Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices

Appendix B — Technical Methods

This document is one of three that outline a jointly developed, Federal/State/Local, plan to address Louisiana's massive coastal land loss problem and provide for a sustainable coastal ecosystem by the year 2050. These three documents are:

- Coast 2050: Toward a Sustainable Coastal Louisiana,
- Coast 2050: Toward a Sustainable Coastal Louisiana, An Executive Summary,
- Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices.

Federal State Local
PARTNERSHIP
COAST 2050

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For additional information on coastal restoration in Louisiana: www.lacoast.gov or www.savelawetlands.org.

Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices

Appendix B- Technical Methods

report of the

Louisiana Coastal Wetlands Conservation and Restoration Task Force

and the

Wetlands Conservation and Restoration Authority

Louisiana Department of Natural Resources
Baton Rouge, LA 1999

ACKNOWLEDGMENTS In addition to those named in the various attributions throughout this Appendix, a number of people played key roles in bringing this document together in its current form. This included editing, table development, writing explanatory and transitional text, and general formatting. These people were: Honora Buras, Ken Duffy, Bill Good, Cathy Grouchy, Bren Haase, Bryan Piazza, Phil Pittman, Jon Porthouse, Diane Smith, and Cynthia Taylor.

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SECTION 1

INTRODUCTION

An important contribution of the Coast 2050 planning process was to develop considerable new technical information on several important subjects. The methodologies used to develop this information are summarized in Appendix B. The summaries are intended to provide a brief written record of what was done.

It is assumed that the reader is familiar with important concepts and acronyms that are generally known to coastal managers, scientists, and planners in Louisiana. Persons responsible for the individual appendices are identified for those readers who desire further information or clarification. The overall Appendix B was compiled by Lee Wilson, consultant to the Ecosystems Protection Branch, U.S. Environmental Protection Agency, Dallas, Texas.

The five discussions of technical methods presented in Appendix B are summarized below.

- *Section 2: Methodology for land loss projections*. This section explains the methods used to project wetlands loss between 1990 and 2050, as presented in Figures 1-1 and 1-2 and Chapter 5 in the main Coast 2050 report. The methodology uses recent rates of loss as a starting point for projecting future losses, adjusts these rates where appropriate, and predicts the main locations of loss through an innovative technique based on computerized interpretations of satellite images. For additional information, contact Suzanne Hawes, New Orleans District, U.S. Army Corps of Engineers. The citation for this part of the appendix is as follows.

  Hawes, S. 1999. Methodology for land loss projections. In: Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices. Louisiana Department of Natural Resources. Baton Rouge, La.

- *Section 3: Faulting, subsidence and land loss in coastal Louisiana*. This section provides information on faulting, subsidence and land loss in coastal Louisiana, as a general consideration in restoration planning. This information was also used to prepare Figure 4-4 in the main report, which relates major fault trends to regional subsidence rates and land loss, and Figure 4-5, which presents a map of subsidence rates in coastal Louisiana by mapping unit. The methodology reflects the professional judgment of Sherwood Gagliano, who utilized various data sources to quantify subsidence rates, and information on faults and other geologic structures of the coast in order to map the spatial patterns of subsidence. For additional information, contact Dr. Gagliano at

- Coastal Environments Inc., Baton Rouge. The citation for this part of the appendix is as follows.

  Gagliano, S. M. 1999. Faulting, subsidence and land loss in coastal Louisiana. In: Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices. Louisiana Department of Natural Resources. Baton Rouge, La.

- *Section 4: Methodology for assessment of fisheries*. This appendix explains the methods used to assess existing trends in fisheries production, and projects these trends into the future, as presented in the regional appendices (Appendices C-F) and summarized in Chapter 6 of the main report. The methodology is based on using selected species as indicators of different elements of the fisheries population, and using available data and professional judgments (largely from the Louisiana Department of Wildlife and Fisheries) to characterize the existing and prospective trends. For additional information, contact Dr. Glenn Thomas, Louisiana Department of Wildlife and Fisheries, Baton Rouge. The citation for this part of the appendix is as follows.

  Ruebsamen, R. and Thomas, R. G. 1999. Methodology for assessment of fisheries. In: Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices. Louisiana Department of Natural Resources. Baton Rouge, La.

- *Section 5: Methodology for assessment of wildlife*. This section explains the methods used to assess existing wildlife habitat status and future trends, as presented in the regional appendices (Appendices C-F) and summarized in Chapter 6 of the main report. The methodology is similar to that for fisheries in that it uses representative species, available data and professional judgments. For additional information, contact Quin Kinler, Natural Resources Conservation Service, Baton Rouge, or Gerry Bodin, U.S. Fish and Wildlife Service, Lafayette.

  Bodin, G. and Kinler, Q. 1999. Methodology for assessment of wildlife. In: Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices. Louisiana Department of Natural Resources. Baton Rouge, La.

- *Section 6: The third delta conveyance channel project*. This section explains the rationale and underlying design concept for what is arguably the most dramatic of all the Coast 2050 strategies – to build a third deltaic lobe of the Mississippi Delta by conveying river water to areas of eastern Terrebonne and western Barataria basins, where a once productive marsh is largely gone. For additional information, contact Dr. Sherwood Gagliano or Dr. Hans van Beek, Coastal Environments, Inc., Baton Rouge, Louisiana.

  Gagliano, S. M. and van Beek, J. L. 1999. The third delta conveyance channel project. In: Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices. Louisiana Department of Natural Resources. Baton Rouge, La.

SECTION 2

METHODOLOGY FOR LAND LOSS PROJECTIONS

Calculation of Rate of Land Loss in the Absence of Restoration

There are two databases showing land loss in coastal Louisiana.

- The database developed by the National Wetlands Research Center of the U.S. Geological Survey (USGS) covers the entire coast, indicates habitat types, and shows loss and gain from 1956 to 1990.

- The database developed by the New Orleans District of the U.S. Army Corps of Engineers (USACE) covers the coastal marshes over a 60-year period of record, divided into four time intervals. The product of this database is a set of seven maps depicting the location of land loss per time period. The database is highly consistent, because the same two geologists determined the land/water interface for all periods. However, it does not cover all of the cypress swamps, does not include the drainage of the Sabine River, and does not show habitat types.

In 1991, as part of the CWPPRA planning process, an interagency group of marsh experts gathered to discuss which database to use to project marsh loss for the Louisiana Coastal Wetlands Restoration Plan (published in 1993). The group determined that the USACE database was the most appropriate to use to project future loss because it had the most extensive loss record and the land/water interface had been consistently delineated. Since land gain was infrequent and localized, the group determined that this parameter was not necessary to project future losses.

The 1991 interagency group chose 1974 through 1990 as the most appropriate base period to determine future loss. The average loss statewide was slightly more than 30 square miles per year from 1974 to 1983. The loss dropped to just over 25 square miles per year in the most recently analyzed time period, 1983 to 1990. There are significant uncertainties in any 60-year projection into the future: rate of sea level rise, frequency of hurricanes and floods, rate of development, etc. The group determined that including the higher 1974-1983 loss with the 1983-1990 loss would compensate for a possible increase in sea level rise. They also felt that the 1974-1990 loss rate most accurately reflected the post-1990 loss rate. Thus, this rate was used in the 1993 CWPPRA "Louisiana Coastal Wetlands Restoration Plan" and in subsequent feasibility studies conducted under CWPPRA.

Subsequently, as part of feasibility studies done under CWPPRA, another group of marsh experts (including some members of the 1991 group) analyzed the loss patterns on the USACE land loss maps. The group drew polygons around areas where loss patterns seemed to have the same cause. The acres lost in each polygon of similar loss were determined for each of the four time periods. The annual percent of marsh loss between 1974 and 1990 was determined for each polygon. For projection purposes, these rates were assumed to continue into the future.

During the Coast 2050 planning process, local experts on Coast 2050 Regional Planning Teams adjusted a few of the 1974-1990 loss rates to account for one-time losses and false loss associated with extremely high water levels.

Another adjustment during the Coast 2050 process was done because the USACE database included only land to water changes, and therefore did not show embankments of dredged material along channels as wetland loss. To partially correct this, the most extensive spoil banks, those along the Mississippi River Gulf Outlet, were measured and counted as loss. Since the Louisiana Coastal Wetlands Conservation Plan is now in place, all future loss due to development will be mitigated. Thus, the 1974-1990 loss due to canals, borrow pits, etc., was not included in the rate to be used for projections. Since the Sabine River watershed was not covered by the USACE database, the 1978-1990 loss rate from the USGS database was used in that area.

The USACE database covered all habitats in the coastal area, including the extensive agricultural and residential areas adjacent to the Mississippi River and Bayou Lafourche. The polygons of similar loss included these nonwetland areas. The Coast 2050 experts realized that including these developed areas in the base from which loss was determined produced an inaccurately low loss rate, since the loss rate should apply only to wetlands acreage. Accordingly, the USGS database was used to determine the acres of marsh in 1990 in each polygon. All loss on the USACE loss maps was determined to be in marsh. The adjusted 1974-1990 loss rate was applied to the acres of marsh in 1990 and then to the remaining acres of marsh each year from 1991 through 2050. This determined the acres remaining in 2050 for each polygon, if no restoration occurred.

Adjustment for Restoration Projects

There is one large freshwater diversion from the Mississippi River at Caernarvon and a second under construction at Davis Pond as this document goes to press. There are nearly 60 coastal restoration projects authorized on the first six CWPPRA Priority Lists. All these projects either reduce future marsh loss or create marsh. For CWPPRA projects, the additional acres present in the project area at the end of 20 years (as determined by the Wetland Value Assessment) were used to determine the benefits between 1990 and 2010. Then, the longevity of each project, (as determined by the CWPPRA Environmental Working Group) was used to determine the marsh loss reduction/marsh gain for each project for years 2011 through 2050. If the project had longevity of greater than 50 years, the WVA benefits were continued until 2050. If the longevity was less than 30 years, after year 30, the loss rate was returned to the 1974-1990 rate. For the Caernarvon Freshwater Diversion, the benefits from the EIS were used. For the Davis Pond Freshwater Diversion, the benefits from the March 11, 1998, Fact Sheet were used.

The benefitted acreage in each polygon was calculated as described above. This acreage was then subtracted from the acres projected to be lost. This determined the net amount of marsh to be lost in each polygon.

Location of Lost Land

In order to determine where within each polygon the above loss might be located, the 1993 LANDSAT image was used. The polygon, diversion, and CWPPRA project boundaries were obtained from the Louisiana Department of Natural Resources (DNR). The Natural Systems Engineering Laboratory at LSU developed the prediction maps. They selectively modified parts of the LANDSAT image to reflect the net acreage of marsh lost in each polygon by 2050.

Each 25 m pixel on the image contained brightness based on combining bands from the original LANDSAT data. Each cell was assigned a pseudo color–dark blue for the lowest end of the brightness range and bright white for the highest end. Generally, solid marsh areas had a high brightness while open water had a low brightness. Areas with an intermediate brightness were assumed to be broken marsh with brightness corresponding to the percentage of land. Brightness was then used as land/water boundary criteria. Areas with brightness higher than the criterion was considered land and those with lower brightness were classified as water.

In order to make the image “lose” land, the criterion for land was then adjusted to a higher value that resulted in less land in the image. This was done iteratively until the amount of land in each polygon matched the acreage predicted to remain in that polygon in 2050. Reducing the brightness criterion removed land from the image. The amount of land preserved by CWPPRA projects and the river diversions was then added back to the image in each polygon. In order to clearly indicate the land lost and gained through 2050, maps were printed to show the base marsh in green, the areas to be lost in red, and areas of gain in black. The result is a map of coastal Louisiana that indicates what marsh areas may be lost or gained by 2050. Refer to Figures 1-1 and 1-2 in the Coast 2050 main report. The overall results of the projection also are presented in Chapter 5 of the report.

Prediction of Loss Through 2050 by Mapping Unit

The USGS database was used to determine the acres of swamp and various types of marsh in each mapping unit in 1990 (Table 2-1). The USACE database was used to determine historic losses and the rate of loss from 1974-1990 for each mapping unit. The benefits of the CWPPRA projects and freshwater diversions were also determined by mapping unit and habitat type. The habitat types to be lost were estimated by superimposing the 2050 loss projection maps onto the 1990 habitat maps. This methodology assumes that the location of future habitat zones will not shift. Since these zones have shifted both north and south in the past, the assumption that they will remain as they were in 1990 is simplistic. Since the USACE database did not include swamps, academics with experience in analyzing swamp loss were contacted and their help was used to determine the amount of swamp predicted to be lost in each mapping unit.

The result is a table indicating projected marsh and swamp losses, as well as benefits of CWPPRA projects and river diversions by habitat type and by mapping unit through 2050 (Table 2-1).

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects.

REGION 1	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
UPPER BASIN								
Amite/Blind	3,440	0	0	0	3,440	138,930	40	0
Tickfaw River Mouth	2,350	0	0	0	2,350	22,840	35	0
Manchac Land Bridge West	2,950	0	0	0	2,950	8,550	60	0
Tangipahoa River Mouth	4,000	390	0	0	4,390	21,310	0	1,670
UPPER BASIN TOTAL	12,740	390	0	0	13,130	191,630	135	1,670
MIDDLE BASIN								
Tchefuncte River Mouth	4,390	380	0	0	4,770	4,020	3,320	0
Manchac Land Bridge East	850	11,620	0	0	12,470	4,490	0	7,350
Bonnet Carre'	1,170	0	0	0	1,170	2,120	0	0
La Branche	980	2,530	3,720	0	7,230	10,020	0	1,130
North Shore Marshes	120	3,580	5,800	0	9,500	0	0	960
Pearl River Mouth	7,280	7,970	6,960	0	22,210	880	410	410
East Orleans Land Bridge	60	22	25,380	0	25,462	0	0	0
Bayou Sauvage	5,110	1,220	110	0	6,440	320	730	200
MIDDLE BASIN TOTAL	19,960	27,322	41,970	0	89,252	21,850	4,460	10,050
LOWER BASIN								
South Lake Borgne	0	0	7,080	9,510	16,590	0	0	0
Central Wetlands	1,000	0	20,510	90	21,600	90	0	0
Biloxi Marshes	50	0	36,000	50,950	87,000	0	0	0
Eloi Bay	990	0	5,320	19,160	25,470	0	0	0
LOWER BASIN TOTAL	2,040	0	68,910	79,710	150,660	90	0	0
REGION 1 TOTAL	34,740	27,712	110,880	79,710	253,042	213,570	4,595	11,720

Acres in 1990 from DNR GIS.

Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.

Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 1	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
UPPER BASIN							
Amite/Blind	0	0	40	40	69,460	0	0
Tickfaw River Mouth	0	0	35	35	11,420	0	0
Manchac Land Bridge West	0	0	60	60	4,270	0	0
Tangipahoa River Mouth	0	0	1,670	1,670	10,655	0	0
UPPER BASIN TOTAL	0	0	1,805	1,805	95,805	0	0
MIDDLE BASIN							
Tchefuncte River Mouth	0	0	3,320	3,320	2,010	0	0
Manchac Land Bridge East	0	0	7,350	7,350	2,250	0	0
Bonnet Carre'	0	0	0	0	0	0	0
La Branche	680	0	1,810	2,070	5,010	60 % I, 40 % B	260 B
North Shore Marshes	510	0	1,470	1,470	0	35% B, 65% I	0
Pearl River Mouth	1,660	0	2,480	2,690	0	70% B, 15% I, 15% F	210 B
East Orleans Land Bridge	3,550	0	3,550	3,550	0	100 % B	0
Bayou Sauvage	0	0	930	3,550	0	80% F, 20% I	2,100 F, 520 I
MIDDLE BASIN TOTAL	6,400	0	20,910	24,000	9,270	50% I, 30%B, 20% F	2100 F, 520 I, 470 B
LOWER BASIN							
South Lake Borgne	660	1,990	2,650	3,310	0	70 % S, 30% B	330 B, 330 S
Central Wetlands	1,010	0	1,010	1,980	0	100 % B	970 B
Biloxi Marshes	2,410	13,670	16,080	16,080	0	85% S, 15% B	0
Eloi Bay	470	2,680	3,150	3,150	0	85% S, 15% B	0
LOWER BASIN TOTAL	4,550	18,340	22,890	24,520	0	80% S, 20% B	1300 B, 330 S
REGION TOTAL	10,950	18,340	45,605	50,325	105,075	40% S, 25% B, 25% I, 10% F	2100 F, 520 I, 1770 B, 330 S

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 2 **BARATARIA BASIN**	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
Baker	640	0	0	0	640	32,760	230	0
Des Allemands	18,520	0	0	0	18,520	44,560	5,840	0
Lake Boeuf	20,420	0	0	0	20,420	45,980	6,425	0
Gheens	12,500	0	0	0	12,500	6,910	2,250	0
Cataouatche/Salvador	90,550	5,110	0	0	95,660	11,850	6,415	0
Clovelly	15,670	19,040	500	0	35,210	0	1,080	3,170
Perot/Rigolettes	2,830	12,180	13,490	0	28,500	0	530	2,080
Jean Lafitte	1,000	450	0	0	1,450	2,920	0	0
Naomi	1,530	13,810	4,770	0	20,110	1,380	0	675
Myrtle Grove	370	0	46,630	1,890	48,890	0	0	0
Little Lake	70	3,890	12,030	10,640	26,630	0	0	900
Caminada bay	0	0	2,230	34,290	36,520	0	0	0
Fourchon	0	0	0	6,770	6,770	0	0	0
Barataria Bay	0	0	0	800	800	0	0	0
W. Pt a la Hache	60	0	8,300	0	8,360	0	0	0
L. Washington/Grand Ecaille	180	0	9,270	27,120	36,570	0	0	0
Bastion Bay	0	0	1,820	2,390	4,210	0	0	0
Cheniere Ronquille	0	0	0	6,530	6,530	0	0	0
Grand Liard	1,440	3,860	4,090	5,840	15,230	0	0	300
BARATARIA TOTAL	165,780	58,340	103,130	96,270	423,520	146,360	22,770	7,125

Acres in 1990 from DNR GIS.

Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.

Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 2 **BARATARIA BASIN**	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
Baker	0	0	230	230	16,380	100% F, lose 50% swamp	0
Des Allemands	0	0	5,840	6,730	26,740	100 % F, lose 60% swamp	890 F
Lake Boeuf	0	0	6,425	8,040	27,580	100 % F, lose 60% swamp	1,615 F
Gheens	0	0	2,250	2,250	3,460	100 5 F, lose 50% swmap	0
Cataouatche/Salvador	0	0	6,415	16,735	5,930	100 % F, lose 50% swmap	10,320 F
Clovelly	0	0	4,250	5,635	0	70% I, 30% F	770 I, 615 F
Perot/Rigolettes	3,190	0	5,800	10,370	0	50% B, 45% I, 5% F	1,990 B, 2,580 I
Jean Lafitte	0	0	0	0	0	0	0
Naomi	450	0	1,125	7,075	0	60 % I, 40 % B	2,650 B, 3,300 I
Myrtle Grove	5,080	780	5,860	10,220	0	90 % B, 10 % S	4,140 B, 220 S
Little Lake	4,190	1,820	6,910	14,330	0	50 % B, 25% I, 25% S	2,690 I, 3,050 B, 1,680 S
Caminada bay	1,880	17,080	18,960	19,560	0	90 % S, 10 % B	480 S, 120 B
Fourchon	0	1,460	1,460	1,790	0	100 % S	330 S
Barataria Bay	0	330	330	520	0	100 % S	190 S
W. Pt a la Hache	2,360	0	2,360	4,500	0	100 % B	2140 B
L. Washington/Grand Ecaille	280	8,480	8,760	9,500	0	95 % S, 5% B	200 B, 540 S
Bastion Bay	500	3,490	3,990	3,990	0	85 % S, 15 % B	0
Cheniere Ronquille	0	4,400	4,400	5,980	0	100 % S	1,580 S
Grand Liard	3,300	3,600	7,200	7,200	0	50 % S, 45 % B, 5 % I	0
BARATARIA TOTAL	21,230	41,440	92,565	134,655	80,090	45% S, 25% F, 20% B, 10% I	13,440 F, 9,340 I, 14,290 B, 5,020 S

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 2	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
BIRDSFOOT DELTA								
West Bay	4,660	2,220	340	760	7,980	0	gain 7120	0
East Bay	3,450	1,340	0	0	4,790	0	1,500	370
A Loutre	23,970	3,850	0	0	27,820	0	4,280	1,070
Cubits Gap	16,790	2,170	0	0	18,960	0	2,960	1,830
Baptiste Collette	2,210	1,900	390	0	4,500	0	1,460	40
BIRDSFOOT TOTAL	51,080	11,480	730	760	64,050	0	3,080	3,310
BRETON SOUND BASIN								
American Bay	2,090	2,320	11,470	26,460	42,340	0	0	700
Caernarvon	100	840	48,390	10,160	59,490	0	0	0
River aux Chenes	250	0	18,500	0	18,750	0	0	0
Lake Lery	210	0	12,410	0	12,620	0	0	0
Jean Louis Robin	570	0	19,880	17,490	37,940	0	0	0
BRETON SOUND TOTAL	3,220	3,160	110,650	54,110	171,140	0	0	700
REGION 2 TOTAL	220,080	72,980	214,510	151,140	658,710	146,360	25,850	11,135

Acres in 1990 from DNR GIS.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 2	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
BIRDSFOOT DELTA							
West Bay	0	0	gain 7120	7,250	0	80 % F, 20 % I	14,370 F
East Bay	0	0	1,870	1,870	0	80 % F, 20 % I	0
A Loutre	0	0	5,350	6,340	0	80 % F, 20 % I	790 F, 200 I
Cubits Gap	0	0	4,790	6,370	0	70 % F, 30 % I	1,500 F, 80 I
Baptiste Collette	0	0	1,500	2,900	0	60 % F, 40% I	1,120 I, 280 F
BIRDSFOOT TOTAL	0	0	6,390	24,730	0	50% F, 50% I	16,940 F, 1,400 I
BRETON SOUND BASIN							
American Bay	9,860	2,080	12,640	13,880	0	80 % S, 15 % B, 5 % I	1,240 B
Caernarvon	1,980	1,700	3,680	13,280	0	80 % B, 20 % S	7,680 B, 1,920 S
River aux Chenes	4,320	0	4,320	4,870	0	100 % B	550 B
Lake Lery	1,020	0	1,020	3,110	0	100 % B	2,090 B
Jean Louis Robin	1,180	3,740	4,920	9,340	0	60 % B, 40 % S	4,420 B
BRETON SOUND TOTAL	18,360	7,520	26,580	44,480	0	70% B, 25% S, 5% I	15,980 B, 1,920 S
REGION TOTAL	39,590	48,960	125,535	203,865	80,090	40% S, 30% B, 20% F, 10% I	30,380 F, 10,740 I, 30,270 B, 6,940 S

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.

Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.

Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 3	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
TERREBONNE BASIN								
Black Bayou Wetlands	160	0	0	0	160	16,270	0	0
Chacahoula Swamps	270	0	0	0	270	37,300	0	0
Verret Wetlands	250	0	0	0	250	57,700	0	0
Pigeon Swamp	10	0	0	0	10	5,500	0	0
Fields Swamp	20,730	0	0	0	20,730	580	3,010	0
Devils Swamp	1,370	0	0	0	1,370	200	865	0
St. Louis Canal	8,030	4,570	1,830	0	14,430	1,090	2,510	1,255
Savoie	2,600	0	0	0	2,600	340	860	0
Bully Camp South	0	0	440	31,110	31,550	0	0	0
Bully Camp North	2,260	2,640	13,080	1,200	19,180	0	1,580	695
HNSC Marshes	840	2,440	120	0	3,400	6,034	0	1,990
Caillou Marshes	50	0	11,100	29,300	40,450	0	0	0
Montegut	120	1,260	4,360	0	5,740	10	0	1,200
Terrebonne Marshes	0	0	4,220	26,210	30,430	0	0	0
Boudreaux	2,095	5,680	9,740	0	17,515	1,910	2,030	3,580
Pelto Marshes	150	1,230	5,580	34,555	41,515	0	0	0
GIWW	22,970	0	0	0	22,970	22,620	9,940	0
Penchant	100,150	4,040	2,120	0	106,310	1,250	13,160	5,170
Mechant de Cade	4,200	14,950	31,150	4,280	54,580	280	4,460	4,350
Avoca	2,630	0	0	0	2,630	1,180	1,850	0
Atchafalaya Marshes	30,310	10,950	1,420	0	42,680	135	3,310	370
Isles Dernieres Shoreline	0	0	0	0	0	0	0	0
Timbalier Island Shoreline	0	0	0	0	0	0	0	0
Point au Fer	0	4,490	21,550	4,010	30,050	0	0	0
TERREBONNE TOTAL	199,195	52,250	106,710	130,665	488,820	152,399	43,575	18,610

Acres in 1990 from DNR GIS.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 3	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
TERREBONNE BASIN							
Black Bayou Wetlands	0	0	0	0	6,510	25% swamp to marsh, 10% to OW	0
Chacahoula Swamps	0	0	0	0	14,920	25% swamp to marsh, 10% to OW	0
Verret Wetlands	0	0	0	0	23,080	25% swamp to marsh, 10% to OW	0
Pigeon Swamp	0	0	0	0	2,200	25% swamp to marsh, 10% to OW	0
Fields Swamp	0	0	3,010	3,210	0	100% F	200 F
Devils Swamp	0	0	865	865	0	100% F	0
St. Louis Canal	1,255	0	5,020	5,020	0	50% F, 25%B, 25% I	0
Savoie	0	0	860	860	0	100% F	0
Bully Camp South	440	12,550	12,990	12,990	0	97% S, 3% B	0
Bully Camp North	6,310	0	8,585	10,495	0	70% B, 15% I, 15% F	1,030 B, 880 I
HNSC Marshes	0	0	1,990	1,990	0	100% I	0
Caillou Marshes	7,970	1,990	9,960	9,960	0	80% B, 20% S	0
Montegut	2,800	0	4,000	4,000	0	70% B, 30% I	0
Terrebonne Marshes	3,920	15,700	19,620	19,620	0	80% S, 20% B	0
Boudreaux	3,940	0	9,550	10,130	0	40% B, 40% I, 20% F	470 I, 110 B
Pelto Marshes	1,460	13,140	14,600	14,600	0	90 % S, 10% B	0
GIWW	0	0	9,940	9,940	0	100% F	0
Penchant	1,030	0	19,360	20,670	0	70% F, 25% I, 5% B	1,310 F
Mechant de Cade	2,100	0	10,910	11,150	0	40% F, 40% I, 20% B	130 B, 110 I
Avoca	0	0	1,850	1,850	0	100% F	0
Atchafalaya Marshes	0	0	3,680	3,680	0	90% F, 10% I	0
Isles Dernieres Shoreline	0	0	0	0	0	1358 s	0
Timbalier Island Shoreline	0	0	0	0	0	1228 s	0
Point au Fer	3,180	110	3,290	4,220	0	80% B, 15% I, 5% S	660 I, 170 B, 100 S
TERREBONNE TOTAL	34,405	43,490	140,080	145,250	46,710	30% F, 30% S, 25% B, 15% I	1,510 F, 2,120 I, 1,440 B, 100 S

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 3	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
ATCHAFALAYA BASIN								
N. Wax Lake Wetlands	2,770	0	0	0	2,770	2,340	460	0
Wax Lake Wetlands	43,610	0	0	0	43,610	10,255	5,860	0
Atchafalaya Bay Delta	2,430	0	0	0	2,430	0	gain 44,430	0
ATCHAFALAYA TOTAL	48,810	0	0	0	48,810	12,595	gain 38,110	0
TECHE/VERMILION BASIN								
Cote Blanche Wetlands	43,470	2,690	0	0	46,160	12,430	510	250
Vermilion Bay Marsh	6,610	29,970	36,660	0	73,240	5,960	0	3,950
Marsh Island	0	0	49,390	7,080	56,470	0	0	0
Rainey Marsh	245	7,770	47,990	2,410	58,415	0	0	780
TECHE/VERMILION TOTAL	50,325	40,430	134,040	9,490	234,285	18,390	510	4,980
REGION 3 TOTAL	298,330	92,680	240,750	140,155	771,915	183,384	5,975	23,590

Acres in 1990 from DNR GIS.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 3	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
ATCHAFALAYA BASIN							
N. Wax Lake Wetlands	0	0	460	460	0	100% F	0
Wax Lake Wetlands	0	0	5,860	5,860	0	100% F	0
Atchafalaya Bay Delta	0	0	gain 44,430	gain 36,350	0	100 % F	8,080 F
ATCHAFALAYA TOTAL	0	0	gain 38,110	gain 30,030	0	100% F	8,080 F
TECHE/VERMILION BASIN							
Cote Blanche Wetlands	0	0	760	3,470	0	85% F, 15% I	2,440 F, 270 I
Vermilion Bay Marsh	9,610	0	13,560	13,560	0	75% B, 25% I	0
Marsh Island	4,800	1,840	6,640	7,290	0	70% B, 30% S	350 S, 300 B
Rainey Marsh	7,060	0	7,840	7,840	0	90% B, 10% I	0
TECHE/VERMILION TOTAL	21,470	1,840	28,800	32,160	0	75% B, 20% I, 5% S	2,440 F, 270 I, 300 B, 350 S
REGIONAL TOTAL	55,875	45,330	130,770	147,380	46,710	40% B, 35% S, 20% I, 5% I	12,030 F, 2,390 I, 1,740 B, 450 S

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 4	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
MERMENTAU BASIN								
Cameron Prairie	9,680	0	0	0	9,680	0	1,995	0
Lacassine Pool only	5,570	0	0	0	5,570	0	0	0
Lacassine south and east	9,570	0	0	0	9,570	0	1,820	0
Big Burn	40,330	2,600	50	0	42,980	0	3,330	2,220
Middle Marsh	1,360	10,260	560	0	12,180	0	460	1,110
Grand Cheniere Ridge	2,730	2,960	560	20	6,270	0	0	0
Oak Grove	560	20,880	3,600	10	25,050	0	0	890
Lower Mud Lake	40	20	0	2,780	2,840	0	0	0
Hog Bayou	1,270	0	7,610	5,900	14,780	0	480	240
North Grand Lake	10,640	0	0	0	10,640	50	1,700	0
Little Pecan	46,270	160	2,470	0	48,900	0	3,670	0
Rockefeller	12,750	11,770	25,780	12,480	62,780	0	2,610	3,920
Grand Lake East	6,970	0	0	0	6,970	0	2,200	0
Grand/White Land Bridge	7,090	0	0	0	7,090	0	1,030	0
Amoco	16,500	0	0	0	16,500	300	6,000	0
South White Lake	29,950	240	80	0	30,270	0	4,220	0
South Pecan Island	550	2,590	29,990	1,720	34,850	0	0	0
North White Lake	38,830	0	0	0	38,830	0	3,560	0
Little Prairie	10,620	50	0	0	10,670	0	740	0
Big Marsh	21,360	9,330	1,180	0	31,870	0	450	80
Locust Island	2,160	7,530	3,020	0	12,710	20	620	620
MERMENTAU TOTAL	274,800	68,390	74,900	22,910	441,000	370	34,885	9,080

Acres in 1990 from DNR GIS.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 4	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
MERMENTAU BASIN							
Cameron Prairie	0	0	1,995	2,115	0	100 % F	120 F
Lacassine Pool only	0	0	0	0	0	0	0
Lacassine south and east	0	0	1,820	1,820	0	100 % F	0
Big Burn	0	0	5,550	5,550	0	60 % F, 40 % I	0
Middle Marsh	0	0	1,570	1,570	0	70 % I, 30 % F	0
Grand Cheniere Ridge	0	0	0	0	0	0	0
Oak Grove	0	0	890	890	0	100 % I	0
Lower Mud Lake	0	525	525	525	0	100 % S	0
Hog Bayou	480	0	1,200	1,200	0	40 % F, 40 % B, 20 % S	0
North Grand lake	0	0	1,700	1,700	0	100 % F	0
Little Pecan	0	0	3,670	3,670	0	100 % F	0
Rockefeller	6,530	0	13,060	13,060	0	50 % B, 30 % I, 20 % F	0
Grand Lake East	0	0	2,200	2,200	0	100 % F	0
Grand/White Land Bridge	0	0	1,030	1,030	0	100 % F	0
Amoco	0	0	6,000	6,000	0	100 % F	0
South White Lake	0	0	4,220	4,225	0	100 % F	5 F
South Pecan Island	6,980	0	6,980	6,980	0	100 % B	0
North White Lake	0	0	3,560	3,560	0	100 % F	0
Little Prairie	0	0	740	740	0	100 % F	0
Big Marsh	0	0	530	3,000	0	85% I, 15% F	2,470 I
Locust Island	630	0	1,870	1,870	0	30% F, 30 % I, 35% B	0
MERMENTAU TOTAL	14,620	525	59,110	61,705	0	60% F, 25% B, 15% I	125 F, 2,470 I

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.

Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.

Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 4 **CALCASIEU/SABINE BASIN**	Fresh Marsh acres in 1990	Intermediate Marsh acres in 1990	Brackish Marsh acres in 1990	Saline Marsh acres in 1990	Total Marsh acres in 1990	Swamp acres in 1990	Fresh Marsh lost by 2050	Intermediate Marsh lost by 2050
Hackberry Ridge	520	0	2,400	0	2,920	0	0	0
Choupique Island	410	0	340	0	750	0	0	0
Big Lake	19,095	0	0	0	19,095	0	720	1,090
Sweet/Willow Lakes	6,240	20	0	0	6,260	0	1,860	0
Cameron Creole	10	13,170	17,890	0	31,070	0	0	1,110
Cameron	5,900	6,820	4,220	1,940	18,880	0	360	435
Clear Marais	4,650	10	120	0	4,780	0	300	0
West Black Lake	2,240	1,190	140	0	3,570	0	640	320
Black Lake	230	910	1,920	0	3,060	0	0	315
Brown Lake	2,570	1,870	11,660	0	16,100	0	0	865
Hog Island Gully	0	0	1,330	2,130	3,460	0	0	0
West Cove	2,810	0	0	0	2,810	0	280	0
Mud Lake	0	0	14,040	0	14,040	0	0	0
Martin Beach/Ship Channel	20	2,760	2,170	570	5,520	0	0	250
Southeast Sabine	10	12,430	6,590	0	19,030	0	0	100
Second Bayou	0	11,150	2,300	0	13,450	0	0	620
Gum Cove	1,230	0	0	0	1,230	0	0	0
Southwest Gum Cove	5,840	3,510	1,120	0	10,470	0	520	320
Sabine Lake Pool 3	15,980	20	10	0	16,010	0	0	0
Willow Bayou	0	2,500	18,960	0	21,460	0	0	0
Johnson's Bayou East	1,840	21,380	280	0	23,500	0	0	5,790
Perry Ridge	7,820	7,370	0	0	15,190	170	gain 2040	0
Sabine Lake Ridges	1,810	8,300	12,100	3,800	26,010	0	0	340
Johnson's Bayou Ridge	0	0	1,290	1,830	3,120	0	0	0
Johnson's Bayou West	0	430	11,060	0	11,490	0	0	0
Black Bayou	600	9,480	13,750	0	23,830	0	0	0
CALCASIEU/SABINE TOTAL	79,825	103,320	123,690	10,270	317,105	170	2,640	11,555
REGION 4 TOTAL	354,625	171,710	198,590	33,180	758,105	540	37,525	20,635

Acres in 1990 from DNR GIS.

Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.

Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

Table 2-1. Acreage and loss of different wetland types in the coastal zone of Louisiana, including benefits of CWPPRA projects (Cont.).

REGION 4 CALCASIEU/SABINE BASIN	Brackish Marsh lost by 2050	Saline Marsh lost by 2050	Net Marsh loss by 2050	Marsh lost without any restoration	Swamp acres lost by 2050	Approximate type of habitat lost	Acres preserved by CWPPRA and USACE marsh creation
Hackberry Ridge	0	0	0	0	0	0	0
Choupique Island	0	0	0	0	0	0	0
Big Lake	1,750	0	3,560	3,620	0	50%B, 30%I, 20%F	60 B
Sweet/Willow Lakes	0	0	1,860	2,100	0	100%F	240 F
Cameron Creole	1,110	0	2,220	7,370	0	50%I, 50% B	2,575 I, 2,575 B
Cameron	95	0	890	890	0	50% I, 40% F, 10% B	0
Clear Marais	0	0	300	1,060	0	100% F	760 F
West Black Lake	0	0	960	960	0	67% F, 33% I	0
Black Lake	195	0	510	1,050	0	70 % B, 30 % I	540 B
Brown Lake	2,740	0	3,605	4,325	0	80 % B, 20 % I	720 B
Hog Island Gully	gain 490	0	gain 490	550	0	70% S, 30 % B	385 S, 655 B
West Cove	0	0	280	600	0	100 % F	320 F
Mud Lake	1,850	0	1,850	2,660	0	100 % B	810 B
Martin Beach/Ship Channel	380	0	630	630	0	60% B, 40 % I	0
Southeast Sabine	390	0	490	890	0	80 % B, 20 % I	400 B
Second Bayou	160	0	780	780	0	80 % I, 20 % B	0
Gum Cove	0	0	0	0	0	50 % F, 30 % I, 20 % B	0
Southwest Gum Cove	210	0	1,050	1,070	0	50 % F, 30 % I, 20 % B	20 F
Sabine Lake Pool 3	0	0	0	0	0	0	0
Willow Bayou	5,190	0	5,190	5,190	0	100 % B	0
Johnson's Bayou East	0	0	5,790	5,790	0	100 %I	0
Perry Ridge	0	0	gain 2040	gain 2040	0	0	0
Sabine Lake Ridges	3,020	0	3,360	3,360	0	90 % B, 10 % I	0
Johnson's Bayou Ridge	640	430	1,070	1,070	0	60% B, 40% S	0
Johnson's Bayou West	2,510	0	2,510	2,510	0	100 % B	0
Black Bayou	4,020	0	4,020	6,400	0	90%B, 10% I	1,740 B, 640 I
CALCASIEU/SABINE TOTAL	23,770	430	38,395	50,835	0	60% B, 30% I, 10% F	1,340 F, 3,215 I, 7,500 B, 385 S
REGION 4 TOTAL	38,390	955	97,505	112,540	0	40% F, 40% B, 20% I	1,465 F, 5,685 I, 7,500 B, 385 S

F=Freshwater Marsh; I=Intermediate Marsh; B=Brackish Water Marsh; S=Saltwater Marsh; OW=Open Water.
Projected loss is the COE loss rate from 1974-1990 applied to DNR acres in 1990.
Projected loss is net loss and includes benefits of CWPPRA projects on PL #1-6 and COE marsh creation.

SECTION 3

FAULTING, SUBSIDENCE AND LAND LOSS IN COASTAL LOUISIANA

by

Sherwood M. Gagliano

Cartography and GIS by
Curtis Latolias and John Sheehan

Report Prepared by
Coastal Environments, Inc.
Baton Rouge, LA

and

Lee Wilson & Associates
Santa Fe, NM

Prepared for
U.S. Environmental Protection Agency
Region 6
Dallas, TX

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Introduction

The passive appearance of Louisiana's coastal lowlands masks the intensity of the region's dynamic geological processes. The Mississippi River Deltaic Plain and Chenier Plain natural systems, which occupy coastal Louisiana (Figure 3-1), lie above a sediment-filled trough called the Gulf Coast Salt Basin (Figure 3-2). The trough was created 225 million years ago when the super continent called Pangea began to pull apart during the Late Triassic Period. In the trough that was created, a great thickness of sedimentary rock has accumulated (Spearing 1995). The Earth's movements associated with the geological structures of the trough are forces that direct and shape the landforms and processes of the two natural systems. These tectonic movements strongly influence where the rivers flow and deposit sediment and where the land sinks and erodes away. Sediment deposition and other processes associated with the natural systems may in turn affect subsidence and earth movement resulting in an inseparable interplay of cause and effect between the geologic setting and the active natural systems. Natural and manmade ridges form the skeletal framework to which the coastal wetlands are attached. They form a divide between the estuarine basins. Chains of barrier islands mark the seaward boundary of the estuarine basins (after Gagliano and van Beek 1993).

For millions of years the Mississippi and other rivers have delivered sediment from the heart of the continent to the continental margin along the Gulf of Mexico. Particle by particle the sands, silts and clays have been carried and dropped. The weight of the deposited

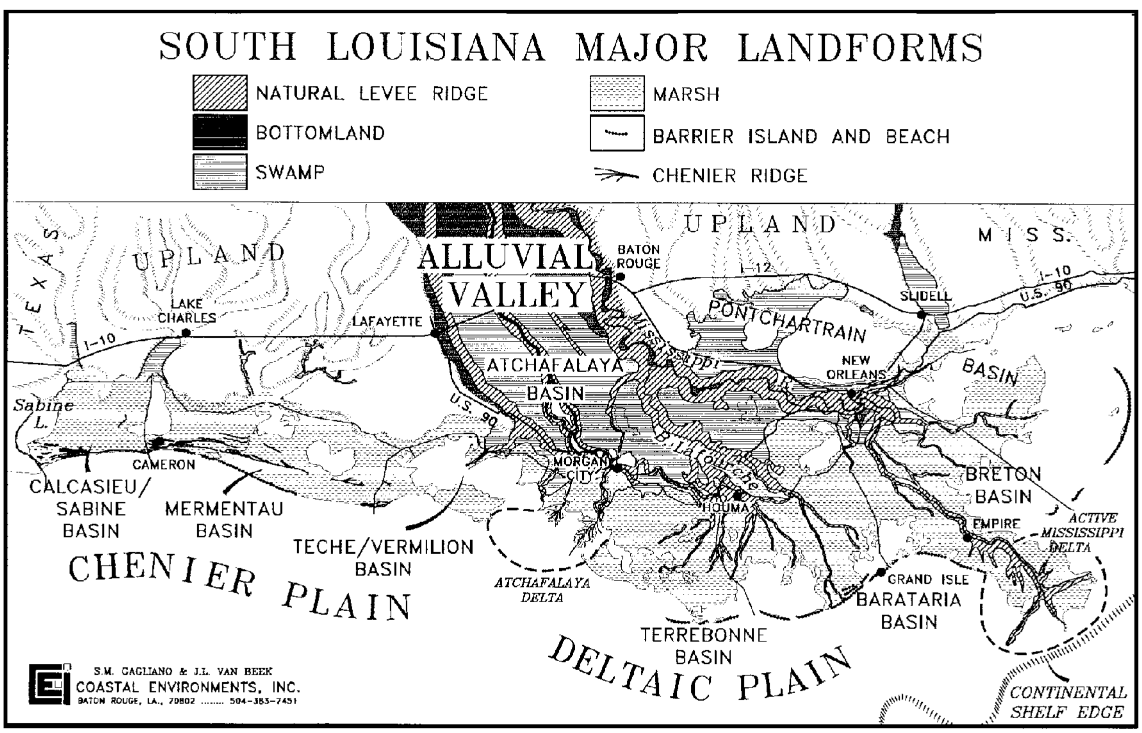


Figure 3-1. Major landforms of coastal Louisiana (after Gagliano and van Beek 1993).

sediment has pushed down the Earth's crust causing both the trough and the gulf to deepen (Figure 3-2). The crust, and thus the sediment that overlays it, continues to sink as more deposits are constantly added to the top of the sequence. When most of the sediment that now fills the trough was deposited, it was deposited in shallow marine and coastal environments. Today, even though some oil wells in south Louisiana have been drilled to depths of more than 25,000 ft, the sedimentary deposits in the deepest part of the trough have not been penetrated. The sediment pile is 40,000 ft thick at the coast and may be as much as 60,000 ft thick offshore (Spearing 1995).

While the weight of the sediment

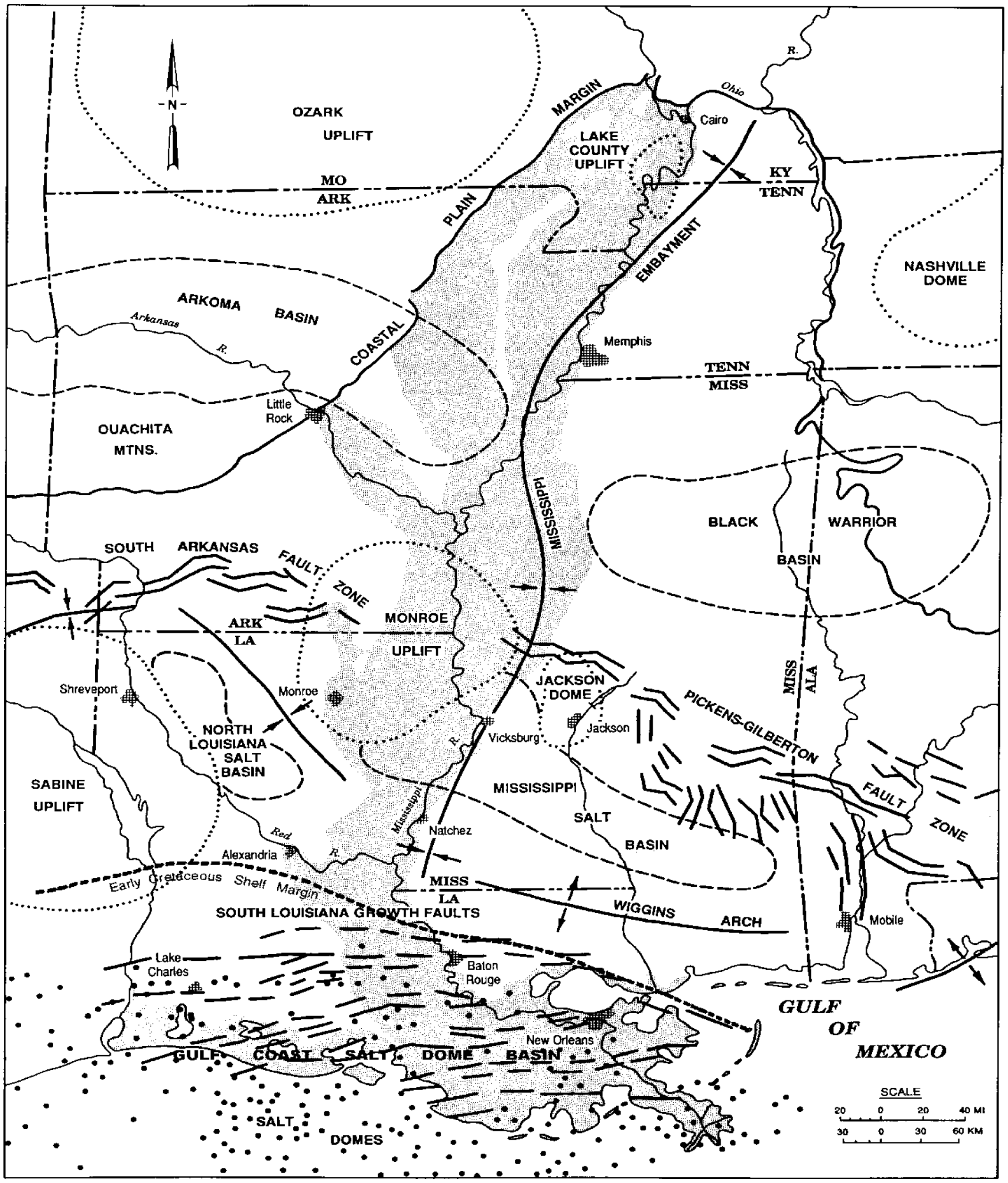


Figure 3-2. Major structural features of Louisiana (after Saucier 1994).

dumped by the rivers causes the crust to bend (down-warping), there is also a compensation effect causing inland areas to be uplifted. The land surface of south Louisiana is like a see-saw. Geologists have identified hinge lines, analogous to fulcrums of see-saws, that run through the coastal lowlands of Louisiana. North of these lines the land is rising (Uplands), and south of them it is sinking (Deltaic and Chenier Plains, see Figure 3-3). The cities of Lake Charles, Lafayette, Baton Rouge and Slidell are landward of the hinge lines and are on blocks that are being uplifted. New Orleans, Houma, Golden Meadow, and Empire are on blocks that are subsiding. In addition to the north-south variations, there are also variations in down-warping and uplift from east to west. The rates of east-west down-warping change abruptly at faults running through the St. Bernard area.

