

State Management Plan for Aquatic Invasive Species in Louisiana

Final Management Plan

Louisiana Department of Wildlife and Fisheries—Mark McElroy

Louisiana Sea Grant—Marilyn Barrett-O'Leary

Louisiana Aquatic Invasive Species Task Force

Funded by EPA Gulf of Mexico Program, Barataria-Terrebonne National Estuary Program, NOAA, and Louisiana Department of Wildlife and Fisheries

Compiled and written by the Center for Bioenvironmental Research at Tulane and Xavier Universities—Alysia R. Kravitz, Richard Campanella, Lisa Schiavinato of Louisiana Sea Grant Legal Program, and members of the Louisiana Aquatic Invasive Species Task Force.

July 2005

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	5
2	INTRODUCTION.....	7
3	PROBLEM DEFINITIONS	10
3.A	PATHWAYS AND MEDIA	10
3.A.1	<i>Shipping.....</i>	10
3.A.2	<i>Boating</i>	17
3.A.3	<i>Transportation Corridors</i>	20
3.A.4	<i>River Diversions</i>	20
3.A.5	<i>Media.....</i>	22
3.A.6	<i>Deliberate Introductions</i>	24
3.B	SPECIES	32
3.B.1	<i>Aquatic Plants.....</i>	32
3.B.2	<i>Finfish</i>	46
3.B.3	<i>Mollusks.....</i>	52
3.B.4	<i>Mammals.....</i>	57
3.B.5	<i>Insects</i>	60
3.B.6	<i>Other Species.....</i>	62
3.B.7	<i>Viruses, Bacteria, and Other Disease-Causing Microbes.....</i>	64
3.C	EXACERBATING CIRCUMSTANCES.....	65
4	STATE JURISDICTIONS.....	67
5	GOAL AND OBJECTIVES	81
6	PRIORITIZATION OF PROBLEMS.....	82
7	MANAGEMENT ACTIONS.....	85
7.A	OBJECTIVE 1.....	85
7.B	OBJECTIVE 2.....	85
7.C	OBJECTIVE 3.....	88
7.D	OBJECTIVE 4.....	91
7.E	OBJECTIVE 5.....	93
8	IMPLEMENTATION TABLE.....	95
9	PROGRAM MONITORING AND EVALUATION	102
10	GLOSSARY OF TERMS	103
11	LITERATURE CITED.....	106
12	APPENDICES.....	119
12.A	APPENDIX A. MEMBERS OF THE LOUISIANA AQUATIC INVASIVE SPECIES TASK FORCE	119
12.B	APPENDIX B. INVASIVE SPECIES IN LOUISIANA	122
12.C	APPENDIX C. SUMMARY OF LOUISIANA STATE LAWS, PROGRAMS, AND REGULATIONS RELEVANT TO AQUATIC INVASIVE SPECIES.....	124
12.D	APPENDIX D. EXECUTIVE ORDER MJF 02-11: LOUISIANA NON-INDIGENOUS AQUATIC SPECIES ADVISORY TASK FORCE	130
12.E	APPENDIX E. LOUISIANA AQUATIC INVASIVE SPECIES COUNCIL ACT	133
12.F	APPENDIX F. SUMMARY OF FEDERAL LAWS, PROGRAMS, AND REGULATIONS RELEVANT TO AQUATIC INVASIVE SPECIES	137
12.G	APPENDIX G. SECTION 1204 OF THE NATIONAL INVASIVE SPECIES ACT OF 1996	150
12.H	APPENDIX H. EXECUTIVE ORDER 13112 OF FEBRUARY 3, 1999	152
12.I	APPENDIX I. SUMMARY OF INTERNATIONAL LAWS AND TREATIES RELEVANT TO AQUATIC INVASIVE SPECIES	156
12.J	APPENDIX J. PUBLIC COMMENTS RECEIVED AND RESPONSES	160

Acknowledgements

Inherent in understanding and addressing any invasive species/pathway issue is to fully recognize that a competent group from government, industry, academia and the public must collaborate in an orderly and coordinated approach to have any reasonable expectation of successfully preventing or managing an exotic species' potential, or real negative impacts. Governor Mike Foster understood this concept when he formed the Louisiana Non-Indigenous Aquatic Species Advisory Task Force and appointed 29 members representing both public and government entities. We thank Governor Foster for his leadership and resolve to initiate the process to develop this management plan.

