



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

ANNUAL
REPORT

2015-2016

TABLE OF CONTENTS

	INTRODUCTION	3
	MISSION AND VISION	4
	RESEARCH	6
	Unmanned Aerial Systems (UAS).....	8
	How Much Water is in the Hill Country?.....	9
	The Meadows Center Abroad.....	10
	The Meadows Center’s First Endowed Chair in Water Conservation.....	11
	EDUCATION	12
	Interpretive Field Trips.....	14
	Historic Glass-bottom boats.....	15
	Texas Aquatic Science.....	16
	Conservation Leadership Book Series.....	18
	River Book Series.....	18
	Partnership with REI, Inc.....	19
	STEWARDSHIP	20
	The Biology Field Lab.....	22
	Underwater Archaeology.....	23
	Operation SCUBA.....	24
	Spring Lake AquaCorps.....	25
	Texas Stream Team	26
	LEADERSHIP	28
	Water Grand Challenges.....	30
	The Environmental Flows Initiative	31
	Watershed Services.....	32

INTRODUCTION

The Meadows Center for Water and the Environment is built on the enthusiasm and drive of its people. In this year’s Annual Report, we are proud to introduce you to some of our staff and showcase the critical role they play in ensuring clean, abundant water for the environment and all humanity.

2015-2016 Highlights

- Dr. Timothy Loftus joined our team as the first Meadows Endowed Water Conservation Chair, ensuring that the Meadows Center and Texas State University remain in the lead in addressing water resources issues in Texas and beyond.
- We are thrilled to announce that Dr. Mike Abbott, Dr. Fritz Hanselmann, Mr. Tom Hegemier, Dr. Warren Pulich, Dr. Walter Rast, Dr. Rudy Rosen, Mr. Shane Townsend, and Mr. Doug Wierman have all agreed to serve as Meadows Fellows and continue their long and productive association with our center.
- Glass-bottom boat #1953, named for the year in which it was built, was restored with a new fiberglass hull that is more water-resistant and will help us maintain our historic fleet for many years to come.
- Our flagship citizen science program, Texas Stream Team, turned 25! Since its inception, thousands of people have volunteered over 45,000 hours to monitor water quality and protect Texas waterways.
- The launch of the Operation Scuba program was a success. This therapeutic SCUBA adventure program for student veterans was piloted last year thanks to the generous support from the Ewing Halsell Foundation. Ten veteran students are now certified PADI open water divers.
- With critical support from the Hoblitzelle Foundation and the formidable skills of Broaddus Planning, we now have a Feasibility Study for Spring Lake that clearly establishes the need for a new research and interpretive center on our site.
- We have embarked on a strategic planning process for the first time. This programmatic plan, coupled with a strategic communications roadmap, will pave the way for our center’s sustainability.

MISSION

Inspiring research and leadership that ensures clean, abundant water for the environment and all humanity.

VISION

A world where all people understand and embrace the value of water and environmental stewardship.

The Meadows Center for Water and the Environment fulfills its mission by integrating activities across four pillars of action in powerful ways. Our work in each of these pillars begins at Spring Lake – one of the largest artesian springs in the world – and ripples outward across Texas and beyond.

RESEARCH



EDUCATION



STEWARDSHIP



LEADERSHIP



© Texas State University



RESEARCH

Conducting Solutions-Focused Research

FACULTY, STAFF, AND STUDENTS AT THE MEADOWS CENTER conduct applied research to address real-world problems. Our researchers provide multi-disciplinary expertise to advance science-based solutions for the most pressing water resource challenges facing Texas and the world beyond.



Conducting applied research to address real-world problems

Increasing understanding of complex water and natural systems

Unmanned Aerial Systems (UAS)

Chief Science Officer and Meadows Environmental Flows Professor, Dr. Thomas Hardy, oversees the work of three staff and many students who use state of the art equipment to collect environmental data in support of science and natural resources management. Projects this year included:

- Developing a habitat suitability model of Whooping Cranes during winter to project territories with increasing populations along the Texas Coast
- Collaborating with TPWD and Texas State Biology faculty in developing counts of colonial water bird nesting sites to monitor status and trends of populations
- Supporting Geography masters student on use of UAS remote sensing data for wetland vegetation classification to support best management practices for treatment of municipal wastewater at the Richland Wildlife Management Area 



IN FOCUS: JACOB BILBO

“I operate our Minion unmanned aerial vehicle (UAV) and our Phantom 3 quadcopter and ensure we are flying safely and operating within federal aviation administration guidelines. I hope my research will improve existing management strategies among sensitive ecosystems such as the San Marcos River. My biggest achievements in this job have included successfully flying and landing our new Minion UAV for the first time in February and using aerial quadcopter imagery to more efficiently map and document aquatic vegetation.”

Jacob Bilbo,
Research Associate and Unmanned
Aerial Systems (UAS) Safety Pilot



The Unmanned Aerial System (UAS) captures high-resolution, multispectral imagery that is geo-referenced and can be used to identify a variety of environmental characteristics.



© Don J. Schulte

How Much Water is in the Hill Country?

The Hill Country is a unique region of Texas where rivers rise out of the limestone, spilling the means for life onto what would be an otherwise dry and difficult place to survive. “How Much Water is in the Hill Country?” aims to better understand the interaction of aquifers, springs, and rivers in the Hill Country and to help make critical decisions that will ensure there is enough water in the future for the environment and people alike. This work is being supported by the Cynthia and George Mitchell Foundation.

Our efforts this year focused on the Pedernales River and included conducting extensive desktop research, a hydro-blitz of 931 sites throughout the watershed, an intensive water quality assessment of 100 sites and water quality analysis, and a gain-loss study. Our researchers found that the Pedernales is in relatively good shape and there is time to work with landowners and decision makers to ensure that it stays that way. Regional GCDs and additional partners have committed to working with the Meadows Center to continue research in the coming years. 

