



Dispatches From The Wild, Weird World Of Humanity And Its Biosphere

August 4 2021

San Francisco

San Francisco International is America's seventh-busiest airport. Lying among the land it owns, surrounded by highways, train tracks, and power lines, is a seemingly unremarkable 180-acre parcel of land known only as the West of Bayside lot. It's soggy, weedy, and visually drab. Most people wouldn't think of it as "nature" at all, just "that weird overgrown scrubby marshy bit I drive by on the way to the



airport." It's exactly the sort of place considered "marginal" or "useless" land, and by the 1980s there were plans to pave it all to build a [subdivision](#).

It's now [a biodiversity hotspot](#), home to deer, foxes, birds, the California red-legged frog, thousands of invertebrates, and three species of snakes. It is, in fact the world's best remaining habitat for the endangered [San Francisco garter snake](#) (pictured), once described by a renowned herpetologist as "the most beautiful serpent in North America." The snakes, whose preferred prey is the California red-legged frog, landed on the first-ever US endangered species list in 1967, and a recovery plan belatedly drafted in 1985 found that the West of Bayside lot was one of the last places it was founded, stopping talk of a subdivision. The land was then protected from development but ignored otherwise for the next 23 years, during which time invasive plants and industrial runoff became a problem. Then, in 2008, the airport and US Fish & Wildlife Service [set forth a new plan for the snakes'](#)

[recovery](#), spearheaded by biologist Natalie Reeder. She led an initiative that built new rainfed ponds, stopped mowing that could kill the snakes, put in place more security to protect against reptile collectors, and deepened existing wetlands, making the site more ecologically hospitable for the snakes and their frog prey. There are now [an astonishing 1,300 San Francisco garter snakes](#) in the 180-acre West of Bayside lot. That's most of the entire world population of the snakes, more than 7 per acre, and likely near the maximum possible number of snakes to sustainably live in such a small area. Scientists are currently planning to use the lot as a source population from which to reintroduce snakes into other suitable habitat. This saga is a wonderful example of proactive conservation in the Anthropocene!

