

Little Colorado River Fish Monitoring in the Lower 1,200 Meters, Grand Canyon, AZ. 1987-2011

**Arizona Game and Fish Department
Research Branch**



Colorado River

Little Colorado River

Introduction

- Annual standardized AGFD Little Colorado River (LCR) Lower 1,200 meter spring (April/May) hoop net monitoring began in 1987.
- The LCR is the primary spawning site for the endangered humpback chub in Grand Canyon. Other native species spawn in the LCR such as flannelmouth sucker, bluehead sucker and speckled dace. Nonnative species such as black bullhead, channel catfish, common carp and fathead minnow also spawn in the LCR.
- This project is one of the most consistent, standardized long-term monitoring projects in Grand Canyon, with the exception of 2000-2001.

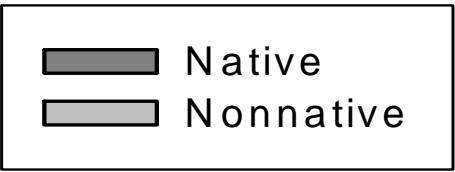
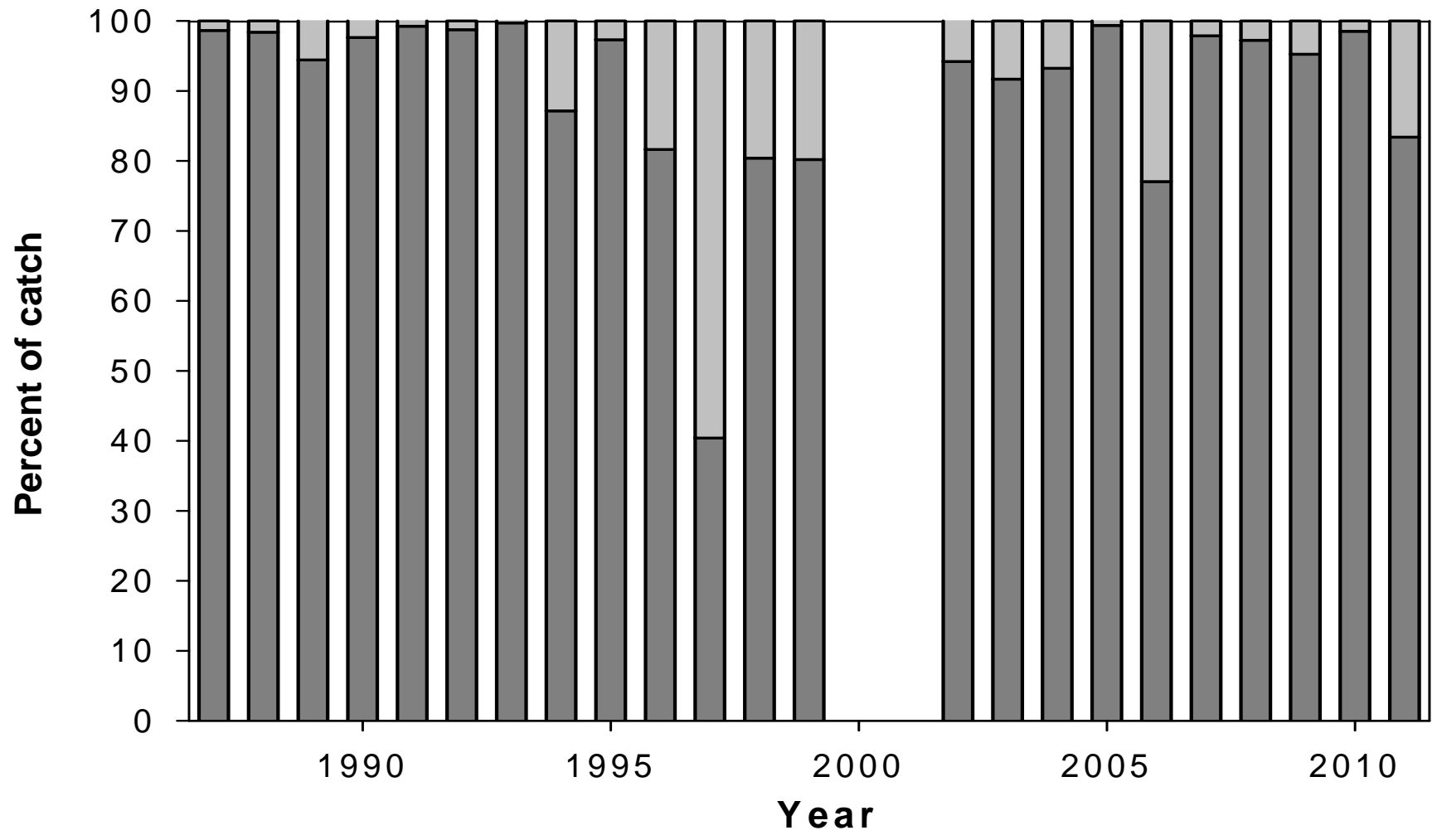
Methods

- 13 standardized hoop nets are fished for 20-30 days each spring (~24hr sets).
- Data collected is utilized to assess relative abundance trends and status of native and select nonnative species.
- Data analysis consists of CPUE as fish per 24 hours, species composition and length frequency distributions. CPUE indices are useful as independent validation for age structured mark-recapture (ASMR) population models of humpback chub.



