

BRINGING CONSERVATION AND ECOLOGICAL RESTORATION OF GRASSLANDS AND SAVANNAS INTO THE PUBLIC AGENDA

Photo: Fernando Silveira

HIGHLIGHTS

- In the debate on the conservation of biodiversity and ecosystem services in Brazil, little attention has been paid to grasslands and savannas. As a result, most policies do not adequately address these ecosystems; examples include environmental compensation and ecological restoration;
- Decisions on management and conservation of grasslands and savannas are influenced by a poor understanding of their diversity, ecology and functioning;
- There is a need to expand and disseminate the ecological knowledge of Brazilian grasslands and savannas, considering also their ecosystem services. It is also important to demystify taboos about the importance of management for conservation policies and ecological restoration of grassy ecosystems.



POLICY BRIEF

GRASSLANDS AND SAVANNAS: UNSEEN RICHNESS AND DEGRADATION, ACCELERATING LOSS

Brazil's grassy ecosystems comprise a diversity of grasslands and savannas. These systems are not the result of forest degradation, neither are they devoid of biodiversity. On the contrary, they are natural ecosystems with typical species composition, often dominated by **grasses**. They can be found in all Brazilian biomes and present a high level of plant diversity (56 species per square meter have been recorded in Pampa grasslands in southern Brazil). They are also inhabited by many species of birds, amphibians, reptiles and even fish.

Savannas and grasslands, when properly conserved, provide a variety of ecosystem services such as carbon capture and storage, water production, habitat function for medicinal plants and pollinators, basis for livestock foraging, and for tourism. They are also at the heart of the culture and socio-economy of local and regional communities, such as the *gauchos* of the Pampa grasslands, the *pantaneiros* of the Pantanal and the *geraizeiros*, *vazanteiros* and other people of the Cerrado savannas.

Despite the high diversity of grassy ecosystems, the rate of conversion to intensive agriculture, forestry, mining and other uses is alarming and requires urgent action. The current rate of native vegetation loss in the Pampas is five times that of the Amazon. The Cerrado has already lost, in 38 years, an area equivalent to Colombia and Chile put together.

In addition to conversion and associated degradation, grassy ecosystems continue to suffer from **invasive alien species**, leading to a degradation process that goes unnoticed by the untrained eye or by satellite imagery. Despite their exceptional biological value and accelerating degradation, Brazil's grasslands and savannas are barely recognized in the public agenda. Likewise, national and international conservation and restoration discussions are oftentimes forest environments driven



Photo: Alexandre Sampaio

DISTURBANCES IN GRASSLANDS AND SAVANNAS ARE NATURAL AND NECESSARY

Disturbances, such as fire and grazing, maintain and shape the diversity, structure, and species composition of grasslands and savannas. The organisms found there have evolved under and adapted to these disturbances. However, because the frequency, timing, intensity, and extent of disturbance can positively or negatively affect their diversity and function, the threshold between conservation and degradation is blurred. High-intensity grazing, for example, can lead to a loss of biodiversity and to the invasion of alien species. Similarly, eliminating grazing and other disturbances can result in losing the large herbaceous biodiversity, typical of these areas, and increasing shrub and tree coverage.

