



The Gulf Breeze

The official newspaper of
Padre Island National Seashore
Fall 2007



The park protects the longest section of undeveloped barrier island in the world, preserving rare coastal prairie; a complex, dynamic dune system; and the Laguna Madre, one of the few hypersaline lagoon environments left in the world.

Greetings from the Superintendent

WELCOME TO PADRE ISLAND NATIONAL SEASHORE, THE longest remaining undeveloped stretch of barrier island in the world. Our mission is to save and preserve this great park for purposes of public recreation, benefit, and inspiration. The Padre Island National Seashore team pledges to give a 100% effort in carrying out this mission and we hope that you have an outstanding experience as you explore and enjoy this national treasure. While you are here, take some time to observe the surrounding areas. Whether you are enjoying the beach, launching your boat or windsurfing at Bird Island Basin, walking or simply driving along Park Road 22, there is always something to see.

This is a new and exciting time for the seashore. First, we have once again achieved a record year for endangered Kemp's ridley sea turtle nests found in the park. Secondly, a proposal to help restore the Kemp's ridley sea turtle at Padre Island National Seashore was one of the nearly \$370 million of proposals certified as eligible by the National Park Service for Centennial Challenge matching funds. This program, if approved by Congress and signed into law by the president, will combine appropriated funds with matching donations from our generous partners. Additionally, The Western Hemisphere Shorebird Reserve Network (WHSRN) Hemispheric Council designated the national seashore as a member of the bi-national Laguna Madre Site of International Importance to shorebirds. The national seashore is the first National Park Service unit to join WHSRN. The decision was based on the tremendous number of shorebirds using the site and its ecological significance for the integrity of the Laguna Madre system. Lastly, we have recently welcomed a new facility manager and chief ranger to our National Park Service family.

Please remember: the National Park Service, visitors, and neighbors are all stewards of this special place and we ask that you help protect and care for Padre Island National Seashore so that it may be enjoyed for generations to come. Whether you are touring the country or are from the local community, we hope that you enjoy your visit and plan to return. Be safe, and we look forward to seeing you again.

Sincerely,

Joe Escoto, Superintendent

Padre Island NS Designated as Site of International Importance for Birds

Shawn McLane, Biological Technician

THE WESTERN HEMISPHERE SHOREBIRD RESERVE NETWORK (WHSRN) Hemispheric Council has designated Padre Island National Seashore (PAIS) as a new member of the bi-national Laguna Madre Site of International Importance to shorebirds for 2007.

WHSRN, now a worldwide organization, has been partnering with the Manomet Center for Conservation Sciences in Portland, Maine; it encompasses 66 sites in 9 countries. PAIS is the first National Park Service unit in the United States to join WHSRN. The bi-national Laguna Madre Site also includes Laguna Atascosa National Wildlife Refuge, which is managed by the U.S. Fish and Wildlife Service, portions of South Padre Island managed by The Nature Conservancy, and portions of the Laguna Madre de Tamaulipas in Mexico, managed by Pro Natura.

The WHSRN council's decision was primarily based on the incredible number of shorebirds using the PAIS site, its ecological significance for the integrity of the Laguna Madre system, and agreement by PAIS's management officials to make shorebird conservation a priority. Padre Island National Seashore is proud to become a part of WHSRN, and is optimistic that its designation will be one of many for the National Park Service.

To become a WHSRN Site of International Importance, a site must contain more than 100,000 shorebirds annually, or at least 10% of a shorebird population. Among the extraordinary shorebird counts that led to the PAIS designation were 588 piping plovers (*Charadrius melodus*), representing roughly 10% of the world's population, and 373,000 western sandpipers (*Calidris mauri*), seen just outside the park's boundary.

A formal WHSRN designation ceremony took place at Padre Island National Seashore on October 12, 2007, at 10:30 a.m. Additional information about the Western Hemisphere Shorebird Reserve Network can be found at <http://www.whsrn.org>.

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Need-to-know info

IN CASE OF EMERGENCY,

DIAL 911

Park rangers are available during normal working hours to provide assistance.

Lost-and-found items may be reported at the visitor center.



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The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

Interpretive Programs

Program	Time
Beach Walk	11:00 a.m. (Daily)
Deck Talk	1:00 p.m. (Daily)
Evening Program	7:00 p.m. (Seasonal)
Coffee with a Ranger	9:00 a.m. (Seasonal)
Star Program	7:30 p.m. (Seasonal)
Junior Ranger	Self-paced

For more information and the latest program offerings, please contact the Malaquite Visitor Center at (361) 949-8068, or visit the park's website, www.nps.gov/pais.

Hours

Padre Island National Seashore is open 24 hours a day, 365 days a year. The Malaquite Visitor Center is open daily from 8:30 a.m. to 4:30 p.m. during the winter. Summer hours are from 9:00 a.m. until 5:00 p.m. The Malaquite Visitor Center is closed on Christmas Day.

Location

The physical address is 20301 Park Road 22. From Interstate Highway 37, turn onto Highway 358. The highway name changes from 358 to South Padre Island Drive, then crosses over the Laguna Madre on the JFK Causeway and becomes Park Road 22. At the end of Park Road 22 is the national seashore's entrance station. Traveling through the park takes one to the Malaquite Visitor Center. Approximately one half-mile farther down the road the pavement ends and beach access begins. The total driving distance from I-37 to the beach is approximately 37 miles.

