

AQUATIC NUISANCE SPECIES IN THE GULF OF MEXICO:

A Guide for Future Action by the
Gulf of Mexico Regional Panel
and the Gulf States

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Cover photo of *Caulerpa taxifolia* provided by Rachel Woodfield, Senior Biologist, Merkel & Associates

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I. Introduction

According to the Nonindigenous Aquatic Nuisance Prevention and Control Act, an “aquatic nuisance species” is a “nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters.”¹ Introductions of “alien” species can be intentional, through the discharge of ballast water or the release of aquarium species, or accidental, through fishing activities or the movement of recreational equipment between water bodies. Introductions of alien species into U.S. waters may cost the United States upwards of hundreds of millions of dollars every year.²



Photo from the Nova Development Corp.® stock collection.

Spurred by the disastrous ecological and economic consequences of ballast water introductions and the zebra mussel invasion, Congress passed the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA or Act). The original purposes of the Act were to prevent the unintentional introduction of nonindigenous species through a ballast water management program and to coordinate research, prevention control, dissemination of information, and other activities regarding aquatic nuisance

species, initially focusing on zebra mussels.³ The Aquatic Nuisance Species (ANS) Task Force was established to “develop and implement a program for waters of the United States to prevent introduction and dispersal of aquatic nuisance species, to monitor, control and study such species, and to disseminate related information.”⁴

The NANPCA also provided for regional coordination through the creation of regional panels. The role of the regional panels is to establish regional priorities, coordinate activities, and develop and implement action plans. The regional panels are also required to submit annual reports on their activities to the Task Force. The Great Lakes Panel on Aquatic Nuisance Species was the only panel established in the 1990 Act. However, when the Act was reauthorized in 1996 by the National Invasive Species Act, a Western Regional Panel was established and the Task Force was instructed to encourage the development of panels in other regions of the United States. Since the reauthorization of the NANPCA, regional panels have been established for the Gulf of Mexico, New England, and the Mississippi River Basin. Regional panels are currently under consideration for the Southeast and Hawaii and the South Pacific. Although they have a similar mandate, each regional panel is unique. Each region has different priorities and the organizational structure of the panels varies.

Sections II - IV of this report analyze the structure and activities of the Great Lakes, the Western Regional, and the Northeast Regional Panels. The structure and activities of the Gulf of Mexico Regional Panel are then examined in Section V. This section concludes by suggesting future actions the Gulf of Mexico Panel should take to most effectively support interstate cooperation and assist the states with the development and implementation of regional plans.

II. Great Lakes Panel

In 1990, the NANPCA called for the Great Lakes Commission to form the Great Lakes Panel on Aquatic Nuisance Species.¹ Formed in 1955 by the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin, the Great Lakes Commission carries out the mandate of the Great Lakes Basin Compact. The Canadian Provinces of Ontario and Quebec are Associate Members of the Commission. Two of the main purposes of the Compact are, through cooperative action, “to promote the orderly, integrated, and comprehensive development, use, and conservation of the water resources of the Great Lakes Basin” and “to plan for the welfare and development of the water resources of the Basin as a whole.”² Aquatic nuisance species prevention and management fit nicely into the statutory mandate of the Commission.

Since its official formation in 1991, the Great Lakes Panel on Aquatic Nuisance Species has been very active. In January 1996, the Panel issued “A Model Comprehensive State Management Plan for the Prevention and Control of Nonindigenous Aquatic Nuisance Species.” The report was presented to the eight Great Lakes states as a model to guide the states “in the development of state comprehensive management plans for the prevention and control of nonindigenous aquatic nuisance species as called for in the federal [NANPCA].”³ The Model Plan identifies the crucial elements of a state plan, such as an executive summary, policy background, implementation section, and a section on program monitoring and evaluation. The necessary elements of each of these sections are identified and sample language is provided. Although New York already had an approved ANS management plan prior to the issuance of the guidance, comprehensive management plans

are now approved in six of the eight Great Lakes states. The Model Plan facilitated the adoption of state plans in Illinois, Michigan, Minnesota, Wisconsin, and Ohio.

In June 1999, the Great Lakes Panel went a step further and prepared “Model Guidance for Great Lakes Jurisdictions.” Recognizing a critical problem with ANS management in the Great Lakes is “a lack of interjurisdictional consistency in laws, regulations, and policies directed at ANS prevention and control efforts,” the Panel developed the Guidance to serve as a benchmark for assessment of the current status of ANS legislation in the individual states and to enhance consistency between the various jurisdictions in the regions.⁴ Model language is provided regarding definitions, classification systems, prohibited activities, enforcement policies and civil penalties, and emergency action plans. The Model Guidance is intended to complement the goals established in the Model Plan. State management plans developed in accordance with the Model Plan are an effective means of implementing laws and regulations adopted pursuant to the Model Guidance. The two documents provide the states with all the necessary tools to develop and implement an ANS management regime tailored to their specific needs.

In July 2001, the Panel facilitated the adoption of a regional policy agreement. The Governors and Premiers of the Great Lakes States and Provinces signed an action plan that “articulates a clear vision to guide collective interjurisdictional action, and presents a series of principles, goals, and objectives to attain that vision.”⁵ The Action Plan seeks to address ten goals, which include, among others, sharing an individual and collective responsibility for the prevention of the spread of ANS, interjurisdictional cooperation, coordination, advocacy, and

development of “a coordinated and responsive management structure, functioning on a binational, multijurisdictional basis.”⁶ The Action Plan is accompanied by an addendum providing strategic actions for the signatories to undertake to meet the goals of the plan in a variety of categories, including research and monitoring programs.

