

Updates on LCR Channel Catfish and Laboratory Predation Studies

Annual Reporting Meeting, Jan 2022



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Requested Elements

1. Project Title:

Warm Water native and non-native fish research and monitoring

2. Project Elements

Project I.3 FY 21-23 workplan

3. Project Objectives

Quantify the potential impacts Cannel Catfish and other non-native predatory fishes on native fish in the Little Colorado River.

4. Funding amount and Source

\$133,000 – GCDAMP

5. Cooperators

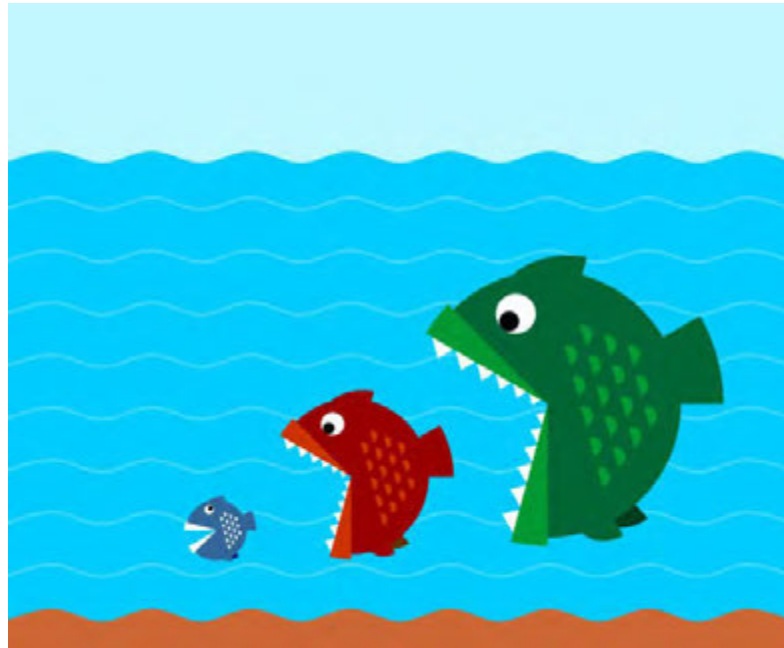
AZ Game and Fish, U.S. Fish and Wildlife Service, Navajo Nation

6. LTEMP Resource Goals addressed

Conserve and protect native fishes

It's a Fish eat Fish World

What is eating what?

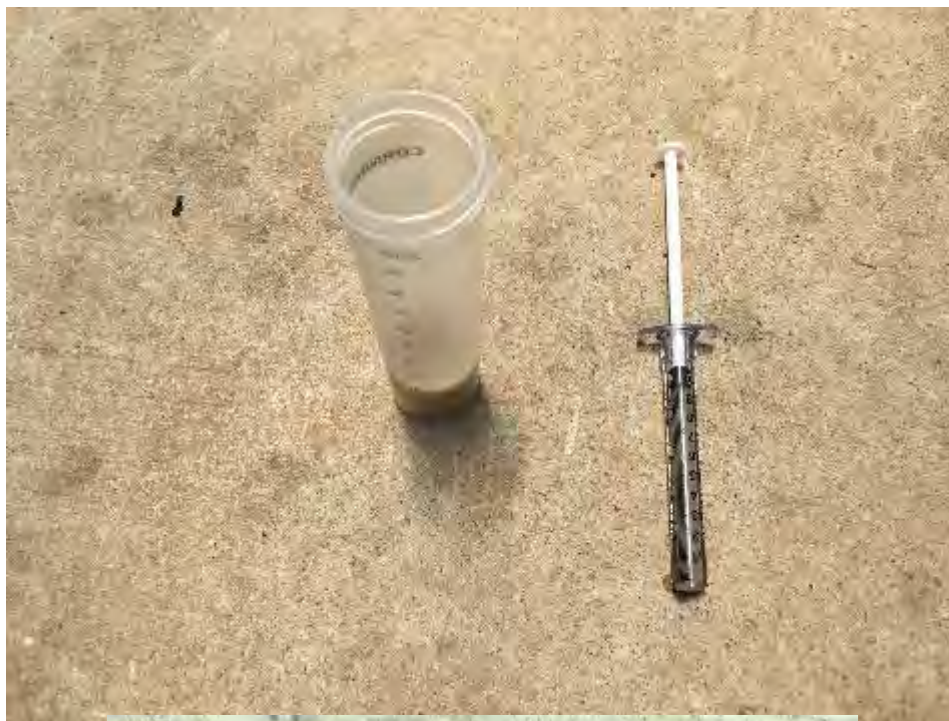


And how much?

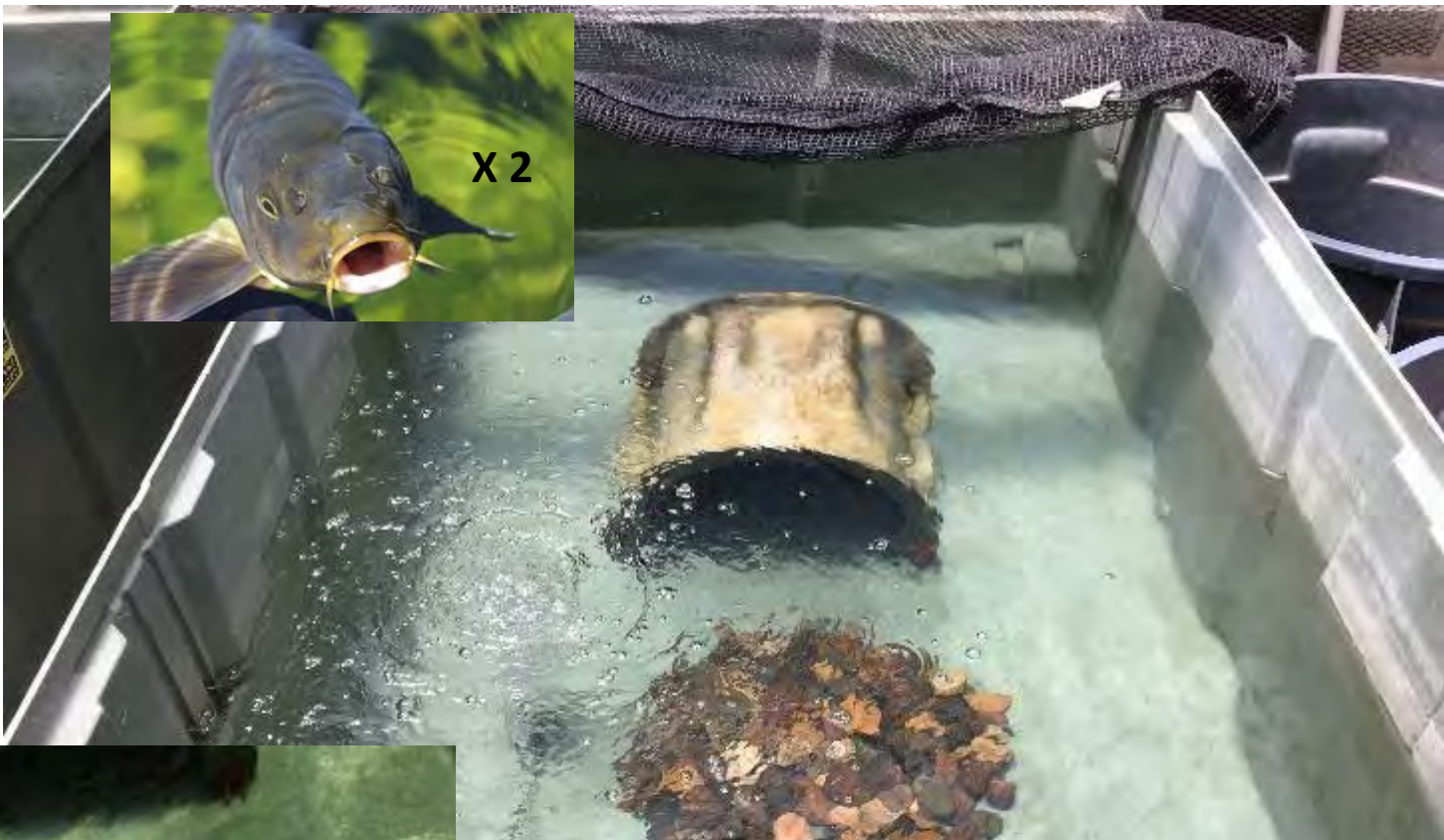
At what life stage?