Educational and Interpretive Programs

Deck Talks and Beach Walks are held every day. Deck Talks last 30 minutes, and are an in-depth discussion of marine organisms and beach debris, including shells, sea beans, and human-made items that are found along the shoreline. Beach Walks last 45 minutes, and are guided walks along the beach with a ranger. Discussions may include the natural and cultural history of the island as well as shells, birds, island ecology, flotsam, and plants, while touching upon environmental issues of importance to the park. **Evening Programs** may be offered at the Malaquite Beach Developed Campground in summer and winter. Evening programs normally last 45 minutes and topics may include wildlife, ecology, history, as well as astronomical topics such as meteor showers, comets, and constellations. **Bird-watching walks** may be offered at the Malaquite Beach Visitor Center during spring migration. Padre Island National Seashore also offers environmental education programs for school groups of all ages. These professionally presented programs teach children about topics that may include habitats and migration while providing direct contact with nature. Contact the park's environmental education specialist at 361-949-8068 for more detailed information and to make a reservation for your group.

Available Facilities

The Malaquite Visitor Center has an information desk, small museum, bookstore, concession stand, observation decks, restrooms, and cold showers (open 24 hours). The visitor center is fully wheelchair-accessible, with ramps to the

main deck and an elevator to the main observation deck. Beach wheelchairs are available for day use. Please contact the visitor center for more detailed information.

Camping

There is a 14-consecutive-day limit for camping. After 14 days, campers must leave the park for 48 hours and then return for a maximum of 56 days in a calendar year. Primitive camping requires a free backcountry permit, available at the visitor center.

Malaquite Campground (Open All Year)

Semi-primitive, providing only toilets, cold-rinse showers, picnic tables, and 48 designated sites (6 sites are for tent camping only, 26 are for tent or RV camping, and 16 are for RVs only). An \$8 fee is required for both day and evening use; \$4 with a Senior or Access passport. There are no hook-ups. There is a gray-water dump station and potable-water filling station near the campground entrance. Quiet hours are from 10 p.m. until 6 a.m. The area is patrolled by rangers. Camping is accommodated on a first-come, first-served basis; reservations are not accepted. The campground is rarely full, except during February, March, and April. No camping permit is needed for Malaquite Campground. Payment may be deposited in the Iron Ranger.

North Beach (Open All Year)

Primitive; no charge. A camping permit is required; available from the Malaquite Visitor Center. Open to RV and tent camping. No reservations are needed. There are no facilities or designated sites. Camping is permitted from the dunes to the water's edge (about a 100-ft. distance) and is open to two-wheel drive vehicles. However, beach conditions may vary with weather, and campers should always use caution to avoid becoming stuck in unexpectedly deep sand.

South Beach (Open All Year)

Primitive; no charge. A camping permit is required; available from the information desk at the Malaquite Visitor Center. Open to RV and tent camping. No reservations are needed; space is usually available. Camping is permitted from the dunes to the water's edge (about a 100-ft. distance). There are no designated sites. The camping area extends from the end of Park Road 22 south 60 miles to the boundary of the park at the Mansfield Channel. There are no roads; all driving is on the beach. The first

five miles of South Beach are open to two-wheel-drive vehicles. The lower 55 miles are accessible to four-wheel drive vehicles.

The beginning of the four-wheel drive area is marked with the five mile marker sign. Please note that in Texas, beaches are considered highways and all vehicles must be street-legal and licensed. ATVs, UTVs, go-carts, and dune buggies are not allowed to be driven in the park.

Driving conditions on the beach may vary with the weather; sometimes, areas of soft sand may be found in the two-wheel drive area making it difficult to drive and easy to become stuck. Some areas within the four-wheel drive area have deep sand. Driving off the beach and into the dunes, grasslands, and mudflats is prohibited.

Yarborough Pass (Open All Year)

Primitive; no facilities, no charge. A camping permit is required, available from the Malaquite Visitor Center. Reservations are not needed. Located on the Laguna Madre 15.5 miles south of the visitor center. Access to the area is possible only through the four-wheel drive area of South Beach. To find the campground (not a developed campground), drive to the 15-mile marker, then backtrack approximately 100 yards and look for a notch in the dunes. Drive through the pass and follow the road approximately 2 miles to the campground. Be aware that the pass through the dunes is sometimes filled with exceptionally deep, soft sand, in which even four-wheel drive vehicles may become stuck. Do not drive on the mudflats surrounding the campground. Fines for damaging the mudflats are costly.

Bird Island Basin (Open All Year)

A camping permit is required, available at the Malaquite Visitor Center. No reservations are accepted for camping; space is usually available. Pit toilets are available. Bird Island Basin is suitable for both RV and tent camping. A day use fee of \$5.00 per day or \$10.00 per year is charged at the entrance station in addition to the park entrance fee of \$10.00 per day, or a \$20.00 annual fee. If you possess a Senior or Access pass, the fees are reduced by half. Bird Island Basin is located on the Laguna Madre approximately four miles from the visitor center. In addition to camping, Bird Island Basin has a windsurfing area ranked by *Windsurfing Magazine* as the best flat-water sailing site in the continental U.S. The Bird Island Basin boat launch ramp will soon be day use only. Hours of operation for the boat ramp will be from 5:00 a.m. until 11:00 p.m.

