Habitat Workshop (November 27, 2001)

Habitat workshop presentations were excellent. Tim Modde, Doug Osmundson, Bob Burdick, and Garn Birchell summarized what they've learned to date regarding habitat needs/preferences of adult pikeminnow and adult and juvenile razorback suckers. Informal discussions resulted in thought-provoking input from workshop participants. I believe we are closer to completing the life history puzzle for the razorback sucker.

Rather than elaborating on who said what when, I'd prefer to present a revised jigsaw puzzle of what it may take to recover the razorback sucker in the presence of abundant nonnative fishes. Much of it is based on thoughts, ideas, and experiences of workshop participants.

Based primarily on results of levee removal studies and experiences with Old Charlie Wash, the ideal nursery habitat for razorback larvae would be a floodplain wetland depression, deep enough to hold water and sustain fishes in 4 out 5 years, shallow enough to dry up in 1 out of 5 years, lots of submerged aquatic vegetation for predator-avoidance cover, in a location and with a wide upstream opening to entrain large numbers of drifting razorback larvae, self maintaining, productive, good water quality.

Ideal and Alternative Scenarios

Floodplain wetland depressions that hold enough water to sustain fishes year-round every year tend to build up populations of nonnative fishes. To give larval razorbacks a fighting chance, nursery habitats may need to be "reset" periodically to reduce the abundance of nonnatives prior to entrainment of razorbacks.

Year 0 (2001)

> Ideal: Because of low flows, the razorback larval nursery habitats dried up and all fishes are gone. The sites have been "reset."
>
> Alternatives: For sites that still hold water, pre-runoff sampling will determine the extent to which nonnative fishes have been knocked down. Where a better reset is desired, sites could be poisoned, drained, or pumped dry, depending on what is most cost-effective.
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> In the Green River, the Stirrup and Baeser Bend are currently dry (as of December 2001). Bonanza Bridge and Horseshoe Bend are presumed dry and devoid of fishes. Above Brennan has ~1 foot of water, so fishes will be knocked down, possibly gone by next spring. Old Charlie Wash is dry. Johnson and Leota have dead pools; nonnative fishes may be knocked down during the winter, prior to spring of 2002.

Year 1 (2002)

> Ideal: High flows for long duration during May/June to entrain large numbers of drifting razorback larvae. Late summer/fall storm events to replace evaporative losses, provide

freshening flows, and maintain water quality into and through the winter. Surviving larvae should be 3-5" long by fall 2002.

Alternatives: Stock hatchery-produced razorback larvae into floodplain depressions. If weather/flows/storms do not cooperate, may need to pump water into sites. Conditions must allow larvae to survive summer 2002 and winter 2002-2003.

Bonanza Bridge, Horseshoe Bend, Above Brennan, Leota L-7, and Old Charlie Wash capable of entraining drifting razorback larvae. Likely would need to stock razorback larvae into the Stirrup, Baeser Bend, and Johnson Bottom.

Year 2 (2003)

Ideal: Flows of sufficient magnitude and duration during May/June to provide freshening flows. Late summer/fall storm events to replace evaporative losses and maintain water quality into and through the winter. Surviving razorbacks should be 12-14" long by fall 2003.

Alternatives: Stock Age 1 hatchery-produced razorback suckers into floodplain depressions. If weather/flows/storms do not cooperate, may need to pump water into sites. Conditions must allow razorbacks to survive summer 2003 and winter 2003-2004.

Year 3 (2004)

Ideal: Flows of sufficient magnitude and duration during May/June to allow razorbacks access to the river if they are ready to go. If they are not ready to go, then conditions must allow razorbacks to survive until they are ready to go.

Alternatives: If water quality deteriorates before razorbacks are ready to leave the nursery habitats for the river, then they can be harvested and put into the river. Or water can be pumped into the sites to maintain water quality through the winter of 2004-2005.

Year 4 (2005)

Repeat. Reset sites. Poison, drain, or pump dry, depending on what is most cost-effective.

There is no way of predicting weather and flow conditions for future years. Therefore, flows, weather, and site conditions will need to be monitored to determine if intervention will be required. If ideal conditions do not exist, then may need to poison, stock, pump, net, etc., to help out the razorbacks. Once razorback populations are built up and sustaining then less management may be needed.

Some points made during the workshop:

-Disproportionate numbers of adult pikeminnow have been found in association with habitat complexes in the Colorado River. Therefore, they are believed to be important.

-Razorback sucker adults are also believed to prefer habitat complexes in the Colorado River.

-Adult razorbacks and pikeminnow use inundated floodplain terrace habitats when they are available.

-Floodplain terraces may be important nursery habitats for razorback sucker larvae, even if the young razorbacks are only one inch in length when they have to go back into river.

-Razorbacks and bonytail may spawn in floodplain habitats (e.g., Cibola, Etters, Dexter, Mojave)

-Floodplain wetland depressions that can sustain fishes year round are thought to be the best type of nursery habitat for larval razorbacks

-Flow through depressions are likely to entrain the most drifting larvae, but are risky (erosion/scouring, adjacent landowners, wetland may become side channel, lowers temperatures, sediment deposition).

-Graded drainable backwaters and gravel pits are safest, but filling/grading is expensive, and larval entrainment is likely lower than flow through.

Some recommendations made during the workshop:

-Stock razorback larvae/young in all types floodplain habitats wherever/whenever possible. Stocked razorbacks are thought to have better chance of survival when they are stocked into slackwater areas where they can acclimate before going into the river.

-Need to figure out better, more efficient ways of capturing young razorbacks. In cases where razorback survival was not detected, maybe the young razorbacks were hunkered down in mud (Muth, Modde, Osmundson). Fyke nets may not work well on Age 0 fish.

-It would be best to lower entire levee around a site, for maximum entrainment of larvae, and so the site becomes self maintaining (i.e., scouring to prevent sediment buildup).

-Young razorback suckers seem to key in on cover. May want to add cover to sites where cover is lacking. Need to be careful because centrarchids also like cover.