Earth movement in the Gulf Coast region takes on a variety of forms. In some areas where the near-surface deposits are soft and poorly consolidated they squeeze and flow under the weight of sedimentary loading and even some man made structures. In some areas the foundation beds warp and bend, and in others the effects of sedimentary loading cleave the earth, resulting in faults.

There is a thick bed of pure salt underlying much of south Louisiana, adjacent areas of Texas and the

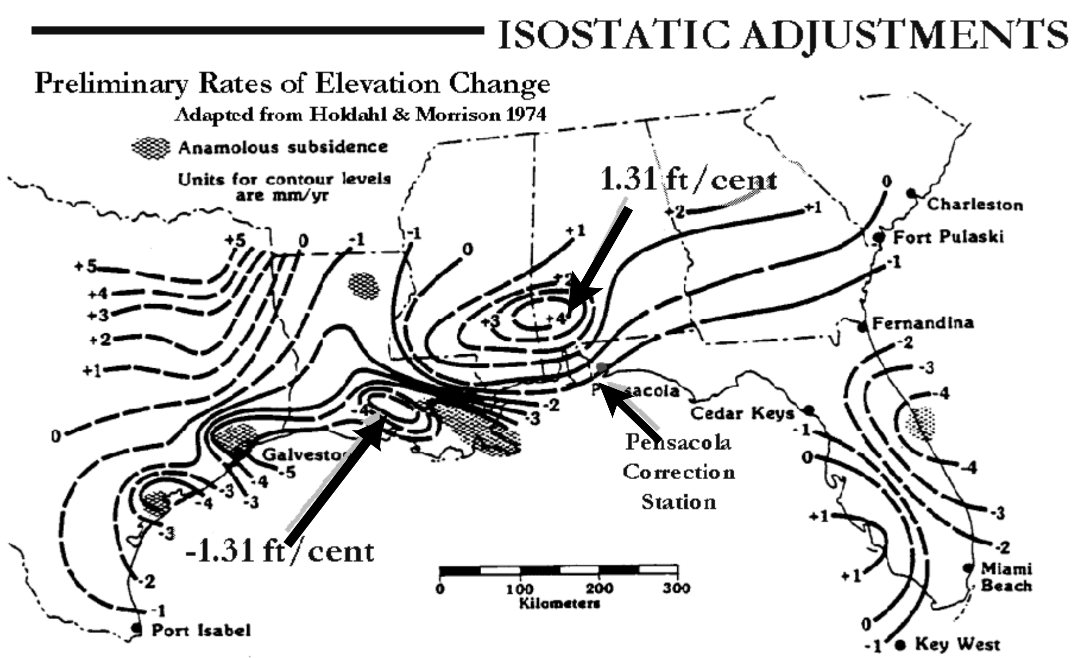


Figure 3-3. Map showing rates of subsidence and uplift of southeastern Louisiana and adjacent areas of Mississippi. Rates in millimeters per year and based on analysis of comparative geodetic leveling measurements (after Penland et al. 1988; adapted from Holdahl and Morrison 1974).

continental shelf. This salt bed, called the Louann Salt, formed in an inland-sea 145 million years ago. Because the salt has a low density, when heavier sand, silt, clay and limestone were deposited above it, the intense pressure and heat caused giant bubbles to form in the salt. Like a mixture of oil and water, the salt bubbles slowly pushed their way upward through the sedimentary sequence (Figure 3-4). Some actually reached the surface and created topographic bulges or domes. Well-known examples of salt domes with surface expression are found in the Five-Island Chain and include Jefferson Island, Avery Island, Weeks Island, Cote Blanche and Belle Isle. There are numerous other salt domes in the subsurface. Most earth movement in the region occurs as slippage along faults. Faults can be traced by topographic displacements on the surface of older uplands, but are not readily visible in the lowlands where movement is masked by

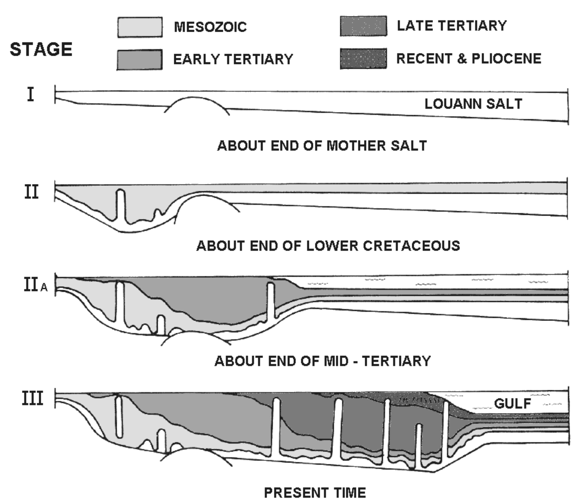


Figure 3-4. Development stages of the Gulf of Mexico showing subsidence, sequential sediment fill, and salt dome development (after Halbouty 1979).

contemporaneous sediment deposition. Most faults in coastal Louisiana show little if any surface expression, and have been mapped primarily by petroleum geologists working with seismic data and correlation of oil well boring logs.

Most south Louisiana faults are "normal faults," found where hanging blocks have moved down the slopes of fault planes. Most are also "growth faults," found where sedimentary beds on the down-dropped (hanging) blocks are thicker than comparable beds on adjacent up-thrown blocks, providing evidence that the faults have continued to move through time. Growth faults are established initially along zones of weakness, such as places where growing delta fronts extend beyond the continental shelf edge. Once established, such weak zones generally persist as more sediment is deposited above them. Thus, the amount of cumulative displacement on a growth fault increases with time and depth.

Major fault systems can be delineated within the maze of faults that snake their way across coastal Louisiana. These fault systems break the region into giant polygonal blocks. Each polygon may move independently of its neighbors, as might ice cubes floating in a pitcher. An individual block may move up, down, and/or tilt; each at a different rate than neighboring blocks.

Blocks with low topographic surface elevation are invaded by the sea as they sink (Figure 3-5). One measure of the degree of marine invasion is the rate of relative sea level rise that occurs on the blocks. A part of this rise rate is related to the worldwide increase in the level of the sea (eustatic rise), which has accelerated during recent decades as a result of glacial melting. The rise rates in coastal Louisiana have also accelerated, and are in some areas as much as 8 to 16 times greater than the worldwide rate.

The existence and location of the fault systems underlying the region have been recognized by geologists for many years, but their significance in relation to the land loss and system collapse phenomena is only now being understood. A better understanding between the relationships of fault bound blocks and other neotectonic activity, land loss and shoreline change is fundamental to long term restoration and multiple use management of the Louisiana coast. For an outstanding synthesis of the geology of coastal Louisiana the reader is referred to Spearing (1995).

In this paper, rates of vertical movement have generally been converted to feet per century (ft/century). English measures are used because they are currently the standard for engineering planning and design in the region. To facilitate conversion to other units of measure, a conversion table is available on the concluding page of this paper.

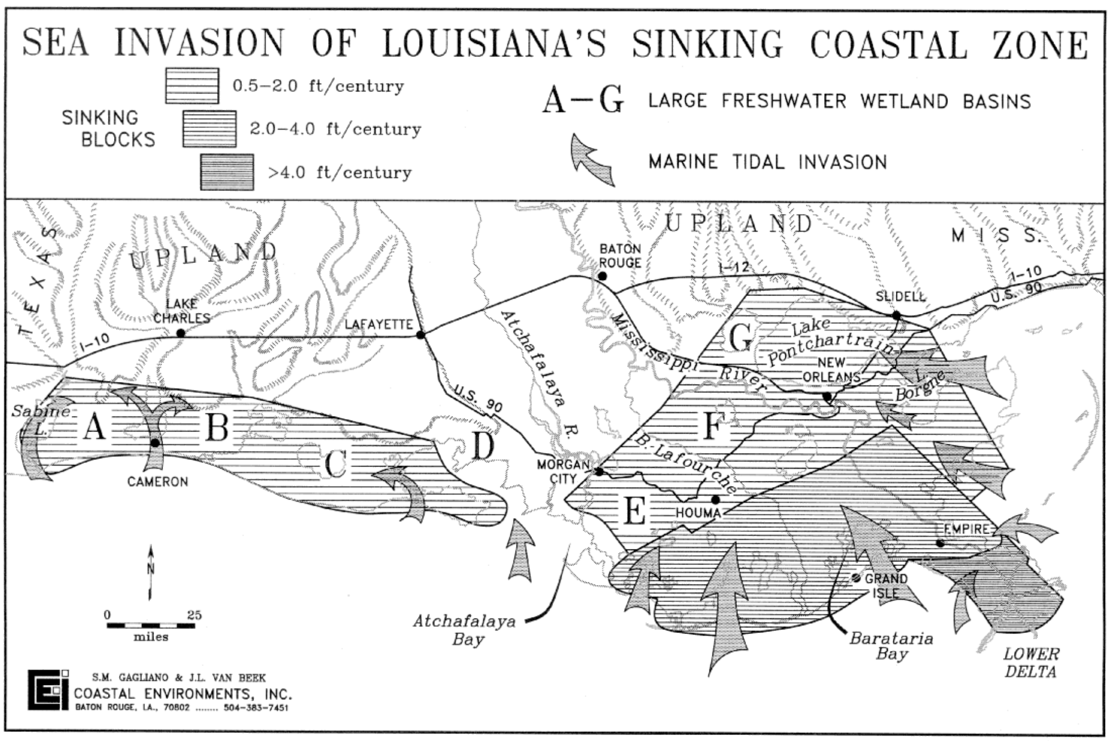


Figure 3-5. Sinking blocks and rising sea. Rates of land sinking can be related to large fault bound blocks. As the blocks subside, the sea invades the land. The marine invasion is accelerated by canals. Salt-sensitive vegetation and fragile organic soils of freshwater basins in the landward ends of the estuaries are highly vulnerable to marine tidal invasion (after Gagliano and van Beek 1993).

The 20th Century Transgression

The landmass occupied by the Mississippi River Deltaic Plain and the Chenier Plain natural systems is the result of 7,500 years of progradation (Figure 3-1). The sediment prism deposited during this progradation is the most recent addition to the top of the Gulf Coast Basin's thick sedimentary sequence. Land building has not been constant for the last 7,500 years; rather, it has been cyclic and related to the process of upstream diversion or delta switching (Fisk 1944; Frazier 1967; Gagliano and van Beek 1970; Coleman et al. 1998). Five major episodes or cycles of delta building have unfolded during this time interval, and a sixth is presently in progress (Roberts 1998). Each cycle lasted 1,000 years or more and progressed through stages of growth of the landmass into the sea (the sea regressed from the land) followed by stages of deterioration and coastal erosion (the sea transgressed onto the deltaic landmass). Even though there have been periods of transgression, the net result has been a building process, the result of which is the Deltaic and Chenier Plains.

Judging from maps of the Louisiana coast made by European explorers and settlers, the coast was in a condition of net gain during the sixteenth, seventeenth and eighteenth centuries. This condition lasted until the late nineteenth century, when a long interval of land building was interrupted and reversed. During the past hundred years there has been an invasion of the land by the sea, the results of which have been catastrophic land loss and wetland deterioration. This paper particularly examines the relationships between growth fault movement and this Twentieth Century Transgression. The geological record indicates that growth fault movement has always been a driving force for deltaic transgression. The twentieth century event is special in that the land sustaining forces that in the past offset transgressive impacts have been stifled, hence the land loss.

In these coastal lowlands, changes of a fraction of an inch per year in the relative elevation between land and sea can upset long-term natural system equilibrium and cause major environmental change. Massive coastal erosion, which began in the late nineteenth century (Gagliano et al. 1981) and peaked during the early 1970's (Britsch and Kemp 1990), has resulted in loss and deterioration of wetlands, barrier islands and ridges (Figure 3-6). During a period of little more than 100 years, more than 1,600 square miles, or about 20% of Louisiana's coast (mostly wetlands), have eroded away. Since it took 7,500 years for the coastal lowlands to form, it follows that 1,500 years of natural land building has eroded away in about 100 years. As a result, both the Deltaic Plain and Chenier Plain systems are badly degraded. The Deltaic Plain in particular has lost, and continues to lose, subsystem components and is approaching a condition of system collapse (Figure 3-7).

The distribution of the land loss sheds light on the causes (Figure 3-6). The losses are not uniformly distributed; rather, high loss is concentrated in four areas: 1) the Calcasieu-Sabine Basin;

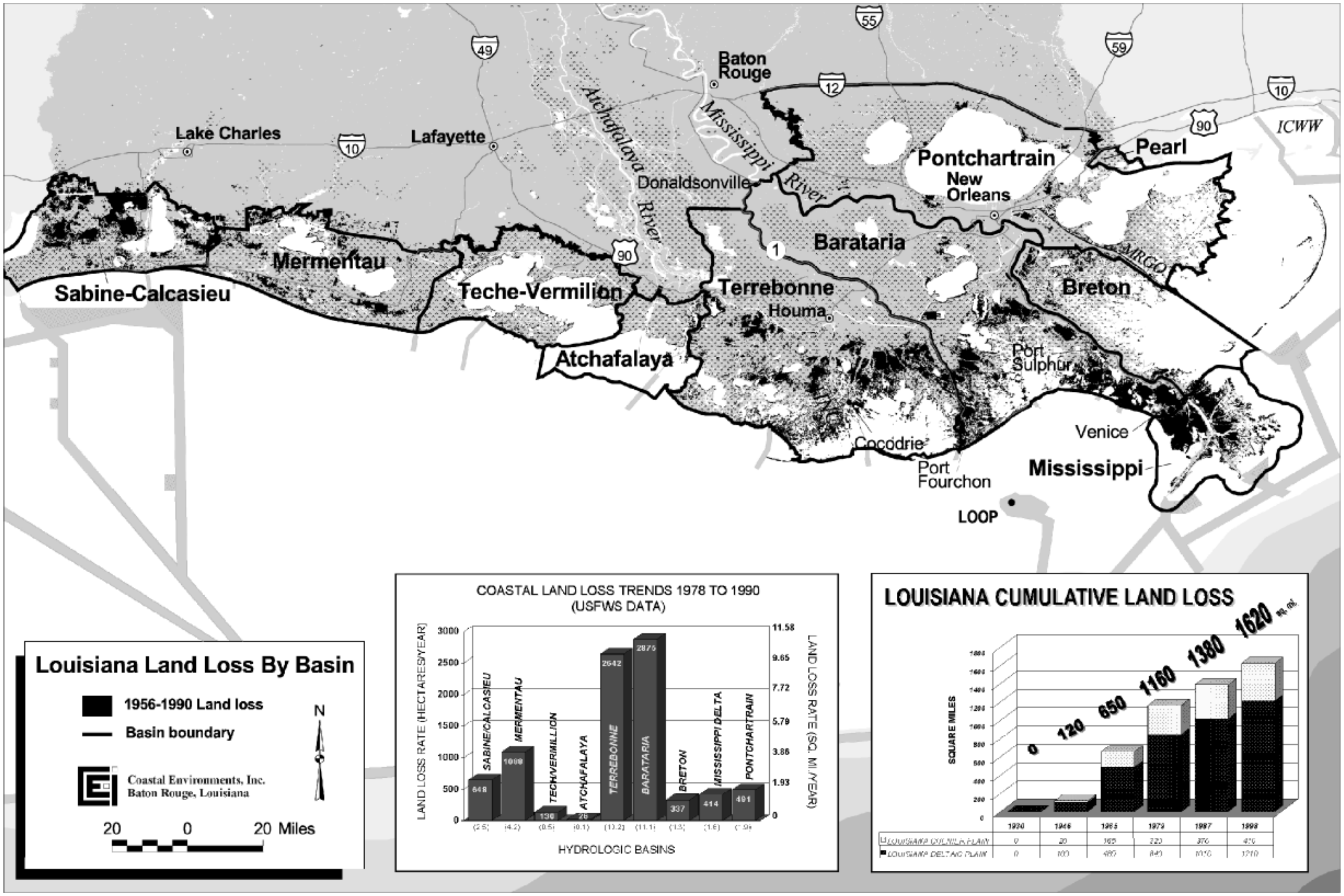


Figure 3-6. Map showing land loss in coastal Louisiana for the period 1956 - 1990 (adapted from Barras et al. 1994). Inset graphs show distribution of loss by hydrologic basins and cumulative land loss.

2) the Pontchartrain Basin; 3) the Terrebonne and Barataria basins; and 4) the Mississippi Basin. It has been determined that losses in the Calcasieu-Sabine Basin are related primarily to marine process invasion of fresh marshes through the Calcasieu and Sabine ship channels. Likewise, losses in the Pontchartrain Basin cluster around the Mississippi River Gulf Outlet, a navigation channel dug in the 1960's.

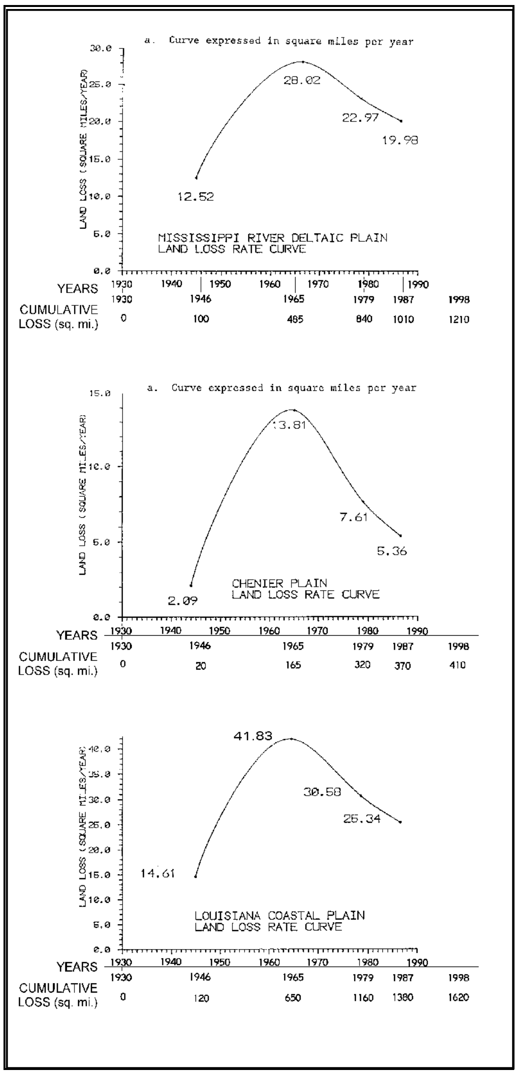


Figure 3-7. Graphs showing land loss curves and cumulative loss in coastal Louisiana (adapted from Dunbar et al. 1992).

The greatest losses have occurred in the Barataria and Terrebonne Basins flanking Bayou Lafourche, and in the Active Mississippi Delta (Mississippi Basin). One of the primary purposes of this paper is to investigate the causes of this loss.

Structural Elements

The major structural features of Louisiana and adjacent areas are shown in Figure 3-2. Louisiana is found in a geologically active, fault lined basin that makes constant vertical and horizontal adjustments. The discussion that follows identifies some of the major geological classifications, features and trends that are represented in the region.

Gulf Coast Salt Dome Basin

The Early Cretaceous Shelf Margin defines the northern boundary of the Gulf Coast Salt Dome Basin (Figure 3-2; Salvador 1991; Saucier 1994; Spearing 1995). As discussed previously, the Louann Salt lies near the base of the 10-or-more mile-thick sequence of sedimentary deposits. This bed of pure salt, which accumulated in an inland-sea during the middle Jurassic period, was originally deposited to a thickness of about 13,000 ft. The salt bed is the mother bed of the salt domes within the basin. The domes of coastal Louisiana are actually the northern part of a broad zone extending under much of the northern and western Gulf of Mexico.

Onshore and beneath the continental shelf the domes are mostly isolated diapiric structures. They are typically mushroom-shaped columns which may be from 2 to 20 miles in diameter. A few have surface expression, but the tops of most are situated from 2,000 to 10,000 ft below the surface. In the deeper offshore areas the salt diapirs are mostly tongue-like masses squeezed out toward the deep gulf along the continental margin. Salt spines in some domes are known to be still rising. Movement is episodic and at an almost imperceptible rate in the probable order of 0.01 in/yr or less (Saucier 1994).

Collapse Features

The domes occur in waves or bands, which are related to deep-seated basement topography (Adams 1997). Between some bands, where salt development has been most intense, the Louann Salt bed has been reduced in thickness, causing collapse of overlying beds (Seglund 1974). These depletion areas result in distinctive circular fault patterns (Figure 3-8). Subsurface faults in the Active Mississippi River Delta area exhibit the characteristic circular pattern of a collapse feature. This delta feature coincides with an area of intensive sediment loading associated with the Balize Delta lobe, a depositional event that occurred during the last 1,000 years (Frazier 1967). This apparent relationship between sediment loading and faulting raises a question of cause and effect. Does the circular fault pattern in the Balize Delta lobe represent a collapse feature over a salt depletion area that was filled by active delta deposition, or does the circular fault system represent vertical movement around an area of intensive sediment loading? These collapse areas are large and scattered across the coast, some coinciding with areas where modern subsidence and erosion rates are high.

South Louisiana Fault Systems

The effects of fault movement on stream patterns and landforms have long been a topic of interest to students of Louisiana geology. Harold N. Fisk (1944) illustrated a pattern of northwest-southeast and northeast-southwest trending faults, fractures, and alignments of streams and water bodies that criss-cross the Mississippi Valley and Deltaic Plain. Ellis Krinitzsky (1950) studied this pattern and concluded that it was related to a shift in the position of the equatorial bulge, which in turn resulted from a shift in the angle or position of the Earth’s rotational axis. Saucier (1994) discussed the theory and concluded that more detailed studies have failed to verify fault movement on many of the alignments and therefore largely discarded the Fisk-Krinitzsky hypothesis. However, it should be pointed out that fractures and lateral movement faults are difficult to identify on well logs and seismic records. Such features, which are more subtle, may be defined on the basis of surface expression and/or relationships with other structural features or trends, and despite being difficult to detect, may constitute important structural elements.

Fisk (1994) also believed that in many instances faults influenced the locations and trends of Mississippi River bends, distributary channel alignments and nodes of distributary branching. He postulated, for example, that the Mississippi River bend called English

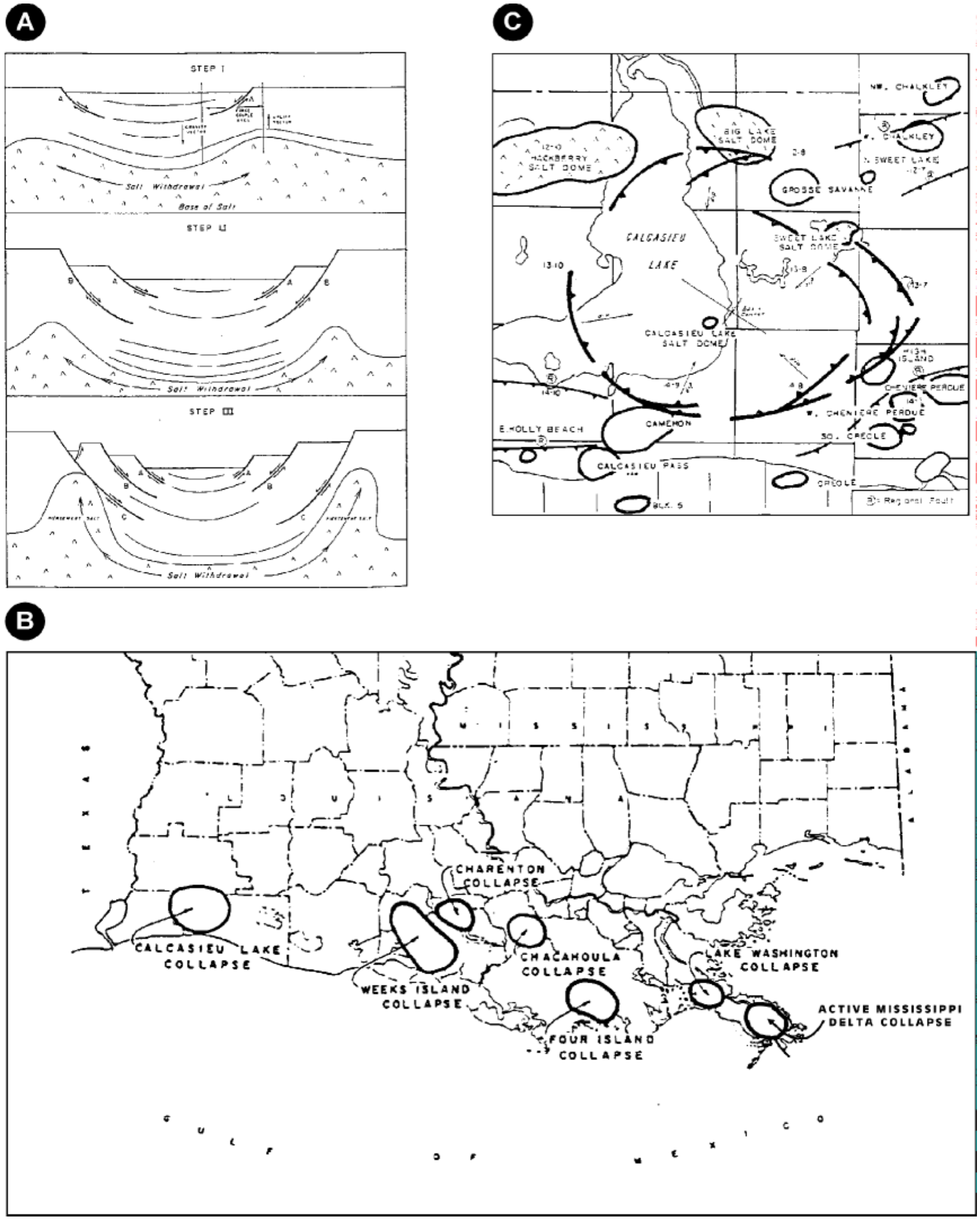


Figure 3-8. Salt depletion areas.

A. Schematic diagram of formation of collapse-fault system over salt-withdrawal basin.

B. Map showing location of selected collapse-fault systems in coastal Louisiana.

C. Calcasieu Lake collapse-fault system. High historic land loss around the lake occurs over the collapse area. (Maps and diagrams adapted from Seglund, 1974. The active Mississippi Delta collapse was added by the author.

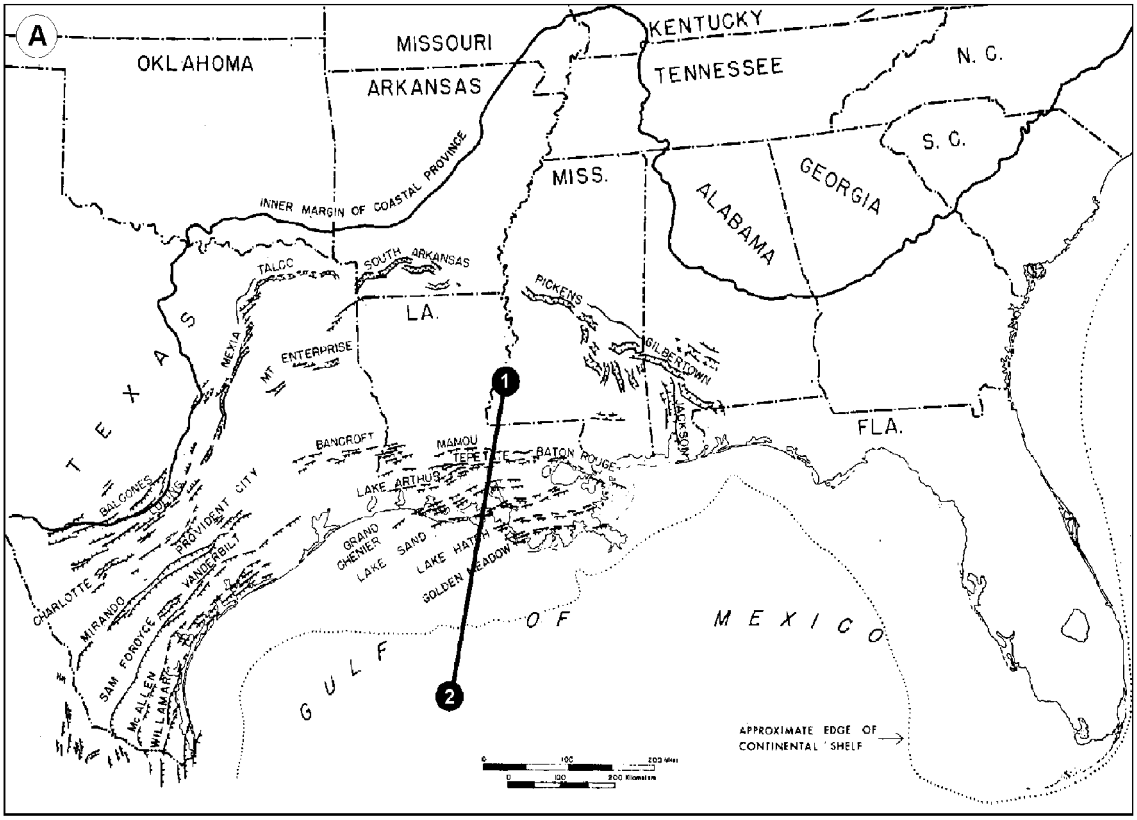
Turn, just downstream from New Orleans, lies within a graben. Work by Saucier (1994), Kolb et al. (1975), and others have verified such relationships. In a comprehensive study of the geology of the Deltaic Plain, Kolb and van Lopik (1958) cited abrupt narrowing of natural levee ridges and sharp changes in the Mississippi River south of New Orleans as probable indications of fault effects on landforms. Watson has demonstrated the relationships between faults, subsidence and uplift and changes in stream morphology and hydrology along the Mississippi River (Watson 1982). Fisk has been proven to be correct in his hypothesis that major fractures and both near surface and deeper subsurface fault movements are fundamental driving process for delta system dynamics, configuration and change.

Growth Faults

Grover Murray (1960) identified major structural features in Louisiana and adjacent areas, including fault trends (Figure 3-9). Growth faults in south Louisiana occur along the margin of, and within the Gulf Coast Salt Dome Basin. Murray (1960) identified eight major fault systems in south Louisiana: the 1) Mamou, 2) Tepetate-Baton Rouge, 3) Lake Arthur, 4) Scott, 5) Grand Chenier, 6) Lake Sand, 7) Lake Hatch and 8) Golden Meadow. These occur within zones of limited width and extent. Within each zone there is typically a series of en echelon normal faults. The zones are generally subparallel to the strike of the younger coastal strata, are about 8 to 20 miles apart and can be traced for distances of 100 miles or more. Displacements on individual faults are typically, but not always, normal faults, taking place contemporaneously with deposition and vertical displacement and generally increasing with depth. The faults are steeply dipping (50 to 60 degrees) in the upper near-surface but flatten out with depth. Displacement in the deeper sections may be in the order of several thousand feet. The earliest dates of fault movement are older inland (Paleocene and Eocene) and become progressively younger toward the coast (Miocene).

Gravity Tectonics Model: South Louisiana Slumping into the Gulf

Models developed by petroleum geologists show delta thickening on the basin side of major fault zones (Galloway 1986; Adams 1997; and others). Richard L. Adams (1997) relates these growth faults to basement topography of the Salt Basin. Using gravity and magnetic mapping, Adams prepared a "basement pseudo-structure map," which he used to develop a model (Figure 3-10). From the model Adams concluded that, "...basement horsts, grabens, and counter-rotated half-grabens influence the location of major growth fault regimes and production trends. Growth faults are preferentially found over the leading edge of high basement blocks, and major fields are often associated with these growth faults" (Adams 1997:6). He also states that, "...growth fault locations are controlled by basement structures and salt movements forming inherent zones of weakness," and that, "...these growth faults are usually found near the shelf break and are most active near the mouths of rivers where the thickest sands are deposited in the delta front... ." Adams further concludes, "...since most salt domes are formed near the corners



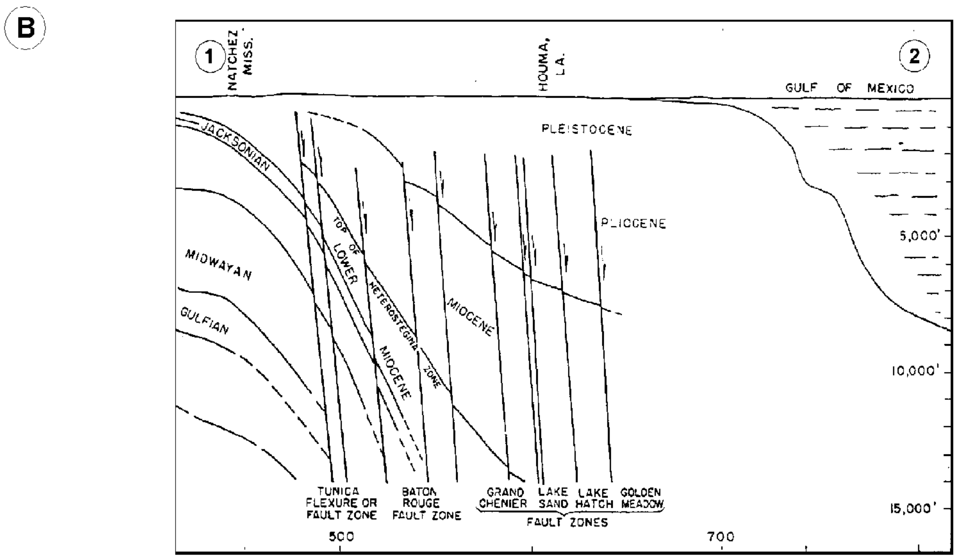


Figure 3-9. Principal fault systems of Gulf Coastal Province.

A. Map showing faults and other structural features.

B. North-South regional cross-section though southern Louisiana showing major stratigraphic units and fault zones. This drawing was published in 1960, when there were no wells below 15,000 feet (after Murray 1960).

of basement blocks, the major growth faults are also often associated with salt domes. The growth faults sole out at depth into decollement zones interpreted to be deep water shales (i.e. maximum flooding surfaces or condensed sections) or remobilized salt."

The sedimentary rocks, which have accumulated on the continental margin are subject to "gravity tectonics," one manifestation of which is a system of growth faults, between which are blocks that slump down and seaward into the Gulf (Figure 3-11; Winker 1982; Galloway 1986). These faults, many of which underlie the Deltaic Plain, remain active for long periods of time.

"Extension and faulting is triggered by gravitational sliding and spreading" (Galloway 1986:123). The fault bound blocks characteristically rotate and tilt as they slump down the fault planes. The surfaces on the inland sides of the blocks are reduced in elevation more than on the seaward sides. Water bodies and areas of high land loss frequently occur in the resulting surface depressions. A contemporary example of the formation of a growth fault zone is found in the Active Mississippi Delta where the Birdfoot Delta has extended beyond the continental shelf edge and is building a thick sedimentary platform into deep water. Here a zone of diaipiric clay structures (mud lumps), faults, and

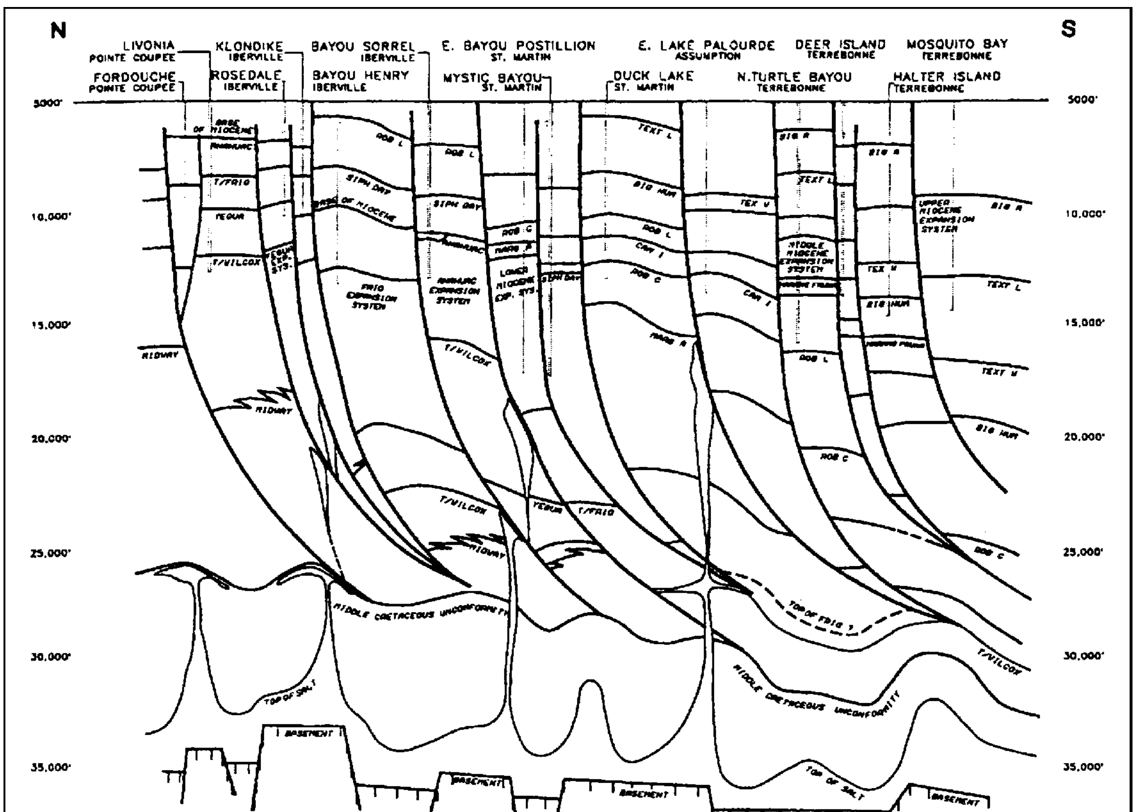


Figure 3-10. Cross-section through Gulf Coast Salt Dome Basin showing successively younger growth fault systems from north to south. Section also shows inferred basement-salt-decollement surface relationships (after Adams 1997).

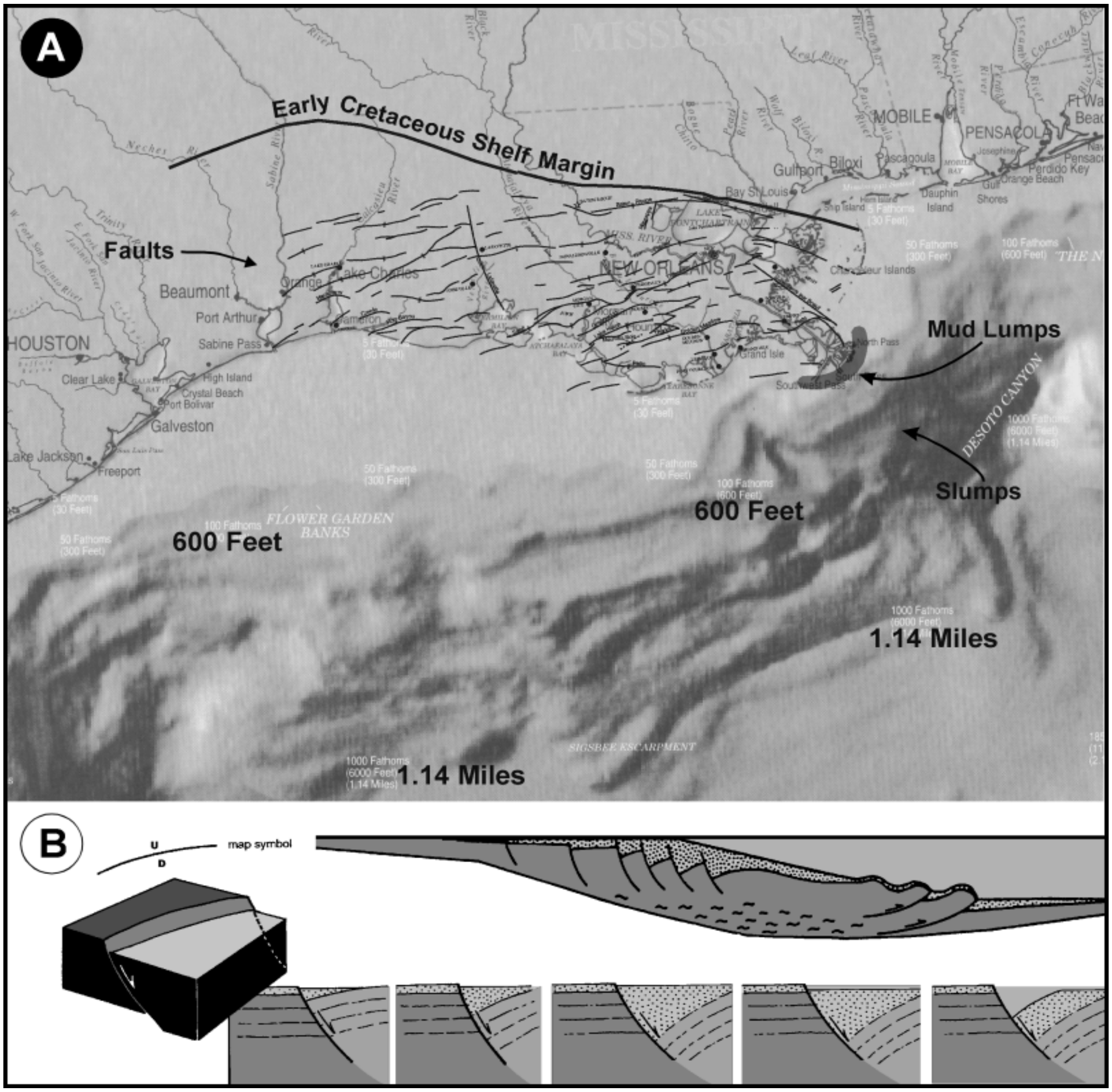


Figure 3-11. Continental margin slumping in south Louisiana.

A. Growth faults indicate lines of instability. Faults are progressively younger in a seaward direction.

B. Stress and strain domains of a prograding clastic continental margin. Diagrammatic cross-section illustrates continental margin gravity slumping model (cross-section after Winker 1982).

massive gravity slumps have developed along the sloping delta front (Figure 3-12). (Morgan et al. 1968; Gagliano and van Beek 1973; Coleman et al. 1980).

The Wallace Fault and Salt Dome Map

In 1966 the Gulf Coast Association of Geological Societies published the "Fault and Salt Map of South Louisiana." The map was compiled by W. E. Wallace, who listed himself as editor, and was the then most current

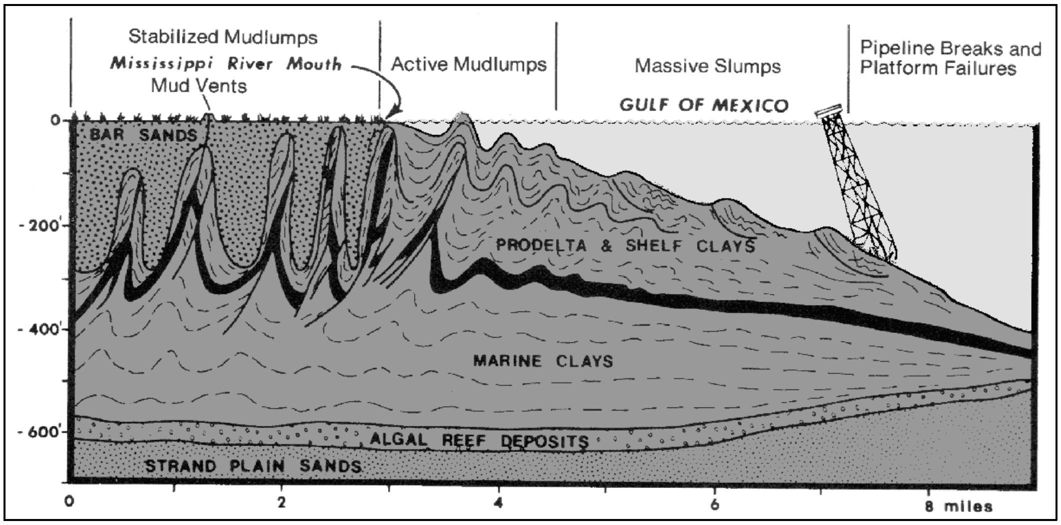


Figure 3-12. A cross-section in the vicinity of South Pass illustrates the manner in which relatively dense river mouth deposits on unstable clays initiate mudlump folding, thrust faulting and massive sea bottom slumps. Vertical displacements along faults of 350-ft or more have been documented. Major fault movement and slumping occur episodically and almost instantaneously (after Gagliano and van Beek 1973).

version of a series commenced by Wallace in 1943. This remarkable map resulted from the compilation of subsurface data from oil and gas fields scattered across south Louisiana, and remains one of the best sources of such data. The original map was at a scale of 1 inch to 4 miles. At the time the map was developed, most of the data were above 10,000 ft; data below 15,000 ft were sparse. The fault traces are probably not corrected to the land surface (map legend and text do not indicate the datum to which the traces are projected). The data points and lines from which the faults are drawn are concentrated around known oil and gas fields. The Wallace salt and fault map takes on new meaning when interpreted in reference to the gravity tectonics model.

