



Arizona Riparian Council

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THE LOWER COLORADO RIVER MULTI-SPECIES CONSERVATION PROGRAM

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The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is an ambitious, regionally coordinated conservation program with an "ecosystem-based" approach to conserving species and habitats along the lower Colorado River. By implementing this program, federal and nonfederal water and power agencies intend to achieve long-term compliance with state and federal endangered species laws. This article provides an overview of relevant background events, the LCR MSCP Plan development process, and the regulatory process associated with the development of the LCR MSCP.

BACKGROUND

In 1994, the U.S. Fish and Wildlife Service (USFWS) designated critical habitat for the four endangered "big river" fishes within the Colorado River Basin (bonytail chub, razorback sucker, humpback chub, and Colorado River squawfish). Section 7(a)(2) of the federal

Endangered Species Act (ESA) prohibits federal agencies from authorizing, funding, or implementing actions that jeopardize the continued existence of an endangered species or adversely affect designated critical habitat of an endangered species. Federal agencies whose discretionary actions may adversely affect designated critical habitat of endangered species are required to consult with the USFWS under Section 7 of the ESA regarding these actions.

In the lower basin of the Colorado River (below Lees Ferry, Arizona), the U.S. Bureau of Reclamation (USBR) serves as the custodian for the Secretary of the Interior (Secretary) in his role as the Watermaster of the river. Management of the Colorado River is governed by an international treaty with Mexico and several minutes to the international treaty, two interstate compacts, a Decree of the U.S. Supreme Court, various statutes, and contracts between the United States and water and power customers. All of these agreements and regulations are collectively known as the Law of the River. The

Secretary, via the USBR, is required to operate the river within the framework established by the various components of the Law of the River; however, the USBR has some discretion involving certain aspects of river operations and maintenance. In addition, the Secretary is responsible for enforcing the provisions of the ESA through the USFWS, and thus is required to ensure that river operations and maintenance actions do not jeopardize the continued existence of threatened and endangered species or adversely modify designated critical habitat.

Following the 1994 designation of critical habitat for the big river fishes, the USFWS met with USBR to discuss development of a Biological Assessment (BA) under Section 7 of the ESA

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Razorback sucker

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PRESIDENT'S MESSAGE

Every year at our annual meeting, we have our election of officers.

Secretary and Treasurer are two offices that are elected every three years. President and Vice President are elected every year. This time frame for elections is spelled out in ARTICLE II OFFICERS of the Council's By-laws. The Board of Directors, comprised of the President, Vice President, Secretary, Treasurer, Committee Chairs, and Members-at-Large propose a change to this time frame. We propose to change the election of the President and Vice President to every three years. This change is proposed as a means to coordinate Council business. Traditionally the Vice

President has gone on to become President. Any change to the By-laws requires a vote by Council members. We will discuss this change at the annual meeting. This discussion is planned for Friday morning, before the start of the plenary session.

In addition, a change to ARTICLE III BOARD OF DIRECTORS Section 1 is also proposed. One of the Board of Directors is the Council delegate to the Western States Riparian Council. I believe this Council is no longer functioning. Therefore, it is proposed to take this out of the By-laws. The proposed changes are shown in the box below.

At this time, the current President and Vice President are

myself and Janet Johnson, respectively. We are running for re-election. If you would like to nominate someone for those positions please contact Cindy Zisner at (602) 965-2490 or Cindy.Zisner@asu.edu.

If you cannot attend the annual meeting and want to comment on these changes, please call me at (602) 831-8780 and I will relay your comments to the membership at the meeting. I look forward to seeing you in April. The topic on grazing should be lively as well as interesting.

Kris Randall, President

PROPOSED CHANGES

ARTICLE II OFFICERS

Section 1. President. The President shall have general direction of the Council officers, shall appoint, with the assistance of the Board of Directors (Article III, Section 4), Chairs of all regular and special committees, shall preside at meetings of the Board of Directors and Council, and shall be ex-officio a member of all committees. The President shall serve in office for one year three years and shall be eligible for re-election.

Section 2. Vice President. The Vice President shall assist the President in duties where needed. In the absence of the President, or in the event of the inability of the President to act, the President's duties shall be assumed by the Vice President. The Vice President shall serve in office for one year three years and shall be eligible for re-election.

ARTICLE II BOARD OF DIRECTORS, Section 1. Number and Qualification.

The Board of Directors shall consist of the Council officers, chairs of the standing committees, the Council delegate to the Western States Riparian Council, and not more than three other at-large members of the Council.

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for operations and maintenance of the lower Colorado River. The USBR initiated formal consultation with the USFWS in March 1996, the same month that the public review draft of the BA was published. The BA, which analyzes the impacts of the discretionary portion of the USBR's operations and maintenance activities on the lower Colorado River was finalized in August 1996. On April 30, 1997, the USFWS issued a Biological Opinion (BO) for the consultation, which specified a Reasonable and Prudent Alternative (RPA) with 17 provisions that would minimize the impacts of take or avoid the likelihood of jeopardizing the continued existence of listed species or adverse modification of critical habitat. One of the specified provisions (RPA 12) is active USBR participation, and encouragement of other federal and nonfederal agencies to participate, in the LCR MSCP.

