



# Guadalupe Bass Restoration Initiative:

## Conserving the State Fish of Texas for Three Decades

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### 30-Year Summary (1991–2021)

#### Conservation Outcomes Achieved for Guadalupe Bass (1991–2021):

- 15 Guadalupe Bass populations restored or conserved
- 2.4 million Guadalupe Bass stocked throughout the native range to support restoration
- Successful repatriation of Guadalupe Bass to the Blanco River
- Successful reintroduction of Guadalupe Bass to the Mission Reach of the San Antonio River
- Genetic restoration of the Guadalupe Bass population in the South Llano River
- Watershed-scale conservation of fish habitats in the Llano, Blanco, and Pedernales river watersheds
- > 40 fish habitat restoration projects completed
- 8 conservation easements preserved 6,116 acres of focal watersheds
- Watershed-scale management of riparian invasive species implemented in 8 watersheds
- 25 public river access areas managed for Guadalupe Bass fishing
- Successfully developed and implemented a 10-year, \$30 million campaign to restore Guadalupe Bass and other endemic black basses in southern U.S. rivers



Inland Fisheries Division

#### Overview

Guadalupe Bass *Micropterus treculii*, the official state fish of Texas, is native to the crystalline, spring-fed rivers of central Texas, including portions of the Brazos, Colorado, Guadalupe, and San Antonio river basins. The economic value of river fishing in central Texas was recently estimated to be \$71 million over a 16-month period and nearly half of anglers reported specifically targeting Guadalupe Bass. Guadalupe Bass are threatened with local extirpation from habitat degradation, flow alteration, and hybridization with non-native Smallmouth Bass *Micropterus dolomieu*. Since concerted efforts to conserve the species were launched through the Guadalupe Bass Restoration Initiative (GBRI) in 1991, TPWD and partners have restored or conserved fishable populations of Guadalupe Bass in 15 central Texas rivers. Efforts to assess, monitor, or restore additional populations of Guadalupe Bass are currently planned or underway in another 13 rivers. Texas Parks and Wildlife Department (TPWD) currently manages 25 public river access areas that offer angling opportunities for Guadalupe Bass, which have served as focal points for engagement of fishing clubs, local conservation groups, and communities in efforts to restore and preserve Guadalupe Bass. Although outcomes achieved for Guadalupe Bass represent an incredible conservation success story, continued actions are needed to ensure that current and future generations of Texas anglers can experience this storied fish. To learn more about conservation efforts being implemented through the GBRI and explore opportunities to get involved, please visit: [www.tpwd.texas.gov/conserveguadalupebass](http://www.tpwd.texas.gov/conserveguadalupebass)





## Summary of Guadalupe Bass Conservation Efforts (1991–2021)

Guadalupe Bass are endemic to the crystalline, spring-fed rivers of central Texas. Their populations are inextricably linked to natural river flow patterns, functional riparian zones, instream connectivity, and instream structural habitat features characteristic of pristine, unaltered riverscapes. The species faces a litany of immense conservation challenges, many of which stem from the fact that their native range occurs within one of the fastest growing regions of the state. Central Texas communities added roughly 700,000 people between 2000 and 2010, and the population is projected to increase more than 50% to over 7.3 million people by 2060. Increased water demands associated with this burgeoning population will be met primarily by surface and groundwater withdrawals, which will undoubtedly impact the region's spring-fed rivers. Urbanization and other land use changes associated with this population growth have the potential to directly alter natural land cover, degrade watershed conditions, and further threaten the long-term resiliency of central Texas rivers. Extirpation of Guadalupe Bass has been documented where fish habitats have been altered due to construction of dams, water withdrawals, and changes in watershed land uses.

