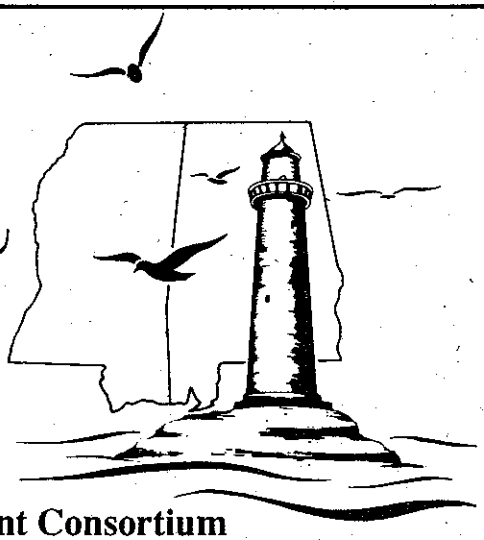
WATER LOG



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Mississippi-Alabama Sea Grant Consortium

Special Issue: Aquaculture in the Marine Environment

Contents

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WATER LOG

WATER LOG is a quarterly publication reporting on legal issues affecting the Mississippi-Alabama coastal area. Its purpose is to increase public awareness and understanding of coastal problems and issues.

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Marine Aquaculture in Mississippi

by Ellen M. Peel

INTRODUCTION

Mississippi is in the final stages of completing regulatory guidelines necessary to accommodate the birth of a marine aquaculture (mariculture) industry in its Gulf waters. To ensure that the activity is compatible with the natural environment and the state's existing tourism, commercial and recreational fishing industries, the Bureau of Marine Resources (BMR) has drafted a comprehensive set of offshore mariculture guidelines. The purpose of this article is to review the development of the guidelines and to offer suggestions for improving Mississippi's permitting procedures.

DISCUSSION OF THE GUIDELINE PROCESS

Background

Interest in establishing a Mississippi marine aquaculture industry was first expressed approximately two years ago by Sea Pride, Inc. a company interested in raising red drum and hybrid striped bass. This company wants to place six four-hundred-foot barge-type vessels in waters approximately two miles south of Horn Island, a designated National Park Service wilderness area located about eight miles off the Mississippi coast. Cumulatively these vessels would occupy 767 acres and would have an individual production capacity between two and four million pounds of fish per year. The structure of each vessel would provide a framework for net pens suspended through the hull into waters of the Gulf and would serve as the rearing chambers for the finfish stock. In addition, the vessels would house crew quarters for six to eight, a research lab, and a computerized center for automatic dispensing of fish food.

The state required Sea Pride to submit a packet of proposed project information as required by the Coastal Wetlands Protection Act. Miss. Code § 49-27-11 (1990). After researching the issues involved, BMR issued a "white paper" addressing concerns over the possible impact upon the resources. In January 1991 Sea Pride, submitted its completed packet of requested materials to BMR. Review of this material by BMR resulted in a finding of an impact that could not be controlled without comprehensive guidelines. At that point the agency was faced with two choices: denying the permit, or going to the Commission on Wildlife, Fisheries and Parks and requesting the issue be held in abeyance, with a moratorium placed on marine aquaculture issues until guidelines could be written. BMR chose the second alternative and also requested the Commission to authorize an environmental study from which BMR could draft guidelines. The Commission approved this action in March 1991.

During the same month, former Governor Ray Mabus and the Secretary of State's Office granted Sea Pride, a fifteen-year renewable lease for use of submerged lands and superjacent water column located approximately 2.18 miles south of Horn Island. Miss. Code § 29-1-107 (1990). In spite of language to the contrary in the lease, it is reasonable to anticipate that Sea Pride, will have at least de facto exclusive use of the 767 acres. (Lease of Submerged Lands and Superjacent Water Column For Purposes of Aquaculture, § 3, p. 2, State of Mississippi, County of Hinds, March 11, 1991). The fact that this lease was issued prior to the decision on the permit has generated public comment and complicated the permitting process.

The Task of Developing Regulatory Guidelines

BMR faced several administrative challenges when it drafted the proposed guidelines. Its authority over aquaculture activities in coastal waters is predicated upon its position as primary permitting agency under the state's Coastal Wetlands Protection Act § 49-27-1 et seq. (1990) and newly delegated authority through a 1991 amendment in the Mississippi Aquaculture Act of 1988. Miss. Code Ann. § 79-22-1 *et seq.* (1989 and Supp. 1991). The Department of Agriculture and Commerce also has authority over aquaculture pursuant to the Mississippi Aquaculture Act. The proposed guidelines represent BMR's attempt at reconciling the two Acts' distinct permitting requirements and goals.

The Guidelines

The guidelines as presently written address three primary categories: (1) permitting requirements, including siting and species regulation; (2) requirements specific to the placement of rearing chambers (nets, racks, cages, long lines, or rafts); and (3) monitoring requirements (pre-operational and operational). The guidleines apply to (l) finfish culture, (2) off-bottom culture of molluscan shellfish, (3) on-bottom culture of molluscan shellfish, and (4)

on-bottom culture in nearshore waters of molluscan shellfish. The strength of the guidelines exists in the siting requirements and compliance through monitoring. (*See* Appendix A for a copy of the current Guidelines.)

