OUR COMMON FUTURE

"THE BINATIONAL LAGUNA MADRE REGION"

PRONATURA

T|C|P|S

TEXAS CENTER
FOR POLICY STUDIES

Stewardship of the Binational Laguna Madre region's diverse habitats, air and water is essential to a better quality of life. In order to achieve this quality of life, we must integrate economic, ecosystem and societal needs in all elements of development and planning.[1]

[1] Vision statement generated by the Working Group of the Laguna Madre Binational Initiative, June 9, 2000. This statement was modified from break-out session comments on a draft statement presented at the Laguna Madre Binational Symposium April 14, 2000.

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Coordinaction:	Karen Chapman Miguel Angel Cruz	Cartography :	Jorge Brenner Israel Amezcua Juan Medel
Contents:	Octavio Herrera Alfonso Banda Patricio Solís Mario Vázquez Hector Zamora José María Villarreal	Production:	Ana Gabriela Robles
		Design:	Roxana González
		Ilustration, Cover:	Mary Beatn
Edition:	Miguel Angel Cruz Ana Gabriela Robles Cristina Elenes	Interiors:	Sergio Moreno

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Rick Luna	Brownsville Economic Development Council
James Matz	Cameron County Commissioner
Larry McEachron	Texas Parks and Wildlife Department
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Ray McLaughlin Jr.	Shrimper
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Steve Schwelling	Texas Parks and Wildlife Department
Perry Trial	Texas Parks and Wildlife Department
Dr. John W. Tunnel	Texas A&M University
Gordon Wells	Texas Natural Resource Information Service
Mike Wilson	Port Mansfield Navigation District
Bill Zimmerman	Shrimper

Laguna Madre Binational Initiative Advisory Committee

Rosa Boden	Volunteer Organizer - Valley Interfaith/Port Isabel
Randy Blankinship	Biologist - Texas Parks & Wildlife Dept./Brownsville
Les Hodgson	Broker - Marco Seafood Sales/Brownsville
Steve LaBuda	Manager - Laguna Atascosa NWR/Rio Hondo
Madge Lindsay	Director - World Birding Center/Mission
James Matz	Commissioner - Cameron County/Harlingen
Cesar Pacheco	Private landowner/Farmer/Harlingen
Carlos Rubinstein	Rio Grande Watermaster, Texas Natural Resource Conser vation Commission/Weslaco
Mike Tewes	Research Biologist Texas A&M University/Kingsville
Judy Vera	Volunteer Organizer - Valley Interfaith/Brownsville
Larry Zamponi	NationsBank/Harlingen
C.P. Claudia Deandar	Editor - Derosa news/Matamoros
Ing. Jorge Martinez	Rancho Rincon de Anacahuitas/Matamoros
Lic. Cesar Treviño	Business/Agriculture liaison/Matamoros
Ing. Jorge Cardenas	Matamoros
Arq. Alejandro Villarreal	Televisión Azteca/Matamoros
Ing. Alejandro Galvan	Matamoros
Ing. David Rojas	Agro-industries/Matamoros

Introduction

The Texas Center for Policy Studies (TCPS) is a public interest organization based in Austin, Texas. We provide technical and policy research assistance to citizens' groups and the public on environmental and public health issues to help inform community action. In addition, we initiate projects in cooperation with local citizens that are designed to promote economic development that is compatible with natural resource protection.

Pronatura Noreste A.C. (PNE) is a Mexican conservation organization with regional offices throughout the country. Its mission is the conservation of biodiversity in priority ecosystems and the promotion of development in harmony with nature. Pronatura's headquarters are in Mexico City, the northeast regional office is located in Monterrey.

In April 1998, TCPS and PNE began a partnership on a project to promote conservation-based development in the binational Laguna Madre region of south Texas and northern Tamaulipas. The goal of this project is to work with local citizens to explore strategies for economic development that will promote the long-term protection of the natural resources of the Laguna Madre. To help achieve this goal, we organized a series of leader´s forums and public opinion surveys, and conducted research on a variety of topic areas in the region. This report is a result of this research.

Rather than address every issue facing the region, we chose to focus our analysis on fisheries, tourism, economic development and land use as topic areas most related to, and dependent upon, the Laguna Madre.

This report is intended to serve as a vehicle for promoting the economic value of the Laguna Madre – both to Texas and to Tamaulipas. We hope the report will help to guide citizens and decision-makers to plan wisely as growth continues in the region, and perhaps offer alternatives to traditional economic development practices.

Through newsletters and binational community forums, the Laguna Madre Binational Initiative will continue to provide research and documentation of the economic value of local natural resources and to present examples of what compatible economic development might look like in the region.

This document is in English and Spanish. The Spanish version includes information for the Tamaulipas Laguna Madre, and the English version includes information for the Texas region. The final chapter – "Our Common Future" integrates both Texas and Tamaulipas and is the same in both translations. Pronatura Noreste A.C. was responsible for researching and compiling the chapters relevant to Tamaulipas, and Texas Center for Policy Studies was responsible for the Texas-related information. We have tried to make comparisons where appropriate. Our intention is that readers will view the region in terms of the ecosystem and not in terms of political boundaries – thus highlighting the importance of binational strategies for development and protection of natural resources.

We hope you find this report useful. Please contact us if you have any comments or suggestions. We look forward to hearing from you.

Miguel Angel Cruz
Pronatura Noreste A.C.
Alfonso Reyes # 201-A Col. Contry
Monterrey, Nuevo León
MEXICO
Tel: (011) 528-358-1106 ext.18
Fax: (011) 528-358-1109
mcruz@pronaturane.org

Karen Chapman
Texas Center for Policy Studies
44 East Avenue Suite 306
Austin, TX 78701
Tel: (512) 474-0811
Fax: (512) 474-7846
kc@texascenter.org
http://www.texascenter.org

"The development of sustainable environmental policies and practices is not simply a matter of changing hears and minds and personal behavior, but changing economic assumptions about the Valley from a place of low wages and dead-end jobs to living wage jobs and the investment of public dollars into the human capitol of the community. This report effectively emphasizes and promotes that concept."

- *Judy Donovan, Lead Organizer, Valley Interfaith*

"In a South Texas of staggering biological, cultural, and social diversity, the Laguna Madre, the bordering Padre Island, and the coastal plains extending well into Mexico stand apart from the richness within which they are embedded. The fact that this natural wealth is of interest to travelers should be of no surprise; only the case that the region has been so sluggish in recognizing that fact. The economic impacts associated with experiential tourism in the Laguna Madre are the underpinnings of an economic strategy that has a reasonable chance of beginning to ameliorate the severe social and economic ills of the Lower Rio Grande Valley. I hope that through this report we will find the spark that melds what are often seen as competing interests into a single-minded appreciation of the economic opportunities that exist literally under foot."

- *Ted Eubanks, Fermata Inc.*

"This report shows how important it is to protect community natural resources in the way we develop our economy. The Cameron County sub-zone is committed to doing just that, through providing funding for projects that sustain our natural assets into the future, and leveraging greater quality of life for our citizens."

- *Bonnie Gonzalez, CEO, Rio Grande Valley Empowerment Zone*

OVERVIEW

Overview

The Laguna Madre extends 227 miles along the lower south Texas and the upper Tamaulipas coast. In Texas the lagoon stretches 130 miles from Corpus Christi to Port Isabel. It lies between Padre Island and the Texas mainland. The Laguna Madre of Tamaulipas extends from the city of Matamoros in northern Mexico to La Pesca, ending at the mouth of the Rio Soto la Marina.

In Texas, the Laguna Madre is classified as a hypersaline lagoon, but is also often referred to as a bay. A lagoon is defined as a "a coastal body of shallow water, characterized by a restricted connection with the sea. The water body is retained behind a reef or islands."[2] In the case of the Texas Laguna Madre, the water body of the lagoon is for the most part retained behind islands, such as Padre Island. A bay is considered a wide inlet of a sea or lake, along the shore. The Laguna Madre is the only "coastal, hypersaline lagoon system on the North American continent, comprising two of only six lagoon systems of this nature worldwide."[3]

Despite the hypersaline nature of the Texas and Tamaulipas lagoons, they are thriving ecosystems. The lagoons provide rich habitat and feeding ground for terrestrial wildlife and marine life and support profitable commercial and recreational fishing activities. The Laguna Madre is also the nursery ground for much of the shrimp caught in the Gulf of Mexico. Marine biologists point to the salt-tolerant seagrasses as the major source of the lagoons' productivity. These seagrasses, along with many marine invertebrates and plant life forms found in the mud and sand of the lagoon, provide nursery and feeding ground for other species of marine life, such as juvenile finfish. The Laguna Madre also provides important habitat for wading birds, shorebirds and other waterfowl.

The bayside of South Padre Island, comprised primarily of mud and sand "flats", are rich with algae, marine organisms and nutrients that replenish the lagoon ecosystem during high tides and as run-off during infrequent rains.

The Texas Laguna Madre receives limited amounts of fresh water inflow from rainfall and the major drainage tributary – the Arroyo Colorado. The Arroyo was once a distributary of the Rio Grande and now serves as the main floodway and drainage system for the extensive network of irrigation districts in the Lower Rio Grande Valley. The Arroyo Colorado extends 90 miles from Mission to the Laguna Madre. Through Harlingen, the Arroyo serves as the Harlingen Ship Channel, connecting the channel to the Gulf Intracoastal Waterway. Water quality in the Arroyo Colorado has long been a subject of concern. Currently the mouth of the Arroyo at the Laguna Madre is on a list of impaired water bodies generated by the state of Texas.[4]

Problems with the Arroyo's water quality

[2] Michael Allaby, *The Concise Oxford Dictionary of Ecology* (Oxford University Press: Oxford, 1994), 224.

[3] John W. Tunnell, JR and Frank W. Judd, editors, *The Laguna Madre of Texas and Tamaulipas: A Compendium* (Texas A&M University Center for Coastal Studies, Corpus Christi and Biology Department, University of Texas-Pan American, Draft Edition, October 27, 1999), ii.

[4] Gail Rothe; The Texas Natural Resource Conservation Commission Total Maximum Daily Loads program; April 14, 2000 presentation at the binational Laguna Madre conference on South Padre Island.

include low dissolved oxygen and sediment toxicity at the mouth, toxic chemicals found in the tissues of fish in the Arroyo (including DDE and PCB's), and elevated fecal coliform bacteria.[5] The Texas Natural Resource Conservation Commission is managing a collaborative long-term effort to improve water quality in the Arroyo by identifying key pollutant sources in its watershed and working with local constituents to minimize the amount of pollutants entering the Arroyo.

Because of its ecological characteristics and the variety of species it supports, many public interest organizations have focused at least some effort on conserving the resources of the Texas Laguna Madre, including Texas Shrimp Association, Sierra Club, the Conservation Fund, the Texas Center for Policy Studies, the National Audubon Society, and the Nature Conservancy of Texas. The Nature Conservancy recently completed a purchase of over 24,000 acres of coastal beach and dune habitat on the northern part of South Padre Island. Both the Nature Conservancy and Audubon also own or lease and manage important natural resource areas such as islands that host nesting colonies of wading birds, and disappearing habitats like the native Sabal Palm forest. The federal government has played a major role in protecting some of the Laguna's resources as well, through establishing the Padre Island National Seashore and the Laguna Atascosa National Wildlife Refuge.

Challenges to Protection

The specific location of the Texas Lower Laguna is partially responsible for the level of protection it has enjoyed: on the east, the lagoon is protected by the barrier island, on the mainland side it is bordered by counties that are for the most part sparsely populated except by expansive cattle ranches and farms. The well known King and Kenedy ranches of Texas and relatively meager settlement patterns of Willacy and Kenedy Counties have protected the mainland side of the Lower Laguna Madre from severe development pressures. However, the wide expanses of land in these areas remain attractive to developers. Projects involving a great deal of infrastructure development that could negatively impact the Laguna, such as the Spaceport in Kenedy County, continue to be proposed.

The Lower Rio Grande Valley is the second fastest growing area of the state. This growth, along with the accompanying commercial and residential development, is putting new pressures on the Texas Laguna Madre and its terrestrial borders. Home and commercial construction on South Padre Island, particularly structures built on or over mud and algal flats, can adversely affect resources that marine and terrestrial wildlife depend upon. Pressure from recreational and commercial fishing industries is raising some concern about the capacity of the Laguna Madre to continue as a productive, sustainable system for shellfish and fish.

The most serious impacts on the Laguna Madre are associated with the Gulf Intracoastal Waterway (GIWW). Since World War II, there have been attempts to expand the Gulf Intracoastal Waterway from its present termination at Port Isabel through to Tampico in the Mexican State of Tamaulipas. The latest attempt to extend the Intracoastal Canal occurred in 1994, when then Tamaulipas governor Manuel Cavazos Lerma pushed the canal project as part of his economic development agenda. The construction of the Canal would have had major impacts on the extensive network of sensitive coastal wetlands. It also would have introduced the same logistical engineering problem in Mexico that Texas faces in maintaining its own waterway: where to dispose of thousands of cubic yards of dredged sediment with each dredging event. In the Texas Laguna Madre, open-bay disposal of this type of dredged material has been linked to extensive loss of seagrass beds. Seagrass habitat is critically important habitat for juvenile fish and shellfish and marine organisms. Though the 1994 effort to expand the Canal was thwarted, future attempts to develop coastal regions in Mexico adjacent to the Laguna Madre must be carefully examined.

This report is intended to show some measure of the economic value of the Laguna Madre as it is today. Conservation groups, sport fishermen, tourism and economic development promoters and citizens of the region all benefit from the resources of the Laguna, and the system remains in a delicate balance. Much of its resources are currently protected, but is this enough? How do we best protect the economic, environmental and community interests surrounding the Laguna Madre to achieve a level of conservation that is sustainable into the future? These questions are worth asking now, while the Laguna is still relatively healthy. We hope this report will help citizens and decision-makers to frame policies of protection for the Laguna Madre, and to incorporate sustainability of the Laguna Madre into local, state, and federal economic development programs.

[5] Ibid.

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CHAPTER 1
HISTORY OF THE TEXAS LAGUNA MADRE

Chapter 1
History of the Texas Laguna Madre

Indigenous tribes & the European Conquest

Dating back at least to 11,000 BC, prehistoric native Americans occupied the Texas Coastal Bend and Rio Grande Valley coastline. The Karankawa and the Coahiltecan tribes were the major groups of native peoples encountered by Spaniards exploring the Texas and Mexico's Laguna Madre coastlines in the 16th century. These tribes lived in the region from 1000 AD until the 1800s. Archaeological findings reveal that the Karankawa tribe found plentiful food in the saline waters of the upper Laguna Madre, but the Coahiltecan survived off the area's terrestrial plant communities and wildlife. The Spanish colonists, the diseases they brought with them, and the Lipan Apaches, fleeing to south Texas from Comanches in the north, eventually decimated or displaced the Coahiltecan. Those that did not succumb to these forces fled to the Texas-Spanish missions or to Northern Mexico.

Alonzo Alvarez De Pineda, a Spanish explorer who mapped the coastlines from Veracruz, Mexico to Florida, claimed the land for Spain in 1519. For many years thereafter, various attempts were made to establish colonies on the mainland of the Laguna Madre and on South Padre.

During the last decade of the 16th century, Spanish colonists traveling inland from southern Mexico came to the Texas coastline. The first records about the Laguna Madre were compiled by Enriquez Barrota who, in 1687, boated from the Laguna Madre de Tamaulipas to the Rio Bravo and on up to Padre Island. His reports spoke of a 'river that runs within' (presumably, the Laguna Madre).[6] In the 17th century, Spanish missionaries from Mexico brought livestock and cattle to South Texas to supply the missions near San Antonio with food. The missions themselves became "the first formal ranches in Texas."[7] From that time forward, the lower tip of the Rio Grande Valley would be the sight of significant change.

By 1770, the Spanish crown was granting land to families in South Texas. Two of the larger landholders were the Balli and Hinojosa families, engaged in cattle and sheep ranching.[8] The distribution of Spanish land grants continued until Mexico's independence. The Mexican government then granted lands in the region until the end of the U.S. and Mexican War in 1848, when the region became part of Texas.

A major factor contributing to the protection of the Lower Laguna Madre system has been the presence of large ranches in Willacy, Kenedy, and Cameron counties as well as those on Padre Island. Some scientists believe that 19th century ranching activities caused large-scale impacts to land and vegetation, most particularly, the loss of native grasslands which had protected the lagoon from erosion.[9] Even so, most also recognize that the existence of these large-scale ranches have to this day protected the Laguna from the more severe impacts of urbanization and development.

The Mexico – US War

In the 1770s, pirates and smugglers, among them the infamous Jean Lafitte, used the Laguna Madre as a base from which they pilfered gold from Mexican ships bound for Spain. Some of these pirates created small communities around Port Isabel and the mouth of the Rio Grande. After a Mexican naval vessel was placed at Brazos Santiago in the mid 1820s, the smuggling diminished and a period of heavy ocean shipping between Brazos Santiago and New Orleans began.[10] During this period, the current State of Tamaulipas, Mexico laid claim to the area between the Nueces River and the Rio Grande. This area was largely considered a "no-man's land"— disputed territory claimed by Mexico, Texans, and Native Americans.[11] Even the Republic of Texas never officially took in this territory; it was not until the conclusion of the US/Mexican war that boundaries were firmly established.

After the U.S. Congress approved annexation of the Republic of Texas in 1845, President Polk and members of the U.S. Congress were intent on securing the southern boundaries of the United States, particularly the border with Mexico. The Lower Rio Grande became the site of battles over this so-called "no-man's land." In 1846, President Polk had General Zachary Taylor establish a military presence in the area. Eventually Taylor secured Fort Polk at the site of today's Port Isabel, and the American Flag was raised to signal that westward expansion could get underway.

[6] Ibid
[7] Ibid. p.88
[8] Ibid. p.90
[9] Ibid. p.96
[10] Carl S. Chilton, Jr., *Port of Brownsville* (Brownsville: Port of Brownsville, 1997) p.8.
[11] Ron Tyler, ed. (The New Handbook of Texas Vol. 6 (Austin: Texas Historical Society, 1996) p.975.

