### **AROUND THE WORLD**



#### Tasmania, Australia 1

### Bushfires Rage Across Tasmania

Australia welcomed the New Year with raging fires and a record-breaking heat wave. On 7 January, the average highest daily temperature hit 40.33°C, beating the previous record of 40.17°C

set in 1972. The first

ary were "the hottest

2 weeks of Janu-

13-day period in

Australian history,"

says the Australian

ogy's David Jones.

forced the bureau

to top-up its color-

coded weather map

to accommodate

temperatures up to

54°C. Trains were

Oueensland amid

fears that tracks

halted in the state of

Bureau of Meteorol-

The extreme heat



**Scorching.** Fires blazed near Hobart, Tasmania, on 5 January.

might buckle. As Science went to press, Tasmania continues to battle two major bushfires triggered on 4 January by what the state fire service classified as "catastrophic" weather conditions. Hundreds of grass- and bushfires are burning across the country, with the most severe in Victoria and New South Wales, where 33 homes were lost, as well as facilities at the Siding Spring Observatory.

A report released on 12 January by Australia's Climate Commission says that the heat wave and bushfires were "exacerbated" by global warming. It concludes: "The length, extent and severity of the current heatwave are unprecedented in the measurement record."

### Washington, D.C. 2

## Appeal to Restore U.S. Gun Violence Research

More than 100 academic leaders signed a letter asking the Obama administration to lift a virtual ban on U.S.-funded gun violence research. The 10 January letter, organized by the University of Chicago's social science group, the Crime Lab, was sent to Vice President Joseph Biden, head of the White House's new Gun Violence Commission. The letter says that "politically-motivated constraints" sought by pro-gun lobbies and adopted by Congress in the mid-1990s have cut short a promising area of study. After 1997, funding from the Centers for Disease Control and Prevention and the National Institutes of Health dried up. "Right now the research community is hampered in its ability to inform policymakers about the expected benefits and costs of different policy approaches because of politicallymotivated limits on data access, and substantial federal under-funding of research on gun violence," writes Crime Lab Director Jens Ludwig, a co-author of the letter, in an e-mail to Science. The Biden panel is weighing new policies in response to the December mass shooting of schoolchildren in Newtown, Connecticut; its recommendations are due this week. http://scim.ag/gunviol





**Collected.** The team that drilled down to Lake Vostok last year now has an ice core.

### Lake Vostok, Antarctica 3

## Russian Team Retrieves First Sample From Lake Vostok

A long-running Antarctic drilling effort finally yielded an ice core, when a team of Russian scientists successfully retrieved its first sample this week from Antarctica's 20-million-year-old Lake Vostok, which is buried under nearly 4000 meters of ice. The team, from Russia's Arctic and Antarctic Research Institute, had completed drilling to the surface of the lake in February 2012. To prevent contamination during sampling, the scientists devised a plan to drill just to the lake's surface, but then allow the pressurized lake water to rise into the borehole and freeze there. They returned this Antarctic summer to retrieve the frozen core-and on 10 January, the team told RIA Novosti, the researchers collected their prize. "The first core of transparent lake ice, 2 meters long, was obtained on January 10 at a depth of 3,406 meters," declared the Arctic and Antarctic Research Institute in a statement. "Inside it was a vertical channel filled with white bubble-rich ice." Next up: Analysis of the core itself, which many hope will contain evidence of microbial life.

### Washington, D.C. 4

### Biologists Accuse Bureau Of Fishy Behavior

Managers at the U.S. Bureau of Reclamation (BOR) committed scientific misconduct when they sought to shut down the agency's research division last year after it produced controversial studies about endangered fish populations, according to a complaint filed earlier this month on behalf of seven fisheries



Join us on Thursday, 24 January, at 3 p.m. EST for a live chat about **the next big step in supercomputing**—and which country might choose to take it. **http://scim.ag/** science-live

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# **NEWS**



biologists working in southern Oregon. The complaint

alleges that BOR area office manager Jason Phillips called for scrapping the agency's Fisheries Resources Branch (FRB), in part because some FRB results conflicted with research results from the National Oceanic and Atmospheric Administration and the U.S. Fish and Wildlife Service (FWS). In one case, an FRB study found a stable population of endangered suckers in Lake Ewauna, where a previous FWS study had deemed the lake habitat of poor water quality. Phillips had stated in an 8 November memorandum that "[t]here's a concern that ... in some cases we are simply carrying out studies to contradict the science of other agencies." The scrapping of FRB "will have a chilling effect of suppressing future scientific findings," the complaint states. BOR spokesperson Pete Lucero says the decision to close FRB was an attempt to make the agency more efficient.

