PLANETARY HEALTH WEEKLY

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SCIENCE WON'T SAVE VACCINES FROM LAWSUITS ANYMORE

The highest court of the European Union handed opponents of basic public health their greatest legal victory in recent memory. At a time when a widening measles outbreaks across Europe and a growing pattern of parents refusing to immunize children, the Court of Justice of the European Union, the rough equivalent of the U.S. Supreme Court, decided that courts across the Continent may weigh whether a vaccine caused an illness regardless of whether or not there is any scientific evidence linking the two. Defining its mission as consumer protection, the CJEU said Europeans ought to be able to sue manufacturers, "excluding any method of proof," because of the imbalance of power between individual consumers versus large corporations. Europe's courts, the CJEU ruled, have a duty to "protect consumer health and safety and ensure a fair apportionment between the injured person and the producer of the risks inherent in modern technological production." The high court decision comes at a fragile time for the international vaccine regime.

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ALSO IN THIS ISSUE:

Ryerson University Faculty of Community Services

OZONE HOLE RECOVERY THREATENED BY RISE OF PAINT STRIPPER CHEMICAL

The restoration of the globe's protective shield of ozone will be delayed by decades if fast-rising emissions of a chemical used in paint stripper are not curbed. Atmospheric levels of the chemical have doubled in the last decade and its use is not restricted by the Montreal protocol that successfully outlawed the CFCs mainly responsible for the ozone hole. The ozone-destroying chemical is called dichloromethane and is also used as an industrial solvent, an aerosol spray propellant and a blowing agent for polyurethane foams. Little is known about where it is leaking from or why emissions have risen so rapidly. The new research, published in the journal *Nature Communications*, analysed the level of dichloromethane in the atmosphere and found it rose by 8% a year between 2004 and 2014. The scientists then used sophisticated computer models to find that, if this continues, the recovery of the ozone layer would be delayed by 30 years, until about 2090. If the dichloromethane in the atmosphere was held at today's level, the recovery of the ozone level would only be delayed by five years, the scientists found. There was a surge in emissions in the period 2012-14 and if growth rate continues at that very high rate, the ozone recovery would be postponed indefinitely.

Read More on the Guardian

Tropical Viruses: Coming Soon to Europe?

The mosquito-borne viral disease Chikungunya is usually found in tropical areas. Researchers have now discovered how climate change is facilitating the spread of the Chikungunya virus. Even if climate change only progresses moderately, as scientists are currently observing, the risk of infection will continue to increase in many regions of the world through the end of the 21st century. If climate change continues unchecked, the virus could even spread to southern Europe and the United States. The climate affects the spread of a mosquito-borne virus in two main ways. First, it plays a crucial role in the geographical distribution of the mosquitos, which can only thrive in the long term if temperature and precipitation levels are high enough. People have already been infected with Chikungunya in Italy, France, and Florida. The climatic potential for new diseases in southern Europe is probably being underestimated. The second scenario assumes that climate change will be left unchecked to a large extent. The virus would likely spread to countries in southern Europe. A global strategy is yet to be developed that would effectively slow down climate change, and this scenario appears to be more likely than the other.

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Kenyans Are First in Africa to Get Generic Version of Latest Aids Drug

Kenya is the first African country to start using a generic version of the latest AIDS drug that can improve and prolong the lives of tens of thousands of people who suffer severe side effects and resistance to other treatments. A generic of Dolutegravir (DTG), first approved in the United States in 2013, is being given to 20,000 patients in Kenya before being rolled out in Nigeria and Uganda later this year, with the backing of the health agency UNITAID. Ogutu, who has been living with HIV for 15 years, said her viral load - the amount of HIV in her blood - has fallen tenfold from 450,000 to 40,000 since she started on DTG. UNAIDS aims for 90 percent of people diagnosed with HIV to receive antiretroviral treatment by 2020. The brand name version of DTG is Tivicay, produced by ViiV Healthcare, which is majority-owned by GlaxoSmithKline. UNITAID works to bring medicines to market quickly and to reduce manufacturing costs by allowing generic companies to access patents for a small royalty and produce them cheaply for the developing world. Kenya, with one of the world's largest HIV positive populations, has made great strides in addressing HIV in its public medical facilities. The number of new infections in Kenya has almost halved over the last decade to 80,000 a year, thanks to increased testing, treatment and awareness.

