

Aquatic Species and Habitats along the San Pedro River

San Pedro Riparian National Conservation Area



U.S. Department of Interior
Bureau of Land Management



Big River & Large Stream Native Fishes of the San Pedro River



Stream, Backwater and Wetland Fishes of the San Pedro River

Desert Pupfish

© JENNY E. ROSS

Endangered



Gila Topminnow

ARKIVE
www.arkive.org

Endangered



© A. Hard

Spikedace

Endangered



Credit: Glen Knowles/USFWS

Longfin Dace



Endangered



Gila Chub

Endangered



Loachminnow



Photo Credit:
Dave (Gio) Giordano

Speckled Dace

Last 2 Survivors of the Original 13 Species Native to Mainstem San Pedro River (not including tributaries)

Desert Sucker

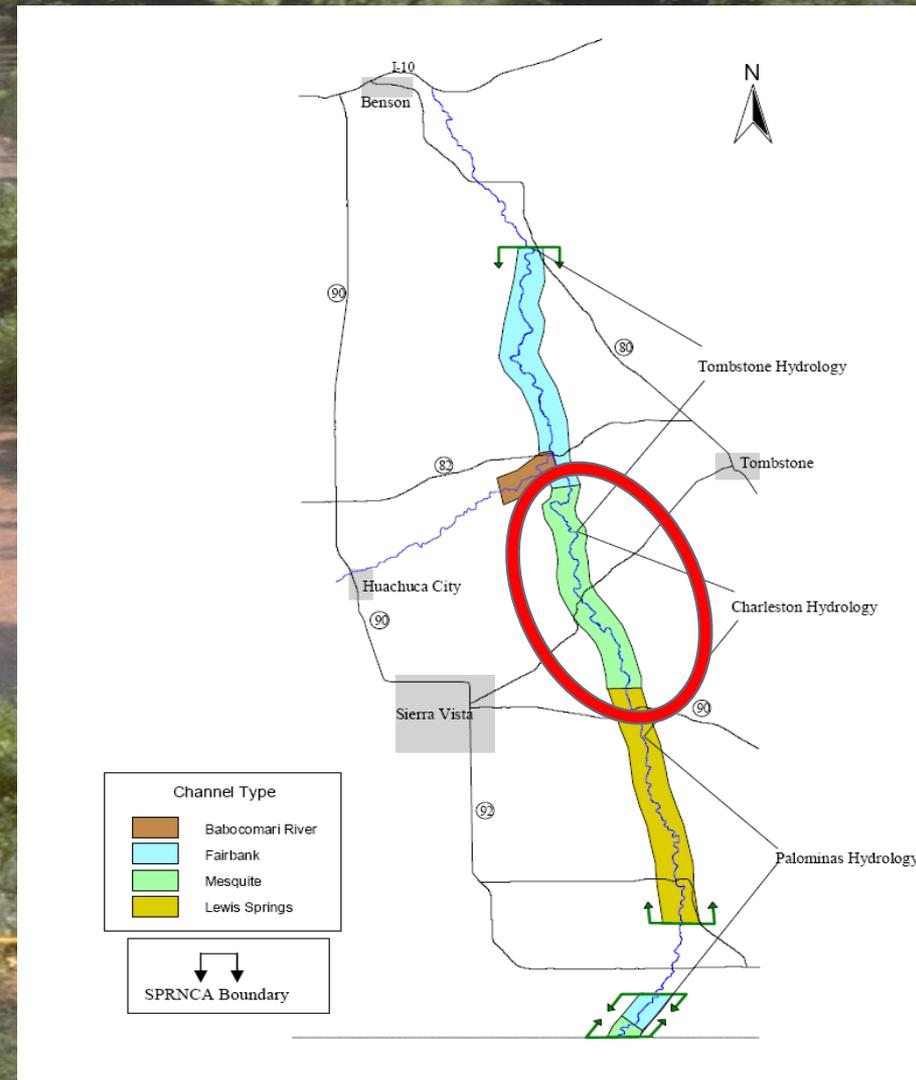


Longfin Dace

- Collapse of native fish fauna in the Gila River basin
- More than half of the fish species found in the San Pedro are Federally listed and the rest are imperiled to various degrees.
- A tributary stream (Aravaipa Creek) still supports 7 native fishes formerly found in the San Pedro River
- Why? Aravaipa has a **larger baseflow** and **fewer invasive species**