Hybridization with non-native Smallmouth Bass has also led to extirpation of Guadalupe Bass from some rivers. Native to the upper and middle basins of the Mississippi River, the Saint Lawrence River, and the Great Lakes, the first known introduction of Smallmouth Bass into Texas occurred in 1934. With 30,000 Smallmouth Bass fry provided by the Arkansas Game and Fish Commission, the Texas Game and Fish Commission attempted to establish a Smallmouth Bass production program at the Tyler and Dundee State Fish Hatcheries. Water in the hatchery ponds proved too warm, and the broodstock couldn't survive the Texas summers. That program was abandoned in 1937. Efforts to establish Smallmouth Bass fisheries in Texas laid dormant until summer 1958, when Texas Game and Fish Commission biologists stocked 6,500 two-inch Smallmouth Bass fingerlings in the South Llano River from Telegraph downstream to Junction. Those fish were supplied by the Tishomingo National Fish Hatchery in Oklahoma. The stocking effort was profiled in the July 1958 issue of Texas Game and Fish Magazine in an article titled "Smallmouth Bass, Visitors to Texas, Give Spirited Fight on the End of a Line." Authored by two Texas Game and Fish Commission aquatic biologists, the article references historic difficulties establishing Smallmouth Bass fisheries in Texas, but then posed the question, "Now you ask, why try again?" In response, the biologists shared that "Smallmouth is a good fishing game fish which will add greatly to the sport of catching fish. Second, there is adequate desirable food in the Llano River to support this additional species. Finally, the Llano River is one of the most suitable, if not the most suitable streams in Texas for Smallmouth." The article goes on to discuss concerns with high summer water temperatures in the South Llano River but theorizes that deep pools and areas of the river adjacent to springs will offer thermal refuge for Smallmouth Bass.

The experimental introduction of Smallmouth Bass to the South Llano River continued thru 1960 and proved unsuccessful in establishing a Smallmouth Bass fishery. Meanwhile, the stockings resulted in an unforeseen and unintended consequence of creating a hybrid population of Guadalupe Bass and Smallmouth Bass. This hybridization went unnoticed in the South Llano River until similar situations resulted from stocking of Smallmouth Bass in other central Texas rivers. Between 1974 and 1980, Smallmouth Bass were stocked in the Blanco,

### Guadalupe Bass Conservation Timelines (1874–1980):

**1874** – Guadalupe Bass described as a species by Vaillant and Bocourt

**1942** – Guadalupe Bass redescribed as a species by Hubbs and Bailey

**1958-1960** – Initial introduction of Smallmouth Bass into central Texas rivers (i.e., South Llano River)

**1974-1980** – Large-scale introduction of Smallmouth Bass into central Texas rivers (> 6.8 million stocked into the Blanco, Guadalupe, Medina, and San Gabriel rivers, and Cibolo and Onion creeks)

**1976** – Guadalupe Bass classified by Clark Hubbs as "depleted"

**1978** – Hybridization detected between Guadalupe Bass and Smallmouth Bass in central Texas rivers

**1979** – Guadalupe Bass recognized as a species of special concern by the American Fisheries Society







Guadalupe, Medina, and San Gabriel rivers, and in Cibolo and Onion creeks. Once hybridization was detected and threats to Guadalupe Bass were recognized, TPWD began to devise a strategy to prevent the local extirpation and possible extinction of Guadalupe Bass.

Initial conservation efforts included establishment of a refuge population of Guadalupe Bass in the Sabinal River in 1988. Research was also initiated on Guadalupe Bass life history, conservation status, and recreational fisheries, which led to publication of the initial range-wide conservation plan for the species in 1991. In 1992, TPWD initiated a Guadalupe Bass rearing program to support genetic restoration and repatriation of the species, which has since produced and stocked nearly 2.4 million Guadalupe Bass in central Texas rivers. Initial stocking focused on restoration of Guadalupe Bass in the namesake Guadalupe River.

