Role Reversal on the Colorado

A different twist on clearing out aliens to save a native fish.

By Ted Williams

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For about 210 miles in Arizona, the Colorado River below Glen Canyon Dam is infested with alien fish that threaten natives. So, to control the aliens and thereby test the feasibility of recovering the natives, the US Department of Interior has approved a two-year experiment that will be well underway by the time you read this. At Glen Canyon Dam the Bureau of Reclamation (BuRec) will fluctuate flows in order to expose redds and kill eggs. In a 9.4-mile stretch above and below the mouth of the Little Colorado River (which enters the mainstem 76 miles downstream of the dam) the US Geological Survey's Grand Canyon Monitoring and Research Center (GCMRC) will lead an effort to remove the aliens with electro-fishing gear, euthanize them with an anesthetic, then hand out the carcasses to local Indians to use as fertilizer. At Bright Angel Creek, 103 miles below the dam, the National Park Service installed a weir on November 18, 2002 that has been interdicting aliens as they enter what is believed to be their most important spawning tributary.

The aliens are wild, self-sustaining trout—virtually all rainbows in the 15 miles below the dam known as the Lees Ferry reach, virtually all browns at Bright Angel Creek and a mix, top-heavy with rainbows, near the Little Colorado River. The natives are chubs; you know, the "trash fish" your grandfather taught you to squeeze and toss into the bushes—in this case "humpback chubs," federally listed as endangered. The feds weren't always so protective of humpbacks. For example, 40 years ago, above what is now Lake Powell, they tried to eradicate them (along with bonytail chubs, razorback suckers and Colorado squawfish—all currently endangered) by applying 20,000 gallons of emulsified rotenone to 445 miles of the Green River and its tributaries. As one angler later told the Fish and Wildlife Service: "Everybody was tickled to death. There was so much chub and trash fish, [but] there was no trout."

Trout control on the Colorado outrages some sportsmen. "We cannot go back to the Garden of Eden," writes Mike Miller of the Colorado Fishing Federation in an action alert entitled Endangered Species Threaten Sportfishing. "You can poison all of the sportfish in the basin, and the evidence suggests it would have very little impact on recovery of the endangered species. . . . Millions of sportsmen's dollars are used on endangered species protection. This is a fact short-sighted, narrow-minded environmentalists never seem to consider. In the end, the alienation and disenfranchising of anglers will have a much greater negative impact on endangered species protection."

A more thoughtful and dispassionate analysis is offered by Terry Gunn, a dedicated conservationist entering his 21st year guiding fly fishermen at Lees Ferry and one of the best guides I've fished with. Not that Gunn is happy about the plan.

"I really have to question the science," he told me. "It's a shot in the dark, a supposition at best. I think the [rainbow] trout are getting a bad rap here; the predation rate on humpbacks is only .07 percent [of trout stomachs checked]. And there are so many other things affecting the humpback chub. Now they've got an Asian tapeworm."

Dave Foster, another highly respected Lees Ferry guide and conservationist, has worked here since 1988, fished here since 1966. Like Gunn, Foster does his homework and never shoots from the hip. "We're mixing our science," he declares. "We've got a flow regime aimed at reducing spawning trout and at the same time a very expensive program to eradicate trout at the mouth of the Little Colorado River. A few years down the road you're not going to be able to tease out which was the most effective method. I've always felt that what's good for the trout is good for the chubs." He agrees with Gunn that the fluctuations aren't going to hurt the trout at Lees Ferry, but that doesn't mean they

won't hurt the fishing. "Anglers will do great in the morning," he says. "But then when the water rises in the afternoon [during peak demand] they'll be standing up to their nipples and casting to gravel bars that were dry the day before."

There are a few humpback populations above Lake Powell, but only about 2,000 adults survive in the lower basin, mostly in the Little Colorado River. Like the other seven native fish species once abundant in the 277-mile Grand Canyon stretch of the main Colorado, the humpback is a big-river fish adapted to flows that could vary between 2,000 and 200,000 cubic feet per second. Large fins allow it to sail through fierce currents. Small eyes protect it from swirling silt. So adept is it at sensing vibrations that it can pick off floating insects in water turbid enough to obscure your rod tip an inch below the surface. It has silver flanks, a long snout, a pencil-thin "wrist" before the tail, and the hump of a male pink salmon in spawning condition. When humpback fry, sweeping down from the Little Colorado, hit their traditional habitat in the dam-chilled mainstream they go into thermal shock and are easy pickings for predators. About 10 percent of brown-trout stomachs checked contain humpbacks; and, while humpbacks are found in the stomachs of only half to one percent of rainbow trout, there are so many rainbows that this could mean between 125,000 and 250,000 rainbows.

The Colorado squawfish (or "pikeminnow"), the bonytail chub, the razorback sucker and the roundtail chub have been extirpated from the park (though they still occur above Lake Powell). If trout predation continues at its current rate, the US Interior Dept. reckons the population of adult humpbacks could fall to 500 within the decade. Extirpation would likely follow shortly thereafter.