We thank the task force membership for generously giving of their time while working on this plan. Indeed, it was only through their dedication and willing determination to apply their expertise that this plan was possible.

Long before any work started on this plan, Ms. Marilyn O'Leary's aim was to get Louisianan's thinking about invasive species issues. Her passion to understand the issues and teach others was truly inspiring. We thank Marilyn for her encouragement and contributions throughout this process and keeping us all focused on our charge.

We especially thank our talented and skilled writers/researchers, Ms. Alysia Kravitz and Mr. Richard Campanella, from the Center for Bioenvironmental Research at Tulane and Xavier Universities, directed by John A. McLachlan, Ph.D. We are particularly grateful to Alysia for returning to Louisiana to take on the challenge of preparing this document. Special thanks to Richard for skillfully preparing the maps, and his overall contributions to this plan.

We also acknowledge and thank Ms. Lisa Schiavinato for her legal review of the regulations and jurisdictional authorities and Ms. Paula Ouder for her edit of this manuscript.

Lastly, we offer this plan as a tribute to our late friend, Mr. Bill Holland, EPA, Gulf of Mexico Program for his courage and commitment to "jump start" our state in this effort.



Louisiana Aquatic Invasive Species Task Force, October 2003. *Photo by LDWF, 2003.*

Acronyms

ANSTF	Aquatic Nuisance Species Task Force
APCS	Aquatic Plant Control Section (Louisiana)
APHIS	Animal and Plant Health Inspection Service (USDA)
ASPEA	Alien Species Prevention and Enforcement Act of 1992
BMP	Best Management Practice
BTNEP	Barataria-Terrebonne National Estuary Program
CBR	Center for Bioenvironmental Research at Tulane and Xavier Universities
CWPPRA	Coastal Wetlands Planning, Protection, and Restoration Act
DOI	United States Department of the Interior
EPCC	Exotic Pest Control Council
GIWW	Gulf Intracoastal Waterway
GoM	Gulf of Mexico
GoMP	Gulf of Mexico Program
GSMFC	Gulf States Marine Fisheries Commission
LAISTF	Louisiana Aquatic Invasive Species Task Force
LDAF	Louisiana Department of Agriculture and Forestry
LDHH	Louisiana Department of Health and Hospitals
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LMRCC	Lower Mississippi River Conservation Committee
LOPH	Louisiana Office of Public Health
LPB	Louisiana Public Broadcasting
LSG	Louisiana Sea Grant
LSU	Louisiana State University
LUMCON	Louisiana Universities Marine Consortium
LWF	Louisiana Wildlife Federation
NAISA	National Aquatic Invasive Species Act (reauthorization in 2004)
NANPCA	Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990
NBWC	National Ballast Water Clearinghouse at the Smithsonian Institute
NISA	National Invasive Species Act of 1996
NRCS	Natural Resources Conservation Service
Port of NO	Port of New Orleans
TNC	The Nature Conservancy
ULL	University of Louisiana at Lafayette
UNO	University of New Orleans
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1 Executive Summary

The Louisiana Aquatic Invasive Species Task Force, formed by authority of *Executive Order MJF 02-11* on June 4, 2002 and convened six times during 2002-2004, has determined that invasive species¹ pose a serious threat to the economic and ecological health of the State of Louisiana. Even in the time it has taken to write this management plan, new bioinvaders have surfaced: Peruvian watergrass has emerged as a new threat to the wetlands near Lake Charles, and black carp, a potential threat to native shellfish, have been discovered in the Red River. This highlights the urgency for action in addressing invasive species in Louisiana.