FISH HABITAT MODELING

- ❑ Fish habitat was modeled for 4 native fishes
- ❑ Method - PHABSIM computer model
- ❑ Parameters – depth, velocity and species habitat suitability index
- ❑ Model run at stream discharges from 1 to 30cfs



Example of Desert Sucker Habitat in Modeled Reach

Riffle

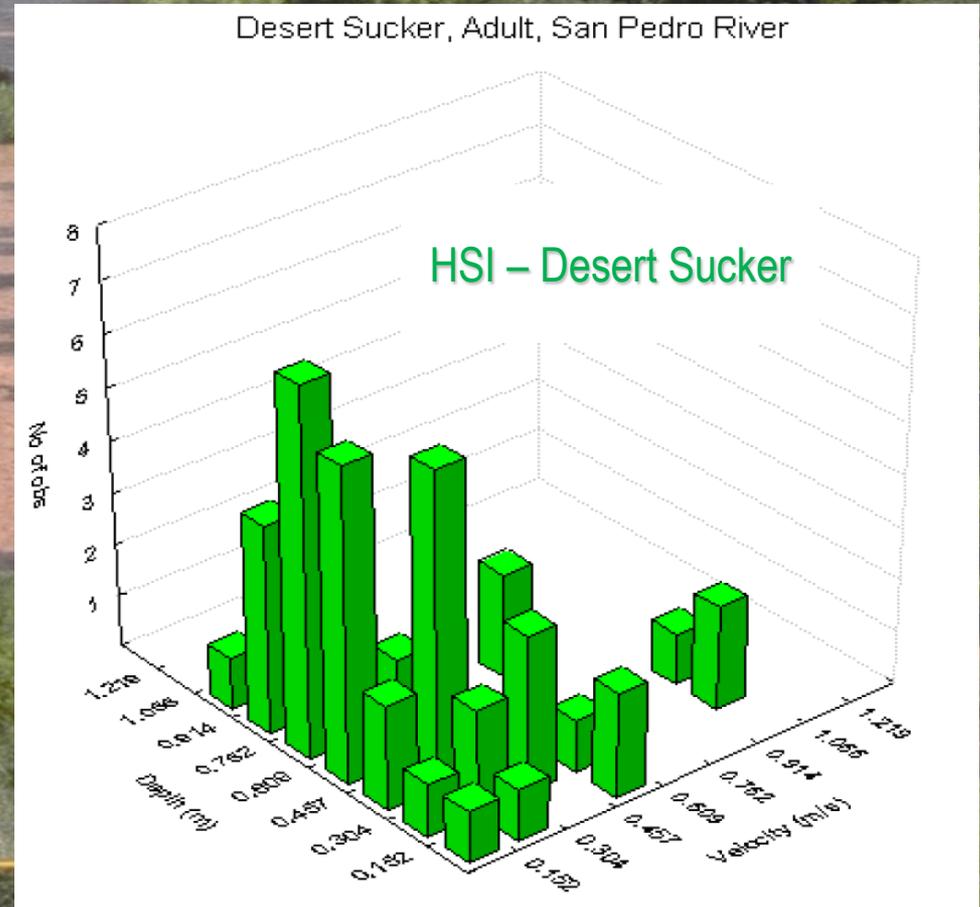
Deep Run



PHYSICAL HABITAT SIMULATION

INPUTS TO PHABSIM MODEL

- Measured channel geometry (shape)
- Flow Volume
- Species habitat suitability index

