Rapid deforestation of Brazilian Amazon could bring next pandemic: Experts

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- ✓ *Nearly 25,000 COVID-19 cases have been confirmed in Brazil, with 1,378 deaths as of April 15, though some experts say this is an underestimate. Those figures continue growing, even as President Jair Bolsonaro downplays the crisis, calling it "no worse than a mild flu," and places the economy above public health.*
- ✓ *Scientists warn that the next emergent pandemic could originate in the Brazilian Amazon if Bolsonaro's policies continue to drive Amazon deforestation rates ever higher. Researchers have long known that new diseases typically arise at the nexus between forest and agribusiness, mining, and other human development.*
- ✓ *One way deforestation leads to new disease emergence is through fire, like the Amazon blazes seen in 2019. In the aftermath of wildfires, altered habitat often offers less food, changing animal behavior, bringing foraging wildlife into contact with neighboring human communities, creating vectors for zoonotic bacteria, viruses and parasites.*
- ✓ *Now, Bolsonaro is pushing to open indigenous lands and conservation units to mining and agribusiness — policies which greatly benefit land grabbers. Escalating deforestation, worsened by climate change, growing drought and fire, heighten the risk of the emergence of new diseases, along with epidemics of existing ones, such as malaria.*

Since it arrived in Brazil, COVID-19 has divided the nation. One side calls for strict social isolation measures to contain the virus, while the other says that everyone should get back to work now, except for the elderly and most vulnerable.

These conflicting views are evident even in the heart of the government. President Jair Bolsonaro in a recent television broadcast declared that hysteria has gripped the country over a disease that he calls "no worse than a mild flu." His Health Minister, Luiz Henrique Mandetta, disputes that, telling Brazilians to stay home.

Misinformation is rife. Rumors proliferate on social media, particularly regarding the number of deaths, while the government discredits the mainstream press, as it tries to report the rapidly developing pandemic and inform the public.

This scenario is not new. Since taking office in January 2019, Bolsonaro and his administration have smeared scientists trying to alert the population over the risks of global warming, or critical of the undermining of federal environmental regulations and agencies. In the first half of 2019, there were conflicting reports within the government itself and among scientists and NGOs about the scale and seriousness of deforestation and, later in the year, regarding the extent of Amazon fires and their close link to major forest clearing.

Brazilian Health Minister Luiz Henrique Mandetta. His opposition to President Bolsonaro's lax views on the seriousness of the COVID-19 pandemic could put the minister's job at risk. Image courtesy of Agência Brasil.

However, behind all this raucous debate, it is becoming clear to experts that COVID-19 and deforestation in the Amazon could be linked — both being products of the natural and human devastation brought by an invasion of the world's remaining forests through the rapid expansion of timber harvesting, mineral extraction, industrial agribusiness and transportation infrastructure.

Even as the outbreak of COVID-19 is being possibly linked to the wildlife trade and humanity's destruction of biodiversity, researchers say that the growing momentum of Amazon deforestation is creating conditions for the eruption of future pandemics.

Indeed, there are signs that this may already be happening.

Deforestation roars ahead, risking rise of new diseases

In 2019, deforestation in the Brazilian Amazon reached its highest level in ten years (9,762 square kilometers, or 3,769 square miles). Importantly, in protected indigenous reserves, it increased even faster, expanding by 74 percent in 2019 under Bolsonaro as compared to 2018. Amazon deforestation rates continue escalating in 2020, doubling from August 2019 to March 2020, compared with the same period in 2018-19.

That's not only bad news for wildlife and indigenous peoples. It is well understood among scientists that major deforestation can lead to the emergence of dangerous new viruses and bacteria against which humanity has little defense, leading to epidemics and pandemics.

An illegal timber harvest seized by IBAMA environmental officials during the Michel Temer administration. Since Bolsonaro took power in January 2019, IBAMA's regulatory and enforcement powers have been drastically curtailed. Image courtesy of IBAMA.

"Wild vertebrates, particularly rodents, bats and primates, harbor pathogens that are novel to the human immune system and, if we clear their habitat and put ourselves in closer contact with them, we can increase the risk that a spillover event occurs, introducing a novel pathogen," Andy MacDonald, an ecologist specializing in disease at the Institute of Geosciences at the University of California, told Mongabay.

Kate Jones, chair of ecology and biodiversity at University College London (UCL), part of London University, says that researchers have long known that animal-borne infectious diseases are an "increasing and very significant threat to global health, security and economies." In 2008, she was part of a research team that determined that at least 60% of the 335 new diseases that emerged between 1960 and 2004 originated with non-human animals.

