



Arizona Riparian Council

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U.S. FISH AND WILDLIFE SERVICE ACTIVITIES IN RIPARIAN AREAS

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The U.S. Fish and Wildlife Service's (FWS) mission is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Fish, wildlife, and plants are protected through a variety of activities, both on and off FWS lands. In Arizona, the FWS has federal trust responsibility for species included in the Migratory Bird Treaty Act (MBTA) and the Endangered Species Act (ESA). Riparian and wetland habitats are of vital interest as they provide habitats for migratory birds and endangered species.

Field stations in Arizona report to the Southwestern Regional Office in Albuquerque, New Mexico. They are also organized by Ecoregion Teams, based on watersheds, with two in Arizona: Gila/Salt/Verde Ecoteam and the Lower Colorado River Ecoteam. Thus, the major riparian corridors in the state form the basis for the FWS ecological management units.

This review begins with one of the most pertinent, but not well-known, programs for riparian and wetland habitats in

Arizona, and then will describe the on-FWS lands activities, and will conclude with off-FWS lands activities.

NATIONAL WETLAND INVENTORY (NWI)

The NWI is a FWS program that produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. Information from the NWI Center is used by federal, state, and local agencies, academic institutions, U.S. Congress, and the private sector. The NWIC has mapped 90% of the lower 48 states, and 34% of Alaska (Arizona was one of the first states to be mapped). Congressional mandates require the NWIC to produce status and trends reports to Congress at 10-year intervals.

The FWS adopted the Classification of Wetlands and Deepwater Habitats of the U.S., which was developed by wetland ecologists (Cowardin et al. 1979) and is used by NWI. The system can be applied to areas from many square miles to square feet, for remote-sensing applications, and has written mapping conventions. In Arizona, there are three

systems: Riverine, Lacustrine, and Palustrine. Modifiers such as water regime, water chemistry, and soil are used to fully describe the wetland.

For federal agencies that produce, maintain, or use spatial data, *Circular A-16* (revised August 19, 2002) establishes a coordinated approach to electronically develop the National Spatial Data Infrastructure. The FWS is the lead agency responsible for the wetland data layer, which uses NWI as its system. Important to remember is that there is no attempt to define the proprietary limits or jurisdictional wetland boundaries of any federal, state, or local agencies.

In the formative years of the Arizona Riparian Council

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PRESIDENT'S MESSAGE

Once again the calendar has turned and it is time to look ahead to the new year, 2003. On behalf of the Arizona Riparian Council Board of Directors, I'd like to wish everyone an enjoyable and successful 2003. As we head into the new year, I would like to pass on a few tidbits of information that I hope interest you.

First, long-time ARC member and former President, Ruth Valencia and her husband David, are moving back to the Phoenix from the Verde Valley. Ruth has accepted a position at Salt River Project (SRP) where she will be responsible for implementing the Roosevelt Habitat Conservation Plan (HCP). This HCP covers mitigation for potential impacts to the Southwestern willow flycatcher, yellow-billed cuckoo, bald eagle, and Yuma clapper rail from SRP's operation of Roosevelt Dam and reservoir. Ruth will be overseeing management, restoration and monitoring of riparian habitats purchased as mitigation lands. Welcome back Ruth!

As many of you may have heard, the Bush Administration will be developing new rules related to the Clean Water Act that could endanger many streams and wetlands across the Nation. At a recent hearing the Environmental Protection Agency and the U.S. Army Corps of Engineers indicated that intermittent and ephemeral streams, small tributaries, and wetlands adjacent to those waters would be excluded from coverage under the Clean Water Act. According to *American Rivers*, more than 60% of all the country's river

miles and wetlands adjacent to those waters could lose protection. This issue is especially important here in the Southwest where many streams are either intermittent or ephemeral. If you would like more information on this issue, contact *American Rivers* in Washington D.C. at (202) 347-7550 or visit their website www.americanrivers.org.

Riparian conservation requires that local communities (where such areas exist) be concerned about their preservation. In order to create a higher level of knowledge and appreciation for the Gila River system west of Phoenix, a birding and nature festival will be conducted for the area. Already the site of two Christmas Bird Counts and successful nomination for nationwide recognition as an Important Bird Area, this riparian system has an abundance of wildlife values that are generally little known. To celebrate these values and provide an opportunity for West Valley communities to recognize this important resource, the *Gila River Birding and Nature Festival* should be a welcome counterbalance to the pressures of use, abuse, and development that are increasingly threatening the conservation of these resources. It is planned for a small start in 2003 and to become a community event thereafter. For more information, contact Tom Hildebrandt, ARC Vice President, (480) 981-9400 X221.

The Arizona League of Conservation Voters Summit recently changed its name to the Arizona Conservation Alliance (ACA). In the months

since the first summit in 2002, ACA participants have drafted a mission statement and a conservation agenda for 2003. The mission statement reads, "The Arizona Conservation Alliance (ACA), a partnership of diverse organizations, is dedicated to the preservation of Arizona's land, air, water, and quality of life for future generations." The final conservation agenda is available for anyone who is interested. If you would like more information on the ACA or the 2003 conservation agenda, please contact ARC President Jeff Inwood (480) 694-4116.

Finally, don't forget to register for our Spring Meeting April 4th and 5th at the Hon-Dah Resort. I look forward to seeing you there.

Jeff Inwood, President 🐾



Fish and Wildlife . . . From pg. 1

(ARC), a classification system for riparian habitat became as sought after as a holy grail. After considerable debate, the ARC Classification Committee decided to test the various systems being proposed and selected test areas near Safford, Arizona, with sites near the river and on the mountain slope. The FWS funded a special project and created digital NWI maps of the site (which until this year, were the only NWI-certified digital maps in the State). With the digital products, the Classification Committee had planned to compare the proposed systems. Unfortunately, either the other systems had no established mapping conventions or no one volunteered to prepare a map. In the end, all sides retreated to their respective camps, and the ARC created a "cross-walk" document to interpret the various systems.

The Arizona Ecological Services Field Office was instrumental in working with the NWI program to have riparian habitat included as a wetland type on FWS NWI maps. Regional and National NWI staff were invited to meet with ARC members in the field and they attended an ARC meeting in December 1988 to determine how to define riparian areas on its maps. The decision was to map wooded riparian vegetation with respect to five plant categories: Mixed broadleaf species, cottonwood (*Populus fremontii*)-willow (*Salix* spp.) associations, saltcedar (*Tamarix* spp.), mesquite (*Prosopis* spp.), and juniper (*Juniperus* spp.). A class of forested (over 20 ft) or scrub-

shrub (under 20 ft) was also designated.

Recently, the FWS Region 2 office has been preparing new wetland maps. The final maps for the San Pedro River were completed in August 2002 from photography flown December 2001, and are available on the web or as a CD-ROM with Arc shapefiles. The next project will be the upper Santa Cruz River. A complete set of the NWI maps for Arizona can be viewed at the Phoenix Office.

NATIONAL WILDLIFE REFUGES (NWR)

Wetlands, including riparian habitats, are typically regarded as priority habitats because so many NWRs were established for wetland dependent species. However, there is no specific habitat "priority system" for all NWRs. Each refuge has different objectives depending upon the reasons they were individually established. Wetland and riparian habitats are clearly priority habitats at the Colorado River NWRs and at San Bernardino and Leslie Canyon NWRs, that were established to protect and recover native fish. Wetland habitat restoration and protection, both on and off the refuges, is clearly identified as a major goal in the Comprehensive Management Plan for these refuges. This year is the 100th anniversary of the NWR system; it all began with one man and one boat, protecting pelicans on a tiny 5-acre island in Florida (an island supporting riparian mangrove and hardwood hammock trees). From those beginnings arose the world's largest and most diverse network of lands dedicated to the protection and

management of a vast array of wildlife. America's NWR system now encompasses over 94 million acres on 538 refuges and thousands of waterfowl production areas.