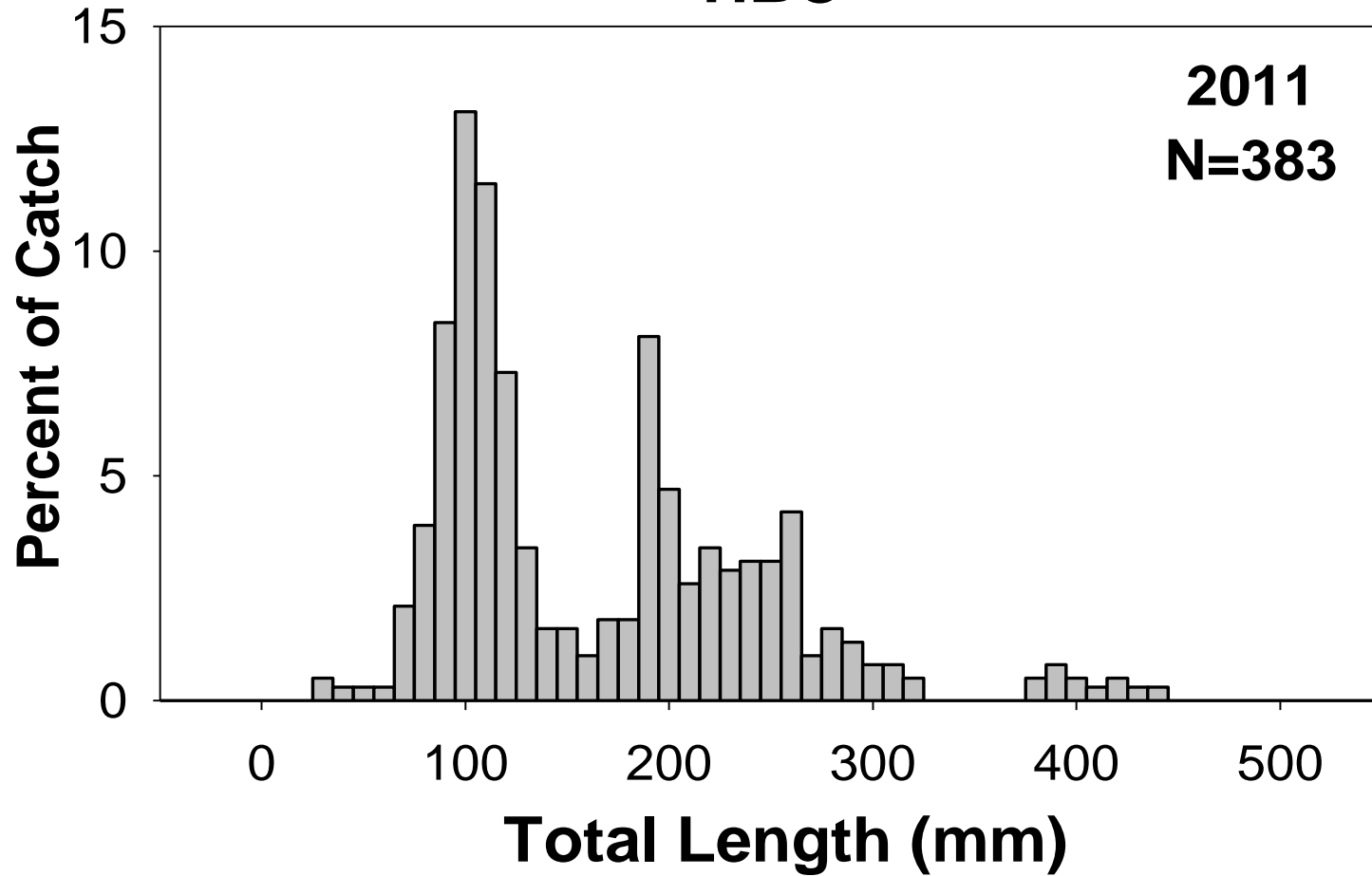
2011 Species Composition	Count	% of Total Catch
Bluehead sucker (BHS)	322	16.30
Flannelmouth sucker (FMS)	602	29.97
Humpback chub (HBC)	383	19.06
Speckled dace (SPD)	367	18.27
Total Native	1,675	83.4
Black bullhead (BBH)	2	0.10
Channel catfish (CCF)	6	0.30
Common carp (CRP)	3	0.15
Fathead minnow (FHM)	306	15.23
Plains killifish (PKF)	2	0.10
Rainbow trout (RBT)	13	0.65
Red shiner (RSH)	2	0.10
Total Non-native	334	16.6
Total:	2,009	100.0