Public Meetings

By December 1991 proposed guidelines were issued and a public meeting was held during January 1992. At that meeting the proposed guidelines drew criticism, including allegations that BMR lacked authority to regulate the aquaculture operations; the guidelines lacked legal validity; and the guidelines were patently restrictive, arbitrary and were anti-industry. After this meeting and consideration of public comments, BMR revised and reissued the guidelines and held a second public meeting. This meeting was well attended by individuals who expressed concerns that an aquaculture operation as large as the proposed net-pen farms could cause damage to the tourism industry, the recreational and commercial fishing industries, and to the fragile environment of the barrier islands. Specific concern was expressed that Mississippi could not afford to put the federally designated wilderness areas of Gulf Islands National Seashore in jeopardy. Additionally, homeowners expressed concern that discharges from the aquaculture facilities, including fish carcasses, may foul the water and shorelines. Many attendees maintained that they did not oppose a marine aquaculture industry on the coast, but felt that the public needed more information and additional public meetings to discuss potential impact to the area and necessary safeguards.

On February 24, 1992, during a monthly meeting of the Commission on Wildlife, Fisheries and Parks in Jackson, Mississippi, the issue was discussed. Three requests were submitted by BMR at this meeting: (l) acceptance of the proposed revised guidelines as binding; (2) removal of the moratorium on marine aquaculture activities; and (3) approval of a permit to Sea Pride. Public participants aired concerns that: (l) the regulation of the marine aquaculture industry must be in a manner compatible with the other water-oriented industries of the Gulf Coast; (2) the placement of the barges within two and three-quaters miles of Horn and Petit Bois Islands was not adequate to protect the federally designated wilderness areas; (3) the siting restrictions in the guidelines amounted to a "taking" and/or a "federal enclave" issue; (4) the issuance of the lease prior to approval of a Coastal Wetlands Permit violated fifteen years of precedents by the Secretary of State's Office; and (5) a lease provision stipulating that the lessee (Sea Pride). had the option to determine the amount of liability insurance for any damage arising from the net-pen operations to coastal resources was unacceptable and contrary to language in traditional lessee-lessor relationships.

The Commission approved each request made by BMR with the stipulation that permit approval be made with the understanding that the lessor (Mississippi) would determine the amount of liability insurance. The Department of Wildlife, Fisheries and Parks, BMR, and the Secretary of State's Office must resolve the insurance figures and amend the lease before the approved permit is to be issued.

Present Situation

The Commission's approval of the guidelines constitutes a notice of intent to adopt subject to the incorporation of changes resulting from comments received during a final thirty-day review period. This thirty-day period began on the day the guidelines were filed with the Secretary of State's Office. To facilitate this process, the BMR has scheduled the last public hearing to accept comments for March 23, 1992 at 7:00 p.m. in the J.L. Scott Marine Education Center in Biloxi, Mississippi. After consideration of comments, the guidelines must again be presented to the Commission and once approved they will become binding in final form in thirty additional days.

Even though the approval and subsequent issuance of the permit prior to the adoption of the guidelines in final form is somewhat unusual, regulation at present can be maintained through specific stipulations in the approved permit, including attachment of the guidelines as an addendum. By accepting the permit, Sea Pride agrees to abide by the requirements of the guidelines in their current form and with any amendments or revisions later approved by the Commission. Among the items stipulated in the Sea Pride permit to be submitted to BMR within ninety days are: (l) a non-lethal predator control plan; (2) a letter from the Corps of Engineers approving siting of the farm within the Pascagoula Ocean Dredged Material Disposal Site, subject to a ninety-day extension if the Corps is responsible for the delay; and (3) a plan for securing and removing the barges in case of a storm or hurricane.

SUGGESTIONS TO IMPROVE THE PERMITTING PROCESS

If the purpose of the Guidelines is to inform a marine aquaculture applicant of steps and requirements involved in obtaining state approval in order to begin operations, a more comprehensive or all-inclusive approach in sharing the information could be incorporated within the Guidelines. An example would be to include specific permitting

and inspection requirement language of the Mississippi Aquaculture Act into the guidelines. Even with many operational requirements falling under the jurisdiction of other state agencies, a notation of the possibility of additional permits along with the name and address of the responsible agency in the guidelines packet might prove helpful. Other requirements worthy of mention might include information concerning: (1) a National Pollution Discharge Elimination System (NPDES) permit for discharge compliance (discharge was an area of concern expressed at the second public meeting); (2) the Department of Health permits for a facility processing A product for human consumption if those activities will be performed, as well as information concerning the National Seafood Inspection Program; and (3) information regarding water column and submerged lands leasing procedures along with the appropriate timing for application. Providing this extra information would exceed the primary responsibility of BMR but would provide the applicant with a more complete picture of all requirements. However, in light of the pressure placed upon BMR to accomodate this new industry, it is understandable why these issues were not addressed in this first effort to draft industry guidelines.

ISSUES NOT YET ADDRESSED

Two issues of potential concern have not been discussed primarily because agency jurisdiction is outside of BMR. The first issue involves whether the U.S. Army Corps of Engineers (CE) will grant permission for the Sea Pride farm, or any other operation, to be sited over part of the Pascagoula Ocean Dredged Material Disposal Site as provided for in the approved Sea Pride permit. This is raised in light of two factors: (1) whether the CE is constrained in its sharing of the site with other non-dredged material users by 40 CFR 228.4(e)(3)(1991). This provision provides that the site "shall be used only for the ocean dumping of dredged material...." 40 CFR § 228.4(d)(3) (1991); and (2) whether the CE will be constrained by potential claims of liability from consumers of fish raised over disposal material, which while determined suitable for ocean dumping has not necessarily been determined safe for fish culture.