Threatened Green Sea Turtles Increasingly Seen in Park Waters

Donna J. Shaver, Ph.D., Chief, Division of Sea Turtle Science and Recovery

THE GREEN SEA TURTLE, (*Chelonia mydas*), IS A THREATENED SPECIES, protected in Texas by both federal and state laws. Padre Island National Seashore provides important habitat for this beautiful, gentle turtle, which was once commercially harvested in Texas. Although green turtles have been documented in park waters during every month of the year, they are most often seen during warmer months, swimming in the surf and near the Mansfield Channel jetties.

Green turtles are not green in color, but derive their name from the color of their internal fat. Hatchlings are black on top and white on the underside, and measure from 1.5 to 2.5 inches long. As they grow, their carapace (top shell) and top of their flippers turn brown with radiating mottled or wavy dark markings or large dark brown blotches. The green turtle is one of the largest sea turtle species, with adults reaching about 50 inches and weighing about 450 pounds.

Green turtle population decimated in Texas, but rebounding

Green turtles were commercially harvested in Texas during the 1800s. However, by 1900, their numbers had declined to the point that the turtle-processing industry collapsed. Both overfishing and severe winter freezes are thought to have been responsible for the population's decline. Nearly 30 years ago, the U.S. Fish and Wildlife Service listed the green turtle as a threatened species in Texas. Because green turtles require 30–50 years to mature, it will take many years for the population to rebuild, but their numbers are increasing in Texas, Florida, and Mexico.

Texas waters, particularly in South Texas, provide important habitat for green turtles. Padre Island National Seashore has conducted extensive research on green turtles in Texas, including nests and individuals found stranded in Texas, netted at the Mansfield Channel, and satellite-tracked after capture at the Mansfield Channel. Most green turtles in Texas waters are juveniles. Although their numbers are increasing, they are still impacted by several natural and human-related mortality factors.

Padre Island National Seashore is one of only two locations on the Texas coast where green turtle nests have been documented. During recent years, from 1–5 green turtle nests have been confirmed annually, and nesting has been stable. However, some nests likely go undetected because sea turtle nesting patrols end in mid-July, and green turtles may nest through mid-September. Clearly, the number of juveniles found in park waters is too large for all of them to have originated from these relatively few nests. The vast majority are likely born elsewhere, perhaps on the Gulf coast of Mexico, where nesting is increasing.

Green turtles enter bays and channels

Those of you who have fished at the Mansfield Channel or other South Texas jetties may have seen juvenile green turtles briefly surface to take a breath of air as they feed on the algae growing on the jetty rocks. Green turtles feed primarily on sea grasses and algae, which are abundant in South Texas bays and jetty areas, making these important areas for juvenile green turtles to feed and grow.

Unfortunately, these same bay areas can become “death traps.” Every few years, water and air temperatures drop so rapidly and drastically that green turtles in South Texas bays become vulnerable to a condition called “cold stunning.” During cold-stunning, the turtles become immobilized and float to the surface, some eventually washing ashore. If they are not found quickly and taken to a rehabilitation facility, they usually die from exposure to cold temperatures, dehydration, or predation.

In January 2007, the Sea Turtle Stranding and Salvage

Network documented the largest cold stunning event recorded on the Texas coast since the network was established in 1980. Over 150 green turtles were located, most south of the park in the Lower Laguna Madre. Thankfully, due to the help of many people and agencies, a large portion of the affected green turtles were located alive, taken and cared for at rehabilitation facilities, and released.

Juveniles also wash ashore with seaweed

Juveniles also occur in near-shore waters of the Gulf of Mexico, and are often spotted swimming there. Many of these young turtles are moving toward bay and jetty habitats after their first few years of life floating in the ocean in association with lines of debris and mats of Sargassum seaweed. Large amounts of seaweed sometimes wash ashore on park beaches, and green turtles that inhabit the seaweed also wash ashore. As with the cold stunned turtles, these turtles can perish if not found quickly. If promptly brought to a rehabilitation facility, however, there is a good chance of survival.

You can help this threatened species

Cold stunning and washing ashore with Sargassum seaweed are two of the most significant sources of mortality for green turtles in South Texas, but you can help to reduce the number that die from these and other causes. If you find a green turtle floating or washed ashore, please report it immediately to a passing ranger or by phoning 361-949-8173, ext. 226. Please be aware that many stranded turtles that are still alive will be motionless and appear to be dead. Your help to look for and report these turtles, live or dead, would be greatly appreciated.

With the increase in numbers of juvenile green turtles, there is a good chance of observing them in the wild at the Mansfield Channel and sometimes in the surf during the warmer months of the year. There are not many places in the U.S. where this can be done. Unfortunately, this increase in numbers also provides more opportunities for potentially harmful and illegal interactions with these turtles. Please do not intentionally capture or remove a turtle from this area. It is illegal to intentionally harass, harm, or kill a threatened or endangered sea turtle. Although juvenile green turtles are primarily herbivorous, they will occasionally eat fish bait and sometimes are inadvertently hooked or entangled as they swim by fishermen. These are not intentional acts by the fishermen and, as such, are not illegal if the turtles are released unharmed or reported to the Sea Turtle Stranding and Salvage Network for rehabilitation. However, the best thing to do if you are fishing in an area where you observe these turtles swimming is to just enjoy their beauty and not cast there.



