



Welcome

Wildlife

to your

Garden



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Introduction

The Diversity of the Sonoran Desert

The Sonoran Desert is one of the most ecologically diverse deserts in the world with more than 2,000 native plant species and hundreds of wildlife species. Special adaptations have allowed plants and animals to survive and thrive in this desert climate for thousands of years.

Over the past century, the desert landscape has changed dramatically in Central Arizona; farms and cities have replaced open desert, interrupted wildlife corridors, and led to a loss of critical habitat for plants and wildlife. An emerging trend in urban gardening is a return back to our desert roots through the use of native plants and sustainable landscape practices.

“Experienced gardeners know if you build it (a habitat garden), they (wildlife) will come!”

By working in partnership, gardeners and pollinators are bringing back the bounty to our urban environment.

The Glendale Xeriscape (low-water-use) Demonstration Garden is an example of how an urban landscape can be transformed into an attractive and colorful oasis through desert-adapted plants, thoughtful landscape design, and proper maintenance. As you walk through the garden, you will see a diversity of plant and wildlife species - a sign of a healthy landscape.

Funded by the Arizona Game and Fish Department Heritage Fund Grant, this guide and the accompanying educational signage at the Glendale Xeriscape Demonstration Garden are designed to help you create and sustain a wildlife-friendly garden. By restoring Sonoran Desert habitat, you can create a place for plants, wildlife, and people to live in harmony.



Creating a Habitat Garden

A Home for Desert Wildlife

Everyone needs a home. A habitat is a home that provides the four basic elements needed for wildlife to survive and thrive: food, water, shelter, and space to raise offspring. No matter the size of your yard, you can welcome wildlife by making it an inviting space.

Food

Knowing the food requirements of the wildlife you want to attract will help you select suitable plants for your garden. Desert wildlife thrives on native Sonoran Desert plants because they have co-evolved together. Native plants also require less water and are less susceptible to insect and disease problems. Choose a variety of native plants, from trees to cacti to groundcover that provide food in the form of foliage, nectar, pollen, fruits, and seeds to sustain wildlife. Pollinators, including insects, birds, and bats, help many plants reproduce, resulting in the formation of fruits, seeds, and the next generation of plants.





Desert birds are opportunistic feeders that have adaptable diets, but they also have their favorite foods. Hummingbirds are attracted to the nectar of red and orange, tubular-shaped flowers. Many songbirds, including mockingbirds and thrashers, consume fruits and berries. Other birds, such as quail and finches, eat seeds. Nearly all birds eat insects, which helps control the insect population. Use the table below as a general guide to attract birds to your garden based on their feeding preferences.



Birds	Food Preferences
<p>NECTAR-FEEDING BIRDS Hummingbirds, Verdins, Orioles</p>	<p>Penstemon, Aloe, Chuparosa, Desert Willow, Fairy Duster</p>
<p>FRUIT-EATING BIRDS Mockingbirds, Doves, Thrashers, Woodpeckers</p>	<p>Wolfberry, Hackberry, Prickly Pear and Saguaro Fruits</p>
<p>SEED-EATING BIRDS Quail, Doves, Sparrows, Finches</p>	<p>Desert Marigold, Brittlebush, Mesquite, Globemallow, Native Grasses</p>
<p>INSECT-EATING BIRDS Wrens, Thrashers, Woodpeckers, Verdins, Warblers, Towhees, Orioles</p>	<p>Aphids, Ants, Ladybugs, Flying Insects, Worms, Caterpillars, Spiders</p>
<p>MEAT-EATING BIRDS Hawks, Falcons, Kestrels, Owls</p>	<p>Reptiles, Small Birds, Rodents</p>

Pollinators Beautify Our Garden

Plants are typically pollinated by the wind or living creatures. Pollinators make up some of the most interesting and tiniest inhabitants of our desert gardens. Many insects are pollinators, critical to keeping your garden healthy, and in turn, providing an important food source for birds, bats, lizards, and spiders. Use the table below as a general guide for selecting plants that will attract pollinators to your garden based on their feeding habits.

