Chapter Five
HABITAT PROTECTION

Summary of Findings

1. *Resource agencies play a key role in highlighting habitat protection needs, but they would prefer to have independent regulatory authority to control and prevent damaging activities.*

2. *Staffing and resource constraints limit the ability of management agencies to gain knowledge about the habitats and species they are charged with protecting.*

This chapter is an extension of the previous one since wetlands are among the most significant coastal habitats. Most of the findings and recommendations in the last chapter also apply here, and vice versa. This chapter attempts to point out some general concerns in the broader area of habitat protection.

Numerous agencies can affect habitats through their own activities and the private activities they regulate. Foremost among these in Texas is the General Land Office, which must manage literally millions of acres of state-owned land, much of it along the Texas Gulf Coast. But this chapter focuses on the key agencies at the state and federal levels that are directly responsible for fish and wildlife protection: the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department. As resource agencies, these specialists must do their best to convince lead agencies that certain conditions or mitigation steps should be required of a permitted activity. At the same time, they are responsible for managing lands and waters already brought under direct public control through park, preserve, refuge and management area acquisitions. Staff at the resource agencies believe that they often are effective in influencing and altering the way that projects are implemented, but they would prefer to have some form of independent veto authority over lead agency actions to insure that the most serious risks to habitats are addressed.

Action Recommendations

Action: *Preserve managers should sponsor a comprehensive survey of Armand Bayou habitats and fish and wildlife resources.*

Involved Agencies:
- Texas Parks and Wildlife Department
- U.S. Fish and Wildlife Service
- other interested agencies and organizations

Rationale: The major management problem in the area of habitat protection, aside from resource limitations, appears to be insufficient information. Preserve managers must have adequate information to be effective in their management planning. They also must consider where the preserve boundary artificially divides a habitat area, indicating the need for management activity outside the preserve boundary as well. (This is especially important given Fish and Wildlife Service warnings about habitat fragmentation.) The *Environmental Inventory of the Armand Bayou Coastal Preserve* was a starting point for this effort. Preserve managers should consider the range of data sources and resource entities (especially universities and private conservation organizations) that can assist with such a survey. Perhaps the most crucial coordination should occur between TPWD and the Fish and Wildlife Service. Preserve managers also should pursue additional funding and legislative support for these types of efforts as part of the implementation process for the *Texas Coastal Management Plan*.

Action: *The involved agencies should insure that Armand Bayou's coastal preserve status is a key factor in the entire spectrum of permitting and regulatory programs that can affect preserve habitats.*

Involved Agencies:
- Texas Parks and Wildlife Department
- Texas General Land Office

Rationale: The involved agencies should continue to use the Galveston Bay National Estuary Program as a means of raising agency awareness of the Texas Coastal Preserve program. They also should insure that preserve managers have adequate opportunities to review and comment on actions that have implications for Armand Bayou habitats or preserve management.

Armand Bayou Management Framework: HABITAT PROTECTION

AGENCY	AUTHORITY	POLICY	STRATEGY	ACTORS
FWS	1. Fish and Wildlife Coordination Act 2. Endangered Species Act 3. Federal Aid in Wildlife Restoration Act (Pittman-Robertson) 4. Federal Aid in Sport Fisheries Restoration Act (Dingell-Johnson) 5. National Environmental Policy Act (NEPA)	1. U.S. Congress 2. U.S. Department of the Interior 2. FWS Director: - partnership policy for voluntary conservation 3. Southwest Region Director (Region 2, Albuquerque)	1. National Wildlife Refuge System (Brazoria): - land management activities - enforcement of migratory bird hunting regulations and endangered species laws - fish and wildlife monitoring - Duck Stamp program to fund land acquisitions 2. Environmental assessments and rendering of biological opinions on federal projects 3. Federal grants for state habitat acquisition and management programs 4. Recovery plans for endangered and threatened species 5. National Recreational Fisheries Policy and major initiatives for nationally significant fisheries 6. National Contaminants Biomonitoring Program 7. Habitat damage assessment after environmental disasters	1. Ecological Services Division 2. Clear Lake Field Office 3. Refuge managers 4. Enforcement agents

