

ESC America's Top 10

General Information	Nominating Organizations Please Use this Column to Provide the Requested Information
Organization & web address	Defenders of Wildlife
Contact name (for species info)	Elizabeth Fleming, Senior Florida Representative
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Communications staff contact name	Haley McKey
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General Species Information	
Common name, genus, and species	Beach Mice [there are 16 subspecies of the oldfield mouse (<i>Peromyscus polionotus</i>) 8 of which are beach mice]; 5 on the Gulf of Mexico coast and 2 remaining (1 extinct) on the Atlantic coast. This profile will provide more detail about the Perdido Key beach mouse to help illustrate the challenges to conserving beach mice.
Geographic range	7 subspecies currently inhabit coastal dune habitat in Florida along the Atlantic and NW Gulf coasts and along the coast of Alabama. - Gulf coast subspecies are found in geographically distinct populations on barrier islands, keys and coastal peninsulas from Mobile Alabama to Cape San Blas, Florida: Alabama beach mouse (<i>P. p. ammobates</i>) Perdido Key beach mouse (<i>P. p. tryssyllepsis</i>) Santa Rosa beach mouse (<i>P. p. leucocephalus</i>) Choctawhatchee beach mouse (<i>P. p. allophrys</i>) St. Andrew beach mouse (<i>P. p. peninsularis</i>). - Atlantic coast subspecies (between Ponte Vedra Beach and Hollywood Beach): Anastasia Island beach mouse (<i>P. p. phasma</i>) Southeastern beach mouse (<i>P. p. niveiventris</i>). The Pallid beach mouse (<i>P. p. decoloratus</i>) was known in two locations: Ponce Park, Volusia County and Bulow, Flagler County. No individuals have been seen since 1959.

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Conservation status

All but one of the beach mouse subspecies are federally listed as Endangered or Threatened: In Florida, Choctawhatchee beach mouse (Gulf), Anastasia Island beach mouse (Atlantic), St. Andrew beach mouse (Gulf) and Perdido Key beach mouse (Gulf) are listed as Endangered. The Southeastern beach mouse (Atlantic) is listed as Threatened. The Santa Rosa beach mouse (Gulf Coast) is not listed and the Pallid beach mouse (Atlantic) was declared extinct in 1993. In Alabama, the Alabama beach mouse is listed as Endangered.

The Perdido Key beach mouse was listed as Endangered in 1985, along with the Alabama beach mouse and the Choctawhatchee beach mouse. Critical habitat was designated for these subspecies at the time of their listing and revised in 2006 to include scrub dunes that serve as refugia during and following storm events and from which recolonization to the frontal dunes takes place.

Perdido Key beach mice occur in isolated populations in Perdido Key, Florida, and five critical habitat units have been designated. The Gulf State Park unit, which extends slightly into Alabama and was occupied at the time of listing, was the only remaining population by 1986. It was the donor site for reestablishment of the mouse into Gulf Islands National Seashore in 1986, ultimately saving the subspecies from extinction. Several subsequent reintroduction and relocation efforts appear to have been successful.

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Remaining population size

Unknown. Beach mouse population estimates are extrapolated from trapping and tracking surveys. Their populations fluctuate on a seasonal and annual basis. While much remains unknown about these population cycles, beach mice are known for their high reproductive rates and experience highs and lows in population numbers. Tropical storms and other events may depress beach mouse populations, perhaps resulting from elimination of habitat and reduction of food supply. Habitat destruction and predation can take a serious toll on beach mice.

Since the late 1970s, the Perdido Key beach mouse has existed in isolated populations along its historic range (16.9 miles). The effects of a hurricane in 1979 and increased fragmentation from development led to the extirpation of all but one population of less than 30 individuals at Gulf State Park-Florida Point. Beach mice from this location were used to re-establish the subspecies at Gulf Island National Seashore between 1986 and 1988. Then in 1999, the population at Florida Point was considered extirpated. Several subsequent relocations and reintroductions, in 2001, 2004 and the last in 2010, appear to have been successful.