"I backed Babbitt's [1996] flood to restore beaches," says Gauvin, "and I got nasty mail from TU members, proclaiming that I wouldn't be happy 'til every trout in the Colorado was flushed into the Sea of Cortez. If we fight this, what will we say to Walleyes Unlimited when they complain about some coho recovery program in Oregon? Let's grow up. This is a problem we have to live with in these altered habitats where trout are a mitigation species. If the science is good, what business have we to be complaining about efforts to save a native species?"

Critics, including Gunn, Foster and a large element of the environmental community, say the science is bad. But the science hasn't happened yet. What is underway on the Colorado is called "adaptive management"—you try something, collect and analyze data, then see if you got results; if you didn't get results, you try something else. Basically, you do the best you can with the information you have. In 1991 adaptive management called for the stabilization of flows. This, reasoned managers, would be good for trout and chubs. Unfortunately, it was good for neither. According to best estimates, it quadrupled the number of trout (which is not the same as benefiting them). Concurrently, the humpback population started to fall off. Before 1991 - when flows fluctuated wildly - the trout fishery at Lees Ferry depended on stocking. Now it's self-sustaining.

The fishery is world famous, the pride of the Arizona Game and Fish Department. I knew I could count on the department for a strong opinion about federal trout control, and fisheries biologist Bill Persons didn't disappoint me. Was he outraged? Well, no. In fact, just the opposite.

"From the lower end of Lees Ferry and the rest of the river we'd like to manage for our four remaining native fish--that's humpback chub, flannelmouth sucker, bluehead sucker and speckled dace," he said. "In the first 15 miles below the dam we're trying to maintain a quality tailwater trout fishery. The condition and average size of those trout is way down. Growth is very poor. There just aren't enough groceries to go around." The fish sampled by the department's electro-fishing crews average eight inches. Foster reports that fish caught by his anglers average better than that—about 13 inches—but that the trophy fishing days at Lees Ferry are definitely over. With flow fluctuations Persons and his colleagues expect the size and condition of Lees Ferry trout to dramatically improve. Moreover, because the flow fluctuations won't be as severe or as sustained as they were previously, the trout will probably be able to sustain themselves. But Persons says this: "I think if we lost three year classes in a row, we'd want to go in with a stocking of fingerlings so we didn't have a big hole in the fishery."

What I find astonishing is that precisely the same reservations articulated by Gunn and Foster are being articulated by biologists who advocate trout control. Sometimes the biologists even use the same words. "A shot in the dark," for example, is also how University of British Columbia fisheries professor Dr. Carl Walters describes trout removal in the vicinity of the Little Colorado. For the past six years Walters has worked as a consultant to the Grand Canyon Monitoring and Research Center; and, being from Canada, he doesn't carry any of the bureaucratic baggage that might cloud his objectivity. Sometimes, he explains, you have to take shots in the dark because once a native ecosystem has been nuked by a dam, there aren't lots of options. "We don't know why the chub population is declining," he says. "We think it has something to do with too many predators at the mouth of the Little Colorado. But we're not absolutely sure. And we're not sure that if those trout are taken out, the chubs can survive."

What's more, both Persons and Walters share Foster's opinion that "what's good for the trout is good for the chubs." Here's how Walters describes the mutually beneficial influence of fluctuating flows: "At Lees Ferry we went from a trophy fishery to your standard jillions of 12-inch rainbows. I've worked on rainbow trout for 50 years, and I've never seen densities this high. For 12 miles they're lined up like cordwood. The first time I walked down there I thought I was back in one of those California fish hatcheries I grew up in. That's exactly how it smelled. [He's not sure what he was smelling - maybe the fish themselves, maybe their excrement, maybe both.] Even if there weren't a native-fish issue, I think we'd recommend fluctuating flows to kill some of the eggs and try to get better sizes of fish. The river can grow lots of little trout or a few big ones. Gunn and Foster understand this. But some of the other guys keep thinking more fish, more eggs, more fish. . . . That's just wrong; it's a rat race that has been played out in tailwaters all over the United States, and it always backfires."

But what about the browns at Bright Angel Creek? It's clear that they're eating lots of chubs; and, once they get out into the Colorado, they have no problem growing.

Fisheries consultant and former Fish and Wildlife Service biologist Dr. Richard Valdez, who has conducted extensive studies on humpbacks and other native Colorado River fish, reports seeing 10- and 12-pound browns in and around Bright Angel. "They swim from there up to the Little Colorado; that's a big [27-mile] migration, but browns will do that," he told me. "I suspect that there are some guys who know that this is one of the best-kept secrets for big browns and that they're not pleased about this effort [to eliminate them]."

But managers don't have a choice - morally or legally. First, the Endangered Species Act mandates the action. Second, while the river from Lees Ferry to the dam is managed by the Park Service as part of the Glen Canyon National Recreational Area, the next 277 miles are managed as part of Grand Canyon National Park. Above Lees Ferry the agency's mission is recreation (although this mission is trumped by the Endangered Species Act whenever it conflicts with the welfare of a listed species). Below Lees Ferry the mission is to protect and restore all the natural parts and, within reason, allow "natural processes to proceed unimpeded."