Female Green Turtle
©Sheryl Barnes

Oil and Natural Gas Operations

Shawn McLane, Biological Technician

EVERY YEAR, PADRE ISLAND NATIONAL SEASHORE RECEIVES MANY inquiries from concerned park visitors on the topic of oil and gas operations within the park. At the time of purchase, only the surface land—not the subsurface mineral rights—were available for sale to the federal government. When Congress established Padre Island National Seashore (PAIS) on September 28, 1962, provisions were included that allowed the original owners of the underlying minerals in the park to be permitted access for development, subject to resource-protection requirements and adherence to federal and state regulations and guidelines. This is why privately contracted companies are able to conduct energy exploration within the park.



Typical drilling operation
©NPS Photo

As of September 2007, six private companies had 13 active wells and 5 pipelines existing within the park's boundaries. Many new oil and gas operations will be taking place in some regions of the park, and will be visible to the public. The following are some of the companies and locations of these new operations:

1. BNP Petroleum has requested a permit for three new wells along the Pan Am Road (located at the 6.8-mile marker). BNP has

been approved for a road that will travel through the dunes at the 12.5 mile marker for two new wells named "Lemon" and "Lemon Seed."

2. Kindee Oil and Gas Corporation plans to install two more wells on what is referred to as the Wilson Pad which is already constructed and located east of the entrance station near the park entrance. Kindee will also be erecting a new well at Yarborough Pass (15-mile marker) called "Dunn-Murdock Deep #1."

3. The "Blue Heron" prospect will be a new energy prospect of up to three wells for Boss Corporation in the coming year. These wells will be located ¼-mile west of Park Road 22, just north of Bird Island Basin Road. The three wells would be drilled from a single pad area.

Padre Island National Seashore is legislatively required to allow owners access to their minerals, but in a safe and environmentally sustainable manner. Each company must go through a permitting process. Environmental assessments are written for each operation, and mitigation measures that must be met by each individual company. Striking a balance between oil and gas operations and protecting the park's natural and cultural resources and visitor experience is difficult at times, but PAIS prides itself on being able to maintain this balance.

Park staff and managers frequently conduct site inspections before, during, and after drilling is complete. PAIS wants to make certain that all private companies working within the park abide by the rules, regulations, and mitigation measures set forth by their permit. We constantly review and update established mitigation measures, assess past practices, relate research findings, incorporate public comment, and coordinate with partners to ensure the preservation and protection of park resources. By implementing these actions, PAIS helps ensure an enjoyable visitor experience while protecting the park's wetlands, wildlife, threatened and endangered species, and historical resources.



BNP Dunn-Murdock well
©NPS Photo

The Migration of the Monarch

Ardrianna McLane, Park Ranger

THE FIRST COLD FRONT OF THE SEASON BRINGS WELCOME RELIEF AND cool breezes that signal the arrival of fall and winter. Heady with the scent of pine forests brought by the first northerly cold front, it is easy to imagine the dappled shade and cool quiet of forests far to the north. In its wake, heralds of winter begin to appear. As daylight shortens and temperatures drop, several natural events begin to occur for both plants and animals. Fortified by warm summer rains, salt-tolerant shrubs and windblown wildflowers erupt in a riot of color, beckoning migrants to stop, re-fuel, and help pollinate the seeds for the coming year. Ducks, geese, and other species of migratory birds begin to move from the north to areas of more-abundant food and warmer temperatures. To survive, many insects may spend their winter as eggs or larvae, or as dormant and dehydrated adults. One special insect has a different survival strategy- the monarch butterfly. Padre Island National Seashore plays an important role in the survival of the monarch butterfly. Located on the Central Flyway, thousands of migrating monarchs funnel through South Texas each fall on their journey south to their wintering roosts in the mountains of Mexico. Before their trek can begin, though, monarch butterflies must first undergo some remarkable transformations.

Deposited by the mother monarch on the underside of a milkweed leaf, a voracious caterpillar emerges from a delicate, luminescent egg. Upon hatching, monarch caterpillars consume one milkweed leaf in four minutes. They eat their body weight in food each day. Caterpillars consume sticky, toxic milkweed until they crawl, fat and satiated, to a protective structure to begin their transformation. Wrapped tightly in a bejeweled chrysalis, caterpillars emerge as resplendent winged wonders.



Nectaring monarch butterfly
©Aubrieta V. Hope

Delicately winged and equipped with amazing adaptive characteristics, the monarch butterfly travels thousands of miles from its summer range, as far north as Canada, to its wintering range, in the mountains of Mexico, only to return again in the spring. Although many monarch butterflies travel across open land to rest and re-fuel, others ride seasonal winds over the Gulf of Mexico in the wake of powerful northerly cold fronts. Like confetti on a child's birthday cake, the dunes and grasslands vibrate with color as exhausted insects arrive to nectar, rest, and replenish for their final push to Mexico. They travel alone, in a smooth direct flight, rather than in the more erratic, fluttering pattern of feeding seen in the summer. At night, monarch butterflies roost or bivouac in trees along their migratory route. Scientists have noticed that butterflies tend to remain at a roost longer when the winds blow from the south. When winds blow from the north, butterflies tend to leave the roost. A strong tailwind can help them not only to conserve energy, but also to survive their arduous, 3,000-mile journey to the safety of the mountainous forests.