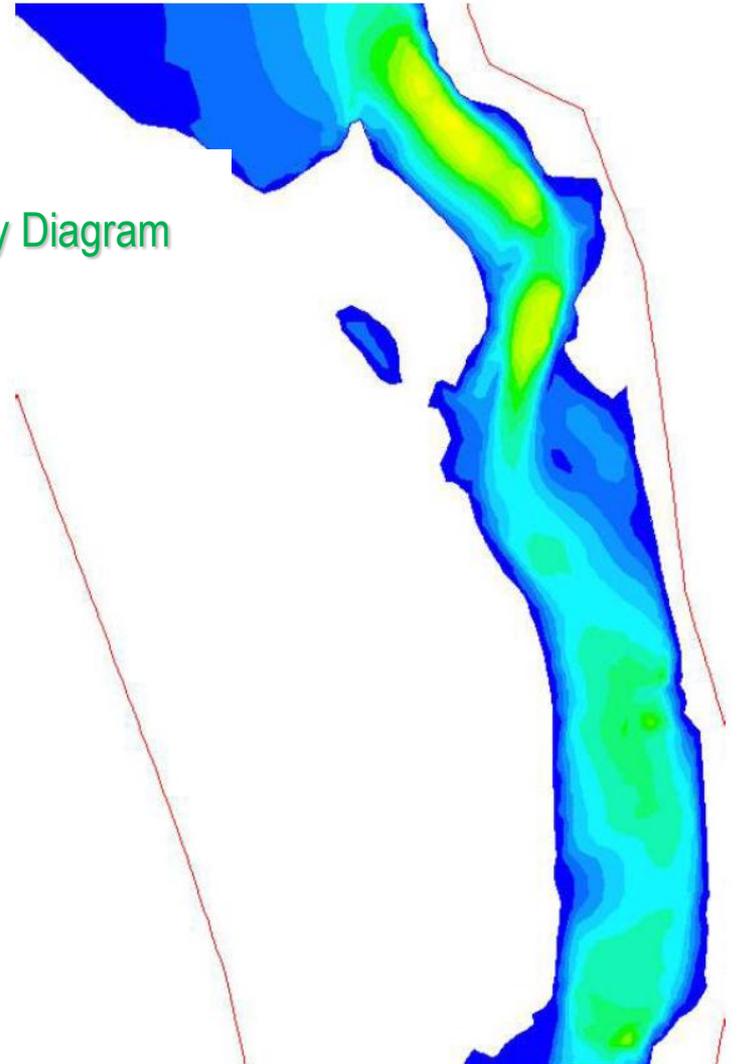
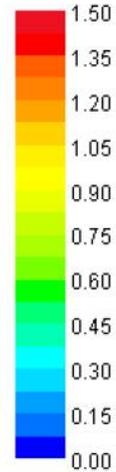


