

POPULATION CONNECTION

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June 2020

**A PLEA TO
THE PEOPLE:
PROTECT
THE PLANET
TO PREVENT
PANDEMICS**





President's Note

This has been the darkest of springs, with endless cascades of devastating news. When so many are suffering such terrible losses, it seems right and proper to pay tribute to the characters, talents, and achievements of those who have left our midst.

I found myself thinking of wonderful Population Connection members through the years when I recently learned the sad news of the deaths of three longtime members (from causes unrelated to COVID-19). Amidst the current tsunami of misery, their passing—and the passing of so many other friends of Population Connection over time—shouldn't go unnoticed.



At the time of his death, at age 96, **David Starr** had been working in the field of journalism for his entire adult life. Beginning as a 17-year-old copyboy for Advance Publications, he rose to president of *The Republican* newspaper in Springfield, MA—a paper whose founding predated that of the GOP itself by some decades. David had the sharpest of minds, so I had to be on my toes when meeting with him. He devoted himself to the improvement of western Massachusetts, while also strongly supporting population stabilization and other vital missions.

I just learned of the death of one of Population Connection's greatest friends, **Lincoln Miller**, of Hillsdale, MI. He and JoAnne, his wife of nearly 54 years, devoted their careers to education and were enjoying a well-deserved retirement, while serving as top cheerleaders for our Population Education program. In addition to teaching special education, Linc founded a program for gifted students and provided math "Super Saturday" classes. As a retiree, he was a prolific fundraiser for local education programs. Every time Linc checked in with us, he brightened our day.



Rabble-rouser. Unintimidated. No-nonsense. These words have been used to describe my good friend **Mardi Kildebeck** who recently died. Through sheer determination, she made the San Francisco Bay area—her home for 50 years—and our world a better place. In addition to her own unflinching activism on behalf of reproductive rights and other great causes, Mardi ran the Mary Wohlford Foundation. At Population Connection, we benefited for years from Mary Wohlford Fellows, talented recent college graduates embarking on a lifetime of fierce advocacy for the causes central to our mission.

At Population Connection, we treasure the relationships with our members. Our appreciation is boundless. If anything good can come of this terrible pandemic, perhaps we can all strive to be more grateful, certainly to those on the front lines of the pandemic, but also to all those "helpers" who by word and deed are dedicated to making our living planet a better, safer place—which is at the heart of our own population stabilization mission.

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Cover Image: Christine McCarthy, a nurse for over 20 years and a palliative nurse for the past year, sits for a portrait on an empty hospital bed at Massachusetts General Hospital in Boston on April 2, 2020. Here at the state's largest hospital, staff are coping with unprecedented realities in this coronavirus pandemic and are deeply worried about what is yet to come. There is an odd juxtaposition inside this normally bustling world-renowned hospital: Expanded intensive care units are packed with COVID-19 patients, while other floors and places such as family waiting rooms are deserted, quiet. (Erin Clark for *The Boston Globe* via Getty Images)

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Editor's Note

All any of us are reading or talking about these days is the novel coronavirus wreaking havoc across the globe. The Democratic Primary? Harry and Meghan ditching their royal crowns and leaving England? Those stories have been replaced with articles about unemployment benefits, DIY protective masks, and how ineffectively we've been washing our hands our entire lives (and, let's be honest, *Tiger King*).

This issue of *Population Connection* magazine explores the origins of the COVID-19 outbreak, which, at press time, was already responsible for killing over 200,000 people worldwide.

Basically, it comes down to the fact that we've treated animals terribly for all time, and every now and then it bites us. This time it has drawn blood, so to speak.

Karin Brulliard wrote in *The Washington Post* on April 3, 2020,

Wild animals have always had viruses coursing through their bodies. But a global wildlife trade worth billions of dollars, agricultural intensification, deforestation, and urbanization are bringing people closer to animals, giving their viruses more of what they need to infect us: opportunity. Most fail. Some succeed on small scales. Very few, like SARS-CoV-2, the novel coronavirus, triumph, aided by a supremely interconnected human population that can transport a pathogen around the world on a jet in mere hours. ... As earth's human population hurtles toward 8 billion, no one thinks human-animal interaction is going to decrease. The key is reducing the risk of a devastating spillover, scientists say—and not by killing bats. But they acknowledge that cultural and economic pressures make change difficult.

We humans have pushed our way into all types of habitats, forcing interactions with wildlife that harm them and us; gathered

up the exotic species that people will pay top dollar to eat and stacked them in cages to bleed and defecate on each other in wet markets; and farmed them in cruel, unsanitary conditions that allow livestock feces to find its way into our food and water.

Why are we pushing into wildlife habitats? Because we are driven to consume more space to build communities, more natural resources to sustain our lives and livelihoods, more wild game to feed more people. In short, because of rapid human population growth. Which is the same reason we've taken to farming livestock in such horrific conditions. We're no longer eating meat produced at our local family-run farms. We're eating meat that's been factory farmed, sometimes thousands of miles away, in huge, depressing feedlots—because that's the only way to produce enough of it for our massive population, which still grows by 80 million people a year.

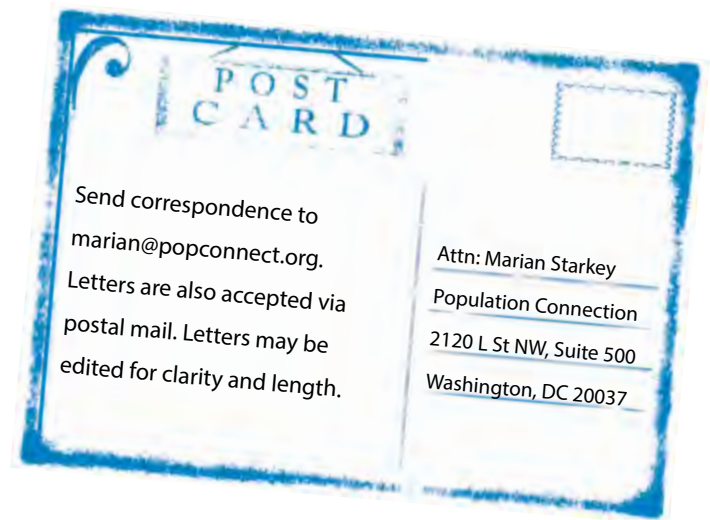
As we stream live concerts, organize our sock drawers, again, and wash our hands until they chap, let's remember that we got ourselves into this mess. And then let's assure ourselves that we have the ability to prevent ourselves from falling prey to wildlife pathogens again in the future. What we have to do:

1. Give every person, everywhere, access to affordable contraception. This will slow the growth of the human population by allowing people to exercise their reproductive rights.
2. Start treating animals with respect. Slowing habitat loss, cracking down on illegal poaching of exotic species, and employing sustainable farming practices are strategies that will prevent zoonotic diseases from infecting humans.

I'm hopeful that we'll come out of this wiser than before and with an eye toward preventing another coronavirus catastrophe.

Marian Starkey
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Letters to the Editor



I know I am “preaching to the choir,” but I just read a disturbing article in *Scientific American** relating the emergence of the virus responsible for COVID-19 to habitat destruction. I felt compelled to share this with someone who might understand, and who other than your organization.

What was almost as disturbing as reading of the nearly inevitable prospect of more of the same happening was the absolute absence of any mention of the underlying cause of habitat destruction, which as we all know, is human population increase.

Gordon Johnson

Just read the moving story in the March 2020 issue on the Nepali visiting service providers—they are truly heroes on the front lines. Then saw the graphic that to meet all unmet family planning needs in Nepal would require an extra \$15 million—are you kidding me?? With the U.S. budget in the trillions, this is pocket change.

I have always been dumbfounded at our misplaced priorities in this world: Hell, for only the cost of a couple of stealth bombers, we could easily pay the yearly unmet need for family planning/women’s health throughout the WORLD.

Andy Stump

Great example in Nepal. Important work and results. Would love to see these declines in births across the globe especially embraced in developed world countries that are driving the majority of environmental devastation. Keep up the great work.

Terry Spahr

The following is a letter that one of our members submitted to the editor of The New York Times. It was not published, so we are sharing it here, lightly edited for clarity and length. Please let us know whenever you submit letters to the editors of newspapers on population issues—we’d love to read them!

—Marian

Re: “Even Before Coronavirus, America’s Population Was Growing at Slowest Rate Since 1919,” *The New York Times*, March 26, 2020

The tone of Sabrina Tavernise’s report on slowing U.S. population growth was thoroughly gloomy. But slow growth should be cause for celebration. It’s true that at the reported annual growth rate of 0.48 percent, America’s population will not double until the year 2165, but is Ms. Tavernise impatient for that milestone?

Why has longterm sustainability—through protection from population pressures on clean water and air, wild land, parkland, and many other resources—stopped being a progressive pursuit?

Certainly, old people will need caregivers, but since good health lasts longer now, the simple solution would be to index retirement age to longevity. To depend on continual population growth to staff our care facilities—or to keep any other businesses healthy, for that matter—is a Ponzi scheme.

George Ainslie, MD

* The *Scientific American* article to which Mr. Johnson refers, “Destroyed Habitat Creates the Perfect Conditions for Coronavirus to Emerge,” was originally published by *Ensis* (with the title “Destruction of Habitat and Loss of Biodiversity Are Creating the Perfect Conditions for Diseases Like COVID-19 to Emerge”). We have reprinted the article in this issue of the magazine; it begins on page 10.

ONE HEALTH TO PREVENT



ONE HEALTH is an approach that recognizes that the **health of people** is closely connected to the **health of animals** and our **shared environment**.

pandemics

ONE HEALTH

is not new, but it has become more important in recent years.

This is because many factors have changed interactions between people, animals, plants, and our environment.