The second issue involves the issuance of a NPDES pollution discharge permit into waters of the territorial sea. Mississippi currently has no plans to require proposed marine aquaculture facilities to obtain a NPDES permit, contending that the Environmental Protection Agency has given the state no guidance in the area. (Telephone interview with Mr. Jerry Cain, Physical Engineer Chief, Industrial Wastewater Control Branch of the Mississippi Bureau of Pollution Control, January 1992.) While Mississippi has authority delegated from the EPA to administer the NPDES program, the EPA retains review authority over all discharges into the territorial sea. 40 CFR 123.24 (d)(1) (1991). Since this is Mississippi's first discharging marine aquaculture facility, the state should actively encourage the EPA to assist in complying with NPDES permitting responsibilities.

CONCLUSION

While the marine aquaculture industry may provide a revitalizing boost to the state's seafood industry, if it is not properly regulated it could bring harm to the commercial and recreational fishing industries and to tourism. Dependence upon healthy coastal wetland resources by these other industries is reflected in nationwide figures showing two-thirds of the commercially harvested fish in the U.S., and an even higher percent of recreational catches, are dependent upon wetland habitat for their source of food, spawning, and the rearing of their young. Given the size of the state's wetland resources, Mississippi's figures should be at least proportionate to the national figures. The fact that the marine aquaculture operations will be conducted coterminous with these other industries creates a greater potential for loss to all and therefore demands strict compliance with protective regulations and guidelines. Revitalizing one segment of the seafood industry at the expense of harming other industries is no gain for the state. Regulation does not prohibit marine aquaculture from developing, it merely assures that the aquaculture industry, as well as other water-oriented industries, have sufficient resources today and in the future.❑

PUBLIC COMMENT

Comments on the guidelines must be received by March 25, 1992 and should be addressed to:

Bureau of Marine Affairs
Attn: Jennifer Buchanan
2620 Beach Blvd.
Biloxi, MS 39531
(601) 385-5860

Ellen M. Peel is a third-year student at the University of Mississippi Law School and a research associate for the Mississippi-Alabama Sea Grant Legal Program. The views expressed in this article are those of the author and do not necessarily represent the views of the editor or the Mississippi-Alabama Sea Grant Consortium.

Appendix A — Mississippi Guidelines for Aquaculture in the Marine Environment

INTRODUCTION

The Mississippi Commission on Wildlife, Fisheries and Parks, at its meeting on December 9, 1991, made known its intent to adopt guidelines of the Bureau of Marine Resources which provide regulatory guidance for aquaculture activities located in marine waters within the coastal zone of Mississippi. Subsequent to that action, the Bureau of Marine Resources held a series of public meetings and solicited public comments. Based on public comments received, the staff has modified the guidelines. In order to receive additional public comments the amended guidelines are being filed with the Secretary of State's Office and circulated for final comments.

The Bureau of Marine Resources has developed this set of guidelines for aquaculture activities in marine waters that require a permit under the provisions of the Mississippi Coastal Wetlands Protection Act and/or the Mississippi Aquaculture Act of 1988. These guidelines are to be used in making permit decisions regarding regulated activities in marine waters and are intended to provide regulatory guidance for the industry and the resource agencies.

AQUACULTURE GUIDELINES—GENERAL

The following general guidelines shall apply to all types of aquaculture activities in the marine waters of the State of Mississippi.

a. All aquaculture operations shall provide the Bureau of Marine Resources with an Environmental Assessment which describes the site characteristics and the potential impacts associated with the project.

b. Discharges into the surrounding waters of any waste materials associated with the production of cultured organisms, excluding excrement, shall be prohibited.

c. All aquaculture operations should avoid locating in close proximity to habitats of special significance. Habitats of special significance include special habitats for endangered and threatened species, public oyster reefs, seagrass beds, bird nesting areas, and sea turtle nesting grounds. Net-pen aquaculture operations shall not be located within one mile of the above referenced habitats. Molluscan shellfish aquaculture operations shall not be located within 1,500 feet of the above-referenced habitats.

d. Care shall be taken to avoid locating aquaculture operations in close proximity to federal navigation channels and dredged material disposal areas. Aquaculture operations north of the baseline shall not be sited within two nautical miles of the centerline of a federal navigation channel. Aquaculture operations south of the baseline shall not be sited within one mile of a federal navigation channel nor shall they be sited within a U.S. Coast Guard safety fairway, an anchorage area, or within the boundary of a dredged material disposal area unless specifically authorized by the U.S. Army Corps of Engineers.

e. Only non-lethal methods of predator control shall be allowed. A predator control plan for each aquaculture operation must be submitted to the Bureau of Marine Resources prior to the issuance of a permit.

f. Aquaculture operations shall not be located within 1,500 feet of any pipeline or submerged cable.

g. All aquaculture operations must be properly marked in accordance with U.S. Coast Guard regulations.

h. All aquaculture operations are encouraged to minimize impacts to the natural scenic qualities of the coastal wetlands.