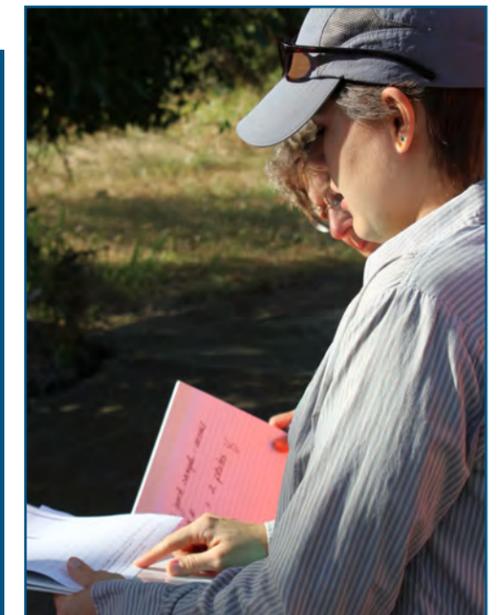
IN FOCUS: SARAH ZAPPITELLO

We supported Sarah Zappitello’s graduate research to find the origin of surface water in the Pedernales River. Zappitello earned her Master’s in Science from Texas State University’s Department of Biology in May 2016. Findings from the study, which also served as her thesis, included:

- Water quality in the Pedernales River is generally good
- Headwater springs and the underlying aquifers are the baseflow source of the Pedernales River
- The Pedernales River’s water quality is influenced by human activity and proximity to springs

“Understanding these natural systems is the only way to really make effective policy decisions. This area doesn’t have much urban development, so this creates the opportunity for proactive conservation.”

Sarah Zappitello,
Texas State University Graduate Student



Zappitello assists a volunteer during the Pedernales hydro-blitz in Summer 2015.



Communicate research to inform decision-making and stewardship practices

Working with multi-disciplinary expertise across campus to catalyze research on water resources

The Meadows Center Abroad

Recognizing the value of transboundary water systems and the fact that many of them continue to be degraded and managed in fragmented ways, Dr. Rast led our international efforts in developing comparative global assessment of transboundary lakes as part of the Transboundary Waters Assessment Programme (TWAP), implemented in cooperation with the International Lake Environment Committee in Kusatsu, Japan. Based on the drainage basin characteristics, Dr. Rast found that African transboundary lakes as a group exhibited the greatest human water security risks, followed by lakes in Asia and South America.

The United Nations Environment Programme and the Global Environment Fund initiated the program. TWAP partners identified and evaluated changes in all transboundary water systems caused by human activities and natural processes, and the consequences these changes have on dependent human populations. In the Spring of 2016, TWAP completed the first baseline assessment of all the planet's transboundary water resources and created benchmarks of the current state of water systems to inform policy, encourage knowledge exchange, identify and classify water bodies at risk and increase awareness of the importance to protect transboundary waters. 🌿



Dr. Walter Rast

Fellow of the Meadows Center
 Director, International Watershed Studies
 Chairman of International Lake Environment Committee (ILEC)

Comprehensive Report of Transboundary Lakes Reveals Scarcity of Global Data

“We [the Meadows Center] extended the influence of our international status by becoming engaged in international projects for which our expertise was useful, and also enhanced our international reputation.”

Dr. Rast described that in this study, his research team, “did not identify the “worst lake” in the world because this designation must be based on consideration of what is most important to the users. Such designation is not simply a number-crunching exercise, but rather must consider the perception of the users and what they consider important. Lakes are essential freshwater systems, which is why ILEC was surprised little was known about them on a global scale. It is clear the international community must focus much more attention on studying these important water sources. ILEC, in cooperation with other partners, including The Meadows Center for Water and the Environment, will continue to promote and support such efforts to the maximum extent as follow-up activities are being considered.” 🌿

The Meadows Center’s First Endowed Chair in Water Conservation

This year we welcomed our first Meadows Endowed Chair in Water Conservation, Dr. Timothy Loftus. A generous contribution from the Meadows Foundation and matching Texas Research Incentive Program funds created this position to support learning and research on water conservation for Texas State University and The Meadows Center. Loftus also serves as a professor of practice in the Department of Geography. 🌿



© AgriLife Today



“ I am a conservationist at heart, and I am ready to help Texas State University become more of a known entity and expected player at the table of water resource issues. There is pretty strong potential, with the population growth expected, that our demand for water will outgrow our supplies. My goal is to help explore, research, and otherwise help solve Texas water challenges.”

Dr. Timothy Loftus
 Meadows Endowed Chair in Water Conservation



“ We must become more efficient in our use of water here in Texas if the next generation is to enjoy the quality of life we have known. Adding Dr. Loftus to our team will ensure that Texas State University remains in the lead in addressing this most serious crisis.”

Dr. Andrew Sansom
 Meadows Center Executive Director



EDUCATION

Encouraging Life-long Learning

THE MEADOWS CENTER'S EDUCATIONAL PROGRAMS ENCOURAGE life-long learning about the environment—and people's relationship to the environment. One of The Meadows Center's greatest responsibilities is preparing the next generation of conservation leaders.



Preparing the next generation of conservation leaders



IN FOCUS:

SAM MASSEY

Massey shares a deep passion for Spring Lake and works tirelessly to preserve and share it with our visitors.

“I’ve always had an interest in nature so it’s been awesome to work outside, but I’ve always been a technology geek too, so I’ve been able to find a niche for myself. One of my favorite projects to work on so far has been implementing the augmented reality sandbox exhibit. I like to use the sandbox when I’m meeting with school groups because I can sculpt the sand to show them what the Edward’s Plateau looks like and which way our rivers flow, then let them play to make whatever they want out of it. It is probably one of the most popular digital exhibit we’ve produced.”