Armand Bayou Management Framework:
HABITAT PROTECTION

AGENCY	AUTHORITY	POLICY	STRATEGY	ACTORS
TPWD	1. Texas Parks and Wildlife Code	1. Texas Parks and Wildlife Commission: - Agency policy statement 2. Executive Director 3. Texas Outdoor Recreation Plan (TORP) and Texas Wetlands Plan addenda	1. Lead state resource agency on fishery and habitat matters: - permit reviews - environmental assessments - recommendations on in-stream flows and freshwater inflows to estuaries 2. Direct management of habitat in state parks, preserves and wildlife management areas 3. State waterfowl stamp program and use of federal grant monies to acquire valuable habitats 4. Permits for disturbance or taking of streambed and bay bottom material 5. Management plans for Texas Coastal Preserve program 6. Documentation of environmental damage and use of litigation to seek compensation and mitigation 7. Technical assistance and expert testimony on habitat matters 8. Enforcement of game and fish and water pollution regulations	1. Resource Protection Division 2. Fisheries and Wildlife Division 3. Public Lands Division 4. Law Enforcement Division: - TPWD game wardens 5. Texas Natural Heritage Program 6. Seabrook Marine Lab

Armand Bayou Management Framework:
HABITAT PROTECTION

AGENCY	AUTHORITY	POLICY	STRATEGY	ACTORS
NMFS	1. Fish and Wildlife Coordination Act 2. Endangered Species Act 3. National Environmental Policy Act (NEPA) 4. Magnuson Fishery Conservation and Management Act 5. Marine Mammal Protection Act 6. Marine Research, Protection and Sanctuaries Act	1. U.S. Congress 2. U.S. Department of Commerce: - National Oceanic and Atmospheric Administration (NOAA) 3. Southeast Region Director	1. Fisheries management planning and implementation 2. Population maintenance efforts for targeted species 3. Review and comment on federal actions and federally-funded or permitted projects 4. Environmental assessments and EIS reviews, especially to evaluate impacts on endangered and threatened species 5. Monitoring of activities and factors affecting estuaries, fisheries and habitats 6. Tracking of proposed projects, follow-up investigation of permitted actions, and documentation of environmental damage 7. Interagency coordination activities 8. Technical assistance and expert testimony on habitat matters 9. Enforcement coordination with U.S. Coast Guard and other agencies 10. Emergency response and assessment	1. NMFS Southeast Region: - Habitat Conservation Division 2. Galveston Field Branch Office: - Area Supervisor and staff 3. NMFS laboratories (Galveston, TX, and Beaufort, NC)

Management Concern:
HABITAT PROTECTION

Background

Coastal habitats nationwide are at risk because of increasing population and human activity near the shoreline. Citizens are given mixed signals by government: environmental laws and coastal protections on the one hand, and development encouragement and public infrastructure investment on the other. The degree of coastal regulation also varies from state to state, as does public demand for conservation measures.

Habitats lose their viability as they are divided by road networks and encroached upon by scattered development and the environmental pollution that all too often accompanies human settlement and industry. At risk is the natural support system for a diversity of species. But also threatened are some of the very resources that sustain coastal economies: fisheries, scenic vistas and other tourism features, recreational hunting and fishing sites, and other elements. Ultimately, the entire estuary system becomes vulnerable if its natural buffer is degraded.

Nature of the Problem at Armand Bayou

Armand Bayou's physical characteristics have changed dramatically during the last century as a result of man's activities in the area. According to the *Environmental Inventory of the Armand Bayou Coastal Preserve*, "the bayou has changed from a wetland-bordered freshwater stream to a brackish tidal lake nearly devoid of wetlands." The region's rapid industrial and residential development led to substantial increases in groundwater withdrawals. The result was widespread land-surface subsidence in coastal areas near Galveston Bay. The Armand Bayou watershed averaged 5-7 feet of subsidence since the early 1900s, causing Mud Lake (the southernmost portion of Armand Bayou) to expand to more than three times its size since the mid-1950s. Lost in the process were several hundred acres of wetlands along the bayou, which have been replaced by much smaller marshes of a different variety. Although this subsidence has diminished in recent years as a result of greater awareness and improved management of groundwater resources, Armand Bayou is a much different environment today for fish and wildlife.

