

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
August 27-28, 2014

Agenda Item

New Information on Razorback Sucker in Western Grand Canyon and Lake Powell

Action Requested

✓ Information item only.

Presenter

Beverley Heffernan, Bureau of Reclamation

Previous Action Taken

Research and activities to support conserving populations of Colorado pikeminnow and razorback sucker in the Basin, consistent with the recovery goals established under the Endangered Species Act of 1973, as amended.

Relevant Science

Current efforts build on prior science in the GCDAMP, the Lower Colorado River Multi-Species Conservation Program, and the San Juan River and Upper Colorado River Recovery Programs. In the fall of 2010, Reclamation convened a science panel and conducted a comprehensive evaluation of razorback sucker habitat primarily to assess the suitability of habitat in lower Grand Canyon and the Lake Mead inflow. This undertaking was in collaboration with the USFWS, GCDAMP, Lower Colorado River Multi-Species Conservation Program (MSCP), NPS, GCMRC, Nevada Department of Wildlife (NDOW), and the Hualapai Tribe. A razorback sucker augmentation plan was completed in 2011 as a result of the science panel evaluation.

Background Information

Lower Grand Canyon: A newly initiated contract was executed early in 2014 with BioWest and ASIR, funded by Reclamation and administered by NPS, and with the cooperation of the U.S. Fish and Wildlife Service, Lower Colorado River Multi-Species Conservation Program, Nevada Department of Wildlife, Arizona Game and Fish Department, and the Hualapai Tribe. This work, a component of the Grand Canyon National Park's Comprehensive Fisheries Management Plan, has already yielded surprising findings regarding the razorback sucker. The study area is from Lava Falls Rapid downstream to the Lake Mead inflow area, and 2-3 miles out into the lake. In Lake Mead, current efforts continue on studies initiated in 1996. Lake Mead has been known to have recruiting populations in 4 areas, and the first larvae were found in 2000. Work upstream to Lava Falls began in March 2014, and initial fish collections began in April 2014. The April samples yielded more than 350 larval razorback suckers at 21 of 47 sites sampled. Samples from May through July are yet to be fully analyzed, but initial reports showed a dramatic increase in larvae in June and July.

Lake Powell: Work in Lake Powell began in 2011 at the San Juan River inflow, and in 2014, a second study area at the Colorado River inflow was established. In 2011 and 2012, despite large stocking programs for the razorback sucker upstream in both the San Juan and Colorado Rivers, 36% of captures at the San Juan arm were without PIT tags, and their ages ranged from 4 to 19 years. These captures were in the lake proper, and 8 fish were observed to move upstream during a two week period in 2012. One larval fish was also collected.

During the high water year of 2011, the San Juan River waterfall was inundated for two weeks, during which time 10% of marked fish moved upstream into the river. Some moved over 150 miles upstream. In 2014, 241 individual razorbacks were captured between the Colorado River inflow area and Good Hope Bay, and many fish were in reproductive condition. Percentage of PIT-tagged fish was about 8%, lower than the San Juan Arm.

RAZORBACK SUCKER IN LAKE MEAD, LOWER GRAND CANYON AND LAKE POWELL—WHAT'S NEW

BEVERLEY HEFFERNAN
BUREAU OF RECLAMATION

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Outline

- 1) Background on razorback sucker
- 2) Overview of work in Lake Mead and Lake Powell—Bio-West, ASIR, USFWS, Utah DWR
- 3) Findings in Lower Grand Canyon
- 4) Findings in Lake Powell
- 5) Questions and discussion—5-10 minutes



