



Recommendations on a new direction for Foodbase Monitoring

Presentation to the Glen Canyon Dam Technical Work
Group.

Presented By:

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Background

- Goal 1 of the GCDAMP

Protect or improve the aquatic foodbase so that it will support viable populations of desired species at higher trophic levels

- Five (5) MO's related to aquatic foodbase each with one CMIN and EMIN

Background

- **WHY ARE WE DEALING WITH THE ISSUE OF THE AQUATIC FOODBASE AT THIS TIME??**
 - Aquatic Protocol Evaluation Panel Convened in May 2001
 - Final PEP Report Received by TWG October 2001
 - GCMRC Responses and Direction to Work with TWG Toward Implementation of PEP Recommendations Approved by TWG in May 2002.
 - Science Advisor Generally Concurred with Recommendations in June 2002
 - Initial Descriptions of Proposed Changes Included in FY03 and FY04 Budgets and Work Plans
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Despite the foregoing actions and proposals there apparently continues to be a lack of understanding by the TWG regarding the proposed new direction

Today's discussion intended to begin clarification.....

Background-prior work

- Past food base research has yielded several peer reviewed publications but has not provided a robust long-term monitoring program.
- This view is shared by both participants in the 2001 Aquatic Protocol Evaluation Panel and reviewers of the 10 year Aquatic Foodbase “Synthesis” report.
- Independent reviewers have recommended that a that a new paradigm is needed to more fully understand the food base of the Grand Canyon Ecosystem.

Specific Recommendations from External Reviews

- **2001 Aquatic PEP:**

- *A long-term monitoring program for the food base does not presently exist. This is understandable because the research needed to ensure a successful monitoring program has not yet been completed. ...The food base program needs to be critically reviewed because the current level of understanding about the linkages between lower trophic levels and food availability of native fishes is not adequate to interpret food base data in relation to the management goal. ... GCMRC needs to explicitly identify the goal of the food base program, determine what metrics to use to monitor the lower trophic levels, and decide what level of detection of change is required.*

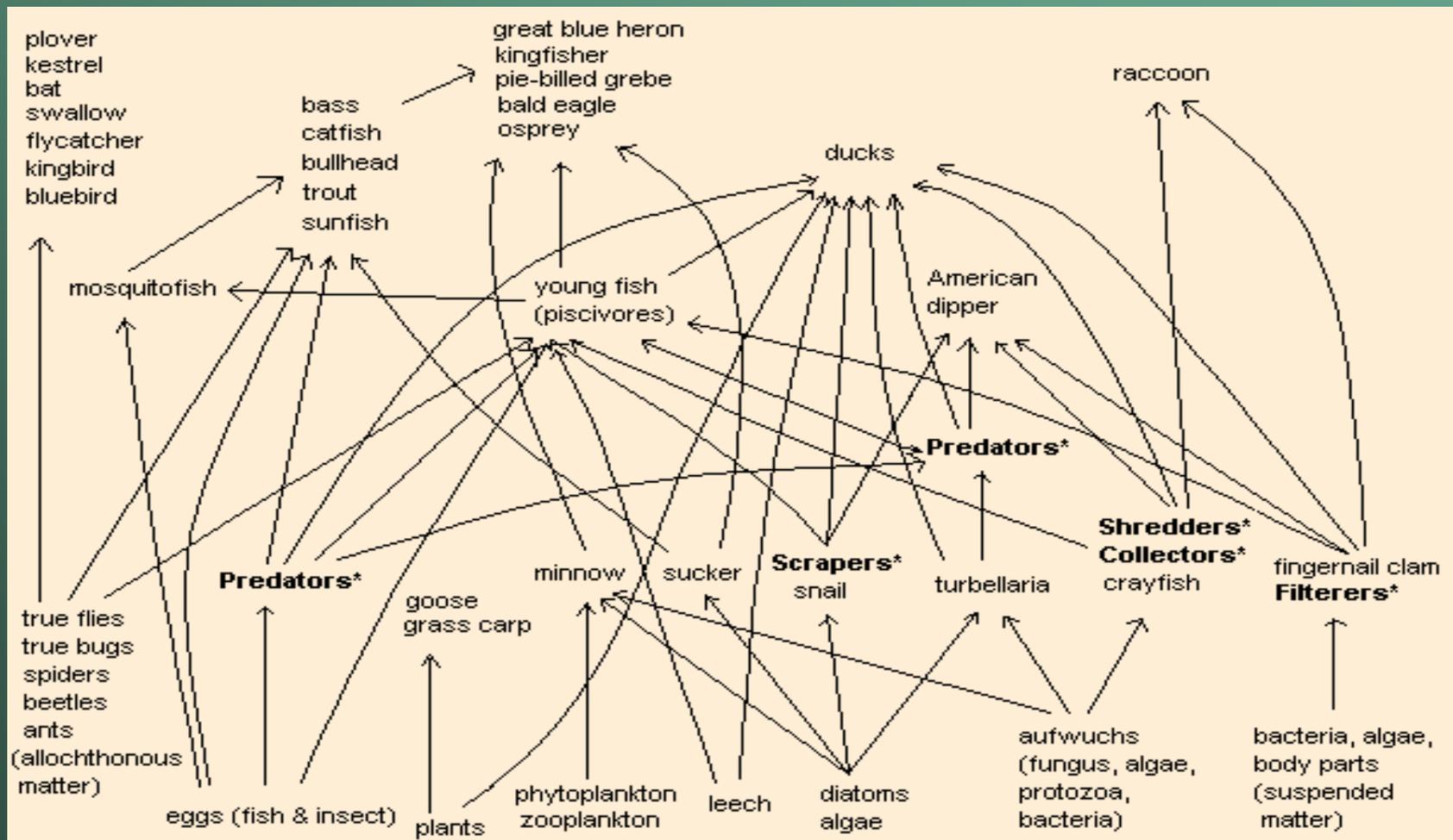
Specific Recommendations from External Reviews