An adaptation of the Wallace map showing faults and salt domes in south central Louisiana is shown in Figure 3-13, and a classification of fault patterns identified on the Wallace map is shown in Figure 3-14. The Wallace map illustrates the intimate relationship between fault zones and salt domes. The domes occur in alignments along the major fault zones. These rows of domes could be barriers to the slumping process, however, additional research is needed to determine if this is the case. Another possibility is that slump blocks displace the domes, and/or slumping material moves through gaps, over the tops of and in between the domes (see Figure 3-13).

Major Fault Systems

Using the Wallace map as a primary source, a fault trend map was developed for the purpose of this study (Figure 3-15). This map connects discontinuous subsurface fault traces into trends. The major fault systems are punctuated by strings of salt domes. The domes result in distinctive radial fault patterns around

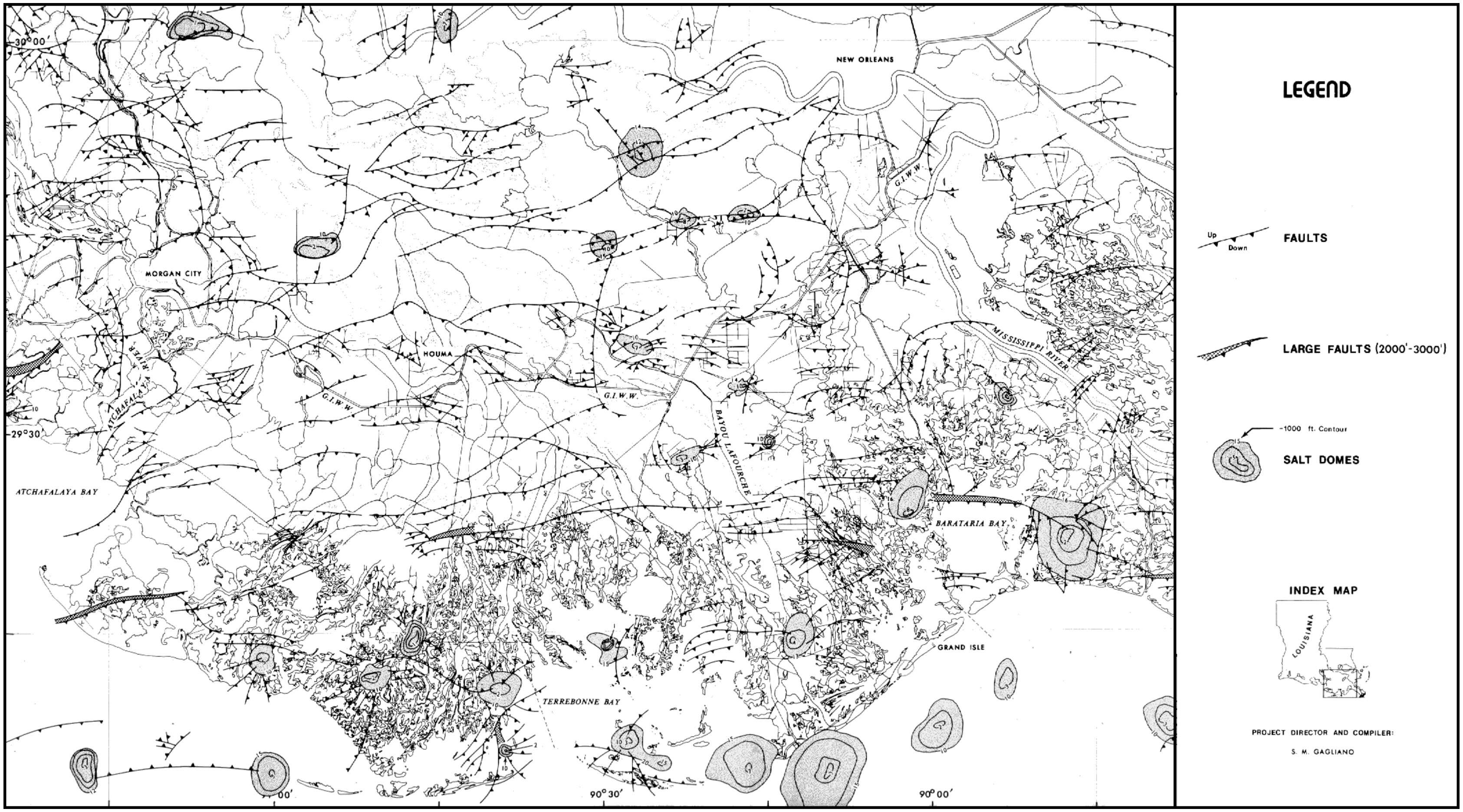


Figure 3-13. Excerpt from the 1966 Wallace Salt Dome and Fault map (adapted by Gagliano et al. 1972).

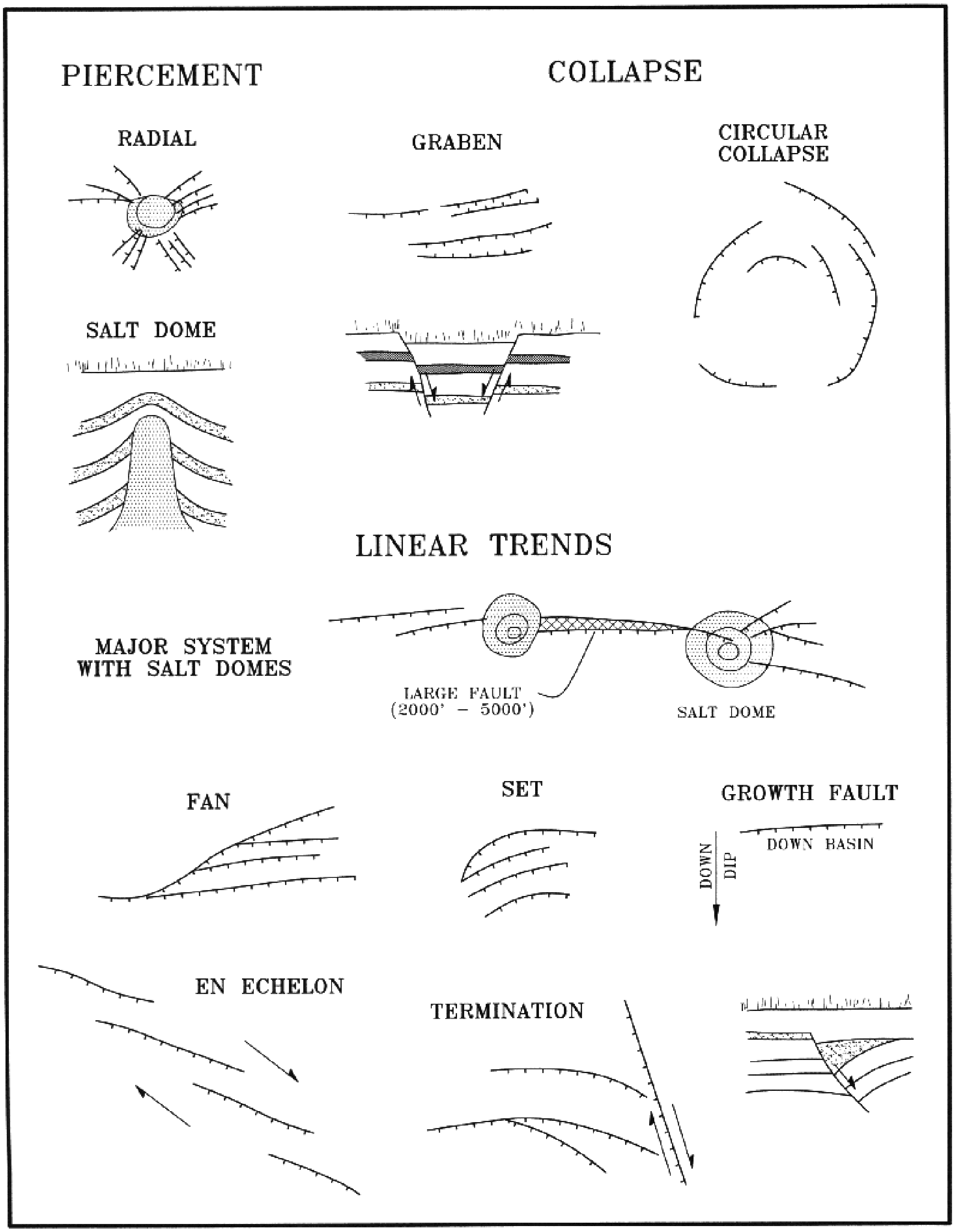


Figure 3-14. Fault patterns and types identified on the Wallace map.

their periphery. Shorter, apparently minor faults are not shown. The major fault systems and alignments are grouped into four categories: Basin Margin Fault Systems; SW-NE Fault Systems and Alignments; NW - SE Alignments or Shear Faults; and, E-W Growth Fault Systems. A discussion of the fault systems that are the most relevant to the study area follows.

Basin Margin Fault Systems

These fault systems are located along the Early Cretaceous Shelf Margin, which defines the northern extent of the Gulf Coast Salt Dome Basin. They include the Bancroft-Mamou fault systems, which extend westward from Baton Rouge across Louisiana and into Texas, and the Baton Rouge fault system.

One of the most prominent fault zones identified by Grover Murray (1960) is the Tepetate-Baton Rouge fault zone, which is referred to in this paper as the Baton Rouge Fault System. This system, extending for more than 200 miles from west of the Mississippi River to the mouth of the Pearl River, has been the topic of a number of studies. Faults in this system are marked by topographic escarpments and displacements of relict late Pleistocene stream scars on the Pleistocene Terrace surface in the Baton Rouge area (Durham and Peeples 1956; Durham 1963). Rolland (1981) also reported cracks and displacements of roads and buildings along this fault in

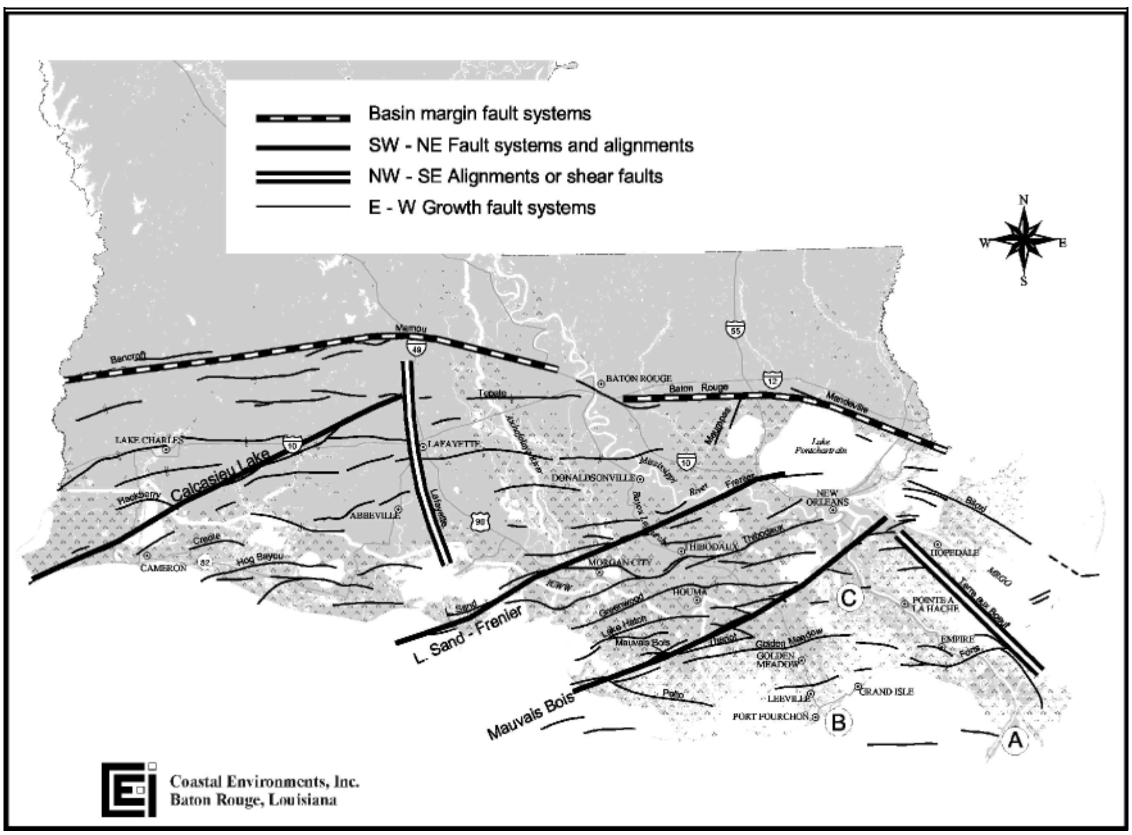


Figure 3-15. Major fault trends of south Louisiana (trends adapted from Wallace 1957).

the Baton Rouge area (average displacement of 2.5 ft/century). Roger Saucier (1963) related geomorphic features on the north shore of Lake Pontchartrain to this fault system and traced the fault into the lake.

Highway and railroad bridges built across Lake Pontchartrain cross faults of the Baton Rouge system (Figure 3-16). Surface offsets of bridge structures caused by fault movement, measured to be from 0.83 to 3.33 ft/century at various bridge locations, have been documented (Lopez, 1991; Lopez et al. 1997). There has also been "minor apparent earthquake activity" in the region associated with the Baton Rouge fault system (Stover, et al. 1987; Lopez 1991; Lopez et al. 1997). The pattern of faults in this system in the eastern end of Lake Pontchartrain is en echelon, indicating shearing (Lopez et al. 1997), with the southern block moving east in reference to the northern block. Individual faults in this system have been identified in the subsurface on subbottom and high-resolution seismic profiles (Kolb et al. 1975: Lopez et al. 1997).

Fault traces in this system coincide with what E. G. Anderson (1979) referred to as the "inferred edge, Mesozoic shelf and Ouachita system." Spearing (1995) calls this the "Early Cretaceous Shelf Margin." This fault system is apparently deep seated and, at least in part, is a line of delineation between areas of uplift and subsidence. Fisk called this a "hinge line"; the fulcrum of isostatic adjustment to crustal loading. Landward of the hinge line the land is stable or rising and seaward of it the land is sinking. Figure 3-4 shows regional patterns of uplift and subsidence north and south of the hingeline faults, as determined from sequential survey of benchmarks (Holdahl and Morrison 1974; Watson 1982).

Saucier (1994), in a synthesis of structural elements in the Mississippi River Valley, includes the Baton Rouge Fault Zone with the South Louisiana growth faults. He states that, "several lines of evidence suggest that most of the fault zones have had some noticeable but geomorphologically unimportant effect on near-surface deposits of Pleistocene age." Only the Baton Rouge Fault Zone has had major geomorphic impact and is known to be currently active. Saucier (1994) considers the Baton Rouge fault zone to be second only to the Reelfoot Rift, (located in northeast Arkansas, southeastern Missouri and northwestern Tennessee and which was the locus of the New Madrid earthquake of 1811-1812), in the entire Lower Mississippi River Valley area in terms of the extent and recentness of Quaternary displacements.

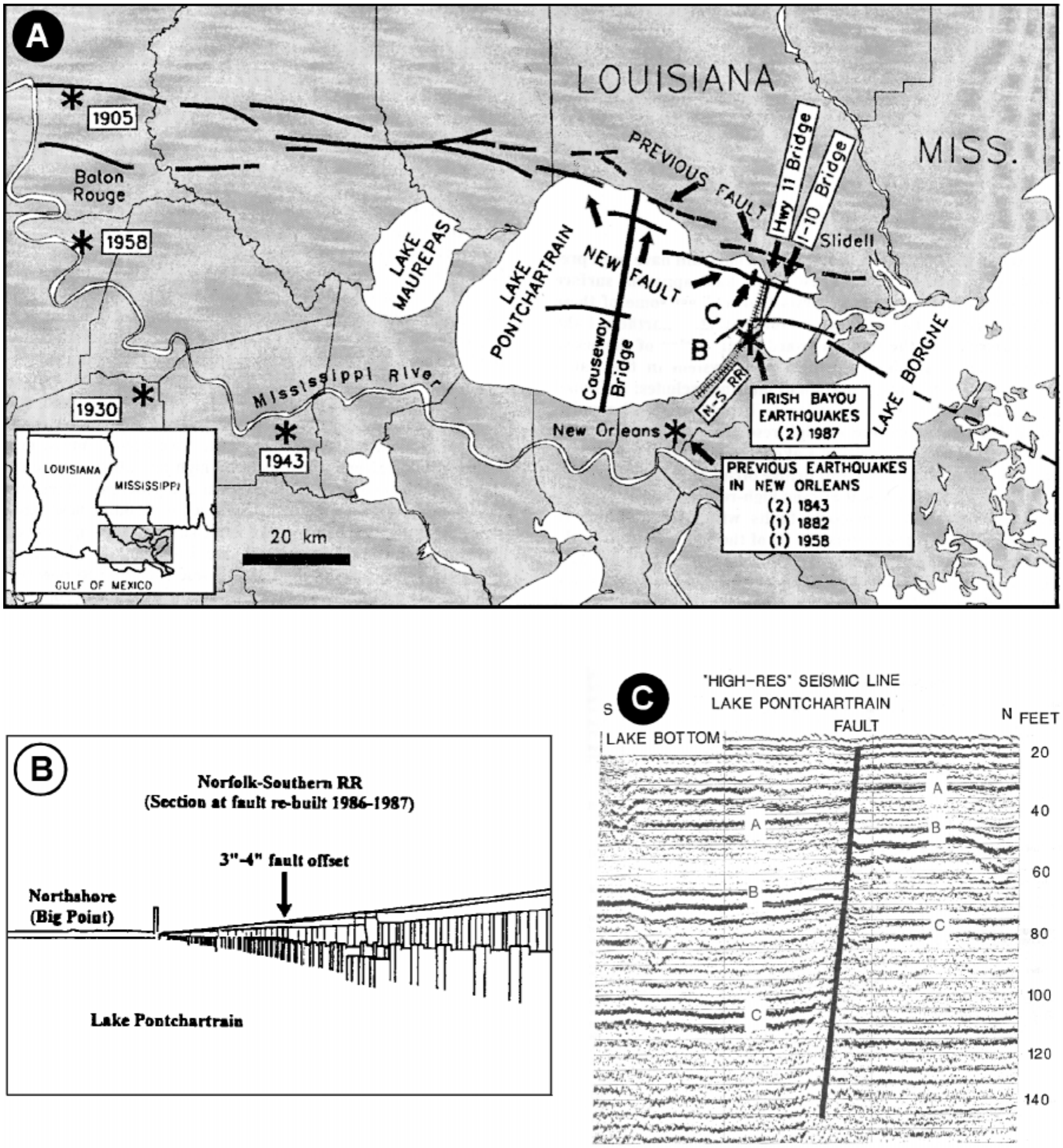


Figure 3-16. Baton Rouge fault system.

A. Fault traces from the Mississippi River to Lake Borgne. Displacements have been measured on bridges shown. Reported earthquake occurrences are also shown.

B. Drawing showing fault offset in re-built section of Norfolk-Southern Railroad bridge in eastern Lake Pontchartrain.

C. Displacement of beds by south dipping normal fault as recorded on U.S.G.S. high resolution seismic line from eastern Lake Pontchartrain. Abrupt terminations of shallow reflectors indicate that the fault is within 10 ft of the lake bottom (after Lopez et al. 1997).

SW-NE Fault Systems and Alignments

Three parallel fault systems cut diagonally across south Louisiana: the Calcasieu Lake Fault Zone, the Lake Sand-Frenier Alignment, and the Mauvais Bois Alignment (Figure 3-15).

The Calcasieu Lake Fault System is a long straight trend of faults cutting across the Uplands and Calcasieu Lake and intersecting the Gulf of Mexico shore in the Holly Beach area.

The Lake Sand-Frenier Alignment is a strong trend of faults, some of which branch or fan toward the southwest. The trend terminates at its northeast end under Lake Pontchartrain where it runs into northwest-southeast aligned systems.

The Mauvais Bois Alignment is well defined at its southwest end by faults under Point au Fer. The Mauvais Bois ridge, a prominent landform, follows the alignment. Toward the northeast it cuts across the ends of a series of east-west growth faults. The alignment terminates under Lake Borgne, where it runs into northwest-southeast aligned systems.

NW - SE Alignments or Shear Faults

Fault patterns, variations in subsidence rates, and other data examined during the course of this study indicate a regionally important, apparently deep seated fault system herein called the Terre aux Boeuf Fault System (Figure 3-15). In the Lake Borgne area, patterns of splinter fault fans at the eastern end of growth-faults terminate at the Terre aux Boeuf fault. The pattern suggests shearing, with the southern block moving east in reference to the northern block. In the active Mississippi River delta, this fault system merges with a circular fault pattern around an apparent collapse feature. The Lafayette Fault System is another apparently deep-seated fracture or fault system that brackets the Deltaic Plain on the west. It is defined by splinter fault fans on growth faults, which terminate at the Lafayette Fault System. No published references to these two postulated fault systems have been found in the literature.

E-W Growth Fault Systems

This is the predominant trend of growth faults in the Gulf Coast Salt Dome Basin. A series of long and continuous fault systems extend across the southern part of the state from Texas to the east and terminate at the Biloxi and Tere aux Boeuf Fault Systems.

The Golden Meadow-Theriot-Forts Fault System is one of the most continuous and distinctive. From the standpoint of coastal erosion and deterioration, it is the most important fault system in the region. The Golden Meadow Fault System, as depicted by Murray (1960; Figure 3-9) would include the Theriot and Forts faults as defined in this paper. The Golden Meadow trend is clearly identified on the Wallace map. Onshore it extends from Point au Fer to Bayou Lafourche, where it branches to the east. Wallace classifies a segment of the system (at the Gulf of Mexico shore and under Point au Fer) as a major fault (2,000 to 5,000 ft displacement). Immediately south of the fault, where it crosses Bayou Lafourche, there is a graben structure. To the east, two salt domes fall within the alignment in the

Barataria Bay area, and the area between the two domes is classified by Wallace as a major fault. It is also interesting to note that the fault cuts into the Lake Washington salt dome. East of this dome, the fault trend continues as the Forts Fault. It crosses the Mississippi River and probably influenced the configuration of the Forts Bend, a sharp bend in the river. Wallace also classifies this as a major fault in the area where it crosses the Mississippi River. It is classified as a major fault along more of its length than any other south Louisiana fault. The Theriot fault is north of, and trends subparallel to, the Golden Meadow fault.

Surface traces of faults in these three systems have become increasingly evident on aerial photographs and images in recent decades. For example, the trend is not evident on 1955 Ammann International Corporation aerial photographs, but is clearly visible on the November 1990 Landsat TM Satellite Imagery, bands 4, 5 and 3. Traces are defined by linear contacts between marsh and open ponds and broken marsh patterns (land loss and marsh deterioration) on the down-thrown block. Some traces are parallel to, but do not coincide with, fault traces as shown on the Wallace map. This is due to the fact that Wallace used subsurface data, which was not necessarily projected to a surface datum.

The Lake Pelto Fault System is identified from the Wallace map. It contains seven salt domes, including the Lake Washington dome, into which it anchors at its eastern end and where it merges with the Golden Meadow-Theriot-Forts Fault System. The system exhibits reverse faulting and sets of fault traces along some segments. This system is less important than the Golden Meadow system. Land loss and marsh deterioration patterns along the south side of the fault trace suggest rotation of the down-dropped block.

The Eugene Island Fault System is defined primarily by a string of nine or more salt domes extending generally parallel to the Gulf shore, partially offshore and partially onshore. Defined faults between the domes tend to be reverse faults.

Sinking Land and Rising Sea

If fault bound blocks along the coast are sinking and are being inundated by the sea it becomes important to determine the rate of change between the elevation of the land and the level of the sea, the combined effect of which is relative sea level rise.

As shown in Figure 3-17, the task of determining rates of relative sea level rise is complicated by the large number of process variables that contribute to vertical change. The land elevation on the blocks, the rate of sinking of the land surface (subsidence) and the rate of rise of the sea (eustatic sea level rise) are primary factors. To further complicate the task, subsidence has a number of components, the two principal of which are compaction of poorly consolidated sediments (compactional subsidence) and geosyncline down-warping, one expression of which is fault movement (fault induced subsidence).

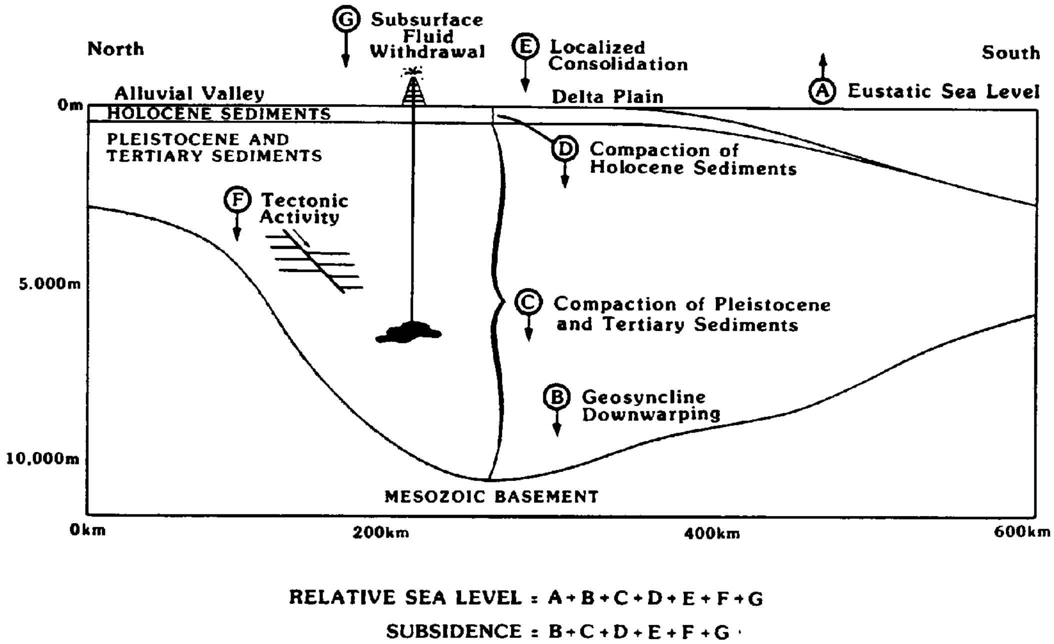


Figure 3-17. Factors contributing to relative sea level rise and subsidence in the Louisiana coastal region (after Penland et al. 1989:8; adapted from Kolb and Van Lopik 1958:95).

In their study of the geology of the Deltaic Plain, Kolb and van Lopik (1958) considered tectonic activity as a component of relative sea level rise (total subsidence). They noted that "most movement probably occurs in spasms, and average rates of movement, which would allow a prediction of the tectonic portion of total subsidence, would be very difficult to establish". A further discussion of the components of relative sea level rise and methods and results of measurements follows.

Rising Sea

The current average eustatic sea level rise rate is 0.49 ft/century. Until recently the sea level rise rate has been low, but the rate is increasing. The best estimate of sea level rise experts have provided is that the level of the world's oceans will increase 0.67 ft over the next 50 years and 1.53 ft during the next century (Wigley and Raper 1992).

Compaction

Compaction is related to the type and thickness of Holocene Period (modern) sediment that has accumulated on top of the weathered surface of the Pleistocene formation during the past 7,500 years. This buried top of the Pleistocene is a continuation of the upland surface, and prior to burial it was exposed by low sea level stands during the last ice age. A prism of modern sedimentary deposits (sand, silt, clay, peat beds and shell beds) accumulated above the weathered surface during the rise and the relative "still-stand" of the sea that followed glacial melting. The poorly consolidated clay and peat beds had higher water content at the time of deposition. After burial, they compacted and lost volume.

This compaction process, which still continues, contributes to subsidence. Where the Holocene deposits are thick, compaction and subsidence rates are higher.

Ramsey and Moslow (1987) attribute 80% of the observed relative sea level rise in coastal Louisiana to "compactional subsidence." Del Britsch (personal communication) has compiled data from innumerable borings in the coastal zone and from analysis of this data has concluded that subsidence rates are directly related to thickness of the Holocene deposits, and compaction thereof. Kuecher (1994) has studied relationships between land loss, thickness and characteristics of Holocene sediment, subsidence rates and faulting and has also concluded that compaction is a primary cause of subsidence. Most researchers have recognized that fault induced subsidence is a contributing factor, but the consensus has been that the majority of relative sea level rise can be attributed to compactional subsidence.

Methods of Measuring Rates of Relative Sea Level Rise and Subsidence

Data for measuring relative sea level rise and subsidence comes from a number of sources. These include: 1) change in elevation of surfaces upon which human structures (prehistoric Indian village sites, lighthouses, forts, roads, etc.) were built, 2) radiometric dating of buried peat deposits, 3) tidal gage records, and 4) sequential land surveying. The latter technique provides the best measure of present day subsidence rates.

Tide Gage Data

Shea Penland, Tom F. Moslow, Karen E. Ramsey, and their colleagues, in an important series of studies and papers, have grappled with the problems related to causes, effects, and rates of relative sea level rise in south Louisiana. (Ramsey and Moslow 1987; Penland et al. 1988; Penland et al. 1989; Ramsey and Penland 1989; Nakashima and Louden 1989; Penland and Ramsey 1990). The team conducted a comprehensive study of historical water level records from 78 tide gage stations and 342 line miles of geodetic leveling data from south Louisiana and adjacent areas of the northern Gulf of Mexico region for the period 1942-1982.

Figure 3-18 shows a typical water level time series from the Grand Isle gage, as analyzed by the Penland et al. team (1989). Water levels generally "climb the gage" through time. The records from each state were analyzed to determine the rise rate for the entire period of record as well as for two twenty year time epochs. Epoch one included the period 1942 - 1962 and Epoch two the period 1962 - 1982. Records from many south Louisiana stations also showed a distinctive increase in rate of rise.

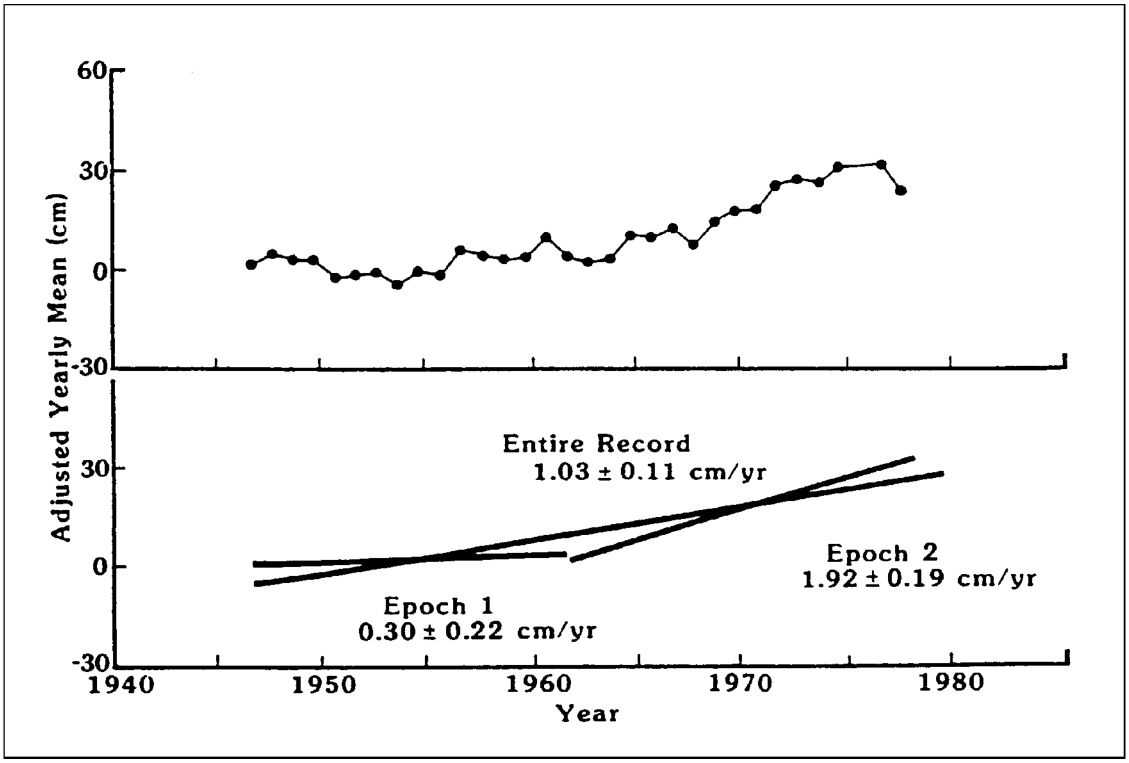


Figure 3-18. Water level time series from National Ocean Survey, Grand Isle, La. tide gage between 1947 and 1978. A change in the rate of rise between the period 1947 - 1962 (Epoch 1), and the period 1962 - 1978 (Epoch 2) has been found on many of the records from gages in south Louisiana (after Penland et al. 1989:24).

Gage records from the northern Gulf of Mexico, from Cameron, La to Cedar Key, Fl, were analyzed. Most records indicated a relative rise in the level of the sea through time, but as shown in Figure 3-19, the rates of relative rise varied from east to west, with the lowest rates being along the coasts of Florida-Mississippi and the highest being along the Deltaic Plain of Louisiana. Land leveling data indicated that the Pensacola location has remained relatively stable and for this reason the rate of relative rise at Pensacola was selected as the best measure of eustatic sea level change for the northern Gulf of Mexico region (see Figure 3-3). Thus, the rate of 0.75 ft/century, as determined from the Pensacola record, was used by the Penland et al. team as a correction factor in adjusting relative sea level rise rates to subsidence rates and vise versa. This same correction method and factor are also used in this paper.

As mentioned above, many of the tide gage records from coastal Louisiana also exhibit a distinctive increase in rate of relative rise, beginning in about 1962 (Figures 3-18 and 3-20). This change is most pronounced in three areas, the South Shore-Little Woods area in the eastern end of Lake Pontchartrain, the Deltaic Plain west of the Mississippi River, and the Mermentau River area in the Chenier Plain. These changes in rate suggest fault movement. Further, they specifically suggest that the rate of movement on faults in the three areas has increased during the 1962-1982 interval.

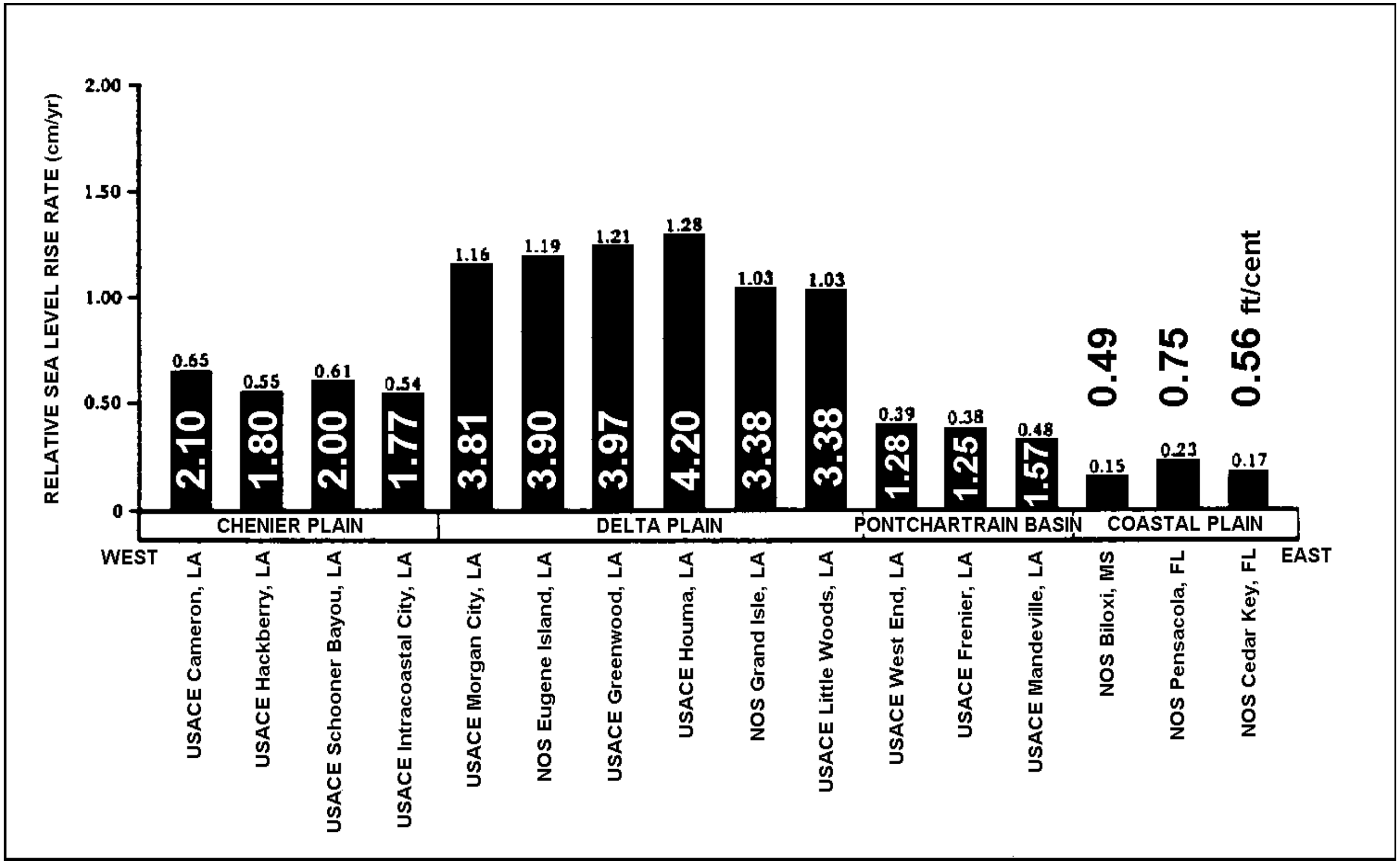


Figure 3-19. Rates of relative sea level rise across the northern Gulf of Mexico region from Cameron, LA to Cedar Key, FL based on records from the National Ocean Survey and U.S. Army Corps of Engineers tide gage stations. The Pensacola, FL gage land location is considered to be stable, and this gage provides a record of eustatic sea level rise in the Northern Gulf Region. The rates of rise of all stations in coastal Louisiana exceed the rate of eustatic rise. The differences are attributed to subsidence (after Penland et al. 1988).

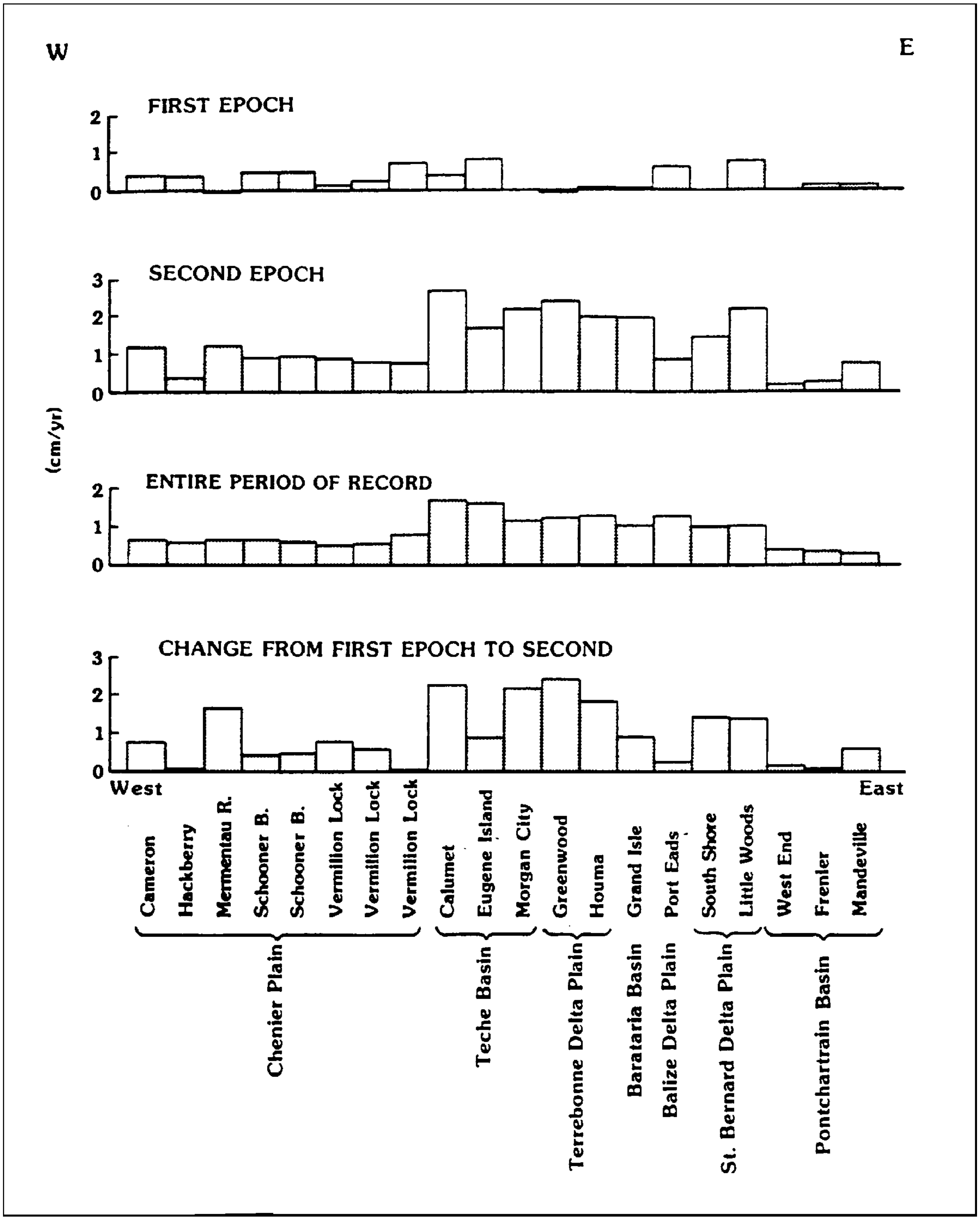


Figure 3-20. Relative sea level rise based on readings from U.S. Army Corps of Engineers tide gage stations in Louisiana. Note change in rate of rise between 1947-1961 (Epoch 1) and 1962-1978 (Epoch 2), (after Penland et al. 1989).

The statewide sea level rise rate was calculated to be 1.148 ft/century for 1942-1962 period and 3.67 ft/century for 1962-1982 period. The relative sea level rise rate for the study area was found to be 3.2 times greater in the second 20-year epoch. Projections of future trends of relative sea level rise were made based on the tide gage records (Figure 3-21).

Ramsey and Moslow (1987) grouped the gage data into seven hydrographic basins. The data show great variation both temporally and spatially throughout coastal Louisiana. Using average values for the entire period of record (1942 through 1982) rates of rise of 3.28 to 3.94 ft/century were found in the areas immediately along the Louisiana coast. Relative sea level rise in the southwest portion of the Deltaic Plain was determined to be 5.91 to 6.23 ft/century. In most cases there was a pronounced decrease in rate landward.

Figure 3-22 depicts a map adapted from Ramsey and Moslow (1987). The map shows a large area of high relative sea level rise rates south of the Theriot-Golden Meadow-Forts fault systems. A local area of high rates occurs along the south shore of the eastern end of Lake Pontchartrain. This is on the down-thrown block of the Baton Rouge Fault System, where movement has been documented by Lopez et al. (1997). Another area of

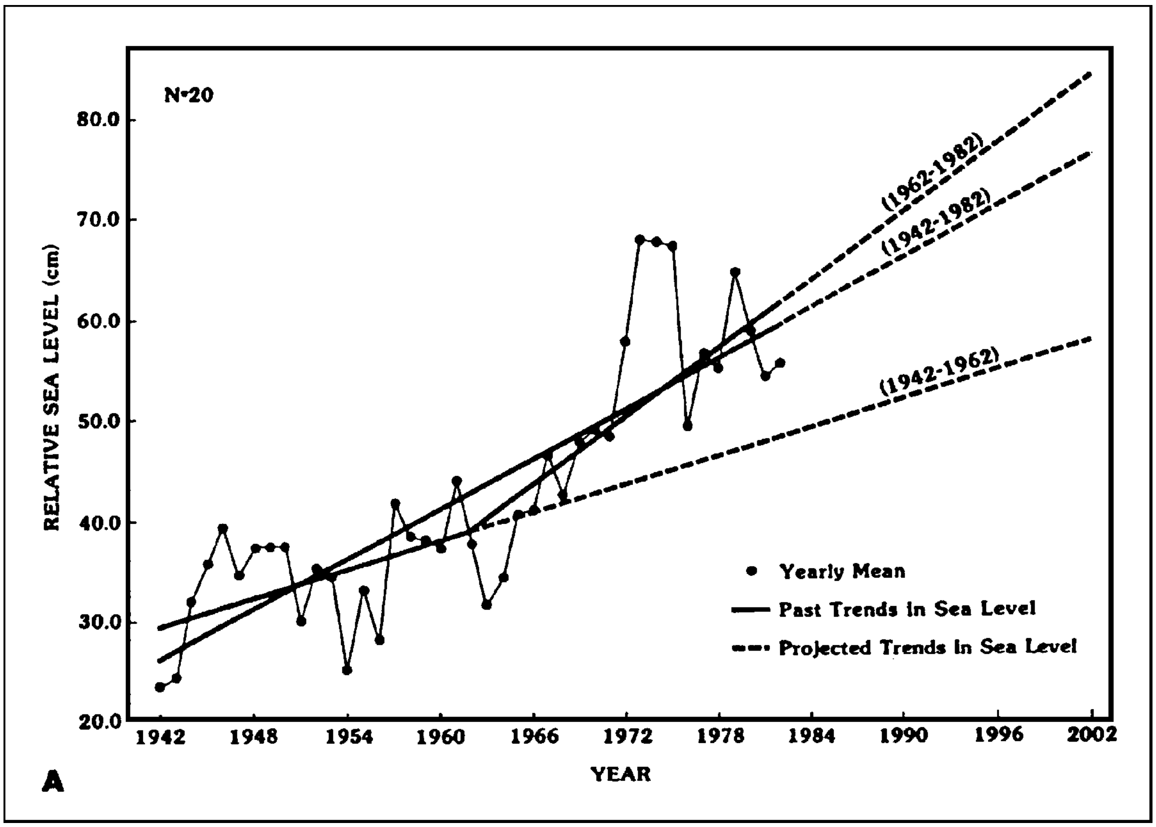


Figure 3-21. Present and future trends of relative sea level rise based on tide gage records from coastal Louisiana (after Ramsey and Moslow 1987).

relatively high rates is found at the mouth of the Mermentau River in the Chenier Plain. This is where the Grand Chenier Fault System reaches the coast.