Invite Pollinators by Providing Food Sources		
	POLLINATORS	NATIVE PLANTS
	<p>HUMMINGBIRDS Attracted to scarlet, orange, red, or white flowers that are tubular-shaped.</p>	Desert Willow, Ocotillo, Chuparosa, Fairy Duster, Penstemon, Agave
	<p>BATS Attracted to dull white, green, or purple flowers that emit strong musty odors. They prefer night-blooming cactus flowers.</p>	Saguaro Cactus, Organ Pipe Cactus, Agave
	<p>BUTTERFLIES & MOTHS Butterflies – Attracted to bright colored flowers, including red, yellow, and purple that have a wide landing pad where they can perch while drinking nectar. They prefer plants in protected spaces with less wind. Moths – Attracted to white, pale-colored flowers that have a strong sweet scent.</p>	Desert Marigold, Desert Milkweed, Desert Senna Night-blooming Cereus Cactus, Yucca, Evening Primrose, Fairy Duster
	<p>BEEES Attracted to bright white, yellow, or blue flowers that provide a landing platform. They are among the best pollinators because their fuzzy bodies allow for easy pollen collection.</p>	Globemallow, Penstemon, Prickly Pear Cactus, Saguaro Cactus, Desert Lavender

Feeders are another way to provide supplemental food for wildlife. They should be cleaned regularly to help prevent the spread of diseases. Wildlife feeders are designed for specific visitors such as hummingbirds, song birds, and squirrels. Wildlife prefer feeders that are located in quiet, undisturbed areas. Provide birds with a safe place to escape from predators by placing bird feeders 10 to 15 feet away from trees or shrubs.



Water

Wildlife need clean water for drinking, bathing, and staying cool. Be creative in the ways you supply it. Some options include traditional bird baths, rocks with concave surfaces, and rain gardens. Birdbaths require cleaning every few days, using a solution of 1 part bleach to 9 parts water, to help prevent the spread of disease and to deter mosquitoes from breeding.

Did You Know?

1-inch of rainfall from a 1,000 square foot roof can provide 600 gallons of water!

Small rain gardens are relatively simple to build and allow plants and wildlife to survive and thrive. Rain gardens generally consist of basins, or shallow depressions, that capture rainwater for plants and wildlife. Constructing a series of basins to capture roof runoff or sheet flow from gently sloped land encourages water penetration and storage in the soil, promotes healthy plant growth, and helps cool the surrounding area. Install native plants in and around rain basins where rainwater will slow, spread, and sink into the root zone of the plants.

Shelter & Space to Raise Offspring

Shelter allows wildlife to hide from predators and inclement weather. Understanding the shelter needs of wildlife you want to attract helps you determine plant selection and placement. Allow plants to grow into their natural form. Over-pruning stresses plants and exposes wildlife, making them vulnerable to predators. Create points of refuge and escape routes by placing plants in clusters. Help protect wildlife by keeping your pets indoors and a watchful eye on them when they're outdoors.

Birds are attracted to areas that provide different vantage points from which to perch. This allows them to find food and watch for predators. Hawks prefer higher perches so they can spot prey, whereas Gambel's quail seek cover under shrubs. Provide optimal perching sites by incorporating plants of different heights, such as the branches of a mesquite tree, the flowering stalks of an agave, and the low lying branches of a fairy duster.

Plantings for shelter also provide nesting sites for wildlife to raise their offspring. Tree and shrub-nesting birds look for dense canopies that provide shade, cover, and protection. Trees and taller shrubs, such as desert hackberry, palo verde, ironwood, and catclaw acacia, are ideal nest sites for small birds. Although intimidating, spiny desert plants such as cholla cactus offer protective nesting sites for cactus wrens and curve-billed thrashers. Birds and other wildlife require natural materials such as leaves and twigs to build their nests. Flickers and woodpeckers build nesting cavities in saguaros, whereas verdins and cactus wrens build nests using thorns, twigs, and grass. To help maintain spaces for raising offspring, avoid the use of blowers and excessive raking that remove vital nesting materials from your landscape.