Over the years, the Great Lakes Panel has worked closely with the ANS Task Force and issued numerous statements on ANS prevention and control. Through the development of policy documents and model guidance, the Panel is guiding the Great Lakes states through the process of formulating and implementing ANS policies and legislation. The Panel documents also highlight success stories in the individual states. The Model Plan and Guidance build upon successful legislation, partnerships, and programs to help other states in the region manage their ANS problems. There appears to be a coordinated effort within the Panel and the region to address the ANS problem as a united front.

The Great Lakes Panel has been extremely active in ANS prevention and control. A variety of factors most likely contributed to the success of the panel. First, the placement of the Panel within the Great Lakes Commission gave the Panel a strong foundation to build upon. An administrative structure was already in place with which the states within the region were familiar. An existing structure is extremely important to the success of a regional panel. In order for a regional panel to do its job properly, there needs to be support for travel arrangements, grant management, and publication and distribution of documents. Placement within an existing

structure allows the Great Lakes Panel to borrow many of the Commission’s administrative resources. Over the years, the Commission has been very successful at building consensus and trust among its 10 partners. As part of that organization, the Panel was able to build upon that trust to explore management options.

Other aspects of the Panel contributed to its successes. The Panel benefitted from the vision of the Executive Director of the Great Lakes Commission, Michael Donahue. According to Katherine Glassner-Shwayder of the Great Lakes Commission, Donahue is a visionary leader who is very good at seeking out grant opportunities for the various projects at the Commission, including those of the Regional Panel. “The Commission benefits greatly from his strong leadership, vision, and support.”⁷ Secondly, the Great Lakes region was the focal point of the first zebra mussel invasion. The invasion was well-publicized and highly costly. The economic impact on the region and the potential for continued losses galvanized the states and the federal government to take steps to prevent the further spread of the invader.

Funding has also had a huge impact on the success of the Panel. Because the Great Lakes Panel was the first regional panel established, it received larger amounts of funding than have been made available to the newer panels. The Panel has also been able to obtain grants from the Environmental Protection Agency and other federal agencies. States, however, generally do not contribute funding to the Panel. To maintain the high level of activity expected of the Great Lakes Panel, the Panel members and the Commission will have to continue to seek outside sources of funding.



Photo provided courtesy of NOAA.

III. Western Regional Panel

The National Invasive Species Act of 1996 (NISA) called for the formation of a Western Regional Panel on ANS, which held its first organization meeting in July 1996. The Panel is composed of 42 members representing the states and provinces west of the 100th Meridian including Guam, Hawaii, and Alaska, as well as other interests, such as industry, academia, and conservation organizations.

Unlike the Great Lakes Panel, the Western Regional Panel (WRP) was not created within an existing administrative structure. Instead, the Panel carries out its responsibilities through a seven-member Executive Committee elected by the full membership of the Panel. The Executive Committee provides the staff support for the

activities that address marine and estuarine aquatic invasions. The difficulty with this type of structure is that the level of staff support provided by the individual members of the Executive Committee depends on the availability of funds and the prior commitments of the members.¹

Only four states within the western region have approved ANS plans: Alaska, Montana, Oregon, and Washington. The immense diversity of the region and the structure of the Panel may be hindering the efforts of the WRP. The Panel meets only once a year and there is no independent administrative support structure for the work of the Panel. Like all panels, the WRP must carefully allocate its resources and, as a result, only one major document has been made available to the public in the six years since its creation, compared to eight in the Great Lakes.

In January 2003, the Western Regional Panel revealed its "Model Rapid Response Plan for Aquatic Nuisance Species," developed for the Panel by the California Department of Food and Agriculture. The Model Plan suggests a two-tier rapid response system which can be incorporated into the ANS management plan of each individual state. The Plan calls for the establishment of a statewide council to identify priorities and provide funding. The actual projects authorized by the council are then carried out by a designated state agency. This model system was created by examining the strengths and weaknesses of recent responses to aquatic invasions, such as *Caulerpa taxifolia* in coastal Southern California.

Another major focus of the WRP is ballast water management. The WRP is currently working with the Pacific States Marine Fisheries Commission and the Pacific Ballast Water Group to coordinate ballast water management throughout the region. The WRP is also involved in the development of ANS education materials.



Photo of Point Lobos, California courtesy of NOAA.

panel, such as drafting agendas for the Panel meetings. There is also an Inland Committee that has been addressing ANS management and research needs and priorities and a Coastal Committee that focuses on the coordination of

IV. Northeast Aquatic Nuisance Species Panel

Established in the summer of 2001, the Northeast Aquatic Nuisance Species Panel membership includes the states of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont, as well as the Canadian Provinces of Quebec, New Brunswick, and Nova Scotia. The Panel has established three committees to focus on key ANS issues. The Communication, Education, and Outreach Committee focuses on the coordination of information dissemination; the Policy and Legislative Committee strives to promote consistent and effective ANS legislation and policies throughout

the Northeast; and the Science and Technology Committee, as its name suggests, focuses on the science of ANS prevention and control. These committees explore options and formulate action items for the Panel.

Despite its infancy, the Panel has facilitated the submission and approval of plans in Maine and Massachusetts. New York and the Lake Champlain Basin (Vermont) already had approved plans in place prior to the formation of the Northeast Panel. The Panel is beginning to develop fact sheets and discuss future actions to address rapid response and ballast water.



Photo of water chestnut courtesy of Barry Meyers-Rice, The Nature Conservancy.

V. Gulf of Mexico Regional Panel

The Gulf of Mexico Regional Panel (GMRP) has gone through many changes during the course of its short lifetime. The Gulf of Mexico is a diverse region which encompasses the most active offshore oil area in the world, seven of the ten busiest ports in the United States, and a watershed covering nearly 2 million square miles.¹ The states of Florida, Alabama, Mississippi, Louisiana, and Texas all have coastlines along the Gulf of Mexico. These states each have different priorities, both economical and ecological, governmental structures, and resources. Cooperative interstate management of the resources in the Gulf of Mexico is extremely difficult. To facilitate interstate management, the EPA established the intergovernmental, community-based Gulf of Mexico Program (GMP) in 1998 to manage and protect the resources of the Gulf consistent with the economic well-being of the region.