Effects of Carp on eggs?





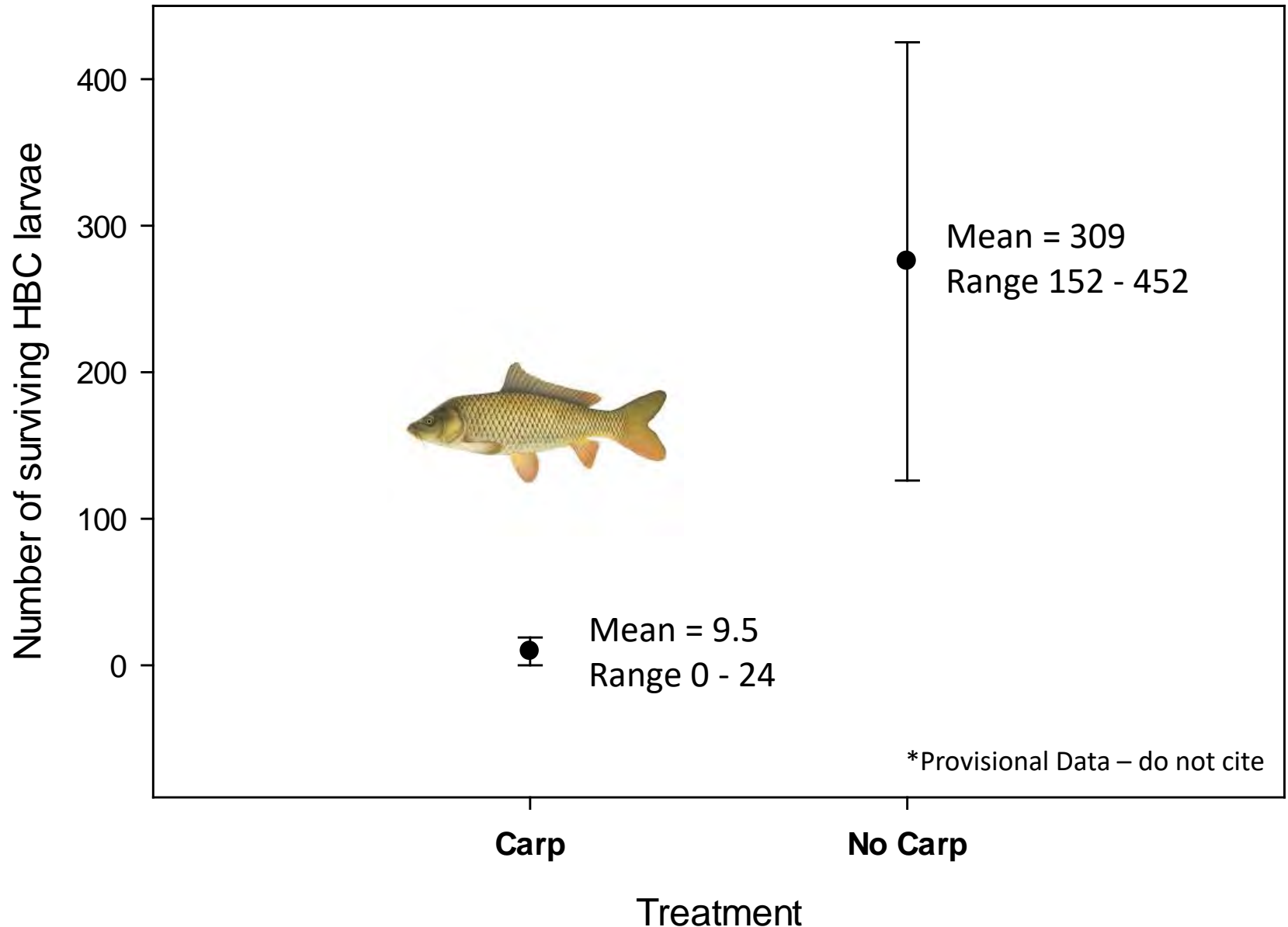
2020



6 tanks with carp
3 tanks without carp

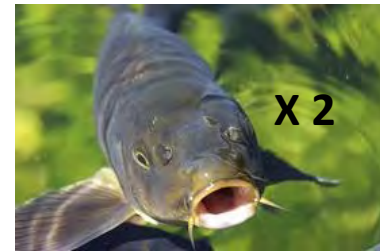


Common Carp predation on HBC eggs

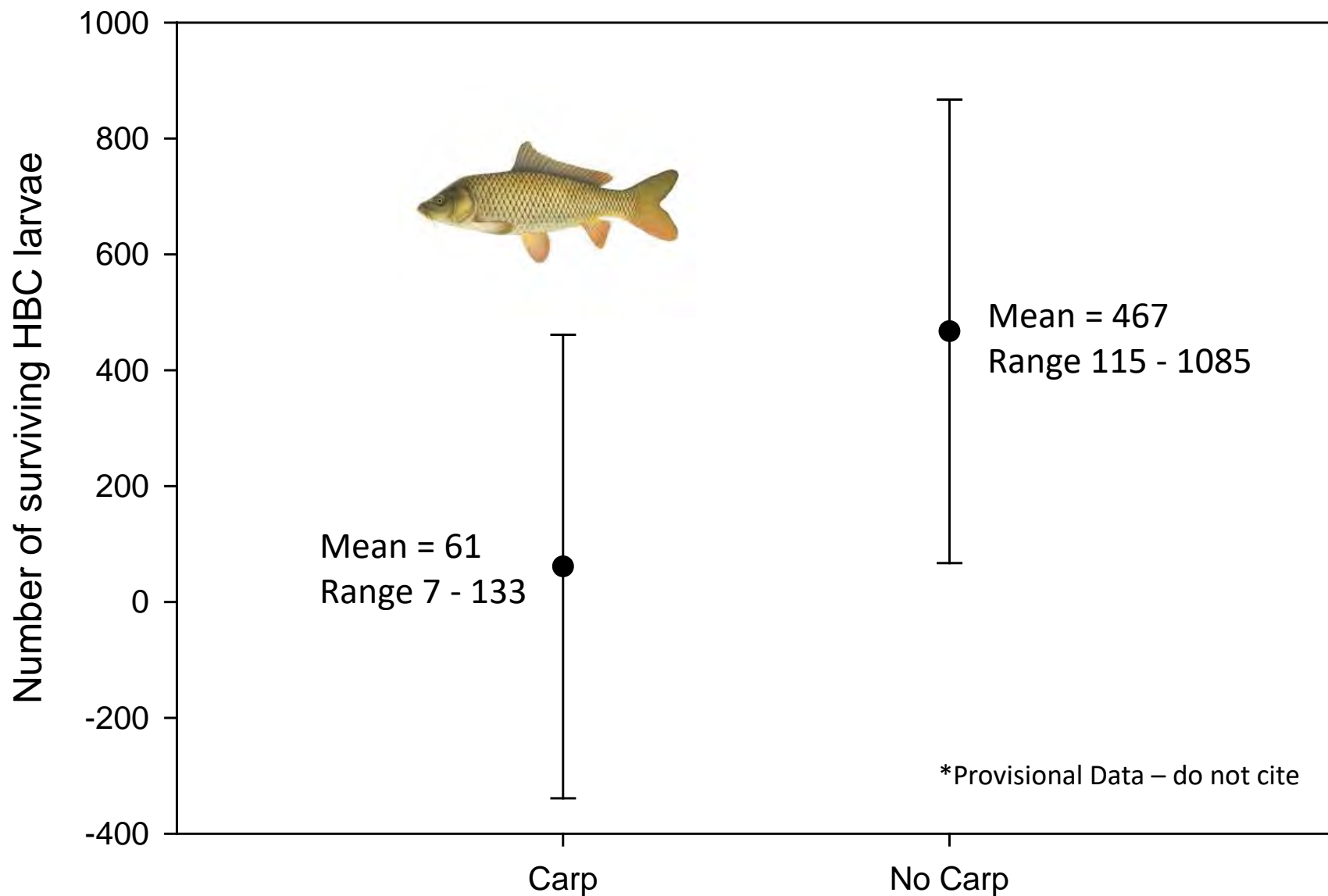


2021

Scale up X 10



Common Carp predation on HBC eggs and Larvae

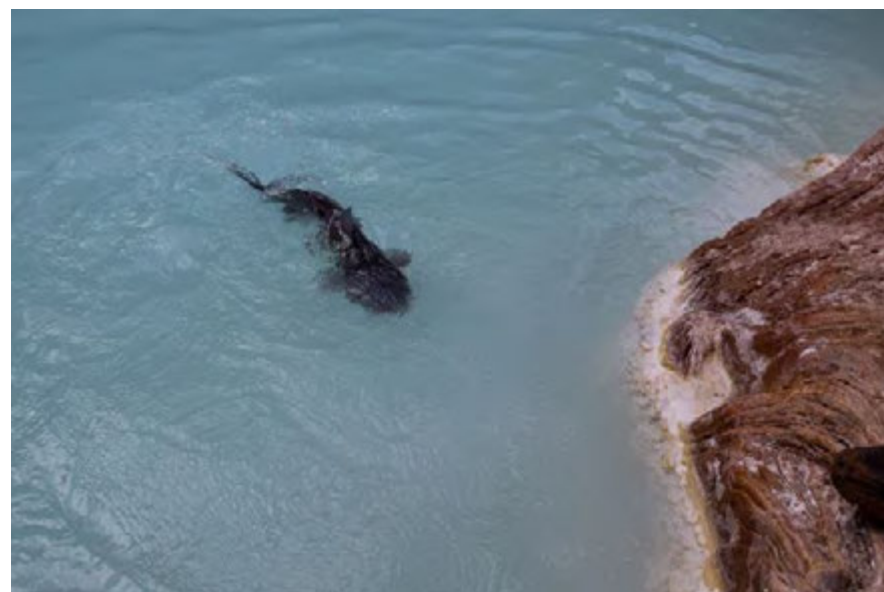


A photograph of a large, light-colored fish, possibly a bass, swimming in a shallow, clear pool of water. The water is surrounded by a rocky, reddish-brown shoreline. The fish is positioned in the center of the frame, facing left. The water is filled with many