A place to rest, re-fuel and rejuvenate is crucial to the monarch butterfly. Loss of habitat due to community development, deforestation of wintering habitat, displacement of native nectaring plant species with non-natives, pesticide use in agriculture, and natural hazards all threaten the survival of this butterfly. Along the migration route, small backyard habitats comprised of nectaring and larval plants across North America create a welcoming oasis for exhausted insects to rest and re-fuel. Padre Island National Seashore provides the necessary pit stop along the way for traveling monarchs to survive their journey to the south.

Fragile, yet resilient, the monarch butterfly evokes a sense of wonder for the young and old in its struggle to survive and thrive.

Coyote, Relentless Keeper of the Ecosystem

Stephanie Myers, Park Ranger

DID YOU KNOW THAT PADRE ISLAND NATIONAL SEASHORE IS HOME TO A large land predator? A large population of coyotes (*Canis latrans*) exists throughout the park. Coyotes play a unique role in the ecological communities of Padre Island National Seashore by helping to balance the consumption and production of resources. As predators, they help to maintain the balance between animals, such as deer and rabbits, and the plants they consume. Coyotes are now found in just about every habitat, from deserts to tundra, wilderness to suburbia, sea-level to mountaintop.

Coyotes are both intelligent and adaptable, allowing them to secure their niche in the ecosystem. The adaptive nature of coyotes stems from their opportunistic feeding habits and reproductive strategies. Coyotes are generalists, eating a variety of foods. At Padre Island National Seashore, coyotes eat rodents, jackrabbits, bird eggs, fish, and crabs. When these are not readily available they scavenge for trash or carrion.

When coyote populations are stressed by trapping and poisoning, they reproduce at earlier ages and have larger litters. In healthy populations, coyotes usually reproduce at two years of age, having one litter of 5-7 pups per year. Stressed populations also tend to have more solitary coyotes or form loose associations to mate and hunt. Healthy populations form packs consisting of an alpha female, alpha male, and pups. Throughout time, coyotes have been both admired and demonized. The resourcefulness of coyotes earned them recognition as one of the most diverse and powerful creatures in Native American folklore and legends. To the agricultural industry, they are pests that require control by trapping and poisoning.

In size, coyotes are comparable to a medium-sized dog (30- 45 pounds), but with thinner legs and smaller feet. A coyote's gait is also different; because their front feet are larger than their rear feet, coyotes tend to travel in a linear fashion. Their howls and yips are heard in the early morning hours or in the night when they are most active.

Coyotes are an important part of the natural system at Padre Island National Seashore, where their population is healthy. With no natural predators on the island, the biggest threat to coyotes comes in the form of interactions with humans. Feeding coyotes is not only unhealthy for them, but can also be dangerous to you, as these smart animals can quickly become habituated to human foods. Animals that are used to seeking food from human sources can become aggressive toward humans, and often have to be put down as a result. Coyotes and domestic pets are also a bad combination; they can exchange diseases and come into physical conflict. You can help protect both the Padre Island National Seashore coyote population and yourself by following these simple rules:



Coyote
©Matt Knott

1. Do not feed coyotes at any time.
2. Pick up and securely dispose of your trash. Trash attracts coyotes to public areas. When camping, secure food—including pet food—in a cooler or other tightly closed container. Place the container in your vehicle or camper.
3. Keep your pets on a leash at all times within the park. Coyotes have been known to prey upon cats and dogs.

Ghost Crabs, the Night Hunters

William Botts, Park Ranger

PADRE ISLAND IS INHABITED BY THOUSANDS OF GHOSTS - GHOST CRABS, that is. The ghost crab (*Ocypode spp.*) is familiar to many visitors who have walked the beaches of the eastern or Gulf coasts of the United States. No ghosts from a Hollywood horror movie have more talents than these remarkable animals. It takes a special set of skills for a normally water-dwelling crab to subsist on land. Why they chose to leave the water and move ashore remains a mystery, but it certainly poses some significant survival challenges.

To begin with, consider that they are true crabs, and consequently have gills for breathing—not lungs, like most land dwellers. This means they can't breathe air efficiently. To overcome this obstacle they possess a tight-fitting sac that stores moisture around the gills, thus keeping the gills wet so that they can extract the oxygen they need to live. A visit to the sea's edge each night suffices to moisten the gills so the crabs can survive on land for hours as they carry out their daily activities. Moisture is also available deep in their burrows from the water-saturated sand.



Ghost Crab
©Tracy Parris

Like the ghosts they are named for, ghost crabs are most active after nightfall. This helps out in two ways. First, it's cooler at night, which helps preserve the precious water that keeps the gills functioning. Second, it's harder for predators to locate ghost crabs in the dark. A visitor walking the beach at night with a flashlight will typically spot dozens of crabs darting about, attempting to locate a meal. As far as the crabs are concerned, just about everything qualifies as food! They have been documented eating human food scraps, dead jellyfish, rotting seaweed, clams, flying insects, and even sea turtle eggs and hatchlings. If you capture a small ghost crab, you'll notice another reason they are successful: their claws. They have one large claw for defense and hunting, and one small claw for feeding. Their musculature allows for fast movement when hunting and provides a mechanical advantage for feeding on a variety of hard-to-eat foods. They have small, grinding teeth to assist with digestion that are located not in their mouths, but in their stomach! The stomach also has fine, comb-like filters that help them sift out even the tiniest food particles that are ingested.

