Middle & Lower Brazos River Study Design - Biology

Fourth Stakeholder Workshop

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Bryan, Texas

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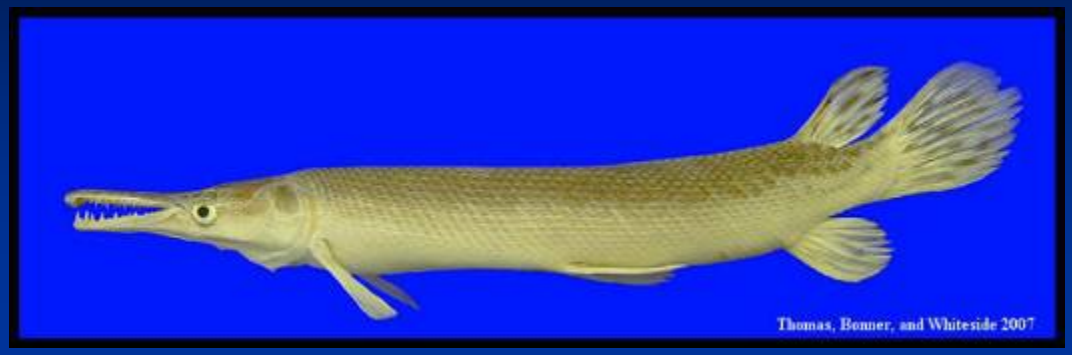
TEXAS INSTREAM FLOW PROGRAM

TEXAS PARKS & WILDLIFE

Middle & Lower Brazos River Biological Indicators

- Instream Biological Communities
  - Native Richness and Relative Abundance
  - Fish
  - May be appropriate
    Benthic invertebrates, mussels, plants, other vertebrates
- Instream Habitat
  - Habitat Quality and Quantity
  - Mesohabitat Area and Diversity
- Riparian Habitat
  - Vegetation
  - Soils
  - Hydrology