small, dark, elongated fish, likely minnows or darters, which are scattered throughout the pool. The text "Predation at all Life Stages" is overlaid in the upper right corner of the image.

Predation at all Life Stages



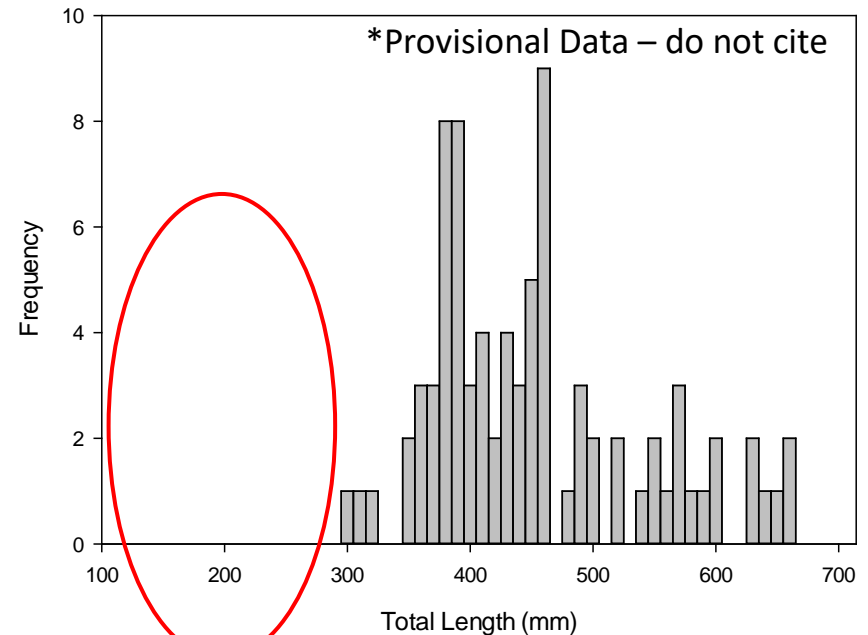
LCR Channel Catfish



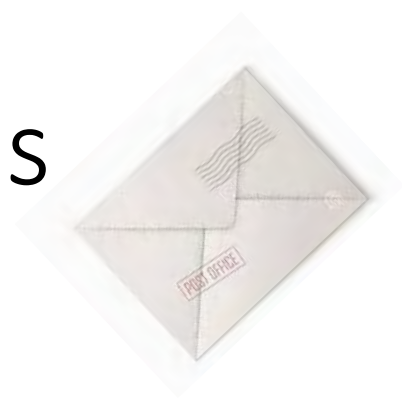
2021 LCR

- 6 Angling trips (May-July)
- 83 Channel Catfish Caught
- Average Size 450 mm
TL (Range 300-660 mm TL)
- Only 7 Recaps
- Pop Estimate (Lincoln-Petersen)
- 1,274 (687-1,861 95 % CI) ?
- 14.5 % of fish (12 out of 83) caught had fish remains in stomach (from gastric lavage)