After subtracting the isostatic rate of rise of 0.75 ft/century, Ramsey and Moslow determined the "compactional subsidence" rate. From this analysis the authors concluded that approximately 80% of the observed relative sea level rise in Louisiana was attributable to compactional subsidence. They also concluded that compaction and loading account for the spatial variation in rate.

The implications of this map are far reaching. Do relative sea level rise rates in the Terrebonne area meet the reality test? The rate of 8.0 ft/century equals two feet of vertical change during twenty years. During the 20 years from 1962 - 1982 did the relative sea level rise rate in the Barataria Basin exceed the rate in the Balize Delta Lobe area, where historically relative sea level rates have been reported to be the highest in the region?

Sequential Land Leveling

Perry C. Howard (in Van Beek et al. 1986) studied subsidence in Plaquemines Parish, which includes the Mississippi River from New Orleans to its mouth. A review of the geological literature

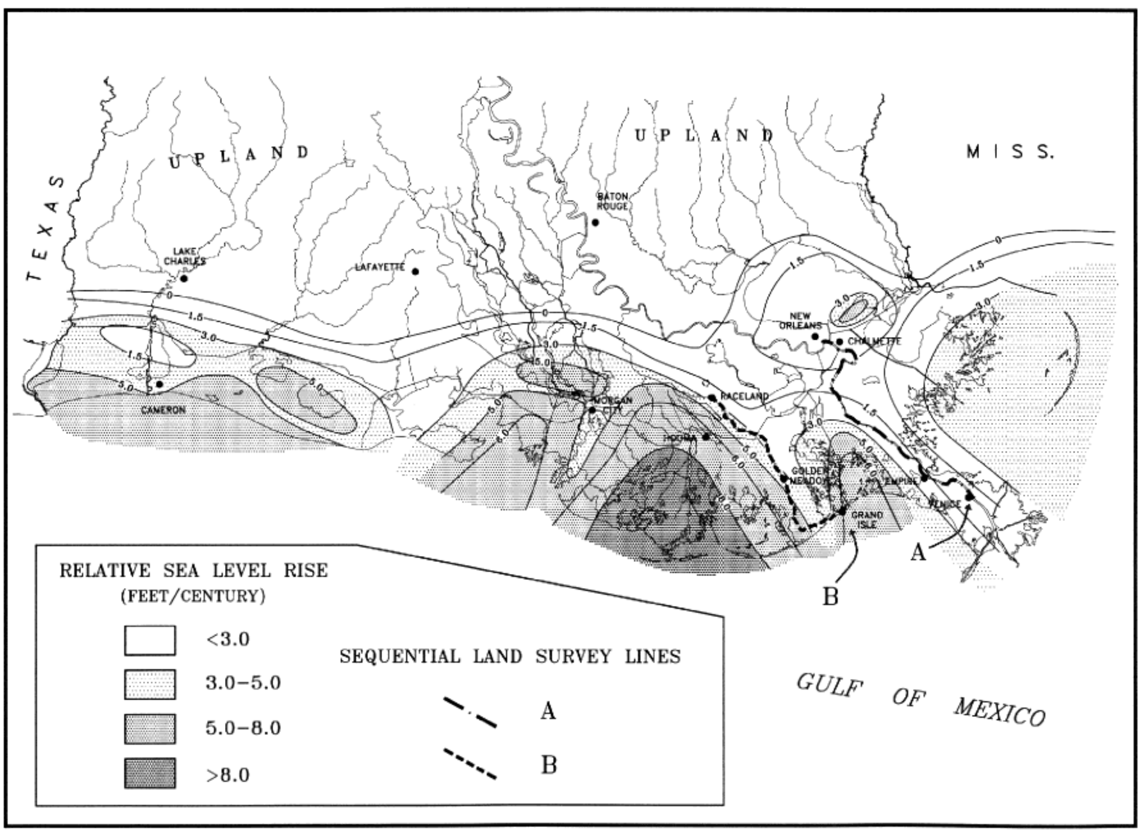


Figure 3-22. Isopleth map of sea level rise rates in coastal Louisiana based on 1962-1982 (Epoch 2) tide gage data (adapted from Ramsey and Moslow 1987). Locations of sequential land leveling lines are also shown. Line A is located along the Mississippi River natural levees (see Figure 3-23). Line B is located along the Bayou Lafourche natural levees (see Figure 3-24).

disclosed subsidence estimates for the Active Mississippi River Delta area ranging from 4 to 14 ft/century. From the published estimates Howard concluded that the minimum value of subsidence is 4 ft/century and the upper maximum is probably about 8 to 10 ft/century. In either case, the maximum subsidence value for the delta exceeds the Ramsey-Moslow rate for the Barataria Basin. It should also be noted that "subsidence" as used by Howard is equivalent to "relative sea level rise" as used herein.

Howard also evaluated data from National Geodetic Survey vertical benchmark surveys along the Mississippi River natural levees between Chalmette, La and Venice, La. The dates of the surveys were 1938, 1946, 1951, 1964, and 1971. Figure 3-23a shows vertical movement between 1938 and 1971 for benchmarks and Figure 3-23b, shows average movement for the period of record. There is an apparent gradual decrease in subsidence towards Venice. The highest rates were found at Braithwaite, with an average rate of 4.0 ft/century, and just north of Phoenix, with an average rate of 4.5 ft/century. The average rate of benchmark movement for the entire section and period of record was determined to be 2.2 ft/century. The National Geodetic Survey data does not include the effect of sea level rise as the benchmark elevations are determined by survey networks that are referenced to stable bench marks well outside of the coastal zone. To determine relative sea level rise, an adjustment must be added for the rate of eustatic rise. Howard added an additional 0.5 ft/century for the rate of sea level rise, and thus concluded that the average rate of relative sea level rise was 2.7 ft/century for the line of section. When an eustatic sea level adjustment of 0.75 ft/century is made the average rate of relative sea level rise for the section is 2.95 ft/century.

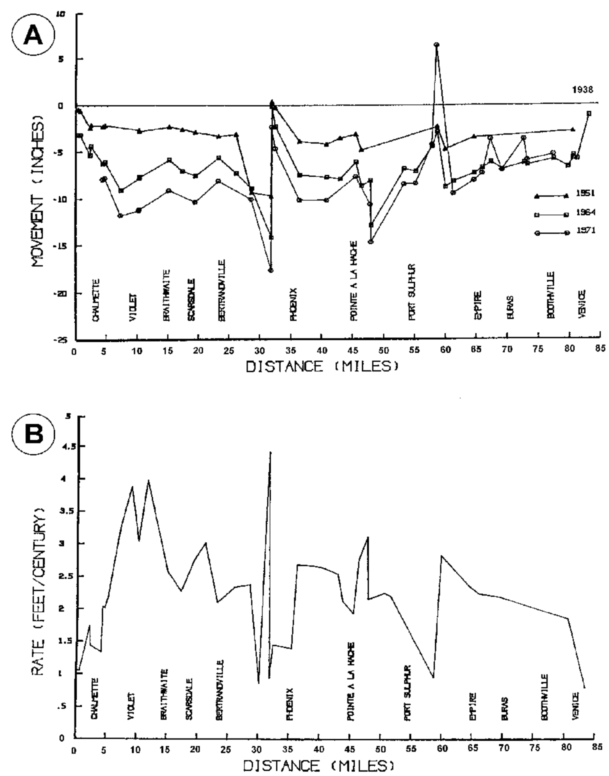


Figure 3-23. Changes in land elevation along Mississippi River natural levees between Chalmette and Venice.

A. Benchmark movement between New Orleans and Venice for period 1938 to 1971.

B. Average movement of individual benchmarks for period 1938 to 1971 (after van Beek et al. 1986).

Ramsey and Moslow (1987) and Penland et al. (1988) also used sequential land leveling data to measure subsidence. The most important traverse that they studied follows the natural levee ridges along Bayou Lafourche (Figure 3-24). In contrast to the section along the Mississippi natural levee ridges south of New Orleans (Figure 3-23), the rates of subsidence down Bayou Lafourche increase toward the coast. Both the Lafourche and the Mississippi section exhibit spikes and valleys in rates. As shown in Figure 3-24b, Kuecher (1994) has compared the location of benchmarks showing spikes along the Lafourche section with locations of the Golden Meadow and Lake Hatch fault traces. He concluded

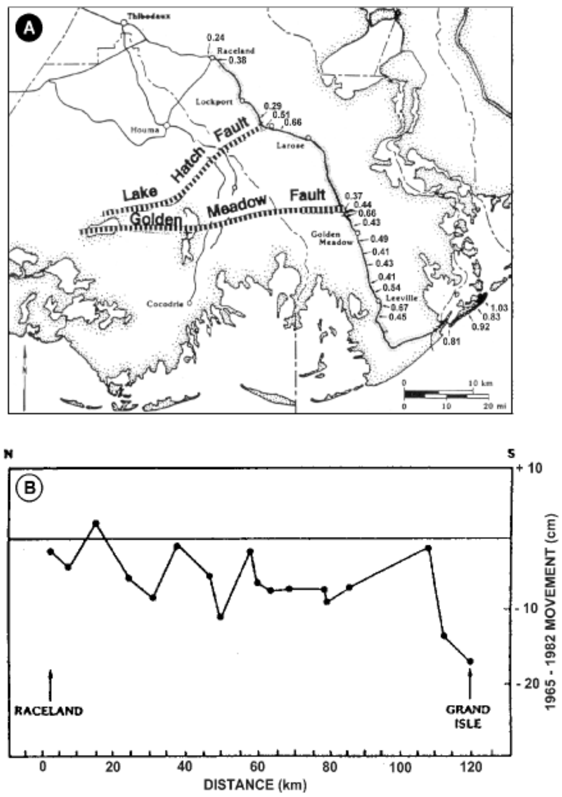


Figure 3-24. Changes in land elevation along Bayou Lafourche natural levees between Raceland and Fourchon, (including the Grand Isle barrier island).

A. Growth fault traces superimposed on subsidence rates (cm/yr). Subsidence rates increase abruptly on downthrown side of fault (after Kuecher 1994, subsidence rates from Penland et al. 1988).

B. Graph showing rates of land movement along Bayou Lafourche (Penland et al. 1988).

that pronounced spikes occur immediately south of the traces.

Buried Peat Deposits

Another important data set comes from radiocarbon dating of buried organic deposits, primarily peat. The advent of radiocarbon dating in the 1950s made it possible for the first time to date geologic features and events. David E. Frazier (1967), working under the direction of H. N. Fisk for the Esso Production Research Company, collected hundreds of samples of buried organic deposits from the Deltaic Plain. These were taken from undisturbed cores and dated at the Esso Production Laboratory. Not only did the dates provide the basis for a more detailed understanding of delta building events, but the dates and other relevant data from the core holes were published for use by other researchers.

Coleman and Smith (1964) used radiocarbon dates of buried peat deposits from south central Louisiana to determine the approximate time that sea level reached its present stand following the end of the last continental glaciation. Using the Coleman and Smith technique and dates and sample data from Frazier's list and other sources, Gagliano and van Beek (1970) plotted radiocarbon dates against depth of burial. The resulting plot shows rates of relative sea level rise for the period 7,200 - 400 years before present (yrs. B.P.). The data indicate that between 7,200 and 4,256 yrs. B.P. the relative sea level rise rate was 0.83 ft/century, and for the interval 4,256 to 400 yrs. B.P. it was 0.35 ft/century. These are average rates for the Deltaic Plain area.

Penland et al. (1988:94-5) plotted age of buried peat against rate of subsidence. They concluded that, "...a comparison of data sets from the youngest (0 - 500 yrs. B.P.) and the oldest (500 - 3,000 yrs. B.P.) portions of the Terrebonne Delta Plain indicates that, if we assume a stable eustatic regime, the rate of compactional subsidence decreases with time after delta-plain abandonment. This decrease occurs because the sediment de-watering that begins upon abandonment diminishes with time."

Del Britsch, a geologist with the USACE New Orleans District, has studied this relationship. He has a comprehensive compilation of radiocarbon dates of buried organic deposits and has used them to develop maps of the rates of subsidence in coastal Louisiana (Britsch personal communication).

H. Roberts (1995) used radiometric dating of buried organic deposits from a selection of core holes to determine subsidence rates across the central Louisiana coastal plain. The data show rates of 0.3 ft/century for a shallow area of the Holocene (recent) sediment fill over the Pleistocene surface increasing to 1.2 ft/century for an area of thick fill, a four fold increase. This section has been used to illustrate the relationship between thickness of Holocene sediments and subsidence rates (Reed, ed. 1995).

The relative sea level rise rates based on dates and depth of buried organic deposits are considerably lower than those from tide gage and sequential land leveling data. However, they do provide a long-term base for evaluating both temporal and spatial changes in rates.

Summary of Relative Sea Level and Subsidence Data

The different data sets discussed above are each unique pieces in the relative sea level rise puzzle, as numerous researchers over a wide period of time approached the issue from a variety of perspectives using different data sources. The data sets, while alone depicting different figures for relative sea level rise, taken together, they demonstrate the same trends in relative sea level rise and identify important anomalies in the data.

The radiocarbon peat dates demonstrate that compaction rates slow with time after delta or depositional abandonment. The tide gage data demonstrate the spatial variation of relative sea level rise rates across the Gulf of Mexico coast, as well as the temporal increase in the rate of relative sea level rise from the first to second epoch. The land leveling data, the most verifiable data set, validate the other data sets and identify fault effects on subsidence.

The anomaly that these data sets identify is the temporal change in relative sea level rise demonstrated by Ramsey and Moslow. While the relative sea level rise rate variation across the coast (spatial variation) could be explained by compaction due to respective variations in Holocene sediment thickness, the increase in rates over time (temporal variation) at some locations can not be explained in the same way. Since compaction at a given location has been shown to decrease over time, the temporal relative sea level rise rate increase demonstrated at given locations can not be due to compaction. The cause of this regional, episodic variation in relative sea level rise is explainable when fault induced subsidence is taken into account. Selected relative sea level rise and subsidence rates are presented in Table 3-1.

Table 3-1. Summary of published findings regarding rates of relative sea level rise in coastal Louisiana.

		cm/yr	in/yr	ft/cent	Data type	Source
EUSTATIC SEA LEVEL RISE						
Observed global sea level rise		0.15	0.06	0.49	tide gage	
Projected global sea level rise, 100 years		0.47	0.18	1.53	projection	Wigley and Raper, 1992.
Eustatic SL rise, northern Gulf of Mexico						
Pensacola, FL		0.23	0.09	0.75	tide gage	Penland et al., 1988
ISOSTATIC CHANGES*						
Subsidence, S. Central La.	(Neg. value)	0.40	0.16	1.31	land survey	Holdahl and Morrison, 1974.
Uplift, S. Mississippi & S. Alabama		0.40	0.16	1.31	land survey	Holdahl and Morrison, 1974.
RELATIVE SEA LEVEL RISE RATES, COASTAL LA. 1942 - 1982						
Areas immediately along coast,	from	1.00	0.39	3.28	tide gage	Penland et al., 1988
	to	1.20	0.47	3.94	tide gage	
SW portion of Deltaic Plain	from	1.80	0.71	5.91	tide gage	Penland et al., 1988
	to	1.90	0.75	6.23	tide gage	
Deltaic Plain subsidence	from	0.90	0.35	2.95	tide gage	Penland et al., 1988
	to	1.30	0.51	4.27	tide gage	
Chenier Plain subsidence	from	0.40	0.16	1.31	tide gauge	Penland et al., 1988
	to	0.60	0.24	1.97	tide gauge	
Miss. R. natural levees,						
New Orleans to Venice		0.82	0.32	2.70	land survey	van Beek et al., 1986
B. Lafourche natural levees						
Raceland to Grand Isle		0.72	0.28	2.36	land survey	Penland et al., 1988
EASTERN LAKE PONTCHARTRAIN						
Little Woods Tide Gauge		1.03	0.41	3.38	tide gage	Penland et al. 1989, Fig. 38, p. 6
Bridge Movement						
Hwy. 11, I-10 west		0.25	0.10	0.82	observation	Lopez et al.1997
Norfolk Southern, RR		0.80	0.31	2.62	observation	Lopez et al.1997
PREHISTORIC RELATIVE SEA LEVEL RISE RATES, COASTAL LA.						
Avg. Relative SL - Deltaic Plain	7300-4200YBP	0.25	0.10	0.83	peat, C14	Gagliano and van Beek, 1970
Avg. Relative SL - Deltaic Plain	4200-400YBP	0.11	0.04	0.35	peat, C14	Gagliano and van Beek, 1970
RELATIVE SEA LEVEL RISE RATE, COASTAL LA. - Epoch 1.						
StatewideSL rise - 1942-1962		0.45	0.18	1.48	tide gage	Penland et al., 1988
RELATIVE SEA LEVEL RISE RATE, COASTAL LA. - Epoch 2.						
StatewideSL rise - 1962-1982		1.12	0.44	3.67	tide gage	Penland et al., 1988

* Not adjusted for isostatic sea level change

Effects of Fault Induced Subsidence on Coastal Lowlands

Unmasking of Fault Displacement (Aggradation vs Subsidence)

Until the twentieth century, movement of growth faults within the coastal area was masked by aggradation resulting from river derived sediment deposition and accumulation of organic materials. Surface traces of faults became exposed by patterns of erosion and marsh deterioration.

Reduction of Overbank Flow and Sediment Supply

Construction of flood protection levees along the Mississippi River and closure of distributary channels have cut off virtually all over-bank flow into the estuarine basins of the Deltaic Plain (Gagliano et al. 1971; Gagliano and van Beek 1976; Reed, ed. 1995). The amount of sediment transported by the Mississippi River has deceased by 50% since 1953 due primarily to construction of five large dams on the upper Missouri River (Meade and Parker 1985). This in turn has reduced the river's capacity to fill the holes resulting from relative sea level rise. Much of the loss in the active delta area of the Mississippi River (Delta Hydrologic Unit) can be attributed to this change.

Reduction of Organic Matter Build up and Deterioration of Floating Marshes

Some swamp and marsh plants can adjust to subsidence and resulting increase in hydroperiod by elevating their root zone. This occurs where peat and other deposits accumulate and the plants maintain their relative position to the water level by constantly sprouting and seeding on the top of the accumulating deposits. As long as subsidence rates do not exceed accretion rates of the swamp and marsh floor, the living surface survives. In many areas subsidence rates have exceeded aggradation rates (Nyman et al. 1990; Reed, ed. 1995; and others).

Floating marshes represent another way in which vegetation responds to subsidence. By producing and maintaining a floating root mat, marsh plants are able to maintain their position relative to water level independent of the elevation of the firm substrate. Floating marshes require freshwater conditions, a firm skeletal framework (natural levees, cheniers, spoil banks, lake rims, etc.) and low water energy conditions. Alteration of required conditions has resulted in extensive breakup and loss of floating marsh mats (Sasser 1994).

Penland et al. (1988) compared rates of sediment accumulation with subsidence rates in the Terrebonne region. They concluded that, "...wetland sedimentation rates lag behind the rates of relative sea level rise in Terrebonne Parish" (Figure 3-25). The relationship between wetland sedimentation and relative sea level rise controls Deltaic Plain land loss. When sedimentation rates exceed sea level rise rates, the delta plain aggrades and maintains its subaerial integrity. When sedimentation rates fall below relative sea level rise rates, land loss ensues. The mean modern (0-50 yr. B.P.) relative sea level rise rate of 4.20 ft/century (based on the average rate record at the Houma USACE tide gage station) exceeds the mean sedimentation rate for the Terrebonne coastal region of 2.76 ft/century. Under these conditons, which have existed for the last 25 years, sedimentation cannot maintain the Terrebonne delta plain. The mean subsidence rate of 0.48 ft/century for 0-500 yr B.P. calculated from the radiocarbon data indicates that wetland sedimentation rates were previously capable of maintaining the stability of the Deltaic Plain. (Penland et al. 1988). For a through review of the accretion process and their relationships to relative

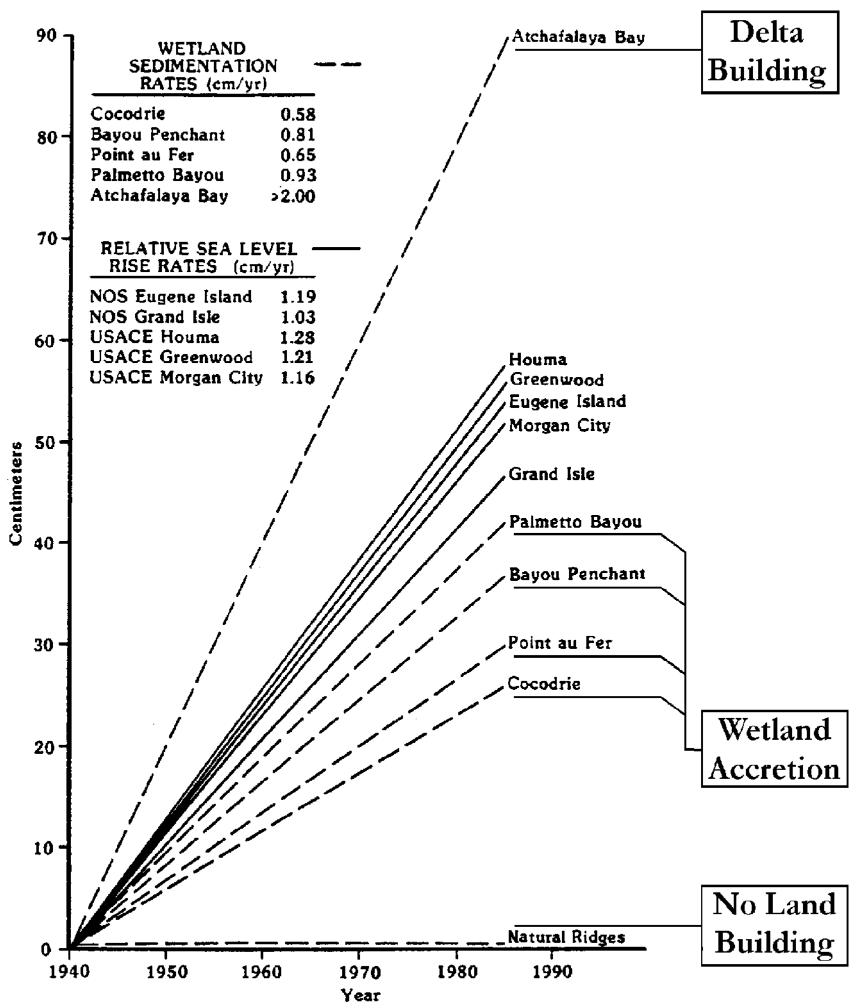


Figure 3-25. Comparison of relative sea level rise rates and wetland sedimentation rates for the Terrebonne Parish region. Only in the Atchafalaya River Delta was land building up at rates higher than relative sea level rise. Wetland sedimentation rates are from DeLaune et al. 1985, and relative sea level rise rates based on records from USACE and NOS tide gages (adapted from Penland et al. 1988).

sea level rise the reader is referred to Reed (ed. 1995).

Other Processes Contributing to Land Loss and Coastal Erosion

There is a synergy, between subsidence and hydrologic forces, that accelerates land loss and erosion. Subsidence, whether due to compaction or faulting, undermines the foundation of coastal lowlands by lowering land elevations and thus exposing wetlands, ridges, and human infrastructure to the forces of the Gulf of Mexico that erode away the land. Fluid withdrawal has also been cited as a cause for subsidence (Penland et al. 1988; Coleman et al. 1998; Boesch et al. 1994), but evaluation of this aspect of the problem is beyond the scope of this study.

Of the variety of damaging forces, marine tidal invasion and storms are responsible for removing a vast area of Louisiana's vulnerable coastal lowlands. Herbivory, the loss of marsh plants due particularly to intensive grazing by the multiplying nutria population, and dredge and fill activities, are also responsible for continued losses. Navigation canals dredged for oil and gas extraction, the Mississippi River Gulf Outlet, the Calcasieu and Sabine ship, Houma Navigation, and other channels have all disrupted hydrology, resulted in saltwater intrusion to fresh marshes, and caused extensive land loss through marine invasion of fresh marshes. Storms cause land loss not only because of the tremendous forces they can wield on fragile wetlands, but also because the natural systems that once protected against extensive storm damage are presently in a state of near collapse. The protection offered by barrier islands is disappearing as the islands themselves disappear, the weakened condition of wetlands can not stand up to or recover from intense storms, and the storms accelerate tidal intrusion, furthering tidal induced loss. In addition to inundation of the land by water, all the forces that cause land loss are exacerbated by the reduction of land elevation due to relative sea level rise.

Effects of Fault Induced Subsidence

The subsidence that is caused by fault movement affects Louisiana landforms in definable areas and in characteristic ways. The following discussion outlines where fault induced land loss has the strongest effects, and what landforms it most seriously impacts.

Effects on Wetlands

The areas of highest land loss in the Louisiana coastal area, almost all of which consists of wetland loss, occurs south of the Golden Meadow-Theriot and Forts fault systems and appears to be related to slump induced fault movement (Figure 3-26). Cumulative losses on these fault blocks since 1930 total more than 737 square miles. This is 46% of the total loss along the entire Louisiana coast, and 61% of the loss in the Deltaic Plain for that same period.

Effects on Barrier Islands and Gulf Shore

Louisiana's barrier island systems have undergone landward migration, area loss, and island narrowing as a result of complex interaction among subsidence, sea level rise, wave processes, inadequate sediment supply and intense human disturbance. Consequently, the structural continuity of the barrier shoreline weakens as the barrier islands narrow, fragment and finally disappear. In the past 100 years, the total barrier island area in Louisiana has declined 55% at a rate of 155 acres/yr. This deterioration will continue to destroy Louisiana's coastline until coastal restoration techniques that complement natural processes are implemented to restore and fortify the shoreline (Williams et al. 1992).

Effects on Ridges and Fastlands

Ridges only aggrade or build up when they are being formed along the banks of active distributaries or as active gulf beaches. Surface elevations of all relict natural levee ridges, chenier ridges, man made ridges, embankments, levees, and fastlands become lower through time in response to subsidence. Protection levees around fastlands prevent aggradation; therefore, all fastland areas within the coastal zone are subsiding (Figure 3-27, see also Figure 3-25). The problem of reduction of land surface is exacerbated in forced drainage districts within fastlands, where drained soils shrink and compact. Surface elevations within some fastland areas in eastern New Orleans are more than 16 ft below mean Gulf of Mexico level. Fastland levees are constructed of earth and cannot withstand the marine erosive forces that are gradually approacing many drainage levees. Furthermore, all infrastructure along the corridors is subject to sinking and erosion. Transcoastal corridors, which cross major fault zones, are critically affected by fault induced subsidence. These include: 1) the Mississippi River below New Orleans; 2) Bayou Lafourche-Louisiana Highway 1; and 3) natural levee ridges south of Houma.

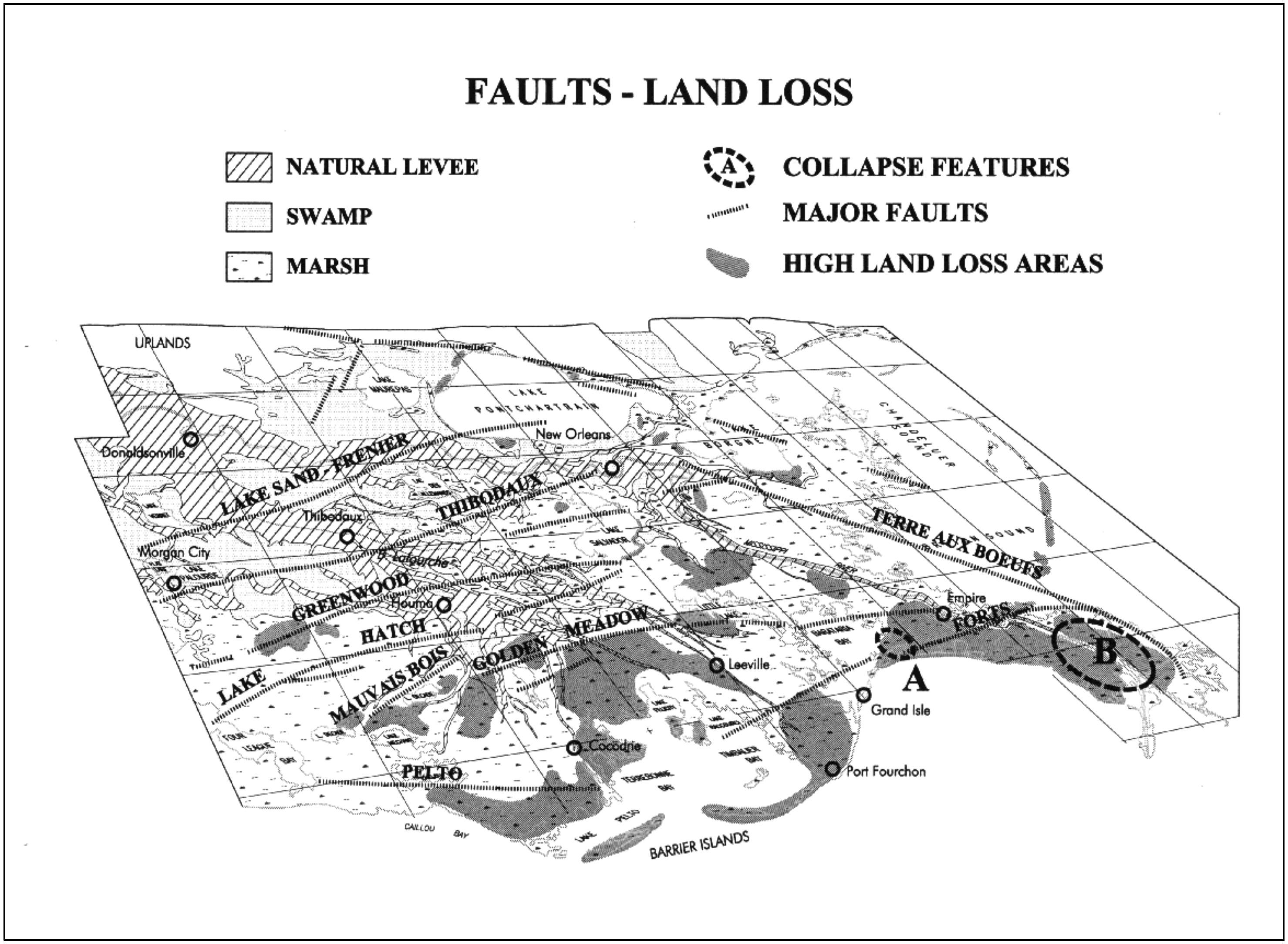


Figure 3-26. Birdseye view of southeastern Louisiana showing relationships between major faults and areas of high land loss.

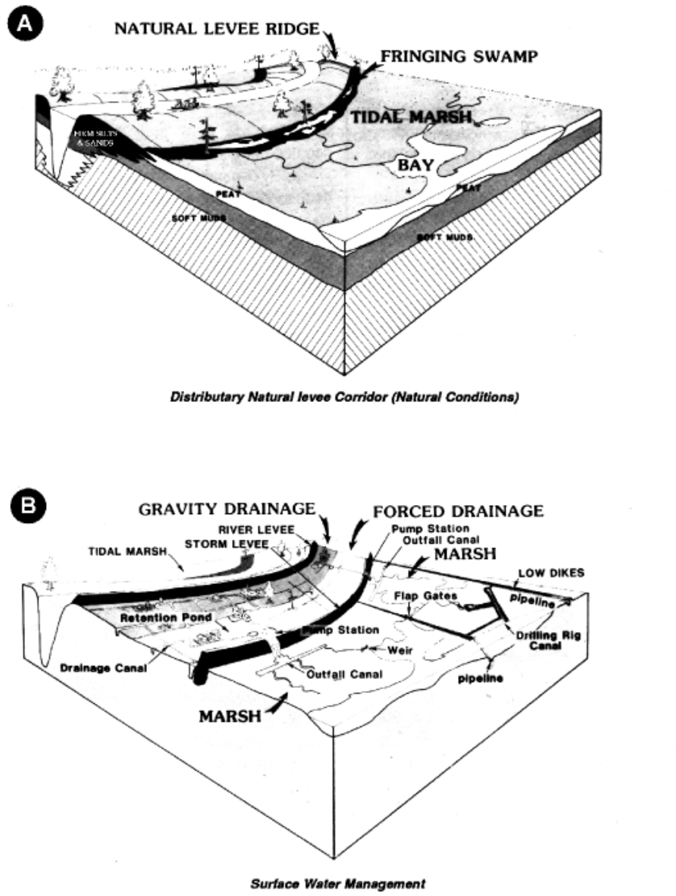


Figure 3-27. Effects of subsidence on ridgelands and fastlands.

A. Distributary natural levee corridor, natural conditions.

B. Subsided distributary natural levee corridor with forced drainage and storm protection levees (after Gagliano 1990).

Delineation of Fault Bound Blocks

As shown in Figure 3-28, the major faults systems and alignments provide the basis for dividing south Louisiana into six mega blocks. Each has distinctive structural and subsidence characteristics. The ability to identify and characterize the conditions on these blocks is a keystone to the integrity of future coastal planning. A brief description of the characteristics of each follows:

Block I Only the southern end of the block lies within the coastal zone. Part of the Calcasieu Lake collapse structure is on this block.

Block II Several major east-west faults run across this block. The Five Island Salt Trend is along the southwest boundary. The Weeks Island and Charenton collapse features are on this block. The Maurepas fault separates uplands and wetlands at the western end of the Ponchatrain basin and the Baton

Rouge fault forms the northern boundary of the basin.

Block III This block is relatively stable, accounting for the low erosion rates in the Biloxi marshes. The block is divided by the Biloxi fault. The northern Chandeleur Islands, which lie north of the fault were relatively stable until impacted by Hurricane Georges in 1998. The southern Chandeleurs and Breton Islands, on the south side of the Biloxi fault, are eroding rapidly.

Block IV Active subsidence on this block is located near the coast. Growth faults come into the Chenier Plain at an angle to the shore zone. These are older, less active faults than those in the deltaic plain.

The breakup of land between White Lake and Grand Lake may be fault induced, as is shoreline erosion at Rockefeller Refuge. Salt collapse feature under Calcasieu Lake area may be a contributing factor to the high historic land loss rates in that area (Figure 3-6).

Block V Fisk (1944) referred to this as the Lake Borgne Fault Zone. It is sliced into many smaller blocks by numerous faults. Many of the large lakes in this zone may reflect the intense faulting. The Chacahoula collapse feature is also on this block.

Block VI This is the area of most active land loss. It is criss-crossed by several major E-W fault zones, which subdivide it into smaller blocks. Three of the smaller blocks are discussed below.

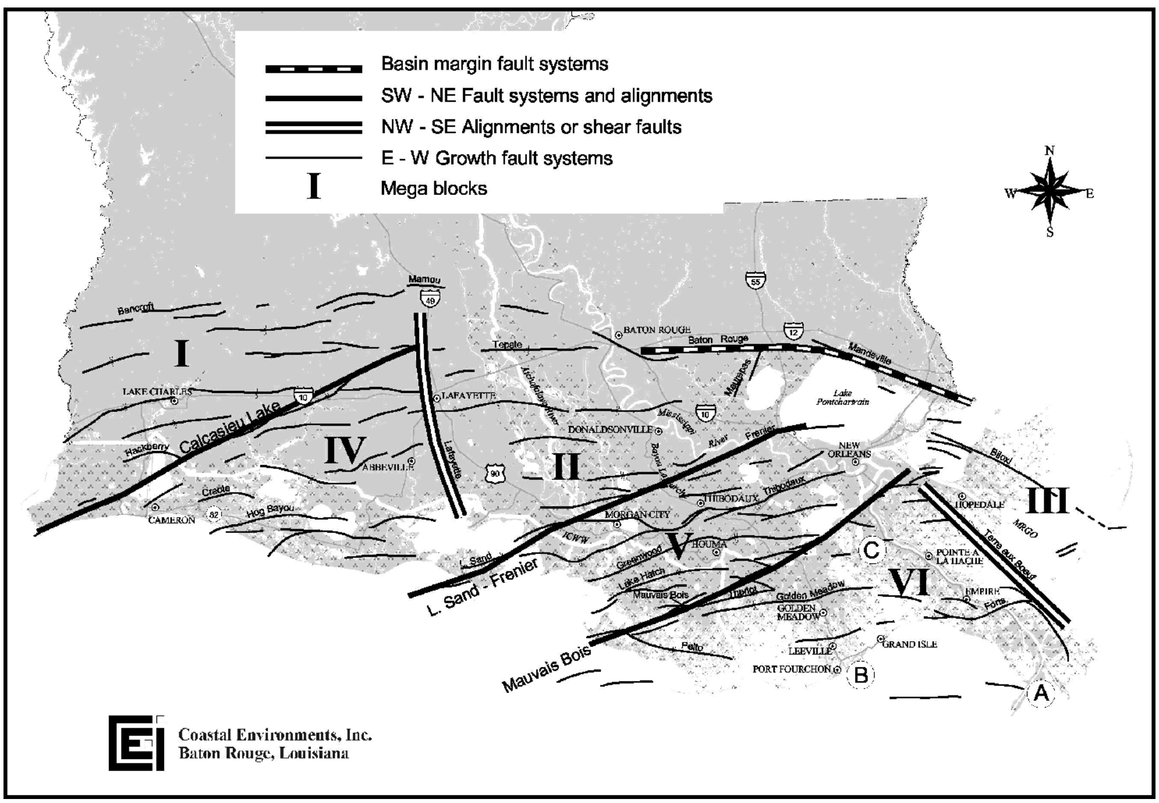


Figure 3-28. Mega blocks with major fault trends of south Louisiana.

Block VI A.
This is located on the down-thrown block of Forts Fault system. This is the active Mississippi Delta area, the area of second highest land loss along the Louisiana coast, second only to neighboring block VI B. The gulf shore and barrier islands along this block are being lost. The Balize collapse feature is on this block.

Block VI B.
Located on the downthrown block of the Golden Meadow Fault System, the Lake Washington and Four Island salt collapse features underlie this block and the Pelto fault that cuts across it. This is the area of highest total land loss along the entire Louisiana Coast. In addition, all barrier islands on this block are eroding. In the case of the Golden Meadow Fault Zone, the active shore zone is in the process of moving inland from its present position along the barrier islands to a new position against the fault trend. All remaining features (landforms and human infrastructure) on the surface of this block are vulnerable to inundation and erosion.

Some of Louisiana's most important and most endangered barrier islands are on the block, including the Derniers and Timbalier chains, the Fourchon headland, Grand Isle and Grand Terre Island.

Block VI C.
On the down-thrown block of the Theriot Fault System, the zone of lakes in west Terrebonne Parish may be related to tilting of this block against the bounding fault on the north side of the block.

Subsidence Rates by Environmental Mapping Unit

For the purpose of the Coast 2050 planning process, a generalized subsidence map of the Louisiana coastal zone was prepared (Figure 3-29). Findings from this study were utilized in preparation of the map. The primary source of subsidence rates for the Deltaic Plain were land level data along natural levee ridges from the most recent period of record. The land level data is considered to be the most accurate measure of subsidence. Rates from the survey lines were extrapolated to the major fault bound blocks. Boundaries for "environmental mapping units" developed for the Coast 2050 project were then superimposed over the fault blocks map to determine applicable rates for each mapping unit. Average values from other data sources, as gleaned from the geological literature, were used for mapping units where sequential land leveling data was not available, such as the Pontchartrain Basin and the Chenier Plain. The map should be regarded as a general tool developed for the Coast 2050 planning process, and not a definitive work intended for engineering design values of subsidence.

Summary and Conclusions

Faults, subsidence and land loss in coastal Louisiana have all been topics of considerable study. Researchers agree that land loss, particularly wetland loss and deterioration, is closely linked to subsidence. They generally acknowledge that geotechnical or fault induced subsidence is a contributing factor, but most tend to agree that subsidence is

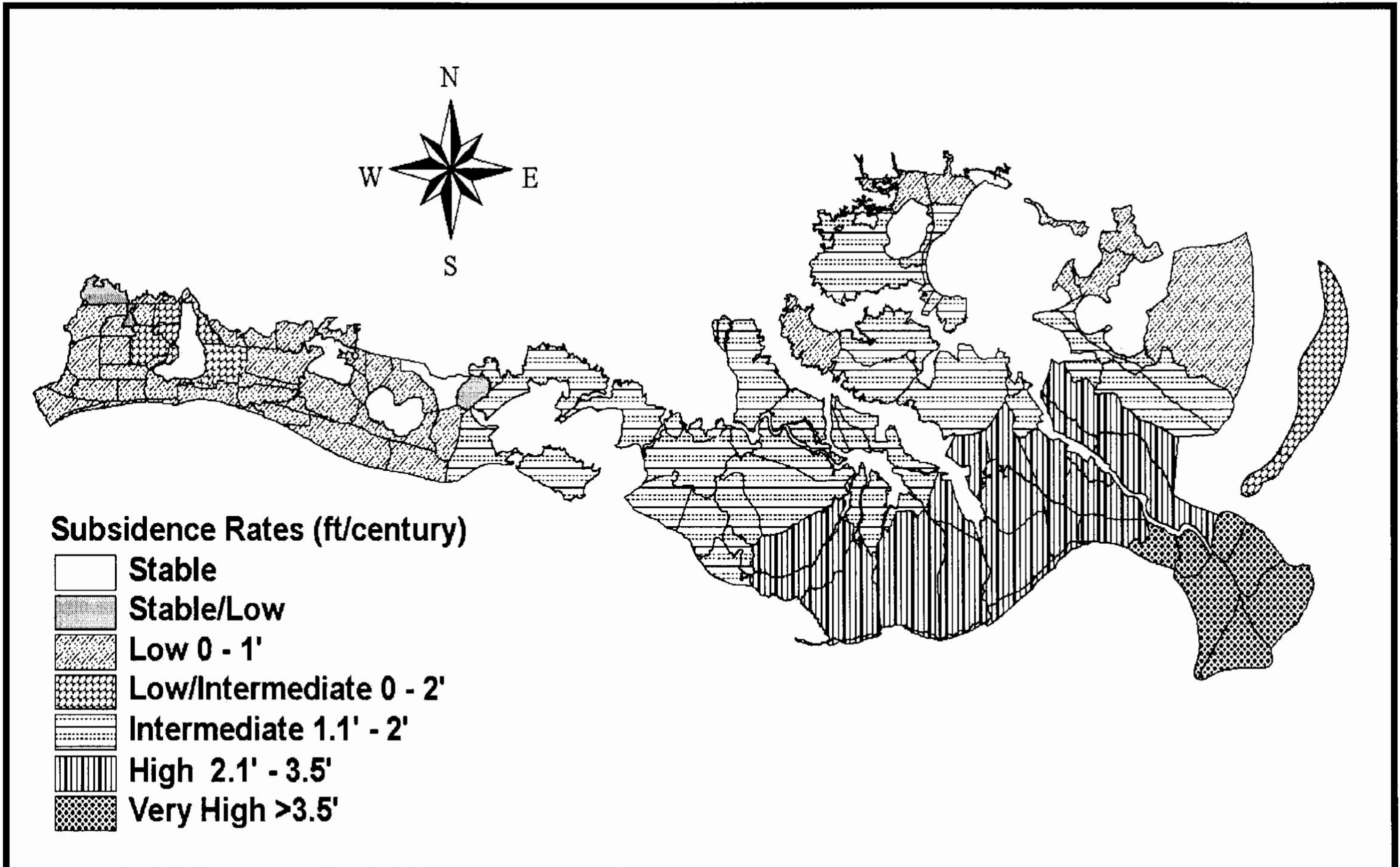


Figure 3-29 Subsidence rates in coastal Louisiana by mapping unit.

predominantly attributed to compaction. Even if compaction of sediments is the major cause of subsidence, most adjustments for compaction probably take place along faults. Vertical adjustments to gravity induced earth movement and isostatic down-warping also occur along fault planes. Cumulative displacement on growth faults and episodic changes in subsidence rates support this conclusion. Much, if not most of the vertical adjustment takes place along fault planes. Therefore, fault induced or geotechnical subsidence, as it has been used in the literature, is a major contributing factor to relative sea level rise. This paper identifies the importance of fault movement, the locations and types of major faults, and identifies blocks bound by the major faults. It establishes a framework for further study and application to coastal restoration. Geotechnical subsidence occurs as movement along circular patterns of faults, which circumscribe collapse features, and along linear growth faults. Collapse features may be induced by salt depletion at depth and/or sediment loading at the surface. Movement along growth faults occurs in response to compaction, geosynclinal downwarping and gravity slumping.

The origin and locations of major growth faults are related to basement topography and earth crust movements. Once established they become zones of weakness where vertical displacement in response to sediment loading occurs. Cumulative displacement of beds indicates that some have been active since Cretaceous times. Thus, the down-thrown blocks of growth faults become depressions which "attract" deposition, and in turn cause movement on the faults.

The coastal region is divided into a mosaic of massive fault-bound blocks. Movement of the blocks is similar to mass movement along the delta front, but on a larger scale and over a longer time period. Some blocks are moving and slumping into the deep Gulf of Mexico through a process of gravity induced slumping which is occurring on a massive scale along the continental margin.

Not all fault-bound slump blocks move at the same time. From the geological time perspective, seaward blocks are more active than inland blocks. Movement along the basin margin fault system (Baton Rouge Fault System) is an exception to this generality. Slump induced movement is episodic. Blocks are subject to abrupt short-term changes in subsidence rates. Rates have increased from prehistoric to historic times. An inferred rate increase occurred in the 1890's, initiating the Twentieth Century Transgression. In the early 1960's, subsidence rates on some blocks increased significantly, resulting in accelerated land loss and barrier island deterioration.

Until recently, fault movement in the coastal lowlands was masked and went unnoticed because of accretion processes. However, within the last 40 years the effects of fault movement have become more evident because of increased rates of sinking and reduction of accretion processes. Fault traces have become visibly delineated by patterns of land loss and marsh deterioration.