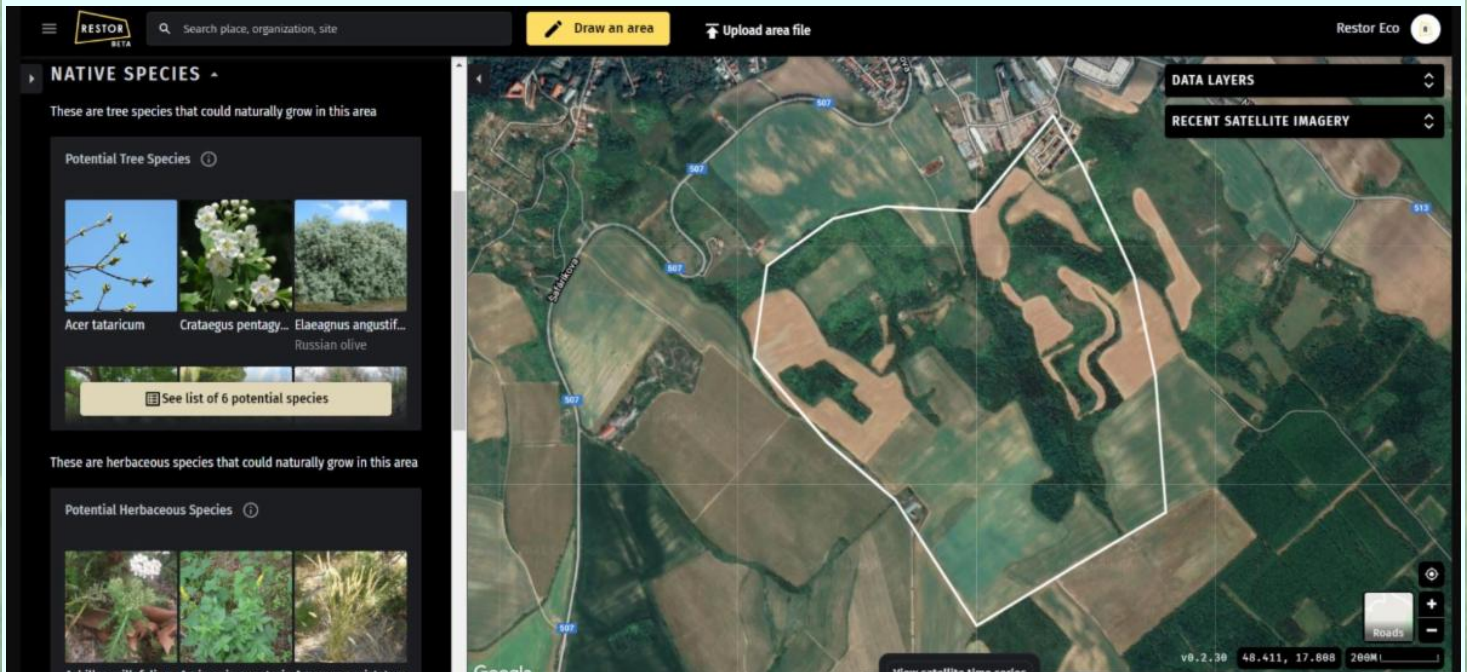


Climate Impacts.



Siberia is experiencing absolutely horrendous forest fires, overwhelming the local capacity to respond. [For the third straight year](#). This time, it's even worse. After the driest summer in 150 years, 4.6 million acres, greater than the land area of Hawaii, have already been destroyed. [Greenpeace Russia reports](#) (pictured) that since January, the figure is 19 million acres, an area larger than Greece. These fires may have created [the worst air pollution event in human history](#), dubbed an "airpocalypse," with soot particles in a size range dubbed "PM2.5" in the air at a concentration of 1,000 micrograms per cubic meter, 40 times higher than the WHO-recommended safe limit and 17 times higher than in the most polluted Indian and Chinese cities. The [choking smog](#) has shrouded the city of Yakutsk, endangering the lives of children and the elderly. And [65 million tons of carbon emissions have been released](#) so far, with two months left in the Siberian fire season.

The iPhone manufacturing hub of Zhengzhou, China [experienced record flooding, with 25 inches of rain-more than a normal year's worth-falling in a 24 hour period on July 20, 2021](#). Over 25 people were killed, many of them in a [nightmarish flooding of the underground subway system](#), and damages add up to at least US \$10 billion. [Recovery will likely be slow](#) for the surrounding rural areas.



As we struggle to survive and thrive in this changing world, an amazing new tool has been created to keep track of all the places people are working to restore habitat to sequester carbon and aid biodiversity. [Restor](#) (at [restor.eco](#)) is an open-source, map-based platform displaying [over 50,000 conservation and restoration projects around the world](#). Even cooler than that, it allows scientists to assess the restoration potential for any area in the world, drawing a polygon on a map and then getting data on the plant species, soil carbon, soil pH, rainfall, and other key ecological attributes of the land within. Restor was created by [the incredibly innovative lab](#) of Thomas Crowther at ETH Zurich. It's currently still in beta (pictured above) and requires setting up an account to use, but will be launched to the public in October. This will be awesome!

