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# Schoolyard habitats teacher training opportunities

*Diana M. Foss*

## Abstract

Teachers are the keys to ensure the ongoing success of a schoolyard habitat. This is especially true during the evaluation and planning phases prior to development of the habitat. Without teacher input toward the masterplan, a schoolyard habitat may fail simply because the teachers perceive the habitat as providing entertainment, rather than daily education opportunities. To encourage teacher involvement in the design process and boost teacher confidence levels, Texas Parks and Wildlife Department is providing training opportunities through workshops. The Department's Urban Program biologists are hosting schoolyard habitat planning workshops in the 3 major urban centers of Texas: Dallas/Fort Worth, Houston, and San Antonio. The author will present the results of the teacher workshop held in Houston, co-sponsored with the U. S. Fish and Wildlife Service.

The Schoolyard Habitat Planning Workshop is designed to give teachers the knowledge and experience to create a habitat masterplan for their own school. The two-day workshop will be held at a Houston school, one that intends to install a schoolyard habitat. Teams (3 to 4 teachers) from selected schools will learn techniques to design and install various habitat-related features. The teachers will actually install the items on the hosting school's grounds. For example, teachers will study pond design first and then construct a small wildlife pond on site.

Topics covered in the workshop include:

- starting a habitat committee
- outlining goals, objectives, and educational features for the site
- surveying teachers and parents to determine goals and solicit volunteer assistance
- selecting an appropriate site for the habitat
- conducting a site survey, evaluation, and mapping
- planning various habitat and educational features for the site
- dividing the plan into smaller phases; determining materials, costs, and time frame per phase
- installation/ construction techniques and tips
- selecting appropriate plant species, with emphasis on natives
- maintaining the site through the seasons, after installation

A Schoolyard Habitat workbook, with tips, techniques, plant lists, references, and resources will be provided to each participant. The workshops held in 1999 will hopefully serve as models for future schoolyard habitat training sessions. Training techniques, both successes and failures, will be shared with the Urban Wildlife Symposium participants.

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Author's address: Urban Program, Texas Parks & Wildlife Department, 14320 Garrett, Houston, TX 77044

## INTRODUCTION

Faced with the continued loss of habitat due to urbanization, school habitats are becoming important links to reconnect urban students with nature. These school habitats may be the only green spaces remaining in an area covered in concrete and asphalt. They provide valuable student learning opportunities, especially in the area of animal-plant interrelationships. When discussing a school habitat, the focus is often on students. However, teachers are the keys to ensure the ongoing success of a school habitat. This is especially true during the planning phases prior to installation. Without teacher input toward the master plan, a habitat site may fail simply because the teachers perceive the habitat as providing entertainment, rather than daily educational opportunities. Teachers may also be unfamiliar with the plants and animals in a school habitat, resulting in a reluctance to utilize the site. To encourage teacher involvement in the design process, familiarize teachers with wildlife and habitat issues, and boost teacher confidence levels, Texas Parks and Wildlife and the U. S. Fish and Wildlife Service are working together to provide a teacher training opportunity, the School Habitat Design and Installation Workshop. The workshop strives to give teachers hands-on experience in the planning, design, and installation of a wildlife habitat on school grounds.

The first two-day workshop was held on 6 March and 27 March, 1999 at a Houston, Texas school, one that planned to install a school habitat. The site was located on property shared jointly by South Houston Intermediate School and Matthys Elementary School in the South Houston Independent School District (ISD). Schools from an 8 county region were invited to apply for participation in the workshop. To gauge administrative support for the school's participation, principals from applying schools were asked to sign an agreement confirming their commitment to: 1) establish and maintain a habitat area on their school grounds for 5 years, with a minimum size of 464 square meters (556 square yards); 2) install a pond in the habitat area, which may require security fencing; 3) allow 3 school employees to attend both workshop sessions; 4) accept delivery of \$500 worth of supplies toward their school habitat; and 5) submit a 1 page written report, each year for 5 years, describing the year's accomplishments in the habitat. Space was limited to 30 adults to insure that each teacher received individual attention from trainers. Forty-three schools applied for the workshop. Eight schools were selected to attend. The selected schools were Jaime Davila Elementary (Houston ISD), Hastings Ninth Grade Center (Houston ISD), E. A. Jones Elementary (Fort Bend ISD), Kruse Elementary (Pasadena ISD), Grady B. Rasco Middle School