To address the increasing threat of invasive species in the region, the Gulf of Mexico Program convened a Nonindigenous Species Focus Team in 1997 (renamed the Invasive Species Focus Team in 2001). In 1998, the Focus Team was invited by the Aquatic Nuisance Species Task Force (ANSTF) to serve as the Gulf of Mexico Regional Panel on ANS. The GMP later determined that the structure of the GMP Management Committee was better suited to serve as the Regional Panel, because of the existing broad organizational management representation of the Committee.² The Management Committee began serving as the Regional Panel in January, 2000. The Focus Team's role evolved into that of an advisor to the Regional Panel on technical and programmatic issues. The Gulf of Mexico Program Office continued to provide the administrative support for the Regional Panel.

In September 2000, the Gulf of Mexico Regional Panel completed an "Initial Survey of Aquatic Invasive Species Issues in the Gulf of Mexico Region." This survey was undertaken to compile background and technical information for the 2000 Annual Report to the ANSTF, compile information to assist the Gulf states with the development of ANS plans, and generate a regional information and coordination resource.³ The Survey identifies the aquatic nuisance species priorities in each of the five Gulf states and provides background information for ANS issues of particular concern in the Gulf, such as shrimp viruses and ballast water. The Survey was an excellent first step for the Gulf of Mexico Regional Panel to take towards ANS management in the Gulf. States now have an informational source to rely on when developing management plans.

Another initial project of the Regional Panel was the sponsorship of ballast water workshops in 2001. Workshops were held in New Orleans, Tampa, and Houston. The workshops were informational and intended to raise awareness of the invasive species threat created by ballast water discharge.

Due to limited resources, the Gulf of Mexico Regional Panel decided to focus on encouraging the development of management plans in one state at a time. Louisiana was chosen as the initial state to receive assistance. The Panel helped the Louisiana Department of Wildlife and Fisheries, Louisiana Sea Grant, and the Barataria-Terrebonne National Estuary Program develop a briefing for state legislative, industry, and citizen representatives. This briefing provided ANS information and made a case for the creation of a Louisiana Invasive Species Plan Task

Force. The strategy of the Regional Panel was successful. A Task Force was formed and a Louisiana State Management Plan is currently being developed. The progress made by Louisiana will be discussed in greater detail later in Section VI.

The year 2002 was one of transition for the GMRP. In December 2001, the GMP Management Committee voted to transfer administrative support of the ANS panel from the Gulf of Mexico Program to the Gulf States Marine Fisheries Commission (GSMFC) in May 2002. The GSMFC was established through an interstate compact between Alabama,

seven working groups to investigate ANS regional needs and formulate action plans. The work groups are structured around themes listed in the National Invasive Species Council's Invasive Species Management Plan and include:

- (1) Pathways/Prevention;
- (2) Eradication/Control/Restoration;
- (3) Vessel Mediated Transport;
- (4) Research/Development;
- (5) Education/Outreach;
- (6) Early Detection/Rapid Response; and
- (7) Information/Management/Coordination.

The work groups will identify research and information needs, target audiences, strategies, and develop recommendations to address those needs. The work groups will present their findings to the Panel. The Panel is free to decide whether to implement the findings of the work groups.

When compared to the Great Lakes Panel, the accomplishments of the Gulf of Mexico Regional Panel appear minor. This, however, is not the case. The GMRP has weathered an administrative restructuring and receives very limited funding and state support. In spite of these challenges, a Gulf-wide

survey was undertaken and successfully completed. The Panel continues to meet twice a year and is discussing future actions, such as compilation of a comprehensive catalog of available Gulf specific ANS educational materials and development of guidelines for the use of ANS in science fair projects and early detection programs.

The GMRP has a strong foundation to build upon in the future. To fulfill its mandate, the GMRP must take full advantage of the support provided by the GSMFC. As evidenced by the Great Lakes Panel, administrative support is cru-



Photo of the Biloxi Harbor entrance courtesy of NOAA.

Florida, Louisiana, Mississippi, and Texas “to promote the better utilization of the fisheries, marine, shell, and anadromous, of the seaboard of the Gulf of Mexico.”⁴ The ANS Task Force approved the transfer. The first meeting of the new panel was held in October, 2002. The GSMFC will also assist the GMRP with the maintenance of an informational website entitled “Nonindigenous Species in the Gulf of Mexico Ecosystem.”⁵

The transition went smoothly⁶ and the new Gulf of Mexico Regional Panel has established

cial to the maintenance of an up-to-date and useful website, arrangement of meetings, and development and publication of documents. Membership on an ANS panel is not a full time position. All panel members have other commitments and priorities. The provision of administrative support by a body independent of the panel helps the panel complete whatever work it chooses to do.

The GMRP must also build upon the existing relationships within the GSMFC. The working relationships among members of the Gulf States Marine Fisheries Commission will prove invaluable to the implementation of the recommendations of the Panel. It is often difficult to obtain funding and implement new programs. Without working relationships between the ANS managers in each state, the documents and programs developed by the GMRP may never be implemented. It is also important to develop relationships between the Governors of the Gulf States. Aquatic nuisance species spread without regard to political borders. States need to coordinate their approaches to the ANS problem. Governors can assist in this coordination effort.

As for the future direction of the GMRP, the Panel should refrain from reinventing the wheel. Since the Great Lakes Regional Panel and the ANS Task Force have already issued excellent comprehensive model plans, a third model plan specifically for the Gulf of Mexico region is unlikely to be helpful or even necessary. When the individual states reach the point of drafting their plans, sufficient guidance is provided by the existing model plans. Furthermore, the five Gulf states are all in various stages of ANS planning and a few states, like Florida and Louisiana, are too far along in the process to benefit from a Gulf-specific model plan.