However, Mexico did not agree that the annexation of Texas had settled the boundary disputes between Texas and Mexico, only that the United States had now joined the quarrel.[12] The War with Mexico lasted two years, with many battles and skirmishes taking place around present-day Brownsville. Author T.L. Fehrenback explains the importance of the War with Mexico: "The Rio Grande was, especially in those years, a formidable river, and it gave the United States a clearly defined southern boundary…. The expansion to the western ocean prevented any other powerful nation from securing an enclave there, and it left the United States as the dominant power on the North American continent."[13] The War with Mexico concluded with the Treaty of Guadalupe Hidalgo in 1848. The Treaty recognized that the area between the Nueces and the Rio Grande was to be a part of the State of Texas. Under the same treaty, the U.S. purchased from Mexico territory that comprises present-day New Mexico, Arizona, California, Nevada, Utah, Wyoming and part of Colorado.

Agriculture and Ranching

The well-known Texas cattle ranch pioneers, Richard King and Mifflin Kenedy, came to the Rio Grande during the War with Mexico as riverboat captains serving Zachary Taylor's forces, and afterward went into the commercial riverboat business on the Rio Grande. King and Kenedy became partners, buying large tracts of land in what is today's Kenedy County and raising beef cattle, sheep, goats and horses. Both men also bought ranch land on Padre Island. They were recognized leaders of the cattle industry in the West. During the Civil War, Kenedy and King continued their land acquisition. Other leading cattle ranch operators in the area included the Yturria family, the Cavazos family, and the Durst family (original to the Armstrong ranch), and Patrick Dunn, who owned most of Padre Island by 1926.[14] The city of Brownsville was incorporated in 1848; its founder, Charles Stillman, was in the shipping business running cargo between Brazos Santiago and New York. At that time, most of the trade from northeast Mexico came through the Brazos Santiago Pass, gradually building the population of Brownsville to around 3,000 by the end of the 1840s.[15] Brownsville continued to be a central migration route during the California gold rush in the 1850s. Travelers from the East Coast came to Brownsville and from there proceeded up the Rio Grande by steamship, then by land across Mexico to California - a more direct route than traveling cross-country. The Laguna Madre coastal region's importance to the United States was once again evident during the Civil War. The Confederacy had put the Texas coast under naval blockade by 1861. Among other activities throughout the Civil War, this was intended to keep cotton and supplies from being sent northward. But by delivering Texas cotton down the Rio Grande and over to Matamoros, where hundreds of European vessels awaited their cotton cargoes, the blockade was effectively circumvented. This trade was quite profitable for Texas. Attempts to stop the cotton trade, plus the more general politics of the Civil War, kept the Rio Grande in upheaval, with battles between the Confederate and Federal forces fought there throughout the war. In 1863, the Union posted a military regiment at Fort Isabel, but the Confederacy kept the coastline and borders with Mexico well defended. The last military action of the Civil War took place in 1865, at which time Union infantry went to Palmito Hill near Brownsville to wage battle. The Union infantry was soundly defeated. This battle took place one month after Robert E. Lee surrendered at Appotomax.[16] Not long after the end of the Civil War ocean shipping in the region declined considerably.

Trade and Commerce

As noted, today's Cameron County - particularly Port Isabel and Brownsville, have played a significant part in Texas' history and the history of the United States. After the Civil War and until about 1904, Port Isabel was a lucrative trading port, attracting business from all over the world. [17] Commercial harvesting of seafood had become concentrated around Port Isabel, Fulton, and Corpus Christi, to the point that by the 1890s many marine fishes, oysters and sea turtles were over-exploited, particularly Green sea turtles. Sea turtles had disappeared from the Texas coast by 1908.[18] Though the fishing industry, including canning plants, contributed significantly to the late 19th century economy, much of Cameron County's economic growth during that period was based on farming and ranching, as were the economies of Kenedy and Willacy. By 1904, rail lines had been built from Corpus Christi to Brownsville, connecting the Lower Rio Grande to the Midwest and northeastern United States. By the 1920s, the railroad was bringing droves of farmers and settlers from the Midwest to the Lower Rio Grande, where they cleared the land and started profitable cotton, vegetable and fruit farms, eventually making the Lower Rio Grande one of the prime agricultural regions in the State. As the agricultural industry grew, business and manufacturing opportunities responded and towns sprang up.

[14] Tunnell and Judd, p.9
[15] Port of Brownsville, p.13.
[16] Dallas Morning News, *Texas Almanac* (Dallas: Dallas Morning News, 1993) p.43.
[17] History of Port Isabel:Brief Chronological History of Port Isabel
[18] Robin Doughty, *Wildlife and Man in Texas* (College Station: Texas A& M University Press, 1983) pp.108-109.

Other factors also contributed to the region's growth during this time. During the Mexican Revolution, which began in 1910, the border population increased significantly as many sought refuge in Texas. Migration patterns were established between particular states in Mexico and particular regions or towns on the border. For example, refugees from central Mexico who settled in the Texas valley were likely to be joined later by immigrants from their hometowns. Migrants from the northwestern states of Zacatecas, Durango, and Sinaloa regularly traveled to Ciudad Juarez/EI Paso.

When economic recessions hit the United States, efforts mounted to push immigrants back to Mexico. In 1914-15, the U.S. side of the Rio Grande Valley experienced a winter of violence when hundreds of Mexicans were persecuted and killed by the Texas border patrols. The Great Depression of the 1930s also brought a new wave of deportations, during which immigrants who had lived undisturbed in the U.S. for decades were repatriated to Mexico.

The Bracero Program

Only a couple of decades after Mexicans were being actively deported from border towns, they were recruited back. The growth of production agriculture in the late 30's and early 40's created a need for a steady supply of field labor, and the U.S and Mexico established the Bracero Program. The Bracero Program was active from 1942 until 1965, and allowed agricultural workers from Mexico to legally enter and work on farms and ranches in the United States.[19]

Estimates vary, but between 3 and 4.5 million contracts were issued for Mexicans to serve as braceros during this period.[20]

By the 60's, an excess of agricultural workers, along with the introduction of the mechanical cotton harvester, destroyed the practicality and attractiveness of the bracero program,[21] and changing immigration policies forced the braceros to return home. Some human rights groups have documented abuses within the Bracero Program, pointing out that Mexicans signed English-language documents they could not understand, faced racism and harassment from U.S. citizens and patrols, worked in hot fields for a paltry wage, and were then unceremoniously shipped back to Mexico without a reintroduction program. According to Sin Fronteras Organizing Project, the U.S. Department of Labor officer in charge of the program, Lee G. Williams, once described it as a system of "legalized slavery."[22]

Ironically, while it grew prosperous on the backs of Mexican laborers, the agricultural industry in the region today faces an uncertain future. Though still considered one of Texas' most productive agricultural regions, urban growth is converting many farms and ranches in Cameron County to residential and commercial developments. A report by the American Farmland Trust showed that the two regions of Texas most affected by the loss of prime farmland between 1982 and 1992 were the Blackland Prairies and the Lower Rio Grande.

According to the AFT report, 85% of the development in the Lower Rio Grande during that period occurred on prime farmland. The report cited in particular Cameron County and Hidalgo County, both of which have high quality farmland and high incidences of conversion of farmland to development.[23]

The Maquila Industry

The passage of NAFTA (the North American Free Trade Agreement) in1993 eliminated trade barriers and linked the economies of Canada, the United States, and Mexico. Though the NAFTA agreement has been controversial, job creation has continued on the border, particularly in Mexico. The bulk of these jobs are in the maquila industry. However, even prior to NAFTA, a host of economic development strategies designed to stimulate industrial expansion on the border came into play.

The 1961-65 Mexican National Border Economic Development Program, followed in 1965 by the Industrialization Program of the Border, are two policies that contributed to the heavy emphasis on industrialization along the border.[24] The latter program introduced maquiladora assembly plants to the region; both prompted increased migration to the border area.

According to the Texas Comptroller of Public Accounts, the maquiladora program allows companies "to take advantage of U.S. Tax Code provisions permitting foreign–based subsidiaries to assemble U.S manufactured products along the border, then export them back to this country, subject only to the taxes on the value added abroad."[25] As of January 2000, 367 maquiladoras existed in Tamaulipas.[26] Border maquiladoras, as well as those located in the interior of Mexico, are one of Mexico's leading sources of foreign capital.[27]

[19] D. Berger; *Population-Environmental Report of the Lower Rio Grande Basin,* National Audubon Society Sabal Palm Grove Sanctuary, 1994
[20] Carlos and Cynthia Marentes, Sin Fronteras Organizing Project website: The Farmworkers' Page,, updated December 1999, www.farmworkers.org; and, Olivia Cadaval, the Smithsonian Institute, Migrations in History, Borders & Identity, The US/Mexico Borderlands website; educate.si.edu/migrations/bord/intro.html
[21] Carlos and Cynthia Marentes, Sin Fronteras Organizing Project website: The Farmworkers' Page, updated December 1999, www.farmworkers.org, http://www.farmworkers.org/testmony.html
[22] Ibid.
[23] American Farmland Trust, *Farming on the Edge* (Dekalb, Ill: American Farmland Trust Center for Agriculture, Northern Illinois University, March 1997) pp.10-11.
[24] Olivia Cadaval, the Smithsonian Institute, *Migrations in History, Borders & Identity*, The US/Mexico Borderlands website; educate.si.edu/migrations/bord/intro.html
[25] Texas Comptroller of Public Accounts, *Forces of Change* Vol.II, Part 1 (Texas Comptroller of Public Accounts: Austin, 1994) p.72
[26] *Industria Maquiladora De Exportacion* http:dgcnesyp.inegi.gob.mx/cgi-win/bdi.exe

Notwithstanding, some maquilas in particular, and increased border industrialization in general, have also been responsible for increased air pollution, hazardous waste disposal problems, traffic congestion, water quality problems, poor public health and a host of related problems.

The growth of the maquila industry has taxed infrastructure in Mexican communities as well. Socioeconomic indicators given in the Tamaulipas version of this report show trends in migration patterns to the border region from the interior of Mexico. In fact, 30% of the inhabitants of the Laguna Madre of Tamaulipas originate from other states in the Republic – primarily San Luís Potosí, Veracruz and Nuevo León.

Ports

To increase the export of regional commodities by ocean trade, the Cameron County Commissioners Court authorized a port to be established in Harlingen. The Brownsville Navigation District and the Port Isabel-San Benito Navigation District were both created in 1928.[28] The ports had their unprofitable times during World War II, though the Rio Grande Valley was experiencing economically good times due to a profitable agricultural industry and the presence of military bases. After World War II, imports of fruit were arriving at the Port of Brownsville from Mexico and Central America, Brownsville became a key location for shrimping, and cotton became a major crop in the Valley. In 1949, the Gulf Intracoastal Waterway (GIWW) was extended from Corpus Christi to the Port of Brownsville, allowing barges to move cargo back and forth from Brownsville to Florida.[29]

One of the most contentious ecological issues surrounding the GIWW remains maintenance dredging of the waterway. The dredging is necessary to allow barge traffic to move through the lagoon. Water depths in the Laguna Madre average one meter, and the GIWW is dredged to a depth of 12 feet. Until recently the dredge "spoil" was deposited in the bay system itself, but a coalition of conservation groups, concerned about the potential impacts these suspended sediments could have on seagrass beds – the cornerstone of life in the Laguna Madre, have called for the Army Corps of Engineers to justify the environmental costs of this activity compared to the ecological benefits the Laguna provides.

The Corps is currently involved in a lengthy process to scientifically document a number of factors in order to continue justifying bay placement of dredge spoil. These include: the effects of maintenance dredging on seagrass beds; the inefficiencies associated with dredging; the potential for land-placement of spoil to harm endangered shorebird habitat, and the economic activity generated by the GIWW.

Population Change

The Lower Rio Grande was the second fastest growing region in the state in terms of percent population growth during the 1990s, with an increase of 20.35 percent, second only to the overall South Texas region's 25.10 percent increase.[30] This population growth is due to natural increase (birth minus death), in migration from other states, and immigration from other countries.[31] "From 1990 to 1995, 88.3 percent of the population growth in the Rio Grande Region was due to natural increase" that is, birth minus death.[32]

Among Kenedy, Willacy and Cameron counties, only Cameron County has realized large population increases over the last two decades, and only Cameron is expected to continue experiencing this rate of growth. Based on the 1990 census report, Kenedy County, with 460 people, is one of the least populous counties in the state, primarily due to the existence of the Kenedy Ranch, which dominates the county. Its population is projected to increase to 504 people by 2020. Though Willacy County has a larger population than Kenedy, it, too, is sparsely populated and is not expected to experience a high growth rate in the next 20 years. In 1990, Willacy County's population was 17,705 and its population is projected to be 24,630 by 2020. In 1990 Cameron County's population was 260,120 it's projected population for 2020 is 473,775. [33]

History in the Making

There are a host of complex factors contributing to the social, economic and political fabric of the border region that impact on the Laguna Madre itself. As shown, many of these factors resulted from policies enacted at the national level in both countries, affecting a series of historical events played out across the scenery of the Lower Rio Grande Valley and northeastern Mexico.

Today the binational Laguna Madre and its coastal lands continue to experience the ups and downs of a region influenced by fluctuating agricultural and manufacturing markets, severe weather conditions, cross border treaties, the interplay between U.S. and Mexican economies, and human impacts on its landscape and natural resources.

[27] Texas Comptroller of Public Accounts, p.72.
[28] Carl S. Chilton, *Port of Brownsville,* p.73
[29] Ibid.
[30] Md. Nazrul Hoque and Steve H. Murdock, *Texas Population Growth at Mid-Decade* (College Station, TX: Texas State Data Center, November 1996) p.3.
[31] Ibid.
[32] Ibid. pp. 4-5.

CHAPTER 2
FISHERIES

Chapter 2
Fisheries

Shrimp is the most important commercially caught marine species in both the Tamaulipas and Texas Laguna Madre regions. It is important to note, however, that the two fisheries are quite distinct. In Texas, with the exception of bait fishing, shrimping occurs primarily in the Gulf of Mexico, not in the Laguna Madre. In Tamaulipas, the bulk of the shrimping activity takes place within the shallow Laguna waters. The Lower Laguna Madre of Texas is recognized primarily for its value as a recreational fishery, though it is also important to both the recreational and commercial fishing industries as a nursery for juvenile fish and shrimp, which migrate from the Laguna to the gulf and back during their growth cycles.

Direct "uses" of the Laguna Madre in Texas include boat-guided recreational fishing, commercial establishments and water-related recreational pursuits operating on South Padre Island, public fishing piers, commercial bait fishing (primarily in the Intracoastal Waterway and Brownsville and Port Isabel ship channels), and bird and wildlife-watching tours. Since much of the activity taking place on the bay itself is related to fishing, this section of the report will examine some of the impacts and issues associated with the recreational and commercial fisheries industries.

Recreational Fishery

Fishing the waters of the Laguna Madre is a popular past time for residents of the Valley and visitors alike. On a given day, one might see anglers wade-fishing the shallow waters of the bay, fly-fishing or embarking on all-day guided fishing trips in search of red drum and spotted sea trout.
Recreational saltwater fishing in the state of Texas is estimated to provide about 25,000 jobs. Most of these jobs are in the service sector, supporting trip-related angling.[34]
Total economic output generated by all (both fresh- and salt-water) angler expenditures for the state is estimated to be around six billion dollars, a ranking second only to California.[35]

Texas Parks & Wildlife Department studies have estimated the economic value of the Lower Laguna Madre's sport fishing industry to be around $180 million, based on local expenditures.[36] This represents about 10% of the total estimated economic output generated from sport fishing coastwide for Texas.[37]

The Texas Department of Economic Development estimates that for every $60,242 spent in Texas by tourists, one job is generated.[38] If this formula is applied to sport fishing, the Lower Laguna Madre sportfish industry supports 1,327 jobs. The Lower Laguna Madre also directly supports an average of between 70 and 100 private sector fishing-related jobs per year.[39] Skipper Ray, president of the South Padre Island Guide's Association, corroborates that in a given year there are approximately 50 guides operating in the communities of Port Isabel, Laguna Vista and South Padre Island, and an additional 20 or so operating out of Port Mansfield in Willacy County.[40] Ray also noted that when he started fishing in 1977 there were only eight guides operating in the area.

Most of the guides in the Lower Laguna Madre do not work year round; many hold down seasonal jobs with restaurants on South Padre Island and guide during the summer months. Ray noted that from November through January, there is much less activity on the water, and in his opinion the bay could sustain sport-fishing activity during these winter months as well.

The Texas Parks and Wildlife Department (TPWD) is charged with regulating inland and near-shore (up to nine nautical miles) commercial and recreational fisheries. The Department also administers angling licenses and fees, and manages a stocking program through maintenance of several fish hatcheries along the coast. TPWD's responsibility is to both protect the resource and promote its exploitation through increasing its "market share" of users. TPWD officials state that their philosophy in this regard is to manage game fish populations for "optimum yield" based on available social, biological and economic information.[41] In other words, the Department's objective is to manage the fishery so as to provide maximum economic benefit to the state of Texas, and to do so without over-taxing the resource.

[33] Ibid.
[34] The 1996 Economic Impact of Sport Fishing in Texas, Maharej and Carpenter, for the American Sport Fishing Association
[35] Ibid
[36] Pers. communication, Robin Reichers, Texas Parks & Wildlife Department, December 1999; this figure reflects gross expenditures with industry-standard multiplier applied
[37] Total economic output (gross expenditures with multiplier applied) coast-wide is an estimated 1.9 billion
[38] Avitourism in Texas, Fermata Inc.; Eubanks and Stoll, October 1999
[39] Source: Texas Workforce Commission and State Comptroller of Public Accounts
[40] Pers. communication, 3/2/00

The two most popular sport fish along the lower Texas Coast are red drum and spotted seatrout. Flounder is also a popular sport fish. TPWD imposes limits on the number of fish one can catch in a given day and on a given trip. Red drum limits are three fish per day between 20" and 28" with a total possession limit of six fish, meaning an angler can only catch six fish total per trip, no matter how many days she is on the water. Spotted seatrout regulations are a daily bag limit of 10 fish and total possession limit of 20 fish, over 15 inches.

Some of the issues and concerns raised by Skipper Ray and others interviewed for this report include: increased numbers of local boats, as well as faster boats on the water and subsequent reduction in good fishing areas, and the affects of suspended sediments on seagrass beds from dredging in the Gulf Intracoastal Waterway (GIWW). Boat sale records for Cameron and Willacy counties do show a slight increase (about one percent per year) from 1997 through May 2000.[42] Port Mansfield-based fishing guide Walt Kittelberger stated that he believes one of the biggest changes in local recreational fisheries is the increasing presence of anglers from metropolitan areas like Houston and Dallas, who are coming to the Laguna Madre to fish because other recreational fisheries are saturated.

