

Biodiversity: the foundation for a sustainable bioeconomy

Sandra Knapp
Natural History Museum, London

comment

Biodiversity research requires more boots on the ground

Our incomplete taxonomic knowledge impedes our attempts to protect biodiversity. A renaissance in the classification of species and their interactions is needed to guide conservation prioritization.

Edward O. Wilson



Rio Tapajós, Jacareacanga, Pará, 2016



Rio Uaupés, São Gabriel da Cachoeira, Amazonas, 2017

NATURE ECOLOGY & EVOLUTION | VOL 1 | NOVEMBER 2017 | 1590–1591



Tsiino Hiiwiida – multiple dimensions of biodiversity of the upper Rio Negro

- Nine Brazilian state funding agencies
- CNPq
- UKRI

An ecosystem of partners……























































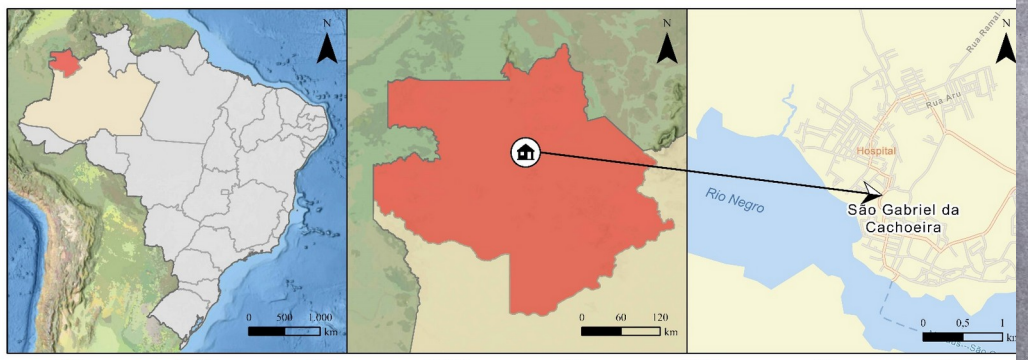
Objectives



1. Multidisciplinary catalogue of plants and fungi of the Cabeça do Cachorro
2. Collaborative network of academics, students, parataxonomists and indigenous communities
3. Training of Amazonians to study in and on Amazonia
4. Dissemination to wider public – national and international
5. New perspectives on the scientific and cultural history of the upper Rio Negro









Brasil
Amazonas
São Gabriel da Cachoeira
Área urbana (São Gabriel da Cachoeira)





São Gabriel da Cachoeira, Rio Negro, 1852



Serra Curicuriari, Upper Rio Negro, Amazonas, Brazil (1852)



