

# Catfish Passage at Bosshers Dam Vertical Slot Fishway in the James River Piedmont/Coastal Fall Zone

VA/NC AFS Chapters Joint Meeting  
*Catfish Symposium*  
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# Restoring Aquatic Connectivity

- **Dam Removal**
  - Always considered first
  - Best overall approach
  - Most benefits
- **Technical Fishway (e.g., vertical slot)**
  - When removal is not feasible
  - Advantageous for counting fish
- **Nature-like Fishway**
  - Becoming more popular
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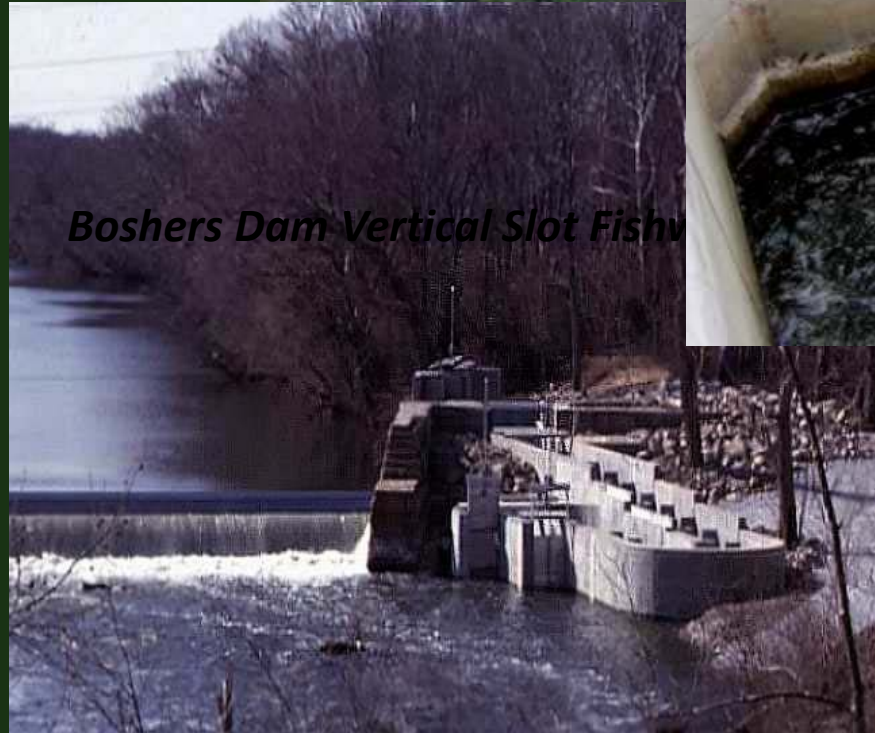