SPECIFIC GUIDELINES — FINFISH AQUACULTURE

a. Net-pen systems shall be located in waters of sufficient depth. A minimum clearance of 10 feet below the bottom of the net-pen system shall be maintained at all times. The distance shall be measured at MLW. If monitoring indicates a serious problem with water quality or other environmental conditions at the site, the operation must be adjusted to reduce impacts. Adjustments shall include but not necessarily be limited to modifying the feeding rate or feeding schedule, reducing the amount of fish in the net-pen system, or increasing the clearance under the nets to allow for increased water circulation.

b. Net-pen aquaculture operations shall not be located within two miles of the shoreline of the offshore islands. The offshore islands include Petit Bois, Horn, East Ship, West Ship, and Cat Islands.

SPECIFIC GUIDELINES — MOLLUSCAN SHELLFISH AQUACULTURE

1. Off-Bottom Culture

a. Off-bottom culture of molluscan shellfish shall mean floating and suspended operations which include but are not limited to long lines and rafts.

b. All off-bottom shellfish culture operations shall

be designed to minimize impacts to water circulation patterns.

c. Molluscan shellfish aquaculture operations shall not be located within two miles of the Gulf Islands National Seashore.

2. On-Bottom Culture — Offshore Waters

a. On-bottom culture of molluscan shellfish in offshore waters includes any aquaculture operation that involves the use of traditional clutch material, racks, cages or similar structures to support shellfish which are located more than 750 yards from the shoreline.

b. A minimum of 4 feet of water at MLW shall be maintained above on-bottom offshore water aquaculture operations at all times.

c. Molluscan shellfish aquaculture operations which include support facilities shall not be located within two miles of the Gulf Islands National Seashore.

3. On-Bottom Culture — Nearshore Waters

a. On-bottom culture of molluscan shellfish in nearshore waters includes any aquaculture operation that involves the use of traditional clutch material, racks, cages or similar structures to support shellfish which are located within 750 yards from the shoreline.

b. Racks and cages must be arranged in rows with adequate spacing between rows to allow for reasonable ingress and egress to the shoreline. No racks or cages shall be located within 200 feet of the shoreline at MLW.

c. On-bottom culture operations shall not disrupt the natural movement of sediment in the nearshore areas.

AQUACULTURE MONITORING PROGRAM

Pre-Operational Environmental Survey

All aquaculture operations shall perform a Pre-Operational Environmental Survey (POES) three months prior to operation and submit the data and findings in a compiled report to the BMR. The POES is intended to characterize bottom conditions at the site prior to the commencement of the aquaculture operation. The POES shall include the following parameters:

Bathymetric Data

A bathymetric survey using a continuous recording depth recorder shall be performed at the aquaculture site. The site should be divided into transects 500 feet apart throughout the site. The transects shall be oriented in both north-south and east-west directions.

Biological Data

Bottom grab samples for benthic analysis shall be collected at intervals of 250 feet along the transects established for the bathymetric survey. A minimum of twenty sampling sites shall be established and a minimum of three replicate samples shall be collected at each sampling station for a large production-level aquaculture operation. A maximum of twenty sampling sites shall be established and a minimum of three replicate samples shall be collected at each sampling station for a small production level aquaculture operation. Samples shall be sieved through a 1.0 mm sieve and preserved for future analysis.

Bottom Characteristics

Bottom core samples for sediment and chemical analysis shall be collected at intervals of 250 feet along the transects established for the bathymetric survey. A minimum of twenty sampling sites shall be established and a minimum of three replicate samples shall be collected at each sampling station for a large production level aquaculture operation. A maximum of twenty sampling sites shall be established and a minimum of three replicate samples shall be collected at each sampling station for a small production level aquaculture operation. Samples shall be analyzed for grain size, total nitrogen and chemical oxygen demand.

Operational Monitoring Program

A Marine Environmental Monitoring Program (MEMP) shall be implemented once the aquaculture operation is initiated and the data and findings shall be submitted in a compiled report to the BMR. The MEMP is intended to monitor potential changes in water and sediment quality resulting from the aquaculture operation. Secondly, it provides data with which to review the current environmental requirements for possible future modifications. As additional data are obtained on the environmental effects of aquaculture operations, the annual monitoring protocol may be substantially revised. It is also possible that monitoring at some culture sites may be curtailed or eliminated entirely if little or no measurable effect on environmental quality is found. The determination to curtail or eliminate monitoring at any site will be made after the BMR reviews the survey results.

The MEMP consists of four principle elements: 1) hydrographic survey, 2) sediment chemistry, 3) water quality, and 4) benthic survey. The frequency and duration of the monitoring will depend on the type and size of the aquaculture operation. A summary of the parameters to be monitored and the frequency is shown in Exhibit 1 of this document. The sampling regime, including the depths of the water samples, types of grab samplers employed, and the data analysis procedures, will be determined according to the size and type of aquaculture operation.❑

EXHIBIT 1 – MARINE ENVIRONMENTAL MONITORING PROGRAM (MEMP)

