



the weekly anthropocene

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

by Sam Matey

Human Evolution. The life of the Bajau people is centered on diving. The Bajau, a tribe of “sea nomads” living in the waters around the Philippines, Malaysia, and Indonesia, dive for nearly all of their food. Their abilities can seem astounding to outsiders. “Underwater, the Bajau are as comfortable as most people are on land.” recalled Dr. Melissa Ilardo, a geneticist from the University of Copenhagen. “They walk on the seafloor. They have complete control of their breath and body. They spear fish, no problem, first try.” (Pictured: Dido, a Bajau diver).



Dr. Ilardo discovered that the Bajau people’s diving is aided by their unusually large spleens (50% larger than those of a nearby inland group). As spleens store oxygen-rich blood, they are a “killer app” for divers; seals, for example have enormous spleens. Dr. Ilardo began to suspect that the Bajau people had evolved for diving. Using blood samples collected from 59 Bajau, she found a gene associated with spleen growth in high abundance, as well as several other adaptations related to diving. This is a strong sign of natural selection at work and underscores this study’s amazing reveal: the Bajau people have actually evolved to be something closer to a marine mammal, with limitless potential ramifications for the human species’ potential. Dr. Ilardo’s team is already looking at potential medical applications for the Bajau people’s abilities. And in this writer’s opinion, in the age of climate change and sea level rise, the ability to be at home in the sea could be an important ability for the human species. For more information on this incredible people (and the threats they face), see goo.gl/v1ugH8 and goo.gl/3BUHYL. Photo credit: Matthieu Paley, National Geographic.

Baja California, Mexico. Researchers from the San Diego Natural History Museum have rediscovered the San Quintin kangaroo rat (*Dipodomys gravipes*, pictured), a species last seen in 1986 and thought to be extinct. Since its initial discovery (thanks to live traps) the researchers found that the San Quintin kangaroo rat is also living in the Valle Tranquilo Nature Reserve. They are now working to develop a conservation plan. “Not only is this discovery a perfect example of the importance of good old-fashioned natural history field work, but we have the opportunity to develop a conservation plan based on our findings,” said Scott Tremor,



museum mammalogist. “The ability to take our research and turn it into tangible conservation efforts is thrilling. It is a commitment to preserving the uniqueness of the Baja California Peninsula.” For more information, see goo.gl/Nyrq6w. Photo credit: Sula Vanderplank, San Diego Natural History Museum.



the weekly anthropocene

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

by Sam Matey

USA (1): Oklahoma. Oklahoma is currently recovering from several massive wildfires, with one, the Rhea Fire (pictured), having burned approximately 451 square miles since April 12th. For comparison, the state of Rhode Island's entire land area is 1,045 square miles. The Rhea Fire is now 50% contained, and police are investigating possible arson as a source for one of the local wildfires, which has resulted in one death. Disasters like these will likely become more and more common as the Midwest warms. For more information, see goo.gl/yr2DbN. For an update, see goo.gl/oN64Yw. Photo credit: Nick Oxford/Reuters.



USA (2): NASA. On April 19th, the US Senate confirmed Jim Bridenstine to be the new head of NASA, in a party-line vote of 50 to 49. Bridenstine, the first congressperson to lead NASA, is known for his anti-LGBTQ views, his stating that global warming "had stopped rising ten years ago" (a statement flatly contradicted by data from the very agency he known hopes to run) and, as a freshman congressman, demanding an apology from President Obama for spending money on climate change research. This is another example of President Trump's willingness to appoint manifestly unqualified individuals to vital positions. For more info, see goo.gl/kgxMTv and goo.gl/5DPmqg.

USA (3): ANWR. Also on April 19th, the Department of the Interior published a notice that set a plan for oil and gas drilling in the Arctic National Wildlife Refuge (ANWR). The process is overseen by former oil industry lobbyist and current Interior Deputy Secretary David Bernhardt, who is attempting to speed up the environmental review proces. Fortunately, environmental groups are already planning a legal battle, and the results of the elections in 2018 and 2020 could postpone drilling in ANWR indefinitely. Until then, this is another sad example of how the Trump Administration is willing to sacrifice America's ecological wealth. "This administration's naked greed and corporate favoritism have become an ongoing self-parody," said Representative Raúl Grijalva (D-AZ), ranking member of the House Natural Resources Committee. "This is the kind of rushed policy that gets made during a backroom deal, not a careful assessment of public opinion and scientific data. President Trump and Secretary Zinke count drilling in the Arctic Refuge as a win because it upsets Americans they don't like, not because it will have any public benefit." For more information, check out goo.gl/GPM4Un.



the weekly anthropocene

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

by Sam Matey

Brunei. In the rainforest canopy of Brunei, a tiny nation on the island of Borneo, there lives an ant that explodes. *Colobopsis explodens* (pictured) was identified as a new species by an international team of researchers. The researchers found that only minor workers of the species (like the one pictured) explode, but that they do so often, with individuals “particularly prone to self-sacrifice when threatened by enemy arthropods, as well as intruding researchers.” The researchers expect more exploding ants to be discovered soon. For more information on this fascinating discovery, see goo.gl/1Nn79c.



