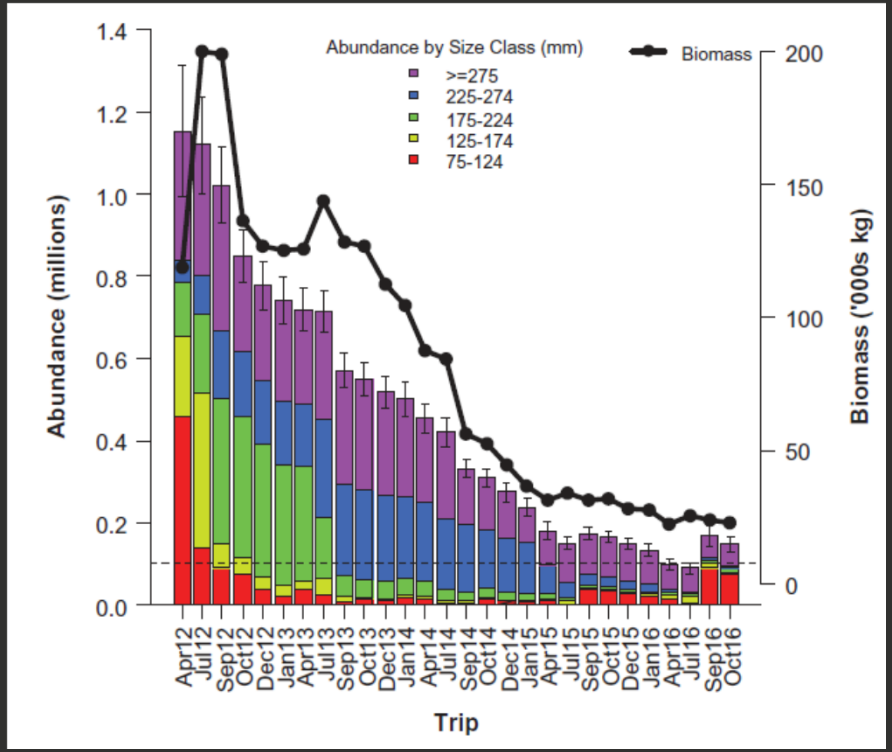
Shared Fishery Goals for the lower Colorado River – NPS/AGFD

- Maintaining a quality recreational Rainbow Trout fishery in Lees Ferry

- Maintaining healthy populations of all native fish (including Humpback Chub and Razorback Sucker) populations in the lower Colorado River

Background

- AGFD stocked Lees Ferry Since 1964
- Last Stocked in 1998
- In 2006, Game and Fish received a NOI to due from CBD to halt proposed stockings
  - Based on jeopardy for humpback and razorback sucker
  - Population status was 3000-5000
  - No compliance in place
- Today Game and Fish needs to stock
  - Poor catch rates and low abundance angler days down and business' closing and guides suffering
  - Better data than in 2013 (out migration)
  - Humpback Chub population status exceeding 11,000