Areas of high land loss occur on blocks on the down-thrown side of the Theriot-Golden Meadow-Forts Fault systems. The Baton Rouge Fault System, located along the rim of the Gulf Salt Dome Basin, is active and has caused structural damage to building foundations and bridges. Some minor earthquake activity may be related to movement along this fault system. A zone of intensive faulting (Lake Borgne Fault Zone) occurs between the Lake Sand-Frenier and Mauvais Bois alignments. Occurrence of numerous lakes in this zone may be related to faults. Collapse features which may have contributed to land loss include the Calcasieu Lake, Four Island, Lake Washington and active Mississippi Delta features. The Hog Bayou (Grand Chenier) Fault System may be affecting subsidence in the Mermentau Basin area.

Fault movements of a fraction of an inch per year are almost imperceptible at the surface in upland areas; however, in low-relief coastal areas, small vertical movement can result in subsidence rates that can upset natural system equilibrium and cause catastrophic loss of wetland vegetation and accelerated erosion of shorelines and barrier islands. These changes in turn may make human infrastructure more vulnerable to flooding, storm surge and erosion.

Subsidence rates on these large fault-bound slump blocks show significant increases since the early 1960's. Areas north of the Gulf Coast Salt Dome Basin are being uplifted as a result of isostatic adjustment. The rates of uplift are approximately the same as those of down-warp to the south.

Relative sea level rise rates along the entire Louisiana coast are higher than at Pensacola, Fl, which is considered to be a geologically stable gage responding only to eustatic change. The highest rates are found in the Deltaic Plain and are associated with foundering fault-bound blocks. Rates in the Chenier Plain are higher than at Pensacola. Some of this difference can be attributed to fault induced subsidence. Rates that are higher than the northern Gulf eustatic rise rate also occur in the eastern end of Lake Pontchartrain and appear to be related to a block on the down-dip side of the Baton Rouge Fault System.

Results of geological research in the Louisiana coastal area has been cumulative. A number of different lines of research have contributed to an understanding of the role of fault movement in the Twentieth Century Transgression in the Deltaic Plain. Replication of some aspects of the research by different scientists provides improved confidence in the findings regarding the role of fault movement in coastal change.

All features on the surface of subsiding blocks including wetlands, natural levee ridges, highways, and flood protection levees are affected. Location of faults, thickness of poorly consolidated materials, and rates of relative sea level rise are parameters that must be considered in evaluating and designing coastal restoration projects. The boundaries of the problem have been defined. Nature's driving forces can not be changed, and if coastal sustainability is to be successful, planning and building need to proceed with

acknowledgment of, and consideration
for these critical natural parameters.

Conversion Matrix

mm/yr	cm/yr	m/yr	m/cent	in/yr	ft/yr	ft/cent	
0.004	0.000	0.000	0.00	0.00	0.000	**0.0012**	< 1
0.305	0.030	0.000	0.03	0.01	0.001	0.1	
0.762	0.076	0.001	0.08	0.03	0.003	0.25	
1.524	0.152	0.002	0.15	0.06	0.005	0.5	
2.286	0.229	0.002	0.23	0.09	0.008	0.75	
3.048	0.305	0.003	0.30	0.12	0.010	1	1
4.572	0.457	0.005	0.46	0.18	0.015	1.5	
5.334	0.533	0.005	0.53	0.21	0.018	1.75	
6.096	0.610	0.006	0.61	0.24	0.020	2	2
6.858	0.686	0.007	0.69	0.27	0.023	2.25	
7.620	0.762	0.008	0.76	0.30	0.025	2.5	
8.382	0.838	0.008	0.84	0.33	0.028	2.75	
9.144	0.914	0.009	0.91	0.36	0.030	3	3
9.906	0.991	0.010	0.99	0.39	0.033	3.25	
10.668	1.067	0.011	1.07	0.42	0.035	3.5	
11.430	1.143	0.011	1.14	0.45	0.038	3.75	
12.192	1.219	0.012	1.22	0.48	0.040	4	4
14.478	1.448	0.014	1.45	0.57	0.048	4.75	
13.716	1.372	0.014	1.37	0.54	0.045	4.5	
15.240	1.524	0.015	1.52	0.60	0.050	5	5
16.764	1.676	0.017	1.68	0.66	0.055	5.5	
18.288	1.829	0.018	1.83	0.72	0.060	6	6
19.812	1.981	0.020	1.98	0.78	0.065	6.5	
21.336	2.134	0.021	2.13	0.84	0.070	7	> 7
24.384	2.438	0.024	2.44	0.96	0.080	8	
27.432	2.743	0.027	2.74	1.08	0.090	9	
30.480	3.048	0.030	3.05	1.20	0.100	10	
33.528	3.353	0.034	3.35	1.32	0.110	11	
39.624	3.962	0.040	3.96	1.56	0.130	13	
45.720	4.572	0.046	4.57	1.80	0.150	15	

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SECTION 4

METHODOLOGY FOR ASSESSMENT OF FISHERIES

Identification of Guilds

In order to assess the recent trends and future projections of fishery populations within the Coast 2050 study area, four broad species assemblages were identified based on salinity preferences. These assemblages were marine, estuarine dependent, estuarine resident, and freshwater.

Within each of the four assemblages, guilds of fishery organisms were established. As used in this document, guilds are groupings of ecologically similar species identified by a single representative species and, hereafter, the terms “guild” and “species” are used interchangeably. Fishery guilds common to coastal Louisiana, within each salinity-preference assemblage, are:

- Marine: Spanish mackerel guild,
- Estuarine dependent: red drum, black drum, spotted seatrout, Gulf menhaden, southern flounder, white shrimp, brown shrimp, and blue crab guilds,
- Estuarine resident: American oyster guild, and
- Freshwater: largemouth bass and channel catfish guilds.

In a broad sense, each of the 12 guilds is uniquely identified by the combination of the representative species’ habitat preference, salinity preference, primary habitat function, seasonal occurrence in the estuary, and spawning or migratory seasons (Table 6-1, main report, reproduced as Table 4-1 of this appendix). Habitat and life history information is based on available scientific literature specific to the northwestern Gulf of Mexico, but is somewhat generalized to accommodate the establishment of guilds.

Trends and Projections for Fisheries Populations

Once the species representing each fishery guild was identified, population changes of each species were assessed and displayed by using a matrix for each of the four coastal regions (Tables 4-2 through 4-5). The matrices display mapping units and guilds and, within the mapping units, provide information on the population stability (recent change trends) and population projections for each species group. Most of the recent trend information was provided by fishery biologists of the Louisiana Department of Wildlife and Fisheries (LDWF). The assessments were based on LDWF fishery independent sampling data and personal observation by area fishery biologists, and generally span a period of 10 to 20 years. Staff of LDWF believe that, due to selectivity of sample gear, the trend information is most reflective of recent changes in the subadult portion of each guild.

The projections of possible future changes in fishery production for coastal Louisiana, also shown in Tables 4-2 through 4-5, are based solely on landscape change model predictions discussed in the main report. The key parameters in making those projections were percent and pattern of wetland loss in each mapping unit. Numerous other factors which could not be forecast — changes in water quality, fishery harvest levels, wetland development activities (e.g., dredging and filling), and blockages of migratory pathways — could negatively impact fishery production. These factors and the potentially great inaccuracy in predicting land loss 50 years into the future, especially when considering landscape changes at a mapping unit scale, limit the precision of the predicted changes in fishery production.

Individuals Involved in Application of Methodology

Information provided in the matrix was developed through the collaborative effort of the LDWF and the National Marine Fisheries Service (NMFS). NMFS contributors were Ric Ruebsamen and Richard Hartman. LDWF personnel responsible for synthesizing the information displayed in each regional matrix are identified below.

Region 1: John F. Burdon, Mark Lawson, and Glenn Thomas.

Region 2: Robert Ancelet, Mark Schexnayder, Greg Laiche, Clarence Luquet, Keith Ibos, Randall Pausina, Brian McNamara and Glenn Thomas.

Region 3: Vince Guillory, Roy Moffet, Martin Bourgeois, Steve Hein, Paul Meier, Pete Juneau, Paul Cook and Glenn Thomas.

Region 4: Dudley C. Carver, Jerry Ferguson, Michael Harbison and Glenn Thomas.

The overall work effort was coordinated by Ric Ruebsamen of NMFS and Glenn Thomas of LDWF.

Table 4-1. (Table 6-1 from main report.) Representative fish and invertebrate guilds of coastal Louisiana.

Species (Guild)	Life stage	Habitat Preference				Salinity Preference				Primary Habitat Function			Seasonal Preference				
		EM	Sh	DW	FS	F	I	B	Sa	S	Nu	Fo	Sp	Su	Fa	Wi	Yr
Marine Assemblage																	
Spanish mackerel	Adult			■				■	■	■		■	■	■			
	Juvenile			■				■	■		■	■	■	■			
Estuarine Dependent Assemblage																	
Red drum	Adult		■	■				■	■			■					■
	Juvenile	■	■				■	■	■		■	■			■ *		■
Black drum	Adult		■	■				■	■			■					■
	Juvenile		■				■	■	■		■	■	■ *				■
Spotted seatrout	Adult		■	■				■	■			■					■
	Juvenile	■	■				■	■	■		■	■		■ *	■		
Gulf menhaden	Adult			■					■	■		■					■
	Juvenile		■	■		■	■	■	■		■	■				■ *	■
Southern flounder	Adult		■	■				■	■			■		■	■		
	Juvenile		■				■	■	■		■	■	■	■		■ *	
White shrimp	Subadult	■	■	■				■	■			■		■	■	■	
	Juvenile	■	■			■	■	■	■		■	■		■ *	■		
Brown shrimp	Subadult	■	■	■				■	■			■		■	■		
	Juvenile	■	■				■	■	■		■	■	■ *	■	■		
Blue crab	Adult	■	■	■		■	■	■	■	■		■					■
	Juvenile	■	■	■		■	■	■	■		■	■	■ *	■ *			■
Estuarine Resident Assemblage																	
American oyster			■					■		■		■	■ *	■ *			■
Freshwater Assemblage																	
Largemouth bass	Adult		■	■	■	■	■			■		■	■ *				■
	Juvenile		■	■	■	■	■				■	■					■
Channel catfish	Adult		■	■		■	■			■		■	■ *				■
	Juvenile		■	■		■	■				■	■					■

Notes:

Habitat Preference--EM=emergent marsh; Sh=shallow water; DW=channel, open water >6 ft;
FS = fresh swamp
Salinity Preference--F=fresh; I=intermediate; B=brackish; Sa=saline
Primary Habitat Function--S=spawning; Nu=nursery; Fo=foraging
Seasonal Preference--Sp=spring; Su=summer; Fa=fall; Wi=winter; Yr=year round

All preferences denoted by block shading.
* Indicates immigration period for marine transient species & spawning season for resident species.

Table 4-2. Region 1 fish and invertebrate population status and 2050 change.

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Amite/Blind	NA/NA	NA/NA	NA/NA	U/U	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Lake Maurepas	NA/NA	NA/NA	NA/NA	U/U	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Tickfaw River Mouth	NA/NA	NA/NA	NA/NA	U/U	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
West Manchac Land Bridge	U/U	U/U	NA/NA	U/U	U/U	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Tangipahoa River Mouth	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	D/D	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
East Manchac Land Bridge	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Lake Pontchartrain	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Sy/Sy	U/U	Sy/Sy	Sy/Sy	
Bonnet Carre	U/U	U/U	U/U	U/U	U/U	NA/NA	Sy/Sy	Sy/Sy	Sy/Sy	NA/	Sy/Sy	Sy/Sy	
La Branch Wetlands	U/U	U/U	U/U	U/U	U/U	NA/NA	Sy/D	Sy/D	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Tchefuncte River Mouth	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	NA/NA	Sy/D	Sy/D	Sy/D	NA/NA	Sy/Sy	Sy/Sy	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-2. Region 1 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
North Shore Marshes	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	NA/NA	Sy/D	Sy/D	Sy/Sy	U/U	Sy/Sy	Sy/Sy	
Pearl River Mouth	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	D/D	Sy/Sy	Sy/Sy	Sy/Sy	U/U	Sy/Sy	Sy/Sy	
East Orleans Land Bridge	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	U/I	Sy/Sy	U/U	
Bayou Sauvage	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	U/U	NA/NA	D/I	D/I	Freshwater impoundment
Chandeleur Sound	I/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	NA/NA	
Chandeleur Islands	I/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	NA/NA	
Lake Borgne	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	NA/NA	
South Lake Borgne	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	NA/NA	NA/NA	
Central Wetlands	Sy/Sy	Sy/Sy	Sy/Sy	Sy/I	Sy/Sy	D/D	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	NA/NA	NA/NA	
Biloxi Marshes	I/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	Sy/Sy	NA/NA	NA/NA	
Eloi Bay	I/Sy	Sy/D	Sy/D	Sy/Sy	Sy/D	D/D	Sy/D	Sy/D	Sy/Sy	Sy/Sy	NA/NA	NA/NA	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-3. Region 2 fish and invertebrate population status and 2050 change.

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf menhaden	Southern flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Baker	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	Sy/Sy	
Des Allemands	U/U	NA/NA	NA/NA	U/U	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Lake Boeuf	NA/NA	NA/NA	NA/NA	U/U	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Gheens	Sy/Sy	NA/NA	NA/NA	Sy/Sy	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Cataouatche/ Salvador	Sy/D	Sy/D	Sy/D	I/Sy	NA/NA	NA/NA	D/D	I/D	Sy/Sy	NA/NA	Sy/Sy	D/Sy	Davis Pond influence
Clovelly	Sy/Sy	I/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	D/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	D/Sy	
Perot/ Rigolettes	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	NA/	D/D	Sy/D	Sy/Sy	NA/NA	Sy/D	D/D	
Jean Lafitte	Sy/Sy	NA/NA	NA/NA	Sy/Sy	Sy/Sy	NA/NA	D/Sy	Sy/Sy	Sy/Sy	NA/NA	I/Sy	D/Sy	
Naomi	I/Sy	Sy/Sy	Sy/D	I/I	I/D	NA/NA	I/I	I/Sy	I/Sy	NA/NA	I/I	I/I	River siphon influence
Myrtle Grove	I/Sy	I/Sy	Sy/D	I/D	I/Sy	I/Sy	D/D	I/D	I/Sy	NA/NA	Sy/I	I/I	
Little Lake	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	I/I	D/D	I/D	I/D	NA/NA	D/D	NA/NA	
Caminada Bay	D/D	D/D	D/D	D/D	Sy/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
Fourchon	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/	NA/	
Barataria Bay	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
West Pointe a la Hache	I/D	I/D	Sy/Sy	I/D	I/D	Sy/Sy	I/D	I/D	I/D	Sy/NA	I/D	I/D	River siphon influence
Lake Washington / Grand Ecaille	D/D	D/D	D/D	D/D	D/D	Sy/Sy	D/D	D/D	D/D	NA/I	NA/NA	NA/NA	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-3. Region 2 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf menhaden	Southern flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Bastian Bay	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
Cheniere Ronquille	D/D	D/D	D/D	Sy/D	Sy/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
Grand Liard	D/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	D/D	D/D	D/D	Sy/Sy	NA/NA	NA/NA	
Fourchon Shoreline	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
Barataria Barrier Islands	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
West Bay	Sy/I	Sy/I	Sy/Sy	Sy/I	Sy/Sy	Sy/D	Sy/I	Sy/I	Sy/I	Sy/D	Sy/I	Sy/I	
East Bay	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/Sy	Sy/Sy	
La Loutre	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/Sy	Sy/Sy	
Cubit's Gap	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/Sy	Sy/Sy	
Baptiste Collette	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/Sy	Sy/Sy	
American Bay	Sy/Sy	Sy/Sy	Sy/Sy	I/Sy	Sy/Sy	I/Sy	I/SY	Sy/Sy	I/Sy	Sy/Sy	NA/	NA/	
Breton Sound													
Lake Lery	Sy/I	Sy/I	Sy/I	I/I	Sy/Sy	I/I	I/I	Sy/I	I/I	NA/NA	I/I	I/I	River siphon influence
Caernarvon	Sy/I	Sy/I	Sy/Sy	I/I	Sy/Sy	I/I	I/I	Sy/I	I/I	Sy/Sy	I/I	I/I	River siphon influence
River aux Chenes	Sy/Sy	Sy/Sy	Sy/Sy	I/Sy	Sy/Sy	I/I	I/Sy	Sy/Sy	I/Sy	Sy/Sy	I/I	I/I	
Jean Louis Robin	Sy/Sy	Sy/Sy	Sy/Sy	I/Sy	Sy/Sy	I/I	I/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-4. Region 3 fish and invertebrate population status and 2050 change.

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue Crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Atchafalaya Marshes	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/D	Sy/I	Sy/I	Lower river only, estuarine species primarily in fall and winter
Avoca	NA/NA	NA/NA	NA/NA	I/D	I/Sy	NA/NA	NA/NA	NA/NA	I/D	NA/NA	U/U	U/U	
Black Bayou Wetlands	NA/NA	NA/NA	NA/NA	I/I	I/NA	NA/NA	NA/NA	NA/NA	I/I	NA/NA	D/I	U/U	
Boudreaux	I/D	I/D	D/D	I/D	D/D	I/I	Sy/D	I/D	I/D	NA/NA	D/I	D/I	
N. Bully Camp	I/D	I/D	D/D	D/D	D/D	D/I	D/D	D/D	I/D	I/I	NA/NA	NA/NA	
S. Bully Camp	I/D	I/D	D/D	D/D	D/D	D/D	D/D	D/D	I/D	I/I	NA/NA	NA/NA	
Caillou Marshes	I/D	I/D	D/D	D/D	D/D	D/D	Sy/D	I/D	I/D	I/I	D/D	U/U	
Chacahoula Swamps	NA/NA	NA/NA	NA/NA	I/I	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/I	Sy/I	
Devil's Swamp	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/I	Sy/I	
Fields Swamp	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/I	Sy/I	
Four League Bay	I/Sy	I/Sy	D/D	I/Sy	D/D	I/D	Sy/Sy	I/Sy	I/Sy	U/U	D/I	U/U	
GIWW	NA/NA	NA/NA	NA/NA	I/D	I/D	NA/NA	NA/NA	NA/NA	I/D	NA/NA	Sy/I	Sy/I	
Mechant/De Cade	I/D	I/D	D/D	I/D	D/D	I/I	Sy/D	I/D	I/D	I/I	D/Sy	D/Sy	
Montegut	I/D	I/D	D/D	I/D	D/D	I/I	Sy/D	I/D	I/D	NA/NA	D/I	D/I	Influenced by water control structures
NHSC Wetlands	I/D	I/D	I/D	I/D	I/D	NA/NA	I/D	I/D	I/D	NA/NA	D/I	D/I	
Pelto Marshes	I/D	I/D	D/D	D/D	D/D	D/Sy	D/D	D/D	I/D	I/I	D/D	D/D	
Penchant	I/Sy	I/Sy	D/D	D/Sy	D/D	D/I	D/Sy	D/Sy	I/Sy	NA/NA	D/I	U/U	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-4. Region 3 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue Crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Pigeon Swamp	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	U/U	NA/NA	U/U	U/U	
Point au Fer	I/Sy	I/Sy	D/Sy	I/Sy	D/Sy	I/I	Sy/I	I/Sy	I/Sy	I/Sy	D/I	U/U	
Savoie	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/I	Sy/I	
St Louis Canal	I/D	I/D	D/D	I/D	D/D	I/Sy	Sy/D	I/D	I/D	NA/NA	D/I	D/I	
Terrebonne Marshes	I/D	I/D	D/D	D/D	D/D	D/Sy	D/D	D/D	I/D	I/I	NA/NA	NA/NA	
Verrett Wetlands	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	I/I	NA/NA	U/I	U/I	
Timbalier Island Shorelines	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
Isles Dernieres Shorelines	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	D/D	I/I	NA/NA	NA/NA	
Atchafalaya Subdelta	Sy/I	Sy/I	NA/NA	Sy/I	Sy/Sy	NA/NA	Sy/I	D/Sy	Sy/I	NA/NA	Sy/I	I/I	Support of estuarine species is river stage dependent
N. Wax Lake Wetlands	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	I/I	I/I	Fresh marsh, overflow swamp
WLO Subdelta	Sy/I	Sy/I	NA/NA	Sy/I	Sy/Sy	NA/NA	Sy/I	D/Sy	Sy/I	NA/NA	Sy/I	I/I	Support extuarine species during low water stages-fall winter
Wax Lake Wetlands	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/I	Sy/I	Only shoreline supports estuarine species during low water stages
Big Woods	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	U/U	U/U	Fresh swamp
Cote Blanche Wetlands	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Better habitat during low water years
E. Cote Blanche Bay	Sy/Sy	Sy/D	D/D	Sy/Sy	Sy/D	NA/NA	Sy/I	D/D	Sy/Sy	NA/NA	NA/NA	Sy/I	Better habitat during low water years
Marsh Island	D/Sy	D/Sy	D/Sy	Sy/Sy	D/Sy	NA/NA	Sy/Sy	D/Sy	I/Sy	NA/NA	NA/NA	Sy/I	Weirs, impoundmens and gates causing loss of habitat

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-4. Region 3 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue Crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Rainey Marsh	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/D	NA/NA	Sy/Sy	NA/NA	Sy/Sy	NA/NA	Sy/I	Sy/I	Eastern portion is more viable estuarine fishery habitat
Vermilion Bay	Sy/Sy	Sy/D	D/D	Sy/Sy	Sy/D	D/D	Sy/I	D/D	Sy/Sy	NA/NA	NA/NA	NA/NA	Strongly influenced by Atchafalaya River flows
Vermilion Bay Marsh	Sy/Sy	D/D	Sy/D	D/Sy	NA/NA	Sy/D	U/I	Sy/D	Sy/Sy	NA/NA	Sy/I	Sy/I	Higher use by estuarine species in fall and winter, mainly edge habitat
W. Cote Blanche Bay	Sy/Sy	Sy/D	D/D	Sy/Sy	Sy/D	NA/NA	Sy/I	D/D	Sy/Sy	NA/NA	NA/NA	NA/NA	Habitat conditions influenced by Atchafalaya River discharge

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-5. Region 4 fish and invertebrate population status and 2050 change.

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
MERMENTAU													
Amoco	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/D	Sy/D	Impounded and influenced by locks
Big Marsh	Sy/Sy	Sy/Sy	U/Sy	NA/Sy	NA/NA	NA/NA	Sy/Sy	Sy/D	Sy/Sy	NA/NA	Sy/I	Sy/I	Impounded and influenced by locks
Big Burn	U/NA	U/NA	U/NA	U/NA	U/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	NA/NA	Sy/I	Sy/I	Impounded and influenced by locks
Cameron Prairie	U/NA	U/NA	U/NA	U/NA	U/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	Sy/Sy	
Grand Lake	D/Sy	D/Sy	D/Sy	Sy/Sy	D/Sy	NA/NA	D/Sy	D/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Impounded and influenced by locks
Grand/White Lake Land Bridge	D/D	D/D	D/D	Sy/D	D/D	NA/NA	D/D	D/D	Sy/D	NA/NA	Sy/Sy	Sy/Sy	Impounded and influenced by locks
Grand Lake East	D/D	D/D	D/D	Sy/D	D/D	NA/NA	D/D	D/D	Sy/D	NA/NA	Sy/Sy	Sy/Sy	Impounded and influenced by locks
Hog Bayou	Sy/D	Sy/D	Sy/D	I/D	Sy/D	Sy/I	Sy/D	Sy/D	Sy/D	NA/NA	NA/NA	NA/NA	
Lacassine	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	Sy/Sy	
Little Prairie	NA/	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/Sy	Sy/Sy	Impounded and influenced by locks
Little Pecan	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Restricted by weirs and water control structures
Locust Island	U/U	U/U	U/U	U/U	U/U	NA/NA	U/U	U/U	U/U	NA/NA	Sy/I	Sy/I	Impounded and influenced by locks

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-5. Region 4 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Middle Marsh	U/U	U/U	U/U	U/U	U/U	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/I	Sy/I	
N. White Lake	NA/	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	D/Sy	U/U	Sy/Sy	NA/NA	Sy/I	Sy/I	Inside Catfish & Schooner structures
N. Grand Lake	NA/	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	D/D	U/U	Sy/D	NA/NA	Sy/I	Sy/I	
Oak Grove	NA/	NA/NA	NA/NA	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	
Rockefeller	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/I	Sy/D	Sy/D	Sy/D	Sy/Sy	Sy/I	Sy/I	Restricted by weirs and water control structures
S. Pecan Island	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	NA/NA	Sy/D	Sy/D	Sy/D	NA/NA	Sy/I	Sy/I	Restricted by weirs and water control structures
S. White Lake	Sy/D	Sy/D	NA/NA	Sy/D	Sy/D	NA/NA	Sy/D	Sy/D	Sy/D	NA/NA	Sy/I	Sy/I	Influenced by locks & weir
White Lake	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	D/Sy	D/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Influenced by locks & weir
CALC/SABINE													
Big Lake	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	U/I	U/I	
Black Lake	I/D	Sy/D	Sy/D	I/D	Sy/D	Sy/Sy	D/D	D/D	Sy/D	NA/NA	I/Sy	I/Sy	
Black Bayou	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	NA/NA	Sy/D	Sy/D	Sy/D	NA/NA	Sy/Sy	U/Sy	
Brown Lake	D/D	D/D	D/D	D/D	D/D	NA/NA	D/D	D/D	D/D	NA/NA	U/U	U/U	Restricted by weirs and water control structures
Calcasieu Lake	I/Sy	I/Sy	I/Sy	Sy/Sy	Sy/Sy	Sy/Sy	D/Sy	D/Sy	D/Sy	Sy/Sy	NA/NA	NA/NA	
Cameron	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/I	Sy/I	
Cameron Creole Watershed	D/Sy	D/Sy	D/Sy	D/Sy	D/Sy	D/Sy	D/Sy	D/Sy	D/Sy	NA/NA	I/Sy	I/Sy	Influenced by weirs and gates
Choupique Island	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	U/U	Sy/Sy	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-5. Region 4 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
Clear Marais	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	NA/NA	D/Sy	D/Sy	Sy/Sy	NA/NA	Sy/I	Sy/I	
Hog Island Gully	Sy/I	Sy/I	Sy/I	I/Sy	Sy/I	Sy/D	Sy/D	Sy/I	Sy/I	NA/NA	NA/NA	NA/NA	
E Johnson's Bayou	Sy/I	Sy/I	U/I	Sy/I	Sy/I	NA/NA	U/I	U/I	Sy/I	NA/NA	NA/NA	NA/NA	
W Johnson's Bayou	Sy/I	Sy/I	U/I	Sy/I	Sy/I	NA/NA	U/I	U/I	Sy/I	NA/NA	NA/NA	NA/NA	
Johnson's Bayou Ridge	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	D/Sy	D/Sy	Sy/Sy	NA/NA	U/U	U/U	
Lower Mud Lake	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	Sy/Sy	D/D	D/D	Sy/D	NA/NA	U/NA	U/NA	
Martin Beach Ship Canal Shore	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	Sy/Sy	D/Sy	D/Sy	Sy/Sy	NA/NA	U/NA	U/NA	
Mud Lake	D/D	D/D	D/D	D/D	D/D	NA/NA	D/D	D/D	D/D	NA/NA	NA/NA	NA/NA	Partly restricted by weirs and water control structures
Perry Ridge	U/U	U/U	U/U	U/U	U/U	NA/NA	U/U	U/U	U/U	U/U	U/U	U/U	
Sabine Lake	I/Sy	I/Sy	I/Sy	Sy/Sy	Sy/Sy	I/Sy	D/Sy	D/Sy	Sy/Sy	NA/NA	U/U	Sy/Sy	Lower/brackish portion of lake
Sabine Lake Ridge	I/Sy	I/Sy	I/Sy	Sy/I	Sy/Sy	I/Sy	D/Sy	D/Sy	Sy/Sy	NA/NA	Sy/I	Sy/I	
Sabine Pool #3	NA/	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	I/Sy	I/Sy	Fresh impoundment
Second Bayou	Sy/Sy	U/U	U/U	U/U	U/U	NA/NA	U/U	U/U	U/U	U/U	U/I	U/I	Restricted by weirs and water control structures

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

Table 4-5. Region 4 fish and invertebrate population status and 2050 change (Cont.).

	Fish and Invertebrate Guilds (Species)												
	Red drum	Black drum	Spotted seatrout	Gulf Menhaden	Southern Flounder	American oyster	White shrimp	Brown shrimp	Blue crab	Spanish mackerel	Largemouth bass	Channel catfish	
Mapping Unit	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Trend/ Projection	Comments
SE Sabine	D/Sy	D/Sy	D/Sy	D/Sy	D/Sy	NA/NA	D/Sy	D/Sy	D/Sy	NA/NA	I/Sy	I/Sy	Restricted by weirs and water control structures
SW Gum Cove	NA/	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	U/U	NA/NA	U/U	U/U	Restricted by weirs and water control structures
Sweet/Willow Lakes	NA/	NA/	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA	Sy/D	Sy/D	
W. Black Lake	D/D	D/D	D/D	D/D	D/D	NA/NA	D/D	D/D	D/D	NA/NA	I/Sy	I/Sy	Restricted by weirs and water control structures
West Cove	Sy/D	Sy/D	Sy/D	Sy/D	Sy/D	U/U	D/D	D/D	Sy/D	NA/NA	Sy/I	Sy/I	
Willow Bayou	I/D	I/D	I/D	Sy/D	Sy/D	I/D	D/D	D/D	Sy/D	NA/NA	U/U	U/U	

NOTES: Steady=Sy, Decrease=D, Increase=I, Unknown=U, Not Applicable=NA

SECTION 5

METHODOLOGY FOR ASSESSMENT OF WILDLIFE

Species and Species Groups

Louisiana's coastal wetlands, extending from the forested wetlands at the upper end to the barrier shorelines bordering the gulf, provide a diverse array of habitats for numerous wildlife communities. In addition to fulfilling all life cycle needs for many resident species, coastal wetlands provide wintering or stopover habitat for migratory waterfowl and many other birds. The bald eagle and brown pelican, protected by the Endangered Species Act, are recovering from very low populations experienced over the last three decades. Increasing populations for those two species are projected to continue in the future, independent of near-term wetland changes. The fate of other species groups in coastal Louisiana will be influenced by habitat conditions there. The prediction of extensive land loss and habitat change by the year 2050 prompted an examination of the effect of such losses and changes in the abundance of wildlife.

To assess habitat functions and the status, recent trends and future projections of wildlife abundance within the Coast 2050 study area, 21 prominent wildlife species and/or species groups were identified on the basis of prominence and/or availability of information:

- Brown Pelican,
- Bald Eagle,
- Seabirds, such as Black Skimmer, Royal Tern, Common Tern, Laughing Gull,
- Wading birds, such as Great Blue Heron, Snowy Egret, Roseate Spoonbill,
- Shorebirds, such as Piping Plover, Black-necked Stilt, American Avocet, Willet,
- Dabbling ducks, such as Mallard, Gadwall, Mottled Duck, Wood Duck,
- Diving ducks, such as Greater Scaup, Ring-necked Duck, Redhead, Canvasback,
- Geese, such as Snow Goose, White-fronted Goose, Canada Goose,
- Raptors, such as Northern Harrier, Peregrine Falcon, American Kestrel,
- Rails, gallinules, and coots, such as King Rail, Sora Rail, Purple Gallinule,
- Other marsh and open water residents, such as Anhinga, Least Bittern, Seaside Sparrow,
- Other woodland residents, such as Pileated Woodpecker, Carolina Chickadee, Belted Kingfisher,

- Other marsh and open water migrants, such as Tree Swallow, Barn Swallow, Savannah Sparrow,
- Other woodland migrants, such as Hermit Thrush, American Robin, Cedar Waxwing,
- Nutria,
- Muskrat,
- Mink, Otter, and Raccoon,
- Rabbit,
- Squirrel,
- White-tailed deer, and
- American alligator.

Matrices

A matrix was developed for each region to present the habitat function and the status, trend, and projection for the above listed species and/or species groups for each habitat type within each mapping unit (Tables 5-1 through 5-4). Each matrix reflects available data and professional judgments.

"Habitat functions" considered were: nesting (Ne), wintering area (W), stopover habitat (St), and multiple functions (Mu). "Status" categories included the following: not historically present (NH), no longer present (NL), present in low numbers (Lo), present in moderate numbers (Mo), and present in high numbers (Hi). "Not historically present" means that the species or species group has not been present in the given area for more than about 50 years. "No longer present" means that the species or species group was present in the given area sometime during the last 50 years, but is not currently present.

"Trend" refers to changes in abundance over the last 10 to 20 years, and "projection" refers to a prediction of changes in wildlife abundance through the year 2050; "trend" and "projection" categories include steady (Sy), decrease (D), increase (I) and unknown (U).

"Habitat Types" reflect 1988 conditions and include the following: open water (OW), aquatic bed (AB), fresh marsh (FM), intermediate marsh (IM), brackish marsh (BM), saline marsh (SM), fresh swamp (FS), hardwood forest (HF), barrier beach (BB), agriculture/upland (AU). Habitat types comprising less than 5% of a unit are shown only if that habitat type is particularly rare or important to wildlife in the given planning unit.

"Habitat function," "status," and "trend" information displayed in each regional matrix represents common understandings of the selected species and/or species groups, field observations, data, and recent habitat changes. "Projection" information is based almost exclusively on the predicted conversion of marsh to open water and the gradual relative sinking and resultant deterioration of forested habitat throughout the study area. Such predictions may or may not prove to be accurate. Additionally, numerous other factors including water quality, harvesting level, and habitat changes elsewhere in the species' range cannot be predicted and were not considered in these projections. Therefore, the projections are to be viewed and used with caution.

Individuals Involved in Application of Methodology

The individuals responsible for synthesizing the information displayed in each regional matrix are identified below.

The matrices were compiled by Gerry Bodin (U.S. Fish and Wildlife Service) and Quin Kinler (Natural Resources Conservation Service).

Species or Species Group	**Individuals**	**Agency Affiliation**
Brown Pelican, Bald Eagle	Tom Hess Larry McNease	LDWF
	Terry Rabot	U.S. Fish and Wildlife Service
Seabirds, wading birds, shorebirds, raptors, rails, gallinules, coots, other marsh and open water residents, other woodland residents, other marsh and open water migrants, other woodland migrants	Bill Vermilion	LDWF
Dabbling ducks, diving ducks, geese	Robert Helm	LDWF
Nutria, muskrat, mink, otter, raccoon, American alligator	Noel Kinler Larry McNease	LDWF
Rabbit, squirrel, white-tailed deer	Mike Olinde Dave Moreland	LDWF
	Quin Kinler	Natural Resources Conservation Service

Table 5-1. Region 1 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat type is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots, and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Upper Pontchartrain Basin																																										
Amite / Blind	FS	73		NH			Ne	Hi	I	I		NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH				NH				NH		
	HF	21		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH				NH				NH		
Lake Maurepas	OW	100		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
Tickfaw River Mouth	FS	53		NH			Ne	Lo	Sy	Sy		NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy		NH		
	HF	37		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
West Manchac Land Bridge	OW	6		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FM	22		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D
	FS	61		NH			Ne	Lo	I	I		NH			Ne	Hi	I	Sy		NH			W	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	11		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Middle Pontchartrain Basin																																										
East Manchac Land Bridge	OW	7		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	IM	41		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D
	FS	15		NH				NH				NH			Ne	Hi	I	Sy		NH			W	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	34		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Tangipahoa River Mouth	FM	10		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	FS	53		NH			Ne	Lo	Sy	Sy		NH			Ne	Hi	I	Sy		NH			W	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	34		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Tchefuncte River Mouth	OW	18		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FM	28		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	FS	26		NH				NH				NH			Ne	Hi	I	Sy		NH			W	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	22		NH			Ne	Lo	Sy	Sy		NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		

Table 5-1. Region 1 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat type is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
			Other Marsh/ OW Residents				Other Woodland Resid.				Other Marsh/ OW Migrants				Other Woodland Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
Mapping Unit	Type	% of Unit	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Upper Pontchartrain Basin																																														
Amite / Blind	FS	73	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	Sy	D	Mu	Mo	I	D	Mu	Mo	I	I
	HF	21		NH			Ne	Hi	I	D		NH			Mu	Mu	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Mo	Sy	D	Mu	Mo	I	S	Mu	Lo	Sy	Sy
Lake Maurepas	OW	100	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Tickfaw River Mouth	FS	53	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy	Mu	Mo	I	D	Mu	Mo	I	I
	HF	37		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy	Mu	Mo	I	S	Mu	Lo	Sy	Sy
West Manchac Land Bridge	OW	6	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	22	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	I
	FS	61	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	D	Mu	Mo	I	I
	HF	11		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Mo	D	D	Mu	Mo	Sy	D	Mu	Lo	Sy	Sy
Middle Pontchartrain Basin																																														
East Manchac Land Bridge	OW	7	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	IM	41	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	I
	FS	15	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	D	Mu	Mo	I	I
	HF	34		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Mo	D	D	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
Tangipahoa River Mouth	FM	10	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	I
	FS	53	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	D	Mu	Mo	I	I
	HF	34		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Mo	D	D	Mu	Mo	Sy	D	Mu	Lo	Sy	Sy
Tchefuncte River Mouth	OW	18	Mu	Mo	Sy	Sy		NH			Mu	Mu	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	28	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	I
	FS	26	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	D	Mu	Mo	I	I
	HF	22		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Mo	D	D	Mu	Mo	Sy	D	Mu	Lo	Sy	Sy

Table 5-1. Region 1 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat type is particularly rare or important to wildlife.

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Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Avifauna: Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots, and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Bonnet Carre	OW	5		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FM	17		NH				NH			Mu	Lo	Sy	D	Ne	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	FS	30		NH				NH				NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	41		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
	AU	6		NH				NH				NH			St	Lo	I	Sy	Mu	Lo	I	Sy		NH				NH				NH			Mu	Lo	I	Sy		NH		
LaBranche Wetlands	OW	16	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy
	IM	10		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	BM	17		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	FS	41		NH			Ne	Mo	I	Sy		NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	9		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Lake Pontchartrain	OW	100	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy
North Shore Marshes	OW	27	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	IM	25		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BM	40		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	6		NH			Ne	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Bayou Sauvage	OW	23	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy
	FM	36		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	8		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	26		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
East Orleans Land Bridge	OW	39	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	D	W	Mo	Sy	D		NH				NH			W	Mo	Sy	Sy
	BM	56		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	D	W	Mo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood- land Resid.				Other Marsh/ OW Migrants				Other Wood- land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Bonnet Carre	OW	5	Mu	Mo	Sy	Sy		NH			Mu	Mu	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	17	Ne	Hi	Sy	Sy		NH			Ne	Mu	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	FS	30	Ne	Lo	Sy	Sy	Mo	Ne	I	Sy	Ne	Mu	Sy	Sy	Mo	Mu	I	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	41		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	6		NH			Ne	Lo	I	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
LaBranche Wetlands	OW	16	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	IM	10	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	17	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	FS	41	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	9		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Lake Pontchartrain	OW	100	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
North Shore Marshes	OW	27	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	IM	25	Ne	Hi	Sy	Sy		NH			Ne	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	40	Ne	Hi	Sy	Sy		NH			Ne	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	6		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Bayou Sauvage	OW	23	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	36	Ne	Hi	Sy	Sy		NH			Ne	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	IM	8	Ne	Hi	Sy	Sy		NH			Mu	Mo	Sy	SY		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	26		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
East Orleans Land Bridge	OW	39	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	56	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy

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	1988 Habitat		Avifauna																																											
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots, and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Pearl River Mouth	OW	28	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy
	FM	15		NH			Ne	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	17		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	BM	15		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	21		NH			Ne	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Lower Pontchartrain Basin																																														
Central Wetlands	OW	19	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	D	D		NH				NH			W	Lo	D	D
	FM	5		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D
	BM	45		NH				NH			Mu	Hi	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D
	AU	26		NH				NH				NH			St	Lo	I	Sy	Mu	Lo	I	Sy		NH				NH				NH				NH				NH		
South Lake Borgne	OW	42	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	D	D		NH				NH			W	Lo	D	D
	BM	24		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	SM	32		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
Lake Borgne	OW	100	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Hi	Sy	Sy		NH				NH				NH		
Biloxi Marshes	OW	76	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH				NH		
	BM	10		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	SM	14		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
Eloi Bay	OW	69	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH				NH		
	BM	5		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	SM	20		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	AU	5		NH				NH				NH			St	Lo	I	Sy	Mu	Lo	I	Sy		NH				NH				NH				NH				NH		
Chandeleur Sound	OW	100	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Mo	Sy	Sy		NH				NH				NH		

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	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Woodland Resid.				Other Marsh/ OW Migrants				Other Woodland Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Pearl River Mouth	OW	28	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	15	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	17	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	BM	15	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	21		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Lower Pontchartrain Basin																																															
Central Wetlands	OW	19	Mu	Mo	Sy	Sy					Mu	Lo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	FM	5	Ne	Hi	Sy	Sy					Mu	Hi	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
	BM	45	Ne	Hi	Sy	Sy					Mu	Hi	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
	AU	26		NH			Ne	Lo	I	Sy					Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	D	D
South Lake Borgne	OW	42	Mu	Mo	Sy	Sy					Mu	Mo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	BM	24	Ne	Hi	Sy	D					Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
	SM	32	Ne	Hi	Sy	D					Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
Lake Borgne	OW	100	Mu	Mo	Sy	Sy					Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Biloxi Marshes	OW	76	Mu	Mo	Sy	Sy					Mu	Mo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	BM	10	Ne	Hi	Sy	D					Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	D	D
	SM	14	Ne	Hi	Sy	D					Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	D	D
Eloi Bay	OW	69	Mu	Mo	Sy	Sy					Mu	Mo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	BM	5	Ne	Hi	Sy	D					Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	D	D
	SM	20	Ne	Hi	Sy	D					Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	D	D
	AU	5		NH			Ne	Lo	I	Sy	Mu	NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D
Chandeleur Sound	OW	100	Mu	Mo	Sy	Sy					Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		

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	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots, and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Chandeleur Islands	OW	87	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Mo	Sy	Sy		NH				NH				NH		
	AB	8	W	Hi	I	I		NH			Mu	Hi	Sy	D		NH				NH			W	Lo	Sy	Sy	W	Mo	Sy	Sy		NH				NH				NH		
	SM	2	Ne	Hi	I	I		NH				NH				NH				NH			W	Lo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			Mu	Lo	Sy	Sy
	BB	3	Ne	Hi	I	I		NH			Mu	Hi	Sy	D		NH				NH				NH				NH				NH				NH				NH		

Table 5-1. Region 1 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat type is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Chandeleur Islands	OW	87	Mu	Mo	Sy	Sy					Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
	AB	8		NH								NH				NH				NH				NH				NH				NH				NH				NH				NH		
	SM	2		NH								NH				NH				NH				NH				NH				NH				NH				NH				NH		
	BB	3	Mu	Mo	Sy	D					Mu	Mo	Sy	D		NH				NH				NH				NH				NH				NH				NH				NH		

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat		Avifauna																																							
	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Breton Sound Basin																																											
American Bay	OW	66	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Lo	Sy	D		NH				NH			W	Lo	Sy	Sy
	BM	8		NH				NH			Mu	Hi	Sy	D	Mu	Hi	I	D	Mu	Hi	Sy	D	W	Mo	Sy	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	D
	SM	18		NH				NH			Mu	Hi	Sy	D	Mu	Hi	I	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D		NH				NH			Mu	Lo	Sy	D
Breton Sound	OW	100	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Mo	Sy	Sy		NH				NH				NH		
Caernarvon	OW	60	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	I	I	W	Mo	I	I		NH				NH			W	Lo	Sy	Sy
	BM	32		NH				NH			Mu	Hi	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	I	I	W	Lo	I	I		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	SM	7		NH				NH			Mu	Hi	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	I	I	W	Lo	I	I		NH				NH			Mu	Lo	I	I
Jean Louis Robin	OW	64	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	BM	18		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	I	I
	SM	16		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			Mu	Lo	I	I
Lake Lery	OW	35	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	I	I	W	Mo	I	I		NH				NH			W	Lo	Sy	Sy
	BM	58		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	MW	Mo	I	I	W	Lo	I	I		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
River aux Chenes	OW	31	W	Hi	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	BM	63		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
Mississippi River Basin																																											
Baptiste Colette	OW	82	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy		NH			W	Hi	Sy	Sy
	FM	8		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy	Mu	Lo	Sy	D	Mu	Hi	Sy	Sy
	IM	6		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy	Mu	Lo	Sy	D	Mu	Hi	Sy	Sy
Cubit's Gap	OW	68	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy		NH			W	Hi	Sy	Sy
	FM	26		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy	Mu	Lo	Sy	D	Mu	Hi	Sy	Sy

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Breton Sound Basin																																															
American Bay	OW	66	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy		NH				NH				NH			Mu	Lo	D	Sy
	BM	8	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	Sy
	SM	18	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	D	Sy
Breton Sound	OW	100	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Caernarvon	OW	60	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	32	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	SM	7	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	Sy	Sy
Jean Louis Robin	OW	64	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	18	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	SM	16	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NL			Mu	Lo	Sy	Sy
Lake Lery	OW	35	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	BM	58	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
River aux Chenes	OW	31	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	BM	63	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
Mississippi River Basin																																															
Baptiste Colette	OW	82	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	D	Sy
	FM	8	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	Sy
	IM	6	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	Sy
Cubit's Gap	OW	68	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	26	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
East Bay	OW	88	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	D	W	Lo	Sy	D	W	Mo	Sy	D		NH			W	Lo	Sy	D
	FM	5		NH				NH			Mu	Lo	D	D	Mu	Mo	D	D	Mu	Hi	D	D	W	Lo	D	D	W	Lo	Sy	D	W	Mo	Sy	D	Mu	Lo	D	D	Mu	Lo	D	D
	BB	1		NH				NH			Mu	Mo	D	D	Mu	Lo	D	D	Mu	Mo	D	D		NH				NH				NH				NH				NH		
La Loutre	OW	73	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy		NH			W	Hi	Sy	Sy
	FM	22		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	Sy	Sy	Mu	Lo	Sy	D	Mu	Hi	Sy	Sy
West Bay	OW	85	W	Mo	I	I		NH			Mu	Hi	Sy	D		NH				NH			W	Mo	Sy	I	W	Mo	Sy	I	W	Mo	Sy	I		NH			W	Mo	Sy	I
	FM	5		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	I	Mu	Hi	Sy	I	W	Mo	Sy	I	W	Mo	Sy	I	W	Mo	Sy	I	Mu	Lo	Sy	I	Mu	Mo	Sy	I
	BB	1		NH				NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH		
Barataria Basin																																										
Baker	FS	44		NH				NH				NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	D		NH				NH			Mu	Mo	I	Sy		NH		
	HF	51		NH				NH				NH				NH				NH			Mu	Lo	Sy	D		NH				NH			Mu	Hi	I	D		NH		
Barataria Bay	OW	97	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Lo	D	D		NH				NH				NH		
	SM	2	Ne	Hi	I	I		NH				NH				NH				NH			Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
Barataria Barrier Islands	OW	64	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Lo	D	D		NH				NH				NH		
	SM	12		NH				NH			Mu	Mo	Sy	D	Mu	Mo	Sy	D	Mu	Mo	Sy	D	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
	HF	2		NH				NH				NH				NH				NH				NH				NH				NH			St	Mo	Sy	D		NH		
	BB	2		NH				NH			Mu	Mo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	Sy	D		NH				NH				NH				NH				NH		
	AU	19		NH				NH				NH			St	Lo	Sy	D	Mu	Lo	Sy	D		NH				NH				NH			Mu	Lo	Sy	D		NH		
Barataria Barrier Shorelines	OW	74	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Lo	D	D		NH				NH				NH		
	SM	20		NH				NH			Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
	HF	1		NH				NH				NH				NH				NH				NH				NH				NH			St	Mo	D	D		NH		
	BB	2		NH				NH			Mu	Mo	D	D	Mu	Lo	D	D	Mu	Mo	D	D		NH				NH				NH				NH				NH		