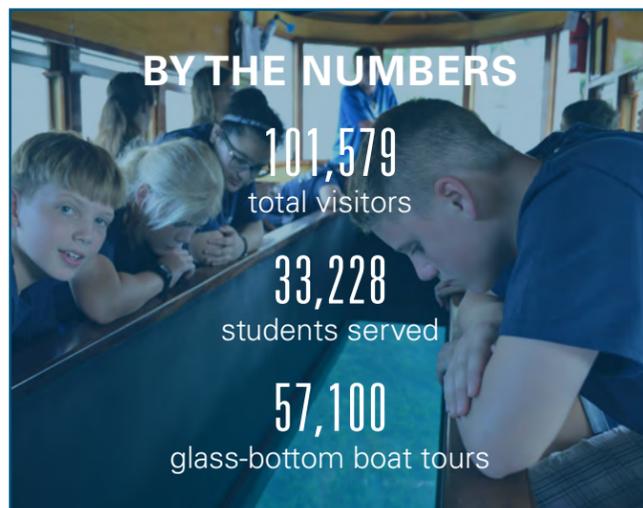
Sam Massey

Assistant Manager to Educational Programs

Interpretive Field Trips

The Meadows Center’s interpreter-led field trips offer a unique learning environment at Spring Lake. We teach visitors about Spring Lake’s ecosystem and biodiversity, the water cycle, and the importance of environmental stewards.

- 26,773 school children and 6,455 university students learned about the importance of the environment to all living things through hands-on, science learning.
- Our 30 TEKS-aligned curricula create customized experiences to meet specific learning goals of any age group, from pre-school to post-retirement. 🌿



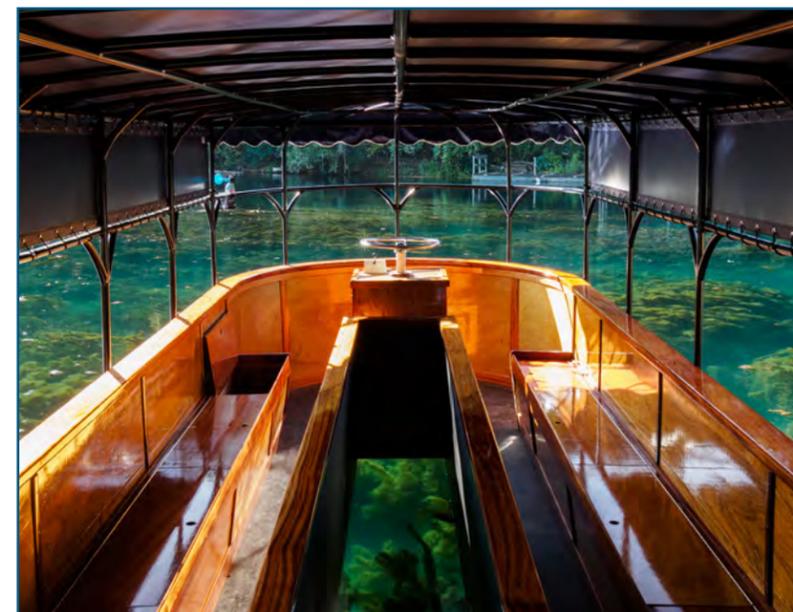
Connecting children and families to nature



Historic Glass-bottom Boats

In May 1946, Paul Rogers led the first tour of Spring Lake on a homemade glass-bottom rowboat. Generations have since explored the sacred headwaters of the San Marcos River on glass-bottom boats. Today they are the centerpiece of our environmental education program, teaching people of all ages about the importance of water.

Boat 1953 Takes Its Maiden Voyage Back To Spring Lake



In May, the Meadows Center welcomed back the first of five newly renovated glass-bottom boats to Spring Lake. The restoration process included redesigning and replacing the wooden framed hulls with a fiberglass composite hull, which is stronger and more water-resistant. Over the next four years, the Meadows Center will pull one boat each year until the entire fleet has been restored with the new composite hull.

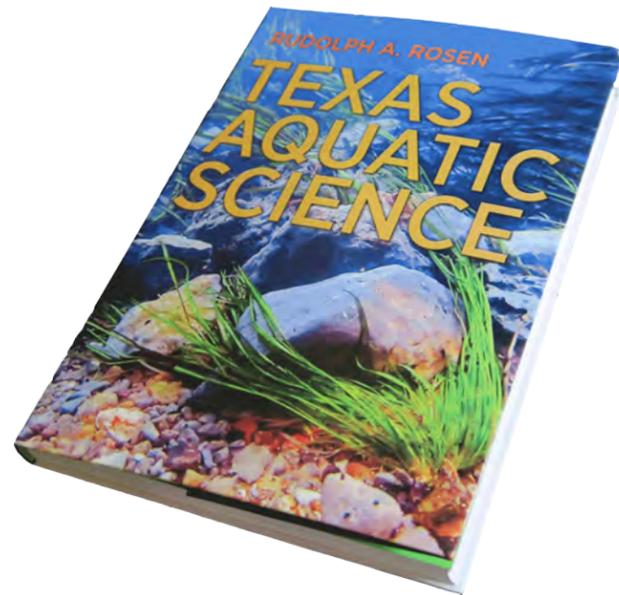
“Glass-bottom boat 1953 was designed to look more like the original boats with a canopy top, rather than the hard top later used on all the boats. Lighter in weight and more open, it drives like a Ferrari. Everyone lines up in front of the gate wanting to take a tour on the New ‘53!” Spring Lake Educational Operations Manager Deborah Lane said. 🌿

Enhancing experiential STEM education

Texas Aquatic Science

Support from the Ewing Halsell Foundation allowed us to research and enhance experiential learning about water through expanded use of Texas Aquatic Science (TAS), a TEKS-aligned water education curriculum for grades 6 – 12. We worked with partners to take TAS curriculum into classrooms and informal education settings across Texas to train teachers, support outdoor education, and evaluate the curriculum’s effectiveness in enhancing experiential STEM education and students learning about water.

- Partnership between the Meadows Center, Texas Parks and Wildlife Department, and Texas A&M- San Antonio
- Research conducted in 39 schools across the state involving nearly 4,500 students for school year 2015-2016.
- Spring Lake named the first Certified Field Site for Texas Aquatic Science through Texas Parks and Wildlife.
- Assisted over 60 informal educational facilities in Texas to further validate their work by becoming a “TAS Field Site Certified” through TPWD
- Over 30,000 students participated in Texas Aquatic Science activities at the Meadows Center. 



IN FOCUS:

TEXAS AQUATIC SCIENCE EDUCATORS

“ This certification expanded our programming and increased our field trip offerings that not only benefit Spring Lake, but also benefit teachers who will be able to count on a Texas Essential Knowledge and Skills (TEKS) aligned educational package both in and out of the classroom.”