A recent study conducted by Texas A&M University revealed that the majority of Texas anglers were fairly content with TPWD's management of the recreational fishery.[43] In fact, most anglers also appear to support regulation of the industry and restricted fishing and boating through sensitive areas such as seagrass beds. Conversely, these same anglers did not report witnessing many problems with propellor-caused damage to seagrass beds.[44]

However, Department biologists do admit there is potential for increased propeller damage to seagrass beds with larger numbers of anglers on the water.[45]

Commercial Fishery - Bay Regulatory Overview

Black drum, baitfish and bait shrimp are the principal species fished within the Laguna Madre itself. Most of the bait shrimp boats fish the GIWW and the ship channels around Port Isabel; some also fish for white shrimp at the mouth of the Rio Grande.

State jurisdiction includes near-shore waters nine nautical miles (10 statutory miles) out into the Gulf of Mexico. Beyond this point, fisheries are regulated by the National Marine Fisheries Service (NMFS) – a division of the U.S. Department of Commerce. The commercial and recreational bay fishery, then, falls under the jurisdiction of the Texas Parks and Wildlife Department.

Bait Fishery

In 1990, the Texas legislature gave regulatory authority over the baitfish, shrimp and oyster fishery to the Texas Parks and Wildlife Department. Texas bays were established as major bays or bait bays through the process, and policies enacted to regulate fishing in the bays in accordance with their designation. At this time, the Lower Laguna Madre was designated as a Bait Bay, for the harvest of baitfish and bait shrimp. Bait shrimp are primarily sub-adult brown and pink shrimp that are caught and sold to local bait shops and used by recreational anglers. Live shrimp are a popular bait source because they are a preferred food for both spotted sea trout and red drum.[46]

For example, a statewide survey of recreational anglers performed by Texas A&M revealed that the majority (76%) had used live shrimp as bait at least once in the previous 12 months.[47]

Shortly after TPWD gained regulatory control of the commercial fishery, the department instituted a license buy-back program on the bay and bait fisheries and established eligibility criteria in an attempt to scale it down.[48] Since that time, no new licenses have been issued for commercial bay and bait fishing, and existing licenses must be renewed yearly. In 1998, 1,470 bait shrimp boat licenses were issued for all of Texas, and in 1999, 1,363 were issued.[49] There are currently 31 active bait shrimp licenses in the Lower Laguna Madre region.[50]

Marine products harvested as bait and sold to commercial dealers were not reportable until September 1991, and comprehensive implementation of the bait program was not completed until 1994, making a detailed historical analysis of the economic value of this fishery rather difficult.

The Galveston Bay system leads in amount of bait shrimp produced, with total ex-vessel values at $1.8 million for 1997.[51] The chart on the following page shows dollar ex-vessel values for other Texas bay systems in 1997. While Galveston Bay contributes more bait shrimp than any other Texas Bay system, the upper and lower Laguna Madre system is a close second, contributing a significant portion of the bait shrimp produced in Texas in 1997.[52] Ex-vessel values of bait shrimp for the Lower Laguna Madre alone in 1997 were close to $500,000, roughly 14% of statewide ex-vessel values of bait shrimp landings in 1997.

[41] Pers. communication Paul Hammerschmidt, TPWD, 2/29/00
[42] Data supplied by Smiley Nava, Texas Parks and Wildlife, Dept. Corpus Christi
[43] *Understanding Future Issues in Saltwater Fisheries Management in Texas*, Ditton, Bohnsack and Hunt, Department of Wildlife and Fisheries Science, Report #HD 610, November 1998
[44] Ibid.
[45] Interview Randy Blankinship, 1/00, Coastal fisheries division, TPWD
[46] *Laguna Madre Compendium* Draft, Texas A&M University Center for Coastal Studies, Tunnel and Judd editors, October 1999.
[47] Ditton, et al, 1998
[48] Pers. communication, Paul Hammerschmidt, 2/29/00
[49] Pers. communication, Paul Hammerschmidt, 3/6/00

Two caveats are important to this analysis. First, Texas law does not require all commercial landings to be reported. As it stands, consumers may purchase seafood from a licensed commercial fisherman for personal consumption – "*without the intent to resell*".[53] Another exception to the reporting requirement is restaurants – a commercial fisherman may sell shrimp directly to a restaurant owner, operator or employee for patron consumption on the premises of the restaurant, without reporting this transaction. While it is likely that some transactions take place that go unreported, it is not clear what percentage these types of transactions might account for the total harvest and sale of shrimp.

Second, commercial landings data for a particular port include all landings, regardless of where the species is caught. For example, seafood caught off the coast of Louisiana but landed in a Texas port is counted as a landing at that port and not as "catch" from Louisiana. As a result, landings data cannot be construed as a measure of the productivity of a particular area of the gulf or coast. Where the catch is landed does, however, determine a certain amount of economic activity in that area, through subsequent processing and sale of the seafood.

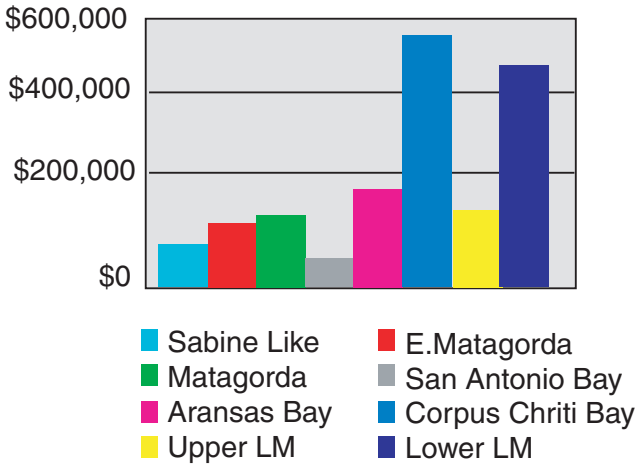
For example, a report released in 1998 for the Texas Sea Grant program shows commercial fisheries in the Laguna Madre estuary (off-shore and in-shore combined) generates $2.4 million dollars in direct economic impact for the region and supports 162 jobs. However, when all landings regardless of catch location are considered, direct impacts are estimated to be around $63 million,[54] with 2,041 jobs generated from commercial fishing.

Texas Parks and Wildlife Department personnel have stated they believe the impact of bait fishing in the Laguna Madre on gulf shrimp populations to be minimal. There are relatively few restrictions on the bait fishery, other than weight limitations. Bait shrimpers are allowed to pull in 200 pounds of shrimp per day, half of which must be alive. There are no official closed seasons for harvesting bait shrimp in bait-only bays. Because the bait boats drag nets for a shorter amount of time in order to salvage the live catch, they also have a quicker sorting process. However Scarlet Colley, a Laguna Madre-based tour guide, expressed concern for what she views as significant loss of live by-catch as a result of on-board practices to salvage the shrimp first, and worry about the by-catch later.[55]

Finfish

In Texas, commercial harvesting of red drum and spotted sea trout has been illegal since 1981. As pointed out in the previous section, these species are recreationally harvested and maintained through stocking programs. Black drum is harvested commercially from the Lower Laguna Madre, primarily with trotlines.[56] Although the most important commercial finfish in the Laguna Madre fishery, black drum yields few surplus fish, due to low mortality rates in the population.[57] Between 1993 and 1996, black drum harvests statewide rose steeply – from less than one million to over four million pounds, then dropped by 35% in 1997. Average price per pound paid to commercial fishermen for black drum rose between 1993 and 1997, reflecting a higher overall value per pound for the species.[58]

Comparision of 1997 ex-vessel value of bait shrimp caught in Texas bays other than Galvenston



[50] Pers. communication, Randy Blankinship, 3/8/00
[51] *Trends in Texas Commercial Fishery Landings*, 1972-1997, Robinson et al., Texas Parks and Wildlife, Management Data Series # 158, 1998
[52] Ibid.
[53] Ibid.
[54] *Impacts of Recreational and Commercial Fishing and Coastal Resource Based Tourism on Regional and State Economies*, Jones and Tanyeri-Abur, Department of Agricultural Economics, Texas A&M University, March 1998
[55] Interview with Scarlet Colley, Fins to Feathers tours, 1/00
[56] Tunnel et al, 1999
[57] Pers. communication, Larry McEachron, 3/2/00

Commercial Fishery – Gulf

Approximately 72% of the commercially important Gulf species spend portions of their life cycles in the Laguna Madre bay system, with gulf shrimp being the principal revenue-generator.[59]

The advent of frozen foods in the 1940's helped to create a domestic market for shrimp. Mexico's Yucatan peninsula coast became known as a shrimp-rich area, and U.S. trawlers at that time landed shrimp caught in Mexico at the Port of Brownsville and Port Isabel. In fact, at that time the Port of Brownsville dredged an additional shrimp basin just to handle the extra traffic. By the mid 1950's there were 350 trawlers operating out of Lower Laguna Madre ports. Shrimpers harvested from Mexican waters during the winter and spring, and in U.S. waters during summer and early fall, making shrimping profitable year round.

In 1976, the Magnuson Fishery Conservation and Management Act (Magnuson Act) established U.S. jurisdiction over fisheries in federal waters of the Exclusive Economic Zone (EEZ, from 3 to 200 nautical miles offshore) and created eight quasi-federal regional councils to oversee fisheries in their respective areas. Mexico also closed its waters to U.S. trawlers at this time and extended its jurisdiction to 200 miles offshore. According to some gulf coast shrimpers, these new regulations severely curtailed their profits, limiting their fishing time to the summer months.

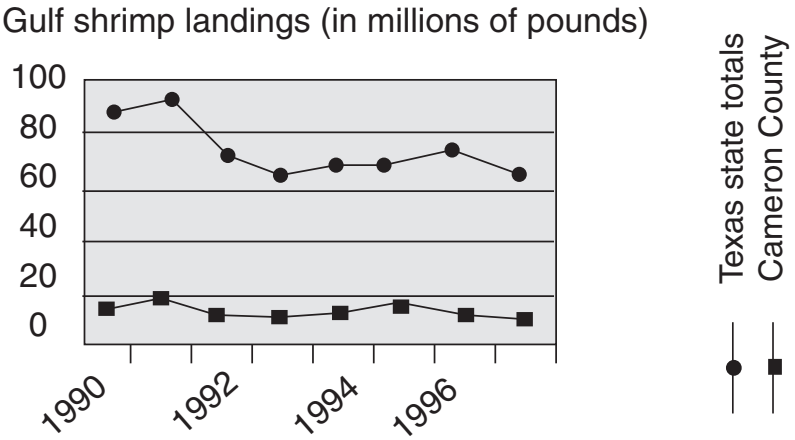
Brown shrimp (*Penaeus aztecus*) is the principal species harvested from the Gulf of Mexico in Texas waters. As mentioned previously, the Laguna Madre and other in-shore wetlands that are hydrologically connected to the Gulf of Mexico provide important nursery habitat for the shrimp. Shrimp spawn off shore, and travel in post-larval and juvenile stages into the Laguna Madre bay through the ship channels and passes. In the Laguna Madre, they spend much of their time on muddy and sandy bay bottoms and, to some extent, in seagrass beds, before migrating as adults back out to the Gulf.

Closed seasons imposed on the fishery are designed to protect shrimp productivity cycles. With the primary growth stage occurring in the summertime, gulf waters are closed to shrimping from May 15th through July 15th. Cameron County gulf shrimp landings between 1990 and 1997 weigh in between 15 and 20% of statewide landings for all shrimp species, for average total revenues of around $57 million per year over the seven-year period.[60] As pointed out earlier in this chapter, gulf shrimp landed in Texas ports may also include shrimp harvested from other states or from outside the territorial waters of the U.S. Brownsville and Port Isabel are considered a single port, and represent the third largest-volume port for shrimp in the nation.

Shrimp landings in pounds have fallen since the 1950's, from around 20 million pounds per year to an average of 11 to 15 million pounds per year in the 1990's. The catch value of the shrimp has risen, however, due to higher per-pound prices.

Today there are 325 active gulf shrimp licenses in the Lower Laguna Madre region.[61] The Texas Shrimp Association (TSA), a non-profit organization founded to represent and promote policies beneficial to gulf shrimpers, estimates that there are around 1,500 full-time employees supported directly by gulf shrimping.[62] TSA also estimates the local economic impact of gulf shrimping to be around $210 million dollars.[63]

There are different levels of operation in shrimping. Some operations are vertically integrated, where one company manages a fleet, unloading dock and processing house and may also broker the sale of the seafood. Others own fleets and unloading docks, some own stores, and some smaller operators simply man a crew and own a boat. These smaller operators may be the hardest hit by changes in the industry, as they are less able to absorb large fluctuations in price or adapt to new regulations (see side-bar: "At Issue…").



[58] Robinson et al. 1998
[59] Pers. communication, Deyaun Boudreaux, Texas Shrimp Association, 1/00
[60] Based on data from the National Marine Fisheries Service for off-shore landings 1990 – 1997
[61] Pers. communication, Randy Blankinship, TPWD, 3/8/00
[62] Pers. communication, Deyaun Beaudreux, TSA, 3/7/00
[63] Economic value statistics differ from source to source. There has not been an attempt to analyze the sources of figures; rather they are reported here as they have been presented.
[64] *Bordering the Future: Challenge and Opportunity in the Texas Border Region*, Texas Comptroller of Public Accounts, July 1998, p. 9; see also pp. 13-33.
[65] See, e.g., *Our Border, Our Future*, Border Infrastructure Coalition, November 1998.
[66] Id. at p. 14.

Summary

The consensus among those interviewed for this report appears to be that the Laguna Madre is "holding its own" as a functioning ecological system. While not pristine by any means, they assert that it is still a relatively healthy system. Many also feel, however, that the bay needs focused conservation efforts in order to remain economically and ecologically viable, and that further pressure from both recreational and commercial fisheries could negatively impact the system unless adequate management plans can be implemented.

The Texas Parks and Wildlife Department, as the lead agency responsible for management and regulation of the commercial fishery in state waters, is currently conducting a data and policy review in preparation for release of a comprehensive fisheries management strategy. The Department says this strategy will optimize both yield and sustainability of Texas coastal fisheries. Increased sea turtle protection efforts are an important part of this strategy.

At issue: Turtle Excluder Devices and Regulations

Turtle Excluder Devices (TEDS) and Bycatch Reduction Devices (BRDs) are designed to limit the numbers of other species hauled up in shrimp nets, primarily sea turtles and red snapper. While it is beyond the scope and purpose of this report to conduct an in-depth analysis of the effects of these two regulations on the industry, several things are worth mentioning here. Interviews with some of the gulf shrimpers reveal that they see themselves as stewards of marine resources, in direct contrast to how conservation groups upset over sea turtle mortality generally view shrimping as a practice. Groups that monitor sea turtle populations claim that sea turtle strandings increase occur during the opening of shrimp season each year.

Shrimpers and those representing them have expressed the belief that new regulations are designed to slowly but surely push them out of existence by increasingly limiting their ability to catch shrimp. They also feel maligned by environmentalists and claim to be unfairly blamed for much of the sea turtle mortality in ocean waters.

TSA representatives say that the Lower Laguna Madre region – south of Corpus Christi - reports the lowest numbers of sea turtle strandings on the coast, because in this region the fishery is primarily a deep-water fishery, and sea turtles are shallower-water creatures. Shrimpers claim to be complying with the TED regulations in all water and say there are other causes of death possibly being overlooked by conservation groups, such as dynamite blasting to remove oil rigs in the Gulf. In interviews conducted for this report, however, at least one on-board crewmember admitted to not using the TED in deeper water.

Others interviewed for this report stated that during open season, so many boats are on the water that regardless of whether or not TEDS are employed, the sea turtles' chances of encountering multiple nets and boats, and subsequent efforts to avoid them, could weaken the turtle to the extent that it succumbs to the next net or predator.

The Department of Commerce, the agency within which the National Marine Fisheries Service operates, recently began appropriating funds to sea turtle restoration projects. TSA and conservation groups formed a loose coalition to help push for the appropriations. In 1997, for example, the Department appropriated $300,000 to sea turtle restoration projects operating in the area between Tepehuajes and Rancho Nuevo, Mexico, north of the Rio Soto la Marina.

At a binational symposium in April 2000, TPWD Coastal Fisheries biologist Randy Blankinship outlined the department's goals for the program. According to Blankinship, the department wants to address inefficiency and by-catch in current bay fishing practices stating that department investigations indicated Texas was on its way to "a disaster in the shrimp fishery" if current harvest rates and methods continue. TPWD hopes to:
1) allow shrimp to grow to a larger, more valuable size;
2) in the bay, prioritize harvest by bait shrimpers;
3) assure adequate escapement to the Gulf; and,
4) provide for an adequate profit margin for individual shrimpers (through reducing overall effort and protecting small shrimp). The department also plans to propose protection for critical nursery areas.

Blankinship noted that these actions would be proposed as a set of regulations to the Texas Parks & Wildlife Commission soon. The proposals will go to public hearing throughout the state, and if adopted, will be implemented through the license limitation and buy-back program.

CHAPTER 3
ECONOMIC DEVELOPMENT

Chapter 3
Economic Development

Introduction

For several years, the Lower Rio Grande Valley, like much of the U.S./Mexico border, has made the promotion of maquiladoras and U.S./Mexico trade the central focus of its economic development strategy. Local Chambers of Commerce believed that development of maquiladora assembly plants on the Mexican side of the border would bring warehousing and other trade-related jobs to the Texas side of the border. They also strongly supported efforts to remove trade barriers between U.S. and Mexico in order to increase the flow of goods through local border crossings. These efforts culminated in the 1993 North American Free Trade Agreement (NAFTA).

Through these and other efforts, the maquiladora industry in Matamoros and Valle Hermosa has expanded considerably. In the Matamoros region, the number of maquilas increased from 86 in 1990 to 119 in March of 2000, or by 38%. During the same time period, employees working in Matamoros maquilas increased by 70% - from a little over 37,000 to more than 63,000. The larger percentage increase in the number of workers as compared to the number of maquilas may reflect a tendency of the industries to hire more workers when wages are pushed down by such events as the peso devaluation in 1994.

