

Arizona State Park's Natural Area Program¹

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Abstract.--A Natural Area Program within Arizona State Parks identifies and registers important sites within the State. Over half of the identified Natural Areas contain riparian elements. Developing protective strategies, cooperation with land managing agencies, and public education show promise for maintaining an important southwestern resource.

INTRODUCTION

Arizona is a spacially diverse land, with major biomes converging within her borders and a rich geologic history. The riparian ecosystems tie together four deserts, chaparral and grasslands with madrean and rocky mountain forests.

Arizona's arid climate has, in many ways, been a blessing. Impacts and development have been confined to a few, very specific areas: much of the natural landscape appears minimally disturbed. With 87% of the land in public ownership, an opportunity exists for a natural area program that is equalled in few other places in the world.

Arizona's claim to one of the nation's highest growth rates is presently placing demands on all resources. Governor Babbitt recently commented "Accommodation of reasonable growth, while conserving the very values for which people move to Arizona, is the challenge for Arizonans".

HISTORY OF NATURAL AREA PROGRAM

In 1971, the Natural Area Committee of the Arizona Academy of Science, recognizing the need to identify areas most important in Arizona by which environmental degradation may be measured, applied for a research grant from Arizona's Office of Economic Planning and Development (nee OEPAD) through HUD 701 land use planning funds. The Academy compiled stud-

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ies of Established Natural Areas in Arizona (Smith, 1974) and identified additional sites for protection within the state. These 75 sites represent examples of the state's various ecosystems, important habitats, hydrologic and geologic structures presently in good condition and worthy of recognition and preservation (Smith, 1976).

The study produced management schemes for selected uses of natural areas and a numerical ranking scheme by which the sites could be prioritized to identify those most important and endangered.

At the completion of the contract in 1975, the Governor, by letter, asked Arizona State Parks Board to assume the program with a Natural Area Advisory Council, nominated by the Arizona Academy of Science, to assist the Board in their ongoing responsibility.

In 1976, the Parks Board formally adopted the program, and through the Council and Coordinator (half-time), continue to study additional areas, to recommend protective measures, and to register protected sites.

NATURAL AREA PROGRAM STRUCTURE

Natural Area Advisory Council

The ten-member Natural Area Advisory Council is comprised of geologists, hydrologists, ecologists, an archaeologist, land use and environmental education experts, who are drawn from various institutions and geographic areas within the state.

The Council gives proposed status to appropriate sites, defines policy and direction for the Natural Area Program; and, as individuals, contribute as consultants to natural area studies. Meetings, open to the public,

are held three times per year, in various towns in Arizona.

The Council enacted goals and objectives, definitions, and criteria. The criteria incorporate the concepts of diversity, genetic pools, protection of undiscovered values, stable ecosystems, baseline monitoring, and include hydrologic, geologic and scenic values. Uses for Natural Areas may be scientific, educational, recreational, or serve as buffer or open space.

The Natural Area Program is not intended as a wilderness designation, although some areas may qualify. Many sites are close to cities, are small, or are disturbed. Additionally, sites were studied for, and boundaries drawn to include, intrinsic values. As a consequence, land ownership patterns within some areas are complex.

Selection Methodology

A potential natural area may be suggested by a private citizen, scientist, agency, or owner. A site is inventoried, and upon evaluation may be more completely studied for presentation to the Council for Proposed status. The study includes evaluation of climate, geology, floral and faunal components, history of disturbance, natural area qualities, ownership, present management, and suggested uses.

Increasing the political base for support of natural areas is one reason for opening nominations to the knowledgeable public. The other is to involve people and organizations throughout the state to enable better identification of potential Natural Areas.

The Brown and Lowe Digitized Computer-compatible Classification for Natural and Potential Vegetation in the Southwest, and map of the Biotic Communities of the Southwest, are the tools to identify the vegetational series and associations for representative natural areas. These important works are the basis of the Numerical Ranking Scheme (Smith, 1975).