* **Total Effort** 6,129.8 hours of soak time

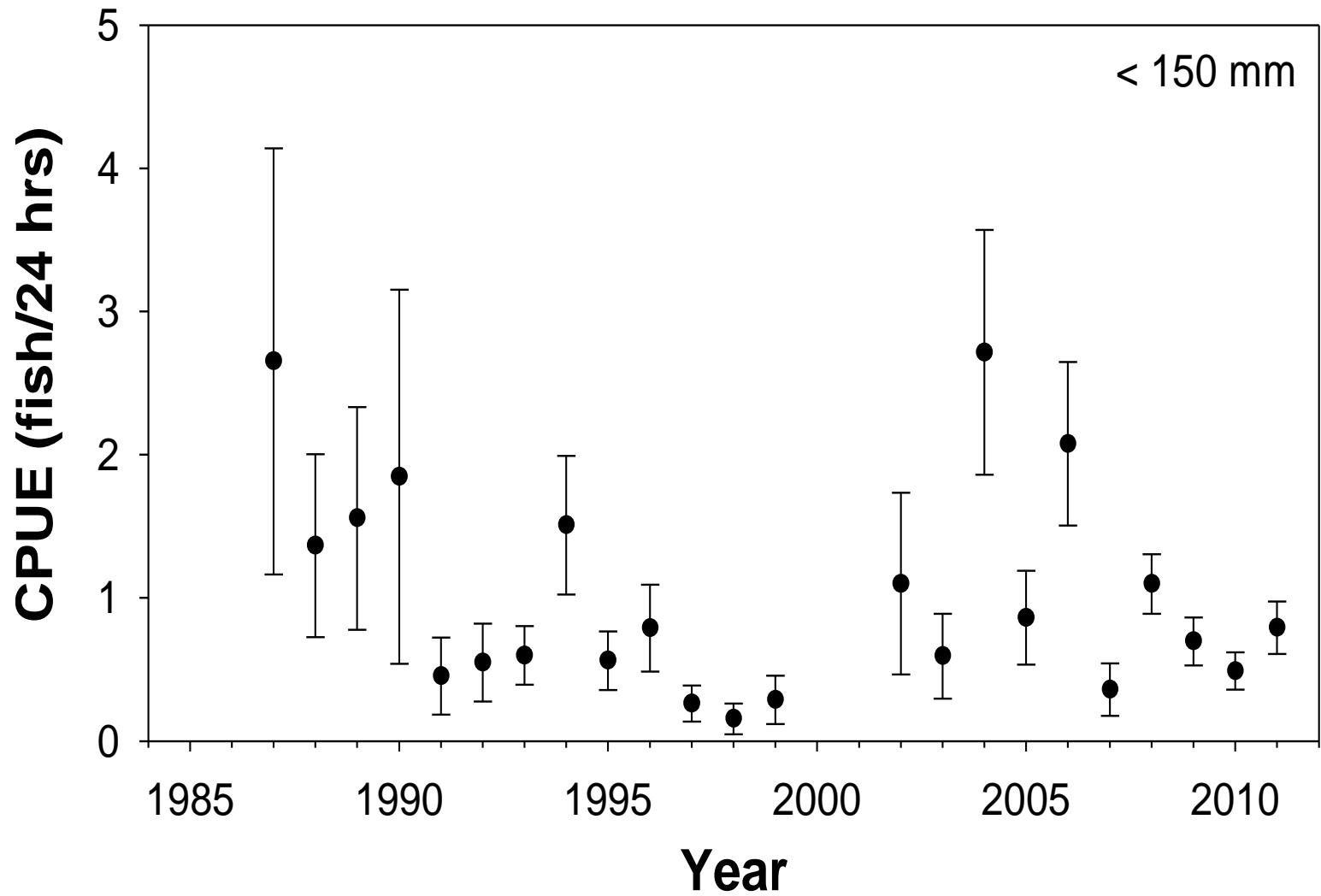


HBC

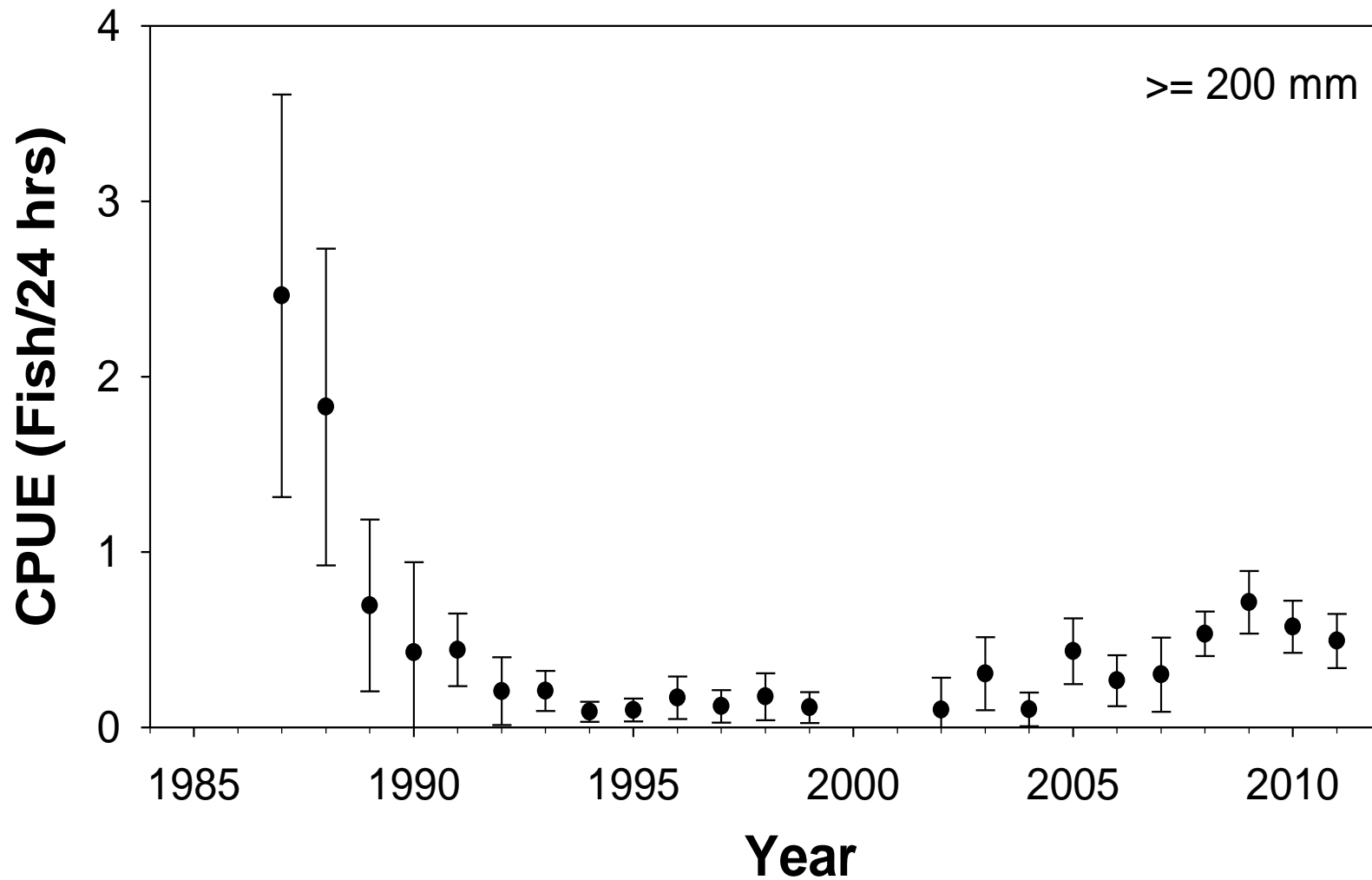
2011
N=383



