# Work Task C34: Characterization of Zooplankton Communities in Off-channel Native Fish Habitats

| FY10 Estimates | FY10 Actual | Cumulative Accomplishment Through FY10 | FY11 Approved Estimate | FY12 Proposed Estimate | FY13 Proposed Estimate | FY14 Proposed Estimate |
|---|---|---|---|---|---|---|
| $60,000 | $69,518.18 | $111,714.31 | $10,000 | $0 | $0 | $0 |

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**Start Date:** FY09

**Expected Duration:** FY11

**Long-term Goal:** To maintain effectiveness of restored fish habitats.

**Conservation Measures:** BONY5, RASU6.

**Location:** Various off-channel fish grow-out ponds and native fish refugia.

**Purpose:** To determine the relative abundance of zooplankton in off-channel ponds being used to support native fish communities within the Colorado River floodplain.

**Connections with Other Work Tasks (past and future):** This work is related to Lake-Side Rearing Ponds (B7), Overton Wildlife Management Area (B11), Imperial Ponds Native Fish Research (C25), Post Development Monitoring of Fish Restoration Sites (F5), and Adaptive Management Research Projects (G3).

**Project Description:** This study will characterize the existing zooplankton communities of the various flood-plain ponds being used within the LCR to hold and/or rear RASU and/or BONY. Off-channel habitats, including both man-made and natural flood-plain ponds are being used to support communities of RASU and BONY. In some ponds the fish are fed prepared feeds, in some cases the ponds are only fertilized with the assumption that this act boosts development of zooplankton for food, and in some cases neither feed nor fertilizer are added to the ponds and the fish must subsist on whatever food is naturally available.

To maximize management of these habitats, the amounts of zooplankton in these ponds must be determined. This study will collect and analyze zooplankton samples from such ponds quarterly over a 2-year period to characterize these zooplankton communities. Future investigations may be developed to evaluate ways to manipulate zooplankton communities to benefit native fishes.

**Previous Activities:** Preliminary samples were collected from lake-side rearing ponds (B7) on Lake Mohave, AZ/NV. This effort was conducted to refine sampling procedures

and develop a study design for the three year study. A written protocol for sample collection, including necessary equipment and procedures, was developed.

Quarterly zooplankton samples were collected from a total of 33 native fish ponds during FY09. Samples were analyzed and zooplankton community structures were characterized and identified to the division, genus, and species levels.

**FY10 Accomplishments:** Zooplankton samples were collected quarterly from a total of 33 native fish ponds located within river reaches 1-5. Reach 1 sampling sites included one pond at Floyd Lamb State Park and two ponds at the Overton Wildlife Management Area (B11), Reach 2 sites included nine lake-side rearing ponds (B7) on Lake Mohave, Reach 3 included Beal Lake, Office Cove pond, and two Needles Golf Course ponds, Reach 4 included Parker Dam Pond, three Emerald Canyon Golf Course ponds, and seven ponds at the Achii Hanyo Rearing Station (B3), and Reach 5 included six ponds at the Imperial Ponds Native Fish Research site (C25). Sample analysis to identify and enumerate the zooplankton community structure was conducted each quarter following sample collection.

Due to the various management strategies used for these sites, not all ponds were available to sample every quarter. Some ponds, such as the lake-side rearing ponds (B7) on Lake Mohave, were dry for a portion of the year to facilitate harvesting of native fish for repatriation to the Colorado River. Even though this prevented fall or winter collections at a few of the sampling sites, well over one hundred samples were collected and analyzed during FY10. In addition to the regular quarterly sampling, a subset of ponds was sampled with increased frequency throughout the spring to provide a more complete picture of what changes were occurring within the zooplankton community between quarterly sampling. Analysis of these samples failed to capture any dramatic shifts in community structure, but samples will be further analyzed to determine any seasonal trends in the zooplankton community.

**FY11 Activities:** This last year of study will focus on writing a final report that will summarize and interpret data from two years of sampling, review literature detailing the known food and feeding habits of native fish, and correlate and make comparisons between the observed zooplankton community of these ponds and what is known about foraging needs of native fish. Feeding trials will also be carried out in a laboratory environment using young-of-year RASU (and possibly BONY) fed zooplankton captured from Lakes Mead and Mohave. These results will be compared to the extant zooplankton communities found within the study ponds and used to characterize the utility of these communities to grow native fish.

**Proposed FY12 Activities:** Closed in FY11.

**Pertinent Reports:** A final report will be completed during 2011.