Proposed Indicator Fish Species



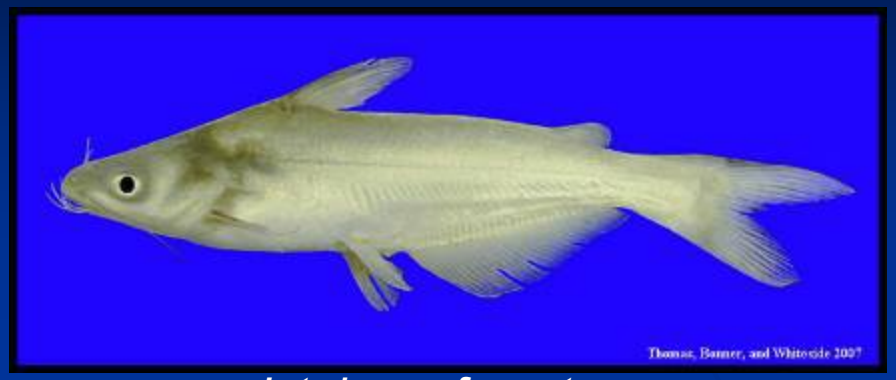
Atractosteus spatula
alligator gar

Macrhybopsis hyostoma
shoal chub

Notropis shumardi
silverband shiner

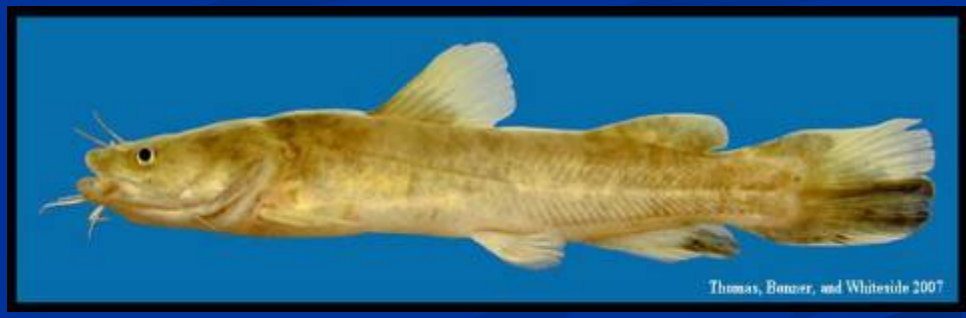
Notropis potteri
Chub shiner

Micropterus punctulatus
spotted bass



Ictalurus furcatus
blue catfish

Ictalurus punctatus
channel catfish



Pylodictis olivaris
flathead catfish

Freshwater Mussels

Mussel Information

- Karatayev and Burlakova, SFA, January 2008
  - Surveyed mussel populations at several sites throughout the middle and lower Brazos basin including sites at FM 485, SH 7, SH 21, and US 59
  - Three sites on the Little River and 1 on Yegua Creek
- Randklev and Kennedy, UNT, July 2008
  - Brazos River at FM 485, Hwy 105
  - Navasota River and Yegua Creek
- Both studies demonstrate that the lower Brazos drainage supports a high diversity of unionids.