Another trait that helps ghost crabs survive on land is their well-camouflaged shell. This provides them with the ability to seemingly disappear when they stop moving. If hiding doesn't work, they simply retreat to the safety of their burrow, excavated down as deep as three feet into the beach. For extra safety, some ghost crabs dig an additional escape burrow out from the main chamber that stops a couple of inches below the beach surface. The last two or three inches can be quickly completed to provide a fast getaway if an enemy, such as a raccoon or badger, attempts to dig them out of the burrow.

Each burrow is occupied by one ghost crab, except during mating season. During courtship, males stroll the beach pausing outside the burrows of other crabs. The male attracts the female with acoustical signals produced by rapping the elbow of the claw against the sand at the mouth of the burrow. Each species of ghost crab around the world has a specific number of taps, and a distinct time interval between taps that distinguishes that species. Females can detect the vibrations up to a meter away through the use of sensory-response systems in the legs that also detect approaching predators. If another male joins the courtship process, it may result in highly ritualized sparring, which typically involves little actual combat. Once the female mates, she will develop and carry an egg mass beneath her bottom shell. When the eggs are ready for release, she returns to the sea she emerged from and releases thousands of eggs into the ocean. No one knows how many of the tiny larvae actually will survive the many perils at sea. Those that do will return to the water's edge to emerge as pea-sized crabs and rejoin their species on the beach.

Why do you think the crabs choose to live most of their life on the beach? We may never know, but it is certainly apparent from their abundance that they have succeeded in the transition from sea to land.

Birding at Padre

Ardrianna McLane, Park Ranger

PADRE ISLAND NATIONAL SEASHORE IS A GLOBALLY IMPORTANT BIRDING Area, a member of the Western Hemisphere Shorebird Reserve Network, and a great location to see many rare and endangered species of birds. Padre Island boasts several special habitats: rare coastal prairie, the hypersaline Laguna Madre, miles of Gulf coast beach, oak motts, and freshwater ponds and marshes. These habitats welcome many species of shorebirds, raptors, wading birds, warblers, and waterfowl throughout the year.



Sanderling
©Tracy Parris

The best time to birdwatch at Padre Island National Seashore is during fall, winter, and spring, when thousands of birds either pass through during migration or spend the winter here. Under the right weather conditions during peak migration in the fall and spring, thousands of migrating birds will literally “fall out” of the sky, exhausted from their long flight and ready to rest and re-fuel. During the summer months, most of the birds found here will be common shore and marsh birds, some raptors, and song birds. This area is the northern limit for many species commonly

found only in Mexico and South Texas, such as the crested caracara, white-tailed hawk, and mottled duck. Occasionally, birds whose normal range is much farther south find their way here, and the area can offer many unexpected and exciting species.

Throughout the year at the national seashore, you may find species along the Gulf beach that include the willet, sanderling, black skimmer, great blue heron, cormorant, cattle egret, ruddy turnstone, and five species of terns. Two endangered species that visit the park are the piping plover and the least tern. During the winter, another four species of gulls appear, along with a variety of other birds. The best way to view these is to drive along the shore and approach slowly, without leaving your vehicle. Another excellent area for birdwatching is Bird Island Basin. Although this area may be dry during the summer or during periods of extended drought, when it's wet, a variety of marsh birds may be seen here, including black-necked stilts, roseate spoonbills, great egrets, and ibis. Bird Island Basin is also an excellent area to see the American white pelican, many different herons and egrets, and warblers and song birds in the willows. For a glimpse of passing migrants or if you are looking for a special passerine, check out the stand of willows located near the restrooms at the Bird Island Basin boat ramp. This area offers shelter, food, and close proximity to the Laguna Madre for migrating birds or winter residents.

Fall brings sandhill cranes, which will usually be seen slowly walking through the grasslands prowling for unsuspecting mice, snakes, or simply plant tubers and worms. Driving along Park Road 22 in the park brings many rewards. During winter, many hawks may be seen sitting on telephone poles near the roads, perched in tree tops, on fence posts, and sand dunes while watching for game. The white-tailed hawk is one of the most commonly spotted raptors, along with crested caracaras, peregrine falcons, northern harriers, and the occasional osprey.

Whether you are a first time birding enthusiast, or a life time bird lover, there are many species to look for and enjoy at any time of year. To help you with your birding needs, binoculars are available on loan from the Malaquite Visitor Center. Also, our bookstore offers some excellent bird guides and information to help you get started. Remember to please refrain from approaching birds too closely and never feed the wildlife.



Long-billed curlew
©Tracy Parris

Global Warming and Climate Change in Our National Parks

Shawn McLane, Biological Technician

IN RECENT YEARS, THERE HAS BEEN GROWING CONCERN ABOUT THE possible impact of global warming on parks and the potential for climate change. Climate change could seriously impact the National Park Service's ability to protect species and their habitats. Numerous scientific perspectives on global warming abound, and a growing consensus is that the earth's climate is in fact getting warmer, and will continue to warm in the coming years and decades, as a direct result of human activities. But the question still remains: How will global warming ultimately shape our national parks for our future generations?