Sonja Mlenar
Instructional Programs Coordinator

“ Here at Spring Lake we have a unique geographical site that helps us to demonstrate TAS lessons to students of all ages in a way that makes the learning easier to understand and see. It makes learning come alive for these students.”

Susan Hankins
Texas Aquatic Science Project Coordinator

“ The TAS curriculum gets students engaged and excited about the physical world around them,” Nature Program Specialist Briane Willis said. “Our goal is to help informal learning sites across Texas adapt the TAS and activities to their unique site.”

Briane Willis
Nature Program Specialist



Disseminating knowledge of water and natural resources

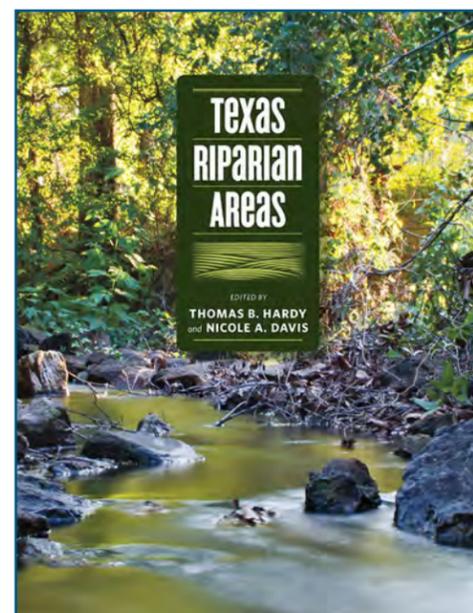
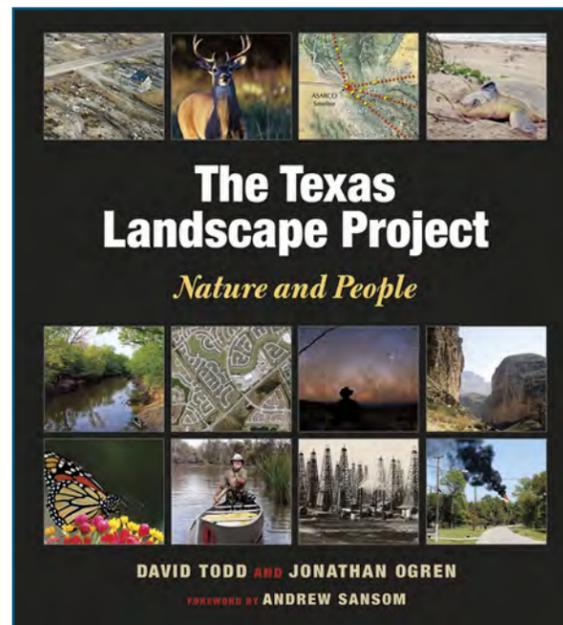
Conservation Leadership Book Series

The Texas Landscape Project is the newest addition to the Kathie and Ed Cox Jr. Conservation Leadership Book Series, sponsored by The Meadows Center and published by Texas A&M University Press. Together, authors David Todd and Johnathan Ogren, have created a visually stunning and highly informative look at the environmental richness and the conservation issues facing Texas today. 🌿



“...a breathtaking compendium of insights into the natural history, the environmental richness, and the manifold conservation dilemmas confronting the Lone Star State today. On these pages, the incredible diversity of Texas is portrayed in meticulous yet stunning illustrative detail, providing us not only with the most comprehensive picture of the Texas environment ever assembled but an intimate rendering of both its treasures and its challenges.”

Andrew Sansom
The Meadows Center Executive Director



River Book Series

The River Book Series introduced *Texas Riparian Areas*, which evolved from a report commissioned by the Texas Water Development Board as Texas faced the reality of over-allocated water resources and long-term if not permanent drought conditions. Its purpose was to summarize the characteristics of riparian areas and to develop a common vocabulary for discussing, studying, and managing them. 🌿

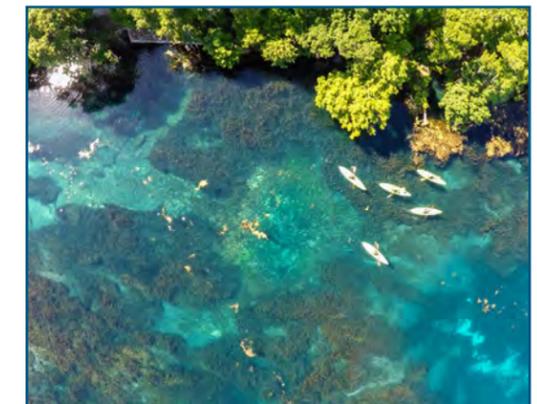
In partnership with:



Demonstrating responsible recreation to encourage stewardship

Partnership with REI, Inc.

The Meadows Center and REI, Inc. partner together to offer paddling classes that focus on outdoor education at Spring Lake. Paddling is one of the fastest growing outdoor sports in the country; and central Texas is one of the fastest growing urban areas in the nation. These unique interpreter-led classes and tours help meet that need by drawing people to Spring Lake, teaching them about water’s environmental and cultural importance, and helping them become stewards of our natural resources. 🌿