Aside from rising water levels, ongoing development has altered drainage patterns in the vicinity and made necessary flood control improvements that can substantially increase the rate and volume of flow in the bayou. Compounding these habitat threats is the bayou's poor water quality. The volume of wastewater effluent discharges into Armand Bayou and its tributaries continues to rise, and nonpoint source pollutant loadings are a growing concern as well. On the positive side, the creation of Bay Area Park and the

Armand Bayou Nature Center have helped to buffer the bayou and its habitats from the impacts of nearby development.

Although Armand Bayou is not believed to be a primary habitat for any threatened or endangered species, it is known to support a variety of fish and wildlife. Unfortunately, there is little information on this flora and fauna, though inferences have been made from studies of Clear Lake. The *Environmental Inventory* noted that the lower reaches of Armand Bayou may well be a valuable nursery habitat for certain commercial and recreational finfish and shellfish.

The central management task is to assess the value of Armand Bayou's remaining habitats in light of the various changes. Then, realistic goals must be set for the potential rehabilitation of habitats in the preserve and the surrounding watershed. There also may be opportunities to improve management of habitats already under public ownership.

Key Management Agencies

U.S. Fish & Wildlife Service (FWS)

The Fish and Wildlife Service is the lead federal agency responsible for conserving, protecting and enhancing the nation's fish and wildlife populations and their habitats. Major FWS concerns include migratory birds, endangered species, certain marine mammals, and freshwater and anadromous fish, such as salmon. The Service is a branch of the U.S. Department of the Interior, which is the principal federal entity concerned with conservation. The Department manages most of the nation's federally-owned public land. Its "Take Pride in America" campaign encourages stewardship and citizen involvement in conservation. In addition, FWS promotes a partnership policy under which it emphasizes cooperative conservation initiatives with private landowners, public agencies, corporations, conservations groups and citizen volunteers.

The entire FWS organization is involved with habitat conservation and management issues, led by the Ecological Services Division, the Fisheries Division, and the Refuge Division. The Fish and Wildlife Service is guided by a Director who reports to the Secretary of the Interior. FWS has seven regional offices, and each Regional Director reports to the FWS Director in Washington, D.C. Region 2, known as the Southwest Region, is based in Albuquerque and covers Texas, Arkansas, Oklahoma and New Mexico. In addition to a national research facility, FWS has more than 700 field units and installations, including its refuges, research labs, field offices and law enforcement offices. A field office for the Houston-Galveston area is located in Clear Lake. Most professional staff of the agency are fish and wildlife biologists or specialists in related disciplines. The Service also trains refuge managers and enforcement agents. The Youth Conservation Corps is jointly administered by FWS, the National Park Service, and the U.S. Forest Service. The Corps provides summer jobs for youths at wildlife refuges, research labs and other field sites. FWS also recruits volunteers for its various locations.

Many valuable habitat areas are under direct FWS control and management through the agency's National Wildlife Refuge System. The nation's flyways for waterfowl are a principal focus of the Refuge System. Refuge sites also provide relatively safe haven for threatened and endangered species, as well as for native plants and many species of resident mammals, fish, insects, amphibians, and reptiles. The Department of the Interior's "Duck Stamp" program (formerly the Migratory Bird Hunting and Conservation Stamp program) enables citizens to contribute to the expansion of the Refuge System by purchasing the stamps at post offices and many refuge sites. The Department also requires that every waterfowl hunter age 16 or older carry a stamp while hunting, and the stamps may be used for entry to refuges that charge visitor fees. Duck stamp revenues go directly toward federal land acquisition activities. FWS reports that since 1934, the Duck Stamp program has financed the addition of nearly 4 million acres of wetlands and other habitats to the Refuge System.