Comprehensive Fisheries Management Plan – NPS 2013

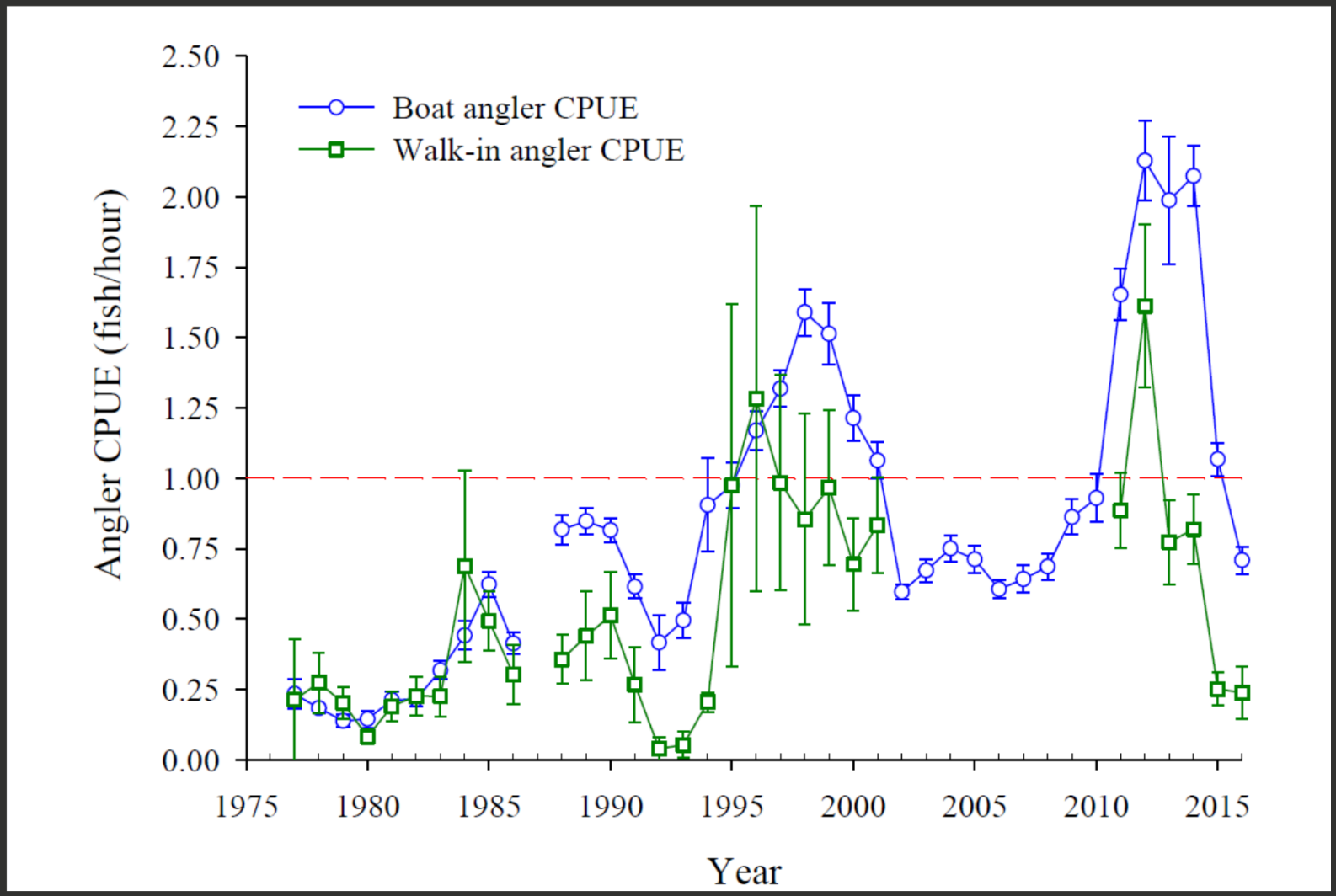
Table 7. Glen Canyon Reach Rainbow Trout Experimental Stocking Criteria

