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1 *Title page*

2 **Pantanal port license would threaten the world's largest tropical wetland**

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16 *Main text*

17 Brazil's Pantanal is recognized as a Natural World Heritage Site and as a Wetland of
18 International Importance by the Ramsar Convention (Fig. 1). Brazil's 1988 Constitution
19 recognizes the Pantanal as "national patrimony," making any proposal that threatens
20 this biome's integrity unconstitutional. Nevertheless, on 26 January 2022 the
21 Environmental Council of Mato Grosso State (CONSEMA) approved (1) the
22 "preliminary license" (the key first step in the licensing process) for a port to export
23 soybeans that would be transported through the Pantanal on barges traveling on a
24 waterway created by dredging the Paraguay River.

25 In the 1990s the stretch of this river that passes through the Pantanal (the "Tramo
26 Norte") was dredged, and barges carried soy from Cáceres to Corumbá (in barges
27 smaller than those considered economically viable today), but this was halted by a
28 judicial order in 2000. After this, only boats for tourism and local commercial trade
29 navigate on this stretch of the river. Some dredging continued on a modest scale to
30 remove the yearly accumulation of sediments and allow passage of boats, and in 2017
31 and 2018 the amount of sediment removed increased substantially.

32 In 2021 the National Department of Transportation Infrastructure (DNIT) signed a
33 contract to greatly increase the amount of sediment dredged from the Tramo Norte (2).
34 The plan is to transform the Tramo Norte into a large-scale navigation channel,
35 requiring dredging at 17 sites to deepen and widen the channel (3). This is the most
36 fragile stretch of the Paraguay River (4) and flanks three protected areas for biodiversity
37 (Guirá State Park, Taiamã Ecological Station and Pantanal Mato-Grossense National
38 Park, the last two being Ramsar sites), as well as one Indigenous Land (Guató) and
39 several communities of traditional Pantanal residents ("pantaneiros"). The dredging
40 lowers the water table, with impacts throughout the Pantanal wetlands, in addition to the
41 impacts of barge traffic. The proposed plan presents a weak analysis, ignores climate
42 change scenarios that foresee severe drought seasons, and neglects socio-environmental
43 impacts (5).

44 Although the waterway plan (3) remains unapproved, on 25 January 2022 the Public
45 Ministry of Mato Grosso issued a document (6) pointing out that approving the
46 proposed port as a free-standing project serves to avoid consideration of the massive
47 impacts of the waterway plan. The license for the port was approved on 26 January
48 2022 despite its environmental impact assessment (EIA) having more than 100
49 inconsistencies (7), violating both a CNZU Recommendation (No. 10/2018) (8) and
50 various legal requirements, as well as ignoring the objections raised at the
51 Environmental Council meeting (1) by researchers, environmental agencies, and NGOs.
52 Traditional peoples' groups have denounced both the lack of consultation as established
53 in Convention 169 of the International Labor Organization, to which Brazil is a
54 signatory, and the EIA having omitted the presence of traditional peoples in the area
55 surrounding the port (9).

56 Other bills currently advancing towards approval would increase the threat of the wider
57 Pantanal waterway project. Bill 3/2022 in the Mato Grosso state legislature would allow
58 licensing-free soy planting in the Pantanal (10). This would overturn Recommendation
59 No. 11/2018 of the National Committee of Wetlands (CNZU), which prohibits the
60 cultivation of soybeans in the Pantanal (11). Bills advancing in the National Congress
61 would dismantle federal environmental licensing (12), thus removing any barriers to the
62 full complex of soy infrastructure threatening the Pantanal. The Pantanal is already
63 suffering severe environmental impacts: it has lost 68% of its water area since 1985 (13)
64 and it is still recovering from the unprecedented fires of 2020 – almost 1/3 of its area
65 was burned, including areas in almost all indigenous lands and protected areas (14),
66 killing an estimated 17 million vertebrates (15).

67 Proposed interventions on the river would potentially change flood pulses, profoundly
68 altering the ecosystem of this large wetland, which plays a role in global climate
69 regulation as a carbon sink (16). The intervention is also expected to disrupt the
70 livelihoods of traditional peoples and to jeopardize the income that local residents earn
71 from wildlife tourism and fishing (5, 9, 17).

