



ARIZONA RIPARIAN COUNCIL

ARIZONA RIPARIAN COUNCIL NEWSLETTER

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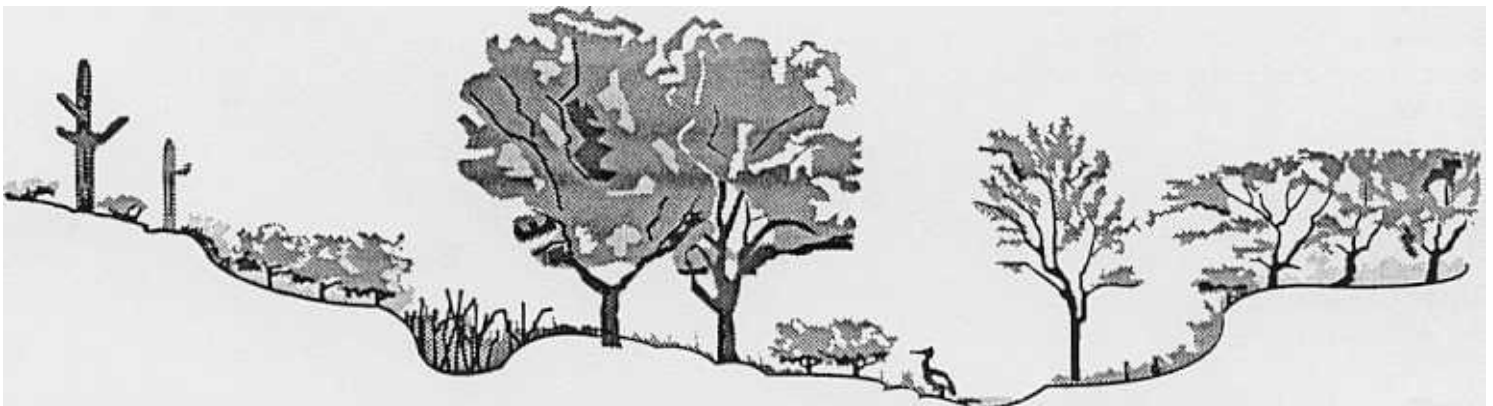
Riparian Revegetation: Art, Science, or Both

*A Commentary by
Chuck Hunter*

The Arizona Riparian Council (Council) will soon publish an annotated bibliography featuring riparian revegetation. This document will greatly assist managers in judging which techniques are most appropriate for their needs. In this vein, I wish to start a regular column for commentary in this newsletter to include advice, accounts of most recent experiences, and critiques of various techniques. I start here with a general critique of the art of riparian revegetation as it is practiced in Arizona. Specifically, I address what we have accomplished so far, what should be the role of experimentation, and where we may be going with riparian revegetation.

Revegetation with native riparian plant species is becoming a popular mitigation goal throughout Arizona among an array of organizations. There remain however, few documented accounts of long-term success despite the growing need for large-scale, highly productive revegetation efforts. My purpose here is to challenge those who are practicing the art of revegetation to formally document the reason(s) for each effort, methodologies used, acreages revegetated, costs/acre, stated goal(s) of each effort, criteria for judging success, proposed monitoring plans, and perceived success. Some may resist such a challenge, exclaiming that it is unnecessary to document what they may feel is a proven procedure. I will maintain however, that one's success may be another's failure depending on the goal of the effort, the perception of what constitutes success, and the ability of one team to repeat the techniques of another.

My own experience with revegetation has now spanned nine years, mostly with projects in low-elevation floodplains. These projects range from purely volunteer efforts to those that are well-
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THIRD ANNUAL RIPARIAN MEETING

The Arizona Riparian Council is sponsoring its Third Annual Meeting on December 2-3, 1988 at the Francisco Grande Hotel in Casa Grande.

A plenary session will be held Friday morning, December 2nd, covering management and use of riparian areas. There will be reports on issue identification by the riparian program of the Commission on the Arizona Environment and Arizona State Parks' SCORP Rivers, Streams, & Wetlands Study.

Committee reports and contributed papers will be given Friday afternoon and Saturday morning. A business meeting and committee meetings will be held during the two-day meeting. A field trip may be planned to the San Pedro River on Saturday afternoon.

The registration fee for the Meeting will be \$15 for pre-registration and \$25 at the door. Student costs are \$8 for pre-registration and \$15 at the door. The registration fees include all costs for registration materials, published abstracts of talks, and refreshments at the breaks. We encourage you to pre-register as it greatly aids us in planning. The deadline for pre-registration is November 18th. Make checks payable to the Arizona Riparian Council and mail to the ASU address below.