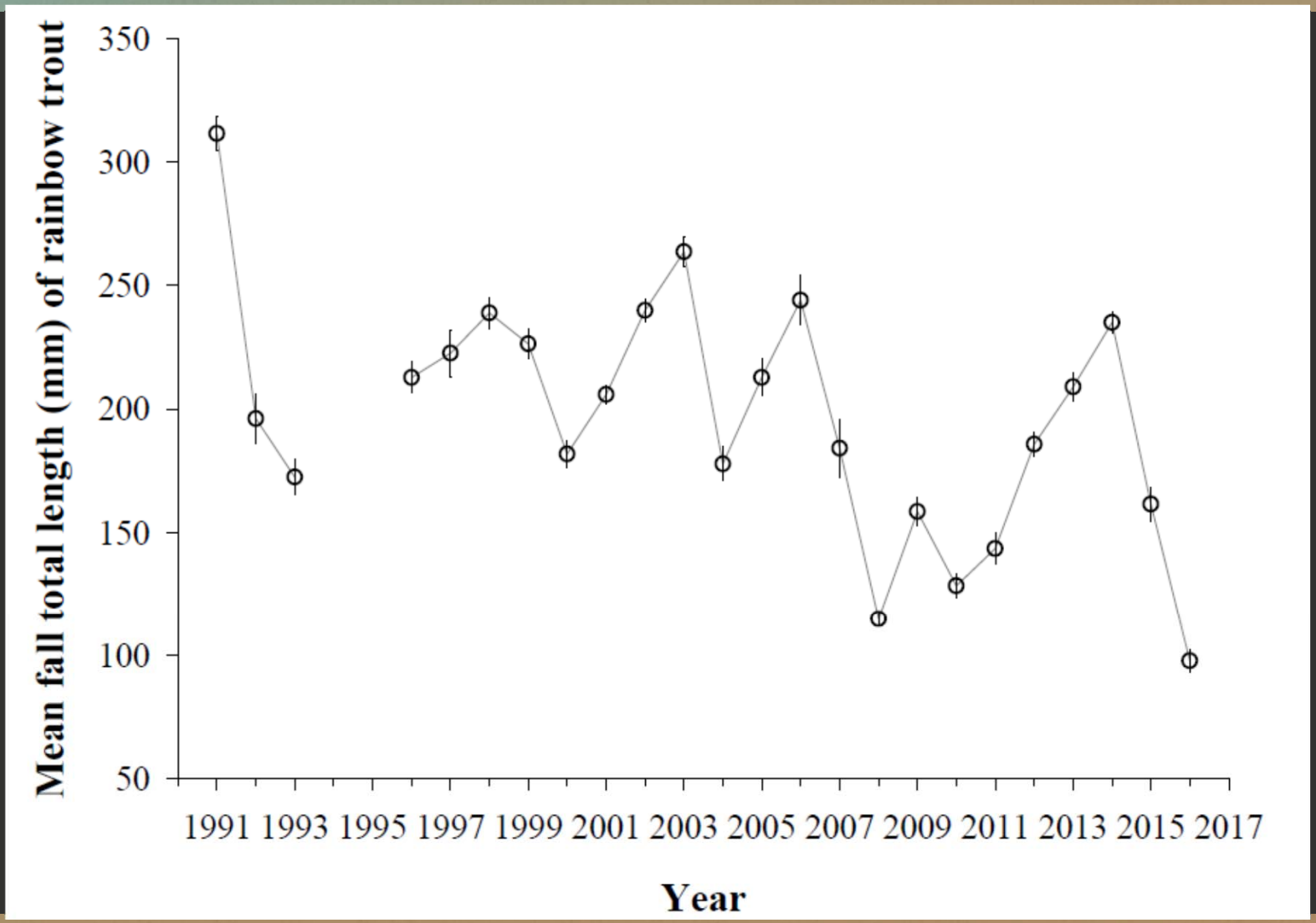
• Recruitment (wild young fish) is low for multiple years: rainbow trout recruits (fish less than six inches) comprise less than 20% of the fish community during AZGFD fall monitoring events for more than three consecutive years; or
• AZGFD electro-fishing estimates of relative abundance (including all sizes of fish) are less than one fish/minute for two consecutive years of fall sampling; or
• If angler catch rates in Glen Canyon Reach decline to less than 0.5 rainbow trout/hour and average size is less than 14 inches for two consecutive years.