MODEL OUTPUTS

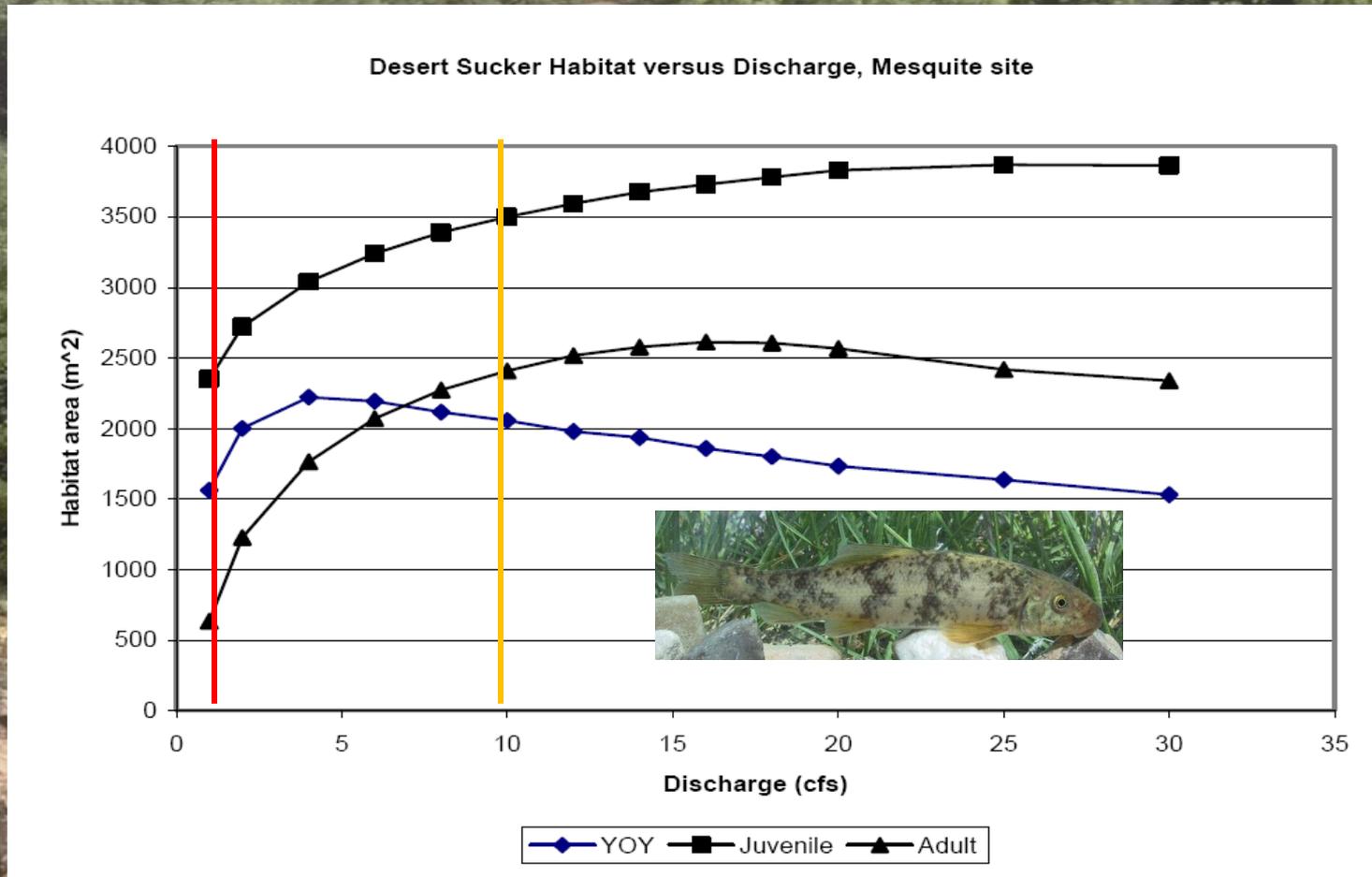
- Depth estimates
- Velocity estimates

Velocity Diagram

Velocity



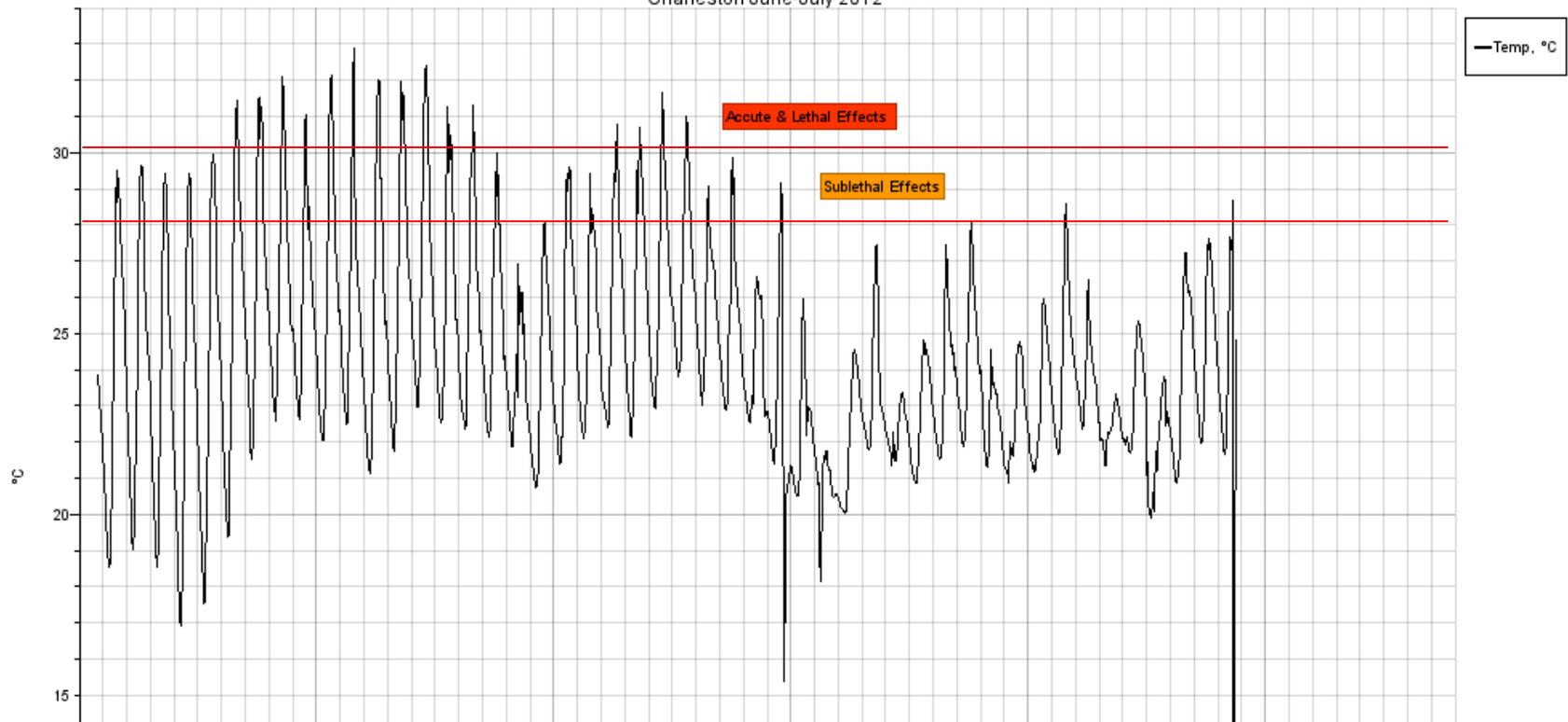
Available Desert Sucker Habitat Area Estimate by Flow Increment (range 1 – 30cfs)



