

MINORITY REPORT
on the Technical Work Group Recommendation to AMWG
of the FY2010-2011 Budget and Work Plan
Specifically on the MAINSTEM NONNATIVE FISH CONTROL PROJECT (BIO 2.R.16)

Prepared by Mark Steffen, Technical Work Group representative for:
Federation of Fly Fishers/Northern Arizona Flycasters
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With so many reasons to oppose GCMRC plans to continue killing non-native fish, it is appropriate to first point out that GCMRC has not adequately justified why non native fish (primarily trout) should be killed now or why they have been killed over the past six years in the Grand Canyon.

I believe it is accurate to say that GCMRC projects to kill non native fish in Grand Canyon were initiated under what we now know were false pretenses. Information learned in the last six years has been ignored and the need for the killing of non native fish has not been adequately re-evaluated.

The AMWG was persuaded in 2001 that the humpback chub population in the Grand Canyon had declined by an alarming amount. This decline was blamed primarily on non native fish (mostly trout), cold water and daily flow fluctuations from Glen Canyon Dam. Today we know the decline was much less than the AMWG was told and that the causes for the decline still are unknown. Recent reports from GCMRC (Coggins HBC open file) show the chub decline started in the early 1990s and a recovery started in the mid to late 1990s before both the trout killing and drought related warmer water releases from Glen Canyon Dam. Curiously (but not noted by Coggins) the chub decline correlates with the disastrous 1990-1991 Environmental Impact Study experimental flows designed to study sediment, sand, mud and clay but which also did extreme damage to the aquatic ecosystem including aquatic plants, insects and fish. A vast majority of trout in Glen Canyon and Grand Canyon were slowly starved to death and for the first time in decades, the Arizona Game and Fish Department in 1991 had to stock large trout instead of fingerling trout to maintain the Lees Ferry trout sport fishery. The likelihood of the 1990-91 EIS experimental flows being a cause of the chub decline has not been investigated even though the US Fish and Wildlife Service in their 1995 BO appendix mentioned that it should be investigated. Furthermore, daily flow fluctuations were dramatically reduced in 1991, drastically altering an ecosystem that had evolved and adapted to daily flow fluctuations becoming essentially a tidal ecosystem. Many scientific studies in the 1980s suggested that cessation of daily flow fluctuations would result in less food available for fish in the Colorado River, including the adult chubs migrating out of the LCR in search of food, behaving similarly to anadromous salmon. A negative effect on fish of reducing daily flow fluctuations has not been adequately investigated even though suggested by AMWG members, perhaps because of institutional bias of DOI agencies against daily flow fluctuations and a bias for any sort of imitation of natural flow releases from Glen Canyon Dam.

The AMWG was told in 2001 there was over one million trout in Grand Canyon and 70,000 trout in the Colorado River in the vicinity of the warm spring fed Little Colorado River, the main home of the humpback chub and a major tributary of the Colorado River. After four years of very intensive and very expensive killing (4 million dollars) of mostly trout in a 17 mile section of the Colorado River, only 20,000 trout were killed versus the 70,000 predicted.

The AMWG has been told since the mid 1990s that trout and channel catfish combined were likely responsible for eating as many as all of the 500,000 baby chubs produced each year in the Little Colorado River (Valdez 1995). Since trout do not enter or live in the warm water of the Little Colorado River but channel catfish and other non native warm water fish do, this assertion should not have led to trout being thought the prominent villain. Indeed, stomach samples of the 20,000 trout killed showed that less than 2% of trout stomachs contained fish. GCMRC, through some sort of

extrapolation declared that the 20,000 trout killed in four years would have consumed 40,000 baby chubs. Alarming somewhat but in context not alarming since 40,000 baby chubs was a small percent of 2 million baby chubs that would have been produced in the same four year period.

Other reasons to oppose government non-native fish killing in Grand Canyon:

