

Status and Trends in the Little Colorado River Lower 1200 Meter Fish Community

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History

In May of 1911, Ellsworth and Emery Kolb documented a school of fish they observed at the mouth of the Little Colorado River (LCR), near Beamer's Cabin.

"...The striking of their tails had caused the noise we had heard. The 'bony tail' were spawning. We had hooks and lines in our packs, and caught all we cared to use that evening.... They are otherwise known as Gila elegans, or Gila Trout, but 'bony tail' describes them very well. The Colorado is full of them; so are many other muddy streams of the Southwest. They seldom exceed 16 inches in length, and are silvery white in color. With a small flat head somewhat like a pike, the body swells behind it to a large hump. Behind the dorsal fin, which is large and strong, the body tapers down slender and round, ending with a large, strong tail..."

What the Kolb brothers didn't know at the time was that the fish they had enjoyed were not Bonytail chub. The Kolb brothers had filled their bellies with a fish species that has been evolving for over 2 million years... **THE** Humpback chub. The photographs and descriptions taken by the Kolb brothers became the first records of one of the most unique river fishes in the world.



Emery Kolb in LCR with dinner (Humpback chub : HBC)

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- Currently, in Grand Canyon humpback chub are confined to one spawning population near the LCR, primarily because cold water releases from the dam may prevent mainstem spawning. There are only six known populations that contribute to the overall Colorado River population. All of these populations are located in the upper Colorado River basin (above Lake Powell) except for the Grand Canyon population.

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- In 1992, the Grand Canyon Protection Act was established which required that all damages to the Grand Canyon as related to dam operations be mitigated. The act required dam operations to become secondary to the health of the Grand Canyon ecosystem.

Gee Whiz Info for the Passengers

- Humpback chub were the last of the Colorado's "big-river" fishes to be described by the scientific community
- One of the first fishes to be listed as endangered
- A member of the minnow family
- Can grow to around 19 inches
- Can live to be 20-30 years old, which is unusual for fresh water fishes
- Eat a variety of food items mostly terrestrial and aquatic insects and occasionally other fish. They even like bagels and Freedom Toast (The same things trout like to eat)



Why should we care about old timers...?

Because they have had the will (and maybe some luck) to stick around for awhile!

Why We Should Care!

- **We** are responsible for the reasons why this species is endangered: The **construction of dams** on the Colorado River has led to the **extirpation** (local extinction of a species which ceases to exist in part of its historical range) of several species of fishes in Grand Canyon.
- Loss of **genetic diversity** (sort of the cornerstone of evolution).
- The loss of even a single species **can** have an effect on the entire ecosystem. Some will argue this!
- HBC are **endemic** (confined to a particular geographic region) to the Colorado River basin and therefore have evolved very unique adaptations to their environment not seen in other large river systems. They are found nowhere else in THE WORLD.
- **Intrinsic** value (Gotta give HBC (and Nelbert) credit for sticking around for a couple million years).
- So **future generations** can have a chance to feed these crazy-looking fish in the wild with scraps from the kitchen.

Extirpated GC Native Species



Pikeminnow : AKA Squawfish



Razorback sucker



Bonytail chub



Roundtail chub

The LAST of The Native GC Fishes



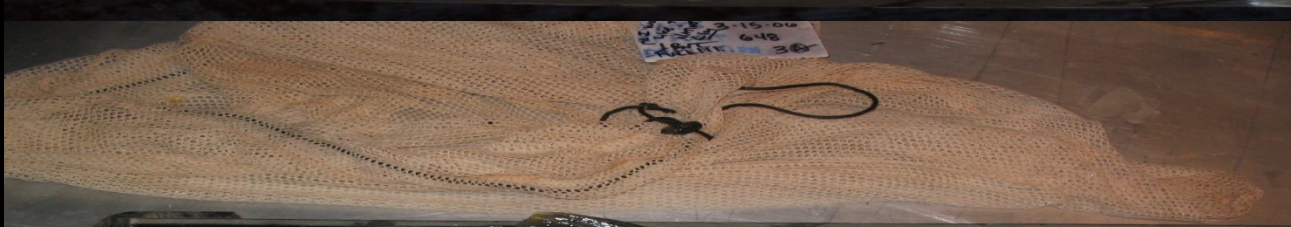
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Non-native Predatory GC Fishes