Habitat modeling shows drastic reductions in available habitat at flows less than 5 cfs

TEMPERATURE AND HABITAT SUITABILITY

Charleston June-July 2012

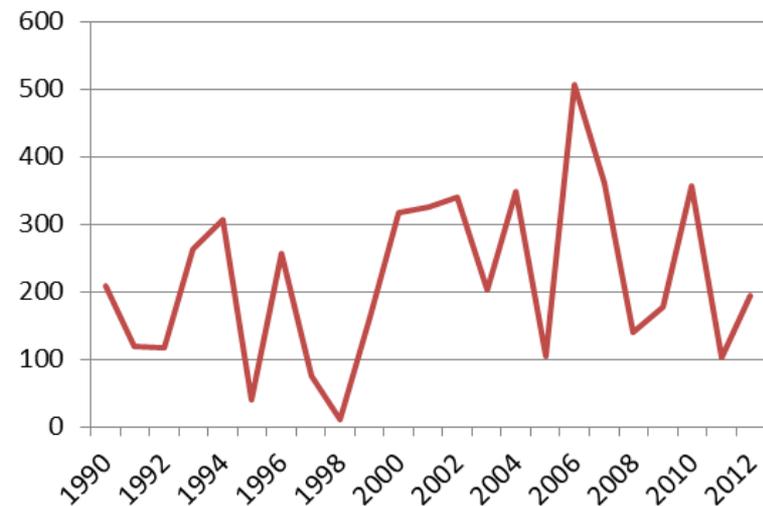


- ❑ Temperatures above 28° C – can result in low growth rates or disease outbreaks
- ❑ Temperatures above 30° C may lead to severe physiological problems including death from other stressors (Bonar et al 2005).

Native Fish Trends – Longfin Dace

- Fish populations at four sites in the SPRNCA have been monitored since 1990 (Stefferud 2012).
- Trend shows wild swings but overall trend is stable.
- Habitat preference shallow habitat with slow moving water – requirements met at very low flows