- 1- Trout are not an invasive species. Trout have been introduced in Grand Canyon since the early 1920s, by NPS, USFWS, AGF and others.
- 2- Killing of trout ostensibly to help native fish has created a precedent that has led to an attitude of gratuitous denigration of trout as an undesirable "non native species". Some advocates of trout killing need no more justification than that trout are "non native".
- 3- GCMRC has not uniformly reported the results of the non native fish killing trips, focusing mostly on the number of trout killed. Because the technique used is electro shocking, hundreds of chubs have also been electrocuted, resuscitated and released, probably repeatedly, and hundreds if not thousands of other non native fish have been killed. It seems extremely likely that chubs shocked and released may have been harmed or killed. USFWS employees have discretely indicated that native fish showed burn marks after being repeatedly shocked and released in the now discontinued NPS "trout reduction project" in Bright Angel Creek. Of course this was not mentioned in official reports.
- 4- The non native fish killing takes place at night in an area used heavily by Grand Canyon National Park visitors. The boats going up and down the river with bright lights are annoying and the details of the killing with electro shocking, poisoning and grinding to pulp are disgusting and revolting activities to be occurring in a National Park.
- 5- The Glen Canyon Dam Adaptive Management Program has an absurd goal of no non native fish down stream of the 15 mile section of river directly below Glen Canyon Dam, known as Lees Ferry, a world famous trout fishery. This has led to all sorts of irrational and absurd ideas, such as "most trout in Grand Canyon come from Lees Ferry". Some AMWG members want the number of trout at Lees Ferry to be kept low and be reduced when thought to be too high. No stocking of trout at Lees Ferry can be allowed. Trout are disparaged in the national media as "known predators of chubs", creating a classic "false choice" example of "chubs or trout" and leading to negative economic consequences to Marble Canyon businesses dependent on sport fishing activities.
- 6- Prior to Glen Canyon Dam, the Colorado River was dominated by highly predacious non native channel catfish. Catfish are warm water fish chased from the river by the cold water now coming from the dam, yet catfish are still present in the warm water of the LCR. Regular flooding of the LCR may be keeping catfish out of the LCR and cold water in the Colorado River does not provide habitat for catfish or other warm water fish. With out Glen Canyon Dam chubs may have been extirpated from Grand Canyon, catfish would still be the dominant fish in the Colorado River and in the Little Colorado River.
- 7- There really is no justification to kill any non native fish. There is justification to recognize the benefits of the status quo and to increase the daily flow fluctuations to improve the benefits of the tidal ecosystem for adult chubs and for trout. It is reasonable to think that the system is best suited for trout in the Colorado River along with some adult chubs. The chubs are primarily in the warm water of the Little Colorado River where they are protected from non native fish and have all the requirements they need for completion of their life cycle.
- 8- Multiple badly designed experimental flow experiments have been detrimental to fish in the Colorado River Ecosystem. These negative consequences have not been investigated. Declines in fish populations likely caused by badly designed experimental flows have been

negligently blamed on dam operations (cold water and daily flow fluctuations) or non native fish (trout). Badly designed experiments have been numerous with the most flagrant being the 1990-1991 EIS experiments, but also anytime that flows were reduced to a low steady 5,000 cfs for aerial photographs. It is interesting that aerial flight photos now are taken at a steady flow of 8,000 cfs, which is an improvement unremarked upon. It would be interesting to know when this change occurred and how or if it correlates with chub improvements.

