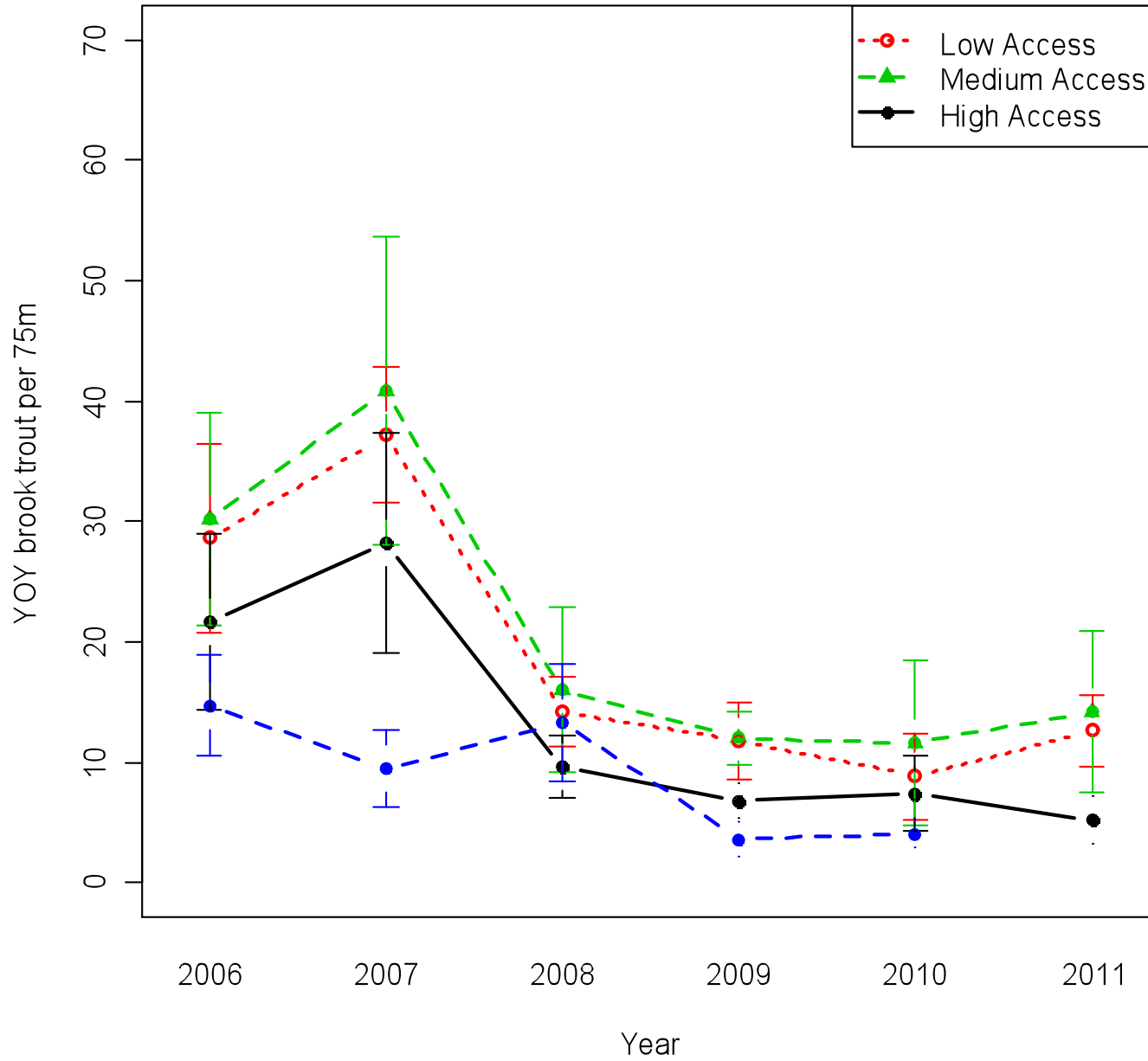
Adult brook trout