One reason trout are so prolific in the Colorado is that the squawfish---the only large predator fish that evolved in the stretch managed by the Park Service—has - been eliminated. This minnow, which can attain weights of 80 pounds or more, is a salmonid-eating machine in other systems, frequently to the dismay of managers. There has been talk about re-introducing squawfish; but they wouldn't spawn in the cold tailwater, and the idea of put-grow-and-eat-trout management turns off biologists. "There's concern about fiddling too much," says Randall Peterson, BuRec's rep on the Adaptive Management Work Group (a diverse collection of stakeholders including government agencies, Indian tribes, power companies, sportsmen and environmentalists that advises the US Interior Dept. on how to operate the dam). "When we saw the unexpected outcome of the exploding trout population it taught us all to go slow and careful."

More serious thought has been given to reintroducing river otters, a project that by no means fits the definition of "fiddling." Otters may have been extirpated when the first dam releases drowned kits in their dens and when the Glen Canyon Dam and the Hoover Dam downstream blocked gene flow. "Without its top aquatic predator the Colorado River ecosystem is just as out-of-whack as Yellowstone used to be without wolves," comments park biologist Elaine Leslie. "We should be looking at native species restoration wherever possible, and the restoration of ecosystems. The problem at Grand Canyon is that there doesn't appear to be a viable population of Sonoran river otters [the subspecies that belongs in the park] anywhere in the Southwest. So, if we were to reintroduce otters, we'd want to get the closest possible relative to the Sonoran otter. The issue of most concern with otter reintroduction is the potential impact on the highly endangered humpback chub, which is slower moving than brown or rainbow trout." But otters target whatever fish is most abundant—i.e. they could be relocated because they'd be wearing radio collars), the impact would be insignificant.

Carl Walters says this: "I don't think otters would hurt the chubs; they'd be well adapted to this kind of predation. The biggest threat to the chubs, beside the trout and the warmwater fish, is each other. They're pretty fierce cannibals. I wouldn't worry about adding otters."

What is good for the humpback chub? If you have to ask, you won't comprehend the answer, which is this: It is good not because it is beautiful, not because it is interesting, not because it reaches 18 inches and is every bit as exciting to catch on a dry fly or nymph as any trout, not because it is anything, only because it is. And it needs to be saved because, to borrow the words of naturalist/explorer William Beebe, "when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again." The framers of the Endangered Species Act understood this.

So do Gunn and Foster, despite their grave reservations about the current experiment. Both stress that they want to see humpback chubs do well. And both have it right when they say that trout should not get all or even most of the blame for the chub's predicament. But trout are one of the few things adaptive managers can do something about.

Everyone who loves the wild, self-sustaining trout of the Colorado had better hope that the current experiment works. If it doesn't, the next experiment the Interior Dept. is almost sure to try is warming the river by releasing water from higher up on the dam. This could, as Walters puts it, "unleash vampires from the basement," bringing more alien predators such as stripers, largemouths, brown trout and channel cats up from Lake Mead and the lower river. On the other hand, the enormous amount of restored habitat in the main river might bring on an explosion of humpbacks sufficient to overwhelm the increased predation.

The vampire that frightens Walters most is the brown trout. "They wouldn't just eat chubs," he says. "Right now the brown population is small and mostly restricted to Bright Angel Creek. We think that the reason browns haven't been able to spread out very far is that the water's too cold. If they move up to Lees Ferry, they're going to eat the rainbows and ruin the fishing. And the brown-trout fishery would never replace it. Big rivers and brown trout fishing don't go together very well."

That doesn't mean that Walters—or anyone else with an ecological conscience—will fight temperature control on the Colorado if it really has to come to that. It means only that the current rainbow fishery is a nationally important mitigation resource that should be retained if it doesn't mean sacrificing the humpback chub.

Much of the environmental community doesn't agree. It is pushing hard for temperature control right now. The Grand Canyon Trust—which has announced that it will sue the Fish and Wildlife Service over a humpback recovery goal that's "a feel-good fairy tale based not on sound science, but political expediency and the desires of powerful special interests"--proclaims that "the Colorado River must be warmed in order to improve recruitment of the humpback chub." Eight other groups, including the

frenetically litigious Center for Biological Diversity, have sent a letter to BuRec charging that one of the goals of its strategic plan—maintaining naturally reproducing rainbows around Lees Ferry "to the extent practicable and consistent with the maintenance of viable populations of native fish"—is not supported by law, contrary to the needs of native fish, and should be eliminated. Maybe they're right.

But maybe the adaptive managers will prove that humpbacks can be saved just with flow fluctuations and localized trout removal. And maybe the Lees Ferry reach will again produce big rainbows. Meanwhile, sportsmen need to support the professionals they've trained and hired with their tax and license dollars, forget everything their grandfathers taught them about "trash fish," and remember how they reacted most everywhere else—where the natives harmed by aliens are trout.