Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
March 7-8, 2006

Agenda Item

SCORE (Status of the Colorado River Ecosystem) Report and Knowledge Assessment Report Update

Action Requested

√ Information item only; we will answer questions but no action is requested.

Presenters

John Hamill, Chief, Grand Canyon Monitoring and Research Center
Ted S. Melis, Integrated Sciences Program Manager, Grand Canyon Monitoring and Research Center

Previous Action Taken

□ By AMWG:
□ By TWG:
□ By an Ad Hoc Group:

√ Other: Other:
□ GCMRC organized and convened two Knowledge Assessment workshops (May and July) and has worked with Ecometric and various science cooperators to develop a report on that process.

Relevant Science

√ The following describes the relevant research or monitoring on this subject:
Copies of the score report are available at
http://www.gcmrc.gov/products/score/2005/score.htm

RELEVANT SCIENCE

√ The following describes the relevant research or monitoring on this subject:
The draft final Knowledge Assessment report is a highly condensed summary of what scientists believe they know about the effects of various flow and non-flow treatments on an array of natural and social resources associated with Glen Canyon Dam and the Colorado River Ecosystem. Areas where uncertainties remain about cause and effect between resource response and proposed management actions resulted in formulation of strategic science questions intended to guide planning related to experimental research, non-experimental research and monitoring. Planning is currently underway by the Science Planning Group using information found in the Knowledge Assessment report and the strategic science questions derived from the two workshops.

The knowledge assessment is the primary relevant science that is used by the SPG to determine knowledge gaps and develop needed future science questions, science plans, and programs for FY 2007-2011. However, other science is used as needed.

BACKGROUND INFORMATION

√ Following is an outline of our presentation. A PowerPoint presentation is also attached.

The draft final Knowledge Assessment report has been completed and distributed to the TWG and SPG members. It has also been shared with the Science Advisors, with a request for comment on the strategic science questions that were derived from the workshop assessments. The process for identifying treatments that might be deemed "management actions" in response to the knowledge assessment has not been completed by managers involved in the Science Planning Group or TWG.

√ I have attached the following background information.
Please see the attached SCORE Report Information Sheet.

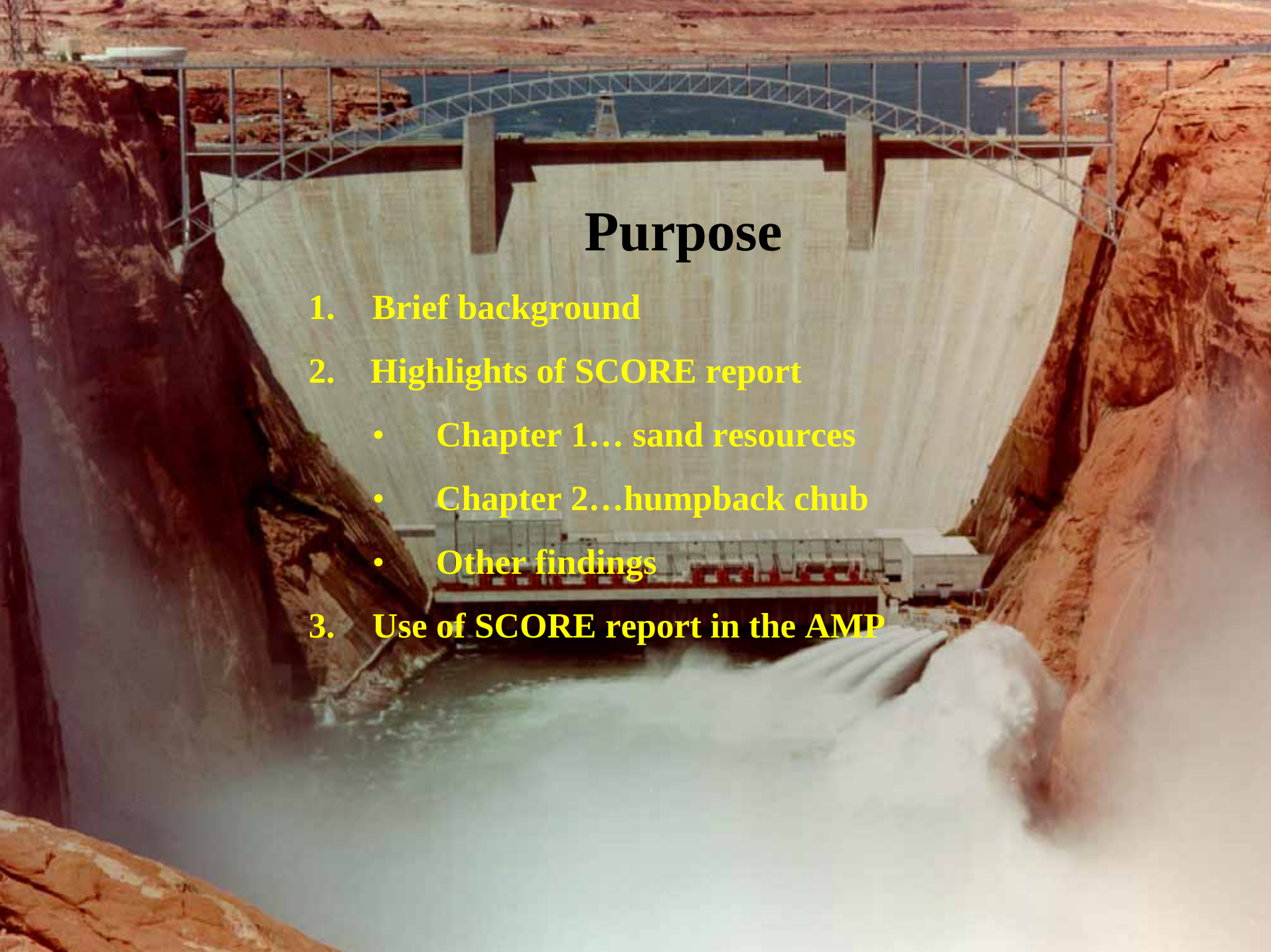
√ The following is a synopsis of my presentation.