Rather, the GMRP should focus on undertaking activities and developing documents that can assist the Gulf states the most. The Panel's resources should be directed towards the development of "tool kits" and policy statements. "Tool kits" refer to documents that provide the states with all the information necessary to

tackle specific ANS issues. Some examples of "tool kits" are model legislation and plans. Model legislation can facilitate regional coordination and consistency by providing states with preferred statutory language. Model plans in the areas of rapid response, early detection, and enforcement are useful guidance to states in the development and implementation of individual programs.

Policy statements issued by GMRP would also be extremely useful to the states. Policy statements can identify regional goals and priorities. Regional coordination can be enhanced through policy statements by focusing and directing the states when developing state goals. Policy statements can urge states to direct resources towards certain activities, thereby facilitating regional coordination. Although policy statements need not be followed by the states or the state agencies with jurisdiction over invasions, such statements provide invaluable guidance to regional policy makers. Furthermore, by identifying regional priorities, the GMRP provides the state ANS managers with additional ammunition in their never ending battle for funding.

The GMRP has a crucial role to play in the prevention and control of ANS in the Gulf of Mexico, and that is the facilitation of regional coordination. As much assistance as feasible should be provided to the states during the development of their individual management plans. Panel assistance should take a variety of forms, from funding to guidance documents to the arrangement of Panel and Work Group meetings. The Panel and its individual members must serve as a voice for the region in front of state legislatures and agencies.

The Panel, however, is not the only entity involved in ANS management in the Gulf of Mexico. As the GMRP struggles to coordinate regional activities and provide information and assistance to the Gulf states, the challenges of development and implementation of ANS management falls to the individual states. The five Gulf states must take full advantage of the assistance offered by the regional panel.

VI. The Gulf States

In a recent report entitled “Halting the Invasion: State Tools for Invasive Species Management,” the Environmental Law Institute (ELI) analyzed the legal tools currently available in the fifty states to combat invasive species. The necessary legal components of ANS management fall into five categories: (1) prevention, (2) regulation, (3) control and management, (4) enforcement and implementation, and (5) coordination. The ELI report also identified sub-categories of tools which, if present in their entirety, would constitute a comprehensive invasive species management program.

To facilitate interstate coordination, a state should have a statewide interagency council and management plan. There are five key elements to invasive species prevention: identification and mitigation of future threats; detection; requirements for controlling introduction and release; quarantine authority; and education.¹ Most states attempt to prevent invasions through the maintenance of either a “clean list” or a “dirty list.” The majority of states utilize “dirty lists,” which identify species that are banned from import or release. This a more permissive regime, as species can be introduced or released unless the state has determined that they are harmful. “Clean lists,” on the other hand, are more effective. “Clean lists” designate those species which have been approved for

importation, transportation, possession, and release. As a result, all non-listed species are regulated by the state.

With regard to the regulation of invasive species, the most common tools are permits, transportation requirements, monitoring programs, and bonds and insurance.² The control and management of invasive species can be achieved through general management authority of a designated agency, emergency powers, biological control agents, or restoration programs.³ Finally, enforcement and implementation is usually accomplished through enforcement authorities and funding.

In this report, the existing ANS legislation in each of the Gulf states has been compared to the model developed by the ELI.⁴ Recognizing that the ELI report deals with the entire range of invasive species, not just aquatic invaders, some of the benchmarks have been altered to better reflect the specifics of ANS management. Throughout this section, the ELI model is used to identify areas in which the Gulf states, individually, excel and where improvements are needed. The Gulf states are not compared to each other. The purpose of this section is to help the Gulf states focus their limited resources towards the most basic and critical areas of ANS management which are lacking in their state programs.

Photo of walking catfish courtesy of U.S. Fish and Wildlife Service.



Florida

Florida has a long history of battling aquatic invasions. Its busy ports and tourism industry are excellent pathways for the introduction of nonindigenous species and the state's numerous waterways facilitate the spread of invaders. In 2002, invasive nonindigenous aquatic plants were reported in 96% of 426 surveyed public rivers and lakes in Florida.⁵ With such extensive invasions, it is no surprise that the control and management of aquatic plants has been the primary focus of Florida over the years. Florida already has an extensive management regime for nonindigenous aquatic plants, defined as "any aquatic plant that is nonnative to the State of Florida and has certain characteristics, such as massive productivity, choking density, or an obstructive nature, which render it detrimental, obnoxious, or unwanted in a particular location."⁶

1. Coordination

Statewide coordination in Florida is facilitated by both an interagency organization and an invasive species plan. The Invasive Species Working Group (ISWG) was established in 2001 to facilitate the development and implementation of a strategic plan for invasive species management in Florida. The ISWG membership includes representatives of the Florida Department of Environmental Protection, the Florida Fish and Wildlife Conservation Commission, the Florida Department of Agriculture and Consumer Services, several Water Management District offices, the Florida Department of Transportation, and the University of Florida Institute of Food and Agricultural Sciences. Such interagency working groups are an excellent means of improving communication between the various agencies and establishing statewide priorities.

In 2002, the ISWG issued a "Statewide Invasive Species Strategic Plan for Florida." The Plan contains a variety of recommended action items that "improve statewide coordination, prevention of new biological invasions, surveillance, rapid response, control and management, and pub-

lic education about invasive species."⁷ This document also compiles background information on invasions and the existing invasive species programs in the state agencies.

Recommended Action

Florida needs to develop and implement a comprehensive aquatic nuisance species management plan. The Strategic Plan is a valuable guidance document, but it fails to address the specifics of invasive species management. For effective prevention and control of aquatic nuisance species, the responsible agencies must know what the statewide priorities and goals are for species and pathways. Furthermore, the approval of a state plan by the ANS Task Force qualifies states to compete for funding to implement the plan.