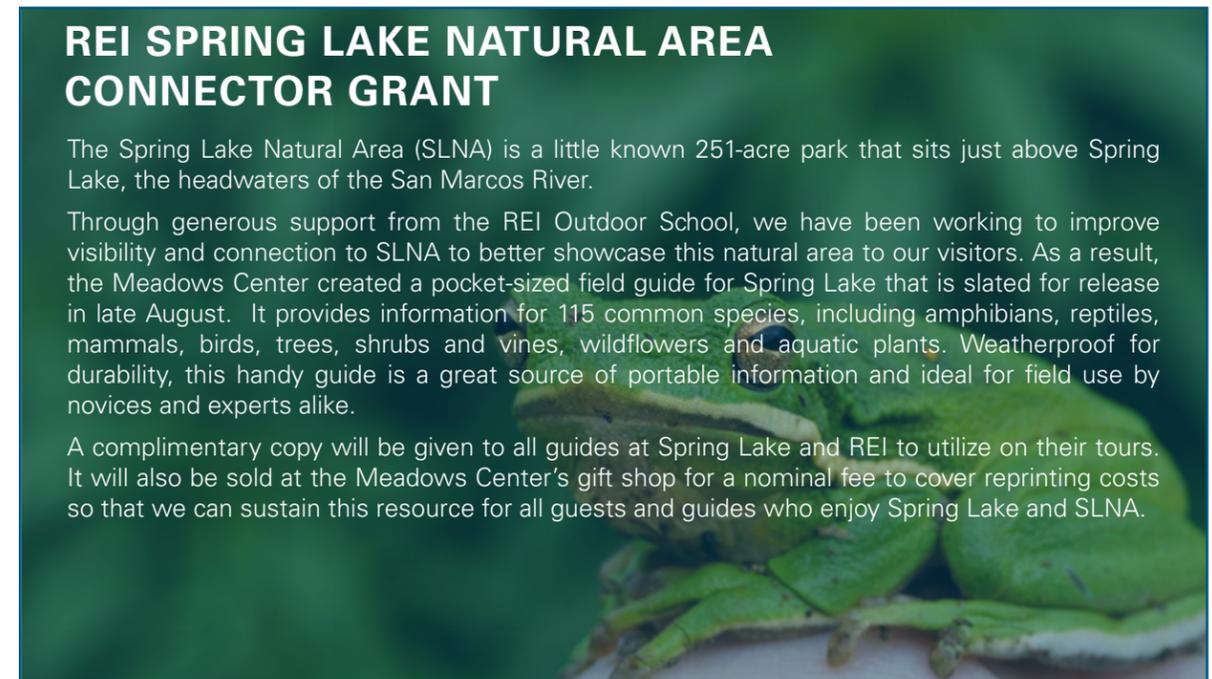
IN FOCUS:

REI SPRING LAKE NATURAL AREA CONNECTOR GRANT

The Spring Lake Natural Area (SLNA) is a little known 251-acre park that sits just above Spring Lake, the headwaters of the San Marcos River.

Through generous support from the REI Outdoor School, we have been working to improve visibility and connection to SLNA to better showcase this natural area to our visitors. As a result, the Meadows Center created a pocket-sized field guide for Spring Lake that is slated for release in late August. It provides information for 115 common species, including amphibians, reptiles, mammals, birds, trees, shrubs and vines, wildflowers and aquatic plants. Weatherproof for durability, this handy guide is a great source of portable information and ideal for field use by novices and experts alike.

A complimentary copy will be given to all guides at Spring Lake and REI to utilize on their tours. It will also be sold at the Meadows Center’s gift shop for a nominal fee to cover reprinting costs so that we can sustain this resource for all guests and guides who enjoy Spring Lake and SLNA.





STEWARDSHIP

Cultivating a Stewardship Ethic

ONE OF THE GREATEST PRIVILEGES OF THE MEADOWS CENTER is the stewardship and management of Spring Lake and its habitat, endangered species, and cultural resources. The Meadows Center is active in the San Marcos community and beyond and strives to strengthen those ties by connecting stewardship of water and natural resources to quality of life.

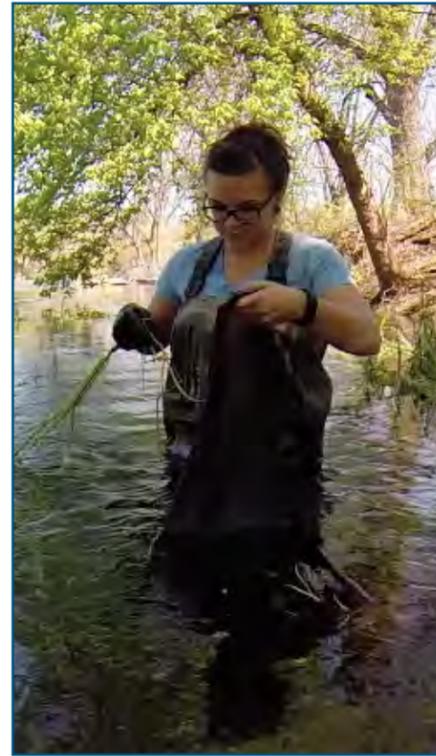
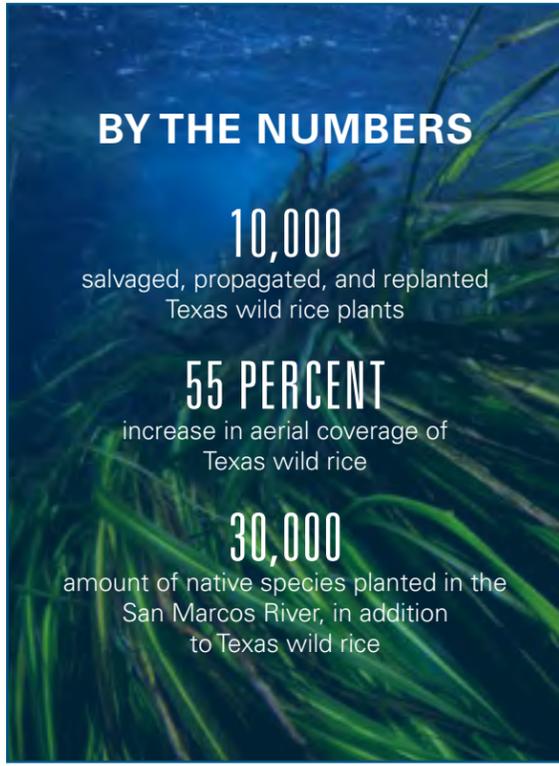


Managing Spring Lake and the San Marcos River

The Biology Field Lab

The Meadows Center supports the Edwards Aquifer Habitat Conservation Plan by rehabilitating aquatic habitats and conducting research to strengthen conservation efforts in Spring Lake and in the San Marcos River. This year the team:

- Managed Spring Lake to enhance ideal endangered species habitat conditions.
- Continuously monitored non-native plants and native plants.
- Removed non-native species by hand and composting at the Texas State University campus.
- Completed propagation techniques that now support 100 percent success on rearing Sagitaria, Ludwigia, and Potamogeton in support of native aquatic restoration in the San Marcos River 🌿



Cultivating a stewardship ethic and practice

Underwater Archaeology

An underwater geoarchaeology survey of Spring Lake suggests human history could be much older than previously thought. A team led by Meadows Center Fellow and Underwater Archaeologist Dr. Frederick “Fritz” Hanselmann, with support from the National Geographic Society, the Waitt Institute and the Center for Archaeological Studies, conducted the archaeological investigation to develop a picture of how the landscape appeared to ancient humans who once lived in the era.