Since the Perdido Key beach mouse was listed in 1985, each population has been extirpated at one time or another, and the total population was never estimated at more than 400 to 500 individuals until 2003, when it was estimated to number between 500 to 800 mice. Following a hurricane in 2004 and a very active hurricane season in 2005, the status of the mouse was uncertain as the storms had affected the entire historic range. As a hedge against extinction, the Florida Fish and Wildlife Conservation had trapped eight mice prior to the hurricanes making landfall and placed them in captivity. The mice have been breeding in captivity ever since, and in 2010, a source population of captive mice was released in Gulf State Park. The amount of suitable habitat has been reduced since the mouse was listed in 1985.

Report Questions

Do you have high resolution photos that can be used in the report?	No, but we can help to obtain them.
Will you want printed reports? If so how many?	20

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If your species is selected, will you use the report as a tool to organize around the species and/or publicize its plight? Yes, beach mice and other small mammals have not received the conservation attention they deserve, and people do not seem to empathize as much with species that have the name "mouse" or "rat" in their name (e.g. Key Largo wood rat, Sanibel rice rat).

Public Engagement Questions (Please explain why the species is interesting, why it matters, why decision-makers + the public should care.)

Interesting facts about the species Beach mice are small, light-colored mice with large ears and dark eyes. Their coloration helps them camouflage against the white sands of their dune habitat. Mating peaks in winter and they will breed year round if food is available. They are monogamous (a pair mates for life). Females give birth to an average of four pups per litter and are ready to breed again within 24 hours after giving birth. Beach mice live 9-12 months in the wild.

Additional background information to complete the species profile in the report References: <http://myfwc.com/conservation/you-serve/wildlife/beach-mice/>; <http://edis.ifas.ufl.edu/uw173>; Biological Opinion, Lost Key Golf and Beach Club, U.S. Fish and Wildlife Service, August 13, 2012 (contains numerous citations, if needed).

What are the most important messages that should be communicated about this species' decline? Loss of beach mice signals loss and degradation of beach dune communities that provide important habitat for many species such as snowy plovers, least terns and other shorebirds; loggerhead and other sea turtles; coachwhip, six-lined racer and other snakes; and monarchs and other butterflies. Dunes and dune vegetation provide protection against storms, wind and waves; healthy dunes offer stability against erosion and help buffer against flooding and other impacts of climate change.

Is your NGO working to save the species? If yes, how? We are providing input to Florida's Beaches Habitat Conservation Plan that includes six beach mice subspecies, sea turtles, shorebirds and other wildlife; working to strengthen coastal policies that regulate development; striving to prevent development and roads from harming beach mice and their habitat; advocating for funding for habitat acquisition programs, including expansion and restoration of habitat with funds becoming available due to the 2010 Deepwater Horizon disaster in the Gulf of Mexico.

How can individuals help? Please be as specific as possible. Support coastal policies that prohibit construction in dunes and other sensitive areas. Avoid walking in dune systems. Use crosswalks and boardwalks. Do not drive in dune habitats or near dunes. Keep pets out of dunes. Keep dogs on leashes and cats indoors. Do not feed stray cats. Secure trash so it does not attract predators. Minimize outdoor lighting.

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Is there anything else that governments or others could/should/are doing to save the species?

Enforcing regulations related to the coastal construction control line; stop permitting and financially insuring development and roads in sensitive coastal areas and barrier islands that are especially vulnerable to hurricanes, sea level rise and flooding; expand system of coastal protected areas.

Criteria-Specific Questions

Describe the **specific threat(s)** to the species. Detail the current and projected decline of the species. Give historic population numbers. Cite any substantiating scientific studies.