Cargo movements through border crossings in the Lower Rio Grande Valley have also increased significantly in the last decade, and three new international crossings have been opened - one in Brownsville, one near Harlingen and one near the small town of Los Indios.

But the question remains as to whether this approach to economic development has brought prosperity to the Valley. There are many indications that it has not. The area still faces extremely high poverty and unemployment, in part because population growth has outstripped job creation and kept wages low. This situation has been recognized in a number of recent reports. For example, the 1998 Texas Comptroller report, *Bordering the Future,* entitled its analysis of the border's economy "Growth Without Prosperity", noting:

By every economic indicator, the Texas Border region has been growing rapidly since at least the early 1980s. But growth has not always meant prosperity. For instance, the Comptroller's baseline forecast of the Border economy suggests that real earnings per capita will more than double by 2020. The same forecast suggests that, barring unforeseen changes, the region's standing relative to the rest of the state will still deteriorate during this period.[64]

The emphasis on cross-border trade and cargo movement, along with population growth, has also put intense pressure on the local transportation infrastructure. Bridges are jammed, cargo movements are delayed and highways are over-crowded. This has led many local officials to focus most of their effort at the state legislature on securing additional funding for transportation improvements.[65]

Increasingly, however, there is more recognition that new strategies are needed to address the Valley's chronic poverty and unemployment problems. While the Border Infrastructure Coalition has placed most of its emphasis on securing transportation funding, it has also begun to acknowledge the underlying problems facing many border residents, stating:

Retail shopping centers are being constructed in El Paso; airports and universities are sprouting new highway loops in Laredo; and farms are being converted into subdivisions as far as the eye can see in the Rio Grande Valley. Yet, despite a building boom and burgeoning economic activity, a large number of border Texans remain poor and unemployed.[66]

The Border Infrastructure Coalition recommended that the state legislature provide new tax incentives to help increase "business activity" and create jobs along the border.[67] It also issued a separate report focused on the need for new worker training programs to increase the availability of highly skilled local labor.[68]

In addition, efforts of local officials and citizens' organizations (in particular, Valley Interfaith) have resulted in the establishment of various incentive programs designed to attract investment and spur job creation. These programs include use of the state enterprise zone framework legislation and creation of federal empowerment zones in the Lower Rio Grande Valley.

This section of the report explores current economic development issues and approaches in Cameron and Willacy counties. It begins with a discussion of some key economic indicators.

[67] Id. at p. 6.
[68] *Workforce Development Report: Legislative Recommendations*, Border Infrastructure Coalition, November 1998.
[69] Texas State Data Center: txsdc.tamu.edu,
[70] Ibid, based on scenario 90-96
[71] Source: U.S. Census Bureau; www.census.gov; County Business Patterns for Texas, selected years

This is followed by a brief evaluation of the results being obtained in the local enterprise and empowerment zones and other incentive programs. It concludes with an examination of the roles that tourism (and, particularly nature-based tourism) and ports play in the Laguna Madre regional economy.

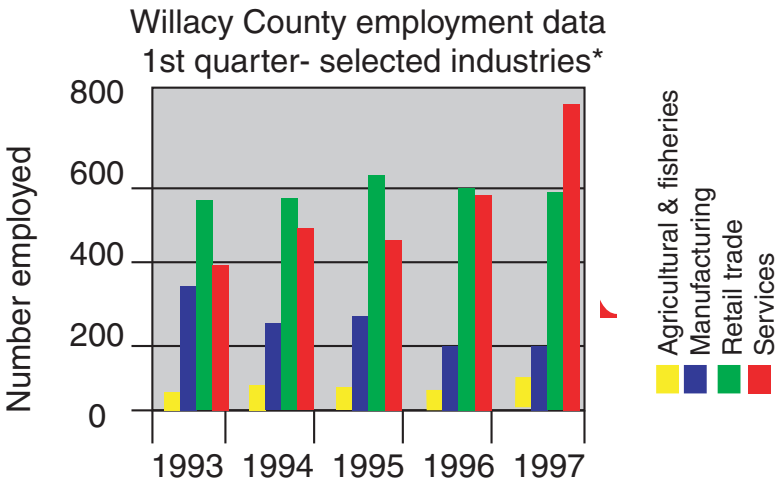
Overview of the Local Economy

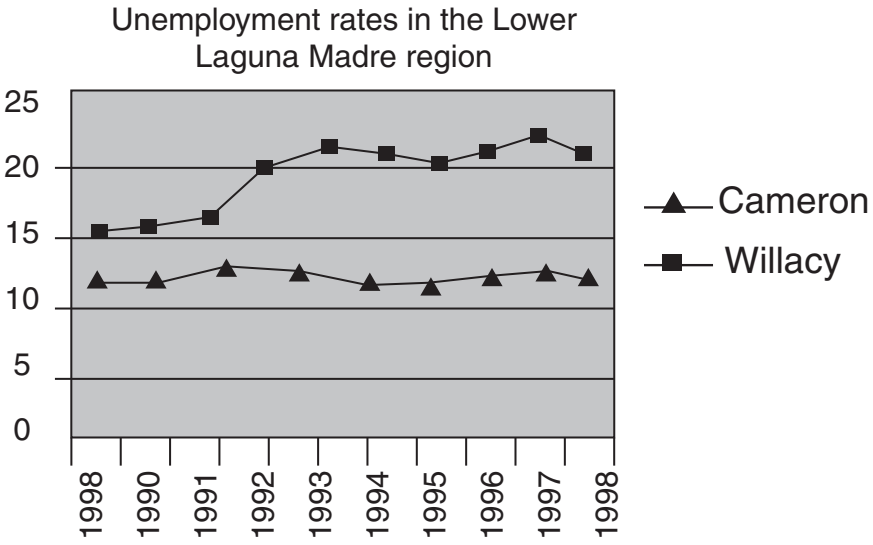
The two counties' demographic and socioeconomic profiles are markedly different. Year 2000 population projections for Willacy and Cameron counties are estimated to be 21,708 and 349,596, respectively.[69] According to projected scenarios,[70] doubling time for these two counties combined, or the amount of time it will take for the population to double, is slightly more than 25 years. Doubling time for the state overall is expected to take twice as long – or over 50 years.

In very general terms, the economies of Cameron and Willacy counties reflect those of the entire border: low per-capita incomes and high unemployment. However, unemployment data available through November 1999 indicate that recent unemployment rates are falling for both counties – from 12.6% in 1998 to 9.4% in November 1999 in Cameron County, and from 21% to 15.2 % in Willacy County for the same period.

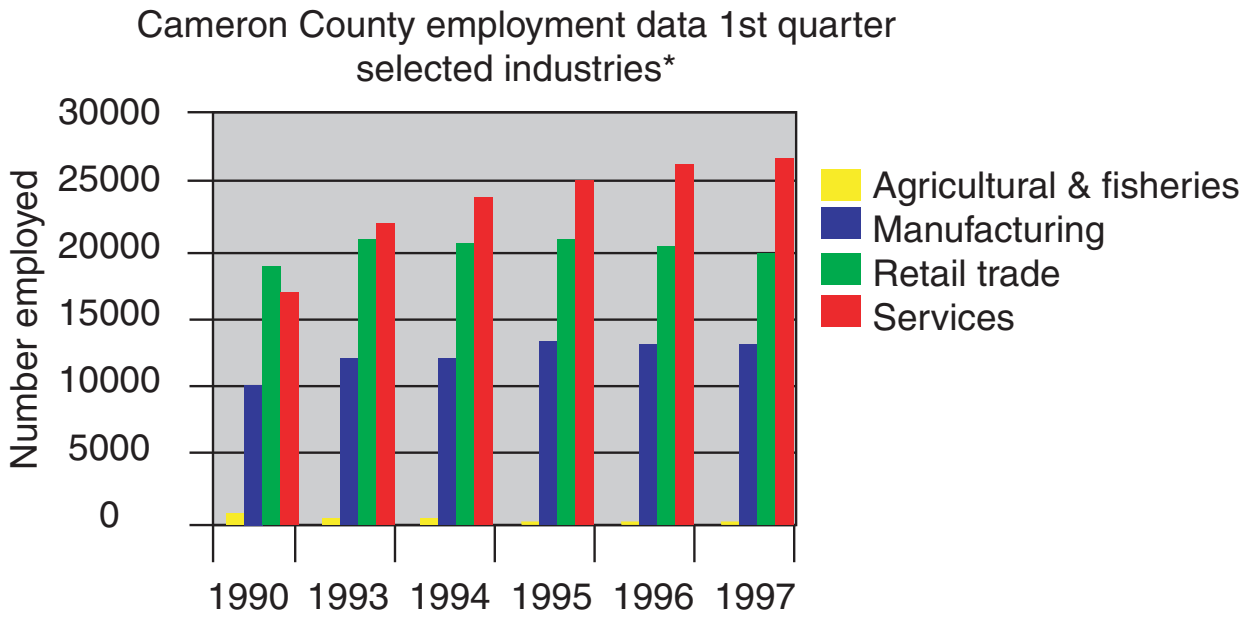
Most of the trends in employment growth are showing up in the services sector in both counties (see two graphs below).

Agriculture and ranching plays a much greater role in the economy of Willacy County, even showing an increase in 1997,[71] while elsewhere in the Valley the agricultural sector appears to be declining. Participants in a 1999 Leaders' Forum sponsored by TCPS stated that the challenge for Willacy County, unlike Cameron, is maintaining a viable ranching and farming economy in the midst of declining trends statewide in this sector, and while still attempting to diversify the economy in general.





In recent years, a fair number of reports have been generated highlighting the dire economic situation along the border, and specifically the Lower Rio Grande Valley. Combined poverty rates for the two-county area according to the 1990 Census were 42.5%. In 1995, those figures had barely changed, with poverty rates hovering at 41.4%. According to the same figures, almost half of all children in the region are living in poverty.



Even in 1999, a study conducted by Old Dominion University in Virginia found that the Brownsville/Harlingen/San Benito Municipal Statistical Area, comprising the three largest Laguna Madre-area cities, ranked next to last in the nation in per-capita income, with the lowest per-capita ranked MSA in Hidalgo County.

Some of the recurring factors identified as causes, according to local officials, are the need for better training and education of residents, the need to build intellectual capital, and the need to supply higher-paid jobs in order to bring prosperity in the region up to a level that compares more favorably with other areas in Texas.

At least one local citizens' organization has made a notable attempt to address some of these alarming poverty statistics.[72] Valley Interfaith, a broad-based organization comprised of churches and public schools developing local leadership to revitalize their communities, initiated a Living Wage strategy in 1998. The strategy is targeted toward increasing wages, primarily in public entities throughout the Valley. According to Valley Interfaith, close to 30% of the areas' population is employed by the public sector, and of those some 60-70% earn below poverty level wages.[73]

Valley Interfaith reports that since the strategy was initiated, they have been able to increase wages for workers in the Mission, McAllen, Pharr/San Juan/Alamo, Port Isabel, Edcouch-Elsa and Brownsville school districts (from $5.15 an hour to between $6.50 – $9.50 for hourly workers, and up to $7.25-$9.25 an hour for paraprofessionals as base wages in those occupations), and in other public sectors, including the City of McAllen, Hidalgo County and the Region 1 Service Center. They have faced some minor opposition from local officials concerned about deterring industries out for cheaper labor.

Other attempts to address poverty and economic development problems in this region have focused on the use of incentives to attract and retain employers. These incentives have been offered through two primary vehicles: state enterprise zones and federal empowerment zones.[74]

[72] See also description of Valley Interfaith's VIDA program at p. 19 of this report.
[73] From *Organizing for Living Wages,* Valley Interfaith position paper, August 1999
[74] The 1999 legislative session also saw passage of statewide legislation (SB 441) to cut state and local sales taxes and franchise taxes through FY 2004. This measure will increase tax benefits to businesses 55% over the life of the bill. The bill was originally part of the border package of legislation introduced in this session.

Enterprise zones

Enterprise zones were established in 1987 through the state legislature to induce private investment in low-income areas by providing incentives and economic development benefits. The Texas Department of Economic Development administers the zones. According to its website, the purpose of the Texas Enterprise Zone Program is "to encourage job creation and capital investment in areas of economic distress." Economic distress indicators used as criteria include, among others, an unemployment rate of at least 1.5 times the state average, high poverty rates, or a 4% population loss over the last three years. The Laguna Madre areas' six enterprise zones all qualified under the poverty and unemployment criteria. Only one – Los Fresnos, also qualified under the population loss criteria as well.

Cities and counties can nominate certain businesses as enterprise projects within a designated enterprise zone. To qualify, a business must be active in the zone, and must hire a new work force, 25% of which includes residents of the zone or economically disadvantaged persons.

Enterprise zones in the Laguna Madre area, and elsewhere in the state, experience varying degrees of success. While enterprise zones have been credited with increasing the number of jobs available, initially they did not appear to be a new and improved paradigm for development, or be designed to specifically raise local wage levels. Many of the participating cities and counties simply added to existing industrial parks or created new ones, in order to get as many new jobs into the region as possible. However, some of those responsible for enterprise zone management and implementation have indicated that the councils are becoming more careful about weighing such criteria as the wages and child care benefits offered.[75]

From the time of their inception in 1988 up to 1997, these local Enterprise Zones were supposed to have generated some 4,108 jobs. In some cases, the projected compared to actual number of jobs created has exceeded expectations, but in others, the projections appear to have been somewhat overestimated. Texas enterprise zones in general have experienced some problems meeting the original goals. The state initially designated 303 enterprise zones. Some zones expired or withdrew from the program, and some companies either went out of business or completed the term of their benefits. As of 1997, 178 enterprise zones, supporting 214 projects, remained active in the state.

The first enterprise zone designated in Texas was in Willacy County. The city of Lyford provided enterprise zone benefits to Indiana Knitwear Corporation, which added 18 new jobs to its workforce, but the city subsequently waived ten of the jobs it required the company to add because, despite high unemployment figures, the company could not find enough qualified applicants.[76] In Raymondville, two businesses received enterprise zone designations, but one (Fruit of the Loom) has closed down after five years and the other (Kinney Bonded Warehouse) eventually chose to opt out of the program.[77] The Willacy/Raymondville zone has had slightly more success with one industry in particular – Kenaf Industries, Inc.[78]

Kenaf Industries, Inc. processes a plant fiber used to make paper. The company has hired 30 employees in Willacy County and may reportedly add up to 250 jobs,[79] by constructing a paper mill on site. (It is possible that growth in the Kenaf industry in Willacy county may be responsible for the rising level of employment shown in the agricultural sector in 1997 for that county.) Other projects slated for the Willacy county enterprise zone, according to the zone's representative, include a 1,000-bed state prison, a potential bleacher manufacturer, more fast food and hotel businesses and, potentially, a 200-acre industrial park.

The following table shows the most recent Enterprise Zone information for the Laguna Madre region during the last state fiscal year, from September 1998 to August 1999, as reported by Enterprise Zone representatives.

	Businesses assisted only	Businesses located or retained	Projected total capital investment	Projected total jobs to be created or retained	Net Revenue/ Loss
Harlingen	20	13	$1,000,000	2,635	+$434,358
Willacy/Lyford	0	0	0	0	0
Los Fresnos	N/A	4	N/A	40	+$2,156.68
Rio GrandeValley Empowerment/ Enterprise Zone	N/A	N/A	N/A	N/A	N/A
Willacy/ Raymondville	0	0	0	0	0
Brownsville	24	23	$20,000,000	1,200	+$898,410
Free Trade Bridge (Harlingen, San Benito, Los Indios)	1	1	$13,300,000	44	$10,915

[75] Telephone conversation, Michelle McCoy, Harlingen Enterprise Zone, 2/24/00
[76] Telephone conversation Lydia Moreno, City of Lyford, 1/17/00
[77] Telephone conversation Eleazar García, City of Raymondville, 1/17/00
[78] See also *Spotlight on Kenaf* at p. 46
[79] Ibid

Enterprise Zone administrators provide yearly reporting to the Texas Department of Economic Development. Administrators rank their revitalization goals and economic objectives in each report and the relative success of incentives offered through the program for that reporting period. In all zones, the most commonly ranked top priorities for the most recent fiscal year were: attracting new businesses, assisting existing businesses, increasing employment, and improving underemployment. Decreasing crime and enhancing police services were also listed in one case, as was enhancing public facilities. However, education and environment were not chosen as priority areas to address through the enterprise zones, and neither were enhancing health and human services or providing affordable housing. The cities of Brownsville and Harlingen both listed local efforts to achieve revitalization goals as "exceeding expectations", and indicated that they believed local revitalization efforts would continue to be "very successful" in the next five to ten years.[80] Both cities also listed state incentives offered through the Enterprise Zone for the reporting period as "exceeding expectations", but all other zones in the program listed state incentives as "unsuccessful" (one) or only "somewhat successful".[81]

Some of the recommendations for improved state incentives, legislation or programs listed by administrators of Enterprise Zones in order to make the program more effective included the following: increasing funds for the Smart Jobs training program, changing existing regulations in order to allow communities to work together more effectively, and an increased outreach and grassroots marketing campaign.

The following paragraph regarding Enterprise Zones is directly quoted from "Smart Growth News", a weekly e-mail list service dealing whith growth and sustainable development-related happenings around the U.S.:

A study in the most recent issue of the Fannie Mae Foundation´s "Journal of Housing Research" attempts to determine the effect of enterprise zones on markets with high and low vacancy rates. The study-conducted by researchers Jhon Engberg and Robert Greenbaum-was based on enterprise zones in 22 states and how they affect not only job and business growth, but also neighborhood improvement and stability. The study´s main focus was on property values, and it determined that enterprise zones have a positive impact on housing values in areas that already had high vacancy rates. According to Jim Carr-the Fannie Mae Foundation´s senior vice president of innovation, research, and technology- the new study gives a better understanding of how enterprise zones affect housing values and how they can be used for neighborhood revitalization. While they are one of the most popular economic development tools in use in this country, there previously has been little systematic evidence to support the effectiveness of enterprise zones.

The Enterprise zone program has met with mixed reviews from around the state. A recent editorial in the Austin American Statesman quoted the State Auditor's Office as accusing the Texas Department of Economic Development of "gross fiscal mismanagement" particularly with regard to the Smart Jobs program.[82] The editorial accuses the state of handing out money for economic development purposes based on little information save the promise of new jobs, and argues for increased accountability of such funds. Legislation is currently being drafted for the January 2001 legislative session that will demand greater accounting of use of such funds by businesses receiving assistance.

