FINAL REPORT
15-042-000-8387
WaterSmart Landscaping: Protecting the Future of Freshwater Inflows for Galveston Bay

The Texas A&M AgriLife Extension Service (AgriLife), with funding from the Texas Coastal Management Program and in partnership with the City of Pasadena, Armand Bayou Nature Center (ABNC), and the Environmental Institute of Houston (EIH) at the University of Houston-Clear Lake (UHCL), completed this project to protect water quality and freshwater inflows in the Lower Galveston Bay watershed using water conserving landscapes. Project partners designed and installed three demonstration landscapes to conserve water, improve local water quality, and provide much-needed habitat. AgriLife produced five original online videos to educate home and business owners about WaterSmart landscaping. The WaterSmart program website, WaterSmart.tamu.edu, was reorganized and includes links to the video series, newly created factsheets, free landscape plans, and inspirational garden photos. Educational materials produced through this project are important longstanding resources for residents of the Upper Texas Gulf Coast.

Task 1: Installation of Demonstration WaterSmart Landscapes.

- **Provide a brief description of status of the task:** ☐ not started ☐ in progress ☒ completed
- **Describe major accomplishments**

  AgriLife worked with EIH, ABNC, and the City of Pasadena to install demonstration landscapes. Two butterfly gardens and one rain garden were created to show how environmentally friendly landscaping practices can be used to protect water quality and freshwater inflows in the lower Galveston Bay watershed.

  <u>Environmental Institute of Houston</u>

  The EIH butterfly garden was installed in the fall of 2016. This butterfly garden is a part of the EIH network of gardens on the UHCL campus that showcase environmentally friendly landscapes. Existing gardens include a rain garden, native prairie garden, and small habitat pond. The butterfly garden was a logical next addition to the site. At the request of EIH staff, only native vegetation was planted at the site.

Project partners cleaned out and weeded the garden bed, applied new mulch, and installed a new stone block border. In addition to the existing butterfly-attracting plants, new native gayfeather was planted to attract butterflies. A new gutter system was installed on a pavilion, connecting a rain barrel to a small birdbath used by a variety of organisms. An interpretive sign was installed to showcase the garden's plants and butterflies and provide visitors tips on how to be WaterSmart at home.

Interpretative signage at the EIH Butterfly Garden

Armand Bayou Nature Center

The ABNC butterfly garden was installed in the fall of 2016. This butterfly garden is located at the front entrance of the nature center. Each plant species in the garden was selected for its value as either a host or nectar plant for endemic butterfly species. To prepare for the garden, existing beds were cleaned and weeded, and several plants were removed and relocated. AgriLife added new soil and created a small berm to add height and interest to the bed. Volunteers mulched the bed and installed 20 species of flowers, shrubs, and trees. An interpretive sign was installed to showcase the plants and butterflies found in the garden and provide visitors tips for implementing WaterSmart practices at home.

Interpretive signage at the ABNC butterfly garden

Pasadena Public Library

The Pasadena Public Library rain garden was installed in the spring of 2017 at the side entrance of the main branch, outside of the Children's Area. Water from the library's roof travels through a down spout into a rock drainage area, then through pipes under two sidewalks into the rain garden. A small WaterSmart garden was created between the two sidewalks to visually tie the rain garden into the library landscaping and to create more valuable

habitat. The 500 square-foot rain garden was planted with a six-species plant palate composed of native and adapted plants that can handle the rain garden's wet/dry cycle. City of Pasadena staff installed the pipes under the rain garden, designed and installed the rock drainage area, dug and prepped the rain garden site, and worked with AgriLife staff to plant and mulch the rain garden. An interpretive bilingual sign was designed and installed to explain the special role of a rain garden. Since the installation, AgriLife staff have worked with the Library staff to provide specific rain garden programing for library patrons.

Interperative signage at the Pasadena Library rain garden

- **List the deliverable(s)/milestone(s) for the task and provide the date completed/submitted to the GLO.**

Deliverable Name	Date Due	Date submitted
Photos before, during and after installation of each WaterSmart landscape	*3/15/2017*	5/31/2017
Documentation of all volunteers participating in installation, to be reported in progress reports	*3/15/2017*	11/30/2016
Conceptual designs and draft text layout of interpretative signage at each site	*10/31/2016*	5/31/2017
Copies of project publicity to be submitted with applicable progress reports	*3/15/2017*	11/10/2016
Photographs of interpretative signage and CMP signage at each site	*3/15/2017*	9/18/2017

Task 2: Conduct WaterSmart Landscaping Workshops

- **Provide a brief description of status of the task:** ☐ not started ☐ in progress ☒ completed
- **Describe major accomplishments.** On April 24, 2016, AgriLife staff and ABNC staff held an afternoon event at ABNC focusing on landscaping for butterflies and pollinators. Over 100 adults and children attended. The Director of the Cockrell Butterfly Center at the Houston Museum of Natural Science was the guest speaker for the event. Several gardens around ABNC were staffed with knowledgeable volunteers giving tours and answering questions. Activities

and displays included construction of newspaper flower pots, which attendees took home full of Indian blanket seeds, and an interactive display about bees, bats, and birds. AgriLife employees staffed a WaterSmart butterfly garden display and answered questions about selecting native plants for butterflies, plant propagation, and local gardening resources.