Designing for Wildlife

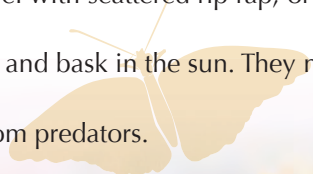
Enjoy Watching Butterflies!

Butterflies need plants throughout their entire life cycle:

- Adults feed on nectar and lay their eggs on certain plants.
- Caterpillars rely on foliage for food and camouflage.

Now that you know about desert plants and wildlife, you are ready to begin your own habitat garden. Start off with a simple sketch of your property and include your house, yard, and existing plants. Conduct a site assessment by noting how the elements (e.g. sun, wind, and rain) impact areas of your yard differently. Use the following design tips to guide your landscape design:

- Go native! Wildlife recognizes and relies on native Sonoran Desert plants. Determine how you can reduce the size of your lawn to create a more desirable habitat for wildlife. Lawns require more water and maintenance than native landscapes.
- Choose plants with different blooming seasons so flowers, fruits, and seeds are available year-round.
- Include trees, shrubs, cacti, groundcover, and perennials of varying heights to provide shelter for a variety of wildlife.
- Group plants together to aid pollinators and offer a hiding place from predators.
- Use gravel sparingly so birds can easily forage for insects on the ground. Better options include fine (quarter-minus) gravel, a thin layer of gravel with scattered rip rap, or shredded mulch.
- Place flat stones to provide space for butterflies to rest and bask in the sun. They need to warm up their bodies and wings for flight.
- Build rock piles to provide space for lizards to hide from predators.
- Create a seating area to view wildlife.





A diversity of plants with different heights, colors, and blooming seasons makes for an appealing habitat that attracts wildlife and people. Hardy desert ironwood trees provide food, shelter, and nesting sites. Desert milkweed offers nectar to butterflies and serves as host plants for butterfly larvae. Hummingbirds, bees, and butterflies are drawn to fairy dusters. Prickly pear cacti provide fruit and seeds. Gooding's verbena and golden dyssochia offer cover for wildlife.

Discourage Problematic Wildlife






















Creating a habitat can sometimes attract wildlife that may be destructive or even dangerous. Rabbits, rodents, and javelina eat tender vegetation, fruits, and seeds. Coyotes and javelina can injure and cause serious harm to pets. Here are some ways to discourage unwelcomed garden guests:

- Keep lids secure on recycling bins and garbage cans.
- Feed your pets indoors.
- Prune plants away from the walls of your home to prevent rats from having easy access to the roof.
- Seal off small openings to your home to prevent pests from getting inside.
- Install plants from larger, 5-gallon containers instead of plants from smaller, 1-gallon containers. Bigger plants are more resilient than smaller plants.
- Place temporary poultry fencing around newly installed and/or desirable plants to deter rabbits.
- Install a larger fence or wall to ward off javelina and coyotes.
























Sonoran Desert Plant Palette

When designing your own habitat, the Sonoran Desert's native plant palette provides plenty of inspiration. Native plants have endless color combinations and provide an array of unique and beautiful contrasting shades of grey and green foliage. Adapted to the local climate, soil, and pests, native plants provide critical habitat for wildlife, require less water and maintenance, and foster a regional appreciation of the natural landscape. Wildlife needs reliable food sources year-round, so choose native plants with different blooming seasons. Rains, favorable temperatures, and properly timed supplemental water can prolong blooming for many plants and some may bloom during more than one season.