Property tax abatements, low interest loans, and sales tax refunds were listed by all Enterprise Zone personnel as "important" or "critical" to achieving community revitalization goals, and all zones listed at least one of these tax abatements as being "tied to jobs and investment".

Only Brownsville listed "job training and services" as being important to achieving community revitalization goals, specifically mentioning the Smart Jobs program as an important tool and recommending increased funds for this program.

In theory, the enterprise zone program could provide a mechanism to integrate economic development and environmental concerns. However, none of the Enterprise Zone programs administered by the state require communities to undertake an accounting of or provide planned mitigation for the possible environmental effects of economic expansion and growth. In general, there is a failure to incorporate environmental considerations into existing enterprise zone programs in a meaningful way.

[80] Mandatory Annual Report; Texas Enterprise Zone Program, period covering September 1, 1998 to August 31, 1999, obtained from the Texas Department of Economic Development
[81] Ibid
[82] Austin American Statesman; Editorial page, "Bedazzled by Eco Devo", March 17, 2000

Empowerment zones

Following the enterprise zone designation, the federal government designated certain areas empowerment zones and allocated $40 million to assist development in those areas. There are two empowerment "sub-zones" in the Cameron and Willacy county Laguna Madre area. Local committees manage these empowerment sub-zones by setting priorities and approving projects. Business development, infrastructure and housing are three of the top priority interests of the empowerment zone committees.

A diverse local economy contributes to the prosperity, quality of life and long-term "survivability" of a community. Attempts to increase education and training levels as well as foster small business development through the empowerment zone, if successful, may help in this regard. For example, the Valley Initiative for Development and Advancement, or "VIDA", is a successful program that provides an important model for development in areas experiencing high unemployment and poverty rates. This program's goal is to provide demand-driven training for citizens looking for high-wage, high skill jobs, and connect employees with businesses looking for skilled labor. (Please see "Spotlight on Project VIDA" at p. 19 of this report.)

The graphic at right shows the Cameron County approved empowerment sub-zone.[83] This sub-zone is directly adjacent to the Laguna Madre. The priorities listed for business development for the sub-zone, according to the empowerment zone website,[84] are based on the premise that the shrimp and commercial fishing industry is declining and that service sector jobs available on nearby South Padre Island do not pay well. The strategy for this sub-zone, therfore, is to increase the number of industrial jobs available to those displaced from commercial fishing and textiles plants[85] in an effort to increase standards of living. A total of $9.8 million in federal funding was allocated to the sub-zone for 22 approved projects, including small business start-up facilities, historic preservation, education and job training, a head start program, an outlet mall, water and wastewater infrastructure improvements and a variety of other projects.

The Laguna Madre sub-zone also listed the Gulf Intracoastal Waterway as an important asset around which to build employment. The Port Isabel/San Benito Navigation District benefited from the Empowerment Zone designation, receiving $1.7 million in empowerment zone funds for infrastructure improvements.[86]

Empowerment zone chair Bob Cornelison estimates that in three years, the program has added about 90 new businesses in the area and some 600 new jobs.[87] Cornelison notes that the ultimate objective of the empowerment zone program is the economic self-sufficiency of the zone area after the two-year period has elapsed and federal dollars have been spent. New businesses include: tool and dye operations employing some 40 individuals; a manufacturer of pool tables (assisted through the small business incubator located at the port); a company building private aircraft parts; a candle factory; a marine service company that rebuilds ship wheels and propellers; and a host of primarily corporate-owned retail stores such as HEB, Hi-Lo Auto Parts, and Dollar General. Other new businesses include a computer services firm; a t-shirt stitching company that has benefited from its proximity to the many t-shirt shops on South Padre Island; a pet hospital; and a variety of new restaurants.[88]

Many empowerment zone programs receiving funding are designed to improve residents skills level through the addition of college preparatory courses in high school, language courses, and job training programs. The VIDA initiative, through a $679,000 empowerment zone grant, will help develop these programs in cooperation with local businesses. Other programs receiving funding include: a Laguna Madre Enterprise Center for small business start-ups (at $750,000); historic preservation and redevelopment in the city of Port Isabel ($763,000); a College and University Laguna Madre Learning Center for offering GED, ESL, and citizenship as well as other courses; $1 million for a primary health care clinic; $1.3 million to support the construction of 100 single-family housing units; and a variety of other projects ranging from a parent involvement program to airport capital improvements.[89]

[83] Graphic courtesy Center for Entrepreneurship and Economic Development (CEED) link to *Rio Grande Valley Empowerment Zone Approved and Proposed Projects*: coserve1.panam.edu/empower/projects.html, as of June 30, 1998
[84] Ibid
[85] In summer 1999, Levi's closed plants in Harlingen and McAllen, resulting in losses of about 1,000 local jobs
[86] See p. 34 under ***Ports*** (Port Isabel/San Benito) section for details on port projects
[87] From comments of Bob Cornelison at the April 1998 Leaders' Forum sponsored by TCPS
[88] Pers. communication Bob Cornelison, 3/29/00
[89] From the CEED-linked website; *Rio Grande Valley Empowerment Zone Approved and Proposed Projects* as of June 30, 1998: coserve1.panam.edu/empower/projects.html

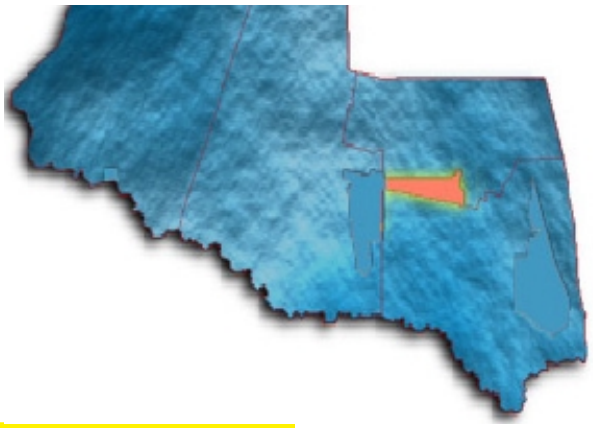
The sub zone designation expires in 2004, at which time incentives for new business expansion will be suspended. There is speculation that there are limits to the amount of growth that can occur in the region after that due to several factors: first, the recent purchase by the Nature Conservancy of Texas of over 24,000 acres of land on South Padre Island north of the end of paved Highway 100 will limit acquisition of areas for development there; and second, property will become more expensive, eliminating those who cannot afford it and altering slightly the socio-economic makeup of the local population.[90]

Expanding initiatives in tourism include an emphasis on the historical landmarks of the area, such as the Port Isabel lighthouse and historical museum, which may also bring new opportunities for retail shops and restaurants. Port Isabel and South Padre Island both endorsed the World Birding Center concept and South Padre is included as a satellite to the center. Port Isabel also handles two cruise lines - River Barge Excursion lines and the American Canadian Carribbean line - dedicated strictly to nature tourism. The Canadian Carribbean cruise boats stop at eight different ports of call, with Port Isabel the last stop on the excursion.[91]

The Willacy County/Sebastian-Santa Monica sub-zone (shown below) asserts that it is building its economic investment on its "sense of community and dedication to improving quality of life".[92] Primarily a ranching area, it is the least-populated sub-zone, but it also has high rates of poverty and unemployment. It was awarded over $3.5 million in federal funds as of June 1998. Funds are primarily aimed at educational initiatives in the Lyford school district and boy-scout/girl scout programs, as well as drainage and sewerage infrastructure throughout the county.

Other programs designed to serve the entire zone are also underway. About $7.3 million in funding has been allocated for a variety of projects, including: a Minority Business Opportunities Center; a One Stop Capital Shop whose purpose is to provide business assistance and retain jobs in the region; a revolving loan fund for part of the region; and general business and economic development capacity building.

The Empowerment Zone report for the Rio Grande Valley lists local efforts to achieve revitalization goals during the reporting period as "exceeding expectations", but rates the state's incentives as "unsuccessful", implying that local efforts to promote community revitalization have outpaced those of the state.[93]



Other Economic Development Approaches

Tax-supported incentives are not new to the Valley. In fact, eight cities, including Harlingen, Raymondville, and Brownsville, have adopted the 1/2 half-cent sales tax allowed by the state for economic development purposes. Brownsville may be the most aggressive user of this fund. The Greater Brownsville Incentives Corporation, through the Brownsville Economic Development Council (BEDC), administers this fund to attract new businesses to the area. As of June 1999, Brownsville had granted 28.7 million dollars worth of incentives.[94] The city has not conducted a cost/benefit analysis to determine its ratio of success in terms of use of this fund, but local economic development officials are pleased with the results they've seen thus far.[95] The incentives reportedly have brought 40 companies and an additional 2,112 jobs to the city, with 2,900 jobs projected over the next two the three years. Brownsville has also decreased the time it allows businesses to "ramp up" from three to two years;[96] in other words, the businesses must meet the jobs criteria in less time in order to qualify for certain incentives.

The BEDC admits that it does not consider environmental criteria (such as low water using industries) when it weighs an industry's benefits. It does, however, consider the number of jobs promised and pay scale offered. The Council does favor expansion into new markets, such as the customer service sector, that provide employment for the growing numbers of older and younger residents of the area. The Council also favors the idea of sustainable development in general, such as eco-industrial parks and nature tourism. It is supportive of more strict land use planning and zoning that would increase green space and improve the aesthetics and overall quality of life of the city.[97]

[90] Pers. communication Bob Cornelison, 3/29/00
[91] Ibid
[92] From the CEED-linked website; *Rio Grande Valley Empowerment Zone Approved and Proposed Projects as of June 30, 1998*: coserve1.panam.edu/empower/projects.html
[93] Mandatory Annual Report, Texas Enterprise Zone Program, Rio Grande Valley Empowerment Zone/Enterprise Zone; reporting period state FY 1999 – 9/1/98 to 8/31/99 (obtained from the Texas Department of Economic Development)
[94] Pers. communication, Rick Luna, Brownsville Economic Development Council, 1/15/00
[95] Ibid
[96] Ibid
[97] Ibid

Others in the local economic development arena appear to be generally in favor of incentives programs, but in no case do they seem to feel environmental protection is a crucial part of economic expansion. One local representative stated that the recent spotlight on nature tourism initiatives has helped his community focus on other alternatives besides warehousing and border trucking as potential areas of expansion. Still, he states that manufacturing is the preferred route for them, and that the spaceport development proposed for Kenedy County could be a positive economic boon, especially for counties not located directly on the U.S./ Mexico border.[98]

Spotlight: Project VIDA[99]

Project VIDA, or Valley Initiative for Development and Advancement, is based on a conceptual model developed and piloted by the Industrial Areas Foundation through Project Quest in San Antonio. VIDA is a multi-faceted program designed to train underemployed or unemployed residents for higher-pay, high skill jobs based on employer-driven needs. VIDA's offices are located in Weslaco and there are currently 14 staff members working in the program.

Local impetus for the project came from Valley Interfaith, and Interfaith remains a strong advocate and collaborator for the program. Since its inception, over 1,300 residents have gone through VIDA training and education programs. VIDA officials say retention in customized training programs for employers is as high as 98%, and in post-secondary programs retention is around 87%, a figure they would like to elevate in the future.

The VIDA program was initiated with seed money provided through the Laguna Madre area Empowerment Zone on the promise of supplying 400 local jobs – a commitment VIDA officials say has been more than met. The program has three components: customized training, post-secondary education, and skills-retention and upgrade. In the first type of program, employers preselect employees, who then go through job-specific training and are awarded their employment upon completion of training. Wages and job requirements are set from the beginning and all instruction is designed to meet criteria supplied by the employer.

The second type of program helps residents in empowerment zone areas achieve educational goals through post secondary instruction. The program covers tuition, books, and fees for low-income individuals to attend UT Brownsville/ Texas Southmost College, South Texas Community College or Texas State Technical College. However, VIDA distinguishes itself from other scholarship programs through: its connection to employers and specific jobs; targeting of family wage jobs with benefits and a career path; provision of long-term training and necessary support services; and a choice of paths to accommodate the educational needs of participants. The VIDA program also receives part of the funds generated through the half-cent sales tax in McAllen for operation of programs in that area.

The project was able to expand a vocational nursing program run by UT-Brownsville, set up an auxiliary campus at the Laguna Madre Learning Center based at Port Isabel High School and offer additional post-secondary courses taught by UT-Brownsville personnel.

A third component of the VIDA program offers skills retention training. Employees keep their jobs when they remain competitive and are able to learn new skills, so the objective is to train workers to keep up with new equipment and expanded technology. In addition, part of the program is a workforce academy that simply teaches the basics to prepare prospective workers for obtaining an associates degree which would result in a higher paying job. A limited ESL (English as a Second Language) program is offered to Port Isabel residents and the classes held on South Padre Island. Some of the island hotels and restaurants reportedly have made the program mandatory for their staff.

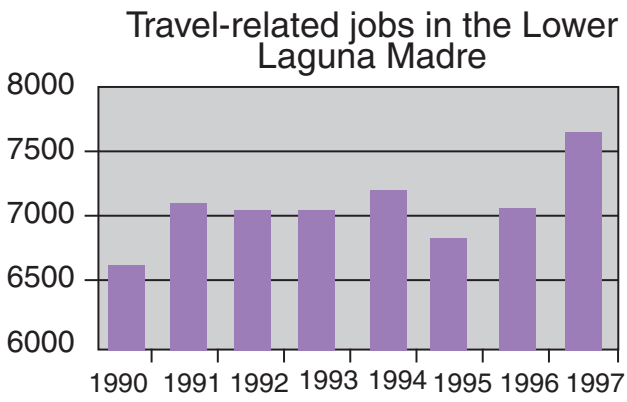
VIDA personnel are initiating other programs and report they've submitted four million dollars in grant proposals in the past few months. Some of the new projects they'd like to fund include a corporate services unit that would serve as a single point of contact for all companies wishing to establish or expand in the region.[100] This initiative as described by VIDA personnel would take care of employee selection and training for the company and establish on-site management of training programs, in effect supplying all the workforce needs the company might have, from job profiling to hiring and training to maintenance of the workforce.[101]

VIDA officials report that their longer term objective, beyond preparing indivduals to enter the work force, is to affect quality of life by becoming a building block for community development and ensuring that citizens who want to can attend college, break out of the low-wage job market and build a better life.

[98] Pers. communication, Eleazar Garcia, City Manager, Raymondville, 1/13/00
[99] Unless otherwise noted, all information for this section supplied by Valley Interfaith, from their fact sheet; *Valley Initiative for Development and Advancement*, August 1999
[100] Pers. communication, Richard García, VIDA program, 1/17/00
[101] Ibid

Tourism

The Laguna Madre is largely responsible for supporting a major part of the South Padre Island and Port Isabel economies. As discussed earlier, sport-fishing alone generates millions for the two-county region. Land-based tourism – birding and wildlife-viewing, hiking, hunting, even shopping and restaurants also benefit from the aesthetic and natural resources provided by the Laguna Madre.



Travel-related spending in the two counties of the Lower Laguna Madre has increased in the past decade. The chart shows general trends in combined job growth related to travel spending for Cameron and Willacy counties.[102] Interestingly, while Cameron County's travel tourism industry overall generates more jobs than Willacy County, the percent change in tourism-related job growth over the past seven years in Willacy County was much higher – 55% as opposed to 13% in Cameron.[103] Overall spending in travel tourism in both counties in 1997 totaled near $444 million.[104] A report of coastal tourism-related expenditures prepared for the Sea Grant program at Texas A & M University found that bay and estuary-related travel expenditures for the Laguna Madre Estuary[105] in 1995 totaled $221.5 million.[106] This figure was based on service station, hotel/motel, restaurant, amusement and general retail-related expenditures. In addition, the report estimated regional economic impacts of estuary-related recreational activities in the Laguna Madre to be $388.2 million, supporting some 8,938 jobs.

While tourism in the region has provided an important source of jobs, it has not necessarily led to economic prosperity. For example, most of the economy of South Padre Island is based on tourism. While many tourists are spending money locally, they are staying in corporate-owned hotels, and probably many are eating in corporate-owned and operated fast-food establishments. These expenditures do not stay within the community as they would if the business were locally owned and operated. In addition, wage scales for service-sector jobs with the hotel, motel and restaurant industries are typically low: waiters, cooks and maids in Texas generally earn between $12,000 and $15,000 a year.[107] Average wages for these occupations in the Laguna Madre region are even lower. Regional wage surveys reveal that in the Brownsville/Harlingen/San Benito area, waiter, cooks and maids report median earnings of $2.50 to $5.70 per hour.[108] Waiters typically supplement their hourly wage with tips, but this is not a guaranteed income, and can vary widely with seasonal highs and lows. A maid earning $5.70 an hour and working a 40-hour work week would gross roughly $11,000 per year. In 1998, poverty was quantified as annual income below $16,530 for a family of four, according to the Census Bureau.

A recent study by Fermata Inc reflected upon the contrasts presented in the region. The study noted that "visitors to the LRGV are never more than a few hours' drive from pristine ocean and beaches, lush subtropical riparian forest along the Rio Grande, Tamaulipan brushland … few areas in the U.S. have such easy access to such a variety of habitats, cultures, and historical riches, so why is South Texas still mired in a poverty from which it seems unable to escape?"[109]

Nature tourism is the fastest growing segment of the tourism industry. The Laguna Madre region is one of the number one bird watching areas in the U.S., with over 500 different species recorded.
In recent years, Valley communities have begun to look more seriously at expanding nature tourism – both as a "clean" industry and in order to increase jobs in the region. These communities have become more active in promoting local flora and fauna to birding and nature-loving tourists eager for a unique opportunity to see Mexican and South Texas species. The first annual Rio Grande Valley Birding Festival was held in Harlingen in November 1994. In 1996, the city of Mission held its first annual butterfly festival. In 1997, McAllen followed suit with the Texas Tropics Nature Festival, and Willacy County held its first festival – "Wild in Willacy", in 1999. Some chambers of commerce see these festivals as having secondary impacts aside from the immediate economic benefits that visitor dollars bring, including enhancing the reputation of the host city as one that is ecologically sensitive.