The Service administers two other laws that provide direct funding for habitat acquisition and management activities: the Federal Aid in Wildlife Restoration Act and the Federal Aid in Sport Fisheries Restoration Act. These are more popularly known as the Pittman-Robertson Act (wildlife) and the Dingell-Johnson Act (fish). These laws authorize federal grants to state fish and wildlife agencies using revenue collected from federal excise taxes on purchases of recreational hunting and fishing equipment. More recent amendments have increased the amount of funding for the programs by expanding the number of products covered by excise taxes. FWS distributes the funds based on a formula that considers the state's land area and its number of hunting and fishing licenses.

The Fish and Wildlife Coordination Act authorizes FWS to review and comment on federally-sponsored projects and permitted activities with the potential to impact habitats and fish and wildlife resources. FWS has been very active in addressing impacts to wetlands and other habitat under this authority. Aside from project review, FWS also serves as a resource agency by providing expert biological advice to federal agencies, states, private industry and citizens. Field office personnel highlight potential development impacts on habitats and urge protective strategies of avoidance, minimization and mitigation. FWS also works closely with the National Marine Fisheries Service and other resource agencies on evaluations required under the National Environmental Policy Act (NEPA) and the Endangered Species Act. These acts enable FWS to render a biological opinion on any activity that will adversely impact an endangered species. An FWS judgement cannot stop a project directly, but it may delay or change it by requiring additional study. Under the Endangered Species Act, FWS works with other agencies and involved parties to develop recovery plans when specific actions are needed to boost the population of listed species. Habitat protection and intensive management are key steps in many recovery efforts. FWS also plays an important role in emergency response to environmental disasters by assessing damage to fish and wildlife habitats and supervising mitigation steps.

FWS monitors and draws attention to habitat degradation and reductions caused by pollution and encroaching development. The Service also tracks recreational activity

related to habitats and wildlife by conducting the National Survey of Fishing, Hunting and Wildlife-Associated Recreation every five years. Using data from the 1985 survey, FWS estimated that these recreation activities contributed $55.7 billion to the U.S. economy. FWS has a network of labs and field stations that support its fish and wildlife management research. The agency's National Contaminant Biomonitoring Program allows Service personnel to assess the impacts of pesticides, chemicals, heavy metals, hazardous waste and other pollutants that may intrude into habitat areas.

The North American Waterfowl Management Plan is another FWS initiative aimed at effective habitat protection. A 1986 agreement between the Canadian and U.S. governments launched this joint conservation effort. Mexico recently signed an agreement to lend assistance. The plan aims to protect and increase waterfowl populations principally by targeting more than six million acres of critical wetlands on which these species rely. After an initial research and planning phase, the management plan now is being implemented in specific habitat areas through Joint Ventures. These ventures involve public-private partnerships for habitat preservation. The Gulf of Mexico Joint Venture area stretches from Alabama to Texas, and conservation projects in this area are intended to protect some 386,000 acres of vital habitat by 2000. Aside from land acquisitions, joint venture participants also develop economic incentives to influence land use practices, negotiate agreements with private landowners, support improved water management, and sponsor wetlands and habitat research. These efforts are critical because the conversion of wetlands to agriculture is one of the leading causes of habitat loss, especially during drought periods. This national (and international) project is one example of the ways in which FWS personnel lend their expertise through technical assistance and direct management programs.

In addition to its preservation of habitats on land, the Service sponsors major initiatives to protect and restore nationally significant fisheries. A National Recreational Fisheries Policy guides FWS actions to conserve and improve the nation's recreational fisheries as well.

FWS staff assist federal and state enforcement agencies by watching for violations while in the field, making referrals, and monitoring required mitigation work. The agency may send advisory letters to point out violations and supply information on applicable federal laws and regulations. However, the agency's primary enforcement focus is on wildlife protection laws and illegal trade. FWS also works with other agencies through various committees and special projects. Finally, the agency demonstrates its commitment to public education by sending representatives to speak before citizen and business groups, by hosting teacher workshops, and by leading field trips with such groups as the Cub Scouts.

Texas Parks & Wildlife Department (TPWD)

The Texas Parks and Wildlife Code gives TPWD primary responsibility for protecting the state's fish and wildlife resources. One of the most important ways that the

department does this is by protecting and monitoring wetlands, uplands and other essential habitats.