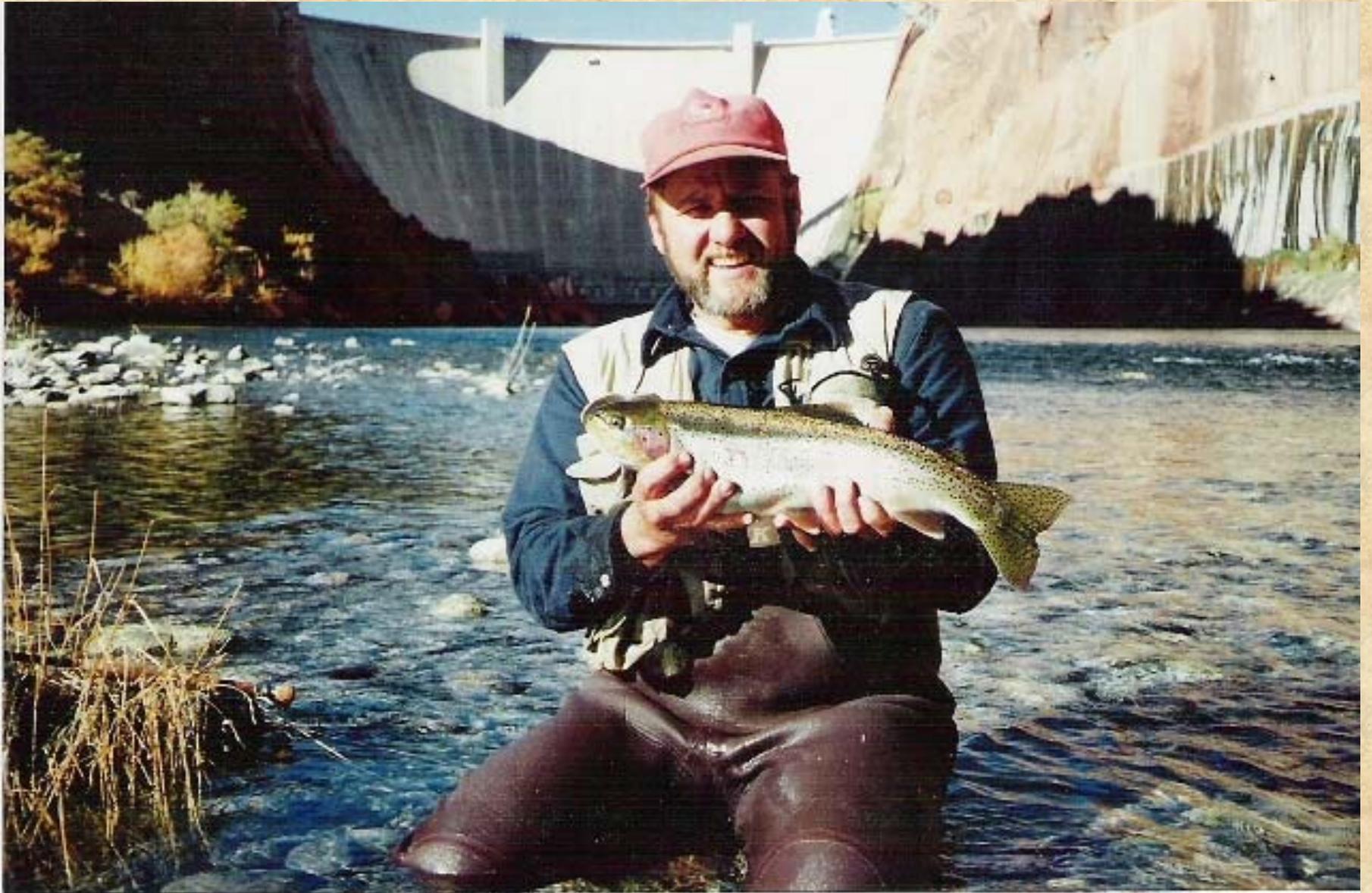
- 9- The current proposed 2010 hydrograph projecting high volume equalization flows along with the low fall steady flow experiment is a current time example of another badly designed experiment. At the June 2009 TWG meeting I commented this experiment will be analogous to removing half of the water from the oceans AND stopping the tides, in the hope of helping some baby fish! Miles and miles of shoreline and aquatic plants and insects will be stranded, left to dry out and rot in the hot sun. Reclamation says they will mitigate this by reducing the water flow over a period of three to four days. I doubt this will be adequate mitigation and this must be a reminder for us of past experiments that were designed with the best of intentions but nonetheless had negative consequences that went uninvestigated and then blamed on the usual scapegoats, the dam and trout.
- 10- The November 2004 High Flow Experiment is a perfect example of a badly designed experiment with negative consequences uninvestigated. Because GCMRC did not do ANY monitoring of aquatic plants, insects or fish after the 2004 HFE, we have only anecdotal reports that trout had reduced food supply through the winter of 2004-2005. AGF monitoring showed drastic declines in trout populations through out Glen Canyon and Grand Canyon in 2005, yet GCMRC claims there is no explanation for the trout decline of 2005!

In Summary, the current plans to continue killing non native fish in Grand Canyon are not justified and are unnecessary, ineffective, badly designed, gratuitous, arbitrary, vindictive, ridiculously expensive and another example of good intentions with bad consequences perpetuated by governmental bureaucratic inertia.

Sincerely,

Mark Steffen
Federation of Fly Fishers/Northern Arizona Flycasters
11475 Homestead Lane, Flagstaff Arizona, 86004

Trout or Humpback Chubs ?



Trout in Grand Canyon

- Trout are not an invasive species
- Trout were first introduced by NPS in 1920



Trout Stocking in the Grand Canyon

Table 6-18. Summary of fish stocking records between Lee Ferry (RM 688.6) and Separation Rapid (RM 450.6), Coconino and Mohave Counties, Arizona.

Species	Date	Locality	# Stocked	Size	Source
Coho salmon	12/1971	Lee Ferry	20,000	Fingerlings	AZ Game and Fish
Rainbow trout	9/1923	Bright Angel	20,000	Fingerlings	National Park Service
	5/1923	Tapeats Crk.	5,000	Eyed Eggs	"
	9/1924	Bright Angel	6,000	Fingerlings	"
	2/1931	Havasu Crk.	18,000	Eyed eggs	"
	1/1932	Bright Angel	21,000	Eyed eggs	"
	12/1934	"	31,000	Eyed eggs	"
	9/1935	"	21,000	Eyed eggs	"
	5/1939	"	13,800	Fingerlings	"
	6/1940	"	18,000	Fingerlings	"
	6/1940	Tapeats Crk.	2,000	Fingerlings	"
	7/1940	Clear Crk.	18,000	Fry	"
	11/1941	Bright Angel	32,000	Fingerlings	"
	7/1942	"	28,000	Fingerlings	"
	7/1942	Phantom Crk.	14,000	Fingerlings	"
	4/1944	Havasu Crk.	4,500	Fry	"
	6/1947	Bright Angel	10,394	Fingerlings	"
	4/1948	Havasu Crk.	13,000	Fingerlings	"
	3/1950	Bright Angel	45,240	Fingerlings	"
	4/1954	Havasu Crk.	20,000	Fingerlings	"
	7/1958	Bright Angel	45,000	Fingerlings	"
	6/1964	"	23,900	Fingerlings	"
	1964	Lee Ferry	10,200	Adv. Fingerlings	AZ Game and Fish
	1964	"	5,000	Catchable	"
	1965	"	10,000	Fingerlings	"
	1965	"	8,830	Catchable	"
	1966	"	10,000	Fingerlings	"
	1966	"	4,500	Catchable	"
1967	"	3,100	Catchable	"	
1968	"	5,500	Catchable	"	
1969	"	20,000	Adv. Fingerlings	"	
1969	"	6,545	Catchable	"	
1970	"	20,000	Adv. Fingerlings	"	
1970	Diamond Crk.	6,173	Fingerlings	U.S. Fish and Wildlife	
1971	Lee Ferry	5,110	Catchable	AZ Game and Fish	
1971	Diamond Crk.	11,000	Fingerlings	U.S. Fish and Wildlife	
1972	Lee Ferry	4,585	Catchable	AZ Game and Fish	
1973	"	5,075	Catchable	"	
1974	"	3,990	Fingerlings	"	
1975	"	30,000	Fingerlings	"	
1975	"	4,500	Catchable	"	