- Background Overview of SCORE Report
- Use of the SCORE report in the AMP - The SCORE report findings have been integrated into the ongoing science planning process.
- Summary of new information/findings since publication of SCORE report
- Plans for updating the SCORE Report
- Potential use of decision support tools to help integrate scientific information into management decisions

Highlights of the State of the Colorado River Ecosystem in the Grand Canyon

Adaptive Management Work Group Meeting
March 7, 2006

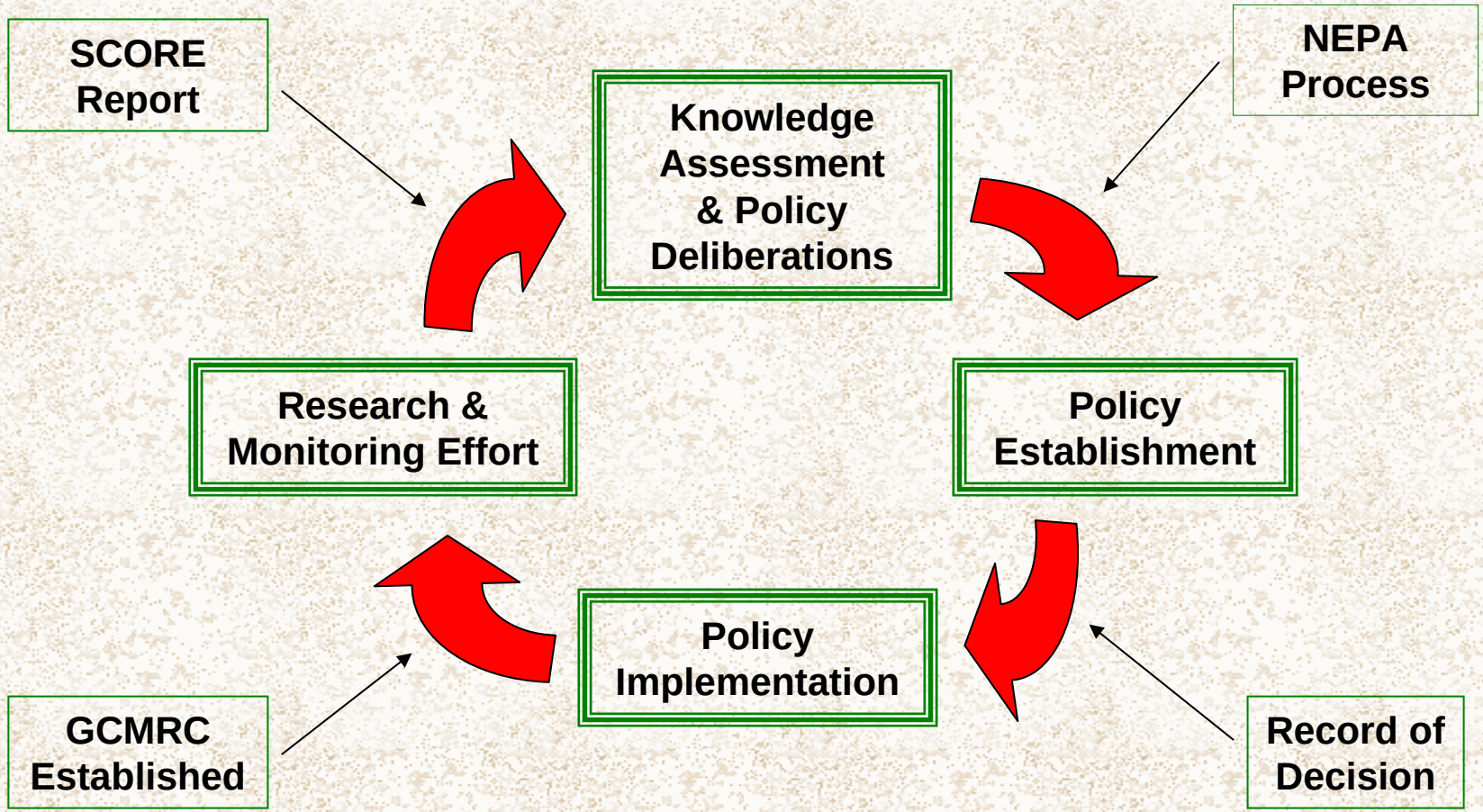
John Hamill, Chief
Grand Canyon Monitoring and Research Center
USGS, Flagstaff, AZ



