

***Trends in abundance of Northern
Snakehead and Largemouth Bass in two
Virginia tidal rivers...or parts thereof
(aka the ghetto graphs talk)***

john.odenkirk@dgif.virginia.gov





The Chosen ones – *the “good”*



The villain



Historically Important LMB Fisheries

Concerns:
Predation
Competition
Displacement



Recruitment

“A Ricker stock-recruit curve may be generally applicable to black bass.” (Shaw and Allen 2016)

“Compensatory, density-dependent mortality appeared to affect Northern Snakehead recruitment.” 17% of variability related to spring flow. (Hoff and Odenkirk 2019)

“Parabolic flow-recruitment relationships” (Smith et al. 2005)



Tidal River Sampling Strategies

Potomac

2004-2019

4 tribs/set stations

(3) 1200 sec runs

Spring (Apr/May)

NSH arrival 2004

Productive/SAV abundant

Rappahannock

2003-2019

6 sites stratified random

(3) 1200 sec runs

Fall (Oct)

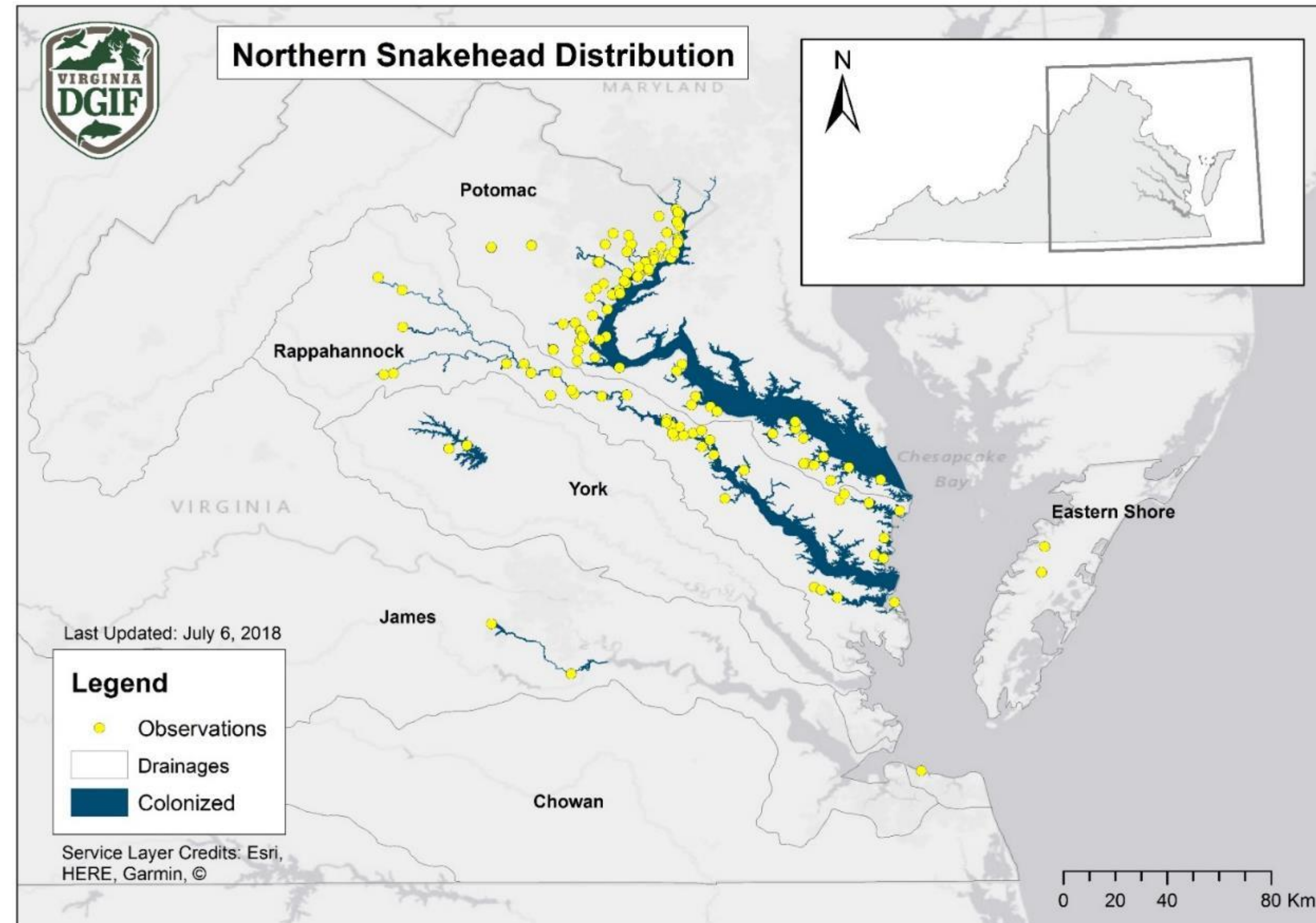
NSH arrival 2012

Less so, almost no SAV





Virginia Rivers of Chesapeake Bay Watershed



Virginia Potomac River Tributaries Sampled

Little Hunting Creek (Fairfax)

Dogue Creek (Fairfax)

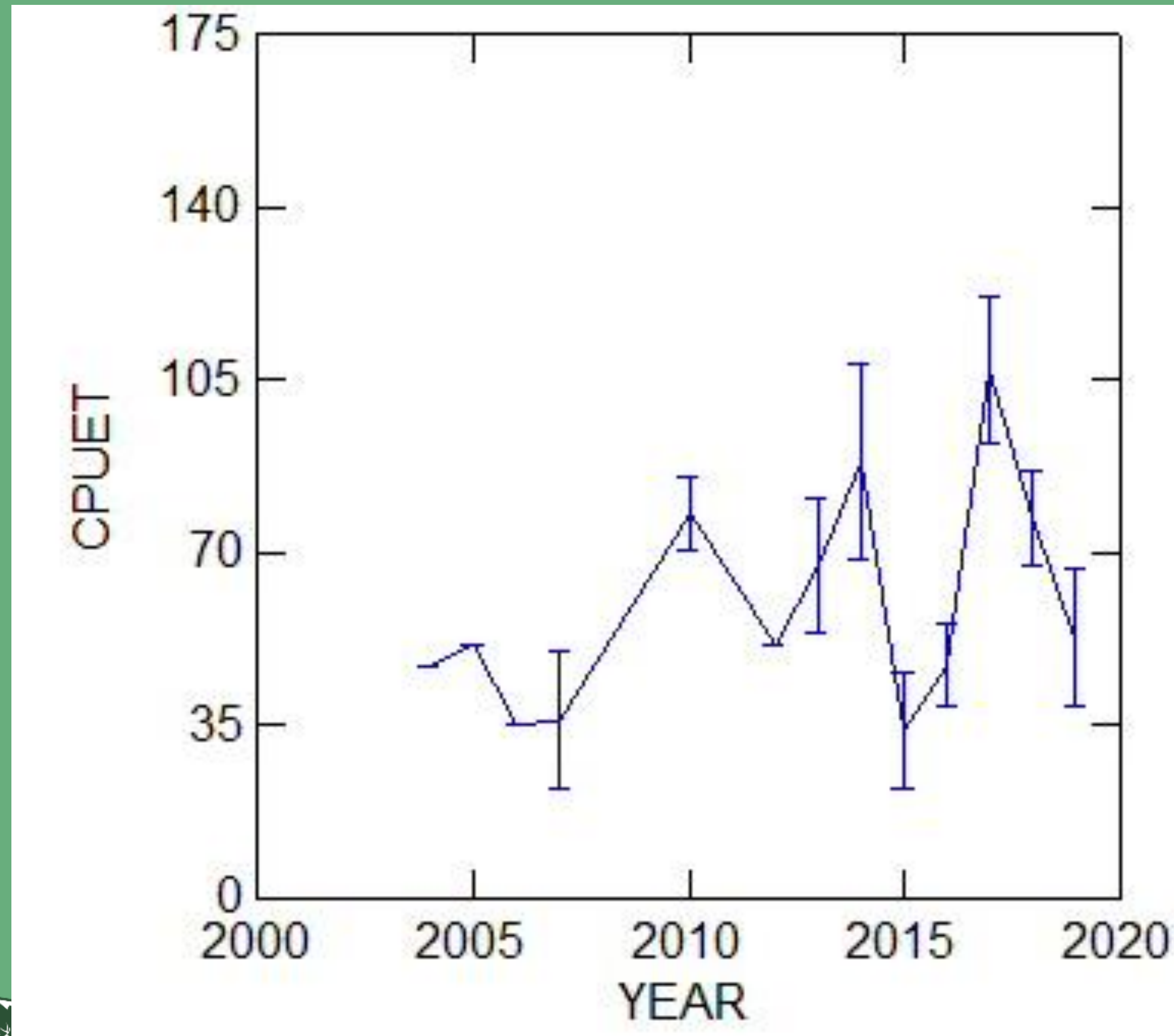
Pohick Creek (Fairfax)

