OFFICE OF THE SECRETARY
U.S. Department of the Interior

www.doi.gov
News Release

Date: October 6, 2016
Contacts: John Gross, National Park Service, john_gross@nps.gov, 970-267-2111
Bill Monahan, USDA Forest Service, wmonahan@fs.fed.us, 970-295-5841
Alyssa Rosemartin, University of Arizona, alyssa@usanpn.org, 520-419-2585
Jake Weltzin, US Geological Survey, jweltzin@usgs.gov, 703-485-5138
Interior_Press@ios.doi.gov

Interior Secretary Jewell Announces Study Showing Spring Starting Earlier in National Parks

Climate change impacting over 75 percent of national parks across the country

SHENANDOAH NATIONAL PARK, VA—Secretary of the Interior Sally Jewell today announced a new study showing that spring is beginning earlier than its historical average in 75 percent of the national parks examined— providing further evidence that climate change is already impacting public lands. The announcement came during a visit to Shenandoah National Park, one of the sites identified in the study as experiencing the impacts of an early onset of spring.

"Using sound science as the basis of this report, we can see that climate change is already impacting our nation's national parks," said Secretary Jewell. "Our challenge in real time is planning for and adapting to these changes - like the need to address increasing threats of invasive species, stresses on native species and changing visitor patterns driven by warmer weather. It's clear that one of the biggest challenges our national parks face in their second century will be adaptive management in the face of a changing climate."

Published today in a special feature of the journal *Ecosphere (Science for our National Parks' Second Century)*, the analysis spans 1901 to 2012, a period that provides the best historical temperature data and that generally overlaps with the history of the National Park System. The study is based on the work of a team of researchers led by the Department of the Interior's U.S. Geological Survey and National Park Service, along with the University of Arizona, University of Wisconsin – Milwaukee, and Cornell University. The team analyzed patterns of historical temperatures for 276 of the 413 national park units, including sites from Alaska to Florida.

The researchers used climate change indicators called the Spring Indices—models based on nationwide field observations of first leaf-out and first-bloom dates in two common and widely distributed flowering plants—lilac and honeysuckle. Based on the indices, the scientists dated the onset of spring in each park, year by year, and then analyzed those trends.

Three out of four parks examined were identified as having an earlier onset of spring; more importantly, two out of four parks were identified as experiencing *extreme* early onsets of spring.

"The bottom line is not just that parks are susceptible to climate change. In fact, they have already changed," said Jake Weltzin, an ecologist with the U.S. Geological Survey and a co-author on the study. "Many park managers are already managing in an extreme environment."

At Shenandoah, the early blooming of lilacs and honeysuckle is indicative of a much larger problem. The park has 360 non-native plant species, of which 41 are considered invasive and highly destructive. These non-native plant species, such as garlic mustard and oriental bittersweet, are taking advantage of a warming climate and earlier spring, invading forests across the park and displacing native wildflowers.

Studies suggest that early spring is also disrupting critically important natural relationships, like the link between the peak bloom of wildflowers and the arrival of birds, bees, and butterflies that feed on and pollinate the flowers.

"These results clearly show that climate changes have already affected park resources. There are now new challenges to managing parks that are experiencing continuously changing relationships between species," said John Gross, an ecologist with the National Park Service.

In some cases, the early onset of spring has thrown off the timing of popular park events, such as the annual Cherry Blossom Festival on the National Mall in Washington, D.C. Consequently, the festival has evolved from a single day to a multi-week celebration. Similarly, a community lilac festival, traditionally held over Memorial Day weekend at Saint-Gaudens National Historic Site in New Hampshire, typically no longer overlaps with the bloom time of lilacs.

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