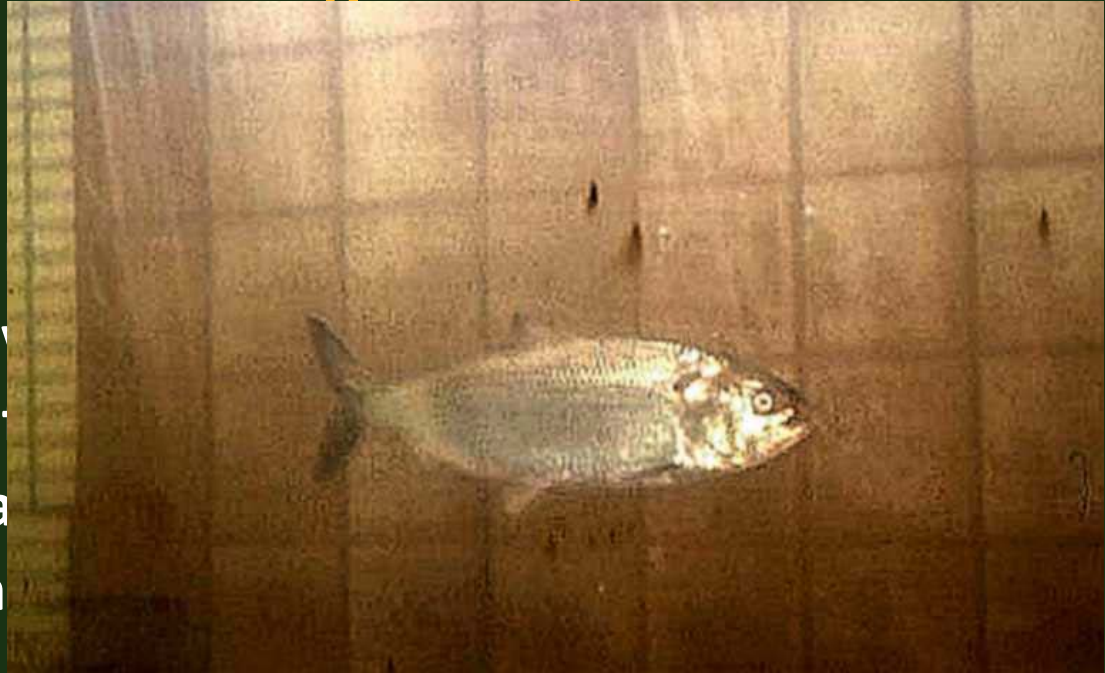
*Boshers Dam Vertical Slot Fishway*





## 23 Fish Species Documented Passing Fishway

- American Shad
- Sea Lamprey
- American Eel (retu
- Blueback Herring (v
- Striped Bass (very
- Smallmouth Bass a
- Gizzard Shad (num
- Common Carp
- Quillback
- Shorthead Redhorse
- Longnose Gar
- Blue Catfish, Flathead Catfish and Channel Catfish
- Rainbow Trout and possibly Brown Trout
- Fallfish and Bull Chub, etc.



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- American Shad
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- Blueback Herring (very few)
- Striped Bass (very few)
- Smallmouth Bass and Largemouth Bass
- Gizzard Shad (numerically dominant; 90%)
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## Distribution of Non-Native Catfishes in the James River

- Channel Catfish widely stocked including in the Upper James by the 1890s
- Blue Catfish widely stocked in the James watershed in the 1970s, but not necessarily well established in the Middle James mainstem
- Flathead Catfish discovered in the Upper James by the 1980s and known to be well established throughout the James by the 1990s
- Jenkins and Burkhead 1993 and several personal communications



## Fishway Counts Evolution

- 1999 – First season of operation
  - Live; 3-4 days/week; 6 hours
  - Expanded over daylight hours
- 2000 – Mostly live and some regular VHS
- 2001 – 2002 Time lapse vhs reviewed post-season
- 2003 – Present: Digital Video
  - Record and review all hours of useable video through 2008 (all spp)
  - Started 15 minute increment review in 2005 (all)
  - 2010 – AMS, SMB only: Review only first 15 minutes (Expand)
  - 2012 – Sea Lamprey counted again
  - 2014 – All spp again for at least this year