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See Also on New Vision

Everyday Heroes: A Story of Self-Sacrifice and Bubonic Plague The Chirurgeon's Apprentice

On 1 November 1666, a young farmer named Abraham Morten took one final, agonizing breath. He was the last of 260 people to die of bubonic plague in the remote village of Eyam in Derbyshire. His fate had been sealed four months earlier when villagers decided to shut themselves off from the rest of the world: a sacrifice they made in order to save the lives of their neighbors in surrounding villages. The nightmare began on an unremarkable day in September, 1665. George Viccars, a local tailor in Eyam, received a consignment of cloth from London for his shop. Upon inspection, Viccars noticed that the cloth was damp. He hung it before his fire to dry, not realizing that it was playing host to fleas that were carrying the bubonic plague. Viccars was dead within a week. The pestilence spread rapidly throughout the village. Panic broke out as villagers began making preparations to flee Eyam for contagion-free surroundings. It was then that two local clergymen, William Mompesson and Thomas Stanley, decided to intervene in order to stop the plague from spreading to neighboring villages.

Read More on The Chirurgeon's Apprentice

Tipping Points Are Real: Gradual Changes in CO2 Levels Can Induce Abrupt Climate Changes

Within only a few decades the influence of atmospheric CO_2 on the North Atlantic circulation resulted in temperature increases of up to 10 degrees Celsius in Greenland, as indicated by new climate calculations from researchers at the Alfred Wegener Institute and the University of Cardiff. Their study is the first to confirm that there have been situations in the planet's history in which gradually rising CO_2 concentrations have set off abrupt changes in ocean circulation and climate at "tipping points." These sudden changes, referred to as Dansgaard-Oeschger events, have been observed in ice cores collected in Greenland. Author Xu Zhang explains: "With this study, we've managed to show for the first time how gradual increases of CO_2 triggered rapid warming." This temperature rise is the result of interactions between ocean currents and the atmosphere. The increased CO_2 intensifies the trade winds over Central America, as the eastern Pacific is warmed more than the western Atlantic. This produces increased moisture transport from the Atlantic, and with it, an increase in the salinity and density of the surface water. Our simulations indicate that even small changes in the CO_2 concentration suffice to change the circulation pattern, which can end in sudden temperature increases," says Zhang.

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Climate Change Could Devastate the Birthplace of the Arabica Coffee Bean

The world's most popular coffee bean, arabica, is under threat in the country where it was first found. Rising temperatures and decreasing rainfall could render as much as 60% of Ethiopia's coffee-growing areas unsuitable for cultivation by the end of the century. As many as 15 million Ethiopian farmers, or about 15% of the country's population, depend on the industry. "Arabica coffee originates from the highland forests of Ethiopia, and it is our gift to the world," said Sebsebe Demissew, a senior botanical scientist at the University of Addis Ababa and one of the coauthors of the study published in *Nature Plants* this week. "As Ethiopia is the main natural storehouse of genetic diversity for Arabica coffee, what happens in Ethiopia could have long-term impacts for coffee farming globally." A 4°C increase in temperature showed a 39-59% decrease in land suitable for coffee-growing, they concluded. There are some possible solutions. The researchers found that migrating coffee plantations to hillside forests could result in a fourfold increase in coffee growing areas. But even this has a limit. Under this scenario the researchers estimate that by 2040 coffee growing plantations will have reached the top of Ethiopia's mountains.

