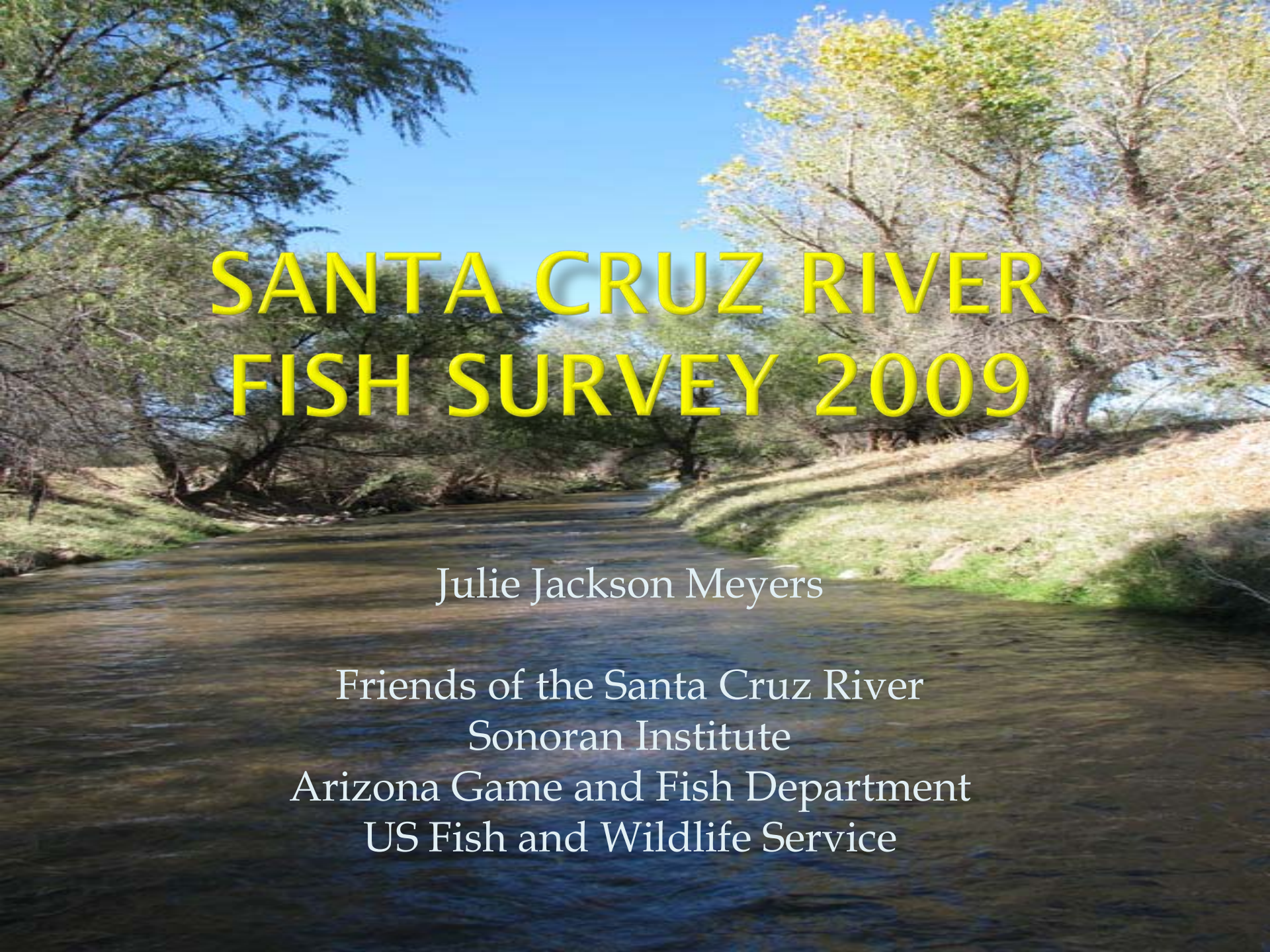


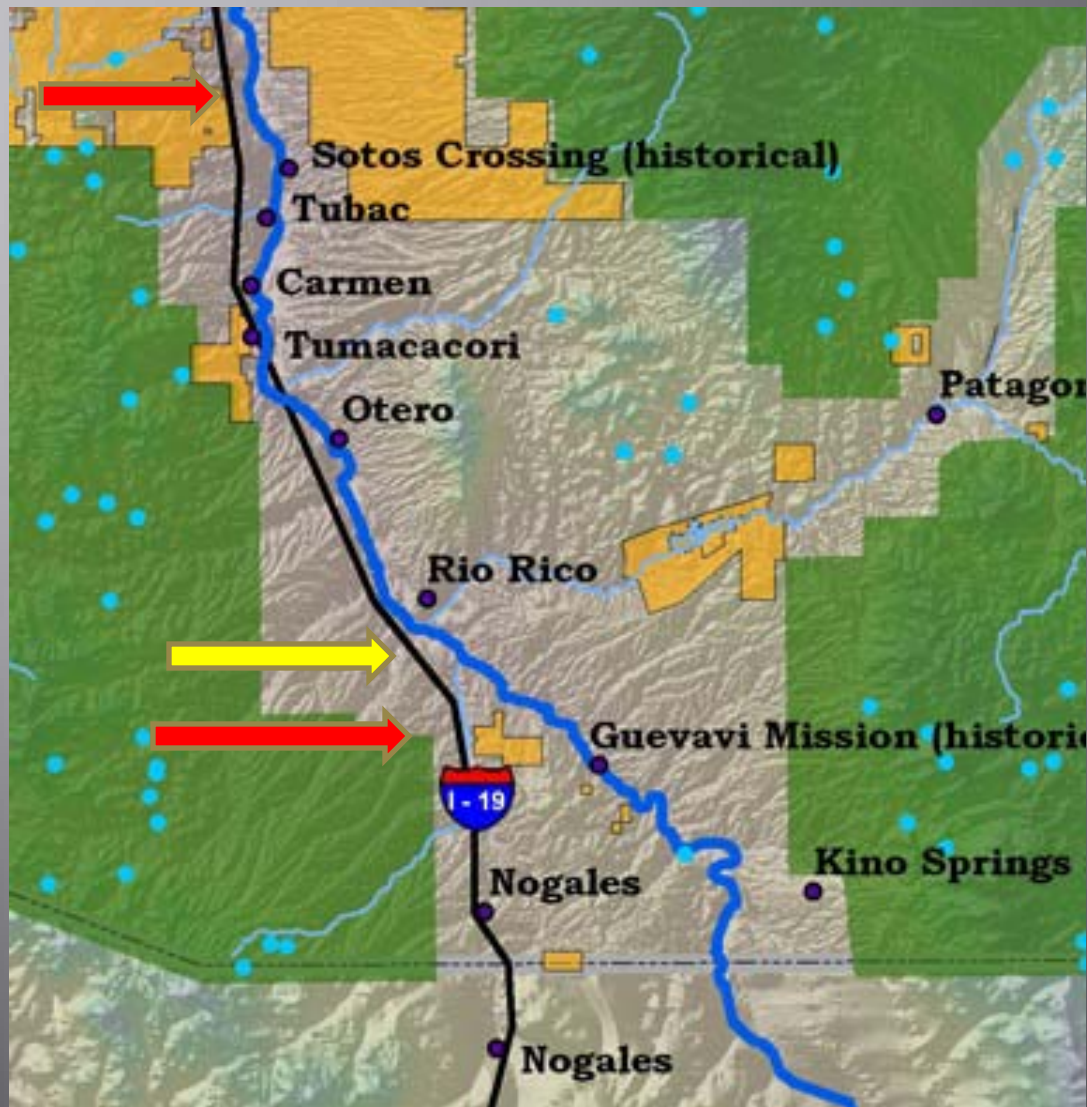


SANTA CRUZ RIVER FISH SURVEY 2009

Julie Jackson Meyers

Friends of the Santa Cruz River
Sonoran Institute
Arizona Game and Fish Department
US Fish and Wildlife Service