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

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Mapping Unit	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
	Type	% of Unit	Other Marsh/ OW Residents				Other Wood- land Resid.				Other Marsh/ OW Migrants				Other Wood- land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
East Bay	OW	88	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NL				NH				NL			Mu	Lo	Sy	Sy
	FM	5	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy
La Loutre	OW	73	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	22	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy
West Bay	OW	85	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FM	5	Ne	Hi	Sy	I		NH			Mu	Hi	Sy	I		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	I		NH			Mu	Lo	Sy	I	Mu	Mo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy
Barataria Basin																																															
Baker	FS	44	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	51		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Barataria Bay	OW	97	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
	SM	2		NH				NH				NH				NH				NH				NH				NH			Mu	Lo	D	D		NH				NH				NL		
Barataria Barrier Islands	OW	64	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NL				NL				NL		
	SM	12	Ne	Mo	Sy	D		NH			Ne	Mo	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NL		
	HF	2	Ne	Mo	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	Sy		NH				NL		
	BB	2		NH				NH				NH				NH				NH				NH			Mu	Lo	D	D		NH				NH				NH				NH		
	AU	19		NH			Ne	Lo	Sy	D		NH			Mu	Lo	Sy	D		NH				NH				NH				NH				NH				NH				NH		
Barataria Barrier Shorelines	OW	74	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NL				NH				NL				NL		
	SM	20	Ne	Mo	D	D		NH			Ne	Mo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	HF	1		NH			Ne	Mo	D	D		NH			Mu	Hi	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	BB	2		NH				NH			Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Lo	D	D		NL				NH				NL				NH		

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Avifauna: Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Bastian Bay	OW	88	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Lo	D	D		NH				NH				NH		
	SM	6		NH				NH			Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
Caminada Bay	OW	71	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	D	D		NH				NH				NH		
	SM	26		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
Cataouatche/Salvador	OW	37	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	I	Sy	W	Mo	Sy	Sy		NH				NH			W	Hi	I	Sy
	FM	49		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	SY	Sy	W	Mo	I	Sy	W	Mo	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	FS	6		NH			Ne	Hi	I	I		NH			Mu	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	5		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Cheniere Ronquille	OW	86	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH				NH			W	Lo	D	D		NH				NH				NH		
	SM	13		NH				NH			Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
Clovelly	OW	20	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Mo	D	D		NH				NH			W	Lo	Sy	Sy
	FM	34		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	40		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	5		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Des Allemands	OW	17	W	Lo	I	I		NH			Mu	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy
	FM	18		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	D	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	D
	FS	41		NH			Ne	Hi	I	I		NH			Ne	Hi	I	Sy		NH			W	Lo	Sy	D		NH				NH			Mu	Mo	I	Sy		NH		
	HF	19		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Fourchon	OW	50	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	D	W	Lo	Sy	D		NH				NH				NH		
	SM	39		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
	HF	2		NH				NH				NH				NH				NH				NH				NH				NH			St	Mo	Sy	D		NH		
	BB	3		NH				NH			Mu	Hi	D	D	Mu	Lo	Sy	D	Mu	Hi	D	D		NH				NH				NH				NH				NH		
	AU	6	W	Lo	I	I		NH				NH			Ne	Mo	Sy	Sy	Mu	Lo	Sy	D		NH				NH				NH			Mu	Lo	Sy	D		NH		
Gheens	FM	37		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy
	FS	21		NH			Ne	Lo	Sy	Sy		NH			Mu	Hi	I	Sy		NH			W	Lo	Sy	Sy		NH				NH			Ne	Mo	I	Sy		NH		

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Bastian Bay	OW	88	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NL				NH				NL				NL		
	SM	6	Ne	Mo	D	D		NH			Mu	Mo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NL			Mu	Lo	D	D
Caminada Bay	OW	71	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	SM	26	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH			Mu	Lo	D	D
Cataouatche/Salvador	OW	37	Mu	Mo	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FM	49	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Hi	I	I
	FS	6	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	5		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	I	I
Cheniere Ronquille	OW	86	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NL				NL				NL				NL				NH				NL				NL		
	SM	13	Ne	Mo	D	D		NH			Mu	Mo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NL			Mu	Lo	D	D
Clovelly	OW	20	Mu	Mo	Sy	SY		NH			Mu	Mo	Sy	SY		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	34	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	IM	40	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	HF	5		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
Des Allemands	OW	17	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	18	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	FS	41	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	19		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
Fourchon	OW	50	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NL				NL				NL				NH				NH				NH				NL		
	SM	39	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	Sy		NH				NH				NL		
	HF	2		NH			Ne	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	Sy		NH				NH				NL		
	BB	3		NH				NH				NH				NH				NH				NH			Mu	Lo	D	D		NH				NH				NH				NH		
	AU	6		NH			Ne	Lo	Sy	D		NH			Mu	Lo	Sy	D		NH				NH				NH			Mu	Lo	D	D		NH				NH				NH		
Gheens	FM	37	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Hi	I	I
	FS	21	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Avifauna: Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
	HF	25		NH				NH				NH				NH				NH		
	AU	15		NH				NH				NH			St	Lo	Sy	Sy	St	Lo	Sy	Sy
Grand Liard	OW	59	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH		
	IM	8		NH				NH			Mu	Mo	D	D	Mu	Hi	D	D	Mu	Hi	D	D
	BM	7		NH				NH			Mu	Mo	D	D	Mu	Hi	D	D	Mu	Hi	D	D
	SM	11		NH				NH			Mu	Hi	D	D	Mu	Hi	D	D	Mu	Hi	D	D
	AU	9		NH				NH				NH			St	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Jean Lafitte	OW	5	W	Lo	I	I		NH			Mu	Lo	Sy	Sy		NH				NH		
	FM	12		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	IM	6		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	FS	35		NH			Ne	Lo	Sy	Sy		NH			Mu	Hi	I	Sy		NH		
	HF	35		NH				NH				NH				NH				NH		
	AU	7		NH				NH				NH			St	Lo	Sy	Sy	St	Lo	Sy	Sy
Lk. Washington/Grand Ecaille	OW	51	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH		
	BM	12		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D
	SM	35		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D

Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Avifauna: Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
	HF	25	W	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
	AU	15		NH				NH				NH			Mu	Mo	Sy	Sy		NH		
Grand Liard	OW	59	W	Lo	D	D	W	Lo	D	D	W	Lo	D	D		NH			W	Lo	D	D
	IM	8	W	Lo	D	D	W	Lo	D	D	W	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D
	BM	7	W	Lo	D	D	W	Lo	D	D	W	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D
	SM	11	W	Lo	D	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	D	D
	AU	9		NH				NH				NH			Mu	Lo	Sy	Sy		NH		
Jean Lafitte	OW	5	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy
	FM	12	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	6	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	FS	35	W	Mo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	35	Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
	AU	7		NH				NH				NH			St	Lo	Sy	Sy		NH		
Lk. Washington/Grand Ecaille	OW	51	W	Lo	D	D	W	Lo	D	D		NH				NH			W	Lo	D	D
	BM	12	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	SM	35	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D

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	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
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			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
	HF	25		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	15		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Grand Liard	OW	59	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	IM	8	Ne	Hi	D	D		NH			Mu	Hi	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
	BM	7	Ne	Hi	D	D		NH			Mu	Hi	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
	SM	11	Ne	Hi	D	D		NH			Mu	Hi	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH			Mu	Lo	D	D
	AU	9		NH			Ne	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
Jean Lafitte	OW	5	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	12	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Hi	I	I
	IM	6	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	FS	35	Ne	Lo	Sy	Sy	Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	35		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	7		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Lk. Washington/Grand Ecaille	OW	51	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	BM	12	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	D	D
	SM	35	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NL			Mu	Lo	D	D

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Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat		Avifauna																																											
	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Lake Boeuf	FM	24	W	Lo	I	I		NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	D	W	Lo	Sy	I		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	D
	FS	54		NH			Ne	Mo	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			W	Lo	Sy	D		NH				NH			Mu	Mo	Sy	Sy		NH		
	HF	15		NH				NH				NH				NH				NH			W	Lo	Sy	D		NH				NH			Mu	Hi	I	D		NH		
Little Lake	OW	69		NH				NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	D	D		NH				NH			W	Lo	D	D
	BM	13	W	Hi	I	I		NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	SM	12		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH				NH			Mu	Lo	D	D
Myrtle Grove	OW	51	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	I	W	Mo	Sy	I		NH				NH			W	Lo	Sy	I
	BM	38		NH			Ne	Lo	Sy	Sy	Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	I	W	Lo	Sy	I		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	I
	AU	6		NH				NH				NH			St	Lo	Sy	Sy	St	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy		NH		
Naomi	OW	26	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	I	I	W	Mo	I	I		NH				NH			W	Mo	I	I
	IM	40		NH			Ne	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Mo	I	I	W	Mo	I	I		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	BM	14		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Mo	I	I	W	Mo	I	I		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	I
	HF	6		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
	AU	5		NH				NH				NH			St	Lo	Sy	Sy	St	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy		NH		
Perot/Rigolettes	OW	45	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	D	D		NH				NH			W	Lo	D	D
	FM	5		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	IM	20		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	BM	23		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
West Pointe A La Hache	OW	50	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	I	I	W	Mo	I	I		NH				NH			W	Lo	I	I
	BM	44		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	I	I	W	Mo	I	I		NH			Mu	Lo	Sy	D	Mu	Lo	I	I

Table 5-2. Region 2 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood- land Resid.				Other Marsh/ OW Migrants				Other Wood- land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Lake Boeuf	FM	24	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	FS	54		NH			Ne	Mo	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	I	I
	HF	15		NH			Ne	Hi	I	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Little Lake	OW	69	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	SY		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NH				NH			Mu	Lo	D	D
	BM	13	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	SM	12	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	D		NH				NH			Mu	Mo	D	D
Myrtle Grove	OW	51	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	38	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	AU	6		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Naomi	OW	26	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	IM	40	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	BM	14	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	6		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	5		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Perot/Rigolettes	OW	45	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D		NH				NH				NH			Mu	Mo	I	D
	FM	5	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Mo	I	Sy
	IM	20	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Mo	I	Sy
	BM	23	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	D	Mu	Mo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	Sy	Sy
West Pointe A La Hache	OW	50	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy		NH				NH				NH			Mu	Lo	D	Sy
	BM	44	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	Sy

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Terrebonne Basin																																										
Pigeon Swamps	OW	5		NH				NH			St	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy		NH				NH				NH				NH		
	FS	52		NH				NH				NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	38		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Verret Wetlands	OW	25		NH				NH			St	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FS	49		NH			Ne	Hi	I	I		NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	23		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Chacahoula Swamps	FS	76		NH			Ne	Mo	Sy	Sy		NH			Ne	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	21		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Black Bayou Wetlands	FS	78		NH				NH				NH			Mu	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	I	Sy		NH		
	HF	18		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
Savoie	FM	23		NH			Ne	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	43		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
	AU	30		NH				NH				NH			Sy	Lo	I	Sy	St	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy		NH		
Devil's Swamp	FM	11		NH			Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	I	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	32		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
	AU	54		NH				NH				NH			St	Lo	I	Sy	St	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy		NH		
Fields Swamp	OW	10		NH				NH			St	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FM	41		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	30		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
	AU	18		NH				NH				NH			St	Lo	I	St	St	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy		NH		

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Mapping Unit	1988 Habitat		Avifauna (cont.)															
	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Terrebonne Basin																		
Pigeon Swamps	OW	5	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FS	52	Ne	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	38		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
Verret Wetlands	OW	25	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FS	49	Ne	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	23		NH			Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	D
Chacahoula Swamps	FS	76	Ne	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	21		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
Black Bayou Wetlands	FS	78	Ne	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	18		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
Savoie	FM	23	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	HF	43		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
	AU	30		NH			Ne	Mo	Sy	Sy		NH			Mu	Lo	Sy	SY
Devil’s Swamp	FM	11	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	HF	32		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
	AU	54		NH			Ne	lo	Sy	Sy		NH			Mu	Lo	Sy	Sy
Fields Swamp	OW	10	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	41	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	HF	30		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
	AU	18		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy

Mapping Unit	1988 Habitat		Furbearers												Game Mammals												Reptiles			
	Type	% of Unit	Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Terrebonne Basin																														
Pigeon Swamps	OW	5	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FS	52	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
	HF	38	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
Verret Wetlands	OW	25	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FS	49	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
	HF	23	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
Chacahoula Swamps	FS	76	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
	HF	21	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
Black Bayou Wetlands	FS	78	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
	HF	18	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	I
Savoie	FM	23	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	Sy
	HF	43	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	I	Sy
	AU	30	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Devil’s Swamp	FM	11	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	32	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	I	Sy
	AU	54	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	Sy
Fields Swamp	OW	10	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	41	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	30	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	18	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy

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	1988 Habitat		Avifauna																																								
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
St. Louis Canal	OW	16		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FS	32		NH			Ne	Lo	Sy	Sy		NH			Ne	Hi	I	D		NH			Mu	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	I	D		NH		
	IM	18		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	D	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	BM	7		NH				NH			Mu	M	Sy	Sy	Mu	Hi	I	D	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	HF	20		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
North Bully Camp Marsh	OW	50	W	Lo	I	I		NH			Mu	Mo	SY	Sy		NH				NH			W	Lo	Sy	D	W	Lo	Sy	D		NH							W	Lo	Sy	D
	FM	5		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D	W	Lo	Sy	D
	IM	6		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D	W	Lo	Sy	D
	BM	30		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D	W	Lo	Sy	D
South Bully Camp Marsh	OW	75	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
	SM	23	Ne	Mo	I	I		NH			Mu	Hi	D	D	Mu	Hi	D	D	Mu	Hi	D	D	W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
Timbalier Isl. Shorelines	OW	76	Ne	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	Sy	D		NH				NH				NH		
	SM	8		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	D	D
	HF	5		NH				NH				NH			Ne	Mo	Sy	D		NH				NH				NH				NH			St	Lo	Sy	D		NH		
	BB	11		NH				NH			Mu	Hi	Sy	D	St	Lo	Sy	D	Mu	Hi	Sy	D		NH				NH				NH				NH				NH		
Montegut	OW	56	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	I	Sy	W	Mo	I	Sy		NH				NH			W	Mo	Sy	Sy
	IM	7		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	I	Sy	W	Mo	I	Sy		NH			Mu	Lo	Sy	D	W	Mo	Sy	Sy
	BM	25		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	I	Sy	W	Mo	I	Sy		NH			Mu	Lo	Sy	D	W	Mo	Sy	Sy
	AU	6		NH				NH				NH			St	Lo	I	Sy	St	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy		NH		
Terrebonne Marshes	OW	85	Ne	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
	SM	12		NH				NH			Mu	Hi	D	D	Mu	Hi	D	D	Mu	Hi	D	D	W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Avifauna (cont.): Other Marsh/ OW Residents Func.	Status	Trend	Proj.	Other Woodland Resid. Func.	Status	Trend	Proj.	Other Marsh/ OW Migrants Func.	Status	Trend	Proj.	Other Woodland Migrants Func.	Status	Trend	Proj.
St. Louis Canal	OW	16		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	FS	32	Ne	Lo	Sy	D	Ne	Mo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	Sy	D
	IM	18	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	7	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	20		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
North Bully Camp Marsh	OW	50	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	5	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	IM	6	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	30	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
South Bully Camp Marsh	OW	75	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	D		NH		
	SM	23	Mu	Hi	D	D		NH			Mu	Hi	Sy	D		NH		
Timbalier Isl. Shorelines	OW	76	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	SM	8	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	5		NH			Mu	Mo	Sy	D		NH			St	Mo	Sy	D
	BB	11		NH				NH				NH				NH		
Montegut	OW	56	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	IM	7	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	25	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	AU	6		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy
Terrebonne Marshes	OW	85		NH				NH				NH				NH		
	SM	12	Mu	Hi	D	D		NH			Mu	Hi	Sy	D		NH		

Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Furbearers: Nutria Func.	Status	Trend	Proj.	Muskrat Func.	Status	Trend	Proj.	Mink, Otter, and Raccoon Func.	Status	Trend	Proj.	Game Mammals: Rabbit Func.	Status	Trend	Proj.	Squirrel Func.	Status	Trend	Proj.	Deer Func.	Status	Trend	Proj.	Reptiles: American Alligator Func.	Status	Trend	Proj.
St. Louis Canal	OW	16	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FS	32	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	IM	18	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	7	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	20	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
North Bully Camp Marsh	OW	50	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy		NH				NH				NH			Mu	Lo	D	D
	FM	5	Mu	Mo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	Sy
	IM	6	Mu	Mo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	Sy
	BM	30	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
South Bully Camp Marsh	OW	75	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	Sy	D		Nl				NH				NL			Mu	Lo	D	D
	SM	23	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	Sy	D	Mu	Lo	D	D		NH				NL			Mu	Lo	D	D
Timbalier Isl. Shorelines	OW	76		NL				NL				NL				NL				NH				NL				NL		
	SM	8	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	HF	5	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	BB	11		NH				NH			Mu	Lo	D	D		NH				NH				NH				NH		
Montegut	OW	56	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	D	D		NH				NH				NH			Mu	Lo	D	D
	IM	7	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	D	D	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	D
	BM	25	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Mo	D	D	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
	AU	6	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Lo	D	D
Terrebonne Marshes	OW	85		NH				NH				NH				NH				NH				NH				NL		
	SM	12	Mu	Lo	D	D	Mu	Lo	Sy	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NL			Mu	Lo	D	D

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Boudreaux	OW	48	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
	IM	13		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D	W	Lo	Sy	D
	BM	20		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D	W	Lo	Sy	D
	HF	9		NH			Ne	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	D	D	W	Lo	Sy	D		NH			Mu	Hi	Sy	D		NH		
Pelto Marshes	OW	70	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
	SM	24		NH				NH			Mu	Hi	D	D	Mu	Hi	D	D	Mu	Hi	D	D	W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
Isles Dernieres Shorelines	OW	78	W	Hi	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	D	D	W	Lo	Sy	D		NH				NH				NH		
	SM	9	Ne	Hi	I	I		NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	Sy	D		NH				NH			W	Lo	D	D
	HF	6		NH				NH				NH			Ne	Mo	Sy	D						NH				NH				NH			St	Lo	Sy	D		NH		
	BB	8		NH				NH			Mu	Hi	Sy	D	St	Lo	Sy	D	Mu	Hi	Sy	D		NH				NH				NH				NH				NH		
NHSC Marshes	OW	16		NH				NH			St	Lo	Sy	Sy		NH				NH			W	Lo	Sy	D	W	Lo	Sy	D		NH				NH			W	Lo	Sy	D
	IM	14		NH				NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	Sy	W	Lo	Sy	D
	FS	28		NH				NH				NH			Ne	Mo	I	Sy		NH			W	Lo	Sy	D	W	Lo	Sy	D		NH			Mu	Mo	I	Sy	Mu	Lo	Sy	D
	HF	26		NH				NH				NH				NH				NH			Mu	Lo	Sy	D		NH				NH			Mu	Hi	I	D		NH		
	AU	11		NH				NH				NH			St	Lo	I	Sy	St	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy		NH		
Caillou Marshes	OW	53	W	Hi	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	BM	13		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	SM	34		NH				NH			Mu	Mo	Sy	D	Mu	Mo	I	Sy	Mu	Hi	Sy	D	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			Mu	Lo	Sy	Sy
Mechant/de Cade	OW	46	W	Hi	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy
	IM	14		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	BM	29		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	FS	1		NH			Ne	Lo	Sy	Sy		NH				NH				NH			Ne	Lo	Sy	Sy	W	Mo	Sy	Sy		NH				NH				NH		

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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	1988 Habitat		Avifauna (cont.)															
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Boudreaux	OW	48		NH				NH				NH				NH		
	IM	13	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	20	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	9		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
Pelto Marshes	OW	70		NH				NH				NH				NH		
	SM	24	Mu	Hi	D	D		NH			Mu	Hi	Sy	D		NH		
Isles Dernieres Shorelines	OW	78		NH				NH				NH				NH		
	SM	9	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	6		NH			Mu	Mo	Sy	D		NH			St	Mo	Sy	D
	BB	8		NH				NH				NH				NH		
NHSC Marshes	OW	16		NH				NH				NH				NH		
	IM	14	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FS	28	Mu	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	26		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D
	AU	11		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy
Caillou Marshes	OW	53	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	13	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	SM	34	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
Mechant/de Cade	OW	46	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	IM	14	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	29	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	FS	1		NH				NH				NH				NH		

	1988 Habitat		Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Boudreaux	OW	48		NH				NH				NH				NH				NH				NH			Mu	Lo	D	D
	IM	13	Mu	Mo	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	BM	20	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	D
	HF	9	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
Pelto Marshes	OW	70		NH				NH				NH				NH				NH				NH				NL		
	SM	24	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NH				NL			Mu	Lo	D	D
Isles Dernieres Shorelines	OW	78		NH				NH				NH				NH				NH				NH				NL		
	SM	9	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	HF	6	Mu	Lo	D	D	Mu	Lo	D	D	Mu	Lo	D	D		NL				NH				NL				NL		
	BB	8		NH				NH				NH				NH				NH				NH				NH		
NHSC Marshes	OW	16		NH				NH				NH				NH				NH				NH			Mu	Mo	Sy	Sy
	IM	14	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	FS	28	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	HF	26	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	AU	11	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Mo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
Caillou Marshes	OW	53	Mu	Lo	D	Sy	Mu	Lo	D	Sy	Mu	Mo	D	Sy		NH				NH				NH			Mu	Lo	D	D
	BM	13	Mu	Mo	D	Sy	Mu	Mo	D	Sy	Mu	Mo	D	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	Sy
	SM	34	Mu	Lo	D	Sy	Mu	Mo	D	Sy	Mu	Mo	D	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	D	D
Mechant/de Cade	OW	46	Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D		NH				NH				NH			Mu	Lo	Sy	D
	IM	14	Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	D
	BM	29	Mu	Mo	D	D	Mu	Mo	D	D	Mu	Mo	D	D	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	D
	FS	1		NH				NH				NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH		

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Mapping Unit	1988 Habitat		Avifauna																																							
	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Penchant	OW	19		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	Sy	D	W	Hi	Sy	D	W	Mo	I	D		NH			W	Hi	Sy	Sy
	FM	67		NH			Ne	Mo	I	I	Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	Sy	D	W	Hi	Sy	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Hi	Sy	Sy
	HF	9		NH				NH				NH				NH				NH			W	Mo	Sy	Sy		NH				NH			Mu	Hi	I	D		NH		
GIWW	OW	17		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy
	FM	36		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	FS	31		NH			Ne	Hi	I	I		NH			Mu	Hi	I	Sy		NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Mo	I	Sy		NH		
	HF	14		NH				NH				NH				NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Hi	I	D		NH		
Avoca	OW	42		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Hi	Sy	Sy
	AB	16		NH				NH				NH				NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			Mu	Hi	Sy	Sy
	FM	17		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy
	FS	8		NH			Ne	Hi	I	I		NH			Mu	Hi	I	Sy		NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	16		NH				NH				NH				NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy
Atchafalaya Marshes	OW	9	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Lo	I	I		NH			Mu	Mo	Sy	Sy
	FM	55		NH			Ne	Mo	I	I	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Lo	I	I	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	19		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Lo	I	I	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	15		NH				NH				NH				NH				NH			W	Lo	Sy	Sy		NH			W	Lo	I	I	Mu	Hi	Sy	D		NH		
Four League Bay	OW	98	W	Hi	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
Point au Fer	OW	22	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy
	IM	11		NH				NH			Mu	Mo	Sy	D	Mu	Mo	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	BM	55		NH				NH			Mu	Mo	Sy	D	Mu	Mo	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	SM	10		NH				NH			Mu	Mo	Sy	D	Mu	Mo	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy
	BB	1		NH				NH			Mu	Mo	D	D	St	Lo	Sy	D	Mu	Hi	Sy	D		NH				NH				NH				NH				NH		

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

Status: NH = Not Historically Present; NL = No Longer Present; Lo = Low Numbers; Mo = Moderate Numbers; Hi = High Numbers

Functions of Particular Interest: Ne = Nesting; St = Stopover Habitat; W = Wintering Area; Mu = Multiple Functions

Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood- land Resid.				Other Marsh/ OW Migrants				Other Wood- land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Penchant	OW	19	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	67	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	HF	9	Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	I	I
GIWW	OW	17	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	FM	36	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	FS	31	Mu	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	14		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
Avoca	OW	42	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	AB	16	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	FM	17	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	FS	8	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	16		Nh			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Atchafalaya Marshes	OW	9	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	55	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	IM	19	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	HF	15		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
Four League Bay	OW	98	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Point au Fer	OW	22	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	IM	11	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	55	Mu	Hi	Sy	D		NH			Mu	Hi	SY	D		NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	SM	10	Mu	Hi	Sy	D		NH			Mu	Hi	SY	D		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH				NH				NH		

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Atchafalaya Basin																																											
Atchafalaya Subdelta	OW	95	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Hi	I	I	W	Hi	I	I	W	Mo	I	I		NH			W	Lo	Sy	Sy
	FM	3		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Hi	I	I	W	Hi	I	I	W	Mo	I	I	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	1		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy		NH				NH				NH				NH				NH		
West N. Wax Lake Wetlands	FM	17		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy		NH				NH			Mu	Lo	Sy	Sy		NH		
	FS	16		NH				NH				NH			Mu	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy		NH		
	HF	55		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
	AU	11		NH				NH				NH			St	Lo	Sy	Sy	St	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy		NH		
East N. Wax Lake Wetlands	FS	35		NH				NH				NH			Mu	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy		NH		
	HF	56		NH			Ne	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
Wax Lake Wetlands	OW	18	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FM	38		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	FS	8		NH			Ne	Lo	Sy	Sy		NH			Mu	Hi	I	Sy		NH			Mu	Mo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy		NH		
	HF	34		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
Wax Lk. Outlet Subdelta	OW	97	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Hi	I	I	W	Hi	I	I	W	Mo	I	I		NH			W	Lo	Sy	Sy
	FM	2		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Hi	I	I	W	Hi	I	I	W	Mo	I	I	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	1		NH				NH			Mu	Hi	Sy	Sy	St	Lo	I	Sy	Mu	Hi	Sy	Sy		NH				NH				NH				NH				NH		
Teche/Vermilion Basin																																											
Cote Blanche Wetlands	OW	10		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy
	FM	54		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	FS	15		NH			Ne	Lo	Sy	Sy		NH			Mu	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy		NH		
	HF	17		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy
East Cote Blanche Bay	OW	100	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH				NH		
West Cote Blanche Bay	OW	100	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH				NH		
Marsh Island	OW	20		NH				NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy

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Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Atchafalaya Basin																																																							
Atchafalaya Subdelta	OW	95	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	I	I
	FM	3	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	BB	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy
West N. Wax Lake Wetlands	FM	17	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy
	FS	16	Mu	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	55		NH			Ne	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	11		NH			Ne	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
East N. Wax Lake Wetlands	FS	35	Mu	Lo	Sy	Sy	Ne	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	56		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Wax Lake Wetlands	OW	18	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	38	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	FS	8	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	I	I
	HF	34		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
Wax Lk. Outlet Subdelta	OW	97	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	I	I
	FM	2	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	BB	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy
Teche/Vermilion Basin																																																							
Cote Blanche Wetlands	OW	10	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	54	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	FS	15	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
	HF	17		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	I	I
East Cote Blanche Bay	OW	100	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
West Cote Blanche Bay	OW	100	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Marsh Island	OW	20	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	I

Table 5-3. Region 3 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat		Avifauna																																							
	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
	BM	70		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	SM	10		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy
Vermilion Bay Marsh	OW	13		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH			Mu	Lo	Sy	Sy
	FM	5		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	IM	25		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BM	30		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	FS	5		NH			Ne	Lo	Sy	Sy		NH			Mu	Hi	I	Sy		NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	18		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy
Vermilion Bay	OW	99	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH				NH		
Big Woods	FM	8		NH				NH			St	Lo	Sy	Sy	Mu	Mo	I	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Lo	Mo	Sy	Sy
	HF	60		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
	AU	25		NH				NH				NH			St	Lo	I	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH		
Rainey Marsh	OW	12	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy
	IM	11		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy
	BM	70		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy

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Mapping Unit	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals																Reptiles			
	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Migrants				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
	BM	70	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	I
	SM	10	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Vermilion Bay Marsh	OW	13	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	I	I
	FM	5	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	I
	IM	25	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	I
	BM	30	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	I
	FS	5	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	I	I
	HF	18		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	I	I
Vermilion Bay	OW	99	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Big Woods	FM	8	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	60		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	25	Mu	Lo	Sy	Sy	Ne	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Rainey Marsh	OW	12	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	IM	11	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
	BM	70	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

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	1988 Habitat		Avifauna																			
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Mermentau Basin																						
Amoco	OW	14		NH				NH			Mu	Lo	Sy	Sy		NH				NH		
	FM	80		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D
Big Marsh	OW	11		NH				NH			Mu	Mo	Sy	Sy		NH				NH		
	FM	57		NH			St	Lo	U	U	Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	IM	25		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
Big Burn	OW	18		NH				NH			Mu	Mo	Sy	Sy		NH				NH		
	AB	6		NH				NH				NH				NH				NH		
	FM	67		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D
Cameron Prairie	OW	6		NH				NH			Mu	Lo	Sy	Sy		NH				NH		
	AB	14		NH				NH				NH				NH				NH		
	FM	67		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D
	AU	11		NH				NH				NH			St	Lo	I	Sy	Mu	Hi	Sy	Sy
Grand Chenier Ridge	OW	11		NH				NH			Mu	Lo	Sy	Sy		NH				NH		
	FM	23		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	IM	24		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	BM	5		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	HF	8		NH				NH				NH				NH				NH		
	AU	30		NH				NH				NH			St	Lo	I	Sy	Mu	Mo	Sy	Sy
Grand Lake	OW	99		NH				NH			Mu	Hi	Sy	Sy		NH				NH		
Grand/White Lake Land Bridge	OW	35		NH				NH			Mu	Mo	Sy	Sy		NH				NH		
	FM	54		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy
	HF	9		NH				NH				NH				NH				NH		

	1988 Habitat		Avifauna																			
Mapping Unit	Type	% of Unit	Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails,Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Mermentau Basin																						
Amoco	OW	14	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	I	I		NH			W	Mo	Sy	Sy
	FM	80	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Hi	I	I	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
Big Marsh	OW	11	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			W	Mo	Sy	Sy
	FM	57	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	25	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
Big Burn	OW	18	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	AB	6	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	FM	67	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
Cameron Prairie	OW	6	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	AB	14	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	FM	67	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	AU	11	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Grand Chenier Ridge	OW	11	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	FM	23	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	24	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	BM	5	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	8	Ne	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
	AU	30	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Grand Lake	OW	99	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH				NH		
Grand/White Lake Land Bridge	OW	35	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			W	Lo	Sy	Sy
	FM	54	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	9		NH				NH				NH			Mu	Hi	Sy	D		NH		

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	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Mermentau Basin																																															
Amoco	OW	14	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	80	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
Big Marsh	OW	11	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	57	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	IM	25	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	I
Big Burn	OW	18	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	AB	6	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	67	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
Cameron Prairie	OW	6	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	AB	14	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	67	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	I	Sy
	AU	11	Mu	Mo	Sy	Sy	Ne	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Grand Chenier Ridge	OW	11	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	I	Sy
	FM	23	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	I	Sy
	IM	24	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	Sy
	BM	5	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	I	Sy
	HF	8		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	30	Mu	Lo	Sy	Sy	Ne	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Grand Lake	OW	99	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Grand/White Lake Land Bridge	OW	35	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	54	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Mo	I	I
	HF	9		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Lo	Sy	Sy

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			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Grand Lake East	OW	14		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			W	Lo	Sy	Sy
	AB	6		NH				NH				NH				NH				NH			W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy
	FM	64		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy
	HF	14		NH				NH				NH				NH				NH				NH				NH				NH			Mu	Hi	Sy	D		NH		
Hog Bayou	OW	34	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			W	Lo	Sy	Sy
	FM	5		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy
	BM	32		NH				NH			Mu	Hi	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy
	SM	25		NH				NH			Mu	Hi	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	D	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy
	BB	1		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy		NH				NH				NH				NH				NH		
Lacassine	OW	20		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	AB	20		NH				NH				NH				NH				NH			W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	FM	55		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	HF	5		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
Little Prairie	OW	6		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy
	FM	30		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	14		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy		NH		
	AU	50		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Little Pecan	OW	15		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	D	D	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	FM	75		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	D	D	W	Mo	D	D	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	HF	3		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH				NH				NH		

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Grand Lake East	OW	14	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	AB	6	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	64	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	D	D		NH			Mu	Lo	D	D	Mu	Mo	I	Sy
	HF	14		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Hog Bayou	OW	34	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FM	5	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BM	32	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	SM	25	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH				NH		
Lacassine	OW	20	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	AB	20	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	FM	55	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	HF	5		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Little Prairie	OW	6	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	30	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	I	Sy
	HF	14		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	50	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Little Pecan	OW	15	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	FM	75	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Hi	I	I
	HF	3		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy

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	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails,Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Locust Island	OW	9		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy
	FM	9		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	31		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Mo	Sy	Sy
	BM	13		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Mo	Sy	Sy
	AU	36		NH				NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Middle Marsh	OW	7		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	FM	10		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	IM	69		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Hi	Sy	Sy	W	Hi	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	AU	10		NH				NH				NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
North White Lake	FM	92		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy
	HF	6		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
North Grand Lake	OW	20		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy
	FM	68		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	HF	7		NH				NH				NH				NH				NH			Mu	Lo	Sy	Sy		NH				NH			Mu	Hi	Sy	D		NH		
Oak Grove	IM	73		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	BM	13		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	8		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Rockefeller	OW	23	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy
	FM	15		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	D	D
	IM	14		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	D	D
	BM	30		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Mo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	D	D
	SM	15		NH				NH			Mu	Hi	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Lo	D	D	W	Lo	D	D	W	Mo	Sy	Sy		NH			Mu	Lo	D	D

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	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Locust Island	OW	9	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	9	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	I	Sy
	IM	31	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	13	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	AU	36	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Middle Marsh	OW	7	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	10	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	I	Sy
	IM	69	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	AU	10	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
North White Lake	FM	92	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	6		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy
North Grand Lake	OW	20	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	68	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	7		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Oak Grove	IM	73	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	13	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	AU	8	Mu	Lo	Sy	Sy	Ne	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Rockefeller	OW	23		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH			Mu	Hi	I	Sy
	FM	15	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy
	IM	14	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy
	BM	30	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy
	SM	15	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Lo	Sy	Sy

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			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
South Pecan Island	OW	26	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy
	IM	5		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	D	D
	BM	61		NH				NH			Mu	Hi	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Lo	Sy	Sy	Mu	Lo	Sy	D	Mu	Mo	D	D
South White Lake	OW	7		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	D	D	W	Mo	D	D	W	Lo	D	D					W	Mo	Sy	Sy
	FM	70		NH			Ne	Lo	I	I	Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	HF	11		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH		
	AU	10		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	Mu	Lo	Sy	Sy
White Lake	OW	99		NH				NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH				NH		
Calcasieu/Sabine Basin																																										
Big Lake	OW	24		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	FM	14		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	IM	9		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	BM	18		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	HF	10		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH				NH				NH		
	AU	25		NH				NH			St	Lo	Sy	Sy	St	Mo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH		
Black Bayou	OW	34	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			W	Lo	Sy	D
	IM	23		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	BM	34		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	HF	5		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH		
Black Lake	OW	68		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Lo	I	D	W	Lo	I	D	W	Lo	I	D	W	Lo	I	D	W	Lo	Sy	D
	IM	5		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Lo	I	D	W	Lo	I	D	W	Lo	I	D	W	Lo	I	D	Mu	Lo	Sy	D
	BM	11		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Lo	I	D	W	Lo	I	D	W	Lo	I	D	W	Lo	I	D	Mu	Lo	Sy	D
	AU	10		NH				NH			St	Lo	Sy	Sy	St	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH		

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Woodland Resid.				Other Marsh/ OW Migrants				Other Woodland Mig.				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
South Pecan Island	OW	26		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH			Mu	Mo	I	Sy
	IM	5	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	BM	61	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
South White Lake	OW	7	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	70	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	11	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	10	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
White Lake	OW	99	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH				NH		
Calcasieu/Sabine Basin																																															
Big Lake	OW	24	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	14	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	IM	9	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	18	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	HF	10		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	25	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Black Bayou	OW	34	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	IM	23	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	BM	34	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	HF	5		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
Black Lake	OW	68	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	IM	5	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	BM	11	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	AU	10	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Lo	Sy	Sy

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

Mapping Unit	1988 Habitat Type	1988 Habitat % of Unit	Avifauna: Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Brown Lake	OW	52		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	FM	7		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	IM	5		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	BM	34		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
Cameron	OW	6		NH				NH			Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH				NH				NH		
	FM	19		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy		NH		
	IM	22		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	BM	14		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	SM	6		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH		
	BB	1		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy		NH				NH				NH				NH				NH		
Calcasieu Lake	OW	94	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH				NH				NH		
Cameron-Creole Watershed	OW	38		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	Sy	W	Hi	I	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy
	IM	26		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Hi	I	Sy	W	Hi	I	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BM	35		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Hi	I	Sy	W	Hi	I	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Choupique Island	OW	33		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy
	FM	29		NH				NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BM	31		NH				NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	5		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH				NH				NH		
Clear Marais	OW	21		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	I		NH			W	Mo	Sy	Sy
	AB	10		NH				NH				NH				NH				NH			W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	I		NH			Mu	Mo	Sy	Sy
	FM	58		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	I	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	AU	6		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	I	Sy	W	Mo	I	Sy	W	Mo	I	I	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy

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Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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	1988 Habitat		Avifauna (cont.)															
			Other Marsh/ OW Residents				Other Wood- land Resid.				Other Marsh/ OW Migrants				Other Wood- land Mig.			
Mapping Unit	Type	% of Unit	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Brown Lake	OW	52	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	7	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	IM	5	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	34	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
Cameron	OW	6	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	19	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	IM	22	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	BM	14	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	SM	6	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	HF	1	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BB	1		NH				NH				NH				NH		
Calcasieu Lake	OW	94	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
Cameron-Creole Watershed	OW	38	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	IM	26	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	BM	35	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
Choupique Island	OW	33	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	29	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	31	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	AU	5		NH			Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy
Clear Marais	OW	21	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	AB	10	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	FM	58	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	AU	6	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy

	1988 Habitat		Furbearers												Game Mammals												Reptiles			
			Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
Mapping Unit	Type	% of Unit	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Brown Lake	OW	52	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FM	7	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	IM	5	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	BM	34	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
Cameron	OW	6	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	FM	19	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	IM	22	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	BM	14	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
	SM	6	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	1	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH				NH		
Calcasieu Lake	OW	94		NH				NH				NH				NH				NH				NH				NH		
Cameron-Creole Watershed	OW	38	Mu	Lo	I	I	Mu	Mo	I	I	Mu	Mo	I	I		NH				NH				NH			Mu	Mo	I	I
	IM	26	Mu	Lo	I	I	Mu	Mo	I	I	Mu	Mo	I	I	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	BM	35	Mu	Lo	I	I	Mu	Mo	I	I	Mu	Mo	I	I	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
Choupique Island	OW	33	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FM	29	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BM	31	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	AU	5	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Clear Marais	OW	21	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	AB	10	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	I
	FM	58	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	I
	AU	6	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails,Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Gum Cove	FM	21		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Lo	Sy	Sy	W	Lo	Sy	Sy
	AU	77		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	W	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Lo	Sy	Sy
Hackberry Ridge	OW	12		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	BM	21		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	I	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	HF	9		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH			Mu	Mo	Sy	D		NH		
	AU	53		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy
Hog Island Gully	OW	37		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	BM	22		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	I	D	W	Mo	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	SM	36		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D		NH			Mu	Lo	Sy	D
East Johnson’s Bayou	OW	7		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			W	Lo	Sy	Sy
	FM	7		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	IM	80		NH				NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
West Johnson’s Bayou	OW	13	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	I	D	W	Mo	I	D	W	Mo	I	D		NH			W	Lo	Sy	Sy
	BM	83		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	D	Mu	Hi	Sy	D	W	Mo	I	D	W	Mo	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
Johnson’s Bayou Ridge	OW	5	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Mo	I	D	W	Mo	I	D	W	Mo	I	D		NH			W	Lo	Sy	Sy
	BM	31		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	I	D	W	Mo	I	D	W	Hi	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	SM	44		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D	W	Mo	I	D	W	Mo	I	D	W	Hi	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	HF	3		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH				NH				NH		
	BB	1		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy		NH				NH				NH				NH				NH		
	AU	16		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	I	D	W	Mo	I	D	W	Hi	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna (cont.)															
			Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.			
Mapping Unit	Type	% of Unit	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Gum Cove	FM	21	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	AU	77	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Hackberry Ridge	OW	12	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	21	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	9	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	AU	53	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy		NH		
Hog Island Gully	OW	37	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	22	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	SM	36	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
East Johnson’s Bayou	OW	7	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	7	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	IM	80	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
West Johnson’s Bayou	OW	13	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	83	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
Johnson’s Bayou Ridge	OW	5	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	31	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	SM	44	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	3		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D
	BB	1		NH				NH				NH				NH		
	AU	16	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		

	1988 Habitat		Furbearers												Game Mammals												Reptiles			
			Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
Mapping Unit	Type	% of Unit	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Gum Cove	FM	21	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy
	AU	77	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Hackberry Ridge	OW	12	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	21	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	HF	9		NH				NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH		
	AU	53		NH				NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
Hog Island Gully	OW	37	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	22	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	SM	36	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
East Johnson’s Bayou	OW	7	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	FM	7	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	IM	80	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
West Johnson’s Bayou	OW	13	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	BM	83	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy
Johnson’s Bayou Ridge	OW	5	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	BM	31	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	SM	44	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	HF	3	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH				NH		
	AU	16	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

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Trends (since 1985) / **Projections** (through 2050)**:** Sy = Steady; D = Decrease; I = Increase; U = Unknown

	1988 Habitat		Avifauna																			
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Lower Mud Lake	OW	11	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH		
	SM	77		NH				NH			Mu	Mo	Sy	D	Mu	Hi	I	Sy	Mu	Hi	Sy	D
	HF	4		NH				NH				NH				NH				NH		
	BB	2		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy
Martin Beach-Ship Can. Shore	OW	9	W	Mo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH		
	IM	33		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D
	BM	26		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D
	SM	7		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D
	BB	1		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy
	AU	24		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy
Mud Lake	OW	34	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH		
	BM	62		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D
Perry Ridge	OW	30		NH				NH			Mu	Mo	Sy	D		NH				NH		
	FM	30		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy
	IM	28		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy
	HF	10		NH			Mu	Lo	Sy	Sy		NH				NH				NH		
Sabine Pool No. 3	OW	32		NH				NH			Mu	Mo	Sy	Sy		NH				NH		
	AB	7		NH				NH				NH				NH				NH		
	FM	61		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy

	1988 Habitat		Avifauna																			
Mapping Unit	Type	% of Unit	Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Lower Mud Lake	OW	11	W	Mo	D	D	W	Mo	D	D	W	Lo	D	D		NH			W	Lo	Sy	Sy
	SM	77	W	Lo	D	D	W	Lo	D	D	W	Lo	D	D		NH			Mu	Lo	Sy	Sy
	HF	4		NH				NH				NH				NH				NH		
	BB	2		NH				NH				NH				NH				NH		
Martin Beach-Ship Can. Shore	OW	9	W	Mo	I	D	W	Mo	I	D	W	Lo	I	D		NH			W	Lo	Sy	Sy
	IM	33	W	Mo	I	D	W	Mo	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	BM	26	W	Mo	I	D	W	Mo	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	SM	7	W	Mo	I	D	W	Mo	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	BB	1		NH				NH				NH				NH				NH		
	AU	24	W	Lo	I	D	W	Lo	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
Mud Lake	OW	34	W	Mo	I	Sy	W	Mo	I	Sy	W	Lo	I	Sy		NH			W	Lo	Sy	Sy
	BM	62	W	Mo	I	Sy	W	Mo	I	Sy	W	Lo	I	Sy	Mu	Lo	Sy	D	W	Lo	Sy	Sy
Perry Ridge	OW	30	W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	Sy		NH			W	Lo	Sy	Sy
	FM	30	W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	Sy		NH			Mu	Lo	Sy	Sy
	IM	28	W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	Sy		NH			Mu	Lo	Sy	Sy
	HF	10	Ne	Lo	Sy	Sy		NH				NH				NH				NH		
Sabine Pool No. 3	OW	32	W	Hi	I	Sy	W	Hi	I	Sy	W	Hi	I	Sy		NH			W	Lo	Sy	Sy
	AB	7	W	Hi	I	Sy	W	Hi	I	Sy	W	Hi	I	Sy		NH			Mu	Mo	Sy	Sy
	FM	61	W	Hi	I	Sy	W	Hi	I	Sy	W	Hi	I	Sy		NH			Mu	Mo	Sy	Sy

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	1988 Habitat		Avifauna (cont.)															
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Lower Mud Lake	OW	11	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	SM	77	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	HF	4		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	Sy
	BB	2		NH				NH				NH				NH		
Martin Beach-Ship Can. Shore	OW	9	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	IM	33	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BM	26	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	SM	7	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	BB	1		NH				NH				NH				NH		
	AU	24	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
Mud Lake	OW	34	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	BM	62	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
Perry Ridge	OW	30	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH		
	FM	30	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	IM	28	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH		
	HF	10		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D
Sabine Pool No. 3	OW	32		NH				NH				NH				NH		
	AB	7	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		
	FM	61	Mu	Hi	Sy	Sy		NH			Mu	Hi	Sy	Sy		NH		

	1988 Habitat		Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Lower Mud Lake	OW	11	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	SM	77	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	HF	4	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	2		NH				NH				NH				NH				NH				NH				NH		
Martin Beach-Ship Can. Shore	OW	9	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	IM	33	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	BM	26	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	SM	7	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	BB	1		NH				NH				NH				NH				NH				NH				NH		
	AU	24	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	D		NH			Mu	Mo	Sy	D	Mu	Lo	Sy	Sy
Mud Lake	OW	34	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	BM	62	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	I	Sy
Perry Ridge	OW	30	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	FM	30	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	IM	28	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	I	Sy
	HF	10	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Sabine Pool No. 3	OW	32		NH				NH				NH				NH				NH				NH			Mu	Hi	Sy	Sy
	AB	7	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	Sy	Sy
	FM	61	Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy

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	1988 Habitat		Avifauna																																											
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails, Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Sabine Lake Ridges	OW	5	W	Lo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Hi	I	Sy		NH			W	Mo	Sy	Sy
	FM	5		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Hi	I	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	24		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	D	W	Mo	Sy	D	W	Hi	I	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D
	BM	35		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Mo	Sy	D	W	Mo	Sy	D	W	Hi	I	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D
	SM	11		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	D	W	Lo	Sy	D	W	Lo	Sy	D	W	Mo	I	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D
	HF	1		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH		
	BB	2		NH				NH			Mu	Hi	Sy	Sy	St	Lo	Sy	Sy	Mu	Hi	Sy	Sy		NH				NH				NH				NH				NH		
	AU	17		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Hi	I	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Second Bayou	OW	13		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			W	Lo	Sy	Sy
	IM	72		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	BM	14		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
Southeast Sabine	OW	9		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			W	Lo	Sy	Sy
	IM	59		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
	BM	31		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D	Mu	Lo	Sy	D	Mu	Lo	Sy	D
SW Gum Cove	OW	17		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			W	Lo	Sy	D
	FM	41		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	IM	24		NH				NH			Mu	Lo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	BM	8		NH				NH			Mu	Mo	Sy	Sy	Mu	Hi	Sy	Sy	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	HF	6		NH				NH				NH				NH				NH			Ne	Lo	Sy	Sy		NH				NH				NH				NH		
	AU	5		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy
Sweet/Willow Lakes	OW	43		NH				NH			Mu	Lo	Sy	Sy		NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			W	Mo	Sy	Sy
	AB	6		NH				NH				NH				NH				NH			W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy
	FM	46		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Lo	Sy	Sy		NH			Mu	Mo	Sy	Sy

Table 5-4. Region 4 wildlife functions, status, trends, and projections.