- Human populations are growing and expanding into new geographic areas. As a result, more people live in close contact with wild and domestic animals, both livestock and pets. Animals play an important role in our lives, whether for food, fiber, livelihoods, travel, sport, education, or companionship. Close contact with animals and their environments provides more opportunities for diseases to pass between animals and people.
- The earth has experienced changes in climate and land use, such as deforestation and intensive farming practices. Disruptions in environmental conditions and habitats can provide new opportunities for diseases to pass to animals.
- The movement of people, animals, and animal products has increased from international travel and trade. As a result, diseases can spread quickly across borders and around the globe.



These changes have led to the spread of existing or known and new or emerging **zoonotic diseases**, which are diseases that can spread between animals and people.

Scientists estimate that more than **6 out of every 10 known infectious diseases in people can be spread from animals**, and 3 out of every 4 new or emerging infectious diseases in people come from animals.

Each year around the world, it is estimated that zoonoses (diseases shared between people and animals) cause **2.5 billion cases of sickness and 2.7 million deaths**.

Sources: Centers for Disease Control and Prevention & National Center for Emerging and Zoonotic Infectious Diseases (Images: freepik.com)



IN THE NEWS

By Stacie Murphy, Director of Congressional Relations

Egypt's Population Reaches 100 Million

The population of Egypt reached 100 million in February, straining resources in a country where 8 percent of the territory contains 97 percent of the inhabitants. With the population growing by 2.5 million each year and 6 in 10 people under the age of 29, education, jobs, and infrastructure remain an enormous challenge.

The Ministry of Social Solidarity mounted a public health campaign last year called “Two is Enough” to encourage people to have smaller families. Officials say it is working, pointing to a decrease in the fertility rate from 3.5 in 2014 to 3.1 in 2018.

Most Americans Want Abortion to Remain Legal

According to a Kaiser Family Foundation poll of 1,215 people in the U.S., 59 percent of Americans believe abortion should be legal in most or all cases, and nearly 7 out of 10 support *Roe v. Wade*.

However, the researchers found what they called a significant “knowledge gap” when it comes to abortion facts. Nearly 7 in 10 respondents believe that most abortions take place at 8 or more weeks into pregnancy (in fact, nearly two-thirds of abortions take place at less than 8 weeks). Thirty-one percent of those polled believed that between 20

and 49 percent of abortions take place more than 20 weeks into pregnancy (the actual number is 1.2 percent). Nearly 8 in 10 had never heard of mifepristone, a pill that can be taken to end a pregnancy in its early stages.

The poll also revealed that many people support restrictions on access, including waiting periods and the requirement that providers have hospital admitting privileges—measures that have no impact on women’s health and safety. Support for these restrictions appears soft, however. After hearing counterarguments, many respondents who had supported the measures stated that they had changed their minds.

Being Denied Abortion Leads to Longterm Economic Fallout

Women who seek abortions but are denied access to the procedure are at high risk for devastating economic consequences, says a working paper published by the National Bureau of Economic Research. Co-authored by Sarah Miller, a professor at the University of Michigan’s business school; Laura Wherry, a professor at UCLA’s medical school; and Diana Greene Foster, a professor of reproductive sciences at the University of California, San Francisco, the paper uses data from the U.S. Turnaway study.

From 2008–2010, researchers followed 217 women who were above the

gestational limits of the clinic and were denied abortions. Of this “turnaway” group, 68 percent carried their pregnancies to term, while 32 percent were able to access abortion elsewhere, miscarried, or had a stillbirth. Researchers tracked the women for five years, calling to check in every six months.

Previous research has found that women who were turned away from abortion services experienced a range of physical and mental health consequences, including increases in intimate partner violence. The new analysis looked at the economic repercussions of the denial. The group of women who were turned away saw a 78-percent increase in past-due debt from their pre-pregnancy group average and had 81 percent more “public records” (evictions, tax liens, and bankruptcies) than they did pre-pregnancy.

The effect was not merely due to the added expense of a child. The researchers found that women who had abortions and then later went on to have a child remained financially better off than those who were turned away.

New Zealand Decriminalizes Abortion

New Zealand’s Parliament passed the Abortion Legislation Act of 2020 by a vote of 68–51, removing abortion from its national Crimes Act of 1961 and making the procedure available through the first 20 weeks of pregnancy.

Previously, abortion at any point in pregnancy was considered a crime punishable by up to 14 years in jail, though officials say there is no record of anyone having been prosecuted under the statute. Exceptions were available for those whose physical or mental health were endangered. New Zealand's Justice Minister, Andrew Little, said the restriction "require[d] women seeking an abortion to maintain a fiction about their mental health. They ha[d] to consult multiple practitioners, multiple health professionals. And what that has done in New Zealand is caused women, those who get an abortion, to get it much later in the pregnancy than is desirable." Another legislator, Amy Adams, hailed the change, saying that the old rules were "outdated and incredibly paternalistic."

Advocates Warn COVID-19 Crisis Will Disproportionately Impact Women

Global health advocates are worried about the ways the coronavirus pandemic will impact women and girls around the world. Dr. Natalia Kanem, executive director of the United Nations Population Fund (UNFPA), warned that the coronavirus outbreak has "severely disrupted" access to sexual and reproductive health and gender-based violence services "at a time when women and girls need these services most," along with forcing many victims into lockdown with their abusers.

Marie Stopes International (MSI) warns that the loss of its services due to the pandemic could lead to up to 9.5 million women and girls going without contraception and safe abortion services this year across the 37 countries MSI serves. As many as 3 million additional unintended pregnancies, 2.7 million unsafe abortions, and 11,000 pregnancy-related deaths could be the result.

An MSI representative in Sierra Leone said the 2014 Ebola epidemic demonstrated the effect of such service disruptions. Researchers estimate that in that country in 2014–2015, clinic closures and reduced access to services resulted in 3,600–4,900 additional maternal, neonatal, and stillbirth deaths.

Pandemic Could Increase Global Poverty

COVID-19 is likely to cause the first increase in global poverty since 1990. Researchers at the United Nations University World Institute for Development Economics Research in Finland looked at a wide range of possible economic outcomes resulting from the COVID-19 pandemic. They say that in the worst-case scenario (a 20-percent decrease in income or consumption around the world), as many as half a billion people worldwide could fall into poverty. More than four out of five of these people would be in sub-Saharan Africa and South Asia. Even the lowest impact scenario (a 5-percent decrease)

would mean an additional 85–135 million poor people. In some regions, the pandemic could erase 30 years of economic progress.

Obamacare's Medicaid Expansion Lowered Maternal Mortality

A study published in the journal *Women's Health Issues* indicates that states that expanded Medicaid access under the Affordable Care Act saw significant reductions in maternal deaths compared to states that did not. A researcher from Columbia University's School of Social Work looked at data from 2006–2017 and found that expansion states saw 7 fewer deaths per 100,000 live births than states that did not adopt the expansion. The largest decreases were among non-Hispanic black women, a group that has persistently higher levels of maternal mortality.

Medicaid coverage is typically available to women for 60 days after delivery. Women's health advocates like the American College of Obstetricians and Gynecologists say that extending the coverage period to one year postpartum would further lower mortality rates.

The National Center for Health Statistics reports that in 2018, the most recent year for which data is available, the maternal mortality rate was 17.4 deaths per 100,000 live births, for a total of 658 maternal deaths that year.

VOLUNTEER WITH US

Population Connection's Membership Engagement team is here to support your local outreach. If you're a current Population Connection member, join us as we reach out across the country! We will give you all the tools and resources you need to inform your community about the importance of global population stabilization.

WAYS YOU CAN GET INVOLVED

- Host an informational booth at a local event
- Organize a film screening at your library or community center
- Request a Population Connection speaker for your group meeting
- Distribute *Population Connection* magazines locally
- Write a letter to the editor of your local paper
- Attend a march or rally (once it's safe to do so!)

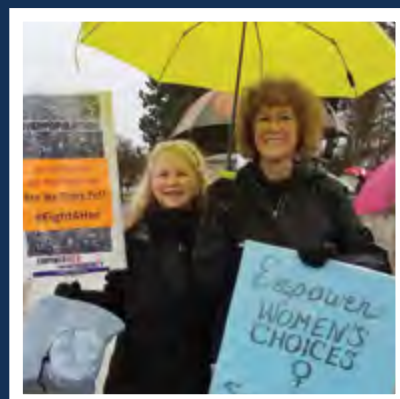
REACH OUT TO OUR TEAM

Our coordinators will help you find a way to get involved!

Email us: ENGAGE@POPULATIONCONNECTION.ORG

For more information or to find an event near you, visit:

POPCONNECT.ORG/GETINVOLVED

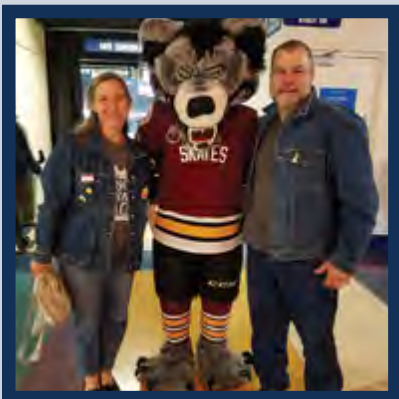




Middy Streeter & Paula Grande



Kelley Dennings



Deena Sherman



Keith Kaback

VOLUNTEER APPRECIATION

MIDDY STREETER & PAULA GRANDE

World travelers and Population Connection members since the '90s, Middy and Paula love volunteering at events like Earth Day, where they get an opportunity to talk to the public about human impacts on our environment. Here's what they said about volunteering:

"We're not people that will sit back and do nothing. We have to do something! Don't minimize your contribution, no matter how small it may appear."

KELLEY DENNINGS

Kelley joined Population Connection in 2012 and has often volunteered with us and with Population Connection Action Fund. She's a champion for population education, environmental preservation, and reproductive rights!

"Population Connection provides me the opportunity to talk about population issues publicly in safe ways, like through a film screening discussion, a PopEd curriculum, or Capitol Hill Days. It's just not a topic that tends to come up naturally in conversation."

DEENA SHERMAN

Deena has frequently volunteered for us, hosting booths at Aurora GreenFest. In their free time, she and her husband enjoy watching hockey games and brewing beer! Her favorite part about volunteering is helping others make the "population connection."

