

PARADISE LOST?

Protecting the Pantanal, a precious ecosystem in crisis



Protecting People and Planet

A report by the Environmental Justice Foundation

“As much as we report this tragedy, we’ve been very careful to tell people that even though more than 20% of the Pantanal has burned and turned into ashes, we still have about 80% left to fight for, and to protect. We think that the worst thing that can happen now is for people to think that it’s all gone and allow land-grabbers to come and transform this landscape forever”

Brazilian volunteer firefighters and environmental defenders Cecília Licarião and Luciana Leite.



The Pantanal is the largest tropical wetland in the world, spanning over 42 million acres and home to astounding biodiversity.



2020 was a record-breaking year for fires in the Pantanal. Almost one-third of the biome burned, killing over 17 million wild vertebrates.

The past few years have shown us just how dangerous the attacks on our planet are. Records broken by heatwaves, wildfires, storms, prolonged droughts and devastating floods have all provided a glimpse of what the future holds if we do not take action now to stop global heating. For too long we have ignored the signs and encouraged the unfettered destruction of critical ecosystems to feed our addiction to fossil fuels, meat, timber, soy and palm oil and the plethora of other products that carry a heavy cost for our planet's health.

Some of the victims of our extractive greed are well known, like the Amazon rainforest and the Great Barrier Reef. But, other less well known yet vital ecosystems are threatened with destruction, including the Pantanal - a wetland that spreads through Brazil, Bolivia and Paraguay. The Pantanal is the world's largest tropical wetland and home to a rich biodiversity, Indigenous peoples and traditional communities who depend upon the unique flood pulse that ensures healthy water flows for an entire region. The Pantanal is, however, quickly disappearing with the intensification of cattle ranching and monoculture farming, including soy plantations. This destruction is a double tragedy: not only is this irreplaceable biome disappearing, but the agriculture, forestry and other land use change driving this destruction globally contributes 23% of annual greenhouse gas emissions¹, pushing our world closer to a dangerous climate tipping point.

Time is running out. We must take action now to protect the Pantanal and other critical ecosystems, reversing deforestation and ecosystem degradation and removing the economic incentives for destructive practices in our global supply chains. Failure in these goals risks the ecological well-being of our world and with it our economic prosperity, social well-being and, ultimately, our survival.

EXECUTIVE SUMMARY

The Pantanal faces a man-made crisis: 29% of the ecosystem was burnt in the 2020 fire season².

- Cattle ranching and agricultural intensification directly threaten the Pantanal. Over 12% of Pantanal's native vegetation has already been lost due to these activities³. Illegal forest clearance increased significantly during Jair Bolsonaro's presidential term⁴. If the current rate of deforestation persists, the Pantanal as an ecosystem will effectively disappear by 2050⁵. The challenge for president-elect Lula da Silva and the international community is to reverse the agricultural intensification and restore this precious biome.
- The Pantanal has suffered severe droughts over the past few years: in 2020, rainfall from January to May was 50% lower than average⁶. Experts link these droughts to climate change, and predict more severe droughts in the future⁷ making this wetland more vulnerable to catastrophic fires.
- The 2020 fires were started by farmers illegally clearing forests to provide more land for cattle pastures⁸, but the spread of the wildfires disproportionately affected Indigenous territories and conservation areas⁹.
- A 2021 Greenpeace investigation linked 15 ranchers in the Pantanal to the devastating 2020 fires¹⁰. These ranchers supply cattle to international meat-processing giants Marfrig, Minerva and JBS, whose products reach supermarket shelves across the world, including the EU¹¹.
- Jair Bolsonaro's policies are directly to blame for the destruction of the Brazilian Pantanal and other critical ecosystems. Bolsonaro's administration actively prioritised agribusiness and mining interests, encouraged a culture of impunity which empowers illegal agricultural expansion against conservation and indigenous rights, and weakened governmental institutions of the Brazilian government responsible for protecting the environment and Indigenous peoples.



EJF calls on the EU to take urgent action to protect the Pantanal and other critical ecosystems around the world by:

- Enforcing robust, legally binding legislation to ban all deforestation-risk products from the EU market and EU supply chains.
- Expanding, as soon as possible, the scope of the Deforestation-free Products Regulation to include wetlands, including the Pantanal.
- Adopting a leadership role and working with other countries to harmonise anti-deforestation measures, and leading achievement of the Paris Agreement targets, and the carbon sink protection outlined in the UN Framework Convention on Climate Change to combat climate breakdown.
- Ensuring that further progress on the EU-Mercosur Association Agreement depends on proper measures being put in place to protect ecosystems in Brazil and other Mercosur countries.
 - Supporting the new Brazilian government in achieving “zero deforestation and degradation of biomes” by 2030.
 - Support a just and effective 30x30 conservation target and the establishment of new protected areas in the Pantanal and its adjacent areas.
 - Deliver on scaled up finance for climate and biodiversity protection as a key to unlocking global conservation cooperation.



Pictures: © EJE, © Heideger Nascimento

The Pantanal, the largest tropical wetland in the world, is home to a rich array of wildlife and provide critical ecosystem services for the people of Brazil.

The Pantanal is the largest tropical wetland in the world, extending over 42 million acres (17 million hectares) across the Brazilian states of Mato Grosso and Mato Grosso do Sul and parts of neighbouring Bolivia and Paraguay. The Pantanal ecosystem comprises wetlands and flooded grasslands, with a lattice of waterways that are influenced by seasonal floods that give way to vast savannas and thick “gallery forests”. The lowland Pantanal floodplain is surrounded on two sides by the Cerrado tropical savanna biome and to the north is bounded by the Amazon biome¹².

This wetland ecosystem acts as a sponge, absorbing water from the surrounding highland plateau during rainy seasons and protecting downstream ecosystems and communities from floods, and slowly releasing water during the dry season¹³. According to WWF-Brazil, over 8 million people living in the wider Paraguay river basin rely on the Pantanal for flood protection and water supply¹⁴. The Pantanal wetlands also serve a water purifying role, helping to filter toxins and pollutants from the water supply¹⁵. Experts have previously valued the ecosystem services provided by a healthy Pantanal at between US\$ 8,120 to US\$ 17,477 per hectare¹⁶ or US\$ 165.8 billion to US\$ 358.8 billion in today’s currency¹⁷. This does not include revenue generated by ecotourism, including jaguar tourism: in the Encontro das Águas Park alone, an estimated US\$6.8 million is generated each year¹⁸.

An irreplaceable ecosystem

The remote and largely inaccessible region supports a rich biodiversity with more than 2000 plant species; more than 580 bird species; 271 fish; 174 mammal species; and 57 amphibian species¹⁹. The Pantanal hosts substantial populations of vulnerable and threatened species including the giant otter (*Pteronura brasiliensis*), considered one of the most threatened mammals in the neotropics, and classified as endangered by the IUCN²⁰; and many other threatened species with declining populations such as the giant anteater (*Myrmecophaga tridactyla*), giant armadillo (*Priodontes maximus*), azara's capuchin (*Sapucay jay*), marsh deer (*Blastocerus dichotomus*), lowland tapirs (*Tapirus terrestris*), and hyacinth macaw (*Anodorhynchus hyacinthinus*)²¹, the world's largest parrot^{22,23}. The richness of biodiversity in the Pantanal and the rate at which it is being destroyed means we could be losing species before we even have a chance to discover them.

10 rare, threatened and poorly known species that depend on the Pantanal to thrive

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT			
<p>1. Giant otters (<i>Pteronura brasiliensis</i>)</p> <p>IUCN category: Endangered Population trend: decreasing</p>		<p>6. Pantanal Swamp-turtle (<i>Acanthochelys macrocephala</i>)</p> <p>IUCN category: Near threatened Population trend: declining</p>		<p>2. Lowland tapirs (<i>Tapirus terrestris</i>)</p> <p>IUCN category: Vulnerable Population trend: decreasing</p>		<p>7. Reticulated freshwater stingray (<i>Potamotrygon falkneri</i>)</p> <p>IUCN category: Data Deficient Population trend: unknown?</p>		<p>3. Bush dog (<i>Speothos venaticus</i>)</p> <p>IUCN category: Near threatened Population trend: decreasing</p>		<p>8. Southern tiger cat (<i>Leopardus guttulus</i>)</p> <p>IUCN category: Vulnerable Population trend: decreasing</p>	
<p>4. Giant armadillo (<i>Priodontes maximus</i>)</p> <p>IUCN category: Vulnerable Population trend: decreasing</p>		<p>9. Azara's capuchin (<i>Sapajus cay</i>)</p> <p>IUCN category: Vulnerable Population trend: decreasing</p>		<p>5. Giant anteater (<i>Myrmecophaga tridactyla</i>)</p> <p>IUCN category: Vulnerable Population trend: decreasing</p>		<p>10. Marsh deer (<i>Blastocerus dichotomus</i>)</p> <p>IUCN category: Vulnerable Population trend: decreasing</p>					

The Pantanal is also a stronghold for the jaguar (*Panthera onca*) - the largest feline in the Americas and one of the Pantanal's keystone species: the wetland is home to the highest density of jaguars in the world. There are between 4,000 and 7,000 jaguars in the Pantanal, out of a total of about 170,000 animals throughout Central and South America²⁴. IUCN lists the jaguar as near threatened, as due to the destruction of their habitat and fragmentation of their historic range: jaguars have lost 50% of their historic range in the past 50 years²⁵.

