



# the weekly anthropocene

dispatches from the wild, weird world of humanity and its biosphere

by Sam Matey

**Sahara.** The Sahara Desert (pictured) is the world's largest warm-weather desert, generally about the size of the contiguous United States (Since deserts are defined by having an annual rainfall of 100 milliliters per year or less, the boundaries fluctuate). Now, a new study published in the *Journal of Climate* has found that it is expanding. Researchers from the University of Maryland analyzed rainfall data from across Africa for 1920 through 2013 and found that the Sahara had expanded by 10



percent. The researchers statistically excluded the effects of natural oceanic climate cycles and found that at least one-third of this expansion is attributable to human-caused climate change. The expansion of the Sahara could have far-reaching consequences, some of which are already being felt. Lake Chad, on the edge of the Sahara, has dried out to a shadow of its former self, exacerbating the already violent situation in the area. Wars being fought on the edge of the Sahara (or in the climatic zone just south of it, the Sahel) include the multinational campaign against Boko Haram, the Central African Republic civil war, the Malian civil war, the Libyan civil war, the South Sudanese civil war, the Darfur rebels' war against Sudan, and the Western Saharan rebels' conflict against Morocco. An expanding Sahara's effect on food production and water availability could exacerbate these conflicts. The researchers note that the way Africa is warming makes the situation more difficult. "We have already started looking at seasonal temperature trends over North America, for example. Here, winters are getting warmer but summers are about the same." explained Natalie Thomas, lead author of the research paper. "In Africa, it's the opposite -- winters are holding steady but summers are getting warmer. So the stresses in Africa are already more severe." For more information, check out [goo.gl/Vd1vAf](http://goo.gl/Vd1vAf).

**Sea Ice.** New data is showing sea ice shrinkage on both poles. The National Snow and Ice Data Center has released new information showing that on March 17<sup>th</sup>, the Arctic reached its sea ice maximum-and it was the second lowest on record. With this data, the Arctic's four lowest maxima on record were recorded in 2016, 2016, 2017, and 2018. This was also the third winter in a row in which the Arctic experienced abnormal heat waves: in February, temperatures soaring above 50 degrees Fahrenheit caused open water to form north of Greenland. In an *Arctic winter*.

Antarctica isn't experiencing climate swings quite that dramatic, but it's still abnormal. The Antarctic sea ice minimum in February was also the second lowest ever recorded, and a new study from the University of Leeds has found that warming ocean water is eroding the Antarctic sea ice sheet from below. For more information, check out the NSIDC's data at [goo.gl/7wNg79](http://goo.gl/7wNg79) and [goo.gl/7aueG6](http://goo.gl/7aueG6). For the Antarctic study, see [goo.gl/QqV8sZ](http://goo.gl/QqV8sZ). This is more evidence of global climate change's effects.



# the weekly anthropocene

dispatches from the wild, weird world of humanity and its biosphere

by Sam Matey

**Ocean Protection: Brazil.** In a great leap forward for marine conservation, Brazil has designated four vast new Marine Protected Areas (MPAs) that preserve an area of ocean larger than Texas and Utah combined. The new MPAs are centered around the Sao Pedro and Sao Paulo archipelagos and the Trindade and Martin Vaz islands. This action protects vital sea turtle nesting sites and populations of the endangered scalloped hammerhead shark and the critically endangered Atlantic goliath grouper, as well as large populations of marine life ranging from dolphins to octopuses. These MPAs bring the



percentage of Brazil's ocean territory that is protected from 1.5% to 24.5%, greatly exceeding the UN target of protecting 10% of the ocean by 2020. Enforcement of the MPAs may be difficult, as they are extremely large and remote, but at the very least this designation will protect them from industrial-scale fishing and mining. This is spectacular news for ocean biodiversity. For more information, check out [goo.gl/3fZnBi](http://goo.gl/3fZnBi). Thanks to IUCN for the map!

**Ocean Protection: Australia.** In a step backward for marine conservation, the Australian government has opened an area the size of Japan to commercial fishing. On March 27<sup>th</sup>, Australia's government enacted new management plans for 44 of its marine parks that open 17% of the parks' area to commercial fishing and 16% more to recreational fishing. This is a blatant giveaway to commercial fishing lobbyists that undermines the marine park system and local ecological integrity. "No government anywhere in the world on land or sea has ever removed this much area from conservation," said Tony Burke, former Australian environment minister and current shadow environment minister. "There will be many losers as a result of this decision. The Ocean Science Council of Australia concurred, describing the plans as "the deliberate design of a system for poor conservation performance." Australia has been showing a disturbing pattern recently of ignoring science-based environmental protection: they are one of the few rich countries in which deforestation is increasing and they are investing heavily in new coal mines. For more information, check out [goo.gl/uLq5LB](http://goo.gl/uLq5LB).