"I love to watch the light go on for people when they realize how many issues would be addressed by simply addressing this one. So many times people say, 'I have never thought about this before!'"

KEITH KABACK


Keith became concerned with environmental issues in the '70s. He became an emergency medicine physician and joined the Board of Directors for Planned Parenthood of Arizona. Volunteering with Population Connection has given Keith the platform to pursue his passions. His favorite volunteering event so far has been tabling at Tucson Earth Day.

"Educating people about population issues and family planning seems to be the most important aspect of your mission. We need to educate the public in order to get them to support policies that promote sustainable population practices."

DESTRUCTION OF HABITAT + LOSS OF BIODIVERSITY



Wild rat
(Denboma, Dreamstime.com)



ARE CREATING THE PERFECT CONDITIONS FOR DISEASES LIKE COVID-19 TO EMERGE

As habitat and biodiversity loss increase globally, the novel coronavirus outbreak may be just the beginning of mass pandemics.

By John Vidal | Originally published by *Ensia* on March 17, 2020

Mayibout 2 is not a healthy place. The 150 or so people who live in the village, which sits on the south bank of the Ivindo River, deep in the great Minkébé forest in northern Gabon, are used to occasional bouts of diseases such as malaria, dengue, yellow fever, and sleeping sickness. Mostly they shrug them off.

But in January 1996, Ebola, a deadly virus then barely known to humans, unexpectedly spilled out of the forest in a wave of small epidemics. The disease killed 21 of 37 villagers who were reported to have been infected, including a number who had carried, skinned, chopped, or eaten a chimpanzee from the nearby forest.

I traveled to Mayibout 2 in 2004 to investigate why deadly diseases new to humans were emerging from biodiversity “hot spots” like tropical rainforests and bushmeat markets in African and Asian cities.

It took a day by canoe and then many hours down degraded forest logging roads passing Baka villages and a small gold mine to reach the village. There, I found traumatized people still fearful that the deadly virus, which kills up to 90 percent of the people it infects, would return.

Villagers told me how children had gone into the forest with dogs that had killed a chimp. They said that everyone who cooked or ate it got a terrible fever within a few hours. Some died immediately, while others were taken down the river to hospital. A few, like Nesto Bematsick, recovered. “We used to love the forest, now we fear it,” he told me. Many of Bematsick’s family members died.

Only a decade or two ago it was widely thought that tropical forests and intact natural environments teeming with exotic wildlife threatened humans by harboring the viruses and pathogens that lead to new diseases in humans like Ebola, HIV, and dengue.

But a number of researchers today think that it is actually humanity’s destruction of biodiversity that creates the conditions for new viruses and diseases like COVID-19, the viral disease that emerged in China in December 2019, to arise—with profound health and economic impacts in rich and poor countries alike. In fact, a new discipline, planetary health, is emerging that focuses on the increasingly visible connections among the well-being of humans, other living things, and entire ecosystems.

Is it possible, then, that it was human activity, such as road building, mining, hunting, and logging, that triggered the Ebola epidemics in Mayibout 2 and elsewhere in the 1990s and that is unleashing new terrors today?

“We invade tropical forests and other wild landscapes, which harbor so many species of animals and plants—and within those creatures, so many unknown viruses,” David Quammen, author of *Spillover: Animal Infections and the Next Human Pandemic*, recently wrote in *The New York Times*. “We cut the trees; we kill the animals or cage them and send

them to markets. We disrupt ecosystems, and we shake viruses loose from their natural hosts. When that happens, they need a new host. Often, we are it.”

INCREASING THREAT

Research suggests that outbreaks of animal-borne and other infectious diseases like Ebola, SARS, bird flu, and now COVID-19, caused by a novel coronavirus, are on the rise. Pathogens are crossing from animals to humans, and many are now able to spread quickly to new places. The U.S. Centers for Disease Control and Prevention (CDC) estimates that three-quarters of “new or emerging” diseases that infect humans originate in nonhuman animals.

Some, like rabies and plague, crossed from animals centuries ago. Others, like Marburg, which is thought to be transmitted by bats, are still rare. A few, like COVID-19, which emerged last year in Wuhan, China, and MERS, which is linked to camels in the Middle East, are new to humans and spreading globally.

Other diseases that have crossed into humans include Lassa fever, which was first identified in 1969 in Nigeria; Nipah from Malaysia; and SARS from China, which killed more than 700 people and traveled to 30 countries in 2002–03. Some, like Zika and West Nile virus, which emerged in Africa, have mutated and become established on other continents.

Kate Jones, Chair of Ecology and Biodiversity at University College London, calls emerging animal-borne infectious diseases an “increasing and very significant threat to global health, security, and economies.”

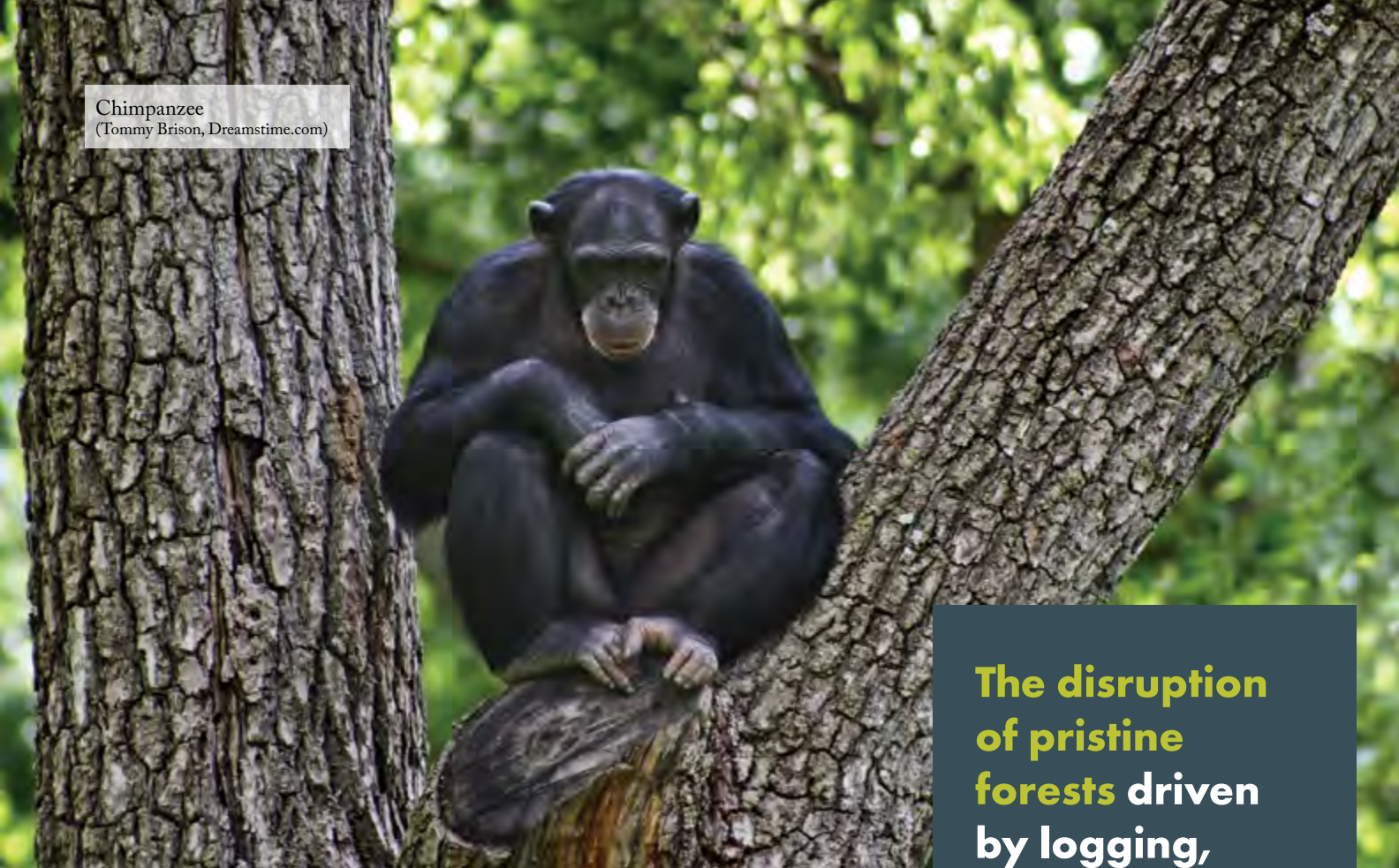
AMPLIFICATION EFFECT

In 2008, Jones and a team of researchers identified 335 diseases that emerged between 1960 and 2004, at least 60 percent of which came from non-human animals.

Increasingly, says Jones, these zoonotic diseases are linked to environmental change and human behavior. The disruption of pristine forests driven by logging, mining, road building through remote places, rapid urbanization, and population growth is bringing people into closer contact with animal species they may never have been near before, she says.

The resulting transmission of disease from wildlife to humans, she says, is now “a hidden cost of human economic development. There are just so many more of us, in every environment. We are going into largely undisturbed places and being exposed more and more. We are creating habitats where viruses are transmitted more easily, and then we are surprised that we have new ones.”

Jones studies how land use change contributes to the risk. “We are researching how species in degraded habitats are



likely to carry more viruses which can infect humans,” she says. “Simpler systems get an amplification effect. Destroy landscapes, and the species you are left with are the ones humans get the diseases from.”

“There are countless pathogens out there continuing to evolve which at some point could pose a threat to humans,” says Eric Fevre, Chair of Veterinary Infectious Diseases at the University of Liverpool’s Institute of Infection and Global Health. “The risk [of pathogens jumping from animals to humans] has always been there.”

The difference between now and a few decades ago, Fevre says, is that diseases are likely to spring up in both urban and natural environments. “We have created densely packed populations where

alongside us are bats and rodents and birds, pets, and other living things. That creates intense interaction and opportunities for things to move from species to species,” he says.

