

Post-stocking Survival:

The group discussed ideas to improve post-stocking survival. Predator avoidance training is being conducted at Bubbling Ponds, but no results were available. Reclamation conducted paired day-night stockings over the past three years, but the data were inconclusive. Reclamation is testing the impact on the size of the release group by releasing similar lots of fish in batches of 250, 500, and 1000 individuals over the next three years. Batches are being released in the same area, but in different weeks at similar individual fish lengths.

Size is still the main factor affecting post-stocking survival. Willow Beach hatchery is on a new plan to stock groups based on year class and will not separate the slow growers from the fast growers. The overall plan is to stock 8,000 fish per year. The first year will be 2018 and fish will be held at the hatchery for five years. The average size of these fish is expected to be near 450 mm. Giovanni pointed out that because these fish are not being separated based on size, there will be some fish in each stocking group that are under 300 mm.

Razorback sucker raised in backwaters or ponds appear to have higher post-release survival than fish released directly from the hatchery; which may be due in large part to their larger size at release. However, backwaters and ponds experience higher levels of mortality prior to release. Eric Loomis has been testing different techniques to increase survival in the backwaters. For example, Aquashade was applied to AJ to limit macrophyte growth, but the berm was breached and the impact of the application could not be determined. Artificial cover or structure may be added to the backwaters to provide shelter from avian predators in the near future. The potential to use game cameras on site to collect observations of avian predation was suggested, but no commitments were made.

AJ has been a valuable backwater and it was agreed that it would be worth rebuilding the berm. Davis Cove backwater will also be brought back online as a grow out facility for razorback sucker.

Another iteration of the ongoing bird predation study in Reach 3 (Laughlin Lagoon) was conducted in May, coinciding with a release of 697 bonytail. Since the beginning of the study, elevated PIT scanners attached to signs in the Lagoon as well as underwater scanning has resulted in 150 tags scanned. This effort will continue in December when another group of bonytail is released into the reach.

Larval Collection:

More than 1,500 razorback sucker larvae were captured in the river zone upstream of Willow Beach this year. Increased effort will be applied in the reach in an attempt to collect more than 3,000 larvae from this area each year. Tom Dowling recommends that if 50% of the population resides upstream of Willow Beach, 50% of the larvae collected should come from there. The group will attempt to increase effort without impacting effort at the main larval collection sites.

Kayak Cove, the cove adjacent to Willow Beach Hatchery has been the most productive place to collect larvae in the river zone thus far. There are other coves upstream of Kayak that also have potential for larval collection and should be explored. It was suggested by the group to evaluate maps and flow regimes before larval season begins to target these coves that have potential to be hot spots.

Above Owl Point (AOP) has been used to designate larvae collected in the usual locations (Wrong Cove area) as well as collections upstream of Willow Beach. For the purpose of larval collections, those

locations upstream of Willow Beach will now be considered a separate zone. Recently the usual AOP sites have not been productive and Dowling agreed that these sites could be removed from the larval collection effort. Methodical PIT scanning will be conducted in the zone over the next several years and if spawning aggregates are located, larval collections in the zone will resume.

Larval collections are expected to be increased. Larvae are now going directly to Lake Mead hatchery as well as Willow Beach. NDOW offered to assist with larval collection if needed.

The importance of zero data during larval collection was also discussed. Reclamation suggested date and times also be recorded even if no larvae are collected.

March and December Roundups:

March roundup netting occurs during the decline in spawning activity. The spawning season may be contracting. Still, there is potential disruption of larval production caused by netting activities. Moving the roundup earlier to capture more fish was considered, but rejected. Moving the roundup may reduce larval production to the point of not reaching annual larval collection targets. The current sampling protocol was setup to reduce the impact of netting on spawning activities, but additional ideas on how to reduce the impact are still needed.

It was suggested that the March roundup should have a target recapture number of 5. This would require active lines of communication between camps. Reclamation will look into using the new Biomark scanners (HPRs) to retain a list of tags from the previous year so the process is fairly automated for each camp. If the number of recaptures is reached early in the week, the netting effort may be redistributed to areas that rarely receive netting effort (downstream of Halfway Wash and upstream of Owl Point). The recapture target should result in most March roundups consisting of more than a total of 100 fish captured, at least at current population levels. Tom Dowling voiced agreement with this plan as long as the total number of captures did not decline significantly. Dowling will further consider this plan and respond back to the group at the CRAB meeting.

Also, in order to reduce the number of fin clips taken and processed, Tom Dowling will send a list of the PIT tagged fish that have already been genotyped. This list may also be used with the HPR scanners to indicate when a fin clip is not required.

Training for PIT tag implantation, sex identification, and the use of the new Biomark HPR scanners should be pursued to increase tag retention, the utility of scanning data, and improve our ability to use information during the March roundup. Kirk Young offered to assist with planning and instruction of such a course if the group is interested. Gio suggested that Willow Beach has lab space available for this activity. Paul Marsh sent around the 1983 Minckley paper on the status of razorback sucker which can be used for reference when sexing fish at time of stocking or during capture events.

The date for the autumn razorback sucker roundup has been scheduled for December 5-9, 2016. The group discussed bringing extra boats if possible so effort can be dispersed effectively. Increased participation is expected as members of AZGF and NDOW offered to assist with the roundup.

Ongoing studies and ideas:

The use of GoPro cameras was discussed as a way to distinguish some male and female razorback during spawning. M&A has experimented with attaching a GoPro to a PIT scanner and the sexual

characteristics are clearly visible on some fish. M&A may be able to link GoPro footage to scanning data via time stamp to accurately identify the sex of individuals. The group also discussed attaching a GoPro to a trammel net during roundup events to assess fish behavior in the presence of a net.

There is a group of 500 large (500 mm) razorback sucker that are currently at Lake Mead hatchery and will be released into Mohave this year. If anyone has any research ideas or questions that could be answered using this cohort, contact Jim Stolberg.

Gio was wondering about the possibility of using the F1 generation of bonytail from Achii Hanyo or other ideas to make that hatchery as effective as possible. Concerns over F1 spawning in the hatchery led to the group to decide against using the F1 generation.

Trout have recently come back on station at Willow Beach after a three-year absence. The response of striped bass on trout stockings and the need for striped bass abundance data were discussed. NDOW has ongoing creel surveys and netting is performed by multiple agencies. Matt Chmiel pointed out that the lake has been changing quite a bit recently and the response of striped bass or razorback sucker to the cessation or reestablishment of trout stockings would be difficult to establish. It was also suggested that we utilize the fish "brag boards" at the Willow Beach, Cottonwood Cove, and Katherine Landing marinas as a source of data. These marinas also have Facebook pages where they post pictures of stripers along with the size and date of capture.