Imperial NWR is on the lower Colorado River and has a very active program to restore natural riparian communities. Since 1994, they have planted 162 acres with a variety of woody riparian species: Fremont cottonwood (12,200 pole and 11,900 gal); Goodding willow (*Salix gooddingii*; 1,600 pole and 27,400 gal); screwbean (*Prosopis pubescens*) and honey (*P. glandulosa*) mesquite (11,500 gal and 500 five-gal); and coyote willow (*S. exigua*; 7,100 gal). In spring 2003, they will plant 1,500 honey mesquite and 1,000 Goodding willow (all gal).

The original cottonwood plot was first used for cutting poles; now they believe the area is more valuable left as habitat. They found that pole planting is more expensive because each hole needs augering and the pole harvesting and planting times are limited. The Bureau of Reclamation (USBR) bought the Refuge a tree planter that is pulled behind a tractor and digs a furrow deep enough for the 1-gal plants. With two workers seated on the planter, they can plant 3,000 trees a day. With container plants, they can plant during extended fall and spring seasons (Fig. 1).

Bill Williams NWR includes reaches of the lower Colorado and the Bill Williams Rivers. Almost all of their activities involve management of riparian habitats. Currently, the Bill Williams River Corridor Steering Committee, that formed in 1990 and met until



Figure 1. Tree Planter at Imperial National Wildlife Refuge

1995, has been reactivated. The Committee consists of FWS, Bureau of Land Management, USBR, Arizona Game and Fish Department (AGFD), Arizona State Parks, Arizona Department of Water Resources, Corps of Engineers (CE), City of Scottsdale, and The Nature Conservancy. The Committee's original task was to develop recommendations on operations of Alamo Reservoir to sustain recreational and habitat needs on the Bill Williams River. The Committee was reactivated through efforts of FWS and AGFD to address unresolved issues from the work in the 1990s. The Committee may begin the process of developing a watershed initiative and will need to fill the remaining scientific data gaps, address adaptive management strategies, consolidate all previous biological studies, complete photo interpretation from the 1920s to present, and deal with instream flow issues. The Committee is early in the decision-making process. The Refuge also conducts the typical transects for birds, mammals, plants,

and herps. They are preparing to do some habitat restoration on the abandoned farm fields with solar powered drip irrigation (to replace mesquite bosques).

San Bernardino NWR is in the southeastern corner of Arizona. Staff are currently working with private landowners in both the U.S. and in Mexico to restore and enhance riparian habitat along the Rio San Bernardino, a tributary of the Rio Yaqui, and crucial wetlands for federally listed Yaqui chub (*Gila purpurea*), Yaqui topminnow (*Poeciliopsis sonoriensis*), Yaqui catfish (*Ictalurus pricei*), and Yaqui beautiful shiner (*Cyprinella formosus*). Many of the restoration activities are identified in the Yaqui Fishes Recovery Plan. Funding for the restoration has come primarily from North American Wetland Conservation Act grants and FWS challenge cost share projects, and has involved construction of rock and wire gabions to catch sediment and allow regrowth of riparian vegetation, removal of cattle,

and installation of cattle water tanks well away from the riparian habitat to eliminate impacts related to grazing. The Rio San Bernardino also provides important nesting habitat for gray hawk (*Buteo nitidus*), yellow-billed cuckoo (*Coccyzus americanus*), Bell's vireo (*Vireo bellii*), and multiple other species.

Leslie Canyon NWR (next to San Bernardino) personnel are currently working with private landowners in Arizona to help restore riparian habitat throughout the Leslie Creek watershed, which provides important habitat for the federally listed Yaqui chub, Yaqui topminnow, Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*), and Chiricahua leopard frog (*Rana chiricahuensis*). Funding for the restoration has come primarily from a Partners for Fish and Wildlife project, FWS Division of Water Resources, and both private and refuge budgets. Work has involved construction of rock and wire gabions to slow erosive flood flows, catch sediment, help recharge groundwater aquifers, and allow regeneration of riparian vegetation; installation and monitoring of test wells to measure groundwater response; and repair of existing earthen berms to spread water across giant sacaton (*Sporobolus giganteus*) grassland habitats bisected by Arizona ash (*Fraxinus velutina*)- Arizona black walnut (*Juglans major*)- Fremont cottonwood riparian corridors. The Leslie Creek riparian corridor and adjacent grasslands are important nesting habitat for varied buntings (*Passerina versicolor*), blue grosbeaks (*Guiraca caerulea*), summer tanagers (*Piranga*

rubra), Botteri's sparrows (*Aimophila botterii*), and multiple other species. Both of the above projects are scheduled to continue and expand.

Buenos Aires NWR, located along the U.S.-Mexico border in the Altar Valley, was established for the endangered masked bobwhite (*Colinus virginianus ridgwayi*) in 1985. Additions to the Refuge to protect valuable wetland and riparian habitats included Arivaca Creek, Arivaca Cienega, and Browns Canyon. The combination of grasslands, wetlands, cottonwood-lined streambeds, and sycamore and live oak mountain canyons preserves some of the southwest's rarest habitats for 7 endangered species, 10 species of concern, and many other native plants and wildlife.

ECOLOGICAL SERVICES

The Arizona Ecological Services Field Office, located at 2321 W Royal Palm Rd, Ste. 103 in Phoenix, has suboffices in Tucson and Flagstaff. The Office has major responsibilities for programs of Endangered Species, Environmental Contaminants, Federal Projects, and Partners for Fish and Wildlife.

Endangered Species

Most of the Field Office effort is directed at ESA Section 7 Consultations with federal agencies. A majority of the listed and candidate species in Arizona are dependent on riparian and wetland habitats; thus, riparian areas receive substantial attention in the biological opinions. Many listing and recovery actions are associated with riparian and wetland habitats. Recovery

plans are prepared for each listed species and include actions needed to recover the species. The following actions described in the soon to be released southwestern willow flycatcher (*Empidonax traillii extimus*) recovery plan would go a long way to ensure the conservation of riparian habitat in Arizona:

Increase and improve breeding habitat, by restoring, mimicking, and/or recreating natural physical and biotic process that influence riparian ecosystems, and reducing other stresses on the flycatcher. Specific actions include: changing management of surface and groundwater, including fundamental changes in dam operations, and restoring flood cycles; reducing impacts of domestic livestock, native ungulates, and feral horses (*Equus caballus*) and burros (*E. asinus*); improving metapopulation stability; securing long-term protection of breeding habitat; managing exotic plant species; reducing brood parasitism by brown-headed cowbirds (*Molothrus ater*); conducting research to refine management practices and knowledge of ecology.

Federal Activities

This program works directly with riparian and wetland habitats. Under the Fish and Wildlife Coordination Act, federal agencies proposing to alter or modify any body of water for any purpose must consult with the FWS and affected state fish and wildlife agencies to assure that wildlife conservation receives equal

consideration. One of the most difficult tasks is to relate secondary impacts to the issuance of CE's permit. However, if we are ultimately to protect and restore the biological (the Clean Water Act adds chemical and physical) integrity of these riparian and wetland areas, we need to look at the impacts to the upland areas that play a role in sustaining biological productivity and diversity.