Despite its high ecological value, most of the Pantanal is unprotected and around 93% of the Brazilian Pantanal is held in private lands²⁶, of which 80% is used for cattle ranching²⁷. Even with its status as a UNESCO Biosphere Reserve and with specific areas designated as Ramsar sites (recognising wetlands of international importance) the existing protected area network falls far short of protecting representative ecosystems and their diverse wildlife.



People and the Pantanal



© EJF

The last Brazilian census (2010) found 474,000 people living in the Brazilian Pantanal²⁸. However, according to a more recent study by WWF-Brazil, the Pantanal is currently home to an estimated 1.2 million people²⁹. Traditionally, the Pantanal was a remote frontier of Brazil's territory, with a small population practising low density cattle ranching, Indigenous subsistence farming techniques, and artisanal fishing³⁰.

There are approximately 270 communities, known as *pantaneiros*, with long histories in the region, including Indigenous peoples, whose livelihoods depend on small-scale ranching, subsistence fishing and farming, and ecotourism³¹. Since the early 2000s, these communities have been displaced by large agribusiness interests using intensive, damaging production methods that are cited by most conservationists as the greatest threat to the Pantanal's survival³².

The Pantanal currently has eleven Indigenous territories covering just under 7,000 square kilometres, including the traditional lands of the Guató, Terena, Bororo, and Kadiwéu peoples³³. The expansion of cattle ranching over the past three or four centuries both within the Pantanal and in its surroundings has pushed Indigenous and traditional groups off their traditional land and threatened their subsistence fishing and farming livelihoods, specifically designed to survive the flood cycles³⁴. In Brazil, over 40% of claimed Indigenous territories have received no government protection, in clear violation of Brazil's 1988 Federal Constitution³⁵.

Cattle ranching has become the primary economic activity in the Pantanal, with approximately 3,000 ranches in the Brazilian areas and an unknown number in Bolivia and Paraguay³⁶. The total cattle herd in the Brazilian Pantanal has been estimated at 3.8 million heads, producing around 1 million calves per year³⁷. While traditional *pantaneiro* cattle ranching techniques are generally viewed as sustainable and have the potential to be certified carbon neutral, low density ranchers have struggled to compete with the intensive beef production of Brazil's growing megafarms³⁸. Since the 2000s, cheap land prices have brought new external agribusiness interests and investments to the region, with intensive farming methods including increased clearing of native vegetation, the planting of non-native pasture grasses, and agrochemical use. This has had devastating consequences for the traditional people of the Pantanal and the ecosystem itself.

The Guató tribe lost 90% of their land in the 2020 fires.

Long-term ecological stressors

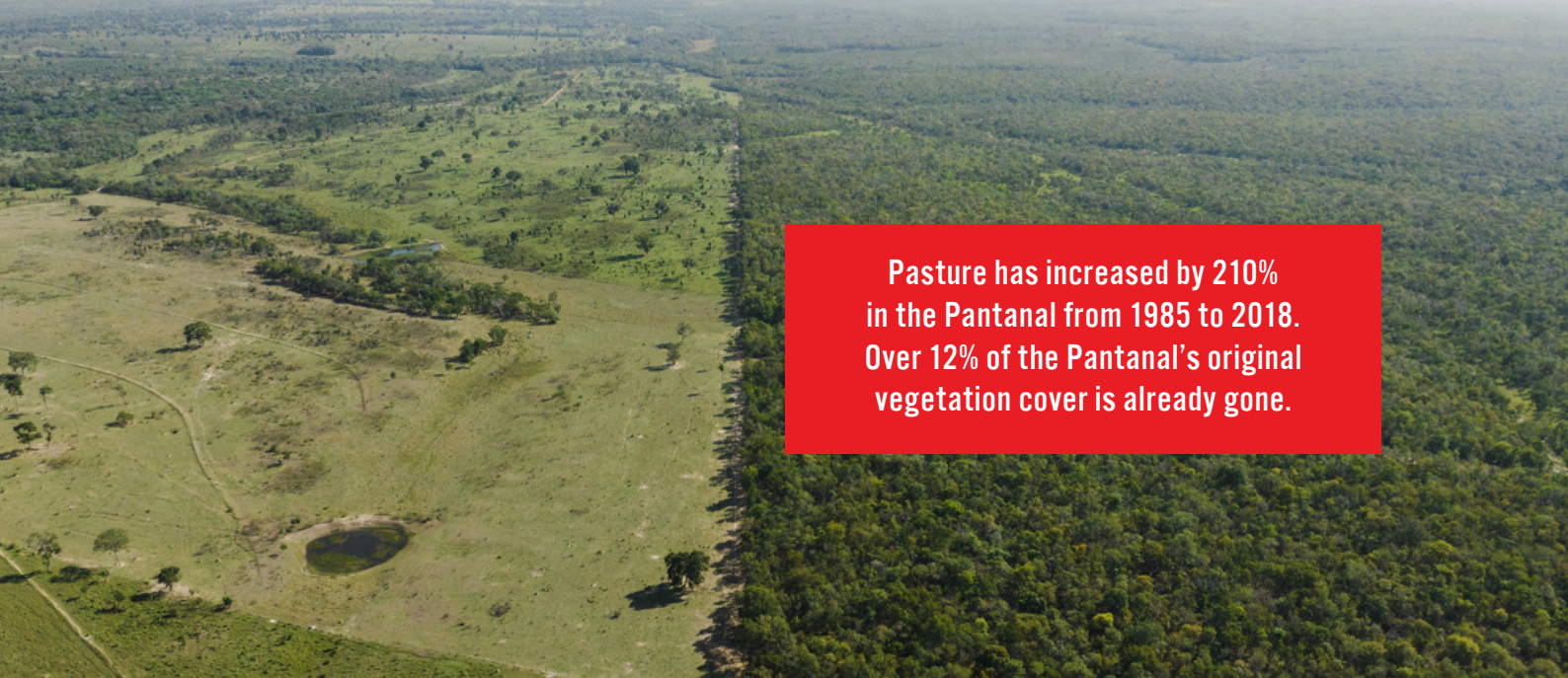
Almost one-third of the Pantanal burned in the illegal 2020 fires started by ranchers to convert vegetation to pasture. The total cattle herd in the Brazilian Pantanal has been estimated at 3.8 million heads. © Heideger Nascimento

If the current rate of deforestation persists, the Pantanal could effectively disappear as an ecosystem by 2050.

Land use change for cattle and agricultural intensification directly threatens the health of the Pantanal wetland ecosystem³⁹. Less than 5% of the Brazilian Pantanal is protected; the rest is under private ownership, the majority of which is used for cattle grazing⁴⁰. Over 12% of Pantanal native vegetation is already gone⁴¹. If the current rate of deforestation persists, the Pantanal as an ecosystem could effectively disappear by 2050⁴². Since the 2000s, land ownership has shifted away from local subsistence farmers and traditional cattle ranchers to 'asphalt farmers' - agribusiness owners who live in the city rather than in the Pantanal, use intensive farming techniques and lack any connection to the land⁴³. These farmers are typical of the opaque supply chains which supply international demand, including from EU markets⁴⁴.

Illegal deforestation in the Pantanal more than doubled in the first six months of 2020⁴⁵. According to Mapbiomas, the area converted to agricultural activities increased from 0.6 Mha in 1985 to 2.8 Mha in 2021⁴⁶. In addition to land use change, other cattle farming practices such as the planting of non-native grasses, continuous grazing, and higher stocking densities threaten the Pantanal⁴⁷.