Given their legal entitlements to Colorado River water and hydropower resources, the three lower Colorado River basin states, Indian Tribes along the river, and other nonfederal interests (e.g., agricultural

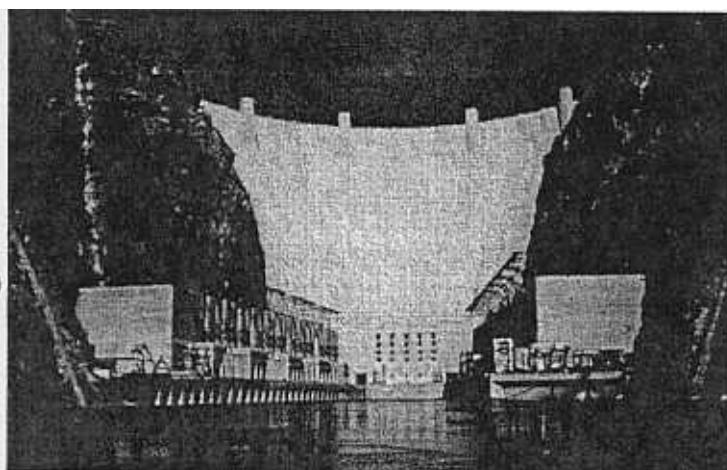
irrigation districts, biological resource management agencies, power providers, and water supply agencies) have a vested interest in the outcome of any consultations between USBR and USFWS that may affect the manner in which USBR operates the lower Colorado River to avoid jeopardizing endangered species or adversely modifying designated critical habitat. As a result, early in 1994 following publication of the proposal designating critical habitat for the big river fishes, nonfederal public agencies, private organizations, and Indian Tribes in the three lower basin states (AZ, CA, and NV) initiated a planning process that would work towards developing and implementing a multi-species management program. The objectives of the multi-species management program were to accommodate current water diversions and power production and optimize future water and power development opportunities; conserve habitat and work toward recovery of endangered species; and reduce the likelihood of additional threatened and endangered species listings.

In 1995, a Memorandum of Understanding (MOU) was developed among the three lower

Colorado River Basin states (including wildlife resource agencies) and the U.S. Department of Interior to establish a forum for considering "all matters related to the effects of water and power resources development, management, operations, maintenance and replacement, or activities to offset those effects, to endangered, threatened, and candidate species within the 100-year floodplain of the mainstem Colorado River and the full pool elevation of the affected reservoirs from below Glen Canyon Dam to the Southerly International Boundary." This MOU ultimately led to the development of a Memorandum of Agreement (MOA), signed August 2, 1995, and later clarified with a Memorandum of Clarification (MOC) in July 1996, that called for the development of a Multi-Species Conservation Program for the lower Colorado River. Signing the MOU and the MOA/MOC were representatives from the U.S. Department of Interior, Arizona Department of Water Resources, Arizona Game and Fish Department, California Department of Fish and Game, Colorado River Board of California, Colorado River Commission of Nevada, and Nevada Division of Wildlife.

As described in the MOA/MOC, the objectives of developing the MSCP are to:

- conserve habitat and work towards the recovery of "included species" within the 100-year floodplain of the lower Colorado River, pursuant to the ESA, and attempt to reduce the likelihood of additional species listings under the ESA; and



*Hoover Dam
(Photo source:
U.S. Bureau
of Reclamation)*



Southwestern willow flycatcher (Photo: George Andrejko).

- accommodate current water diversions and power production and optimize opportunities for future water and power development, to the extent consistent with law.

A list of 102 species of plants and animals was proposed for inclusion in the LCR MSCP (the “included species”).

The LCR MSCP is governed by the 35-seat LCR MSCP Steering Committee. Steering Committee membership includes five members from each of the following agencies or interests:

1. U.S. Department of Interior (Department of Interior, USBR, USFWS, National Park Service, Bureau of Land Management, Bureau of Indian Affairs)

2. State of Arizona (Arizona Department of Water Resources, Arizona Game and Fish Commission, Arizona Power Authority, Central Arizona Water Conservation District, Wellton-Mohawk Irrigation and Drainage District)

3. State of California (Colorado River Board of California,

California Department of Fish and Game, California agricultural interests, California urban interests, California power interests)

4. State of Nevada (Colorado River Commission of Nevada [two seats], Nevada Division of Wildlife, Southern Nevada Water Authority, power customers of the Colorado River Commission)

5. Indian Tribes (Colorado River Indian Tribes [also representing Chemehuevi, Ft. Yuma-Quechan, Ft. Mojave Indian Tribes, and Cocopah tribes], Hualapai Tribe)

6. Environmental organizations (five seats to be filled)

7. Other public or private entities (City of Yuma, City of Needles, Trout Unlimited/B.A.S.S., two seats to be filled)

The Steering Committee has appointed a Working Group (Work Group) to oversee the technical development of the MSCP with Steering Committee oversight and approval. The Work Group has also formed a number of technical subcommittees to provide guidance on specific technical or policy subjects. These include the Biology Subcommittee, Hydrologic Modeling Subcommittee, Peer Review Subcommittee, Projects List Subcommittee, Funding and Financing Subcommittee, Implementation Issues Subcommittee, Compliance Subcommittee, and Public Outreach Subcommittee.

In January 1997, the Steering Committee was designated an Ecosystem Recovery and Implementation Team (ECRIT) by the USFWS, pursuant to Section 4(f)(2) of the ESA. The designation of the LCR MSCP Steering Committee as an ECRIT is somewhat unique in that it provides ECRIT status to a major group of water and power stakeholders. The designation

was deemed appropriate, however, given the Steering Committee's objectives of conserving habitat and working towards recovery of declining species, while accommodating current and future water and power uses of the river. In this role, the Steering Committee will advise the USFWS on various actions to conserve native species, while considering human water and hydroelectric power needs.

A budget of \$4.5 million was established for the LCR MSCP Plan development, facilitation services, contract administration by the National Fish and Wildlife Foundation, and interim conservation measures (ICMs); and a cost-sharing agreement for the \$4.5 million was negotiated among the states and the federal government. The contract to develop the LCR MSCP Plan was awarded in September 1997 and included preparation of all required environmental analyses and documentation.