Partners for Fish and Wildlife

The Partners for Fish and Wildlife program works with willing landowners on private property to provide technical and financial assistance for native habitat improvement projects. Habitats in Arizona face many of the threats of those across the U.S. such as fragmentation, destruction, invasion of exotic species, overgrazing, and recreational impacts. A major focus of the Partners program in Arizona is riparian and wetland habitats. Since 1992, when the Partners program began in Arizona, 98 of the 102 projects have been on riparian or wetland areas. Riparian corridors have been described as the "lifeblood" of the region, forming vital linkages between streams and their surrounding uplands. In Arizona, there is a special need to protect riparian and wetland habitats, which face threats from competition for scarce water resources. Fencing is an important and effective way to protect riparian habitats, especially in an "open-range" state like Arizona. Invasive exotic species are another threat to riparian areas. Partners projects have helped remove non-native species such as salt-

cedar, several thistles, and green sunfish (*Lepomis cyanellus*) from selected areas.

Environmental Contaminants

The FWS efforts to monitor contaminants in wetlands took a giant step forward shortly after Rachel Carson published *Silent Spring* in 1962. The FWS was the steward for one of the longest running and most geographically widespread contaminant monitoring efforts in the nation. The National Contaminant Biomonitoring Program (NCBP) monitored organochlorine pesticide and metal levels in fish collected from over 100 wetland locations nationwide from 1976 to 1984. Results of those surveys were published in scientific journals and thus were readily available to all interested parties. The NCBP database is still frequently used by state and federal agencies to provide a historic baseline for contaminated streams and rivers.

The environmental contaminant program moved out of the laboratory to field offices in the mid-1980s. The result was that local FWS biologists had the opportunity to identify concerns and problems in their areas. In Arizona, riparian and aquatic concerns were identified in 27 of the 29 environmental contaminant reports prepared by the Field Office (1985-2002). Our association with the Cooperative Fish and Wildlife Research Unit at the University of Arizona established a program to help train new recruits to the program. All 10 of the studies were on the aquatic resources in Arizona (1991-1999) and were publish-

ed as theses, dissertations, or journal reports.

FISHERY RESOURCES

The Arizona Fishery Resources Office, located in Pinetop with suboffices in Parker, Flagstaff, and San Carlos, works with Native American governments in Arizona and has lead responsibility for a number of the listed fish. Fish need functioning aquatic systems to survive, and riparian habitat is a critical component of aquatic systems in Arizona. Fish assessments and other parameters of the aquatic system are conducted by the office.

Alchey/Williams Creek National Fish Hatchery (NFH) and Willow Beach NFH both raise endangered fish that are used to restock or augment native fisheries in Arizona. Their efforts are essential in restoring the fishery component of the riparian-stream system.

JOINT VENTURES

Joint Ventures transform the goals of the North American Waterfowl Management Plan into on-the-ground actions, relying on a cooperative approach to conservation. Originally focused on waterfowl, they now assist in implementing all of the bird plans, such as Partners in Flight and Shorebirds. There are two Joint Ventures in Arizona, the Intermountain West and Sonoran. The Sonoran was formed in 1999, and is international in scope, including all of Baja, Sonora, and southern Arizona west to the Salton Sea. While birds may be the focus of the Joint Ventures, the areas both benefit and depend on the

community of fish and wildlife species found there.

As you might expect, most of the projects are in riparian or aquatic areas. For instance, examples of projects funded in 2001 in the Sonoran Joint Venture are La Marian and El Indio Wetlands, and Restoration in Farmlands Along the Rio Hardy and Colorado River Delta Project; Whitewater Draw Wildlife Area Wetlands Restoration Project; Achii Hanyo Wildlife Preserve Wetlands Project; and Cienega de San Bernardino Restoration Project. Many of the wetland-cienega projects have riparian elements such as the last project where the Sonoran Joint Venture provided technical assistance in cottonwood-willow planting at Black Draw as part of the larger restoration effort.

BORDERLANDS

The FWS is one of the members of the Department of the Interior U.S.-Mexico Border Field Coordinating Committee (FCC). Work is done by Issue Teams, and some are geographically based, such as the San Pedro Issue Team and some are program based, such as Habitat Conservation. Until recently, funds available to the FCC provided for small projects on both sides of the border, with a number of those in riparian areas. Two of the projects for which the FWS was lead are the Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*) conservation project, a community-based conservation effort with the Sonoran Institute on the Santa Cruz River in Sonora, and vegetation mapping and habitat assessment of the Colorado

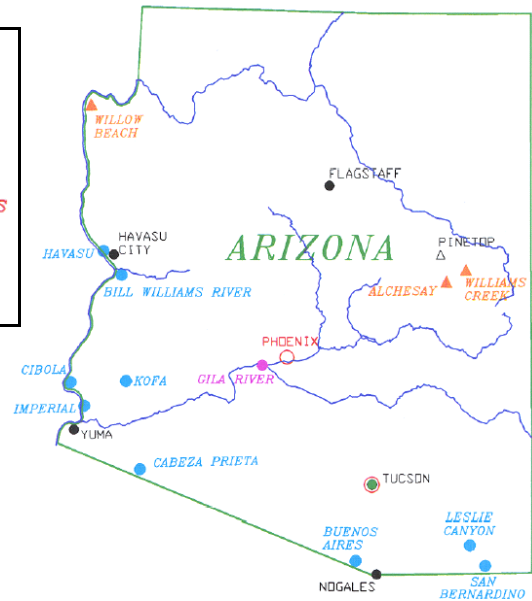
River delta in Mexico. Of interest to most riparian biologists, the U.S. Geological Survey announced at the November 2002 FCC meeting that it will repeat the 1996 aerial photography flown along a 100-mile band of the border beginning flights over Arizona this winter with photographs available next summer. This work will facilitate geographic information system work and allow excellent comparison data to look at change.

LAW ENFORCEMENT

The Senior Resident Agent Office is located in Mesa, and Special Agents are located in Flagstaff and Pinetop. The FWS Special Agents become involved with riparian and wetland issues when they enforce violations of the MBTA and ESA related to those habitats or species associated with those habitats.

LEGEND

- NATIONAL WILDLIFE REFUGES
- MAJOR CITIES
- ▲ FISH HATCHERIES
- ECOLOGICAL SERVICES OFFICES
- COOPERATIVE RESEARCH UNITS
- △ FISHERIES RESOURCE OFFICE
- WATERFOWL AREA



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LONG-TIME CONSERVATIONIST AND WILDLANDS ADVOCATE PASSES AWAY

Mike Seidman passed away in Phoenix, Arizona, on December 31, 2002. Mike spent over 30 years of his life advocating the protection of wildlife and their habitat in the arid Southwest and northern Mexico. He was instrumental in the reintroduction of the Mexican wolf and the black-footed ferret and worked tirelessly on behalf of the black-tailed prairie dog, beaver, jaguar, desert tortoise and other species.

Mike served as Conservation Officer for the Arizona Zoological Society and the Phoenix Zoo. He served on the Board of the Directors for the Arizona Wilderness Coalition and the Sky Island Alliance, and was a member of the Arizona Riparian Council, Grazing Clearing House, Middle Gila Conservation Partnership, and the Sonoita Valley Planning Partnership to name a few of the organizations

he was involved in.

Mike brought knowledge, integrity and passion to every project, discussion, and debate. Whether one agreed or disagreed with Mike, he was highly respected for his unwavering efforts to protect places dear to all of us.

Memorial contributions may be made to the Sky Island Alliance at PO Box 41165, Tucson, AZ 85717-1165.