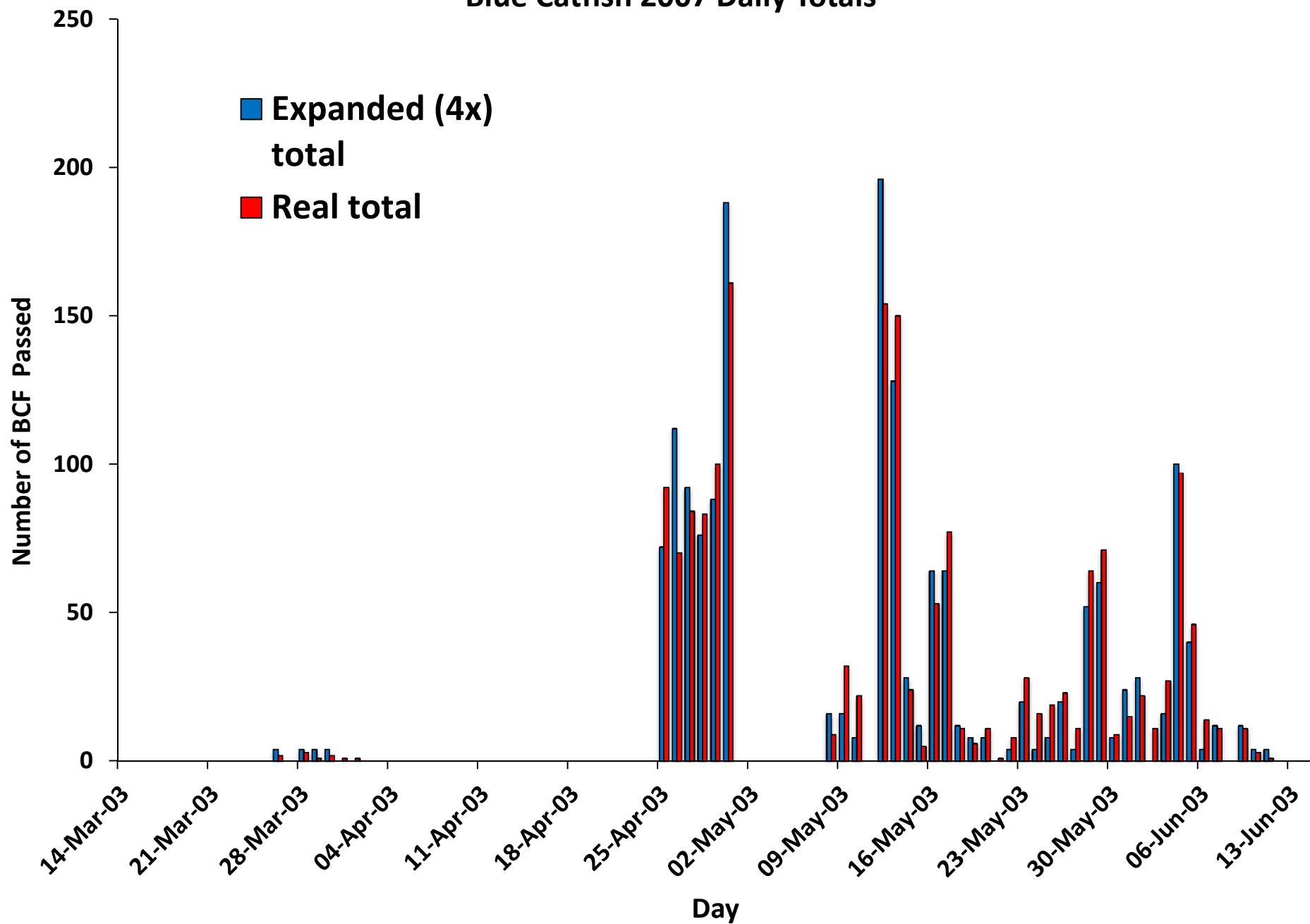




## Fishway Counts continued

- Simulated hourly expansions were not significantly different from known hourly counts for 2007 Gizzard Shad – i.e. estimate method is sound
- Blue Catfish 2007 estimates also proved to be solid based on statistical analyses
- Generally, every 5<sup>th</sup> day is a 24 hour review to subsample night passage (Sea Lamprey, three catfish species, occasional Gizzard Shad)
- Night passage results expanded for useable days of video to get season estimates