Study Area



Native fish

Gila topminnow

Longfin dace

Gila chub

Desert sucker

Sonora sucker



A photograph of a river with a dirt road on the left bank and trees in the background. The river is shallow and rocky, with a dirt road on the left bank. The background shows a line of trees and a clear sky.

Causes for declines

- ▣ Dewatering of river through groundwater pumping
- ▣ Habitat degradation and alteration
- ▣ Introduced nonnative species
- ▣ Degraded water quality

Nonnative fish

- ▣ Western mosquitofish, green sunfish, largemouth bass, fathead minnow, red shiner, bullhead catfish, etc.
 - can come from stock tanks and private ponds
 - for mosquito control or game fishing
 - bait bucket or aquarium release

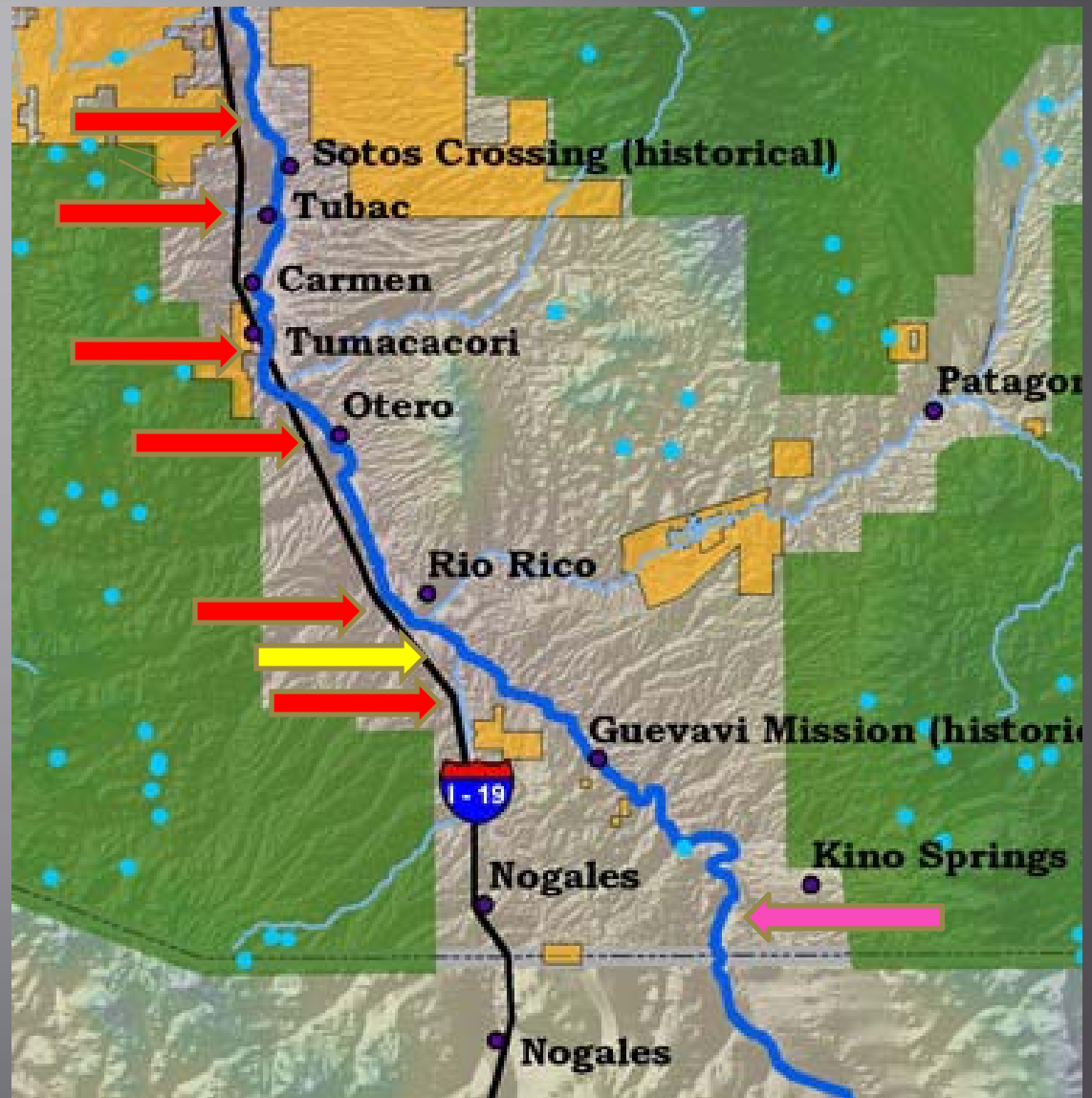


Previous surveys

- ▣ Conducted by different agencies for various studies
- ▣ 1997: USFWS contaminants study (King et al. 1999)-LD most sites, DS, SS, GT
- ▣ 2003: AGFD (Voeltz et al. 2004) - GT and LD at various sites, none at Rio Rico
- ▣ 2004: one GT at Tumacacori, LD at Nogales wash
- ▣ 2007: FOSCR few LD at Nogales wash, one WM in mainstem
- ▣ 2008: AGFD, FOSCR, SI, USFWS
 - marked first year of standardized yearly monitoring
 - Two LD lower sites around Tubac, 210 LD and 62 WM at Johnson's property on mainstem upstream of NIWWTP
- ▣ June 2009: improvements to NIWWTP completed

2009 sites

- Nogales wash
- Rio Rico
- Palo Parado
- Santa Gertrudis
- Tubac bridge
- Chavez-Siding