Longfin Dace

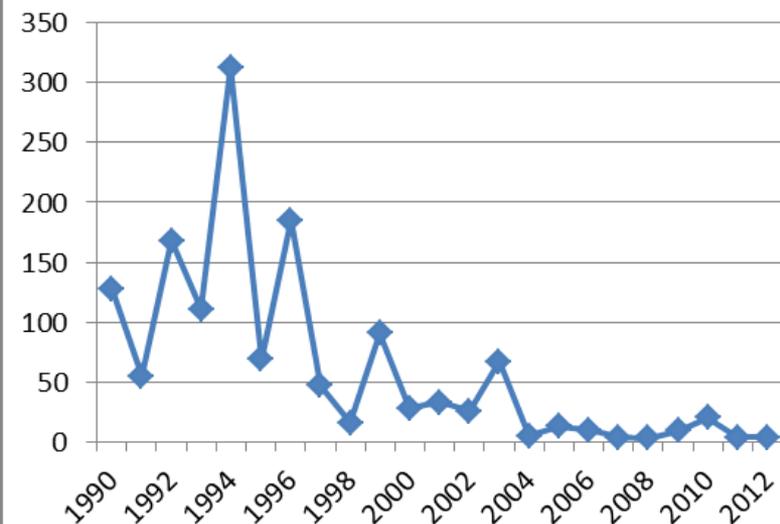


— Longfin Dace

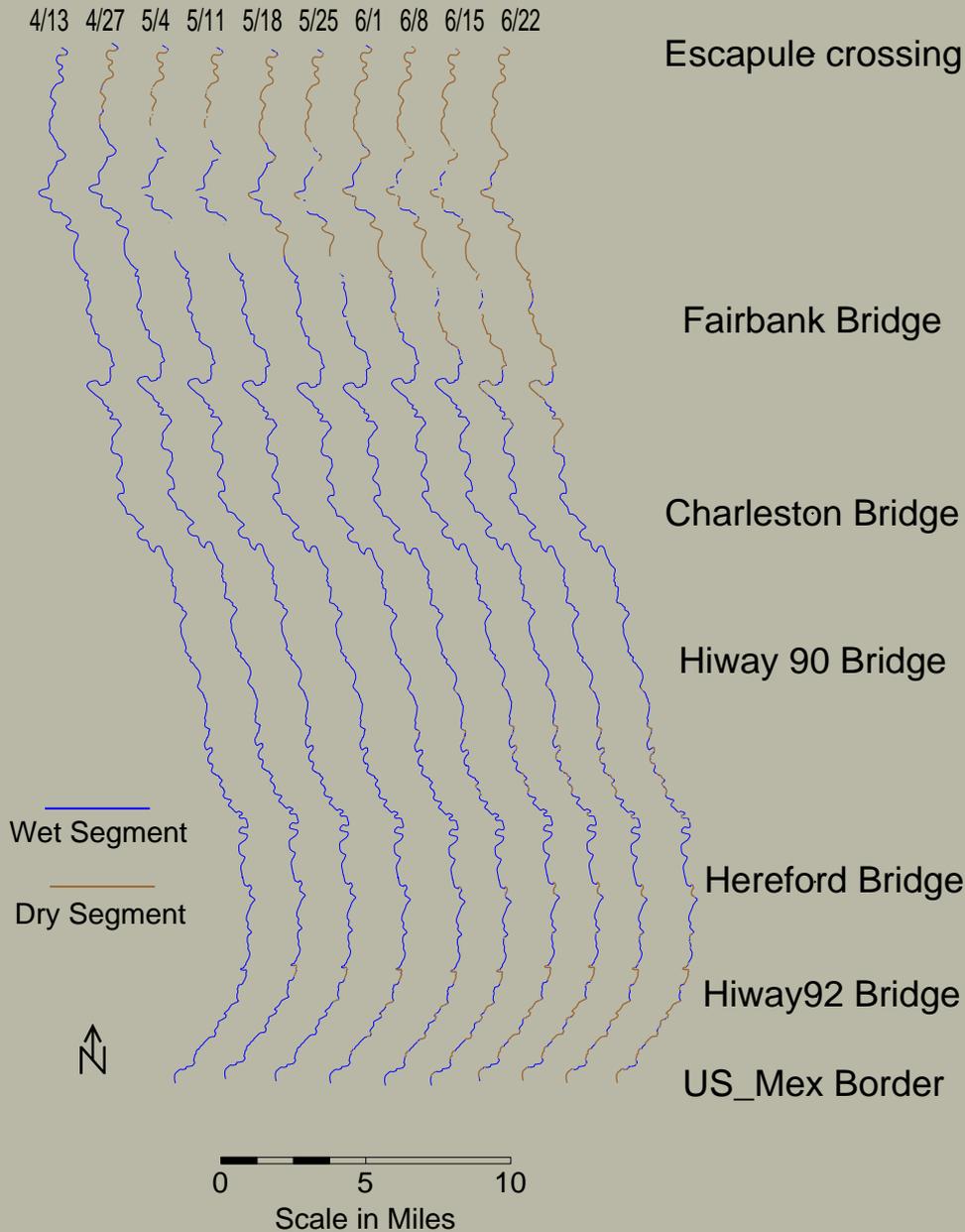
Native Fish Trends – Desert Sucker

- Fish populations at four sites in the SPRNCA have been monitored since 1990 (Stefferud 2012).
- Trend is downward with catch reduced to a range of 3-20 over the last 5 years
- Habitat preference streams and rivers with rocky bottoms and moderately swift water