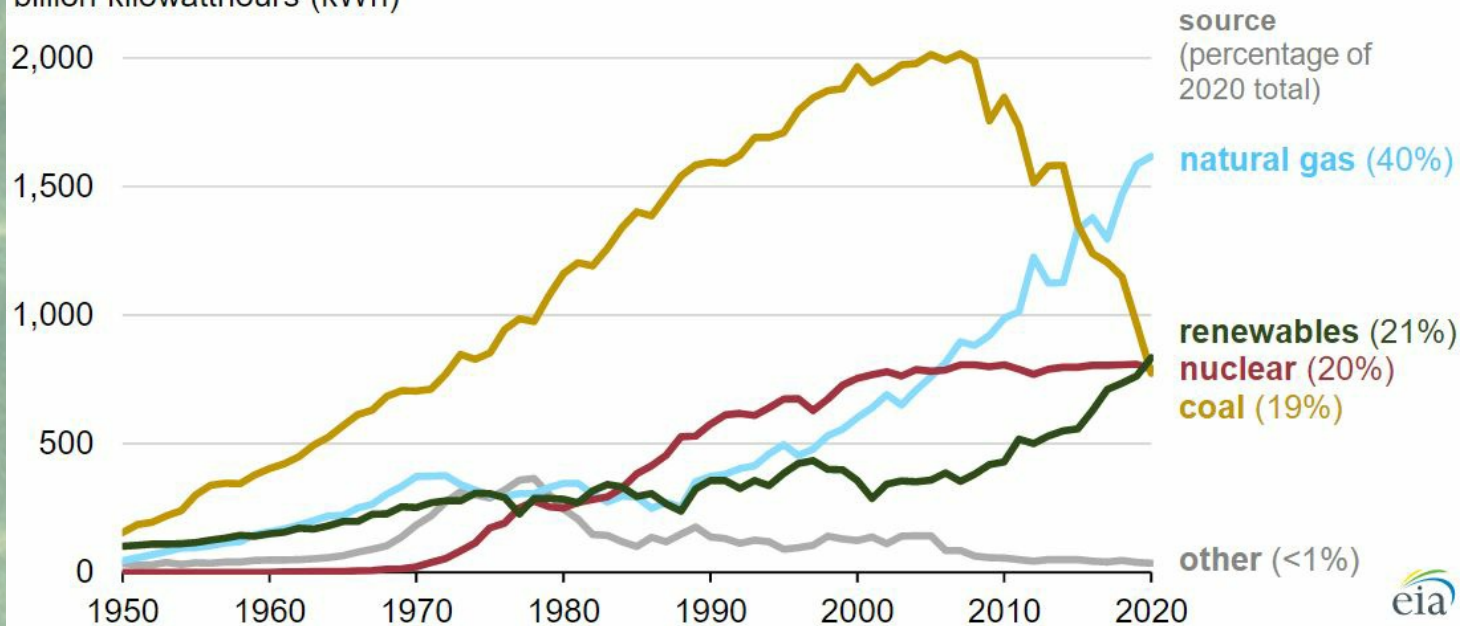
If you're looking for an insightful map-based tool available for the public now, Carbon Brief has an excellent [map of how climate change has affected specific extreme weather events around the world](#), with different icons for different disasters that when clicked reveal key paragraphs and references from the studies that analyzed their link to climate change. Wondering how much more likely climate change made, say, Hurricane Harvey, the California droughts, or the July 2015 summer heatwave in France? Check this map out!



United States

Annual U.S. electricity generation from all sectors (1950–2020)

billion kilowatthours (kWh)



The drumbeat of the renewables revolution keeps going! The federal Energy Information Administration reported that in 2020, [renewables \(counting hydropower\) became the second-most prevalent U.S. electricity source](#) (see graphic above!), overtaking the rapidly-declining coal sector. Furthermore, [U.S. carbon emissions from energy \(i.e. counting cars, electricity, etc., but not counting land use change\) in 2020 were the lowest in 40 years](#), at 4.6 billion metric tons of carbon dioxide, down from [5.13 billion metric tons in 2019](#) and a [high of 6.003 billion metric tons of carbon dioxide in 2007](#). It's also worth noting that 54% of those 2020 carbon emissions were from coal, which only provided 19% of power. This is why the top priority is getting rid of coal!

What with improving technology, state commitments to 100% renewables, Wall Street shifting money away from fossil fuels, and likely future federal support, renewables will likely keep rising in the next few decades, and furthermore continue to rise faster and faster. This is of course too slow and too late to stop the terrible climate disasters we're already seeing, which will continue to get worse. However, the American energy system is at least moving in the right direction, and when the renewables revolution accelerates much further, there's a decent chance it'll be enough to stop truly apocalyptic disasters in the farther future.