AgriLife staff participated in the City of Pasadena Earth Day and the University of Texas Medical Branch Earth Day and presented to the City of La Marque Garden Club, Nassau Bay Garden Club, and Galveston Bay Master Gardener organization. AgriLife distributed informational factsheets and packets of native Upper Texas Gulf Coast wildflower seeds, presented information about the importance of outdoor water conservation, and answered questions on a wide variety of gardening and water conservation topics. Hundreds of people were reached by these activates, which also served to build the WaterSmart email newsletter subscription list, allowing for continued education and interactions.

- **List the deliverable(s)/milestone(s) for the task and provide the date completed/submitted to the GLO.**

Deliverable Name	**Date Due**	**Date submitted**
List of workshop participants, to be reported in applicable progress reports	*3/31/2017*	10/5/2017
Results of the pre and post surveys, to be reported in applicable progress reports	*3/31/2017*	None were administered. The come and go nature of the events held did not allow for pre and post surveys to be administered
Participant and sponsor evaluations, to be reported in applicable progress reports	*3/31/2017*	None were administered. The come and go nature of the events held did not allow for participant evaluations to be administered. No sponsors were obtained for the events so they could not be evaluated.
Copies of event publicity, to be submitted with applicable progress reports	*3/31/2017*	10/5/2017 (April 2016 event)

Task 3: Education and Outreach

- **Provide a brief description of status of the task:** ☐ not started ☐ in progress ☒ completed
- **Provide a brief description of status of the task.** AgriLife staff worked throughout the project period to spread the word about WaterSmart Landscaping principles and projects through print and digital methods.
- **Describe major accomplishments**

  Agrilife developed educational and outreach materials, including fact sheets and a series of unique, innovative YouTube videos. AgriLife submitted draft copies of all education and outreach materials to the GLO prior to publication.

  Factsheets: Six WaterSmart factsheets were created or substantially revised during the project period, which include the following:

  - What are WaterSmart Landscapes
  - Neighborhood Friendly Landscapes

- Benefits of Native Plants
- Rain Gardens
- Dealing with Drought
- Using Plants to Attract Wildlife
- Enhancing Your Yard for Wildlife

Each Factsheet is available for download online at watersmart.tamu.edu and agrilifebookstore.org. Hard copies of factsheets are distributed at WaterSmart workshops, educational events, and speaking engagements.

E-Newsletter: The WaterSmart E-Newsletter was created and distributed each month beginning in February 2016. This newsletter serves as a tool for communicating with homeowners, volunteers, and interested persons and provides methods to incorporate WaterSmart practices into home landscapes to reduce water consumption, create habitat, and reduce water pollution.

YouTube Video series: AgriLife contracted with Apo Metis media company to create a-5 video YouTube series. Each unique video is packed with information for home and business owners on the Upper Texas Gulf Coast. The first video focuses on the principles of WaterSmart landscaping and the remaining four videos covering the following topics:

- What does it mean to be WaterSmart
- Why Use Compost?
- Best Watering Practices
- Why use Native Plants?
- Texas Native Plants

The videos are hosted and available on YouTube and WaterSmart.tamu.edu. The videos have been viewed over 2,700 times.

Website: The WaterSmart Program website, watersmart.tamu.edu, was updated throughout the project period to include new photos, text, resource links and downloads. On the website, the factsheets are available for download and the video series can be viewed.

Social media: The WaterSmart Landscapes Facebook page posts information on a variety of topics, including WaterSmart plants, rain gardens, garden tips, planting advice, irrigation, green roofs, outdoor water conservation, butterfly gardens, and volunteer opportunities. The Facebook page also highlights special events, such as Native Plant Week, National Wildflower Week, and Earth Day. The WaterSmart Facebook page shared posts from other pages, such as Take Care of Texas and the Native Plant Society of Texas to connect followers with other information resources. From September 2015 to March 2017, the number of page likes and followers grew from 36 to 86 and 209 Facebook posts were shared.

- **List the deliverable(s)/milestone(s) for the task and provide the date completed/submitted to the GLO.**

Deliverable Name	**Date Due**	**Date submitted**
Education and outreach materials, including how-to-manual, brochures and fact sheets	*3/31/2017*	5/31/2017; A "how-to" manual was not completed as part of this project. Two complete rain garden how-to manuals were created outside of this project, fulfilling the need that was seen when this project was proposed. Resources were instead focused on factsheets and videos.

YouTube video series	*8/31/2016*	4/18/2016
Documentation of education materials added to WaterSmart website, to be reported in applicable progress reports	*3/31/2017*	5/31/2017
Documentation of social media outreach, to be reported in applicable progress reports	*3/31/2017*	5/31/2017

Task 4: Project Reporting

- **Provide a brief description of status of the task:** ☐ not started ☐ in progress ☒ completed
- **Describe major accomplishments.** Agrilife prepared and submitted reports, deliverables, and requests for reimbursement as required in the contract.
- **List the deliverable(s)/milestone(s) for the task and provide the date completed/submitted to the GLO.**

Deliverable Name	**Date Due**	**Date submitted**
Monthly progress reports and requests for reimbursement	3/31/2017	On-going throughout project
Final Report	*3/31/2017*	10/5/2017
Project Closeout Form	*3/31/2017*	10/5/2017

October 18, 2016 Armand Bayou Nature Center

The Armand Bayou Nature Center WaterSmart butterfly garden before work began.