SPECIES PROFILE



ARIZONA'S GIANT WATER BUGS (HEMIPTERA: BELOSTOMATIDAE)

by Robert L. Smith, Department of Entomology, University of Arizona, Tucson

Giant water bugs are noteworthy for at least three of their characteristics. First, the largest members of the family are huge insects as the family's common name implies. They are by far the largest of the true bugs (order Hemiptera) and at over 110 mm long, are among the largest insects. Second, the voracity of these predatory bugs is legend. Members of the genus *Lethocerus* have been reported to take foot-long trout and water snakes, bullfrogs and other adult anurans and even the occasional wading bird – prey all weighing in at multiples of the predator's own mass. Remarkably strong raptorial front legs and powerful anesthetic saliva used to immobilize captured prey facilitate the bugs' predatory feats. Finally, the biological feature that captured my interest almost 30 years ago involves their reproductive behavior. All of the 100 or so species in six giant water bug genera have exclusive paternal care of eggs (Smith 1997). That is to say: mom goes whistling off after mating, leaving the dad holding the bag—of eggs, as it were.

Males of the genus *Lethocerus* (subfamily Lethocerinae) brood eggs that their mates attach to emergent vegetation above the surface of the water (Ichikawa 1988, Smith and Larsen 1993). In this case, paternal brooding behavior consists of males guarding

the eggs and periodically bringing them water. The brooding male dips himself in and imbibes water then ascends the emergent substrate and drips the carried water onto the eggs to keep them hydrated. Unattended eggs desiccate and the embryos die.

Males belonging to five genera in the subfamily Belostomatinae brood eggs attached to their backs during mating rituals that include as many as 100 copulations over a period of several days. This marathon-mating pattern is designed by natural selection to assure that males invest only in eggs they have fertilized (Smith 1979a). Brooding behavior in this subfamily includes exposing eggs to air at the surface of the water, and a variety of behavioral patterns to aerate eggs when the bug is submerged. For example, some species do pushups when below the surface of the water, and other species stroke attached eggs with their hind legs (Smith 1976, 1979b). Both patterns serve to move fresh oxygen-rich water over their surface of the developing embryos. In all cases, male brooding is obligatory. If eggs are left unattended out of water they desiccate and the developing nymphs die, if submerged without care, the embryos drown.

Arizona's aquatic habitats may contain up to six species of giant water bugs representing three New World genera. Three species are common and three

are rare or have very limited distributions in our state. The most common species is *Abedus herberti* Hidlago. This medium-sized (24.5-40 mm length) belostomatine water bug is abundant in the mountain streams of southeast to central Arizona. A subspecies *A. herberti utahensis*, occurs in the northwest corner of the state (Menke 1960).

A perfect indicator that an Arizona mountain stream has been flowing continuously for thousands of years is the presence in it of *Abedus herberti*. The zoogeography and ecology of members of the genus *Abedus* are unusual in that all but one species are stream dwelling throughout their lives. By contrast, all other species in the family reproduce in lentic habitats. We know that *A. herberti* and its California ecological replacement, *A. indentatus* (Haldeman), and several other *Abedus* spp. share another unusual characteristic, they are flightless, lacking functional flight musculature (Goodwyn and Smith, in prep.). Thus populations of these bugs lack the power to disperse between mountain ranges and probably do not move among drainages within a mountain range. If this is indeed correct, then each drainage contains a unique population of the species. Unfortunately, the species has been extinguished from several streams by the introduction of exotic crayfish.

Abedus herberti exhibits flash flood avoidance behavior first discovered by David Lytle (1999). When significant rain hits the surface of the rock pools occupied by these insects, the bugs abandon the water and climb out of the stream bed where they remain safely high and dry for several hours.

A second species of *Abedus*, *A. breviceps* Stål, is found in central Arizona. Menke (1960) examined old specimens from Tonto Creek, and from Camp Verde. I have collected this species in the Verde River near Cottonwood. These are the only Arizona localities for *A. breviceps*, which has a Mexican center of distribution. This species occurs under cobbles in moving water. I have collected it by holding a "D" net downstream while rolling fist to melon-sized cobbles upstream from the net. It seems probable that this species is flightless, and the Arizona population in the Verde River drainage is almost certainly relic of a former contiguous distribution through

southern Arizona into Mexico. Thus, *Abedus breviceps* may be an important indicator of the ecological health of the Verde.

Abedus signoreti sonorensis Menke is a subspecies of a predominantly Mexican species. The only locality from which it has been taken in Arizona is San Bernadino Ranch along the U.S.-Mexican border near Douglas. Efforts to enhance fish habitat in this National Wildlife Refuge may have inadvertently destroyed the habitat for and extinguished the only known population of *A. signoreti* Mayr in the U.S.

Lethocerus, is renowned for its powerful flight and huge flight muscles. In fact, an African member of this genus has been the premier experimental animal for decades of research into the physiology of insect asynchronous flight musculature.

A single Arizona species, *Lethocerus medius* (Guérin-Méneville) occurs in southern Arizona defining the northern boundary of the species primarily Mexican distribution.

Lethocerus medius in Arizona typically winters in the perennial waters of our mountain streams. This is an unusual if not unique habit for *Lethocerus* spp. In streams it occasionally preys on fish, amphibians and other large aquatic insects including *Abedus*, but during the winter months these huge bugs are usually torpid and probably unable to take prey. When the summer rains come in July, *L. medius* adults embark on flights that eventually take them to vernal ponds and "cattle tanks" in the valleys between mountain ranges.

Lethocerus medius colonizes these habitats as they fill with runoff. There they reside through the initial algal bloom and phyllopod hatchings, but the real bounty these bugs await is the invasion of the ponds by desert anurans whose rapidly developing larvae provide the needed flush of high protein food required by females to produce eggs. Males of *L. medius* set up territories on mesquite or paloverde branches that have fallen into

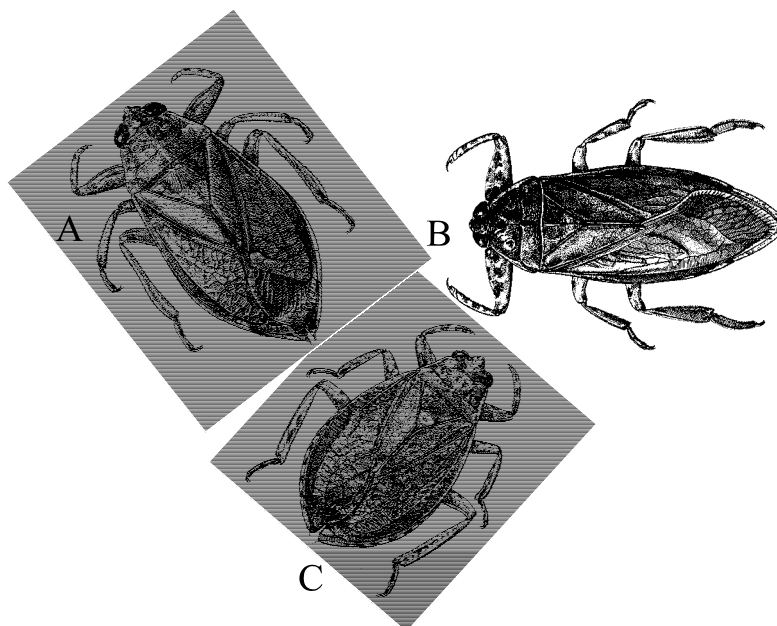


Figure 1. Illustrations of Arizona's giant water bug genera. A) *Lethocerus* sp. B) *Belostoma* sp. C) *Abedus* sp. From Menke (1979)

the water, or on the emergent portion of inundated stalked vegetation. This substrate, partially submerged and partially emergent, is required for reproduction by lethocerine giant water bugs. Territorial males "roost" on the emergent substrate and perform "pushups" that create wave motion and attract receptive females.