[102] Bureau of Transportation Services, research travel custom reports: http://research.travel.state.tx.us
[103] Ibid.
[104] Ibid.
[105] In this case, the Laguna Madre estuary is defined as south of the Nueces Basin in Nueces County, to include Kleberg, Kenedy, Cameron and Willacy counties.
[106] *Impacts of Recreational and Commercial Fishing and Coastal Resource Based Tourism on Regional and State Economies*, Jones and Tanyeri-Abur, Department of Agricultural Economics, Texas A&M University, March 1998
[107] Texas Employment Commission; 1998-1999 Texas Occupational Wage Survey; at www.tec.state.tx.us/lmi/lfs/type/wages
[108] Hourly wage percentiles for establishment jobs: National Compensation Survey, Brownsville, Harlingen, San Benito, TX, August 1999, url: stats.bls.gov/ncs2/ncbl0178.pdf
[109] *Avitourism in Texas – two studies of birders in Texas and their potential support for the proposed World Birding Center*; Ted Eubanks and John R. Stoll, October 12, 1999

The fact that so many cities have jumped on the bandwagon attests to the economic benefits these festivals accrue for communities. Harlingen estimated that the first birding festival it held brought in around 1,000 visitors, for a local economic impact of $266,000.[110] By 1997, local economic input was estimated to have climbed to $3 million, with an expanded schedule of events, and by 1998 visitation had jumped to 4,300.[111] Chamber of commerce officials in McAllen estimate that wildlife enthusiasts provide annual economic benefits of over $34 million to the city.

Some communities have also produced birding "maps" listing specialty species and where to find them. The city of Brownsville has a map to point visitors in the direction of key birding areas in the city, and South Padre Island is developing a "Birding Master Plan" in order to orient visitors to the birding attractions there. An increasing number of locally owned and operated bed & breakfast operations and specialty stores are emerging in response to the nature tourists' particular needs. However, the region has been slow to take full advantage of the marketing potential of the relatively wealthy and educated traveler associated with wildlife watching tourism. There are no stores specializing in high-end binoculars and gear for birders, for example, though birding guidebooks are available at all the refuges, as well as posters, t-shirts and other memorabilia. There are few professional guides to provide the kind of personal attention a birder often desires, nor were there, until recently, many other types of accommodations save for corporate-owned hotels. In the past few years several new bed and breakfast outfits have begun operating around the region, with some providing both guides and on-site bird-watching experiences.

The Texas Parks and Wildlife's World Birding Center project, located in Mission, is designed to promote regional bird watching opportunities and provide a "one-stop" type of service to birding tourists. Though the actual facility has not been constructed, a recent study conducted by Fermata Inc. concluded that birders were willing to pay more and stay longer if the birding experience met their expectations. Of course, this could bring additional economic benefits to local communities. The study also pointed out that wildlife-oriented tourists, more than anything else, were motivated by a desire "to enjoy the sights, smells and sounds of nature", and "to be outdoors".[112]

The popularity of the region to birders and nature enthusiasts is due in large part to two refuges in the Valley where nature and wildlife-watching opportunities abound – Laguna Atascosa, near Hondo, and the Santa Ana National Wildlife Refuge near Alamo. Other unique and popular spots include the Sabal Palm Audubon Center and Sanctuary in Brownsville, Bentsen-Rio Grande State Park near Mission, and the Convention Center boardwalk on South Padre Island.

A great deal of what makes the region ecologically unique is rapidly being replaced, as parts of this report illustrate. The growth in industrialization, trade and warehousing along the border and local population growth rates are manifest in the increasing urbanization of the area, and local leaders clamber for yet more transportation dollars from the state to expand highways and roads. Thus, while the region enjoys a great deal of biological diversity that provides significant economic benefits and the potential for greater benefits still, this diversity could be compromised by expansion of other economic sectors. Some local leaders have expressed awareness of the fact that regional growth is happening too quickly to manage in a sustainable way. During a Leaders' Forum sponsored by Texas Center for Policy Studies in April 1998, participants repeatedly noted that a comprehensive and collaborative regional land-use plan involving all municipalities in the area would greatly assist them in protecting both natural capital and human health.

The Gulf Intracoastal Waterway and Local Ports

The Gulf Intracoastal Waterway (GIWW) is an inland waterway 12 feet deep and 125 feet wide. It runs along the Gulf Coast from Florida to Brownsville, Texas. The final segment of the waterway extends 120 miles from Corpus Christi to Brownsville, passing directly through the Laguna Madre. This segment connects four Laguna Madre ports of Mansfield, Harlingen, Port Isabel-San Benito, and Brownsville with other deep water and shallow-water ports along the Texas Gulf Coast. Originally constructed to transport military supplies in the 1930's, this segment of the GIWW now transports primarily petroleum, petroleum products and agricultural chemicals.[113] However, the amount of cargo shipped in this section accounts for only 2% of the overall traffic on the waterway.[114]

The Ports of Mansfield, Harlingen, and Brownsville, and the Port Isabel/San Benito Navigation District operate off the GIWW. Port Isabel and the Port of Brownsville share access via a ship channel to the Gulf and the Laguna Madre portion of the GIWW. Laguna Madre ports and the GIWW reportedly account for some 4,552 jobs in heavy industry, manufacturing and transportation services that depend upon the ports and waterway to transport goods to and from the region.[115]

[110] *Bird Conservation*; interview with Nancy Millar, "Small Town Success", Spring Migration 1997, p. 9
[111] Banking on Birds; Valley's avian attractions become basis of fledgling ecotourism business, Teclo J. Garcia, The McAllen Monitor, 5/3/99
[112] *Avitourism in Texas – two studies of birders in Texas and their potential support for the proposed World Birding Center*; Ted Eubanks and John R. Stoll, October 12, 1999, p. 13
[113] Subsidized Destruction; the Gulf Intracoastal Waterway and the Laguna Madre, Kelly and Diaz, Texas Center for Policy Studies, April 1994.
[114] Ibid.
[115] *The Estimation of the Economic Impacts of Industry, Services, Recreational Activities, Commercial Fishing, and Tourism Associated with the Portion of the Gulf Intracoastal*

The ports themselves directly employ few people; for example the Port of Harlingen has only three employees, but often seasonal and/or temporary labor, such as the longshoremen, are employed for off-loading cargo and other work. Original port developers envisioned the ports handling large shipments of fruits, vegetables and grains, especially in the early 30's, when agriculture became the prime economic builder in the region as a result of the fertile delta soil and mild temperatures. Today, much more of the ports' revenues are generated from shipping petroleum products, and receiving and shipping fertilizer, much of which goes to Mexico.

Founded in 1948, the northern-most port in the Lower Laguna Madre is the Port of Mansfield, managed by the Willacy County Navigation District. It is directly connected to the Gulf of Mexico via the Port Mansfield "cut" which slices directly across South Padre Island. The port owns some 1,760 acres of upland and 3,117 acres of submerged land adjacent to the Laguna Madre. The small community of Port Mansfield does not have a mayor or city council, and since most of the community was built around the port, the Willacy County Navigation District and its Port Director approximate local government.[116] Three board directors oversee the activities of the Navigation District. The port's major revenue-producing activities include leasing of land, docks and boat stalls for commercial, residential and private use – i.e. fishing-related activities, and operating a small airfield for public use. The port also hosts a coast guard installation and a seafood processing plant.

Major commodities shipped through the harbor facilities of Port Mansfield include oil and gas exploration and production supplies (though these are a small percentage of the port's business), and seafood products such as gulf shrimp and fish and blue crabs from the Laguna Madre (though blue crabs account for a relatively small portion of seafood extracted from the bay).

Port Mansfield claims recognition as one of the top ten fishing locations in the United States. As noted in the fisheries section of this report, a number of fishing guides operate out of the Port Mansfield facilities, and the community hosts a yearly fishing tournament that attracts anglers from around the state. To a great extent, therefore, the economy of Port Mansfield is dependent upon tourism and recreational fishing. Port Mansfield seems to have embraced its rural flavor, and the community appears to be positioning itself to capitalize more on the appeal of its small-town atmosphere and proximity to Laguna Madre resources as a destination for nature tourists. The Wild in Willacy Nature Festival mentioned previously is one example of this type of initiative. The Port of Harlingen, founded in 1927, supports transportation and brokerage services for such commodities as oil and petroleum-related products, grain, cotton, seeds and fertilizers, sugars, cement, and sand. The port area includes some 150 acres, some of which was acquired to serve as dredge spoil disposal area. Industries hosted by the port include Cargill Inc., Midstates Commodities, Diamond Shamrock and South Texas Chlorine.[117] The port provides transportation links between the U.S. and Mexico, through rail, sea and land access. The ports' revenue from the last fiscal year was $497,000.[118]

Harlingen's port supports a crane manufacturing operation, but most of its business is tied to the movement of goods. The cranes are used on oil platforms, and, according to Port Port Director Butch Palmer, many of the cranes manufactured recently at the port are being shipped to the Mexican oil company Pemex.[119] The port has no current plans for expansion but reportedly wants to increase its rail capacity to handle larger shipments, and increase on-site storage such as silos for liquid or dry bulk products to facilitate pass-through industries.[120]

The Port Isabel/San Benito Navigation District is a deep-water port founded in 1929, and operating out of the town of Port Isabel. The port maintains a ship channel from the Laguna Madre and the GIWW to the Port of Brownsville's deep-water channel leading through the Brazos-Santiago Pass. It is positioned 29 miles north of the mouth of the Rio Grande in Cameron County.

Commercial fishing and shrimping and passenger services account for the bulk of Port Isabel's business. The economy of Port Isabel has been tied to the gulf shrimping industry since the 1950's. According to the Port, 168 shrimp trawlers are located in Port Isabel with about 300 people employed in the shrimping business during the season. The port processes some 20 million pounds of shrimp per year, or up to 40% of all shrimp caught in the Gulf. The shrimp processing plant was recently upgraded in order to be able to process okra, and the facility will now be processing and packaging some 15 million pounds of okra per year from Mexico.[121] According to District personnel, the Port collects no property taxes and has not carried a debt since 1974.[122]

[116] Port Mansfield website: mccharen.com/portmansfield 3/27/00
[117] Port of Harlingen website; portofharlingen/facilities.com 3/27/00
[118] Ibid.
[119] Pers. Communication, Butch Palmer; Director, Port of Harlingen, 3/28/00
[120] Ibid.
[121] Ibid.
[122] Pers communication, Bob Cornelison, Port Isabel Navigation District, 3/27/00

Port officials generally support the gulf shrimp industry, and have expressed dismay at what they feel to be the causes behind the apparent decline of the industry, as evidenced by this quote from their website: "…a combination of federal regulations, environmental considerations and foreign shrimp imports has greatly damaged this vital industry, dried up capital and discouraged our next generation of residents."[123]

The federal regulations referred to (and discussed earlier in this report in the Fisheries chapter) include the 1976 Magnuson Act. After the Act was passed, Mexico closed its waters to foreign harvesters, but did issue permits for U.S. trawlers to continue shrimping up until 1978, at which time no further trawling would be permitted. However, according to Port officials, there were other economic forces that also imposed changes on the industry. Diesel fuel prices doubled due to an oil embargo imposed by Arab countries, adding an additional cost to shrimping, and rising imports of cheaper foreign shrimp also affected domestic demand.[124]

Port Isabel is engaged in an active passenger business, hosting ferries that haul people and vehicles to Central American cities such as Honduras and Guatemala. In addition, gambling cruises carried 70,000 revelers last year and plans are to add another cruise to the ports roster this year.

According to Port Director Bob Cornelison, the Port also has Texas' only oily bilge reclamation facility. The facility is used to separate oil from bilge water pumped out of vessels that previously would have been dumped at sea or in the Laguna. Port officials say they've reclaimed 45,000 gallons of oil over the past several years. The Texas General Land Office, which sponsored the facility, is using the model in Port Lavaca and Port Aransas. Cornelison stated that the facility has saved the state 3 million dollars in nuisance spills.[125]

Other plans call for the building of a new ferry dock, continued service to oil drilling companies, and negotiations are underway for shipping cement down the GIWW. At least some of these projects are receiving monies from empowerment zone funding, as discussed earlier in this report.

The Brownsville Navigation District owns and controls more than 44,000 acres of land adjoining a turning basin and ship channel. The Port's literature states that this acreage is available for industrial development, and that "in recent years over $150 million worth of industrial development has been located on Port property, including tank farms, light manufacturing, seafood processing, steel fabrication and grain handling facilities."

The Port of Brownsville has an interesting and somewhat checkered history, subject to the whims of global economic forces such as the price and availability of oil and fluctuating manufacturing trends, as well as to the priorities of a series of port directors and commissioners. Despite this volatility, the Port seems to be intent upon building its infrastructure and continuing to host manufacturing and industry on site.

Established in 1934, the navigation district managed after a few false starts to obtain the financing for the port, but had to eventually condemn private land to locate the port facilities. Since its start-up, the Port has handled petroleum products. During the 40s and 50s, it became one of the most important U.S. ports for cotton shipments. By 1956, 90% of the cotton shipped out of the port came from Mexico, to be transported out to foreign ports. Today, virtually no cotton is handled at the Port, but the port still ships a variety of petroleum products.

The overall tonnage handled by the Port of Brownsville has increased since 1990, rising from around 1.6 million tons in 1990 to about 2.8 million tons in 1998.[126] It is interesting to note, however, that the port handled around 1.5 million tons as early as 1954.[127] Since then the tonnage handled appears to have been somewhat erratic but has not increased substantially, reflecting changes in modes of shipping, oil embargoes, peso devaluations and other factors. The port generally ranks 105th to 115th out of some 150 U.S. ports in terms of tonnage handled, while other Texas ports along the GIWW, such as Houston and Corpus Christi, rank on average second and fifth, respectively.[128]

The Port's erratic development was not aided by the decision to locate a Union Carbide plant on Port property. Union Carbide manufactured a variety of chemicals used to make pesticides and fungicides, as well as common household products such as paint thinner, varnish remover and sealants. The industry was classified and permitted as a "low-quantity generator" of hazardous waste according to the TNRCC.[129] The chemicals manufactured at Union Carbide included acetic acid, formic acid, ethanol, ethyl acetate, propionic acid, and acetic anhydride.[130] These chemicals contain varying degrees of toxicity and levels of danger to humans and wildlife.[131]

[123] From Port Isabel Navigation District website: members.xoom.com/Port_Isabel/; 3/27/00
[124] Ibid.
[125] Ibid.
[126] US Army Corps of Engineers Navigation Data Center, Waterborne Commerce Statistics Center, Internal US Waterways Tonnage Comparisons; (www.wrc-ndc.usace.army.mil)
[127] *Port of Brownsville, 60 years of Service*, Carl S. Chilton, Jr. 1997
[128] US Army Corps of Engineers Navigation Data Center, Waterborne Commerce Statistics Center, Internal US Waterways Tonnage Comparisons; (www.wrc-ndc.usace.army.mil)
[129] Texas Natural Resource Conservation Commission Interoffice Memorandum, dated 2/14/94, from Carlos Rubinstein, Waste Program Manager, Harlingen, regarding a site inspection conducted at the plant
[130] Ibid.
[131] For more specific information on the nature and toxicity of these chemicals, visit Environmental Defense's *Scorecard* website, at www.scorecard.org

Reportedly, the plant operated on a profit from 1961 to 1982,[132] then shut down in 1983 and tried unsuccessfully to sell the facility. Between 1983 and 1993, Union Carbide undertook a lengthy remediation process in 26 different locations to clean up and monitor levels of hazardous waste by-products that were generated in the manufacturing process, disposed of on site and leached into the soil and groundwater. In December 1993, Union Carbide submitted a proposal to the TNRCC to review and close down the 26 test sites, claiming remediation was completed to adequate standards. Remediation included removal and off-site disposal of soils containing the hazardous chemicals. Even in 1993, a number of toxic chemicals were still showing up in soil and groundwater tests, including arsenic (ranked as one of the most hazardous compounds – among the worst 10% - to human health),[133] lead, mercury, benzene, vinyl chloride, and dichloroethene. However, Union Carbide claimed that the chemical levels found were determined to not exceed, or exceed slightly, certain standards set for the protection of human and ecological health,[134] and in 1994, TNRCC recommended the site no longer required inspection. In 1996, the industry's permit was revoked and the facility officially closed. For some 13 years, the Port held property it could not lease, sell, or realize a profit from while the clean-up was underway.

Another factor that cost the Port some money was the decision to construct a grain elevator on Port property and lease it to store Mexican corn and locally produced grain sorghum. Though 75% of the local grain crop was reportedly handled at the Port in the 1970's, financial studies revealed that the grain elevator was operating at an annual deficit of $125,000. The Port added new cargos such as cottonseed meal, oats, safflower seed and citrus pulp, but finally sold the elevator to a private company in 1991. The Port incurred a loss on the sale of 1.6 million, and now has to lease the land from the buyer at almost $46,000 per year.[135]

The Port established a foreign trade zone in 1981 on 2,000 acres of its property. The zone operated fairly successfully in the 1980's by primarily serving the maquila industry. About 72% of the products coming through the trade zone were from Mexico and destined for U.S. markets. Products included vegetable oil, diesel and jet fuel, lubricants, door hinges, windshield wiper blades, sugar, and liquor. The advent of NAFTA affected zone business by exempting some trade from customs duties. Volume subsequently dropped from 3.2 to 2.3 billion tons, and is likely to continue to drop.[136] The latest financial statements reviewed showed total liabilities in the amount of $45 million and assets of $114 million.

The Port of Brownsville has had plans underway for a long time to construct a bridge from the Port to the Mexican border. The bridge has not materialized for a variety of reasons, including concern on the part of local environmentalists about the affects such a bridge might have on sensitive wetlands and endangered species habitat. Though a presidential permit has been issued for the project and a $43 million dollar bond passed in 1991 for partial financing, the Port still needs some $1.8 million in funding.[137] In addition, Mexico must come up with its share of the corresponding infrastructure or the bridge will terminate at the international border.