One of the principal drivers of this transfer of diseases from wild animals to humans occurs as the result of habitat disturbance — especially the disruption of tropical forests.

"Approximately one in three outbreaks of new and emerging illnesses is linked to changes in land use, like deforestation," explained Peter Daszak, president of EcoHealth Alliance, a not-for-profit organization based in New York. Daszak was lead author in a study entitled "Infectious disease emergence and economics of altered landscapes" published last year. That paper notes that "diseases causally linked to land change use include deadly diseases such as HIV/AIDS, Ebola, and Zika Virus." Preliminary research indicates we can now

likely add COVID-19 to that list — the most devastating pandemic to strike humanity since the 1918-19 flu which killed upwards of 50 million people.

Aerial view of the Amazon rainforest on fire in Colniza municipality, Mato Grosso state, August 2019. Most of 2019's fires were ignited by people. Image by Victor Moriyama / Greenpeace.

One way deforestation leads to the emergence of new diseases is through fire. In mid-August 2019, a group of international experts on zoonotic diseases (that is, illnesses transmitted from animals to humans), met in Colombia to analyze the impact of the wildfires then underway in the Amazon. In their statement, they warned: "The Amazon region of Brazil, endemic for many communicable or zoonotic diseases can, after a wildfire, trigger a selection for survival, and with it change the habitat and behaviors of some animal species. These can be reservoirs of zoonotic bacteria, viruses, and parasites."

This wildfire scenario has already played out elsewhere. In 1988, huge fires in Indonesia created conditions allowing the emergence of the Nipah virus, which has a morbidity rate of between 40% and 70%. Researchers believe that the outbreak of fires there caused fruit bats to flee their forest homes, seeking food in orchards. Then pigs ate the fruit that the bats had nibbled, becoming infected with the virus, ultimately infecting local people, who began to die from brain hemorrhages. Amazon fires are expected to grow far worse, as agribusiness uses it as a tool to clear rainforest, and as climate change intensifies drought there.

Fever follows in wake of environmental ruin

In fact, there are already Brazilian examples of a major environmental disruption provoking disease. One such incident concerns the bursting of the Mariana iron mining tailings dam on

the Doce River in Minas Gerais state in 2015, which killed 19 people and was regarded at the time as the most serious environmental disaster in Brazil's history.

Biologist Márcia Chame, from Fiocruz, a foundation specializing in the science and technology of health, believes that a major surge in yellow fever cases in Minas Gerais in 2016-17, leading to the state government decreeing a state of emergency, was partly the result of the disaster which polluted 500 miles of river all the way to the Atlantic Ocean.

Chame argues that the bursting of the dam, which led to "an avalanche of 2.2 billion cubic feet of mud and mine waste," pouring into the Doce River, severely affected animals in the surrounding watershed, making them less resistant to disease.

"An abrupt change in the environment will have an impact on animals, including monkeys. With the stress of the disaster and the lack of food, they become more susceptible to illnesses, including yellow fever." Chame says that many monkeys in the Doce watershed fell ill with yellow fever. Those monkeys were then bitten by mosquitoes, who in turn bit humans, bringing the disease to the region's towns. According to her, mosquitoes — particularly *Haemagogus leucocelaenus* and *H. janthinomys* — were "driven by landscape modifications, with forest fragments running in peri-urban areas, allowing enough interaction [between monkeys, mosquitos and people] to produce such an epidemic."

Similar processes may well be underway in the Amazon, though going mostly unexamined and undetected. A study published last year, entitled "Development, environmental degradation and disease spread in the Brazilian Amazon" concluded that "too little attention has focused on the emergence and reemergence of vector-borne diseases that directly impact the local population, with spillover effects on other neighboring areas."

Severe forest disturbance is already known to contribute to the expansion of known diseases like malaria, says MacDonald. "The primary mosquito vector in Latin America does really well in recently cleared patches of forest, on the margins of the remaining forest (where there is more standing water for breeding, higher temperatures which can facilitate faster development of the mosquito and malaria parasite, as well as increase human biting rates). With people settled in these cleared patches… it can increase malaria transmission."

Comparing satellite images and health data, MacDonald, together with Erin Mordecai from Stanford University, determined that deforestation in the whole of the Amazon Basin has helped lead to a significant increase in malaria. MacDonald told Mongabay that the research team calculated that in 2008 a 10% rise in deforestation, that is, about 1,600 square kilometers (618 square miles) of additional forest cut, led to a 3.3% increase in malaria transmission. That amounted to an additional 9,980 cases across the region.