## Blue Catfish 2007 Daily Totals



## Fishway Counts continued

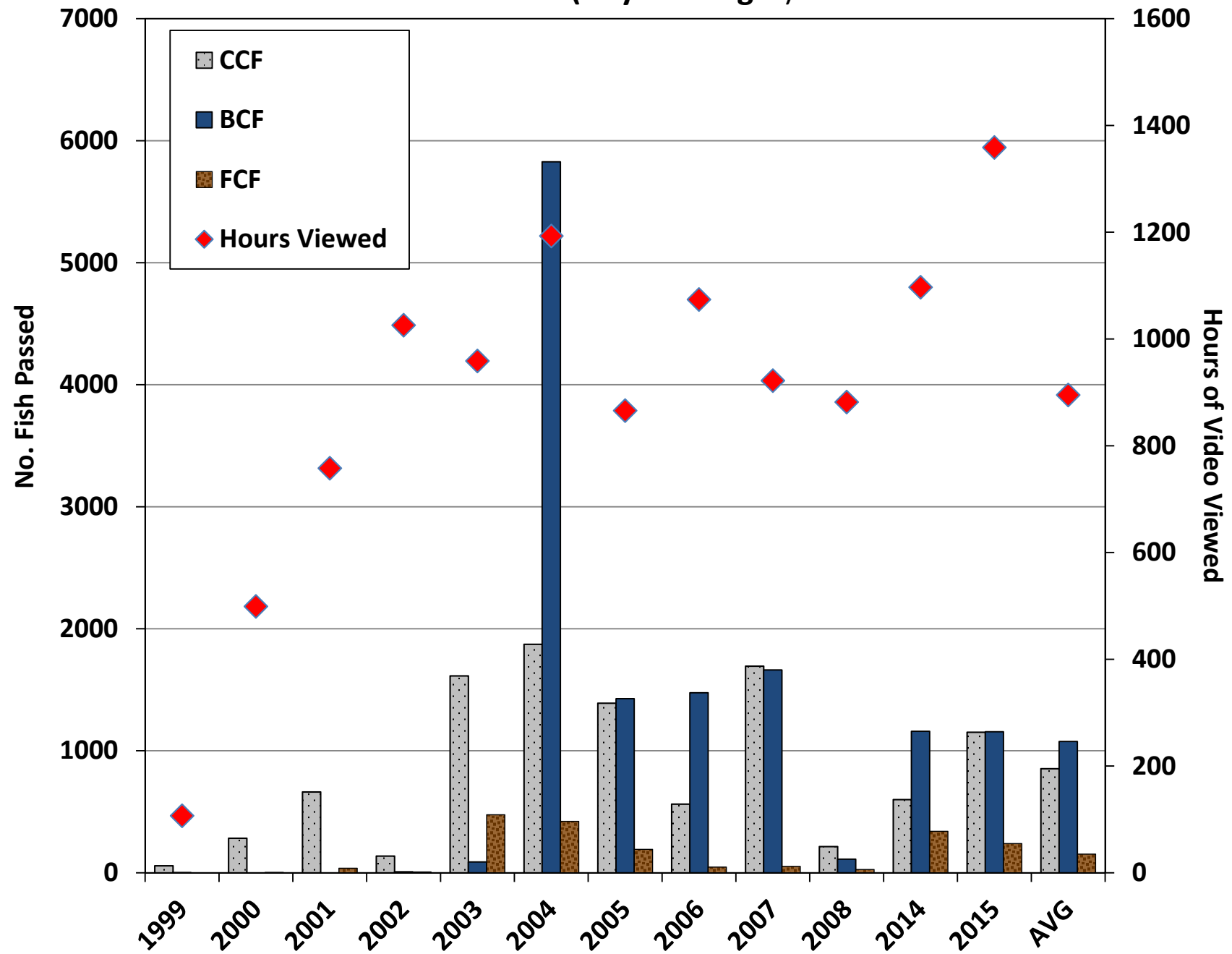