In national parks all across the country, climate change is already being felt. Recently, many parks have been experiencing degrading haze-pollution issues, increasing temperatures, and minimal precipitation. With low precipitation levels, serious risks such as die-off and disease are already impacting flora and fauna species. Unclean air not only decreases the natural beauty of a park, but can also increase the temperature of an area by holding heat at the earth's surface. Studies in western parks have shown that with these current increasing temperatures, there has been an 8% increase in wildland fires in the last 14 years.

Alternatively, in some parks, flooding, strong hurricanes, and tremendous rain have been the norm. Parks such as Cape Hatteras, Everglades, Gulf Islands, and Padre Island could all experience land loss if water levels increase. Protecting flora and fauna species from extinction in coastal parks could become very cumbersome if water levels continue to rise. These extreme weather events have caused some parks to close their doors for weeks at a time as a result of storm impacts.

Countless species of plant life and animals are particularly sensitive to climate change. Many species will decrease in number, go extinct, or adapt to the changing weather patterns. Non-native species of plants and animals are replacing native species in many park units as climate patterns change. National parks will likely become some of the most important sites for global warming research in the future.

America's national parks will need to be particularly adaptable to changing ecosystems in the future. Parks may have to manage their resources in conjunction with non-native and/or invasive species. In the past, parks have removed invasive plants and animals as best as possible. In the future, though, invasive species will begin appearing in areas that once harbored an ecosystem with only native creatures. Integrated pest management practices could be implemented to control or reduce invasive plant and animal species. These management practices will depend on the intensity of migration of these non-native species.

National parks across the country are currently doing their part for a cleaner tomorrow. To increase air quality, many parks have already begun to use cleaner alternative (i.e., electric and natural gas) modes of transportation for both employees and visitors. Recycling of plastic, aluminum, glass, and paper is now federally mandated for all National Park Service units. Interpretive walks and talks are tailored to educate the public about climate change and what they, the public, can do to help preserve our beautiful federal lands. Informing the public about the real-life scenario of global warming and what that means for future generations is a step in the right direction. We all can do our part by taking the time to reduce, reuse, and recycle. It is our grandchildren's future that we hold in our hands, and we all can do our part to help protect it.



Sea oats landscape
©Shawn McLane

Kid's Corner

Sea Monsters and Creatures of the Deep

There are many different stories about monsters living in the darkest depths of the ocean, but are there really sea monsters? In the ocean, many creatures have amazing characteristics that help them to survive but may make them seem scary to us. Check out these fascinating sea creatures to find out more about how they survive.

Giant Squid

AAAAAAAhhh!! Giant squid really do exist; they can grow up to 60 feet long. That's the length of two school buses! Although scientists keep searching, no one has found one alive and healthy. We only know they exist because the remains of several of these animals have washed ashore. Throughout history, many sailors have claimed that these creatures could pull ships to the bottom of the ocean. Don't worry though, no one has seen a healthy one come to the surface of the water.

Great Barracuda

The great barracuda is known for its razor-sharp teeth. Some divers even claim to have been chased by these fish. The truth is that a cooked barracuda is more dangerous than one that is still alive. Barracuda can carry a poison in their bodies called ciguatera that does not dissolve when cooked. So the real danger from a barracuda is eating a poisonous one. The poison can make people very ill.



Green moray eel
Courtesy: www.seasky.org

Green Moray Eel

Have you ever looked behind aquarium glass to see a green, snake-like animal showing you all of its teeth? The green moray eel may seem creepy as it opens and closes its mouth to force water over its gills. The moray eel is actually blue in color, but the yellow, slimy mucus covering its skin makes it appear green. Though they look intimidating and dangerous, they will only attack when necessary.

What Makes a Fish a Fish? A fish has a backbone (scientists call it vertebrae) fins, gills, and scales. Animals such as starfish and jellyfish are not actually fish, because they do not have backbones. Now scientists are calling them sea stars and jellies to help people help know that these amazing animals are not really fish.

Name That Fish

Read the clues below and rearrange the jumbled letters to spell out the names of fish found at Padre Island National Seashore.

1. I will eat almost anything, including algae, shrimp, fish bones, mud, and sand. I have venomous spines in my pectoral and dorsal fins. I also have cat-like whiskers.

T F I C A H S _ _ _ _ _

2. I live on the ocean floor and like to eat shrimp, small clams, and sand eels. I am flat, with both of my eyes on one side of my body.

D O F U L R E N _ _ _ _ _

3. My skin is like sandpaper and I use it to identify my prey. I have a strong mouth full of many teeth.

K H R S A _ _ _ _ _

4. During the summer months, I live in the warm waters of the Laguna Madre and dig up buried mollusks and worms to eat. I make a drumming sound with my air bladder.