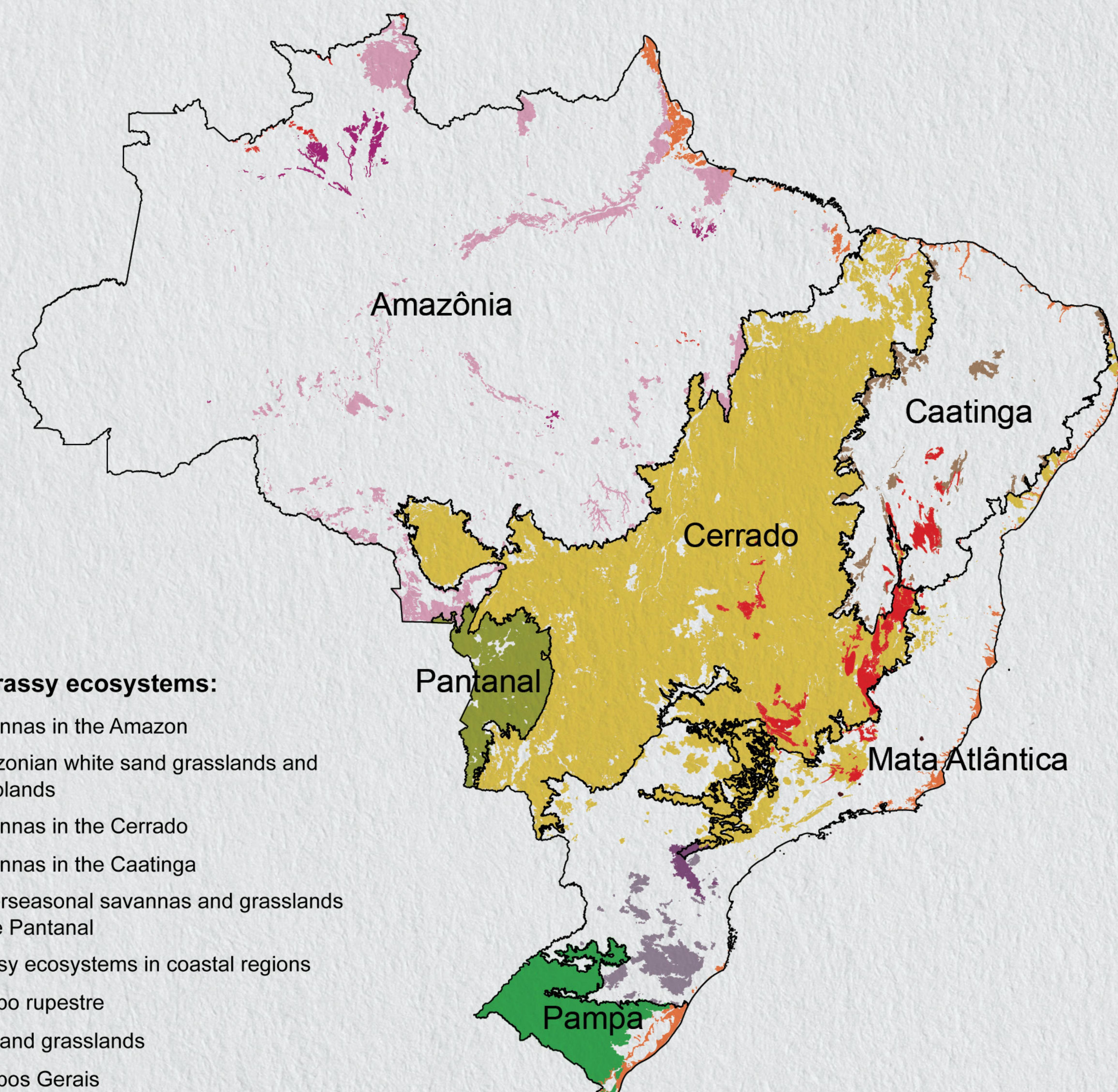
In order to design conservation policies and actions for these ecosystems, it is essential to recognize and understand the ecology of grasslands and savannas, in particular the role of disturbances for their diversity and functioning. In Brazil, there is still a lack of regulation of management practices in protected areas whose original ecosystems are not forests. The implementation of **Integrated Fire Management** has been an important step in this direction. However, this practice needs to be expanded. Similarly, the development of Integrated Grazing Management strategies would be interesting for the conservation and ecological restoration of open ecosystems.



