

## Arizona Riparian Council, 26th Annual Meeting, April 2013

### Sustaining Urban Rivers – Visions and Actions across the Southwest: Application for the Salt River through the Phoenix Metro Area

#### **Lessons Learned: Synthesis of Workshop (compiled by JC Stromberg)**

- 1) **Objective.** A workshop was held in April 2013 with the objectives of bringing together managers, researchers, and stakeholders of the urbanized Salt River to engage in a dialog on how to make the River a more accessible and desirable place for people and wildlife.
- 2) **Process.** On the first day, invited speakers shared their experiences in managing, implementing or informing river restoration or conservation in three other arid land cities. The next day was a workshop focusing on the urban Salt, divided into three sessions, each initiated by short presentations by panelists. In the first session, we discussed vegetation, wildlife, and green space. Environmental flows, water sources, and water quality were the key topics for the second session. The third session focused on strategies for taking action and engaging the public. Workshop participants broke into groups to brainstorm visions for the river and actions that could be taken to realize these visions.
- 3) **Product.** This document synthesizes the groups' visions for the river and identifies approaches and actions that could be taken to restore desired outcomes.

### Visions for the River

A common vision emerged among the participants. We would like to have:

1. Surface water flowing in the Salt River, continuously or near-continuously, from Granite Reef Dam to its confluence with the Gila River (*environmental flows*)
2. A “ribbon of green” paralleling the river, with diverse aquatic, wetland and riparian habitat (*vegetation and wildlife habitat*)
3. Trails and pathways lining the river and interconnecting with a regional trail system (*connectivity and recreation*)
4. Places where people can gather to watch birds, enjoy the scenery and learn about the river and its biology (*social and educational opportunities*).
5. An ecosystem that is to a large degree self-maintaining, requiring little input of energy and low human intervention (*sustainability*)
6. An ecosystem that provides multiple ecosystem services, including aesthetics, recreational opportunities, provision of wildlife habitat, evaporative cooling, and recharge of groundwater (*ecosystem services*).

## Achieving our Vision

*To achieve our vision, action is needed on many fronts. Many ideas emerged, a portion of which are captured here. Some of these ideas already are being implemented to some degree, and we use this as an opportunity to bring them to people's attention.*

**I. Inform, educate, and engage the public.** An educated and engaged public is critical for achieving the vision outlined above. The group at the conference were a self-selected subset who care about and know about desert rivers and their riparian areas. Until a greater percentage of the public says, "I want this", things will not change. Without public support, there will be no financial support. To increasing awareness of the Salt River by the greater Phoenix community and to educate people on the values of a restored River we could:

- Provide schools with a curriculum for the river. Arizona Audubon has developed a curriculum (River Pathways) that teachers can use to teach K-12 students about desert rivers and their biology. This curriculum is available online at

[http://riosalado.audubon.org/sites/default/files/documents/river\\_pathways\\_curriculum.pdf](http://riosalado.audubon.org/sites/default/files/documents/river_pathways_curriculum.pdf); accessed April 23, 2013).

- Engage more students with the river. ASU's ecology explorers program (<http://ecologyexplorers.asu.edu/>) works with teachers and students to participate in 'real world' research. Riparian research could be integrated to a greater degree into this existing program.

- Lead Salt River field trips. People need to get out and walk and listen! Several groups, including Arizona Audubon, Arizona Native Plant Society, and Sierra Club lead field trips to rivers and other sites. Perhaps ARC members could volunteer to lead field trips at Rio Salado, through a MOU with the City of Phoenix (Winston Lyons).

- Establish a traveling riparian show. The Arizona Riparian Council currently travels around the state to various venues as part of their educational mission, but this type of activity could be expanded. See "The Utah Waters Van" at <http://www.thelivingplanet.com/index.php/2012-03-30-18-26-44/outreach-programs>.

- Put up informative road signs. The entity that control placement of road signs could be encourage to put up signs on overpasses at or near Salt River crossings simply to inform people that about the presence of the river (e.g., Salt River at Central Ave.)

- Implement an "Adopt-a-section-of-the-river" or "Adopt-a-section-of-canal" program. Individual cities or SRP could implement programs that link a group of people to a particular section of river or canal, analogous to ADOT's adopt-a-highway and adopt-a-street programs

(<http://www.azdot.gov/highways/adoptahwy/AaHApplication.asp>); accessed April 25, 2013)

- Create PSAs for public transit. We could engage with Valley Metro to produce and air public service announcements about the Salt River on the Light Rail transit system. These could be timed to occur at Salt River crossings or at canal crossings.