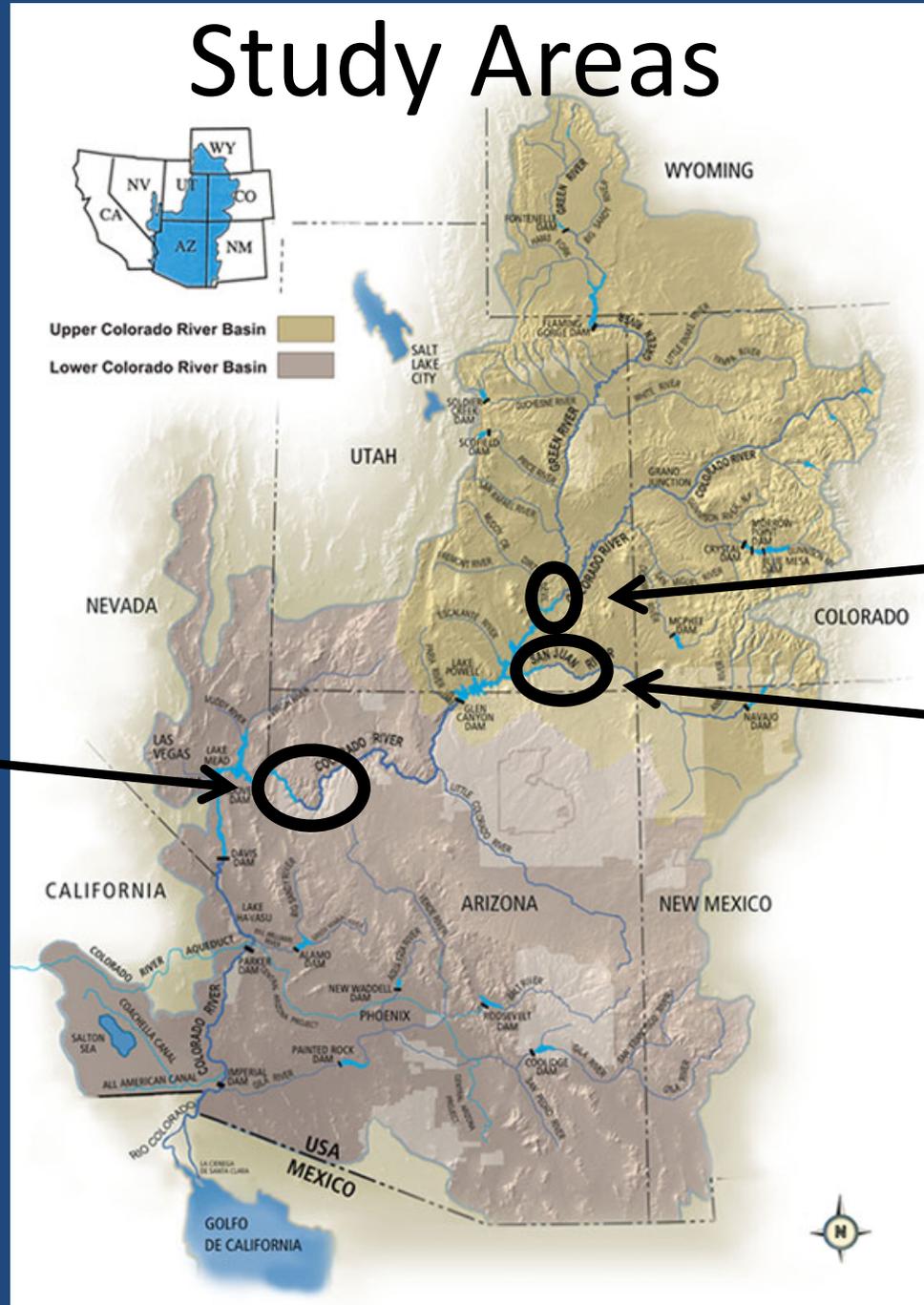
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Overview Razorback Sucker

- Listed ESA 1991
- Critical Habitat designated 1994
- Recovery plan 1998
- Recovery goals 2002
- Recovery Goals require two populations in upper Basin (Green River and Upper Colorado River OR San Juan River), and two populations in the lower Basin (not specified where)



