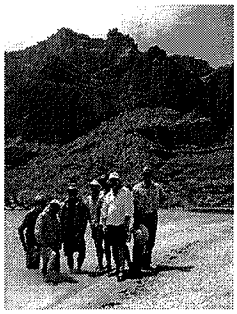
2009 Fish PEP Panel



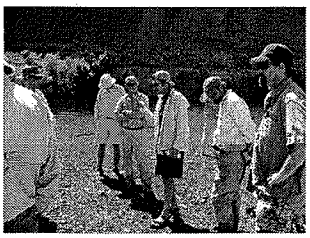
Mike Bradford (CDFO, Chair)
Gordon Mueller (retired)
Dana Winkelman (USGS)
Jim Rice (NCSU)
Doug Osmundson (FWS)
Mark Bevelhimer (Oak Ridge)

and
Mike (*why am I here?*)
Hansen (UWSP)

Special thanks to all that assisted with the PEP's activities

Review components

- Lee's ferry reach
- LCR chub program
- Mainstem fish
- General issues

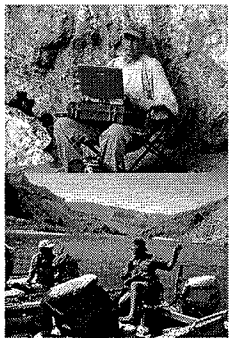


Review outline

- 2000 Lee's Ferry PEP
- 2001 Aquatic PEP
  - Water quality
  - Food base
  - Native fish
  - Non-native fish
- Progress since PEP reviews
- Recommendations
- Responses to TWG questions

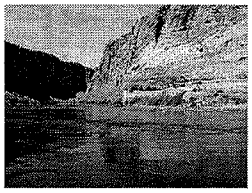
This is a high-quality science program

- Programs are rigorous and scientifically sound
- Dedicated and experienced staff
- Extensive program review and publication record



Lee's Ferry

- 2000 PEP recommendation:
  - Move to a more statistically robust random sampling design



- 2001-2009
  - Combined fixed and random sampling that show parallel trends
  - High precision estimates of angler and survey catch per effort
  - Early life history studies (Korman)

Lee's Ferry Observations

- Consistent, intensive sampling
- Good correlation between fixed and random sites
- Random sites may be useful for invasive surveillance
- Cohort reconstruction possible for dam effects and downstream impacts.

Lee's Ferry Recommendations

1. Recast the management objectives as sports fishery metrics (catch rate, fish size).
2. Retain the creel survey
3. Abandon fixed sites and use a fully random design- increase # of random sites
4. Consider reducing trips from 3-4 to 1-2. CV can increase to 15-20%
5. Make fuller use of age information

Little Colorado Region HBC

2001 PEP

- Continue development of age-structured model
- Continue lower 1200m sampling to maintain time series
- Directed studies to establish successful life history strategies
- Develop an integrated monitoring program
- Be mindful of handling issues

Since 2001

- ASMR developed and reviewed
- 1200m CPUE series continued
- Mark-recapture of LCR adult population restarted in 2001 and continued
- Periodic sampling of HBC in mainstem near LCR
- PIT tag antenna

PEP Observations

- Is the 1200m sampling redundant with FWS sampling?
- Are 2 sets of mark-recapture estimates annually needed for the LCR?
- Can handling be reduced?

LCR HBC Uncertainties

- How dependent is the population on mainstem conditions?
  - NSE project, life history studies
- Is there a carrying capacity for HBC in the LCR?
  - Analysis of existing data
- What are the dynamics of spawners in the LCR?
  - PIT tag arrays

LCR HBC Recommendations

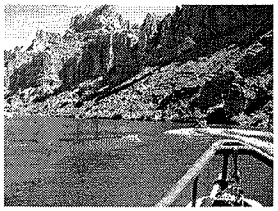
- Compare lower LCR FWS catch data and AZGF lower 1200m sampling to determine if both programs are now needed.
- Evaluate the benefits of the second (fall) FWS mark-recapture estimate:
  - Can juvenile abundance be indexed by the spring series?
  - How many (or few) PIT tags are needed to maintain ASMR?
- Continue development of the PIT tag antennae
  - Full channel width
  - 2 arrays to evaluate movement
  - On-site continuous maintenance needed?

LCR HBC Recommendations Con't

- Develop stock assessment framework for LCR humpback chub
  - Integrate information from all programs into agreed-upon format for annual reporting
- ASMR runs at 3-5 year interval
  - Can ASMR detect variation in recruitment?
- "Minimum handling" as a management objective
  - PIT tag loss and tagging and tag-related mortality
  - Unknown sub-lethal effects

Mainstem Colorado River

- 2001 PEP
  - Impressive and detailed electrofishing surveys for trout (and other species)
  - No plan for native fish
  - No systematic plan for "warmwater" non-natives
    - Recommend a risk assessment for those species.



PEP Observations

- Good coverage of trout and common non-native species with randomized AZGF surveys
- Currently no monitoring program for other non-native species nor mainstem natives
- Recent studies indicate trammel nets may be acceptable for mainstem HBC sampling
- There is a need for a new non-native and mainstem native fish sampling program

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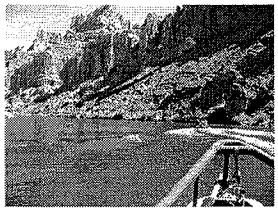

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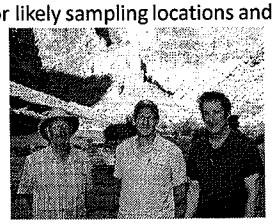
PEP recommendations for the Mainstem

1. Consider reducing the mainstem electrofishing survey to an annual trip rather than 2x/yr.
   - Current estimates of trout CPUE are precise
   - Analysis to determine what loss of information would result

Mainstem con't

2. Evaluate undesired non-native species for:
   - Risk to native fish (potential for establishment and impact)
   - Points of entry
   - Preferred habitats or likely sampling locations and gear types

Canucks- an invasive species?



Mainstem con't

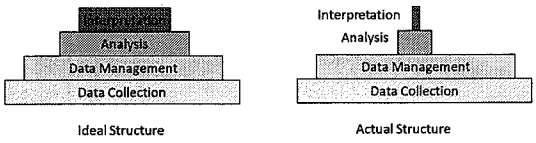
3. Based on #2, develop new sampling protocol for surveying for non-native fish that are not well sampled by the e/f program
   - Fixed sites at hotspots
   - Multiple gear types
   - Opportunistic surveillance
   - Non-random "informed" sampling

Mainstem con't

4. Clarify objectives and expectations for the mainstem HBC populations to provide direction.
   - What frequency of survey is needed for the adult aggregations?
   - How many aggregations need to be surveyed?
   - What level of spatial and temporal effort is warranted for spawning and recruitment surveys?

Institutional issues

- Most programs are beyond the experimental stage and the reporting and analysis of annual updates can be standardized.
- Are there sufficient resources for integration and analysis?



Other Institutional Issues

- Organize reporting around objectives rather than agency/trip reports
  - E.g., integrate non-native catch information across all sampling programs
- The Adaptive Management question
  - Are the flow experiments and the monitoring program operating at the same scale?