There will be an outdoor barbecue Friday evening around the pool at the Francisco Grande. The barbecue will include a steak dinner with the trimmings. There will be a cash bar. A bargain for \$15 and a good place to informally chat with others.

A block of rooms at the Francisco Grande has been reserved for conference participants for December 1-2. For room reservations, call the hotel directly and identify yourself as part of the Arizona Riparian Council Meeting. Rooms range from \$35 to \$40 for singles or doubles. The hotel telephone number is 1-800-237-4238 and the hotel is located at 26000 Gila Bend Highway, west of Casa Grande.

For more information, contact the Arizona Riparian Council, c/o Center for Environmental Studies, ASU, Tempe, AZ 85287-1201, 965-2975.

*PLAN TO ATTEND THE
THIRD ANNUAL MEETING
OF THE
ARIZONA RIPARIAN
COUNCIL
DECEMBER 2-3, 1988
IN CASA GRANDE*

*PLEASE PRE-REGISTER
BY NOVEMBER 18TH*



ARC Elections Slate of Candidates

The Nominating Committee offers the following slate of officers for the membership's consideration at the Council's 1988/89 elections to be held at the annual meeting in Casa Grande, Dec. 2-3, 1988. Additional nominations will be taken at the annual meeting.

President	Duncan T. Patten
Vice President	Andrew Laurenzi or William G. Kepner
Secretary/ Treasurer	Cindy D. Zisner

Duncan T. Patten has been President of the Arizona Riparian Council since it was formed in 1985. He is also Director of the Center of Environmental Studies and Professor of Botany at Arizona State University, and Business Manager for the Ecological Society of America. His research interests include riparian ecosystems, plant ecology, conservation, applied ecology (man's impact), physiological ecology, environment-vegetation relationships, and the structure and function of desert and mountain subalpine ecosystems.

William G. Kepner is an Environmental Contaminant Specialist for the Fish and Wildlife Service in Phoenix, Arizona. Bill received an A.A. degree from Phoenix College in 1972, a B.S. degree from the Univer-

sity of Arizona (Tucson) in 1975, and a M.S. degree from ASU (Tempe) in 1982. He was a fisheries/wildlife biologist for the Bureau of Land Management from 1978 to 1984 for which he coordinated and conducted nongame vertebrate inventories in western Arizona. In 1980, he received the Unit Citation Award for Excellence of Service from the Secretary of the Interior and in 1982 and 1988 he received the Doug Morrison Memorial Award for Outstanding Wildlife Biologist in Arizona from the Wildlife Society (TWS) (Arizona Chapter). He is currently working on special studies relative to impacts of contaminants on fishery and wildlife resources. Bill is a member of TWS and is a Certified Wildlife Biologist. Additionally, Bill is a member of the American Fisheries Society (AFS) and is a Certified Fisheries Scientist. Bill has served as President of both local TWS and AFS Chapters. He is a member of the Natural Areas Advisory Council of the Arizona State Parks Board and the Fish and Wildlife Service Desert Fishes Recovery Team.

Andrew Laurenzi is the Director of Land Protection for The Arizona Nature Conservancy. He has worked for TANC since 1985, previously as the Public Lands Protection Planner. Andy received a B.S. in Biology from Fairfield University in Connecticut in 1976 and a M.S. in Zoology from ASU in 1982. His masters thesis was on "Spatial Patterns in Riparian

Forest Vegetation in central Arizona." He worked for ASU as a field biologist for several years. Andy has been an active member of the Arizona Riparian Council since its inception and currently chairs the Policy and Land Issues Committee. He is a member of TWS, Vice Chair of the Natural Areas Advisory Council (ASPB), and serves on the Board of the Arizona Native Plant Society.

Cindy D. Zisner has been a member of the Arizona Riparian Council since its inception. She has participated by maintaining the mailing list and helping at annual meetings. Cindy has worked for the Center for Environmental Studies for 12 years, initially as a laboratory technician and currently as the Center's word processor. She types manuscripts for scientific peer-reviewed journals, governmental reports, and other biological papers. Through this she has become very familiar with riparian issues and problems. She holds a B.S. in Bio-Agricultural Sciences and a M.S. in Botany, both from ASU.