Intensive farming in the upland plateau - where the Cerrado meets the Pantanal - is a further concern due to erosion and agrochemical run-off into waterways, which threaten biodiversity and the 'flood pulse' that is the lifeblood of the wetland⁴⁸. The environmental degradation of these highlands is occurring around three times faster than in the floodplain⁴⁹. The plateau's native vegetation is threatened by intensifying mechanised agriculture with a focus on monocultures of soybean, maize, and sugarcane for biofuel production⁵⁰.

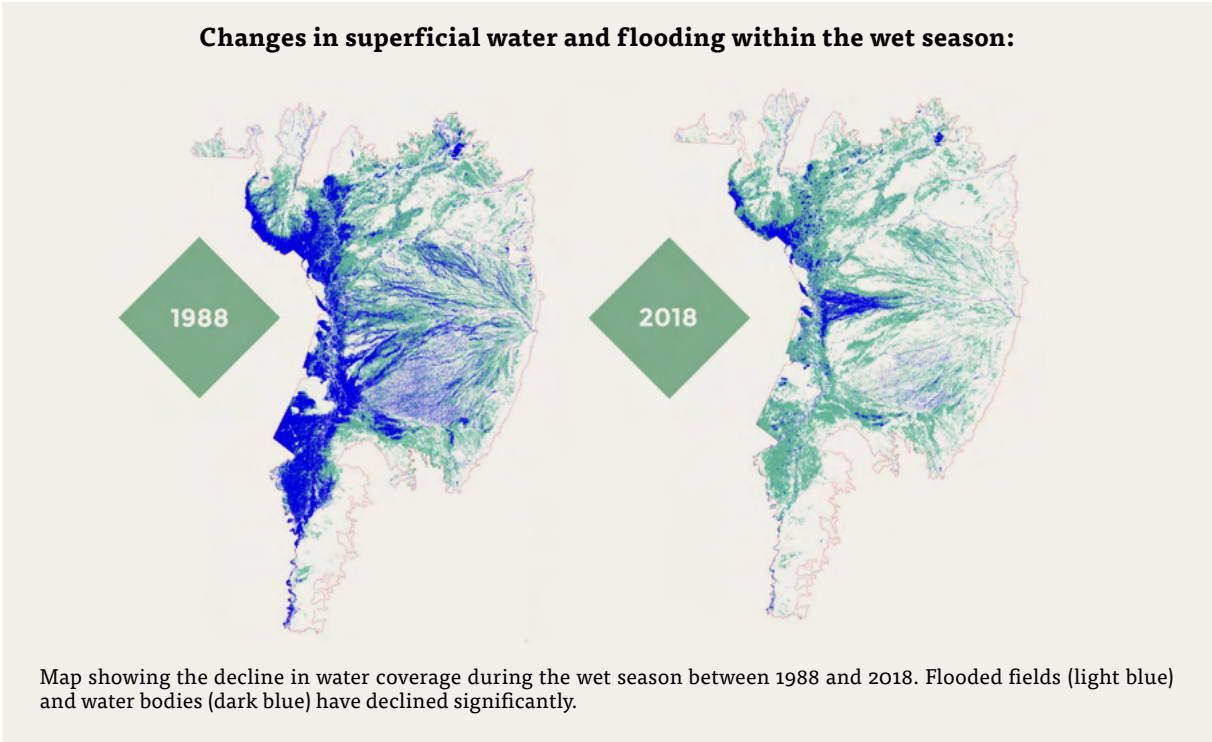


Pasture has increased by 210% in the Pantanal from 1985 to 2018. Over 12% of the Pantanal's original vegetation cover is already gone.

This precious biome is being destroyed to make way for expanding and intensifying agriculture. According to Mapbiomas, the area devoted to pasture in the Pantanal increased by 210% between 1988 - 2018. © EJF

The area devoted to agriculture increased by 39% from 2001 to 2013 in this critical highland region⁵¹. Soybean cultivation doubled in just seven years from 2009 to 2016, according to a study conducted by a grassroots NGO coalition⁵². In November 2019, president Bolsonaro reversed a ban on sugarcane plantations in the Amazon and Pantanal biomes in order to increase Brazil's biofuel production⁵³, one of its targets under the Paris Agreement, which ironically is helping to fuel the fires in the region.

Other threats to the Pantanal ecosystem include planned hydropower projects and mining and other industrial activities in the highlands which will further degrade the biome's unique waterways downstream⁵⁴. These activities - which consume vast quantities of water - together with climate change, land use change and the disappearance of river springs in the plateau region are together responsible for the drying of the largest tropical wetland on the planet. Since 1985, the Pantanal has lost millions of hectares of flooded area both in the dry and wet season, with severe consequences for biodiversity and peoples.



Source: MapBiomas, 2022.

There was a 71% drop in the number of deforestation-related fines in the Pantanal in 2019 (the year Bolsonaro assumed office) compared to 2018.

President Bolsonaro has also encouraged deforestation by relaxing environmental restrictions and protections for Indigenous territories. Despite a 70% increase in deforestation over the first three years of Jair Bolsonaro's presidential term⁵⁵, there was a 71% drop in the number of deforestation-related fines in the Pantanal in 2019, compared to the previous year⁵⁶, and the number of environmental investigation cases that made it to trial dropped by 60% by 2021⁵⁷. President elected Lula da Silva and the international community must now build back the barriers preventing the devastation of the Pantanal and other critical biomes across Brazil.

Land use change in the Pantanal 1985 - 2021

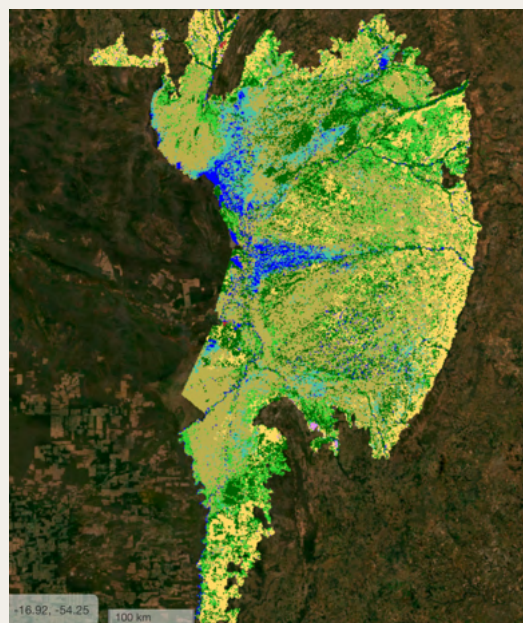
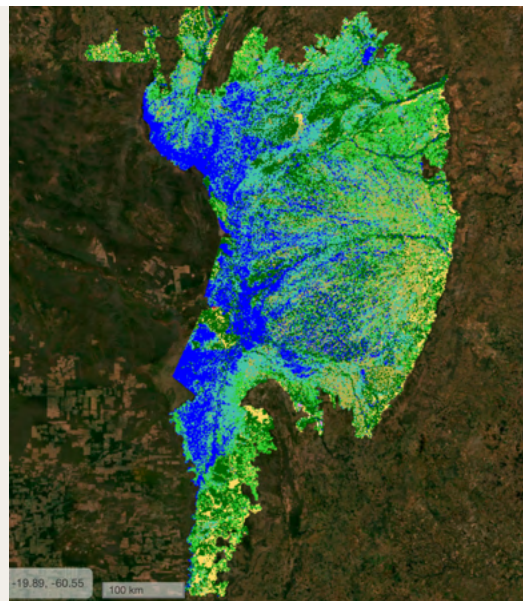
1985

- 1. Forest
- 2. Non-Forest Natural Training
- 3. Agricultural
- 4. Unvegetated area
- 5. Body Of Water
- 6. Not observed

2021

- 1. Forest
- 2. Non-Forest Natural Training
- 3. Agricultural
- 4. Unvegetated area
- 5. Body Of Water
- 6. Not observed

Land used for farming has increased significantly at the expense of water surface area and vegetation – pasture area in the biome has almost tripled since 1985.



Source: MapBiomias platform.

A wetland in flames



**Over 38,000 square kilometers
– an area larger than Belgium –
have burned in 2020.**

The roots of 2020's devastating wildfires lay in the desperately low rainfall from January to May, which was 50% lower than average⁵⁸. Researchers link droughts in the Pantanal to climate change, with warming ocean temperatures affecting rainfall: climate models indicate an increase in the frequency of extreme precipitation events and extended periods of drought⁵⁹. Studies have found that the Amazon rainforest generates its own rainfall and as forest cover diminishes, it will impact precipitation patterns across the region⁶⁰.