During the 2009–2010 timeframe, the National Fish and Wildlife Foundation (NFWF) approached the Southeast Aquatic Resources Partnership and state fish and wildlife agencies in the region with the concept of establishing a regional aquatic resources conservation initiative that would use endemic riverine black basses as charismatic, keystone species to garner interest and support for conservation of river ecosystems in the southern USA. This led to development of a 10-year business plan to secure funding to fill critical science needs and implement watershed-scale, multispecies approaches to freshwater fish conservation, including instream and riparian habitat restoration, barrier removal, and flow restoration projects. This funding supported the ability of TPWD to expand the scope and scale of conservation efforts directed at Guadalupe Bass in central Texas rivers. TPWD initiated partnerships with local landowners, conservation non-profit organizations, fishing clubs, river authorities, and other partners to fill critical science gaps and to restore and preserve habitat conditions for Guadalupe Bass in focal watersheds. A primary goal was to achieve self-sustaining and fishable populations within focal watersheds, and to implement conservation practices that would provide broad-based benefits to local communities such as improved water quality, enhanced productivity of working lands, recreational enhancements, and local economic benefits.

### **Guadalupe Bass Conservation Timelines (1988–2009):**

**1988** – Research initiated by TPWD on Guadalupe Bass life history, conservation status, and recreational fisheries

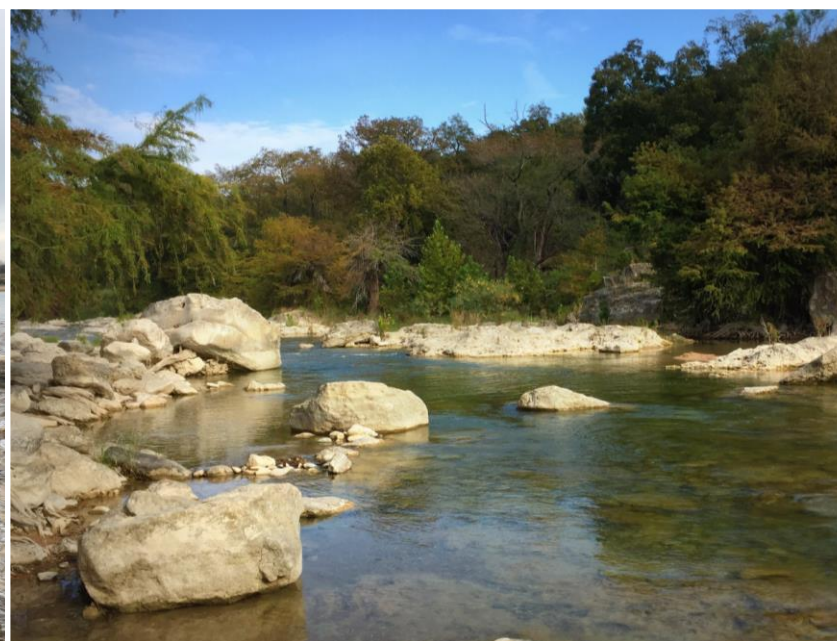
**1988** – Guadalupe Bass sanctuary population established at Lost Maples State Natural Area in the Sabinal River watershed

**1989** – Guadalupe Bass named the official state fish of Texas

**1991** – Initial Guadalupe Bass Conservation Plan assembled

**1992** – Remedial conservation stockings of Guadalupe Bass initiated in the namesake Guadalupe River

**2009** – B.A.S.S. launches the Bass Slam, which spotlights angling opportunities for Guadalupe Bass in central Texas rivers



**Guadalupe Bass Conservation  
Timelines (2010–2015):**

**2010** – 10-year business plan assembled by TPWD and partners to guide investments by the National Fish and Wildlife Foundation in conservation of Guadalupe Bass and other endemic basses found in southern U.S. rivers

**2010** – Landowner Incentive Program Watershed Funding Series established (> 60,000 acres restored since 2010)

**2010** – Llano River watershed restoration initiated

**2010** – Remedial conservation stockings initiated in the South Llano River

**2011** – Repatriation of Guadalupe Bass initiated in the Blanco River

**2011** – James River watershed restoration initiated

**2011** – National Fish and Wildlife Foundation Bring Back the Natives Grant Program prioritizes projects that conserve Guadalupe Bass

