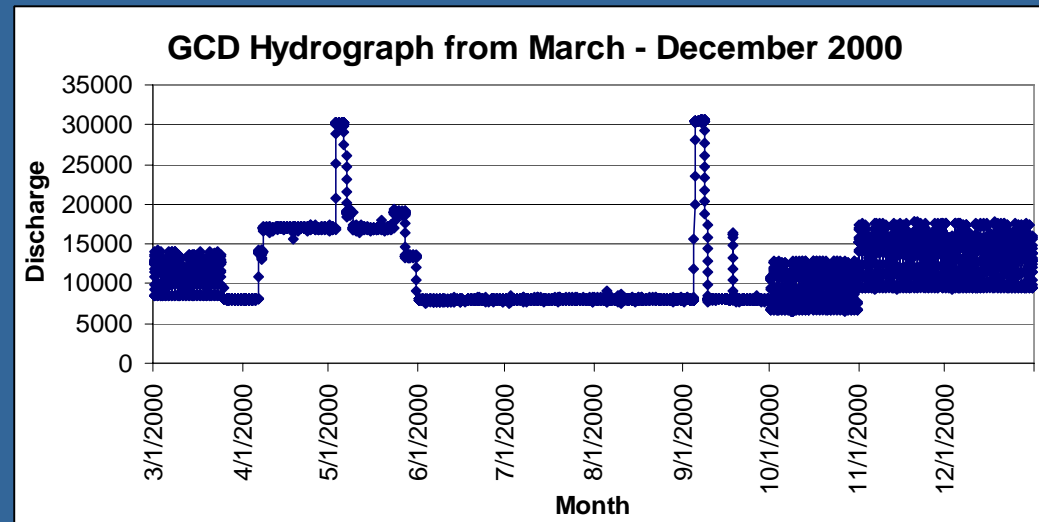


Low Steady Summer Flows 2000 Synthesis Project

B. E. Ralston, M.E. Andersen
SBSC/GCMRC
Report to AMWG Sep. 9, 2008

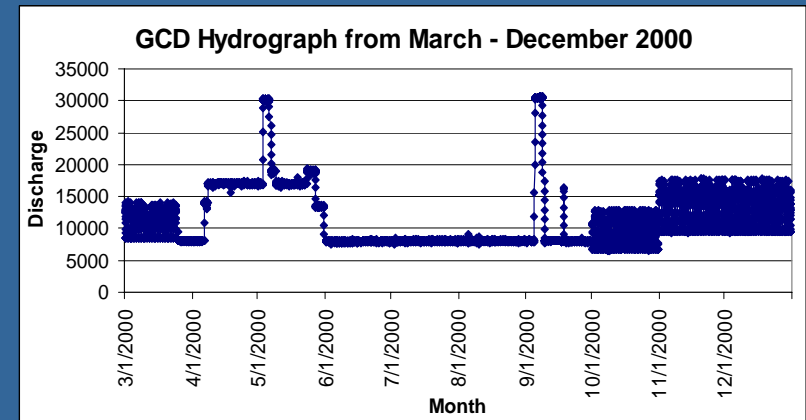


Introduction & Background

- **February 2000: Completion of Plan of Experimental Flows for Endangered Fish (SWCA 2000)**
- **April - September 2000: Implementation of experimental hydrograph**
- **25 Studies initiated to evaluate flows on physical, biological and cultural resources**
- **August 2007: AMWG requested synthesis of information**

Hypotheses by Season and Hydrograph

- Hydrograph designed around life history of native fishes
- **Spawning in Spring**
- Summer larval development
- **Early fall exotic fish disturbance**



Three Phase Approach

(Accelerated Schedule)

■ Synopsis:

- Phase I. Summary of individual studies, Completed Summer 2008.
- Phase II. Workshop for secondary analysis
 - Aug. & Oct. 2008.

■ Synthesis:

- Phase II (cont'd). Synopsis and synthesis. USGS Publication FY 09.
- Phase III. Incorporate results of synthesis into fall steady flows science plan July 09.

Current Status 2008

March – Initiated synopsis and data consolidation through cooperative agreement with Northern Arizona University

July – Draft summary completed

August – Workshop conducted: Physical and Biological resources

October – Workshop planned: Social Sciences,
October 8, 2008, AWRD 8:30 am – 4:30pm

General Conclusions Workshop I

- Water temperatures in near shore appear most warmed by low volumes and direct sunlight; fluctuations of limited influence
- Maximum young of year native fish habitat at mouth of LCR observed at 13 kcfs; ponding at higher flows did not occur
- Flows greater than 8 kcfs appear to be the threshold for exporting more sand

General Conclusions Workshop I

- New Zealand mudsnail numbers increased during 2000, but impacts to other species not observed
- Warm water appears to support algae and diatom growth, but fluctuations can negate growth gains
- *Chlodophora* recovers quickly following disruption

General Conclusions Workshop I

- Primary productivity and invertebrates in Lees Ferry largely unaffected by test flows
- Lees Ferry rainbow trout appear to have had successful reproduction in 2000; year class appears to have persisted for five years
- Tamarisk expanded initially in 2000, but have persisted in only limited areas

General Conclusions Workshop I

- Native sucker species and nonnative fathead minnows appear to have reproduced in summer 2000
- Humpback chub may have benefitted from 2000 flows, but ageing is imperfect

Aug. '08 Workshop Outcome

- **New OFR to be developed in FY09 (draft March 2009) – accelerated schedule**
 - **Executive Summary**
 - **Experiment Overview**
 - **Synopsis (July '08 - completed)**
 - **Synthesizing results – augmenting knowledge assessment document and following Knowledge Assessment format**
 - **Recommendations for future studies**

LSSF Workshop I Recommendations for Further Description/Detailed Explanation and Analysis

- **New Synthesis Topics (subject to revision following Oct. workshop):**
 - Quantify areal extent of warm near shore habitats associated with Thermal Infrared Data
 - Quantify ponding at mouth of LCR
 - Reanalyze fish capture data to clarify effects of fall 31k spike
 - Synthesize fish and water temperature data (incorporate more recent monitoring data)
 - Vegetation effects on the ecosystem

Budget Summary

- FY 08: 100k
- FY 09: 80k
 - 40k carry over
 - 40k new
 - Sufficient for project