Partly as a result of exceptionally dry periods, the Pantanal has experienced record fires over the past several years. Brazil's space agency, the INPE, estimated that in 2020, some 38,617 square kilometres - an area larger than Belgium - had burned in the Brazilian Pantanal⁶¹. LASA, a satellite mapping project by

the Federal University of Rio de Janeiro, estimated that 29% of the entire Pantanal ecosystem burned in 2020⁶². INPE also recorded more than 19,000 fire hotspots in 2020⁶³. **This is the highest number of fires in recorded history of the biome and triple the annual average.**

Satellite data reveals that in some of the areas hardest hit by the fires, the burning first appeared - and multiplied - on private properties before spreading to Indigenous territories. Some began inside reserves and native forest on private properties that are ostensibly legally protected⁶⁴. Fires have impacted every Indigenous territory in the Pantanal: one of the worst hit has been Guató tribe, which lost 90% of their land in 2020's fires⁶⁵. The largest reserve, the Kadiweu Indigenous Territory, home to the Terena, Kinikináo and Kadiweu peoples in Mato Grosso do Sul state, suffered from approximately 176 fire outbreaks in 2020⁶⁶. The burning of Indigenous lands not only jeopardises livelihoods, but also represents an existential threat to Indigenous identity, knowledge, and culture by eroding the connection to land and biodiversity that are the cornerstone of Indigenous communities.



Source: NASA

Biodiversity burned

Over 200 jaguars were killed, injured, or displaced by fires in the Encontro das Águas protected area.



Amanaci - the Jaguar who had her paws severely burnt. © Ueslei Marcelino

“It is really an apocalyptic scene and it seems like you are in war...we’re losing this biome and it’s happening right in front of our eyes”

Luciana Leite, conservation biologist, co-founder of Chalana Esperança and volunteer firefighter.

The fires in 2020 devastated the Encontro das Águas (“Meeting of Waters”) State Park, that lies on the confluence of the Rio São Lourenço and Rio Três Irmãos. The park is home to hundreds of jaguars, at least 200 of which are thought to have been killed, injured, or displaced due to the fires that destroyed 93% of the park’s vegetation⁶⁷. The intense heat took a huge toll on reptiles in particular and volunteers rescued countless animals that survived the flames only to die later from the lack of food and water with intense competition over scarce resources⁶⁸. Based on the amount of land burnt, experts believe that around 600 jaguars had their habitat impacted by the fires, potentially leading to food insecurity and genetic instability for the Pantanal’s jaguar population⁶⁹.

In 2020, many fires in the Pantanal were started by cattle ranchers and soy farmers in July and August⁷⁰ and wreaked havoc when drought conditions and strong winds caused fires to jump normal fire boundaries like streams and roads. A 2021 Greenpeace investigation linked the 2020 fires in the Pantanal to 15 cattle ranchers, one of whom was investigated by the Brazilian police for illegally setting fire to vegetation⁷¹. Wetland ecology means that during the dry season or periods of drought, dense peat vegetation can catch alight and fires can burn underground, escaping fire breaks and making them very difficult to contain⁷².

The Brazilian federal government has proved highly ineffective at extinguishing the fires. Despite assurances from the administration and the military that hundreds of federal agents had been deployed, those on the frontlines of the firefighting - ranchers, tour guides, biologists, veterinarians, journalists, and local fire departments - said that the federal presence was almost completely absent in 2020⁷³. "I can't see much federal help; it is basically us here," said Felipe Augusto Dias, the Executive Director of local non-profit, SOS Pantanal. In a speech to the UN General Assembly for the World Biodiversity Summit on September 30, 2020, Jair Bolsonaro denied the gravity of the crisis in the Pantanal, and attempted to use the ongoing wildfires in the Western United States to deflect attention - for comparison, the fires in the Pantanal burnt more than double the area of the California 2020 wildfire season⁷⁴.



Animals that managed to escape the fires died of thirst and hunger.

Biologists expect the effects of the fires will have a lasting impact on the Pantanal's wildlife by damaging unique ecological processes and increasing competition over scarce food and water.



Pictures: © EJF

Pantanal, Amazon, Cerrado – A pattern of devastation

The devastation of the Pantanal mirrors the intensifying threat to other Brazilian biomes, such as the Amazon, the Cerrado, the Pampas and the Caatinga, from intensive agriculture. Unscrupulous operators have taken advantage of the Bolsonaro administration's anti-conservation agenda, and set illegal fires to clear land for cattle ranching, soybean and sugarcane plantations. The INPE recorded a 34% increase in deforestation alerts in the Amazon in the 12-month period from August 2019 to July 2020 as compared to the previous year⁷⁵. Meanwhile, when accounting for size, the Cerrado's savanna biome that covers some 23% of Brazil is disappearing at a rate almost four times faster than the Amazon⁷⁶. Both 2019 and 2020 were record-breaking years for wildfires in all three ecosystems: the Pantanal, Cerrado and the Amazon⁷⁷.

Furthermore, the health of the Pantanal is directly linked to the health of the Cerrado highlands surrounding it and whose rivers feed the wetland, and the Amazon rainforest's ability to generate rainfall in the region⁷⁸. **Protection of the Pantanal is inextricably linked to conservation of all of Brazil's biomes. Any conservation efforts must take into account the complexity and interconnectedness of all ecosystems.**

“People have been reporting more of the fires, but people are failing to connect what is actually going on. You watch the main news and people don't speak of climate change, people don't speak of land-use change. People don't speak of political inaction. People don't speak of any of the roots of the problem. They just document [the fires] as they document something that is happening as if it was totally disconnected from human activity...no one is discussing what to do to avoid the 2020 fires [from happening] again,”

Luciana Leite, conservation biologist, co-founder of Chalana Esperança and volunteer firefighter.



The destruction in the Pantanal was caused by ranchers and farmers setting illegal fires to the forest to clear the land for more cows and crops.

Protecting Indigenous rights



© EJF

Failures to enforce environmental protections fit within the Bolsonaro administration’s strategy of prioritising agribusiness and mining interests over conservation and Indigenous rights. Brazil has long been one of the most dangerous places in the world for climate activists and environmental defenders. Between 2012-2021, Brazil saw the highest number of documented killings of land and environmental defenders globally – 342 of 1,733 individuals, or almost 20% of deaths⁷⁹. Indigenous peoples, whose land rights have been threatened by Bolsonaro’s agenda, are the most severely impacted – a third of those killed during this period were Indigenous peoples⁸⁰. It remains to be seen if and how the situation will improve following the recent presidential elections.

EJF’s 2022 investigation into the destruction of the Pantanal uncovered the harms that Brazil’s intensifying agricultural industry imposes on Indigenous peoples in the Pantanal. Driven from their land, the Terena people are now confined to just a few reserves and surrounded by farms, mostly dedicated to cattle ranching. Any land returned to them has often been converted to pasture or monocultures, unsuitable for the Terena people to use for farming using their traditional methods.

“How did we, Indigenous peoples, who owned the land, ended up confined, surrounded by barbed wire, like cattle”?

Anonymous, Grand Terena Council Assemblage, 2022



The fire spreads in the cornfield. According to the Guarani-Kaiowá community members, these fires are typical and are usually set by farmers to criminalise the community. © Heideger Nascimento

“We, the Terena people, are traditional farmers and we would like to cultivate in the traditional way. The land is no longer proper for this because it has deteriorated – it has become a pasture, we can’t use it to cultivate our produce.”

Val Eloy, Terena leader, June 2022

Meanwhile, the use of harmful pesticides in the Pantanal – including several substances banned in parts of the EU⁸¹ – have caused damage to the fishing livelihoods of Indigenous and traditional peoples.

Almost two-thirds of Brazil’s highly hazardous pesticide sales are linked to the production of soya destined for the international market.⁸² According to a recent study, Mato Grosso is the Brazilian state with the highest consumption of agrochemicals, almost 143 metric tonnes were used in 2020.⁸³ Among the substances found in water samples, five are banned in the EU, Switzerland, Australia and Canada, due to the risks to human and environmental health.⁸⁴ These, and other harmful substances, pose a threat to the subsistence fishing livelihoods of many Indigenous peoples and damage the health of the Pantanal’s waterways and rivers. A 2022 report published by Friends of the Earth Europe showed how Brazilian agribusiness and European companies have been successful in lobbying for the increased use of agrochemicals, spending millions in the process. Bayer and BASF have got 45 pesticides approved by the Bolsonaro government, of which 19 contain substances that have been prohibited in the European Union. The report estimates that pesticide use in Brazil has multiplied sixfold over the last 20 years.⁸⁵

“When it rains, everything flows into the rivers, and that harms the water and the fish as well. When (pesticides) fall into the water, they kill the fish and the water... the river is dead. The fish no longer enter it.”