(c) Linnean Society of London



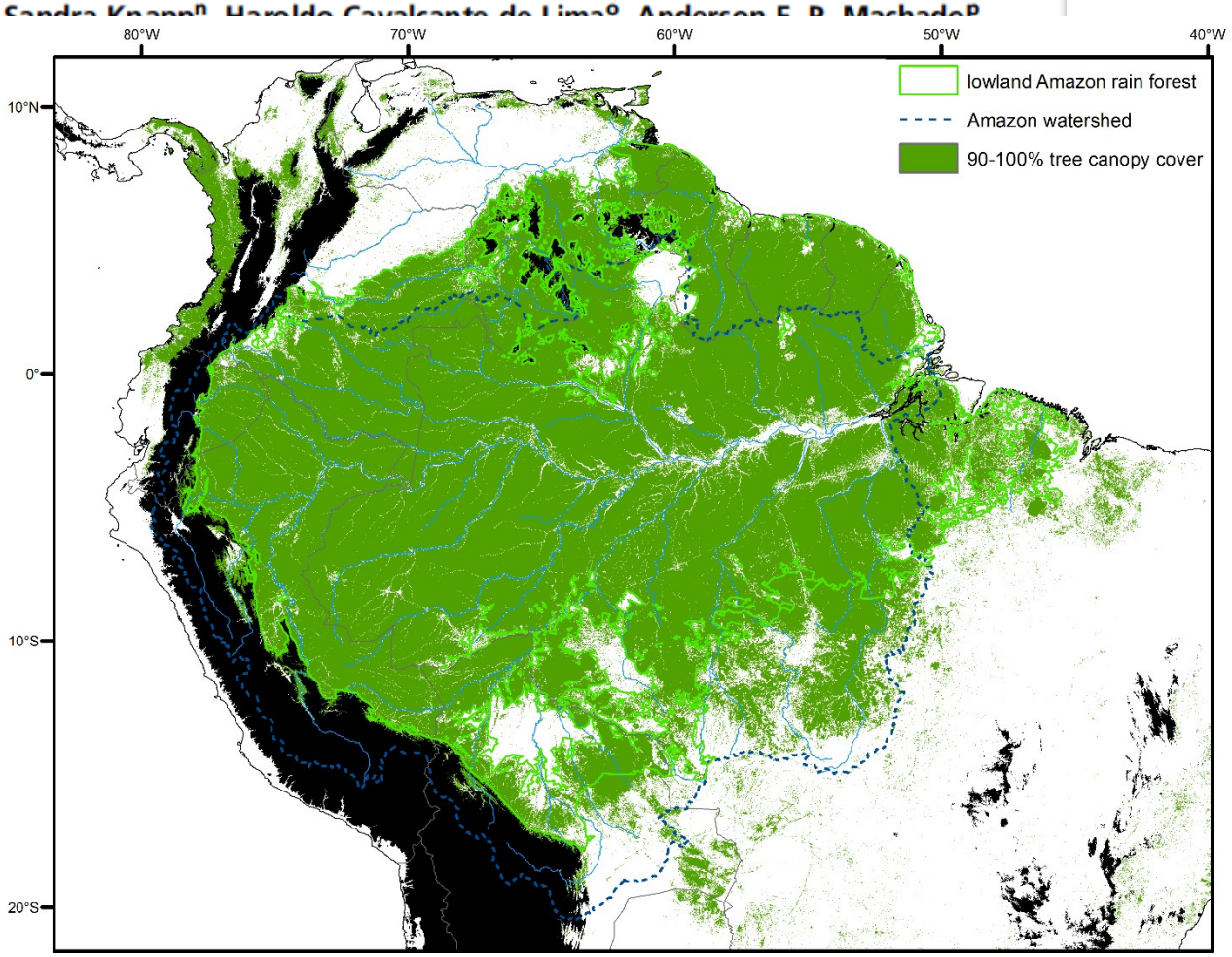
Serra Curicuriari, Upper Rio Negro, Amazonas, Brazil (2013)


Manacacias
Matias
Naquen
Comunidad
Morichal Nuevo
Morichal Viejo
Reserva Nacional Natural Puinawai
San Carlos de Rio Negro
Tibilibi
Parque Nacional Pari
Pana Pana
São Joaquim
Siuci
Caruru
Cuiari
Colombia
Missão Tunui
Mitú
Yurupari
CUÉ-CUÉ/ MARABITANAS
Parque Nacional Serrania La Neblina
Querari
Içana
Marabitanas
Tabocal
Acaricuara
Yapu
ALTO RIO NEGRO
Melo Franco
Marabitana
Missão Boa Vista
BALAIO
São Felipe
Parque Nacional do Pico da Neblina
Ipanoré
Tiquie
Caruru
Taracuá
São Joaquim
Matapi
São Gabriel da Cachoeira
São Gabriel da Cachoeira
MÉDIO RIO NEGRO II
Castanheiro
Pari Cachoeira
MÉDIO RIO NEGRO I
Santa Isabel do R
Taraira
Mauá
Nacional Natural Yaigojé...
RIO TÉA
Puxuri
JURUBAXI-TÉA
Praia do Maçarico

Amazon plant diversity revealed by a taxonomically verified species list

Domingos Cardoso[a,1,2], Tiina Särkinen[b,1], Sara Alexander[c], André M. Amorim[d], Volker Bittrich[e], Marcela Celis[f]
Douglas C. Daly[h], Pedro Fiaschi[i], Vicki A. Funk[c], Leandro L. Giacomin[j], Renato Goldenberg[k], Gustavo Heiden[l],
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Trees:

6,727 species
803 genera

vs.

