

Rare Visitors

Sea Turtles, including green sea turtles, hawksbill sea turtles, Kemp's Ridleys, leatherbacks and loggerhead sea turtles are rare visitors to the Texas coast, and occasional sightings have occurred in Galveston Bay. Historically, sea turtles were exploited commercially for eggs, meat and tortoise shell products in Texas and along the Gulf coast. At one time a large commercial turtle fishery and processing industry existed in Galveston Bay. Over-utilization, including harvesting of turtle eggs, along with destruction of nesting habitat, contributed to the decline of these species.

In November, 1995, a rare West Indian Manatee (*Trichechus manatus*) made news in the Houston area by spending time far inland in Buffalo Bayou. This was one of several occurrences of manatees, slow, massive marine mammals, in the Galveston Bay region that year. Other sightings occurred in West Bay and San Luis Pass, as well as elsewhere on the Texas coast.

These docile and completely defenseless mammals consume 10-15% of their body weight daily in the form of aquatic plants. With so little underwater vegetation in the Galveston Bay system, it is easy to see why these animals are so rare here. Historically, their range may have included Texas, but they now live mainly in Florida and the Yucatan Peninsula of Mexico.

Manatees were once hunted for meat, hides and bones. Current threats include loss of habitat and collisions with boats, entanglement in fishing nets, and crushing or

drowning in flood gates. Manatees are protected by the Marine Mammal Protection Act (like dolphins), and are not to be approached or disturbed in any way.

Whooping cranes (*Grus americana*) are one of the most endangered animals in North America, and winter in the marshes and tidal flats at the Aransas National Wildlife Refuge near Rockport. However, the Galveston Bay region is in their migratory pathway. At one time these huge birds (nearly 5 feet tall) wintered along the entire Texas coast, including the Galveston Bay region. Destruction of habitat, shooting, collisions with power lines and fences, and general disturbance by humans contributed to their decline. They are monitored very carefully by U.S. and Canadian wildlife officials. While their numbers seem to be increasing slowly, the population will most likely be limited by their need for large areas of marsh habitat--itself at risk on the Texas coast.

The Houston toad (*Bufo houstonensis*) is a small toad extremely similar in appearance to the American toad, which is very common. Much of this amphibian's habitat has been developed or paved over as the city of Houston expanded. The species historically occurred in Harris County, but is now located mainly west and northwest of the Galveston Bay system. It is unlikely that this toad will return in large numbers to the immediate Galveston Bay region.

Ecosystem Management

While pollution, over-hunting and competition with or predation by

exotic species are certainly causes of species endangerment, habitat loss is the constant theme for all of the threatened species in Galveston Bay.

When scientists speak of the loss of biodiversity, they refer to the exceptionally large numbers of species forced to the brink of extinction due to human activities. The loss of even one *keystone species* (a single species of critical importance to an ecosystem) can cause an entire ecosystem to collapse, and slight changes can have major effects on the entire system.

Ensuring suitable habitat holds the greatest hope for survival of many threatened plants and animals. Sustainable development, pollution prevention and public-private partnerships are other ways to preserve endangered species, and to prevent more species from declining. By maintaining biodiversity, humans as well as wildlife will benefit in the long run.

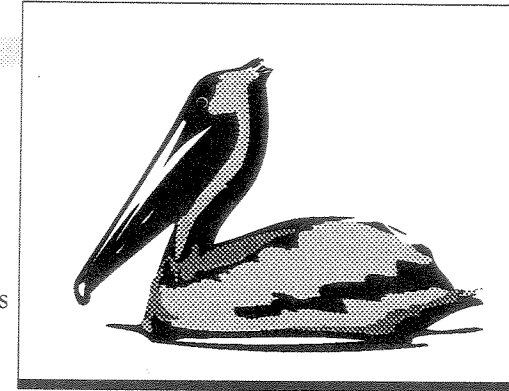
How You Can Help

Public awareness is the first step toward protecting endangered species and the ecosystems on which they depend. You can help by recycling, buying recycled products, and taking care not to litter.

Fishing line, latex balloons, plastic bags and 6-pack rings entangle and kill wildlife. Lead sinkers and lead shot poison fish and birds. Dispose of these items properly, or look for alternatives to use in their place. Working together to make a few lifestyle changes, we can make Galveston Bay a better habitat for all the species that live here--endangered or not!