MARINE CULTURE SYSTEM SIZE	MONITORING PARAMETERS DURING MARINE CULTURE OPERATIONS							
	WATER COLUMN					BOTTOM		
	CURRENT	TURBIDITY		DISSOLVED	SALINITY	CHEMICAL	TOTAL	BENTHIC
NET–PEN CULTURE	DIRECTION AND SPEED	SECCHI DISK	AERIAL PHOTOS	OXYGEN		OXYGEN DEMAND	NITROGEN	SAMPLE
SMALL PRODUCTION LEVEL (135 tons or less of feed per net–pen system per year)	CONTINUOUS	DAILY	SEMI-ANNUALLY	DAILY	DAILY	ANNUALLY Maximum of 20 Sampling Sites with 3 replicates at each site	ANNUALLY Maximum of 20 Sampling Sites with 3 replicates at each site	ANNUALLY Maximum of 20 Sampling Sites with 3 replicates at each site
LARGE PRODUCTION LEVEL (Greater than 135 tons of feed per net–pen system per year)	CONTINUOUS	DAILY	QUARTERLY	DAILY	DAILY	QUARTERLY Minimum of 20 Sampling Sites with 3 replicates at each site	QUARTERLY Minimum of 20 Sampling Sites with 3 replicates at each site	QUARTERLY Minimum of 20 Sampling Sites with 3 replicates at each site
MOLLUSCAN CULTURE								
SMALL PRODUCTION LEVEL (100 acres or less)	CONTINUOUS	NOT REQUIRED	SEMI-ANNUALLY	Determined on a case–by–case basis	Determined on a case–by–case basis	ANNUALLY Maximum of 20 Sampling Sites with 3 replicates at each site	ANNUALLY Maximum of 20 Sampling Sites with 3 replicates at each site	ANNUALLY Maximum of 20 Sampling Sites with 3 replicates at each site
LARGE PRODUCTION LEVEL (Greater than 100 acres)	CONTINUOUS	NOT REQUIRED	QUARTERLY	Determined on a case–by–case basis	Determined on a case–by–case basis	QUARTERLY Minimum of 20 Sampling Sites with 3 replicates at each site	QUARTERLY Minimum of 20 Sampling Sites with 3 replicates at each site	QUARTERLY Minimum of 20 Sampling Sites with 3 replicates at each site

Environmental Regulation of the Aquaculture Industry

by Ellen M. Peel and Ronald J. Rychlak

INTRODUCTION

The aquaculture industry is one of the fastest growing segments of the American economy. Over the past decade, American consumption of seafood has grown dramatically, as has American production. Although seafood imports exceed exports, the gap has been narrowed. This growth in aquaculture production has been driven by increased attention that the industry has received from legislatures and the legal community. Responsible attention to the industry as well as the environment are necessary for continued growth.

National attention first focused on the aquaculture industry in 1980, with passage of the National Aquaculture Act (NAA), 16 U.S.C. §§ 2801-2810 (1985). As part of the NAA, Congress made several "findings" as to the then-current state of the industry. These findings identified certain "constraints" which impeded the growth of aquaculture in the United States. One important finding was that legal concerns prevented aquaculture operations from becoming established or operating efficiently. While many of the "constraints" identified in 1980 have been eliminated, several legal issues remain of great concern to the industry. Of particular importance are those laws relating to environmental protection and purity of food products. This article briefly addresses the legal issues and suggests concerns that should be drawn to the attention of anyone considering entering this field. As always, consultation with an attorney is recommended before undertaking any significant action in this area.

FEDERAL REGULATION OF THE AQUACULTURE INDUSTRY

In 1980, Congress found that "[m]any areas suitable for aquaculture were subject to land-use or water-use management policies that do not adequately consider the potential for aquaculture and may inhibit the development of aquaculture." NAA § 2801(a)(8). The policies of primary concern included state zoning and other state land-use restrictions, public trust law, and federal land use restrictions in designated areas such as navigable waterways, wetlands, and coastal zones. Although the 1980's brought an increased concern about the environment and more land and water regulations, most newer regulations do consider the potential for aquaculture enterprises. Today's aquaculture industry can prosper under this newer environmental legislation, but today's aquaculturist must be aware of the various requirements.

Coastal Zone Regulations

If an aquaculture operation is located within the "coastal zone" of the United States, land use operations are subject to the federal Coastal Zone Management Act of 1972 (CZMA), 16 U.S.C. § 1451-1464 (Supp. 1991) through compliance with state implementing plans. The CZMA is premised on agreements under which the federal government offers financial assistance to states that develop a Coastal Management Plan (CMP). A CMP is a comprehensive state plan designed to protect coastal resources and prevent environmental degradation within the coastal zone of the state. Most CMP's rely on a variety of permitting schemes conducted by the state under its statutory authority. Anyone proposing any significant activity or development within the coastal zone must obtain the requisite permits, often from several different agencies. These permits are supposed to assure that the proposal will not cause environmental harm beyond that allowed by the CMP and the CZMA. Only after each permit has been obtained and each requirement has been met may the proposed activity proceed.

In some states such as Mississippi, CMP's have had only a minimal impact on the freshwater aquaculture industry. In Mississippi, 96.4 percent of the state's aquaculture operations are located outside the state's three coastal counties. Moreover, Mississippi has a history of granting exemptions for the freshwater aquaculture industry. Nevertheless, if site selection has not yet been determined, the CZMA's impact should be considered by the aquaculturist.

Wetland Protection

The legal definition of "wetlands" has recently become a very contentious issue. In 1989, several agencies jointly produced a Federal Manual which was supposed to provide uniformity among the federal agencies. (*See* John Farrow Matlock, *The Administration's New Wetlands Policy*, 11 WATER LOG 2 pg. 3 (1991)). Unfortunately, the manual's definition of wetlands has been viewed by some as too encompassing, and there have been even more recent efforts (from Congress and the White House) to redefine wetlands. This issue should be resolved in the near future.