2. Prevention

Florida already has many of the key prevention elements in place. Unfortunately, the authority to carry out prevention programs is spread among a variety of state agencies and departments.

The Florida Department of Environmental Protection (DEP) has jurisdiction over aquatic plant management, including non-native species. Florida's invasive aquatic plant management contains all five key elements. The DEP is authorized to undertake studies to determine whether an aquatic plant species poses a threat to the state, to inspect facilities to detect whether introductions are occurring, to promulgate regulations related to the importation, transportation, and possession of non-native aquatic plants, to quarantine plants to prevent spread, and to conduct public education programs.⁸

The Fish and Wildlife Conservation Commission (FWCC) has jurisdiction over freshwater and marine aquatic life. The FWCC has no programs for the management of nonindigenous wildlife or marine species. The FWCC's prevention authority is not as comprehensive as the DEP's, although the FWCC does have the authority to inspect facilities used to produce, grow, or transport

freshwater fish.⁹ The FWCC does maintain a “clean list,” which prohibits the transport, introduction, or possession of all non-native species except those listed by the agency.¹⁰ The Division of Marine Fisheries is currently working with the Florida Marine Research Institute to evaluate marine organisms for placement on the FWCC’s restricted list.¹¹ This type of permitting scheme places the burden of proving the safety of the species on the importer and is an essential tool for the prevention of invasions. Educational programs, for both the public and students, are also carried out by the FWCC.

Recommended Action

The DEP has an incredible amount of authority to act to prevent the spread of aquatic plants. Unfortunately, the FWCC has very little authority to prevent the spread of other aquatic nuisance species. The FWCC needs the authority to inspect public and private land to determine whether introductions have occurred and to quarantine those species which pose a threat to the state. The Florida Legislature, therefore, must be encouraged to expand the authority of the FWCC. The FWCC, as an agency, needs to implement regulations for the prevention of the introduction of all aquatic nuisance species including wildlife and marine species. Programs are needed for risk assessment, surveying, and the development of standards for the importation and release of aquatic nuisance species.

3. Regulation

Florida requires permits for the transportation, introduction, and possession of both aquatic plants¹² and non-native freshwater aquatic species.¹³ The Bureau of Invasive Plant Management within the DEP conducts surveys and monitors control efforts. Florida does not currently require the posting of a bond or proof of insurance to possess certain species.

Recommended Action

Florida’s permitting regime has a good foundation. The permitting scheme, however, needs to be expanded to cover marine species and aquatic wildlife species, such as nutria. Florida should

also consider requiring insurance coverage or the posting of a bond for the possession of species which pose an identifiable risk of invasion. Such bonds can provide the state additional protection against having to bear the full economic burden of post-invasion ANS management.

4. Control and Management

The DEP has general management authority and emergency powers regarding aquatic plants. For example, the DEP’s list of restricted plants can be expanded, if necessary, by an emergency order.¹⁴ The use of biological control agents to manage invasive aquatic plants is also authorized by the state.¹⁵ Unfortunately, the FWCC does not have similar powers to control and manage other aquatic nuisance species.

Recommended Action

New legislation should be passed providing the FWCC with emergency powers to expand the list of restricted non-native species and impose quarantines. Without such authority, the FWCC remains powerless to mount a rapid response to new introductions.

5. Enforcement and Implementation

Any person who violates the provisions of Florida’s aquatic plant management program is guilty of a misdemeanor of the second degree.¹⁶ It is also a misdemeanor offense to import other nonnative species into Florida without a permit.

Funding is crucial to the implementation of an aquatic nuisance species program. Florida established the Aquatic Plant Management Trust Fund to enable the control and management of aquatic plants on state lands.¹⁷

Recommended Action

The state should also consider increasing the penalties for the introduction of aquatic nuisance species. Intentional introductions could be considered egregious enough to warrant the imposition of higher fines or imprisonment. Florida may also want to consider establishing a Trust Fund for the control and management of aquatic nuisance species, other than plants.

Alabama

Alabama has not experienced the same level of invasions as some of the other Gulf states. However, zebra mussels have established themselves in North Alabama and hydrilla, water hyacinth, and salvinia are found in many state waterways. Alabama has also become concerned with ballast water introductions, as *Vibrio cholera*, the bacteria that causes cholera, may have been introduced into Mobile Bay in 1991 through ballast water exchange.¹⁸

1. Coordination

Alabama does not currently have an interagency council or statewide plan for aquatic nuisance species. The state, however, does recognize the importance of coordination. In 2002, the Alabama Department of Conservation and Natural Resources (DCNR) sponsored a statewide Aquatic Nuisance Species Planning meeting. This meeting was agency, not legislatively, driven and spearheaded by the Wildlife and Freshwater Fisheries Division of DCNR. The purpose of the meeting was to bring together all stakeholders with an interest in the development of a statewide ANS plan. The meeting resulted in an informal action plan. The attendees determined that a white paper on the issue should be developed for presentation to the Commissioner of the DCNR.¹⁹ The white paper is expected to be ready for the Commissioner this summer. After the delivery of the white paper, the stakeholders will urge the Commissioner to approach the Governor of Alabama with an official request for the establishment of a statewide task force or similar body.²⁰

Recommended Action

ANS managers in Alabama must build upon the momentum generated at the statewide meeting to develop a statewide comprehensive plan. The Alabama Legislature or the Governor should establish an interagency council to facilitate the development and implementation of the plan.