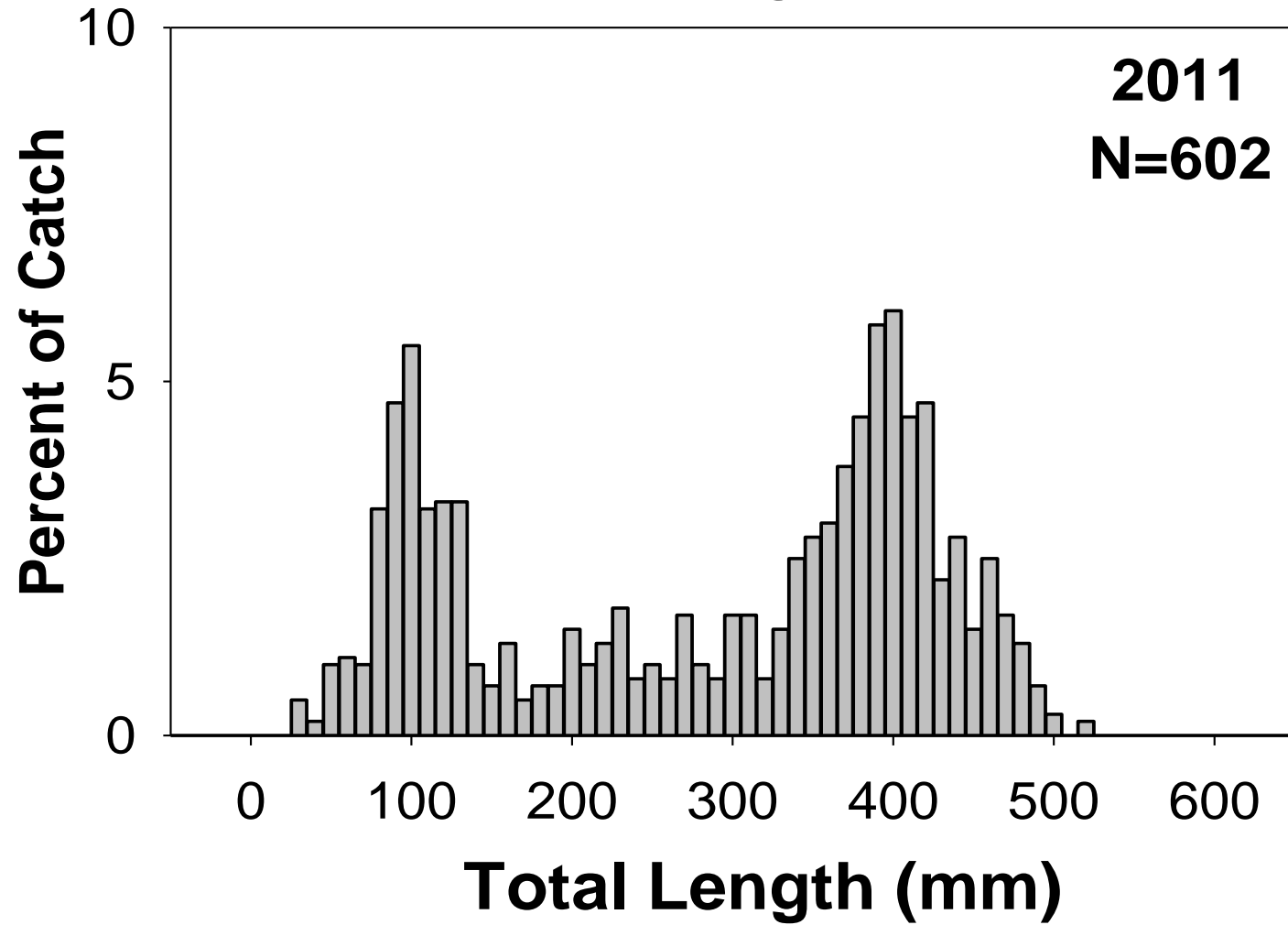
Humpback chub



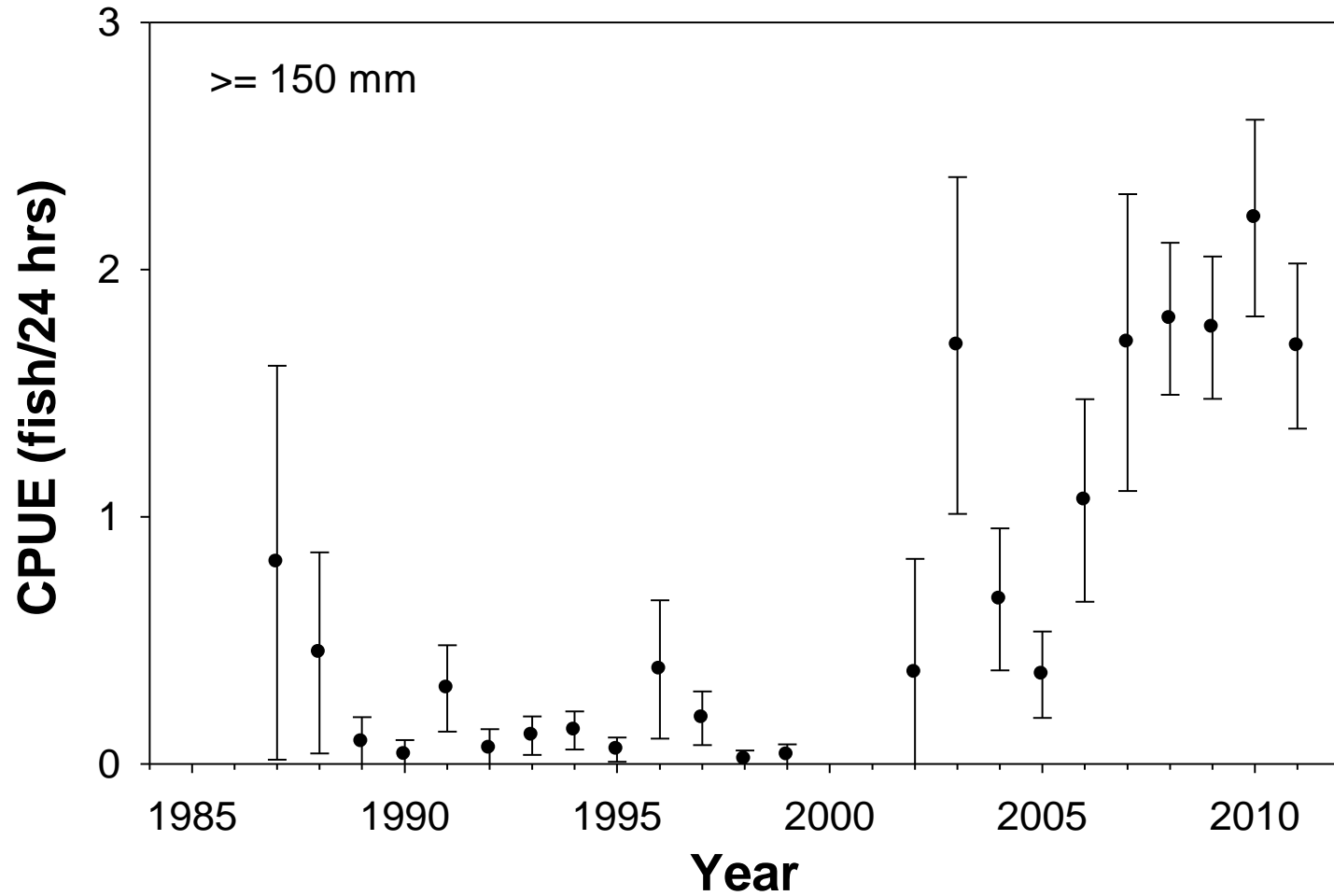
Humpback chub



FMS

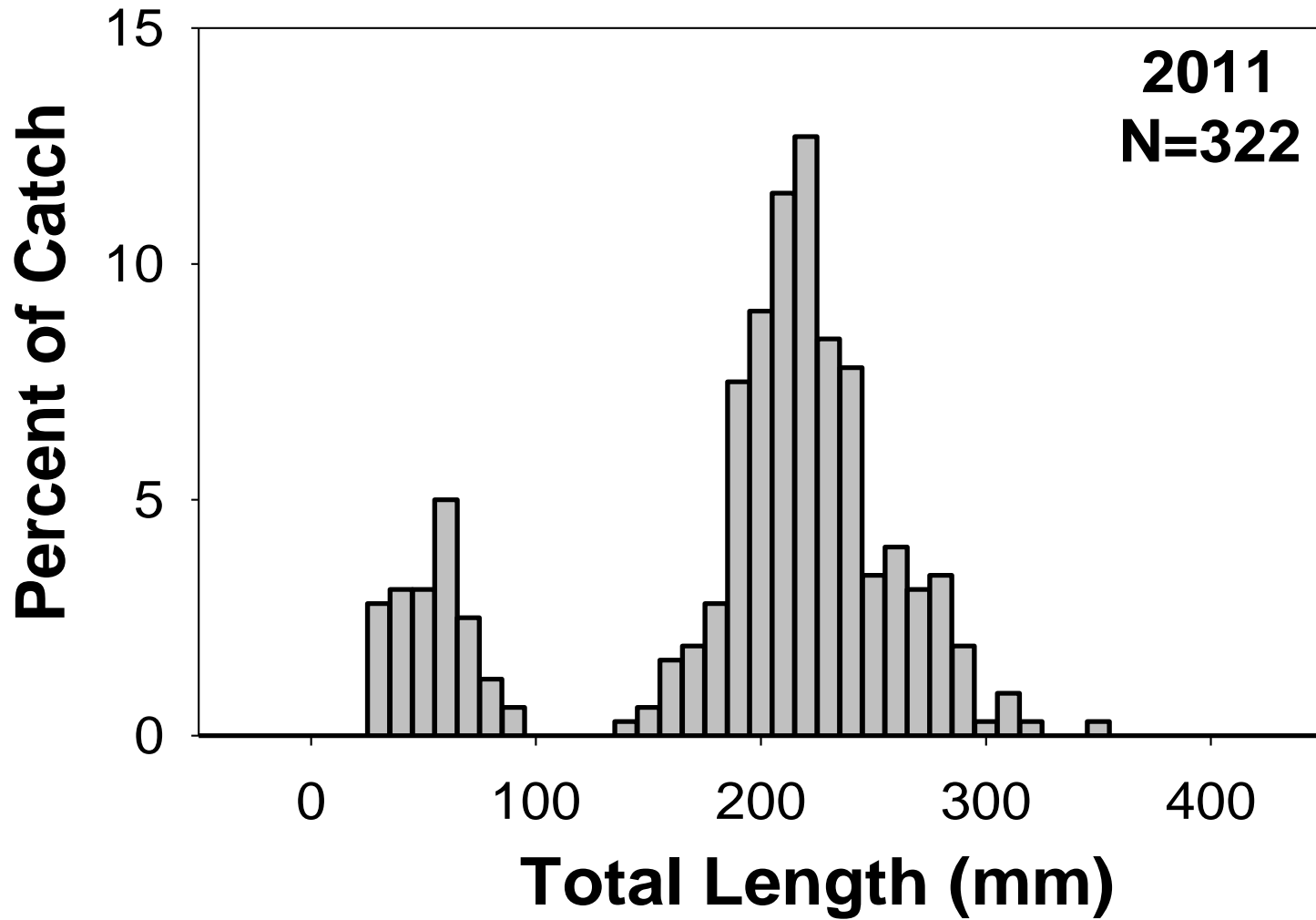