The LCR MSCP is funding ICMs to provide critical short-term conservation actions for important species during the development of the long-term conservation plan. The LCR MSCP has focused these efforts on endangered fish species, the razorback sucker and bonytail chub, and on endangered riparian bird species, such as the southwestern willow flycatcher, and their habitat. The specific projects include: Native Fish Work Group efforts to augment the aging razorback sucker population in Lake Mohave; the Achii Hanyo fish rearing facility on the Colorado River Indian Tribes (CRIT) Reservation; development of leopard frog refugium by National Park Service; riparian restoration programs at the Fort Mohave

Tribe's Twin Lakes project; the CRIT Deer Island riparian restoration project, riparian restoration efforts at the Havasu National Wildlife Refuge (NWR), and installation of exclusion fencing to protect riparian habitat at the Bill Williams NWR.

MSCP PLAN DEVELOPMENT PROCESS

The initial phase of MSCP Plan development involved construction of the LCR MSCP database and acquisition of relevant literature. The database has been assembled in a Geographic Information System (GIS) platform, which allows the development of various spatially explicit data layers (e.g., vegetation community distributions, species distributions, soil types, land use, ownership, etc.). The LCR MSCP GIS database has been organized at three different spatial scales: (1) watershed scale—generally at a 1:250,000 scale and covering the watershed of the lower Colorado River within the three lower basin states; (2) river scale—generally 1:24,000 scale and providing greater detail for the 100-year floodplain and reservoir full pool elevations; and (3) reach scale—to be developed for specific reaches of the river at scales necessary to support requisite analyses. Relevant literature, both peer-reviewed and gray, are being acquired and entered into a bibliographic database. We envision GIS database development and acquisition of relevant literature to proceed, as needed, throughout the plan development and implementation phases.

The next step in plan development involved refining the list of species to be included in the planning process. The Steering

Committee's original list of 102 species was re-evaluated, and additional species were recommended for consideration in the MSCP Plan. The augmented list of 119 species was then divided into six groups:

- (1) *Priority species*—species that are federally or state listed, proposed for listing, candidates for listing or have a high likelihood of being listed during the planning horizon of the MSCP; that have regionally significant populations in the study area; and are likely to be affected by the LCR MSCP.
- (2) *Endemic planning species*—species that are geographic or soil endemics in the study area or that have a wider distribution but are associated with a particular microhabitat that is limited in the study area.
- (3) *Habitat-based planning species*—species that are considered to benefit from the habitat-based conservation actions implemented for Groups 1 and 2.
- (4) *Species not recommended for further evaluation at this time.*
- (5) *Species that do not currently occur in the planning area but may be repatriated in the future (e.g., Colorado squawfish).*
- (6) *Species that do not currently occur in the planning area but which may be affected by operation and maintenance of the lower Colorado River (e.g., totoaba, vaquita).*

At this time, conservation strategies will be developed for, and ESA take authorizations will be sought for, Groups 1, 2, and 3.

To determine the conservation needs of the species and justify their placement into one of these six groups, species accounts were developed for each species, describing relevant status, life

history requirements, distribution and important populations, and management needs. Using this information, the LCR MSCP Biology Subcommittee recommended LCR MSCP conservation goals for all Group 1 and 2 species (i.e., those species that require species-specific conservation actions to enhance their populations). These goals also include recommended measures to achieve the defined goals, such as achieving target population sizes, restoring acreages of habitats or establishing numbers of additional breeding locations, as well as monitoring, management and research needs. The species goals will be used as a basis for developing conservation strategies that will accomplish the overall LCR MSCP goal of working towards the recovery or preventing future listing of these species, while accommodating current and future water and power uses. A major component of the species goals is the proposed restoration of thousands of acres of riparian habitat suitable to support new breeding centers for species such as the southwestern willow flycatcher, western yellow-billed cuckoo, and other riparian-associated wildlife.

The species conservation goals and suggested measures described above will provide a basis for determining how much conservation will be provided to reverse the decline of the LCR MSCP priority and planning species, although costs, feasibility, and other factors will be taken into consideration during the development and adoption of a preferred conservation strategy by the Steering Committee. We have

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SPECIES PROFILE



WHAT'S GOING ON WITH ARIZONA'S LEOPARD FROGS?

by Michael J. Sredl, Arizona Game and Fish Department

The Southwest, with its blistering summer heat, low humidity, flash floods, and other natural forces that helped shape the saguaro cactus, spectacular canyon lands, and other features familiar to its residents is also home to a group of frogs whose North American relatives have, at various times, been called spring frogs, marsh frogs, and grass frogs. In a sense, with their moist, permeable skin and aquatic life history, the survival of southwestern leopard frogs (as they are now commonly called) and their relatives has been precarious for a long time. But in spite of conditions seemingly inhospitable to aquatic frogs, they were until recently common inhabitants of Arizona's wetland and riparian systems. What's led to the decline of these important components of Southwest aquatic systems? No one knows for sure, but highly predacious nonnatives (sport fish, bullfrogs, and crayfish), habitat destruction and fragmentation, disease, and environmental contaminants have been implicated in some of the population declines in Arizona (for a review of global amphibian population declines, see Blaustein and Wake 1990 or Phillips 1994). Understanding the basic biology and status and distribution of this group is the first step to formulating sound management plans. Towards this end, I will briefly review a few simple behavioral and morphological characteristics

useful in frog identification, then review the status of Arizona leopard frogs, and finally outline management approaches being developed to identify and stabilize important local leopard frog populations.

Ranids (frogs of the family Ranidae) in Arizona are the leopard frogs (five or six native and one introduced species), the Tarahumara frog and the bullfrog (introduced). Distinguishing ranid frogs from other Arizona frogs and toads is not too difficult, due to the excellent jumping ability of ranids (they can jump a meter or more in a single bound!). They are the most aquatic of Arizona's amphibians, usually found near permanent water except during summer rains. Fitting with their "aquatic lifestyle," they have relatively smooth skin and hind feet with well-developed webbing. Although difficult to tell from one another, a few additional characters can distinguish leopard frogs from the other Arizona ranids. Leopard frogs, true to the cat from which they derived their common name, have well-defined spots. They also have paired glandular ridges (dorsolateral folds) running down each side of their back; these are absent in bullfrogs and very weak in the Tarahumara frog. Bullfrogs often chirp or

squeak when they jump, whereas leopard frogs and the Tarahumara frog don't (for more information on identifying Arizona amphibians, see Stebbins 1985).