72 The destruction of Pantanal is neither profitable nor positive in any aspect. The Mato
73 Grosso state government should reverse its decision to approve the port and ensure that
74 decision-making is based on scientific advice, bridging the gap between science and
75 policy for conserving this hotspot for biodiversity and ecosystem services. Decisions
76 that threaten the Pantanal also threaten Brazil's international reputation in environmental
77 matters and invite boycotts of Brazilian soy by importing countries.



78
79 **Fig 1.** Pantanal biome landscape, a tropical wetland covering three South American countries (Brazil,
80 Paraguay, and Bolivia). Credit: Heideger Nascimento.

81 **Conflict of interest statement**

82 No competing interest.

83 **Ethics statement**

84 All authors have read and agreed to the published this version of the Correspondence.

85 **References**

- 86 1. *1ª Reunião Ordinária do CONSEMA* (Secretaria Estadual do Meio Ambiente,
87 Cuiabá, Mato Grosso, Brazil, 2022); https://youtu.be/yg_uPIIZu1o
- 88 2. *DNIT inicia serviço de dragagem no Rio Paraguai* (Departamento Nacional de
89 Infraestrutura de Transportes, Brasília, DF, Brazil, 2021); <https://bit.ly/3sx94Qf>
- 90 3. *Relatório do Estudo de Viabilidade Técnica, Econômica e Ambiental da Hidrovia do*
91 *Rio Paraguai* (Instituto Tecnológico de Transportes e Infraestrutura, Universidade
92 Federal do Paraná, Curitiba, Paraná, Brazil, 2015); <https://itti.org.br/relatorios-tecnicos/>
- 93 4. Hamilton, S. K. *Regul. Rivers: Res. Manage.* **15**, 289-299 (1999).
- 94 5. *Nova Hidrovia Paraguai-Paraná: uma análise abrangente* (Wetlands International
95 and Mupan, Campo Grande, Mato Grosso do Sul, Brazil, 2019); <https://bit.ly/34rQDEL>
- 96 6. *Posicionamento público do Ministério Público do Estado de Mato Grosso ao pleno*
97 *do Conselho Estadual de Meio Ambiente (Consema) e à sociedade.* (Ministério Público
98 do Estado de Mato Grosso, Cuiabá, Mato Grosso, Brazil, 2022).
- 99 7. *Parecer Técnico N.º 152841 / CLEIA / SUIMIS / 2021* (Secretaria Estadual do Meio
100 Ambiente, Cuiabá, Mato Grosso, Brazil, 2021); <https://bit.ly/3oFz22S>
- 101 8. *Recomendação CNZU n. 10, de 22 de janeiro de 2018* (Ministério do Meio
102 Ambiente, Brasília, DF, Brazil, 2018); <https://bit.ly/3oGeSpl>
- 103 9. *Porto recebe licença prévia para operar no Pantanal e pode trazer mais impactos à*
104 *região* (Le Monde Diplomatique Brasil, 2022); <https://bit.ly/3oIfvif>
- 105 10. *Projeto de lei nº 3/2022* (Assembleia Legislativa do Estado de Mato Grosso, Cuiabá,
106 Mato Grosso, Brazil, 2022); <https://bit.ly/34rQFMT>
- 107 11. *Recomendação CNZU n. 11, de 22 de janeiro de 2018* (Ministério do Meio
108 Ambiente, Brasília, DF, Brazil, 2018); <https://bit.ly/3oGeSpl>
- 109 12. Ruaro, R., Ferrante, L., Fearnside, P. M. *Science* **372**, 6546 (2021).
- 110 13. *A dinâmica da superfície de água do território brasileiro* (MapBiomias, São Paulo,
111 SP, Brazil, 2021); <https://mapbiomas.org/>

- 112 14. Libonati, R., DaCamara, C. C., Peres, L.F., de Carvalho, L.A.S., Garcia, L.C.
113 *Nature* **588**, 217-219 (2020).
- 114 15. Tomas, W. M. et al. *Sci. Rep.* **11**, 23547 (2021).
- 115 16. Mitsch, W. J. et al. *Landsc. Ecol.* **28**, 583-597 (2013).
- 116 17. Gottgens, J.F., Perry, J.E., Fortney, R.H., Meyer, J.E., Benedict, M., Rood, B.E.
117 *Bioscience* **51**, 301-308 (2001).

