



*People and Nature: Our Future is in the Balance*

## **National Wildlife Federation**

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**Arizona State University**  
**Tempe, Arizona**  
**Spring 2002, Landscaping**  
*Native Habitat Project*

### **BACKGROUND**

#### **Campus Profile**

Arizona State University (ASU) is a research institution located in metropolitan Phoenix with over 100 four-year academic and research programs in all major disciplines. It serves approximately 50,000 undergraduates and 10,000 graduate students. The campuses are in low-elevation Sonoran desert. The main campus in Tempe is within a mile of the Salt River, which historically supported cottonwood-willow riparian forest and Tempe Butte, a remnant of creosote-cactus desert. Because of the campus proximity to the riverbed, it most likely supported mesquite woodland prior to urbanization. In 1994, the campus grounds were declared an arboretum. Currently, the campus is dominated by turf and subtropical vegetation, which reflects the unfortunate landscaping trend in the Phoenix area; however, there is an emerging interest in reintroducing native vegetation into rapidly developing portions of main campus and its satellites for water conservation and future intensified sustainability.

#### **Group/Class Profile**

The Native Habitat Society is a registered student organization at ASU that was founded in 2001 to promote the goals of the Native Habitat Project. The student organization is composed of graduate and undergraduate students from the life sciences and other disciplines. Students serve essential diplomatic, academic, organizational and educational roles. An advisory committee of professors in the life sciences and arboretum staff provide technical and administrative assistance.

#### **Contacts**

Jennie Rambo  
Graduate student  
480- 965-0043, 832 8537  
tortoise@imap2.asu.edu

Stanley H. Faeth  
Professor and Associate Chair, Department of Biology  
480-965-4120, 965 3571  
S.FAETH@ASU.EDU

### **GOALS AND ACCOMPLISHMENTS**

#### **Short-Term Goals**

The initial goal of the Native Habitat Project is to establish a network of native vegetation for wildlife habitat and resource conservation on main campus and to promote understanding of the ecological importance of native plants to wildlife and ecosystems. Several habitats on campus will serve as models of how we can live more sustainably in urban areas and restore the ecological integrity of the American landscape. These include the Arizona Uplands Wildflower Habitat, the Arizona Mesquite Woodland, the Cottonwood/Willow Riparian Forest and the Burrowing Owl Habitat. Projects also incorporate drip irrigation to conserve water and maintain without pesticides. To begin establishing a habitat network in the surrounding community, I am

writing a small book and giving a series of presentations on urban wildlife restoration. Furthermore, I am working to strengthen student and faculty membership in the Native Habitat Society.

### Long-Term Goals

Within one to three years, we will continue to re-landscape additional portions of the life science complex with native vegetation that will draw habitat attention to the plight of native wildflowers, pollinators and birds. In addition, the mesquite and cottonwood-willow habitat is anticipated to support riparian-obligate bird species, which may use the campus forest as a stepping stone for habitat along the Salt River. Furthermore, the forest is expected to redefine the landscaping character of the eastern portion of main campus and inspire the establishment of additional groves of native trees.



Within this time, we also anticipate that these landscapes will generate a substantial network of habitats in surrounding neighborhoods and encourage citizens to ameliorate the stress placed on native biotic communities by urbanization. In the future, the project will challenge landscapers and city governments to incorporate wildlife habitat and corridors into existing right-of-ways, retention basins, canal banks and urban parks throughout the greater Phoenix area. By promoting diverse native plant species over exotic vegetation, we hope to reverse the trend of urban heat island effects and invasive species introduction, which misguided xeriscapes have encouraged. We also hope to unite local environmental, educational and wildlife rehabilitation groups towards reaching these common goals. Finally, the project seeks to instill empathy for native species and the ecosystems of the Sonoran desert and the resolve to preserve them.

### Accomplishments

The Arizona Uplands Wildflower Habitat begun in November 2001. Indigenous wildflowers and shrubs replaced exotic vegetation. Approximately 4,000 square feet is occupied by 18 species of plants indigenous to the Sonoran desert of south-central Arizona, including brittlebush (*Encelia farinosa*), globemallow (*Sphaeralcea ambigua*), penstemon (*Penstemon parryi* and *P. pseudospectabilis*), desert marigold (*Baileya multiradiata*), Mexican gold poppy (*Eschscholtzia mexicana*), lupine (*Lupinus sparsiflorus*), scorpion flower (*Phacelia crenulata*) and blazing star (*Mentzelia multiflora*). A second phase of this habitat featuring plants of desert canyons was planted in March and April 2002. There, the first Arizona rosewood (*Vaquelinia californica*) and sugarbush (*Rhus ovata*) were introduced to the ASU arboretum. The vegetation currently supports insects and native birds including mourning doves, cactus wrens, verdin, house finches, lesser goldfinches, Anna's hummingbirds and a variety of native bees. To introduce the project to visitors, a permanent 12"x18" arboretum sign provides information about the Arizona Uplands, and the Native Habitat Project. It acknowledges the support received from the National Wildlife Federation and Associated Students of ASU. It features nine color photographs of some of the wildflower species growing in the habitat with common and botanical names. Many visitors to the habitat have inquired about the plants and asked for seed to plant in their yards.

