



IRNR

ANNUAL REPORT 2014

WHO WE ARE

Many complex natural resources challenges — from land fragmentation and threatened and endangered species to strained and insufficient water resources — exist today in Texas and throughout the nation. At the Texas A&M Institute of Renewable Natural Resources (IRNR), our work is about solving these challenges through discovery, engagement, innovation and land stewardship.

We use interdisciplinary approaches and collaboration with multiple partners to develop durable and innovative solutions. We partner with university departments, research and extension centers and various organizations, bringing together research scientists, students, county agents, program specialists, agency partners and others to holistically address these natural resource issues.

Established in 1978 as a component of the Agriculture Program at Texas A&M University, the Institute's purpose was to coordinate, strengthen and integrate multidisciplinary approaches to renewable natural resource issues by providing a forum for quality research, teaching and extension programs.

We are a unit of Texas A&M AgriLife Research, the Texas A&M AgriLife Extension Service and the College of Agriculture and Life Sciences at Texas A&M University. We serve as the host institution for the Gulf Coast Cooperative Ecosystem Studies Unit, a partnership among 11 federal agencies and 36 universities and organizations that facilitates collaborative research, education and technical assistance among federal and state agencies, universities and non-governmental organizations.

WHAT WE DO

Our work centers on 6 program focus areas:

- Land Trends and Conservation Design
- Wildlife Conservation and Mitigation
- Military Land Sustainability
- Sustainable Energy Development
- Watershed Resiliency
- Private Land Stewardship

LOCATIONS

To assist in our regional partnerships and projects, our scientists and staff are located at multiple offices: College Station, San Antonio, Gatesville and Washington, D.C.

2 INSTITUTES, 1 MISSION

Since land and water activities are intrinsically linked, IRNR collaborates with the Texas Water Resources Institute on a wide range of natural resource and water issues. The 2 Institutes share resources and the expertise of more than 60 full-time professional and support staff. Working together, we accomplish what a single principal investigator or department could not normally do alone.



\$7,009,530

TOTAL FUNDING IN 2014

2014 HIGHLIGHTS

This was a year of growth and planning for IRNR.

- We launched a formal strategic planning effort, engaging a Strategic Planning Team, key external partners and IRNR staff in the process.
- As a result of the strategic planning process, we redefined our key *signature* programs:
 - Land Trends and Conservation Design
 - Wildlife Conservation and Mitigation
 - Military Land Sustainability
- We also established our new programs in *emerging* areas:
 - Sustainable Energy Development
 - Watershed Resiliency
 - Private Land Stewardship
- The *Texas Land Trends* data were updated and a new report, *Status update and trends of Texas rural working lands*, was published. The report showed and analyzed the dramatic loss and fragmentation of privately owned farms, ranches and forests currently in Texas.
- We began efforts to establish a Center for Private Land Stewardship in partnership with the Noble Foundation and East Foundation as founding partners, to allow a focused and integrated effort in research and engagement activities promoting the conservation of private lands and their benefits. The partners signed a Memorandum of Understanding on February 3, 2015.

LAND TRENDS AND CONSERVATION DESIGN

Texas native landscapes are increasingly threatened by suburbanization, rural development and land fragmentation driven by rapid population growth. These rural-to-urban land changes bring challenges, and effective conservation will require innovative solutions to sustaining private rural working lands. Our *Land Trends and Conservation Design Program* meets these challenges with applied research and outreach efforts. Our land conservation work helps enable communities to feed more people using less land, provide clean and safe water for all uses, conserve and improve wildlife habitat, and maintain viable rural economies.

WILDLIFE CONSERVATION AND MITIGATION

Our *Wildlife Conservation and Mitigation Program* conducts problem-driven research addressing today's wildlife and habitat management issues. We promote stewardship of game, nongame, endangered and threatened species populations, and their habitats, by translating sound science into application and outreach. Texas is home to 75% of all wildlife species in the United States, including 90 species listed as threatened or endangered under the federal Endangered Species Act. We provide the science-based knowledge useful to species' recovery, and the education and resources stakeholders need to manage these wildlife populations sustainably.

MILITARY LAND SUSTAINABILITY

Our *Military Land Sustainability Program* supports U.S. Department of Defense testing and training activities through our expertise in land management and regional planning, research and policy innovations, and education and outreach. Preparing this country's military requires expansive air, land and sea space, but many military installations now face encroachment from competing land uses. We are developing programs to conserve these areas. Our approach combines conservation with working lands and national defense interests, supporting the twin imperatives of military readiness and land stewardship.