Read More on Quartz

New Tool Helps African Countries Find the Best Sites for Renewable Energy Projects

Demand in the Eastern Africa Power Pool (EAPP)and Southern African Power Pool (SAPP), which include more than 50 percent of the continent's population, may exceed 1,000 terra-watt hours (TWh) by 2030, nearly three times 2010 electricity consumption. Much work needs to be done to supply that expected demand. A new tool called Multicriteria Analysis for Planning Renewable Energy (MapRE) might keep such delays from happening by helping governments, utilities, and developers pick better sites for renewable energy projects. Developed by researchers at the University of California, Berkeley; Lawrence Berkeley National Laboratory; and International Renewable Energy Agency, MapRE lets users characterize solar and wind energy sites according to a fuller set of criteria than other analyses have. MapRE starts with a large spatial database that includes wind speeds and timing, solar insolation, and other physical factors. But it also factors in the impact of both the project and the transmission infrastructure it will need. These factors include the transmission extension costs based on population density and on the estimated distance to the nearest grid infrastructure. Using the tool, potential projects requiring long transmission extensions, which increase project risk, can be identified.

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The End of the Combustion Engine? Volvo to Go All-Electric by 2019

Volvo has announced a major leap forward in an effort to embrace an electrified portfolio of vehicles. The Swedish automaker will go all-electrified come 2019; every single vehicle it launches will feature an electric motor in some usage. This is not the immediate end of the internal-combustion engine for Volvo: its electrified future will be composed of not only battery-electric vehicles and plug-in hybrids, but also 48-volt mild hybrids. The mild-hybrid systems will become optional equipment for every single Volvo in the future. Volvo will launch five fully-electric cars between 2019 and 2021, three will be Volvos, while two will come from Polestar, the brand's standalone performance division. Volvo says the five cars will be supplemented by a range of plug-in gasoline, plug-in diesel, and mild hybrid variants. Volvo aims to sell, 200,000 vehicles in China by 2020 and 800,000 globally by the same time. By 2025, Volvo wants to have sold 1 million electrified cars; for some perspective, Volvo's total global sales in 2016 ran to 534,000 units.

Read More on Green Car Reports

SPOTLIGHT ON POLICY: Policy to The People: Context is King When Advocating for Renewable Energy Policies

The first rule of advocating for climate change-related legislation is: You do not talk about "climate change." The term has become so polarizing that its mere mention can cause reasonable people to draw seemingly immutable lines in the political sand. But public opinion does not always cement state legislation. Florida, for example, has not only the wind and solar resources to support renewable energy, but also more public support for it than Oregon, which currently has a policy requiring that at least a quarter of its energy come from renewables. Florida has no renewable energy policy. The context in which renewable energy policy is framed, particularly in terms of jobs, electricity costs and pollution, has a tremendous impact on a person's opinion of it. People tend to forget that when they talk about renewable energy it has benefits for air pollution, and so when you remind people of that it's likely to increase their support because reducing air pollution is a local benefit. The key is the local benefit because people don't connect to broad concepts such as climate change on a personal level, instead view it as a global phenomenon.

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SPOTLIGHT ON INDIGENOUS HEALTH: Investors Withdraw From Deadly Dam Project in Honduras

International investors are withdrawing all funding from a controversial hydroelectric dam project in Honduras that became increasingly untenable due to several murders among those who had opposed it. In Honduras, at least 124 campaigners opposing mines, dams, logging and tourist resorts have been murdered since 2010, making it the most deadly country in the world for environmental and land activists. Forty percent of the environmental defenders killed in 2014 were indigenous people trying to defend their land and water sources. A number of people who opposed the dam project at Agua Zarca dam on the Gualcarque river have been killed over the years, allegedly by state-sanctioned military death squads. But it was the murder of one environmental activist, Berta Cáceres, that brought fierce international notoriety and condemnation to this project. The activist group, which said the dam would compromise their access to water, food and medicine and threaten the Lenca people's traditional way of life, continued to demand that investors withdraw and make reparations for the human rights violations linked to the project. Cáceres' coworker, Nelson García, was slain two weeks after her death.

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WEEKLY BULLETIN

QUOTE OF THE WEEK

"We recognize the limits of military power, and how important it is to leverage all elements and capabilities that our interagency and nongovernmental organizations bring to bear in Africa and around the world."

Maj. Gen. Joseph P. Harrington, the head of United States Army Africa at the opening session of the African Land Forces Summit in Malawi, a gathering from May 8-11, 2017 of land force chiefs from the U.S., United Kingdom, France, Brazil and 40 African nations.