Desert Sucker



—◆ Desert Sucker

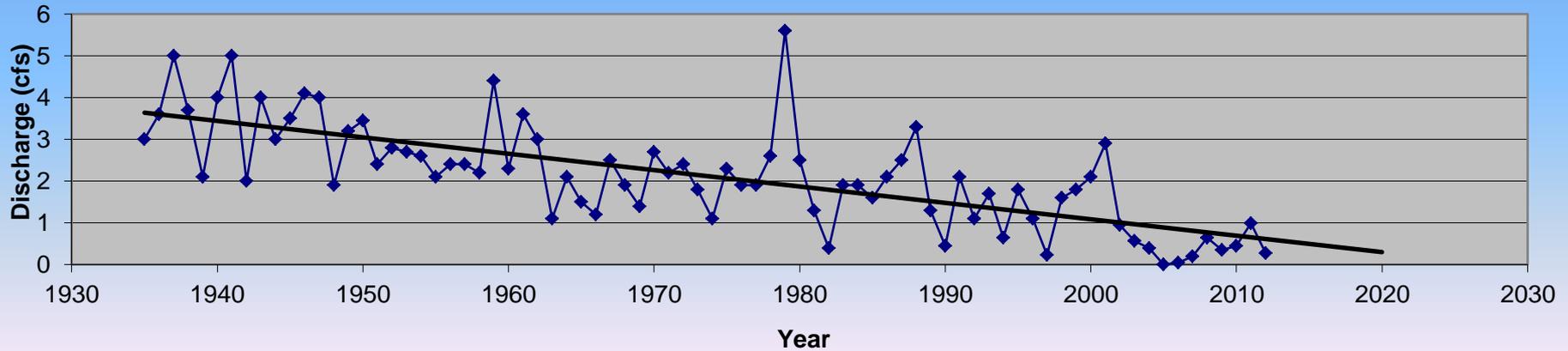


- ❑ As streamflows recede from 10 cfs at the Charleston gage the length of river with flow decreases.
- ❑ At flows less than 2 cfs, > 40% of the San Pedro River RNCA is often dry.
- ❑ In July the flow can continue to decrease until the monsoon comes
- ❑ Of the remaining 60%, much is stream with little or no flow (isolated pools)

Trend in Stream Discharge

Lowest Week Long Flow (period of record 1935-2009)

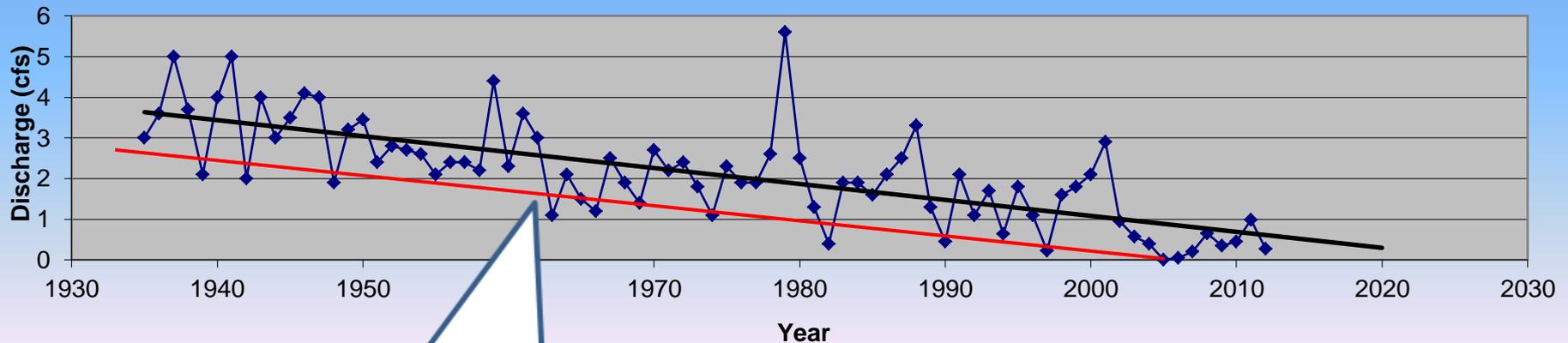
Annual 7 Day Average Low Discharge (June-September) 1935-2012
San Pedro River at Charleston, AZ