(Continued from front page)

funded, well-staffed, and have long-term efforts. I have planted both pole-plantings and rooted-stock cuttings. Finally, I have worked on projects with goals ranging from species-specific wildlife enhancement, bank stabilization, mitigation for lost riparian habitat, as well as projects solely for re-establishing a particular tree species. In all cases, I served as a follower and not as a leader, but I now come away with some very definitive opinions on the merits of a variety of methodologies.

"Revegetation with native plant species is becoming a popular mitigation goal throughout Arizona."

There have been many low-budget, volunteer-oriented revegetation projects in Arizona and these efforts undoubtedly will continue to be very popular. Of the ones I have worked on, morale among the participants was always high and there was no question that individual work efforts bordered on being Herculean. Such projects serve as extremely important educational tools in teaching the need for high-quality riparian habitat to high-level agency personnel, non-agency volunteers, private landowners, and the public at large. In my view, many of these efforts have succeeded also in stabilizing banklines, re-establishing some

native riparian plant species, and in providing some habitat for fisheries. On the negative side however, I now believe that the vast majority of these projects combined, represent only a drop in the bucket in terms of re-establishing riparian vegetation for enhancing riparian wildlife populations, especially in attracting and holding species of special interest. I am not aware of any low-budget project that has succeeded in supporting threatened, endangered, or special interest species, despite the fact that this is an important goal for many of these efforts.

Large, well-funded revegetation projects are also not without problems. Almost all of the larger projects in the 1980s have been plagued by poor planning, inadequate logistical support, poor implementation, and little interest in intensive long-term monitoring. Hundreds of thousands of dollars have been expended and there is little more mature revegetated habitat now than when the early experimental projects of the mid to late 1970s demonstrated that revegetation was feasible.

Large projects in California have suffered similar fates and there are now active groups in both northern and southern California working to enhance communication among contractors and agencies that will hopefully lead to greater success. I am not aware of the full range of costs associated with efforts in Arizona, but in Cali-

fornia, large-scale projects vary widely from \$2,500 to \$700,000/acre with a mode appearing to be about \$10,000/acre. These are extremely high price tags for most agencies and private businesses requiring revegetation for mitigation purposes, especially given the present track-record for success.

"Hundreds of thousands of dollars have been expended and there is little more mature revegetated habitat now than when the early experimental projects of the mid to late 1970s demonstrated that revegetation was feasible."

As with low-budget revegetation projects, I am not aware of documented increases in riparian wildlife use of any large well-funded project except for some of the early experimental efforts on the lower Colorado River. Even these sites now appear to be too small to support stable populations of the rarer species given continued downward trends in the surrounding natural riparian habitats.

All this would seem to paint a bleak picture for using revegetation techniques in the future as a mitigation tool. Many lessons from experimental projects from the 1970s have gone unheeded and little has been learned from the successes or failures during the 1980s. Yet, I remain optimistic, as there are ways to learn from failures and correct the mistakes of the

past. There is enough evidence now to firmly require the linking of revegetation with experimentation. Thus, through experimentation, we can start to learn what factors favor growth of riparian plants in a variety of situations and conversely, we can learn to avoid factors that lead to low productivity and high mortality.

Unfortunately, factors affecting survival and growth on most of the recent projects are regulated to the realm of pure speculation without corroborative data. When doubts are raised over specific recommendations, or when failure results from what was thought to be a "cookbook" technique, the first thing that should be done is to conduct controlled experiments. Testing the validity of advice or techniques on site is the only way to advance our ability to revegetate riparian habitats. In essence, we need to approach revegetation as agricultural scientists approach learning how to grow new crops.

Many of us who have been, or are now, involved in revegetation were at one time versed in the advantages of solving problems through the scientific method.

"Through experimentation, we can start to learn what factors favor growth of riparian plants and conversely, we can learn to avoid factors that lead to low productivity and high mortality."

Somewhere along the path of experience, whether it was lack of time or bureaucratic support, many of us have allowed the scientific method to fade from use in our average duties. The argument, that we have no time for experimentation because we have to rapidly grow trees, would seem to be no longer valid and actually, self-contradictory. We have gained little by these random attempts that have resulted in a few long-lived trees.

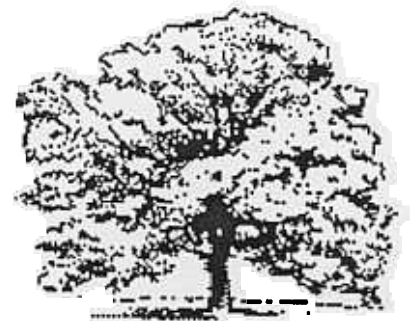
So, where are we going with riparian revegetation? Revegetation presently is one of the most often suggested mitigation procedures when a project will result in loss of riparian habitat. Yet, there remains little evidence that such mitigation attempts are successful in replacing riparian habitats in-kind. This would support the notion that many existing riparian habitats are not artificially replaceable and proposed actions that include revegetation as mitigation should not be allowed.