The department is guided by the nine-member Texas Parks and Wildlife Commission. The Commission establishes agency policy, and earlier this year it approved a new staff-developed agency-wide environmental policy. The policy contains a general statement of TPWD's overall responsibility. Protection of the state's "unique biodiversity" is the highest agency priority. The new policy also intends that agency operations, such as parks and preserve areas, serve as models of proper natural resource protection. Most importantly, the policy is meant to guide TPWD staff in their day-to-day activities. An Executive Director manages the agency, and a continuing reorganization has changed the arrangement of agency divisions and branches that report to him. All of TPWD's program-oriented divisions are involved in habitat protection, including the Public Lands Division, the Fisheries and Wildlife Division, the Resource Protection Division, and the Law Enforcement Division. TPWD has designated one staff member as the agency's Coastal Preserves Coordinator to coordinate activities with the Texas General Land Office and supervise the preparation of management plans and programs for the Texas Coastal Preserve program. TPWD clearly is a field-oriented agency,with more than half of its staff assigned to field locations. In addition to parks and management areas, TPWD has 28 field offices around the state. The Houston-Galveston area has a number of staff locations, including the Seabrook Marine Laboratory located directly on Galveston Bay.

Aside from its statewide recreation planning duties, TPWD is the state's lead resource agency on fish and wildlife matters. The Fisheries and Wildlife Division protects habitats by monitoring and regulating populations, implementing land management practices (along with the Public Lands Division), and investigating damage from pollution and other man-made factors. The Resource Protection Division concentrates more closely on environmental impacts and project evaluations. The Law Enforcement Division enforces game and fish laws and also targets water polluters to support state water quality objectives. In the absence of independent regulatory authority, TPWD must do its best to document instances of environmental damage and seek compensation from the responsible party. If TPWD cannot persuade the relevant action agencies to take enforcement steps against uncooperative violators, then it may decide to pursue litigation on its own. The Texas Legislature has instructed TPWD to be aggressive in both of these areas -- persuasion and litigation.

The one area where TPWD does have direct authority is through its permit program for the disturbance or removal of streambed and bay bottom material such as sand, gravel or shell from state-owned streambeds and marine bottoms. TPWD can play an active role in habitat protection if an applicant proposes to undertake this activity in such areas. TPWD also has direct responsibility for habitats that are part of the State Park System, TPWD wildlife management areas, or state preserves. TPWD uses federal grant monies and revenue from the state's waterfowl stamp program to acquire sensitive habitat areas. The department also regulates areas that are critical to the state's shrimp fishery by assigning a "nursery area" designation. Nursery areas are tributary bays, bayous, inlets,

lakes, and rivers which are known to provide a rich growth and development environment for postlarval and juvenile shrimp. The designation does not apply to outside waters, major bays, or bait bays.

Other ways in which TPWD promotes habitat protection include:

- field monitoring and biological research to guide habitat management activities
- review of proposed actions that require federal or state permits or the preparation of an environmental impact statement, and participation in hearings and other proceedings related to project review and environmental assessment
- recommendations on the scheduling of in-stream flows and freshwater inflows to estuaries
- public education programs, and
- advisory duties for various special projects, inter-agency committees, and technical assistance programs

Chapter 81 of the Texas Parks and Wildlife Code authorizes various types of management areas and preserves under TPWD supervision, including the designation of "scientific areas for the purposes of education, scientific research, and preservation of flora and fauna of scientific or educational value." Coastal preserves such as Armand Bayou are prime candidates for scientific area designation. TPWD also administers the Texas Natural Heritage Program, which was created in 1983 to inventory and manage data on sensitive and unique natural resource areas in the state. Staff involved in impact assessments turn to the Heritage Program for essential information.

Finally, more than 400 TPWD Game Wardens are in the field and can report violations of environmental regulations to the appropriate agencies. These commissioned peace officers are joined by regular TPWD staff in monitoring activities that may impact habitats and wildlife.

National Marine Fisheries Service (NMFS)

The chief responsibility of the National Marine Fisheries Service is fisheries management, primarily of offshore species as well as marine mammals, endangered sea turtles and marine fishes. NMFS duties related to marine recreational fisheries overlap somewhat with those of the U.S. Fish and Wildlife Service (FWS) and the Texas Parks and Wildlife Department (TPWD), while its commercial fishery programs also overlap to some extent with those of TPWD.