Trend in Stream Discharge

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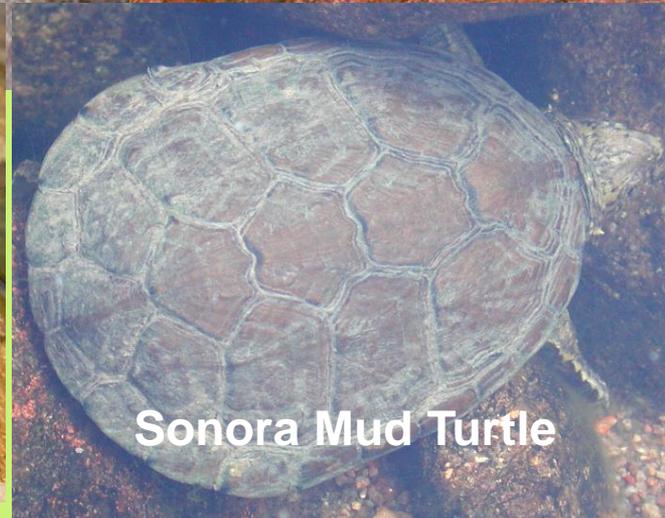
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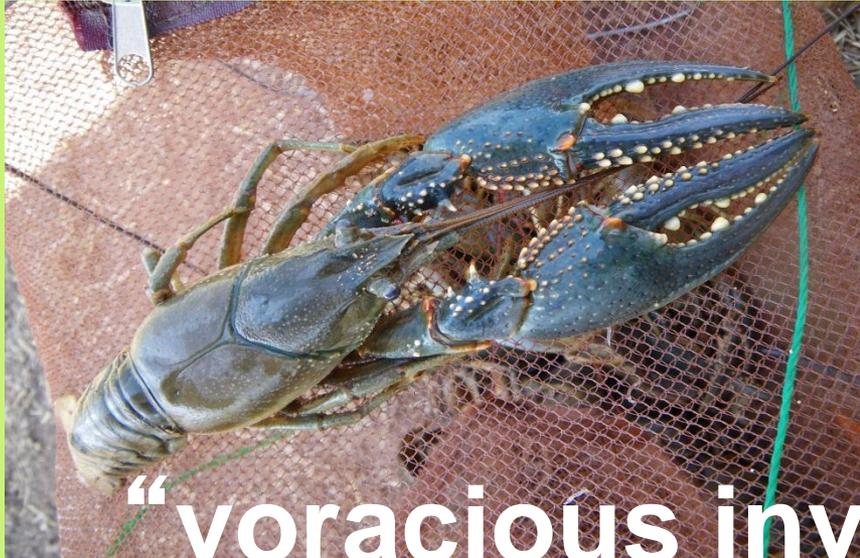
Lowest Discharges (not averages) are critical for aquatic species survival

Trend shows surface water necessary to support fish is at risk !

Leopard Frogs and Garter Snakes



American Bullfrog & Northern Crayfish



“voracious invasive species”





So what can be done?

VALUE OF BEAVER TO AQUATIC HABITAT

- 1) Raise level of floodplain aquifer (water storage)
- 2) Increase frequency of inundation of the flood plain
- 3) Water stored in the floodplain moves slowly back to the channel as base flow
- 4) Beaver ponds and riffles below dams create habitat diversity



04/15/2012

Healthy Watersheds as an Integral Component of Aquatic Habitat and Riparian Resiliency

Historically, many watershed in the San Pedro Basin support grasslands but have undergone a wide spread conversion to shrub and tree dominated landscapes.



Native Fish Reintroductions to SPRNCA



Gila Topminnow

Desert Pupfish



- SPRNCA Legislation – Protect, Conserve, Enhance
- Gila topminnow and desert pupfish released at 3 locations

Conservation of Imperiled Species - Fish, Frogs, Plants and Snakes -

Restored Wetland



Little Joe Spring



THE END

Special Thanks

to Sally and Jerry Stefferud
who monitored the San
Pedro fish community for
20+ years



Questions?

Comments?