Bolsonaro paves the way for more deforestation

In the midst of the COVID-19 crisis, the Brazilian Congress now stands ready to vote, turning a temporary 120-day Provisional Measure decreed by Bolsonaro in December 2019, into permanent law. Provisional Measure (MP) 910, instead of curbing illegal land invasions, rewards land grabbers who illegally felled forest on public lands in Amazonia before December 2018 — regularizing their illegal occupation by allowing the purchase of the

property at greatly reduced prices, turning it from public to private. Essentially, the measure allows land grabbers to break the law and get away with it.

According to a technical note issued by the not-for-profit organization, IMAZON, the MP could lead to the deforestation of up to 16,000 square kilometers (6,178 square miles) by 2027, an area ten times larger than the area that led to an increase of nearly ten thousand new cases of malaria in the MacDonald study.

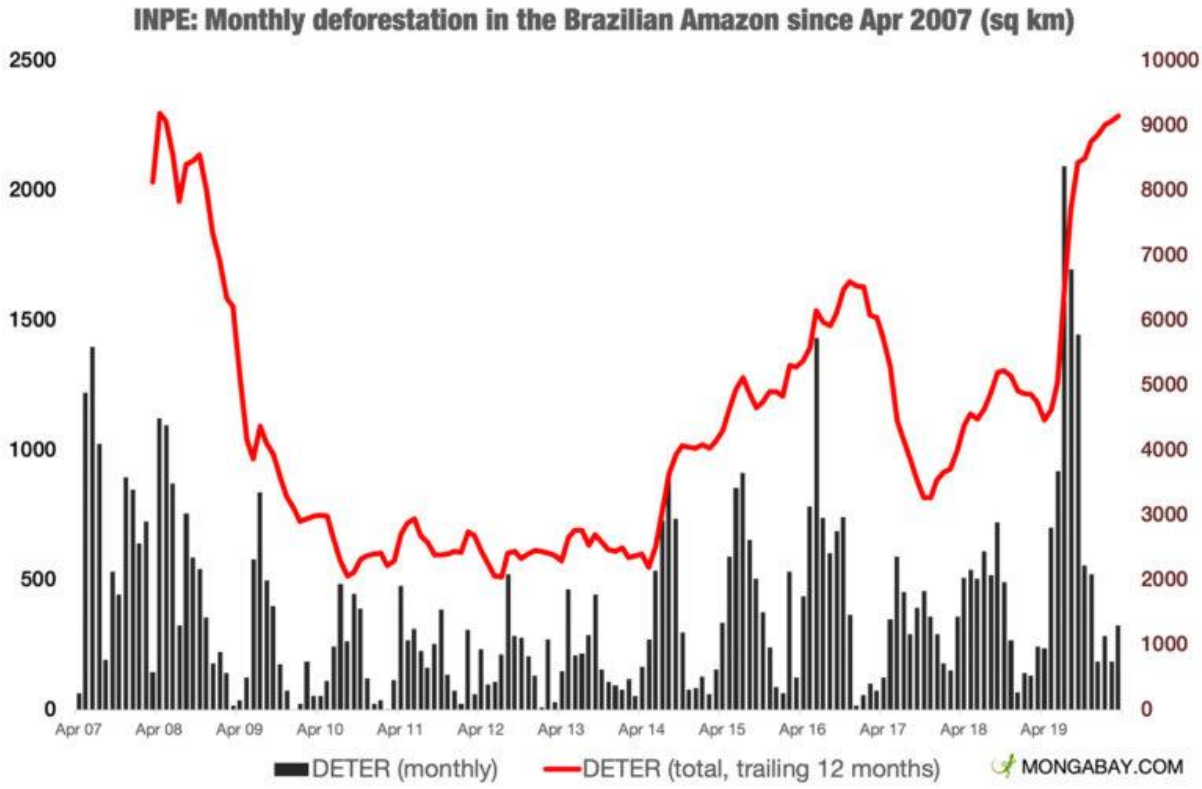
Under the present terms of MP 910, authorities are not required to check the validity of any claim made by a potential landowner for properties under 2,500 hectares (6,166 acres) in size — a stipulation that supposedly benefits small-scale farmers.

But Amazon land grabbers are extremely skilled at bypassing such regulatory limits. One very common practice is to utilize *laranjas* (literally oranges, but more accurately, stooges). The big landowners get relatives, friends or employees to register a small plot in their names, avoiding federal oversight. Later, the laranjas hand the property over to the land grabber, sometimes in exchange for a small payment.

If a landowner employs 20 *laranjas*, each registering a plot of 2,500 hectares (6,166 acres), he ends up with a property of 50,000 hectares (111,000 acres). Another worrying consequence is that land grabbers can seize land occupied by indigenous communities who lack deeds, as is happening with the Sateré-Mawe indigenous group in Amazonas state.