Threatened and Endangered Species of Galveston Bay

Managing for the Future



When Congress passed the Endangered Species Act [16 U.S.C. 1531 et seq.] in 1973, it set clear public policy for actions to prevent the destruction of nature's diversity. Congress envisioned a network of international, national, state and private organizations working with the federal government in providing a means to conserve "the ecosystems upon which threatened and endangered species depend."

The federal Endangered Species Act also encouraged state participation in the preservation of endangered species through grants and recovery programs. States (including Texas) also identify species threatened or endangered within the state and place them on a special state-wide list. Endangered species in Texas are inventoried and monitored through a variety of divisions of the Texas Parks & Wildlife Department (TP&WD), which is the state agency given authority to conserve resident wildlife determined to be threatened or endangered. The Texas Natural Heritage Program (of TP&WD) inventories and protects plant groupings or ecosystems of special concern, such as coastal oak mottes and coastal dunes, and assists in ecological inventories for proposed permits.

Why Save Endangered Species?

What makes these animals and plants so special that money and effort should be spent to conserve them? Many individual species are unique indicators of the health of their native *ecosystem* (a network of plant and animal communities and the associated environment). The speed with which some species are declining is a warning that the health of the environment humans live in is also declining. For example, the rapid loss of bald eagles and peregrine falcons warned of the effects of DDT, which impaired fertility and egg-hatching success. Without these species, scientists might not have known about the effects of contaminants until much more damage--including damage to humans--was done.

The Galveston Bay system is an ecosystem that has undergone much change and alteration by

humans, and as a result, a number of its resident species have become threatened or endangered. Only through balanced and carefully-planned ecosystem management can we ensure that this list of species does not grow longer.

Species Recovery

Just because an animal or plant is placed on the endangered species list doesn't mean the situation is hopeless. Recovering an endangered species requires actions that will stop the decline, then allow an increase in the population. This is usually a gradual and complicated process involving much study, planning and cooperation between public and private entities. This process, guided by a *Recovery Plan*, can include habitat protection, new research, special wildlife and habitat management techniques, and captive breeding for reintroduction into the wild.

When several species are declining in one ecosystem, the best approach is often to focus on restoring and protecting the habitat in order for the entire group to recover. By protecting an entire ecosystem, it may be possible to prevent the future decline of additional species in that area.

This fact sheet is one of a series produced through a cooperative agreement between the Galveston Bay Foundation and the U.S. Fish and Wildlife Service. The information in this series was developed by authors from the Galveston Bay Foundation, National Marine Fisheries Service, Sea Grant College Program, Texas Natural Resource Conservation Commission, Texas Parks and Wildlife Department, Texas Water Development Board and the U.S. Fish and Wildlife Service.

The Galveston Bay Foundation is a nonprofit organization whose mission is to preserve and enhance the Bay for its multiple uses through education, conservation, research and advocacy. The mission of the U.S. Fish and Wildlife Service is to conserve, protect and enhance the nation's fish and wildlife and their habitats for the continuing benefit of the American people.

For more information, contact the Galveston Bay Foundation at 17324-A Highway 3, Webster, Texas 77598, or call 713/332-3381.