Purpose

1. Brief background
2. Highlights of SCORE report
   - Chapter 1… sand resources
   - Chapter 2…humpback chub
   - Other findings
3. Use of SCORE report in the AMP

Adaptive Management



Mission
USGS, Grand Canyon Monitoring and Research Center (GCMRC)

To provide credible, objective scientific information to the Adaptive Management Program on the effects of operating Glen Canyon Dam on the downstream resources of the Colorado River ecosystem, utilizing an ecosystem science approach

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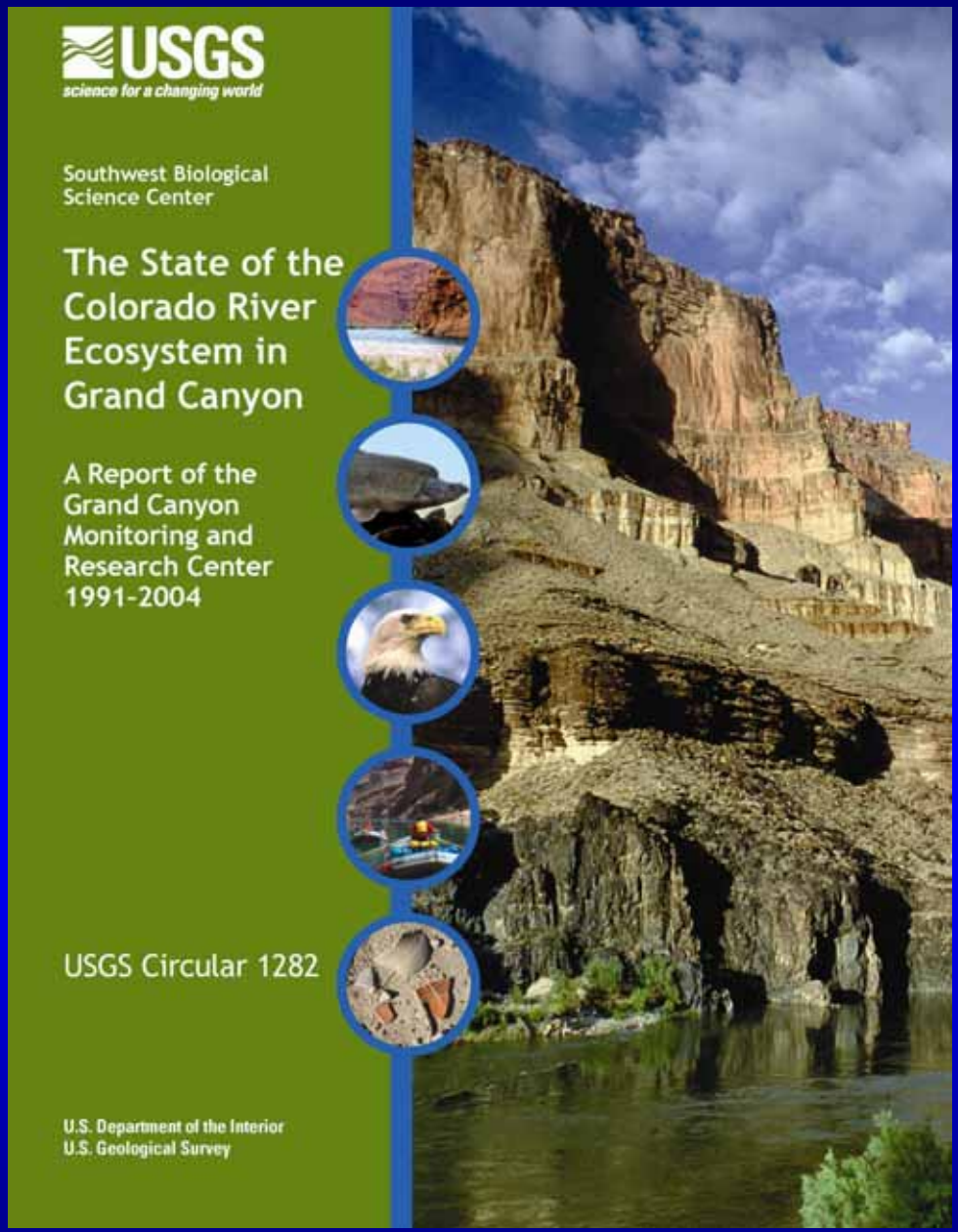
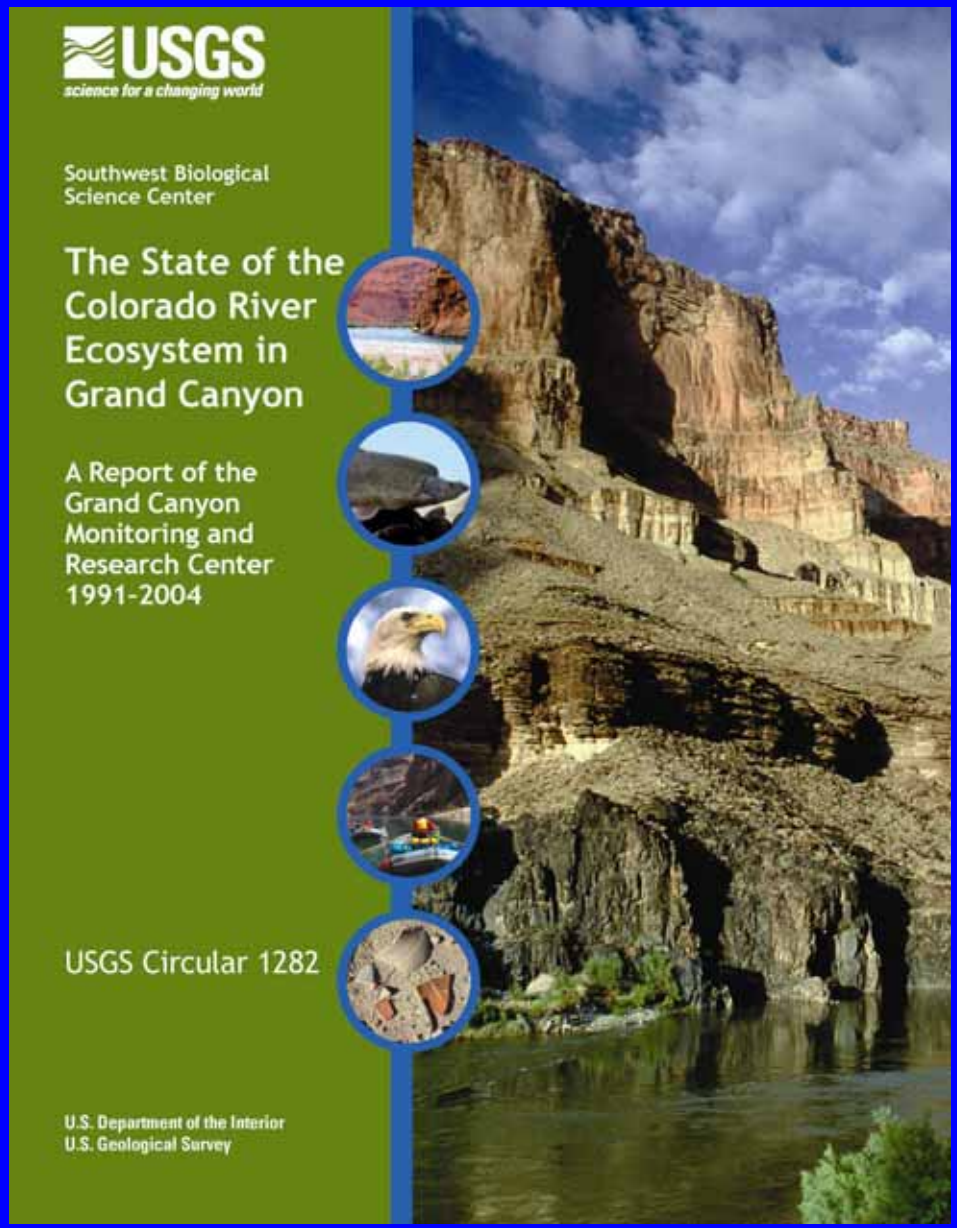
Adaptive Management Program Goals

1. Protect/improve aquatic food base
2. Maintain/attain viable native fish population (especially humpback chub)
3. Restore populations of extirpated species as feasible and advisable
4. Maintain a healthy rainbow trout pop consistent with native fish protection
5. Maintain/attain a viable population of Knab ambersnail
6. Protect riparian and spring communities and related T&E species
7. Establish needed water quality, temperature and flow regimes
8. Maintain/attain needed sediment storage
9. Maintain/improve the quality of the recreation experience (consistent with ecosystem goals)
10. Maintain/increase power production and energy generation (consistent with ecosystem goals)
11. Preserve, protect, and restore cultural resources
12. Maintain a high quality monitoring, research and adaptive management program