2. Prevention

Alabama maintains a “dirty list” for fish. It is illegal to sell, possess, import, or release any fish species included on the list.²¹ Unlike a “clean list,” a “dirty list” places the burden of establishing the threat posed by the species on the government and is a less effective protection against invasion. There is also a list of restricted nonindigenous aquatic plants.²² In addition, it is illegal to introduce any nonindigenous aquatic plant into state waters.²³ Marine life and wildlife are not addressed by any of these regulations.

Recommended Action

The “dirty list” for fish is inadequate to address the threat posed by nonindigenous species. Alabama should convert its aquatic nuisance species prevention regime from “dirty lists” to “clean lists.” While “clean lists” require more resources to establish and maintain because an agency must undertake the necessary studies to ensure that a species is safe to import or possess, such lists are much more effective in preventing invasions. Alabama also needs to provide the Department of Conservation of Natural Resources or some other agency with jurisdiction over invasive marine species and aquatic wildlife.

3. Regulation

Alabama regulates ANS invasions solely through its “dirty lists.” No permit is required to possess unlisted species of aquatic life, although a permit is required to operate an aquatic facility. The lack of a permitting scheme is a huge gap in Alabama’s ANS management. The state has absolutely no control over what species are coming into and traveling through the state.

Alabama at least has a monitoring program in place. The Alabama Marine Resources Division conducts monthly assessment programs to identify and track invasions. These assessments are crucial to determining baselines and identifying priorities and pathways.

Recommended Action

Alabama must establish a permitting scheme. Once the state converts to “clean lists,” permits should be required to sell, transport, import, or possess any non-native aquatic species not included on the list. After the permitting scheme is in place, Alabama may want to consider requiring insurance or bonds for certain species or categories of species.

4. Control and Management

The Department of Conservation and Natural Resources has general authority over freshwater fish and aquatic plants. Unfortunately, the DCNR does not have any emergency powers to place additional species on the restricted lists to prevent further introductions into the state or mount rapid responses to new invasions. There is also no authority within the agency to destroy species to prevent invasions or use biological control agents.

Recommended Action

The DCNR must be given full authority to manage ANS. The Department must have jurisdiction over all categories of ANS, including marine life

and wildlife. The agency must also be given some emergency powers so that it can rapidly respond to any new invasions. The Alabama Legislature should be encouraged to enact legislation providing the DCNR with these additional powers. ANS can only be managed effectively by agencies with enough authority to implement innovative control and management measures.

5. Enforcement and Implementation

It is a misdemeanor to sell, possess, import, or release a restricted fish species or to introduce a nonindigenous aquatic plant into state waters. Alabama does not have any specific funds earmarked for the management of ANS.

Recommended Action

Because no funding mechanism exists to help defray the costs of ANS management, a trust fund should be established to help DCNR fund control, management, and enforcement programs. Any money generated from the prosecution of violators could be used to maintain the Trust Fund.



Photo of shrimp boats proceeding to sea after the blessing of the fleet at Bayou la Batre, Alabama courtesy of NOAA.

Mississippi

In the summer of 2000, massive numbers of Australian spotted jellyfish invaded the Gulf of Mexico. The jellyfish caused problems for both the commercial and recreational fisheries in Mississippi. Fortunately, it appears the jellyfish failed to establish a permanent population. The invasion, however, revealed how vulnerable the state is to new invasions and how unprepared state agencies are to mount control efforts. Mississippi, like Louisiana, is especially vulnerable to invasions as both the Gulf of Mexico and the Mississippi River are fertile pathways. Zebra mussels, Asian swamp eel, and black carp are all on the move towards the state.

1. Coordination

Mississippi does not have an interagency council or a statewide plan to address aquatic nuisance species.

Recommended Action

Mississippi needs to take action with regard to ANS management. An interagency council should be established as soon as possible to facilitate communication between the relevant management agencies, such as the Department of Wildlife, Fisheries, and Parks (DWFP) and the Department of Marine Resources. Once this organization has been formed, a statewide management plan for ANS should be developed and implemented.

2. Prevention

The Department of Wildlife, Fisheries, and Parks is required to maintain a list of approved, restricted, and prohibited non-native aquatic species.²⁴ This list has yet to be created by the Department. If such a list is properly maintained, it can serve as a comprehensive database of species which pose a risk of invasion.

The DWFP does not have any authority or receive any funding to conduct surveys or inspections to detect the presence of ANS.

Nor does the agency have the authority to quarantine a particular species to reduce the threat of invasion.

Recommended Action

The DWFP must develop the statutorily mandated clean and dirty lists for the state. Until those lists are developed, the DWFP is in violation of the law. In addition, because the DWFP already has general authority over the introduction of aquatic species into public waters, future actions should focus on the expansion of its powers. The Mississippi Legislature should grant the DWFP the authority to carry out detection programs, such as surveys and inspections, and to quarantine. The agency should also be funded to carry out educational programs regarding pathways and prevention methods.

3. Regulation

In Mississippi, it is illegal to release any aquatic species into state waters without first obtaining a permit from the DWFP.²⁵ It is also illegal to import, sell, or possess walking catfish and piranhas.²⁶ Violations of these provisions are misdemeanors.

Recommended Action

In theory, Mississippi has a comprehensive permitting scheme. Unfortunately, no permits can be issued until the lists of approved and restricted species are developed by the DWFP. To effectively regulate aquatic nuisance species, the DWFP must create and maintain these lists. The Mississippi Legislature should also consider requiring insurance or bonds for the possession of certain risky species.

4. Control and Management

The Department of Wildlife, Fisheries, and Parks has general control and management



Photo of jellyfish invasion at St. Joseph reef in Hancock County, MS courtesy of Michael K. Brainard, Mississippi Department of Marine Resources.

authority over aquatic species. The DWFP is authorized to destroy any walking catfish or piranhas found within the state to prevent the introduction of those species into state waters. Mississippi also has a notification requirement. If non-native aquatic species are released from an aquaculture operation, the operator is required to notify the DWFP so that control and eradication efforts can be mounted.