The garden in progress: undesirable plants removed and new soil added.

The garden after new plants and mulch were added.

AgriLife staff with the finished garden.

The smaller garden bed before the workday.

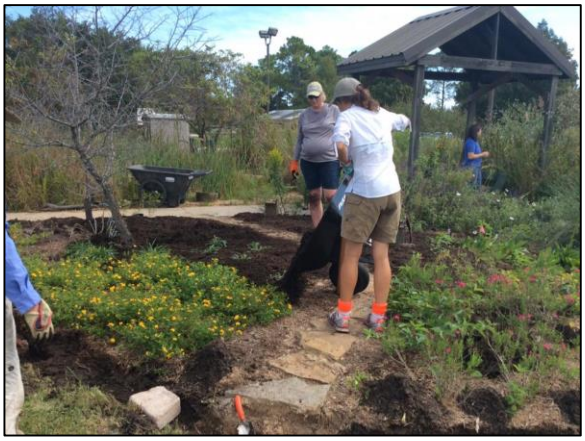
The smaller garden bed after it had been cleaned, mulched and planted.

October 14, 2016 Environmental Institute of Houston

Before the workday at the WaterSmart butterfly garden at the EIH at UHCL.

After the workday at the butterfly garden at the EIH at UHCL.

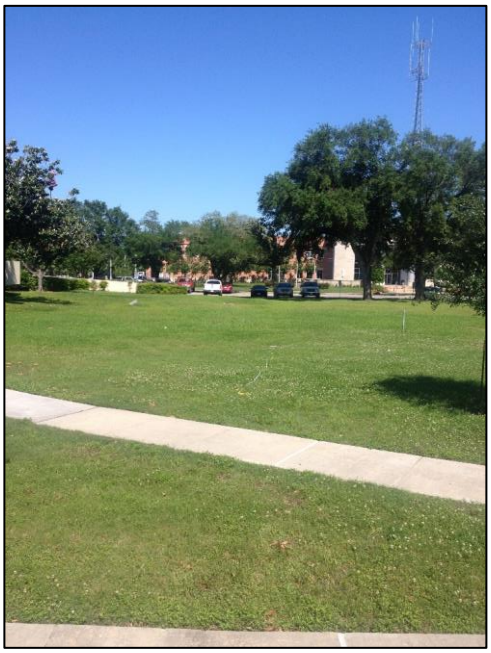
Volunteers at EIH helping to build the new rock border and spread mulch.



Volunteers spread new mulch in the garden.

Pasadena Library Garden Before and After Site Photos

Rain garden site before



Garden sites before

Rain garden site after installation

Garden sites after with WaterSmart garden in the foreground, and rain garden in the background

Rain garden after planting and sodding the area

WaterSmart garden after planting

Pasadena Library Garden Construction

City of Pasadena workers digging the rain garden

Installation of pipes under two sidewalks to move water from the down spout into the rain garden

New ponding/drainage area by the building, the pipes under the sidewalks begin here

Prepped garden beds, rain garden (foreground), WaterSmart garden (middle), with library in the background

City of Pasadena and AgriLife staff planting the rain garden

City of Pasadena and AgriLife staff planting the rain garden

City of Pasadena watering the newly planted rain garden

WaterSmart garden after planting.

View from the down spout on the library, you can see the drainage structure in the foreground, WaterSmart garden in the middle, and rain garden in the back.

Pasadena Library

Site before rain garden installation

Breaking ground on the rain garden

Excavated rain garden

Rock layer laid, perforated underdrain pipe being placed, and beginning to back fill the garden with a mixture of compost and native soil

Plants laid out for planting

Rain garden after planting

The perforated underdrain pipe runs along the bottom of the rain garden the connects to the storm drain system

View from the Library showing WaterSmart garden created between the sidewalks, the rain garden in is visible in the background

WaterSmart garden before planting

WaterSmart garden after planting


Meeting Room Entrance
Library Entrance
Before


Meeting Room Entrance
After

The pipe on the left is the water source for the rain garden.

City of Pasadena staff designed and installed the rock basin as part of the rain garden system. Water fills the rock area then drains first into the basin on the right into pipes connected to the rain garden. During large rainfalls, the large storm drain serves as an overflow so the area does not flood.