As a first step to understand the pattern and scale of decline of Arizona leopard frog populations, Arizona Game and Fish initiated statewide surveys for all native ranids in 1990. The results of these surveys have confirmed the findings of earlier studies indicating that nearly every native ranid frog in Arizona has declined over the past two or three decades. There are strong survey data to support the contention that the Tarahumara frog and at least three of the five native Arizona leopard frog species (northern, Chiricahua, and lowland leopard frogs) have been extirpated or have declined. For two of these three species, northern and Chiricahua leopard frogs, the



Artwork by Randy Babb.

statewide pattern of occupancy of historical localities is similar: they are apparently absent from many sites that supported populations as recently as the late 1970s to mid 1980s. Though never broadly distributed in Arizona, the Tarahumara frog is now extirpated, having disappeared from all known localities in Arizona during the late 1970s and early 1980s.

Lowland leopard frog
populations have not shown a severe, rangewide decline. This species appears stable in central Arizona, but our surveys verified the findings of earlier studies which found that this species is doing poorly in southeast Arizona and the lower Gila and Colorado rivers. The status of Ramsey Canyon and plains leopard frogs is less clear. Populations of the newly described Ramsey Canyon leopard frog are restricted to a few canyons in the Huachuca Mountains. Since they have been studied, these populations have been fairly stable, but their small number and size make them vulnerable to a variety of potential threats. Data for the plains leopard frog possibly indicate a severe decline, but because of poor access to potential habitats, survey data are incomplete.

In order to stabilize important populations, Arizona Game and Fish and others have begun to develop and test management strategies to help restore functioning metapopulations (a metapopulation is a population of populations) to appropriate areas. Techniques which we are evaluating include 1) *ex situ* captive breeding and/or rearing of tadpoles for release (as juveniles) to the wild, 2) translocating wild eggs, tadpoles, and frogs, 3) removing non-

native species, and 4) renovating or creating habitat. Our intent is to use a coordinated mix of these and other techniques, tailored to the needs of particular situations.

One of our first steps in formalizing our approach to conservation and management of Arizona leopard frogs is development of the concept of Conservation and Management Zones (CMZs). Using data from the statewide surveys mentioned above, we are beginning to identify areas of critical conservation need. To do this we are establishing criteria for prioritizing populations from a statewide conservation perspective. These criteria include: 1) overall status of the species, both statewide and global (i.e., a highly sensitive species endemic to Arizona receives higher conservation priority than a geographically widespread species whose status in Arizona is less critical), 2) geographical context of a population or cluster of populations (i.e., those in a region of severe decline or in a remote area that is unlikely to be naturally recolonized in the event of local extinction receive highest priority), 3) evolutionary context of a population or cluster of populations (i.e., those that are important due to genetic distinctness or diversity receive highest priority), 4) manageability of the population or area (i.e., those populations in areas where threats are most likely to be controllable and land owners or managers are willing and able to cooperate receive highest priority), and 5) complexity and cost (i.e., those populations that can be stabilized or recovered through use of the fewest, simplest, and most cost-effective conservation actions receive highest priority).

Statewide surveys conducted by Arizona Game and Fish have provided, and will continue to provide, most of the information we will need to address the first two criteria. However, site specific observations collected by professionals such as those who belong to the Arizona Riparian Council can greatly increase our knowledge base. With cooperating academic biologists, we are beginning to gather the sorts of genetic information necessary to address the third criterion. We have some information concerning the last two criteria, but they will require additional investigation specific to individual populations, areas, politics, and other factors that may be particular to each proposed CMZ. These will largely be addressed through cooperative, site-specific planning and negotiation with appropriate landowners and resource managers, including public, academic, and interagency review of proposed actions. Interested Arizona Riparian Council members can also make valuable contributions to this part of the CMZ process as well.

After setting priorities, we must begin the cooperative effort of CMZ designation, customized conservation planning, generation of funding, preparation of any necessary environmental compliance documents, and implementation of measures that are appropriate to each area. Although Arizona Game and Fish can coordinate this process and make significant contributions in funding and implementation, it is essential to have active participation and funding from cooperators, especially the affected landowners or managers, if we are to have any hope that this approach will be

successful on a large landscape level. We must also recognize that our initial efforts to designate CMZs and implement conservation measures will be test cases. We must evaluate these first efforts and modify our approaches as needed to make them more effective and efficient. We can expect to encounter difficulties and outright failures at the beginning, but by making methodical evaluations and modifications, it should be possible, with contributions from key resource managers, landowners, and members of the Arizona Riparian Council, to bring the difficult job of recovery of native Arizona

amphibians one step closer to reality.

For more information on Arizona ranid frogs, see Sredl (1997).

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recently identified locations that are considered to provide opportunities for implementing conservation measures on a large scale (Conservation Opportunity Areas) and the physical and chemical requirements for successfully implementing the proposed habitat restoration activities in these areas (Target Restoration Parameters). The next step of the process is to utilize site-specific hydrologic/hydraulic modeling to determine the feasibility and alternative methods of creating the conditions (e.g., hydrograph, groundwater fluctuations, soil salinity, etc.) suitable for habitat restoration actions within the various Conservation Opportunity Areas.

Making use of the results of the site-specific hydrologic/hydraulic modeling, geographic locations for implementing conservation actions and technical approaches to restore

suitable conditions will be combined to create conservation strategies. These conservation strategies are likely to vary in their cost and feasibility, as well as their ability to provide adequate conservation to justify the issuance of ESA take authorizations for the LCR MSCP priority and planning species. The conservation strategies, selected and approved by the Steering Committee, will be evaluated in the Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) to satisfy the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively.