Size distribution of channel catfish in the Little Colorado River



Back of envelope Calculations



- 600 Channel Catfish (low end of estimate)
 - 10% eat a native fish every 24 hours

60 fish eaten/day

X

100 days of warm water (above 20 C)

= 6,000 fish eaten/year



Translocations ?? 300 -600 fish

About 10K HBC in LCR

Relative impacts of Catfish – Potentially High!



Angling vs Antenna Recaptures

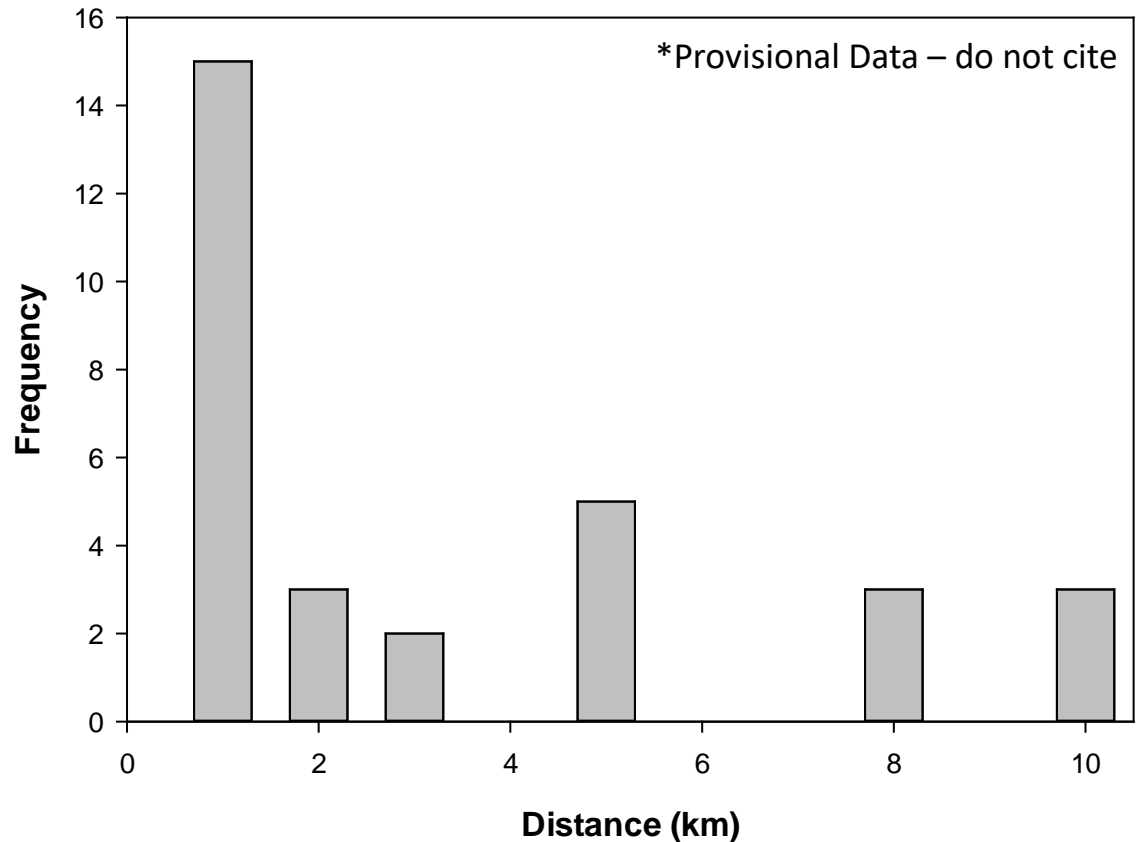
- Angling recaps (7) – all within few hundred meters
- Antenna recaps