TIP OF THE ICEBERG

“Pathogens do not respect species boundaries,” says disease ecologist Thomas Gillespie, an associate professor in Emory University’s Department of Environmental Sciences, who studies how shrinking natural habitats and changing behavior add to the risks of diseases spilling over from animals to humans.

“I am not at all surprised about the coronavirus outbreak,” he says. “The majority of pathogens are still to be discovered. We are at the very tip of the iceberg.”

The disruption of pristine forests driven by logging, mining, road building through remote places, rapid urbanization, and population growth is bringing people into closer contact with animal species they may never have been near before.



Nature poses threats, it is true, but it's human activities that do the real damage. The health risks in a natural environment can be made much worse when we interfere with it.

Humans, says Gillespie, are creating the conditions for the spread of diseases by reducing the natural barriers between virus host animals—in which the virus is naturally circulating—and themselves. “We fully expect the arrival of pandemic influenza; we can expect large-scale human mortalities; we can expect other pathogens with other impacts. A disease like Ebola is not easily spread. But something with a mortality rate of Ebola spread by something like measles would be catastrophic,” Gillespie says.

Wildlife everywhere is being put under more stress, he says. “Major landscape changes are causing animals to lose habitats, which means species become crowded together and also come into greater contact with humans. Species that survive change are now moving and mixing with different animals and with humans.”

Gillespie sees this in the U.S., where suburbs fragmenting forests raise the

risk of humans contracting Lyme disease. “Altering the ecosystem affects the complex cycle of the Lyme pathogen. People living close by are more likely to get bitten by a tick carrying Lyme bacteria,” he says.

Yet human health research seldom considers the surrounding natural ecosystems, says Richard Ostfeld, distinguished senior scientist at the Cary Institute of Ecosystem Studies in Millbrook, New York. He and others are developing the emerging discipline of planetary health, which looks at the links between human and ecosystem health.

“There’s misapprehension among scientists and the public that natural

ecosystems are the source of threats to ourselves. It’s a mistake. Nature poses threats, it is true, but it’s human activities that do the real damage. The health risks in a natural environment can be made much worse when we interfere with it,” he says.

Ostfeld points to rats and bats, which are strongly linked with the direct and indirect spread of zoonotic diseases. “Rodents and some bats thrive when we disrupt natural habitats. They are the most likely to promote transmissions [of pathogens]. The more we disturb the forests and habitats the more danger we are in,” he says.

Felicia Keesing, professor of biology at Bard College, New York, studies how environmental changes influence the probability that humans will be exposed to infectious diseases. “When we erode biodiversity, we see a proliferation of the species most likely to transmit new diseases to us, but there’s also good evidence that those same species are the best hosts for existing diseases,” she wrote in an email to *Ensis*.

MARKET CONNECTION

Disease ecologists argue that viruses and other pathogens are also likely to move from animals to humans in the many informal markets that have sprung up to provide fresh meat to fast-growing urban populations around the world. Here animals are slaughtered, cut up, and sold on the spot.

The “wet market” (one that sells fresh produce and meat) in Wuhan, thought by the Chinese government to be the starting point of the current COVID-19 pandemic, was known to sell numerous wild animals, including live wolf pups, salamanders, crocodiles, scorpions, rats, squirrels, foxes, civets, and turtles.

Equally, urban markets in West and Central Africa see monkeys, bats, rats, and dozens of species of birds, mammals, insects, and rodents slaughtered and sold close to open refuse dumps and with no drainage.

“Wet markets make a perfect storm for cross-species transmission of pathogens,” says Gillespie. “Whenever you have novel interactions with a range of species in one place, whether that is in a natural environment like a forest or a wet market, you can have a spillover event.”

The Wuhan market, along with others that sell live animals, has been shut by the Chinese authorities, and the government in February outlawed trading and eating wild animals except for fish and seafood. But bans on live animals being sold in urban areas or informal markets are not the answer, say some scientists.

“The wet market in Lagos is notorious. It’s like a nuclear bomb waiting to happen. But it’s not fair to demonize places which do not have fridges. These traditional markets provide much of the food for Africa and Asia,” says Jones.

“These markets are essential sources of food for hundreds of millions of poor people, and getting rid of them is impossible,” says Delia Grace, a senior epidemiologist and veterinarian with the International Livestock Research Institute, which is based in Nairobi, Kenya. She argues that bans force traders underground, where they may pay less attention to hygiene.

Fevre and Cecilia Tacoli, principal researcher in the human settlements research group at the International Institute for Environment and Development (IIED), argue in a blog post that “rather than pointing the finger

“We cut the trees; we kill the animals or cage them and send them to markets. We disrupt ecosystems, and we shake viruses loose from their natural hosts. When that happens, they need a new host. Often, we are it.”

at wet markets,” we should look at the burgeoning trade in wild animals.

“[I]t is wild animals rather than farmed animals that are the natural hosts of many viruses,” they write. “Wet markets are considered part of the informal food trade that is often blamed for contributing to spreading disease. But ... evidence shows the link between informal markets and disease is not always so clear cut.”

CHANGING BEHAVIOR

So what, if anything, can we do about all of this? Jones says that change must come from both rich and poor societies. Demand for wood, minerals, and resources from the Global North leads to the degraded landscapes and ecological disruption that drives disease, she says. “We must think about global biosecurity, find the weak points, and bolster the provision of health care in developing countries. Otherwise we can expect more of the same,” she says.

“The risks are greater now. They were always present and have been there for generations. It is our interactions with that risk which must be changed,” says Brian Bird, a research virologist at the University of California, Davis, School

of Veterinary Medicine One Health Institute, where he leads Ebola-related surveillance activities in Sierra Leone and elsewhere.

“We are in an era now of chronic emergency,” Bird says. “Diseases are more likely to travel further and faster than before, which means we must be faster in our responses. It needs investments, change in human behavior, and it means we must listen to people at community levels.”

Getting the message about pathogens and disease to hunters, loggers, market traders, and consumers is key, Bird says. “These spillovers start with one or two people. The solutions start with education and awareness. We must make people aware things are different now. I have learned from working in Sierra Leone with Ebola-affected people that local communities have the hunger and desire to have information,” he says. “They want to know what to do. They want to learn.”

Fevre and Tacoli advocate rethinking urban infrastructure, particularly within low-income and informal settlements. “Short-term efforts are focused on containing the spread of infection,” they write. “The longer term—given that new infectious diseases will likely continue to spread rapidly into and within cities—calls for an overhaul of current approaches to urban planning and development.”

The bottom line, Bird says, is to be prepared. “We can’t predict where the next pandemic will come from, so we need mitigation plans to take into account the worst possible scenarios,” he says. “The only certain thing is that the next one will certainly come.”





Think
exotic
animals
are to
blame
for the
Coronavirus?

Think again.

Malaysian fruit bat
(Yiu Tung Lee, Dreamstime.com)

Scientists have fingered bats and pangolins as potential sources of the virus, but the real blame lies elsewhere—with human assaults on the environment.

By Sonia Shah

Originally published by

The Nation on February 18, 2020

It could have been a pangolin. Or a bat. Or, as one now-debunked theory that made the rounds suggested, a snake.

The race to finger the animal source of COVID-19, the coronavirus currently ensnaring more than 150 million people in quarantines and cordons sanitaires in China and elsewhere, is on. The virus's animal origin is a critical mystery to solve. But speculation about which wild creature originally harbored the virus obscures a more fundamental source of our growing vulnerability to pandemics: the accelerating pace of habitat loss.

Since 1940, hundreds of microbial pathogens have either emerged or reemerged into new territory where they've never been seen before. They include HIV, Ebola in West Africa, Zika in the Americas, and a bevy of novel coronaviruses. The majority of them—60 percent—originate in the bodies of animals. Some come from pets and livestock. Most of them—more than two-thirds—originate in wildlife.

But that's not the fault of wild animals. Although stories illustrated with pictures of wild animals as "the source" of deadly outbreaks might suggest otherwise, wild animals are not especially infested with deadly pathogens, poised to infect us. In fact, most of these microbes live harmlessly in these animals' bodies.

The problem is the way that cutting down forests and expanding towns, cities, and industrial activities creates pathways for animal microbes to adapt to the human body.

Habitat destruction threatens vast numbers of wild species with extinction, including the medicinal plants and animals we've historically depended upon for our pharmacopeia. It also forces those wild species that hang on to cram into smaller fragments of remaining habitat, increasing the likelihood that they'll come into repeated, intimate contact with the human settlements expanding into their newly fragmented habitats. It's this kind of repeated, intimate contact that allows the microbes that live in their bodies to cross over into ours, transforming benign animal microbes into deadly human pathogens.


Consider Ebola. According to a 2017 study, Ebola outbreaks, which have been linked to several species of bats, are more likely to occur in places in Central and West Africa that have experienced recent episodes of deforestation. Cutting down the bats' forests forces them to roost in trees in backyards and farms instead, increasing the likelihood that a human might, say, take a bite of a piece of fruit covered in bat saliva or hunt and slaughter a local bat, exposing herself to the microbes sheltering in

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the bat's tissues. Such encounters allow a host of viruses carried harmlessly by bats—Ebola, Nipah, and Marburg, to name a few—to slip into human populations. When such so-called "spillover" events happen frequently enough, animal microbes can adapt to our bodies and evolve into human pathogens.

Mosquito-borne disease outbreaks have been similarly linked to the felling of forests, although less because of the loss of habitat than to its transformation. As trees' leaf litter and roots disappear, water and sediment flow more readily along the shorn forest floor, newly open to shafts of sunlight. Malaria-carrying mosquitoes breed in the sunlit puddles. A study in 12 countries found that mosquito species that carry human pathogens are twice as common in deforested areas compared to intact forests.

Habitat destruction also scrambles the population sizes of different species in ways that can increase the likelihood that a pathogen will spread. West Nile virus, a virus of migratory birds, is one example. Squeezed by habitat loss as well as other affronts, bird populations in North America have declined by more than 25 percent over the past 50 years. But species don't decline at a uniform rate. Specialist bird species, like woodpeckers and rails, have been hit harder than generalists like robins and crows. That increases the abundance of West Nile virus in our domestic bird flocks because, while woodpeckers and rails are poor carriers of the virus, robins and crows excel at it. The likelihood that a local mosquito will bite a West Nile virus-infected bird and then a human grows.