11,676 species
1,225 genera
(ter Steege et al. 2016)

Cardoso et al. (2017) *PNAS*

the reasons for such discrepancy



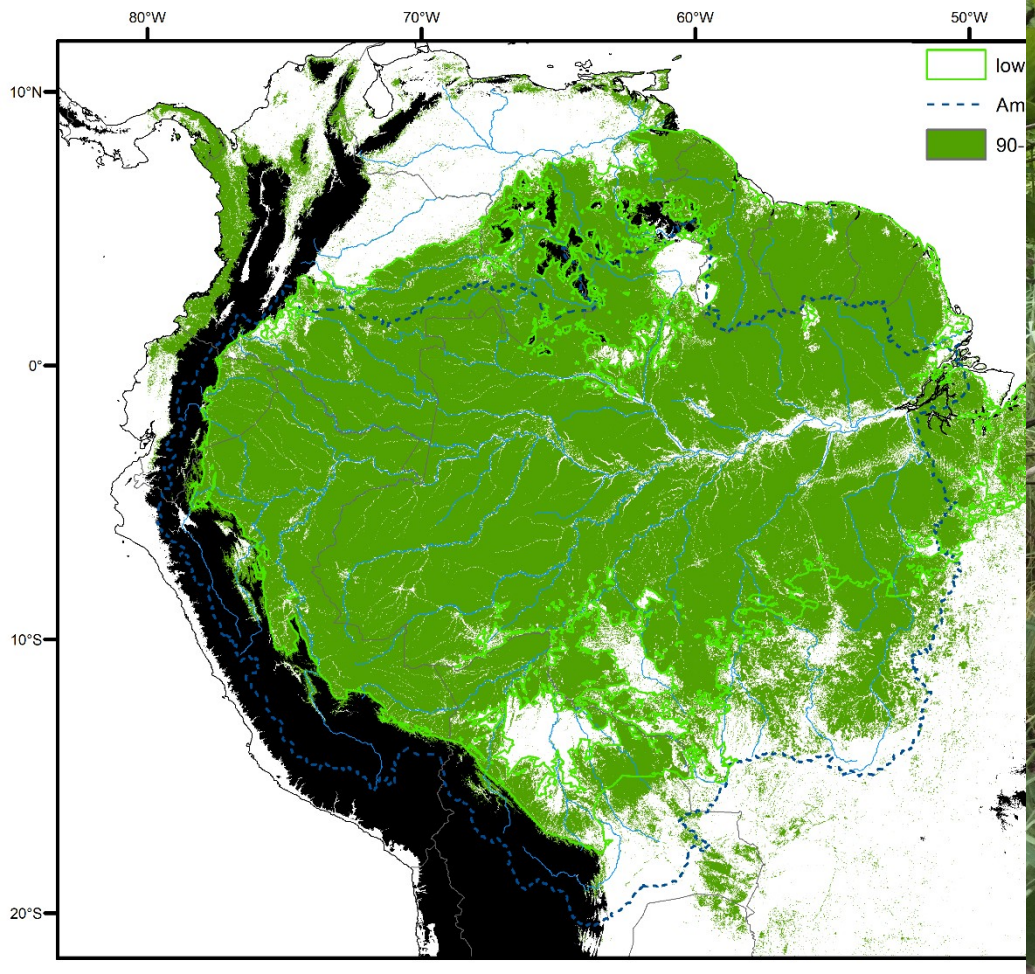
***Pariana* sp.**
Poaceae

© Domingos Cardoso

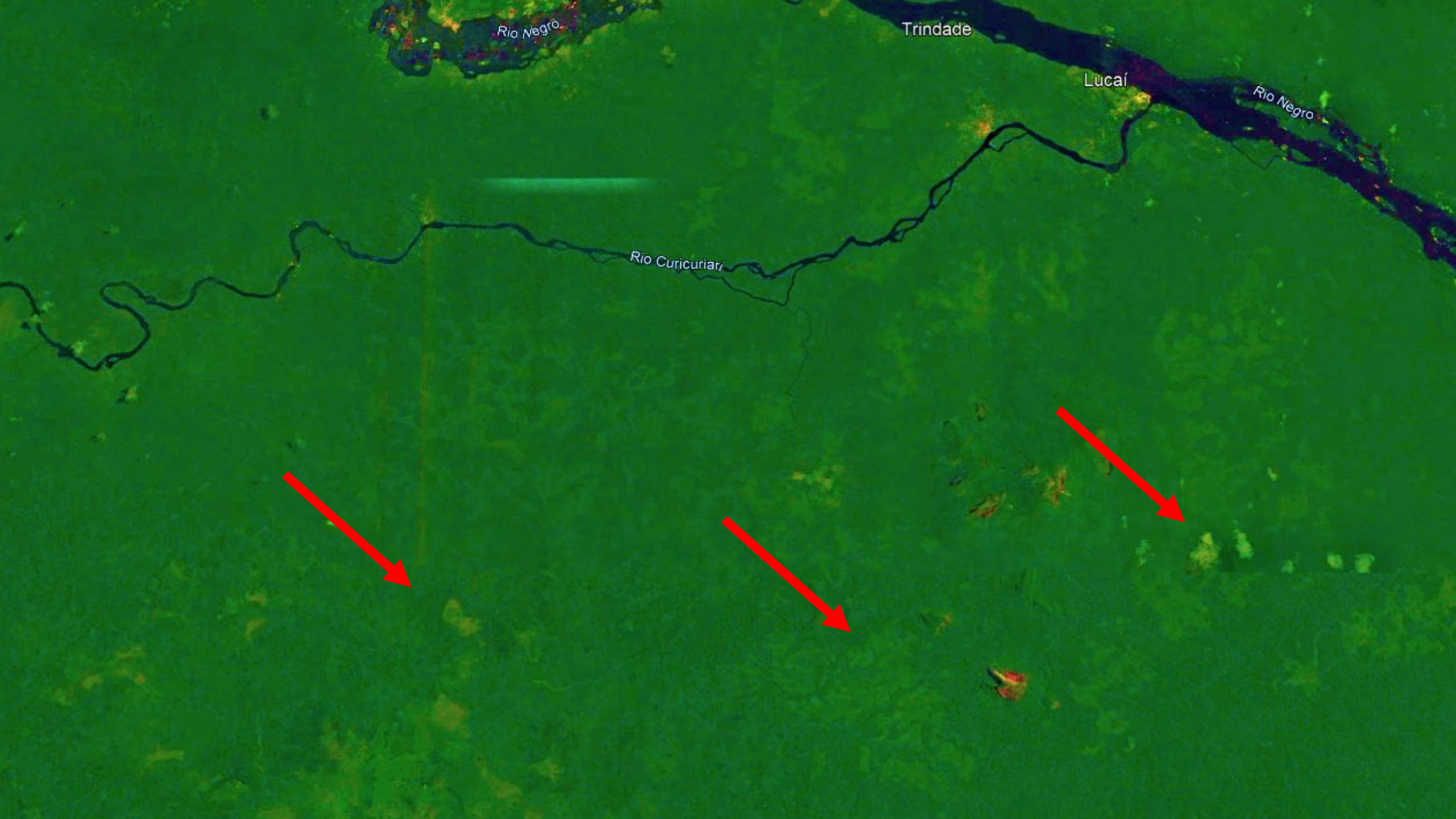