33 Fish detected on antenna's



Movement of Channel Catfish in the LCR



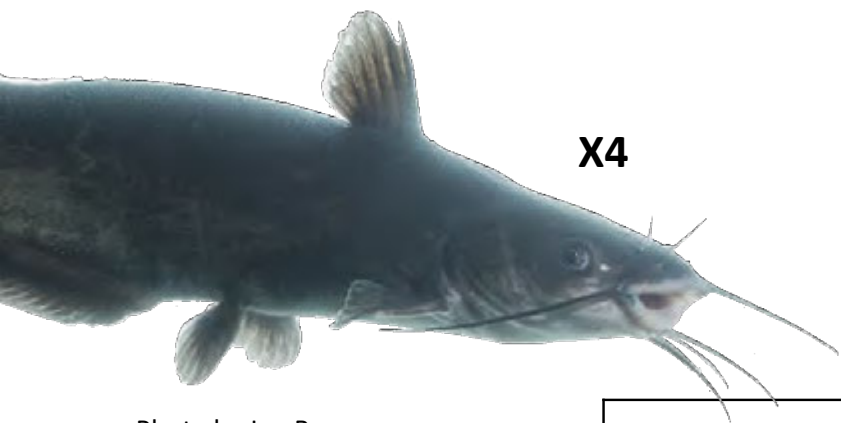
Predation at all Life Stages



Laboratory Predation Studies

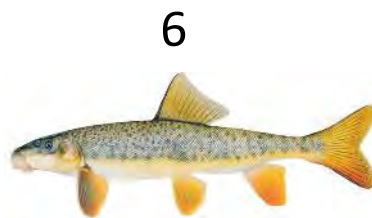
1,000-gallon raceways





X4

Photo by Jan Boyer
AZGFD

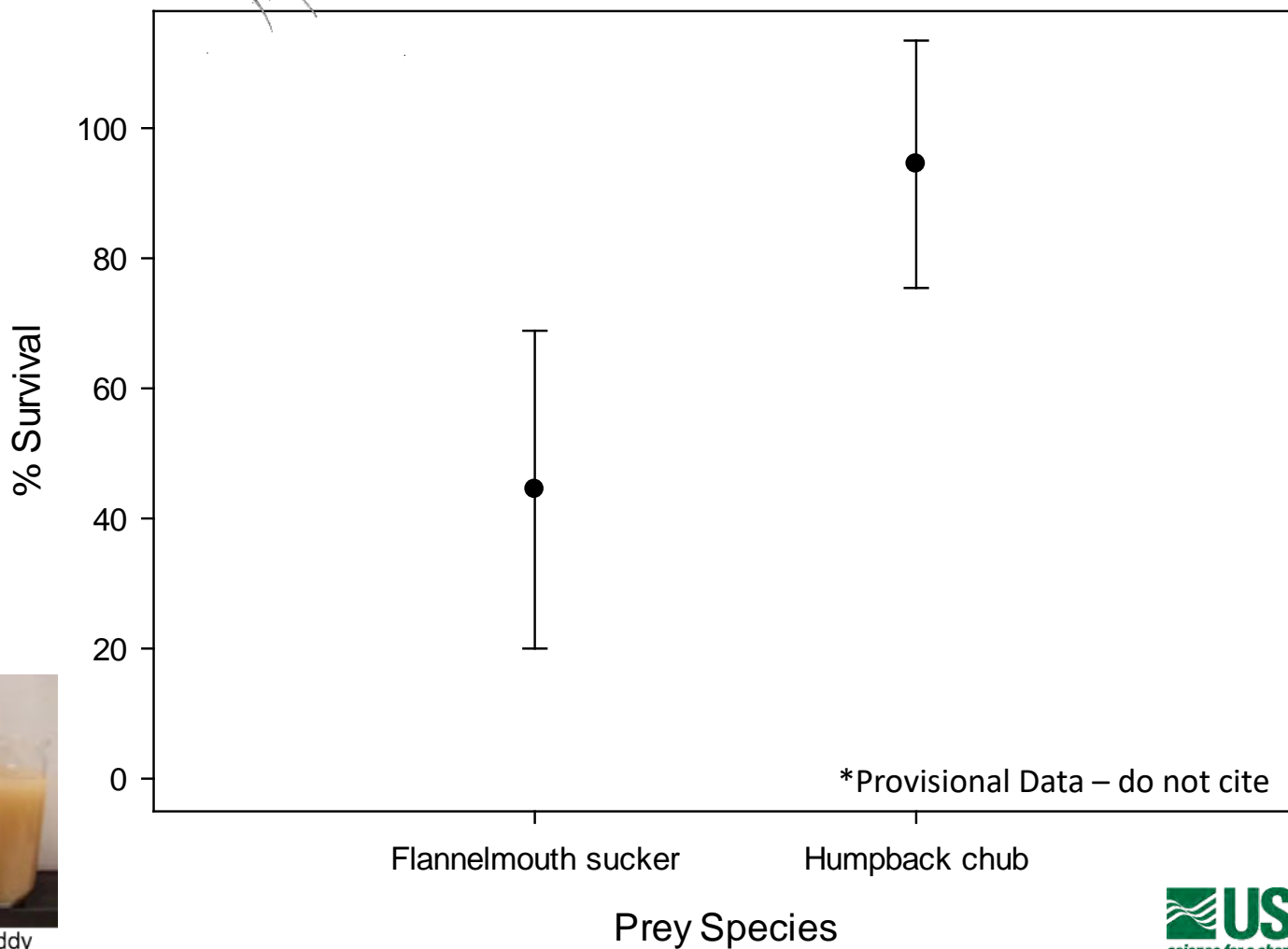


6



6