REGULATORY PROCESS

The LCR MSCP involves both federal and nonfederal actions and involvement. Therefore, the LCR MSCP is currently being viewed as a joint compliance

process, satisfying the requirements of both Section 7 (federal) and Section 10 (nonfederal) of the ESA. A programmatic EIS/EIR will be prepared to satisfy the requirements of NEPA and CEQA. The MSCP Plan must include a Financing Plan that demonstrates how the program will be paid for; an Implementing Agreement, which is essentially a contract between the parties implementing the plan specifying commitments and assurances; and a Monitoring and Adaptive Management Plan, which will ensure that the MSCP has the flexibility to modify the implementation of conservation actions over the life of the plan to accommodate new information on species status and new scientific developments.

The USBR's Section 7 consultation with the USFWS requires the submission of a BA analyzing the USBR's actions and their affect on endangered

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ARC

Thirteenth Annual Meeting

April 30 - May 1, 1999

Flagstaff, Arizona

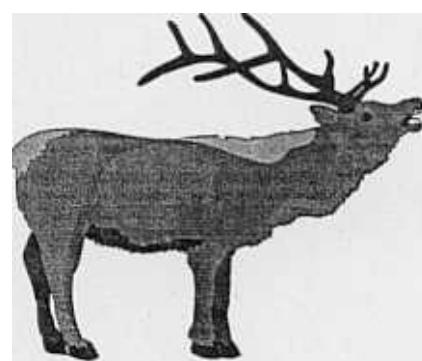
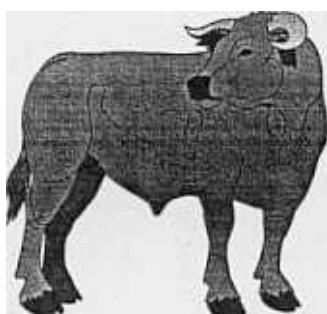
This year's annual meeting will be based on *Ungulate Grazing in Riparian Areas*. The meeting will begin with registration beginning at 7:30 AM on Friday, April 30, 1999. Welcome and introductions will occur at 8:30 and will be followed by several invited speakers discussing grazing issues. Invited speakers include Rick Miller, Arizona Game and Fish Department, providing an overview of elk and livestock grazing in riparian areas along the Mogollon Rim; Bruce Palmer, U.S. Fish and Wildlife Service, will give us background information on how consultation and compliance with the Endangered Species Act affects development of management plans on U.S. Forest Service allotments; Dave Stewart, U.S. Forest Service, will tell us about changes in the U.S. Forest Service management plans and future plans in the Rim country; and Kate Kline, U.S. Forest Service, and Rick Remington, Arizona Game and Fish Department, will discuss Forest Service and Game and

Fish management activities to address elk grazing impacts. Afternoon talks will be presentations of technical papers by participants.

On Saturday, field trips will include sites such as *Hoxworth Spring*, located southwest of Flagstaff, has been studied by Abe Springer, Assistant Professor of Hydrogeology, Northern Arizona University. An Arizona Water Protection Fund grant was awarded for restoration work at this site including establishment of a stable channel configuration. Monitoring includes ground-water level, effects of elk, and channel morphology. *Hart Prairie Preserve*, located north of Flagstaff is the site of a Bebb willow restoration project funded by a Arizona Water Protection Fund grant. The project included restoration of natural stream flow and exclosure fencing and monitoring. C. Hart Merriam maintained a base camp in this picturesque area while he did field work for his classic description of life zones. *Oak Creek Canyon and Red Rock Crossing*, are located southwest of Flagstaff. The field trip will include several stops through the picturesque canyon to look at effects of flooding on the channel and vegetation, channel restoration efforts, and Red Rock crossing, the site of a controversial bridge proposal.

The Arizona Riparian Council is holding its Thirteenth Annual Meeting this year in Flagstaff, Arizona, at the Radisson Woodlands Hotel. Room rates are \$79 for singles or doubles and a block of rooms will be held until April 15, 1999. The toll free number is 1-800-333-3333 and their direct reservations number is 1-520-773-8888.

Inserted in this newsletter should be a registration form (if not, contact Cindy Zisner at 602-965-2490). This year because dues renewal was not sent out we are considering everyone who was a member as of December 1998 as a member for registration fee purposes. Look at the address on this newsletter and right after your last name should be an expiration date. If it is 12/98, 12/99, 12/00 or later you may pay the member registration fees. If those dates do not appear you must pay the nonmember registration fee. Also at this time we are requesting that membership fees for 1999 be paid as well. They



are not included in the registration fee for the meeting. Registration fees cover registration materials, program

and abstracts, lunch, and break refreshments. Annual dues are \$15/individual and help cover the costs of the newsletters. So

even if you cannot attend the annual meeting, please pay your dues.



1998 FALL CAMPOUT AND GET-TOGETHER

More than two dozen participants, not including a couple of canine companions, converged in southern Arizona over the weekend of October 17-18 for the annual Council Fall Campout and Get-Together. Our hosts at Patagonia Lake State Park provided a camping area and a covered ramada with tables for our informational presentations. On Saturday, David Weedman, Nongame Branch of Arizona Game and Fish Department in Phoenix, talked about the endangered Gila

topminnow, a small fish that still inhabits several streams in the Sonoita Creek and surrounding area. Matt Chew (Arizona State Parks) and Don McGann (private consultant) gave an overview of real estate and land acquisition issues. The late afternoon was spent setting up camp, hiking, and enjoying the grassland scenery. An evening barbecue of burgers and beans (with all the fixings and appropriate beverages) was arranged and impeccably prepared by Marty Jakle and Jeff Inwood. Sunday morning field trips were hosted

by the park (a birding boat trip around the perimeter of Patagonia Lake) and by The Arizona Nature Conservancy (a tour of their Patagonia/Sonoita Creek Preserve). Our collective thanks go to Rick Gagnon, Park Manager and to all the good folks who helped make this campout a success. Fall 1999 is just around the corner, so don't hesitate to offer your suggestion for next year's venue to one of the Council officers. Hope to see you all at the Annual Meeting, and again next fall.