Photo: Enio Sosinski

CONSEQUENCES OF THE INCOMPREHENSION OF GRASSLAND: THE CASE OF DECREE NO. 52.431/2015 IN RIO GRANDE DO SUL, BRAZIL

In southern Brazil, in Rio Grande do Sul, where the Brazilian Pampa is located, the State Decree No. 52.431/2015 defined the concept of “rural area consolidated by the suppression of native vegetation with pastoral activities” for areas with the presence of cattle ranching over native vegetation. This definition created a false equivalence between the use of remnants of natural grasslands with cattle ranching and other agricultural uses. This false equivalence would allow the application of the amnesty in the conservation requirement of 20% of rural properties in legal reserve, according to the Law for the Protection of Native Vegetation (12.651/12). Considering that virtually all native grassland areas in Rio Grande do Sul have been under cattle ranching for hundreds of years, enforcement of this legislation could result in the authorization of the conversion of all remaining areas to other uses. At the basis of this decree is the lack of recognition of the positive effects of grazing on grasslands: grazing does not displace native vegetation; on the contrary, when properly managed, it is a critical factor in the maintenance of grassland structure and diversity. The decree is currently being challenged by the Public Prosecutor's Office and has not yet been implemented due to a preliminary ruling by the Court of Justice.



MAP - Locate the different types of grasslands and savannas that make up 27% of the national territory.

Grassy ecosystems: environments that are naturally devoid of trees. The herbaceous plant layer, especially grasses, can be dense in South Brazilian grasslands, Pantanal and Central Brazil savannas. In systems such as the *campos rupestres* and *cangas*, low shrubs, exposed soil and rocks define the vegetation physiognomy.

Grasses: species of the *Poaceae* family whose high cover in most grasslands and savannas play an important role in their dynamics and functioning. In addition, they are fodder for livestock and biomass fuel in natural fires. Over 1,500 native species occur in Brazil, mostly from grassy ecosystems.

Invasive alien species: Plants, animals, and microorganisms that have been intentionally or unintentionally introduced by humans to places outside their natural range, become established, produce offspring, and spread to new areas. In grasslands and savannas,

they are mainly grasses, originally introduced to feed livestock, and trees such as pine.

Integrated Fire Management: set of practices designed to maintain the biodiversity and physiognomy of fire-prone grassy ecosystems. These may include the use of prescribed fires to control the amount of flammable material and reduce the risk of large fires. The strategy integrates local people's traditional fire management practices into the management of protected areas.

Ecological restoration: activities designed to restore a lost or degraded ecosystem. In the case of grasslands and savannas, the focus should be on reestablishing native herbaceous species and incorporating adaptive management through controlled disturbance, rather than planting trees (which are harmful to these ecosystems and should be regarded as degradation).

RECOMMENDATIONS



- Establish research programs that focus on the biodiversity and ecosystem services provided by grasslands and savannas;
- Incorporate recommendations for the management of grasslands and savannas in accordance to their ecological characteristics into federal, state, and local laws;
- Recognize the role of fire and grazing in maintaining grasslands and savannas. Expand Integrated Fire Management policies to include proposals for Integrated Grazing Management;
- Promote programs to encourage supply chains for grassland and savanna restoration. The lack of seedlings and seeds of native species, especially



of herbaceous species, for large-scale use is one of the key bottlenecks in restoring these ecosystems;



- Create protected areas that are compatible with grassland and savanna ecology and functioning, i.e., that incorporate essential disturbances in the management of these environments, without compromising their biodiversity and ecosystem services;
- Promote conservation and sustainable use programs focused on grasslands and savannas on private lands, such as payments for environmental services and certifying products from sustainable use.

ABOUT THE PROJECT

The project *GrassSyn* - Biodiversity of Brazilian Grasslands and Savannas: Patterns and Drivers, Ecosystem Services and Strategies for Conservation and Restoration - aimed to synthesize knowledge on grassy ecosystems in Brazil. Through an integrative vision and respecting the specificities of the different types of grasslands and savannas in Brazil, *GrassSyn* seeks to expand the consideration of these ecosystems in public policies.

ABOUT SinBiose

The Brazilian Synthesis Center on Biodiversity and Ecosystem Services (SinBiose) supports the development of knowledge synthesis to tackle current issues in biodiversity and ecosystem services. The initiative is lead by CNPq, with the support from the Ministry of Science, Technology and Innovation (MCTI) and state research foundations. Learn more at www.sinbiose.cnpq.br

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