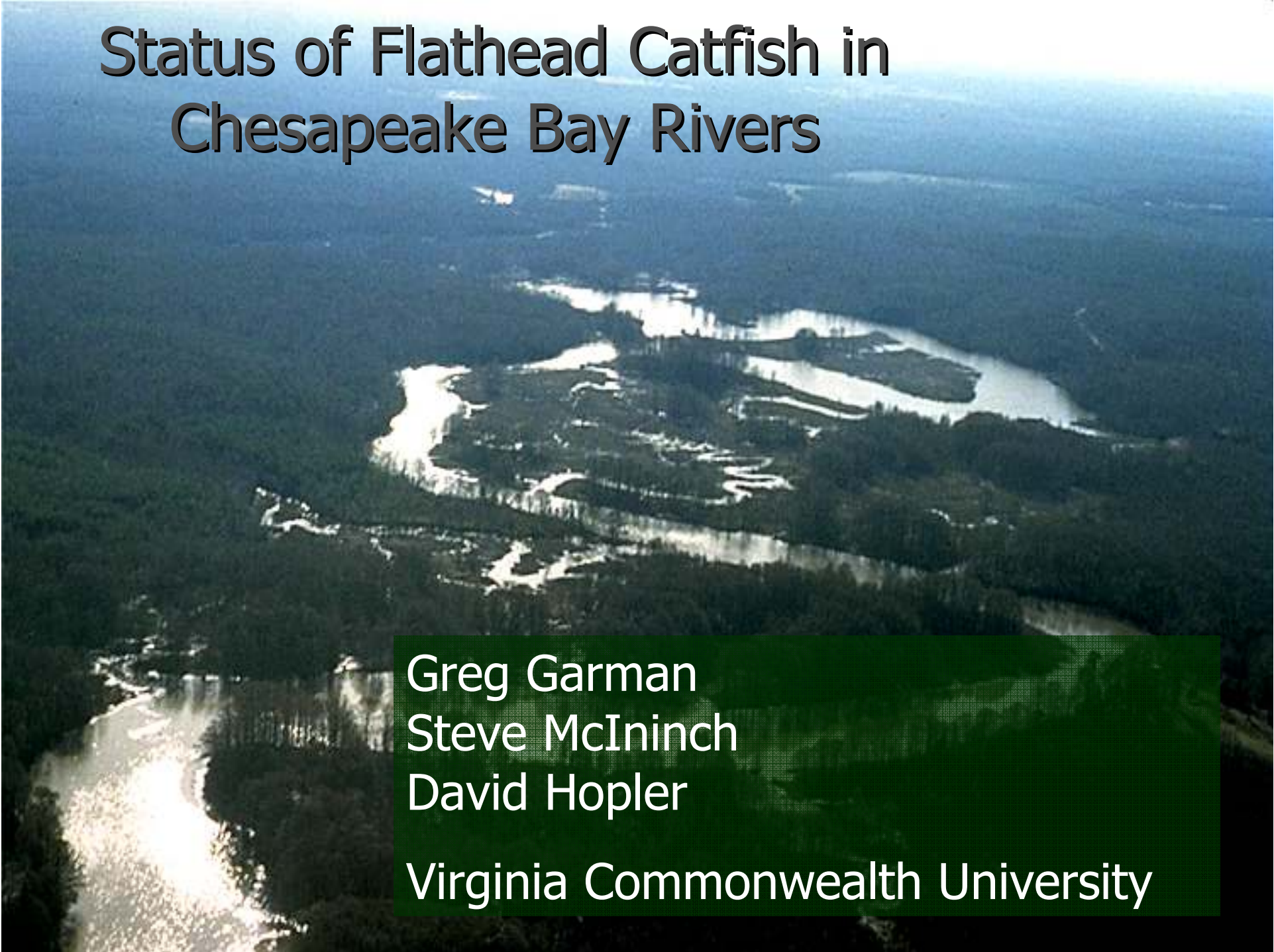


# Status of Flathead Catfish in Chesapeake Bay Rivers

An aerial photograph showing a river meandering through a dense, green forested landscape. The river is light-colored, possibly due to sand or silt, and contrasts with the dark green of the surrounding trees. The river flows from the bottom left towards the top right, with several bends and smaller tributaries visible.