**USA.** In another disheartening attack on environmental regulations, Trump's EPA has announced that they will roll back the Obama-era fuel efficiency standards for vehicles, in a statement that relies on inaccurate data and parrots industry talking points. "It reflects the ignorance of this administration with regards to science and the degree it will go to reject the skills of its own high-quality employees," said Jim McCargar, former EPA senior policy advisor. "It's just flat-out wrong." For the full sordid story, see [goo.gl/CMwtDA](http://goo.gl/CMwtDA).



# the weekly anthropocene

dispatches from the wild, weird world of humanity and its biosphere

by Sam Matey

**Panama.** For years, frog populations around the world have been ravaged by chytrid fungus (*Batrachochytrium dendrobatidis*), a deadly fungus that feeds on the skin of living amphibians and has already been implicated in the decline or extinction of over 200 species. Now, it looks like some frogs are fighting back. A new study released in the journal *Science* found that several frog populations in Panama, including a population of the critically endangered *Atelopus varius* (pictured) appear to have evolved defenses against the pathogen. For more information, check out [goo.gl/ER9z3n](http://goo.gl/ER9z3n). Great news!



**Sweden.** Sweden has a robust population of brown bears, a situation helped by a law that makes it illegal to hunt a female with cubs. A new study published in *Nature Communications* has found that this has influenced the evolution of the Swedish bear population. The researchers analyzed 22 years of data and found that females are now keeping their cubs for up to a year longer, a strategy which slowed reproductive rates but kept both mother and cubs alive longer. This fascinating discovery is an excellent example of how animals can adapt to human-managed ecosystems in the Anthropocene. For more information, check out [goo.gl/iSBe9D](http://goo.gl/iSBe9D).

**Science Is Awesome (1).** In an amazing breakthrough, a team of scientists from China's Hunan University have created a strain of rice that can thrive in salty soils. The scientists identified the STRK1 gene as one that helps rice adapt to salt stress and generated a group of transgenic rice plants in which that gene was highly expressed. When these plants were grown in salty soil, they were greener and larger than the control (normal) rice plants. Salty soil is an agricultural problem around the world and could be exacerbated by climate change. If STRK1-enhanced rice becomes widespread, it could save billions of dollars and potentially thousands of lives. For more information, check out [goo.gl/rhF7Rd](http://goo.gl/rhF7Rd). Great news!

**Science is Awesome (2).** *Shewanella oneidensis* bacteria are some of the strangest life-forms on Earth. They transfer excess electrons from their metabolism directly into the rock that they live on, similar to the way humans transfer excess electrons to oxygen molecules. These bacteria essentially "breathe" rock! Now, a new study by a team of University of Southern California researchers has learned more about the mechanism of this transfer. The bacteria use tiny electron transport proteins formed into "nanowire" structures to move the electrons to the rock. The fact that these bacteria produce electrons has inspired the researchers to look into their potential as power generators. "My lab is driven by the idea that we could develop new machines, where living cells are functioning as part of a hybrid biotic-abiotic system," said Dr. Moh El-Naggar, leader of the USC team. "We are trying [to] build the foundations of a new generation of living electronics." For more information, see [goo.gl/MdY5fj](http://goo.gl/MdY5fj).



# the weekly anthropocene

dispatches from the wild, weird world of humanity and its biosphere

by Sam Matey

**Portland, Maine.** The University of Southern Maine’s Emissaries Club held their first “March March” Back Bay Cleanup on March 31st from 10 AM to 2 PM. It was an amazing experience and went better than my wildest expectations! We had a great turnout, with about 15 people coming for at least part of the event (pictured). Huge shout-outs to Jenne Patterson, our Public Relations and Communications Officer (who did an amazing job publicizing this event), Kate O'Connor,



our Vice President (that's her home we're gathered in front of!), Max Card, our Safety Officer (who did a great job organizing the group), Maria Guerra (who donated several recycling bins), Jamela Lewis (who got us all some Dunkin Donuts Munchkins) and all of our awesome volunteers! Also, thanks to

the USM Eco-Reps, the USM Martial Arts Club, and the awesome Garbage to Garden group, who all sent volunteers. The trash pickup was incredibly successful! We collected 10 trash bags' and 1 giant recycling bins' worth of solid waste (pictured). All of this waste will be reintegrated into the local municipal waste stream. We also collected about 20 hypodermic needles, which, as hazardous waste, were picked up by the fire department.



All attendees did great work and helped keep Back Cove safe for the animals and humans who enjoy its natural beauty. If you’re interested in events like this, the Emissaries meet every Thursday at 4:30 on the second floor of the Glickman Library in Portland. Our next event is on Wednesday, April 4th, when Kate O'Connor is leading an All-Culture All-Gender Clothing Swap. The Swap will occur from 11 AM to 2 PM at the Woodbury Center in Portland. Come pick out new outfits for the summer-for free! Thanks again to all who took part. This, the first Emissaries Event, has been a resounding success! There will be much more news from us in the months and years to come.