Cabelo, river dweller of Paraguayan and Indigenous descent

Local civil society organisations note that the expansion of agricultural activity into key biomes like the Pantanal has not actually improved the lives of Brazilians⁸⁶: most agricultural production is destined for export, whereas food insecurity in Brazil has risen dramatically, wiping away all gains made since 2004 when the national survey began⁸⁷. In fact, the agricultural business presents a threat to Brazilians' human rights, making use of exploitative work practices akin to modern slavery. In July 2022, 10 workers across three farms within the Pantanal were rescued from slavery and forced labour.⁸⁸ One, a 63-year-old Paraguayan man had been enslaved on a cattle ranch for 20 years.⁸⁹ A total of 47 rescues took place across Corumbá and 95 in Porto Murtinho from 1995 - 2021.⁹⁰ These, however, are only two of the 16 municipalities which encompass the Pantanal, and with cattle ranching the main economic activity across all of them, these examples likely only represent a fraction of labour exploitation cases in the region.⁹¹ Cattle ranching has been associated with 30% of rescues from slavery in Brazil since 1995⁹², with a 568.4% increase in reported cases between 2020 and 2021 alone.⁹³



EU consumption driving destruction

The EU is the second-largest market for forest and ecosystem risk commodities (FERCs) after China⁹⁴. In recent decades, EU Member States have generally seen an increase in forest cover at home, but that has not translated into a net decrease in deforestation impact - it has just moved it farther out of sight⁹⁵. EU consumption is currently cited as responsible for around 10% of global deforestation⁹⁶: every year, the EU causes the loss of around 72,900 square kilometres equivalent in area to Ireland⁹⁷. It is therefore critical for the EU to adapt its import, investment, and consumption behaviours to protect the Pantanal and other key ecosystems worldwide.

Brazil is the single biggest exporter of agricultural goods to the EU, which in turn is the largest foreign direct investor in the Brazilian economy⁹⁸. Between 2015 and 2019, Brazil exported over 382,126 tonnes of beef to the EU, valued at over €2,413 billion. Italy accounted for approximately 39% of imports by weight, importing 148,534 tonnes of beef products during this period. The Netherlands imported approximately 107,735 tonnes of Brazilian beef products, making up 28% of respective EU imports in the period. Germany, meanwhile, was responsible for at least 33,403 tonnes of imports, standing at roughly 9%⁹⁹.

One report found that up to one-fifth of EU soy imports and 17% of beef imports from Brazil may be linked to deforestation in key biomes¹⁰⁰. A 2021 Greenpeace report, 'Making mincemeat of the Pantanal', identified 15 ranchers linked to the catastrophic 2020 fires¹⁰¹. These ranchers supply cattle, either directly or indirectly, to meat-processing giants such as JBS, Marfrig and Minerva, who export their beef to markets across the world. Between 1 January 2019 and 31 October 2020, JBS's Pantanal-linked facilities alone exported products worth almost US\$2 billion, with the EU-27 and UK making up 13% of the value^{102,103}. Consumers in the EU are unknowingly funding the decimation of this precious wetland and the people and biodiversity reliant upon it.

JBS – the largest meat-processing company in the world – has been embroiled in a litany of scandals, including allegations of modern slavery^{104,105}, the illegal sale of rotten and salmonella-tainted meat¹⁰⁶, and bribery of multiple government officials¹⁰⁷. JBS culpability for deforestation in Brazil has been exposed by several investigations into its supply chains^{108,109}. Between 2008-2020, JBS is estimated to have indirectly contributed to the loss of 1.5 million hectares of forest – and area roughly the size of Belgium across six Amazonian states¹¹⁰.

By buying up smaller companies, JBS has built a powerhouse of 70 brands and subsidiaries including Moy Park, Tulip and Pilgrim's Pride¹¹¹ that are sold in over 180 countries¹¹². Using available trade data, EJF has identified over 570,000 tons of direct exports from Brazil to the EU by JBS and its subsidiaries between 1 January 2019 and 13 October 2022¹¹³. Greenpeace investigations identified four cattle ranchers linked to the 2020 Pantanal fires to JBS processing facilities in Campo Grande, Mato Grosso do Sul. One of these facilities has reportedly supplied French retailer Carrefour, Burger King and McDonalds¹¹⁴.

Import quantities are not the only factor to be considered when assessing the EU's impact on ecosystem destruction: opaque and complex supply chains increase the risk of commodities ending up in EU supermarkets or food outlets. For example, even though the EU has imported far less Brazilian soy than China, over the past decade the EU's soy imports have been exposed to twice the relative deforestation risk as China's¹¹⁵. The same report linking EU imports to Brazilian deforestation, narrowed down deforestation risk, finding that 2% of farms were responsible for 62% of potentially illegal deforestation in the Brazilian Amazon and Cerrado¹¹⁶.

One of the most prominent legal instruments to halt EU-driven deforestation is the deforestation-free products law, which has been welcomed by many environmental organisations as a "major leap forward" in Europe's efforts to protect forests. Yet, in its current format, the limited scope of the law, particularly in terms of non-forest ecosystems covered, threatens to have perverse unintended impacts on other critical biomes, such as the Pantanal and other wetlands, which are critical for carbon sequestration and storage and therefore key allies in the fight against climate breakdown.

In Brazil, it is evident that a non-comprehensive approach to deforestation can accelerate land-use change in adjacent biomes. For example, the Soy Moratorium, signed in 2006, initially helped to reduce deforestation in the Amazon Forest (until 2015 when it started increasing), and yet it provided no protection for the Cerrado tropical savanna, where land clearance and deforestation continued to increase over the same period.

The exclusion of wetlands from the EU deforestation due diligence legislation may unintentionally accelerate the race to convert these ecosystems into agricultural lands, with devastating effects on their rich biodiversity, on the traditional communities who rely on these ecosystems and, critically, on our ability to fight climate breakdown.

Members of the European Parliament, the Commission and Council must together ensure that the Pantanal and other wetlands, which are disappearing three times faster than forests, are included in the legislation in the next year, during revision.

An aerial photograph of a large industrial complex, likely a meat processing plant, featuring numerous large buildings with corrugated metal roofs, parking lots, and surrounding infrastructure. A prominent red text box is overlaid on the upper portion of the image.

Between 2016 and 2021, JBS processed 26.8 million cows (a 54% increase over the period, from 17.4 million), alongside millions of pigs and chickens. During the same period, JBS as a global entity increased its annual greenhouse gas emissions by 51%, more than fossil fuel giant Total, more than Italy's annual climate footprint and 95% of France's.¹¹⁷

RECOMMENDATIONS

Ambitious policy and regulation in the EU could be a real game changer in the fight to protect the Pantanal and other ecosystems vital for biodiversity protection and climate mitigation. The EU has a positive environmental leadership vision, but in order to achieve its Green Deal ambitions it must look beyond its borders and leverage its standing on the international stage and global markets to be a force for good. EJF therefore calls on the EU to:

1. Urgently pass and implement an ambitious sustainable corporate governance due diligence framework, with robust enforcement and transparency mechanisms, to eradicate human rights and environmental abuses from EU value chains.

As the world's largest single market, the EU holds potential for world-changing impact: if it acts now with robust policy to eradicate human rights and environmental abuses from European value chains, the EU could help to create a global 'race to the top' towards a more just and sustainable future for all. The new mandatory human rights and environmental due diligence initiatives that have been a focus of the current EU terms – including the Corporate Sustainability Due Diligence Directive; the Regulation on deforestation-free products; and the Regulation on prohibiting products made with forced labour on the Union market – are a critical opportunity to future-proof value chains and turn EU consumption into a force for good.

In the process of designing and implementing critical legislation, it is also important for EU Members to consider potential unintended consequences of non-comprehensive legislation that protects some biomes to the detriment of neighbouring ecosystems. It is vital that policymakers at EU and Member State level remain steadfast in defending the ambition of these initiatives and a broader mandatory human rights and environmental due diligence framework that is aligned with global standards, such as the UN Guiding Principles on Business and Human Rights.

2. Negotiate robust environmental and human rights protections into all trade agreements.

Trade agreements with Brazil should include robust environmental and human rights clauses accompanied by effective enforcement mechanisms and sufficient deterrent sanctions. This must include within any potential EU-Mercosur free trade agreement or bilateral agreement negotiated with Brazil.