Madagascar. In a shocking story of wildlife crime, over nine thousand critically endangered radiated tortoises have been freed from a single house in Madagascar. Radiated tortoises (*Astrochelys radiata*) are found only in Madagascar and are suffering greatly from illegal collection for the pet trade. Soary Randrianjafizanaka, a regional leader for Madagascar’s environmental agency, was following up on a tip about a strange smell emerging from a two-story house in the town of Toliara. When she arrived, with police in tow, she found that the house was packed, wall to wall, with radiated tortoises. “You cannot imagine. It was so awful,” Ms. Randrianjafizanaka said. “They had tortoises in the bathroom, in the kitchen, everywhere in the house.” Fortunately, Madagascar’s wildlife defenders sprang into action to save the tortoises: three suspects found burying dead tortoises were arrested, and six trucks were summoned to bring the tortoises to a nearby wildlife rehabilitation center. The house was found to contain 9,888 live radiated tortoises, along with 180 dead ones. Amazingly, even after their horrific treatment, most of the tortoises have survived: only 574 of the 9,888 have died, mostly due to dehydration and infection. Due to the scale of the poaching efforts, the surviving tortoises will not be released into the wild. For more info, see goo.gl/q4TpxB.

Heroes of the Anthropocene: Jadav Payeng. In honor of Earth Day, the Weekly Anthropocene is introducing a new irregular feature, Heroes of the Anthropocene, which will share the stories of human beings who have worked to help humanity and its biosphere. Our first Hero of the Anthropocene is Jadav Payeng, known as “India’s Forest Man.” In 1979, he began planting trees on the barren Majuli island in the Brahmaputra river, and spent years single-handedly reforesting the area. “First with bamboo trees, then with cotton trees. I kept planting — all different kinds of trees,” said Mr. Payeng. “It’s not as if I did it alone,” he continued. “You plant one or two trees, and they have to seed. And once they seed, the wind knows how to plant them, the birds here know how to sow them, cows know, elephants know, even the Brahmaputra river knows. The entire ecosystem knows.” Jadav Payeng’s forest, now larger than New York’s Central Park, is now home to tigers, deer, monkeys, and a herd of 100 elephants that spends six months there every year. For more information on this amazing man, please see goo.gl/x93dtz and goo.gl/9WV5Lz. For a short film on Mr. Payeng, check out goo.gl/eXjfAA.





the weekly anthropocene

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

by Sam Matey

Standish, Maine. On April 23rd, the University of Southern Maine's Wetlands Ecology class (which includes this writer) visited a vernal pool by the side of Pond Road in Standish, Maine (pictured, view from the road). Vernal pools, which derive their name from the Latin *vernus*, or "of spring", look like nondescript leaf litter-filled depressions for most of the year. But in the spring, they fill with water from melting snow. Since they are (by definition) unconnected to larger waterbodies, they act



as safe havens for a diverse community of life-forms that live and breed there without fear of predation from fish. They are extremely important breeding spots for amphibians, especially frogs and salamanders. Our class, led by Professor Karen Wilson, searched for "indicator species" whose presence would qualify the vernal pool for legal protection. In Maine, if a vernal pool has been officially surveyed and found to have more than 40 wood frog (*Lithobates sylvaticus*) egg masses or has an established population of fairy shrimp (a vital amphibian food source) it is deemed a "significant" vernal pool and accorded a degree of legal protection. The Pond Road vernal pool had not yet been officially surveyed and was not listed as a significant vernal pool.

Our class, however, found more than enough to fulfill the requirements for protection. A wood frog egg mass held by this author (pictured) was just one of 37 found in a dense bed of vegetation (pictured below, another, younger egg mass). Another five were found scattered around the pool, bringing the total to 42! Sampling the water with nets also revealed the presence of fairy shrimp (the comical-looking orange organisms commonly known as Sea Monkeys), along with a diverse slew of invertebrates including young predaceous diving beetles and copepods. As it normally takes multiple visits to officially confirm a vernal pool's significant status, Professor Wilson and myself are currently discussing the possibility of visiting the Pond Road Vernal Pool to gather more data, after the USM semester is over. This project could result in the protection of vital amphibian



habitat! If anyone is interested in volunteering for such a visit or has experience with the Maine legal requirements for significant vernal pools, please email me at Samuel.matey@maine.edu or text me at 207-572-7937. Stay tuned for more news on this project in the upcoming months!