Aquia Creek (Stafford)

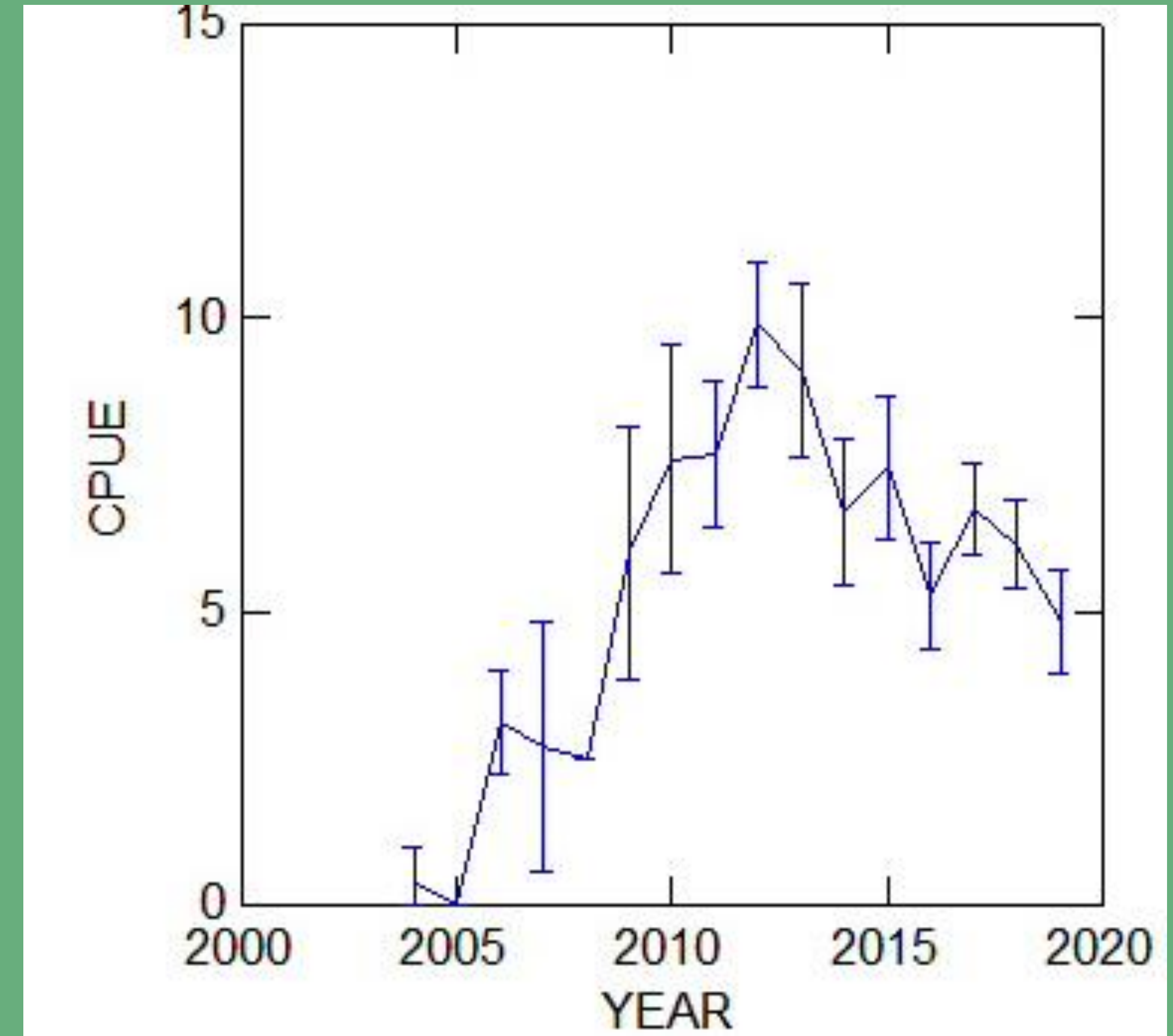


Little Hunting Creek Catch Rates

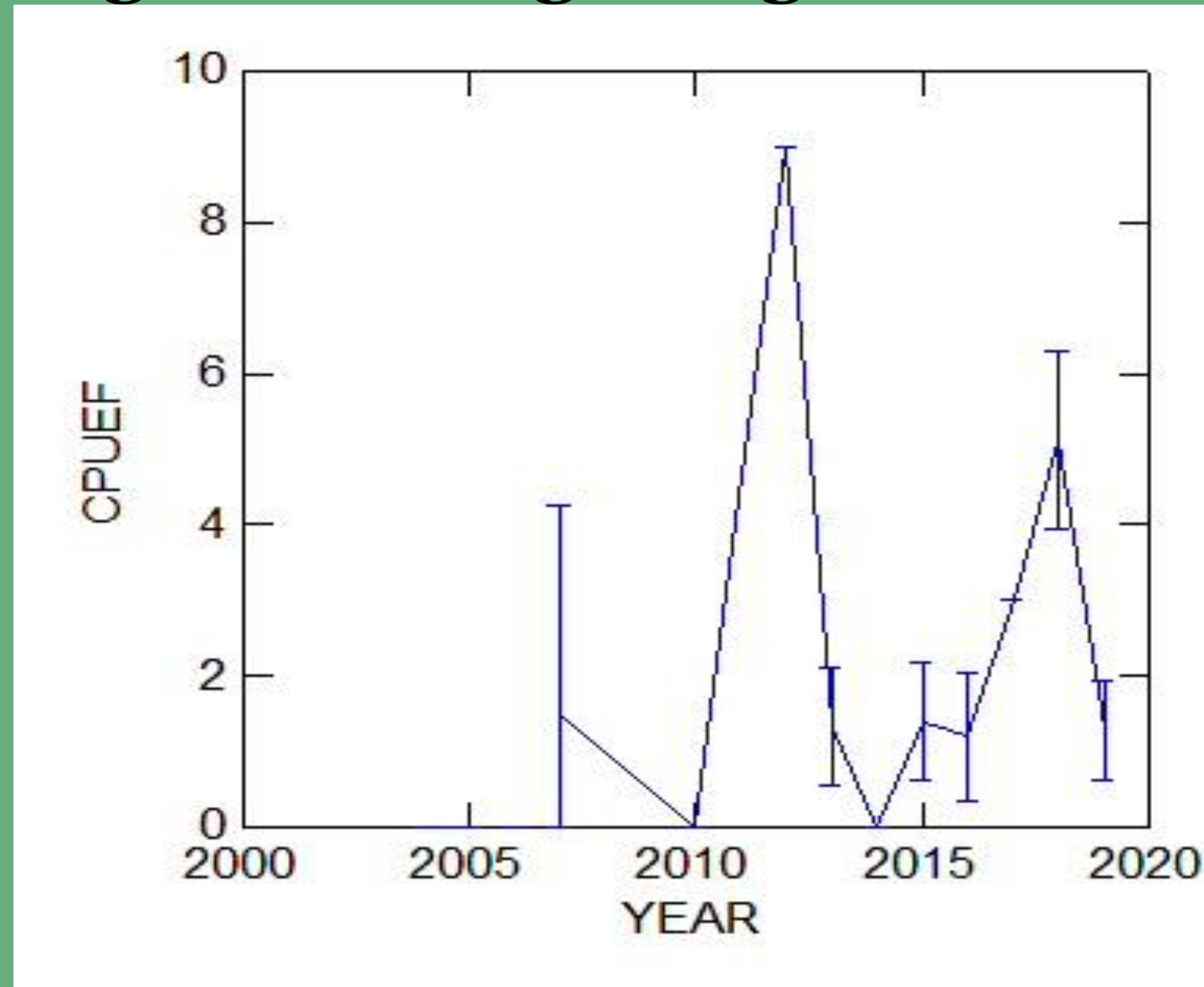
Bass



Snakehead

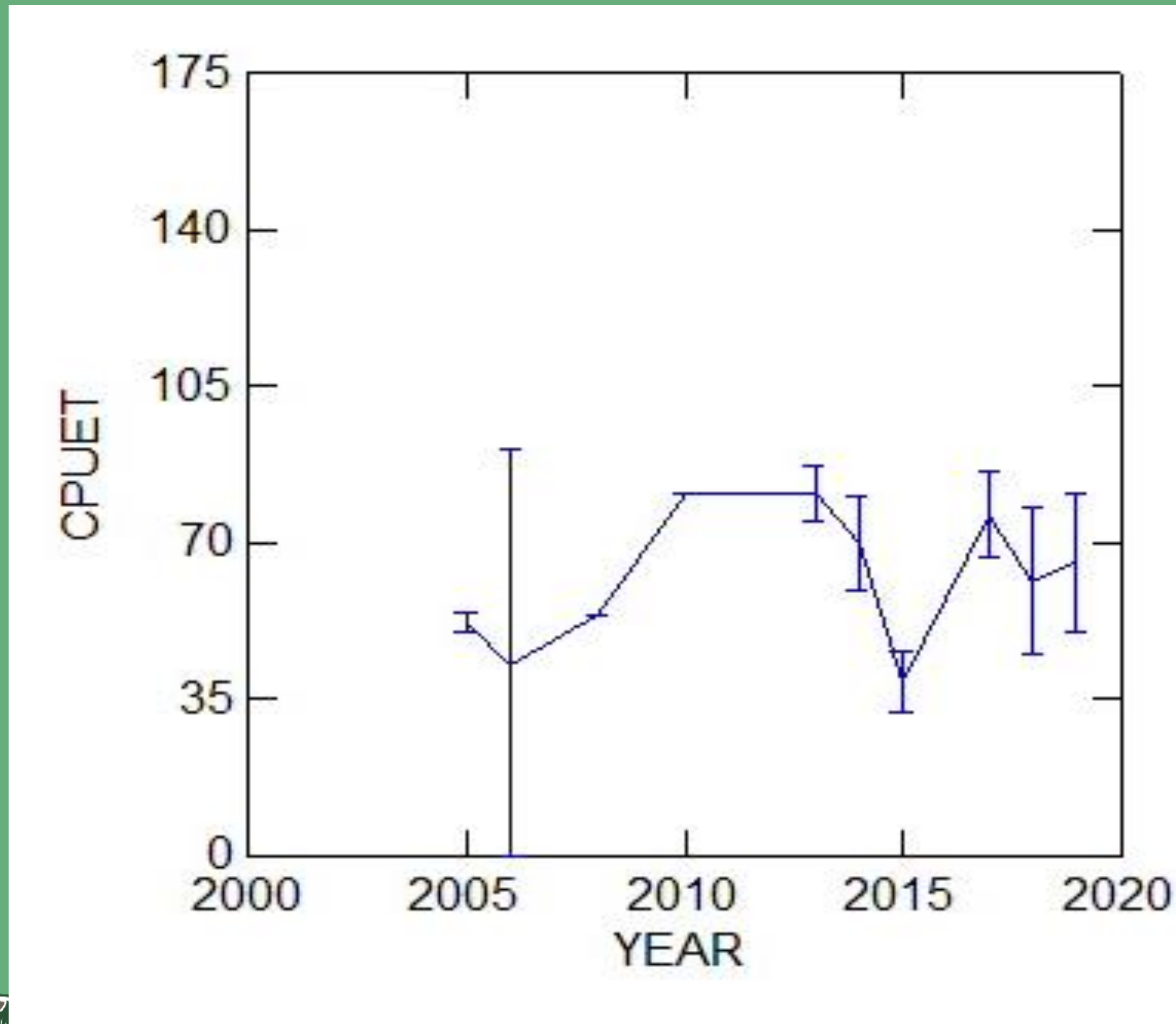


Little Hunting Creek Fingerling Bass Catch Rates