Read More on New York Times

EVENTS TABLE

DATE	CONFERENCE	LOCATION	REGISTER
July-Sept	Aboriginal Conferences	Canada	http://aboriginalconferences.ca/
July 25-27	Pedagogy For The Anthropocene: Re-Rooting Academic Knowledge in Nature	Toronto Canada	http://docs.google.com/forms/d/e/1FAIpQLSofqDbn3qR-F5XpU09k_mhfkPp6SOj3w4-vQsouYH1oVuYnQ/viewform?c=0&w=1
Sept 25-27	Canadian Association of Community Health Centres 2017 Conference	Calgary Canada	https://www.cachc.ca/2017conference/?utm_source=CACHC+e-News&utm_campaign=95ef99308c-EMAIL_CAMPAIGN_2017_06_20&utm_medium=email&utm_term=0_78768ad041-95ef99308c-306041945
Sept 29	Governance of Pharmaceuticals Policy Workshop	Toronto Canada	http://www.pharmacy.utoronto.ca/whocc
Oct 29-31	Canadian Conference for Global Heath	Montreal Canada	http://www.ccgh-csih.ca/ccgh2015/index

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NEW BOOK: THE COMPETITIVENESS OF TROPICAL AGRICULTURE BY ROGER NORTON

The Competitiveness of Tropical Agriculture: A Guide to Competitive Potential with Case Studies describes and synthesizes existing methodologies for evaluating competitiveness in agriculture. As exports of tropical fruit, nuts, and other high-value crops have been growing very rapidly from developing countries, but often encounter serious obstacles in their value chains, this book demonstrates how national agricultural policy is oftentimes not guided by considerations of inherent competitiveness.

Key Features

- Presents evaluations of 105 agricultural products, including crops, livestock outputs, aquaculture products, and forestry products
- Explores insights not found in other competitiveness studies, including spatial variation within a country for the same crop, relation to the use of skilled labor, and above all, the role of value chain issues in determining competitiveness
- Includes analysis of results, such as assessing sector-wide effects on employment and income of policies that help align the sector with its competitive advantage

[Read More on Elsevier]

GLOBAL ABORTION POLICIES DATABASE

The Global Abortion Policies Database is designed to strengthen global efforts to eliminate unsafe abortion by producing an interactive open-access database and repository of current abortion laws, policies, and national standards and guidelines. This tool builds upon the UNPD's previous work in this area, resulting in a more comprehensive information resource on abortion policies in the 21st century. The database will facilitate analyses of countries' abortion laws and policies when they are placed in the context of WHO guidelines and human rights norms and standards. It is intended to help states identify and eliminate the barriers that women encounter in accessing safe abortion services. It is also intended to increase both the transparency of abortion laws and policies and to ensure accountability for the protection of women's health and their human rights.

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DRAGONFLIES REVEAL HOW BIODIVERSITY CHANGES IN TIME AND SPACE

An ecological filter in a pond, such as voracious fish that feed on dragonflies and damselflies, can help ecologists predict how biodiversity loss may impact specific habitats, according to Rice University researchers who spent four years studying seasonal changes in ponds across East Texas. In one of the first studies of its kind, the scientists show that strong environmental "filters", in this case, predatory fish, cause dragonfly and damselfly communities to vary regularly from year to year and season to season in ponds across East Texas. The results, which appear online this week in the journal *Ecology Letters*, show how an ecological filter can help ecologists predict how biodiversity loss may impact specific habitats.

Thousands of Earth's species are becoming extinct each year and the rate is increasing. Scientists have struggled to predict consequences of biodiversity loss, in part because of the uncertainty about natural variations in composition of communities across time and space. "Ecologists tend to think about biodiversity in space, we locate biodiversity hotspots and use maps to show how biodiversity varies in different habitats but not in time," said Volker Rudolf, associate professor of biosciences at Rice and the lead scientist on the new study. "In reality, biodiversity changes over time just as much and in many different ways.