Key findings include:

- Several soil samples date to the Paleolithic era (approximately 2.5 million to 20,000 years ago), challenging previously held notions of how early or how long people have been at Spring Lake.
- The team also found that a lake existed of similar depth to today’s Spring Lake (formed in 1849 by a man-made dam) existed between roughly 1,600 and 1,200 years ago. 🌿



IN FOCUS:

UNDERWATER ARCHAEOLOGY

“ We’re just barely scratching the surface of what we know about past human activity at the springs, especially at the earliest known times of human occupation here. Hopefully future joint terrestrial and underwater efforts will shed even further light on Spring Lake.”

Dr. Fritz Hanselmann
Underwater Archaeologist and Meadows Fellow

“ Between roughly 1,600 and 1,200 years ago, some sort of blockage created a lake of similar depth to today. The blockage could have been a log jam, beaver dam, or perhaps even a man-made dam. If nothing else, the discovery presents an interesting research question to pursue in the future—what or who made the prehistoric dam?”

Jacob Hooge
Project Archaeologist



Strengthening Texas State University ties to the community and beyond by connecting stewardship of water to quality of life

Operation SCUBA

The Operation SCUBA Initiative gives student veterans an opportunity to earn a PADI open water dive certification and learn about education, team building, therapeutic resources and environmental stewardship at Spring Lake. The course integrates scuba diving and mental wellness techniques as a way for veterans to bond with others, develop a sense of purpose, and most importantly, receive support from their peers. So far ten student veterans have completed the course and we plan to reach more veterans in the next year. 🌿



IN FOCUS:

OPERATION SCUBA

“It’s probably one of the best things I’ve done through the Texas State Veterans Alliance so far. Operation SCUBA gives you a chance to connect to all those things you’re familiar with—the safety, the buddy work, the learning of new skills, and the muscle memory.”

Melanie Harris
Operation SCUBA participant

“It was great to just be underwater. It feels like you can escape all the noise of the city just by going fifteen to twenty feet underwater. I want to do underwater archaeology as a minor for my Masters, so [Operation SCUBA] has had a pretty big impact in a short amount of time. It’s one of the first things in a while that I’ve been excited about that has revolved around school.”

Glen Stevenson
Operation SCUBA participant

“I was recently awarded an underwater archaeology internship with the National Parks Service and the Hispanic Access Foundation, diving, documenting, and preserving three shipwrecks in Biscayne National Park. Without The Meadows Center’s Operation SCUBA and Texas State University’s School of Social Work, I wouldn’t have known about the professional opportunities diving can provide.”

Caleb Henderson
Student Mentor for Operation SCUBA



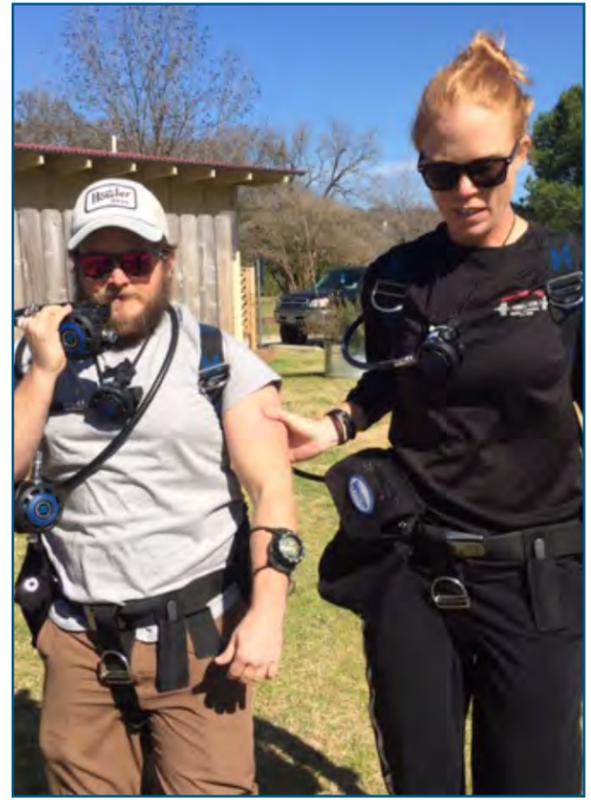
BY THE NUMBERS

199 new trained citizen science divers, becoming AquaCorps members

1,291 volunteer dives to help manage Spring Lake

Spring Lake AquaCorps

As the steward of Spring Lake, The Meadows Center is responsible for the management of this unique body of water and its natural and cultural resources. By successfully completing the Spring Lake Dive Authorization course, qualified divers can become members of AquaCorps to assist us in managing and monitoring a true freshwater treasure of Texas: Spring Lake. 🌿