SUSTAINABLE ENERGY DEVELOPMENT

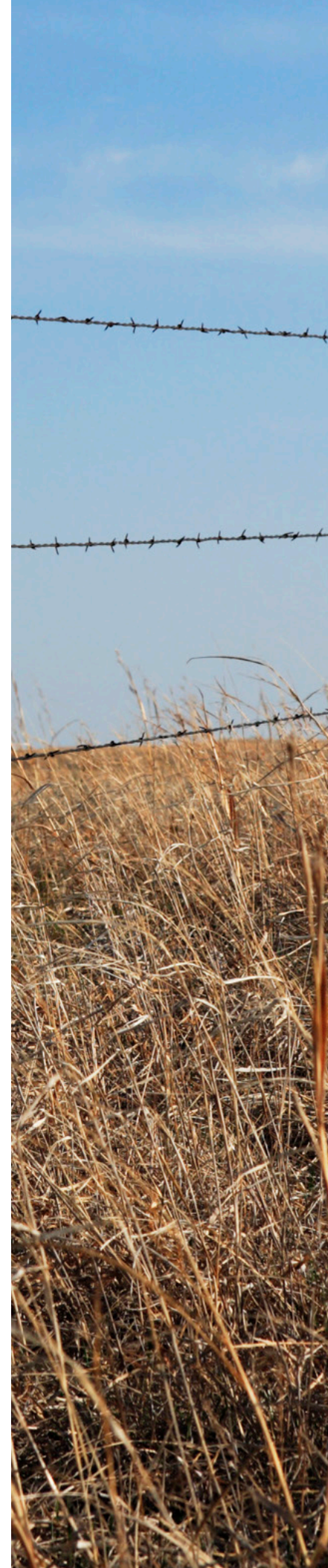
Our *Sustainable Energy Development Program* supports safe, efficient and environmentally responsible energy production. If air, water and land impacts associated with oil and natural gas drilling and fracturing are not properly managed, there can be short- and long-term community issues and impacts to livestock, ranch land and cropland. Our team of researchers, educators and specialists focuses on the integration of innovative research and technologies that reduce the footprint of oil and gas activities and brings together regulators, industry, academia, environmental organizations and the public.

WATERSHED RESILIENCY

Our *Watershed Resiliency Program* applies sound research and outreach to achieve sustainable and secure water resources for humans and wildlife. Focusing on aquatic species and ecosystems, we provide watershed restoration, land management practices and policy innovations. Our work promotes the proper management of land and water resources for adequate spring flows, streamflows and aquifer recharge, securing water for agriculture, municipalities, recreation and habitats.

PRIVATE LAND STEWARDSHIP

Our *Private Land Stewardship Program* fosters stewardship of private lands and their associated public benefits through research and collaborative conservation. Our experience in working with private landowners and private landowner groups offers unique engagement opportunities for building relationships based on trust and science-based, pragmatic solutions to emerging natural resource challenges. The Institute's success is a direct reflection of the reciprocal relationships and networks it has formed with private landowners over the years and of its unique ability to integrate research, extension and policy into meaningful, sensible natural resource solutions.





PROJECT HIGHLIGHT: TEXAS LAND TRENDS

Working lands are privately owned farms, ranches and forests that produce food and fiber, support rural economies, and provide wildlife habitat, clean air and water, and recreational opportunities. Texas has more than 142 million acres of these private working lands, 83% of the state's total land base, and leads the nation in land devoted to farms, ranches and forests.

But Texas working lands are undergoing a fundamental change, one that has implications for rural economies, national and food security, and conservation of water and other natural resources. Native landscapes are increasingly threatened by suburbanization, rural development and land fragmentation driven by rapid population growth.

Texas Land Trends analyzes land use, value and ownership data and then provides decision-makers the information needed to plan for the conservation of Texas' working lands. Through reports, public presentations and online interactive data portals, *Texas Land Trends* provides Texans with the most relevant data for tackling the challenges facing their rural working lands. In 2014, IRNR published the newest *Texas Land Trends* report.

Key report findings:

- From 1997 to 2012, there was a net loss of approximately 1.1 million acres of working lands, converted to non-agricultural uses.
- During 1997-2012, more than 54% of total land conversion occurred in the state's 25 fastest growing counties and approximately 590,000 acres were lost from the agricultural land base in these counties.
- Texas continues to lead the nation in the loss of working lands (total acres). From 1982 to 2010, the USDA National Resources Inventory data reported the conversion of more than 4.1 million acres of Texas working lands to urban uses, with significantly higher conversion rates occurring from 1992 to 2007.
- Average ownership size declined from 581 acres in 1997 to 521 acres in 2012.

TEXASLANDTRENDS.ORG

PROJECT HIGHLIGHT: FRESHWATER MUSSEL RESEARCH

Freshwater mussels are one of the most imperiled wildlife groups in the world. In Texas, 15 species are listed as state threatened, of which 6 are candidates for protection under the Endangered Species Act (ESA). Because mussels play important ecological roles in freshwater ecosystems, mussel declines have the potential to negatively impact ecosystems structure and function. The listing of mussels may also cause significant economic impacts through reductions or reallocations of water.

