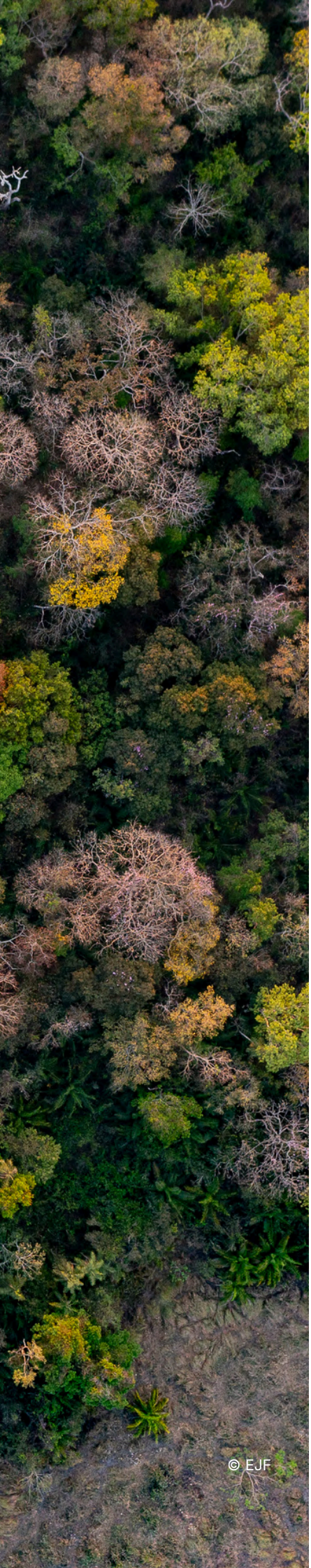
A MANIFESTO FROM THE SPECIES OF THE PANTANAL



Ecological State of the Pantanal

We, the species that inhabit and visit the world's largest tropical floodplain, represented here also by researchers and institutions committed to its protection, affirm that it is urgent to safeguard the Pantanal. To do so, it is necessary to halt activities, projects, and developments that threaten the biome's ecological integrity. At the same time, it is essential to immediately and systematically begin restoring the Pantanal floodplain by rehabilitating headwaters, recovering degraded areas, and removing barriers and practices that disrupt the natural flow of water.

Ensuring hydrological connectivity, the foundation of this unique biome's ecological dynamics, is indispensable for reestablishing its natural cycles, its biodiversity, and the ecosystem services that sustain both human and non-human life.

The Pantanal is a territory of encounters and connections: migratory birds that cross continents, fish that travel dozens of kilometers along rivers, and mammals that move seasonally between uplands and floodplains following the flood pulse, distributing energy and nutrients that fertilize land and waters and structure ecological networks.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The Pantanal is also the setting of important conservation stories, places where different peoples have, over time, reconciled their ways of life with the sustainable use of natural resources and the maintenance of essential ecological processes. Many of these trajectories demonstrate that coexistence between human societies and the dynamics of floodplains is possible, and can sustain high levels of biodiversity.

However, drivers of degradation are now advancing at an accelerated pace, fragmenting habitats, altering hydrological regimes, and disrupting the cycles that sustain life. Beyond declining numbers, the reality is one of interrupted vital flows, broken ecological connections, and compromised migrations.

These transformations, combined with the worsening climate crisis, including more severe droughts, shifts in precipitation patterns, and intensified heatwaves, and further compounded by land-use change, have increased both the frequency and severity of wildfires. The Pantanal is the Brazilian biome that has dried the most and burned the most over the past 40 years. Between 1985 and 2023, 8.9 million hectares of the Pantanal burned at least once, equivalent to 59% of the biome, with some areas experiencing multiple fire cycles.

In light of this context, we are not facing isolated events or natural misfortunes, but rather a set of identifiable pressure drivers acting cumulatively and synergistically on the Pantanal system. It is these threats, their structural causes, their ecological impacts, and their implications for both migratory and resident species that we examine below.