Mussel Facts

- Historically 25 mussel species known to occur in Brazos River basin
- Recent research describes 14 species in the Brazos including tributaries
- Of these, 10 species are found in the Brazos mainstem
- Two of which are State listed or federally proposed for listing

Imperiled species

- *Truncilla macrodon* (Texas fawnsfoot)
  - Rare Central Texas endemic species – fewer than 200 have been collected since its description 1852
  - Brazos at Hwy 105 – 10 individuals were found all juveniles suggesting a new population discovered

- *Quadrula houstonensis* (smooth pimpleback)
  - Previous studies have documented decline in distribution (see Howells, 2006)
  - Found on Brazos at FM 485 and Hwy 105 as well as the Navasota at Hwy 105 and Yegua Creek

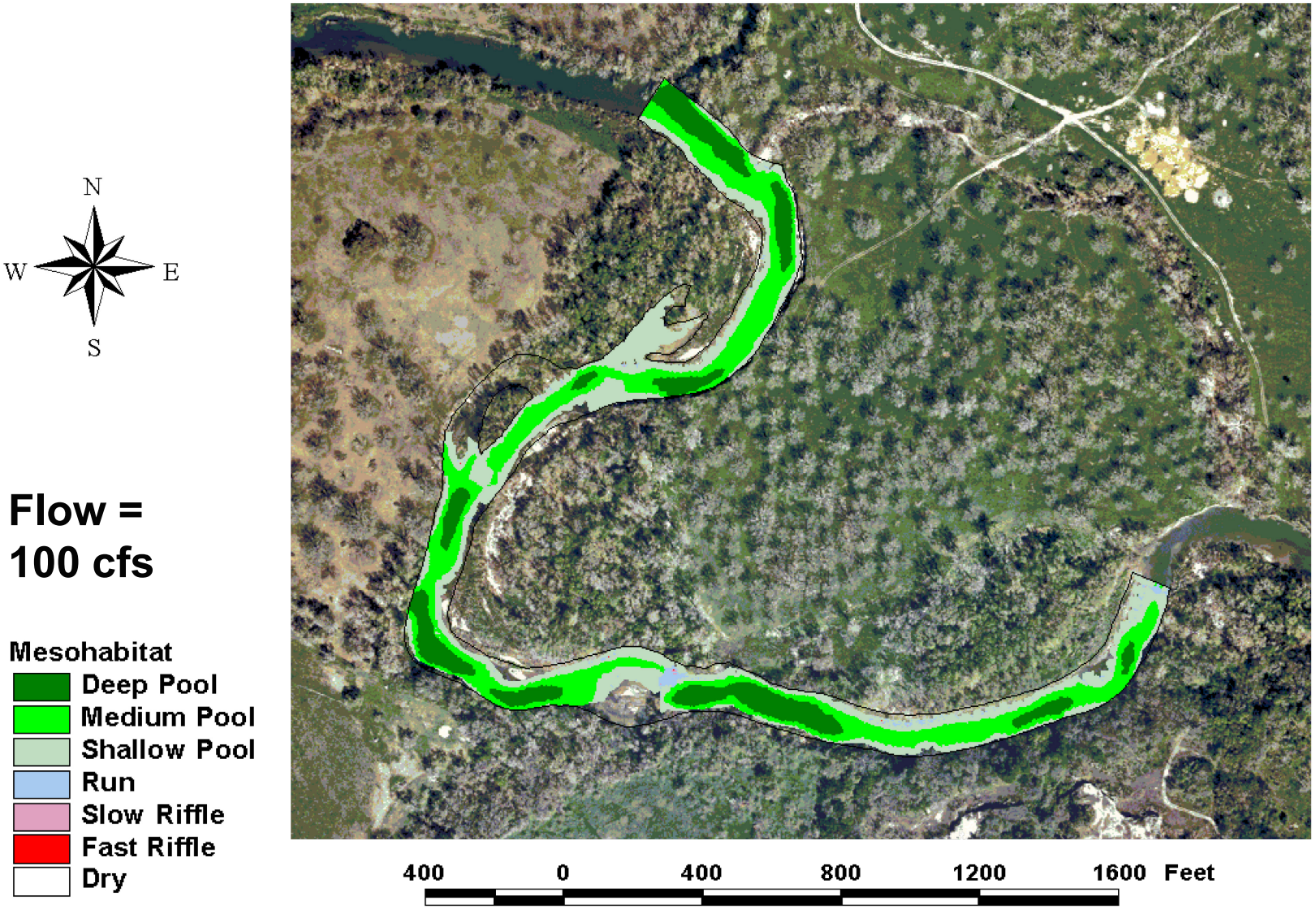
Other Species?

