

# The Dynamic Dunes

by Claudia Frosch



USFWS photo

As the sun sets over Bon Secour National Wildlife Refuge on Alabama's Gulf Coast, the silhouettes of the sea oats that grow on the frontal dunes, swinging slightly in the wind, stand in a breathtaking contrast to the deep red of the sky. This is the time when visitors to Bon Secour take their last photographs before the refuge closes for the night. It is also the time when one of its major beneficiaries comes to life: the endangered Alabama beach mouse (*Peromyscus polionotus ammobates*).

Light brown above with the white on its belly coming all the way up to the eyes, this elusive little creature of the night spends the daytime in burrows, waiting to come out and feed under the cover of darkness. Huge eyes and ears are custom-fit for a life in the shadows, and it is hard not to call it cute. However, their lifestyle makes beach mice almost impossible to be spotted in the wild, and very few people other than researchers have ever had the privilege to see one in its natural environment. Most people are not even aware of their existence, much less of their plight.

Beach mice are probably one of the most truly representative inhabitants of coastal dune ecosystems along the Gulf Coast, and as such are well adapted to living in a constantly changing environment. Sand dunes are highly dynamic, building up and eroding away with wind and water, and they can even be destroyed by hurricanes that frequent the area. Historically, beach mice would show the same dynamics as their habitat; local populations may suffer severely, but in the natural process of dune regeneration after a major impact, mice

would recolonize those areas from the surrounding, intact habitat. This strategy worked for the mice when they still occurred widely along the Gulf Coast, from Fort Morgan in the west to Perdido Pass in the east. However, in modern times, with increased beachfront development, habitat losses and fragmentation have had severe impacts on the Alabama beach mouse, which is now limited to a few isolated populations in the western portion of its original range. With decreasing patches of habitat, and increasing distance in between them, recolonization after destruction of a local population becomes highly unlikely, thus leaving the species as a whole extremely vulnerable to extinction. It is because of Bon Secour NWR, which protects some of the last remaining intact coastal ecosystems, that the Alabama beach mouse still survives.

Anyone who has ever been to the beaches of Bon Secour NWR will remember the view of the dunes, starting with the young, and still growing, primary dunes on the beach and stretching all the way back over more heavily vegetated secondary and tertiary dunes



**Alabama beach mouse habitat at Bon Secour NWR.**

*Photo by George Gentry*

on to the most “mature” oak-overgrown scrub dunes. While the preferred beach mouse habitat seems to be in primary and secondary dunes, recent research has shown that the older, interior parts of the system are also an important factor for the survival of the mice, especially as a retreat during critical times (such as hurricanes). Bon Secour NWR may be the last place on the Fort Morgan peninsula where one can still find this full successional spectrum of dunes of different ages.

The policy at Bon Secour is not only to preserve habitat but also to enhance it. In a continuing effort to help build back the dunes after several hurricanes in the 1990s, refuge personnel and volunteers install sand fences on the beach. These fences, in sea turtle-friendly 10-foot (3-meter) sections, are angled at about 45 degrees in order to capture the major prevailing winds (northwest and southeast). The wind that passes through the fence will slow down, causing the sand it carries to drop and settle around the fence, beginning the formation of a new dune. Scientific studies are documenting the recolonization by vegetation and monitoring its effect on beach mice.

The need for more research is significant, as many questions relating to beach mice, their habitat, and their ecology remain unanswered due to the elusive nature of these small, nocturnal animals. Bon Secour NWR serves as a natural laboratory, offering the site and facilities to enhance our knowledge about the Alabama beach mouse. At the same time, information is made available to the public in order to promote the mouse’s plight.

As the sun appears again on the horizon, the Alabama beach mouse is ready to retire into its burrow. Tomorrow will bring another night, hopefully one of countless more that will see beach mice survive to make their living in the dunes. As long as their remaining habitat is safeguarded within the boundaries of Bon Secour NWR, there is certainly hope.

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**Bon Secour NWR was established in 1980 to preserve more than 5 miles (8 km) of intact coastal strand, one of the most imperiled and dynamic habitats in the country. These dynamic dunes provide habitat for the endangered Alabama beach mouse and three listed species of nesting sea turtles. Bon Secour, translated locally to mean “safe harbor,” provides habitat for more than 370 species of birds. Many of these are migratory species that complete the arduous journey from South and Central America to North America to breed each year. Bon Secour is the first land these long-distance migrants encounter after flying over the Gulf of Mexico. The diverse habitats of the refuge, from strand to pine flatwoods and mixed hardwoods, provide food, cover, shelter, and resting areas for these weary travelers.**

**Bon Secour hosts thousands of visitors each year. It provides excellent opportunities for nature study and environmental stewardship to everyone from elementary students to senior “snowbird” visitors. The refuge benefits from a growing network of volunteers and the support of an established Friends organization. Because one of the purposes of the refuge is to serve as a living laboratory, Bon Secour hosts university groups, interns, graduate students and scientists throughout the year.**