However, the DWFP does not have any emergency powers with regards to aquatic nuisance species. Nor is the Department authorized to use biological control agents.

Recommended Action

The DWFP, as the agency with general control authority for ANS, should be given some emer-

gency powers. The Mississippi Legislature needs to pass legislation providing the DWFP with the authority to mount rapid responses to new invasions.

5. Enforcement and Implementation

It is a misdemeanor to stock, place, or release any aquatic species into Mississippi waters without a permit. Mississippi does not have a specific fund for the management of ANS.

Recommended Action

Mississippi should develop a trust fund to assist with the costs of ANS management. The trust could be funded from a variety of sources, including taxes and fines.

Louisiana

Louisiana is home to approximately 1,000 non-native species.²⁷ One of the major invaders, nutria, is not your typical aquatic nuisance species. Although the nutria is not a permanent water resident, this South American rodent's diet of marsh grass is contributing to coastal erosion. Nutria populations have grown so rapidly that the state of Louisiana established a bounty program for the animal, awarding hunters \$4 per tail. Louisiana has also been invaded by hydrilla, salvinia, and the Australian spotted jellyfish.

1. Coordination

In 2002, Louisiana took the first steps towards the development of a comprehensive management plan for aquatic nuisance species. The Governor of Louisiana created an interagency task force to compile information, identify ways to coordinate ANS activities throughout the state, recommend a management plan and legislation, and identify funding sources.²⁸ The Governor designated the Louisiana Department of Wildlife and Fisheries (DWF) as the lead agency. The Louisiana Non-Indigenous Aquatic Species Advisory Task Force is required to deliver a final report to the Governor by July 1, 2003.²⁹ The Task Force is currently working with the Center to write the state plan.

To facilitate the development of a management plan, the Task Force contracted with the Center for Bioenvironmental Research at Tulane and Xavier Universities. The Center designated two employees to research and write the management plan.

Recommended Action

Louisiana's Task Force is an excellent mechanism for intrastate coordination. It is important that the Task Force not be disbanded upon the completion of the management plan. The Task Force will have a continued role to play in the implementation of the plan. In addition, the Task Force is an invaluable tool to improve communication and coordination among the various state agencies.

2. Prevention

The Department of Wildlife and Fisheries maintains a "dirty list" of fish which may not be possessed, sold or transported without permission. Non-native fish may not be released into state waters without the written permission of the Wildlife and Fisheries Commission. There is also a list of noxious aquatic plants which require a permit to import or transport.

The DWF's only quarantine authority relates to pet turtles infected or potentially infected with bacteria harmful to humans or other turtles.

Recommended Action

The Louisiana Legislature should direct the DWF to convert its "dirty lists" to "clean lists." In addition, the DWF's authority to develop such lists should be expanded to include all aquatic species, including marine life and aquatic wildlife. It is also important that the DWF have the authority to quarantine species if necessary to prevent or reduce the risk of invasion.

3. Regulation

Permission, not a permit, is required for the possession, selling, and transportation of certain identified fish. Permits are required for the importation or transportation of noxious aquatic plant species.

Louisiana is one of the first states to utilize the unique regulatory tool of a bond requirement. An individual involved in the culturing of invasive tilapia must post a \$25,000 bond or present a letter of credit.³⁰ Tilapia live holder permittees are required to post a \$10,000 bond.³¹ The posting of a bond ensures that tilapia permittees are able to pay for any damages caused by their activities.

Recommended Action

Louisiana needs to expand its permitting scheme to cover all aquatic species. A permit should be



Photograph of nutria courtesy of the Environmental Protection Agency.

required to possess, sell, transport, or release any species not approved by the Department of Wildlife and Fisheries. Louisiana should also consider extending the bond requirement to the possession, import, and transportation of other risky aquatic species.

4. Control and Management

The Department of Wildlife and Fisheries has general control and management authority over most aquatic life. In the event of a tilapia release, notification must be given to the DWF. The DWF has no emergency powers.

Recommended Action

Louisiana should expand the jurisdiction of the DWF to encompass all aquatic species. The notification requirement should extend beyond tilapia to any species on the state's restricted list. Also, the DWF must be given emergency powers to respond to invasions.

5. Enforcement and Implementation

Illegally possessing, selling, or transporting a fish species included on the Department of

Wildlife and Fisheries' restricted list is a misdemeanor offense in Louisiana, which is punishable by no more than a \$5000 fine or imprisonment up to two years.³² There are separate penalty provisions for specific aquatic species, such as tilapia and triploid grass carp. Illegally importing or transporting identified noxious plants is a class one violation punishable by a fine ranging from \$50 to \$200.³³

Louisiana has not developed a funding mechanism to assist the state ANS management agencies.

Recommended Action

Although Louisiana has penalties in place for violations of current ANS regulations, these provisions must continue to expand as the state extends the jurisdiction of the DWF to encompass the full range of ANS. Both criminal and civil penalties are essential to the enforcement of state ANS laws. Louisiana should also consider establishing a trust fund to help pay for ANS management. The trust fund can be maintained by the money generated from prosecution of violators.

Texas

Texas has struggled for years to combat massive invasions of aquatic plants, such as water hyacinth and hydrilla. The lower Rio Grande River has been almost completely choked by aquatic plants. Because of the economic and ecological costs of aquatic plant invasions, Texas, like Florida, has mainly focused on managing and controlling invasive aquatic plants.

1. Coordination

Although Texas does not have an interagency council or a statewide plan for ANS, Texas does have a State Aquatic Vegetation Plan. The Texas Parks and Wildlife Department (TPWD) was directed by the state legislature to develop this plan in coordination with the state Department of Agriculture, the Natural Resource Conservation Commission, and various water districts and political subdivisions.