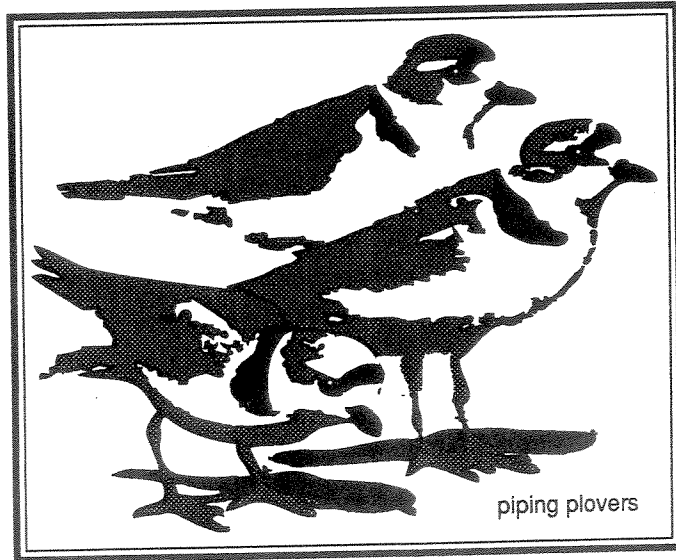
Endangered Species in Galveston Bay

Fifteen species of animals and plants in the Galveston Bay system are currently on the federal list of Threatened and Endangered Wildlife and Plants (often referred to as the Endangered Species List). An endangered species is one that is determined to be in danger of becoming extinct through all or a significant portion of its range. The major reasons for animal endangerment in the Galveston Bay area include habitat loss, toxic contamination, and disturbance by humans. Following is a brief description of several federally-listed species and the threats to these species. More detailed information is available from the U.S. Fish and Wildlife Service Clear Lake Ecological Services office (713-286-8282).

Brown pelicans (*Pelecanus occidentalis*) are arguably the most well-known of Galveston Bay's endangered species, and a wildlife management success story. These large water birds (up to 8 pounds) have a long, pouched, grayish bill and a wingspan of 7 feet. (White pelicans [*Pelecanus erythrorhynchos*] are not endangered, and except for a small resident population, spend only the winter in Galveston Bay.) "Brownies" completely disappeared from Galveston Bay after Hurricane Carla in 1961, but their decline started much earlier. DDT, once a popular pesticide, is considered the primary cause of the brown pelican's decline. Loss of habitat due to development and destruction of nest sites by humans also were major contributing factors in their decline.

Brown pelicans are now returning to Galveston Bay, and have been breeding successfully here since 1994. Reduction of contaminant levels (including the banning of DDT) and better protection of breeding areas should ensure a growing population of brown pelicans in the years to come. However, human disturbance of their nesting colonies, and the limited number of nesting sites continue to be a major concern. Brown pelicans must still be protected until their numbers are sufficient to be removed from the Endangered Species List.

Piping plovers (*Charadrius melodus*)--listed as threatened in



Texas--are small, stocky migratory shorebirds about 7 inches long, with a wingspan of about 15 inches. There are only about 4,000 piping plovers left, and nearly 1,900 winter on the Texas coast. In winter, piping plovers prefer beaches, sandflats, mudflats, **algal mats** (sheet-like accumulation of algae on mudflats) and dunes along the Gulf Coast and on **spoil** (dredged material) islands in the Bay and intracoastal waterways. They are most commonly seen at Bolivar Flats and San Luis Pass.

The main threats to piping plovers are development, dune stabilization, damming and channelization of rivers,

and wetland drainage. Increased urbanization has increased predation by skunks, foxes and domestic pets. Human disturbance also threatens these birds.

Attwater's greater prairie chicken (*Tympanuchus cupido attwateri*) depends on specific areas of coastal prairies for various activities such as courtship, feeding and nesting. Ideal habitat is a large prairie with short, mid, and tall grasses interspersed throughout, and rarely any tall vegetation or trees. As more coastal prairie is converted to agriculture or residential and commercial development, these birds have become very scarce. Encroachment of **Chinese tallow** (*Sapium sebiferum*, Roxb.) trees, which encourage conversion of prairie grasslands to woodlands, may be a factor in their decline. Fire ants, wild and **feral** (domesticated animals, such as pigs, cats or dogs, living in a wild state) mammals, birds of prey and competition from introduced, non-native species (such as pheasant) may also endanger these birds.

Male prairie chickens have an elaborate courtship display that makes them popular with bird watchers. They are presently in only four Texas counties, including the Galveston Bay Coastal Prairie Preserve in Galveston County. Efforts to preserve the species include captive breeding at Fossil Rim, Texas A&M University and the Houston Zoo, but successful large-scale re-introduction into the wild is likely to take several years. Prairie restoration efforts by several public and private partnerships are necessary to ensure adequate habitat for captive-raised birds.

There is one listed endangered plant species in Harris County, the

Texas prairie-dawn flower (*Hymenoxys texana*). A member of the sunflower family, the prairie-dawn occurs in the northern part of the Gulf coastal prairie, where it is found in poorly drained depressions and damp swales. It usually occurs in sparsely vegetated areas of fine, sandy soil. It flowers from March to early April. The prairie-dawn flower is declining largely due to habitat destruction for residential development and road construction.

Once Endangered...