Difference in predation vulnerability



4X

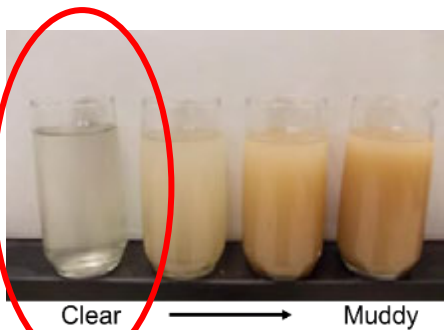




Photo by Jan Boyer
AZGFD



Difference in predation vulnerability

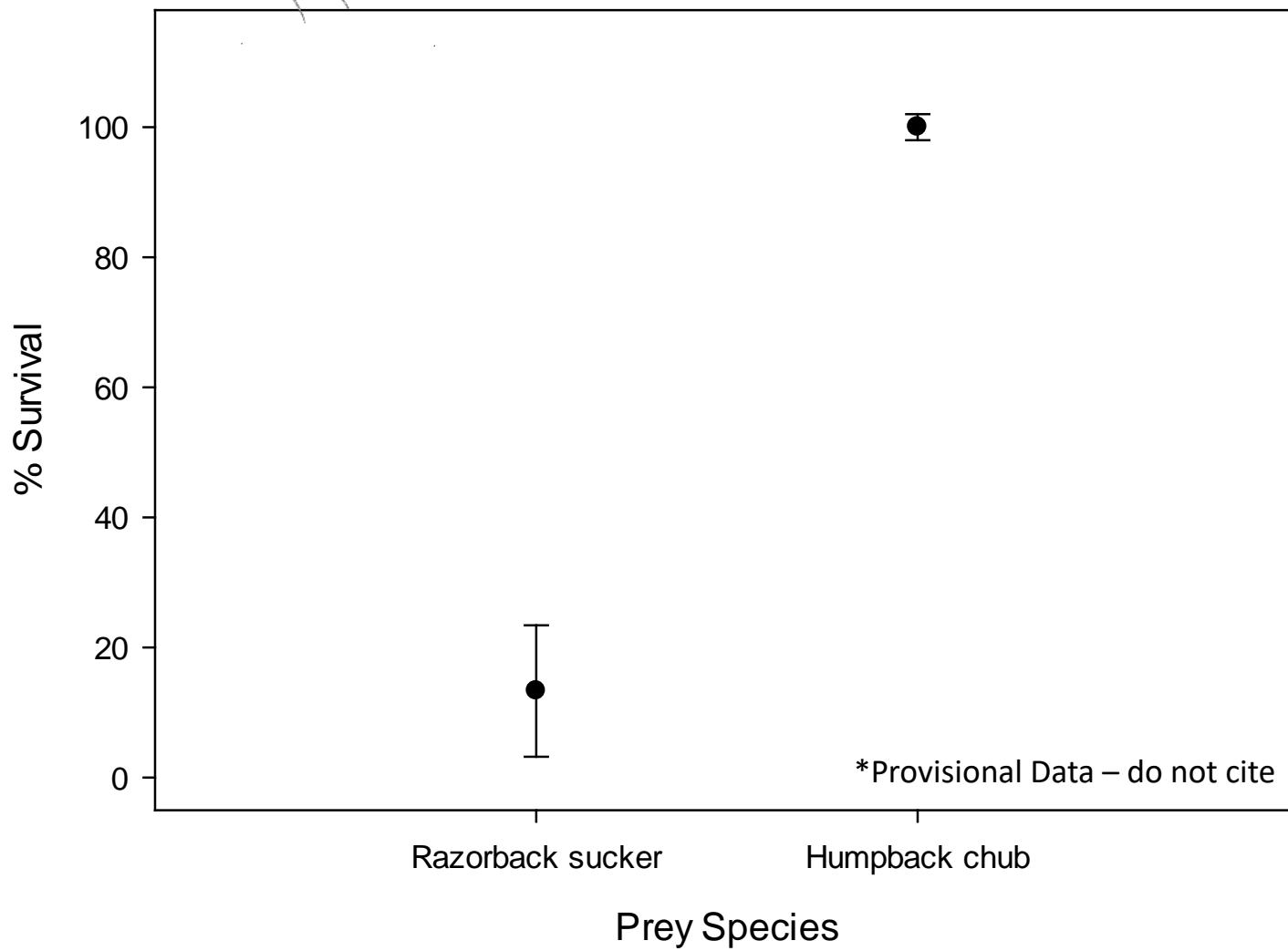
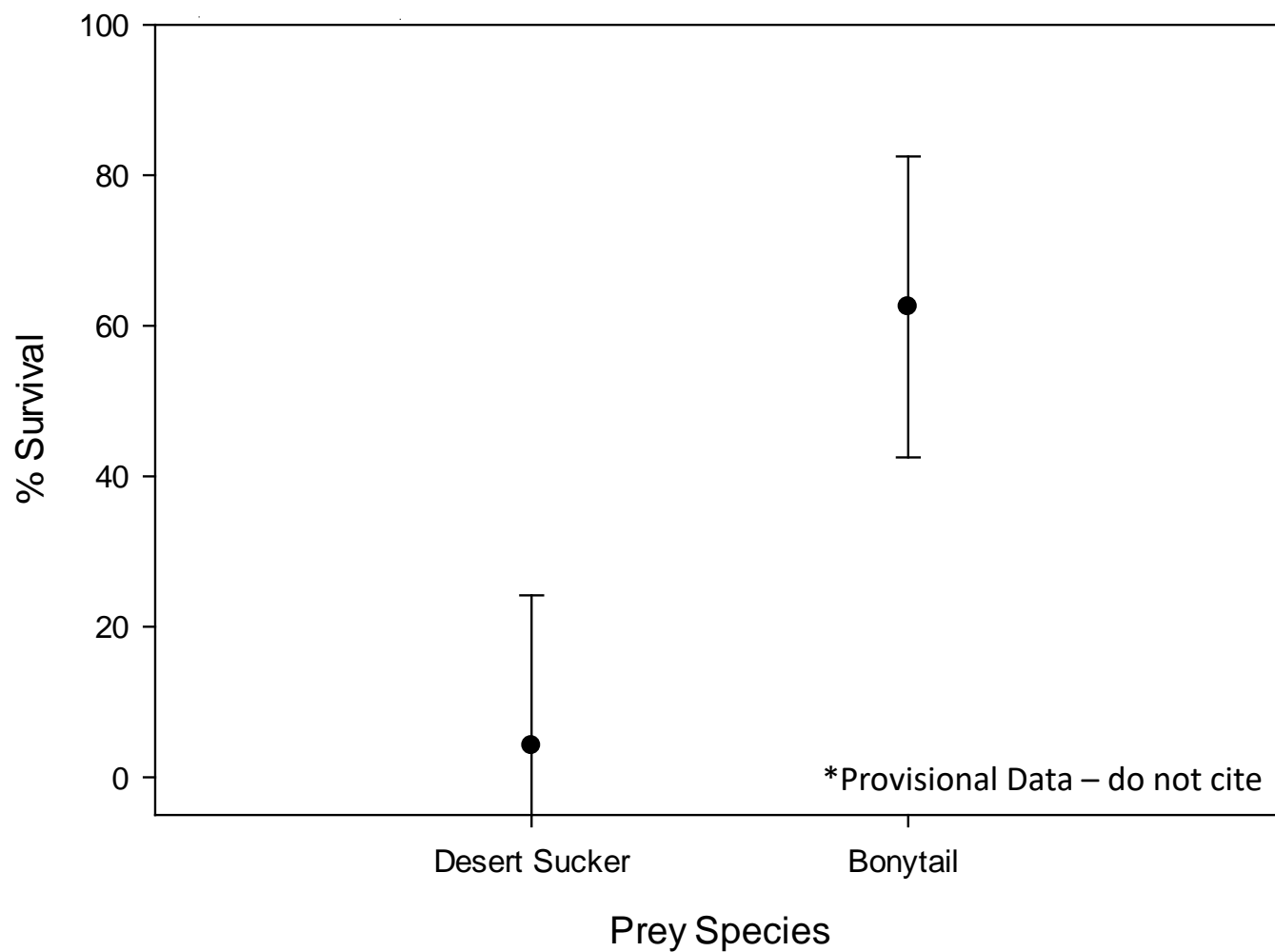




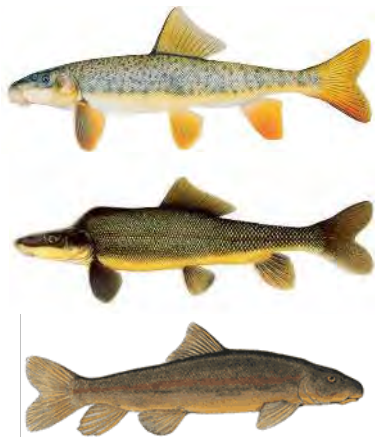
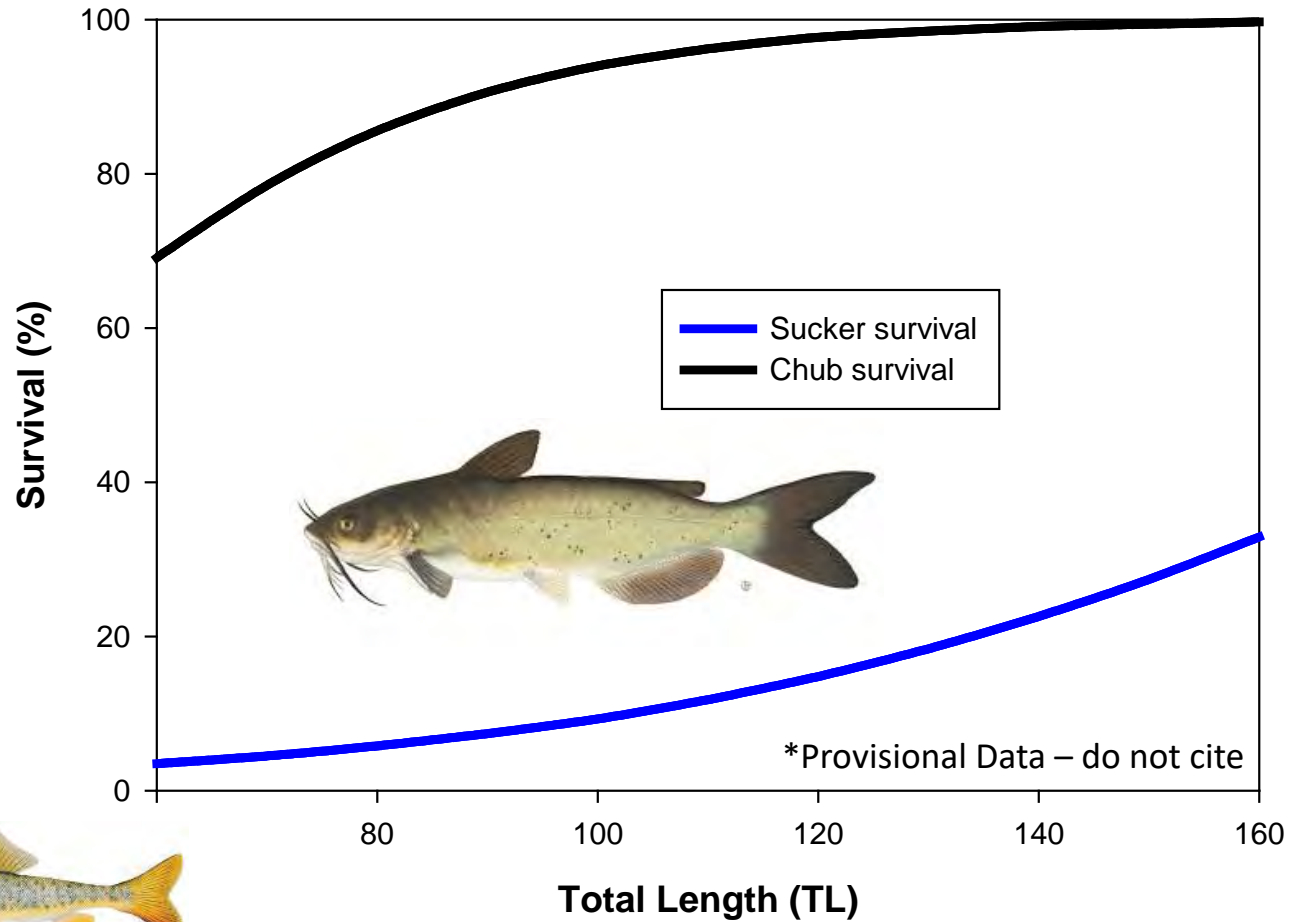
Photo by Jan Boyer
AZGFD