What is at stake is the continuity of the ecological processes that sustain one of the largest living networks on the planet.

Structural Anthropogenic Pressures and Emerging Threats

Conversion of Native Vegetation and Land-Use Change

Historically, cattle ranching in the Pantanal developed as an extensive activity, based on the traditional management of native pastures and aligned with the seasonal flood regime. In this traditional system, herds coexist with local biodiversity and, in some cases, establish specific ecological interactions, some even beneficial, such as the commensal relationship observed between cattle and the hyacinth macaw. However, traditional ranching has been intensifying, with higher cattle densities per hectare.

Today, agribusiness represents one of the main drivers of native vegetation loss. There are around 3,000 ranches in the floodplain, supporting more than 3.8 million head of cattle. This process involves the introduction of exotic pastures, intensive use of agrochemicals, clearing of native vegetation, and the loss of ecosystem services.

For decades, the plateau has concentrated the expansion of agricultural commodities, such as soy and corn, and has recorded the highest rates of native vegetation conversion.

In the Upper Paraguay River Basin, between 2015 and 2024, the loss of native vegetation in the floodplain surpassed that in the plateau, totaling approximately 450,000 hectares.

This situation is further aggravated by the presence and expansion of the road network, as roads act as catalysts for native vegetation loss by facilitating access to and degradation of previously conserved areas of the floodplain.

Considering that the Pantanal states of Mato Grosso and Mato Grosso do Sul account for around 24% of Brazil's cattle herd, projection models indicate a concerning trajectory in which cattle ranching and agriculture continue to play a central role as drivers of native vegetation conversion both within the biome and in its surrounding areas.

Infrastructure, Waterway Development, and Landscape Alterations

The Pantanal is an inherently transboundary biome, covering more than 16 million hectares (IBGE, 2019), with portions in Brazil (91.6%), Bolivia (6.6%), and Paraguay (1.8%). Its ecological integrity therefore depends on connectivity across these territories, yet the threats it faces extend beyond the biome's geographic and political boundaries. Spanning 1.75 million kilometers, the Paraguay–Paraná Waterway (HPP) project is one of the most emblematic examples of this mismatch, primarily aimed at enabling the transport of soy and mineral commodities from central South America to Atlantic ports.

Numerous technical studies and scientific articles have also highlighted significant limitations regarding the economic and environmental feasibility of implementing the Paraguay–Paraná Waterway, especially along the stretch that crosses the Pantanal. Proposed interventions such as dredging, rock blasting, and channel straightening are likely to alter key hydrosedimentological processes, with potential impacts on water residence time in floodplains, lateral connectivity between rivers and wetlands, and the geomorphological stability of riverbanks.

However, the most insidious impact operates at another level: by draining and destabilizing historically flooded areas, the project has the potential to reconfigure the landscape, making it progressively more suitable for intensive human uses. What was once a floodplain, protected by its own flood pulse, becomes land open to conversion. In this sense, the waterway would act as a driver of new anthropogenic pressures, triggering a cycle of degradation that goes far beyond the project's direct impacts.

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These changes may affect areas historically used by migratory birds, alter the migration dynamics and recruitment of fish species dependent on the flood pulse, and influence biogeochemical processes linked to the carbon cycle, including the storage, emission, and transformation of organic matter. Taken together, these transformations point to a structural reconfiguration of the river system, with long-term implications for the ecological integrity and biocultural heritage of the Pantanal.