Choose Plants with Different Blooming Seasons to Feed Wildlife Year Round

Plants		Spring	Summer	Fall	Winter
TREES	Desert Mesquite , <i>Prosopis</i> variety <ul style="list-style-type: none"> • Velvet Mesquite, <i>Prosopis velutina</i> • Screwbean Mesquite, <i>Prosopis pubescens</i> • Honey Mesquite, <i>Prosopis glandulosa</i> 				
	Ironwood , <i>Olneya tesota</i>				
	Palo Verde , <i>Parkinsonia</i> variety <ul style="list-style-type: none"> • Blue Palo Verde, <i>Parkinsonia florida</i> • Foothills Palo Verde, <i>Parkinsonia microphylla</i> 				
	Desert Willow , <i>Chilopsis linearis</i>				
SHRUBS	Wolfberry , <i>Lycium fremontii</i>				
	Fairy Duster (Pink species is native) <ul style="list-style-type: none"> • Pink fairy duster, <i>Calliandra eriophylla</i> • Baja fairy duster, <i>Calliandra californica</i> 				
	Desert Lavender , <i>Hyptis emoryi</i>				
	Brittlebush , <i>Encelia farinosa</i>				
	Creosote , <i>Larrea tridentata</i>				
	Chuparosa , <i>Justicia californica</i>				

Choose Plants with Different Blooming Seasons to Feed Wildlife Year Round

		Plants	Spring	Summer	Fall	Winter
CACTI & SUCCULENTS		Saguaro Cactus , <i>Carnegiea gigantea</i>				
		Prickly Pear Cactus , <i>Opuntia</i> variety <ul style="list-style-type: none"> • Englemann's Prickly Pear, <i>Opuntia engelmannii</i> • Purple Prickly Pear <i>Opuntia santa-rita</i> • Beavertail Prickly Pear, <i>Opuntia basilaris</i> 				
		Ocotillo , <i>Fouquieria splendens</i>				
		Compass Barrel Cactus , <i>Ferocactus cylindraceus</i>				
		Desert (rush) Milkweed , <i>Asclepias subulata</i>				
PERENNIALS		Parry's Penstemon , <i>Penstemon parryi</i>				
		Desert Marigold , <i>Baileya multiradiata</i>				
		Blackfoot Daisy , <i>Melampodium leucanthum</i>				
		Globemallow , <i>Sphaeralcea ambigua</i>				
		Angelita Daisy , <i>Hymenoxys acaulis</i>				



Sustainable Landscape Practices

It's easy to maintain a healthy habitat by adopting sustainable landscape practices that support plants and wildlife, including proper watering, mulching, pruning, avoiding toxic chemicals, and observing plant and wildlife interactions.

Proper Watering

Native plants require less water and maintenance, but most new plants require regular watering to get them established and keep them healthy. Improve your landscape watering efficiency by following these easy tips:

- Group plants with similar water needs to provide sufficient watering.
- Install drip irrigation to minimize evaporation.
- Water trees at the dripline, or outer edge of the tree's canopy, where rainwater naturally sheds.
- Water in the evening or early morning, when temperatures are cooler, to minimize evaporation.
- Change your irrigation schedule seasonally to match the watering needs of your plants.

Proper Mulching

Mulch provides an essential top layer of protection over the soil that reduces water evaporation, regulates soil temperature, and prevents weed growth. There are two types of mulch, organic and inorganic:

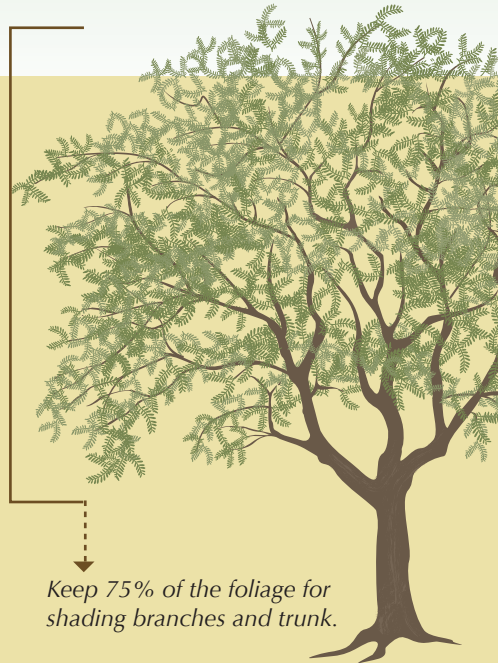
Organic mulch: Mostly plant material that is quick to decompose. Examples include shredded wood or bark, and compost.