Purpose: Provide comprehensive assessment of scientific information about the status and trends of the natural, cultural, hydro-power and recreational resources in the Grand Canyon affected by the operations of Glen Canyon Dam

Scope: Synthesized available data from 1991-2004



Report Content:

1. Sand/Sediment Supply
2. Fishes of the Grand Canyon
3. Climate, Drought and Flows
4. Water Quality
5. Aquatic Ecology
6. Riparian Vegetation and Wildlife
7. Bird of the Grand Canyon
8. Debris Flow and Rapid
9. Recreation Use Values
10. Hydropower Production
11. Cultural Resources
12. Recreation Values and Campsites
13. Lessons learned

Rigorous Peer Review

www.gcmrc.gov

Charter 1...Sand Resources

86 percent reduction from pre-dam sand levels

Importance of Sand Bars

- **Terrestrial Habitat –** substrate for riparian vegetation & assoc. fauna
- **Aquatic Habitats** – nursery habitats that may support native fish
- **In-Situ Preservation –** most archeological sites buried in sand/silt
- **Recreational Campsites -** for boaters and backpackers

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EXAMPLE OF BEACH LOSS
The Camping Beach Downstream From Tapeats Creek (River Mile 133)

1952 (Kent Frost). Everyone would want to camp here.

1995. I hope I brought a cot to sleep on

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Palisades (RM 66)

Pre-flood (November 19, 2004)
at 8,000 cfs

Post-flood (December 10, 2004)
at 10,000 cfs

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Conclusions

- Sand does not accumulate in the river channel under MLFF
- Short duration controlled floods (BHBF) are effective at building sand bars following sand input from tributaries
- Dam operations effect the persistence of sand bars created by BHBF

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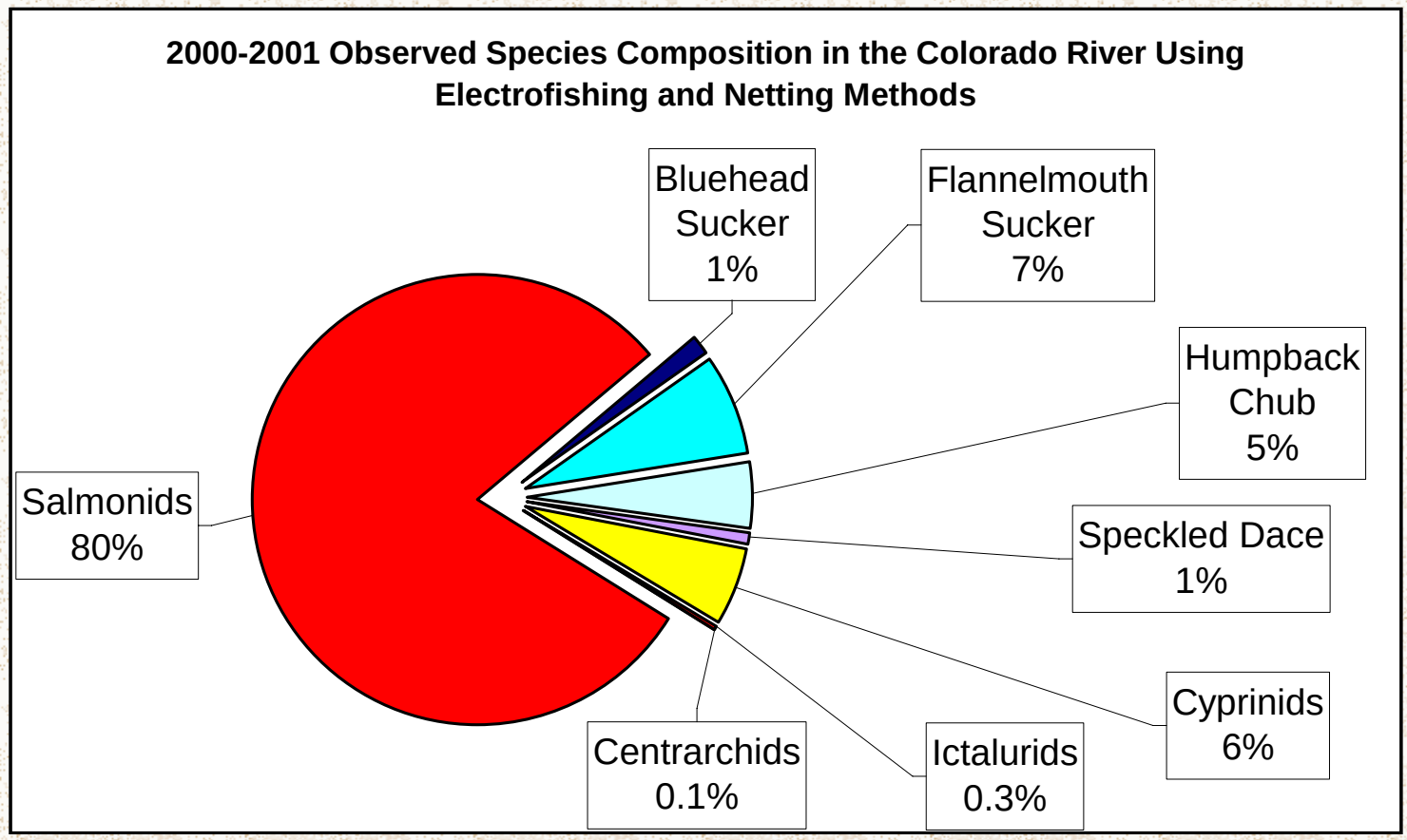
Chapter 2 – Fishes of the Grand Canyon