Paul Marsh, Cindy Zisner, Marty Jakle, and Kris Randall on the birding boat trip around Patagonia Lake.



LEGAL ISSUES OF CONCERN

Kimberly MacEachern & Richard T. Campbell, Law Offices of von Oppenfeld Hiser and Freeze, P.C.

CAN THIS PORPOISE BE SAVED? THE ESA IN THE COLORADO RIVER DELTA

On November 5, 1998, environmentalists, including the Southwest Center for Biological Diversity, walked out of the Multi-Species Conservation Plan Steering Committee (MSCP) after two years of meetings in Las Vegas meant to develop a species conservation program for the lower Colorado River. Angered by limitations on the scope of the plan which would exclude the Colorado River Delta and the Gulf of California, both of which are in Mexico, the walk out was their way of taking a stand, which may be followed with litigation. At issue is whether the Endangered Species Act (ESA) extends the length of the river into Mexico.

The MSCP is putting together a comprehensive program to assist agencies in ESA Section 7 consultations for approval of incidental take authorizations under ESA Section 10. This would apply to projects undertaken by federal agencies such as the Bureau of Reclamation, and nonfederal agencies like irrigation districts and municipal water suppliers. The Steering Committee is studying the impact of the MSCP on the mainstem of the lower Colorado River from below Glen Canyon Dam to the Southerly International Boundary with Mexico. The scope of the MSCP does not yet include the Colorado River Delta or the upper Gulf of California in Mexico.

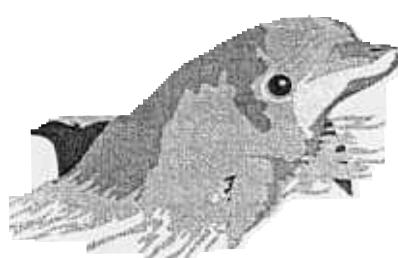
The environmentalists' strong concerns for the Colorado River

Delta stem from the fact that it is still the largest desert estuary in North America. The Delta provides a critical interface with the marine ecosystem of the upper Gulf of California. Both the Delta and Gulf are home to at least five threatened or endangered species, including the Yuma clapper rail, the desert pupfish and the vaquita harbor porpoise — the world's smallest and most endangered sea mammal, currently numbering only a few hundred. (Valdéz-Casillas, C., et. al., *Wetland Management & Restoration in the Colorado River Delta: The First Steps*, Special publication of CECARENA-ITESM Campus Guaymas Nov. 1998).

Under the ESA, after a species is listed as endangered or threatened, the U.S. Fish and Wildlife Service (FWS) must designate critical species habitat "to the maximum extent prudent and determinable" (16 U.S.C. §1533(a)(3)). However, unless there are special circumstances, the entire geographical area occupied by a species should not be designated as critical habitat (*Id.*, § 1532(5)(B)). Section 7 of the ESA requires each federal agency to consult FWS or the National Marine Fisheries Service (NMFS) to insure, that "any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such

species" (16 U.S.C. §1536). Environmental groups, particularly the Southwest Center for Biological Diversity, assert that the ESA plainly requires consultation when federal actions, such as the MSCP, affect endangered species in another country. But the federal agencies disagree.

Extension of the ESA beyond the boundaries of the United States is a matter that remains in legal limbo despite decades of litigation. The controversy sparked in 1978 when the Secretary of the Interior published a final rule, after soliciting agency comment, under ESA Section 7 that required "every Federal agency to insure that its activities or programs in the US, upon the high seas, and in foreign countries, will not jeopardize the continued existence of a listed species" (emphasis added). Several agencies, including the U.S. Army Corps of Engineers the State Department and the Department of Defense opposed the extraterritorial application while the White House Council on Environmental Quality, the Interior Department's Solicitor's Office and the General Counsel's Office of the National Oceanic and Atmospheric Administration took the position that the



consultation duty extended to foreign countries.

The following next year, Secretary of the Interior Lujan revised the regulation limiting ESA applicability to agency actions occurring within the territorial boundaries of the U.S. or within international waters. Shortly thereafter, Defenders of Wildlife, along with several other environmental organizations sued Lujan, seeking a declaratory judgment that the new regulation's geographical limitation was an error. The federal district court granted the Secretary's motion to dismiss saying that the plaintiff environmentalists lacked legal standing to bring the legal challenge (*Defenders of Wildlife v. Lujan*, 707 F. Supp. 1082 D. Minn. 1988).

But the Eighth Circuit Court of Appeals disagreed. In the only appellate level case to address the extraterritorial application of the ESA, the Court granted DOW standing and held that both the plain language of the ESA and its legislative history

supported extending the consultation requirements beyond the borders of the U.S. (*Defenders of Wildlife v. Lujan*, 911 F.2d 117 (8th Cir. 1990) *reversed on other grounds*, *Lujan v. Defenders of Wildlife*, 504 U.S. 555 (1992)). In its decision, the Eighth Circuit cited the landmark endangered species case *Tennessee Valley Authority v. Hill*, 437 U.S. 153 (1978) in which the existence of the snail darter was preventing completion of a large TVA dam. The Supreme Court said that "the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost. This is reflected not only in the stated policies of the Act, but in literally every section of the statute" (*Id.* at 121). In a similar analysis of ESA's Section 7 consultation language, the Eighth Circuit noted that, reduced to its simplest form, the statute "clearly states" that each federal agency must consult with FWS or NMFS on any action to insure that such action is not

likely to jeopardize the existence of any endangered species. The Act defines 'endangered species' broadly, without geographic limitations, and makes no distinction between domestic and foreign species (*Id.* at 122).