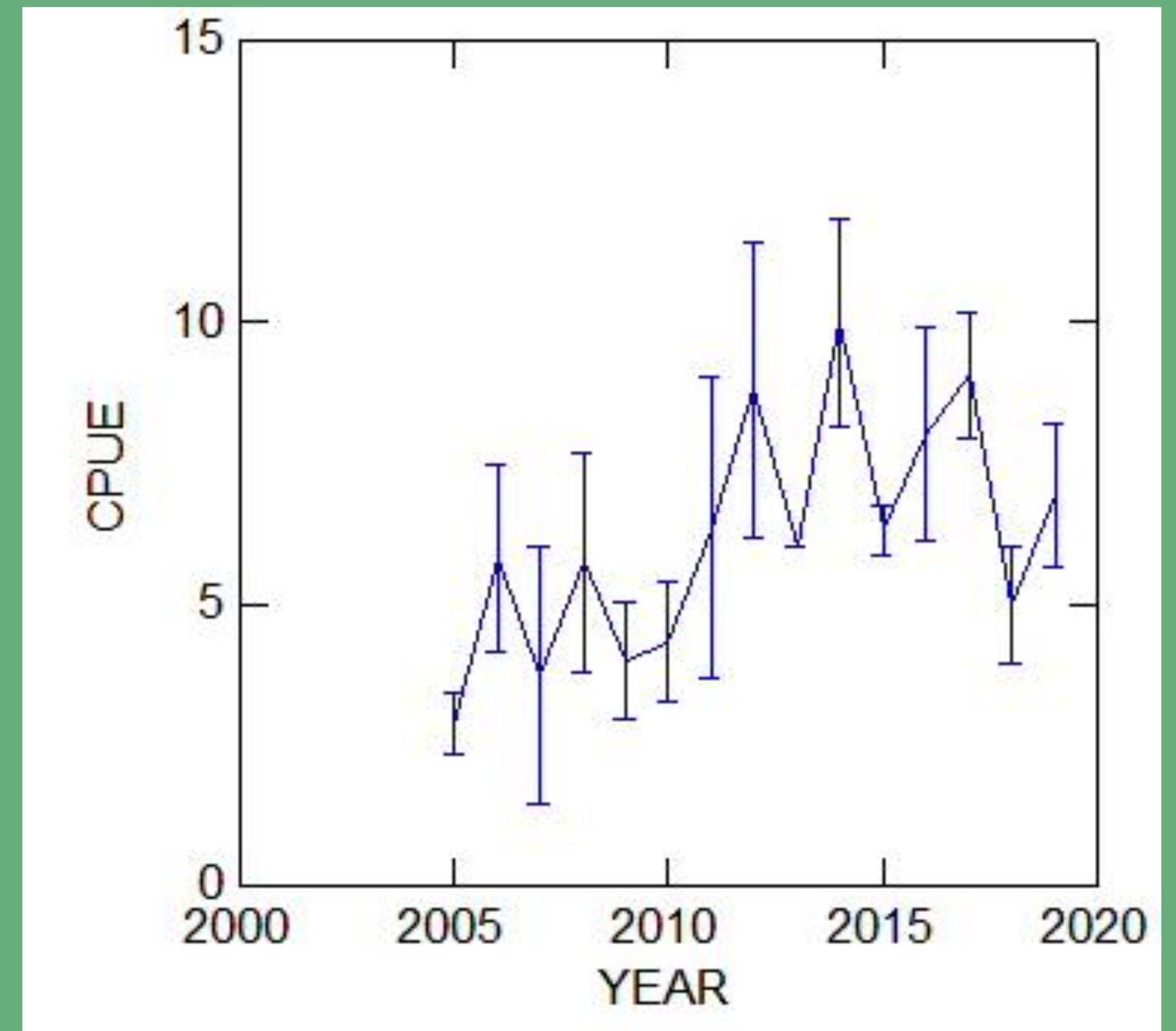


Dogue Creek Catch Rates

Bass

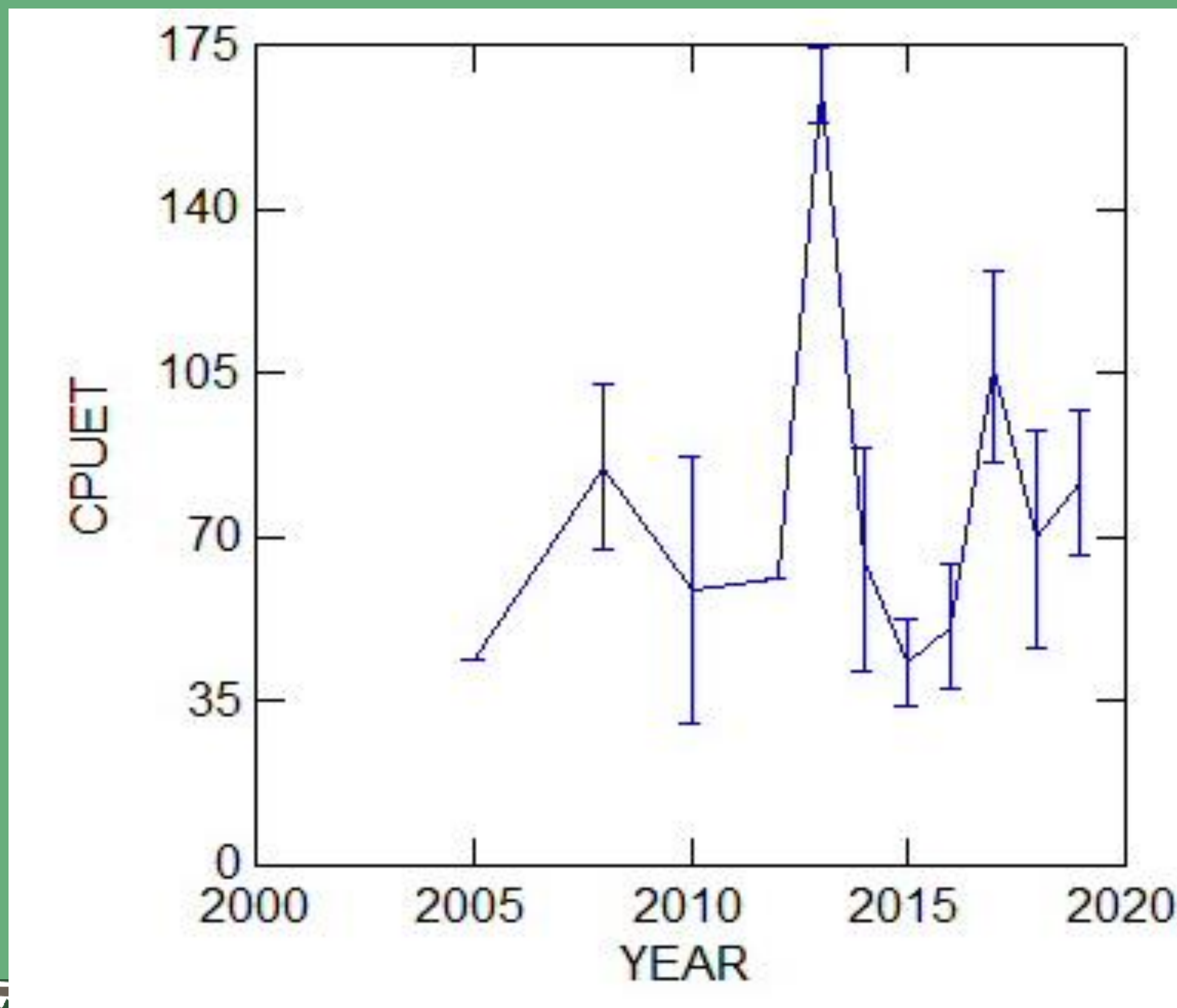


Snakehead

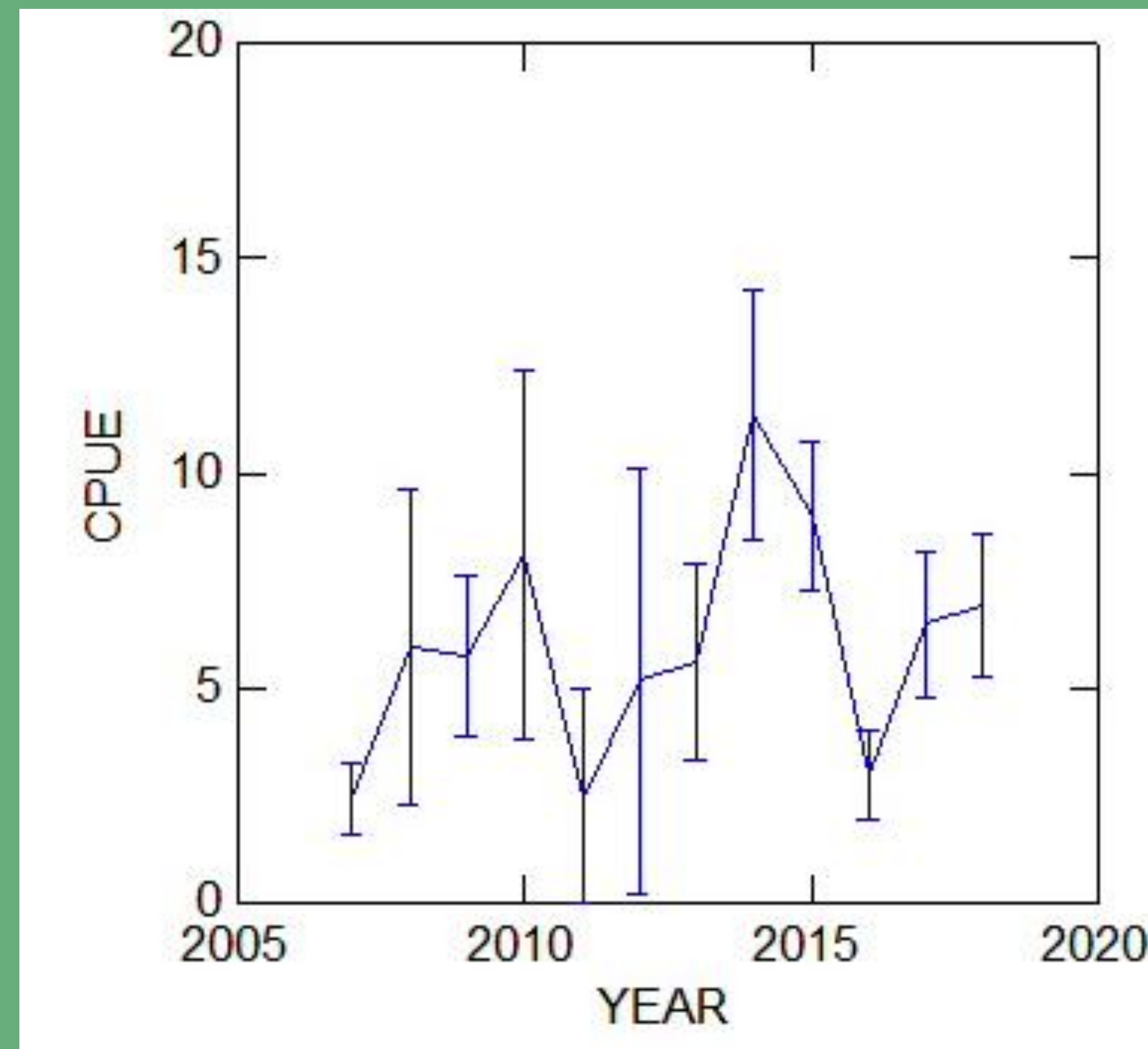


Pohick Creek Catch Rates

Bass