**2012** – Pedernales River watershed restoration initiated

**2012** – Establishment of South Llano River Conservation Demonstration Area

**2012** – Repatriation of Guadalupe Bass initiated in the Mission Reach of the San Antonio River

**2012** – Fishing access leases secured for Guadalupe Bass anglers

**2013** – Range-wide survey of Guadalupe Bass x Smallmouth Bass hybridization completed

**2015** – Blanco River watershed restoration initiated



With the initial NFWF-funded project supported in 2010, TPWD focused its attention on the South Llano River and the hybrid population that resulted from Smallmouth Bass stockings that occurred from 1958–1960. In partnership with the Llano River Watershed Alliance, the Texas Tech University Llano River Field Station, areas landowners, and an extensive list of other local project partners, a plan was assembled to restore Guadalupe Bass to the South Llano River. From 2011–2017, more than 700,000 Guadalupe Bass were stocked in the South Llano River. Today, less than 2% of the Guadalupe Bass population consists of hybrids. In addition to the South Llano River stocking program, project partners organized river conservation workshops attended by approximately 750 landowners and local community partners in the watershed. Over 78,000 acres of ranchlands implemented stewardship practices to help preserve fish habitats. Restoration projects in the watershed restored 7,754 acres of spring, stream and riparian habitats, directly benefiting water quality and habitat conditions for Guadalupe Bass. These and other conservation efforts in the South Llano River watershed successfully restored Guadalupe Bass populations and promoted local stewardship practices to help ensure the river is able to sustain Guadalupe Bass populations into the future.

TPWD and partners have since replicated this successful conservation approach in other rivers and watersheds of central Texas, with substantial investments in the Pedernales, James, and Blanco rivers. In all cases, the approach has involved engagement of early adopters and local community leaders willing to collaborate on a pilot project that could demonstrate proof of concept. TPWD engaged with local conservation non-profit organizations, working to build capacity within watershed alliances and fishing clubs to act as local river stewards and to leverage resources with TPWD to deliver watershed-scale conservation.

From 2010-2015, these “proof of concept” projects were conducted in the Llano, Blanco, James, Pedernales, and San Antonio rivers. These were incredibly effective at engaging local communities, landowners, and local conservation organizations in thinking more holistically and recognizing the value of planning and delivering conservation actions at watershed scales. These projects provided the fundamental underpinnings and built support for a statewide conservation prioritization that was conducted in 2015 to select priority watersheds for native fish conservation.

Building on the success of the GBRI in priority watersheds of central Texas, TPWD and partners worked to form other watershed-based partnerships to conserve ecologically important rivers throughout the state, again centered around the needs of focal fishes with the goal of providing broad-based benefits to local communities. These 20 focal watersheds, collectively referred to as the Texas Native Fish Conservation Areas Network (see [www.nativefishconservation.org](http://www.nativefishconservation.org)),



**Guadalupe Bass Conservation  
Timelines (2016–2019):**

**2016** – Launch of Healthy Creeks Initiative to control giant reed *Arundo donax* along central Texas rivers

**2016** – Launch of Texas Farm and Ranch Lands Conservation Program to support conservation easements and preserve intact watersheds

**2017** – Guadalupe Bass Conservation Plan updated

**2017** – Completion of remedial conservation stockings in the South Llano River

**2018** – 10-year conservation goals achieved for Guadalupe Bass outlined in the National Fish and Wildlife Foundation business plan

