

ESC America's Top 10

General Information	Nominating Organizations Please Use this Column to Provide the Requested Information
Organization & web address	Center for Biological Diversity, biologicaldiversity.org
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General Species Information	
Common name, genus, and species	Key Deer, <i>Odocoileus virginianus clavium</i>
Geographic range	Florida Keys: 26 islands from Big Pine Key to Sugarloaf Key with the majority of deer occurring on Big Pine and No Name Keys
Conservation status	federally endangered
Remaining population size	600-800 deer
Report Questions	
Do you have high resolution photos that can be used in the report?	yes
Will you want printed reports? If so how many?	no
If your species is selected, will you use the report as a tool to organize around the species and/or publicize its plight?	yes
Public Engagement Questions (Please explain why the species is interesting, why it matters, why decision-makers + the public	
Interesting facts about the species	The Key deer is the smallest subspecies of white-tailed deer, about the size of a German shepherd, and is found only on the islands of the Florida Keys. Three-quarters of the world's Key deer live on just two islands: Big Pine Key and No Name Key. They are strong swimmers, moving seasonally between the islands to find fresh water

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Additional background information to complete the species profile in the report	<p>Hunting and habitat loss caused the Key deer to decline to about 50 animals by the 1920s. However, an editorial cartoonist, a Boy Scout and a gun-toting refuge manager helped save the deer from extinction. In the 1930s, Pulitzer prize-winning cartoonist “Ding” Darling publicized the hunting of the Key deer in a political cartoon that drew an enormous public outcry, leading to a state hunting ban. In 1947, 11-year-old Glenn Allen, a Boy Scout in Miami, wrote a letter asking President Truman to establish a national wildlife refuge to save the Key deer, sparking a letter-writing campaign that resulted in the establishment of two refuges. Decades of dedicated enforcement of the hunting ban by gun-toting refuge manager Jack C. Watson — the John Wayne of the Keys — helped to increase the population to 400 by the late 1960s. The Key deer was listed as an endangered species in 1967.</p>
What are the most important messages that should be communicated about this species' decline?	<p>Sea-level rise due to climate change is a serious and growing threat that is projected to inundate most remaining key deer habitat within this century unless we take bold action to reduce carbon pollution.</p>
Is your NGO working to save the species? If yes, how?	<p>Indirectly, by (1) working to reduce greenhouse gas mitigation, (2) working with the Fish and Wildlife Service and National Marine Fisheries Service to incorporate climate change threats into recovery plans, critical habitat designation, and consultations for endangered species, and (3) raising awareness about the threats that sea-level rise poses to endangered species through a 2013 report on this issue and comprehensive work by our Florida office.</p>
How can individuals help? Please be as specific as possible.	<ol style="list-style-type: none">1. Raise awareness about the serious threat from sea-level rise and support actions that reduce greenhouse gas pollution.2. Protect remaining habitat and discourage further human development in the Keys.3. Respect speed limits to avoid car collisions with deer.4. Do not feed deer which changes natural behaviors.5. Support the restoration of natural fire cycles in pine rockland habitat.

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1. Cut greenhouse pollution quickly: Deep and rapid cuts in greenhouse gas emissions are critical for reducing sea-level rise. One study found that achieving emissions reductions that keep warming below two degrees Celsius (3.6 degrees Fahrenheit) can decrease future sea-level rise by 31 to 56 percent by 2100 and 71 to 80 percent by 2300, compared to the rise expected under our current emissions trajectory.

2. Protect natural buffers: Coastal ecosystems naturally protect our shorelines from sea-level rise by absorbing storm surge and slowing erosion. Protecting and restoring living shorelines—including marshes, seagrass beds, kelp forests, coral reefs and oyster reefs—will buffer the coast from sea-level rise and also provide essential habitat for wildlife. One study found that if existing coastal habitats in the United States remain intact, exposure to sea-level rise hazards could be reduced by half.

3. Make room for species to move inland: Proactively protecting inland coastal areas is essential to helping wildlife and their habitats move inland in response to sea-level rise, preventing them from being squeezed out between rising waters and coastal development.

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

Criteria-Specific Questions

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Historically urban development and overhunting were the biggest threats to key deer. Today collisions with cars are the largest cause of deer deaths. Other sources of mortality include poaching, drowning in ditches and canals, running by dogs, entanglement in fences, sparring between bucks, and foreign debris in the digestive tract from feeding in trash containers.

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.

However, sea-level rise due to climate change is rapidly escalating threat that is projected to inundate most remaining key deer habitat within this century under the current emissions trajectory. About 86 percent of the land area of the islands occupied by the Key deer is less than 3 feet above sea level. The Key deer's pine rockland habitat has already been reduced by rising seas, and up to 96 percent of Big Pine Key's pine forest and hardwood hammocks could be inundated by 2100. Sea-level rise will also eliminate many Key deer watering holes.

References:

A Center for Biological Diversity GIS analysis found that approximately 86% of the keys currently occupied by key deer are 1 meter or less above mean sea level. USFWS. 2010. Key deer (*Odocoileus virginianus clavium*) 5-year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, South Florida Ecological Services Office. Available at http://ecos.fws.gov/docs/five_year_review/doc3275.pdf.

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

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Sea level rise is a serious and escalating threat to species in the Florida Keys, where most of the land area is below 6 feet in elevation. Sea level rose 8 inches during the past century, and the rate of sea-level rise is accelerating as the world warms. Globally, an average of 3 to 4 feet of sea-level rise is expected in this century — five to six times what we have experienced so far — and a 6.5-foot rise by 2100 is possible.

Adding to this threat, flooding from rising seas will worsen as climate change increases the destructive power of Atlantic hurricanes and storm surges — the enormous walls of water — they push onto the coast. The risk of extreme storm surges has already doubled as the planet warms, and these events could become 10 times more frequent in the coming decades.

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.

The endangered Lower Keys marsh rabbit has lost almost half of its habitat because of sea-level rise, and the key tree cactus is dying off as the soil becomes too salty. About 86 percent of the land area of the islands occupied by the Key deer is less than 3 feet above sea level.

References:

Global average sea-level rise projections for 2100 range from 1.5 feet to 6.5 feet based on the following studies, with an average of 3 to 4 feet expected:
Grinsted, A. et al. 2009. Reconstructing sea level from paleo and projected temperatures 200 to 2100 AD. *Climate Dynamics* 34:461–472; Jevrejeva, S. et al. 2010. How will sea level respond to changes in natural and anthropogenic forcings by 2100? *Geophysical Research Letters* 37:1-5; NRC. 2012. *Sea-level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. National Research Council. National Academies Press, Washington, D.C.; Pfeffer, W.T. et al. 2008. Kinematic constraints on glacier contributions to 21st-century sea-level rise.

Judge's score for severity and extent of threat.

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

The key deer appears to play a role in dispersing the key tree cactus, another endangered species in the Keys.

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.

The key deer depends on a variety of habitats in the Keys for foraging, resting, and reproduction.

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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* .

The Key deer is an ambassador for species restricted to the Florida Keys that are also threatened by sea-level rise, including;

Key Largo cotton mouse
Key Largo woodrat
Miami blue butterfly
Stock Island tree snail
Key tree cactus
Lower Keys marsh rabbit
Rice rat (Lower Florida Keys DPS)
Schaus swallowtail butterfly

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.