Once an area has been declared a "wetland," activities on the site are subject to federal regulation under section 404 of the Clean Water Act. 33 U.S.C. § 1344 (Supp. 1991). Section 404 sets forth a permitting system admini-

stered by the Army Corps of Engineers (the Corps). If aquaculture operations or preliminary site preparations include dredge or fill discharges into wetlands, the aquaculturist may not proceed until having obtained a permit. Federal permit applications may be obtained from the Corps. Because several states also have wetland protection schemes, the aquaculturist must also check to see that all necessary state permits have been obtained (frequently a joint application packet combining federal and state requirements is provided by the Corps to minimize duplication for the applicant).

Waterway Site Regulations

Some aquaculture methods call for use of flowing waterways. Depending upon the type of waterway in which the site is situated, the aquaculturist may be faced with both federal and state regulation. If the waterway is navigable, the operation must comply with the federal Rivers and Harbors Act of 1899, 33 U.S.C. § 403 (1986). Under this Act, the Corps must authorize any project that includes the building of a breakwater or jetty; excavating or filling; or altering or modifying the course, location, condition, or capacity of "navigable waters" of the United States. The Corps should be contacted in case of any doubt.

If the site includes tidelands (foreshore) or submerged lands, the aquaculturist will also have to comply with the state's public trust laws. Terms of this trust vary from state to state, but the basic public trust doctrine provides that states have title to the land underneath navigable waters and to tidally affected lands. These lands are held in trust for the public benefit. To protect access for all, the trust restricts anyone wishing to have exclusive use of trust property. If the aquaculture operations require use of public trust land, a lease from the state (which is not always easy to obtain) is typically required.

Surface Water and Ground Water Use

The aquaculture industry depends on maintaining a stable source of clean water, but aquaculture operations themselves can contribute to water quality problem. For this reason, they are subject to regulations relating to the discharge of "used" water. Discharge of any pollutant into waters of the United States is regulated by the federal government through the National Pollutant Discharge Elimination System (NPDES). The NPDES program strives to achieve maximum "effluent limitations" on point source discharges, including restrictions on quantities, rates, and concentrations of chemical, physical, biological or other constituents which are discharged from point sources. Accordingly, certain conditions will be imposed on anyone seeking such a permit.

Ultimate regulatory authority under NPDES rests with the Environmental Protection Agency (EPA), but responsibility may be delegated to approved states. When a state qualifies for delegation, it handles all of the permitting process, including making sure that federal standards are met. If a state is not delegated for NPDES purposes, the aquaculture facility discharge must comply with both federal regulations and any state discharge water quality standards. The regional office of the EPA, as well as any relevant state agencies, should be contacted to determine the specifics of needed permits.

Common-Law Environmental Considerations

Compliance with CMP's, section 404, and NPDES does not exempt the aquaculturist from traditional common-law doctrines. Neighboring land users could still bring a tort action, such as a claim for public nuisance or a private nuisance action for unreasonable interference with the neighbor's enjoyment of his or her property. Aquaculturists must also be on guard against presenting dangerous situations which might subject them to suits based on negligence or attractive nuisance. The aquaculturist must also, of course, comply with any relevant development plans and zoning requirements.

LIMITS ON SPECIES SELECTION, PRODUCTION, AND PROCESSING

In addition to those laws that establish programs to protect the environment, several other legal matters are of concern to the aquaculturist. Some laws prohibit the commercial production of certain species of fish; other laws limit the availability of drugs and vaccines used to treat fish; and since the aquaculturist is producing a food product, some laws regulate the purity of the ultimate product. All of these matters are of concern to the aquaculturist.

Species Selection

Selection of a species is normally the aquaculturist's first decision, and it thereby determines site location and water needs. Not all species can be commercially propagated. The federal government protects species whose existence is threatened or endangered through the Endangered Species Act of 1973, 16 U.S.C. §§ 1531-1543 (Supp. 1991). States also often have similar acts. Aquaculture operations would be prohibited from raising these fish because endan-

gered and threatened species cannot be sold, offered for sale, imported, exported, taken, received, or shipped in interstate commerce. The list of endangered species is located at 50 C.F.R. § 17.11 (1991).

A second federal limitation on species selection comes from the Lacey Act Amendments of 1981, 16 U.S.C. § 3371 (Supp. 1991). This Act makes it a crime to "import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any fish... taken, possessed, transported, or sold in violation of any law or regulation of any State or in violation of any foreign law." *Id.* at § 3372(a)(2)(A). The purpose of this Act is to restrict importation of a species which (especially in the event of escape) might be injurious to human beings, agriculture, horticulture, forestry, or wildlife resources. States also often have equivalent regulations. The aquaculturist should consult the Lacey Act as well as relevant state statutes to determine whether any such limitations apply to the fish in question.

Pesticide Regulation

Water quality is important to assure a safe aquaculture food product. Unfortunately, contaminants sometimes make their way into the water and impact on the fish, rendering them unfit for human consumption. The primary ways in which water contamination can affect food purity are chemical herbicides used to control aquatic vegetation in fish ponds; runoff of pesticides, herbicides, and fertilizers from adjoining fields into aquaculture ponds; overspray falling into ponds from aerial sprayings of herbicides; and aquifer contamination by recharge water contamination. Protection from such contamination is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) 7 U.S.C. §136 (1980 and Supp. 1991).