3. Support a just and effective 30x30 conservation target and an ambitious Post-2020 Global Biodiversity Framework at the Convention on Biological Diversity's upcoming COP15.

The EU must continue to advocate for increased international cooperation towards climate, biodiversity and human rights goals in the Pantanal and around the world. This should include setting an ambitious – and enforceable – post-2020 nature conservation goal to protect and restore 30% of representative ecosystems by 2030.

The EU should advocate for ambitious targets and set out a detailed plan for implementation and embed biodiversity objectives across all sectoral policies and programmes. The EU must also help ensure that the rights of Indigenous peoples and local communities are enshrined in conservation policy. Their leadership and knowledge must be recognised and embedded in all protected area designations and management processes to ensure environmental justice for frontline communities.

4. Deliver scaled-up finance for climate and biodiversity protection to unlock global conservation cooperation.

With the election of President Lula da Silva, there are far greater opportunities to build cooperation with Brazil to achieve climate, biodiversity and human rights goals. With robust legislation and political will, private and public spending can be harnessed as innovative tools for protection of people and the planet.

The EU and its Member States must, at minimum: deliver on existing climate and biodiversity funding commitments, and set higher targets for the Post-2025 New Collective Quantified Global Goal for climate finance; set ambitious funding targets for the Post-2020 Global Biodiversity Framework; and scale up funding and mobilise innovative and accessible financial instruments under multilateral and bilateral nature conservation agreements such as the Glasgow Leaders' Declaration on Forests and Land Use, which advance environmental justice and support developing economies.

EJF calls on industry to participate in protecting our shared environment and halting deforestation worldwide. In addition to voicing support for robust deforestation-free supply chain members at the EU level, industries must commit to:

- Strengthening due diligence and risk processes by investigating supply chains for environmental and human rights violations, prioritising high-risk sectors and geographies;
- Working with verified suppliers of products whose provenance is independently and robustly verified, or supporting existing suppliers in transitioning to legal, sustainable supply chains;
- Developing internal processes to ensure fully transparent and traceable supply chains and publishing detailed and verifiable information on performance;
- Creating grievance mechanisms for addressing environmental and human rights violations within supply chains; and

EJF calls on consumers to add their voice to the fight against environmental degradation:

- Ask your retailers for proof of the legality and sustainability of their products, with a particular current focus on the provenance of Brazilian beef products, leather, and soy. Demand transparent, accountable and independently-verified supply chains from field to consumer. Avoid Brazilian beef, leather and soy and choose organic, locally-produced, legal and sustainable alternatives.
- Contact your elected representatives and let them know you support robust legislation for deforestation-free supply chains in your country.

References

- 1 Intergovernmental Panel on Climate Change. (2019). Special Report on Climate Change and Land. https://www.ipcc.ch/site/assets/uploads/2019/08/4.-SPM_Approved_Microsite_FINAL.pdf
- 2 Laboratório de Aplicações de Satélites Ambientais da Universidade Federal do Rio de Janeiro. 13 November, 2020. 'Área queimada Pantanal 2020'.
- 3 Alho et al. (2019). Threats to the biodiversity of the Brazilian Pantanal due to land use change. *Ambiente & Sociedade*, 22.
- 4 Jordan, L. (4 Sep 2020). Fires in Brazil's Pantanal wetland and Amazon rainforest worst in a decade. *Unearthed Greenpeace*.
- 5 Silva, J.S.V., Abdon, M.M. Silva, S.M. A., Moraes, J.A. (2011). Evolution of deforestation in the Brazilian Pantanal and surroundings in the timeframe 1976- 2008. *Geografia*, 36. pp35-55.
- 6 WWF Brazil. (21 July 2020). 'Pantanal has 126% more fire outbreaks than in 2019'. 28 September 2020. <https://www.wwf.org.br/informacoes/english/?76711/Pantanal-has-126-more-fire-outbreaks-than-in-2019#:~:text=Since%20the%20beginning%20of%202020,was%20more%20susceptible%20to%20fires.>
- 7 Thielen, D., Schuchmann, K.L., et al. (7 Jan 2020). Quo vadis Pantanal? Expected precipitation extremes and drought dynamics from changing sea surface temperature. *PLOS ONE*, 15(1).
- 8 CIMI. (21 Sep 2020). Regionais da CNBB lamentam “desmonte das instâncias de fiscalização” e cobram investigação sobre queimadas no Pantanal. <https://cimi.org.br/2020/09/regionais-cnbb-lamentam-desmonte-fiscalizacao-cobram-investigacao-queimadas-pantanal/>
- 9 Muniz, B., Fonseca, B., And Ribeiro, R. (6 Oct 2020). Fires raze nearly half of Indigenous territories in Brazil's Pantanal. *Mongabay*. <https://news.mongabay.com/2020/10/fires-raze-nearly-half-of-indigenous-territories-in-brazils-pantanales/>
- 10 Greenpeace International (2021) Making mincemeat of the Pantanal. Greenpeace International, Amsterdam, The Netherlands. <https://www.greenpeace.org/international/publication/46577/pantanal-brazil-fires-jbs-meat-cattle/>
- 11 Greenpeace International (2021) .Op. cit.
- 12 Guerra, A., et al. (2020). Drivers and projections of vegetation loss in the Pantanal and surrounding ecosystems. *Land Use Policy*, 91.
- 13 Junk, W. J., and Nunes de Cunha, C. (2005). Pantanal: A large South American wetland at a crossroads. *Ecological Engineering*, 24(4). pp.391-401.
- 14 World Wildlife Fund Brazil and World Wildlife Fund Freshwater Practice. (2017). Brazil's Pantanal: From Pilot to Pact. 12pp. https://d2ouvy59podg6k.cloudfront.net/downloads/pantanal_snapshot_8a_002_copy.pdf
- 15 Waterland Research Institute (2000) Swarts, A. F., ed. The Pantanal of Brazil, Bolivia and Paraguay: Selected Discourses on the World's Largest Remaining Wetland System. Hudson MacArthur Publishers. 276pp.
- 16 Moraes, A.S, Sampaio, Y., and Seidl, A. (2009). Quanto Vale o Pantanal? A Valoração Ambiental Aplicada ao Bioma Pantanal. Documentos, Embrapa Pantanal, 105.
- 17 U.S. Bureau of Labor Statistics. Inflation Calculator. Accessed 20 October 2020. https://www.bls.gov/data/inflation_calculator.htm
- 18 Tortato, F. R., Izzo, T. J., Hoogesteijn, R., and Peres, C. A. (2017) The numbers of the beast: Valuation of jaguar (*Panthera onca*) tourism and cattle depredation in the Brazilian Pantanal. *Global Ecology and Conservation*, 11. pp.106-114.
- 19 Alho et al. (2019). Op. cit.
- 20 IUCN, 'Giant Otter', October 8, 2020, <https://www.iucnredlist.org/species/18711/21938411>
- 21 Junk, W.J., da Cunha, C.N., Wantzen, K.M. et al. (2006) Biodiversity and its conservation in the Pantanal of Mato Grosso, Brazil. *Aquatic Sciences*, 68. pp.278-309.
- 22 IUCN, 'Hyacinth Macaw', October 8, 2020, <https://www.iucnredlist.org/species/22685516/93077457>.
- 23 IUCN, 'Giant Anteater', October 8, 2020, <https://www.iucnredlist.org/species/22685516/93077457>
- 24 Langlois, J. (2 Oct 2020). Volunteers coming to rescue jaguars, other animals injured during Brazil's wildfires. *National Geographic*. <https://www.nationalgeographic.com/animals/2020/10/volunteers-rescuing-jaguars-injured-during-brazil-wildfires/>
- 25 Panthera.org.
- 26 Tomas, W., et al. (2019). Sustainability Agenda for the Pantanal Wetland: Perspectives on a Collaborative Interface for Science, Policy, and Decision-Making. *Tropical Conservation Science*, 12. pp1-30.
- 27 Seidl, A., Silva, J., and Moraes, A.S. (2001). Cattle ranching and deforestation in the Pantanal. *Ecological Economics* 36(3). pp413-425.
- 28 Instituto Brasileiro de Geografia e Estatística. (2011). Sinopse do Censo Demográfico 2010. Rio de Janeiro, pp. 261. <https://biblioteca.ibge.gov.br/visualizacao/livros/liv49230.pdf>
- 29 WWF-Brazil and WWF Freshwater Practice. (2017). Op. cit.
- 30 Schulz, C. et al. (2019). Physical, ecological and human dimensions of environmental change in Brazil's Pantanal wetland: Synthesis and research agenda. *Science of the Total Environment*, 687. pp1011-1027.
- 31 World Wildlife Fund (Spring 2020), 'People of the Pantanal', October 7, 2020, <https://www.worldwildlife.org/magazine/issues/spring-2020/articles/people-of-the-pantanal>
- 32 Ioris, A.R. (2017). Places of Agribusiness: Displacement, Replacement, and Misplacement in Mato Grosso, Brazil. *Geographical Review*, 107(3). pp.452-475.
- 33 Rossetto, O.C., and Girardi, E.P. Pantanal Research Center. (2018). Trajetória e Resiliência dos Povos Indígenas do Pantanal Brasileiro. Ambiente Agrário do Pantanal Brasileiro: Socioeconomia e Conservação da Biodiversidade. pp.193-235.
- 34 Povos Indígenas no Brasil, 'Guató', October 7, 2020, https://pib.socioambiental.org/en/Povo:Guat%C3%B3#Demarcation_of_the_Guat.C3.B3_IT.
- 35 CIMI. 'Terras Indígenas'. <https://cimi.org.br/terras-indigenas/>
- 36 Tomas et al. (2019). Op. cit.
- 37 Oliveira, L.O.F, Abreu, U.G.P, Dias, F.R.T, Fernandes, F.A., Nogueira, E., & Silva, J.D. (2016). Estimativa da população de bovinos no Pantanal por meio de modelos temáticos e índices tradicionais. *Comunicado Técnico Embrapa Pantanal*, 99. pp1-11.
- 38 Schulz et al. (2019). Op. cit.
- 39 Alho et al. (2019). Op. cit.