Habitat Types: OW = Open Water; AB = Aquatic Bed; FM = Fresh Marsh; IM = Intermediate Marsh; BM = Brackish Marsh; SM = Saline Marsh; FS = Fresh Swamp; HF = Hardwood Forest; BB = Barrier Beach; AU = Agriculture/Upland. Habitat types comprising less than 5% of unit are shown only if habitat is particularly rare or important to wildlife.

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	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
Mapping Unit	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
Sabine Lake Ridges	OW	5	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	5	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy
	IM	24	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	BM	35	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	SM	11	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	HF	1		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
	BB	2		NH				NH				NH				NH				NH				NH				NH				NH				NH				NH				NH		
	AU	17	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy
Second Bayou	OW	13	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	I
	IM	72	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Hi	I	I
	BM	14	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Hi	I	I
Southeast Sabine	OW	9	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	IM	59	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy
	BM	31	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Mo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy
SW Gum Cove	OW	17	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	41	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	IM	24	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	BM	8	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	Sy	Sy
	HF	6		NH			Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	Sy
	AU	5	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy	W	Mo	Sy	Sy		NH			W	Mo	Sy	Sy	Mu	Lo	Sy	Sy
Sweet/Willow Lakes	OW	43	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	AB	6	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	Sy	Sy
	FM	46	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy

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	1988 Habitat		Avifauna																																							
Mapping Unit	Type	% of Unit	Brown Pelican				Bald Eagle				Seabirds				Wading Birds				Shorebirds				Dabbling Ducks				Diving Ducks				Geese				Raptors				Rails,Coots and Gallinules			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
West Black Lake	OW	61		NH				NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	FM	20		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	IM	9		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	AU	6		NH				NH				NH			St	Lo	Sy	Sy	Mu	Mo	Sy	Sy	W	Hi	I	Sy	W	Hi	I	Sy	W	Mo	I	Sy		NH			Mu	Lo	Sy	Sy
West Cove	OW	24	W	Mo	I	I		NH			Mu	Hi	Sy	Sy		NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	AB	7		NH				NH				NH				NH				NH			W	Hi	I	D	W	Hi	I	D	W	Mo	I	D		NH			Mu	Lo	Sy	D
	FM	65		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	W	Hi	Sy	D	W	Hi	Sy	D	W	Mo	Sy	D		NH			Mu	Lo	Sy	D
Willow Bayou	OW	40	W	Lo	I	I		NH			Mu	Mo	Sy	Sy		NH				NH			W	Hi	D	D	W	Hi	D	D	W	Mo	Sy	D		NH			W	Lo	Sy	D
	IM	8		NH				NH			Mu	Lo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	W	Hi	D	D	W	Hi	D	D	W	Mo	Sy	D		NH			Mu	Lo	Sy	D
	BM	52		NH				NH			Mu	Mo	Sy	D	Mu	Hi	Sy	D	Mu	Hi	Sy	Sy	W	Hi	D	D	W	Hi	D	D	W	Mo	Sy	D		NH			Mu	Lo	Sy	D

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Mapping Unit	1988 Habitat		Avifauna (cont.)																Furbearers												Game Mammals												Reptiles			
	Type	% of Unit	Other Marsh/ OW Residents				Other Wood-land Resid.				Other Marsh/ OW Migrants				Other Wood-land Mig.				Nutria				Muskrat				Mink, Otter, and Raccoon				Rabbit				Squirrel				Deer				American Alligator			
			Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.	Func.	Status	Trend	Proj.
West Black Lake	OW	61	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Lo	Sy	Sy
	FM	20	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	I
	IM	9	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Lo	Sy	I
	AU	6	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy	Mu	Lo	Sy	Sy
West Cove	OW	24	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	AB	7	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Hi	I	Sy
	FM	65	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Hi	I	Sy
Willow Bayou	OW	40	Mu	Mo	Sy	Sy		NH			Mu	Mo	Sy	Sy		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy		NH				NH				NH			Mu	Mo	I	Sy
	IM	8	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy
	BM	52	Mu	Hi	Sy	D		NH			Mu	Hi	Sy	D		NH			Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	Sy	Mu	Lo	Sy	D		NH			Mu	Lo	Sy	D	Mu	Mo	I	Sy

SECTION 6

THE THIRD DELTA CONVEYANCE CHANNEL PROJECT

Proposed Mississippi River Diversion Channel and Subdelta Building in the Barataria-Terrebonne Area of Coastal Louisiana*

Prepared by

Sherwood M. Gagliano
and
Johannes L. van Beek

Coastal Environments, Inc.
Baton Rouge, LA

for

Lee Wilson & Associates
Santa Fe, NM

and
U.S. Environmental Protection Agency
Region 6
Dallas, TX

Contract No. 68-06-0067

June, 1999

* Editor's Note: This appendix was developed subsequent to the adoption of the Coast 2050 Plan by the CWPPRA Task Force and State Wetlands Authority and does not reflect the specifics of the approved plan as described in *Coast 2050: Toward a Sustainable Louisiana* (the Main Report, December, 1998).

ACKNOWLEDGMENTS The authors wish to thank the U.S. EPA Region 6 for their support in further developing the Third Delta concept. We also thank Lee Wilson for his critical review of this report and the constructive comments concerning the presentation of information, Gerald Morrissey for his efforts in producing successive versions of this document, Curtis Latolias for cartography and graphics, and John Sheehan for geographic information system (GIS) analysis and graphics.

Executive Summary

The southern Louisiana coast has been built by a process that involves cyclical development of delta wetlands. The central importance of the delta cycle to wetlands sustainability was recognized in the recently completed Coast 2050 Plan, which embraces the re-establishment of natural processes of land building and maintenance as a fundamental approach to achieve sustainable restoration. Development of the Third Delta Conveyance Channel (3DCC) project parallel to Bayou Lafourche is specifically incorporated as a strategy within Regions 2 and 3.

Creating a new delta requires construction of a long artificial channel that connects the Mississippi River to an area where wetlands can be built without undue interference with existing activities. To reduce cost and increase benefits, it is important that as much of the work of channel development as possible be done by nature, and that the project provide as many additional, multiple-use benefits as possible.

To divert river water and sediment in a manner that mimics natural processes, channel characteristics of natural river diversions have been used to define the combination of key parameters (cross-sectional dimensions, gradient, flow and velocity) that would enable natural channel enlargement and delivery of sediments to the targeted delta locations. Features of the Atchafalaya River and the historic Bayou Lafourche distributary were evaluated for this purpose. In addition, the man-made Wax Lake Outlet diversion also was evaluated, since this channel has successfully achieved several goals of the 3DCC project, including building of a delta, natural scour and evolution of the channel, and stable crossing of other infrastructure, including the GIWW.

Conceptual design evaluations indicate that excavating an initial channel of 20,000 cfs capacity may be sufficient to create self-scouring conditions, and that constraining the ultimate scoured capacity to 200,000 cfs is consistent with historic development of major subdelta lobes. Other design considerations are that the project must provide for crossings of existing roads and railways, Bayou Lafourche and the GIWW; and presents opportunities to include features that would support navigation along the channel and new highway development along the levee, thereby connecting existing communities with an economically valuable transportation corridor.

Setting and Need for Project

Overview

The central Barataria-Terrebonne estuarine complex, located on either side of Bayou Lafourche, has experienced some of the highest rates of wetlands loss in coastal Louisiana (Figure 6-1). The vast acreage of marsh that once existed in this area is nearly gone. Important areas of intense human economic activity, including the Louisiana Highway 1 corridor through Golden Meadow to Port Fourchon and Grand Isle, are increasingly exposed to flooding and storms (Figure 6-2).

The recently completed Coast 2050 plan has identified this area as one where natural inputs fail to sustain an ecosystem of emergent marsh vegetation. Restoration of the ecosystem requires the creation of a new series of delta lobes, in order that a new land platform can be built and sustainable marsh can be established. This process is comparable to the formation of the natural delta lobes that built the original ecosystem. The new wetlands are to be built primarily in the Little Lake mapping unit to the east of Bayou Lafourche, and in the S. Bully Camp and Terrebonne Marshes mapping units of Lafourche and Terrebonne Parishes to the west of Bayou Lafourche.

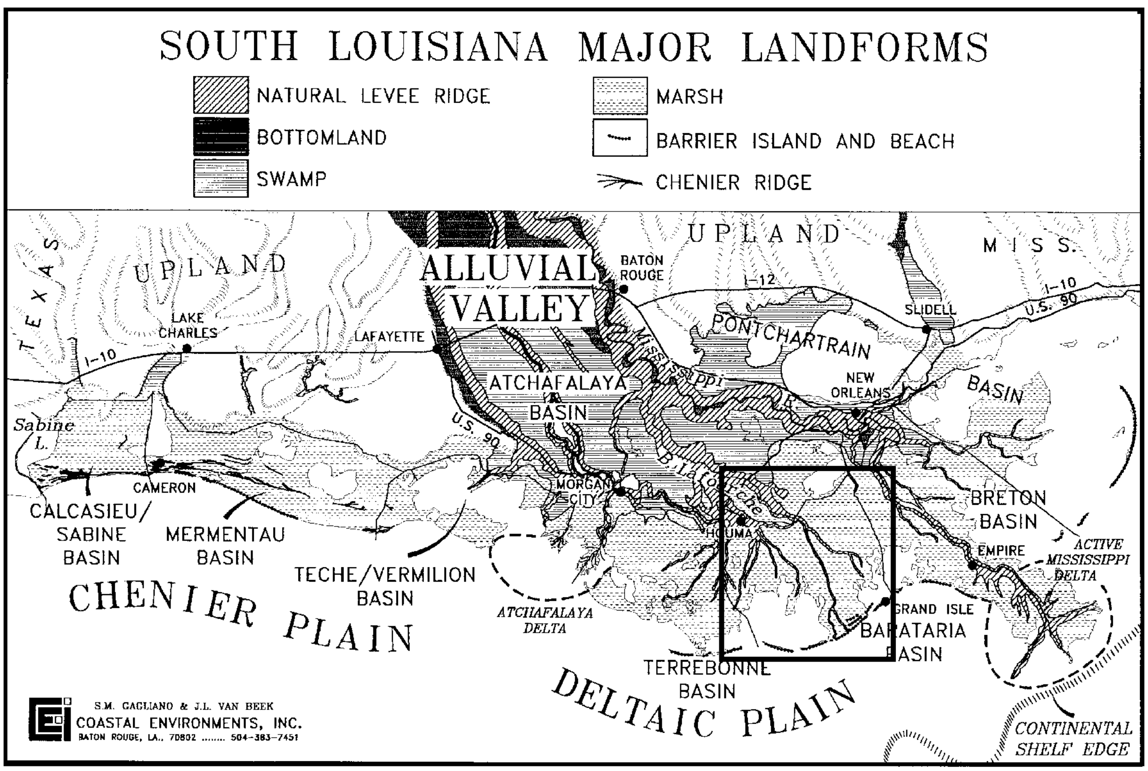

Figure 6-1. Major physiographic features of south Louisiana. The box encloses the central Barataria-Terrebonne estuarine complex.

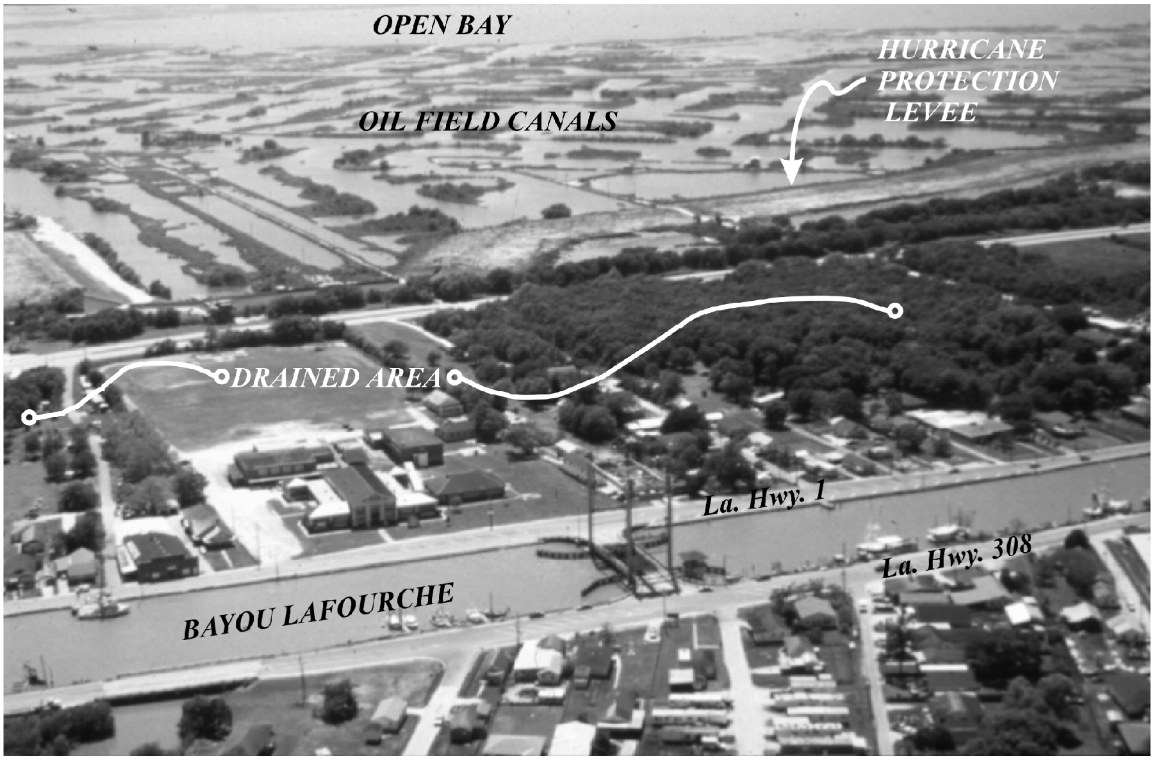

Figure 6-2. Aerial view of Golden Meadow, Louisiana looking west across Bayou Lafourche. The town lies within a forced drainage system (fastland). It is surrounded by flood protection levees and kept drained by pump. Note canals and open water areas outside of levees in the background.

The concept of creating new delta lobes implies that a substantial amount of the Mississippi River flow must be routed to these areas so that subdelta lobes can be formed naturally— much as now occurs at the mouth of the man-made Wax Lake Outlet of the Atchafalaya River. Because there are already two natural areas of delta building currently active along the coast— at the mouths of the Mississippi and Atchafalaya rivers — this project is known as "the Third Delta."

Natural Landscape

The area affected by the proposed project includes most of the Barataria estuarine basin and the lower eastern half of the Terrebonne estuarine basin (hydrologic units), which flank the natural levee ridges of Bayou Lafourche, a historic distributary of the Mississippi River. The area generally extends from Bayou Terrebonne on the west to Bayou des Allemands and the Barataria Bay Waterway on the east, and to barrier islands on the south that separate the area from the Gulf of Mexico.

The skeletal framework of the area is a complex of natural levee ridges that are remnants from past courses of the Mississippi River and its distributaries, formed at times when the river was building subdelta lobes in this area. The natural ridges have relatively high elevations and firm mineral soils and are the principal corridors of human settlement and activity (Figure 6-3). The basins lying between the ridges are

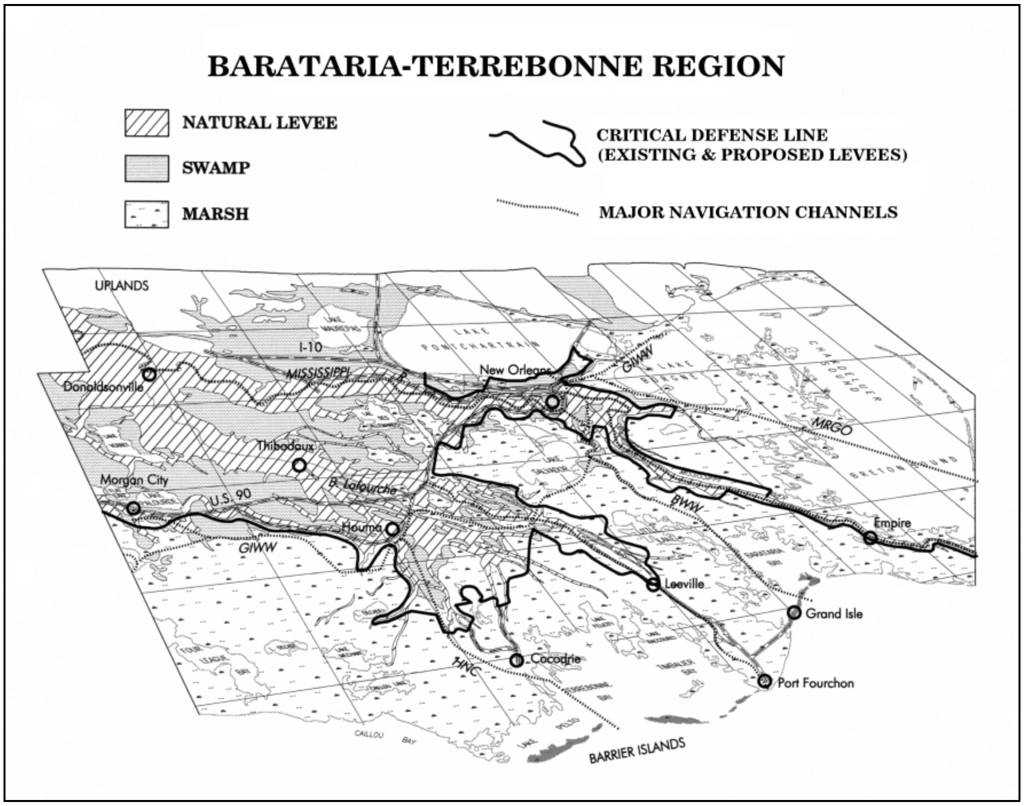

Figure 6-3. The Lafourche region of south Louisiana showing branching pattern of natural levee ridges and interdistributary estuarine basins, and the hurricane protection line. Not all segments of the hurricane protection line have been built.

dominated by wetlands and estuarine water bodies. The water is fresh at the inland end and saline toward the seaward end, with a broad mixing zone in between. The estuarine basins of the Lafourche region are particularly rich and productive in fisheries and other renewable resources and form the core of the Barataria-Terrebonne estuarine complex.

Rates And Causes of Land Loss

The presence of some four million acres of coastal wetlands in Louisiana is the result of several thousand years of delta building and related processes involving sediments delivered to the coast by the Mississippi River. The wetlands near Bayou Lafourche were mostly created when the bayou was the main course of the river, some 1,000 to 2,000 years ago. When the river shifted to its modern course, the net rate of land building declined. However, these wetlands continued to sustain themselves through periodic sediment addition and the accumulation of organic matter from wetland plant growth. This natural vertical accretion largely offset the results of the natural processes of land degradation, especially subsidence and sea level rise, as well as other impacts such as storm erosion and the gradual encroachment of saline water from the Gulf of Mexico.

In the twentieth century, several effects of human activity have served to greatly accelerate land loss over the natural rate.

Construction of flood control levees along the Mississippi River and the damming of Bayou Lafourche greatly reduced the sustaining inputs of freshwater, nutrients, and sediment needed by the marshes. Dredging of oil and gas access canals altered local hydrology and often isolated large areas of marsh from the natural processes that sustained them. Dredging of north-south navigation channels facilitated ingress of salt water and rapid loss of fresh water.

Figure 6-4 shows the distribution of land loss across the Louisiana coast by basin, and the accumulation of loss during this century. The concentration of loss in the Barataria and Terrebonne basins, 975 square miles (2,525 km^2) out of a coastal total of 1,620 square miles (4,196 km^2), is very evident. The map of this loss shows much of it to be concentrated in the areas near lower Bayou Lafourche, where man-induced impairment of marsh dynamics is exacerbated by natural geologic processes (slumping and subsiding of fault-bound blocks) that increase the vulnerability of the marsh to loss. The rates of loss may have peaked in the 1960's, but this is in part because in the areas most susceptible to erosion there is no longer as much land left to lose. In the Coast 2050 Plan, the consequences of this massive loss of wetlands have been characterized as bringing this part of the coastal ecosystem to the point of functional collapse (LCWCRTF and WCRA 1998).

Modern Land Building

During recent geologic time, whenever a delta lobe was abandoned by the river and began the slow process of natural deterioration, the loss in wetland acreage was more than offset by the building of new deltaic wetland near the mouth of the new river course. In the twentieth century, this land building process has been impaired for several reasons: the modern Mississippi River Delta is located in comparatively deep water where land building is inefficient; the sediment load available to the delta from the continental interior has been reduced by dam construction and soil conservation programs; the dredging of navigation channels tends to move the sediment offshore, instead of allowing natural deposition and wetland creation; and the natural shift of the river to a new course, the Atchafalaya River, has been stopped through construction of a flow-control structure at Old River.

Despite these factors, some land building does occur in the historic delta below New Orleans, and in the new Atchafalaya River Delta near Morgan City. In the latter area, two subdelta lobes are emerging, associated with the Lower Atchafalaya River and the Wax Lake Outlet, at a combined rate of about 3.0 square miles (7.85 km^2) annually (Coleman 1998).

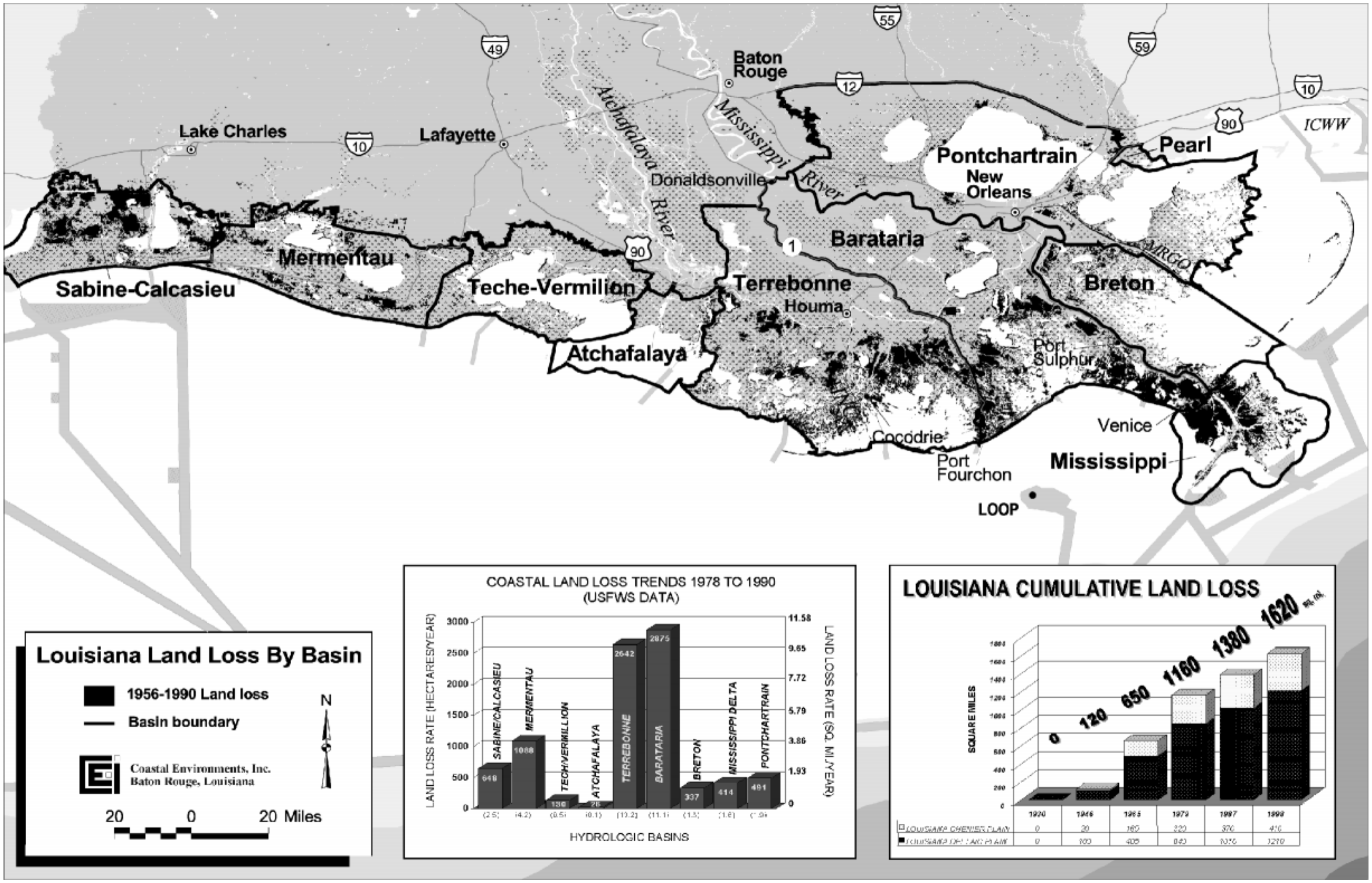

Figure 6-4. Map showing concentration of loss near lower Bayou Lafourche. Right inset graph showing cumulative loss along the Louisiana coast for the period 1930 - 1998 (data from Dunbar et al. 1992, projected for 1987 to 1998). Left inset graph showing Land loss trends in coastal Louisiana by basin for the period 1978 - 1990 (adapted from Barras et al. 1994).

Alternative Approaches to Restoration

A number of projects have been proposed that would benefit the Barataria and Terrebonne basins in the vicinity of lower Bayou Lafourche, which include those listed below.

- A project for a small increase in existing diversion of Mississippi River water down the existing channel of Bayou Lafourche was selected for the CWPPRA 5th Priority List.
- The Davis Pond Freshwater Diversion project now under construction will direct up to 10,000 cfs of Mississippi River water into the Barataria Basin.
- Additional freshwater with some sediment could reach the eastern Terrebonne Basin through the Gulf Intracoastal Waterway (GIWW) between its juncture with the Lower Atchafalaya River and Bayou Lafourche.
- Dedicated dredging has been proposed to build new wetlands in Timbalier Bay, Caminada Bay, etc., and protect the critical Louisiana Highway 1 economic and safety corridor.

The diversion projects identified above all can have significant benefits in retaining wetland acreage in areas where extensive marsh remains but is undergoing significant losses. However, none of the diversions carry enough sediment to build substantial new wetlands, and none are large enough to ultimately fix the fundamental problem of the ecosystem being on the verge of collapse. Dedicated dredging can and will create new wetlands, but on a relatively small scale and at a high unit cost; it may also adversely impact the source area of the dredged material.

In short, the problems in the lower Barataria and Terrebonne basins have become so severe that the traditional types of coastal restoration projects can only buy time until a long-term solution is developed. The Coast 2050 Plan has determined that in this area a highly functional wetland ecosystem can be sustained only by rebuilding the wetlands on a large scale. Consequently, a cornerstone strategy of the plan is a project to develop a new conveyance channel from the Mississippi River to receiving areas in the coastal marshes south of the Gulf Intracoastal Waterway (GIWW), where the outfall would build two large subdeltas. This idea was first proposed by the authors in 1993, and has been presented and discussed at a number of professional conferences and public meetings (Gagliano and van Beek 1993, 1994; Gagliano 1997).

This alternative, put forth in the Coast 2050 Plan, will require a major public works act, and could only go forward with full public support and the authorization of the U.S. Congress. This report presents preliminary findings concerning probable characteristics and requirements of the proposed channel and subdeltas. All alignments, rights-of-way and locations of features, as well as proposed discharge volumes and velocities, are preliminary and subject to public and technical review and change as reconnaissance and feasibility studies are conducted.

Lessons from Other Channels

The feasibility of implementing the proposed 3DCC hinges on two primary considerations. These are:

- the ability of the channel to be self-sustaining, that is, to convey water and sediment without much maintenance, in the manner of a major active distributary of the Mississippi River; and

- the ability to provide for delta development in a manner that is socially acceptable and economically justifiable, as for example by crossing navigation channels without creating a hazard.

The following sections address these issues by examining the process of distributary development, the requirements of the conveyance channel as related to these processes, and the manner in which these requirements affect and benefit the area's resources.

Design Analog: the Wax Lake Outlet

In 1942, the Wax Lake Outlet of the Atchafalaya River was dug through the natural levee ridges of Bayou Teche in the vicinity of Calumet, Louisiana, to provide an additional flood outlet for the Atchafalaya Basin Floodway (Figure 6-5). It has become a major distributary of the Atchafalaya River with peak flows that now exceed 200,000 cfs. The original training canal dug in 1942 has enlarged naturally through scouring and has taken on the character of a large

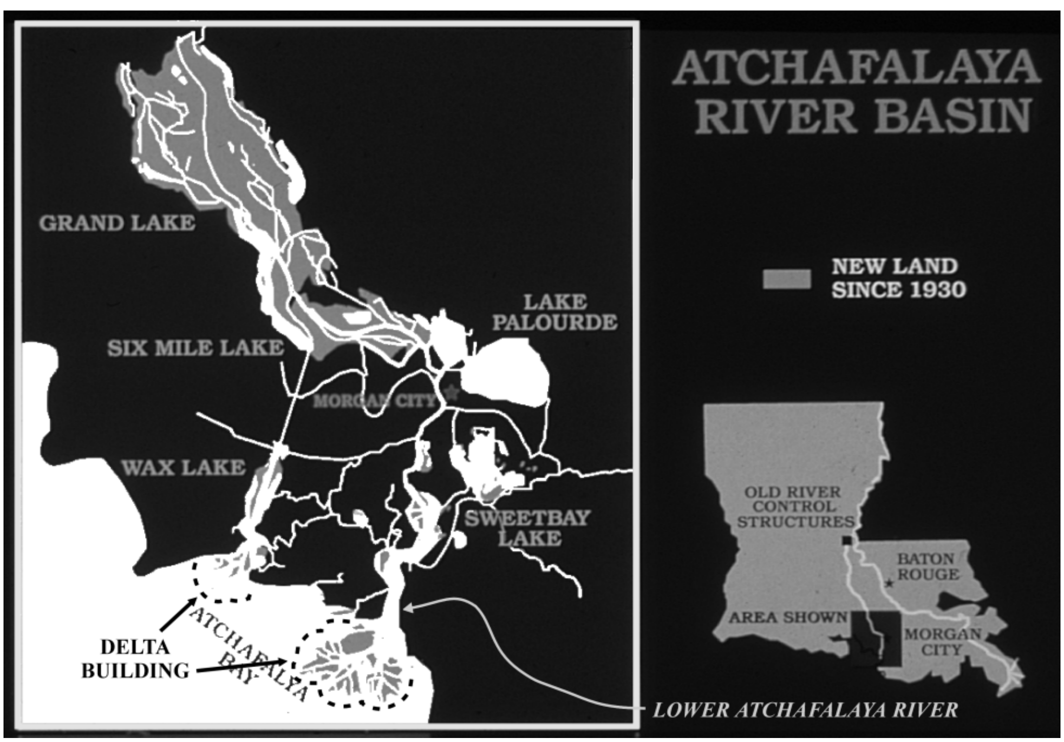

Figure 6-5. Maps showing location and features of the Wax Lake Outlet and associated subdelta.

river. Natural levees have formed and continue to increase in height and width (Figure 6-6). At its outlet, the second-most rapidly growing subdelta of the Mississippi-Atchafalaya River system has formed (Figure 6-7). The subdelta emerged during the large flood of 1973, has grown at an annual rate of up to 1.16 mi^2 per year (3.0 km^2 per year), and by 1995 had a surface area of more than 24.3 mi^2 (63 km^2) (Coleman et al. 1998).

The outlet channel crosses the GIWW by direct intersection, with no interference

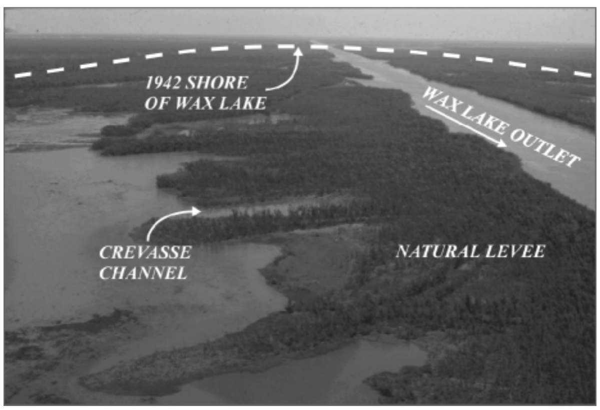

Figure 6-6. Upstream view of the Wax Lake Outlet channel showing infilled areas of historic Wax Lake. Overbank processes have formed prominent natural levees along the channel. Aerial view looking north.

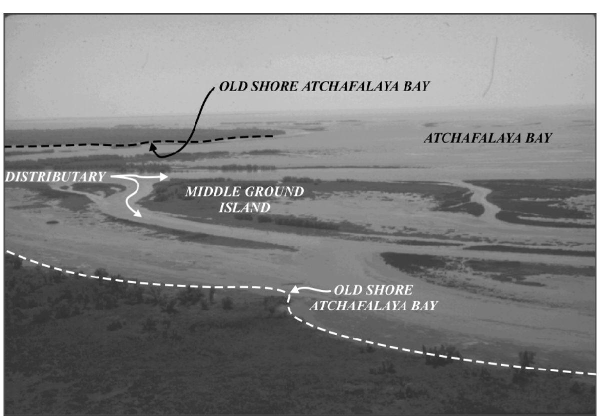

Figure 6-7. Aerial view of the Wax Lake subdelta, looking east.

with navigation, and no need for any special structures. Initial concerns that higher water velocities in the outlet channel would interfere with navigation on the GIWW have not materialized, and so would not be expected to occur at the proposed conveyance channel, where velocities would be lower. The outlet channel also is crossed by a highway bridge and a railroad bridge, and is crossed by a number of large oil and gas pipelines. The channel demonstrates convincingly the feasibility of redirecting large amounts of flow and sediment from the river system for the purpose of subdelta building without unduly disrupting infrastructure elements or navigation. The history of this channel, and its hydraulic characteristics, is a useful analog for the design of a new conveyance channel near Bayou Lafourche. Subsequent discussions rely upon the analog for many insights.

Historic Distributary Channels

The evolution of the Mississippi River Deltaic Plain is a history in which new channels are continually being created and, over time, abandoned. The process by which river water is diverted into a new channel system has occurred at many scales ranging from relocation of the main channel to the development of short-lived crevasses. Invariably, the major diversions resulted from a decreasing efficiency of the higher-order channel, resulting from delta progradation and the related increase in channel length and decrease in channel gradient; the water got too hard to move, so it found an easier route. A natural process of channel development will also apply to the conveyance channel and associated subdelta lobes. Efficient functioning of the conveyance channel thus will have a practical limit; however, the productive life span of the channel can be maximized by initiating development of the first subdelta lobe and allowing the channel to scour and develop naturally until the main channel can efficiently support the second channel and subdelta lobe. After the expected period of efficient development and growth for each lobe, there are a variety of management opportunities that could be considered based on regional conditions at the time.

For developing the requirements for the 3DCC, three of the most recent diversions were evaluated from a geomorphic process perspective. Two of these, the Lafourche and Atchafalaya diversions, occurred naturally and involved the main channel of the Mississippi River. The third, the Wax Lake Outlet, as discussed previously, was constructed to increase the outlet capacity of the Atchafalaya Basin Floodway System.

Figure 6-8 compares the water-surface profiles at bankfull discharge for the modern Mississippi and Atchafalaya channels and the ancient Lafourche channel. For the Lafourche channel, the bankfull discharge profile is assumed to be approximated by the modern-day levee crest. Figure 6-9 shows the changes in gradient as a function of distance from the channel mouth for the same three streams. The two figures demonstrate the similarity of the Atchafalaya River and the ancient Lafourche channel. Each clearly contrasts with the low and nearly constant gradient along the present, lower Mississippi River.

It appears that well developed, first order distributaries of the Mississippi River exhibit a similar gradient and rate of gradient change. This will be further discussed in the following sections. Evaluation of the second order Wax Lake Outlet distributary also will show that a lesser gradient can provide for development of an effective distributary that is self-scouring if certain initial channel conditions and discharges are met.

Bayou Lafourche

Bayou Lafourche was the main artery of the Mississippi River Deltaic Plain from approximately 2,500 years ago to 800 years ago (Coleman 1998). Efficiency of this channel is indicated by both its longevity and the areal extent of the associated Lafourche Delta Complex. In addition to being marked by Bayou Lafourche, the channel course is prominent because of well-developed natural levee ridges and channel deposits. Both of these features provide a means to estimate flow characteristics for bankfull stage at the height of its development. The natural levee crest elevations provide an estimate of the water surface gradient at bankfull stage and the rate at which the gradient decreases in the downstream direction (Figures 6-8 and 6-9).

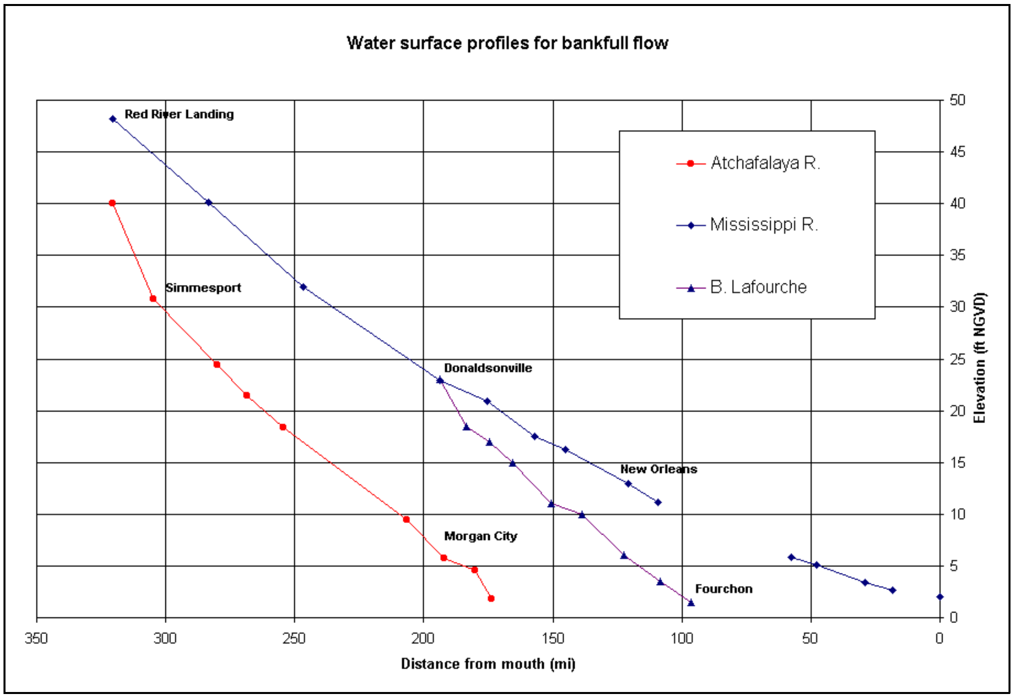

Figure 6-8. Water surface profiles from bankfull flow along the Lafourche-Mississippi, Recent-Mississippi, and Atchafalaya Rivers.

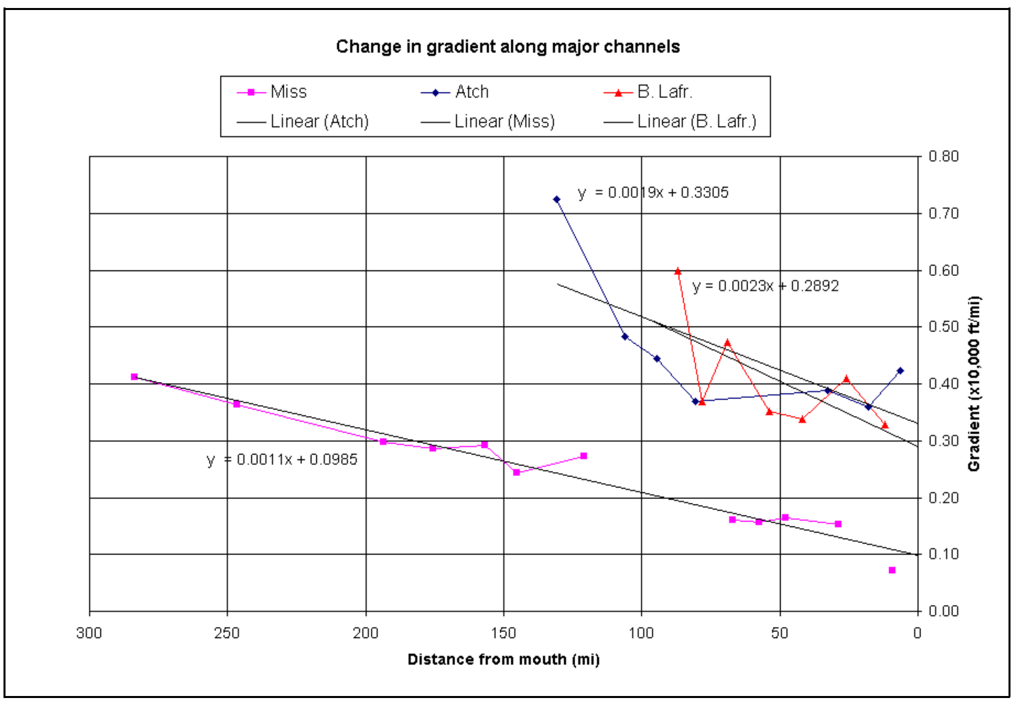

Figure 6-9. Changes in gradient for bankfull flow along the Lafourche-Mississippi, Recent-Mississippi, and Atchafalaya Rivers.

Atchafalaya River

Development of the Atchafalaya River as a major Mississippi River distributary was initiated about 500 years ago, but significant advances in the diversion of flows probably did not occur until the mid-1800's. The process and development have been documented extensively (Fisk 1952; Gagliano and Van Beek 1975; Roberts 1998). The diversion was so effective— because of its gradient advantage over the Mississippi River— that it became necessary to control discharges structurally in order to prevent total capture of the Mississippi River. The Old River Control Structure, completed in 1959, limits diversion to about 30% of the combined Mississippi River and Red River flows. Development of the Atchafalaya River's main channel progressed naturally through a combination of natural levee development and channel scour. The sediments entrained by the channel scour became an important component of delta development in Atchafalaya Bay. Channel development through the lower basin was accelerated by dredging because large lakes limited the rate of channel development and therefore development of floodway discharge capacity.

The bankfull discharge for the Atchafalaya River has been estimated to be approximately 400,000 cfs (van Beek et al. 1977). For this discharge, the gradient and the rate of gradient change along the river, as determined from eight USACE gauging points for two separate events, are similar to those for Bayou Lafourche (Figures 6-8 and 6-9). As was the case for Bayou Lafourche, at this discharge the water-surface profile is only slightly concave. The average gradient of 0.24 ft/mi (7.315 cm/km) and a decrease in gradient of approximately 0.0012 ft/mi (0.0227 cm/km) are also very similar to those of Bayou Lafourche.