"There are ecological theories that suggest that community dynamics should be connected in both time and space, but we typically just infer the temporal dynamics from the spatial patterns," he said. "In a sense, people have sort of done this backward. They assume that if these dynamics happen over time, then here's what we should see in space. In our case, we don't assume. We actually show what happens."

In their study, Rudolf and his students collected and analyzed more than 18,000 insects, amphibians and fish in quarterly visits each year from 2011 to 2015 at 45 remote ponds in the Davy Crockett and Angelina national forests about 80 miles north of Houston. One of the main things the team wanted to investigate was the extent that each pond varied, not just from season to season but also from year to year during the same season. By returning each fall, winter, spring and summer to the same ponds for four years, they quantified four sets of season-by-season changes (i.e., spring to summer) as well as four sets of year-to-year changes (i.e. summer to summer) for each site. In analyzing the differences, Rudolf's team found systematic differences in the temporal and spatial patterns of dragonfly diversity across ponds with different top predators. In ponds that were associated with the presence of predatory fish like bass, the top predators brought an order to both the type of dragonflies that were able to live in a pond and how dragonfly communities changed over the seasons and years.

Rudolf said the study suggests that ecological stress brought on by overfishing, overhunting, habitat loss and climate change could have very different effects on habitats with and without filters. He said the study shows how important it is for ecologists to account for such differences as they seek to quantify and conserve remaining biodiversity.

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ANOTHER STEP FORWARD FOR CHEAP SOLAR POWERED SMART WINDOWS

US researchers have developed a self-powered smart window that can cut building HVAC costs by up to 40 per cent by augmenting window tint – blocking light and infrared heat. Electrochromic glass typically needs a separate power source for operation, making it complicated to retrofit into existing buildings, but researchers from Princeton University have come up with an all-in-one solution to make it cheaper and easier to install.

They've applied a new solar cell technology to the windows that selectively absorbs near-ultraviolet light, making it transparent and providing the energy needed to adjust the window's tint and block out light and infrared heat. "This new technology is actually smart management of the entire spectrum of sunlight," Andlinger Center for Energy and the Environment engineering professor Yueh-Lin Loo said. The charge generated from the solar triggers a reaction in the electrochromic window, turning it from clear to dark blue, which can block more than 80 per cent of light. "Using near-UV light to power these windows means that the solar cells can be transparent and occupy the same footprint of the window without competing for the same spectral range or imposing aesthetic and design constraints," Dr Loo said.

Princeton doctoral student Nicholas Davy said the team was working on creating a flexible version of the technology that could be applied to existing windows as a laminate, which could be controlled wirelessly using an app. "Someone in their house or apartment could take these wireless smart window laminates – which could have a sticky backing that is peeled off – and install them on the interior of their windows," Mr Davy said. "Then you could control the sunlight passing into your home using an app on your phone, thereby instantly improving energy efficiency, comfort and privacy." "It does not generate enough power for a car, but it can provide auxiliary power for smaller devices, for example, a fan to cool the car while it's parked in the hot sun," Dr Loo said.

Read More on The Fifth Estate

AIR ON BOARD CRUISE SHIPS IS TWICE AS BAD AS AT PICCADILLY CIRCUS

Passengers on cruise ships could be exposing themselves to dangerous levels of pollution, according to an investigation by Channel 4's Dispatches team that found some public areas on the ships' decks were more polluted than the world's worst-affected cities. The undercover investigation, focused on the levels of "ultra-fine particles" found in the air on and around cruise ships, from the fuel the ships' engines burn. These particles are so small, around a thousandth of the width of a human hair, that they can enter the bloodstream via the lungs. More than 1.9 million people from the UK travel on a cruise each year and there is growing concern among the scientific community about the health risks.

Dispatches used a P-Trak ultrafine particle counter to measure the ultra-fine particulates suspended in the air on board P&O Cruises' ship Oceana. The Oceana is more than 250 metres long, 15 storeys high and can carry more than 2,000 passengers. The device found 84,000 ultra-fine particulates per cubic centimetre on the deck downwind of, and directly next to, the Oceana's funnels. That's more than double the amount found at London's Piccadilly Circus, where the number of ultra-fine particulates per cubic centimetre was 38,400.