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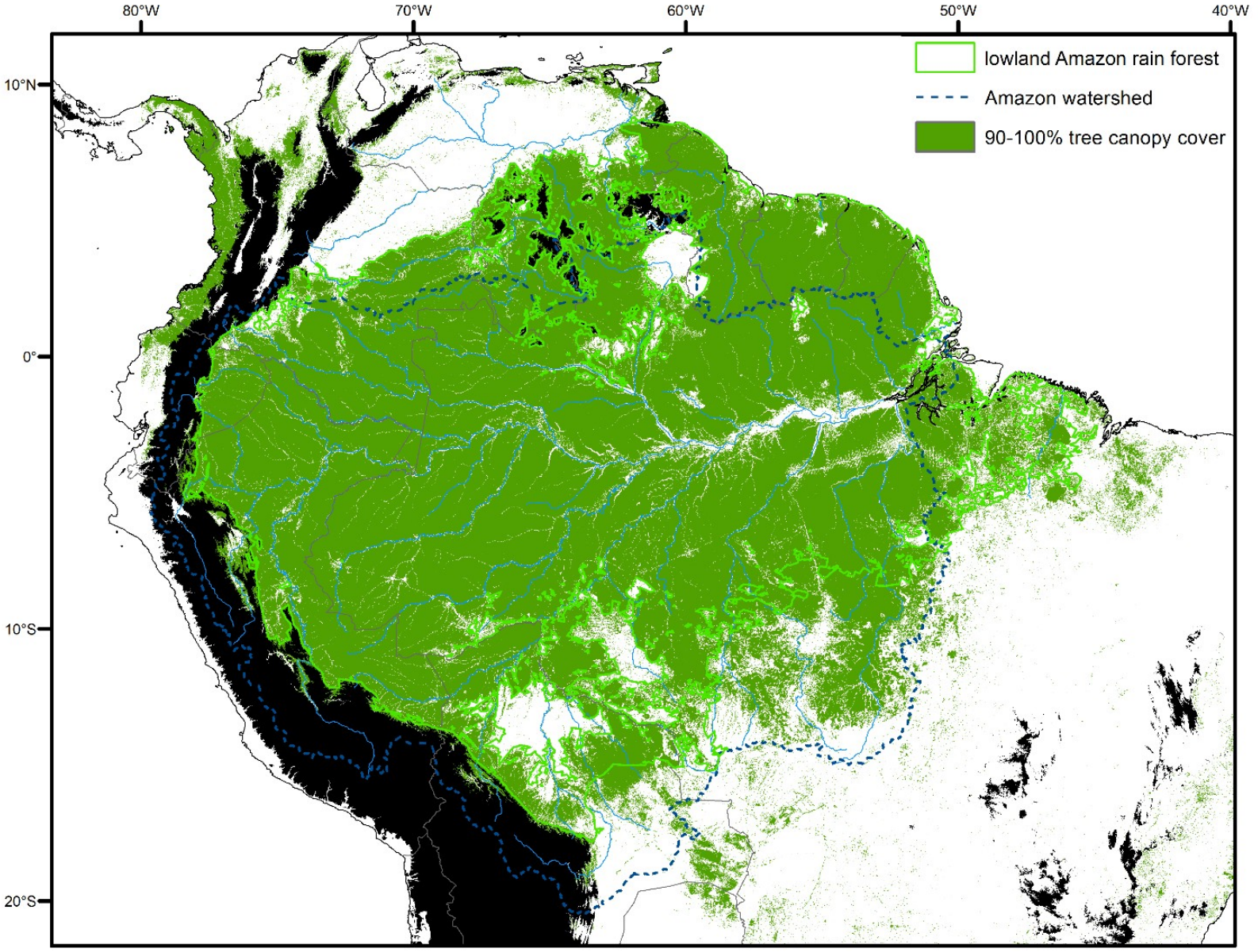
Cardoso et al. (2017)
PNAS