The Task Force, led by the Louisiana Department of Wildlife and Fisheries, submits this *State Management Plan for Aquatic Invasive Species in Louisiana*, to (1) describe the nature and extent of this environmental problem, which afflicts Louisiana to a degree far greater than most other states, and (2) propose specific management actions to minimize negative impacts. This living document is Louisiana's first state management plan for invasive species, and one of the first in the region.

Situated at the crossroads of major transportation routes, Louisiana decided that its invasive species state management plan should reflect this geographically distinguishing characteristic. That is, the plan emphasizes how these species arrived here and spread, because these geographical factors inform how invasive species may be controlled and managed. The following pathways and media² of concern are described herein:

- Shipping
- Recreational Boating and Fishing
- Transportation corridors (highways, waterways, railroads)
- River Diversions
- Ballast water, fouling, and dunnage
- Deliberate horticultural introductions
- Deliberate aquaculture introductions
- Deliberate sportfishing introductions
- Deliberate pet and aquarium introductions

The Task Force also recognized the utility of understanding this problem at the species level, because some management actions are most effective when targeted at particular species rather than certain geographical features. The following species of concern are described herein:

Water hyacinth	Chinese tallow tree	Parrot feather
Hydrilla	Wild taro	Brazilian waterweed
Eurasian watermilfoil	Water lettuce	Common salvinia
Giant salvinia	Cogongrass	Purple loosestrife
"Cylindro," a blue-green algae	Rio Grande cichlid	Common carp
Grass carp	Silver carp	Bighead carp
Black carp	Tilapia	Asian clam
Zebra mussel	Brown mussel	Green mussel
Channeled apple snail	Nutria	Feral hogs
Red imported fire ant	Formosan termite	Asian tiger mosquito
Africanized honeybee	Australian spotted jellyfish	<i>Daphnia lumholtzi</i> , a water flea
Chinese mitten crab	Green crab	Various viruses, bacteria, and other microbes

The goal of this state management plan is to prevent and control the introduction of new nonindigenous species into Louisiana; to control the spread and impact of existing invasive species; and to eradicate locally established invasive species wherever possible. It endeavors to do this through five objectives:

¹ Invasive species are non-native organisms whose introductions cause or are likely to cause adverse environmental, economic, and/or human health impacts.

² Pathways are geographical features or patterns by which species are physically transported to new areas; media are natural and man-made materials infested or utilized by species as they are transported to new locations.

1. Coordinate all AIS management activities or programs within Louisiana and collaborate with regional, national, and international AIS programs.
2. Prevent and control the introduction/reintroduction of nonindigenous invasive species through education about species and pathways, targeting the general public (including schools), industries and user groups, government agencies, and nongovernmental organizations.
3. Eliminate locally established invasive species through monitoring, early detection, rapid response, and early eradication.
4. Control the spread of established invasive species through cooperative management activities designed to minimize impacts when eradication is impossible.
5. Prevent the introduction of non-native species, or the spread of existing ones, through legislation and regulation.

The plan identifies specific management actions geared toward resolving this problem, of which some are partially or fully funded, and others remain unfunded. Examples of ongoing, funded management activities in Louisiana are:

- the Nuisance Aquatic Plant Control program (ongoing water hyacinth, hydrilla, and other invasive plant removal from wetlands and bayous);
- the nutria bounty program; and
- development of a “Citizen’s Guide to Invasive Species in Louisiana” for outreach purposes.

Priority unfunded management actions are listed below and include the development of a statewide Rapid Response and Early Eradication Plan.

The purpose of the *State Management Plan for Aquatic Invasive Species in Louisiana* is to coordinate and support all state invasive species efforts from a single node under conditions of collaboration and full communication, rather than from dispersed, uncoordinated locales susceptible to duplications or gaps in effort. Not only does such a planning effort improve the efficacy of field actions, it also opens doors to funding opportunities for the proposed actions. Cooperation among the Task Force members (drawn from nine state entities, six federal agencies, four universities, six stakeholder groups, and four industry representatives) was key to the development of this management plan, and will be even more critical to its execution.

In spring 2004, Task Force members Senator Gerald Theunnissen and Representative Wilfred Pierre co-sponsored a bill in the legislature that called for the creation of the Louisiana Aquatic Invasive Species (LAIS) Council and Advisory Task Force to implement this management plan. The bill passed both the House and Senate, and was signed into law by Governor Kathleen Blanco.