Flannelmouth sucker

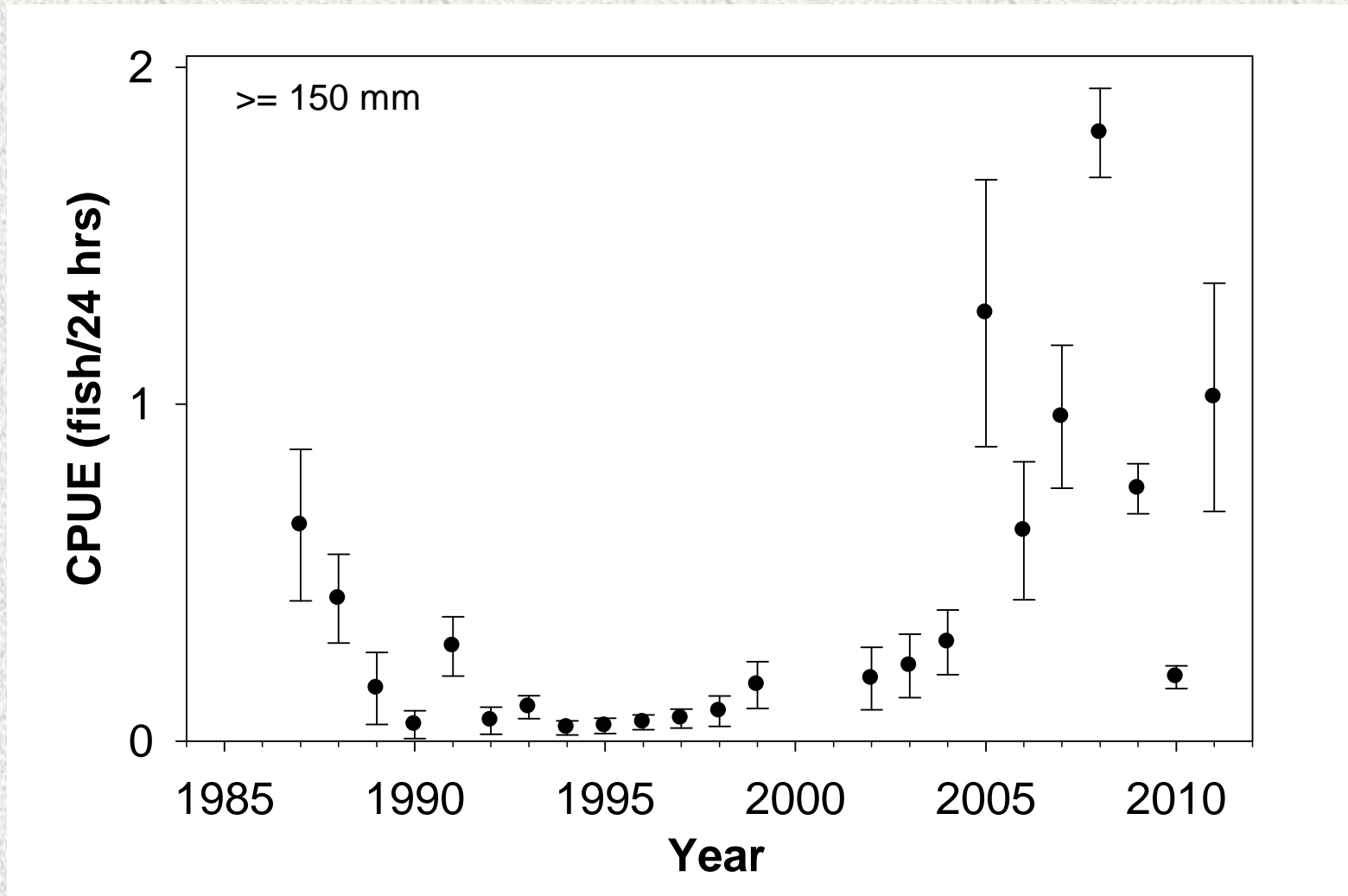


BHS

2011
N=322



Bluehead sucker



Why the increase in nonnatives in 2011?