Inorganic mulch: Non-living material that is extremely slow to decompose. An example is decomposed granite.

Protect and feed your soil by using organic mulch, which is inexpensive and easy to obtain. For example, composted or shredded plant trimmings and leaves from your yard are often the best mulch to use. Allow leaves, flowers, and seeds to accumulate on the ground to add organic matter, which builds the soil ecology, enhances soil nutrients, and retains soil moisture.

Trees need their leaves, so have a good reason to prune.

- Avoid pruning young trees.
- Keep lower branches in place to help shade the trunk and make it stronger.
- Prune mature trees only to remove dead, diseased, and damaged branches.
- Selectively prune branches that cross or rub together.
- Don't remove more than 25% of a tree's crown in one year.



Keep 75% of the foliage for shading branches and trunk.

Proper Pruning

Install trees and shrubs in appropriate areas of the yard, where they do not interfere with utilities and structures. Allow them enough space to reach their mature size. This greatly reduces the need for frequent pruning. Most native plants require minimal to no pruning. Excessive pruning or improper pruning can compromise the health of plants. Pruning reduces the amount of food and shelter available for wildlife. Letting flowers go to seed so they can be dispersed will bring more flowers and wildlife.

Learn how to make proper pruning cuts using the right tools. Take time to learn how and why to prune before making any cuts. If you must prune, use the natural shapes of the plant as a guide (i.e. no shear cutting or geometric shapes). While pruning, take a step back to view the developing plant shape. Special attention and care should be given to trees since they provide valuable wildlife habitat and provide shade to understory plants. Never remove more than 25% of the plant's crown (e.g. leaves, stems, branches) in one year.

Avoid Harmful Chemicals

Avoid using chemicals like herbicides and pesticides in your landscape. They are harmful to the environment and wildlife. If not applied correctly, herbicides can affect the health of desirable plants, too. Pesticides kill beneficial insects that are important food sources for birds, bats, lizards, and spiders.

Weeds can be controlled without herbicides by following these easy tips:

- Use organic mulch around plants to inhibit weed germination.
- Remove weeds before they set seed and don't put weed seeds in your compost pile.
- Pull weeds after it rains when the ground is moist.

Native plants are more resistant to pests and diseases and are adapted to the local conditions. Not all insects are pests, however. Upon examination, you may find that most insects in your yard are actually living in harmony with your plants and eating pests. For example, assassin bugs could be preventing an aphid infestation from taking over your desert milkweed. This plant is crucial to the life-cycle of Monarch butterflies. Lady bugs are good guests to have in the landscape because their larvae have great appetites for aphids.

Using Integrated Pest Management (IPM) is the best method for getting rid of pests. This involves some detective work to identify the pest and learn about its life cycle to come up with a safer, targeted approach for pest control. IPM will offer a variety of options and most solutions include a non-chemical approach to protect plants, people, pets, and the environment.



Observation: The Key to a Successful Habitat Garden

Watching how wildlife interacts with plants will provide the best guide for your landscape practices. Observe their behaviors when they visit your garden. What are they eating? Where do they perch? Are they nesting? How much time do they spend in your garden? Some questions you'll be able to answer, while others will remain a mystery. In addition to inviting wildlife to your habitat garden, the time spent observing them is also good for your health. According to the Therapeutic Landscapes Network, "Supporting and observing wildlife invites soft fascination, which can reduce stress and restore cognitive function." Relax in a patio chair, grab your binoculars, and enjoy!



Certify Your Habitat Garden & Inspire Others

Creating a habitat garden requires some research, observation, and imagination. You will be rewarded for your efforts by attracting cheerful songbirds, energetic hummingbirds, colorful butterflies, push-up performing lizards, and other entertaining wildlife to your yard.

