

Water-Related Natural Resources of the Lower Rio Grande Valley of Texas

An Annotated Bibliography

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Coastal Impact Monitoring Program

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Abstract

This bibliography contains citations, abstracts or annotations, and keywords for professional publications on water and water-related natural resources of the Lower Rio Grande Valley. The specific geographical area covered is the area within a 100 km radius of the mouth of the Rio Grande and within 100 km on each side of the Rio Grande between its mouth and Falcon Dam.

The bibliography was compiled through a manual search through issues of seventeen journals plus Texas Parks and Wildlife Department archives of job reports for the project area. More than thirty years of issues were searched for twelve of these titles. In addition, thirty-one electronic and paper bibliographies were searched, and seventeen libraries were visited.

A master database of over 3,000 citations was compiled and 846 publications were selected for the bibliography. Of these, 717 entries include an abstract or annotation. An index is provided. Each index citation includes first author, date of publication, and the first several words of the title. Areas indexed, keywords, and number of items found for keywords (if more than 30 titles) are — *Plants and Animals*: Algae [31], plants other than algae [37], oyster [49], shrimp [62], birds [55], fish [151], reptiles [32], endangered species [33]; *Water Bodies*: Arroyo Colorado [50], Laguna Madre [238], Rio Grande [209], groundwater [45]; *Habitats*: coastal barrier [106], seagrass [57]; *Water Quality*: water quality [92], metal pollution [32]; *Interest Areas*: agriculture [52], border issues [31], dredging [37], geology [63], hydrology [74], planning document [55]; *State and Federal Agencies*: Texas Parks and Wildlife Department [140]; Texas Water Development Board [34], U.S. Fish and Wildlife Service [48].

The bibliography was compiled using EndNote Plus-2 for the Macintosh. The electronic version may be searched or converted to other bibliographic database formats by using EndNote search engines for Macintosh, DOS, or Windows. The bibliography and search engines are available at the anonymous ftp site: [panam.edu/gulfwater/cimp](ftp://panam.edu/gulfwater/cimp) and from the first author.

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Acknowledgments

Many people were involved in the compilation of this bibliography. Librarians at the several libraries listed in the appendix freely gave their time to assist us in our searches. There was never a case where a librarian hesitated to stop other work to answer questions and provide assistance. Some librarians of whom we asked much are:

- Ms. Ruth Grundy, The University of Texas at Austin, Marine Science Institute
- Ms. Julie Menard, U.S. Geological Survey, Austin
- Mr. Dennis Trombatore, The University of Texas at Austin Geology Library
- Ms. Amanda Masterson, The University of Texas Bureau of Economic Geology
- Ms. Selene Hinojosa, The University of Texas - Pan American

We are indebted to Dr. Terry Allison, The University of Texas - Pan American, and Mr. Charles Webster, Texas Natural Resources Conservation Commission, for allowing us access to their personal libraries. Ms. Mary Ellen Vega assisted in locating U.S. Fish and Wildlife Service documents. Mr. Dick Harrington and Mr. Tom Warren were very helpful by making Texas Parks and Wildlife Department publications available. Dr. Wes Tunnell generously allowed the use of annotations from his several bibliographies. We appreciate the effort he expended in preparing these annotations and his permission to include these annotations in this bibliography.

We would like to thank Mrs. Beverley Gonzales for entering abstracts to hundreds of files and for hours of her time beyond that required or requested of her. We are indebted to Ms. Jan Justice for establishing continuity of style and editing the citations. Special appreciation is expressed to Mr. Bruce Smith and Dr. Frank Judd for their direction, support, and encouragement throughout the project.

The compilation of this bibliography was supported by Texas General Land Office Contract 94-099R.

Introduction

Coastal Impact Monitoring Program

The coastal environment of southern Texas and northeastern Mexico provides natural resources for commerce, industry, agriculture, recreation, and enrichment of the spirit. However, the pollution which so often accompanies increased population has begun to threaten the rich coastal ecosystem of this region.

Out of concern that coastal pollution is increasing and that coordinating binational policy and action is difficult, the Rio Grande Coastal Impact Monitoring Program (CIMP) was established for the purpose of determining how the Rio Grande watershed impacts human health and coastal natural resources of the Gulf of Mexico and the bay and estuarine systems of southern Texas and northeastern Mexico.

