Lees Ferry Trout Fishery Status and Trends Update
January 2006

January 25, 2006
Technical Work Group
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Update:

• Electrofishing catch rates 1991-2005
• Size distributions
• Condition Factor 1991-2005
• Discussion of possible flow, foodbase and water quality effects
Electrofishing catch/minute 1991-Nov 2005

SIZE: 2  152 - 304 mm TL

95% CI CPE

YRMO
Electrofishing catch/minute 1991-Nov 2005

SIZE: 3  305-405 mm TL

95% CI CPE

YRMO
Size Distributions 1991-2005
Size distributions 1997-2005
Condition Factor

SIZE: 2  152 - 304 mm TL

SIZE: 3  305-405 mm TL
Possible flow effects:

**USGS 09380000 COLORADO RIVER AT LEES FERRY, AZ**

- **DAILY Discharge, cubic feet per second**
  - **Aug 01**
  - **Sep 01**
  - **Oct 01**
  - **Nov 01**
  - **Dec 01**
  - **Jan 01**

**EXPLANATION**
- **MEDIAN DAILY STREAMFLOW BASED ON 83 YEARS OF RECORD**
- **DAILY MAXIMUM DISCHARGE**
- **DAILY MINIMUM DISCHARGE**
- **DAILY MEAN DISCHARGE**
Difference between SEPT maximum and AUG minimum discharge
Temperature Patterns below Glen Canyon Dam
1988 to January 19, 2006

Daily Mean Temperatures for 2003-2005

2005 Modeled

1988-2002 Trendline
Annual Dissolved Oxygen Patterns below Glen Canyon Dam
July 1992 to December, 2005 Glen Canyon Dam Tailrace
2005 values are daily means

Dissolved Oxygen:
- Dam: July 1992 to 2004
- 2005 Lees Ferry
- 2005 below Dam
- 2005 inside Dam

Hypoxia
Possible Temperature - Oxygen Effects

• Increased temperature = increased metabolic demand, more food needed to maintain fish

• Low oxygen = fish get lethargic, stop feeding, may die or move downstream. Affects larger fish more than small fish because of higher metabolic demands of larger fish.
Possible foodbase changes

- New Zealand Mudsnail?
- Changes in species composition and community structure of invertebrates (Gammarus chironomids)
- Changes in community structure of aquatic plants
  \((Cladophora \rightarrow Oscillatoria & Bryophytes)\)
New Zealand MudSnail

Discovered in 2000 but in the river at least as early as 1995. This species has been labeled a trophic dead end in other systems.
New Zealand Mudsnail
Summary:

• Catch rates and condition of larger size classes of fish decreased significantly in November 2005.

• Anglers report very slow fishing.

• Anglers report little or no spawning activity.
  – No sexually mature fish were observed in November 2005, a time when fish are typically beginning to spawn.
• Lee’s Ferry density and condition have declined
  – Why?
    • Increased temperature and metabolic demands by trout
    • Change in food base
    • Introduction of New Zealand mud snails

• We have seen evidence of decreasing recruitment over the past two years and during our November sampling we saw evidence that we may have another poor spawn. Is it time to think about stocking again?? Will this help if we are seeing the effects of a changing food base and the resulting food limited response by rainbow trout??
# Mean KnL and sample sizes

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