On July 27th, Governor Kate Brown of Oregon [signed into law a magnificent, far-reaching clean energy bill](#). It mandates that the Beaver State's two major utilities, "submit plans to reduce emissions by 80% from a baseline amount by 2030, 90% by 2035 and 100% by 2040." (To be clear, it also mandates that they then follow through on those plans and reach the emissions reduction deadlines). In addition to having a strong timeline (many states use 2050 as the final deadline year), note that this is measuring climate progress in a slightly different way than the similar bills states like New York, California, and Maine have passed-it's not saying "100% renewable energy energy from your utilities by this year", it's saying "100% *less*

greenhouse gas emissions by this year." For more backstory, check out [this interview with climate activist and Oregon state representative Khanh Pham](#) on what it took to get the bill passed.

It's also highly encouraging to remember that [this is the state where in 2019, Republican lawmakers physically ran away from the state capitol to deny quorum for a very similar climate bill, and at least one of them then threatened the lives of the state troopers sent to find him and bring him back](#). Admittedly, that bill used a different approach, trying to set up a cap-and-trade market versus direct mandates to utilities, but the point remains that two years, opposition to the category of "major climate action in Oregon" went from "Elected Republican officials will do anything, up to and including threatening to kill cops, to stop it," to "passed and signed into law with only the usual political whining." That's progress-and, this writer thinks, a good sign for the trajectory of climate action in politics in the 2020s!

As the US [bans import of products from](#) major polysilicon suppliers in Xinjiang for using [Uighur slave labor](#), and the US solar industry works to remove all Xinjiang-sourced products from its supply chains, an alternative to silicon in solar panels is gaining ground. Xinjiang supplies [about 45% of global polysilicon](#), which is currently used as a major component in photovoltaic panels, raising concerns that the (obviously morally imperative) banning of Xinjiang products will constrain solar panel production. However, there's an excellent trend making this less and less of a problem: US manufacturers are increasingly turning to solar panels based on **cadmium telluride**, which don't include any polysilicon. [Cadmium telluride](#) solar panels already supply [40% of the US utility-scale market and 5% of the global market](#), a wide array of companies are throwing money into making more of them, and the Biden Administration's Department of Energy set up a [\\$20 million fund in June](#) to accelerate research on and grow the supply chain for cadmium telluride panels. Excellent news!

And on July 27th, **Whatcom County, Washington State**, became [the first US county to ban all new fossil fuel infrastructure](#). The county council voted unanimously to make it illegal to build new coal-fired power plants, oil refineries, and fossil fuel transshipment and export facilities, and to require much stricter review of any expansion at the two oil refineries already present in the county. "There will be no new refineries, they won't be able to get permits to export their product and while we will still have these dinosaur facilities already