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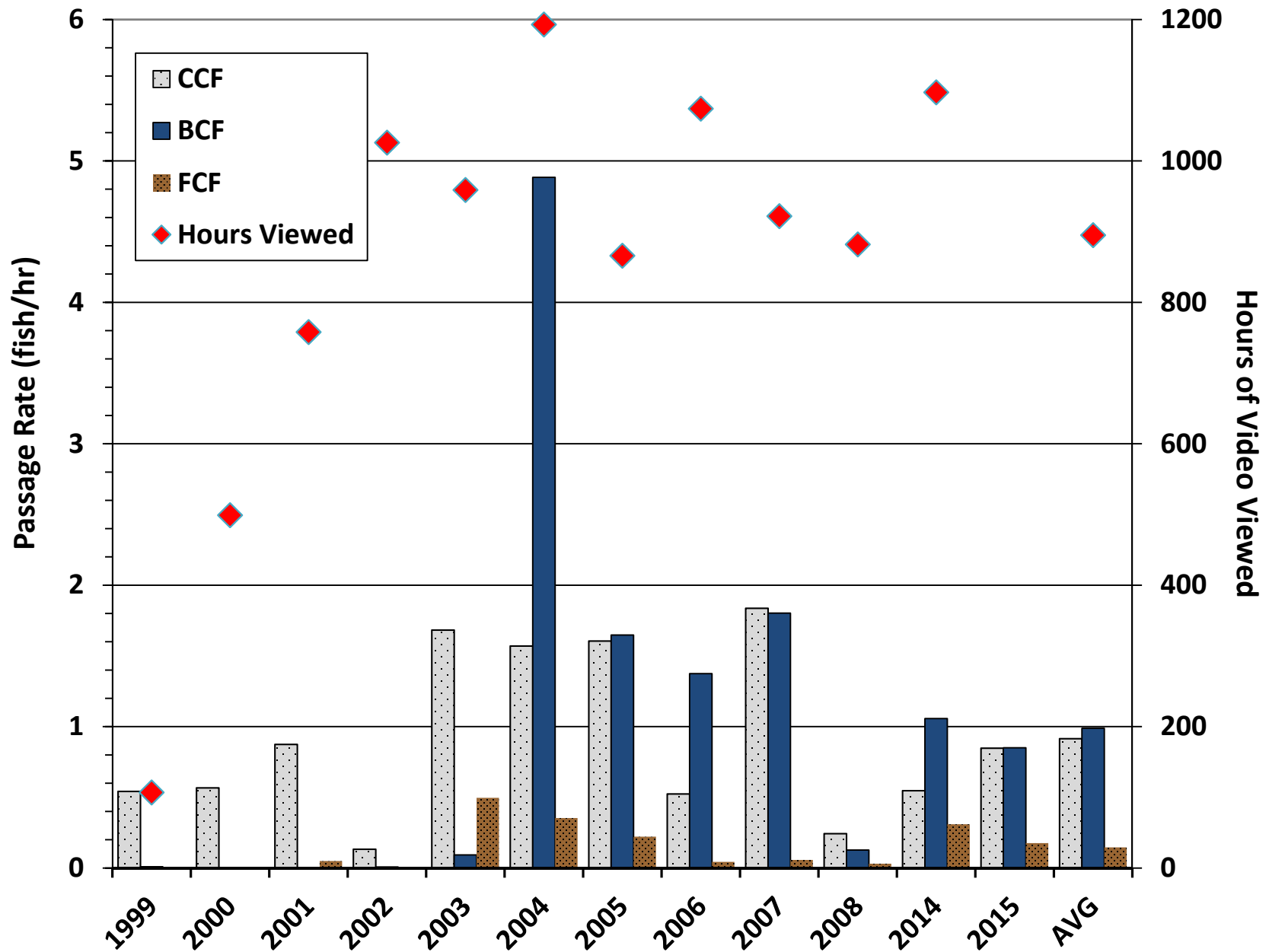
# Flathead Catfish Clip