- The 2001 Aquatic PEP recommends additional research regarding appropriate methods for monitoring the Aquatic Food Base
- Ultimate objectives
 - Primary Productivity - algae, plants, and other carbon sources
 - Secondary Productivity - invertebrates
 - Drift (Lees Ferry Anglers May Assist)

Specific Recommendations from External Reviews

- In addition to monitoring recommendations, the 2001 Aquatic PEP recommended focused research empirically linking the food base to native and non-native fishes.

Example of a SIMPLIFIED aquatic food web



GCMRC Recommendations

- **Release solicitations for cooperative agreements to enlist external scientists to conduct research related to developing a monitoring program that addresses the Aquatic PEP recommendations.**
 - **Solicitations to be developed and competed in 2004 for award in 2005.**

GCMRC Sponsored Pilot Studies

- **Monitoring algal and invertebrate community in Lees Ferry reach.**
 - **Test alternative sampling methods**
 - **Develop alternative sample processing protocols to increase speed and therefore increase capability to process more samples.**
 - **Continue historic data set.**

GCMRC Sponsored Pilot Studies

- **Monitoring the aquatic food base in Glen Canyon using whole stream metabolism measurements.**
 - **Develop protocols to measure stream metabolism using the two-station dissolved oxygen technique.**

GCMRC Sponsored Pilot Studies

- **Monitoring aquatic drift in the Lees Ferry reach using the EZ-Q acoustic back-scatter instrument**
 - **Assess feasibility of using the EZ-Q to monitor organic drift in the clear water Lees Ferry Reach.**
 - **Attempt to calibrate EZ-Q measurements with traditional measures of Drift (e.g. plankton nets).**
 - **Use Lees Ferry Anglers Willingness to Participate**

GCMRC Sponsored Pilot Studies

- Investigate food web linkages between non-native fish and the algal and invertebrate community.
 - Stable isotope analysis will be used to investigate the use of the algal and invertebrate community by non-native fishes (Rainbow Trout, Brown Trout, and Common Carp).
 - Samples collected during 2003 and 2004 mechanical removal operations.

Today's action.....

- **Endorse revised Food Base direction based on PEP & SAB recommendations.....**
- **Detailed proposals and RFPs to be developed and vetted with TWG during FY04**
- **Approve budget items with caveat that precise nature of work will be determined through RFP process, peer review, GCMRC staff expertise, and external cooperators.**