



the weekly anthropocene



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

By Sam Matey, May 29 2019

Bolivia. On April 29, 2019, Bolivia's Guaraní Charagua Iyambae autonomous indigenous government (roughly equivalent to a US Native American tribe, but with more legal rights and powers) created the Ñembi Guasu Area of Conservation and Ecological Importance



(pictured, above), a massive new protected area in Bolivia's Gran Chaco region. Ñembi Guasu, meaning "The Great Refuge" in the Guaraní language, preserves 4,650 square miles of intact forests, an area approximately three times the size of Rhode Island. Preliminary camera trap surveys estimate that the area is home to at least 100 mammal species, 300 bird species, and 80 reptile and amphibian species, including jaguars, pumas, ocelots, peccaries, night monkeys, tamanduas, tayras, tinamous, caimans, boa constrictors, and more. Furthermore, Ñembi Guasu "bridges the gap" between two existing protected areas, Bolivia's Kaa Iya del Gran Chaco National Park and Paraguay's Chaco Biosphere Reserve, creating an even larger transboundary protected area network. Finally, and perhaps most interestingly of all, Ñembi Guasu protects the homeland of the Ayoreo people, a nomadic indigenous community that have chosen to remain in voluntary isolation from the rest of the world. This is an amazing example of conservation initiatives enacted by and for indigenous peoples. For the full fascinating story, see tinyurl.com/y26o92ka.

City Parks. City parks are emerging as a multifaceted adaptive response to the multifaceted threats posed to cities by climate change. In addition to being nice places to relax, socialize, and enjoy a little piece of nature, researchers have found that parks provide valuable shade and evapotranspiration cooling in warming cities, lowering ambient temperatures by up to 17 degrees Fahrenheit! They're also highly effective at absorbing floodwaters from climate change-boosted storms and letting them infiltrate into the ground. Atlanta and NYC are already planting new parks specifically for flood control, and Dallas for cooling. Great news! For more, see tinyurl.com/y65mujda.



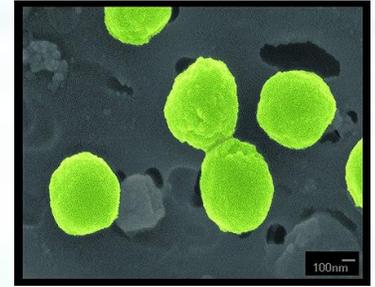
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Plastic in the Oceans (1). *Prochlorococcus* bacteria (pictured) are probably the most important organisms you've never heard about. They're a group of marine cyanobacteria only discovered in 1986, and they are the most abundant photosynthesizing organisms on the planet. The estimated 3 octillion (3×10^{27}) *Prochlorococcus* spread across the oceans of the world producing 10% of all the oxygen on the planet. Now, a Macquarie University research team found that pollutants



leaching from common forms of plastic pollution, such as polyethylene grocery bags, greatly harmed *Prochlorococcus*-at least in the lab. "We found that exposure to chemicals leaching from plastic pollution interfered with the growth, photosynthesis and oxygen production of *Prochlorococcus*, the ocean's most abundant photosynthetic bacteria," said lead researcher Dr Sasha Tetu. "Now we'd like to explore if plastic pollution is having the same impact on these microbes in the ocean." Sobering news, and another example of an unanticipated ecosystem impact from human pollution. For more, see tinyurl.com/y2o8rsfy.

Plastic in the Oceans (2). In a much more hopeful study, another research team found that an array of oceanic bacteria have evolved to consume oceangoing plastic pollution-and that we might be able to make them even better at it. The researchers collected polyethylene (PE) and polystyrene (PS) fragments from beaches in Greece. As they had been naturally weathered by UV radiation and temperature fluctuations, their surfaces were plated in carbonyl groups, offering a "grab-on point" for bacteria. After exposing the beachcombed plastic to a suite of marine bacteria for five months, the mass of the PE had decreased by 11% and the PS by 7%-and "acclimated bacteria" that had already been exposed to plastic in earlier experiments did even better. This is a great new example of the incredible adaptive power of life-if there's suddenly a big new category of stuff in the ocean, it's an excellent opportunity for the organism that evolves to eat it. If this adaptation takes off naturally in the marine ecosystem, or if we engineer even better plastic-munchers, this could be part of a great solution to plastic pollution. Great news! For more, see tinyurl.com/yyjygb4l.

Plastic in the Oceans (3). While we hope for super-bacteria to save us, forward-thinking nations continue to crack down on the root problem: single-use plastics. On May 22, 2019, the UK confirmed a ban on single-use plastic straws, drink stirrers, and cotton buds, to come into effect in April 2020. The move follows the UK's pioneering ban on microbeads in cosmetics and has overwhelming public support. Great news! For more, see tinyurl.com/yytw3hg7.