Greg Garman  
Steve McIninch  
David Hopler

Virginia Commonwealth University

# Flathead Catfish (*Pylodictis olivaris*)



- Native to Mississippi and Gulf slope drainages
- Introduced to Virginia *ca.* 1965-1970
- Documented currently from Potomac, James, York, and lower Susquehanna rivers
- Tolerates up to 6 ppt
- Aggressive and opportunistic piscivore; 'biologically harmful introduction' (Fuller et al. 1999)



## More biology....

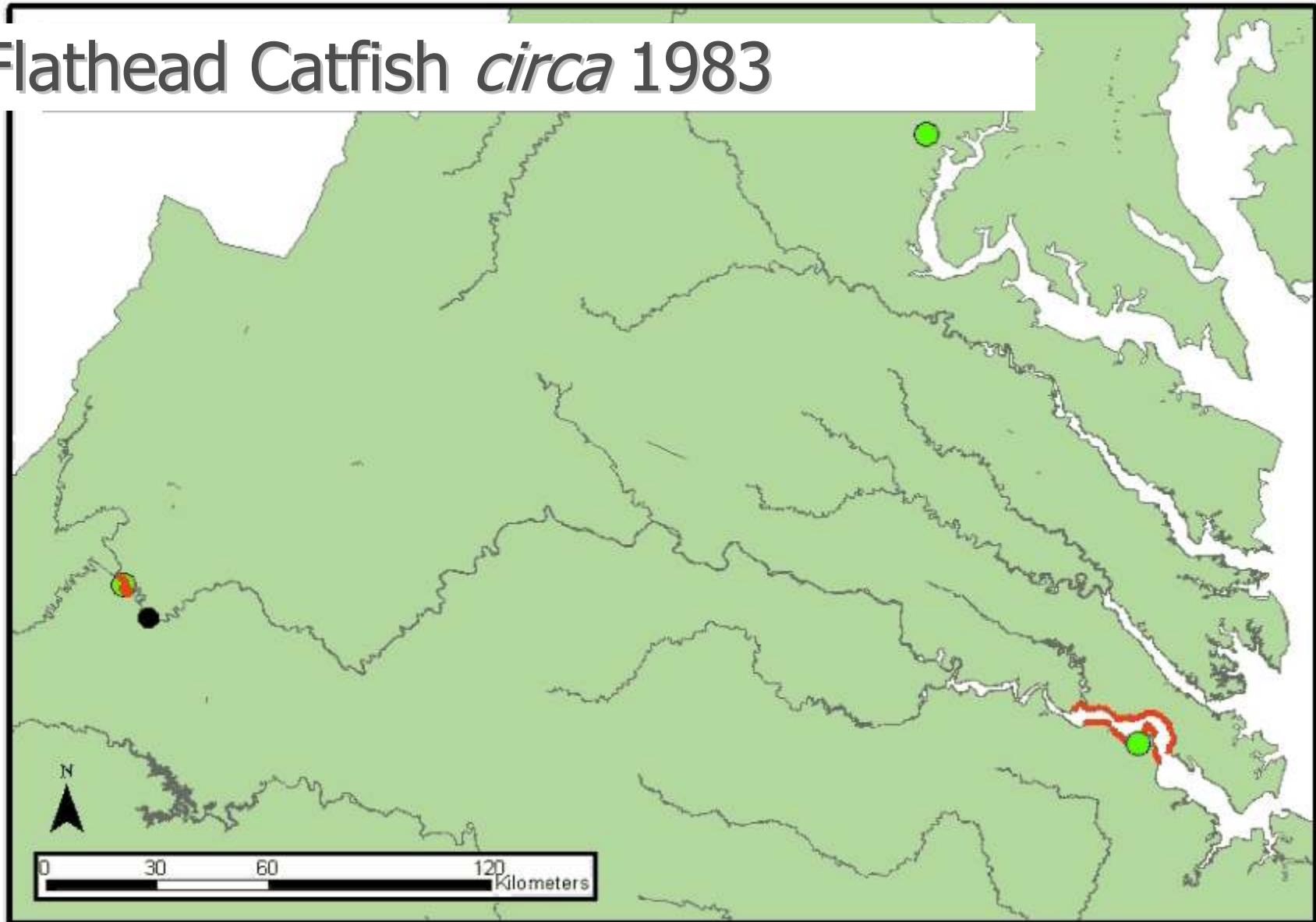


- >55 kg and age 15+ in native range (Jackson 1999)
- Not yet reached comparable sizes in Chesapeake Bay rivers
- Almost exclusively piscivorous >150 mm TL (Chandler 2003)
- Centrarchid specialist (Kwak 2008); *Alosa* in diets (Chandler 2003)