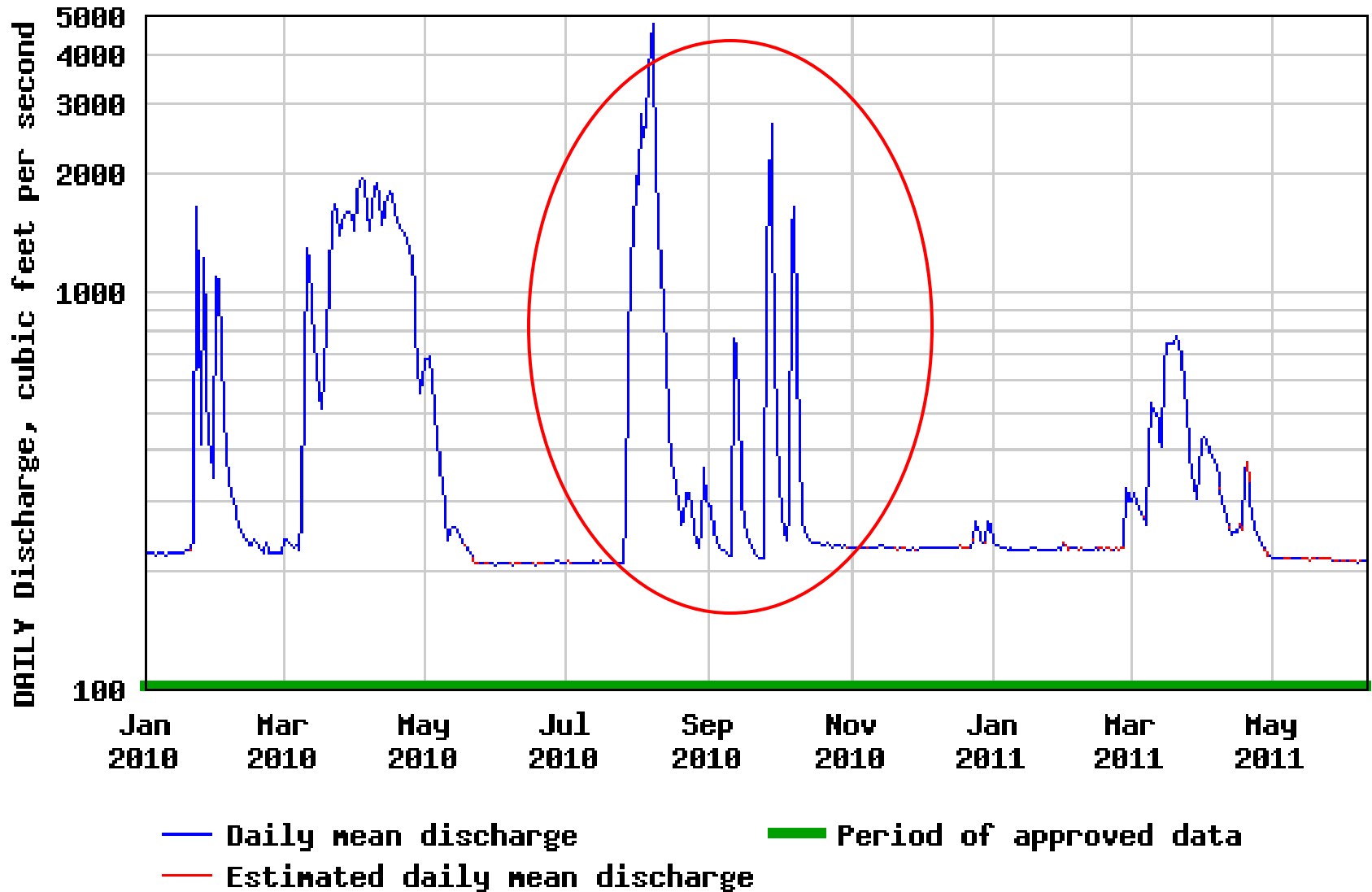
- 1) Possibly due to increases in mainstem Colorado River (equalization) flows from approximately 15,500 - 24,500 cfs over a three day period.
- 2) Increased flows allowed greater access to lower LCR for cold-water species (i.e., Rainbow trout).