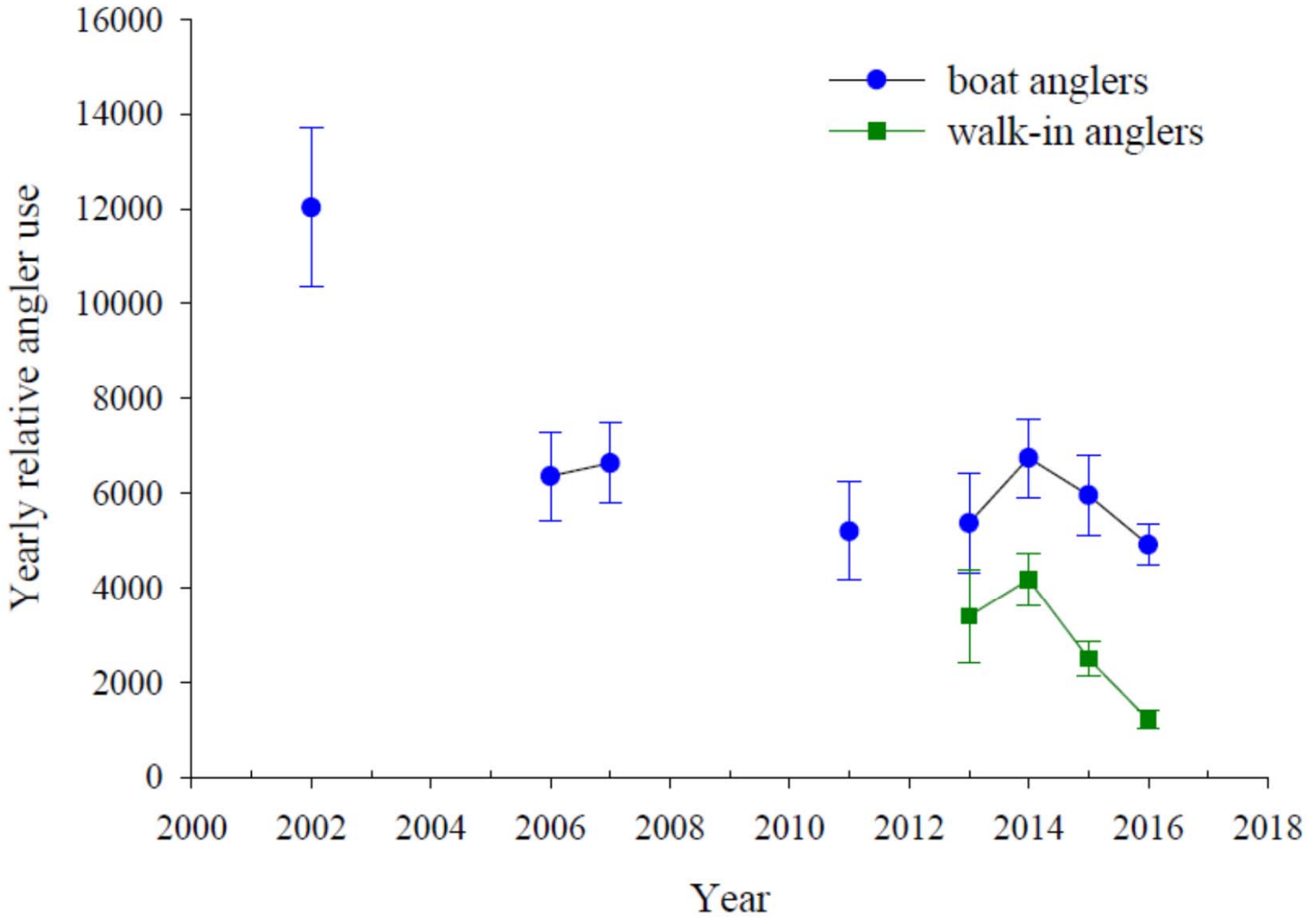
- Resulted in BO – adverse affect – no incidental take established
- Would not result in Jeopardy for Humpback Chub or Razorback Sucker

Parameters	Objective Guideline	Strategies if Objectives are not met
OBJECTIVE - Maintain a healthy population of Rainbow Trout at Lees Ferry to support recreational fishing.		
Recruitment	Rainbow Trout ≤ 6 inches compose 20% - 50% of the Lees Ferry population as determined by fall electrofishing	• Stocking • Trout Management Flows • HFEs
Abundance	Rainbow Trout electrofishing CPUE exceeds 1 fish per minute (all sizes of trout)	• Stocking • HFEs • Change in regulations
OBJECTIVE – Provide a quality trout fishing experience with catch frequency commensurate with the Blue Ribbon status of the fishery.		
Angler Catch Rate	Angler catch rate ≥ 1 Rainbow Trout per hour	• Stocking • HFEs • Change in regulations