MP 910 also allows those who have already benefited from the regularization of invaded public lands, but who have sold that property, to join the queue again requesting a new plot. Although she recognizes the need to sort out the current anarchy over landownership

in the Amazon, Suely Araujo, former president of IBAMA, the government's environmental agency, is critical of the MP. "With this flexibility, and without separating big landowners from small ones, this law legalizes those who live from land invasion, deforestation and the sale of public land," she told Mongabay.



Monthly deforestation in the Brazilian Amazon since 2007. Image by Rhett A. Butler / Mongabay, data provided by INPE.

On March 27, Minister Alexandre Moraes, a member of the Federal Supreme Court, Brazil's court of last resort, issued a preliminary ruling for facilitating the approval of Provisional Measures. Even though the intention is to fast-track urgent measures during the COVID-19 crisis, environmentalists fear that the ruralist lobby will take advantage of this new procedure to push ahead more energetically with their agenda. "If there isn't a political decision to withdraw MP 910 from the measures to be voted through, we run the risk of a serious environmental reverse during this [health] crisis," warned Araújo.

Greater risks ahead

Even as Brazilian deforestation rates soar, and land use laws in the Amazon basin are undermined, indigenous peoples across Latin America are trying to draw attention to the gravity of the global environmental crisis, which they believe caused the COVID-19 outbreak.

"Coronavirus is telling the world what indigenous peoples have been saying for thousands of years — if we do not help protect biodiversity and nature, we will face this, and even worse threats," said Levi Sucre Romero, an indigenous man from Costa Rica at a press conference organized by Covering Climate Now in New York City in mid-March.

Another indigenous leader at that meeting, Dinamam Tuxá, coordinator of APIB (the Articulation of the Indigenous Peoples of Brazil), was just as vehement: "The cure for the next pandemic, and even for this one, can be found in the biodiversity in our indigenous lands," he argued. "This is why we need to protect our lands and rights, because the future of life depends on it." In contrast, Bolsonaro is pushing legislation through Congress that would allow large-scale mining, oil and gas drilling, and industrial agribusiness within Brazil's indigenous reserves, largely without input from the people living there.

Experts continue warning urgently that more pandemics lie ahead. "I am not at all surprised about the coronavirus outbreak," disease ecologist Thomas Gillespie, an associate professor in Emory University's Department of Environmental Sciences, told *Scientific American*. "The majority of pathogens are still to be discovered. We are at the very tip of the iceberg."

John Scott, head of Sustainability Risk with the Zurich Insurance Group, referring to the Ebola, SARS, MERS, and other recent epidemics, offers a similar message: "The past 20 years of disease outbreaks could be viewed as a series of near-miss catastrophes, which have led to complacency rather than the increased vigilance necessary to control outbreaks."

Climate change, deforestation, successive pandemics

Scientists were not startled by the COVID-19 pandemic; they'd been warning the world about such an event for decades. Similarly, many won't be surprised if the much neglected climate crisis reaches a point of no return, with far more serious impacts for the world — including massive Amazon tree die off and huge atmosphere-destabilizing carbon releases, driven not only by policies favorable to land grabbers, but due to a drastic decline in Amazon rainfall and an increase in fires. Indeed, many say that these multiple crises are intertwined.

One great challenge of the post-COVID-19 world will require that civilization somehow recover from the global economic recession (or depression) it causes without further aggravating the climate crisis via the mass conversion of forests to gold, zinc and bauxite mines, or to cattle ranches and soy plantations. The danger: if tropical deforestation continues out of control, we may barely recover from one pandemic before being faced by another.

The next plague could arise nearly anywhere: in the increasingly disrupted Amazon, the Congo, Indonesia, or even far beyond the tropical zone, in the Arctic, where permafrost is melting rapidly, possibly thawing out unknown and dormant viruses that could unleash the next planetwide health crisis. In this sense, COVID-19 — horrific as its outcomes could be — may only be a harbinger of far worse pandemics to come.

Banner image caption: IBAMA environmental agency officials examine an Amazon rainforest devastated by illegal loggers and land grabbers inside Jamanxim National Forest, Pará state, Brazil. This sort of large-scale habitat destruction drastically alters animal behavior, bringing rainforest wildlife into closer contact with humans, potentially leading to the transfer of zoonotic diseases. Image courtesy of IBAMA.

Source:https://news.mongabay.com/2020/04/rapid-deforestation-of-brazilian-amazon-could-bring-next-pandemic-experts/