The CIMP is a collaborative effort involving state and federal governmental agencies and academic institutions representing the state of Texas, the United States of America, the state of Tamaulipas, and the Republic of Mexico. Headquarters of the CIMP is located at the University of Texas – Pan American Coastal Studies Laboratory on South Padre Island, Cameron County, Texas. The Universidad Autonoma de Tamaulipas is the primary Mexican counterpart of the University of Texas – Pan American.

Primary Selection Criteria

Citations and annotations refer to publications on water-related natural resources of the Lower Rio Grande Valley of Texas and Tamaulipas. The bibliography concentrates on the Lower Laguna Madre of Texas; the Upper Laguna Madre of Tamaulipas; the Rio Grande below Falcon Dam; Cameron, Hidalgo, Willacy, and Starr counties; and northeast Tamaulipas. Additionally, all literature cited in the *Report of Literature Review on Discharges from the Rio Grande and Arroyo Colorado and Their Impacts* is included, regardless of the nature of the publication; no attempt was made to supply annotations for many of these citations.

Secondary selection criteria

Over 3,000 citations were filed and evaluated. Only those citations that were judged to be wholly irrelevant to south Texas and northern Tamaulipas were purged. Of the remainder, certain types of publications were transferred to a supporting bibliography. Some of the types transferred out of this bibliography are:

- Publications of interest to students of the Laguna Madre, the Rio Grande, the Gulf of Mexico, or the Lower Rio Grande Valley, but not strictly relevant to this project.
- General works that provide only minor information on the area and topic, particularly if the information is a secondary reference.
- Deep geology, unless it refers to an aquifer.
- New species records, range extensions, identification guides, and species lists unless significant habitat information is also included, or the study otherwise provides important data for this project.
- Newspaper articles, articles in popular press, and most secondary references.
- Personal communications.
- Maps without additional environmental data.

A few general works peripherally related to this study (e.g., human history, anthropology, health) and some of the bibliographies searched are included to give interested persons a starting point for further research.

Supporting bibliography

Over two thousand references that were excluded from this bibliography are retained in a supporting bibliography. Many are annotated. These citations, although not directly related to this study, are nevertheless valuable. There are many references on the south Texas coastal zone, but outside the study area. Likewise, there are many references on the study area, but outside the scope of this project. This supporting database may form the nucleus for at least two other bibliographies: the south Texas coastal zone and the Lower Rio Grande Valley.

Annotations

Whenever provided in the publication or a bibliography, the author's abstract or bibliographers annotation was included. For a few of exceptional length, the abstract was abridged. For publications without author's abstracts, the author's words were excerpted from summaries, conclusions or other sections that summarized the content of the article. If an existing bibliography included an annotation, we often used the annotation unchanged. When necessary, annotations were added to excerpts or they were written in their entirety. Annotations written by us are not included in quotation marks and are appended by the initials, in brackets, of the person writing the annotation. Likewise, credits to the work of others were included in brackets. If we failed to provide credit to the work of others for an annotation, we sincerely apologize and ask that we be informed of our oversight so we may correct the bibliography for future releases.

Entries in the "abstract" field indicate the following:

- Abstract — The author's abstract or an abstract taken from another bibliography.
- Whole publication — For some notes, the entire publication is entered.
- Summary — The publication's summary section in whole or part.
- Conclusion — The publication's conclusion section in whole or part.
- Introduction — The publication's introduction section in whole or part.
- Preface — The publication's preface in whole or part.
- Excerpt(s) — Quoted passages from the publication.
- Annotation — Written by us or taken from another bibliography.

Keywords

A standard set of keywords was established to simplify keyword entry, facilitate searching, and form a basis for an index. These keywords are listed in an appendix to this introduction and are accompanied by an explanation. It is important to refer to this appendix before searching electronically or manually. If a publication included its own keywords, these were also entered.

Methods

Citations and many annotations were obtained initially from existing computer databases at the Coastal Studies Laboratory (CSL), the reprint collection at the CSL, written bibliographies on hand, the literature cited in a few publications, and Texas Parks and Wildlife Coastal Fisheries reports. Some literature cited sections of publications and written bibliographies were scanned into a Macintosh® IIci by a Microteck® ScanMaker® scanner and processed by OmniPage® optical character recognition software. Most editing and manual data entry were done on a Macintosh® Quadra® 610 with a 20" monitor. The use of a large monitor for this type of work is highly recommended.