Study Areas



Colorado River and
Lake Powell Inflow

San Juan River and
Lake Powell Inflow

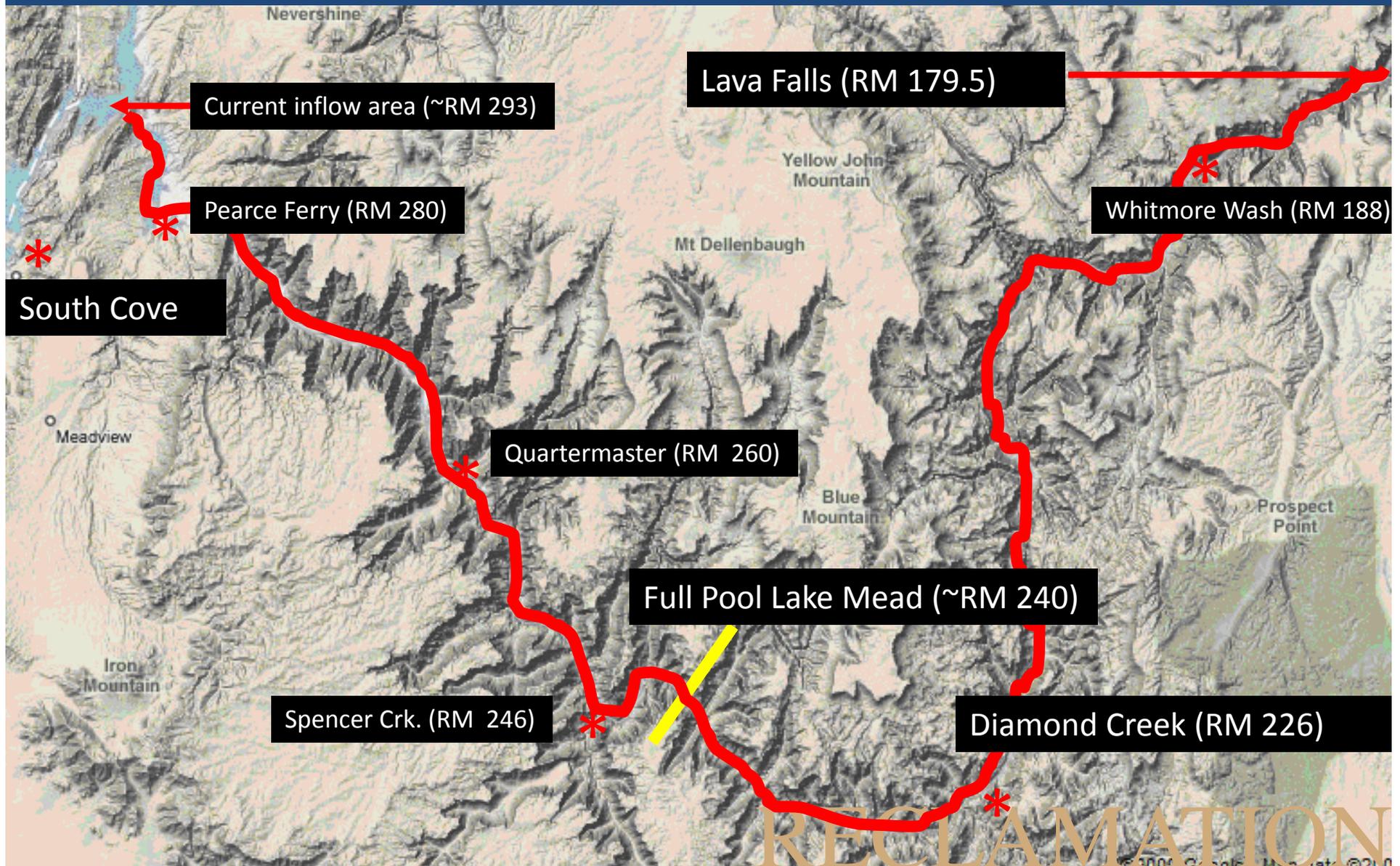
Lower Grand Canyon
and Lake Mead Inflow

Review of Biological Opinions for RBS in Grand Canyon

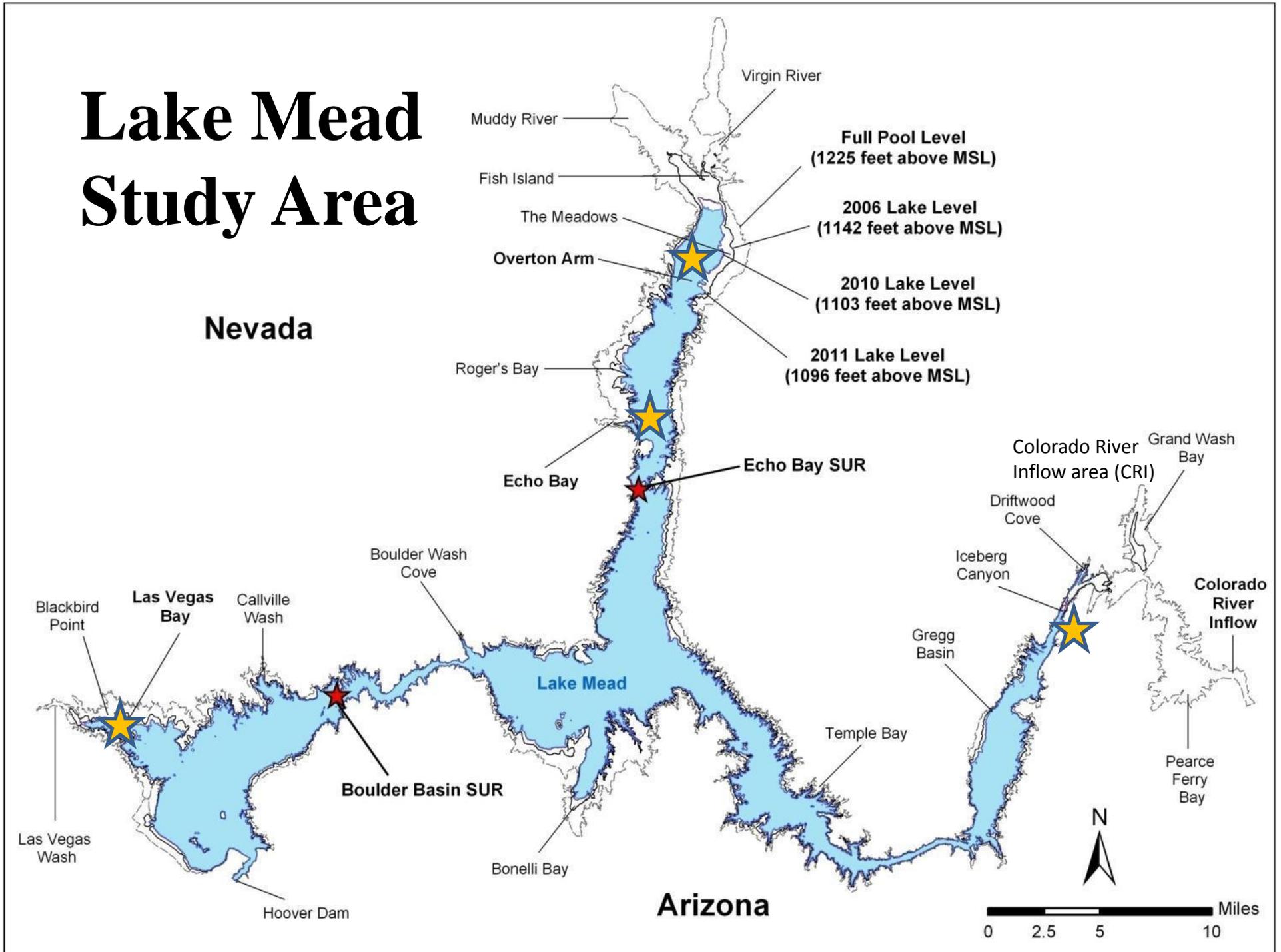
- 1995 BiOp (Reclamation, Operation of Glen Canyon Dam)— “sponsor a workshop, develop a management plan for RBS in Grand Canyon.”
- 2006 BiOp (NPS-Colorado River Management Plan)— “...conduct surveys in the Lower Gorge-Lake Mead interface for spawning razorback suckers...”
- 2008 BiOp (Reclamation, Shortages and Coordinated Reservoir Operations)— “...examine the potential habitat in the **lower Grand Canyon** for RBS and institute an augmentation program in collaboration with FWS, if appropriate.”

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What is Lower Grand Canyon?



Lake Mead Study Area



Overview of RBS in Lake Mead

- 18 years of study (1996-2014)
- 108 sonic-tagged individuals in Lake Mead
- 1,317 total individuals captured
- 860 unique individuals
- 4 areas of known, established reproduction in Lake Mead (Las Vegas Bay, Echo Bay, Overton Arm, Colorado River Inflow)
- 492 individuals aged, 2-36 years old
- 2014 Lake-wide population estimate 590 (CI 423-873)
- Only documented population of recruiting fish in Colorado River Basin

Data courtesy Brandon Albrecht and Ron Kegerries, Bio-West

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RBS Records From Colorado River Inflow Area of Lake Mead 2000-2013

- 2000 and 2001—larvae found
- 2008—adult in Gregg Basin (near CRI)