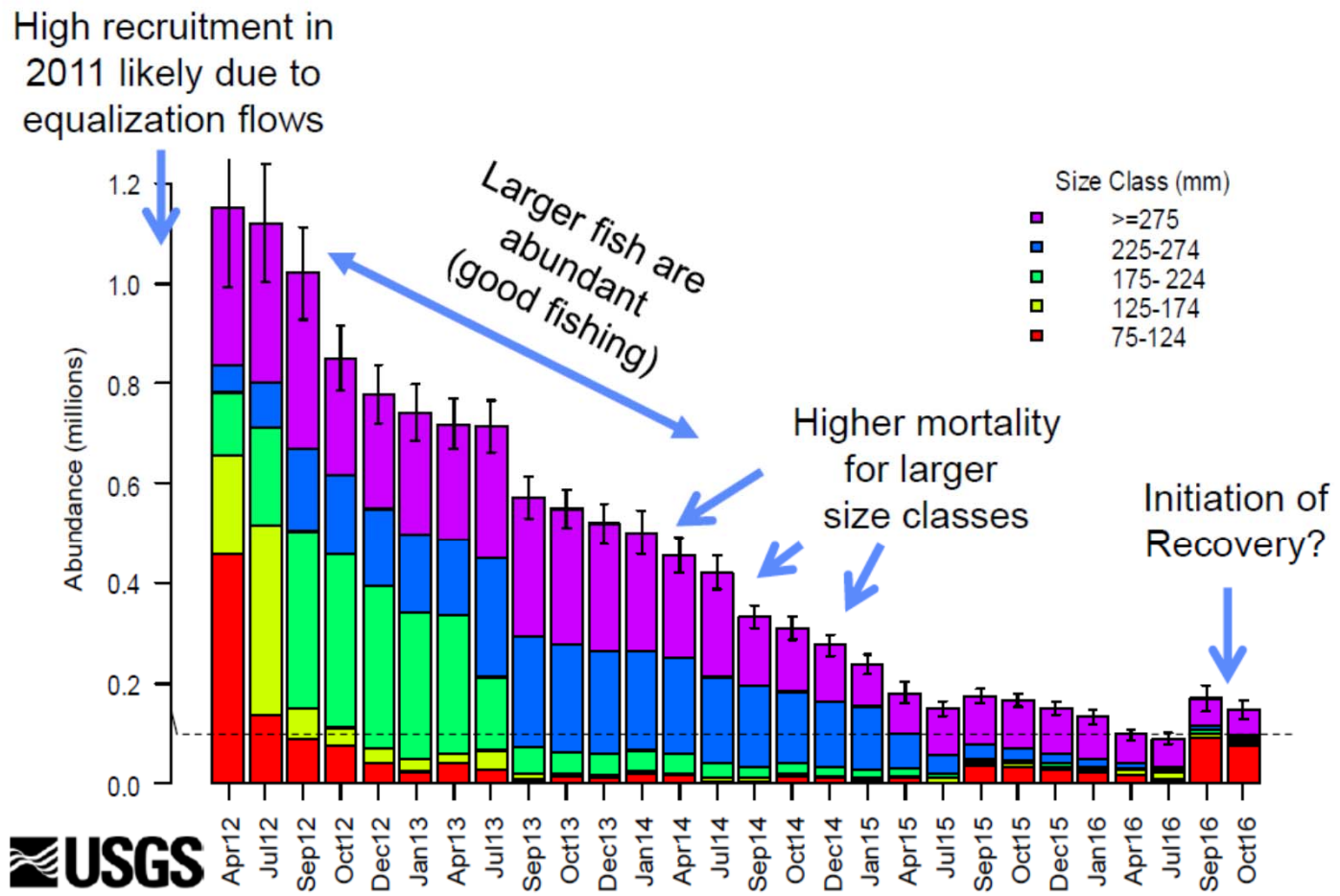
OBJECTIVE – Grow quality sized trout that are available to the angler, consistent with the Blue Ribbon status of the fishery.		
Angler Catch Quality	10 Rainbow Trout ≥ 14 inches caught by the angler in a 10-hour day, at least one ≥ 20 inches Maintain trout condition factor ≥ 1 during the summer months.	• Food base enhancement • Trout Management Flows • Change in regulations
OBJECTIVE – Avoid catastrophic failure of the trout population, and establish protocols for emergency recovery from population loss.		
Water Quality	Dissolved Oxygen ≥ 5 mg/l as measured at outflow from GCD.	• Flow manipulation • Temperature Control Device • Use of river outlet tubes
Catastrophic Failure of Population	If failure of multiple age classes is documented by electrofishing and <0.25 trout per hour is documented in creel surveys, mitigation will be necessary.	• Stocking • Translocation of wild trout from the Colorado River downstream of Lees Ferry