Instream Habitat

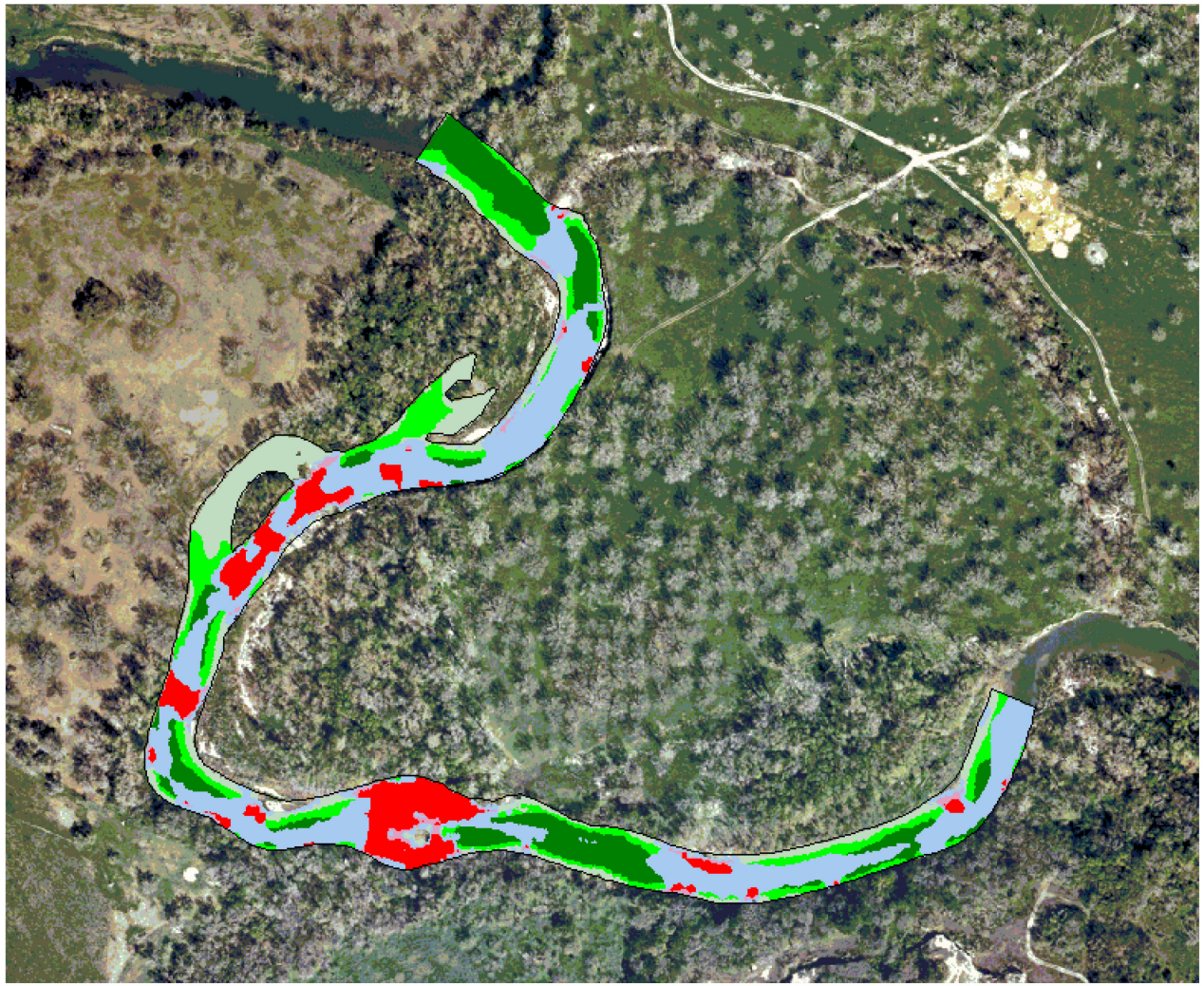
Mesohabitats

- Pool – flat water, low current; usually deep
- Backwater – flat surface, very slow or no current
- Run/Glide – low slope, smooth, unbroken surface
- Riffle – moderate slope, broken surface
- Rapid – moderate to high slope, very turbulent
- Chute – very high velocities in confined channel