Therefore, if action agencies or private businesses wish to continue pursuing their actions, they also should be willing to fund experimentation and research for developing sound revegetation techniques. I think that it is important to clarify that some revegetation techniques are highly successful in some areas for some specific goals. However, for a proponent to say that his/her method is effective for growing trees

would be irresponsible without a broad database covering the variety of physical factors affecting growth throughout Arizona.

"We need to approach revegetation as agricultural scientists approach learning how to grow new crops."

With this in mind, I find it encouraging that several organizations in California (both governmental and private) are approaching the art of revegetation with a substantial investment in the scientific method. I firmly believe that the time is right for a similar approach to revegetation in Arizona and I hope this column will spark new life into the discussion. I invite rebuttals and further debate on any of the points I have raised with the goal that communication will lead to greater success in protecting and enhancing our quickly diminishing riparian resources.



ARC Resolution Changes Proposed

These proposed changes will be voted on by the membership at the annual meeting, December 2-3, 1988.

The proposed resolutions to change the Constitution of the Council are as follows:

Currently reads:

ARTICLE V BOARD OF DIRECTORS

The Board of Directors shall consist of the officers of the Council and not less than three other members of the Council and shall be presided over by the President of the Council.

Changes underlined:

ARTICLE V BOARD OF DIRECTORS

The Board of Directors shall consist of the officers of the Council, chairs of the standing committees and not more than three other at large members of the Council and shall be presided over by the President of the Council.

Changes in the Bylaws of the Council are as follows:

Currently reads:

ARTICLE III BOARD OF DIRECTORS

Section 1. Number and Qualification. The Board of Directors shall consist of the Council officers and not less than three other Council members. The first Board of Directors shall consist of those persons elected or appointed at the first meeting of the Council who shall hold office until the first annual meeting of the Council. Directors shall thereafter be elected at the Council's annual meeting and shall serve a term of three years with

the possibility for re-election. The first election will create staggered terms of Board members. Council officers shall serve on the Board of Directors while in office or for a three-year term, whichever is longer.

Section 2. Election of Directors. Members of the Council shall be elected to the Board of Directors by the majority vote of members at the Council's annual meeting.

Changes are underlined:

ARTICLE III BOARD OF DIRECTORS

Section 1. Number and Qualification. The Board of Directors shall consist of the Council officers, chairs of the standing committees, and not more than three other at-large members of the Council. The first Board of Directors shall consist of those persons elected or appointed at the first meeting of the Council who shall hold office until the first annual meeting of the Council. Directors shall thereafter be elected at the Council's annual meetings. At-large members shall serve a term of three years with the possibility for re-election. [The first election will create staggered terms of Board members.] Council officers shall serve on the Board of Directors while in office or for a three-year term, whichever is longer.

Section 2. Election of Directors. At-large members of the Council shall be elected to the Board of Directors by the majority vote of members at the Council's annual meeting.

Currently reads:

ARTICLE IV COMMITTEES

Section 1. Standing Committees. Standing committees of the Council shall be:

Executive Committee—Responsible for the day-to-day operation of the Council with the power to decide on all administrative procedures of the Council. The Committee shall consist of each officer, the immediate past-president, and any at-large members of the Council as designated by the Board of Directors. This Committee shall report its interim actions to the members of the Council at the annual meeting. Any actions of the Executive Committee may be overridden by a two-thirds majority vote of the attending membership.

Steering Committee—Shall be composed of the Board of Directors and chairs of the standing committees, and shall be responsible for coordination of activities and communication between the committees. Steering Committee meetings shall be called by the President of the Council.

Nominating Committee—Shall be composed of three members of the Council appointed by the Council President and shall be responsible for those obligations as set forth in Article II, Sections 6, 7, 8, and 9.

Dissolution Committee—Shall be an automatic committee and shall be composed of the existing Board of Directors. Decisions of the Dissolution Committee shall be made by majority vote. Obligations of the Dissolution Committee are presented in the Constitution, Article IX, Section 2.

Other Standing Committees—A list of other potential standing committees is presented in an Appendix to the Bylaws. These committees will be voted on at the first Annual Meeting.