The Numerical Ranking Scheme evaluates sites against each other to identify those most endangered or important. Scarceness or commonness of a biome, series or association, integrity, diversity or sensitivity to disturbance of a site, presence of rare, endangered or peripheral species; topographic diversity, hydrological processes, archaeological or paleontological values, threat, availability and use factors are evaluated and produce

a value by which a site may be ranked.

Site Status

Proposed Natural Area status, a land use planning and notification step, is given to a site after the Council has reviewed the primary values, and assigns a numerical priority. Although this status has no actual impact or legal status, it serves to red-flag sites that might otherwise be overlooked during planning for long range public projects such as power lines, dams, and other consumptive uses. It calls attention to values that may not be apparent to agencies or owners, but that are important in the spectrum of sites in Arizona.

The second status with the Natural Area Program is "Recognized Natural Area". Owners or certain agencies (such as Indian reservations) may be protectively managing a natural area, but are hesitant to enter into an agreement with a governmental agency. This stewardship is acknowledged by awarding a "Certificate of Recognition".

The third status is "Registered Natural Area" whereby a document between State Parks Board and an owner/agency sets down specifics of a site's condition, management and important values. Although it is a non-binding agreement, several points within the document provide for communication and notification of management change. Mutual recognition of values, and the agreement to communicate are the keys for protection of sites held by others within the state.

Relationship to Federal Program

The various types of status within Arizona's Natural Area Program closely parallel those within the Heritage Conservation and Recreation Service's Natural Landmark Program, where land outside the agency's jurisdiction is identified for various values: geological or biological.

Federal agencies have policies and procedures for establishing natural areas on lands under their management. The U.S. Forest Service has two categories: Research Natural Area, and Botanical, Zoological or Geological Natural Area; Bureau of Land Management has Natural Areas and Areas of Critical Environmental Concern; and U.S. Fish & Wildlife Service and National Park Service may establish Natural Areas. The major vehicle for cooperation by these agencies is their incorporation of state-important natural areas within the scheme of their existing policies. In Arizona,

this is essential to the success of the Natural Area Program. Federal agencies do not have a state perspective to identify important sites within the state's range of natural systems; yet, with a major portion of Arizona's land in federal ownership, this cooperation must occur to protect the state's significant lands.

RIPARIAN ECOSYSTEM ISSUES IN ARIZONA

Background

During the past ten years, several government-sponsored projects in Arizona proposed to reduce riparian habitat. The public outcry in response to this action prompted important riparian ecosystem research sponsored by state and federal agencies.

The research produced startling figures supporting the need to identify and protect a heretofore unrecognized resource (Johnson, 1970).

Arizona's landscape supports limited perennial streams and riparian habitat (Brown, et al, 1978). Of the various ecosystems in the state, riparian areas occupy the smallest land area, less than .75% (Babcock, 1968). This is confined to narrow bands adjacent to the stream beds. In the arid southern half of the state, perennial streams and riparian habitat occur where geologic formations force water to the surface.

Land settlement patterns since earliest historic times centered on reliable water supplies, producing present private land ownership that closely follows stream and river drainages. Arizona faces the following dilemma: 87% of land base in public ownership, the majority of the most limited, most vulnerable and most valuable ecosystem (Riparian Habitat Symposium, 1977) is held within the private sector.

Recently, Governor Babbitt expressed concern for riparian habitat, noting its scarcity and lack of protection or standing in the state.³

Scope of Systems and Threat

The biotic range of riparian ecosystems in Arizona is diverse--from near alpine tundra to the palm grove remnants of evergreen subtropical forests. Most of the Sonoran desert rivers in the United States are located in southern Arizona. Significant portions of these rivers

remain in a relatively natural state. The San Pedro River (with four proposed natural areas identified along Arizona reach (Smith, 1976)) occurs in a pivotal biotic area and supports record vertebrate diversity and significant acreage of mesquite forests.

The Natural Area Program has identified 45 proposed Natural Areas which include the range of Arizona's riparian ecosystems; half of the presently proposed 90 areas. Fifty percent of the 45 riparian areas are threatened by activities that may negate their values.