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**In the end,
there is no real
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pandemics. It's
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or furry
flying bat. It's
populations of
warm-blooded
primates: **The
true animal
source is us.****

•

Similarly, the expansion of suburbs into the Northeastern forest increases the risk of tick-borne disease by driving out creatures like opossums, which help control tick populations, while improving conditions for species like white-footed mice and deer, which don't. Tick-borne Lyme disease first emerged in the United States in 1975; in the past 20 years, seven new tick-borne pathogens have followed.

It's not only the fact of habitat destruction that ratchets up the risk of disease emergence, it's also what we're replacing wild habitat with. To sate our species' carnivorous appetites, we've razed an area around the size of the continent

of Africa to raise animals for slaughter. Some of these animals are then delivered through the illicit wildlife trade or sold in so-called "wet markets." There, wild species that would rarely if ever encounter each other in nature are caged next to one another, allowing microbes to jump from one species to the next, a process that begot the coronavirus that caused the 2002–03 SARS epidemic and possibly the novel coronavirus stalking us today.

But many more are reared in factory farms, where hundreds of thousands of individuals await slaughter, packed closely together, providing microbes lush opportunities to turn into deadly pathogens. Avian influenza viruses, for example, which originate in the bodies of wild waterfowl, rampage

Indian pangolin (Vicky Chauhan, Dreamstime.com)

We can protect wildlife habitat, so that animal microbes stay in their bodies and don't cross over into ours, an approach championed by the "One Health" movement, among others.

in factory farms packed with captive chickens, mutating and becoming more virulent, a process so reliable it can be replicated in the laboratory. One strain called H5N1, which can infect humans, kills more than half of those infected. Containing another strain, which reached North America in 2014, required the slaughter of tens of millions of poultry.

The avalanche of excreta produced by our livestock introduces yet more opportunities for animal microbes to spill over into human populations. Because animal waste is far more voluminous than croplands can possibly absorb as fertilizer, it is collected in many places in unlined cesspools called manure lagoons. Shiga toxin-producing *Escherichia coli*, which lives harmlessly inside the guts of over half of all cattle on American feedlots, lurks in that waste. In humans, it causes bloody diarrhea and fever and can lead to acute kidney failure. Because cattle waste so frequently sloshes into our food and water, 90,000 Americans are infected every year.

This process of transforming animal microbes into human pathogens is accelerated today, but it is not new. It began with the Neolithic revolution, when we first cleared wildlife habitat to make way for crops and yoked wild animals into servitude. The "deadly gifts" we received from our "animal friends," as Jared Diamond put it, include measles and

tuberculosis, from cows; pertussis from pigs; and influenza from ducks. It continued during the era of colonial expansion. Belgian colonists in Congo built the railroads and cities that allowed a lentivirus in local macaques to perfect its adaptations to the human body; British colonists in Bangladesh cut down the Sundarbans wetlands to build rice farms, exposing humans to water-borne bacteria in the wetlands' brackish waters.

The pandemics those colonial-era intrusions created plague us to this day. The macaque's lentivirus evolved into HIV. The water-borne bacteria of the Sundarbans, now known as cholera, has caused seven pandemics so far, the latest churning just a few hundred miles off the coast of Florida in Haiti.

The good news is that, because we are not passive victims of animal microbes invading our bodies but fully empowered agents who turn harmless animal microbes into pandemic-causing pathogens, there's much we can do to reduce the risk that these disease-causing microbes emerge at all.

We can protect wildlife habitat, so that animal microbes stay in their bodies and don't cross over into ours, an approach championed by the "One Health" movement, among others.

We can conduct active surveillance in places where animal microbes are most likely to transform into human pathogens, hunting for ones that show signs of adapting to the human body—and squelching them before they cause epidemics. For the past 10 years, scientists funded by USAID's PREDICT program did just that. While the human footprint has continued to expand across the planet, PREDICT scientists have pinpointed more than 900 novel viruses around the



Fruit bats in Mozambique
(Liudmila Burdukovskaia, Dreamstime.com)

world that emerged as a result, including new strains of SARS-like coronaviruses.

Today, the shadow of the next pandemic looms. But that's not just because of the novel coronavirus. The Trump administration's liberation of extractive industries and industrial development from environmental and other regulatory constraints can be expected to accelerate the habitat destruction that brings animal microbes into human bodies. At the same time, the administration is reducing our ability to pinpoint the next spillover microbe and to contain it when it starts to spread. The administration decided to end the PREDICT program in October. Officials reportedly felt "uncomfortable funding cutting-edge science." Last week, the administration proposed cutting funds to the World Health Organization too, by 53 percent.

The epidemiologist Larry Brilliant once said, "Outbreaks are inevitable, but pandemics are optional." But pandemics only remain optional if we have the will to disrupt our politics as readily as we disrupt nature and wildlife. In the end, there is no real mystery about the animal source of pandemics. It's not some spiky scaled pangolin or furry flying bat. It's populations of warm-blooded primates: The true animal source is us.



What 11 Billion People Mean for Disease Outbreaks

By Bahar Gholipour

Originally published by *LiveScience* on November 25, 2013

In mid-April 2009, samples from two California children suffering from the flu arrived at the Centers for Disease Control and Prevention in Atlanta for further investigation; something didn't seem normal about the particular flu strains they had. Local clinics and flu surveillance staff had detected a virus that had a unique genetic makeup, different from any known human flu virus. It was entirely new to science.

That was the beginning of the 2009 swine flu pandemic. Countries around the world took notice and prepared for possible outbreaks, the World Health Organization sent out guidelines to ministries of health, and vaccines were developed in a matter of months. The virus, which may have started infecting people first in Mexico, spread across the globe, infecting millions of people and killing thousands before running its course, with the pandemic coming to an end in August 2010.

The virus was a new strain of H1N1, the influenza virus involved in the devastating 1918 Spanish flu pandemic, which killed between 30 million and 50 million people worldwide, according to the U.S. Department of Health and Human Services, more than died during World War I. The emergence of the new H1N1 in 2009 was a reminder that despite the unprecedented progress in treating infectious disease in the past decades, the looming shadow of a deadly pandemic still persists.

In fact, with every mysterious virus that surfaces, be it the 2009 swine flu, the 2002 SARS coronavirus, or most recently, MERS (Middle East Respiratory Syndrome, a viral respiratory illness that has emerged around the Arabian Peninsula and killed half of the people who have had it), the same questions come to the minds of researchers and health authorities: Is this the virus that's going to cause the next pandemic? And will humanity be able to stop it?

And now, new challenges are being added to existing ones: The latest population projections from the United Nations, announced in a new report last summer, estimate that the world's population will reach 9.6 billion people by mid-century, and 11 billion by 2100.

The sheer number of people, their interactions with animals and ecosystems, and the increase in international trade and travel are all factors that will likely

change the way humanity deals with preventing and treating epidemics, experts say. In fact, the unprecedented growth of the human population in the second half of the last century—growing from 2.5 billion to 6 billion—may have already started changing how infectious diseases emerge.

“There's a strong correlation between the risk of pandemic and human population density. We've done the math and we've



Pigs cram together in a small cage in Vietnam
(Jeff Cagle, Dreamstime.com)

proved it,” said Dr. Peter Daszak, a disease ecologist and the President of EcoHealth Alliance, who examined the link in a 2008 study published in the journal *Nature*.

Looking at contemporary outbreaks since the mid-20th century, Daszak and colleagues found that the rate of emergent diseases caused by pathogens new to humans has increased significantly with time, even when controlling for progress in diagnosis techniques and surveillance, which could make it only seem like diseases were on the rise. More than 300 new infectious diseases emerged between 1940 and 2004, the study found.

Some of these diseases were caused by pathogens that have hopped across species and finally into humans—for example, the West Nile virus, the SARS

coronavirus, and HIV. Others were caused by a new variant of a pathogen that evolved to thwart available drugs, such as drug-resistant tuberculosis and malaria.

Certain pathogens, such as the bacteria that cause Lyme disease, are not new to humans, but their incidence increased dramatically, perhaps due to changes that newly arrived humans made to the environment inhabited by animals carrying these pathogens.

In light of the continuous population growth, health authorities are calling for strengthening public health organizations, and giving more resources to systems that would protect people. Researchers are studying ways to identify viruses faster, so that vaccines could

be developed early in the process, and scientists are trying to understand the complicated interactions between humans and the surrounding ecosystem, so that they could identify emerging disease hotspots and find the next emerging virus before it finds humans. All of these are done in an effort to have the new creative solutions that preventing pandemics on a populated planet would require.

You can predict very confidently as each year moves forward, we’re going to see more and more diseases emerge,” Daszak said. “It’s a little abstract to most people. And to be fair, it’s new for scientists too.”

DISEASES OF THE FUTURE ARE ALREADY IN NATURE

When Daszak and his colleagues analyzed the characteristics of emerging diseases,

The sheer number of people, their interactions with animals and ecosystems, and the increase in international trade and travel are all factors that will likely change the way humanity deals with preventing and treating epidemics, experts say. In fact, the unprecedented growth of the human population in the second half of the last century—growing from 2.5 billion to 6 billion—may have already started changing how infectious diseases emerge.

they found some similarities between them. All known emerging diseases were linked to sudden human population growth, new human activity in the environment, and high wildlife diversity in the area where the pathogen originated.

About two-thirds of new diseases were transmitted to humans from animals, the researchers found. More than 70 percent of these diseases, known as zoonotic diseases, were caused by pathogens originating in wildlife—for example, the Nipah virus that causes inflammation of the brain and first surfaced in 1999 in Perak, Malaysia, or the SARS coronavirus

that first infected a farmer, are both traced back to viruses in bats.