The LAIS Task Force recommends to the future Council these management actions:

- Hire staff to administer the LAIS Council and Advisory Task Force;
- Develop a Rapid Response and Early Eradication Plan;
- Assess Louisiana ports and waterways for invasive species.

The Louisiana Department of Wildlife and Fisheries and the Louisiana Aquatic Invasive Species Task Force recommend the approval of this plan by the Governor of Louisiana so that implementation may commence.

2 Introduction

Introduced species arrived in Louisiana with the earliest waves of French colonizers at the turn of the 18th century. Many introductions, particularly agricultural and horticultural plants, have imparted significant benefits to the state. But nearly two centuries would pass before authorities appreciated that the accidental or intentional diffusion of non-native life forms into new environs could also initiate great costs, as dramatically illustrated by the 19th-century yellow fever epidemics traced to the *Aedes aegypti* mosquito, introduced from Africa. Louisiana, with its subtropical environment, extensive coastal wetlands, and strategically positioned shipping industry, suffers disproportionately from “invasive species”—that is, introduced species that cause extensive economic or ecological harm. The complex nature of species introduction, the various pathways of diffusion, and the myriad governmental jurisdictions through which invasive species spread conspire to make this a particularly challenging resource management issue. The *State Management Plan for Aquatic Invasive Species in Louisiana* identifies and characterizes the scope of this problem in the state, and—for the first time—plans a coordinated suite of actions (summarized in the Implementation Table Section 8) toward these five objectives:

1. Coordinate all AIS management activities or programs within Louisiana and collaborate with regional, national, and international AIS programs.
2. Prevent and control the introduction/reintroduction of nonindigenous invasive species through education about species and pathways, targeting the general public (including schools), industries and user groups, government agencies, and nongovernmental organizations.
3. Eliminate locally established invasive species through monitoring, early detection, rapid response, and early eradication.
4. Control the spread of established invasive species through cooperative management activities designed to minimize impacts when eradication is impossible.
5. Prevent the introduction of non-native species, or the spread of existing ones, through legislation and regulation.