To avoid threats to the mussels and their habitats, our researchers are assisting key stakeholders, including the Texas Parks and Wildlife Department (TPWD), U.S. Fish and Wildlife Service (USFWS) and Texas Department of Transportation (TxDOT), in developing a better understanding of species boundaries, distribution, basic biology, host-fish requirements and habitat utilization. These projects will provide a foundation for drafting recovery plans if any of the species become federally listed and for focusing recovery efforts for threatened mussel populations.

We are also leading the effort to assist state agencies in developing needed standard sampling protocols for establishing the presence or absence of state-threatened, federally listed or candidate mussel species.

Project Impacts:

- Rediscovered a mussel species thought to have been extinct in central and west Texas
- Conducted extensive surveys in central and west Texas, resulting in a greater understanding of the distribution, abundance, and habitat requirements for several state-threatened and federal candidate mussel species
- Collaborated with TPWD and USFWS to host an annual freshwater mussel identification workshop to train participants on mussel identification and sampling



2014: BY THE NUMBERS

FUNDING AGENCIES

City of San Antonio, East Wildlife Foundation, GSI Environmental, Meadows Foundation, National Parks Service, Natural Resources Conservation Service, North Texas Municipal Water District, Pioneer Natural Resources, Texas A&M AgriLife Extension Service, Texas A&M University System, Texas Commission on Environmental Quality, Texas Comptroller of Public Accounts, Texas Parks and Wildlife Department, Texas Water Foundation, University of Kentucky Research Foundation, University of Texas University Lands, U.S. Department of Defense, U.S. Department of Defense - Corp of Army Engineers, U.S. Department of Energy, U.S. Fish and Wildlife Service

9,519

Research and Extension contact hours

4,371

Attendees at 96 presentations given by staff at 90 events

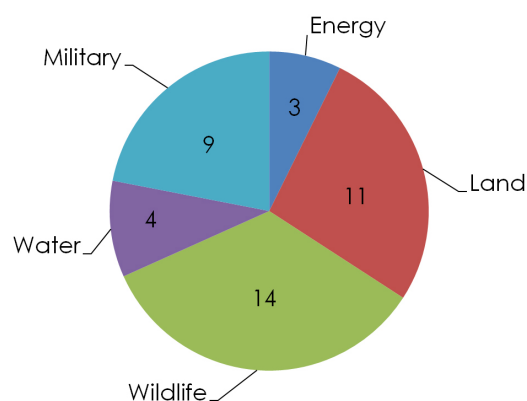
2,414

Conservation Matters subscribers

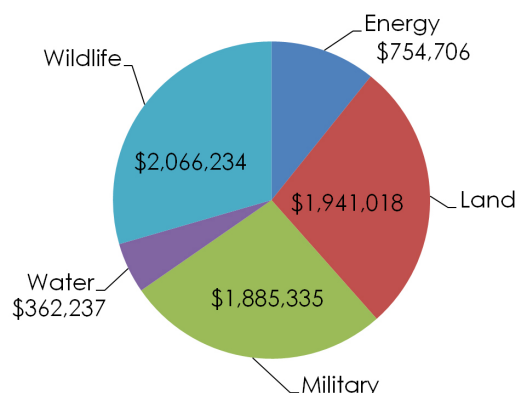
GRANTS AND CONTRACTS

	Funding	Number of grants
Research	\$4,242,152	28
Extension	\$2,767,378	13
Total	\$7,009,530	41

PROJECTS BY PROGRAM AREA



FUNDING BY PROGRAM AREA



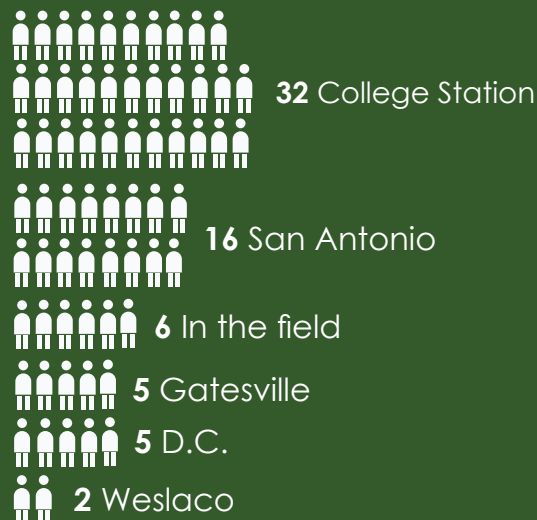
29 PUBLICATIONS

581 TWITTER FOLLOWERS

17 NEWS RELEASES

38 STUDENTS SUPPORTED

66 IRNR AND TWRI STAFF MEMBERS



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