Boat angler CPUE
Walk-in angler CPUE
Angler CPUE (fish/hour)
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
1975
1980
1985
1990
1995
2000
2005
2010
2015
Year


Mean fall total length (mm) of rainbow trout
350
300
250
200
150
100
50
1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015 2017
Year


16000
14000
12000
10000
8000
6000
4000
2000
0
Yearly relative angler use
boat anglers
walk-in anglers
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
Year

Rainbow Trout Abundance Estimates in Glen Canyon



Proposed Action

- **AGFD plans to stock 13,000 triploid Rainbow Trout annually between April 1st 2017 and October 15th 2021**

Joint Probability

P(A and B and C)=P(A)*P(B)*P(C)

A is defined as outmigration rate

B is defined as evacuation rate

C is defined fish prey evacuated is an Humpback Chub

Upstream probability of Humpback Chub Predation	Downstream probability of Humpback Chub Predation
P=0.00015943	P=0.000049896

The probability that a stocked triploid Rainbow Trout will not ingest a Humpback Chub is 99.99984 and 99.99995 for the upstream and downstream reaches evaluated respectively.

Quantifying an estimate of ingested Humpback Chub from trout stockings

Nt= IP*Np*f. (Yard et. al. 2011)

Year	Upstream (Nt)	Downstream (Nt)	Combined (Nt)
2017	0.016	0.013	.029
2018	0.055	0.043	.098
2019	0.056	0.044	.10
2020	0.057	0.045	.12
2021	0.058	0.046	.14

Coordination timeline to date

- Discussed for over 2 years with NPS
- Notified via conference call on April 4th
- Letter sent notifying NPS, USFWS – April 21st
- Planned stocking on May 18th
- NPS responded on May 15th with concerns
- Call with ADWR on May 15th
- AGFD held stocking on May 16th for a minimum of 30 days
- Call with Basin states June 6th
- Coordination meeting June 14th with NPS, Reclamation, USFWS
- Multiple Coordination Calls from June 14th to July 18th
- Impact Analysis sent to Basin States for comments on July 9th and July 25th
- Webinar conducted with Basin States on July 25th.
- Comments accepted and considered to date.

Conservation Measures:

1. Due to the hypothesis that out-migration may be a factor driven by density, the stockings will not exceed more than 4,000 triploid Rainbow Trout stocked by month.

2. Although, the stockings are not expected to result in take and much less population level declines, other variables (e.g. invasive species, flow operations, impaired food base, and temperatures) may result in declines to the population of Humpback Chub. If the population declines to below an estimated 7500 adult individuals, then the stocking actions will cease until the population of Humpback Chub increases back above 7500 adults. This “off-ramp” is consistent with the previously agreed to Rainbow Trout mechanical removal triggers.