**2018** – Genetic restoration goals achieved for Guadalupe Bass in the South Llano River

**2018** – Bass Pro Shops South Llano River Guadalupe Bass Prize Promotion

**2018** – Completion of remedial stockings in the Blanco River

**2019** – Bass Pro Shops San Gabriel River Guadalupe Bass Prize Promotion

**2019** – Launch of Hill Country Headwaters Initiative supported through the U.S. Farm Bill

**2019** – Guadalupe Bass conservation case studies published in the American Fisheries Society book, *Multispecies and Watershed Approaches to Freshwater Fish Conservation*



have since been selected as priority watersheds for conservation investments by various conservation funding programs administered by TPWD, U.S. Fish and Wildlife Service, Natural Resources Conservation Service (NRCS), and other conservation organizations. Substantial funding continues to be invested in stream and watershed restoration and in landscape preservation through conservation easement funding programs. These priority watersheds have also been selected as priorities for riparian invasive species control and riparian habitat restoration. This includes funding targeted specifically toward the Central Edwards Plateau Rivers Native Fish Conservation Area, which represents one of the key strongholds for Guadalupe Bass. In this example, more than \$5.1 million has been committed through a NRCS Regional Conservation Partnership Program referred to as the Hill Country Headwaters Conservation Initiative to restore and preserve stream, riparian, and grassland habitats. Guadalupe Bass is identified as a focal species for the initiative. Selection of Guadalupe Bass strongholds as programmatic priorities for conservation investments has been embraced over the past decade, and many of the related conservation strategies and success stories were featured in multiple chapters of the American Fisheries Society (AFS) book, *Multispecies and Watershed Approaches to Freshwater Fish Conservation* (<https://fisheries.org/bookstore/all-titles/afs-symposia/54091c/>).

Throughout the GBRI, TPWD has taken every opportunity to communicate and share Guadalupe Bass conservation success stories. TPWD has also made concerted efforts to connect and engage the Texas river fishing community, particularly fly anglers, in efforts to conserve Guadalupe Bass. This has included angler involvement in citizen science, such as support of our Guadalupe Bass genetic monitoring program and participation in rapid assessments of specific stream reaches, as well as river cleanups, angler access improvements, and riparian habitat restoration. TPWD also partnered with Bass Pro Shops to establish outreach and promotional efforts where anglers who caught tagged Guadalupe Bass received gift cards and fishing gear donated by Bass Pro Shops and other sponsors. There have been numerous other impactful and transformative outcomes that resulted from the GBRI, such as filling critical science gaps, refining genetic assessment techniques and related fish production and stocking strategies, enhancing recreational fishing access to Guadalupe Bass fisheries, and increasing grassroots support and engagement in river stewardship in Texas.



#### Conservation Priorities

- ✓ North Fork San Gabriel River
- ✓ Brushy Creek
- ✓ Gorman Creek
- ✓ Middle Colorado River
- ✓ North Llano River
- ✓ South Llano River
- ✓ Pedernales River
- ✓ Onion Creek
- ✓ Lower Colorado River
- ✓ Upper Blanco River
- ✓ Mission Reach San Antonio River
- ✓ Medina River
- ✓ Sabinal River
- ✓ Frio River
- ✓ Nueces River