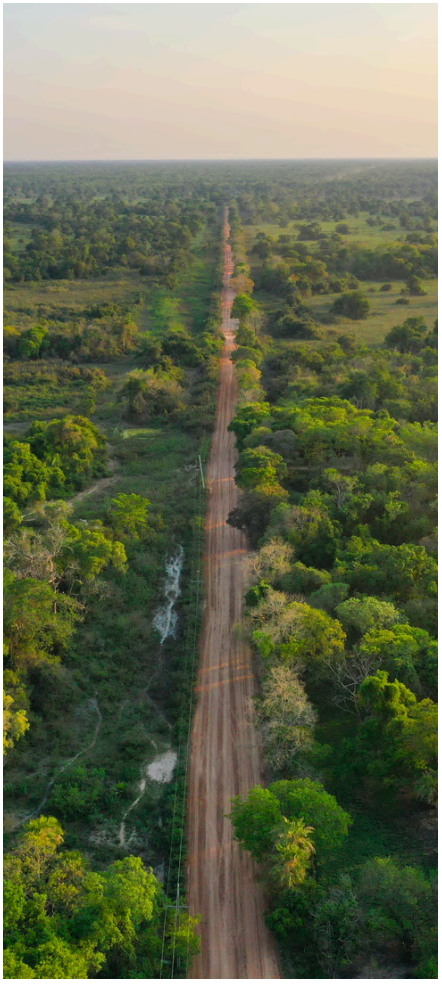
For us, the species that live in the Pantanal, the landscape resulting from the construction of the Paraguay–Paraná Waterway will be unrecognizable and uninhabitable.

Road Network Expansion and Wildlife Road Mortality

The Pantanal is globally recognized as a wildlife sanctuary, regulated by flood pulses shaped by seasonal cycles of high and low water, which create a mosaic landscape capable of supporting high-density animal populations.

However, the movements of Pantanal fauna are being drastically affected by the expansion of the road network in the states of Mato Grosso and Mato Grosso do Sul. Road construction transforms continuous landscapes into fragmented ecosystems, altering habitat composition, configuration, and quality.

In recent years, increased traffic along highways crossing the Pantanal has led to a rise in wildlife mortality, surpassing levels recorded in other regions of Brazil.



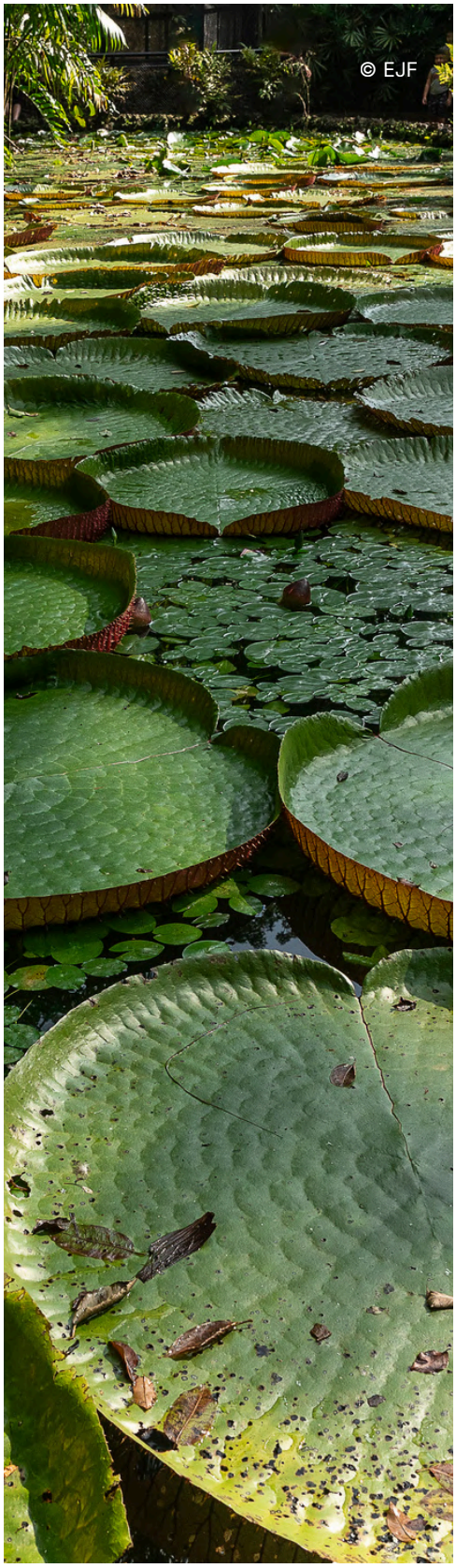
For many species, roads can act as complex barriers to movement, in addition to altering animal behavior and movement patterns. While some species avoid roads due to their presence and noise, others remain in the surrounding areas in search of food, as these structures can create new landscape features such as secondary vegetation and artificial water pools that attract animals to roadside areas, increasing the likelihood of vehicle collisions.