(continued)

Trout Stocking in the Grand Canyon

Table 6-18(cont.). Summary of fish stocking records between Lee Ferry (RM 688.6) and Separation Rapid (RM 450,6), Coconino and Mohave Counties, Arizona.

Species	Date	Locality	# Stocked	Size	Source
Rainbow trout (cont.)	1976	Lee Ferry	100,000	Fingerlings	AZ Game and Fish
	1977	"	100,000	Fingerlings	"
	1978	"	50,000	"	"
Brown trout	7/1926	Shinumo Crk.	50,000	Eyed eggs	National Park Service
	8/1930	"	50,000	Eyed eggs	"
	12/1930	Garden Crk.	4,000	Eyed eggs	"
	1/1930	Bright Angel	100,000	Eyed eggs	"
	12/1930	"	45,000	Eyed eggs	"
	12/1934	"	50,000	Eyed eggs	"
Brook trout	8/1920	Bright Angel	5,000	Fingerlings	"
	6/1927	Havasus Crk.	10,000	Fingerlings	"
	12/1928	Clear Crk.	50,000	Eyed eggs	"
	1/1931	"	25,000	Eyed eggs	"
	12/1934	"	18,000	Eyed eggs	"
	1977	Lee Ferry	47,880	Fingerlings	AZ Game and Fish
	1978	"	100,000	Fingerlings	"
	12/1978	Lee Ferry		Fingerlings	"
Cutthroat trout	1979	Lee Ferry	50,000	Catchable	"
Woundfin dace	7/1972	Lee Ferry	650	Fingerlings	"

Hiking to Fish in Grand Canyon



Grand Canyon River Rafting Trips



Grand Canyon River Rafting Trips



Bright Angel Creek in Grand Canyon



Bright Angel Creek in Grand Canyon



Bright Angel Creek in Grand Canyon



Trout or Humpback Chubs ?

- **Commonly heard in newspaper stories**
- **Commonly heard in TV news stories**

A False Choice ?

YES !

A Physiological Reality Check

- **Chubs are warm water fish**
- **Trout are cold water fish**

A Geographical Reality Check

- **Chubs are doing very well in the warm, spring fed Little Colorado River**
- **Trout are doing well in the cold water Colorado River coming from Glen Canyon Dam**
- **Trout do not live in and do not enter the Little Colorado River !**

Trout Eat Chubs ?

- **Chubs eaten by trout would be young chubs that unintentionally leave the LCR during flooding and would not survive in the cold water anyway**
- **Carl Walters (verbal communication) says trout eat only “loser chubs”**

Fanciful Theories

- **Killing cold water fish will lead to warm water fish living in cold water**
- **Chubs will find warm water along the shoreline of a cold river if flows are low and steady**

More False Choices

- **Cold water non-native fish or warm water native fish?**
- **Hydropower or Chubs?**
- **Hydropower or Beaches?**
- **Hydropower or Archaeological Sites?**
- **Fluctuating flows or Chubs?**
- **Fluctuating flows or Beaches?**
- **Fluctuating flows or Archaeological Sites**

False Choice Consequences

- **Killing non-native fish only because they are non-native**
- **Prevent stakeholder compromise**
- **Pit stakeholders against one another**
- **Define resources as mutually exclusive**
- **Create desire to win & make others lose**
- **Create animosity and acrimony**
- **Prevents constructive progress**
- **Prevents adaptive management**

**One small step for man,
one giant leap for mankind.**

Neil Armstrong



**If we can send a man to the moon, we can
have warm water fish living in cold water!**