Methods

- ▣ November 2
- ▣ Electrofishing-shock and block
- ▣ Seining



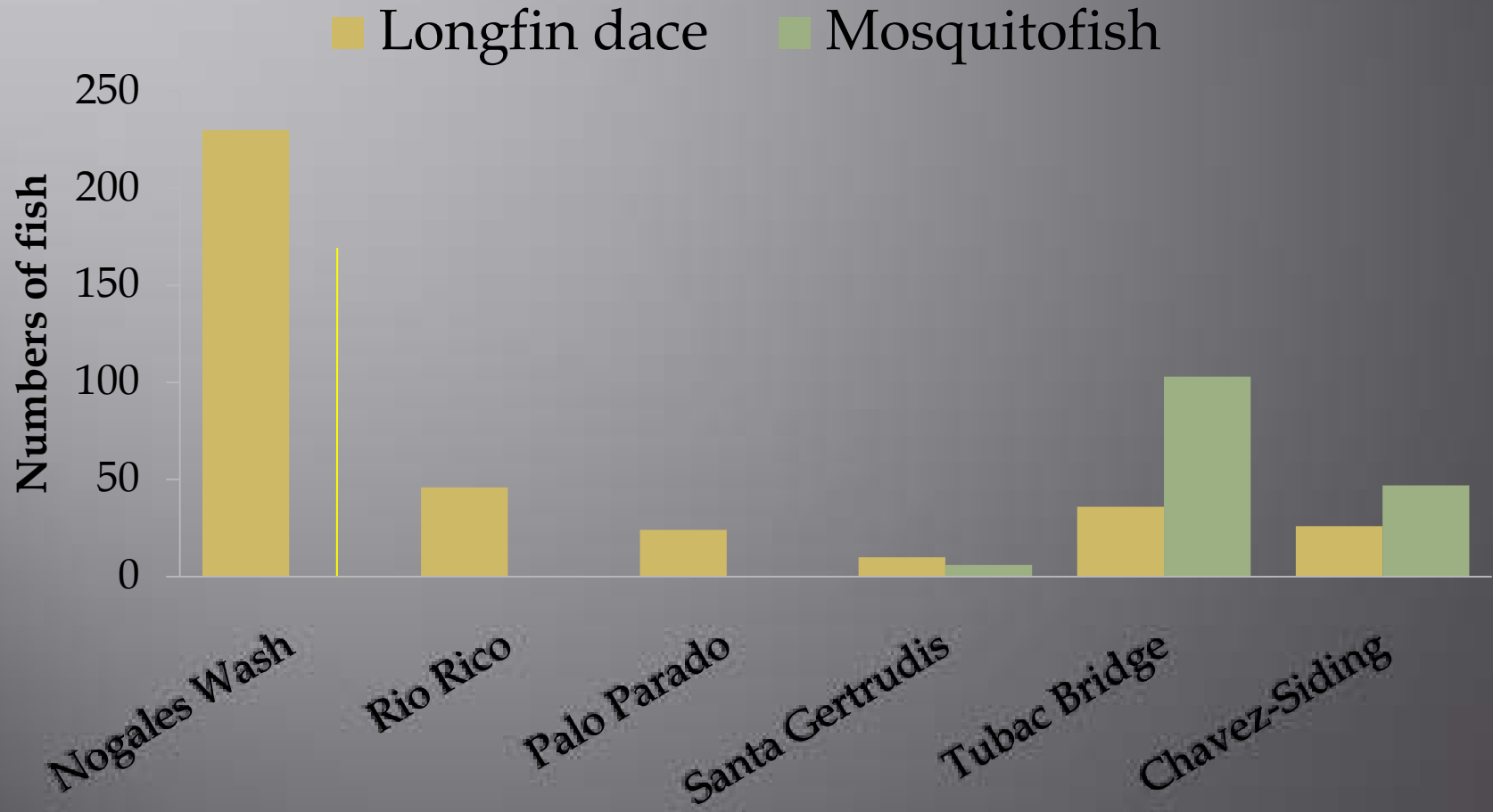
Results

- ▣ Longfin dace
 - 142 collected at the combined five downstream sites
 - 230 collected at Nogales Wash

- ▣ Mosquitofish
 - 156 collected at three most downstream sites
 - None at Nogales Wash



