

Notes and Comments

The Pantanal is on fire and only a sustainable agenda can save the largest wetland in the world

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The Pantanal, the World's largest freshwater wetland, is suffering extreme drought since 2019. The amount of water in floodplains and rivers is reducing, resulting in extremely dry soil and vegetation, and increasing the risk of wildfire events. This scenario is likely due the negative synergies between deforestation and widespread use of fire in the Amazon, changing hydrological cycle and reducing rainfall in parts of the La Plata basin (Lovejoy and Nobre, 2018). From January 2020 to date, several wildfires swepted over 3.8 million ha (Figure 1), calculated from NPP-375 satellite data, with unpredictable impacts on biodiversity, ecological services, and human health. These fires may have affected at least 65 million native vertebrates and 4 billion invertebrates, based on known species densities. Affected species include the endangered jaguar (*Panthera onca*), giant anteater (*Myrmecophaga tridactyla*), marsh deer (*Blastocerus dichotomus*), crowned solitary eagle (*Buteogallus coronatus*) and hyacinth macaw (*Anodorhynchus hyacinthinus*). Impacts on these species can be direct by injuries and death, or indirect due to habitat loss and resource shortage (Figure 2). Furthermore, the

smoke can increase the risk of respiratory diseases that could worsen COVID-19 pandemic (De Oliveira et al., 2020) affecting local rural, indigenous, and traditional people. While climate change is one of the main drivers of out-of-control wildfire events worldwide (Abatzoglou and Williams, 2016) and natural ignition of fire may occur, in the Pantanal near 98% of the current wildfires were caused by human activities, either accidental or criminal. Climate change models forecasting recurrent extreme climatic events (Marengo et al., 2016). The projected episodes combined with predictions of a loss of up to 74% of native vegetation by 2030, increase the likelihood of severe droughts in the Pantanal (Miranda et al., 2018) and new catastrophic wildfire events may also occur. Despite being a relevant ecological factor in savannic ecosystems such as the Pantanal, recurrent, large-scale fires may lead to cumulative negative impacts on ecosystems and environmental services, as well as to undesirable social and economic outcomes. Concerted sustainability initiatives are urgently needed to avert or minimize the current trends, following valid agendas (Tomas et al., 2019). Tax incentives and rewards for environmental services and biodiversity conservation should be provided to landowners and communities engaged in sustainable land use and conservation practices. The expansion of the protected area network and the promotion of green technologies for infrastructure projects are complimentary aspects of the desirable sustainability agenda. Considering the likelihood of recurrent, out-of-control wildfire events in the coming years, fire prevention policies and best management practices are critical and must be included in any use in the Pantanal. Here we stress the need for (A) continuous monitoring for early detection of fire risk and fire events; (B) the establishment of firefighter brigades in strategic locations in the region with continuous operation; (C) community education programs focused on proper fire use for management purposes, (D) effective enforcement of fire-use policies and (E) implementation of a wildlife

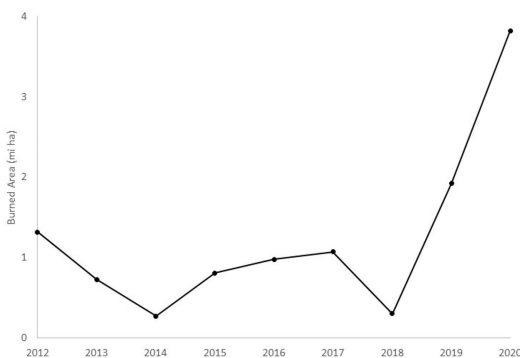


Figure 1. Pantanal burned area per year until 9/25/2020.

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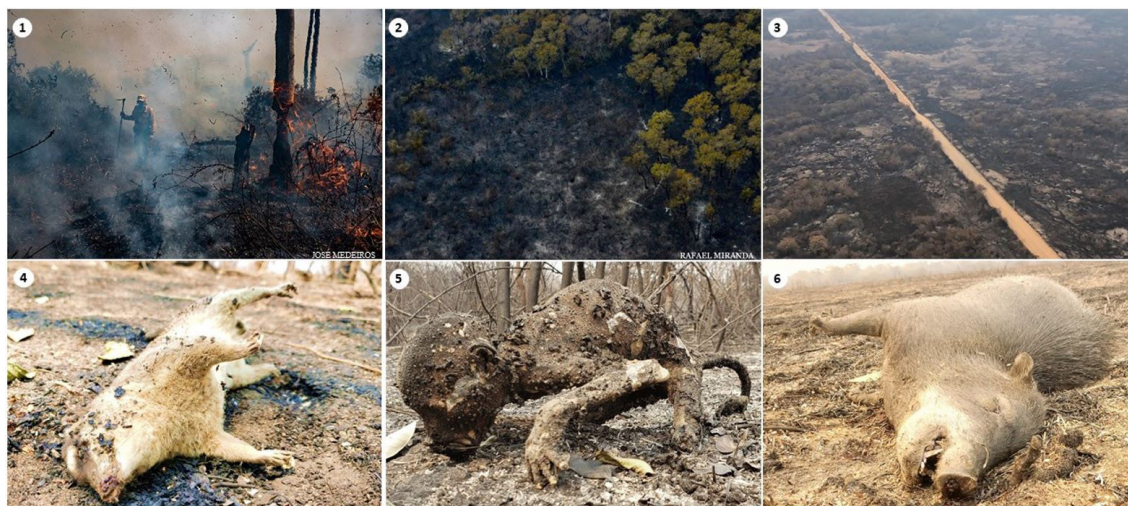


Figure 2. Wildfire in Pantanal: 1 – firefighter; 2, 3 – burned area; 4, 5, 6 – dead animals.

rescue-rehabilitation centre. The future of the Pantanal wetland depends strongly on these strategies that connects economy, biodiversity conservation and traditional culture as to be performed by the proposed agendas.

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