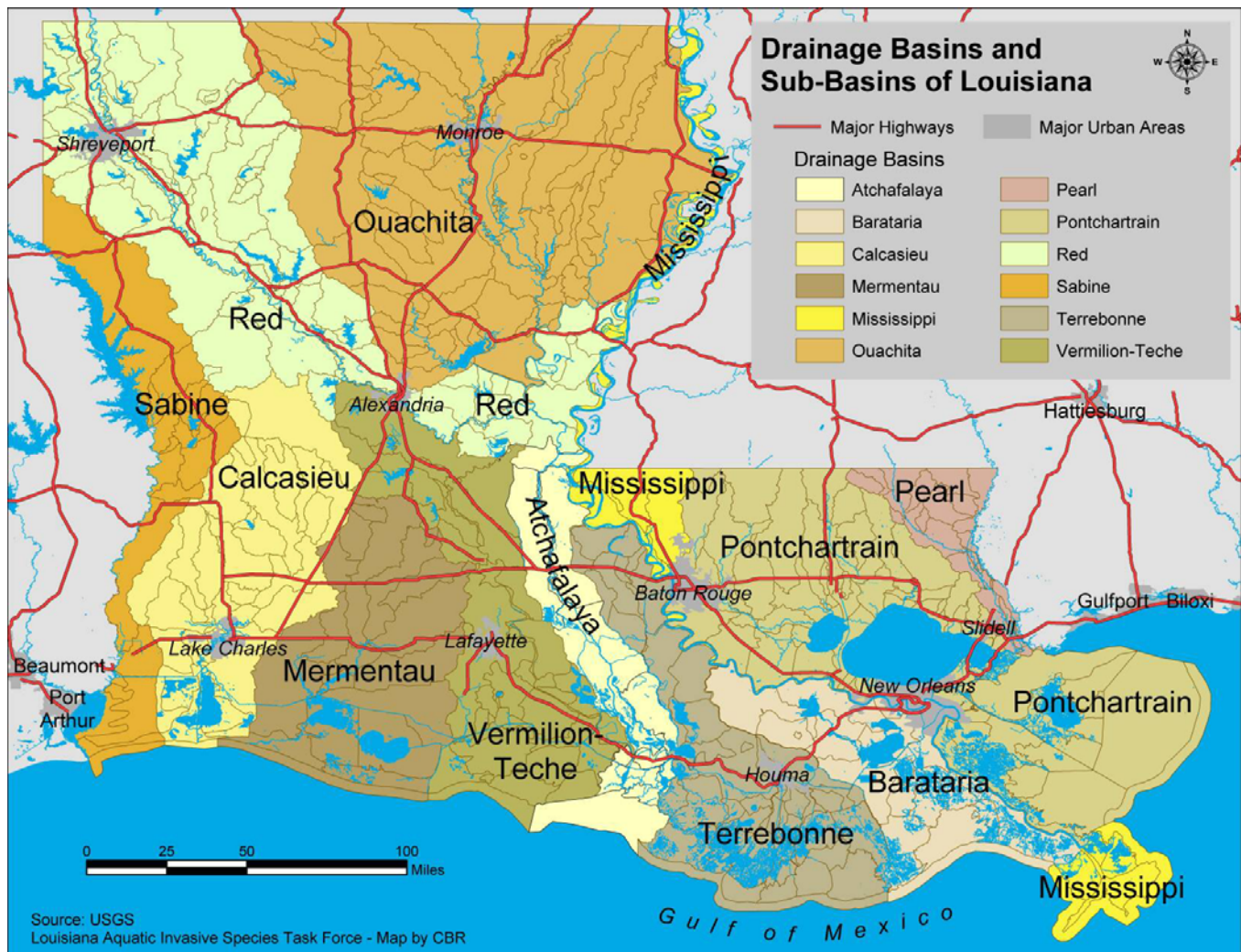
The purpose of the management plan is to coordinate and support all state invasive species efforts from a single node under conditions of full communication, rather than from dispersed, isolated locations susceptible to duplications or gaps in collaboration and effort. Not only does such a planning effort improve the efficacy of field actions, it also opens doors to funding opportunities for the proposed actions.

The management plan focuses not on all invasive species in Louisiana, but on those inhabiting aquatic environments (particularly aquatic plants) and those spread via aquatic pathways. Emphasis was also placed on those species and pathways not addressed by other entities. Many viruses and agricultural pests, for example, fall under the definition of invasive species but are best left to the specialized jurisdictions of medical researchers and agronomists. The management plan covers two years into the future for specific actions, while foreseeing the next five years for general, long-range planning.