# Ictalurid 'Inoculations' in Virginia

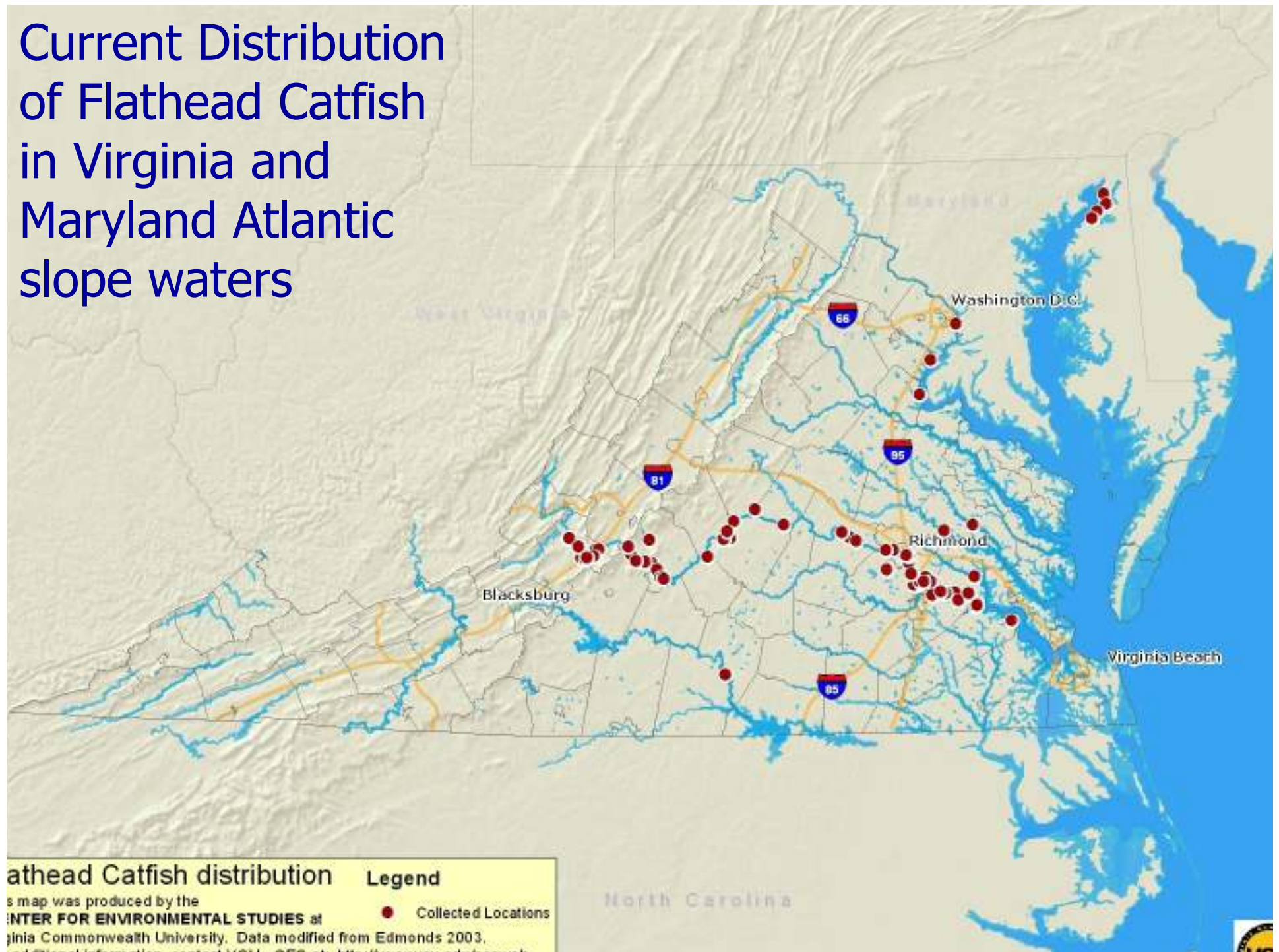
- FLATHEAD CATFISH
- < 200 introduced initially to the James; *ca.* 1965-70
- Headwater site and lower tidal site (Jenkins and Burkhead 1993)
- Significant time lag prior to rapid expansion in James River mainstem (Edmonds 2002)
- BLUE CATFISH
- 285,000 introduced *ca.* 1975
- multiple locations in several VA river systems
- Shorter time lag, followed by slower expansion than predicted by random dispersal model