(Brazosport ISD), The Rice School/La Escuela Rice (Houston ISD), South Houston Intermediate/Matthys Elementary (South Houston ISD), and Wainwright Science/Math Elementary School (Houston ISD). The participating schools represented approximately 8,500 students, ranging from pre-Kindergarten (4 - 5 years of age) to ninth grade (14 - 15 years of age).

## THE PROCESS:

The School Habitat Workshop provided teachers with opportunities to obtain the knowledge and skills to manage a school habitat. Each school sent a team of 3 - 4 teachers to participate in the workshop. The team approach encouraged creation of a committee and discouraged the idea of 1 teacher working alone. To supply teachers with the necessary background information, 5 hours of classroom instruction covered such topics as committee organization, goal setting and fundraising, habitat basics and ecological processes, plant selection to benefit wildlife, pond design for maximum wildlife use, water filtration using aquatic plants, natural mosquito control, seasonal habitat maintenance, natural wildlife carrying capacity, proper planting methods, and curriculum ideas for student utilization of the site prior to working outside. As background reference material, each team received a resource kit with books, Native Texas Plants, Landscaping Region by Region (Wasowski 1997), Sand County Almanac (Leopold 1966), Nature at Your Doorstep (Basile 1997), and City Kids, City Critters (Roberts 1996). The kit also contained wildflower seed, videos, posters, and other curriculum materials. Each teacher received the Creating a School Habitat manual by Foss and Jones. Teams utilized the reference books during and after the workshop. Guest teachers from 2 area schools with established habitat sites presented curriculum projects that had been accomplished by students in their school habitats. These experienced teachers also gave advice and answered questions from the audience regarding site management. Teachers were advised to visit established habitat sites to gather ideas for their own sites.

The School Habitat Workshop emphasized gaining hands-on experience. Teachers spent 4 hours outside practicing the techniques learned in class. Teachers employed a variety of common equipment to complete an inventory and evaluation of the proposed habitat site. Surveying equipment and hand levels were used to ascertain the ground slope for pond placement. Teachers followed a soil key to analyze the clay content of the soil. They also used augers and shovels to dig a two-foot hole and conduct a soil test to determine the soil's ponding

potential. After evaluating the soil type and ground slope, the teams then decided the appropriate location for the pond and marked its outline. Teachers observed the backhoe digging the pond shape, while discussing plans for the rapidly growing pile of dirt excavated from the hole. Teams planted trees and shrubs, built and installed benches, and discussed future plans for the security fence, deck, pathways, and additional plantings.

Creation of a master plan for each school was a major objective for the teaching teams. Teams devoted 5 hours during the workshop, plus additional hours of their own time, toward their habitat master plan. Teams learned to use drawing tools, such as the compass, protractor, t-square, ruler, and landscape shape templates, to sketch their design on large pieces of paper. Teachers selected a map scale for their plan and practiced drawing buildings, land plots, plants, and trees to scale on their paper. They started with a base map showing the basic dimensions of their site. They added the pathways, pond, and other land use patterns to the map in the correct scale. They selected plants to serve a specific function first, and then determined the exact plant to fit that function. Teachers were encouraged to replicate local habitat types, such as coastal prairie or pine/hardwood forest, rather than choosing desert or tropical habitats that would not grow well under Houston, Texas conditions. Plants were selected from a list of regional native species with a few hardy non-natives added due to their abundance and benefits for wildlife. To design a quality wildlife habitat, teams were urged to provide year-round sources of food, water, and shelter, wildlife corridors, layers of vegetation, plant diversity, larval butterfly plants, and sheltered areas away from heavy student traffic. From an educational perspective, teams added features that would provide learning opportunities for students. Those features included such items as a rotting log decomposition station, a weather station, a deck on one side of the pond to allow easy student access to the water, perch 'n plant station, and a plant succession station.