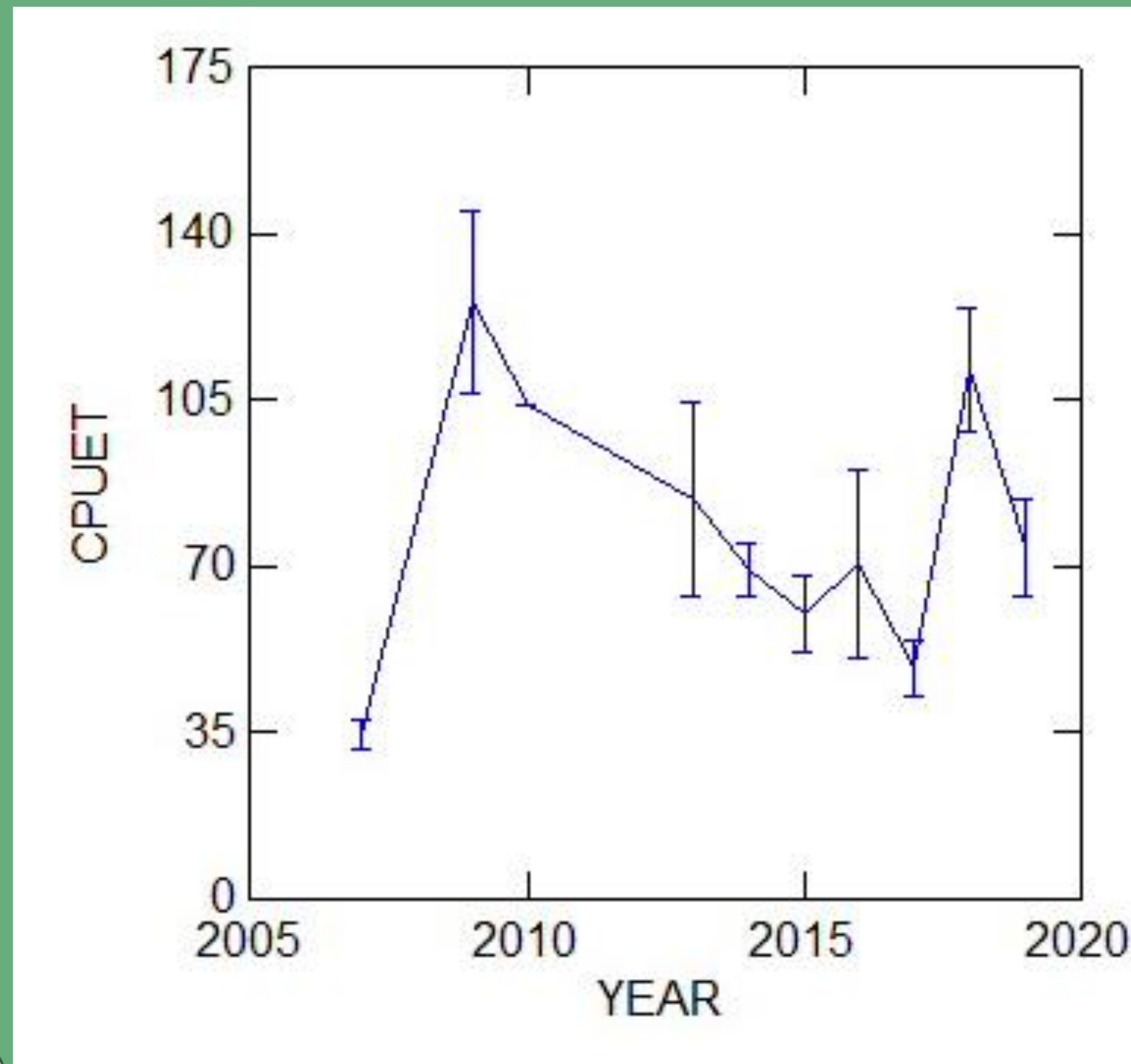


Snakehead

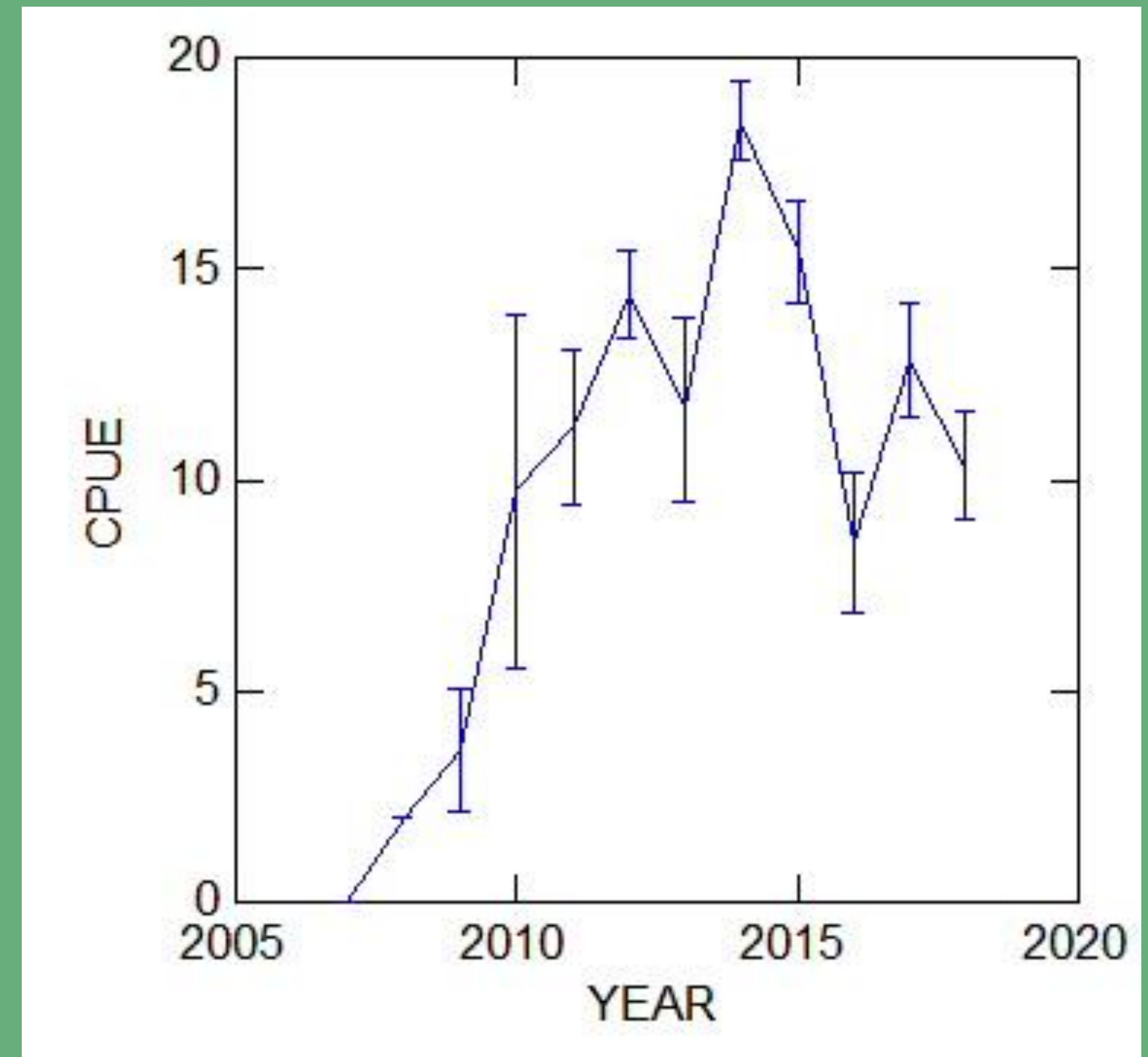


Aquia Creek Catch Rates

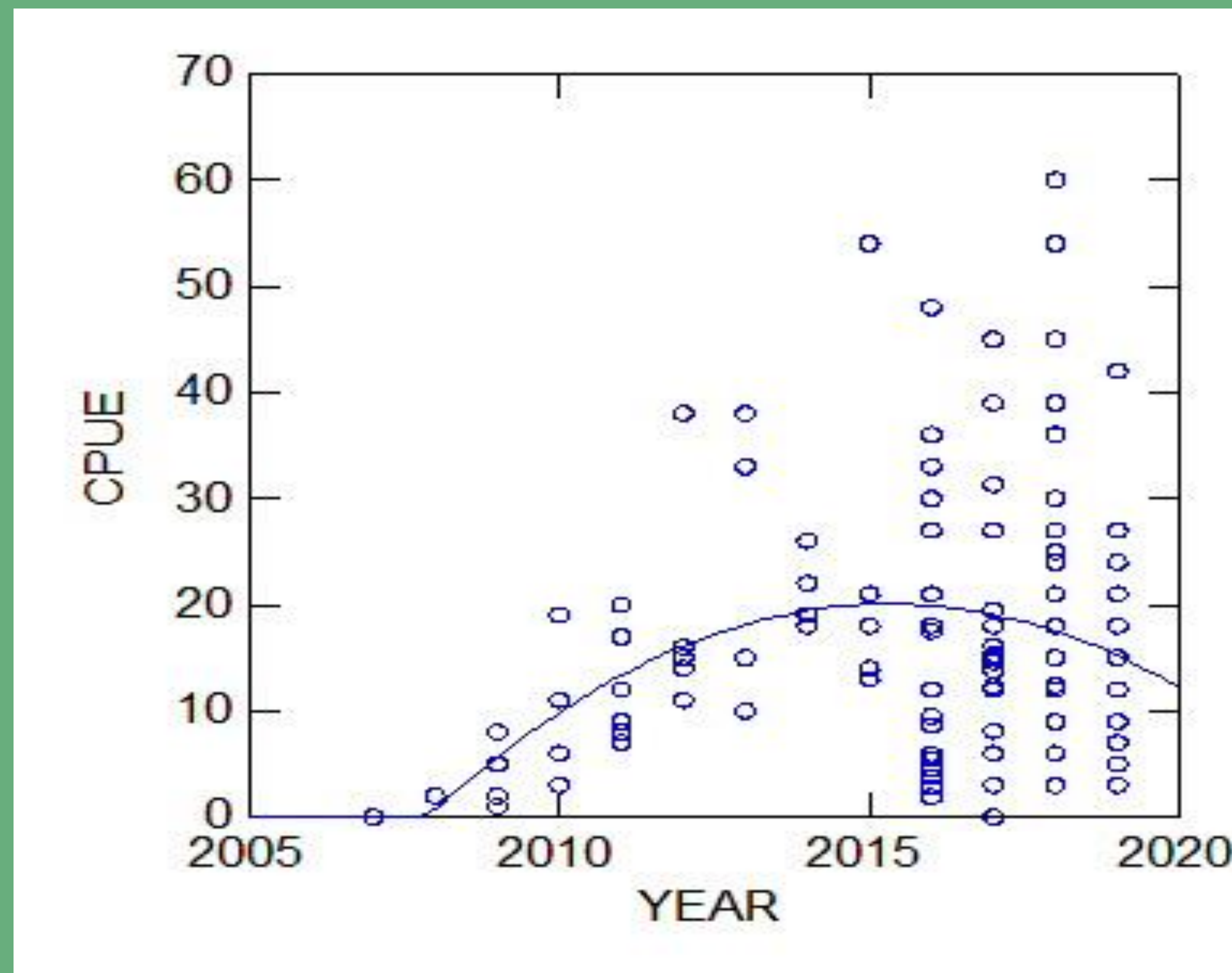
Bass



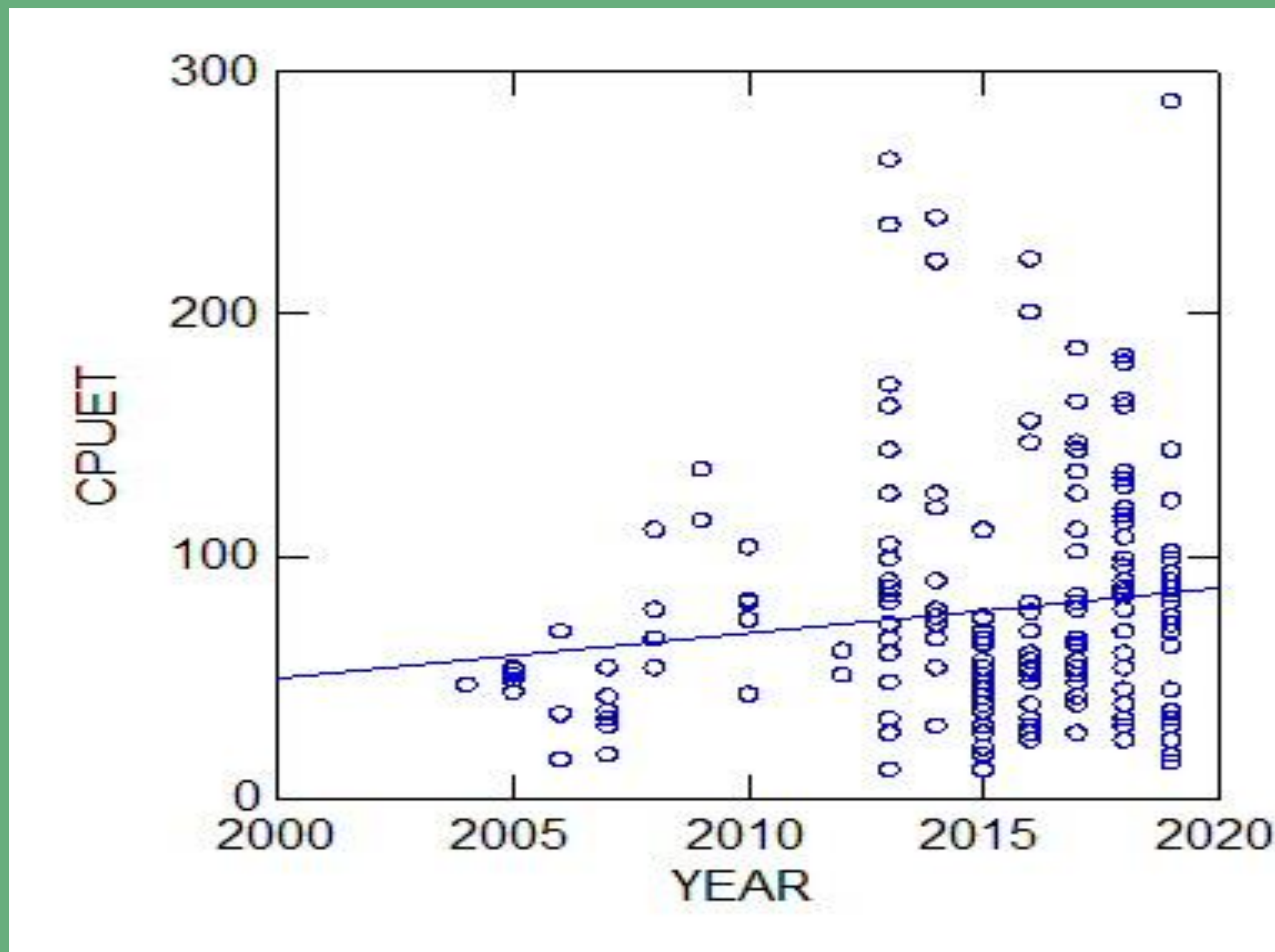
Snakehead