Belostoma is the third giant water bug genus that occurs in Arizona. One species, *Belostoma flumineum* Say is very common and widely distributed. It occurs in "permanent" ponds, especially those containing an abundance of aquatic plants. Ponds that host this species often contain thousands of individuals especially late in the summer. During this time, male back space can limit reproduction for the population, because all males are encumbered with eggs and most females are heavily gravid, but unable to find a free male to be used as oviposition substrate. These bugs eat other aquatic insects and small tadpoles. The presence of fish of any kind seems to eliminate *B. flumineum* from otherwise suitable habitat. This species is a strong and frequent flyer.

The final species in our Arizona inventory is *Belostoma bakeri* Montandon. This species occurs in a single very special Arizona locality: Montezuma Well in the Verde Valley. The species shares this amazing deep spring fed sinkhole habitat with at least two endemic species. One is an amphipod and the other is a member of the giant water bug sister group, the water scorpions (Nepidae). Despite its wide distribution from Washington state through California into northern Baja

California, to the best of my knowledge, *B. bakeri* occurs nowhere else in Arizona. Thus it should be regarded as part of Montezuma Well's enigmatic and fascinating biology.

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SPRING MEETING – FIRE ON THE WATERSHED: ARE WE BURNED OUT OR READY TO FAN THE FLAMES?

In the summer of 2002, over 502,400 acres of forest were burned or charred in Arizona. The Rodeo-Chediski fire burned an area of 468,638 acres. The Bullock fire in the Santa Catalina Mountains burned 30,563 acres. The Oracle Hill fire burned over 2,400 acres. The Indian Fire consumed over 800 acres and was on the fringe of the city of Prescott.

With the many fires that occurred last summer in Arizona, the Arizona Riparian Council believes this is a topic of interest for our members. The title for this year's meeting is *Fire on the Watershed: Are We Burned Out or Ready to Fan the Flames?*

The morning plenary session will feature four speakers that will talk about various aspects of fire. Areas that will be addressed are fire history in Arizona, fire impacts on the watershed at the landscape level, streams and water quality effects of fires, and the effects of fires on riparian areas.

A registration form should be included into your newsletter. If not, you can go to the ARC website (<http://aztec.asu.edu/ARC/ARC.htm>).

The Hon-Dah Resort is holding a block of rooms for us at \$69/night single or double occupancy. Their reservations number is (800) 929-8744. The following directions are from their web page (www.hon-dah.com).

From Phoenix through Payson (191 miles): Take State Hwy 87 north to Payson, from Payson take State Hwy 260 east

to Show Low. In Show Low, continue on Hwy 260 through Pinetop/Lakeside. Hon-Dah is 3 miles outside of Pinetop at the Junction of Hwy 260 and 73.

From Phoenix through Globe (189 miles): Take U.S. Hwy 60 through Globe. From Globe, take Hwy 77 and U.S. Hwy 60 through the Salt River Canyon to Show Low. From Show Low, directions are the same as above.

From Tucson (208 miles): Take U.S. Hwy 89 north to Oracle Junction. At Oracle Junction, take State Hwy 77 north to Globe. From Globe, take Hwy 77 and U.S. Hwy 60 through the Salt River Canyon to Show Low. From Show Low, directions are the same as above.

At the annual meeting the Secretary and Treasurer positions are up for election. Biographies for the candidates are provided here. If you are interested in these positions please contact Kris Randall, Nominations Committee Chair, at (602) 242-0210 X250 or Kris_Randall@fws.gov.


CANDIDATE BIOS

Secretary

Cindy D. Zisner has lived in Arizona for 32 years. Currently, she is Secretary, Chair of the Education Committee, and Editor of the Newsletter for the Council. Cindy is a founding member of the Council. She holds a B.S. in Bioagricultural Sciences and a M.S. in Botany, both from Arizona State University and she is currently employed at the Center for Environmental Studies. At the

Center she is involved in many different projects including the National Science Foundation-funded Central Arizona - Phoenix Long-Term Ecological Research project. She is also Co-Chair of the River Management and Restoration Task Force. Cindy is strongly committed to the Arizona Riparian Council and providing education about riparian areas to the public.

Treasurer

Originally from Michigan, **Theresa Pinto** has lived in Arizona for about 13 years. She has been Treasurer for the Council for the last 3 years and has been an ARC member for 5 years. Theresa holds a B.S. in Natural Resources from the University of Michigan and a M.S. in Forestry, with an emphasis on wildlife ecology, from Northern Arizona University. Currently, Theresa is an environmental planner at the Flood Control District of Maricopa County. At the Flood Control District, she is involved with all aspects of environmental planning including ecological assessments, developing habitat restoration plans, hazardous waste investigation and cleanup, and archeology. Prior to working at Flood Control, most of her work experience was in environmental consulting, but she also has had a wide variety of jobs ranging from sales to field research. 

CLEAN WATER ACT PROTECTION—COMMENTS NEEDED!

By Julia Fonseca

The Bush Administration has released a proposal to pare back the Clean Water Act, along with guidance on how to interpret a recent court case. The proposal is viewable at www.eswr.com/swanccanpr.pdf. Rule changes being considered encompass all aspects of the Clean Water Act. The changes could reduce the scope of the Clean Water Act in Arizona. Meanwhile, the guidance may change how field offices will interpret who needs permits to modify streams or discharge pollutants to streams.

The Clean Water Act (CWA) regulates discharges of pollutants to streams, and is administered by Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) in various programs. The Section 402 program is also known as the National Pollutant Discharge Elimination System, and regulates municipal, construction and mining discharges to streams. (EPA can delegate certain responsibilities for regulating pollutants to the states, and Arizona just recently assumed this responsibility.) Section 404 of the CWA requires the Corps to regulate discharges of dredged or fill material into streams. This program affects those who fill in

channels for roads, homes, and other structures.

The Administration is considering fundamental changes in the types of waterways which would be afforded federal protection. The Administration will consider whether to eliminate CWA protection for various types of systems, potentially including intermittent streams, ephemeral streams, perennial streams deemed non-navigable, channelized or man-made drainages, streams tributary to larger streams, or wetlands or washes adjacent but not directly connected to perennial watercourses. An “advanced notice of public rule-making” was announced in the *Federal Register* on January 15.

COMMENTS ARE DUE BY MARCH 3 to Water Docket, Environmental Protection Agency, Mailcode 4101T, 1200 Pennsylvania Ave., NW, Washington, DC 20460. Attention Docket ID NO. OW-2002-0050.

“Removing federal Clean Water Act protection for non-navigable tributaries of navigable waters, including intermittent and ephemeral streams..... would reverse almost 30 years of national policy to protect the

nation’s waters,” according to the Association of State Wetland Managers (<http://www.aswm.org>). The total stream miles in Arizona has been estimated to be 127,505 (based on USGS digitized hydrology at 1:100,000). There are 112,900 mi (89%) of ephemeral streams. The effect of excluding ephemeral streams would be significant in Arizona.

Since 1984, dry washes in Arizona have been regulated under Section 404 of the CWA. Today, Section 404 helps to conserve riparian areas through providing a streamlined process for projects that disturb less than one-half acre of the stream. The desire to avoid individual Section 404 permits contributes to preserving washes. Projects that do require permits are minimizing or mitigating their impacts under the program.