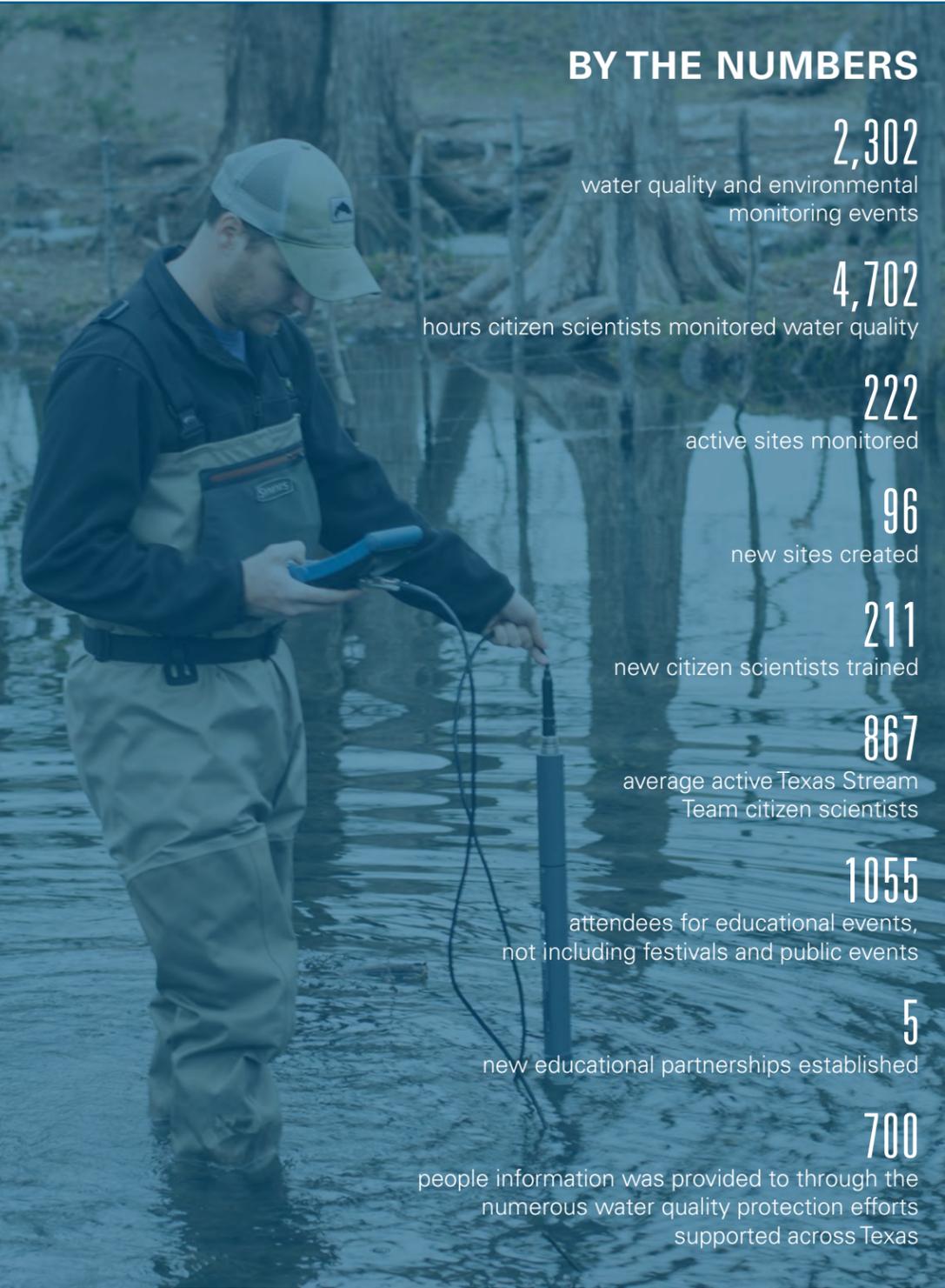


Inspiring protection and management of cultural and natural resources

Texas Stream Team

Texas Stream Team is steadfast in its commitment to conserve our waters and shape environmental stewards. Over the past 25 years, more than 8,000 Texans - birders, anglers, students, retired professionals, nature lovers and others- have come together in more than 45,000 hours of service as part of Texas Stream Team.

- We offer interactive activities that teach people about nonpoint source pollution's effects on water for drinking, recreation, fisheries, and wildlife at Spring Lake and across Texas.
- Citizen scientists are trained to collect water quality data using applied scientific techniques to monitor pH, dissolved oxygen, and other indicators of water quality at their favorite sites.
- Data supports academic research, informs policy, and serves as a de facto early warning system for water quality across Texas.
- Supported numerous water quality protection efforts across Texas, providing information to more than 700 people 🌿

BY THE NUMBERS

- 2,302 water quality and environmental monitoring events
- 4,702 hours citizen scientists monitored water quality
- 222 active sites monitored
- 96 new sites created
- 211 new citizen scientists trained
- 867 average active Texas Stream Team citizen scientists
- 1055 attendees for educational events, not including festivals and public events
- 5 new educational partnerships established
- 700 people information was provided to through the numerous water quality protection efforts supported across Texas



LEADERSHIP

Transforming Knowledge Into Action

THE MEADOWS CENTER FOR WATER AND THE ENVIRONMENT IS a leader in water and environment management and policy topics in Texas, the U.S., and abroad. The Meadows Center convenes stakeholders to address critical water and natural resource concerns and the grand challenges that we will face in the decades to come. Staff share the Meadows Center culture of service with communities and organizations and often serve in voluntary leadership roles in diverse contexts.



Supporting responsible natural resource and water policy in Texas

Convening stakeholders to address critical water and natural resource challenges

Water Grand Challenges

“A Texas where water is appropriately valued; efficiently consumed; and sustainably available for the community, the economy, and the environment for generations to come.”
2016 Water Grand Challenges Vision Statement

In 2012, we partnered with the Cynthia and George Mitchell Foundation and the Meadows Foundation to launch a groundbreaking initiative known as Water Grand Challenges, which brought together an influential and diverse group of stakeholders to grapple with urgent issues outside the normal envelope of water policy makers.

In large part as a result of the Water Grand Challenges and in partnership with groups including the American Farmland Trust and The Texas Agricultural Land Trust, Speaker of the Texas House Joe Straus ordered an interim study which helped make the case for the Legislature to establish and fund The Texas Farm and Ranchlands Conservation Council in the Texas Parks and Wildlife Department to begin purchasing the development rights from owners of important landscapes, allowing them to avoid fragmentation.

Today, the Water Grand Challenges Initiative continues to convene to find creative solutions for both short-term and long-term challenges that inhibit the sustainability of Texas’ water resources for the future. 