In March, plans to restore mesquite woodland to campus were approved by the ASU arboretum. Two weeks later, the superintendent of grounds and the landscape coordinator were transferred to East campus; at that time, the campus architect raised concerns regarding the precise location. Two months of negotiations on the part of the Department of Biology and the deans of the college resulted in the procurement of the largest retention basin on main campus and a generous commitment of labor and machinery by facilities management to assist students in implementing this project this summer. Thus, one of the major entrances to the university will see the restoration of the mesquite woodland and low-elevation riparian forest that historically dominated the area. A 450 foot-long, drip irrigated channel will support velvet and screwbean mesquite, Fremont cottonwood, Goodding's willow, Arizona ash, desert elderberry and blue palo verde. The understory will consist mainly of associated hackberry, wolfberry, saltbush, perennial bunch grasse and indigenous wildflowers. Currently, I am drafting a new landscape plan for approval by the university planning committee.



I have met with Greg Clark of Liberty Wildlife Rehabilitation Foundation to select nest sites for Burrowing owls at a desert remnant near main campus. These burrows will be constructed this summer and subsequently will be monitored for owl activity to provide data for conservation of burrowing owl populations.

Numerous faculties, student and arboretum staff committee meetings have taken place during the spring semester regarding the Arizona Uplands Wildflower and Mesquite Woodland habitats. During Earth Day and Wildlife Week, we recruited over 20 new student volunteers and distributed over 50 native wildflower seed packets and habitat brochures from our table outside the main library. We also enlisted campus staff to begin the first habitats in the surrounding community.

I am writing the Sonoran habitat book in more depth than previously intended, although it will be completed summer 2002. The native plant entries alone have been extensively revised to include wildlife value and landscaping information on 77 species of trees, shrubs, cacti, wildflowers and grasses. The remaining portions will emphasize plant species composition and diversity, vegetation structure and environmental heterogeneity, wildlife behavior and nutrition, invasive species biology, and metapopulation structure and dynamics. These topics are essential for individuals to realize the fullest potential and limitations of their yards as habitats. It will also be accompanied by sections on natural landscaping, organic gardening principles and how to change society's negative perceptions of natural yards. The third and final version of the PowerPoint presentation is rescheduled for completion in early July 2003.

### **Challenges and Responses**

The most formidable challenge in establishing native habitats in cities is overcoming the negative perceptions of native vegetation wielded by commercial landscapers, management and urban planners. Such decision-makers must be educated about the diversity, ecological roles, and aesthetic value of native plants. This task requires time, diplomacy and persistence. On

college campuses, management may resist projects on the premise that students are incapable of managing projects, in which case, it is crucial that students seek diplomatic support from a large faculty committee and, if possible, allies within campus management.

In summer 2001, I arranged the first meeting between the arboretum and life sciences to discuss the return of large-scale native landscapes to Main campus. Over the course of three months, students, faculty, the deans of the college, the landscape coordinator, and the arboretum director, convinced facilities management to support the establishment of the Arizona Uplands Wildflower Habitat at Life Sciences. We succeeded because we emphasized education, aesthetics and low maintenance. The following March, the arboretum approved final plans to restore mesquite forest to a retention basin on campus. Shortly after, however, the director and landscape coordinator were transferred to the east campus, at that time, the campus architect became involved and raised objections about the project because it would replace a landscape of ten foot-tall African sumac, an invasive tree extensively planted in the Phoenix area. It was very difficult to locate another site because the university planning committee was in the midst of campus master plan revisions. Uncertain about the future of alternate sites within a developing campus, I set out to win the support from faculty and deans of other colleges in order to secure the original retention area in the campus core. After two months of negotiations and uncertainty, administration redirected the planners to preserve another larger floodwater retention site for the mesquite-riparian forest.