Under FIFRA, any manufacturer of a chemical that is intended to kill pests must register the chemical with EPA. To obtain approval, the manufacturer of the chemical must show that the product performs as claimed, that the labeling is appropriate, that there is no unreasonable adverse effect on the environment, and that use is safe. Use of an unregistered chemical would expose the aquaculturist to severe sanctions. In fact, even some authorized chemicals may be restricted to professional applicators who must be registered with the EPA.

Since the aquaculture crop is a food product, contamination is also governed by the Food, Drug and Cosmetic Act (FDCA) 21 U.S.A. §§ 301-394 (1972 and Supp. 1991). FDCA's primary goal is to protect the health and safety of the public by preventing deleterious, adulterated, or misbranded articles from entering interstate commerce. If pesticides are to be used, special care should be taken to avoid any contamination of the fish product. If contamination of the aquaculturist's water comes from a neighboring property, it is likely that a tort action would be available.

Limitations on Approved Drugs and Vaccines

Like any farmer, aquaculturists must protect their stock from disease if they are to prosper. Unfortunately, aquaculturists have a limited number and type of medicines with which to fight disease. Scarcity of approved drugs may place aquaculturists in situations where it is difficult to treat stock without violating the FDCA. At present, there are only three chemicals and two vaccines approved by the Food and Drug Administration (FDA) for use in treating fish diseases caused by parasites, bacteria, viruses and fungi. Registering a new animal drug takes a great deal of time and money for research and testing. Fish, unlike many farm animals, do not generate a high enough return on a drug company's research investment to warrant the time and money required for necessary research and testing. Considering the attention now being given to expedite the approval process of human drugs, it may be reasonable for the aquaculture industry to lobby for an expedited process for new animal drugs and additional financial incentives for drug and chemical companies to invest in the necessary research and development.

Processing the Food Product

Aquaculturists who process their stock must comply with applicable federal and state seafood processing regulations to ensure the food product is fit for human consumption. The federal government does not currently have a mandatory federal seafood inspection process; however, the National Marine Fisheries Service (NMFS) does administer a voluntary inspection program, the National Seafood Inspection Program. 50 CFR § 260 (1991). This program checks seafood processors for quality, quantity, and safety. Processor use of this service can serve as a marketing advantage to gain consumer confidence in the quality of the seafood.

During the last session of Congress, each House passed bills to establish a mandatory seafood inspection program, but these failed to survive the conference committee process. The proposed inspection program would be based on what is known as the Hazard Analysis and Critical Control Point Method. Instead of grading product quality, this proposed program would emphasize testing at critical control points. Such a program would be consistent with the mandatory inspections required in the beef industry by the Federal Meat Inspection Act and by the Poultry Prod-

ucts Inspection Act. It is likely that a federal inspection program will be put in place in the near future. (For a detailed discussion of seafood inspection programs, *See* Brian Perkins, *An Update on the Issues of Seafood Safety and Inspection*, 11 WATER LOG 1 pg. 3 (1991). *See also* Special Issue: *Mandatory Seafood Inspection: Do We Need It?* 9 WATER LOG 4 (1989)).

States with significant seafood production have, to a certain extent, picked up the slack left by the federal government in assuring a safe food product. Mississippi has enacted a relatively thorough statutory scheme to regulate aquaculture, Miss. Code Ann. § 79-22-1 et seq. (1989 and Supp. 1991), but the catfish industry has been largely exempted. *Id.* at § 79-22-33 (1989). The Catfish Institute, a business entity founded in 1986 by a group of catfish farmers for the purpose of promoting the state industry, has instituted its own inspection program known as "Mississippi Prime Inspection Program." This program boasts of weekly inspections to ensure retention of "high standards of processing and superior taste, appearance, and texture... [to earn] the Mississippi Prime Stamp."

CONCLUSION

While environmental regulations may limit certain activities that may be undertaken by an aquaculturist, the permitting requirements have not prevented the industry from growing rapidly over the past decade. People who are interested in entering the industry must make certain that they obtain the necessary permits, and this may require additional expenditures to make certain that pollution is kept to a minimum. It should be recognized that the regulatory climate which may seem to burden the industry in the short term will in the long run protect the water quality that is so vitally important to aquaculture.❑

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South Alabama Seafood Association v. Dep't of Conservation and Natural Resources of the State of Alabama

No. CV-91-002 (Circuit Court of Montgomery County, Alabama, 26 September 1991)

Under Alabama law, a private owner of beachfront property cannot prevent oyster fishing on natural oyster reefs in waters adjacent to the landowner's property

INTRODUCTION

On 26 September 1991, the Circuit Court of Montgomery County, Alabama, granted a permanent injunction prohibiting Oliver Kuppersmith, the owner of property on Heron Bay, and Lindon Johnson, his lessee, from exercising the exclusive right of harvesting oysters from Heron Bay. Ala. Code § 9-12-23 (1987) provides that private leases on riparian bottoms must be cancelled if the bottoms are later found to be natural oyster reefs. (For an overview of questions about oyster-bed leasing in Alabama, see George F. Crozier's article in 10 WATER LOG 2 (1990)).