In the event of litigation relating to the federal agencies failure to consult on the possible adverse effects of a proposed project on endangered species in the Colorado Delta, the Bureau of Reclamation would likely argue that since it does not have the jurisdiction to determine critical habitat for the endangered species in a sovereign nation such as Mexico it lacks the power to fulfill the ESA. Although the Eighth Circuit decision did not apply the critical habitat issue because, it opined, the Act revealed an intent to separately address the concerns raised by critical habitats and endangered species, the issue is debatable. If the MSCP does not eventually include Mexico within its scope, it is also probably ripe for litigation.



MSCP.....Cont. from pg. 8

species and designated critical habitat. The USFWS will issue a BO that authorizes incidental take of endangered species by USBR. It is a goal of the MSCP participants to prepare a sufficiently adequate and comprehensive MSCP to allow the USFWS to use it as the RPA in this and subsequent section 7 consultations. Take authorizations will be issued for federally listed species, and pre-listing agreements will be developed for unlisted species. Take authorizations under the California Endangered Species

Act and Natural Communities Conservation Planning (NCCP) Act will also be sought from the California Department of Fish and Game for California-listed and unlisted species. The EIS will analyze the impacts of the USBR and other federal agencies implementing the SCP and the impacts of the USFWS authorizing the incidental take of endangered species. The MSCP Plan will also serve as a Habitat Conservation Plan under section 10 of the ESA and must evaluate the alternatives associated with the incidental taking of endangered species and demonstrate minimization and

mitigation of the impacts of such taking, to the degree practicable.

The LCR MSCP is expected to be completed early in the year 2001. It will provide a 50-year conservation program, and its implementation will be overseen by an entity comprised of federal and nonfederal stakeholders. Implementation of conservation actions on the ground will involve federal and state resource agencies as well as other land and resource managers currently involved in plan development.



Noteworthy Publications

Michelle M. Oleksyszyn, Department of Plant Biology, Arizona State University

Green, D. M. 1997. Recreational impacts on erosion and runoff in a central Arizona riparian area. *Journal of Soil and Water Conservation* 53(1):38-42.

Riparian areas have been altered by anthropogenic activities such as damming and groundwater pumping. In addition, increasing human interest in outdoor recreation has lead to increased activity in riparian areas. This study examined the impact of recreation on riparian areas by simulating a rain event and monitoring runoff rates and quantities in low, medium, and high use areas of Little Ash Creek, a tributary of the Agua Fria River. Canopy cover at Ash Creek is dominated by *Fraxinus pennsylvanica* (velvet ash) but also contained *Populus fremontii* (Fremont's cottonwood) and *Platanus wrightii* (Arizona sycamore), while herbaceous vegetation consisted mostly of *Hordeum jubatum* (foxtail barley) followed by *Cynodon dactylon* (Bermuda grass), *Chenopodium album* (lamb's quarter), and *Bouteloua curtipendula* (side-oats grama). Before the rainfall simulation, information was collected on soil properties and vegetation. Soil sampling consisted of measurements for bulk density, texture, and moisture. Above-ground herbaceous vegetation, herbaceous cover, and slope were also recorded. Rainfall simulation involved a 30-minute rain event. In each usage area, the author recorded the time it took runoff to begin and he collected sediment samples at 5-minute intervals to quantify the amount of runoff. There were apparent differences between sites in both soil properties and vegetation. High

use areas had significantly higher values for bulk density, earlier initiation of runoff, greater amounts of runoff, less vegetative cover, more ruderal species, and less soil moisture than the lower use areas. Soil compaction and runoff can adversely affect riparian communities by preventing root extension and decreasing water holding capacity and nutrient availability (as nutrients are often found in the top layer of the soil). In addition to changes in vegetation and soil structure, soil fauna will be adversely affected. The author concludes that management of recreational use in riparian areas needs to consider the human use impacts on the structure and function of riparian zones.

Shafroth, P. B., G. T. Auble, J. C. Stromberg, and D. T. Patten. 1998. Establishment of woody riparian vegetation in relation to annual patterns of streamflow, Bill Williams River, Arizona. *Wetlands* 18:577-590.

The authors state that previous models exist that relate the establishment of *Populus* sp. (cottonwood) to streamflow components and annual hydrograph data. *Populus* sp. are important in riparian areas for wildlife, yet recruitment of new *Populus* saplings has decreased in recent years. This study used a currently accepted model for *Populus* establishment and tested it against four riparian species of the Southwest – *Populus fremontii* (Fremont cottonwood), *Salix gooddingii*, (Goodding willow) *Tamarix ramosissima* (saltcedar), and *Baccharis salicifolia* (seep willow) to determine whether a germination model for *Populus*

could be applied to other woody riparian species. The study was conducted along the Bill Williams River. Large amounts of precipitation in 1993 and 1995 necessitated maximum releases from Alamo Dam and provided the authors with optimal conditions for studying seedling establishment. The model was used to predict where species would successfully establish from 1993 through 1995 and the accuracy of the model was evaluated by documenting actual establishment at each of eight transects along the river. Of the plots where they predicted establishment to occur, the authors examined characteristics between those plots which actually contained new seedlings and those which failed to support new seedlings to determine which factors were responsible for failed establishment in seemingly optimal locations. To identify year of establishment, representative samples of each species were excavated and growth rings were counted. They studied such characteristics as seed dispersal periods for all species, abundance of woody and herbaceous species, light availability, depth to groundwater, and soil particle size classes and electrical conductivity. Data on flow releases were obtained from the Army Corps of Engineers and low and high flow estimates made from BLM records and USGS surveys. They found that their model was successful at predicting sites for germination in 1993 and 1995, but unsuccessful in 1994. Within sites that were able to support germination, they found that seedlings germinated best when basal area of other woody species was low and when herbaceous cover was greater. The single most important factor

for germination success was maximum depth to the water table. The authors conclude that the model constructed for *Populus* can be applied to other riparian species but that both geomorphology and substrate play important roles in modifying model parameters.