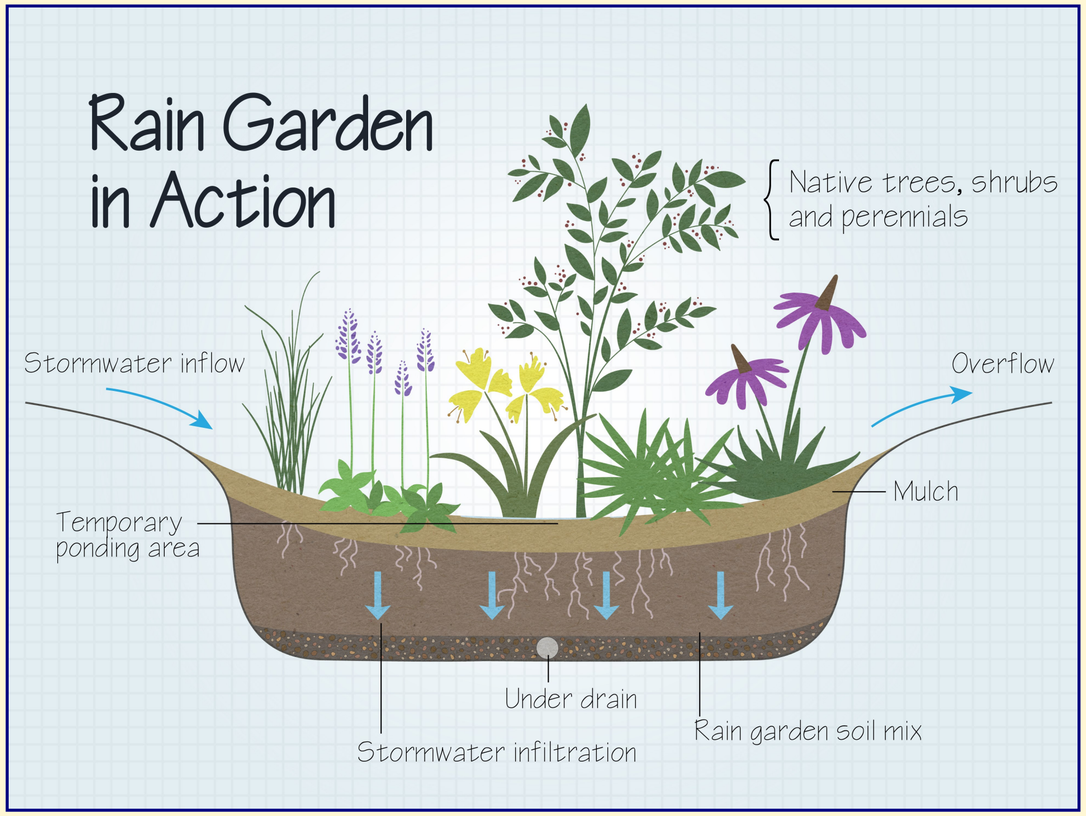
A WaterSmart Rain Garden

This rain garden is more than just a flower bed. It is designed as a bowl shaped depression to capture, hold and absorb stormwater, or rainwater that runs off impervious surfaces such as roofs, parking lots and streets.

Plants and soil in the garden filter pollutants out of the water as it flows through the garden.

The native and adapted plants in this garden are well suited to our climate and the wet and dry cycles of a rain garden as part of the design.

Rain gardens also provide homes for wildlife including birds and butterflies.



WaterSmart.tamu.edu

Este jardín de lluvia es más que simplemente un lecho de flores. Está diseñado como una depresión en forma de cuenca para capturar, retener y absorber el agua pluvial que se escurre de superficies impermeables como techos, estacionamientos, y calles.

Las plantas y el suelo en el jardín filtran los contaminantes del agua a medida que el agua fluye por el jardín.

Las plantas nativas o adaptadas en este jardín son bien adecuadas a nuestro clima y a los ciclos húmedos y secos que un jardín de lluvia tiene como parte del diseño.

Los jardines de lluvia también proporcionan hogares para la fauna silvestre incluyendo pájaros y mariposas.

FUNDED BY A TEXAS COASTAL MANAGEMENT PROGRAM GRANT APPROVED BY THE TEXAS LAND COMMISSIONER PURSUANT TO NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AWARD NO. NA14NOS4190139.

Photos by the Texas Coastal Watershed Program

WELCOME TO A WATERSMART BUTTERFLY GARDEN

Hamelia

White Penta

Rondeletia

Milkweed

This garden was specifically designed using native and non-invasive adapted plants to create a home for butterflies and other wildlife. These plants are well suited to our local conditions so they do not require the use of chemical fertilizers, herbicides or pesticides to remain healthy, which makes them WaterSmart. They can also tolerate periods of drought and heavy rain, making them excellent choices for your home garden.

What we do to our lawns and what runs off of your yard determines the health of Armand Bayou and ultimately Galveston Bay. By applying WaterSmart practices at home we can reduce the amount of runoff pollution and improve water quality.

Habitat is a place where animals get what they need to survive:

- **food, water, shelter and a place to raise young**

Attracting butterflies requires providing the right plants for all life stages. Throughout its life, a butterfly needs:

- A place to lay eggs
- Food for caterpillars
- A place to form chrysalides
- Food sources for adult butterflies

Creating a garden to attract butterflies harmonizes gardening and landscape practices with nature.

For more information go to www.watersmart.tamu

Monarch butterfly on Milkweed

Queen butterfly on Blue Mistflower

Mustin butterfly on Penta

Queen butterfly on Mexican Flame Vine

FUNDED BY A TEXAS COASTAL MANAGEMENT PROGRAM GRANT APPROVED BY THE TEXAS LAND COMMISSIONER PURSUANT TO NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AWARD NO. NA14NOS4190139.