Dr Matthew Loxham, a specialist in air pollution at the University of Southampton, said these were the levels of pollution you would expect to find in cities such as Delhi or Shanghai. As for the health risks, there is, he says, cause for concern. "From a scientific point of view, we know that pollution causes adverse health effects even in the short term," he said. "On a ship deck, you're exposed to higher levels of pollution so you may get symptons such as runny nose, cough, dry eyes or a higher risk of asthma attacks. For those that are pre-disposed, there may be a higher risk of stroke or heart attack." Loxham said: "If the cruise ships are complying with the law and there is still this level of pollutants, the question really is: are these laws fit for purpose?"

From an environmental point of view, it's bad because of the air pollution caused by the very high sulphur content. The shipping industry, however, has traditionally liked it because it's much cheaper than other fuels.

Read More on The Guardian

CRASH AND BURN (OUT): 5 STAGES OF POSTDOCTORAL COLLAPSE

WRITTEN BY: SABRINA ZEDDIES

The number of postdoctoral researchers that burn out at an early stage of their career seems to be increasing, and mental health has been a hot topic at universities and institutes across the world. The scientist in me always wonders why it is this group that is particularly at risk? Funding struggles, job insecurity and pressure to perform are obvious contributors but do they explain the whole picture?

1. The enthusiasm trap

When I defended my PhD thesis, I felt on top of the world. With all my enthusiasm for science, I took on a postdoctoral position that was a career change from basic research to quality assurance and translational medicine. I was excited to learn something new and discover a new field and I had the training that positioned me well for success. My mentors and colleagues were supportive and I was surrounded by positive energy.

2. The more you put into it, the more you get out

Maybe I should mention that on my first day, I was five months pregnant. At the time I did not really think much about it. Sure, I did not sleep well at night because I had no idea how to sleep with a belly the size of a small European country. Never mind. Everyone is exhausted at times in science, right? Stop whining, it will surely get better at some point. I focused on learning as much as I could as quickly as I could. After all, I also had to start making big decisions in my new job. “Wait!”, I hear you say, “you weren’t yet fully trained and had no experience!” – but I had a PhD… surely I should be able to educate myself. Learning by doing, this is how my PhD went as well – if only I spend more hours studying, I would succeed.

3. This is how we roll in science

As time went on, more responsibilities were added to my job. I was given the opportunity to learn even more, how fantastic! However, I ignored the fact that I still hadn’t been trained for the actual job. And I didn’t have time to remember that that I was no longer a PhD student, single, with mostly other PhD students as friends. Work used to also be my social life and it certainly was not now. I was a mother who had not had a good night’s sleep in months, mornings quickly became a routine exercise. Get up, get ready, get the baby to daycare, get to work. And in the evening, the same in reverse. No time for rest, no time to reflect and hardly even time to see my child. I was unable to not be busy and besides that, if you are not busy, you are lazy, right? And lazy people do not succeed in their careers. Other colleagues talked about workload, pressure to perform and not being able to see friends. I was just another one of them. We are used to it, PhD life was like this as well.

4. Try harder

Soon, I could not switch off my head at night. Thoughts started creeping up that no matter how hard I tried, I would never be able to succeed. I lacked experience and basic knowledge on the subject. But I was so relieved having secured a postdoctoral position that I held on to it as hard as I could. Better have this job then have no job at all. What to do? There was only one answer: I had to try harder! Did I enjoy what I was doing? Nope. Each morning, I would get up exhausted and go back to a job I was not good at. I dragged myself to work. At the end of the day, I had no idea what I had been busy with. I had accomplished nothing.

5. It Hits the Fan

You know what is strange about burnout? I was unaware of it. I was numb. Unable to see how bad things had become. I found no joy in what I was doing. My health was deteriorating. I made more and more mistakes. I had trouble remembering things. Still, I could not acknowledge how bad things were. And I could not stop. If only I tried harder, I would succeed… Until I was too exhausted to get up and leave the house. I called in sick. I rested. I reflected on the previous two years and asked myself: Do I like what I am doing? The answer was: No. While I am good at a lot of things, this job was not me and nobody (myself included) had bothered to notice.