- 2010—3 untagged (wild) adults captured, 7 larvae
- 2011—7 untagged (wild) adults, 8 recaps, 65 larvae
- 2012—13 untagged (wild) adults, 13 recaps, 12 Larvae, 2 fish moved upstream to Quartermaster or beyond, 3 fish moved up past Pearce Ferry, 1 wild fish (male, ripe) captured at Spencer Creek

Data courtesy Brandon Albrecht and Ron Kegerries, Bio-West

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Current Work—2014>

- Study area is downstream of Lava Falls/Whitmore Wash to Colorado River Inflow area
- Larval and small-bodied fish sampling
 - Larval fish community (what is spawning?)
 - composition, timing, abundance, location, periodicity of spawn
 - Small-bodied fish community
 - composition, relative numbers, habitats
- Sonic telemetry (captive adult fish-'Judas' fish)
- Trammel netting
- Continued monitoring at Colorado River Inflow area

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Results (so far) of sampling in Lower Grand Canyon

- All sonic sensors installed by March 2014; Monthly surveys for larval fish started in April.
- Nine sonic-tagged fish released @ Lava Falls March 17th.
- April sampling = > 350 larval razorback suckers identified from 21 of 47 sites sampled, river miles 191 to 279 (widely distributed). Samples from May to September still need to be completed.
- Sonic-tagged fish detected from Lava Falls downstream at multiple locations and include fish from 2010 tagging.
- 75 unmarked, juvenile humpback chub from river miles 199 to 275, and larval HBC
- LOTS of native sucker larvae, Larval fish increased dramatically in June and July