## TOTAL PASSED (Day and Night)

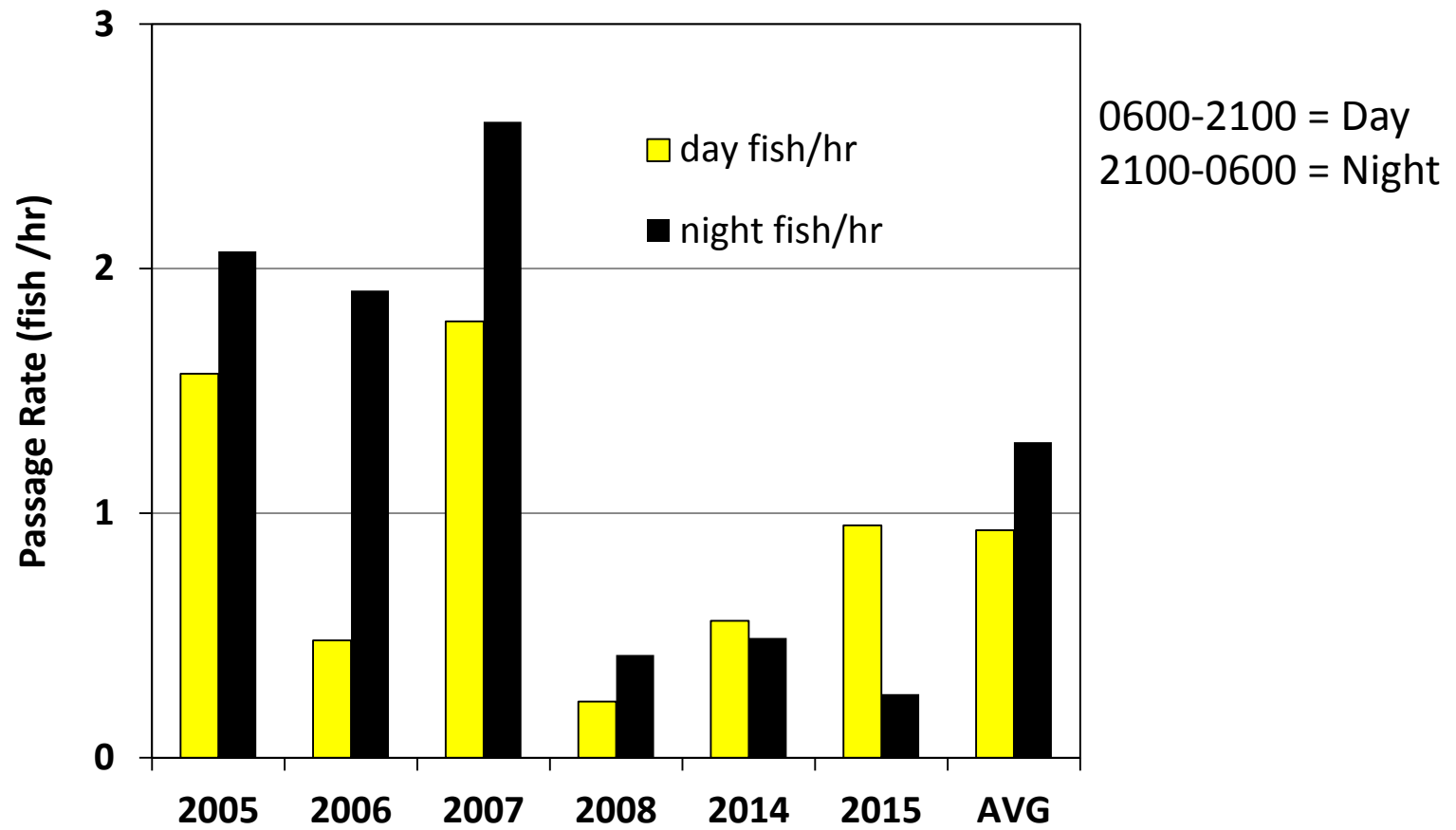


## TOTAL PASSAGE RATE (Day and Night)

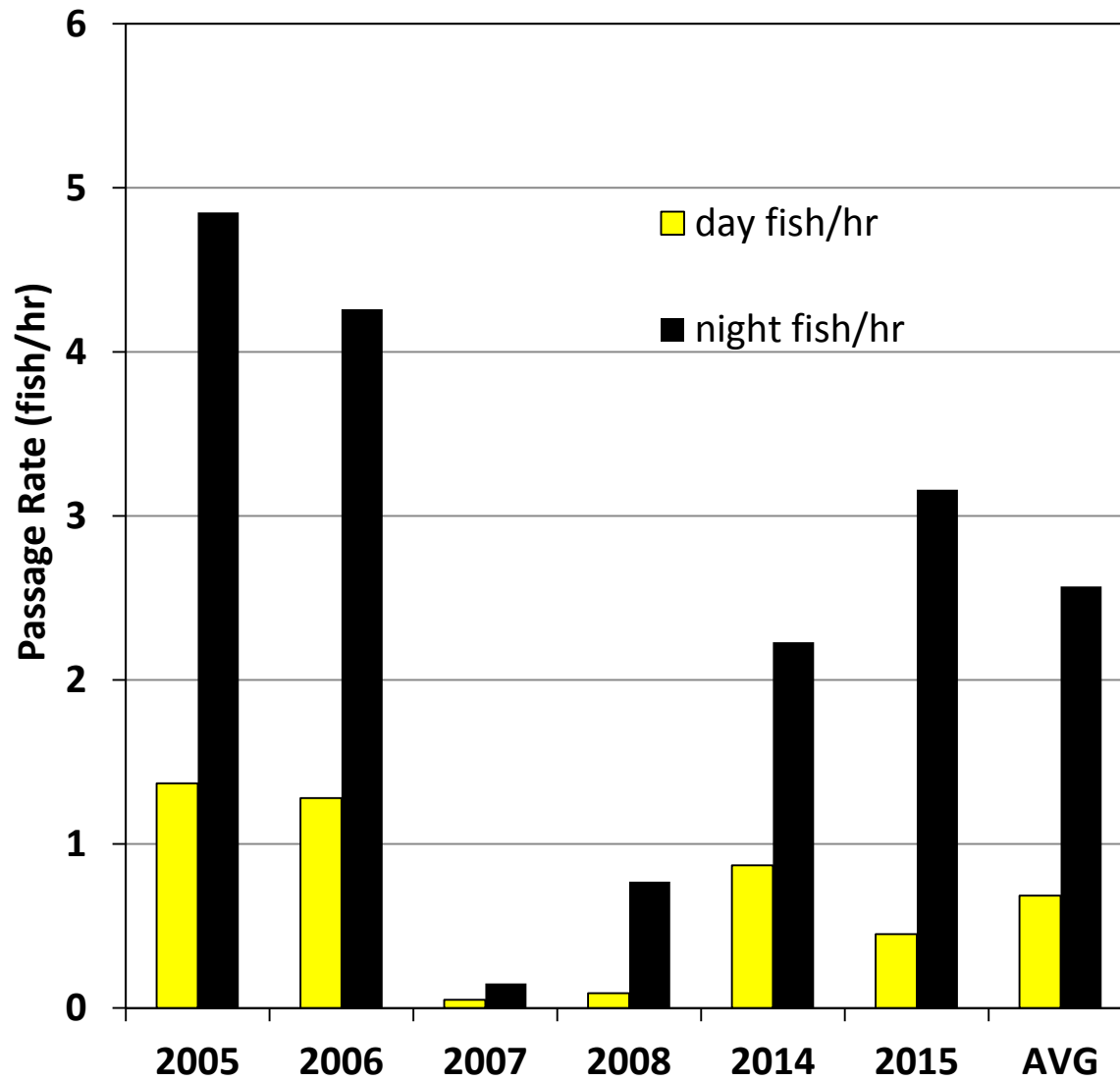




## Channel Catfish

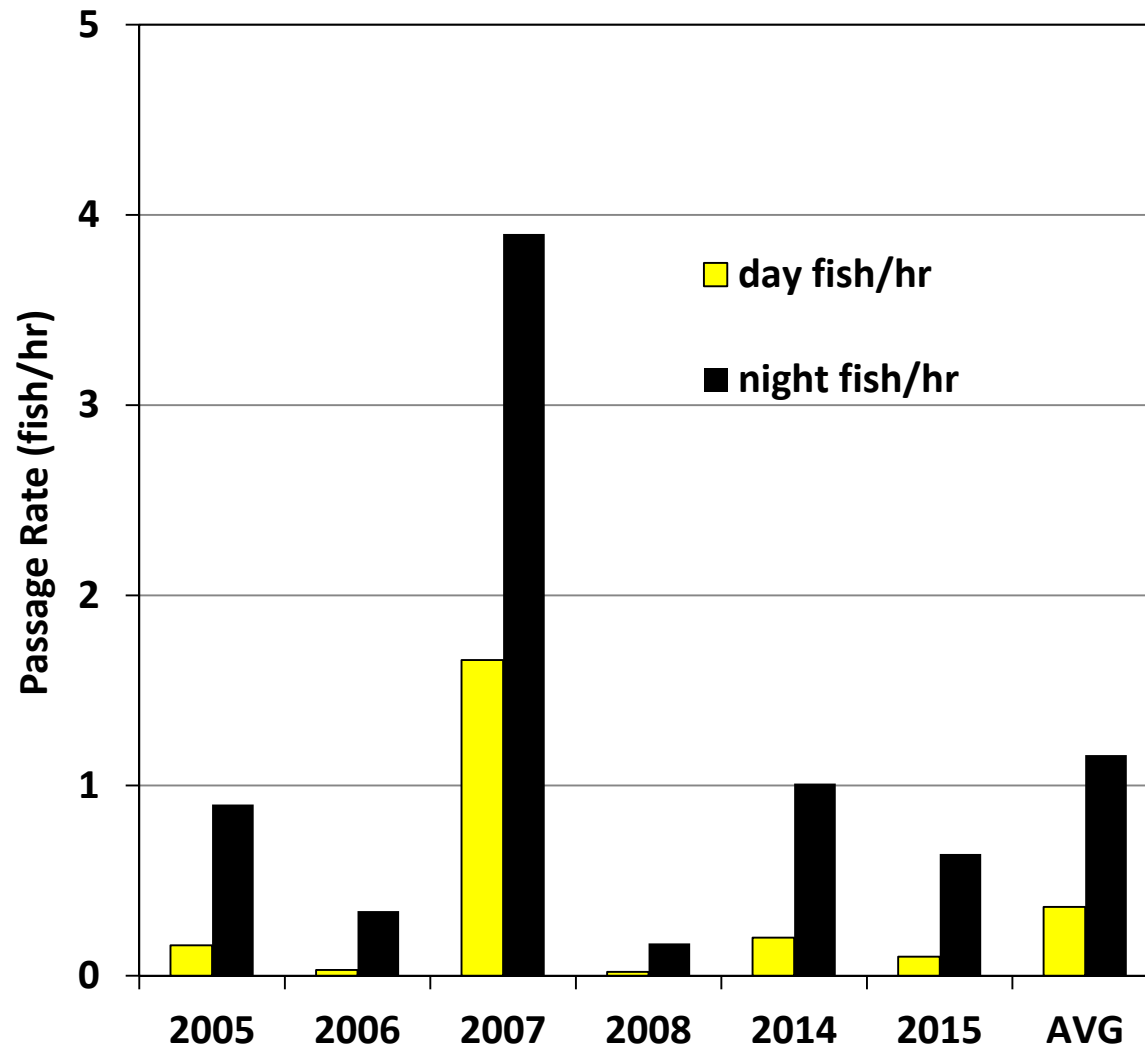


## Blue Catfish



0600-2100 = Day  
2100-0600 = Night

## Flathead Catfish



0600-2100 = Day  
2100-0600 = Night



## Boshers Catfish Passage Summary

- Channels, Blues and Flatheads were all introduced into the watershed upstream of Boshers Dam prior to fishway installation (1999)
- Fishway counts contribute to knowledge on catfish movements from the James Fall Zone into the Piedmont (Middle James)
- Similar, and considerable, numbers of Channel Catfish and Blue Catfish use the fishway
- Flathead Catfish passage numbers are relatively low in comparison

## **Boshers Catfish Passage Summary**

- Channel Catfish exhibit similar diurnal and nocturnal passage rates, slightly higher nocturnal rate of passage
- Blues and Flatheads both exhibit nocturnal passage rates that are considerably higher than diurnal rates
- Increasing the frequency of nocturnal video review may improve catfish passage estimates
- Random selection of the 15 minute increment will be implemented to further improve estimate method
- Other abundance measurements such as boat electrofishing CPUE will be compared to passage numbers to determine if there is a correlation (more consistent years of counting catfish again is needed)
- Other variables that effect passage rates are flow and temperature

# Solution to Invasive Catfish Problem:



**SUCCESS!**



# Acknowledgements

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FP Crews

DGIF ShadCam Tue Apr 23 15:54:19 2002



<http://www.dgif.virginia.gov/fishing/shadcam/>

# Questions?