Stromberg, J. C. 1998. Functional equivalency of saltcedar (*Tamarix chinensis*) and Fremont cottonwood (*Populus fremontii*) along a free-flowing river. *Wetlands* 18:675-686.

The exotic plant species, *Tamarix chinensis* (saltcedar), may affect riparian areas by changing fire disturbance, soil chemistry and moisture, and altering the composition of biotic communities. However, these and other effects have not been consistently documented across all studies and in studies which made conclusions about the negative impacts of saltcedar, some failed to provide adequate controls and others were conducted in areas where anthropogenic disturbance may have complicated results. The author therefore cautions that management decisions to remove saltcedar should be carefully made based on thorough understanding of the functional role that it plays in riparian ecosystems. She states that because of lack of agreement about the effect of saltcedar in various experiments, it is possible that its roles vary by site and that its influence may be site-specific. The objectives of this study were to evaluate the functional and structural roles of saltcedar and cottonwood on the middle San Pedro River near Cascabel, Arizona. Three perennial and four ephemeral reaches were examined. Vegetation varied slightly between the two reaches with the perennial sections dominated by *Populus* (cottonwood) and *Salix* (willow) and the ephemeral sites by saltcedar and shrub associations.

Increment cores and slabs were collected to determine stand age. A series of factors were considered such as canopy height, distance from channel, sediment accumulation, soil particle size classes and nutrient levels. All factors were compared between saltcedar and cottonwood stands in two ways: (1) By comparing the means for each species and (2) by examining the temporal changes between the two species, based on stand age. Of the 30 traits examined, only 11 differed between the two species within either mean values or temporal changes. Based on these results, saltcedar did not differ functionally from cottonwood on the middle San Pedro River. Contrary to popular ideas, in this study saltcedar did not have greater sedimentation, increased soil electrical conductivity or increased exotic herbaceous cover than cottonwood stands. Saltcedar stands were different from cottonwood in that they had greater clay content in soils and greater numbers of herbaceous understory vegetation. The author concludes that, at least in this location, saltcedar may be functionally equivalent to cottonwood.

The above articles by Shafroth et. al and Stromberg can be found in the latest issue of *Wetlands* (December 1998). The entire issue focuses on riparian articles. Other articles in this issue are:

Patten, D. T. Riparian ecosystems of semi-arid North America: diversity and human impacts.

Briggs, M. K. and S. Cornelius. Opportunities for ecological improvement along the lower Colorado River and delta.

Osterkamp, W. R. Processes of fluvial island formation, with examples from Plum Creek, Colorado and Snake River, Idaho.

Auble, G. T., and M. L. Scott. Fluvial disturbance patches and cottonwood recruitment along

the upper Missouri River, Montana.

Rood, S. B., A. R., Kalischuk, and J. M. Mahoney. Initial cottonwood seedling recruitment following the flood of the century of the Oldman River, Alberta, Canada.

Merigliano, M. F. Cottonwood and willow demography on a young island, Salmon, River, Idaho.

Dominick, D. S., and M. P. O'Neill. Effects of flow augmentation on stream channel morphology and riparian vegetation: upper Arkansas River basin, Colorado.

Johnson, W. C. Adjustment of riparian vegetation to river regulation in the Great Plains, USA.

Friedman, J. M., W. R. Osterkamp, M. L. Scott, and G. T. Auble. Downstream effects of dams on channel geometry and bottomlands vegetation: regional patterns in the Great Plains.

Mahoney, J. M. and S. B. Rood. Streamflow requirements for cottonwood seedling recruitment an integrative model.

Feller, J. M. Recent developments in the law affecting livestock grazing on western riparian areas.

Everitt, B. L. Chronology of the spread of tamarisk in the central Rio Grande.

Gladwin, D N. and J. E. Roelle. Survival of plains cottonwood (*Populus deltoides* subsp. *monilifera*) and saltcedar (*Tamarix ramosissima*) seedlings in response to flooding.

Smith, S. D., D. A., Devitt, A. Sala, J. R., Cleverly, and D. E. Busch. Water relations of riparian plants from warm desert regions.

Abstracts for these articles can be accessed on the web:

www.sws.org/TOCV18n4.html



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 \$15. 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 April 15, 1999. Please call or write with suggestions, publications for review, announcements, articles, and/or illustrations.

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CALENDAR

Urban Riparian Buffer Conference, sponsored by the Southern New England Chapter of the Soil and Water Conservation Society. April 21-22, 1999, Hartford, CT. An interdisciplinary forum to exchange ideas about how to create and maintain effective urban riparian buffers, exploring technical, aesthetic, and social aspects/issues associated with the establishment and maintenance of these buffer areas. Contact Jackie Pashnik, SWCS, P.O. Box 262, Storrs, CT 06268, JPASHNIK@PRODIGY.NET.

Ungulate Grazing in Riparian Areas, 13th Annual Meeting of the Arizona Riparian Council, April 30-May 1, 1999. Radisson Woodlands Hotel, Flagstaff, Arizona. For more information, contact Cindy D. Zisner, Secretary (602) 965-2490, Cindy.Zisner@asu.edu.

Getting the Job Done at the Ground Level. Sixth National Watershed Conference, May 16-19, 1999. Double Tree Hotel, Austin, Texas. For more information contact John W. Peterson, Executive Director, National Watershed Coalition at (703) 455-6886 or 4387 or jwpeterson@erols.com.


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