Electronic databases were downloaded to disk and processed by EndLink® software for conversion to EndNote® format. Some electronic data required conversions by a word processor before EndLink® could process the data.

Manual searching: Even though there seems to be a plethora of electronic bibliographies, most of the entries for this bibliography were located by manual methods. Journals were searched through the journal indices and tables of contents. Other written bibliographies and the literature cited sections of relevant publications were examined, as were collections of reprints, library shelves, and boxes of bound and loose reports.

Electronic bibliographies: Several electronic databases were searched with Boolean strings designed to maximize recovery of relevant citations. Geographical keywords often included: Rio Grande, Laguna Madre, Padre Island, Arroyo Colorado, Cameron County, Willacy County, Starr County, Hidalgo County, Rio Grande Valley, Lower Rio Grande Valley, and, when allowed, latitude and longitude restrictors. Usually, general restriction to “Texas or Tamaulipas” was used. Other descriptors such as “pollution,” “geology,” “drainage” and “river” were often needed. Bibliographies that were searched are referenced in this bibliography to aid others who may wish to search for references in peripheral areas. These citations are provided as Appendix D to this introduction.

Journals Manually Searched

<i>American Midland Naturalist</i>	1961-1993
<i>Biological Bulletin</i>	1961-1992
<i>Botanica Marina</i>	1973-1980, 1987-1992
<i>Bulletin of Marine Science</i>	1979-1993
<i>Copeia</i>	1948-1951, 1958-1993
<i>Ecology</i>	1949-1953, 1960-1993
<i>Ecological Monographs</i>	1955-1960, 1962-1993
<i>Estuarine and Coastal Shelf Science</i>	1988-1993
<i>Fishery Bulletin</i>	1977-1991
<i>Journal of Mammology</i>	1939, 1948-1981, 1983-1992
<i>Journal of Wildlife Management</i>	1957-1992
<i>Limnology and Oceanography</i>	1959-1993
<i>Marine Biology</i>	1980-1993
<i>Marine Pollution Bulletin</i>	1971-1980
<i>Southwestern Naturalist</i>	1956-1992
<i>Texas Journal of Science</i>	1949-1993
<i>Transactions of the American Fisheries Society</i>	1945-1976, 1982-1993

Libraries Utilized

University of Texas – Pan American Learning Resource Center

University of Texas – Pan American Coastal Studies Laboratory

University of Texas at Austin, Marine Science Institute, Marine Science Library

University of Texas at Austin, Perry-Castaneda Library

University of Texas at Austin, Geology Library

University of Texas at Austin, Life Science Library

University of Texas, Bureau of Economic Geology Library

University of Texas at Brownsville, Arnulfo L. Oliveda Library

Texas A&M University at Kingsville, James C. Jernigan Library

Texas A&M University at Corpus Christi Library

Texas A&M University at College Station, Sterling C. Evans Library

U.S. Army Corps of Engineers Library at Galveston

U.S. Fish and Wildlife Service documents in Corpus Christi

The library of Mr. Charles Webster (TNRCC, Weslaco)

The library of Dr. Terry Allison (UT-Pan American)

Texas Parks and Wildlife Department, Coastal Fisheries Library, Olmito

U.S. Geological Survey Library, Austin

Bibliographies Searched

- American Geological Institute. *GeoRef*. Electronic media, on-line bibliographic database. Alexandria, Virginia: American Geological Institute. No date.
- American Water Works Association. *Waternet*. Electronic media, on-line bibliographic database. Denver, Colorado: American Water Works Association. No date.
- Bagur, J.D. *Barrier Islands of the Atlantic and Gulf Coasts of the United States: An Annotated Bibliography*. U.S. Fish and Wildlife Service, Biological Services Program, 1978. FWS/OBS-77/56. 215 pp.
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- Elsevier Science Publishers. *GEOBASE*. Electronic media, on-line bibliographic database. Norwich, United Kingdom. Elsevier Science Publishers. No date.
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- Soniat, Thomas M., Jim Simons, and Eric N. Powell. *Gulf of Mexico Oyster Bibliography*. 1992. TAMU-SG-92-602. 59 pp.
- Texas Coastal Management Program. *An Annotated Bibliography of Research Activities in the Coastal Zone*. Austin, Texas: Texas General Land Office, State of Texas Coastal Management Program. 1974.
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- Tunnell, J.W., Jr. and Sandra Alvarado. *Texas Coastal Ecology Bibliography*. Corpus Christi, Texas: Center for Coastal Studies, Texas A&M University-Corpus Christi. 1994.
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[Texas A&M University-Corpus Christi] prepared for the U.S. Department of Commerce, NOAA Office of Marine Pollution Assessment, 1979. Damage assessment program IXTOC I Oil Spill 31 December 1979. 61 pp.