The National Marine Fisheries Service is part of the National Oceanic and Atmospheric Administration (NOAA), which is under the U.S. Department of Commerce. Galveston

Bay falls within the agency's Southeast Region, which stretches from Texas to North Carolina and includes Puerto Rico and the U.S. Virgin Islands. The Southeast Region's Habitat Conservation Division has a field branch office in Galveston, where an area supervisor and other staff are based. Because of their limited expertise on water quality matters, local NMFS staff seek technical assistance from agency chemists at the NMFS laboratory in Beaufort, North Carolina, when reviewing major discharge applications. The staff review only the most significant discharge proposals because of limited resources. Aside from the impacts of wastewater effluent in estuaries, a major concern that NMFS shares with other agencies is the adverse effects on habitats of nonpoint source pollution and other byproducts of human activities.

Protection of critical habitats, including coastal wetlands, is an integral part of insuring the health and maintenance of fisheries and species under NMFS jurisdiction. However, like the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department, NMFS serves only in an advisory capacity during reviews of federally-funded or permitted activities in waters of the United States. NMFS staff must work with lead agencies, such as the U.S. Army Corps of Engineers on Section 404 dredge/fill discharge permits and EPA and the Texas Water Commission on wastewater discharge permits, to insure thorough environmental reviews and minimization of adverse impacts. NMFS has review-and-comment authority under the Fish and Wildlife Coordination Act, the National Environmental Policy Act, and the Clean Water Act.

Under the Magnuson Fishery Conservation and Management Act, fishery management plans are prepared and implemented, based on national standards, with the objective of achieving and maintaining the optimum sustainable yield from each targeted marine fishery. The Magnuson Act is significant in the area of habitat protection because it requires that each fishery management plan examine the significance of habitat to the fishery, as well as the potential impacts of any alterations to the habitat. NMFS manages species which are primarily harvested in offshore federal waters (those included in the United States' 200-mile Exclusive Economic Zone, or EEZ) such as Gulf shrimp. The Marine Mammal Protection Act requires NMFS to insure that populations of targeted species are maintained at sustainable levels to prevent their long-term depletion. The Endangered Species Act enables NMFS to protect endangered marine mammals, sea turtles and marine fishes from human-caused death, injury or harrassment. (This is an area of overlapping authority between NMFS and FWS. For example, FWS is responsible for endangered and threatened sea turtles when they are on land). NMFS joins the Fish and Wildlife Service in determining whether a proposed federal action will have an adverse impact on any threatened or endangered species. This judgement typically is made in consultation between these agencies, the lead agency, and other resource agencies such as the Texas Parks and Wildlife Department. A final piece of federal legislation which affects NMFS is the Marine Research, Protection and Sanctuaries Act.

While NMFS staff provide formal notice to other agencies of their findings and recommendations on proposed projects, they also communicate informally with other resource agency staff on a regular basis. Staff also attend interagency coordination

meetings and participate in on-site inspections as needed. In addition to tracking proposed actions and permit applications, staff monitor how NMFS recommendations are received by lead agencies and to what extent they are implemented in actual projects and permitted actions. Follow-up investigations are conducted in the field as resources and staff time allow. NMFS disseminates the results of its monitoring activities and field research through *Marine Fisheries Review* and other journals. Staff would prefer to report information for individual estuaries or even portions of estuaries, but resource limitations make this level of detail impossible, so only gross figures are provided for states and Corps of Engineers districts. NMFS staff also see a need to keep a more comprehensive record of minor actions on which the agency does not officially comment.

NMFS staff work primarily with the U.S. Coast Guard to enforce federal habitat and species protection laws. They also advise other federal and state agencies of regulatory and permit violations that fall under their jurisdiction. NMFS joins other resource agencies in responding to emergency incidents such as oil spills and releases of hazardous materials. Along with the Fish and Wildlife Service and the Texas Parks and Wildlife Department, NMFS advises the lead response agency on potential impacts to living marine resources and their habitats and assists in determining the extent of environmental damage.

