

DRIFTING SANDS

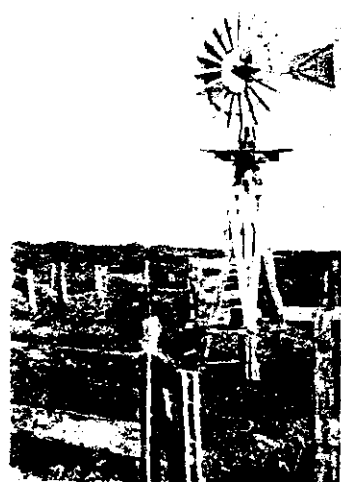
by **Bob Whistler**, Chief Naturalist, and **Marcia Stout**, Park Naturalist—Padre Island National Seashore, Corpus Christi, Tex.

The endless stretches of beach at Padre Island are reminders that wind is, indeed, a powerful force in nature. Conducted beach walks incorporate this theme while visitors use their imaginations to trace the grains of sand along their journey from inland sources, through river systems to their present location on the beach. There, they are swept toward land by the gulf's offshore currents until they are finally washed back to shore by tidal forces. Many grains amass in bare sand dunes known as "active dune fields" which actually migrate. As the wind sweeps over them, many of their sand grains are blown into the Laguna Madre, the shallow body of water separating the island and the mainland. This process, over a long time, will eventually fill in the shallow body of water and make the island contiguous with the mainland.

Sand transport is often experienced by feeling the thin coating of fine-grained sand which covers one's face after a short stay on the beach.

Other manifestations of wind energy are evident in man-made instruments such as the windmill. Early ranchers used windmills to provide water for the cattle on the island. One such windmill still exists at Padre Island.

The wind theme is incorporated into the evening campfire programs on the beach. The wind even "decides" the seating arrangement for the partic-



People who visit Padre Island see the wind at work in many ways.

Photo from Padre Island National Seashore.

ipants since the interpreters must face away from the wind so their voices can be carried with the wind rather than compete against it and the pounding surf.

The sun is another main character in this story since it warms the water and causes air to rise. These winds pull water along with them and create ocean currents, including the giant wheel-shaped current

most relevant to Padre Island. For centuries, wind has powered the sails of ships while their hulls are swept along, influenced by the "liquid" winds of currents.

The present state of this barrier island was largely determined by water movement. The island's future will be greatly influenced by the wind which carries the island's sand toward the mainland.

WIND TRADE-OFFS

by **Jack de Golia**, Environmental Education Specialist—Everglades National Park, Homestead, Fla.

As in many places, wind is an important force that affects life and its processes in the Everglades, a park with a unique mixture of tropical and temperate plants and animals. Because of trade winds and hurricane winds, tropical plants and small tropical animals were either blown to Florida or carried here by tides. These plants and animals live at the northern extreme of their range.

Without the winds and tides generated by hurricanes, nutrients in Florida Bay (the body of water between the southern Florida coast and the Florida Keys) would settle to the bottom and remain there, out of reach for most of the fish and filter-feeding invertebrates that live in the bay waters. Hurricanes stir the shallow bay and change the salinity of the waters for years to come. In turn, this change in the bay lets shrimp find more food material. The shrimp, then, provide food for a whole array of fish, birds, and even alligators and crocodiles.

The Everglades' life depends on heavy tropical rains

in the summer and a relatively dry winter and spring. The trade winds with moist air from the Caribbean enable millions of microorganisms and fish to thrive in the one to two feet of water that covers the glades after the summer rainy season. In the winter, drier cold air blows down from the snowy north and increases evaporation. The combination of evaporation, evapotranspiration, and the flow of the Everglades into the Gulf of Mexico shrinks the formerly wide expanse of water into isolated pools jammed with fish that had been spread over the entire region. These concentrations of fish feed flocks of wading birds who use the easily caught food supply to support their young still in the nest. If the winter north winds bring rain, as they have this year, the water does not drop adequately to concentrate the food supply needed for the young birds.

Visitors to Everglades National Park encounter the wind here in various ways. The occasional cold fronts in winter can turn a park visit into a chilling experience. High humidity, often freezing temperatures, and winds cut through light clothing, bringing out down clothing and surprised looks.

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