Phots by the Texas Coastal Watershed Program

WELCOME TO THE WATERSMART BUTTERFLY GARDEN


Purple Cone Flower


Texas Lantana


Passion Flower Vine


Pink Autumn Salvia

This garden was specifically designed using native and non-invasive adapted plants to create a home for butterflies and other wildlife. These plants are well suited to our local conditions so they do not require the use of chemical fertilizers, herbicides or pesticides to remain healthy, which makes them WaterSmart. They can also tolerate periods of drought and heavy rain, making them excellent choices for your home garden.

What we do to our lawns and what runs off of your yard determines the health of our bayous and ultimately Galveston Bay. By applying WaterSmart practices at home we can reduce the amount of runoff pollution and improve water quality.

Habitat is a place where animals get what they need to survive:

- **food, water, shelter and a place to raise young**

Attracting butterflies requires providing the right plants for all life stages. Throughout its life, a butterfly needs:

- Food sources for adult butterflies
- A place to form chrysalides
- Food for caterpillars
- A place to lay eggs

Creating a garden to attract butterflies harmonizes gardening and landscape practices with nature.

For more information go to www.watersmart.tamu


Monarch on Milkweed


Sulphur on Pink Autumn Salvia


Gulf fritillary on New Gold Lantana


Giant Swallowtail on Buttonbush

FUNDED BY A TEXAS COASTAL MANAGEMENT PROGRAM GRANT APPROVED BY THE TEXAS LAND COMMISSIONER PURSUANT TO NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AWARD NO. NA14NOS4190139.

Photos by the Texas Coastal Watershed Program , Environmental Institute of Houston and Debbie Bush

Texas A&M AgriLife Extension

ERPT-010
4/16

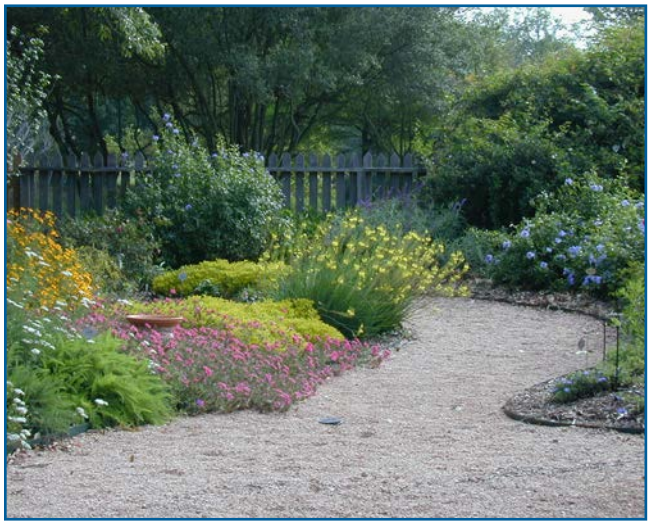
WaterSmart Landscapes

From sprinkler to storm drain, from bayou to bay, the water used to maintain your yard remains untreated. What you do to your lawn and what runs off it determines the health of your local bayou and Galveston Bay.

Runoff from residential areas in the Galveston Bay watershed is the No. 1 source of water pollution in most of our bayous. However, you can take steps to reduce the pollution that flows off your yard by adopting WaterSmart practices.

What are WaterSmart landscapes?

A WaterSmart yard uses plants and practices that require little or no fertilizers or pesticides and less water than conventional lawns. With minimal grass cover and maximum use of native and adapted plants, the WaterSmart landscape can be beautiful, easy to maintain, and environmentally friendly.



WaterSmart garden at Armand Bayou Nature Center

WaterSmart yard using a crushed rock pathway

WaterSmart landscapes can reduce the amount of polluted runoff entering the storm drain system by 90 percent. They can also cut the amount of water you use for irrigation by 90 percent. By converting your lawn one section at a time, you can create a landscape that helps preserve the bay area and gradually reduces your maintenance time.

Native plants

WaterSmart landscapes use both native and adapted noninvasive plants. Native plants are suited to the Upper Texas Gulf Coast and therefore require less water and fewer fertilizers and pesticides. WaterSmart landscapes also use other nonnative plants and heirloom varieties that are adapted to the Gulf Coast climate.

As an added feature, the native plants attract wildlife such as birds and butterflies to our landscapes.

Fertilizers and pesticides

Unfortunately, many homeowners damage our water by adding more fertilizer and pesticides than their lawns need. During rainfall or overwatering, the excess fertilizers and pesticides run untreated directly into our bays and bayous.

Every year, algae blooms from excess fertilizer remove precious oxygen from our water, causing fish kills. Many pesticides are not only toxic to aquatic life, but they may also accumulate in our food chain. It is best to use them sensibly or not at all.

To protect our environment as well as save money on fertilizer, have your soil tested to ensure that you are giving your plants only what they need.

What you can do

Install a rainwater harvesting system: Rainwater harvesting captures, diverts, and stores rainwater for later use. You can collect rainwater in a large cistern, tank, or barrel.