Recommended Action

Texas should expand upon the work undertaken by the Texas Parks and Wildlife Department to develop a plan for all invasive aquatic species. In addition, to remove some of the financial and administrative burden from the TPWD, the state should create an interagency task force to draft the state ANS management plan and assist with implementation.

2. Prevention

A survey is currently underway in Texas to identify exotic species in Galveston Bay. The Galveston Bay Invasive Species Project strives to accumulate information on exotic species already in Galveston Bay, identify control methods, and conduct risk assessments of identified species.³⁴ The Project's anticipated completion date is the end of 2003. Such surveys, however, are not authorized or funded for the entire coastal zone.

It is illegal to import, possess, sell, or release into state waters any exotic or harmful fish, shellfish, or aquatic plant without a permit from the Texas Parks and Wildlife Department.³⁵ The

Department publishes lists of harmful or potentially harmful fish, shellfish, and aquatic plants. Aquaculture is also regulated by the TPWD.

Other prevention mechanisms are available in Texas. The TPWD may quarantine an aquaculture facility if symptoms of disease are present in any cultured penaeid shrimp species.³⁶ In addition, the Aquatic Vegetation Management Fund authorizes educational programs related to aquatic vegetation control.³⁷

Recommended Action

The TPWD should begin to convert the restricted species lists from "dirty" to "clean." Texas should also fund an initial survey of species and pathways for the entire coastal zone of the state. A comprehensive survey is extremely important in establishing baselines and identifying priorities and should be undertaken prior to the drafting of a management plan. The TPWD's quarantine authority should also be expanded beyond shrimp aquaculture facilities to include other potentially harmful invasive species.

3. Regulation

As mentioned above, Texas requires a permit to import, possess, transport, or release harmful fish, shellfish, or aquatic plants into state waters. A license is also required in Texas in order to operate an aquatic facility, such as a fish hatchery.

Recommended Action

Texas must expand its permitting regime beyond fish, shellfish, and aquatic plants to include any species not included on the state's "clean list," once such a list is developed. Texas should also consider requiring the posting of bonds or insurance for the possession, importation, and transportation of certain dangerous species.

4. Control and Management

The Texas Parks and Wildlife Department has general control and management authority over

invasive fish, shellfish, and aquatic plants.

Recommended Action

First, Texas must expand the authority of the Texas Parks and Wildlife Department or another related agency to include marine species and wildlife management. Currently, no state agency in Texas has any authority to manage species other than fish, shellfish, and aquatic plants. Texas agencies have no authority to manage invasive aquatic-dependent animals, such as nutria. This is a huge management gap which must be rectified before comprehensive management can be implemented. In addition, the Department must be provided with some emergency powers in order to adequately respond to future threats.

5. Enforcement and Implementation

Violations of the Texas Parks and Wildlife

Department permit requirements for certain activities related to invasive aquatic species are classified as Class B misdemeanors. These are punishable by a fine of no more than \$2000 and/or imprisonment up to 180 days.³⁸

Texas has established an Aquatic Vegetation Management Fund to assist with the development of aquatic vegetation management plans; research, education, and outreach programs; and vegetation control.³⁹

Recommended Action

Texas should either expand the Aquatic Vegetation Management Fund to include all aquatic nuisance species or establish a separate fund to defray the costs associated with management of invasive fish, shellfish, and wildlife.

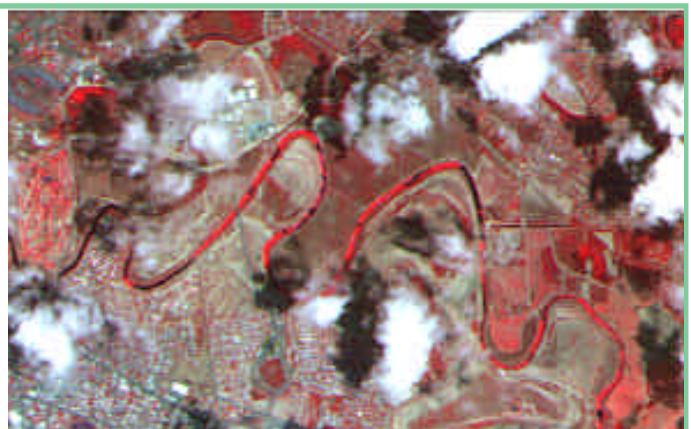


Left, photo of water hyacinth blockage on the Rio Grande upstream from Brownsville, Texas, courtesy of Mark Jakubauskas, University of Kansas.

Imagery below is of a water hyacinth infestation of the Rio Grande (represented by bright red) on March 30, 2002 (left), and its tremendous expansion (right) by May 9, 2002. ASTER imagery courtesy of Mark Jakubauskas and the Kansas Applied Remote Sensing Program, University of Kansas.



March 30, 2002



May 9, 2002

VII. Conclusion

The Gulf of Mexico Regional Panel on Aquatic Nuisance Species has its work cut out for it. ANS invasions are notoriously difficult to prevent and then control and manage once a population has become established. The GMRP must build upon the experiences of other regional panels and the individual states. Although the five Gulf states encompass the full spectrum of ANS management programs, each state has policies or regulations that are working on some level. The GMRP must facilitate the communication between the states, so that positive experiences in one state can be extrapolated and applied, if fea-

sible, in the other states. For example, Texas, Mississippi, Alabama, and Florida could benefit greatly from Louisiana's experience and regulations requiring the posting of bonds for certain species. Florida also has a lot to offer the other Gulf states, as they have made significant progress towards the development of a statewide management plan. The Gulf of Mexico Regional Panel should be a forum for the exchange of ideas and management techniques. If the Gulf states work together as a region to address the threat posed by ANS, a comprehensive management scheme will emerge.

Photo of the Gulf coastline at New Orleans courtesy of NOAA.



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