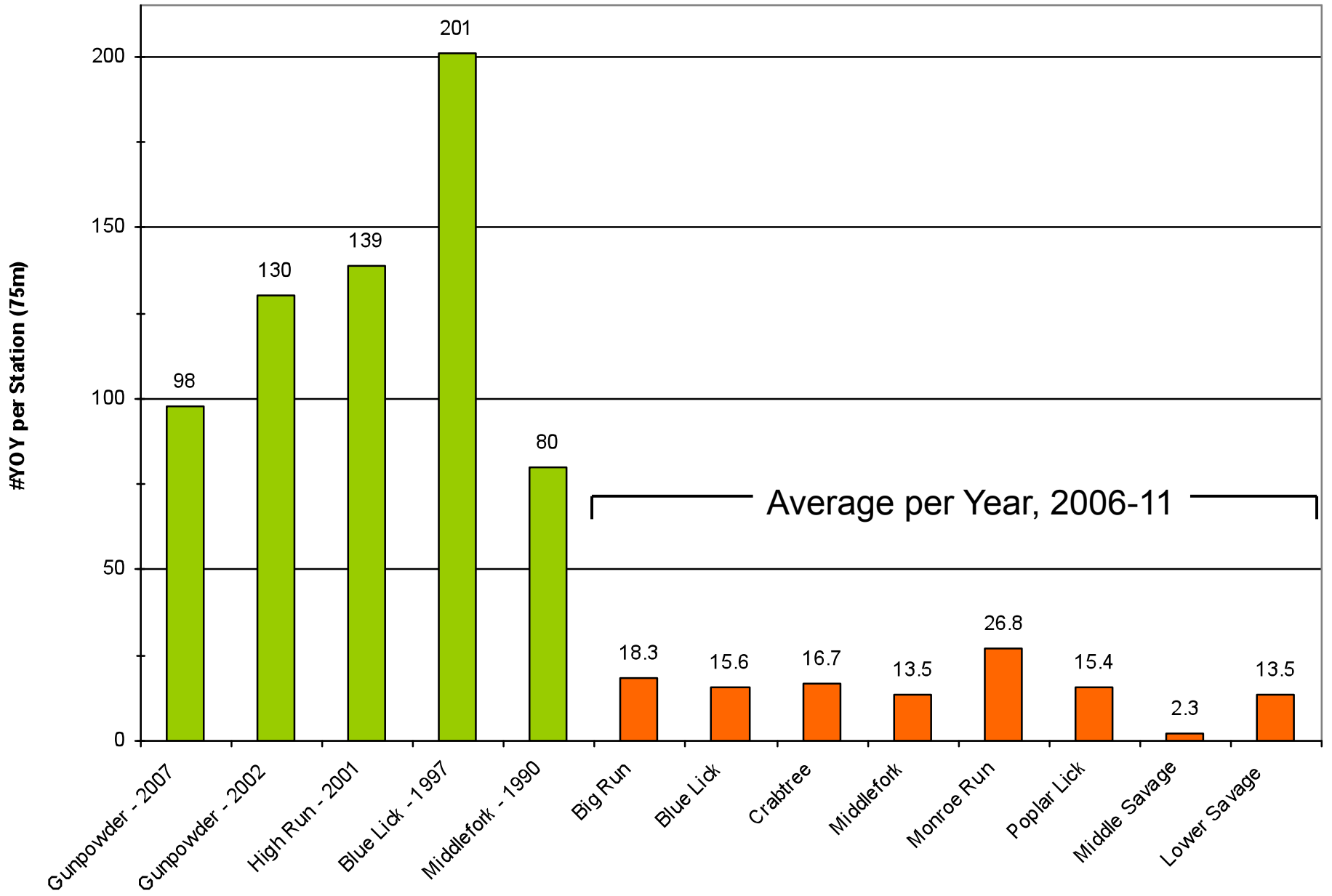


Adult brook trout > 8"