Rainwater harvesting system

Harvested rainwater is an alternate water supply and stormwater-management approach that anyone can use. It can reduce the amount of drinking water used for landscape irrigation. It reduces the demand on existing water supplies as well as decreases runoff, erosion, and contaminated surface water.

Plant a rain garden: A rain garden is a shallow excavated area in the soil that is planted as a garden and designed to capture rainfall from impervious surfaces such as roofs, sidewalks, streets, and parking lots.

WaterSmart rain garden with native plants and no turf grass

Rain gardens slow the flow of stormwater, allowing some of it to soak into the soil. They allow us to keep more of the rain that falls on our yards. When designed properly, water in a rain garden should stand for no more than 24 to 48 hours, too short a period for mosquitoes to hatch.

The plants, soil, and mulch in the rain garden filter the rest of the stormwater, making it cleaner when it finally enters the storm drain. Planted with native plants, rain gardens also function as habitat for wildlife such as birds and butterflies.

WaterSmart rain garden that captures and reuses runoff from the surrounding area

Photos by Chris LaChance

WaterSmart.tamu.edu

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Stephanie Hendrickson
WaterSmart Program Assistant
Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu
Watersmart.tamu.edu

TAMU-SG-16-510

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.

Texas A&M AgriLife Extension

ERPT-007
4/16

Neighborhood-Friendly Landscapes

As the issues of water quality and habitat loss become more critical, many people are adopting a natural approach to home landscaping. Natural landscapes, also called habitat gardens, consist mainly of native plants. They can take many forms, ranging from wild and unkempt to a more traditional, manicured design.

Occasionally, conflicts over these landscapes have arisen in neighborhoods, homeowner associations, and cities. But such conflicts need not be inevitable. You may be able to avoid "weed wars" by setting an example through good communication and proper maintenance practices.

Below are some strategies for fostering communication and education to help avoid confrontation before, during, and after you develop your natural landscape.

Learn the rules. Before converting your yard into a habitat garden, become familiar with the local ordinances, policies, and deed restrictions governing residential areas. Understand the process of applying for a variance or permit as well as the appeals process, if needed.

This information is readily available from city parks departments, homeowner association offices, or property management companies.

Learn the benefits of natural landscapes. Know what you want to accomplish in changing your landscape. You will be better able to answer the "why" questions as well as capitalize on opportunities to win support and possible converts.

Educate others. Find ways to inform others by word and deed. Welcome questions from neighbors, create a landscape that others will want to use as an example, and participate at homeowner association or community association meetings.

Change gradually. You could begin by placing a few native plants along the borders of a bed. A next step might be to enlarge the landscape beds a bit each year, to gradually accustom your neighbors to the new approach.

Communicate with neighbors. Let them know about your plans, and keep the conversations positive. For instance, you could give updates to the neighbors as the landscape progresses. Welcoming neighborhood children to learn about your landscape could generate excitement that they could transfer to the adults.

Use identification tags on plants if possible. Those who are unfamiliar with native plants may think they look odd or unruly. Plant tags can introduce them to new types of plants, give prominence to natives in the landscape, and offer an instant source of education.

Create borders or setbacks. Neat edges create the appearance of order, even if it's ordered chaos. Setback planting—placing trees and flowers behind the sidewalk and out of the right of way—will help keep the plants from hanging over curbs or sidewalks.

Think "plant communities." Create planting zones by grouping species found in naturally occurring areas such as wetlands, prairies, or shaded forests. The plants in these zones will have similar light and moisture requirements.

For visual impact, plant in masses. Native plants are sometimes less showy than traditional landscape plants. Planting them in large groups offers eye-catching interest.

Vary plant selection size, color, and texture. Landscapes are more interesting and visually appealing when plants with varying characteristics are planted together to form a rich tapestry.

Avoid straight lines and hard edges. Curved planting beds enhance the natural look of the landscapes and incorporate good basic landscape design.

Add structural interest. Birdbaths, garden structures, and even sculptures can add a personal signature to your landscape.

Maintain your landscape properly. Allowing the natural landscape to succumb to a "vacant lot" look will not create a climate of understanding or acceptance.

Tolerate differences. Recognize and acknowledge your neighbors' choices in plant types and landscape approaches.

Use legal means only as a last resort. Although cities and homeowner associations are becoming more sensitive to environmental issues, many still rely on outdated concepts and laws. Antagonistic approaches seldom win support or approval, but promoting a spirit of cooperation and goodwill can help.

Photos by Chris LaChance

WaterSmart.tamu.edu

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Stephanie Hendrickson
WaterSmart Program Assistant

Chris LaChance
Environmental Educator

Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu Watersmart.tamu.edu

TAMU-SG-16-507

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.

Texas A&M AgriLife Extension

ERPT-004
4/16

Benefits of Using Native Plants

What are native plants?

Native plants are local and occur naturally without human help in a given area. Many have thrived there for centuries. There are different types of native plants, including flowers, shrubs, trees, grasses and vines that you can use in your landscape.

Why are they beneficial?