This risk scenario is particularly severe in Mato Grosso do Sul, the state that contains most of the Pantanal, with an extensive road network connecting the floodplain to urban centers. The most critical example is BR-262, known as the “highway of death,” which records extremely high rates of wildlife roadkill: between 2023 and 2024 alone, 2,300 vertebrate animals were killed along a 350 km stretch.

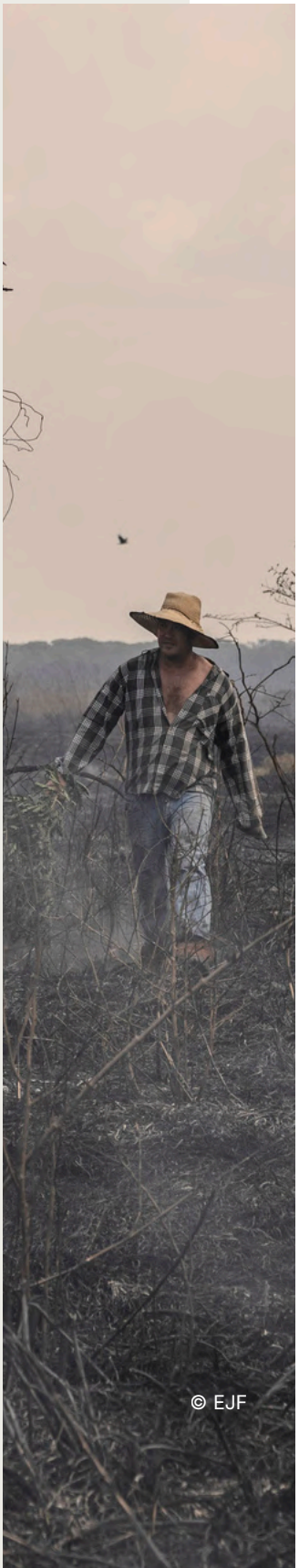
The naturally high abundance of species in the Pantanal, combined with the historical lack of safe crossing alternatives, contributes to the high rates of road mortality on BR-262 and other highways in the region.

In light of this scenario, after sustained pressure from civil society and more than a decade of research, mitigation measures have finally begun to be implemented. Brazil's National Department of Transport Infrastructure (DNIT) approved a R$30.2 million plan for BR-262, which includes the installation of 170 km of guiding fences and the adaptation of 25 wildlife crossings.

Although overdue, these initiatives aim to address a gap long identified by research: providing Pantanal wildlife with safe alternatives for crossing roads. However, these measures cannot remain limited to BR-262. It is essential that roadkill mitigation strategies be expanded and implemented across other highways in the region. In addition, new road infrastructure projects must be required to incorporate effective strategies to prevent collisions with wildlife.



Climate Change, Extreme Droughts, Heatwaves, and Wildfires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In addition to the loss of surface water recorded and briefly discussed in the preamble of this manifesto, the Pantanal is entering a new phase of vulnerability marked by increasing intensity, duration, and frequency of extreme events. Prolonged droughts, shifts in historical average temperatures, and increasingly unpredictable precipitation patterns are among the direct effects of the ongoing climate emergency. For the Pantanal, projections indicate that average local temperatures could rise by as much as 7°C by 2100.

Several studies indicate that the average number of rainy days in the Pantanal is already declining, making dry periods more intense and prolonged. The increase in drought events, in addition to posing a threat to biodiversity, may also lead to changes in fire regimes.