Management Evaluation Findings

1. *Resource agencies play a key role in highlighting habitat protection needs, but they would prefer to have independent regulatory authority to control and prevent damaging activities.*

   The Corps of Engineers credits fish and wildlife and land and water management agencies with being very successful in communicating their concerns and influencing federal regulatory processes, such as those governing the Houston-Galveston Navigation Channels project. (Some observers of the inter-agency team for the ship channel project believe that that group has set a new standard for cooperative technical advisory groups.) Lead agencies such as the Corps value input from numerous agencies so that they can weigh a mixture of viewpoints and arguments. But TPWD staff wish that there were some appeals mechanism that they could use, as federal resource agencies do, to request higher-level review of lead agency decisions. They emphasize that there always will be disagreements because environmental risk assessments are based more on individual perceptions than on scientific findings, especially where data is inadequate. In the absence of some form of veto power, however, resource agency staff believe that their ability to force further review and study makes a difference in project evaluations and gives them influence with lead agencies and project sponsors. Adverse resource agency comments and testimony can signal a lack of consensus among management agencies and boost public controversy surrounding a project. It also can lend support to potential lawsuits by private conservation groups, and resource agency

staff sometimes are called as witnesses. Federal resource agencies also emphasize that they always want to know where their state counterparts stand on issues. They believe that their recommendations carry more weight when state resources agencies concur.

Habitat protection agencies say that regulators of discharges, waste disposal, air emissions and other critical activities must do a better job of implementing and enforcing their rules to prevent habitat degradation. Agency staff say that a particular concern is the need for monitoring and assessment of cumulative impacts on habitats. Without their own authority, resource agencies must appeal to project sponsors to accept and honor voluntary agreements to minimize impacts from their activities. The agencies' only alternative is to pursue costly and slow litigation in cases where they can demonstrate potential damage to habitats. Staff also point out that resource agencies headed by politically-appointed boards tend to fluctuate in their priorities and commitment to certain programs. Staff in resource agencies sometimes need the support of the very highest officials of their agency to pursue a critical issue, but that support cannot always be counted on.

2. *Staffing and resource constraints limit the ability of management agencies to gain knowledge about the habitats and species they are charged with protecting.*

TPWD staff say that their agency does not have adequate resources to monitor fish and wildlife populations effectively, especially non-game species. They say that monitoring of habitats is even less frequent, aside from rare, short-duration studies such as those being done for the Galveston Bay National Estuary Program. EPA staff agree with this assessment of existing monitoring capabilities, saying that much more extensive monitoring of living resources and habitats is needed. They point out a particular need for improved monitoring of sediment quality.

One specific example that was mentioned involves the state Toxic Substances Coordinating Committee, which is chaired by the Deputy Commissioner of the Texas Department of Health and includes representatives of the Railroad Commission of Texas, the General Land Office, the Parks and Wildlife Department, the Texas Water Commission, and the Texas Department of Agriculture. These involved agencies are hoping to coordinate fish sampling activities to check for the presence of toxics, but TDH's request for $1.3 million was cut by the Legislative Budget Board. Agency officials say that statutes exist calling for chemical monitoring and research in Texas habitats, but state agencies are not receiving the necessary funding to carry out the task.

Agency staff note that it is difficult to visualize the "big picture" habitat issues when they are so busy dealing with day-to-day "brushfires." Their overriding concern is that habitat management agencies are still reacting rather than planning effectively for habitat protection. Some agency personnel also expressed concern that so many competing environmental initiatives are being launched simultaneously. The staff find it difficult to keep up with so many studies and special projects, and they

question whether the various initiatives are being coordinated in any way and are making their goals and intentions clear. This leads some to call for better "networking" among resource agency staff and between agencies at different levels of government. They say that resource agencies need to have a better understanding of who the players are in the various state and federal regulatory processes and how to maximize their own influence.

Finally, resource agencies again are looking to local governments to accept the important assignment of pinpointing valuable habitat areas within their own communities. They also urge cities and counties to improve local public education efforts regarding habitat values and general environmental concerns.