Change would be to eliminate the Steering Committee.

California Riparian Systems Conference: Protection, Management, and Restoration for the 1990s

by Judy Hohman and
Chuck Hunter

This conference, which was the second one convened in seven years, was held at the University of California, Davis from September 22-24, 1988. A broad spectrum of professionals, including hydrologists, engineers, biologists, range conservationists, as well as interested public groups and private citizens, attended to share their concerns, experiences, and expertise on how to protect and manage existing riparian habitats, as well as to re-establish riparian habitats which have been degraded or destroyed.

The overall emphasis of the conference was that riparian communities are narrow corridors within a large watershed and that if these riparian areas are to be properly managed and protected for future benefits and enjoyment, the total watershed and basin must be properly managed. The key phrase was "grow for the flow."

Concurrent and poster sessions included channel geomorphology, rangeland and desert riparian systems, habitat management for selected riparian/aquatic species, urban streams, coastal and montane riparian systems and riparian restoration.

Although this conference was about California, Arizona was also represented. Doug Duncan, of the Bureau of Land Management, presented a poster session on mammal inventories on the San Pedro River and Drs. Peter Bennett, Roy Johnson, and Chuck Lowe presented papers on desert riparian habitats in Arizona.

The Arizona Riparian Council was represented by Duncan Patten. Dr. Patten was an invited panel member for the discussion on "Integrating Private and Public Concerns." Arizona appears to be farther along in statewide organization than California (e.g., Arizona Commission on the Arizona Environment, Arizona State Parks, and Arizona Riparian Council efforts).

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ARIZONA STREAMS AND RIPARIAN RESOURCES ISSUES

Over the past several months, a number of entities have focused on riparian issues and have reached similar conclusions for the protection and management of the state's stream and riparian resources. The following is a summary:

- The Commission on the Arizona Environment (CAE) has undertaken a 15 month project of assessing the status, economic value, public opinion and solutions to the controversial issues surrounding riparian resources. The CAE's efforts have been to reflect the multiple use aspect of stream and riparian resources.
- The Arizona Rivers, Streams, & Wetland Study of the Statewide Comprehensive Outdoor Recreation Plan (SCORP), prepared by Arizona State Parks, has just finalized its recommendations for a conceptual framework for the management and conservation of the state's river, stream, and wetland (riparian) resources. The main focus of the study was to determine the roles these resources can play in meeting Arizona's growing recreational needs.
- The Arizona Riparian Council has worked with both CAE and SCORP and with its own members to plan for the future of the state's riparian resources. The recent efforts of the Council have produced a comprehensive riparian classification system for the state.

The following recommendations are a consensus (among the groups mentioned above) of the strategies needed to address this critical issue. To facilitate the accomplishments of statewide recognition, protection and proper utilization of Arizona's stream and riparian resources, the following recommendations are submitted:

- I. Because it has been found that stream and riparian resources are necessary to preserve the economic stability and the quality of life in this state, the Governor is urged to issue an Executive Order that would require state agencies to consider the principles of preservation and, when appropriate, mitigation of the adverse impacts on or restoration of stream and riparian resources in their decisions, actions, regulations, and funding.
- II. Because it has been found that the effective preservation of stream and riparian resources requires the initiative and cooperation of the Legislature, the Legislature is urged to enact a concurrent resolution establishing a Legislative Committee on Stream and Riparian Resource Protection which shall include members of both legislative houses, representatives of appropriate state agencies and

user interest groups. Members of the Committee are to be chosen jointly by the President of the Senate and Speaker of the House. The Committee shall consider, among other things:

- A. Development of mechanisms, including legislation if required, for the acquisition, protection, and management of stream and riparian resources on public and private lands.
 - B. A means of encouraging the use of common terminology, definitions, and inventory data.
 - C. A means of encouraging cooperation among local, state, and federal agencies that have jurisdiction over stream and riparian management, utilization, protection, and regulation.
 - D. Examination of the feasibility of establishing minimum in-stream flow standards where appropriate.
 - E. Facilitation of the development and implementation of educational programs to increase knowledge of and sensitivity to stream and riparian resource issues.
- III. The Governor of Arizona should designate November 15-20, 1988 as "State Stream and Riparian Resources Week." This action will create awareness of the value of stream and riparian resources to the State of Arizona, and provide focus on the many events planned for that week.

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There were some memorable highlights among the papers presented. Examples included an hour-long presentation on the recovery of streams and the importance of riparian vegetation after the Mount St. Helens volcanic eruption.