Present Utilization of Riparian Habitat

Livestock Grazing

Most riparian systems in Arizona are grazed, producing aging cottonwood or hardwood galleries, with concurrent lack of reproduction of trees, vines or shrubs; diminished wildlife and recreational values; and erosion and water quality problems. Much of the federal land is grazed; however, fencing certain riparian habitat is proposed or completed on various forests throughout the state (Ames, 1977). Other federal agencies, such as SCS, have counseled farmers or ranchers to remove "Phreatophytes"; a philosophy that is changing.

Groundwater Pumping

Primary users of groundwater are municipalities, industry (in Arizona, mining interests have water rights in several key riparian areas) and irrigated farming. Withdrawal of groundwater faster than plant roots can grow results in large dieoffs of natural riparian growth (Phillips, et al, 1964). Farming directly threatens the streamside forests by the clearing of new fields, or by farming to the edge of the stream banks. Federal Government agricultural policies directly or indirectly support groundwater withdrawal, compounding the complexity of efforts to conserve riparian habitat (Kendall, 1978).

Dams

Federal water management projects on desert river systems are the single most potent threat to riparian habitat in Arizona (Todd, 1978).

Present Protection Strategies

Federal Programs

The United States Forest Service in Arizona is fencing grazing exclosures on streams and adjacent riparian growth.

³Speech to Governor's Commission on Arizona's Environment, August 10, 1978.

The U.S. Fish & Wildlife Service, through the unique and nationally significant ecosystem inventory, incorporates an analysis of riparian habitat for acquisition priority. In Arizona, private owners are aware of this option for maintaining or dispensing of important holdings.

In both programs, the Natural Area Program is supplying potential sites, justification and support for the federal action.

State Programs

The Natural Area Program calls attention to specific sites needing special planning or protection.

Arizona Game & Fish Department has long been a champion for protection of riparian ecosystems, and has been instrumental in mitigating impacts of several large federal projects (Manes, et al, 1970).

Private Programs

The Nature Conservancy has purchased and maintains several important properties in southern Arizona. Their ability to arrange financing for purchasing important habitat is an important role in the state.

A cattle ranching corporation, the Victorio Company, has fenced several stockpounds to enhance riparian and wildlife habitat (Thomas, 1978). They are unique in the state, having several wildlife biologists on their ranches to manage for wildlife values, as well as livestock production.

Future Needs of Riparian Ecosystems

Federal Policies

Many federal agency programs that study, impact or enhance riparian habitat are not coordinated. A synthesis of the products of various programs' research with each other, and with the state can place dollars and efforts where it will be most beneficial to maintain riparian habitats.

State Policies

A state policy for riparian ecosystems would address:

1 - Legal recognition that maintenance of riparian vegetation and wildlife habitat is a beneficial use. This could set the stage for riparian habitat management agreements with entities that have discretionary land management capabilities. The mining industry presently leases farmable streamside land to maintain their right to the water by leasing

to present "beneficial" users.

2 - Insuring that a voice knowledgeable of riparian ecosystem values is on water-related Boards and Commissions.

Research about the autecology of individual riparian species in the southwest. Proper management of this system depends on how the individual parts function. Specifically, it is not known at what age a cottonwood can withstand grazing. With this established, a restoration grazing management plan on a riparian site can be developed.

During the next two years, the Nature Conservancy Heritage Program proposes to inventory the biological and geological elements within Arizona to identify those needing protection and planning consideration, and to computerize this information in an easily accessible mode. This valuable addition to Arizona's efforts should provide more information to document the need to establish a state riparian ecosystem policy.

SUMMARY

The Natural Area Program has established a statewide perspective and communication with federal and state agencies. Issues are clarified by understanding the policies and limitations of agencies, communication with the private sector and site documentation.

Riparian ecosystem policy and protection is the single most important issue for the Natural Area Program; the state's natural diversity is dependent on it. The focus of this symposium on management and protection strategies should serve to galvanize federal and state action for acknowledgement of this important ecosystem. Arizona requires federal understanding of its total riparian ecosystem needs because of the large federal holdings within the state. The state needs to define its role in the management and protection of its unique natural heritage.

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