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- Watson, R. L. *Texas Coastal Geology, Wind-tidal Flats, Sabkahs, and Sea Level*. 1989. Unpublished bibliography 24.

Standard Keywords

The following terms were used as standard keywords. The purpose of the standardized list is to facilitate computer searching and to more nearly assure that we entered appropriate keywords. These are not the only keywords used. Rather, these are keywords for which we attempted to assure are present when applicable. By providing this list, we avoid indexing every conceivable descriptor and expect that this will greatly facilitate the use of the bibliography for both electronic and manual searches. The terms in brackets at each keyword are other keywords one would reasonably expect to also find for the same citation, but there are exceptions.

Geographic

Texas

South Texas [*Texas, Lower Rio Grande Valley, LRGV*]

Lower Rio Grande Valley [*Texas, South Texas, LRGV*]

LRGV [*Texas, Lower Rio Grande Valley*]

Willacy County [*Texas, South Texas, Lower Rio Grande Valley, LRGV*]

Cameron County [*Texas, South Texas, Lower Rio Grande Valley, LRGV*]

Hidalgo County [*Texas, South Texas, Lower Rio Grande Valley, LRGV*]

Starr County [*Texas, South Texas, Lower Rio Grande Valley, LRGV*]

Mexico

Tamaulipas [*Mexico*]

Padre Island [*barrier*]

Gulf of Mexico [*Gulf*]

Laguna Madre [*wetland, bay, coast, marine, estuary*]

Lower Laguna Madre [*LLM, Laguna Madre, South Texas, Lower Rio Grande Valley...*]

LLM [*Lower Laguna Madre, Laguna Madre, South Texas, Lower Rio Grande Valley...*]

Upper Laguna Madre (includes associated bays) [*ULM, South Texas, ...*]

ULM [*Upper Laguna Madre, ...*]

Rio Grande [*river, fresh water*]

Rio Grande Basin

Arroyo Colorado [*wetland, estuary, drainage, channel, floodway*]

South Bay [*bay, Laguna Madre, wetland, marine, estuary*]

GIWW (i.e., Gulf Intracoastal Waterway) [*wetland, marine, estuary, coast, bay, dredging*]

Habitat/land types

Gulf
coast
bay
wetland
barrier (i.e., coastal barrier)
mainland
river
fresh water
marine
estuary
upland
rangeland [*upland*]
woodland [*upland*]
brushland [*upland, woodland*]
pond [*fresh water, surface water*]
lake [*fresh water, surface water*]
reservoir [*fresh water, surface water*]
resaca [*fresh water, surface water*]
seagrass [*submurgent vegetation, marine*]
reef
flat

Processes/states/modifiers

inshore
riparian
flow
current
level (i.e. water level) [*height*]
height (i.e. water height) [*level*]
tide [*height, level*]
flood [*height, level*]
drainage
channel
floodway [*drainage*]
pollution [*air quality or water quality*]
contaminant (not used with air pollution) [*pollution, water quality*]
oil spill [*pollution, contaminant, hydrocarbon contaminant, water quality*]
nutrient [*water quality*]
eutrophication [*nutrient, contaminant, pollution, water quality*]
hydrocarbon contaminant [*pollution, water quality or air quality*]
metal contaminant [*pollution, water quality*]
water quality
air quality
potable water [*fresh water*]
irrigation water [*fresh water, agriculture*]
wastewater [*fresh water, municipal*]

freshwater inflow [*fresh water, drainage, surface water*]
surface water
groundwater
submergent vegetation
emergent vegetation
marsh [*emergent vegetation*]