- 40 Chiaravalloti, R.R. (2016). Is the Pantanal a pristine place? Conflicts related to the conservation of the Pantanal. *Ambiente & Sociedad*, 19(2).
- 41 Alho et al. (2019). Op. cit.
- 42 Silva, et al. (2011). Op. cit.
- 43 Schulz et al. (2019). Op. cit.
- 44 Camargos, D., and Campos, C. (8 Oct 2020). Pantanal fires started on farms belonging to suppliers of agribusiness giants. *Repórter Brasil*. <https://reporterbrasil.org.br/2020/10/pantanal-fires-started-on-farms-belonging-to-suppliers-of-agribusiness-giants/>
- 45 Jordan. (2020). Op. cit.
- 46 MapBiomias, October 5, 2020, <https://plataforma.mapbiomas.org/>
- 47 Hance, J. (28 Mar 2011). How to save the Pantanal and increase profits for the cattle industry. *Mongabay*. <https://news.mongabay.com/2011/03/how-to-save-the-pantanal-and-increase-profits-for-the-cattle-industry/>
- 48 Alho, C.J.R., and Sabino, J. (2011). A conservation agenda for the Pantanal's biodiversity. *Brazilian Journal of Biology*, 71(1). pp327-335.
- 49 Guerra et al. (2020). Op. cit.
- 50 Azevedo, A.A., and Monteiro, J.L.G. (2003). Análise dos impactos ambientais da atividade agropecuária no cerrado e suas inter-relações com os recursos hídricos na região do pantanal. In: Jaccoud, D., Stephan, P., Sá, R.Lde, Richardson, S., Fecuri, J. (Eds.), *A Avaliação De Sustentabilidade Do Crescimento Do Cultivo Da Soja Para Exportação No Brasil*. Brasília: WWF.
- 51 Guerra et al. (2020). Op. cit.
- 52 SOS-Pantanal, WWF-Brasil, Conservation-International, ECOA, Fundación- AVINA. (2017). *Monitoramento Das Alterações Da Cobertura Vegetal E Uso Do Solo Na Bacia Do Alto Paraguai Porção Brasileira-período De Análise: 2016 a 2017*. Corumbá: Embrapa Pantanal.
- 53 Mendelson L., da Silva Junior, C.A., et al. (2020). Sugarcane: Brazilian public policies threaten the Amazon and Pantanal biomes. *Perspectives in Ecology and Conservation*, 18.3. pp210-212.
- 54 Schulz et al. (2019). Op. cit.
- 55 Birernath, A. (2022) Bolsonaro ou Lula: em qual governo a taxa de desmatamento na Amazônia foi maior? *BBC*. Available at: <https://www.bbc.com/portuguese/brasil-63290268> Accessed 28 October 2022.
- 56 Muniz, et al. (2020). Op. cit.
- 57 Silva, C. (2022) How Bolsonaro reduced enforcement of environmental laws. *The Brazilian Report*. Available at: <https://brazilian.report/liveblog/2022/08/30/bolsonaro-reduced-enforcement-environmental/> Accessed 8 November 2022.
- 58 WWF Brazil. (21 July 2020). 'Pantanal has 126% more fire outbreaks than in 2019'.
- 59 Thielen, et al. (2020). Op. cit.
- 60 Wright, J.S., Fu, R., et al. (20 Jul 2017). Rainforest-initiated wet season onset over the southern Amazon. *PNAS*, 114(32). pp8481-8486.
- 61 Instituto Nacional de Pesquisas Espaciais. 'Queimadas'. <http://queimadas.dgi.inpe.br/queimadas/aq1km/>
- 62 Laboratório de Aplicações de Satélites Ambientais da Universidade Federal do Rio de Janeiro. 13 November, 2020. 'Área queimada Pantanal 2020'. <https://lasa.ufrj.br/noticias/area-queimada-pantanal-2020/>
- 63 INPE. 'Queimadas'. Op. cit.
- 64 Muniz, et al. (2020). Op. cit.
- 65 Angelo, M. (30 Sep 2020). 'It burned everything': Fires surge on indigenous land in Brazil. *Thomas Reuters Foundation*.
- 66 Muniz, et al. (2020). Op. cit.
- 67 Instituto Centro de Vida, (29 Sep 2020), Primeiras chuvas não contêm avanço do fogo em áreas protegidas no Pantanal, October 4, 2020, <https://www.icv.org.br/2020/09/primeiras-chuvas-nao-contem-avanco-do-fogo-em-areas-protetidas-no-pantanal/>
- 68 Langlois (2020). Op. cit.
- 69 Alberts, E.C. (24 Sep 2020). For the Pantanal's jaguars, fires bring 'death by a thousand needle wounds'. *Mongabay*. <https://news.mongabay.com/2020/09/for-the-pantanal-jaguars-fires-bring-death-by-a-thousand-needle-wounds/#:~:text=Based%20on%20the%20amount%20of,or%20killed%20by%20the%20fires.>
- 70 Alho et al. (2019). Op. cit.
- 71 Greenpeace International (2021). Op. cit.
- 72 Spring, S. (29 Aug 2020). Brazil's Pantanal, world's largest wetland, burns from above and below. *Reuters*. <https://www.reuters.com/article/us-brazil-environment-fires/brazils-pantanal-worlds-largest-wetland-burns-from-above-and-below-idUSKBN25PoNR>
- 73 Pollastri, T., and Biller, D. (30 Sep 2020). As Brazil's wetlands burned, government did little to help. *AP News*. <https://apnews.com/article/brazil-wetlands-animals-wildlife-latin-america-242091863afb68509456bd8440caa8b9>
- 74 Pollastri, T., and Biller, D. (30 Sep 2020). Op. cit.
- 75 INPE. 'TerraBrasilis Deter (Avisos)'. October 5 2020. <http://terrabilis.dpi.inpe.br/app/dashboard/alerts/legal/amazon/aggregated/>
- 76 Spring, J. (28 Aug 2018). Special Report: Appetite for destruction - Soy boom devours Brazil's tropical savanna. *Reuters*. <https://uk.reuters.com/article/us-brazil-deforestation-specialreport/special-report-appetite-for-destruction-soy-boom-devours-brazils-tropical-savanna-idUKKCN1LD16B>
- 77 INPE. 'Queimadas'. Op. cit.
- 78 Guerra, et al. (2020). Op. cit.
- 79 Hines, A. et al. (2022) Decade of defiance: Ten years of reporting land and environmental activism worldwide. *Global Witness*. <https://www.globalwitness.org/en/campaigns/environmental-activists/decade-defiance/#decade-killings-globally>
- 80 Hines, A. et al. (2022). Op. cit.
- 81 Dowler, C. (2020) Soya, corn and cotton make Brazil world leader for hazardous pesticides. *Unearthed*. Available at: <https://unearthed.greenpeace.org/2020/02/20/brazil-pesticides-soya-corn-cotton-hazardous-croplife/> Accessed 11 November 2022.
- 82 Dowler, C. (2020). Op. cit.
- 83 de Castro, F. P. et al. (2022) Agrotóxicos no Pantanal: Contaminação das águas e impactos na saúde e ambiente em Mato Grosso. Fase. <https://fase.org.br/pt/acervo/documentos/relatorio-tecnico-agrotoxicos-no-pantanal/>