Aquia Creek NSH EF CPUE Quadratic Curve



Potomac River LMB CPUE Trend – All Sites



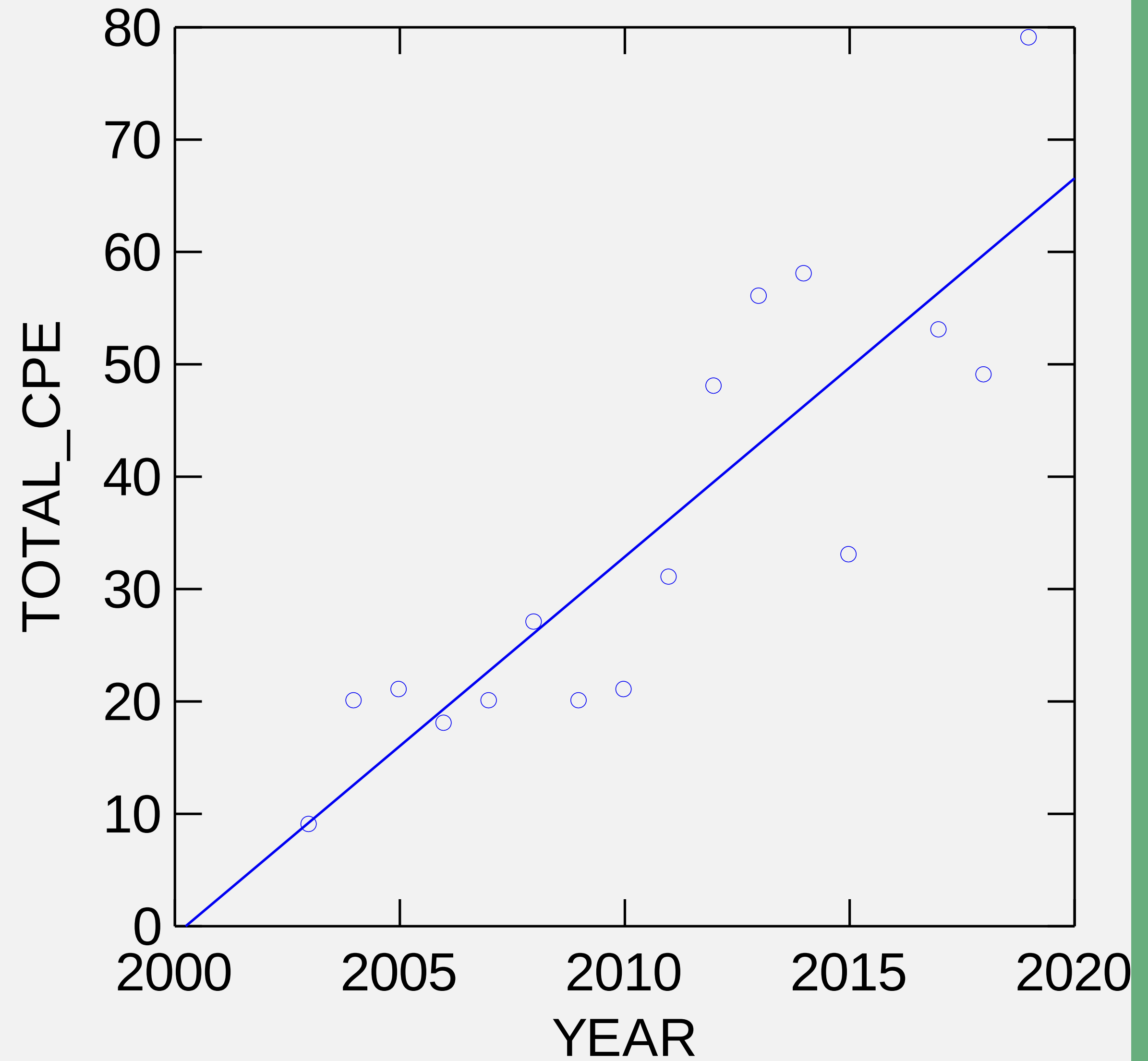
Rappahannock River Sampling

**Six sites on main stem between
Fredericksburg and Port Royal
3 miles apart**