Taxons

invertebrate
crustacean [*invertebrate*]
decapod [*invertebrate, crustacean*]
mollusk [*invertebrate*]
fish
amphibian
reptile
mammal
bird
plant

Human activities/interests/fields

dredging
agriculture
fishery
industry
municipal
hydrology
geology
archeology
sociology
remote sensing
human health
planning document
border issues

Keywords by Subject Area for print version

Activities and interest areas

Agriculture [52]
Archeology [6]
Border issues [31]
Dredging [37]
Fishing [89]
Geology [63]
Human health [18]
Hydrology [74]
Industry [27]
Municipal [16]
Planning documents [55]
Remote sensing [14]
Sociology [4]

Federal agencies

Minerals Management [1]
National Oceanic and Atmospheric Administration [12]
National Weather Service [5]
United States Army Corps of Engineers [21]
United States Department of Health [2]
United States Environmental Protection Agency [2]
United States Fish and Wildlife Service [48]
United States Geological Survey [13]
US & Mexico, International Boundary and Water Commission [15]

Habitats

Algal flat, see Tidal flat
Barrier island, see Coastal barrier, Brazos Island, Padre Island
Boca Chica, see Brazos Island
Brazos Island [4]
Brazos Santiago Pass [15]
Brushland [20]
Coastal barrier [106]
Flats [28]
Laguna Atascosa National Wildlife Refuge [7]
Mansfield Pass [8]
Marsh [18]
Mud flats, see also Tidal flat
Padre Island, see also Brazos Island, coastal barrier
Ponds, lakes, resacas, reservoirs [14]
Rangeland [10]

Reef [26]
Resacas - *see* Ponds, lakes, resacas, reservoirs
Reservoirs - *see* Ponds, lakes, resacas, reservoirs
Rio Grande Valley Wildlife Corridor [2]
River [15]
Sabal Palm [1]
Santa Anna National Wildlife Refuge [7]
Seagrasses [57]
Tidal flat [21]
Upland [28]

Local agencies

LRGVDC- Lower Rio Grande Valley Development Council [11]

Pollution

Air [5]
Eutrophication [16]
Heavy metals - *see* Metals
Hydrocarbon [22]
Metal contaminants, *see* Metals
Metals [32]
Nutrients, *see* Eutrophication
Oil spill [17]
Organic, *see* Eutrophication, Hydrocarbon
Pesticide, *see* Metals, Hydrocarbon
Trace elements, *see* Metals
Trace metals, *see* Metals
Water quality [92]

State agencies

Texas Clean River Act/Program -- *see* Texas Natural Resources Conservation Commission
Texas Department of Agriculture [2]
Texas Department of Health [6]
Texas Department of Water Resources [28]
Texas General Land Office [8]
Texas Historical Commission [4]
Texas Natural Resource Conservation Commission [20]
Texas Natural Resources Information System -- *see* Texas Water Development Board
Texas Parks and Wildlife Department [140]
Texas Water Commission -- *see* Texas Natural Resources Conservation Commission
Texas Water Development Board [34]
Texas Water Quality Board [5]

Taxons

Algae [31]
Amphibian [9]
Birds [55]
Crabs [29]
Crustacea, not Shrimp or Crabs [8]
Dolphin, see Marine mammals
Endangered species [33]
Fish [151]
Invertebrates, not Shrimp, Crabs, or Oyster
Mammals [17]
Manatee, see Marine mammals
Marine mammals [13]
Mollusca, other than oysters [21]
Oyster [49]
Plant, not Algae [37]
Reptile [32]
Seagrass, see Habitats - Seagrass [57]
Sea turtles, see Turtle
Shrimp [62]
Turtle [22]
Whale, see Marine mammals

Water bodies

Arroyo Colorado [50]
Bahia Grande [4]
Brownsville Harbor Canal [26]
Brownsville Ship Channel, see Brownsville Harbor Canal
Cayo Atascosa [8]
Drainage canals other than Arroyo Colorado [8]
Floodways other than Arroyo Colorado [2]
Ground water [45]
Gulf Intracoastal Waterway, see Activities - Dredging
Laguna Madre [238]
Laguna Madre de Tamaulipas [7]
Ponds, lakes, resacas, reservoirs [14]
Potholes and playa lakes [8]
Rio Grande [209]
River, not Rio Grande [15]
San Martin Drain [27]
South Bay [27]

-- End --