Reductions in the extent of CWA jurisdiction would reduce protection for endangered species and archaeological and historical resources. Because issuance of the Section 404 permit is a federal action, the Corps has a responsibility to comply with the Endangered Species Act and the National Historic Preservation Act. 🐾



LEGAL ISSUES OF CONCERN

Richard Tiburcio Campbell, Law Offices of Withey, Anderson & Morris, Phoenix

CHERRY CREEK:

THE LEGAL CHALLENGE TO INSTREAM FLOW MAINTENANCE IN ARIZONA

Whether the Arizona Department of Water Resources (ADWR) has the authority to authorize the maintenance of instream flows in Arizona's streams and rivers is the fundamental water right issue currently before an administrative law judge in *In the Matter of Application for a Permit to Appropriate Public Water of Cherry Creek*, OAH Docket No. 02A-SW002-DWR. The issue is before the court due to Phelps Dodge's objection to Tonto National Forest's 1999 application to appropriate Cherry Creek flows for instream use in order to preserve its use for recreation and for wildlife purposes.¹ Cherry Creek is located in Gila County, within the Salt River watershed. Cherry Creek is a tributary of the Salt River above Roosevelt Lake.

Phelps Dodge challenges the Cherry Creek application by attacking the very foundation of the instream flow permit program. The challenge is made primarily on the basis that the Arizona Legislature has not explicitly authorized instream flow rights. Phelps Dodge also asserts that ADWR violated the State's Administrative Procedures Act by issuing instream flow rights without first promulgating rules for an instream flow permitting program.

Proper consideration of the arguments in this matter require some discussion of the development of the instream flow

permit program as it currently exists in Arizona.

BACKGROUND Early Arizona Water Law

Since before statehood Arizona has applied the law of prior appropriation (i.e., first in time, first in right) to its surface watercourses.² Under this doctrine a person generally obtains a surface water right in Arizona by manifesting the intent to appropriate the water, and then by putting the surface water to a "beneficial use."³ At least one pre-territorial case in 1888 required that the manifestation of intent be by "some open, physical demonstration." *Clough v. Wing*, 2 Ariz. 371, 382-83 (1888). In the early years of the State, physical diversion of water became the de facto rule for demonstrating the intent to appropriate water because surface water was overwhelmingly diverted for agricultural irrigation, municipal use, and mining. However, although the Arizona Legislature has had ample opportunity to do so, diversion of water has never explicitly been called out as a necessary requirement for appropriation of water in any case or statute.^{4,5}

*McClellan v. Jantzen*⁶

In this 1976 case the Arizona Court of Appeals held that the Arizona Game and Fish Department could not claim the right to excess water in lake for fishing and recreational purposes without first acquiring an

appropriative right to the excess water from ADWR. In doing so, however, the Court of Appeals discussed whether the appropriation of water required actual diversion. The Court said:

"The concept of diversion to effect beneficial use was consistent with the stated purposes for which an appropriation could be made prior to 1941, that is, domestic, municipal, irrigation, stock watering, water power and mining. However, in 1941 when 'wildlife, including fish' and in 1962 when 'recreation' were added to the purposes for appropriation, the concept of an *in situ* appropriation of water was introduced - it appearing to us that these purposes could be enjoyed without a diversion."⁷

The court's discussion does not end the matter because it is likely *dictum*, which means it is not binding precedent because it was a statement not necessary for the decision of the case. However, the logic contained in this statement has been relied upon by the state of Arizona to move forward with its instream use program.

Cont. pg. 16 ... Legal Issues

SPRING-FED WETLAND CONSERVATION IN PIMA COUNTY

By Julia Fonseca, Pima County Flood Control District

Springs are increasingly recognized as important and vulnerable centers of plant and animal diversity. Two large springs are owned by Pima County: Bingham Cienega and Agua Caliente Spring. These springs are biologically significant because they have large discharges, and are located at low elevations, unlike most other springs in Pima County.

Bingham Cienega is managed by the Nature Conservancy and is open to the public only through special arrangement. Bingham Cienega supports both an ash-forest swamp and approximately 22 acres of cattail-bulrush marsh. The endangered Huachuca water umbel was recently discovered there. Flows are highly variable. During wet years, the spring contributes flow to the San Pedro River.

Following its acquisition in 1989, the drainage ditches and berms were allowed to fill with vegetation, and grazing was eliminated. After a period of passive restoration, portions of the adjoining farm fields were revegetated with sacaton and native trees and shrubs by the

Nature Conservancy with funding from the Arizona Water Protection Fund and the Pima County Flood Control District.

Agua Caliente Park is managed by the Pima County Natural Resources, Parks and Recreation Department, and is open to the public during daytime hours. No swimming or fishing is allowed. Agua Caliente Spring is perennial, and has a discharge which supports roughly 7 acres of ponds and a small alkali sacaton grassland. Soils indicate that wetlands and shifting spring-fed channels once existed in the general vicinity of the ponds.

Certain plants, fish, leopard frogs, snakes and turtles that historically used the site have been lost. Furthermore, the ability of native riparian trees to establish and thrive seems to be impaired. Desiccation of the wetlands and the incursion of non-native fish and bullfrogs have occurred. Over time, biologists predict that the quality of the riparian areas will continue to decline.

A draft report by the U.S. Army Corps of Engineers recommends that changes be made at Pima County's Roy P.

Drachman-Agua Caliente Park to stem the loss of habitat for wetland species. Transforming two of the three spring-fed ponds into a system of streams and wetlands would provide native species more and better habitat conditions. Removal of all ponds is not realistic, due to the historic and aesthetic value of the pond closest to the picnic area.

The recommended alternative was developed in concert with local biologists and Pima County staff. Public debate is spirited, and has run the gamut from opposition to any change to support for removal of all ponds for wetland habitat restoration.

A decision whether to proceed with any changes would be made by the Pima County Board of Supervisors. If the board approves an agreement with the Corps, the Corps and County would proceed with detailed design studies. The recommended alternative is described, along with data and public comment, on the web at <http://www.dot.co.pima.az.us/flood/AguaC/index.htm>. 

NEW STATE AUDUBON DIRECTOR

By Sam Campana, Director


We are going to do great things together in Arizona. Audubon has already been successful on several public policy issues.

We are getting Important Bird Areas nominated from all over Arizona. Scott Wilbor, the IBA coordinator, is doing a

tremendous job being certain that the process is made easy, and that Arizona gets national prominence for our unique habitats for birds.

We are working hard on identifying the first site in Arizona for an Audubon Center. We know it will be in

Maricopa County, probably in central Phoenix at the Rio Salado. We are meeting with federal agencies, state departments, county districts and city officials.

I am SO enjoying this new job. I hope to be here for the next 15 years! 



NOTEWORTHY PUBLICATIONS

Jere Boudell, Department of Plant Biology, Arizona State University

J. L. Horton and J. L. Clark, 2001. Water table decline alters growth and survival of *Salix gooddingii* and *Tamarix chinensis* seedlings. *Forest Ecology and Management* 140: 239-247.

Impoundment alters river hydrology causing water table decline, increasing channel incision, and decreasing sediment loads. Altering a flood regime can deleteriously affect species adapted to a specific flood regime. It has been suggested that the exotic species that successfully establish in altered riparian areas do so because they are more adapted to the new conditions than the species that inhabited the area before the alteration occurred. One suggestion for the change in community composition is that the successful exotic species can survive the higher rate in groundwater decline. Horton and Clark investigated the effects of varying rates of water table decline on the native *Salix gooddingii* (Goodding's willow hereafter willow) and the exotic *Tamarix chinensis* (saltcedar).

The authors collected seeds from willow and saltcedar at both the Hassayampa and Bill Williams Rivers. Fifteen growth tubes were connected to a reservoir of water. Seven tubes contained willow, seven contained saltcedar, and one was used to measure the volumetric water content. The entire structure is referred to as a rhizopod. The reservoir of water within each rhizopod was

manipulated to simulate a rate of groundwater decline of 0, 1, 2, or 4 cm/day. Seedling mortality and plant height was measured twice per week. After water levels reached the bottom of both the 2 and 4 cm/day treatment, plants were harvested. Total biomass, root length, leaf area, and root-to-shoot ratios were determined for each species and were compared between treatments.