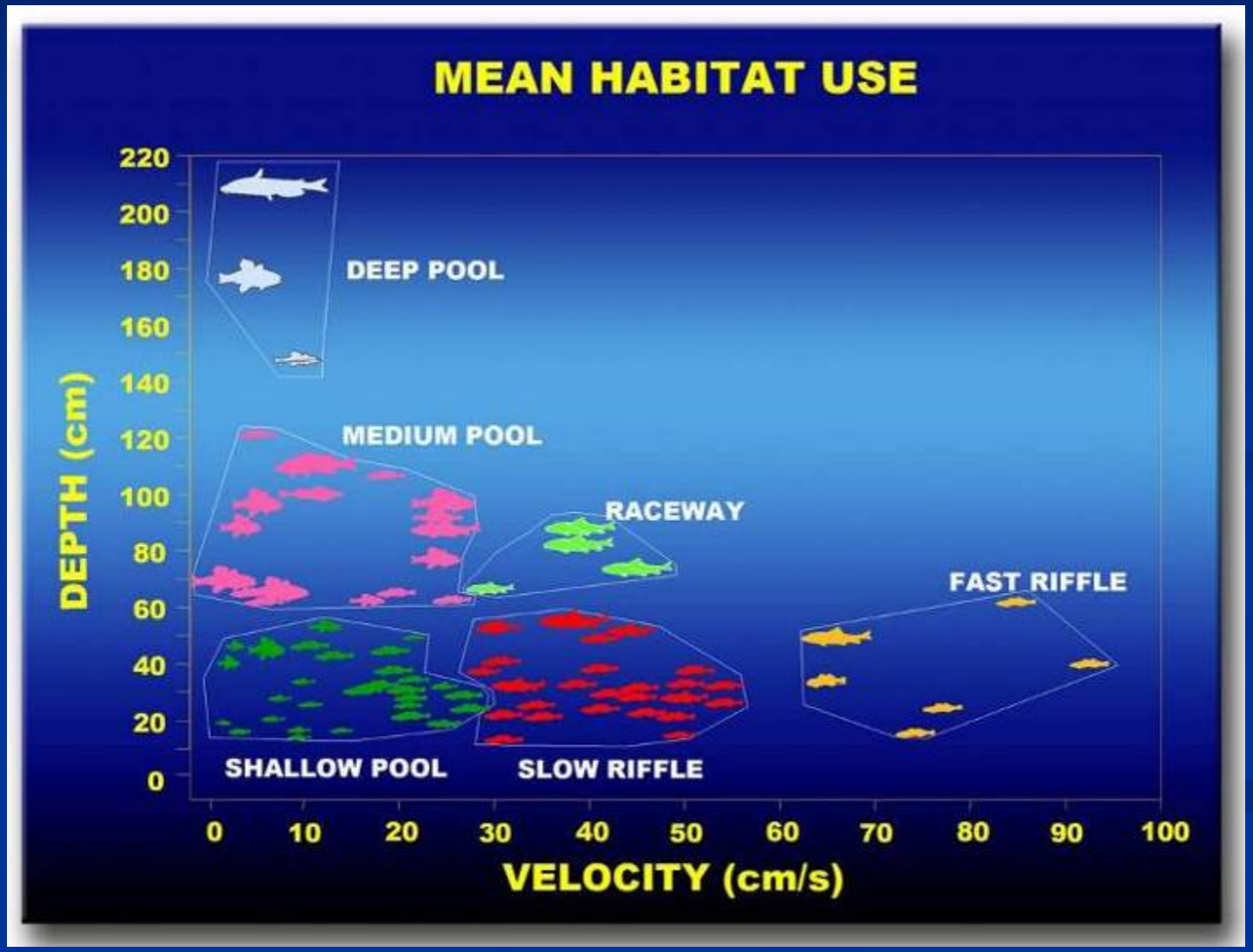
Habitat Changes with Flow



Habitat Changes with Flow

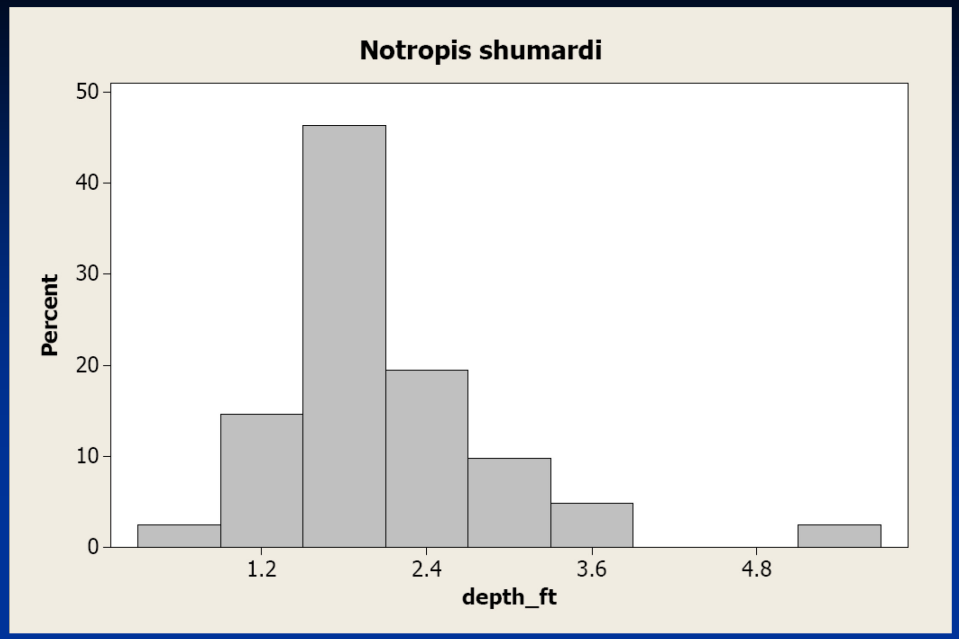


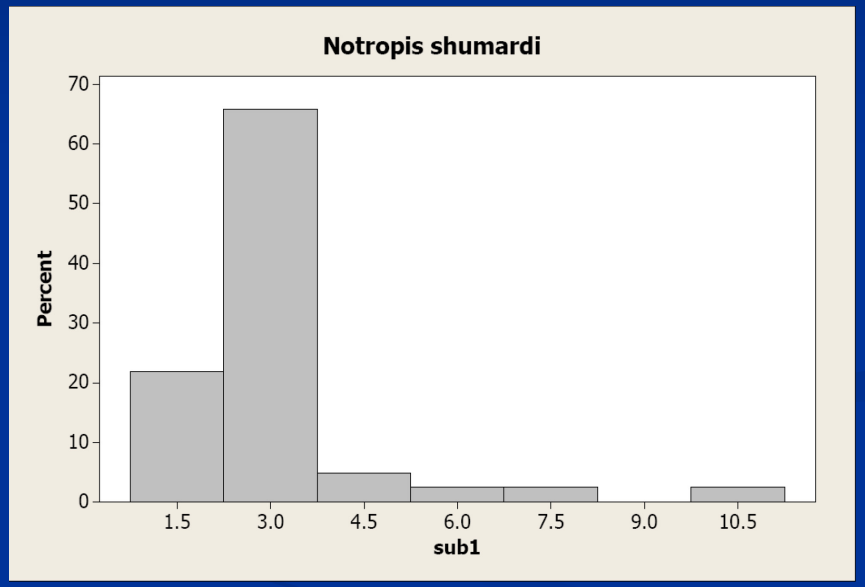