Data courtesy Brandon Albrecht and Ron Kegerries, Bio-West;
Howard Brandenburg, Judith Barkstedt , ASIR

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Lake Powell Study Areas 2011-2014



Colorado River Inflow

Inflow area

San Juan River waterfall

Piute Farms-waterfall

Inflow

San Juan River Inflow

Neskahi Wash (LM 22)

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Key Findings Lake Powell

- San Juan River Inflow 2011-2012
 - Large stocking program for RBS upstream in both San Juan and Colorado rivers, BUT 53/148 (36%) captured without PIT tag in 2011-2012 in San Juan inflow (Recruitment??)
 - One RBS Larvae (Reproduction)
 - Age of fish 4 to 19 years old
 - RBS captured in Lake portion of inflow
 - 8 fish moved upstream (up to 200 miles) of waterfall during two week period in 2012
 - Fish movement from Farmington, NM to Grand Valley, CO (through Lake Powell)
 - 25 Colorado pikeminnow (usually poor condition)
- Colorado River Inflow 2014
 - > 250 individual razorbacks captured
 - Four (4) bonytail-1 spawning
 - Two Colorado pikeminnow (poor condition)

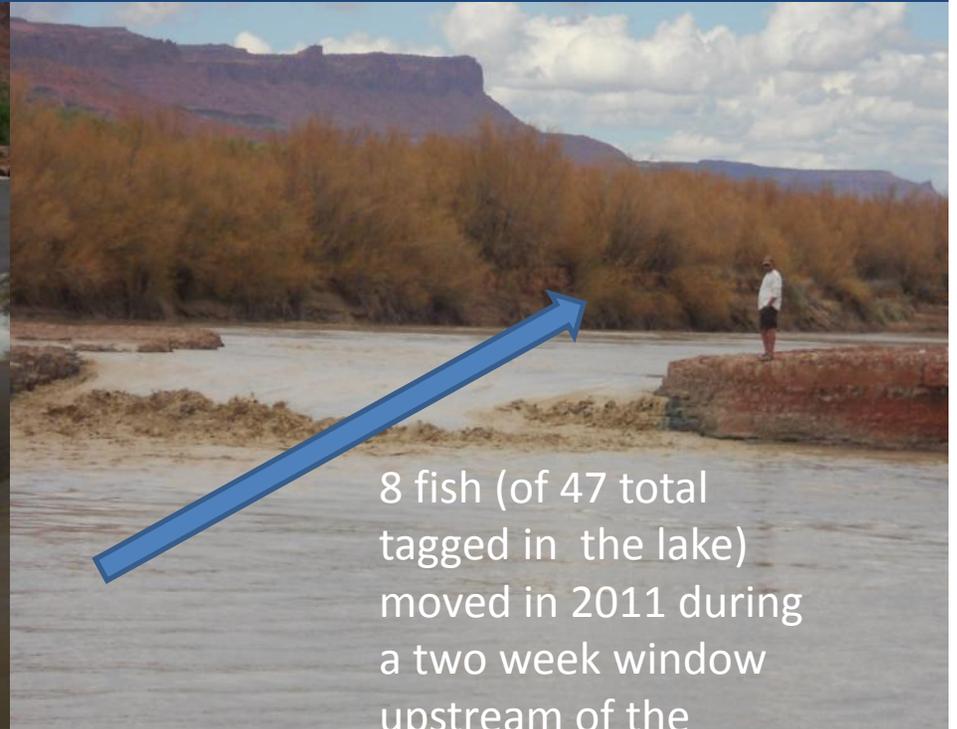
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Lake Powell Habitat



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San Juan River Waterfall 2008 vs 2011

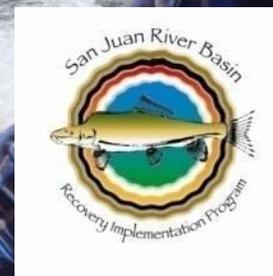
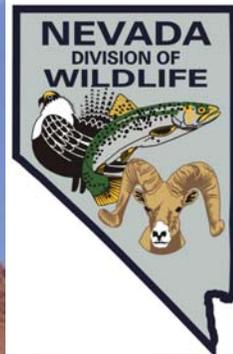


8 fish (of 47 total tagged in the lake) moved in 2011 during a two week window upstream of the waterfall, 45, 64, and 200 miles miles

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Acknowledgements



Lake Mead Workgroup