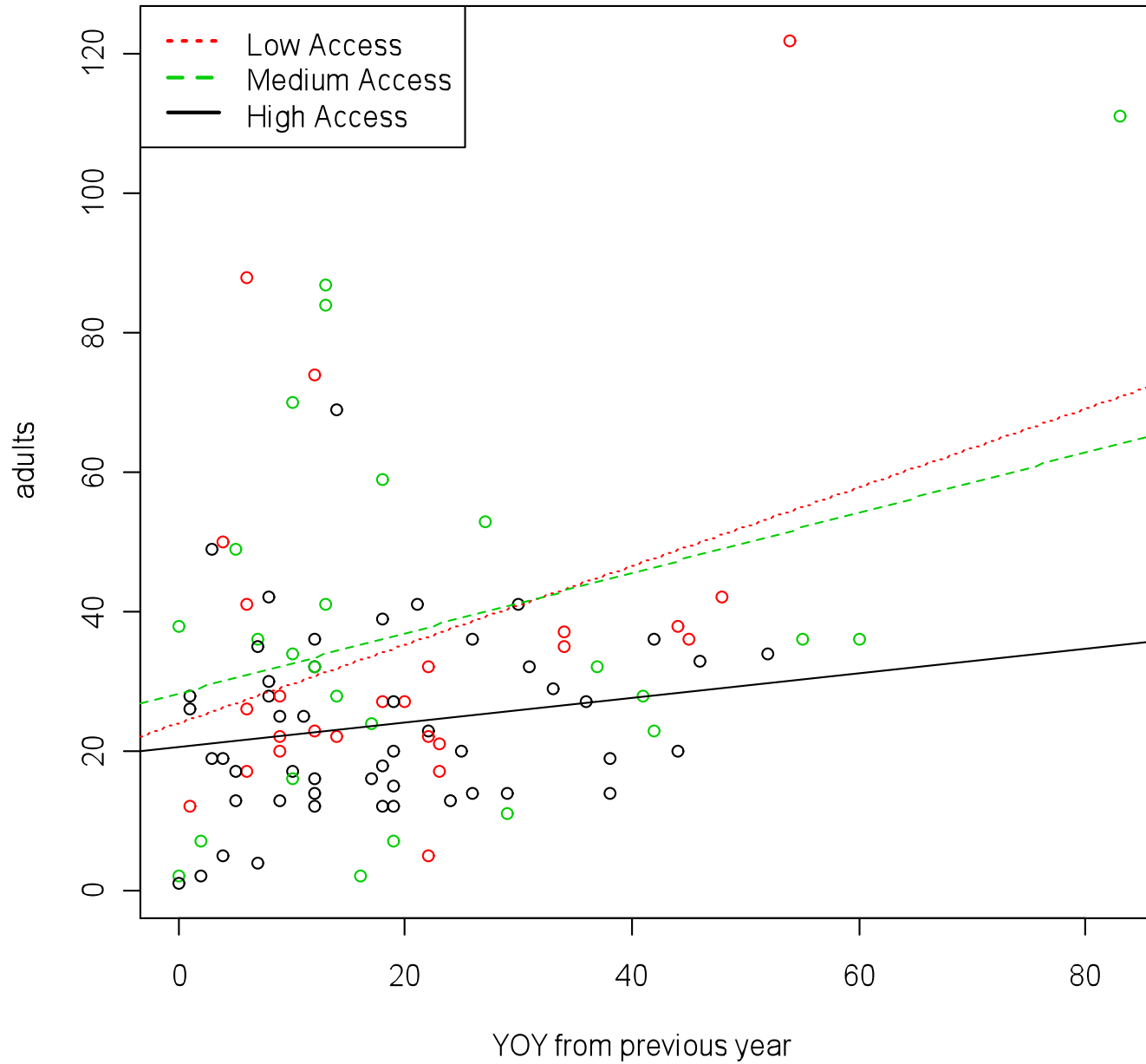


YOY brook trout





Adults related to YOY from previous year



UMCES Research Conclusions

Dr. Robert Hilderbrand

- Declines are a regional phenomena
- Angling has depressive effect on population
- Weak evidence that regulations are working
- Lack of strong recruitment probably best explanation for lack of strong response
- Can get more big fish, but not bigger fish

DNR Inland Fisheries Conclusions for Regulation Success in Meeting Stated 2007 Objectives

1) Restore the number of larger fish (>200 mm) in the system for biological and angling value

- Despite early increases populations did not remain above 2006 levels through the 5 years study period.
- There are some indications that the Regulation may have had a positive effect.
 - Numbers of large fish were more stable than YOY and smaller adults despite their susceptibility to angling and several years of record drought conditions in the basin.
- If reproduction does not improve in the next several years, numbers of larger fish will decline significantly as well.

2) Restore overall trout population densities

- Densities have declined within the Savage system and statewide during the monitoring period 2007-2011.
- Environmental conditions, high spring flows and summer droughts, are the main culprit, resulting in poor year class production throughout this time period, and particularly since 2008.
- Decline in densities in the high angler access areas, where the regulation would have the highest likelihood of impact, was less severe than in the medium and low access areas, possibly indicating reduced angler related mortality.

3) Reduce angler related mortality, particularly of larger fish

- As overall adult densities have declined the number of larger fish has not shown a statistically significant decline. This may be due in part to the regulation.
- Angler comments to Annapolis and regional staff have reported excellent (and improved) fishing success during the regulation period, for both numbers and size of fish.
- Larger brook trout than ever captured before in the Savage system by staff during sampling have occurred in the last two years, with the largest being 13.5", and many in the 11"-12" range.

Protect the only intact brook trout system in Maryland while still optimizing angling use

- Poor reproduction and adverse environmental conditions have suppressed populations in the Savage River as they have Statewide.
- The regulation may have improved the survival of the larger fish which is crucial in maintaining reasonably good fishing through multiple years of bad conditions. Positive reports from anglers for both the numbers and size of brook trout being caught in the Upper Savage system through the regulation period and as recent as early October 2011 are evidence of this success.

Overall Conclusions on Status of Savage River Brook Trout

- The over-riding effects of 4 successive years of very poor reproduction due environmental conditions region wide and two years of extreme drought in 2010 and 2011 have limited the ability to evaluate the potential of Catch and Release management to improve populations.
- There is limited evidence that the regulation protected the larger trout maintaining reasonably good fishing through a period in which it otherwise would have suffered and creating the potential for a quick recovery when conditions improve.
- If reproduction does not improve in the next several years, numbers of larger fish will decline precipitously, populations may reach record lowest levels and recovery could be slower.

- Monitoring data has shown a relationship between recruitment and adult densities, maximizing adult survival in periods of adverse environmental conditions will ensure quicker and more successful recovery when conditions are adequate.