K A L C B U R D M _ _ _ _ _

Ranger Val's Answers: 1. catfish; 2. flounder; 3. shark; 4. black drum

WESTERN
NATIONAL PARKS
ASSOCIATION

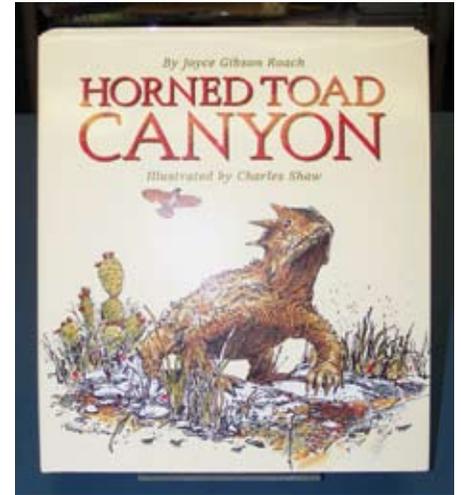
Ranger-Recommended Reading

Horned Toad Canyon

By Joyce Gibson Roach

Illustrated by Charles Shaw

Bold pen and ink drawings accented by soft southwestern watercolors enhance the reader's enjoyment while delving into this delightful tale of the inhabitants of Horned Toad Canyon. This book begs to be read aloud to both the young and old alike. Scientific facts and natural history information are carefully woven throughout the book by connecting the lives of the inhabitants of Horned Toad Canyon to the fun and engaging characters of Tuck, Shorty, Nip, and the gangly Harris Hawk, who acts as a lookout. Once you have joined the horned toads and their friends on their adventures in their quiet canyon, you can learn more about the plight of horned toads throughout their range as encroaching development threatens their survival.



Save the Bays; Buy this Bag!

According to recent data from the Environmental Protection Agency and other sources, the United States consumes over 380 billion plastic bags each year. Scientists suggest that Americans throw away nearly 100 billion plastic bags each year. Less than 1 percent of these bags are recycled; many end up in landfills or in the bay, where they endanger wildlife like sea turtles, fish, dolphins, and birds. Made of 100% cotton, this sturdy cloth bag emblazoned with the park's special logo is perfect for toting your books, groceries, or beach gear. Help the environment by reducing, reusing, and recycling with this cloth bag each time you shop!



20% Discount

for all teachers and homeschool educators. When you check out at the Malaquite Visitor Center Bookstore, mention that you are a teacher or a homeschool educator and get a 20% discount on all of your educational purchases!



Health and Safety Tips

Swimming

Use caution when swimming and never swim alone. Strong currents flowing parallel to the beach, tides flowing to and from the beach, and sudden drop-offs in the surf can be dangerous for swimmers and waders alike. If caught in a rip tide, do not panic. Swim parallel to the beach until you are free from the flow, then swim to shore. Do not attempt to swim to shore against the flow. You will not make it.

Hazardous materials

These periodically wash ashore and range from 55-gallon barrels containing unknown substances to used medical products. If you come upon hazardous materials, note the location and alert a park ranger.

Metal detectors

Possession or use of metal detectors is prohibited in the park. Items such as seashells and driftwood, washed in by the tide, may be collected as long as they are not used for commercial purposes. All other collecting is prohibited. Collection of live sea creatures is prohibited.

Pets

Pets must be on a leash and under physical restraint at all times. Pets are not permitted at the Malaquite Visitor Center area, including the designated swim beach in front of the visitor center from the southernmost shade pavillion to the north trail head access point. The three shade pavillions north of the trail head access point are pet friendly areas as long as your pet is leashed at all times. Pet waste is becoming a growing problem; clean up after your pets.

Gray water and sewage

Gray water and sewage must be disposed of only at the dump station at the Malaquite Beach campground.

Driving

Beaches are Texas public highways. Only street-legal and licensed vehicles may be driven in the park. ATVs, UTVs, go-carts, and dune buggies are not allowed to be driven in the park. Driving in dunes, grasslands, or mudflats is prohibited. Drive with caution and strictly observe posted speed limits. Pedestrians have the right-of-way at all times and do not always watch for approaching vehicles.

Portuguese Man-of-War

These dangerous creatures are found at the park throughout the year. These attractive, blue jelly-like organisms cause a painful sting, usually accompanied by redness and some swelling of the affected skin area. If stung, seek first aid. A very small percentage of those stung will experience an allergic reaction, which can cause difficulty breathing; numbness in the arms, legs, or elsewhere; severe pain and/or disorientation; or unconsciousness. Visitors experiencing these or other symptoms should notify a park ranger or call 911.

Sting Rays

These relatives of the shark can inflict a puncture wound in the lower leg that can be extremely painful. To prevent a sting ray injury, we recommend doing the "sting ray shuffle"; instead of walking, visitors should shuffle along, so instead of stepping on them, you actually nudge them, thereby causing them to swim away.

Rattlesnakes

Rattlesnakes live in the dunes, grasslands, and mudflats. Visitors should use extreme caution when walking in these areas.

Hunting

Hunting is not permitted in the park, except for the taking of waterfowl in the Laguna Madre in accordance with applicable state and federal regulations. The transportation of lawfully taken wildlife, including exotic species, through the park, is prohibited, except for waterfowl and fish.

Loaded firearms are strictly prohibited. A Concealed Handgun License issued under the authority of the State of Texas, or another state, is not valid at Padre Island National Seashore.



Jet skis, air boats, and kite surfing are prohibited.

IN CASE OF MEDICAL EMERGENCY

If you have a medical emergency during your visit, contact a park ranger immediately or go to the Malaquite Visitor Center. If an employee is not available, please dial 911. The closest hospital is Bay Area Medical Center, located at the corner of South Padre Island Drive and Rodd Field Road in Corpus Christi. This facility is 24 miles from the visitor center.