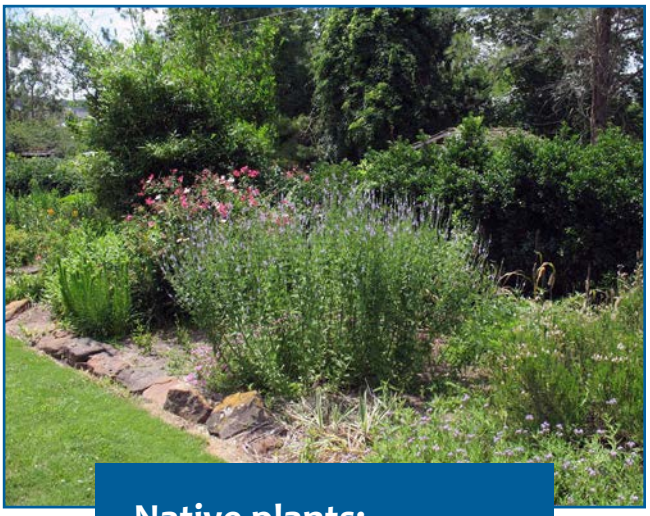
Native plants produce flowers, fruits, and seeds throughout the year. They create a beautiful, natural look and attract wildlife such as birds and butterflies to your yard.

Native plants are well suited to our climate and soil conditions. Once these plants become established, they require less watering and need no chemical fertilizers, pesticides, or herbicides to thrive. When used in the correct conditions, they also require little maintenance.

Compared to exotic plants, natives can better withstand drought and are more resistant to attack by insects and diseases. They can also limit the chances of invasive species overtaking your yard.

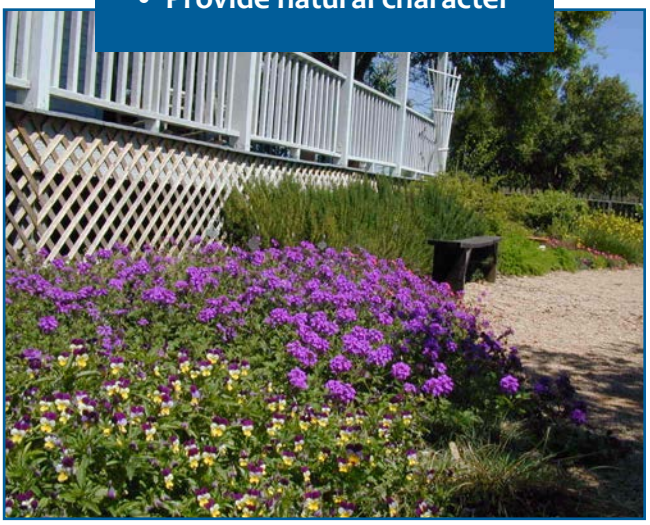
Adapted plants

Some nonnative plants are adapted to Gulf Coast conditions and offer many of the same benefits as do our native plants. WaterSmart landscapes use native and adapted noninvasive plants to help conserve water, protect water quality, and provide habitat for wildlife.



Native plants:

- Need little maintenance
- Save water
- Save money
- Create wildlife habitat
- Provide natural character



Native plants to try in your landscape

Flowers


Black-eyed Susan


Bluebonnet


Indian blanket


Purple cornflower

Grasses


Gulf muhly


Little bluestem

Shrubs


Esperanza


Texas lantana

Trees


Drummond red maple


Sweetbay magnolia

Vines


Crossvine


Passion flower

For more native plant suggestions, visit WaterSmart Landscapes for the Upper Texas Gulf Coast, the Lady Bird Johnson Wildflower Center's Native Plant Database, and the Earth-Kind Plant Selector.

Photos by Chris LaChance and Aggie Horticulture

WaterSmart.tamu.edu

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Stephanie Hendrickson
WaterSmart Program Assistant
Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu
Watersmart.tamu.edu

TAMU-SG-16-504

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.

TEXAS A&M AGRILIFE EXTENSION

ERPT-008
4/16

Rain Gardens

A beautiful solution to water pollution

A rain garden is a bowl-shaped depression designed as a garden to capture, hold, and absorb rainwater. Rain gardens slow the flow of rainwater from roofs, sidewalks, streets, parking lots, and other impervious surfaces, allowing the water to penetrate the soil.

The soil cleans the water of pollutants before it enters the storm drain and empties into our bayous and bays. This process allows us to keep more of the rain that falls on our yards, and the stormwater that finally enters the storm drain is cleaner.

Rain gardens use native plants as well as nonnative plants that are adapted to our climate. When designed properly, water in the rain garden should stand for no more than 24 to 48 hours, too short a period for mosquitoes to hatch.

Another benefit is that rain gardens serve as habitats for wildlife such as birds and butterflies. They are useful for residential, commercial, and public areas.

Above all, a rain garden is a landscape amenity, blending beauty and function—an attractive WaterSmart solution to water pollution.

Photos by Chris LaChance

WaterSmart.tamu.edu

Sea Grant Texas AT TEXAS A&M UNIVERSITY

TEXAS COASTAL WATERSHED PROGRAM

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Stephanie Hendrickson
WaterSmart Program Assistant

Chris LaChance
Environmental Educator

Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu Watersmart.tamu.edu

TAMU-SG-16-508

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.