An observation that the average planning and construction life of an Army Corps of Engineers' flood control project was 26.5 years was unsettling.

One presenter pointed out that desert spadefoot and true toads are wholly dependent on riparian situations and implied that any part of our deserts in Arizona could at any time be briefly transformed into important riparian areas from sheet flooding. This last fact underscores the importance of managing beyond riparian corridors in order to maintain these corridors.

The most impressive aspect of the conference was the tremendous public interest and support that exists in California concerning the protection and restoration of riparian habitats. Numerous city and county development or flood "control" agencies have specific branches whose function is to restore the aquatic and riparian habitats of ephemeral and perennial streams. Several designed flood control projects which use the traditional approach of removing riparian habitat and replacing it with concrete-lined or riprapped straight channels have been rejected by numerous California communities with a demand for incorporating the natural environment as a vital component of the waterway.

Several non-structural or limited structural projects have been successful because they: 1) utilize an integrated flood protection design, 2) clearly identify the design objectives, which included wildlife, fisheries, aesthetics, and recreation values, and 3) implement a realistic maintenance program that includes monitoring the project's goals.

One morning was devoted to the restoration of riparian systems. The reoccurring sentiment was that the knowledge and technology exists to restore riparian habitats; however, there were very few presentations that demonstrated that restoration has been successfully accomplished in California.

Lack of success was due to a number of factors including: 1) no definition of goals or identification of key species for gauging success, 2) poor site suitability, 3) planting failures, and 4) lack of monitoring to see if goals of the revegetation efforts were successful. At least two projects assessed their restoration success through the experimental approach to determine use by target species and factors determining growth and survival.

This trend is encouraging since we can learn from an experimental approach rather than operating in ignorance, as in the "landscaping approach" practiced widely in the western United States today.

CALENDAR OF EVENTS

- * November 14-21, 1988—
Arizona's First Annual "Streams and Riparian Week."
- * November 15, 1988—
SCORP Town Hall, Wesley Bolin Plaza. Strategies for the state's outdoor recreation agenda that were developed during the SCORP planning process will be presented and refined. Recommendations from the State Parks' Rivers, Streams, & Wetlands Study will be highlighted. Governor Moford will give the Keynote address.
- * November 17-18, 1988—
Commission on the Arizona Environment's fall meeting. Potential legislative issues will be on the agenda, as well as the results of the Commission's Riparian Issues project which the Arizona Riparian Council took part in.
- * November 18-19, 1988—
"Celebrate America's Rivers"—
A National Conference in Honor of the 20th Anniversary of the National Wild and Scenic Rivers System. Sponsored by American Rivers, Inc., the National Park Service, and the USFS; Washington DC. Contact Suzi Wilkins 202-547-6900.
- * December 2-3, 1988—
Arizona Riparian Council's Third Annual Meeting, Francisco Grande Hotel, Casa Grande.

The Arizona Riparian Council (ARC) was formed in 1986 as a result of increasing concern over the alarming rate of loss of the State's most threatened natural ecosystems—*riparian systems*. It is estimated that less than 10% of the State's original riparian acreage remains in a natural form. These habitats are considered Arizona's most rare and threatened natural communities.

The purpose of the ARC is to provide for the exchange and transmittal of information on the status, protection, and management of riparian systems in Arizona. For the purpose of this Council, 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, intermittent, or ephemeral surface or subsurface water drainage. To put it more simply, riparian habitats are the green ribbons of trees and shrubs growing along watercourses.

The ARC newsletter is published quarterly and is an effective medium to communicate current events, issues, and impacts that involve Arizona's riparian systems as well as detailing the happenings of the ARC. To contribute articles and information or address comments to the ARC, please send all materials to:

Tanna Thornburg, ARC Editor
 Arizona State Parks
 800 W. Washington, Suite 415
 Phoenix, AZ 85007



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 upon written application. There are no dues, however, contributions (\$5, \$10, \$25) are gratefully accepted. For more information about the Arizona Riparian Council or to join, write to the return address below.

ARIZONA RIPARIAN COUNCIL

Officers

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Duncan Patten.....	965-2975
Vice-President:	
Erv Zube.....	621-5462
Secretary-Treasurer:	
William C. Hunter.....	965-2490

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Education:	
Tanna Thornburg.....	255-1996
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Bruce Roundy.....	621-7259
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Andy Laurenzi.....	622-3861
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Kniffy Hamilton.....	241-5512
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