- Conduct and /or participate in nature festivals. Existing salt-River focused festivals include the Tres Rios Nature and Earth Festival (<http://www.tresriosnaturefestival.com/>) which occurs yearly on the River west of Phoenix, the Dragonfly Day Nature Festival (at Rio Salado Audubon Center), and the Migration Celebration (at Rio Salado Audubon Center; <http://riosalado.audubon.org/>). The City of Phoenix has expressed

interest in holding festivals on their riparian habitat, an action that could be explored further with Park Rangers (e.g. Winston Lyons).

- Engage with artists, such as is being done along the middle Verde: The Verde Valley Land Preservation group has challenged visual artists to “create an emotional connection between the public and the Verde River” (<http://www.verdeartistchallenge.org/index.html> accessed April 22, 2013).

- Use social media to a greater extent. As one example, people could use social media to track watchable wildlife at particular spots along the River (e.g., birders can post the species they see). A possible template for this is the Audubon society’s Railbirds event.

- Engage the traditional news media. Contact science writers and reporters (e.g. Shawn McKinnon, Steve Boden), and work with them to showcase positive actions taking place on the river or to discuss benefits of the river and riparian corridor. This also could include smaller outlets such as Phoenix Parks and Recreation newsletter.

- Develop a website for people to ‘know their watershed’. This could refer to watershed at the larger scale or smaller scale as it relates to urban tributaries. Ideally, this would be an interactive website where people view a map and click on the watershed in which they live, and the site would tell them interesting things such as what vegetation grew there historically, what birds have been seen in the area, or the nearest park or trail to them.

- Explore what other river groups have done that are applicable to the Salt. Many examples can be found in at Rivernetwork.org  
<http://content.yudu.com/Library/A24cwr/RiverVoices25thAnniv/resources/index.htm?referrerUrl=http%3A%2F%2Fwww.rivernetwork.org%2Fnews%2F25-lessons-25-years>

- Rebrand the Salt River.

- Establish a river mascot.

**II. Create a “Friends of the Salt River” Organization.** One avenue to sustaining a thriving Salt River riparian corridor is to establish a friends-of-the-river group. Similar groups have coalesced around other rivers in the region, including the Santa Cruz River and the Rio de Flag. Several individuals signed their names to a sign-up sheet that was passed around, with the intent of holding a meeting in the near future to discuss the inception of FOSR.

Main issues to tackle: 1) agree on a mission statement; 2) establish a board of directors; 3) develop a web site; 4) apply for non-profit status for the purpose of applying for grants. The geographic scope of the FOSR would be the Salt River from Granite Reef Diversion Dam (east end of the Valley) to the confluence of the Salt and Gila Rivers (west end of the Valley). A possible mission statement is “To restore and sustain a thriving Salt River riparian corridor in the Phoenix metro corridor, through education, information-sharing, and action”.

**III. Establish a data repository.** We need a central, accessible repository of information on the Salt River. This web site can function as an interim site, providing lists of journal articles and reports.

There also is a need for a common, spatially-integrated database. We need a database with many data layers, in one place, to tie together disjunct areas of the fragmented riverscape. Several

agencies and institutions have jurisdiction over the river. GIS data layers for the river, riparian corridor and/or urban watershed presently exist at the Maricopa County Flood Control District (John Hathaway, POC), ASU CAP-LTER (<http://caplter.asu.edu/data/>), and the Stromberg Lab at ASU (Julie Stromberg, POC). Perhaps, once established, FOSR could apply for a small grant to integrate these GIS databases, and also to gather published as well as unpublished information about the river.

## Visions for the River- *Environmental flows*

Securing existing surface flows and attaining additional base flow for the urban river is paramount. One approach would be to have water managers release Salt River water directly from Granite Reef Diversion Dam into the Salt River channel. To restore perennial flow (or at least saturated soil) in the low-flow channel throughout most of the Phoenix metro area, it is estimated that a continuous discharge of 500 to 100 cfs from Granite Reef Dam would be required (B. Boyd, pers. comm.). Could we engage SRP to participate in an experimental flow release to sustain dry-season low-flows? The rights to the water are owned by the Salt River Project (SRP), who distribute the water to its partners through a series of canals.