The effects of these changes were starkly observed in 2020, a symbolic and tragic milestone of this climate transformation. That year, large-scale wildfires consumed approximately one third of the biome and resulted in the death of an estimated 17 million wild vertebrate animals, including reptiles, birds, mammals, and amphibians, constituting one of the greatest tragedies ever recorded in tropical forest fires.

The destruction reached millions of hectares and exposed the socioecological fragility of a system whose dynamics have historically depended on the alternation between flood and dry cycles.

In subsequent years, fire outbreaks continued to increase while precipitation patterns declined, with rainfall up to 60% below the historical average and nearly a thousand percent increase in fire incidence during certain periods of 2024, indicating the persistence of critical conditions similar to or even worse than those of 2020. The recurrence of these extreme events not only causes immediate biodiversity loss but also undermines essential ecological processes, reducing the resilience of the floodplain and intensifying cycles of degradation.

Moreover, large-scale fires rapidly release carbon accumulated over centuries in organic soils, vegetation, and peat, turning the Pantanal from a major carbon reservoir into a source of emissions. At the same time, Indigenous territories and traditional communities are increasingly exposed to fires, with impacts on housing, food security, health, and cultural continuity.

In this context, the synergy between climate change, recurring fires, and landscape transformation is redefining systemic risk for the biome and signals an ongoing large-scale ecological transition.

Final Declaration of the Species

In light of the scientific evidence, the intensification of large-scale wildfires, the ongoing conversion of native vegetation in the floodplain, habitat fragmentation, and mounting pressure for ambitious infrastructure projects, we declare that the Pantanal and its rich biodiversity are in danger. To reverse this scenario, we present the following points as urgent and non-negotiable:

(1) We call for the **strengthening of new legal and institutional frameworks, such as a Pantanal Law,** as well as alignment with environmental agendas agreed upon across local, regional, and international forums. These instruments must guide coherent, long-term public policies grounded in scientific evidence and capable of addressing the socioecological complexity of the floodplain.

(2) It is equally essential to guarantee and strengthen the territorial, cultural, and political rights of Indigenous peoples and traditional communities inhabiting the Upper Paraguay River Basin. **The demarcation and effective protection of indigenous territories, respect for free, prior, and informed consent,** and recognition that their own management systems and knowledge are foundational conditions for the conservation of the Pantanal. Protecting these peoples is not only a constitutional and ethical obligation, but a proven strategy for maintaining biodiversity and ecological stability.

3) In this same vein, **it is urgent to implement specific policies for the protection and recovery of populations of threatened species** that depend on the floodplain, including migratory, endemic, and ecologically significant species. Habitat loss, alterations to the flood pulse, recurring fires, and the expansion of linear infrastructure all increase the risk of population collapse.

(4) Integrated conservation measures are needed, including **the creation and consolidation of new protected areas, the expansion of ecological corridors, and the development of action plans for threatened species.**

(5) In this context, it is essential to **promote coordinated, cross-sectoral policies and actions for conservation and sustainable land use**, avoiding fragmented approaches that generate conflict, inefficiencies, and environmental degradation. Coordination among the environmental, agricultural, energy, infrastructure, health, and education sectors is key to achieving lasting results.

(6) **Policies that support the dignified permanence of Pantanal communities** are strategic, combining productive investments, social inclusion, and sustainable energy transitions capable of generating employment, income, and innovation aligned with ecosystem conservation.

(7) Finally, the importance of policies that incentivize biodiversity-based value chains must be emphasized—**policies that recognize and strengthen local products, knowledge, and practices,** promoting place-based, resilient economies compatible with the maintenance of the ecological processes that sustain the Pantanal.

Without immediate action, the disappearance of the Pantanal becomes a plausible scenario within this generation.

THE FOLLOWING INSTITUTIONS ARE SIGNATORIES TO THIS MANIFESTO.


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