# Flathead Catfish *circa* 1983





# Current Distribution of Flathead Catfish in Virginia and Maryland Atlantic slope waters



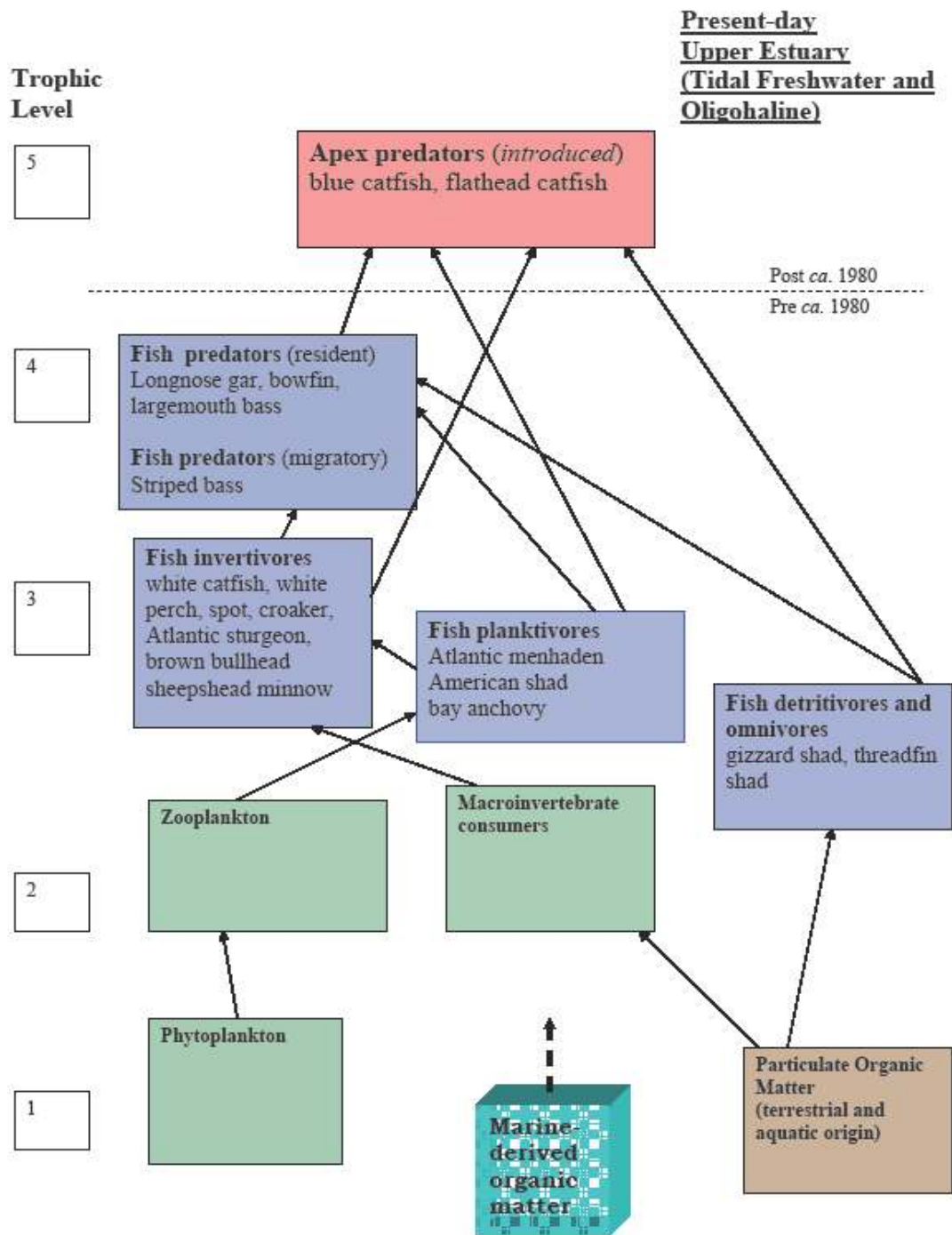
# Comparison of Potentially Invasive Catfishes in Virginia (Edmonds 2003)

## FLATHEAD CATFISH

- Extended lag periods
- Faster dispersal
- Limited dispersal mechanisms
- Few introductions with very small numbers
- Habitat and trophic specialist

## BLUE CATFISH

- Shorter lag periods
- Slower dispersal
- Multiple dispersal mechanisms
- Repeated introductions with larger numbers
- Habitat and trophic generalist



# Stable isotope analyses ( $^{15}\text{N}$ , $^{34}\text{S}$ , $^{13}\text{C}$ ) of trophic structure in VA tidal rivers

Garman and Macko 1998

MacAvoy, et al. 1998; 2001; 2008

Macko, unpub. data



# Hypothesized Trophic Structure

James River upper  
estuary

 predators

**Ca. 1900**

**2° Consumers**

**1° Consumers**

**Carbon source(s)**



# Hypothesized Trophic *Cascade*

James River upper  
estuary

Ca. 2010

+

Apex predators

-

2<sup>o</sup>

+

1<sup>o</sup>

-

producers



# Management implications

## Flathead catfish in Chesapeake Bay rivers

- High densities more likely in systems lacking comparable native predators, abundant forage, and in nontidal habitats or tidal habitats with structure (constructed reefs);
- May compromise restoration of native species (e.g. *Alosa* spp.) and alter lower trophic levels through hypothesized top-down cascades (McPeck 1998; MacAvoy, et al. 2008);
- Flathead catfish range expansion through angler introductions and, ironically, habitat restoration (dam removal, fish ladders)