Humpback Chub Hoopnet Monitoring in The Little Colorado River



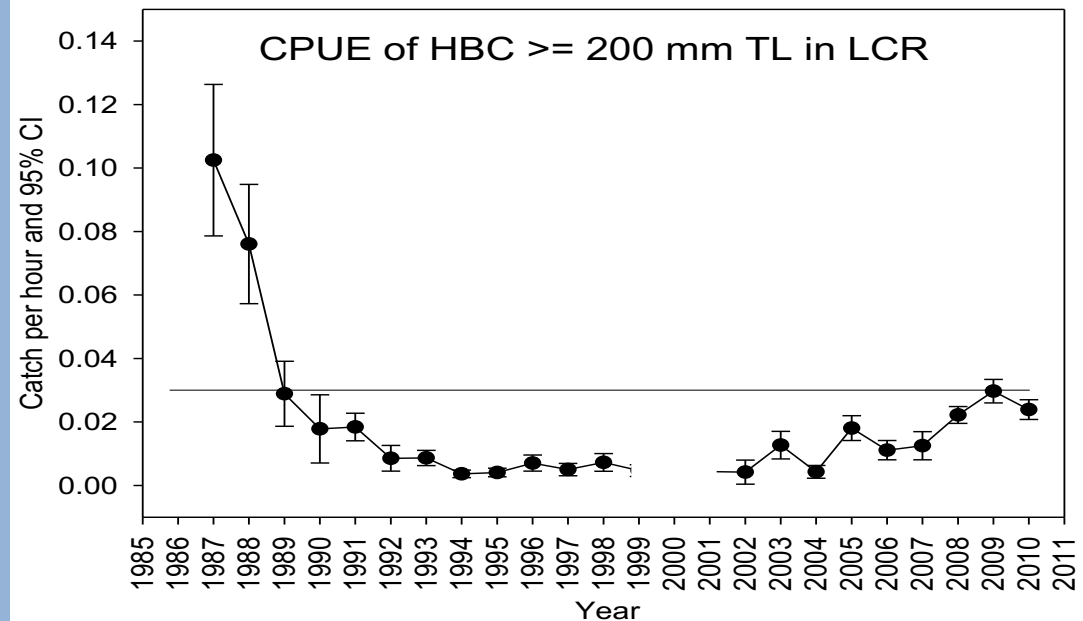
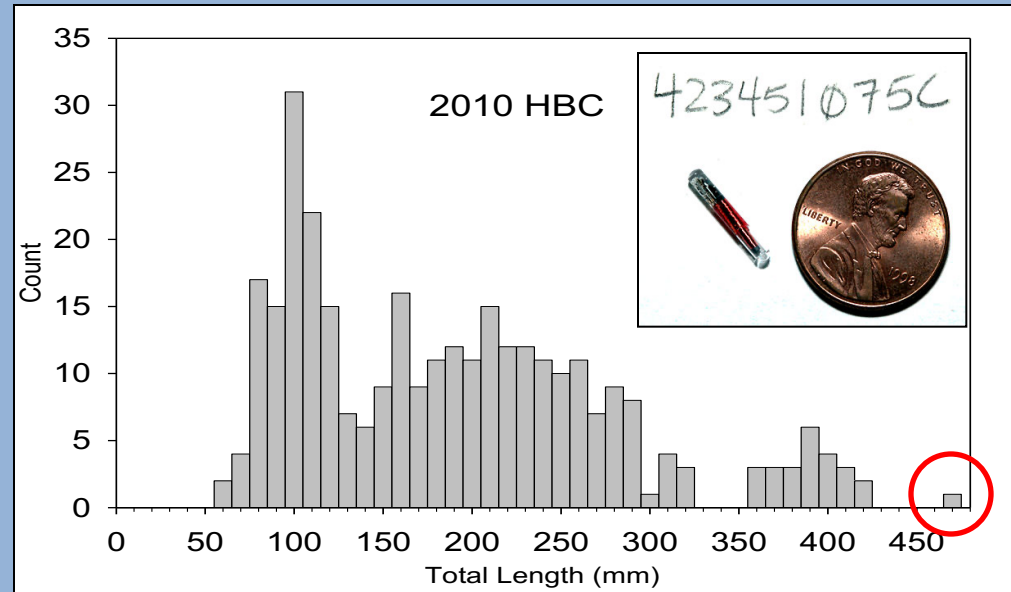
AGFD Little Colorado River Lower 1200 meter HBC Hoopnet Monitoring