IN FOCUS:

HWY 290 PIPELINE STUDY



The Meadows Center published a research paper by Meadows Fellow Douglas Wierman, PG, that took on a significant question: Has the Highway 290 pipeline contributed to increased groundwater pumpage in Northern Hays County? It identified and included West Travis County Public Utility Agency’s retail planning region, Northern Hays County service areas (CCNs), and a two-mile buffer zone to examine the influence of the Highway 290 pipeline on water pumpage throughout the region.

Wierman’s study found:

- Pumpage by non-exempt permit holders in Northern Hays County remained relatively steady over the last ten years, but there has been an increase in residential wells drilled.
- Most of the larger subdivisions built out in the last ten years use surface water from the pipeline.
- The anticipated development in Dripping Springs Water Supply Corporation’s service area (which serves as a CCN for the greater Dripping Springs area) will likely outpace supply. Wierman concludes:

“...based on the anticipated development activity in the DSWSC service area, there is not sufficient permitted surface and groundwater to meet future demand. The Trinity Aquifer will likely be the water source to meet this demand. The area needs a realistic, long term water plan. At some point, the aquifer will not be able to backstop poor planning.”

Doug Wierman
 Fellow of the Meadows Center

The Environmental Flows Initiative

A water market could benefit the environment on the Texas coast. This year, the initiative:

- Partnered institution include the Harte Research Institute, National Wildlife Federation, Nature Conservancy, and Ducks Unlimited
- Developing the foundational science and market analysis to launch a water-transaction market in Texas for the benefit of bays and estuaries.
- Will execute at least one significant water transaction with demonstrable benefit to ecological resources injured by the Deepwater Horizon oil spill.
- Will lay the groundwork for market development in three bay systems whose ecological health and commercial fishing productivity are imperiled by declining freshwater inflows.
- Named Sharlene Leurig as Project Director of the Texas Environmental Flows Initiative.
- Partnered with water expert, Carlos Rubinstein, to advise the initiative on policy and water markets. 



IN FOCUS:

LEADERS IN ENVIRONMENTAL FLOWS

“ I have always admired the center’s commitment to protect and conserve water resources while promoting economic development and social well-being. This is a critical time for water issues in Texas and I look forward to working with The Meadows Center and Texas State University to support finding sustainable solutions for water.”

Carlos Rubinstein
 Independent Advisor to The Meadows Center

“ I was attracted to The Meadows Center because it’s a great collaborative organization, which is really important because the issues we are working on are so complex and require so much different expertise and capacity.”

Sharlene Leurig
 Project Director,
 Texas Environmental Flows Initiative

Building capacity of local communities to protect and steward their water and natural resources

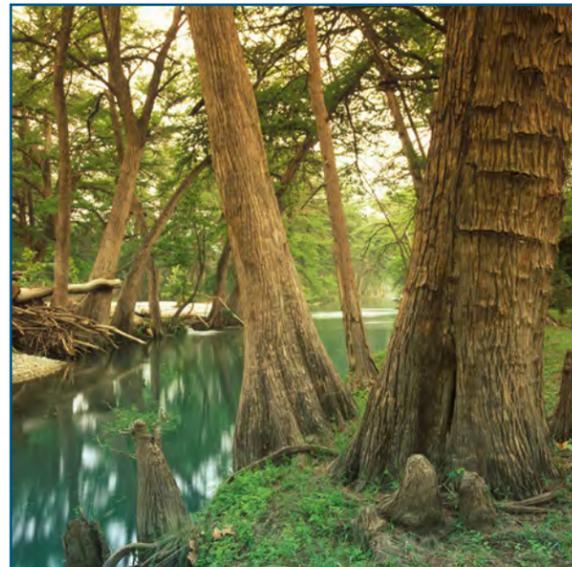
Watershed Services

Cypress Creek Watershed Protection Plan

- First watershed protection plan with a substantial groundwater management component to be accepted by TCEQ and EPA.
- The plan calls for integrated holistic management of ground and surface water supplies to protect flows and water quality.
- A proposal for over \$1 million to implement management activities outlined in the plan was informally approved and the contract is expected in late summer of 2016.
- Additional gifts from the Willett Foundation and the Way Foundation were granted to support a Watershed Coordinator for the region and for promoting activities, education and municipal government support for coordinated management of water resources.

San Marcos Watershed Initiative

- For the past 3 years, the Meadows Center staff has supported the City of San Marcos, Texas State University, Hays County, local non-governmental organizations, non-profits, community groups, local business owners, citizens and other stakeholders in the development of a watershed protection plan.
- The plan will be completed in summer 2016 and a request will be made to TCEQ and EPA for funding to implement activities in the plan that protect flow and water quality and also increase capacity to manage surface and groundwater comprehensively.



Cypress Creek



San Marcos River



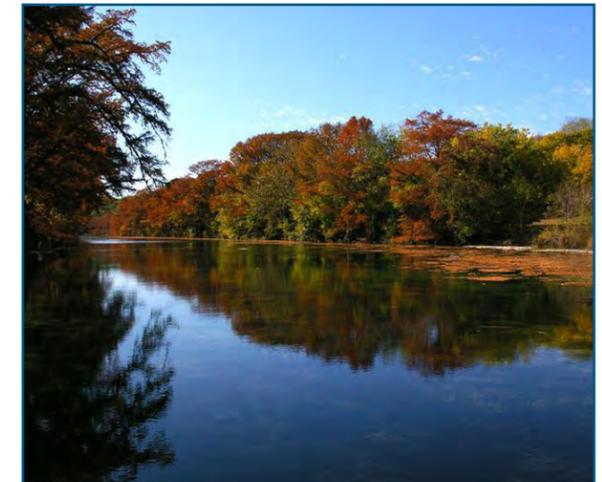
San Marcos River, © Texas State University

Blanco Watershed Conservation Assessment

- The Meadows Center is partnering with Siglo Group and other water experts to conduct a conservation assessment and develop conservation priorities.

Shoal Creek Conservancy

- We partnered with Alan Plumer Associates, City of Austin, and Shoal Creek Conservancy to undertake a feasibility study and preparatory work for an urban watershed plan to restore and protect Shoal Creek and its springs flow. 



Blanco River



Shoal Creek