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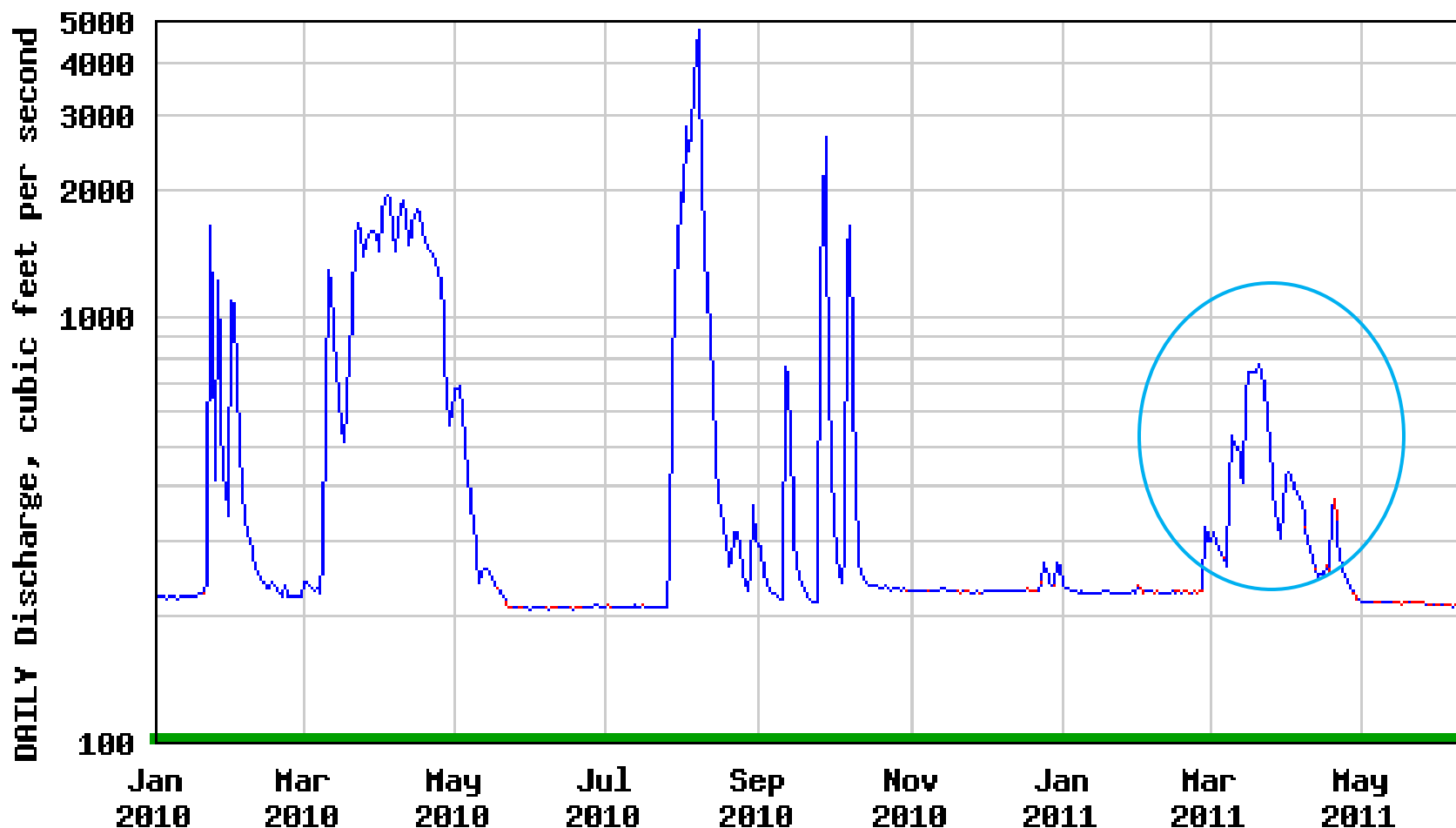
- 3) Dispersed small-bodied fish downstream in mainstem Colorado River (2011) and LCR in fall of 2010?
- 4) The increased relative abundance of fathead minnow is not unprecedented (i.e., 2006).

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USGS 09402300 LITTLE COLORADO RIVER ABV MOUTH NR DESERT VIEW, AZ



— Daily mean discharge

— Period of approved data

— Estimated daily mean discharge

Conclusions

- CPUE of HBC ≥ 200 mm was similar to early 1990's catch rates.
- Relative abundance of flannelmouth sucker continues to remain above historic observations.
- Relative abundance of commonly captured nonnative species tends to vary annually.
- Trends in LCR lower 1,200 m adult HBC (≥ 200 mm) are similar to trends in Age Structured Mark Recapture (ASMR) abundance estimates for adult HBC.



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