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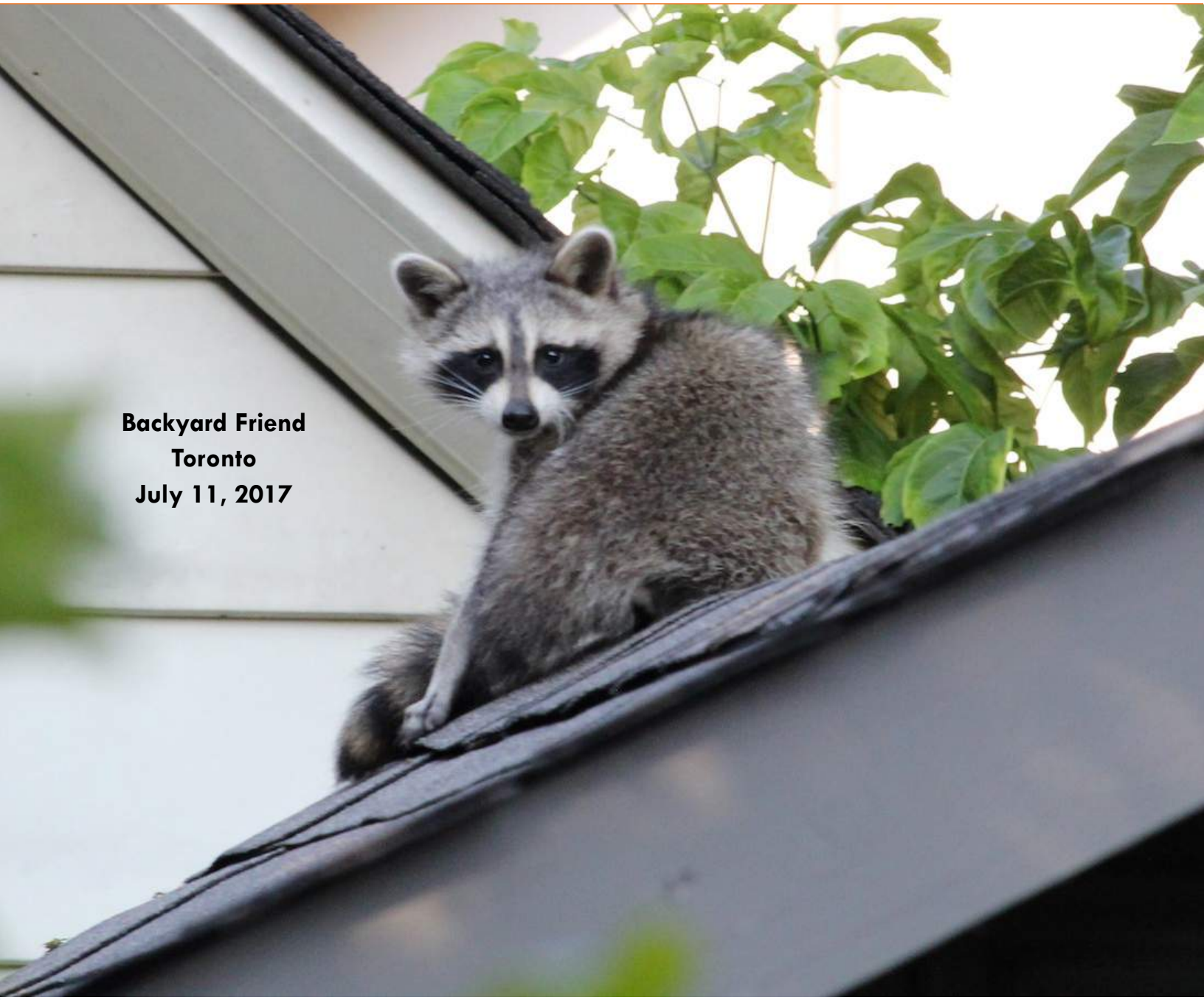

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