Despite these many setbacks, the Port of Brownsville still lists among its long-range goals plans for construction of a power plant, an even deeper water port, an on-site desalinization plant, and highway system upgrades.[138]

[132] *Port of Brownsville, 60 years of Service*, Carl S. Chilton, Jr. 1997
[133] Again, see Environmental Defense's *Scorecard* for more information on arsenic and the other chemicals listed here
[134] See Texas Administrative Code, Title 30, Part I, Chapter 335, Subchapter S, Rule 335.555: Risk Reduction Standards
[135] Ibid
[136] Ibid
[137] Ibid
[138] Ibid

CHAPTER 4
LAND USE

Chapter 4
Land Use

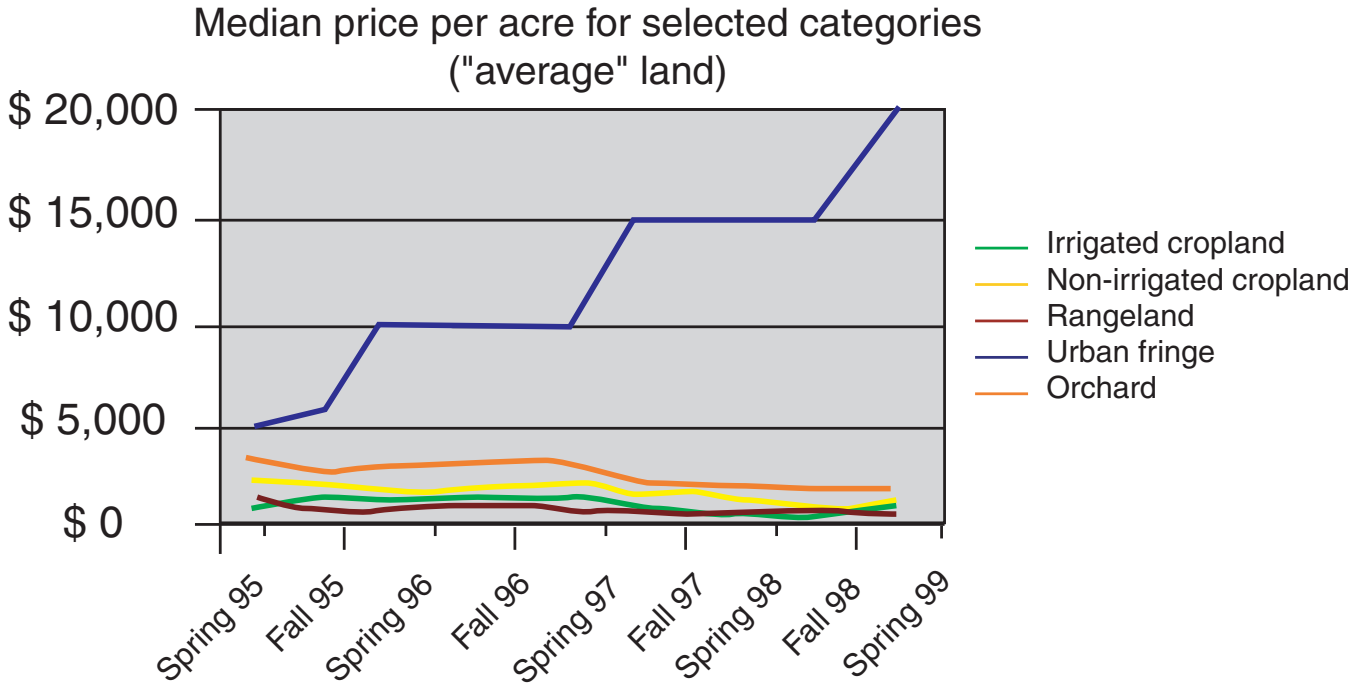
Farming

Texas ranks first in the nation in production of cotton, with over 5.5 million acres planted in 1997, and first in production of beef cattle.[139] The state ranks second in production of grain sorghum, and third in production of some fruits and vegetables, including grapefruits and oranges.

These crops are a major part of the harvest produced in the Lower Laguna Madre region, and despite increasing urbanization and industrialization, agriculture still plays a major role in the local economy. Since 97% of Texas lands are privately owned, these private lands are also increasingly important for protecting wildlife species and open space, as is land conserved on wildlife sanctuaries or refuges. Nonetheless, the continued breakup of family-owned parcels is changing the landscape of Texas and the Lower Laguna Madre region. As tax burdens and the changing economy have caused some landowners to sell to residential and commercial developers, the physical landscape of the region is also changing. For some landowners, there is much greater financial incentive to sell land than to continue to eke out a profit from it. This is especially true for farm and ranchland located closer to urban areas. The chart below shows clearly that while the value of rural land has dropped or remained relatively static over time, the value of urban fringe land has tripled in only four years' time.[140]

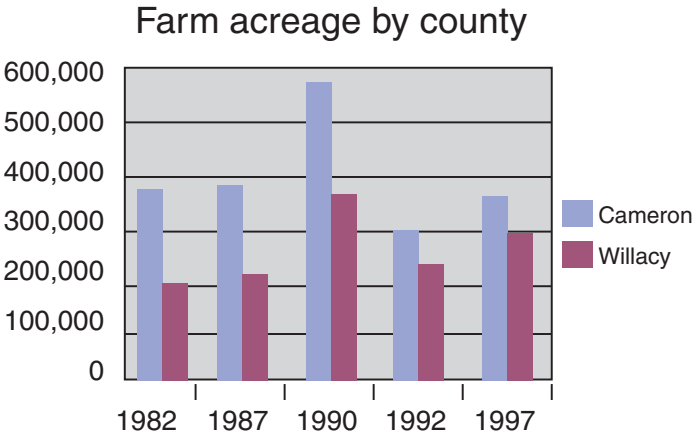
Conservation easements, such as the Wetlands Reserve and Conservation Reserve Programs (WRP and CRP), have helped some landowners to protect land and habitat or to conserve wetlands on their property. Under these programs, a landowner voluntarily places an easement on his or her property restricting certain uses and protecting the cultural or natural features through a legal agreement. The holder of the easement may be a non-profit organization or a government agency. In 1992, there were 7,608 acres in both Cameron and Willacy counties enrolled in these programs. By 1997, land enrolled in these programs in Cameron and Willacy counties had increased to 8,594 acres.[141]

While farms and ranches do not directly employ a large number of people - about one percent of the workforce in Cameron County is employed by agriculture, and about 18% in Willacy County – they do provide significant revenues to the region. In addition, there is other employment generated from the harvest, including processing, packaging, and shipping of agricultural products, and sales of farm equipment and supplies. The market value of agricultural products sold in the Lower Laguna Madre region (Cameron and Willacy counties) was over $125 million in 1992, and over $128 million in 1997.[142]



[139] USDA, National Agriculture Statistics Service, www.nass.usda.gov, 1992 and 1997 Census of Agriculture: govinfo.library.orst.edu/
[140] Ibid
[141] Ibid
[142] Ibid

The American Farmland Trust (AFT), a non-profit organization dedicated to protecting national agricultural resources, puts the Lower Rio Grande Plain, which includes Cameron and Hidalgo counties, eighth in a list of the top 20 most threatened major land resource areas in the U.S.[143] AFT points out that between 1982 and 1992, the Lower Valley citrus crop was reduced by 44%. The report also shows that 85% of what is now developed land in the Valley was considered "prime and unique" farmland prior to being developed.



The chart[144] shows an overall declining trend in the number of acres dedicated to farming in the region, though from 1992 to 1997 farm acreage increased. At the same time, the number of actual farms decreased in the same period. Between 1992 and 1997, the Lower Laguna Madre region lost 32 farms, the majority of them in Willacy County.[145] The overall market value of agricultural products sold has dropped in Cameron County by a little less than 3 million dollars, but risen in Willacy County by about 5.8 million dollars. These statistics would seem to indicate that there are fewer farms realizing slightly higher profits in Willacy County, while most of Cameron County's agricultural producers have watched the value of their crops decline slightly in the past five years.

Other indicators show slight increases in agricultural production in Willacy County, and decreases in Cameron County. For example, farm production expenses in Cameron County decreased from 71 million in 1992 to 56 million in 1997, but increased in Willacy County from 32 to 35 million in that same period.[146] Irrigated farmland in Cameron County decreased in that five-year period by over 65,000 acres, but *increased* in Willacy County by over 27,000 acres. The number of acres of total cropland and harvested cropland also decreased slightly in Cameron County and increased in Willacy County.[147]

In examining the reasons for these trends, it would seem that the increasing industrialization and urbanization of the immediate border zone is having an affect on Cameron County farms, while in Willacy County agriculture seems to be on a slight rise. It may be premature to speculate whether or not this increase may be due to the recent establishment of the Kenaf industry in Willacy County, but Kenaf might be a contributing factor to the trend.

Spotlight on Kenaf

(Photo courtesy American Kenaf Society website;kenafsociety.org)

Kenaf is a fast-growing, fibrous plant that can be used to manufacture a variety of products - from paper to automotive panels. Some farmers in Willacy County have been growing the plant for the past few years for Kenaf Industries, Inc., one of the few businesses receiving incentives from the Enterprise Zone designation that is still operating in the area (see *Enterprise Zones* in the Economic Development Chapter of this report).

According to the Earth Island Institute's "ReThink Paper" initiative, based in San Francisco, kenaf has great potential to meet demands for paper, reducing reliance on trees and helping to alleviate pressure on the world's forests.[148] Kenaf is still such a new crop in the U.S. it is difficult to predict its economic potential, but research indicates it could supplement local harvests and provide a sustainable alternative to the cotton and grain staples traditional to the region.

[143] *Farming on the Edge*, American Farmland Trust, p 11, 1997
[144] Source USDA, NASS, nass.usda.gov
[145] Ibid
[146] Ibid.
[147] Ibid.
[148] ReThink Paper, C/O Earth Island Institute, 300 Broadway, Suite 28, San Francisco CA, 94133-3312, (415) 788-3666 Ex. 232, rtp@earthisland.org

Originating in Africa, the Middle East and Asia, and related to cotton and okra, kenaf (*Hibiscus cannabinus)* consists of a highly absorbent and lightweight inner "core" and tougher fibrous outer bark called "bast".[149] The plant grows 12 to 14 feet in a single growing season (four to five months), produces five to ten tons of fiber per acre,[150] and reportedly requires fewer herbicide applications due to a natural resistance to most pests and diseases,[151] though Chuck Taylor of Kenaf Industries Inc. has noted that the crop requires an herbicide program similar to that of cotton.[152] John Sij, a professor at Texas A&M University in Kingsville, stated that trifluralin (Treflan) is the only general herbicide labeled for use with kenaf, and is also commonly used with cotton and soybean.[153] According to Sij, the plant must be killed by frost in order for the dry stalks to be harvested, and more research needs to be done on other types of harvest aids, especially along the Gulf Coast, where frost does not commonly occur.[154]

Some positive features of kenaf, according to the Earth Island Institute, are that the leaves of the plant can be tilled into the soil, recycling nitrogen and reducing the need for fertilizer. In addition, because of its lighter color, it can be bleached without using the chlorinated compounds common to traditional wood-paper processing, and which can leach cancer-causing dioxins into the environment.[155]

A downside to kenaf in terms of its sustainability in the Laguna Madre region is that it must be irrigated in order to produce sufficient amounts of plant fiber for a viable commercial crop.[156] However, the plant is drought resistant, and the long growing season in South Texas provides a longer time frame for the plant to develop the biomass needed for a commercial harvest.[157]

Kenaf is currently grown in Mississippi, Arkansas, Texas, Louisiana, California, Florida, and Delaware,[158] and kenaf products sold by companies in Georgia, Mississippi, Arkansas and Texas. Aside from paper, kenaf can be used in manufacturing cat litter, industrial absorbents, diapers, potting soil, livestock feed, automotive panels, tea bags, filtration paper, rope, twine, particle board and as a fibrous reinforcement for plaster.[159]

While the plant seems to provide a sustainable alternative to logging and deforestation in the production of many paper products, as of 1997 there were only two U.S. kenaf-paper manufacturers operating, one of which - Vision Paper, is based in Albuquerque. Earth Island reports that the challenges to promoting broader use of kenaf include a resistance to change on the part of the traditional pulp and paper industry, and the overall higher cost of kenaf paper.[160] The Institute notes that the price of traditionally produced paper is artificially low, because it does not incorporate the host of environmental costs related to logging, wood pulp extraction and paper processing. However, the relatively higher price of kenaf may yet make it less attractive to consumers.

Kenaf Industries, Inc. located in Raymondville, is the sole local buyer and processor of kenaf in the Laguna Madre region. D. B. M. Farms of McAllen, in collaboration with a company called Jupiter Seed, supplies kenaf seeds produced in Mexico to local growers.[161] The seeds are produced in southern Tamaulipas, near Tampico, and the company reports that it is also currently investigating ways to perfect separation of the bast from the fiber at its Tampico location.[162] While kenaf is still not produced on a large scale in the region, Chuck Taylor, of Kenaf Industries, Inc. reports that some 7,500 acres of kenaf were harvested in Willacy County this spring.[163] Kenaf Industries is also currently planning to construct a paper mill in order to process the locally harvested crop of kenaf.[164]

[149] From: American Kenaf Society, Box 1658, Vernon, TX 76385 (kenafsociety.org)
[150] Ibid. from link: "What is Kenaf, How do I grow it?"
[151] ReThink Paper
[152] Chuck Taylor; Kenaf Industries Inc., presentation at the Binational Laguna Madre Conference, April 14, 2000, South Padre Island
[153] John Sij, e-mail reply dated 6/20/00 in response to query from TCPS intern Mary Voorhees
[154] Ibid.
[155] ReThink Paper
[156] John Sij, e-mail reply dated 6/20/00 in response to query from TCPS intern Mary Voorhees
[157] Ibid.
[158] From American Kenaf Society, Box 1658, Vernon, TX 76385 (kenafsociety.org)
[159]From Kenaf.com link to Ankal, Inc. website; "Latest Developments at Ankal, Inc.", 6/20/00
[160] ReThink Paper
[161] From jupiterseed.com website, 6/20/00
[162] Ibid.
[163] Presentation at the Binational Laguna Madre conference, April 14th, 2000
[164] Pers. comm., Eleazar Garcia, 1/17/00

Ranching

Before the Texas/Mexico border was delineated in the 1800's, this region, as part of Mexico, supported an "abundance of livestock and open range."[165] Today, though the dividing line between the two nations intersects these farmlands, Mexican and US ranchers share the ecoregion's soil types, rainfall patterns and vegetation. Ranches in Texas tend to be larger than those in Mexico because of the Mexican ejido system of communal land ownership. Mexican "ejidetarios" run herds on smaller parcels of land and there are more goat meat producers.[166] Both Mexican and Texas grazing lands are overstocked and overgrazed – as much as 150% in Texas and over 470% in some counties along the lower Rio Grande watershed in Tamaulipas.[167] Overgrazing causes woody plants to proliferate, leading to further elimination of native grasslands for forage.

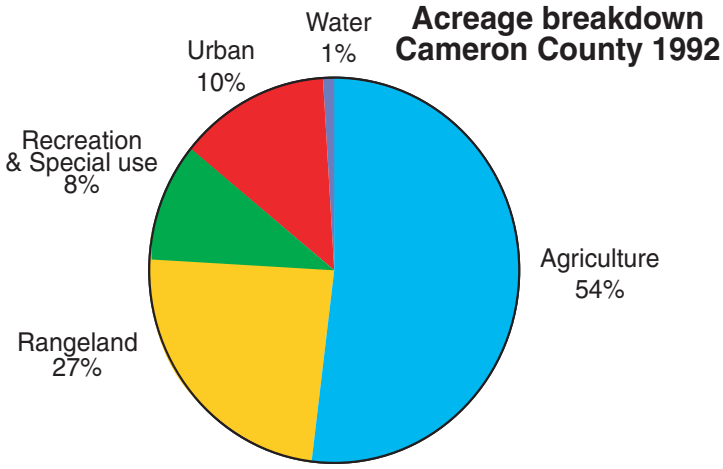
A 1991 survey of South Texas ranchers revealed that 28% leased their land for hunting.[168] As part of these operations, some also engage in feeding wildlife, putting in watering holes, and conducting population surveys to monitor wildlife populations. Other ranches listed alternative enterprises as supplemental sources of income – principal among these were nature photography and bird watching.

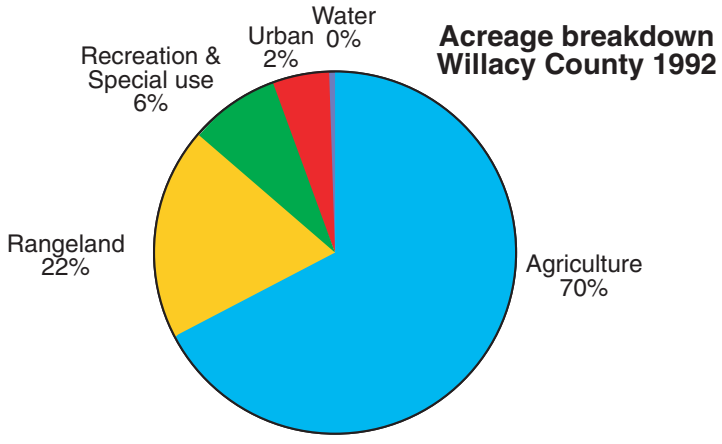
Other Land Uses, Impacts & Protection Strategies

The charts below show current land use by county in the Lower Laguna Madre Region. The "recreation and special use" category includes federal lands such as national wildlife refuges and other areas managed for conservation by private organizations.

These lands account for roughly 250,000 acres. The U.S. Fish and Wildlife Service manages over half of the total acres dedicated to publicly accessible land and land held for wildlife conservation in the region, but Texas Parks and Wildlife, National Audubon Society, the Nature Conservancy of Texas, the Valley Land Fund and the National Park Service also own and manage land for public access and recreation.