As humans do not often come into contact with wildlife, such pathogens should theoretically not pose much danger to people. But the pathogens can make the leap to humans by first infecting other animals that humans do come into contact with, such as domestic pigs. The animals serving as the middle link of this disease chain, however, have to be in places in some overlapping territory, which occurs when burgeoning populations push people into wild areas where humans once rarely, if ever, ventured.

“Each wildlife species carries a bunch of microbes, most of them we’ve never known about,” Daszak said. “When you build a road into a new patch of rainforest, you put a pig farm in there, people move in and come into contact with these pathogens.”

The number of pathogens originating in wildlife and infecting humans has increased with time, too, Daszak’s research shows. In the last decade of the 20th century, such pathogens were responsible for more than half of the new infectious diseases that cropped up in that time period.

Human contact with wildlife species that facilitate the transmission of novel viruses may increase in the future, as the population grows and humans searching for places to live and farm fan out to areas inhabited by or closer to wildlife.

PREDICTING THE FUTURE

Stephen Morse, an epidemiologist at Columbia University, was in the early years of his career when the first case of HIV/AIDS was detected in the United States in 1981. In a pandemic that continues to this day, HIV, believed to have originated in chimpanzees, has infected

60 million people and caused an estimated 30 million deaths.

“For many years, there was complacency, thinking that infectious diseases were pretty much becoming ancient history,” said Morse, who studies how pathogens develop the ability to infect humans.

The kind of complacency present in those pre-HIV years largely no longer exists. Scientists are constantly on the lookout for the next pathogen that may cause an epidemic. One of the viruses that scientists have thought posed the greatest pandemic threat is the bird flu, or H5N1, a strain of influenza virus that has been circulating in birds and killing them. Resources devoted to prepare for and combat a bird flu pandemic in humans were shifted and applied to the swine flu pandemic in 2009.

Another worrisome influenza virus on the watch list is H7N9, an avian flu first detected in China in 2013 that has infected a number of people who had come in contact with infected birds. As viruses constantly change, it is also possible for them to mutate in a way that allows them to easily spread among people. In fact, one of the hardest questions for the scientists to solve is not just how viruses living in animals become able to infect humans, but also what makes them able to move from person to person, Morse said.

For H5N1, scientists have shown that the virus needs only four mutations to be able to transmit via air among mammals.

“With H5N1 and H7N9, we do a lot of worrying and watching, because we really don’t know what to look for until it begins taking off in people,” Morse said. “And at that point, it’s already too late.”

Morse and his colleagues are working on a project called PREDICT, part of the Emerging Pandemic Threats program run by the U.S. Agency for International Development, to help anticipate the next big disease threat.

“The idea is to see how early we can identify potential infections that could be serious, like the next SARS,” Morse told *LiveScience*, calling from Uganda, one of the focus countries of the PREDICT program, where scientists monitor wild-life and people in contact with wildlife to discover novel pathogens. “We are trying to understand more about the ecology of these infections, and what pathogens that wildlife species carry are likely to come into contact with human,” he said.

Scientists have found that new viruses are more likely to surface in some parts of the

world than others. Tropical Africa, Latin America, and Asia are the disease emergence hotspots, and their high biodiversity and increasing human interaction with the environment may be helping viruses to make the leap into humans. And from there, they can go anywhere on the globe.

EPIDEMICS MAY GROW FASTER AND COST MORE

Today, travelers are just a few hours’ flight away from places that would have taken months to travel to by ground or sea in the past. This is a boon not just to humans, but to the microbes they carry. Sick travelers can introduce pathogens to new people as they travel, and at their destination, before they even realize they are sick. With future population growth, simple math suggests that there’s going to be more travelers, potentially helping

epidemics grow by quickly spreading the contagion.

“We’re going to see connectivity between people increase, so there’s more risk of a disease emerging in remote parts of the Amazon, and actually getting into our global travel network and affecting those in London, Moscow, and Delhi,” Daszak said.

The emergence of SARS in 2002 in China painted a picture of what it would be like when a virus finds its way into the travel network: The virus rapidly propagated around the world in just a few weeks, infecting more than 8,000 people and killing about 800 before it was brought under control by limiting unnecessary travel and quarantining those affected.



Wild ducks
(Inge Hogenbijn,
Dreamstime.com)

Human contact with wildlife species that facilitate the transmission of novel viruses may increase in the future, as the population grows and humans searching for places to live and farm fan out to areas inhabited by or closer to wildlife.

A traveling virus may also cause economic damage, beyond even the costs associated with disease treatment and control. SARS cost billions of dollars by cutting international travel by 50 to 70 percent, and affected businesses in several sectors. Growth of the Chinese GDP fell by 2 percentage points in one quarter, and half a percentage point in annual growth, according to the World Bank and the Chinese government's estimations.

IS HUMANITY PREPARED TO FACE THE FUTURE?

The movement of the world's population from sparsely populated rural areas to dense cities may also impact the spread of pathogens. By the year 2050, 85 percent of people in the developed world and 54 percent of those in the developing world are expected to have left rural areas for cities, according to United Nations estimates.

From a global disease-fighting perspective, urbanization can have some positive effects. Better communication systems can help spread early warnings and other critical information at times of outbreaks. Moreover, better disease surveillance

systems can be set up in urban settings compared with remote rural areas.

However, concentrated populations in cities may need a stronger public health sector to protect them. People in crowded cities are often more vulnerable to infectious disease, especially in the face of natural disasters such as hurricanes and floods, which have particular public health problems associated with them, said Dr. Ali S. Khan, director of the CDC's Office of Public Health Preparedness and Response.*

"We are going to need a robust public health system to respond to population increase, urbanization, the aging population, and increased travel, increased interaction between humans and animals that give rise to new diseases," Khan said. But instead, "we've hollowed out public health, and I think this poses a great threat to the health security of our nation and global communities," he said.

The U.S. public health sector is suffering budget cuts at both the state and federal levels. Khan said the CDC's \$1 billion program supporting disease identification and emergency operations now runs on \$600 million, and with 45,700 fewer public health workers in the field, functioning as the eyes and ears of the agency.

However, the news isn't all gloomy, Khan said. "It is pretty clear that as we concentrate people in the city, there's an increase in creativity. So I'm optimistic that this increased creativity will lead to novel solutions that will help us identify disease, prevent and track better than we've ever been able to do in the past," he told *LiveScience*.

* [Dr. Khan left the CDC in 2014 and is now Dean of the College of Public Health at the University of Nebraska Medical Center.]

And there have already been glimpses of progress nowadays, Khan said, noting the rapid response by the CDC, WHO, and other public health organizations to recently emerging viruses such as MERS, as well as the agencies' enhanced communication with the public.

"So think about all this great work where we look at social media to try to understand when a disease is emerging in the community, and we use social media to communicate with people in a way we were never able before," Khan said.

There has also been progress in developing novel diagnostics that can quickly detect infection before a person starts showing symptoms, and in sequencing genetic material of a pathogen to understand what it is and how it works, Khan said.

"Immense progress" has also been made in reducing the amount of time it takes to make a vaccine, Khan said. About two months after the 2009 swine flu pandemic was announced by the WHO, vaccines had been developed and production of enormous quantities of them were underway.

"We should expect to see a continuous acceleration of progresses, but this is not a given," Khan said. "I think people nowadays have a false sense of security, and I think part of this is that public health is working," but that can only last so long if public health resources keep decreasing instead of strengthening, he said.

"We have eradicated and eliminated some diseases from our community, but the honest truth is most diseases don't get eliminated," Khan said. "Most diseases come home to stay."



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Anti-Choice Legislators Across the Country Use COVID-19 Crisis to Attack Abortion Access

By Stacie Murphy, Director of Congressional Relations

You might think that in the midst of a terrifying worldwide pandemic and resulting global economic meltdown politicians would be too busy to meddle with abortion rights.

You would be wrong.

All across the country, as the coronavirus pandemic has disrupted every aspect of life and pushed millions of people into an increasingly precarious economic position, anti-choice legislators have used the upheaval as an excuse to interfere in reproductive decision-making and curtail access to abortion.

COVID-19 Relief Package Briefly Delayed Over Abortion Fight

The attempts began early, with the Families First Coronavirus Response Act (FFCRA), the second of the three coronavirus relief packages Congress has passed so far (there is talk of a fourth package, but as of our press deadline, no details were available). The FFCRA provided billions in funding for family and medical leave, expanded coronavirus testing, and extended unemployment benefits. It made no references to reproductive health care.

The fundamentals of the package had been agreed to, but a vote was delayed when some anti-choice lawmakers began claiming that the bill contained unspecified “loopholes” that could be used to fund abortion services. They insisted that Hyde Amendment language explicitly prohibiting federal funding for abortion had to be included. After a day of wrangling, pro-choice representatives agreed (one suspects there was eye-rolling involved) to channel the money through a division of the Department of Health and Human Services (HHS) that is covered by Hyde.

States Attempt to Block Abortion Access Amid Coronavirus Outbreak

Some state governors have been more direct in their approach. On March 20, Ohio’s attorney general sent a letter to the state’s abortion clinics ordering them to stop providing procedures to preserve medical supplies like surgical masks. Multiple states, including Alabama, Arkansas, Indiana, Iowa, Louisiana, Oklahoma, Tennessee, and Texas, have followed suit, some barring all procedures and others drawing distinctions between those abortions deemed “medically necessary” and those considered “elective.”

Abortion rights groups have filed suit in every state, arguing that unlike a colonoscopy or other elective procedure, abortion is both a constitutional right and time-sensitive—unnecessary delays put patients at greater risk. It isn’t possible to list here the actions and outcomes in every state; any attempt would double the length of this column, as well as be out of date almost immediately, given the fast-moving pace of litigation. It seems probable, however, that this issue will eventually wind up before the Supreme Court in some form.

Trump Releases FY 2021 Budget

On February 10, the Trump administration released its proposed FY 2021 budget. As in previous years, it issues massive cuts to global health funding—nearly \$4 billion, including a 61-percent decrease in international family planning funding and a continued zeroing out of funding for the United Nations Population Fund (UNFPA). As in previous years, we do not expect this budget proposal to have much influence on the congressional budget appropriations process. It remains, however, a sign of the disdain with which the administration views global health and development programs.