- 84 de Castro, F. P. et al. (2022). Op. cit.
- 85 Real World Radio (2022) A toxic alliance: How European agrochemical corporations and the agribusiness lobby are influencing the legislative agenda in Brazil. *Real World Radio*. Available at: <https://rwr.fm/interviews/a-toxic-alliance-how-european-agrochemical-corporations-and-the-agribusiness-lobby-are-influencing-the-legislative-agenda-in-brazil/> Accessed 11 November 2022.
- 86 CIMI. (2 Oct 2020). O agro é fogo: queimadas são responsabilidade do agronegócio. <https://cimi.org.br/2020/10/agro-e-fogo-queimadas-criminosas/>
- 87 Instituto Brasileiro de Geografia e Estatística. (2020). Pesquisa de Orçamentos Familiares 2017-2018: Análise da segurança alimentar no Brasil. <https://biblioteca.ibge.gov.br/visualizacao/livros/liv101749.pdf>
- 88 Vaccari, G. and Consolaro, V. (2022) Idoso mantido há 20 anos em condição de escravo é resgatado em fazenda no Pantanal. *Correio do Estado*. Available at: <https://correiodoestado.com.br/cidades/idoso-mantido-ha-20-anos-em-condicao-de-escravo-e-resgatado/402836> Accessed 8 November 2022.
- 89 Vaccari, G. and Consolaro, V. (2022). Op. cit.
- 90 SmartLab Brazil (2021) Brazil: General geographic panorama. Available at: <https://smartlabbr.org/trabalhoescravo/localidade/5006903?dimensao=prevalencia>
- 91 SmartLab Brazil (2021) Brazil: General geographic panorama. Available at: <https://smartlabbr.org/trabalhoescravo/localidade/5006903?dimensao=prevalencia>
- 92 SmartLab Brazil (2021) Brazil: Profile of slave labour cases. Available at: <https://smartlabbr.org/trabalhoescravo/localidade/o?dimensao=perfilCasosTrabalhoEscravo> Accessed 7 November 2022.
- 93 SmartLab Brazil (2021) Brazil: Priority areas and comparative analysis. Available at: <https://smartlabbr.org/trabalhoescravo/localidade/o?dimensao=prioritarias> Accessed 7 November 2022.
- 94 TRASE. (2020). Trase Yearbook 2020. <https://insights.trase.earth/yearbook/highlights/traders-and-markets/>
- 95 Pendrill, F., Persson, U.M, Godar, J., and Kastner, T. (2019). Deforestation displaced: trade in forest-risk commodities and the prospects for a global forest transition. *Environmental Research Letters*, 14(5).
- 96 European Parliament (October 2020). Draft report with recommendations to the Commission on an EU legal framework to halt and reverse EU-driven global deforestation. https://www.europarl.europa.eu/doceo/document/ENVI-PR-652351_EN.pdf
- 97 Cuyppers, D., et al. (2013). The impact of EU consumption on deforestation: Comprehensive analysis of the impact of EU consumption on deforestation. <https://ec.europa.eu/environment/forests/pdf/1.%20Report%20analysis%20of%20impact.pdf>
- 98 European Commission. 'Brazil'. October 7 2020. https://ec.europa.eu/trade/policy/countries-and-regions/countries/brazil/index_en.htm
- 99 Based on imports reported by Germany and the Netherlands from Brazil in Eurostat. Products filtered for: Bovine meat (fresh/chilled/frozen); Bovine offal, tongues, liver (fresh, chilled/frozen); Bovine meat - salted, in brine, dried or smoked; Bovine meat preparations; Bovine boneless
- 100 Rajao, R., et al. (17 Jul 2020). The rotten apples of Brazil's agribusiness. *Science*, 369(6501). pp246-248.
- 101 Greenpeace International (2021) Making mincemeat of the Pantanal. Greenpeace International, Amsterdam, The Netherlands. <https://www.greenpeace.org/international/publication/46577/pantanal-brazil-fires-jbs-meat-cattle/>
- 102 Greenpeace International (2021) op cit
- 103 Brazil trade data via Panjiva. [Extracted November 2022]
- 104 Phillips, D. (2021) Brazilian beef farms 'used workers kept in conditions similar to slavery'. *Guardian*. Available at: <https://www.theguardian.com/environment/2021/jan/06/brazilian-beef-farms-used-workers-kept-in-conditions-similar-to-slavery> [Accessed 8 November 2022]
- 105 Teixeira, F. (2021) JBS among meat firms linked to slavery-tainted ranches in Brazil. *Reuters*. Available at: <https://www.reuters.com/article/us-brazil-trafficking-cattle-idUSKBN29A2EW> Accessed 8 November 2022.
- 106 Gaworecki, M. (2017) Rotten beef and illegal deforestation: Brazil's largest meatpacker rocked by scandals. *Mongabay*. Available at: <https://news.mongabay.com/2017/04/rotten-beef-and-illegal-deforestation-brazils-largest-meatpacker-rocked-by-scandals/> [Accessed 8 November 2022]
- 107 Wasley, A. et al. (2019) JBS: The Brazilian butchers who took over the world. *The Bureau of Investigative Journalism*. Available at: <https://www.thebureauinvestigates.com/stories/2019-07-02/jbs-brazilian-butchers-took-over-the-world> Accessed 9 November 2022.
- 108 Campos, A. et al. (2020) Revealed: New evidence links Brazil meat giant JBS to Amazon deforestation. *Guardian*. Available at: <https://www.theguardian.com/environment/2020/jul/27/revealed-new-evidence-links-brazil-meat-giant-jbs-to-amazon-deforestation> [Accessed 11 November 2022]
- 109 Global Witness (2020) Beef, banks and the Brazilian Amazon. *Global Witness*. London, United Kingdom. <https://www.globalwitness.org/en/campaigns/forests/beef-banks-and-brazilian-amazon/>
- 110 Steinweg, T., Rijk, G., and Piotrowski, M. (2020) JBS: Outsized Deforestation in Supply Chain, COVID-19 Pose Fundamental Business Risks. *Chain Reaction Research*. Available at: <https://chainreactionresearch.com/report/jbs-outsized-deforestation-in-supply-chain-covid-19-pose-fundamental-business-risks/> Accessed 11 November 2022.
- 111 Moy Park is Northern Ireland's largest private sector business and one of Europe's main poultry producers, supplying 25% of the total Western European chicken parent market. Tulip is Denmark's oldest brand, selling 150 million canned meat products annually. Both Moy Park and Tulip are owned by Pilgrim's Pride, the world's second-largest food company, which is majority owned by JBS (around 80%).
- 112 JBS (2022) Our brands. Available at: <https://jbs.com.br/en/our-brands/>
- 113 Trade data via Panjiva [Extracted October 2022]
- 114 Greenpeace International (2021) Making mincemeat of the Pantanal. Greenpeace International, Amsterdam, The Netherlands. <https://www.greenpeace.org/international/publication/46577/pantanal-brazil-fires-jbs-meat-cattle/>
- 115 TRASE. (2020). Op. cit.
- 116 Rajao et al. (2020). Op. cit.
- 117 IATP, DeSmog and FeedBack media briefing, Rising Emissions: Misleading Investors and the Public, 21 April 2022



EJF would like to extend special thanks to Cecília Licarião and Luciana Leite for their contribution to this report. All views expressed are those of EJF alone, and interviewees do not necessarily share the expressed views and interpretations.



© Heideger Nascimento

“People have been reporting more of the fires, but people are failing to connect what is actually going on. You watch the main news and people don’t speak of climate change, people don’t speak of land-use change. People don’t speak of political inaction. People don’t speak of any of the roots of the problem. They just document as they document something that is happening as if it was totally disconnected from human activity...no one is discussing what to do to avoid the 2020 fires [from happening] again.”

Luciana Leite, conservation biologist and volunteer firefighter.

EJF, Unit 417, Exmouth House 3/11 Pine Street, London, EC1R 0JH, UK
Tel: +44 (0) 207 239 3310 | Email: info@ejfoundation.org
ejfoundation.org | Registered charity, No. 1088128



Protecting People and Planet