#### Assessment Priorities

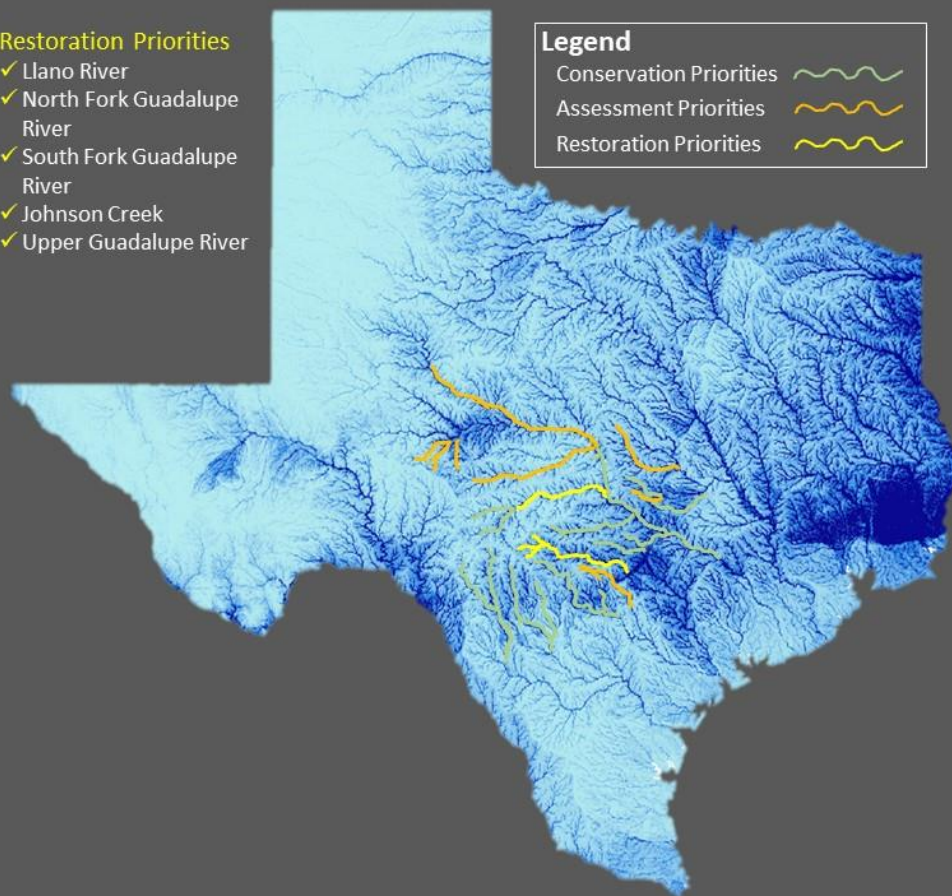
- ✓ Upper Lampasas River
- ✓ South Fork San Gabriel River
- ✓ Upper Colorado River
- ✓ South Concho River
- ✓ Dove Creek
- ✓ Spring Creek
- ✓ San Saba River
- ✓ Cibolo Creek

#### Restoration Priorities

- ✓ Llano River
- ✓ North Fork Guadalupe River
- ✓ South Fork Guadalupe River
- ✓ Johnson Creek
- ✓ Upper Guadalupe River

#### Legend

- Conservation Priorities
- Assessment Priorities
- Restoration Priorities



## GBRI Priority Rivers

### Guadalupe Bass Conservation Timelines (2020–2021):

**2020** – Blanco River Guadalupe Bass assessment completed

**2020** – San Gabriel River Guadalupe Bass assessment completed

**2020** – Guadalupe Bass conservation case study published in the State Wildlife Grant Program 20<sup>th</sup> Anniversary Report

**2021** – Medina River Guadalupe Bass assessment completed

**2021** – Dove Creek Guadalupe Bass assessment completed

TPWD is incredibly appreciative of our partners who have supported the GBRI over the past 30 years including All Water Guides, American Fisheries Society, Bandera County River Authority and Groundwater District, Bass Pro Shops, City of Fredericksburg, City of New Braunfels, Favrot Fund, Guadalupe-Blanco River Authority, Hill Country Alliance, Hill Country Conservancy, Kerr County, Living Waters Fly Fishing, Llano River Region Adventures, Llano River Watershed Alliance, Lower Colorado River Authority, Meadows Center for Water and the Environment, National Fish and Wildlife Foundation, National Fish Habitat Partnership, Nueces River Authority, San Antonio River Authority, Southeast Aquatic Resources Partnership, Tarleton State University, Texas A&M Forest Service, Texas Council of Fly Fishers International (and member clubs), Texas Master Naturalists, Texas Parks and Wildlife Foundation, Texas State University, Texas Streams Coalition, Texas Tech University, Texas Water Development Board, Llano River Field Station, The Nature Conservancy, University of North Texas, University of Texas at Austin, University of Texas at San Antonio, U.S. Fish and Wildlife Service, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Upper Guadalupe River Authority, Water Oriented Recreation District of Comal County, and especially the numerous Texas Hill Country landowners and anglers whose cooperation makes the GBRI possible!

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