TEXAS A&M AGRILIFE EXTENSION

ERPT-005
4/16

Dealing with Drought

Water restrictions need not mean that our yards must evolve into gravel and cactus. We can prepare and maintain our landscapes to make them more resilient and more WaterSmart:

- **Use compost** to help the soil hold more water and to retain more rainfall and irrigation in the yard. As compost breaks down, it improves the health of the soil, which helps plants survive stressful conditions like drought and disease. Also, the beneficial microbes and microorganisms in compost break up compacted soils, allowing water to penetrate.
- **Water less often** but more deeply to force the plants' roots to grow deeper in search of water. Roots that grow near the surface will dry out quickly.
- **Choose plants** that suit our climate and the spot where they are planted. Native and non-invasive adapted WaterSmart **plants** can withstand periods of drought and flood.
- **Group plants** by their water needs.
- **Water early** in the morning or after sunset, when less water is lost to evaporation, and winds are usually calmer.
- **Train plants** to require less water by slowly reducing the amount you give them. Most established plants and lawns can get by on 1 inch of water once or twice per week.
- **Set your lawnmower** at the highest setting, and lengthen the amount of time between cuttings. Longer grass blades help shade the soil. Lawns cut short require more water.
- **Hold off** fertilizing your lawn until late fall and then only if there is substantial rainfall.
- **Add mulch** to a depth of 2 to 3 inches to conserve moisture, reduce soil compaction, and keep the plant roots at a more even temperature.

Photos by Chris LaChance

WaterSmart.tamu.edu

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Stephanie Hendrickson
WaterSmart Program Assistant

Chris LaChance
Environmental Educator

Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu Watersmart.tamu.edu

TAMU-SG-16-505

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.

Texas A&M AgriLife Extension

ERPT-009
4/16

Using Plants to Attract Wildlife

If you want a natural environment for your yard, nature has already created the perfect landscape ecosystem template for you to copy. A good place to start if you want to attract wildlife to your yard is to group similar plants together in your landscape to mimic nature.

Choose plants for specific types of wildlife

When choosing plants for your landscape, think about the kind of wildlife you want to attract. Important plant groups to consider include:

- Conifers
- Grasses
- Nectar-producing plants
- Plants that bear fruit in summer and fall
- Winter-persistent plants
- Plants that bear nuts or acorns

Plant a variety

The larger the variety of plants you grow, the more types of wildlife your yard will attract. To keep the wildlife coming to your yard year round, select plants that will produce food during each season.

Use native plants

Native plants offer the best sources of food for the local wildlife, and they are best suited to your soil and climate conditions. Well-adapted nonnative plants are also good options.

WaterSmart Plants to Use

Several WaterSmart plants attract birds and butterflies. For more plants that draw wildlife, see the Native Plant Database of the Lady Bird Johnson Wildflower Center and the Earth-Kind Plant Selector.

Photos by Chris LaChance and David and Linda McDonald

WaterSmart.tamu.edu

Stephanie Hendrickson
WaterSmart Program Assistant
Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu
Watersmart.tamu.edu

TAMU-SG-16-509

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.

TEXAS A&M AGRILIFE EXTENSION

ERPT-006
4/16

Enhancing Your Yard for Wildlife

To attract wildlife to your landscape, you need to provide them with food, water, shelter, and places to raise their young. Feeders, birdbaths, and native plants can help you meet these needs and create a haven for wildlife in your backyard.

Birds and squirrels

The easiest way to attract birds to your yard is to put up a bird feeder. Common types are house feeders, tube feeders, and tray or platform feeders.

Set up the feeder in a quiet place where it is easy to see and refill. An ideal spot is near a tree, which will provide natural cover and branches for resting. A birdhouse can provide additional shelter.

Birdbaths also attract wildlife. They provide a dependable supply of fresh, clean water for drinking and bathing. Change the water once a week to deter mosquitoes.

Squirrels will also be attracted to both the water in the birdbath and the seeds in the feeders.

Hummingbirds

To lure hummingbirds, place a nectar feeder where it is protected from the wind.

Catch the attention of passing hummingbirds by tying foot-long strands of bright red or orange plastic ribbon to the trees near the feeders. The bright colors will lure hummingbirds to get a closer look.

Butterflies

Butterflies are not only beautiful, but they also pollinate your flowers.

To attract butterflies, you must provide the right plants for all life stages of the butterfly, including a place to lay eggs, food for the caterpillar, a place where the chrysalide can form, and food for the adult butterfly. For example, milkweed can sustain the entire life cycle of monarch butterflies.

Pesticides

Pesticides kill the good insects as well as the harmful ones. They also can kill off food sources for other wildlife. Native plants help take care of any potential insect problem because they provide habitats for the beneficial organisms that discourage pests.

Photos by Chris LaChance and David and Linda McDonald

WaterSmart.tamu.edu

Publication funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award No. NA14NOS4190139.

Stephanie Hendrickson
WaterSmart Program Assistant
Texas A&M Agrilife Extension/Texas Sea Grant
shendrickson@tamu.edu
Watersmart.tamu.edu

TAMU-SG-16-506

Texas A&M AgriLife does not discriminate on the basis of race, color, religion, sex, national origin, disability, age, genetic information, veteran status, sexual orientation or gender identity and provides equal access in its programs, activities, education and employment.