Appeals Courts Split on Trump Title X Rule

In February, an 11-judge panel of the 9th Circuit Court of Appeals ruled 7–4 that part of Trump’s Domestic Gag Rule could remain in effect. HHS put the restrictions into place more than a year ago.

The provision at issue in this case was a ban on Title X health care centers offering referrals for abortion services. Health centers are allowed (but not required) to provide “nondirective counseling” on all pregnancy options, including abortion.

In his dissent from the ruling, Circuit Judge Richard Paez wrote that the majority’s ruling “sanctions the agency’s gross overreach and puts its own policy preferences before the law.”

In March, however, the 4th Circuit Court of Appeals ruled in a Maryland case that HHS could not enforce the ban in that state. The split means that it is likely the Supreme Court will eventually be asked to settle the dispute.

Supreme Court Hears Louisiana Abortion Case

On March 4, the Supreme Court heard oral arguments in *June Medical Services, LLC v. Russo* (originally *June Medical*

“In vacating the district courts’ preliminary injunctions, the majority sanctions the agency’s gross overreach and puts its own policy preferences before the law. Women and their families will suffer for it. I strongly dissent.”

–Circuit Judge Richard Paez

Services, LLC v. Gee, but amended due to a staffing change at the Louisiana Department of Health), which involves a 2014 Louisiana law requiring abortion providers to have hospital admitting privileges. The law in question is virtually identical to a Texas law ruled unconstitutional in 2016, but back in September 2019, a three-judge panel from the 5th U.S. Circuit Court of Appeals nevertheless determined that the facts in the Louisiana case were “remarkably different” than in the Texas case and allowed the law to stand. The decision was a stark example of conservative justices ignoring a precedent they didn’t like and hoping the Supreme Court would back them up. The full 5th Circuit voted not to rehear the case, leading providers and

patient advocate groups to appeal to the Supreme Court.

During oral arguments, Louisiana’s Solicitor General, Elizabeth Murrill, was unable to answer factual questions about the law without undermining her own case, and could not offer any evidence of health benefits provided by Louisiana’s law. Court watchers reported that Chief Justice John Roberts seemed particularly irritated by the blatant bad faith on display, leading to some hope that he might vote with the court’s liberal wing to strike the law down. It’s possible. But counting on John Roberts to save abortion rights in America is not a comfortable place to be. A decision is expected sometime in June.



We've Taken Our Fight Online!

By Lindsay Apperson, National Field Manager

Just weeks before our annual Capitol Hill Days conference, the first cases of COVID-19 began to present in the United States. In a matter of days, those few cases turned into hundreds, and then thousands, throughout the country. In the face of the rapidly spreading virus, we made the necessary decision to cancel our in-person conference to prioritize the health and safety of our participants, speakers, and staff. Soon after, we began transitioning our entire #Fight4HER campaign online as states across the country issued stay-at-home orders.

Right now, we are facing serious repercussions of this global pandemic as coronavirus continues to spread rampantly across the country. The Trump administration's response has left us far behind as we scramble to expand access to testing and necessary medical equipment and treatment. While we face this mounting crisis, politicians are exploiting COVID-19 to advance their anti-choice agenda, from attempting to use the pandemic relief bill to further restrict access to reproductive health care to deeming abortion procedures “non-essential” and attempting to close down clinics providing abortion services. As these legislators use coronavirus to chip away at domestic reproductive rights, millions of people around the world still lack access to

reproductive health care because of the United States' dangerous foreign aid policies.

These circumstances have posed new challenges for our field and outreach work as we strive to keep our activists involved in the fight for access to reproductive health care around the world, while supporting and respecting their own health and well-being during these unprecedented times. Though we know that everyone is rightfully focused on this public health crisis, we also know that we cannot forget about the millions of people who lack access to reliable health care because of devastating U.S. reproductive health policies. That's why we've taken our fight online!

Capitol Hill Days Goes Digital

In place of our in-person Capitol Hill Days conference, we quickly transformed the annual event into a CHD Digital Weekend of Action. Undeterred by the new format, #Fight4HER activists all across the country came together to fight back against deadly U.S. policies that have devastated access to reproductive health care globally. They joined us to call on Congress to end the Global Gag Rule and to invest \$1.6 billion in international family planning, including

\$111 million for the United Nations Population Fund (UNFPA).

We started the weekend with a kick-off call on Friday, March 27, where 95 activists from across the country joined us to hear about all the ways they can take action to advocate for reproductive health and rights around the globe. We were joined by Melvine Ouyo, #Fight4HER advocate from Nairobi, Kenya, who talked about the critical importance of repealing the Global Gag Rule and investing in international family planning and reproductive health programs.

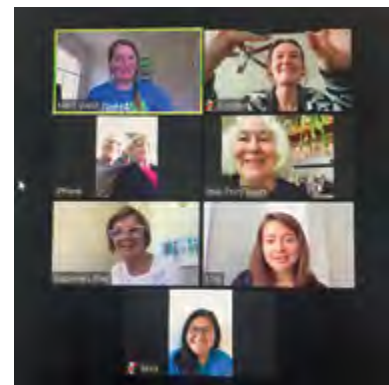
Later on Friday, our sister organization, Population Connection Action Fund, stormed Twitter in a virtual “rally.” Over 2,000 people participated, reaching over 9.2 million users—the Action Fund's most successful social media engagement to date! The campaign hashtag, #Fight4HER, trended on Twitter in the U.S. thanks to activists and partner organizations sharing their powerful videos about why they fight to repeal the Global Gag Rule.

On Saturday and Sunday, we released a series of digital sessions. These videos gave our activists the opportunity to connect virtually with a great lineup of reproductive health and progressive

organizing experts who spoke about the crucial need for reproductive justice, the devastating impact of the Global Gag Rule, and their best advocacy and organizing tips.

On Monday, March 30, we flooded congressional offices with emails, tweets, and phone calls to demand access to comprehensive reproductive health care for people around the world. In all, we had 980 advocates send 3,224 messages to their legislators, and we held virtual meetings with congressional offices in key states with constituents across the country. We engaged with key members of Congress, including Rep. Susie Lee, who joined our Nevada activists for their virtual meeting, and Sen. Dianne Feinstein, Rep. Annie Kuster, and Rep. Ann Kirkpatrick, who tweeted out their support for the #Fight4HER to repeal the Global Gag Rule.

Our activists are making it clear to their elected officials that global reproductive health needs to be a top priority, even in the face of this pandemic. As we practice social distancing to help flatten the curve, we know that the #Fight4HER will persist as strongly as ever. We look forward to continuing the fight online with you all, and hope you're staying safe and healthy.



Screenshots of tweets from Population Connection Action Fund's #Fight4HER Twitter Rally and of Zoom meetings with members of Congress



PopEd: In-Home Edition

Social Distancing Not Stopping Our Work With Teachers

By Pamela Wasserman, SVP for Education

In a typical spring, PopEd staff would be crisscrossing the country, facilitating workshops with current and future teachers on campuses, in K-12 schools, and at conference centers. In mid-March, these plans, along with everyone else's plans everywhere, came to a screeching halt. As the inevitable spread of the coronavirus pandemic became apparent, schools closed, conferences were canceled, and everyone working in education had to figure out how to reinvent learning for a virtual classroom.

In the few days before our DC office closed and our PopEd team decamped to our new home offices in bedrooms and kitchens, we made some plans. We'd offer all of the workshops we were scheduled to do from Maine to Arizona, but as webinars. They could be live webinars with participant interaction, recorded webinars for use any time, or short courses customized for different audiences. Teacher education faculty, scrambling to develop online content for the rest of their semesters, jumped at the chance to have us visit their classes remotely. We knew virtual presentations would be a different experience than in-person workshops, but we all got creative in thinking of ways to give the classes useful instruction and a feel for how our population education activities would

work in their future classrooms with children and teens.

The PopEd Zoom Room

Fortunately, we weren't starting entirely from scratch. We already had some elements we could incorporate into engaging webinars—demo videos of 30 of our activities, PowerPoint slide decks to walk participants through many of our lessons, and some creative props for live demonstrations. But how would we interact with each group? The hallmark of our in-person workshops is getting participants up and moving through the activities with us, asking questions, and offering ideas.

While it's no substitute for being in the same room with everyone, our Zoom webinars do allow us to have discussions and use the written chat function for participants to ask and answer questions and respond to classmates. After our first few visits to the Zoom room, we decided a buddy system for facilitation was best—one person to present the webinar; one person to monitor the chat and keep things moving. This tag-team approach has also been invaluable when technical glitches arise—WiFi hiccups, webcam glitches, and the like. With over 50 webinars presented through the end of April, we've had plenty of opportunities

to hone our techniques. If the demand for webinars continues into the summer and fall, we'll be ready.

Lessons for Homebodies

Teachers don't have to attend a webinar to access PopEd lessons this spring. There are plenty of activities and student readings for free download. Before the stay-at-home orders went into effect, we posted a blog article titled "28 Learning Activities & Lesson Plans for Students' Distance Learning at Home." In it, we highlighted teaching resources for different grade levels and disciplines that could easily be included in K-12 teachers' digital classrooms.

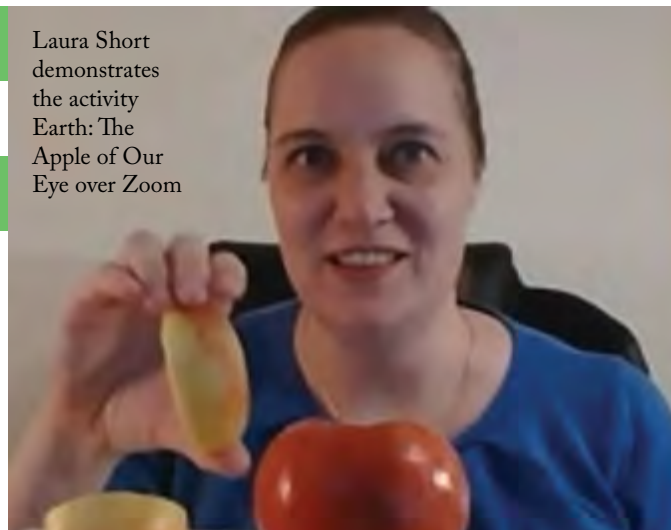
Teachable moments this spring, including the 50th anniversary of Earth Day and the kick-off of the 2020 U.S. Census, also gave us opportunities to share more great lessons that could easily be adapted for remote learning. Our Earth Day Lessons for Distance Learning webinars in April attracted hundreds of participants, many of them new to PopEd.