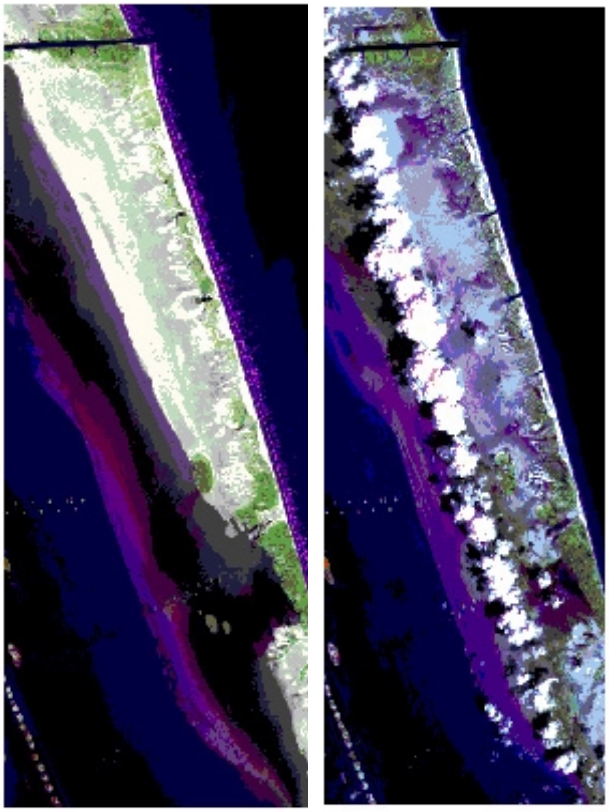
Padre Island National Seashore, owned by the National Park Service, extends 80 miles up the coastline to Corpus Christi, protecting coastal barrier island resources. Barrier islands and their adjacent wetlands serve a variety of valuable functions including protecting mainland areas from storms and protecting coastal wetlands. In an effort to protect these resources, the Coastal Barrier Resources Act of 1982 grouped barrier islands into mapped units and barred federal expenditures and financial assistance to development locating in those units.[169]





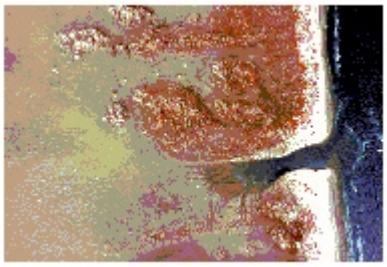
[172] See "Tourism" section of the Economic Development chapter, pp 37-39
[175] *Sierra Nevada Wealth Index*, p. 3, March 97, The Sierra Business Council, Truckee California [24] Olivia Cadaval, the Smithsonian Institute, *Migrations in History, Borders & Identity*, The [33] Ibid.

In September 1999, Hurricane Bret made landfall on the southern Texas coast just north of Port Mansfield. This satellite image clearly shows how a hurricane or major storm can create "washover" passes, where high wind and wave action blow a channel through to the other side.



The image on the far left shows South Padre just south of the Port Mansfield cut before Bret's landfall, the image in the center is just after landfall, and the smaller image on the extreme right is a close-up of one washover pass created by Bret.

These images illustrate how barrier islands can protect the mainland from storms, that can cause extensive damage to private property. Had Bret landed on the town of South Padre Island, the losses to personal property and life might have been much more severe.



In the Laguna Madre region, several areas are key to protecting the bay system and associated endangered species habitat. These habitats include the type of coastal prairie and thorn scrub found on Laguna Atascosa National Wildlife Refuge, mud and sand flats on the barrier island, and coastal estuaries, tidal wetlands, mangroves, lomas and sloughs. This system has been drastically altered over time. Development on South Padre Island has restricted the natural migration of sand from wind and current action, jetties interrupt the flow of underwater sediment and sand transport from currents, cutting off replenishing supplies of beach sand, and the dredging of the GIWW suspends and re-suspends sediments over time that may block light to the seagrass beds in the Laguna Madre itself. In addition, the dredging of the Brownsville ship channel cut straight through the lower tip of the Laguna Madre, isolating the southernmost Texas portion in what is now called South Bay.

Areas along the Lower Laguna Madre have been targeted for protection by both state and national conservation organizations and the Fish and Wildlife Service. Bahia Grande is one such area – a 6,000-acre wetland lying adjacent to and north of the Brownsville ship channel. The U.S. Fish and Wildlife Service has recently acquired this wetland through a series of purchases with assistance from the Conservation Fund of Texas and the Natural Resources Conservation Service. This effort will enable implementation of a plan for restoring flows into the wetland, which were cut off with the construction of the Brownsville Ship Channel. Previously, some 10,000 terns, gulls and black skimmers nested on an island in the wetland,[170] and it is widely believed this wetland was a productive shrimp nursery before drying up. In order for the wetland to be restored, U.S. FWS must obtain the cooperation of the Port of Brownsville, since restoration most likely will involve digging a trench from the Ship Channel to Bahia Grande and allowing water to flow naturally back into the wetland.

The Nature Conservancy of Texas recently purchased 24,532 acres of land on South Padre Island north of the termination of Highway 100 – some 19,000 acres in Willacy County and 5,000 in Cameron County. This purchase, ten years in the making, is a landmark for conservation in the region, providing long-term protection for lands adjacent to the Laguna Madre.

[165] From *Improvement of Integrated Forage-Based Production Systems and Enhancement of their Influence on Socio-Economic Conditions in Northeast Mexico and South Texas, p. 1, Summary of Outcomes, Fifth Binational Workshop, Texas A&M University, April 26-29, 2000*
[166] Ibid
[167] Ibid
[168] Ibid
[169] Draft Environmental Baseline document in support of the SEIS for INS&JT-F 6 Activities along the U.S./Mexican border. US Army Corps of Engineers, March 1999
[170] From "Restoring the Bahia Grande – From Clouds of Dust to Schools of Fish", David Blankinship, Port Isabel, 4/30/00
[171] Map courtesy Steve Schwelling, GIS Lab, Texas Parks and Wildlife Department, Austin, 6/7/00

These tracts are featured on the following page[173] .Acquisition practices by the U.S. Fish and Wildlife Service, Nature Conservancy and others are designed to link existing tracts of land along the river with coastal habitat and with Laguna Atascosa NWR, thus providing a "corridor" of unbroken protected areas for use by the endangered ocelot and jaguarundi, as well as for the 700 other vertebrate species which reside in the region. These lands, aside from protecting wildlife resources, also serve as important and irreplaceable nature study areas for families and visitors to the region. As mentioned earlier in this report,[172] the local refuges and protected areas provide tracts of unbroken, forested habitat for birds, animals and plant life, and are living laboratories for school children to gain an understanding of the natural world that sustains them.

The goals of the U.S. Fish and Wildlife Service's Lower Rio Grande Valley National Wildlife Refuge (LRGVNWR) for public use and recreation are: "To offer compatible wildlife-dependent public access and recreational opportunities on tracts of the Lower Rio Grande Valley NWR that result in furthering the public's appreciation of Lower Rio Grande Valley Area of Ecological Concern and the National Wildlife Refuge System. This will be done by the provision of wildlife observation, photography, fishing and hunting recreational opportunities…"[173]

The refuge system began purchasing lands for the Wildlife Corridor in 1980. The Fish & Wildlife Service hopes to eventually protect 132,500 acres total to maintain current levels of biodiversity and provide additional public access opportunities. To date, 90,000 of those acres have been purchased, with funding provided by the federal government. Of these, approximately 40,000 have now been opened to the public in the Laguna Madre region. These tracts are featured on the following page[174]

Private ranches and farmlands are also important areas where wildlife habitat can and has been maintained through individual management practices or the purchase of conservation easements. While private lands are not usually open to the public, they can help to maintain native brush lands and natural wetlands, which in turn provide open space and nesting habitat for birds and wildlife. The Valley Land Fund, a non-profit organization, has sponsored a popular photo contest for the past several years that highlights some of the spectacular wildlife protected on South Texas ranches. The contest pairs wildlife photographers with participating landowners so that both share in any forthcoming prizes, and the photographs are published in a book produced every other year.
The Valley Land Fund also holds a small amount of funds for the purchase of habitat, and has been interested in buying wooded lots in the city limits of South Padre Island to keep them from being developed. These lots provide stopovers for migratory species of warblers and other songbirds and shorebirds, and attract thousands of birds, and birdwatchers, during spring and fall migrations.

[171] Map courtesy Steve Schwelling, GIS Lab, Texas Parks and Wildlife Department, Austin, 6/7/00

[172] See "Tourism" section of the Economic Development chapter, pp 37-39

[173] Final *Lower Rio Grande Valley and Santa Ana National Wildlife Refuges Interim Comprehensive Management Plan & Draft Environmental Assessment*, September 1997, U.S. Fish & Wildlife Service, U.S. Department of the Interior

[174] Courtesy Nancy Brown, U.S. FWS, LRGVNWR, Alamo, Texas

[34] The 1996 Economic Impact of Sport Fishing in Texas, Maharej and Carpenter, for the American Sport Fishing Association

Maps

New publicly accessible US Fish & Wildlife Refuges in the Laguna Madre region
(Excluding Laguna Atascosa NWR)

Lower Rio Grande Valley National Wildlife Refuge

Vehicles are permitted on "Fishing Access Roads" Only, other areas open to foot traffic

Open from sunrise to sunset, seven days a week. Foot access only.

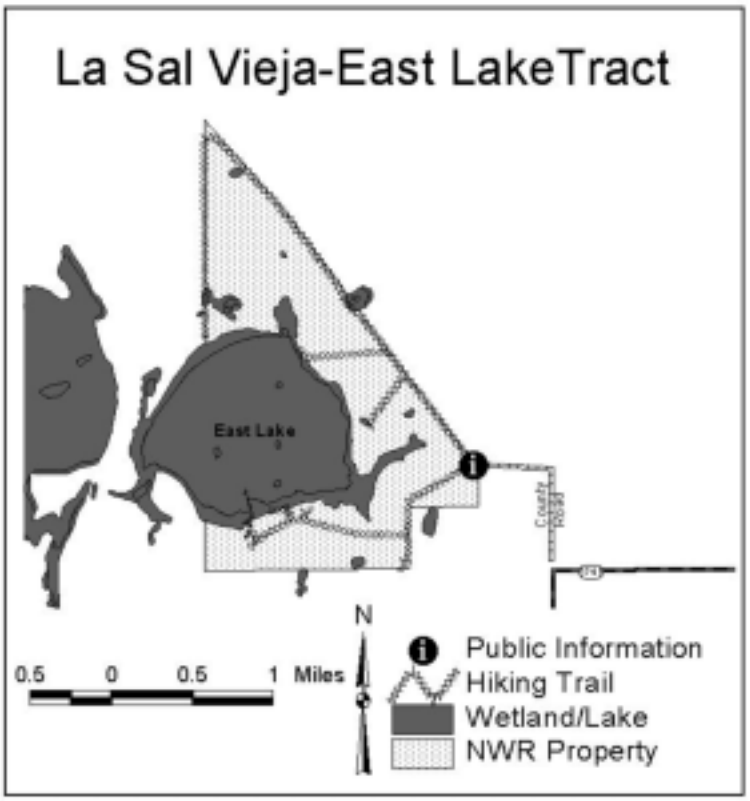
For your safety, always walk the trails with someone else.

Proper clothing and insect repellent will prove worthwhile.

Always carry water.

Help protect the rare plants and wildlife. No pets, firearms, fires, camping, or collecting of animals or plants.

For more information about the refuge, please contact the Santa Ana NWR Visitor Center at (956) 787-3079 ext. 100.



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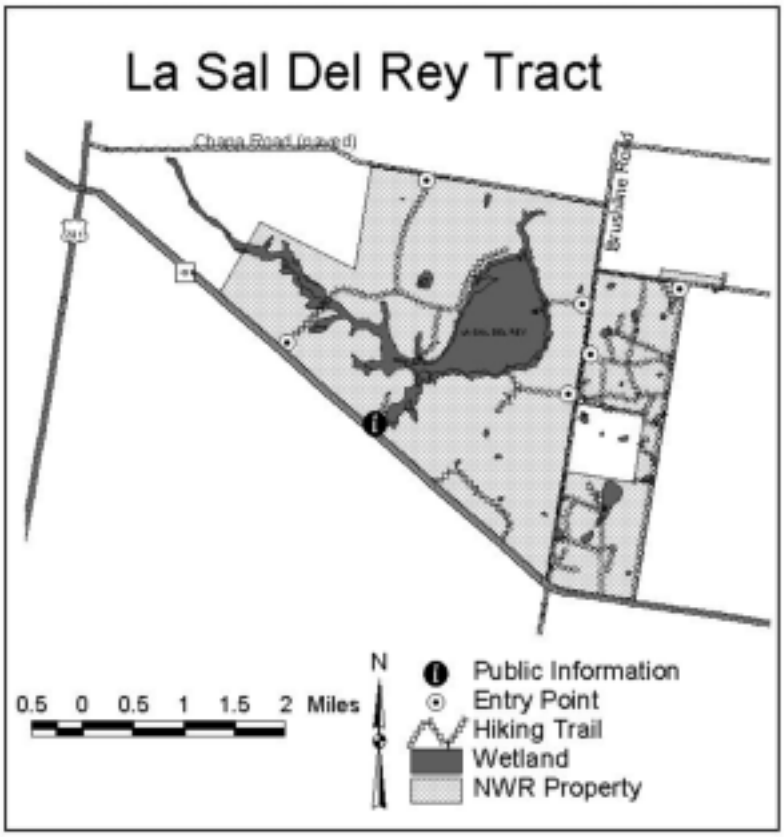

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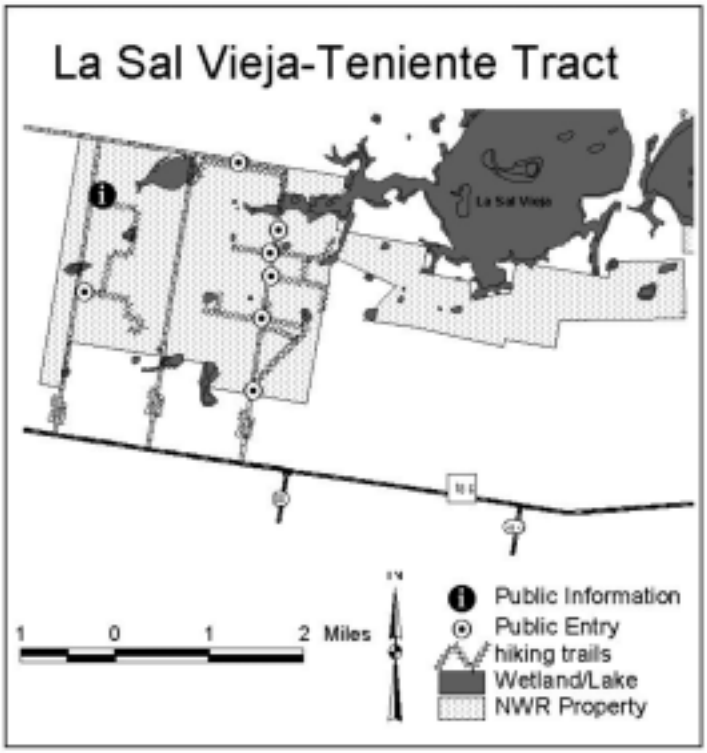

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CHAPTER 5
OUR COMMON FUTURE

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Our Common Future

Trade is moving more goods across the border, expanding industrial growth and transportation needs in the region, and bringing in more people. Conversely, increasing numbers of border patrol agents can be seen cruising the denuded banks of the Rio Grande, Boca Chica beach and nearby ranches to stop the influx of immigrants, while the Immigration and Naturalization Service and Border Patrol plan new lights, fences and roads all the way to the mouth of the river at the Gulf of Mexico. The mosaics of river, wetland, beach, dune and thorn scrub that make up the unique and incredibly biodiverse natural capital of the region continue to draw more tourists and nature-lovers to the area.

This scene illustrates the different, and sometimes conflicting goals that exist in the region. As growth continues and the numbers of people begin to overwhelm the ability of the air, water and land to sustain them, local leaders face a critical challenge. This challenge involves a willingness to think outside the box, to welcome alternative ideas, and to recognize that protecting local natural capital must be factored into planning for the future. One of the region's most important resources—the Laguna Madre—and the sustainability of this unique ecological system, must be a priority in this regard.

While it is not intended as an extensive analysis, this report does show that important strides are taking place at the local and regional level to boost earnings, provide more jobs, diversify economies and increase quality of life. Much more must be done. Local leaders need the tools that will help them plan for growth before it overwhelms them, and wise decisions made that will help protect the region's natural heritage.

Other initiatives around the country have made vast improvements in their communities by bringing together economic development interests, local and regional governments, the private sector and the public to plan future growth and compatible economic development. One of the most successful examples of this type of effort is the Sierra Business Council, in the Sierra Nevada of California and Nevada. This is a collaborative effort of Sierra Nevada business leaders from large and small enterprises to protect their local quality of life. The Councils' definition of "wealth" is summed up in the following paragraph:

> *Wealth is not just monetary worth but the different types of capital that, taken together, make up the real riches of a region…it is important to understand and assess three types of wealth: 1) social or human capital; 2) natural or natural resource capital; and 3) financial capital. Each must be conserved and increased if the Sierra Nevada economy is to be prosperous, stable and sustainable.*[175]

The Council produces an index of wealth "indicators" that help it to measure how it is progressing in terms of protecting quality of life factors that it has deemed important through a collaborative prioritization process. Sample indicators from the three types of wealth – social, natural and financial – are measured periodically, such as: education levels; growth in small businesses; agricultural revenue; fish populations; aquatic habitat quality; job growth and unemployment rates.

If we were to measure the "wealth" of the Laguna Madre region in terms of these three sectors, we might find that the natural, social and financial capital are not well balanced. For example, while there are many manufacturing and service sector industries, unemployment and poverty rates remain high. While there are protected natural areas, endangered species have not been restored. While there are beautiful resacas and a natural water supply, water quality is poor and the Rio Grande is dwindling away to nothing.

While the border and the coast offer many recreational opportunities, traffic congestion is growing and trees are making way for highways and strip malls. While trade and population growth are increasing, health workers continue to deal with infectious diseases like hepatitis and dengue fever.

TCPS and Pronatura Noreste have conducted significant work to try to define what some of the wealth indicators for the Laguna Madre region might be. This work is based on input from local leaders and citizens gathered from Leaders' Forums, a survey of registered voters, personal interviews and breakout sessions at a binational symposium held in April 2000. The following initial indicators were condensed from a list generated at the symposium:

Natural Capital:
- Percent change in wildlife populations and habitat
- Laguna Madre water quality
- Air quality

Financial Capital
- Job growth and diversity
- Number of locally owned businesses

Social Capital
- Health trends
- Poverty levels
- Number and diversity of enrichment courses available to youth and adults
- Migration patterns and population growth
- Educational attainment

TCPS and Pronatura NE will continue to measure certain indicators and provide this information to the public in the Laguna Madre region. We hope this will prove useful and aid in community decision-making processes. It is our desire that the Laguna Madre will continue to be a resource that citizens of the binational region can enjoy for many generations, and that these efforts will lead to greater quality of life and health for Laguna Madre area residents.