American alligators (*Alligator mississippiensis*) have been reclassified in Texas as "threatened due to similarity of appearance," which means that because they look very much like endangered crocodiles, they may still be vulnerable to poaching. Alligators live in rivers, streams, marshes, swamps, estuaries, bayous and creeks with minimal water-flow. They currently occur in 90% of their historic range, and can be found in all of the counties immediately surrounding Galveston Bay.

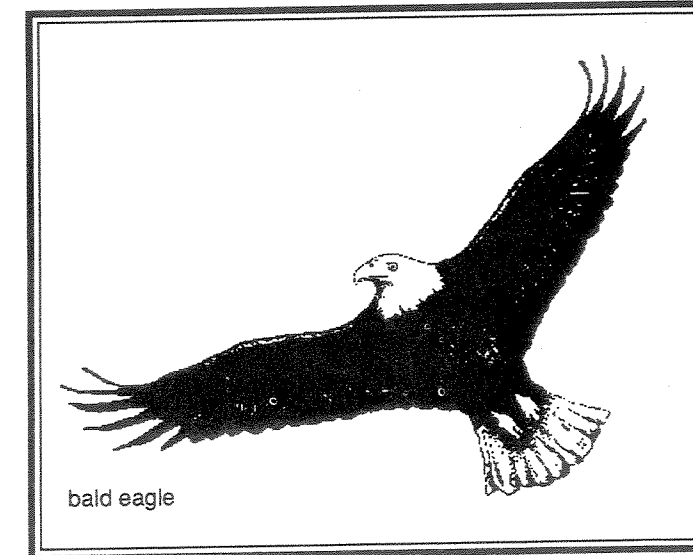
These large, lizard-like reptiles are the largest of all members of the crocodile family in North America, reaching up to 16 feet long and weighing 500 pounds. Alligators are thought to live 50 or 60 years. Like crocodiles, alligators are descended from reptiles that lived between 225 and 65 million years ago!

Once widely hunted for its skin, the American alligator came close to extinction earlier in this century. A conservation program set up in the 1950s banned hunting and saved the alligator from extinction. A limited harvest is now permitted during a short, carefully-controlled hunting

season every fall. Alligator farms are popular tourist attractions in some areas, and the animals they raise are harvested for meat and hide products.

Bald eagles (*Haliaeetus leucocephalus*) are large, hawk-like birds with a 6-7 foot wingspan. They were down-listed from endangered to threatened in 1995. In Texas, their preferred nesting habitat is along river systems or near a large body of water. Their nests are often located where forest, marsh and open water meet. The Wallisville area of the Trinity River delta is one such nesting site.

Past threats to these magnificent birds include reproductive failure



caused by pesticides, loss of habitat, and unrestricted killing by humans. Habitat loss, human disturbance and lead poisoning are continued threats. Nevertheless, nesting populations in Texas are slowly increasing, especially along the Gulf coast. Bald eagles are known to nest in Harris, Brazoria, and Chambers Counties around Galveston Bay. Wintering bald eagles arrive in Texas in October and begin returning north in February and March.

Arctic peregrine falcons (*Falco peregrinus tundrius*) have been downlisted from endangered to "threatened due to similarity of appearance" with the endangered

American peregrine falcon (*Falco peregrinus anatum*), which nests in West Texas. Arctic peregrines, known for their ability to reach speeds of 200 mph or more while diving at prey, are smaller than the American peregrine. A small population winters on the Texas coast, and can be seen in large concentrations during October and April migrations.

Like many species of birds, the chief reason for their decline was reproductive failure due to pesticides, but the population is increasing as contaminant levels are reduced. De-listing the American peregrine falcon has been proposed. If finalized, it would remove the "similarity of appearance" provision for the Arctic peregrine.

Least terns (*Sterna antillarum*) are small birds, about 21 cm long, with a wingspan of about 51 cm. They are known for preferring nesting sites on salt flats, broad sandbars and barren shores. They also frequently nest on dredge islands, gravel parking lots and in sandpits. The least terns in the immediate Galveston Bay area and along Gulf beaches (anywhere within 50 miles of the Gulf) are not on the federal endangered species list. **Interior least terns**, or those that stay more than 50 miles inland, are listed as endangered. Nevertheless, all least tern nesting and roosting areas, including those on Bay and Gulf beaches, should not be disturbed.

Threats to least terns include destruction of nesting areas by reservoirs and channelization projects, recreational use of their nesting areas by humans, including driving on beaches, water pollution and predation.