Different Fish Use Different Habitats

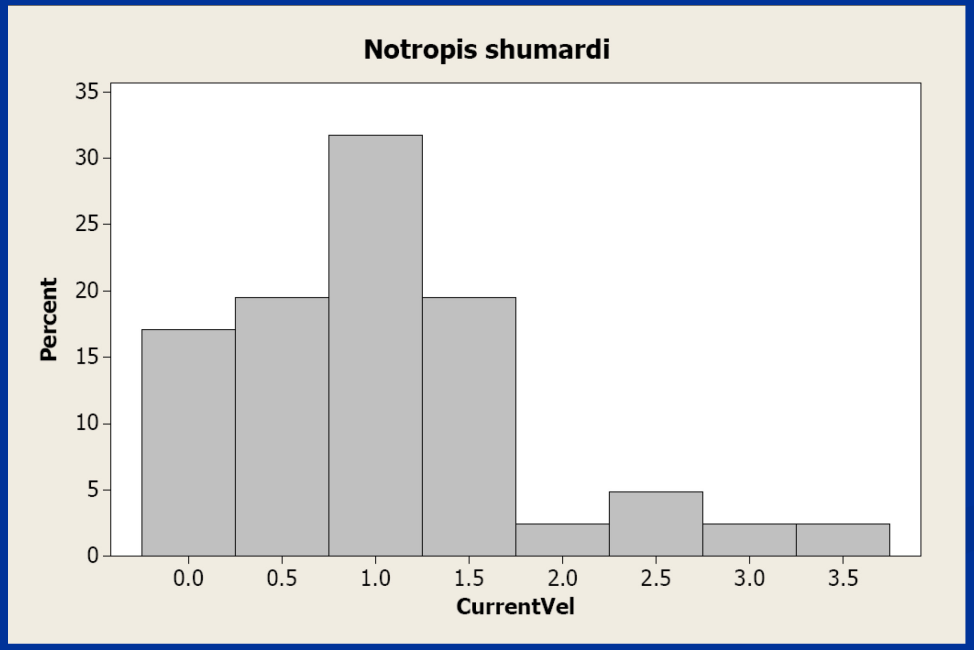


Fish Sampling

silverband shiner







Baseline Riparian Studies

Purpose:

- Characterize extent and condition of riparian habitats