### Washington, D.C. 5

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CONGRESSMAN

## A New Look for House Science Panel

The congressional committee that pays the most attention to U.S. science policy has three new subcommittee chairs.

Last week, the House of Representatives' Committee on Science, Space, and Technology announced that second-term legislator Representative Larry Bucshon (R–IN), a cardiothoracic surgeon who is a deep skeptic of climate change science, would head its research subcommittee. Bucshon replaces Representative Mo Brooks (R–AL), who in his first term impressed the community with his understanding of the government's role in funding basic research.





The new chair of the full committee, Representative Lamar Smith (R–TX), has split the environment and energy portfolio and given energy to a new member of the committee: Representative Cynthia Lummis (R–WY). A lawyer and career politician, she's a strong advocate of the fossil fuel industry and doesn't believe that humans are contributing to climate change. Finally, the new chair

of the technology panel is freshman Representative Thomas Massie (R–KY). A Massachusetts Institute of Technology–trained mechanical engineer and entrepreneur who developed pioneering human-computer interface software, Massie is an acolyte of Tea Party favorite Senator Rand Paul (R–KY). http://scim.ag/scisub

## Washington, D.C. 6 NOAA: 2012 Hottest Year

### **On Record for U.S.** Last year saw the warmest average tempera-

tures on record—at least for the contiguous United States, according to a report released last week by the National Oceanic and Atmospheric Administration (NOAA). The

Denizen of the Deep, Caught on Film

In 2004, the first still photographs of the giant squid roaming its deepwater habitat wowed the world. But this year, scientists have gone one better: They have video. The ghostly white creature was spied by a threeperson team, led by Japanese zoologist Tsunemi Kubodera, in a submersible in waters 600 meters deep about 1000 kilometers south of Tokyo. The team included scientists and filmmakers from Japan's National Museum of Nature and Science, the Discovery Channel, and Japanese broadcaster NHK, which has made it a 10-year mission to capture images of the creature in its habitat. For hundreds of hours last summer, the team searched for signs of the sea creatures with the aid of chemical attractants, bioluminescent lures, and ultrasensitive cameras that used only infrared light. The lucky dive came in July 2012: The team spied a giant squid about 3 meters long—which is still small for the species; the largest ever caught was twice as long—and followed it to a depth of about 900 meters. NHK aired footage from the video in Japan on 13 January; the Discovery Channel will air it on 27 January.

## THEY SAID IT

## "The Administration does not support blowing up planets."

—Paul Shawcross, chief of the Science and Space Branch at the White House Office of Management and Budget, rejecting an online petition to build the Death Star, the orbiting weapons system from *Star Wars*.

average temperature was 13°C, compared with a 20th century average of 11.2°C. (The previous record-holder, 1998, saw average temperatures of 12.4°C). The year consisted of "a record warm spring, the second warmest summer, the fourth warmest winter, and a warmer than average autumn," said climate scientist Jake Crouch, of NOAA's National Climatic Data Center, in a press conference on 8 January. The data do not address global temperatures, however.

Meanwhile, a draft of another climaterelated report—the U.S. Global Change Research Program's National Climate Assessment on the impact of global warming in the United States, released every 4 years was published on 11 January. It points to stronger evidence that the climate is changing rapidly, and primarily as a result of human activities, including the burning of fossil fuels—and notes that there will be increasing impacts on crops and fresh water supplies. The report, written by a group of 240 scientists, will now undergo a 3-month period of public comment and review.