Working at a large university presents both a tremendous opportunities to instigate positive change and the challenge of reconciling the diverse perspectives of numerous stakeholders. I also had to consider the long-term political ramifications of short-term decisions. For example, The Native Habitat Society must continue to win support from management in order to ensure that the mesquite/riparian forest expands throughout the eastern portion of main campus, as large areas of asphalt are replaced by greenspace during the next several years. However, I also had to balance long-term possibilities with the current reality of initiating habitats during this first crucial month and in areas where they would have a secure future. I could not have foreseen that the alternate retention basin would be preserved, but I did begin to devise a specific revegetation plan for that site as the master-planning situation developed. Although the time I spent gathering additional support for the mesquite woodland was considerable, it is already apparent that the project will benefit greatly from increased volunteering and be more firmly institutionalized through diverse disciplines.

## **ENGAGEMENT AND SUPPORT**

### **Stakeholder Engagement**

The faculty committee has been tireless in helping students negotiate sites for the habitats. The committee includes Dr. Stanley Faeth, Dr. James Collins, Dr. David Pearson, Dr. John Alcock, Dr. Juliet Stromberg and the associate deans of the college, Dr. Milton Sommerfeld and Dr. David Young. In addition, we have been fortunate in working with talented and supportive arboretum staff including the director Scott Cisson, the landscape coordinator Michael Buschbacker and the volunteer coordinator Louisa Ballard. The student organization has been crucial towards the success of the wildflower area. A fellow student, Cinnamon Hayes, has been especially important in helping me to establish the wildflower habitat and organize the Earth

Day/Wildlife Week table. Facilities staff, Kelly Nemec and James Newell, donated their time to produce the wildflower habitat sign.

### **Funding and Staffing**

In November, I donated \$150 of perennial wildflowers and seed to the wildflower habitat. Associated Students of ASU awarded \$350 to obtain shrubs and additional wildflowers. The arboretum and grounds provided assistance for removing non-native vegetation and agreed to provide labor and heavy equipment to prepare the retention site and help students plant trees at the Mesquite Woodland/Riparian Forest this summer. The \$775 from NWF covered the cost of 15-gallon native trees and (1) boxed tree, acquired wholesale from Treeland; Arid Zone Trees is donating boxed mesquite with a value matching or exceeding that of the grant money. A staff member and I are each donating a tree to the mesquite forest. The wildflower habitat sign, which cost \$80, was provided by the campus sign shop. On Earth Day, students raised \$97 towards the wildflower habitat.

### **National Wildlife Federation's Campus Ecology Program**

Support from National Wildlife has been instrumental in establishing this project. We perhaps could not have won final approval for the mesquite/riparian habitats without the prestige and support from NWF. In addition to the funding for the mesquite/riparian forest, the fact that this project is a part of a much larger, national effort seems to inspire more individuals to act locally. More than anything, the recognition received by the Native Habitat Project from Campus Ecology has helped us persevere through difficult and uncertain times that this project has encountered. The case studies, the *Campus Environmental Yearbook*, and network updates were also helpful.

### **OUTREACH, EDUCATION AND PRESS**

The habitats will be integrated into the educational mission of the university by promoting human understanding of the importance of native plant species to wildlife and ecosystems and urban sustainability issues. It will also provide crucial natural observatories for biology, ecology and environmental studies classes, as well as giving students practical experience in restoration ecology. Recently, the project has received enthusiastic support from faculty in the College of Education, who plan to involve education majors as well as young children in the establishment, care, and monitoring of habitats. I have also met with the co-director of the Central Arizona-Phoenix Long-term Ecological Research Program in urban ecology at ASU, who may incorporate the native landscapes into large-scale monitoring efforts approved by the Native Habitat Society.

To promote the project, I gave a presentation to the biology graduate student seminar entitled, *Reversing One Hundred Years of Conventional Landscaping: This Job is For the Birds!* We widely promoted the project during Earth Day and Wildlife Week, as previously noted and continue to distribute a brochure on how to landscape for wildlife. The Arizona Uplands Wildflower Habitat received front-page coverage in the university newspaper, *State Press*.

## **REVIEW AND REPORTING**

The status and progress of the project will be published in an annual review and shared with National Wildlife Federation in the future. Furthermore, these landscapes will become institutionalized through life science and education curriculum and permanent arboretum designation.

## **CLOSING REMARKS**

Reversing centuries of conventional landscaping may be one of the biggest challenges we face in restoring habitat to urban areas. But, once people understand the connection of individual habitats to the broader geographic area and to the history of the land, they will let go of the lawns and the symmetry and instead preserve the biological integrity and beauty of the American landscape.