Alternatively, one could better manage the 'new' urban water sources that are sustaining pockets of wetland vegetation. Over 100 storm drains discharge into the urban Salt River channel, and these maintain pockets of wetland and riparian vegetation of varying size. Perhaps we could work to designate the Salt River as a preferred recipient of storm water discharges. Simultaneously, we could investigate the possibilities of connecting multiple storm drains into one larger drain, to concentrate the discharge and turn intermittent discharge points into areas with perennial flows, analogous to what has occurred in the area immediately below Tempe Town Lake. Concern was expressed that storm water discharges would decline as water conservation efforts improved. New housing developments are accompanied by onsite detention basins, which may recharge local aquifers but do not provide flows to the River.

Municipal effluent is another important water source for the river. Of note, the effluent discharged at the 91<sup>st</sup> Avenue wastewater treatment plant sustains an extensive riparian ecosystem on the far west side of the Phoenix metro area. Water from the Mesa Wastewater Treatment facility until recently helped maintain the riparian wetland near Price Road. Water from the 23<sup>rd</sup> Avenue wastewater plant apparently is sold to an irrigation water district and when they are not purchasing the water it is intermittently discharged at 35<sup>th</sup> Avenue. One suggestion was to reroute municipal wastewater so as to discharge at a site upstream of Phoenix, and then allow the riparian and wetland vegetation that it would support to supply tertiary water treatment. This would involve pumping water upstream, but would restore flows closer to their point of diversion from the stream channel.

The many sand and gravel operations in the river bed influence water supply. These operations pump groundwater but then discharge the used water to the river. More information is needed on this topic to determine how much water the sand and gravel mine operators discharge to the river, and to determine to what extent this water sustains riparian wetlands such as those at Tempe Marsh (near Price Road).

Pumped groundwater is used expressly for riparian restoration in localized areas, notably the Phoenix Rio Salado riparian habitat. At this restoration site, water is pumped from 5 wells to supply flows to a series of channels and ponds that were constructed as part of habitat restoration. This restoration project was funded and authorized by the Water Resources Development Act of 1999. Such an approach is not particularly sustainable in the long run, given the high costs of maintaining and repairing damaged wells.

To augment groundwater sources for future human use, surface water is recharged into the aquifer at designated spots along the river including the Granite Reef Underground Storage Project (GRUSP; <http://www.srpnet.com/water/waterbanking.aspx>). Rather than using the river bed for single purposes, could we work with SRP and others to manage such groundwater recharge areas for multiple ecosystem services, following the model of the Gilbert Riparian Preserve Water Ranch? The Gilbert Preserve supports wetland and riparian habitat as well as groundwater recharge basins, and also provides recreational and educational opportunities for people in the Phoenix area. One impediment to such an approach is that fewer groundwater recharge credits are granted by the State if a portion of the water is 'lost' through evapotranspiration. One could investigate means of changing this credit-system, perhaps by instituting offset credits for restoring riparian habitat.

Flood flows are crucial to maintain species diversity on desert rivers. SRP does release pulse events into the river channel during occasional wet periods when the Verde River reservoirs are filled to capacity, and these provide the temporal dynamism and winter floods that are vital to regeneration of riparian pioneer trees. Could we also engage SRP to participate in an experimental flood release, to modify the pattern of winter flood releases so as to better match the climatic hydrograph?

Water quality is another important aspect of environmental flows. The water that flows into the river from storm drains contains a variety of chemicals. Recent research (Palta, 2013) indicates that the wetland ecosystem at the discharge point can transform or detoxify some potential toxins, thereby providing an ecosystem service. Other ongoing research at ASU by Amanda Suchy (pers. comm.) is exploring how different types of wetland plant communities can reduce nitrogen levels in the storm drain water. Information sharing between these ASU researchers and key personnel at City of Phoenix and ADEQ will allow for improved management of the wetlands that develop at storm drain outfalls. Although these storm drain outfalls are periodically cleared to allow for water conveyance, there may be ways to retain particular types of vegetation in particular areas to better supply water purification services.

There also are water quality concerns pertaining to the aquifers. There are many old landfills and industrial sites (from the 1950s, 60s, and 70s) in or near the Salt River bed, and there is concern that these sites have a potential to leach metal contaminants such as lead and copper. At the Rio Salado restoration site, water is being pumped from a shallow layer located at around 250 feet below land surface. According to an application from the City of Phoenix for an Arizona Pollutant Discharge Elimination System Permit to discharge pollutants to Waters of the United States, the pumped groundwater is being monitored for metals, oil and grease, pH, inorganics, and organics.