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## FINDINGS

### **Building a Better Burrow**

Genetically speaking, it might not take much to evolve some new complex behaviors—such as how a wild mouse expands its burrow. Burrowing behavior varies between species: Deer mice make simple, one-tunnel burrows, whereas a close relative, the oldfield mouse, goes for a long, two-tunnel design that includes an escape passage. To assess the genetic basis of burrow building, Harvard University evolutionary biologist Hopi



Hoekstra and her colleagues bred oldfield mice with deer mice, mated the offspring again with deer mice, and then assessed tunnel characteristics in both generations. Different genes control different components of burrow building, Hoekstra and her colleagues reported this week in Nature. Three gene regions underlie tunnel length, but just one determines whether escape tunnels are made. That region could contain only one gene-suggesting that very little genetic change is needed to evolve the twotunnel burrow (a dominant trait). "The paper provides a nice empirical example of how a complex behavior evolves on a genetic level," says Catherine Peichel, an evolutionary biologist at the Fred Hutchinson Cancer Research Center in Seattle, Washington. http://scim.ag/burrowers

## **Rethinking Barnacle Reproduction**

Scientists continue to marvel at the length of the barnacle's penis—up to eight times its body length in some species. That endowment has long been thought to explain how the immobile creatures manage to reproduce

## Frankensteinish Flight of the Bumblebee

Bumblebees seem to have subpar wings when it comes to wear and tear—at least, compared with their cousins the yellow jackets. But how does a more fragile wing benefit the bumblebee? Harvard University biomechanist Andrew Mountcastle took an unusual approach to the question: He glued

yellow jacket wings to a bumblebee—and found that what's good for the wasp isn't necessarily best for the bee.

While examining insect wing adaptations, Mountcastle had noticed that, unlike the bee's wing, the wasp's wing has a joint that makes it flexible and possibly more resilient in crashes. Subjected to repeated collisions with a leaf, the bumblebee wing wore down 1.5 times faster than the yellow jacket wing, Mountcastle reported last week at the annual meeting of the Society for Integrative and Comparative Biology in San Francisco.



**Wing change.** Gluing a yellow jacket wing to a bumblebee (*right*) tests the wing's performance.



But bumblebees beat their wings much more rapidly than do yellow jackets. And after attaching the yellow jacket wing, he says, he found that the quicktime beat caused the wasp wing to flex all the time

found that the quicktime beat caused the wasp wing to flex all the time, possibly lowering flight efficiency.

Bumblebees have their own way of coping with collisions, too. The scaffolding veins on their wings are concentrated close to the body, leaving the tip less rigid and likely better able than the rest of the wing to withstand wear and tear. These findings could help the development of insect-sized aerial robots: "The more we know about biodesign, the better we will be able to emulate it with technology," says Robert Dudley, a physiologist at the University of California, Berkeley.



**Long shot.** *P. polymerus* shoots sperm into the water via its long penis (*top, above feeding legs*).

(barring a few self-fertilizing species). But a study published this week in the Proceedings of the Royal Society B suggests that at least one species, Pollicipes polymerus, has a different approach-possibly a compensation for its relatively short penis. P. polymerus delivers sperm through copulation when close enough to reach its neighbor, but it also casts sperm out into the water column, trusting that distant mates will capture them. Apparently, the scattershot approach works: The researchers found that most fertilized barnacle eggs contained DNA from distant barnacles. But the finding may make some scientists cringe, says Joseph Pawlik, a marine biologist at the University of North Carolina, Wilmington, who was not involved in the study. Previous studies have assumed that barnacles reproduce only with their near neighbors, he says-so "I suspect that some people will need to go back and look at the studies they've been doing." http://scim.ag/barnre

### NOTED

>Gastrointestinal disease-causing *Clostridium difficile* is the scourge of hospitals; scientists have explored ways to introduce healthy gut bacteria to the afflicted via a controversial and somewhat unpalatable treatment called "fecal transplant" (http://scim.ag/GutBacteria). Enter **RePOOPulate, a synthetic poop product** made from purified intestinal bacterial cultures that can combat *C. difficile* and, says its creator, microbiologist Emma Allen-Vercoe of the University of Guelph in Canada, it offers a "less icky" alternative to fecal bacteriotherapy.



### **This Week's Section**

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