The second phase of the training involved visits to each school site by the workshop trainers. Biologists from Texas Parks and Wildlife and the U. S. Fish and Wildlife Service met with each school habitat committee at their school, reviewed their habitat site master plan, and toured the proposed site to discuss the plan. The committee compiled a list of the materials needed by each site from their \$500.00 workshop grant. Most teams requested trees, shrubs, perennials, vines, and pond materials. The supplies were delivered to each school prior to their first scheduled workday. After installation of the vegetation, committee members confirmed arrangements to insure that the plants would be watered during

the summer school recess. Each committee faced the challenge of completing their master plan, obtaining cost estimates, determining construction priorities, gathering additional materials, recruiting workday support, and installing portions of the habitat prior to the end of school. Fellow teachers and students were delighted to see progress occurring on the habitat, since most had heard rumors about the committee's plans. To instill feelings of ownership and deter potential problems with vandalism, committees were strongly encouraged to recruit as many students as possible for the workdays. By the end of May, workdays had occurred at every school site, resulting in pond and plant installation.

## CONCLUSIONS

The School Habitat Design and Installation Workshop resulted in 30 teachers trained in basic habitat management and the establishment of 8 school habitat sites that will be utilized as models for future workshops. During this first year, those 8 sites will impact approximately 8,500 students, ranging from pre-Kindergarten to ninth grades, with the potential to affect additional students every year thereafter.

According to teacher evaluations, verbal comments, and informal questionnaires, the School Habitat Design and Installation Workshop successfully prepared teachers to design and implement their master plans. Armed with sufficient knowledge and common techniques, teachers felt confident in their abilities to start the habitat development process, with the realization that biologists were just a phone call away if problems were encountered. One teacher commented that the training gave her a framework with logical steps to follow so that she was forced to plan ahead, rather than proceed haphazardly. On their own, prior to the biologists' site visit, each team successfully evaluated their site for slope, determined the soil's water holding capability, and marked their pond design on the ground. Each team reviewed their master plan to compile a list of plant material needed. When asked, each committee successfully explained the reasons why they placed certain plants in specified locations. The workshop background information was also passed down from the trained teachers to the students. During a site visit, one teacher was overheard answering a sixth grade student's questions about the habitat. The pair discussed why the shallow depth of the pond was appropriate for wildlife use, how the mosquito fish (*Gambusia sp.*) controlled mosquitoes by eating the larvae, and how the visiting night herons (*Nycticorax nycticorax*) would not eat all the fish because the plants provided shelter.

With any new event, there is always room for improvement. During the application phase, a need for 2 separate workshops became clear: 1 for schools that had no habitat site, and 1 for schools that had a partially established site and wished to enhance the area further for wildlife. Teachers urged that the workshop be held in the fall, giving teachers and students an entire school year to construct their new habitat site. Designing their habitat master plan was important to every teacher team, yet the process proved difficult for most. To aid in their master planning efforts, teachers desired additional time to practice using tools and drawing objects to scale. They also wanted to see examples of good quality school habitats. To accomplish this, an existing school habitat site could host the next workshop, or the teachers could be transported to such a site. Utilizing native vegetation to attract wildlife is an important aspect of a school habitat, yet most of the teachers were unfamiliar with native species. Teachers suggested more training about native vegetation, with a visit to a demonstration garden or native plant nursery as part of the training. They wanted to see the plants at their mature heights under normal growing conditions. The teaching teams appreciated the curriculum ideas from the guest teachers, as well as the opportunity to ask questions of teachers who had experienced the trials and tribulations of creating a school habitat. However, the teams also desired opportunities to hear

students describe ways they utilized the sites. To acquire time to accomplish all of this, teachers requested that a third day be added to the workshop, or that advanced training opportunities be offered during the year. The teacher teams have volunteered to either serve as host sites or trainers for a future workshop. They also plan to form a networking group, consisting of both new school habitat and established sites. The support group would meet regularly at a school habitat site to provide opportunities for networking and advanced training.

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