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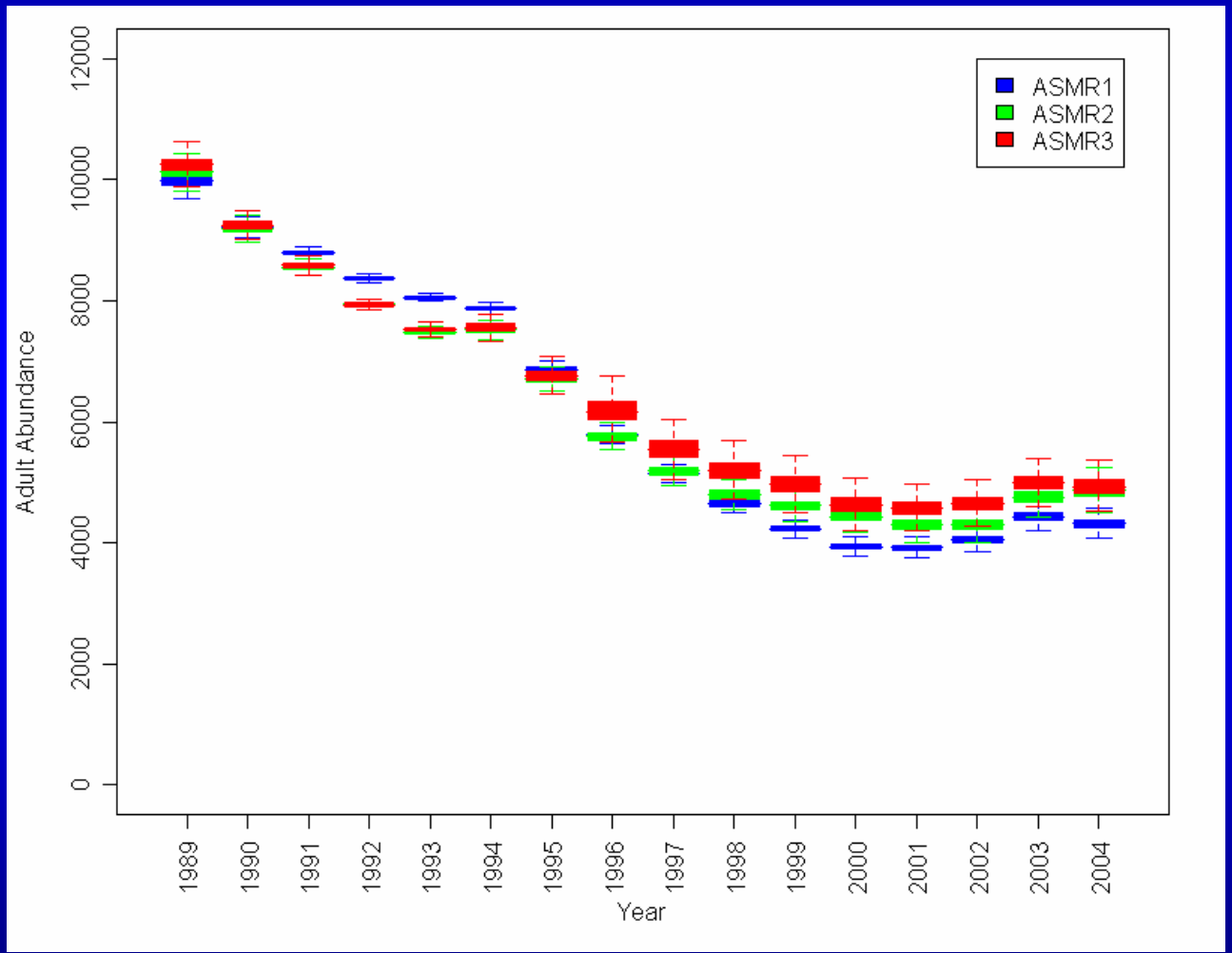
Colorado River Humpback Chub Population