The results of this investigation found that soil drying occurred after 22 days in the 1 cm/day treatment, after 8 days in the 2 cm/day treatment, and after the first measurement in the 4 cm/day treatment. Willow was found to have greater lateral root development than saltcedar; however, willow had a slower rate of root growth than saltcedar. The exotic saltcedar had lower biomass productivity, but a higher rate of root elongation than willow. The authors suggest that the greater lateral root development and slower rate of root growth in willow allows it to successfully establish near shallow stream edges, but also makes it more susceptible to suffer due to the greater rate of groundwater decline present in rivers with altered flood regimes. Saltcedar, on the other hand, with its lower biomass productivity and higher rate of root elongation has a competitive advantage in altered riparian areas.

Horton and Clark recommend to those who manipulate the flood regimes in managed riparian areas to

consider not only seed production and germination phenology, but also root growth rates of the varying riparian species in the areas in which they manage.

Horton, J. L. Kolb, T. E., and S. C. Hart. 2001. Physiological response to groundwater depth varies among species and with river flow regulation. *Ecological Applications* 11(4): 1046-1059.

Woody species present in Southwestern riparian ecosystems rely on both groundwater and the associated capillary fringe. Decreases in water availability deleteriously affect native woody riparian species and can also affect community composition when conditions begin to favor species more tolerant of drier conditions. Native woody species such as *Populus fremontii* (Fremont cottonwood hereafter cottonwood) and *Salix gooddingii* (Goodding's willow hereafter willow) are susceptible to xylem cavitation brought on by drought conditions, whereas the exotic *Tamarix chinensis* (saltcedar) is more tolerant. Xylem cavitation causes other changes in physiology such as decreased xylem hydraulic conductance, which leads to loss of turgor pressure, decreased stomatal conductance, decreased photosynthesis, and branch and crown mortality. Horton et al. investigated the physiological condition of cottonwood, willow, and saltcedar in areas


that vary in depth to groundwater. They wanted to know if an increase in groundwater depth would cause a decrease in tree shoot water potential that would lead to decreased stomatal conductance, decreased net photosynthesis, and increased canopy dieback. They also wanted to know if differences occurred in sensitivity to groundwater decline between the species under investigation. Finally, they wanted to know if trees located on the unregulated Hassayampa River were less sensitive to variation in groundwater depth than trees located on the regulated Bill Williams River.

Horton et al. collected data along seven transects at each river. The uppermost transect

was located along a perennial portion of the reach and the lowermost along an ephemeral portion. Depth to groundwater (DGW) was measured at each transect. They also measured shoot water potential of terminal twigs, leaf gas exchange of water vapor and CO₂, and recent crown dieback.

The results of the investigation revealed that an increase in DGW resulted in a decrease in shoot water potential, which caused decreased stomatal conductance, decreased net photosynthesis and increased canopy dieback and mortality in both cottonwood and willow. They also found that a threshold of 2.5-3.0 m in DGW existed for both species. Saltcedar was found to be less sensitive, in fact more tolerant of extreme

water stress induced by increased DGW. DGW was found to be consistently shallow at the Bill Williams River and did not significantly affect the physiological condition of any of the species under study. However, at the Hassayampa River, DGW varied in both time and space, which did affect the physiological condition of the investigated species.

The management implications of the Horton et al. investigation are to keep groundwater depth in managed rivers below the physiological threshold in order to encourage and support the establishment and survival of native riparian species. 

Legal Issues Cont. from pg. 13

ADWR's Ramsey Creek Order

After the *McClellan v. Jantzen* decision, several instream flow applications were made to ADWR. The Nature Conservancy's application to appropriate water for instream flows on Ramsey Creek was the first to be seriously challenged. Relying upon the *McClellan* decision, ADWR made its first ruling in regard to instream flows and approved the Ramsey Creek permit over the objections in 1983. No appeals were made to this decision.⁸

ADWR Instream Flow Task Force

ADWR created a task force in 1986 whose goal was to recommend rules or guidelines for ADWR's nascent instream

flow program. The Task Force, comprised of federal, state, county, and environmental nonprofit stakeholders, including the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, the Arizona Attorney General's Office and Salt River Project (SRP), assumed that Arizona law did not require that surface water be diverted to reflect intent to appropriate. The task force resulted in ADWR's issuance of its first *Guide to Filing Applications for Instream Flow Water Rights in Arizona* in 1991, which was updated in 1997.

Governor Mofford's Executive Order

Although ADWR had been approving instream flow applications since 1983, by 1991 there had yet to be any movement by the Legislature to

codify an instream flow program. In response, Governor Mofford gave explicit recognition to instream flow rights in a 1991 executive order wherein she stated,

*"In recognition of the critical nature of riparian areas of the State, it is hereby determined that the policy of the State of Arizona shall be: ... (e) To encourage the preservation, maintenance and restoration of instream flows throughout the State."*⁹

Legislative Inaction

Oregon very likely holds the distinction for being the first western state to protect instream flows when in 1929 it prevented the diversion of stream flows in order to protect scenic falls in the Columbia River Gorge.¹⁰ Not until the early 1970's, however, did the concern for maintaining

instream flows result in state recognition of instream flow rights. Currently, nearly every western state, including Alaska¹¹, Colorado¹², Idaho¹³, Oregon¹⁴, Montana¹⁵ (as reaffirmed in a recent 2002 decision by its Supreme Court), Washington¹⁶, and Wyoming¹⁷, has chosen to explicitly allow for the maintenance of instream flows.

In 1992, the Arizona Legislature debated a bill that would codify an instream flow program. However, the bill was altered to instead create a Riparian Area Advisory Committee (RAAC) to study the issue further and provide recommendations to the Legislature.¹⁸ [Editor's note: *The Arizona Riparian Council was part of this Committee. After meeting for 1.5 years, RAAC submitted a final report to the Governor and Legislature describing various regulatory and nonregulatory approaches that could be implemented to protect and maintain Arizona's valuable riparian areas.*] No legislation ever resulted.

PHELPS DODGE'S ARGUMENTS

Protests to instream flow applications may be filed by any person who alleges that the proposed instream flow appropriation conflicts with vested water rights, is a menace to public safety, or is against the interests and welfare of the public. In October 1999 a number of protests to the Cherry Creek instream flow application were filed, including a protest by Phelps Dodge.¹⁹ After its objections were not resolved informally by Tonto National Forest, Phelps Dodge filed a request (along

with SRP, although SRP has since sided with ADWR in regard to the overall legality of the instream flow program[†]) for an administrative hearing.

No Legal Authority For Instream Flow Permits.

Phelps Dodge's primary assertion centers on the legislative silence in regard to instream flow rights: "*If the Arizona legislature had intended to allow instream flow rights as a prior appropriation and beneficial use of water, it surely would have done so with express and unambiguous statutory language.*"²⁰ As proof Phelps Dodge cites Governor Mofford's 1991 Executive Order, which according to Phelps Dodge recognized that statutory authority was necessary for ADWR to authorize instream flow rights. In the Order, Governor Mofford states that ADWR "*shall ... coordinate with other state agencies to develop legislation to protect instream flows....*"

Finally, Phelps Dodge asserts that ADWR unjustifiably relied upon the discussion of instream flow rights in the *McClellan v. Jantzen* decision to justify its instream flow program. Since it is *dictum*, Phelps Dodge reasons, it should not have served as precedent for ADWR decision-making.