- Began in 1987
- Monitoring effort is 20 – 30 days
- Takes place in spring usually April and May
- One of the longest, standardized, ongoing HBC monitoring projects in Grand Canyon

Objectives

- Asses population status and trends
- Determine catch per unit effort (fish/hour)
- Determine species composition
- Determine size and length frequencies

2010 HBC Results



2010 Results

- 98.5 % of the total catch were native fishes.
- Nonnative species captured (N=32): Channel catfish (N=12), Common carp (N=1), Fathead minnow, Plains killifish, Rainbow trout (N=1).
- Species composition of the total catch has been dominated by native fishes ($\geq 95\%$) since 2004, with the exception of 2006.

Commonly Asked Questions

- How did you get here?
- Where do you camp?
- What do HBC taste like? (Chicken...with more bones; the hump is the best part!).
- How long are you down here?
- What are those big fish we see near the confluence?

Why Are There Multiple Ongoing Science Trips In The Canyon?

- ✓ The easy answer is Glen Canyon Dam (AKA:People)
- ✓ Science and related activities have been going on in the canyon since the Powell Expedition (1869)
- ✓ Due to the construction of dams and the associated designation of humpback chub as an endangered species. By law, efforts have to be ongoing to attempt to remove HBC from the endangered species list. Which requires science trips and taking your favorite camps (kidding).
- ✓ Longevity of HBC and an increasing knowledge of HBC life history (remember, the scientific community has only 'known' about this species for 65 years). We still are learning and fish can swim (they don't always stay where you tell them to stay...Bad fish, no soup for you!!!)

HBC Tag History

- In 2010, a HBC was captured that had not been recaptured since March of 1994 (**16.2 years**). This individual was first captured in 1992. Rough estimates would make this fish approximately **25 years old**.
- Events like this shed light on the importance to collect as much information over long periods of time to provide data to **inform management actions**.
- The current HBC population model would have considered this individual to be deceased and therefore not contributing to the overall population (due to the length of time between capture events).
- All records of this fish being captured are from the LCR.

More Tag History Info

- A different old timer HBC was captured in 2010 (circled in red). It was almost 19 inches in length. A bit less shy than the previous HBC, it has been recaptured 4 times in the last 16 years. Rough age estimates would make this fish **close to 30 years old!** This fish has also only been captured in the LCR!
- In June of 2007, at RM 242.6 (Mack/Miller? Canyon) a tagged adult HBC was recaptured. The only other record of this fish being captured is from the mouth of the LCR in December of 1991 and it was about 14 inches in length; **181** miles away.



HBC Population Estimates

- HBC population estimates for the LCR inflow reach in 2009 was between 6,000 and 10,000 adults (age - 4+). Most likely close to 8,000 fish.

Coggins, L.G., Jr., and Walters, C.J., 2009, Abundance trends and status of the Little Colorado River population of humpback chub; an update considering data from 1989-2008: U.S. Geological Survey Open-File Report 2009-1075, 18 p. [<http://pubs.usgs.gov/of/2009/1075/>].





We Need Your **HELP!!**

Please ask customers not to disturb the nets or the ropes attached to shore.



THANK YOU!!!