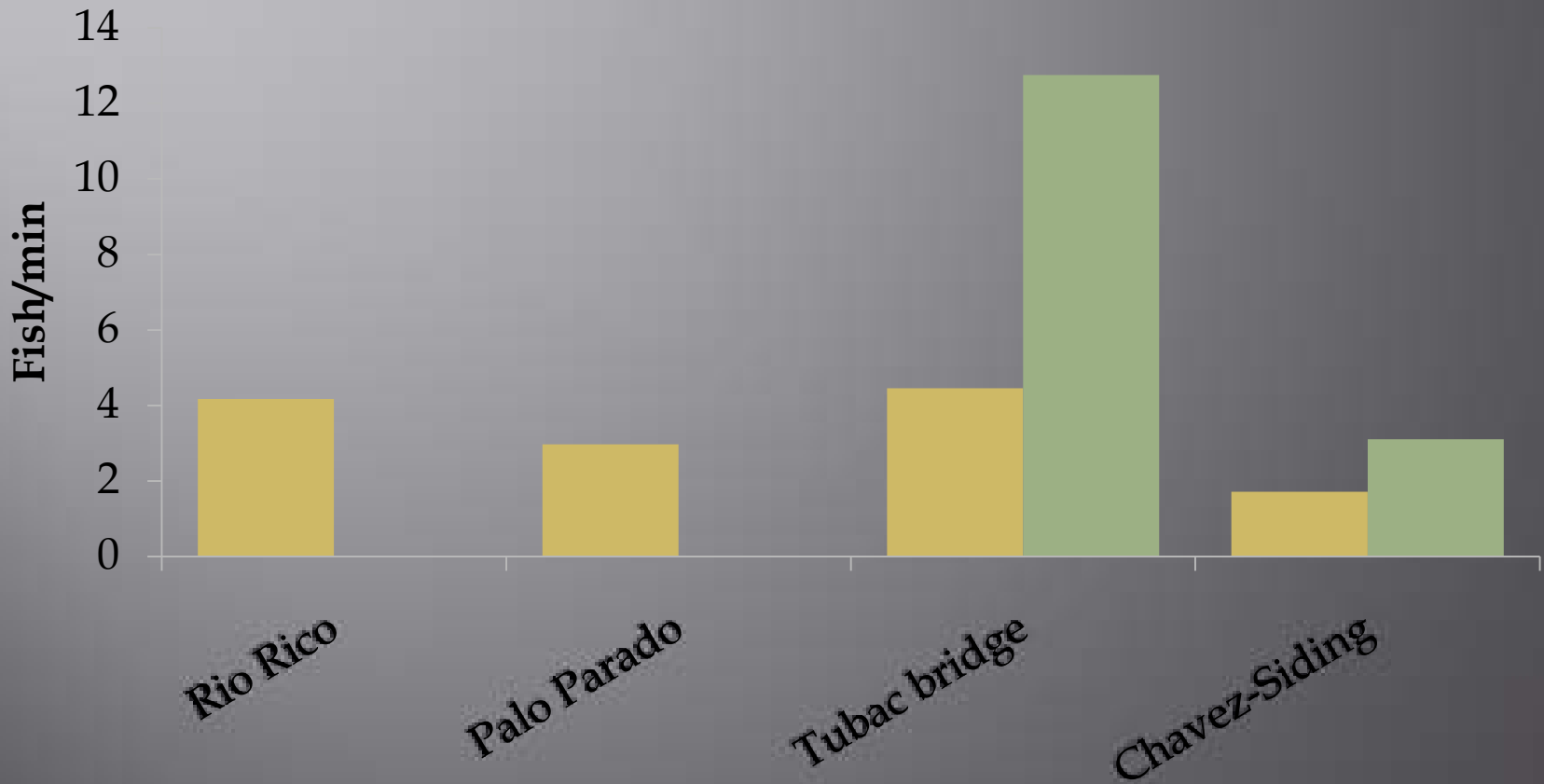
Numbers of fish combined methods



Catch rate

shock and block

■ Longfin dace ■ Mosquitofish



Other aquatic fauna

- ▣ Amphibians
 - Sub-adult Sonora Desert toad
- ▣ Aquatic invertebrates
 - Odonata
 - ▣ Dragonfly and damselfly larvae
 - Corydalidae
 - Hemipterans
 - ▣ Belostomatid, water striders, water scorpions, back swimmers, water boatmen



Return of Longfin dace

- ▣ “the most successful , highly adaptable, cyprinid fish native to the deserts of the American Southwest” -Minkley 1973
- ▣ highly opportunistic, travel amazing distances during high precipitation and runoff in short periods of time
- ▣ persist in tiny pools, under logs, debris
- ▣ habitat preference different than mosquitofish



What about Gila topminnow?

- ▣ may be able to redistribute from upstream sources and persist in river
- ▣ are extremely prolific
- ▣ mosquitofish pose a significant threat
- ▣ Gila topminnow replaced by mosquitofish in 2 years in Arivaca Creek (Miller 1961)
- ▣ larval Gila topminnow lack predator avoidance behavior that mosquitofish exhibit



The future of native fish in SCR

- ▣ Results show that treatment plant upgrade has had a significant impact on fish to persist in the river
- ▣ What effects will other contaminants from effluent have on fish and other aquatic animals?
- ▣ Will other natives have ability to re-establish?



Acknowledgements

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