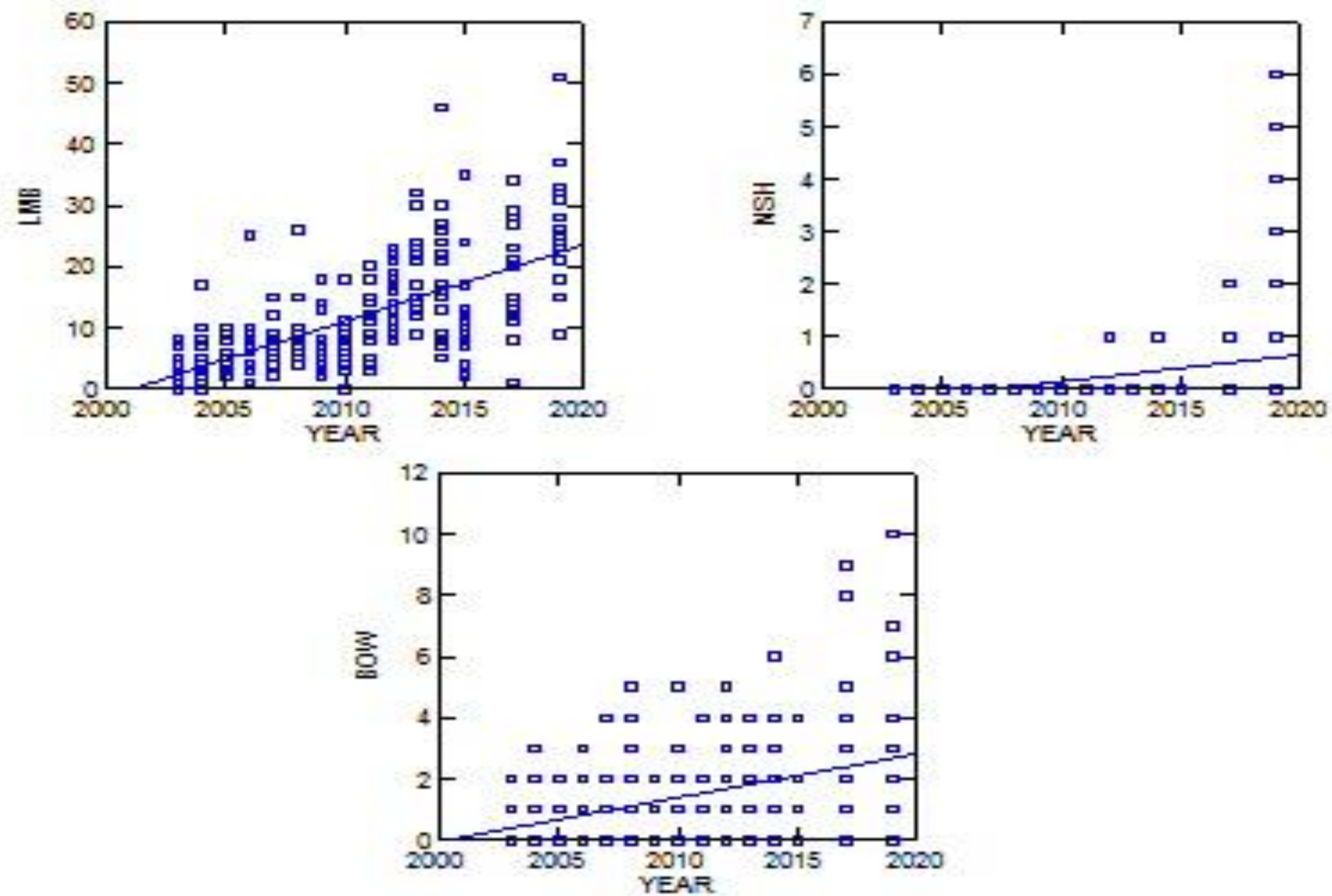




Tidal Rappahannock LMB abundance
CPE=Catch Per Effort (total bass per hour)
 $r^2=0.76$; $P<0.001$

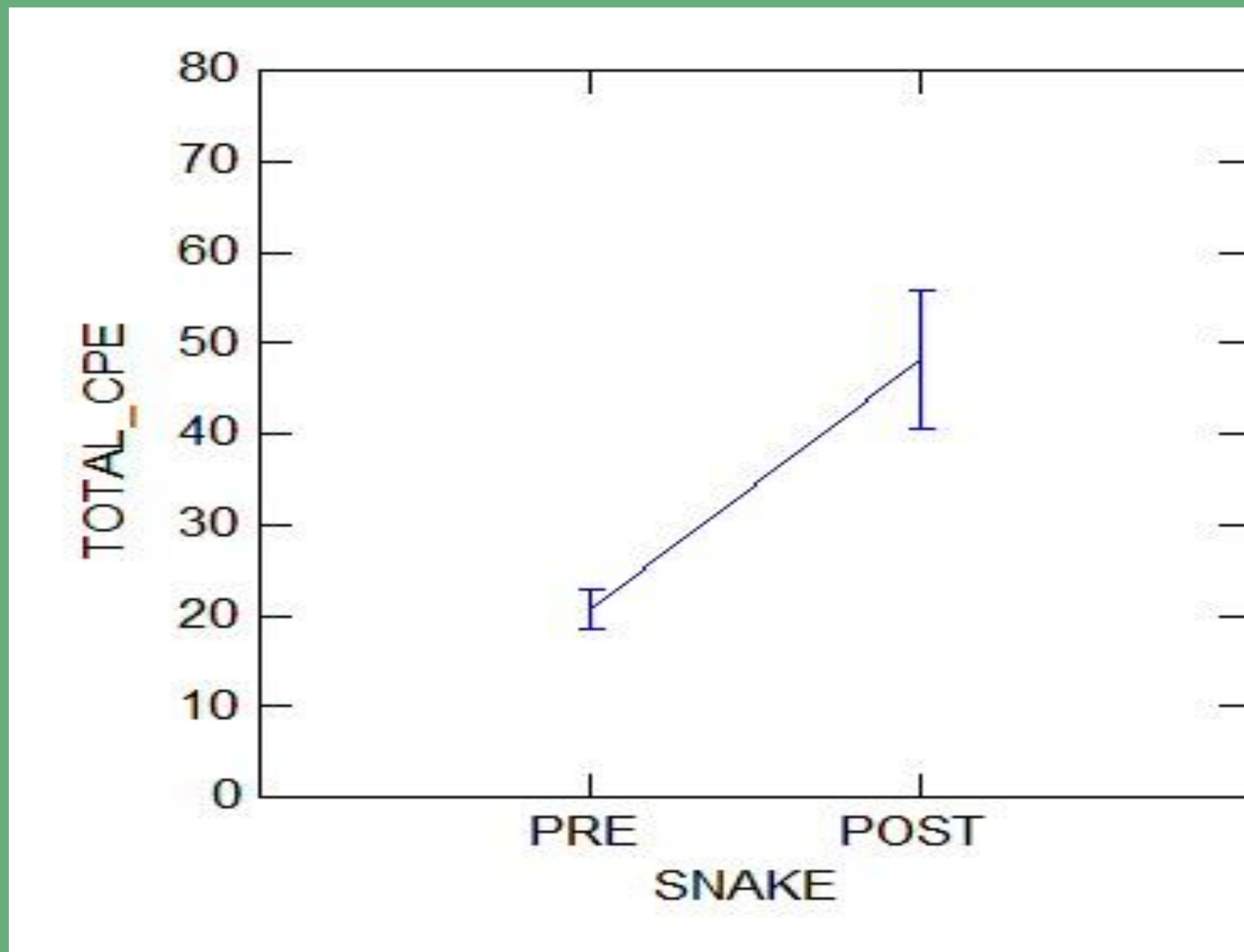


Rappahannock River Predator Catch Rates



Rappahannock River Largemouth Bass Abundance

ANOVA
 $P=0.001$
 $F=15.4$
 $n=9,8$



Conclusions

Largemouth Bass abundance was stable in Potomac River creeks and increased in the Rappahannock River over 15 years.

Northern Snakehead abundance in Potomac River creeks declined from peaks established in 2012-2015 and expanded in the Rappahannock River.

Snakehead and bass populations appeared to function independently with abundance related to variable recruitment.