Reason for Decline

- **Colorado River temperature and/or flows**
- **LCR flooding**
- **Asian Tapeworm infestation**
- **Nonnative fish competition and predation**
- **All of the above**
- **Other**

Humpback Chub Management Actions

- Translocation
  - Upper reaches of LCR (FWS)
  - Other Tributaries—feasibility study (NPS)
- Refuge Development
- Temperature Control Device evaluation
- Warm Water Non Native Management
- Trout Removal

Humpback Chub Comprehensive Plan under development

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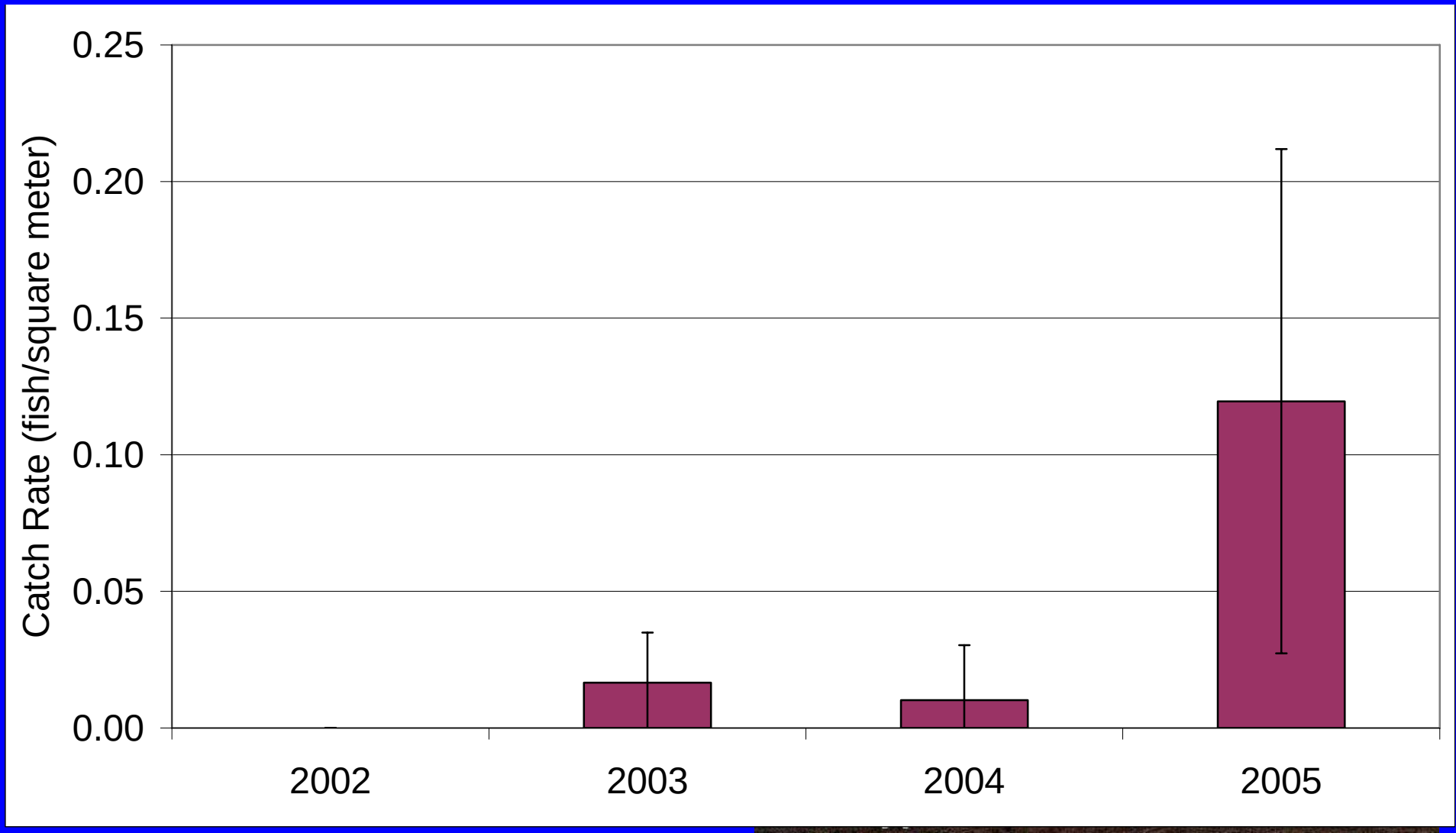
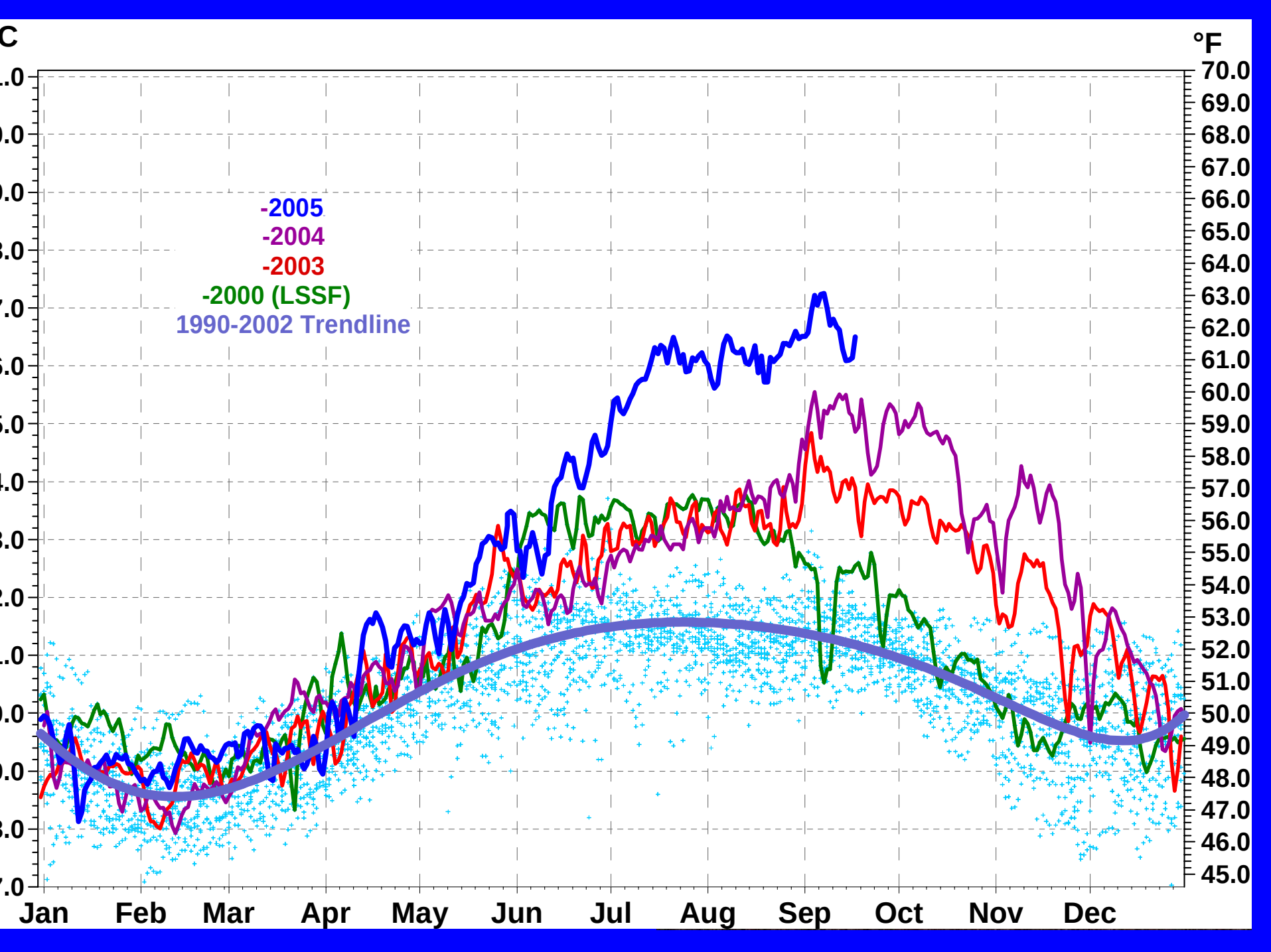
Beach seine catch rates of young of year humpback chub between river mile 30-60




C
°F
-2005
-2004
-2003
-2000 (LSSF)
1990-2002 Trendline
70.0
69.0
68.0
67.0
66.0
65.0
64.0
63.0
62.0
61.0
60.0
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56.0
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52.0
51.0
50.0
49.0
48.0
47.0
46.0
45.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Other Selected SCORE Report Findings

- **Greater aquatic productivity in the Lees Ferry reach**
- **Increased Lees Ferry rainbow trout and many more trout throughout the CRE**
- **Efforts to reduce trout populations in the vicinity of the LCR through mechanical removal have been successful**
- **Ongoing degradation of cultural resource sites from side channel erosion and visitor use**
- **Campsite numbers and area have are declined**

(The specific cause and effect relationship of many of these trends is still unclear.)

Use of the Score Report in the AMP

- October 2005 Science Symposium
- Technical basis of Science Planning Process
  - 5 Year Monitoring and Research Plan including experimental research
  - Provides basis of Knowledge Assessment Report (KAR) which is being used to identify management actions and evaluate experimental options
- Periodic update planned (timing uncertain)


Questions/comments?