FACTS

On 16 March 1990, Oliver Kuppersmith, who owned land adjacent to Heron Bay, executed an oyster lease to Lindon Johnson. Johnson thereafter posted throughout the area signs reading "Private Oyster Bed". Oyster fishermen, contending that the area covered by the purported lease was a natural oyster reef, sought an injunction to prevent the state from enforcing exclusive rights in Johnson to fish the bay for oysters. Ala. Code § 9-12-23 (1987) gives the Commissioner of Conservation and Natural Resources authority to cancel private leases of natural oyster reefs. Ala. Code § 9-12-21 (1987) defines a natural oyster reef as "not less than one acre in continuous area of any bottoms of any bay, sound, bayou, creek, inlet or any other body of salt or brackish water on which oysters grow naturally . . . in quantity sufficient to warrant fishing for them with hand tongs as a means of a livelihood . . . ."

ANALYSIS

In granting the injunction, the court relied on the language of the statutes in light of prior case law. The oyster reefs in Heron Bay, which run along the shore a distance of about two miles, were found to be natural reefs by "the overwhelming weight of the evidence" in an old decision of an Alabama appellate court. *Havard v. State*, 23 Ala. App. 228, 124 So. 912 (1929), *cert. denied* 220 Ala. 359, 124 So. 915 (1929). Testimony by oyster fishermen and expert witnesses established that the bottoms of Heron Bay still constitute a natural oyster reef. The evidence also showed that oystermen normally put the culls from each day's catch back onto the reefs of Heron Bay so they would have a sheltered place to tong when weather was bad. While Ala. Code §§ 9-12-21 and -22 (1987) grant exclusive rights in oysters to landowners who create artificial reefs within 600 yards of their shoreline, the court noted that those statutes did not apply because neither Kuppersmith nor Johnson had done anything towards the creation of an artificial reef. Finding that the oyster beds in Heron Bay were "natural" within the meaning of the statute and that the livelihoods of oystermen who fished the bay during bad weather was being impaired, the court ordered the state no longer to enforce Johnson's purported lease on the bay.

CONCLUSION

This case reflects a continuing and increasingly heated conflict between Alabama's oyster fishermen and riparian owners. The oyster stock off the Alabama coast has been severely reduced in recent years by extreme weather conditions, heavy fishing, and pollution, which has in turn led to fierce competition for rights to fish in waters known to be productive. In reaching its decision, the court looked almost exclusively to whether the reef was "natural" or "artificial," without considering the larger question of how scarce natural resources should be allocated under the public trust doctrine when public and private rights collide. The scene of future battles in this controversy could now shift to the Alabama legislature, where riparian owners may seek legislation to confirm their property rights in near-shore oyster beds.❑

John Farrow Matlock

The editors wish to thank Dr. George F. Crozier of the Dauphin Island Sea Laboratory for providing information used in preparation of this article.

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LAGNIAPPE

A Little Something Extra

Two bills have recently been introduced in the Mississippi Legislature that seek to remove the Bureau of Marine Resources from the Department of Fisheries, Wildlife, and Parks and to place it under the control of a new Marine Conservation Commission. S.B. 2919 introduced by Senator Tommy Gollot of Biloxi, and companion bill H.B. 969, introduced by Representative J.P. Compretta of Bay St. Louis would establish an independent commission empowered to "manage, control, supervise and direct any matters pertaining to saltwater aquatic life and marine resources..." Both of the bills would limit membership of the commission to gubernatorial appointees who are residents of the three coastal counties.

Public outcry over the new wetlands delineation manual promulgated last August continues unabated. The manual was rewritten by the government with a view to defining wetlands more narrowly; under the proposed manual the total acreage that could qualify as wetlands for federal protection would have been reduced by as much as half. The period for public comment was originally to have ended on October 15, 1991 but was extended twice and finally ended on January 21, 1992. Over a period of five months EPA and the other regulatory agencies concerned received about 80,000 written comments on the manual, most of them adverse to the proposed changes. The government is revising the manual in light of the comments it has received, and it is expected that the manual will take force before the end of the year. A bill is now pending in Congress that would require a review of the manual by the National Academy of Sciences before the manual could be given effect.

On January 31 a jury of the Circuit Court of Jackson County, Mississippi, found against Georgia-Pacific Corp. in *Ferguson v. Leaf River Forest Products*, Inc., a suit brought by a plaintiff who owned land along the Pascagoula River and who claimed that Georgia-Pacific had harmed him by discharging dioxin into the river. While the jury found for Georgia-Pacific on the plaintiff's claim of trespass, it awarded the plaintiff and his wife $20,000 on their nuisance claim, $180,000 on their emotional distress claim, and $3 million in punitive damages. More than 160 suits have been brought by more than 8,200 plaintiffs who are alleging trespass, nuisance, and emotional distress caused by Georgia-Pacific's discharge of traces of dioxin from pulp mills into south Mississippi rivers. *Ferguson* is only the second of the dioxin lawsuits to come to trial; in the first, decided in October of 1990, the jury also found for the plaintiff and awarded him more than $1 million in compensatory and punitive damages. Georgia-Pacific is appealing both judgments. In a related development, a class action suit naming virtually every producer of paper pulp in the United States and seeking not less than $100 billion in damages arising from the discharge of dioxin was filed in a state court in Beaumont, Texas on March 6.

On March 2 the United States Supreme Court heard arguments in the case of David Lucas, an owner of beachfront property in South Carolina who claimed that the state was required to compensate him when it refused to grant him a permit to build on the property. The Supreme Court of South Carolina held that Lucas was not entitled to compensation (*See* 10 WATER LOG 4). Environmental regulation of private property in dozens of states could be affected if the U.S. Supreme Court reverses the decision of the South Carolina court. The Court will announce its decision later this year.