Difference in predation vulnerability



Sucker vs chub survival with Channel Catfish

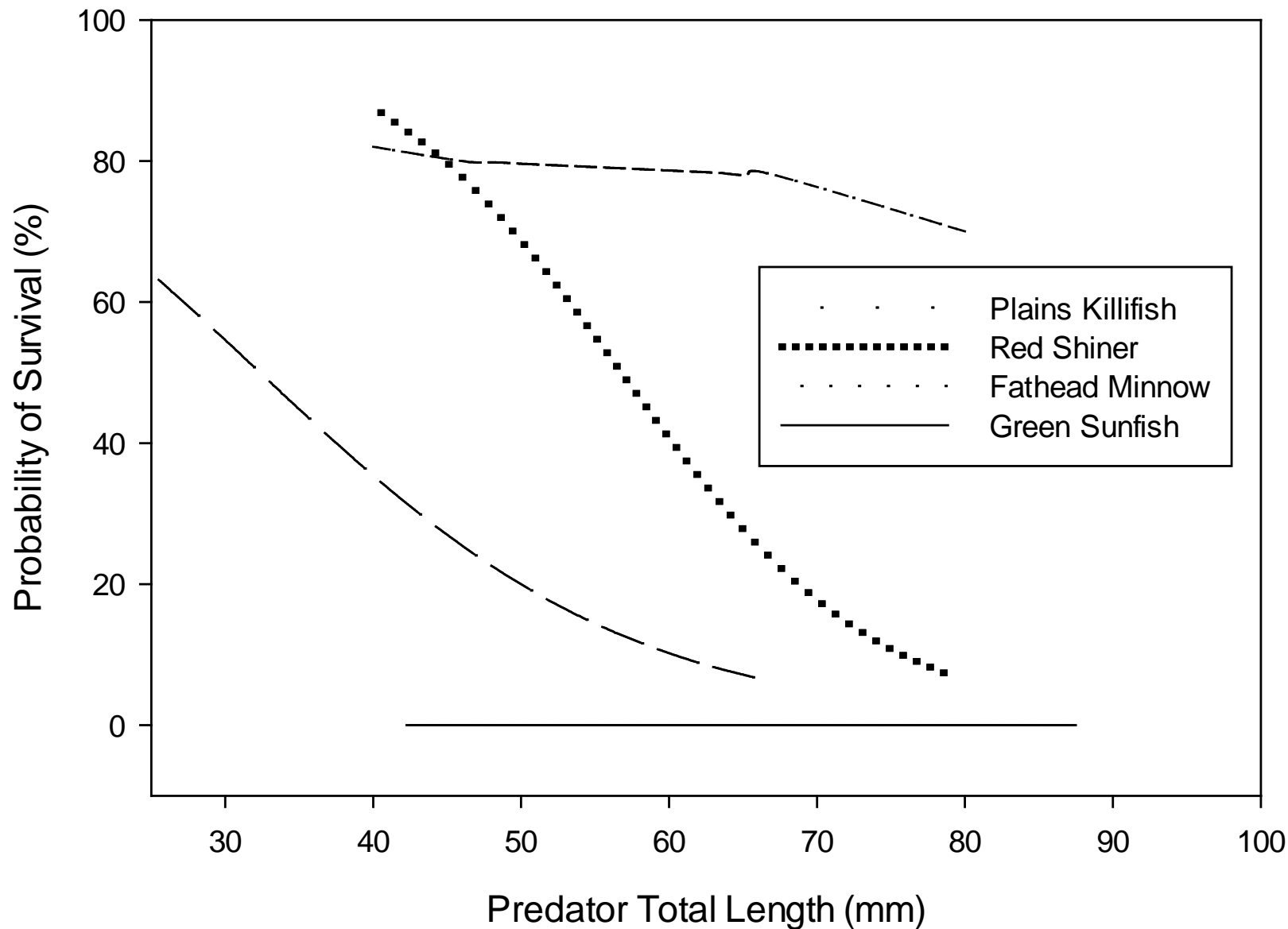




Laboratory Predation Studies

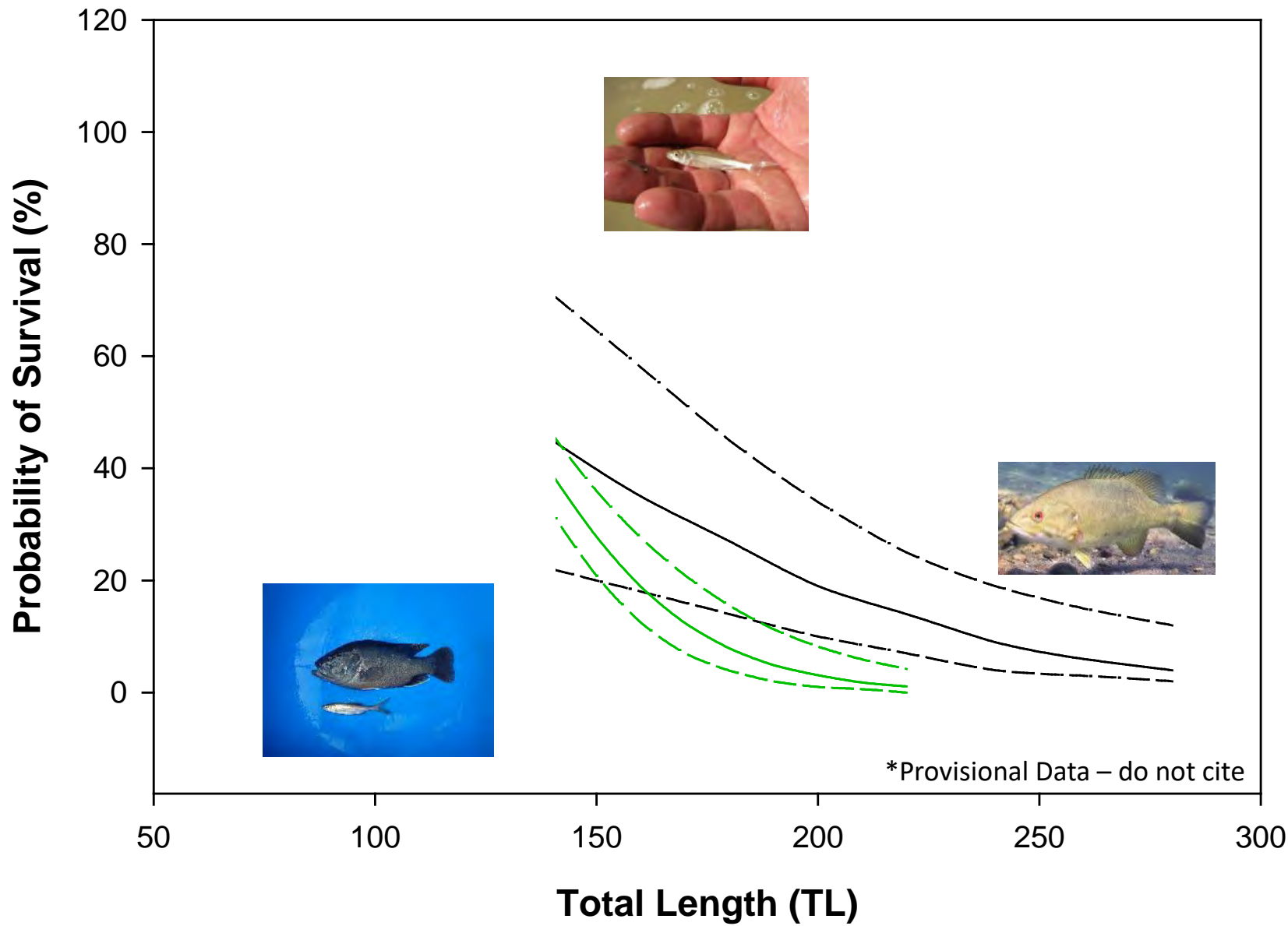


Small-bodied predators

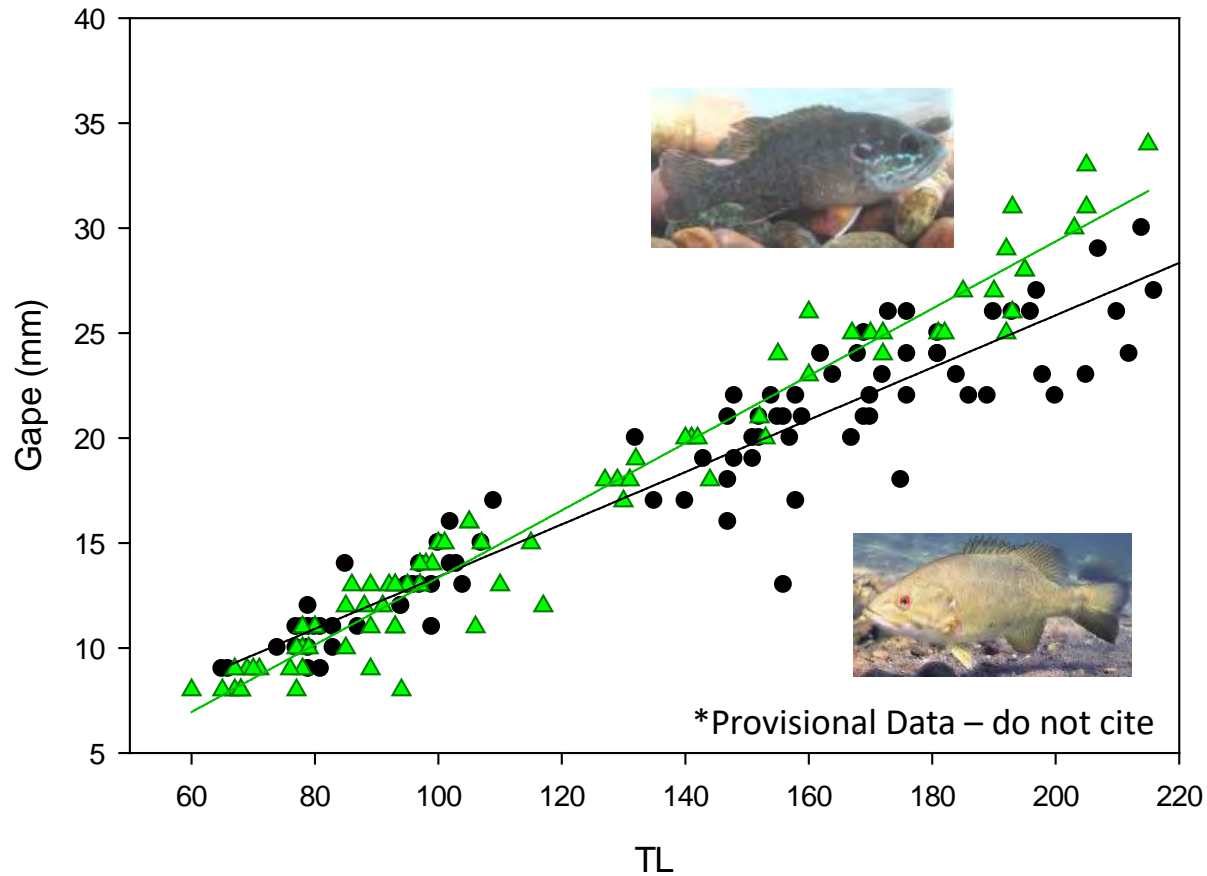


Survival of larval humpback chub (12 mm TL) as predator size increases for four species of small-bodied predatory fish commonly found in the Little Colorado River. Probability of survival calculated using JMP Prediction Profiler, based on 10 replicated 24-hr laboratory trials for each predator species (4 predators and 12 prey in each trial).

Smallmouth Bass vs Green Sunfish



Smallmouth vs Green sunfish Gape comparison



*Provisional Data – do not cite



Where are these introduced predators coming from ?

2019 - Dry



2021



What's coming down
the LCR with Flooding?





Questions?