Beach mice occur only in dune habitats above the high tide line. These include primary and secondary dunes, generally dominated by sea oats that provide food sources, burrow sites and protection from predators. They also require scrub dunes that, in addition to food sources and burrow sites, provide elevated refugia during and after intense flooding due to hurricanes and other storm events.

Because they occur only in dunes, beach mice are at high risk of extinction. The main threats to beach mice are destruction of their habitat and direct mortality from predators. Coastal development and disturbance, including construction of homes, condominiums, hotels and roads, threaten beach mice and their habitat, including higher elevation refugia during storms. Hurricanes can severely affect beach mouse habitat as tidal surge and wave action overwash habitat and clear away vegetation. Climate change and sea level rise are increasing threats to beach mice and their habitat. Human activities, such as walking or using ATVs in dunes and removing dune vegetation also lead to loss and fragmentation of habitat. And feral and free-ranging pet cats, foxes, raccoons, and coyotes prey upon beach mouse. Beach mice no longer occur in some areas, likely eliminated by cats, including parts of the Archie Carr National Wildlife Refuge, despite the protection and abundance of healthy beach mice habitat.

Indicate if there is an associated **political threat**. For instance, is this species being actively attacked by an industry group or member of Congress?

Designation of critical habitat for the Alabama beach mouse, Perdido Key beach mouse and Choctawhatchee beach mouse have been controversial and untra-conservative political influences are undermining existing conservation programs and preventing progress. Some politicians and developers belittle the importance of protecting "mice" and fail to grasp the ecological and economic implications of destroying dune systems even though they are the first line of defense for real estate during storm events.

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Outline and describe the **extent of the threat**. For instance, is it threatening the only habitat of a small remaining population? Is it a current, eminent, or future threat? Cite any substantiating scientific studies.

Beach mice are found only in dune habitats on beaches. Barrier beaches and other sensitive habitats are vulnerable to the effects of climate change. Since its population has been reduced to few individuals in the past, the Perdido Key beach mouse exhibits low genetic diversity.

Like other beach mice, the Perdido Key beach mouse is threatened by human development, which is briskly picking up pace with the recovering economy. Two very serious examples include a very large residential and resort community that has been permitted to be constructed, and the potential widening a highway (SR 292), through Perdido Key critical habitat, including the higher elevation refugia from storms. [Note: need to check back on status before publishing report.]

Judge's score for severity and extent of threat.

Provide information on the benefits the species provides, such as economic, medicinal, or ecosystem services.

Beach mice live among the vegetation in coastal dune ecosystems. They excavate burrows in the sand, where they take shelter from the heat during the day. The animals roam the dunes at night looking for seeds and sometimes insects. They gather seeds of sea oats and other plants and store them in the burrow, which may help promote the dispersal and germination of beach vegetation, and influence the formation of sand dunes.

Detail the ecological and scientific importance of the species. Note if it is a keystone species and describe the extent of its role in the biodiversity of its environment. Cite any substantiating scientific studies.

A healthy beach mouse population is representative of a healthy coastal dune ecosystem. Dunes are the first natural line of defense for coastal Florida to prevent the loss of wildlife habitat and private property due to hurricanes, sea level rise, oil spills and other threats.

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Could the species be considered an "ambassador" which can be used to communicate the threats that are occurring broadly to a group of species or an ecosystem? (An example would be a frog that represents the decline of amphibians. Or a FL species that represents the decline of the Florida Keys.) If yes, please detail how it is an ambassador *and name the other species being represented* .

Beach mice evolved to persist naturally through local extirpations due to storm events and the harsh nature of coastal ecosystems. Historically these areas were recolonized through dispersal from adjacent occupied areas. As human development has fragmented the coastal dune landscape, beach mice can no longer recolonize areas on their own as they did in the past. The Perdido Key beach mouse survives today because of translocations and captive breeding conducted under the ESA.

Judge's score for importance of species.

Final Judge's Score

0

Please submit to Nancy Welch at nwelch@endangered.org by April 4th. Thank you for participating in the 2014 Top Ten Report.