[†]The SRP protest was based on its longstanding assertion that since water in the Salt and its tributaries is fully appropriated, the granting of instream flow rights in Cherry Creek to Tonto National Forest could conflict with the vested rights of SRP shareholders. SRP shareholders water rights were adjudicated in 1910 when the Kent Decree was issued by an Arizona territorial court. SRP's objection to the Cherry Creek application is narrowly focused on the impact of Cherry Creek instream flow on specific SRP operations. SRP, however, is actively supporting ADWR in defending against Phelps Dodge's global challenge to instream flows.

Prohibition of ADWR's Instream Flow Permits

Phelps Dodge also argues that ADWR failed to engage in proper rulemaking under the State's Administrative Procedures Act (APA) in regard to its instream flow permit program. As such, ADWR's *Guide to Filing Applications for Instream Flow Water Rights in Arizona* is considered invalid rulemaking. Also, in the absence of "fair and open" rules required under the APA there exists the risk that ADWR will "quietly issue" instream flow permits without fully informing the public.²¹

ADWR AND SRP'S RESPONSE Diversions Unnecessary

For ADWR and SRP to argue that there is no clear authority or precedent under State law requiring that the intent to appropriate surface water be demonstrated by an actual diversion of surface water. They argue that the Arizona Territorial Court decision in *Clough v. Wing*, which required that manifestation of intent be by "some open, physical demonstration," is not persuasive authority because it was decided prior to the enactment of any specific statute regarding prior appropriation. Also, they point out that historically the "open, physical demonstration" requirement was meant to provide notice to other appropriators rather than the construction of a physical diversion.²²

FOLLOW THE LOGIC OF MCCLELLAN V. JANTZEN

Phelps Dodge asserts that the discussion of instream flow rights in *McClellan v. Jantzen*

was *dictum*. In response, ADWR and SRP urge the court to examine the rationale expressed by the Court of Appeals in that case, rather than decide whether the case is *dictum* or binding precedent.²³

ADWR Not Required to Adopt Instream Flow Rules

ADWR and SRP also counter Phelps Dodge's argument that ADWR had not adequately promulgated rules for processing instream flow applications as required under the APA. They assert that ADWR need not adopt rules for instream flow permits because the legal authority to issue such permits is contained in the surface water code itself, which provides the application requirements for appropriation of water.²⁴ ADWR also claims its public notice procedures provide the public with adequate notice of instream flow applications, so rule-making is not required.²⁵ Finally, they note that the *Guide to Filing Applications for Instream Flow Water Rights in Arizona* is not intended to be a rule, but is rather a "substantive policy statement" properly adopted by ADWR pursuant to the APA.

CONCLUSION

The decision by the administrative law judge in the *Cherry Creek* matter will likely be appealed to Maricopa County Superior Court no matter how the court decides to resolve the issue. The judge is expected to make a decision early this year, perhaps as soon as late January. It is very pos-

sible that the significant environmental and water rights issues at stake in this case means its ultimate resolution will be by the Arizona Supreme Court.

REFERENCES

1. Application for Permit to Appropriate Public Water of the State of Arizona - Instream Flow Maintenance No. 33-96609 (Jul. 30, 1999).
2. *Hill v. Lenormand*, 2 Ariz. 354 (1888)
3. A.R.S. §454-141(B).
4. See A.R.S. §45-152.A.4 and 5, §45-158, §45-160, and §45-162.
5. John D. Leshy, "Protecting Streamflows in Arizona, Arizona Waterline (1989) ([D]iversion has never been an explicit, absolute requirement of Arizona water law.").
6. 26 Ariz. App. 223 (App. 1976).
7. Id. at 225.
8. DWR Decision and Order, *In the Matter of the Applications for a Permit to Appropriate Public Waters of the State of Arizona* Nos. 33-78419 and 33-78421 (Apr 29, 1983).
9. Executive Order No. 91-6 (Feb. 14, 1991).
10. Berton Lee Lamb, "Criteria for Evaluating State Instream-Flow Programs: Deciding What Works," *Journal of Water Resources Planning and Management* (May/June 1995).
11. AS §§46.15.030; 46.15.145.
12. CRS §37-92-102(3).
13. ICA §455A.22.
14. ORS §§536:235, 332-360.
15. MCA §85-2-316
16. WRC §90.22.010.
17. WSA §§41-3-1001 - 1014.
18. Lois Kulakowski and Barbara Tellman, "Instream Flow Rights: A Strategy to Protect Arizona's Streams," University of Arizona Water Resources Research Center (May 1994).
19. Letter dated Nov. 24, 1999 from Michael Brophy on behalf of Phelps Dodge to Rita Pearson, ADWR, in opposition to the Cherry Creek application.
20. Memorandum of Points and Authorities of Phelps Dodge Corporation at 7 (Nov 22, 2002).
21. Id. at 7-10.
22. SRP's Responsive Prehearing Legal Memorandum on Instream Flow Issues at 6 (Dec. 11, 2002); ADWR's Responsive Prehearing Legal Memorandum at 4 (Dec. 11, 2002).
23. SRP's Responsive Memorandum, *supra*, at 7; ADWR's Prehearing Legal Memorandum at 7 (Nov. 22, 2002).
24. A.R.S. §45-153.
25. ADWR Prehearing Memorandum, *supra*, at 7-9.
26. Request for Hearing, Docket No. 02A-SW002-DWR (Jun 20, 2002).
27. Executive Order 91-6 (Feb. 14, 1991).



The Arizona Riparian Council (ARC) was formed in 1986 as a result of the increasing concern over the alarming rate of loss of Arizona’s riparian areas. It is estimated that <10% of Arizona’s original riparian acreage remains in its natural form. These habitats are considered Arizona’s most rare natural communities.

The purpose of the Council is to provide for the exchange of information on the status, protection, and management of riparian systems in Arizona. The term “riparian” is intended to include vegetation, habitats, or ecosystems that are associated with bodies of water (streams or lakes) or are dependent on the existence of perennial or ephemeral surface or subsurface water drainage. Any person or organization interested in the management, protection, or scientific study of riparian systems, or some related phase of riparian conservation is eligible for membership. Annual dues (January-December) are \$20. Additional contributions are gratefully accepted.

This newsletter is published three times a year to communicate current events, issues, problems, and progress involving riparian systems, to inform members about Council business, and to provide a forum for you to express your views or news about riparian topics. The next issue will be mailed in May, the deadline for submittal of articles is April 15, 2003. Please call or write with suggestions, publications for review, announcements, articles, and/or illustrations.

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 - Marty Jakle (602) 242-0210
- Protection/Enhancement
 - Kris Randall (602) 242-0210 X250
Kris_Randall@fws.gov
 - Bill Werner (602) 789-3607
bwerner@gf.state.az.us
- Water Resources
 - Julie Stromberg (480) 965-0864

CALENDAR

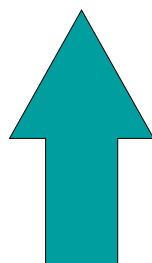
Arizona Riparian Council Board of Directors Meeting, February 19, 4 PM, Maricopa County Flood Control District Offices, Phoenix. Contact Cindy Zisner, Cindy.Zisner@asu.edu or (480) 965-2490.

Fire on the Watershed: Are We Burned Out or Ready to Fan the Flames?
Arizona Riparian Council 17th Annual Meeting, April 4-5, 2003, Hon-Dah Resort, Pinetop, AZ. Contact Cindy D. Zisner, Cindy.Zisner@asu.edu or (480) 965-2490 for registration information.

Lessons Learned – Gateway to Flood Mitigation, Association of State Floodplain Managers, May 11-14, 2003, St. Louis, MO. Contact Association of State Floodplain Managers, (608) 274-0123 for more information or <http://www.floods.org/StLouis/>.



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