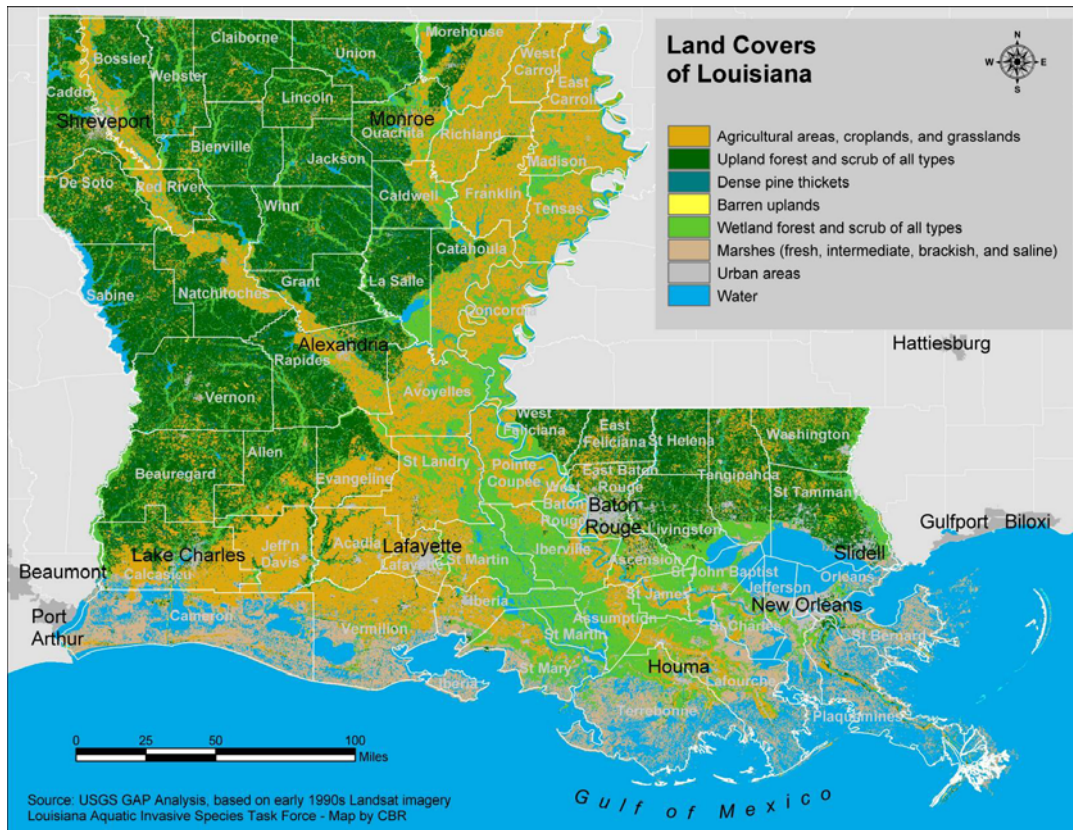
Invasive species issues are highly multidisciplinary. Ecologists, engineers, economists, educators, and ethicists all see the issue from different perspectives and play roles in resolving it. The multifaceted nature of invasive species also challenged the authors in structuring this plan. We decided to define the problem by breaking it down by pathway and media (how species arrived here and how they are diffused), by species, and by existing circumstances that exacerbate the problem. Pathways and species were then prioritized and summarized in tabular form, and existing authorities and jurisdictions were researched and documented. Management actions were then detailed according to the four objectives (listed above), and summarized in an implementation table. The plan concludes with a monitoring and evaluation plan, glossary, literature cited section, and appendices, all of which were designed to make the *State Management Plan for Aquatic Invasive Species in Louisiana* a “go-to” resource for this topic.

Participants in the planning process were as varied as those affected by this issue: state and federal agencies, universities, trade associations, private industries, port authorities, and research centers. Representatives of these entities, listed in Appendix A, were invited to serve on the Louisiana Aquatic Invasive Species Task Force, which met in Baton Rouge six times throughout 2002-2004 to help assemble this plan. Authority for the plan and the Task Force are derived from *Executive Order MJF 02-11: Louisiana Non-Indigenous Aquatic Species Advisory Task Force*, signed by Governor M.J. “Mike”

Foster, Jr. on June 4, 2002. Mark McElroy of the Louisiana Department of Wildlife and Fisheries and Marilyn Barrett-O'Leary of Louisiana Sea Grant oversaw the planning process and assembly of the Task Force, assisted by the Center for Bioenvironmental Research at Tulane and Xavier Universities, which wrote the plan. Funding for this effort came from the EPA Gulf of Mexico Program, the Barataria-Terrebonne National Estuary Program, the National Oceanic and Atmospheric Administration, and the Louisiana Department of Wildlife and Fisheries. The plan follows the guidelines of the Aquatic Nuisance Species Task Force, an intergovernmental organization which standardizes and approves state management plans nationwide.



Drainage basins and sub-basins in Louisiana are usually separated by slight topographic ridges in inland areas, and by waterways in the deltaic region of the state. Invasive aquatic plants often diffuse throughout connecting water bodies within a basin and, unimpeded by topography, may spread into neighboring basins. Map by CBR, 2004.



Wetlands and freshwater marshes are the land covers of Louisiana most prone to extensive establishments of aquatic invasive species. *Maps by CBR, 2004.*