Teaching About U.S. Trends

Already in production when our exile began is a new curriculum set, *330 Million in the USA*, inspired by the 2020 Census. It includes 14 activities for middle and high school students that fit well into a



Carol Bliese demonstrates the activity Water, Water Everywhere over Zoom



Laura Short demonstrates the activity Earth: The Apple of Our Eye over Zoom

U.S. history and civics curriculum with lessons on changing U.S. trends (population growth, family life, immigration, transportation, political representation, environmental activism, and more). Most of these new lessons can be done successfully in a virtual classroom. Many include primary sources from the past 230 years, including historical census data, archival images and footage, and some of our nation's most important documents, such as the Federalist Papers and the original Social Security Act. The lessons also help students make sense of current hot-button issues including gerrymandering, immigration, and wealth inequities.

To enhance the lesson plans, *330 Million in the USA* also includes readings on historical trends related to education, work, family, transportation, diet, and environmental policies (and how current trends affect current middle and high school student—Gen Z). A set of infographics also marks trends in population, housing, immigration, and wealth.

PRAISE FOR POPED WEBINARS

“Thank you for a wonderful interactive session tonight. It was perfect! I appreciate all the effort you put into making this meaningful for my students and me. Population Education has always been a professional group with whom to collaborate. You surpassed my expectations for this session.”

—Elizabeth O. Crawford, Associate Professor, UNC-Wilmington, North Carolina

“The virtual presentation was wonderful. I especially enjoyed the way there was an assignment woven in (the three response questions that students had to answer); that was so helpful.”

—Rina Bousalis, Assistant Professor, Florida Atlantic University

“I found your presentation to be both engaging and informative! The resources I have gained from your presentation have made me more confident in my abilities to teach social studies and for that I cannot thank you both enough! Also kudos to you both on being flexible with technology. Rona has made a mess of easy communication, but you both handled it well.”

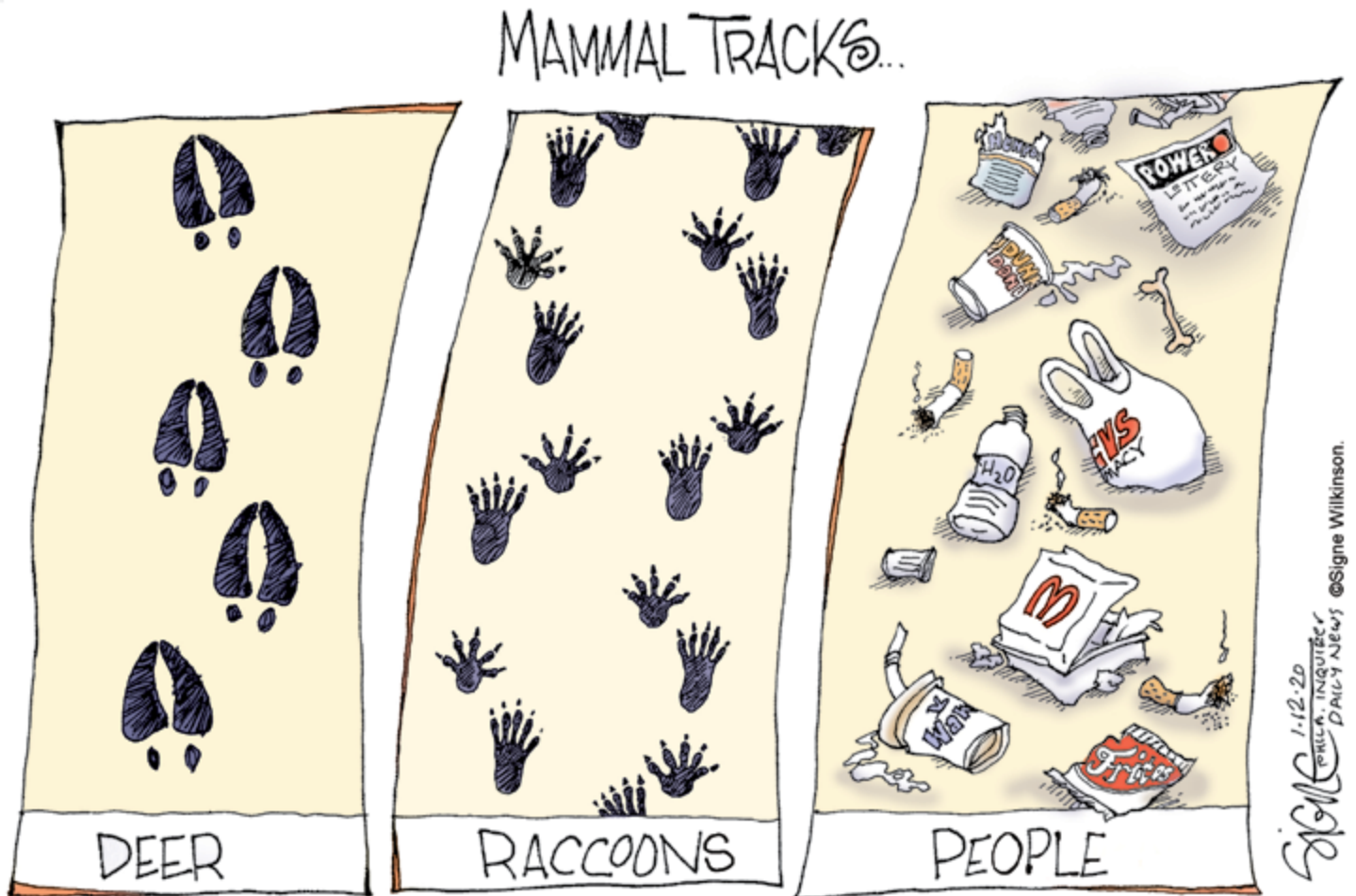
—Rebecca Langdon, Student Teacher, Columbia College, South Carolina

“Awesome. I have information, knowledge, and tools for my students to better understand population and its effects on the environment or global climate. One of the best webinars I attended in many years.”

—Enid Perez, Science Teacher, Creedmoor, North Carolina

“I think this is hugely important and really timely. We talk a lot about creating activities that our students will connect with and that will have relevance to their everyday lives, and this is certainly up there.”

—Joshua Ellis, Assistant Professor, Florida International University



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The Washington Post

Two days after abortion providers in Texas asked the U.S. Supreme Court to take emergency action concerning abortion access in Texas, the federal appeals court that had allowed restrictions on abortion to take effect backed down. The surprise move spares the Supreme Court—at least for the moment—from having to decide this volatile issue at a fraught time, and it spares the U.S. Court of Appeals for the 5th Circuit the possibility of an embarrassing reversal. Sadly, though, women in Texas have not been spared. They suffered—and still face—hardship and uncertainty as Texas politicians cruelly exploit the novel coronavirus pandemic to try to ban access to abortions.

A furious legal battle has been waged in the federal courts in the weeks since Texas Gov. Greg Abbott (R) issued an executive order banning most abortions as “non-essential” medical procedures during the pandemic emergency. The decision Monday night by the appeals court restored access to medication abortion, a two-pill process that accounts for a significant portion of abortions in Texas. But the only other abortion procedures that remain available are for patients with a gestational age that would exceed the state’s legal limit for abortion by April 22 (one day after Gov. Abbott’s executive order is set to expire).

The legal back-and-forth has caused fear, confusion, and other real hardships. Court affidavits detail the damage.

Texas officials claim the restrictions on abortion are necessary to preserve resources and personnel in the fight against COVID-19. But most states are managing to fight the virus without impinging on women’s constitutional rights. That’s because abortion is a relatively safe procedure that is generally not done in hospitals and does not require extensive personal protective equipment.

Instead of expending time and resources on an unscrupulous campaign to ban abortion, officials in Texas should be focusing on strategies that might actually help in the fight against the coronavirus.

—April 15, 2020

Los Angeles Times

As attempts to exploit the COVID-19 pandemic go, here’s a reprehensible one: the effort by some conservative states to halt abortions by arguing that they are “nonessential” medical procedures.

It should be obvious that an abortion can’t be “postponed” until the pandemic clears up like a facelift or cataract surgery or routine dental work. If a woman doesn’t get an abortion in a timely fashion, she can’t get it at all.

And that is, undoubtedly, what Texas and Ohio are hoping for. This is a chance for abortion opponents and state officials who are hostile to reproductive rights to advance their goal of making abortions difficult to access under the ruse of protecting coronavirus patients. (Mississippi’s governor said his state might follow suit.) That’s shameful. And it’s medically negligent.

If a woman can’t get an abortion, there is, indeed, a serious adverse medical consequence: She has a baby she did not intend or desire to have.

In Texas, where some providers are already turning away patients, Planned Parenthood Federation of America, the Center for Reproductive Rights, and the Lawyering Project filed suit this week asking for a temporary restraining order against using the health order to stop abortion procedures.

According to the suit, Texas’ interpretation of the health order is unconstitutional, singles out abortion providers from other medical services, and causes patients irreparable harm.

Both Ohio and Texas have a history of passing baseless restrictions on abortion. That they would now use the COVID-19 pandemic as an excuse to deny women their constitutional right to an abortion is perhaps not surprising, but it is certainly appalling.

—March 27, 2020

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Photo from Population Connection's
outreach to women in Somalia by
human rights advocate Lisa Shannon

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