Wax Lake Outlet

The Wax Lake Outlet may be called a second-order distributary in that it is a distributary of the Atchafalaya River. In contrast to its parent stream, however, this diversion is man-made. Construction occurred in 1942 with an initial bottom width of 400 ft (122 m) and a uniform depth of -45 ft (-13.72 m) NGVD (USACE, 1995). However, despite the intent to increase floodway capacity by diverting only 20% of the Atchafalaya River, efficiency resulting from its gradient advantage to Atchafalaya Bay allowed the Wax Lake Outlet to rapidly enlarge naturally, through channel scouring and concomitant development of natural levees.

The natural development of the channel occurred to the extent that in the 1970's flow capture had increased to about 35% and is presently estimated to be 40% at bankfull discharge of the Atchafalaya River. Even greater channel development and delta growth were retarded (until recently) by the presence of a weir from 1988 until 1993 at the head of the channel and by lakes along the lower reaches.

A 1998 survey by the USACE provides information concerning channel dimensions. Natural levee elevations were difficult to determine because of the unknown effects of initial dredged material deposition. The bank gradient along the channel is approximately 0.2 ft/mi (9.81 cm/km). Channel dimensions generally decrease in a downstream direction, the most probable reasons being incomplete channel development and flow losses to adjacent marshes and lesser channels along the lower reaches. Channel depth has increased from the initial 45 ft (13.72 m) to a depth in excess of 80 ft (24.38 m) at the upper end, 60 ft (18.23 m) along the middle 10 miles (16.1 km), and decreasing to about 40 ft (12.19 m) near the mouth. Corresponding channel widths are mostly on the order of 600 ft (182.88 m).

USACE 1995 gaging data allows further evaluation of the present channel. The data for a number of hydraulic parameters (gradient, stages at the head and mouth, average velocity) are summarized in Figure 6-10, assuming a 40% capture of Atchafalaya River flow. At bankfull discharge of the Atchafalaya River, this would amount to 160,000 cfs for Wax Lake Outlet with a flow velocity of approximately 5 ft/sec (1.52 m/sec), and an average gradient of 0.15 ft/mi (2.841 cm/km). This gradient is about the same as that determined for the lower reach of the Lafourche natural levee crest. Lack of data between the head and mouth of the channel did not allow establishing whether a perceptible change in gradient exists along this short (15 mi, 24.14 km) channel.

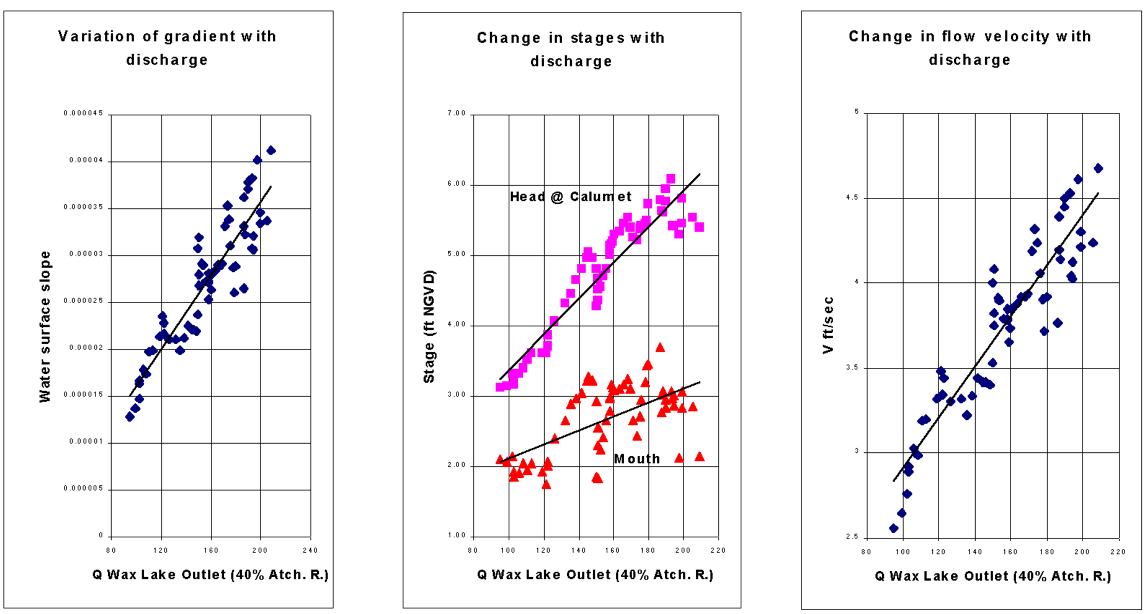

Figure 6-10. Flow characteristics of the Wax Lake Outlet diversion as a function of discharge (COE gaging data).

Project Characteristics

Alignment

There are only a few basic alignments that will serve to fulfill the project objectives of bringing large amounts of river water to, and building subdelta lobes in, the southwestern Barataria and southeastern Terrebonne basins. In Barataria, a relatively short route could be taken from the Mississippi River along the eastern side of the basin, cutting across the basin in a westerly or southwesterly direction; or a longer channel could be routed from the river at the northern end of the basin in an alignment parallel to Bayou Lafourche. A similar choice exists on the Terrebonne side, in that a conveyance channel could parallel Bayou Lafourche, or a somewhat shorter route could cut across the basin from the Atchafalaya River.

The alignments that essentially run east-west, across the basins, would cut across the natural north-south hydrologic flow patterns of the region. Such alignments would block drainage in the severed segment of the basin lying north of the channel, contributing to chronic backwater flooding. This would be damaging to the freshwater swamps and marshes, as well as to the small communities located within and around the margins of the basins. As a result, the concept of such cross-basin alignments has been rejected.

A north-south alignment would be consistent with the natural flow and drainage patterns of the basins. However, a conveyance channel dug parallel to the Bayou Lafourche ridge but at some distance to the east or west of the ridge would have several effects. The entire channel footprint would be within wetland areas, maximizing wetland loss due to initial construction. In addition, the area between the natural levee ridge and the constructed guide levee could be at least partially isolated from existing drainage pathways, potentially requiring pumping for drainage.

To minimize the direct loss of wetlands during construction, the need for forced drainage, and the disruption of natural, basin-wide hydrology, the channel alignment should closely approximate the natural corridor from the river to the project area, which is the existing Bayou Lafourche levee ridge. Specifically, it should be located very near the exiting ridge-wetlands boundary. Note that this alignment, though not the shortest route from the river to the target marshes, has a marked gradient advantage over the main channel of the lower Mississippi River.

General Features of Conveyance Channel

The proposed 3DCC would leave the Mississippi River along its west bank at a point located a short distance downstream from the Sunshine Bridge, east of Donaldsonville, LA. A control structure would be needed at the diversion point. If an option for navigation is considered, the control structure would include a lock. Otherwise, a structure similar to the Old River Auxiliary Control Structure could be considered. A location would be selected for the control structure where

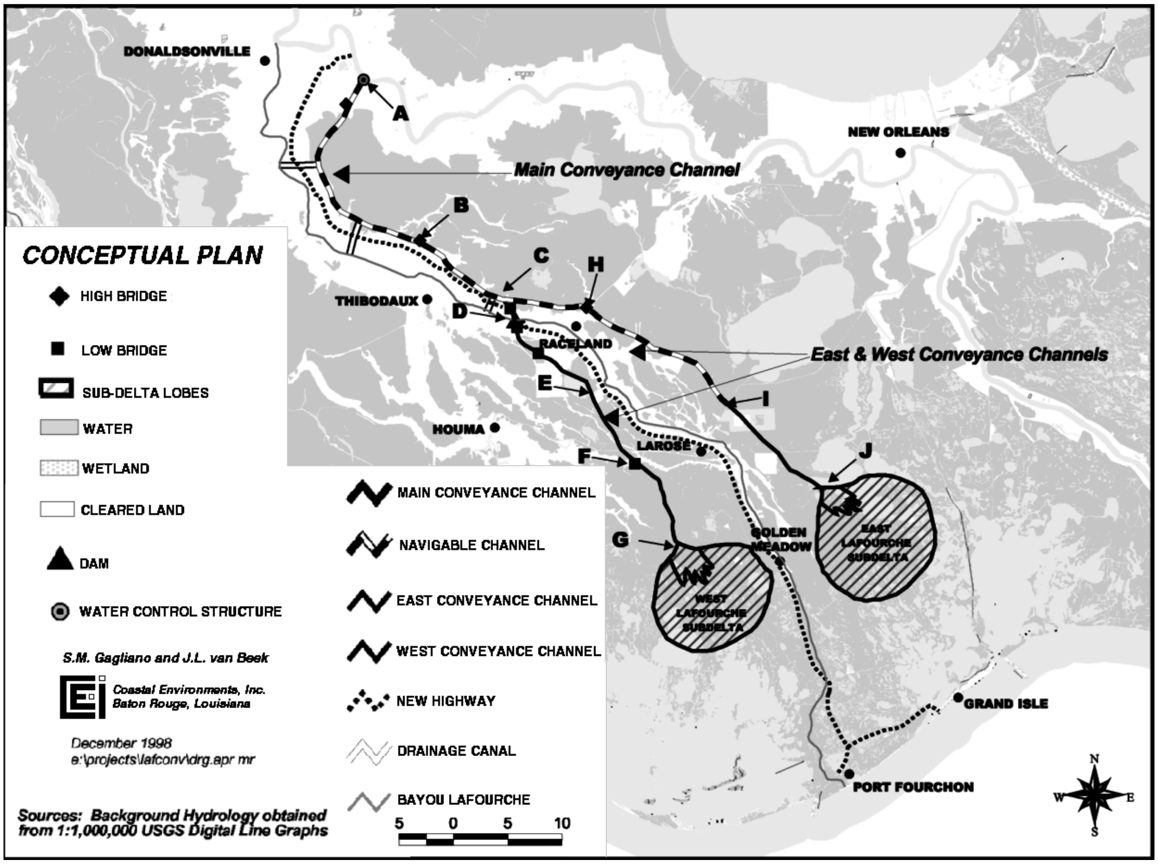

Figure 6-11. Map showing features of proposed Third Delta Conveyance Channel and affected areas.

there are no existing petrochemical plants (Figure 6-11, Point A).

The alignment of the conveyance channel would generally follow the back-slope (toe) of the natural levee on the east side of Bayou Lafourche for approximately 30 miles to Point C, where it would bifurcate. One branch would continue to follow the back-slope of the east levee for 35 miles. It would cross the GIWW at Point I and enter Little Lake at Point J, where it would form the head of a subdelta lobe.

At Point D the second branch would cross the existing channel of Bayou Lafourche and thence generally follow the back-slope of the natural levee on the west side of Bayou Lafourche. It would swing away from the levee south of the GIWW (near Point F), until reaching Point G, where it would form the head of a second subdelta lobe, approximately 30 miles (48.3 km) from Point C.

A dam would be required across the channel of Bayou Lafourche at the crossing point of the conveyance channel (D). The Bayou channel between Donaldsonville and the dam would be converted to a lake. In addition, drainage from the east-bank natural levee of Bayou Lafourche would be trapped by the guide levee of the new conveyance channel. A pumping station would be required at the dam, which would serve both to remove excess water

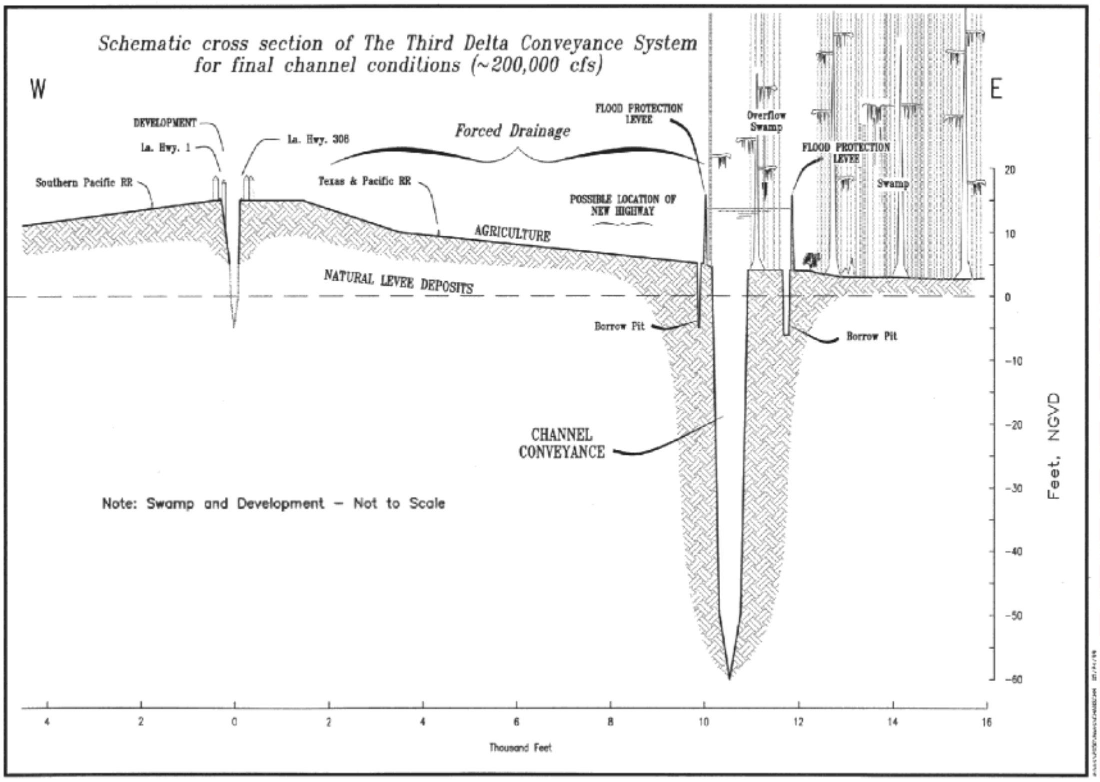

Figure 6-12. Schematic cross-section of Bayou Lafourche and the proposed Third Delta Conveyance Channel.

from the lake and to accommodate drainage from the isolated east levee. A borrow canal for material to construct the western guide levee could be dredged just west of the levee within the forced drainage area (see schematic cross-section, Figure 6-12), and thus also could serve to convey drainage water from the east-bank drainage area to the pump station. At the upstream end, the lake would continue to supply drinking water through diversion from the Mississippi River by the Bayou Lafourche Freshwater District.

Conveyance Channel Design Considerations

Channel Development

Under natural conditions a distributary develops across the natural levee of the higher order stream and enters the adjacent, interdistributary basin. While a steep gradient will exist across the natural levee, hydraulic efficiency within the basin only develops as a channel is scoured and natural levees are built. Until that time, the gradient within the basin may remain greatly reduced if the basin is wide and flow is allowed to spread out. In the case of the proposed 3DCC system, dredging and flow confinement between dredged material deposits and guide levees will be used to advance the distributary development beyond a natural, initial phase, which otherwise would require flooding most of the upper Barataria Basin.

The initially dredged channel will be sufficient to convey about 20,000 cfs

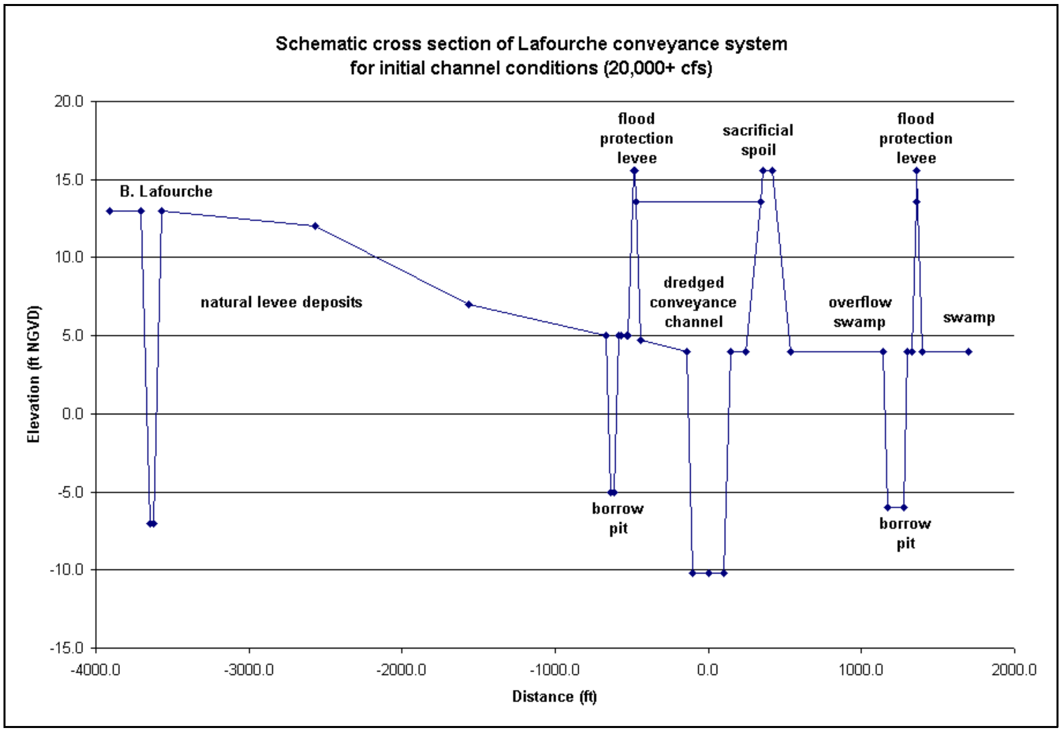

Figure 6-13. Schematic cross-section of the Third Delta Conveyance Channel System for initial conditions.

(see analysis of gradient and channel dimension requirements, below). It is evident from computational results that greater depth and discharge, and a resultant increase in velocities could improve efficiency of the initial, dredged channel. This could be achieved by additional channel dredging. Initial channel dimensions were nevertheless kept small for two additional reasons besides dredging cost and footprint of the dredged material. These reflect the desire to mimic natural development to the extent possible and to allow channel scour to deliver sediments to the targeted subdeltas.

It must be kept in mind that natural channel development provides a significant source of sediment for the delta. Therefore, at the point where the volume of dredged material deposition exceeds the volume of the natural levees that would normally develop, dredging begins to adversely affect the rate of delta development by reducing the volume of sediment delivered to the delta. (This is the case unless dredged material is made available for transport during channel enlargement.) The needs to optimize sediment yield and to confine flows to achieve the desired gradient can be combined by using the dredged material for the construction of a sacrificial levee, sedimentary characteristics permitting. A potential combination of conveyance system features is shown schematically in Figure 6-13. The sacrificial levee is shown on the east bank immediately adjacent to the dredged channel, where it initially would serve to confine flows. As the channel naturally scours and enlarges, the sacrificial levee will be eroded, and its associated sediments carried to the developing subdeltas. Figure 6-14 shows a schematic comparison of the initially dredged channel and the final, naturally scoured channel.

It is envisioned that initial channel development and delta growth will be slow until floodway deposition further confines flows through natural levee development. If further analogies with the Wax Lake Outlet are made, it may be expected that channel development of the

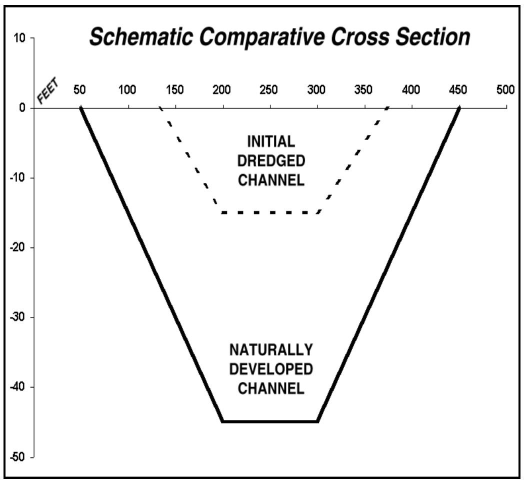

Figure 6-14. Schematic cross-section comparing the initial dredged channel and final naturally scoured channel at the upper end of the Third Delta Conveyance Channel System.

3DCC to its full magnitude will take on the order of 50 years, which is the length of time over which the Wax Lake Outlet increased in size from an initial 45 ft by 400 ft (6.1 m by 121.9 m) channel to its present average size of about 60 ft by 600 ft (18.29 m by 182.9 m). Associated with this was an equivalent discharge increase from about 80,000 to 160,000 cfs. Delta development will be simultaneous but emergence may lag because of initial predominance of subaqueous deposition.

Gradient

The information developed for the Atchafalaya River and the historic Lafourche-Mississippi River (Figures 6-8 and 6-9) suggests that the gradients and rates of gradient change exhibited by these two channels may be used as an initial means for the feasibility evaluation of the 3DCC. The uppermost curve (A) in Figure 6-15 represents the gradient of the historic Lafourche distributary channel. The second curve (B) is the same gradient, beginning at the river and ending at the head of the proposed Barataria subdelta, and would be the natural line for the 3DCC.

Figure 6-15 shows that the head of the historic channel had a bankfull water surface elevation of about 23 ft (7 m) NGVD, which is consistent with current high stages of the Mississippi River. The proposed conveyance channel is shorter and can maintain the same gradient (B) with a head elevation of only 18 ft (5.49 m), a value representing a flow of 700,000 cfs, which is commonly exceeded during high water in most years (Figure 6-16). Consequently, as shown in Figure 6-15 (curve C), the probable gradient of the new conveyance channel will be comparatively steep. Certainly this gradient appears adequate to provide for conveyance of a large quantity of water and sediment. In feasibility studies, it will be necessary to determine if this steeper channel will be stable or if there may be a tendency for the channel mouth to migrate southward to achieve a more normal gradient. The option also exists

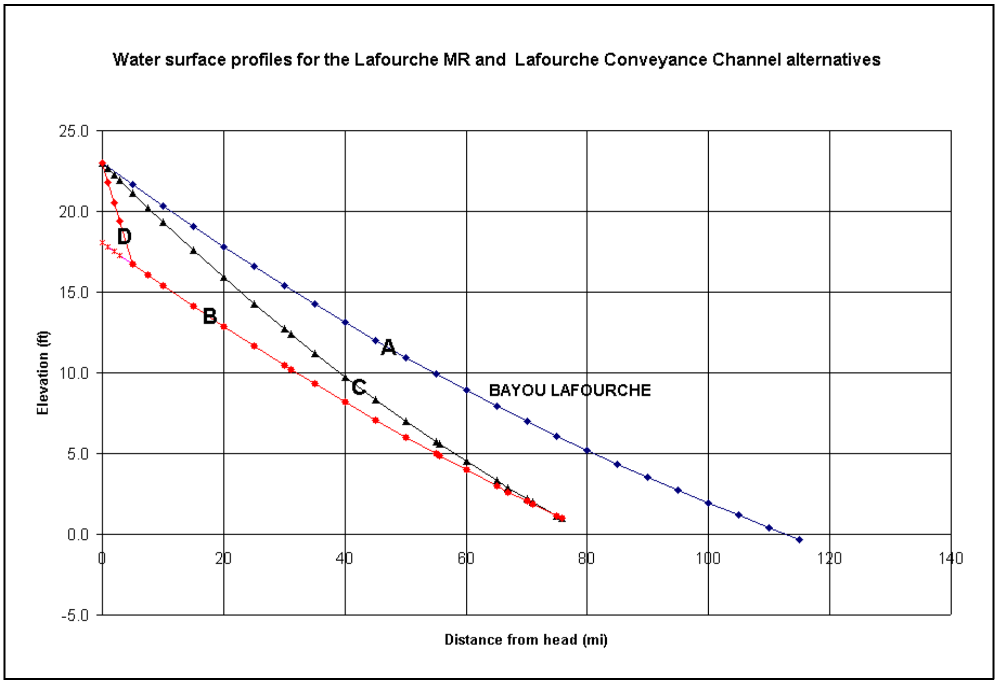

Figure 6-15. Alternative surface water profiles for bankfull flow of the proposed Third Delta Conveyance Channel based on the Lafourche-Mississippi bankfull gradient. Curve A. Historic Lafourche Channel; and equivalent for Third Delta Channel. Curves B, C, and D. Alternative gradients for Third Delta Channel

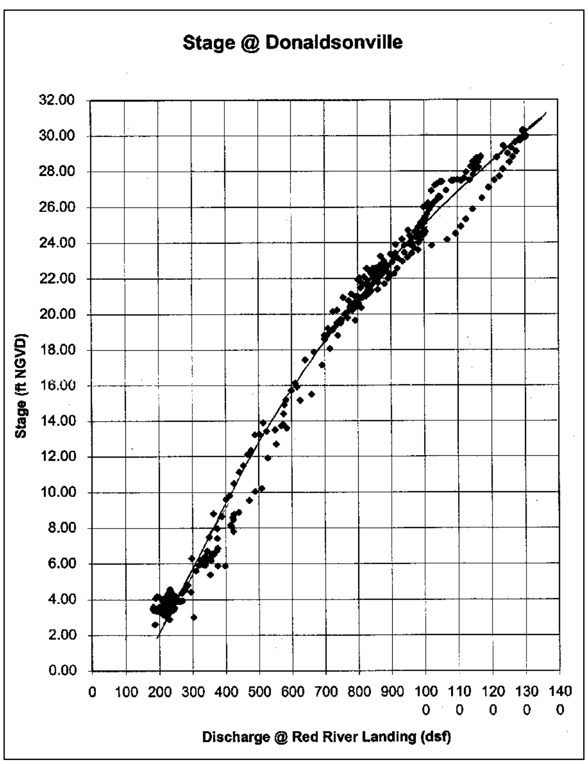

Figure 6-16. Water levels at Donaldsonville as a function of Mississippi River discharge (USACE gaging data).

to engineer a very steep upper portion of the channel, with the normal gradient over the remainder of the channel length [see Figure 6-15 (D)]. This option may be preferred because it would lessen levee height requirements for flow confinement along the upper reaches of the channel.

Channel Discharges and Dimensions

The preferred gradient characteristics of the 3DCC, as defined above, were used to determine channel requirements for the main reach of the conveyance channel, the Timbalier and Barataria distributaries, and the distributaries within each of the deltas associated with them. Detailed determinations were made for two discharge values, 20,000 cfs and 200,000 cfs, respectively.

The final target flow rate of 200,000 cfs is the approximate flood discharge estimated to be necessary for development of the two desired subdeltas as presently conceived. As discussed subsequent, this estimate is based on subdelta growth histories elsewhere. The 20,000 cfs initial flow rate was arrived at on the basis of generalized hydraulic evaluations, applying both the USACE's HEC-RAS model and standard hydraulic computations to various combinations of channel size, discharge, and flow confinement by levees. Selection of the initial discharge was governed by the needs to limit channel water level stages and levee heights in the upper Barataria Basin, limit initial channel size and dredging, and provide sufficient hydraulic efficiency for sediment transport and natural channel enlargement. In addition, initial channel dimensions were kept to a minimum so that subsequent channel development would mimic natural development of a distributary channel, and delivery of sediment scoured from the developing channel to the targeted subdeltas would be maximized, as would occur naturally.

On the basis of channel dimensions and stage records it is estimated that average velocities in the Wax Lake Outlet shortly after construction were about 3 ft/sec (0.95 m/sec) for an Atchafalaya River discharge of about 400,000 cfs. This velocity was used as a preliminary estimate of the minimum velocity required for the primary conveyance channel and the major distributary channels. Using a combination of HEC-RAS model runs and application of the hydraulic relationship between velocity, channel dimensions, and gradient, as expressed in Manning's equation ($v=1.49((R^{2/3}s^{1/2})/n)$, in which v is the average flow velocity in ft/s, R equals the hydraulic radius of the flow area, s is the gradient, and n equals a roughness coefficient), the combination of channel dimensions and gradients that was found to best satisfy reduced water level and dredging needs as well as the velocity requirements was associated with a flow of 20,000 cfs when limiting flows to a single distributary channel.

No satisfactory combination of channel dimensions and discharges was identified that provided sufficient velocities in both major branch channels without channel and related dredging requirements that greatly exceeded the initial dredging requirements of the GIWW. At this time, this suggests that it may be better to provide for a sequential, rather than simultaneous development of the Barataria and Timbalier subdeltas. Accordingly, further computations were pursued for a single subdelta only, applicable to either one because of similar discharge and channel length requirements.

To determine required channel dimensions in greater detail and to evaluate flow velocities and stages for each of the two selected discharges, an Excel spreadsheet was developed with computations based on Manning's equation. Computations assumed a roughness coefficient of 0.023 for the channel, and 0.065 for the overbank area, based on previous investigations of the Atchafalaya Floodway (van Beek 1975). Twenty-five separate channel reaches were specified, using gradients determined from the preferred-gradient curve (D) in Figure 6-15. Two equal distributary channels were assumed within each subdelta.

The results of the computations are summarized in Table 6-1, and in Figures 6-17 and 6-18. Table 6-1 presents computed parameters for a 20,000 and a 200,000 cfs discharge, respectively, for each of four reaches: (1) Donaldsonville through the Mississippi River natural levee, (2) natural levee to the main channel bifurcation (split), (3) split to the head of the subdelta, and (4) subdelta head to the distributary mouth. The two figures show elevations for a number of channel and channel-related parameters, including required levee heights and the channel invert from which the dredged channel depth can be inferred (ground elevation less invert).

Requirements for a 20,000 cfs initial discharge would be met by a channel with a dredged depth ranging from 15 ft to 25 ft (4.6 m to 7.6 m) and a top width ranging from about 235 ft (71.63 m) in the upper reach to 300 ft (91.44 m) near the mouth. Related bottom widths

Table 6-1. Flow conditions for initial alternatives and the fully developed Third Delta Conveyance Channel.

Parameters	Initial Dredged Channel		Fully Developed Channel
	20/20/10	20/10/5	200/100/50
Manning n	0.023	0.023	0.023
Channel side slope	3	3	3
Bottom width (ft)	75-200	75-200	400
Reach 1	Dnldsvl - Nat. Lv.	Dnldsvl - Nat. Lv.	Donalsvl - Split
Discharge (cfs)	20,000	20,000	200,000
Gradient	0.00238	0.00238	0.000067
Hydraulic depth (ft)	15.1	15.1	57.6
Top width	291	291	876
Flow velocity (ft/s)	5.39	5.39	5.9
Reach 2	Nat. Lv. - Split		
Discharge (cfs)	20000	20000	
Gradient	0.000047	0.000047	
Hydraulic depth (ft)	23.8	23.8	
Top width	343	343	
Flow velocity (ft/s)	3.1	3.1	
Reach 3	Split-Head Delta	Split-Head Delta	Split-Head Delta
Discharge (cfs)	20000	10000	100000
Gradient	0.000040	0.000040	0.000051
Hydraulic depth (ft)	24.9	16.9	43.3
Top width	350	302	733
Flow velocity (ft/s)	2.9	2.4	4.47
Reach 4	Head-Mouth	Head-Mouth	Head-Mouth
Discharge (cfs)	10000	5000	50000
Gradient	0.000035	0.000035	0.000041
Hydraulic depth (ft)	17.6	11.8	30.2
Top width	3.6	271	602
Flow velocity (ft/s)	2.3	1.8	3.67

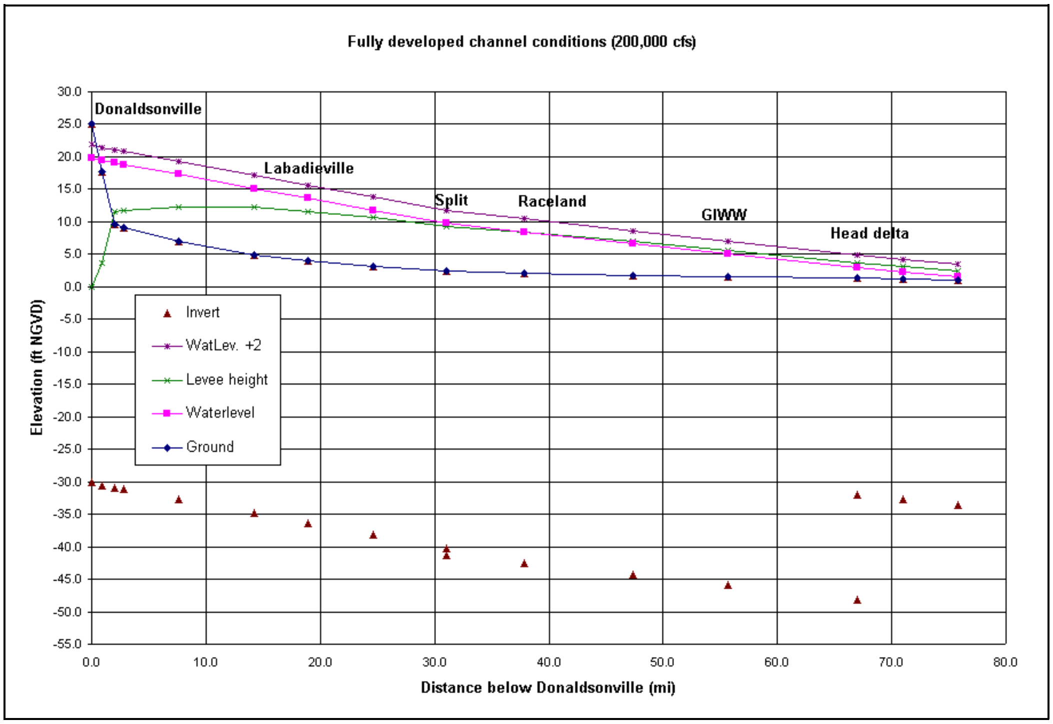

Figure 6-18. Potential water level, channel, and levee conditions along the fully developed Third Delta Conveyance Channel (200,000 cfs).

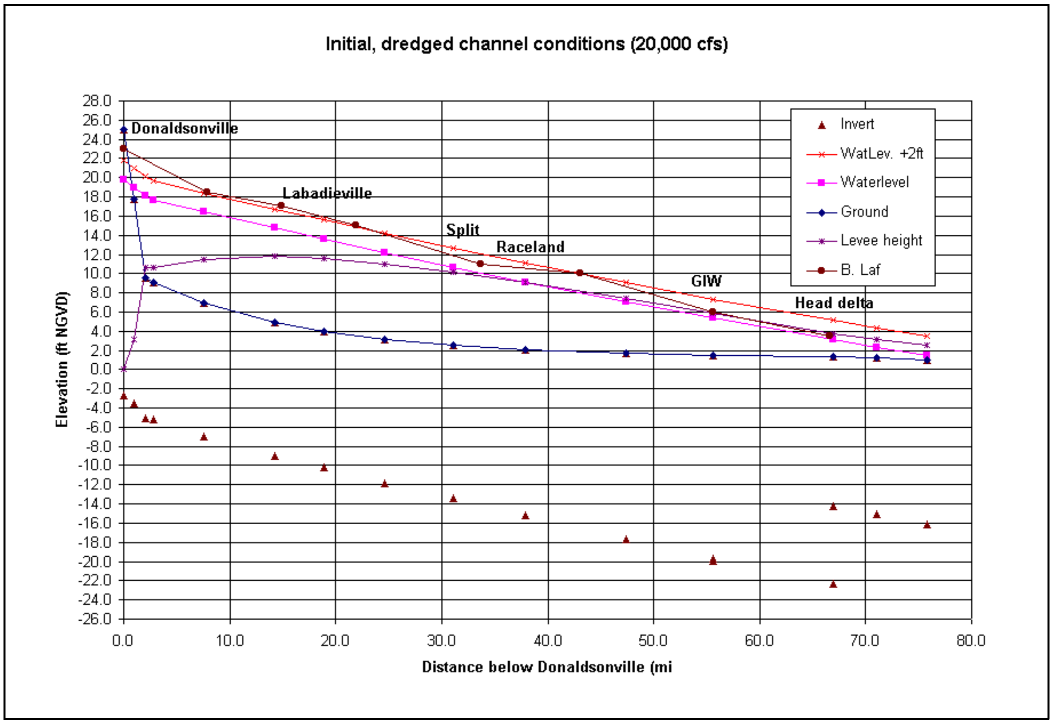

Figure 6-17. Potential water level, channel, and levee conditions along the initial dredged conveyance channel (20,000 cfs).

approximately 100 ft and 200 ft (30.48 m to 60.96 m) respectively. Figure 6-17 shows that flow depths would be about 25 feet (7.62 m). Dredging requirements per unit-length of channel would be of the same order as those of the constructed GIWW, and less than those of the Wax Lake Outlet. Velocities for the stated conditions were found to range from about 5 ft/s (1.52 m/s) in the steep, upper reach, to about 2 ft/s (.607 m/s) in the subdelta. Subject to further verification and modeling, these velocities are believed to be near the threshold for further, natural channel development. It is envisioned that, similar to development of the Atchafalaya River and the Wax Lake Outlet distributary channels, the channel will enlarge through natural scouring as a more efficient gradient and higher velocities evolve over time. This can be expected to occur progressively downstream because of the increased flow confinement that will result from natural levee development along the channel.

Computations were repeated in the same manner for the targeted 200,000 cfs discharge, maintaining the same gradient characteristics. As indicated by Table 6-1 and Figure 6-18, conveyance of a 200,000 cfs discharge (seasonal peak flows) under those gradient characteristics would be allowed by channel depths below ground of about 45 ft (13.72 m), and top and bottom widths ranging from 400 to 900 ft (121.92 to 274.32 m) and from 100 to 300 ft (30.48 to 91.44 m), respectively. Flow depths would be between 40 and 50 ft (12.19 to 15.24 m). Velocities under those conditions would be from 4 to 6 ft/s (1.22 to 1.83 m/s) for bankfull stage.

Even though these channel dimensions meet the gradient requirement, they may not be optimal and must be further evaluated. Greater depth and lesser width may be a more probable evolution as suggested by the Wax Lake Outlet.

The computations also provide estimates of the requirements for guide-levee construction, when comparing ground levels along the channels with the estimated water levels. Because of identical gradients, levee height requirements are assumed to be the same for the 20,000 and 200,000 cfs discharges. Computed levee heights, as measured above ground level and assuming a 2-ft freeboard (0.607 m), would be greatest (~12 ft, ~3.66 m) at the latitude of Labadieville and decrease from there toward the Mississippi River natural levee and to the 3DCC mouth (Figures 6-17 and 6-18).

Subdelta Lobes

The primary purpose of the proposed project is to deliver a large enough volume of transported sediment to the rapidly eroding and deteriorating areas of the Barataria and Terrebonne estuarine basins in order to initiate and sustain growth of subdelta lobes. Two subdeltas, straddling the Bayou Lafourche corridor in the general vicinity of Golden Meadow, would result. The specific rate of growth, geometry, configuration of landforms and related kind and quality of fish and wildlife habitat cannot be determined without further evaluation. However, forecasts can be made concerning the general nature of the subdeltas, based on the history of subdeltas along the lower reaches of the Mississippi River, Wax Lake Outlet, and Lower Atchafalaya River.

Information on potential subdelta growth has been based on historic growth within the modern Mississippi River delta and actual and predicted delta growth associated with the Atchafalaya River (Gagliano and van Beek 1976; Donnell and Letter 1992; Coleman et al. 1998). Each subdelta is expected to have a subaerial extent of about 75 mi^2 (194.25 km^2). This is the equivalent of the historic Cubits Gap subdelta of the Mississippi River, which is estimated to have received about 100,000 to 120,000 cfs of the Mississippi's flood-discharge, but developed in greater water depth than those prevailing in the areas of the 3DCC subdeltas. Each subdelta is also generally of the same magnitude as that predicted for the Wax Lake Outlet, assuming for the latter a subaerial growth period of 50 years and using its average rate of growth of 1.16 mi^2/year (3.0 km/year). While flood flows for this delta are probably in the order of 150,000 cfs at present, a greater growth rate is expected for the Lafourche subdeltas because of lesser water depths and greater sediment retention. Reflecting this information, channel levees need to be designed to convey 200,000 cfs.

The subdeltas will pass through sequential stages of development, including a subaqueous infilling of water bodies, development of a branching channel network, emergence of bars and natural levees, and vegetation colonization and succession. Fish and wildlife habitats will be predominantly fresh with high values for migratory waterfowl during the winter and spring, then shifting to high values for estuarine fish during the dry, low flow and low stage months of summer and fall. Oyster cultivation in the outfall area would have to be relocated.

If targeted flow volumes are achieved, the subdeltas should grow rapidly because of favorable conditions in the receiving areas. The water bodies into which delta growth will advance are shallow, partially occupied by broken marsh, and are subject to relatively low wave energy, all of which should contribute to rapid subdelta development.

The subdeltas will be positioned, and their growth trained, so that the resulting wetlands will provide storm buffers to the flood protection levees that surround the Lafourche corridor in the Larose-to-Golden Meadow area. Figure 6-19 is a bird's-eye view of the proposed channel and the subdeltas it would create.[1]

Related Features

An opportunity for a navigation option exists on the Main Conveyance Channel and Eastern Branch Channel between the Mississippi River and the GIWW. This navigation route would not be developed along the western branch of the conveyance channel or through the East Subdelta. A navigation channel through the subdelta would disrupt the land building process, which would be

[1] Because it will take about 50 years to develop one delta of the 3DCC to its full magnitude, since the deltas are likely to be built sequentially, and since no acreage losses to project footprint were considered, it is possible that the benefits attributed to the 3DCC by 2050 in the Main Report are overstated.

contrary to the primary goal of the proposed project. There would be additional costs associated with the navigation option, because of requirements for a lock at the Mississippi River and high rise or lift bridges at the highway crossings (see points A, B, and H in Figure 6-11). Transportation infrastructure crossings also would be required along the new channel (at points D, E and F in Figure 6-11).

A new highway could be built along the new conveyance channel west guide levee, with a specific alignment from the levee to the back-slope of the east natural levee of Bayou Lafourche (which would be within the forced drainage areas, Figure 6-12). It could extend from the River Road (Louisiana Highway 18) to U.S. Highway 90, where it could also join the proposed upgrade of Louisiana Highway 1. This in turn could continue to Port Fourchon and Grand Isle. The highway segment along the conveyance channel would open a new commercial and light industry corridor situated away from the residential communities and historic districts, which presently line the highways along the channel of Bayou Lafourche.

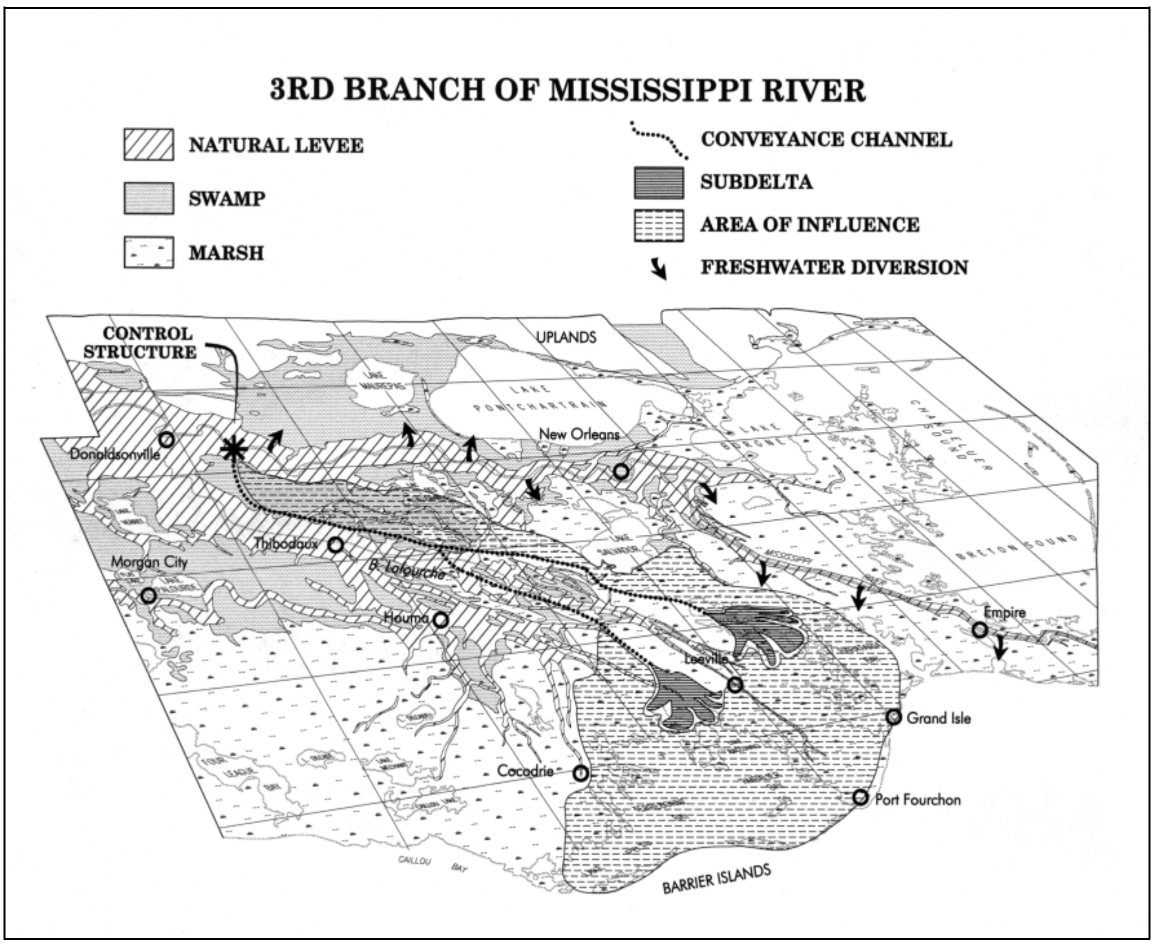

Figure 6-19. Bird's eye view of the Third Delta Conveyance Channel, associated subdeltas, and area of influence.

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SECTION 7

ERRATA SHEET

The following correction should be noted in the companion document to this appendix entitled *Coast 2050: Toward a Sustainable Coastal Louisiana, an Executive Summary*:

- The fifth sentence on page 1 should be replaced with: "The statistics are awesome: the ecosystem contributes nearly 30% by weight of the total commercial fisheries harvest in the lower 48 states and provides overwintering habitat to 50% of the migratory waterfowl using the Mississippi Flyway; 18% of the U.S. oil production and 24% of U.S. gas production come from Louisiana and the Adjacent Gulf of Mexico, with an annual value of $17 billion; Louisiana's ports rank first in the Nation in total shipping tonnage."

The following correction should be noted in the companion document to this appendix entitled *Coast 2050: Toward a Sustainable Coastal Louisiana*:

- The first sentence in the first full paragraph on page 57 should be replaced with: "Based on the average of a long-term survey coordinated by the U.S. Fish and Wildlife Service, coastal Louisiana winters about 50% of the waterfowl that migrate along the Mississippi Flyway. The percentage has been as high as 62% in one year (1992). It has also been documented that this survey includes significant numbers of waterfowl that migrate along the Central Flyway."

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