The Glendale Xeriscape Demonstration Garden is certified as a Wildlife Habitat® by the National Wildlife Federation and a Monarch Waystation by Monarch Watch for providing critical wildlife and butterfly habitat. The garden displays educational signs to help garden visitors learn how they can attract and support wildlife, too.

The National Wildlife Federation and Monarch Waystation promote the creation of vital habitat through the following education and certification programs:

National Wildlife Federation - Wildlife Habitat®

Get your habitat garden certified as a Wildlife Habitat® by providing the following:

- ✓ **Food** – native plants and supplemental feeders.
- ✓ **Water** – bird baths, fountains, rain gardens, and ponds.
- ✓ **Shelter** – mature trees, dense shrubs, ground cover, and brush piles.
- ✓ **Places to Raise Young** – mature trees, dense shrubs, nesting boxes, and host plants for caterpillars.
- ✓ **Sustainable Landscape Practices** – use native plants, water efficiently, compost, mulch, and eliminate pesticide use.

Monarch Watch - Monarch Waystation

Get your habitat garden certified as a Monarch Waystation by providing the following:

- ✓ **Nectar Plants** – include a variety with different blooming seasons (e.g. baja fairy duster and desert milkweed) as food for adult butterflies during the breeding and migration seasons.
- ✓ **Milkweed Plants** – include at least 10 milkweed plants with two or three different varieties (e.g. desert milkweed, butterfly weed, and narrowleaf milkweed) for caterpillars.
- ✓ **Exposure** – locate in a sunny space (needs to have at least six hours of sunlight).
- ✓ **Soil Type and Drainage** – have low-clay soil and good drainage to support nectar and milkweed plants.
- ✓ **Shelter** – group nectar and milkweed varieties close together in bunches to offer protection for butterflies during each stage of their life-cycle.
- ✓ **Sustainable Landscape Practices** – use native plants, water efficiently, compost, mulch, and eliminate pesticide use.

Certifying your habitat garden is simple and can be done online. By doing so, you are helping spread the word about the importance of creating landscapes that welcome wildlife and monarch butterflies. You can use your garden as a teaching tool to educate and encourage others in creating their own Wildlife Habitats and Monarch Waystations.

Resources

Arizona Audubon Society:

Habitat at Home - <http://az.audubon.org/habitat-home>

Plants for Birds - <https://www.audubon.org/plantsforbirds>

Classroom presentations for grades K-8 - <http://riosalado.audubon.org/k-8-programs>

Arizona Game and Fish Department:

Information about Arizona's wildlife – www.azgfd.com/Wildlife

Arizona Municipal Water Users Association

Creating and maintaining landscapes in the Arizona Desert – www.amwua.org/landscape/

Arizona Native Plant Society – Native Plant & Seed Sources

www.aznps.com/sources.php

Cornell Lab of Ornithology – All About Birds

www.birds.cornell.edu/AllAboutBirds/birding123

Earth-Friendly Desert Gardening – Master Gardener Press

<http://cals.arizona.edu/maricopa/garden/html/pubs/mgpress/efdg.htm>

Glendale Xeriscape Demonstration Garden – A Low-water-use Garden

www.glendaleaz.com/xeriscapegarden

IPM – Integrated Pest Management for the Home Garden

<http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1521.pdf>

National Wildlife Federation – Create a Certified Wildlife Habitat

<https://www.nwf.org/Garden-for-Wildlife/Create>

Monarch Waystation – Create a Certified Monarch Habitat

www.monarchwatch.org/waystations/

Sonoran Audubon Society – Bookmark Series and other publications

<http://sonoranaudubon.org/projects/focus-birds-bookmarks/>

University of Arizona Cooperative Extension – Maricopa County Master Gardeners

<https://extension.arizona.edu/maricopamg>

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jo rolfe
DESIGN



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<https://www.glendaleaz.com/waterconservation/xeriscapegarden.cfm>

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