## Visions for the River- *Vegetation and Wildlife Habitat*

Historically, the Salt River in the Phoenix area was vegetated by marshes, riparian cottonwood-willow forests, mesquite forests, and salt-bush shrublands. Floods caused the river low-flow channel to move within a zone that was up to several miles wide. Today, however, much of the river has been channelized to reduce flood damage to urban areas built in the pre-dam floodplain, and much of the stream has been dewatered. Riparian vegetation is intermittent over the length of the river, and where present forms a narrow strip in and along the low flow channel. One suggestion from the group was to protect areas of the river that have not yet been channelized, as such areas have the greatest potential for establishment of a wide swath of riparian vegetation. Similarly, efforts could be undertaken to identify and protect areas of the river that presently have dense pockets of wetland and riparian vegetation.

Another suggestion was to develop models that show how the riparian habitat would change in response to different flow scenarios. Such an approach has been adopted by the city of Fort Collins, as described in a talk presented by Dr. Dave Merritt. Such an effort would require collaboration by researchers with expertise in hydrology and ecology. Efforts by locally invested experts would provide the public with a set of alternative outcomes for future. Results of the modeling exercise could be captured via artistic renderings. To be effective at implementing change, the outcomes would need to be presented to key players in the policy arena.

### Visions for the River- *Societal Benefits*

Riparian restoration, and restoration of green space in general, has social and economic benefits. The more that people are aware of these benefits, the more likely they are to support river restoration. Studies are available that determine the social and economic values of riparian restoration and of greenspace, but are these studies transferable to the Phoenix area. Researchers from ASU or elsewhere could conduct studies on whether property values increase with proximity to riparian areas or summarize and publicize existing studies conducted in other similar cities (e.g., Tucson, as mentioned by speaker Julia Fonseca) that demonstrate a positive linkage. Studies also could be conducted, summarized, or publicized on the mental and physical health benefits of having a riparian greenspace in close proximity.

### Visions for the River- *Connectivity and Recreation*

A general consensus was that there needs to be a mix of user spaces, including riparian wildlife habitat and more traditional recreational venues such as parks with shade and benches. The four-legged stool idea was mentioned, wherein 1) picnic amenities, 2) restrooms, 3) trash clean up, and 4) law enforcement are required to make areas wholesome and attractive.

Levels of security and perceptions of danger are major issue that needs to be addressed in present and future riparian parks. Presently there is a high rate of vandalism (copper theft, graffiti) at the Rio Salado habitat, thereby reducing access to key amenities such as restrooms and water fountains as indicated by Wendy Wonderley in her presentation. More rangers are needed for patrolling.

Presently, the Rio Salado Habitat Restoration Area has an extensive series of trails along the Salt River in central Phoenix (<http://phoenix.gov/parks/trails/locations/riosalado/index.html>). However, there is no 'broader'

draw to the area such as large park spaces for picnicking, sports, or gardening. In addition to economic obstacles, one impediment to development of such spaces is soil contaminations by old industrial sites which has created “brownfields”.

The Reach 11 Recreation Area (<http://phoenix.gov/parks/trails/locations/reach11/> accessed April 25, 2013) was mentioned as a spatial template for the Salt River. Reach 11 has extensive trails through xeroriparian habitat and large soccer fields and other sports arenas. This mix draws many people. Once present at the riparian space, people have the opportunity to become excited about and educated about riparian habitat.

One also can look to Indian Bend Wash Greenway flood control project (<http://www.scottsdaleaz.gov/parks/greenbelt> accessed April 25, 2013) as an example of what can be accomplished along an urban river. The Greenway is an 11-mile mix of parks, lakes, paths and golf courses extending through the city of Scottsdale. However, this areas does not include a component of dense riparian vegetation and wildlife habitat except at its lowermost extremity.

Workshop participants (partial list):

Susan Craig, Steven Earl, John Hathaway, and Summer Waters (facilitators); Liz Makings, Robert Madera, Aireona Raschke, Beau Rudd, Danika Setaro, Amanda Suchy, and Ron Tiller (note takers); Louie Adams, Heather Bateman, Melanie Banville, Basil Boyd, Edessa Carr, Debra Daniel, Monica Elser, Joe Dixon, Pat Ellsworth, Heather English, Heather Finden, John Griffin, Tom Hildebrandt, Thomas Krebs, Mike Leard, Collis Lovely, David Merritt, Monica Palta, Theresa Pinto, Deborah Sparrow, Julie Stromberg, Diana Stuart, Peggy Thomas, Roland Wass, Dustin Wolkis, Ryan Wood, Wendy Woodman, Brittany Choate Xlu, Patrick Yamnick, and others.