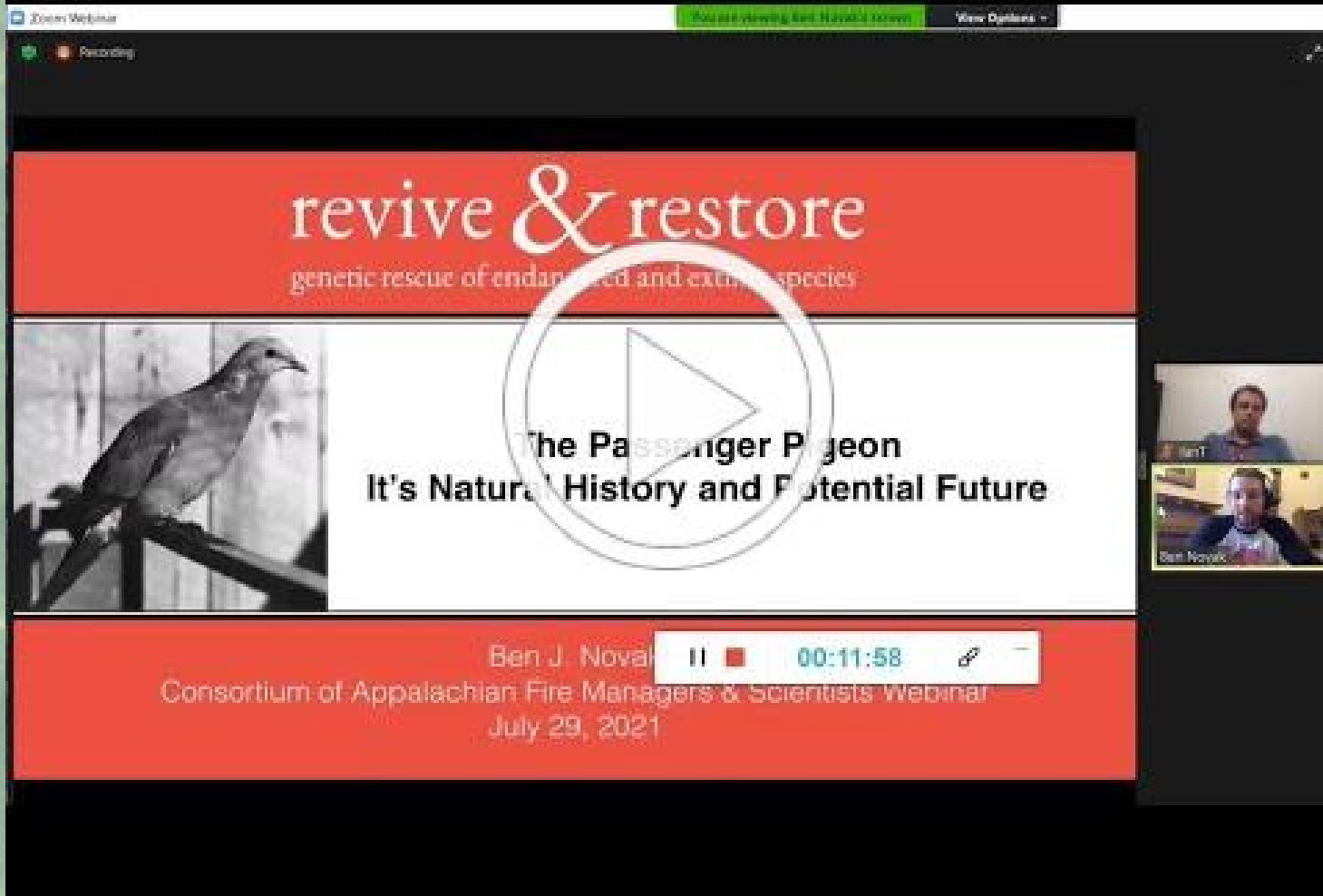
here it will be more challenging for them to expand,” said county councilor Todd Donovan. “The future is clearly in renewable energy.” This seems great as a precedent-setter, but not that big of a deal at first glance; there are [over 3,000](#) US counties, after all. However, Whatcom County is strategically located on a stretch of the Salish Sea with an excellent natural deep-water port, and the fossil fuel industry [has really wanted](#) to build new fossil fuel infrastructure there, mostly centered around exporting North American fossil fuels to Asia. Hundreds of thousands in dark money were spent in an attempt to influence local elections and the in-county redistricting process (this *failed immensely*, with environmental activist candidates now dominating the county council), and legal and activist battles raged over proposed new coal terminals and oil export facilities in the county for years. This is a great victory, yet another sign of the weakening of the fossil fuel industry, and an exemplar for other US counties to follow!

A Cleaner Future on the Northwest Coast

Whatcom County's new ordinances would halt new fossil fuel development on a waterway that already has become an industry hub.



Special Video: Ben Novak of Revive & Restore on the Future De-Extinction of the Passenger Pigeon



On July 29th, [Ben Novak of Revive and Restore](#), the world's first full-time de-extinction biologist, presented a webinar to the [Consortium of Appalachian Fire Managers & Scientists](#) on the natural history and [potential resurrected future](#) of the currently extinct passenger pigeon (*Ectopistes migratorius*). This is an extraordinary saga of cutting-edge science, the failures, foibles, and fantastic feats of humanity, and the ecosystems of the North America. Check it out! Also, you may notice the inclusion of some of this writer's mapping work starting at the 14:40 mark! If you're reading this newsletter in PDF form, check out the video at <https://www.youtube.com/watch?v=4NiBvhjji-g>.

The Weekly Anthropocene

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