

Case Study: Merritt Island National Wildlife Refuge

Read the case study below. As you read, complete the Case Study Notetaking worksheet.

Geography

Cape Canaveral is on the east coast of Florida, roughly in the middle of the state. The cape itself is a low, marshy area that juts far out into the Atlantic Ocean. This feature is so prominent that early Spanish explorers noted it in their charts. In the later half of the 16th century it was named Cabo Canaveral (literally “Cape Canebrake”). A “canebrake” is a dense thicket of cane vegetation and provides a very accurate description of what it must have looked like before Europeans began to settle in the area.

The Banana River separates Cape Canaveral from Merritt Island, which is to the west. Merritt Island is separated from the mainland of Florida to the west by the Indian River. Nearby towns include Cocoa Beach and the city of Cape Canaveral, as well as Titusville on the mainland.

History

Humans have occupied the Cape Canaveral area for at least 12,000 years. The earliest inhabitants took advantage of the numerous fish, crab, oysters, clams, ducks, and other birds that lived in the area.

Europeans later increased exploration and shipping to the New World. The area around Cape Canaveral witnessed many shipwrecks. There were so many shipwrecks that in 1843, the United States government began construction of the Cape Canaveral Lighthouse. This brick lighthouse was completed in 1848.

During the Civil War, the Confederate government ordered the lighthouse keeper to dismantle the lighthouse. This would make navigation more difficult for the Union naval forces patrolling the Atlantic seaboard. The lighthouse keeper at the time complied with this order. He dismantled the lighthouse, packed the lighting mechanisms in wooden crates, and buried these crates near his home on the Banana River. After the end of the Civil War, the lighthouse keeper requested that the United States government rebuild the lighthouse.

Rather than rebuilding the old lighthouse, the government decided to build a new structure. This new lighthouse was built of wood instead of brick. It was completed in 1868. By 1886, coastal erosion threatened to wash the lighthouse into the Atlantic. To keep that from happening, the government dismantled the lighthouse again and moved it 2.4 kilometers (1.5 miles) inland, beginning in 1892. This project was completed in 1894, and the lighthouse remains there today.

From the early 1900s on, very little development occurred in the area. Only a few small fishing and farming towns were established. In addition to its isolated location, the marshy

Case Study: Merritt Island NWR, continued

area around Cape Canaveral is home to massive swarms of mosquitoes. These mosquitoes discouraged the establishment of beach resort communities like Fort Lauderdale and Miami Beach to the south. However, the sleepy area began to change rapidly later in the 20th century.

Rockets & the Kennedy Space Center

In 1938, the Banana River Naval Air Station was established near Cape Canaveral as part of the larger Jacksonville Naval Air Station to the north. In 1948, the Navy turned this base over to the Air Force. Shortly thereafter, President Truman established the Joint Range Proving Grounds at Cape Canaveral.

This site provided an ideal location for the Air Force to test missiles for two reasons. First, it would allow them to launch missiles over the Atlantic Ocean and thus not have to worry about testing over populated areas. Second, due to the relatively close proximity to the Equator, the rockets could take advantage of the Earth's rotation to get an extra boost. This is because the Earth spins faster closer to the Equator.

As the area became more important as a missile test site, the United States was also becoming more interested in outer space. In 1958, NASA (the National Aeronautics and Space Administration) was formed. The U.S. space program began to expand rapidly. In 1962, NASA acquired 140,000 acres of land, water, and marshes at Merritt Island, adjacent to what would become the John F. Kennedy Space Center. This space center became the centerpiece of the U.S. space program. It has been the launch site for all manned spaceflights in the United States ever since.

Merritt Island National Wildlife Refuge

Early on, NASA realized that it would not need to use the entire 140,000 acres it had acquired for the space center. The agency turned over the unneeded portion to the U.S. Fish & Wildlife Service, part of the Department of the Interior. Since 1963, the U.S. Fish & Wildlife Service has managed the area as the Merritt Island National Wildlife Refuge. In 1975, the Fish & Wildlife Service signed an additional agreement with NASA to create the Canaveral National Seashore. Within Merritt Island National Wildlife Refuge, there are seven distinct types of habitat: freshwater impoundments, saltwater marsh and estuaries, coastal sand dunes and beach, pine woods, hardwood hammocks (dense stands of hardwood trees that grow on natural rises a few inches higher than surrounding wetlands), scrub (plant community dominated by shrubs), and ocean waters. This impressive array of habitats supports at least 330 species of birds, 31 species of mammals, 117 species of fish, 68 species of amphibians and reptiles, and 1,045 species of plants.

Case Study: Merritt Island NWR, continued

Among these species, 15 are listed as either endangered or threatened. These include the West Indian manatee (endangered), the wood stork (endangered), the roseate tern (endangered), the green sea turtle (endangered), the Kemp's ridley sea turtle (endangered), Atlantic hawksbill sea turtle (endangered), leatherback sea turtle (endangered), loggerhead sea turtle (threatened), the southeastern beach mouse (threatened), Florida salt marsh snake (threatened), piping plover (threatened), eastern indigo snake (threatened), the Florida scrub jay (threatened), and the American alligator (threatened).

For the five species of sea turtle that live in the United States, the Canaveral National Seashore is particularly important. This 24-mile stretch of beach is the longest undeveloped parcel of coast remaining in Florida. It is a prime sea turtle nesting area. In fact, more than 1,600 loggerhead sea turtles alone nest there each year. Green and leatherback sea turtles also nest along this national seashore. Without question, preserving this vital nesting area is one of the keys to the recovery of these species.

Although the nesting beaches may be the most spectacular feature of the national seashore and adjoining national wildlife refuge, the marshes are truly the most productive feature of Merritt Island. These nutrient-rich habitats result from fresh water mixing with salty ocean water. This rich broth is able to nurture shallow water grasslands. These grasslands provide habitat for various worms, crabs, clams, and small fish. These organisms are then able to support larger animals that are higher in the trophic level (food chain). These higher trophic-level organisms often use the marshes and estuaries as breeding grounds and nurseries. Then they move back into deeper ocean water.

By restricting access to these marshes and either limiting or prohibiting fishing, it is possible to observe what is known as the "spillover effect." This means that as fish are protected within a no-take zone, they grow larger, produce more offspring, and eventually migrate out (i.e., "spillover") into adjacent open areas.

Ecological Benefits

While much of the Merritt Island NWR is open for the public to enjoy, two areas have been off-limits since 1962. These areas are the Banana Creek Reserve and the North Banana River Reserve. Together, these areas comprise roughly 40 square kilometers (25 square miles). Restricting access to these areas was done in the interest of national security and was meant to secure the launch sites at the Kennedy Space Center. It had nothing to do with conservation.

The benefits of prohibiting fishing in these areas have been tremendous in the adjacent open areas. In the areas north and south of the off-limit reserves (an area enclosing 100 kilometers,

Case Study: Merritt Island NWR, continued

or 62 miles), recreational anglers have caught 62 percent of record-size black drum, 54 percent of record-size red drum, and 50 percent of record-size spotted sea trout. Fish tagging studies conducted in the 1980s have clearly demonstrated that fish routinely move in and out of the off-limit reserves.

These record-setting catches provide scientists with information about fish movements. This information shows that the spillover effect is happening in and around the Merritt Island NWR. There have been no conservation goals associated with the establishment of these closed areas. However, it is clear that in this case space exploration and marine conservation go hand in hand. And the recreational anglers that continue to set records would surely testify to that.

Case Study: Merritt Island NWR, continued

