**Spatial modelling and estimation of mammals’ mortalities by Pantanal 2020 megafires**

Ismael V. Brack 1,2,†

José L.P. Cordeiro 2,4,6,7,8

Andreas Kindel 1,2

Barbara Z. Rangel 1,2

Danielle Crawshaw 2,6

Dener Heiermann 12

Douglas O. Berto 1,2

Fernando L. Sicuro 2,3,4,5,6

Gabriela S. de Oliveira 1,2

Guilherme Servi G. 2,9

Ingridi C. Franceschi 1,2

Isabel S. Lermen 1,2

Marcione B. de Oliveira 2, 3

Pedro A. Thomas 1

Rafaella A.A. de Oliveira 10

Thais F. Conceição 2, 11

Luiz F.B. de Oliveira 2, 3

1 Graduate Program in Ecology, Biosciences Institute, Federal University of Rio Grande do Sul, Porto Alegre, Brazil;

2 Grupo de Estudos em Vida Silvestre, Brazil;

3 Setor de Mastozoologia, Departamento de Vertebrados, Museu Nacional –Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, 20940-040, Brazil;

4 Center for Environmental and Marine Studies, Adaptation Biology & Ecological Processes, University of Aveiro, Aveiro, Portugal;

5 Department of Physiological Sciences, Institute of Biology Roberto Alcantara Gomes, State University of Rio de Janeiro, Rio de Janeiro, Brazil;

6 International Platform for Science, Technology and Innovation in Health (PICTIS), Ílhavo, Portugal;

7 Saúde de e Ambiente, Fundação Oswaldo Cruz (Fiocruz/Ceara), Eusébio, Ceará, Brazil

8 Department of Biology, University of Aveiro, Campus de Santiago, Aveiro, Portugal

9 Undergraduate Program in Biological Sciences, Bioscience Institute , Federal University of Rio Grande do Sul, Porto Alegre, Brazil;

10 Undergraduate Program in Biological Sciences, Federal University of Mato Grosso, Cuiabá, Brazil;

11 Graduate Program in Veterinary Sciences, Faculty of Veterinary Medicine, Federal University of Mato Grosso, Cuiabá, Brazil;

12 Graduate Program in Animal Biology, Biosciences Institute, Federal University of Rio Grande do Sul, Porto Alegre, Brazil;

† Corresponding author. ismaelbrack@hotmail.com. Currently at the School of Forest, Fisheries, and Geomatics Sciences, University of Florida.

**ACKNOWLEDGEMENTS**

We are very grateful to Igor P. Coelho for his valuable contributions throughout several steps of this study. We thank Polo Socioambiental Sesc Pantanal, in the name of Cristina Cuiabália R. P. Neves and Christiane Caetano Rodrigues, for all the logistic and financial support for this study. We are grateful to all Sesc Pantanal personnel and volunteers who made the fieldwork possible: park rangers, fire brigades, staffs, and students. We also thank Márcia Chame for supporting the conclusion of this manuscript. Authors are thankful for the support of their institutions: Museu Nacional / UFRJ, Fiocruz/Ceará, Universidade Federal do Rio Grande do Sul, Universidade Federal do Mato Grosso, State University of Rio de Janeiro (UERJ) in the person of the Director of IBRAG, Dr. Norma Albarello, and also the University of Aveiro. FL Sicuro also thanks the FCT/MCTES for financial support to CESAM (UIDP/50017/2020+UIDB/50017/2020+LA/P/0094/2020) through Portuguese national funds.

**AUTHOR CONTRIBUTIONS**

This study was only possible due to the effort and dedication of the people of this great team who forwent their safety during the COVID-19 pandemic at that moment of urgency for the Pantanal. Ismael V. Brack, José L.P. Cordeiro, Andreas Kindel, Gabriela Schuck de Oliveira, Danielle Crawshaw, and Luiz Flamarion B. de Oliveira conceived the ideas and designed the methodology. Ismael V. Brack, José L.P. Cordeiro, Ingridi C. Franceschi, Marcione B. de Oliveira, Thais F. Conceição, Isabel S. Lermen, Gabriela Schuck de Oliveira, Pedro A. Thomas, Douglas O. Berto, Rafaella A. Amorim de Oliveira, Barbara Z. Rangel, Guilherme S. Gonçalves, Dener Heiermann, and Danielle Crawshaw collected the data. Ismael V. Brack, José L.P. Cordeiro, Ingridi C. Franceschi, Marcione B. de Oliveira, Thais F. Conceição, Gabriela Schuck de Oliveira, Fernando L. Sicuro, Luiz Flamarion B. de Oliveira, Douglas O. Berto, Guilherme S. Gonçalves, and Danielle Crawshaw managed the data. Ismael V. Brack, José L.P. Cordeiro, Ingridi C. Franceschi, and Luiz Flamarion B. de Oliveira conducted the analyses. Ismael V. Brack led the writing and all authors contributed to the manuscript and approved its final version.

**DATA AVAILABILITY STATEMENT**

Data and code are available at the GitHub repository <https://github.com/ismaelvbrack/MS_Mortalities_Pantanal2020>. Upon acceptance, the data and code will be permanently available at Figshare.

**CONFLICT OF INTEREST**

The authors declare that they have no conflict of interest or personal relationships that could have influenced this work.