Patch of **savanna vegetation** in the middle of **Amazonia**, state of Pará, Brazil


Rio Negro
Trindade
Lucaí
Rio Negro
Rio Curicuriari

Amazon plant diversity revealed by a taxonomically verified species list



Trees:

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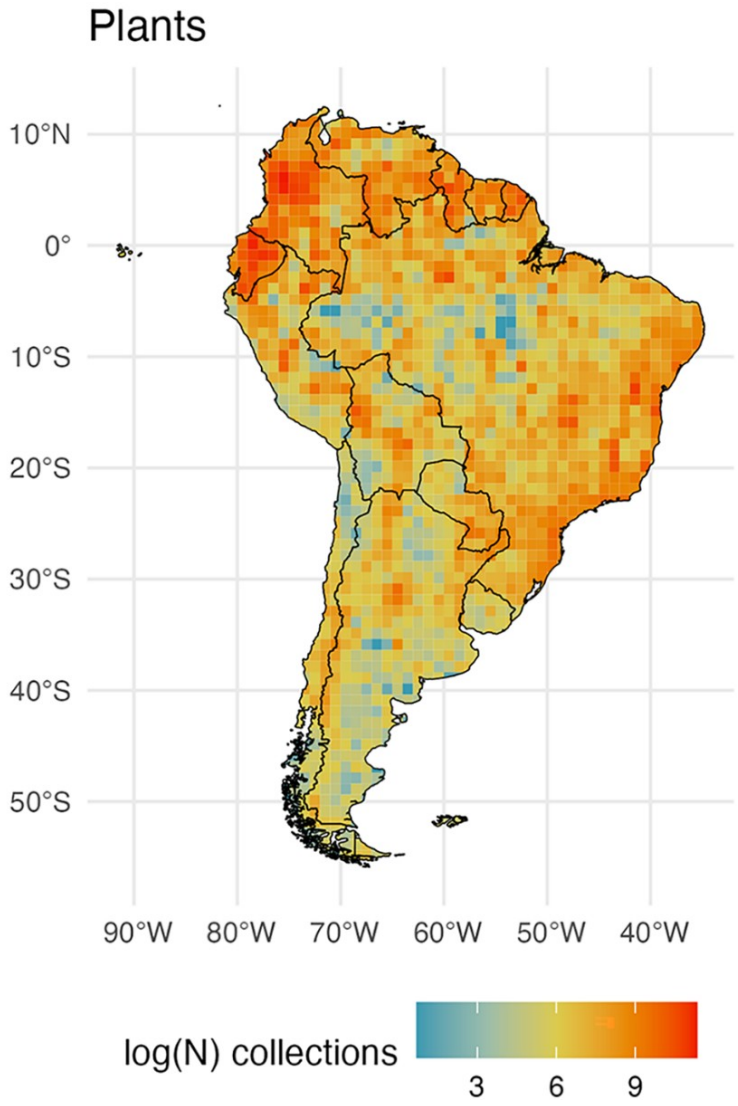
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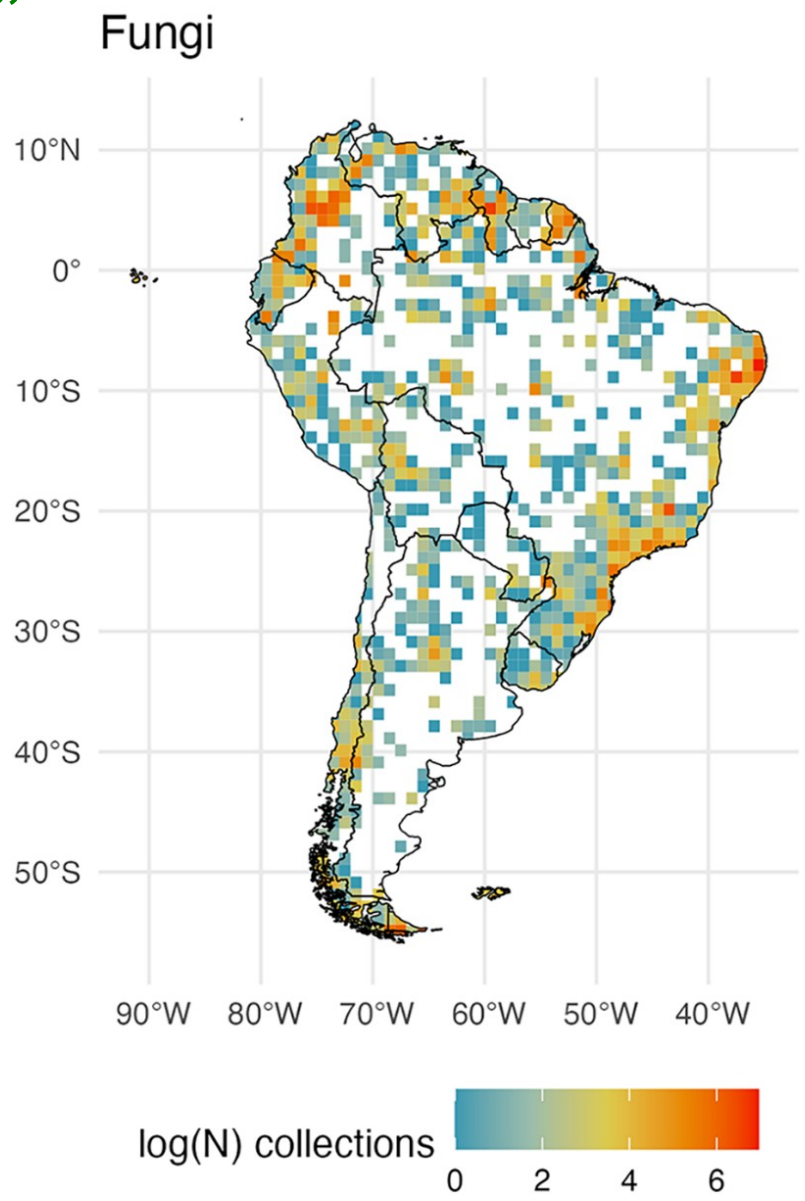
(ter Steege et al. 2016)

More than half of plant diversity is not trees!

Cardoso et al. (2017) *PNAS*

Biodiversity “blindspots”





Mosses and allies



?

Ball et al. (2025) *PeerJ*

Unlocking historical collections from Cabeça do Cachorro

- All bryophytes (mosses and allies) from South America
- Detailed geographical data from those collected in Brazil
- Imaging done for project student in-depth studies
- Modelling in conjunction with other plant and fungal data

INCT-Herbário Virtual da Flora e dos Fungos




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24 de abr. de 2024 08:58


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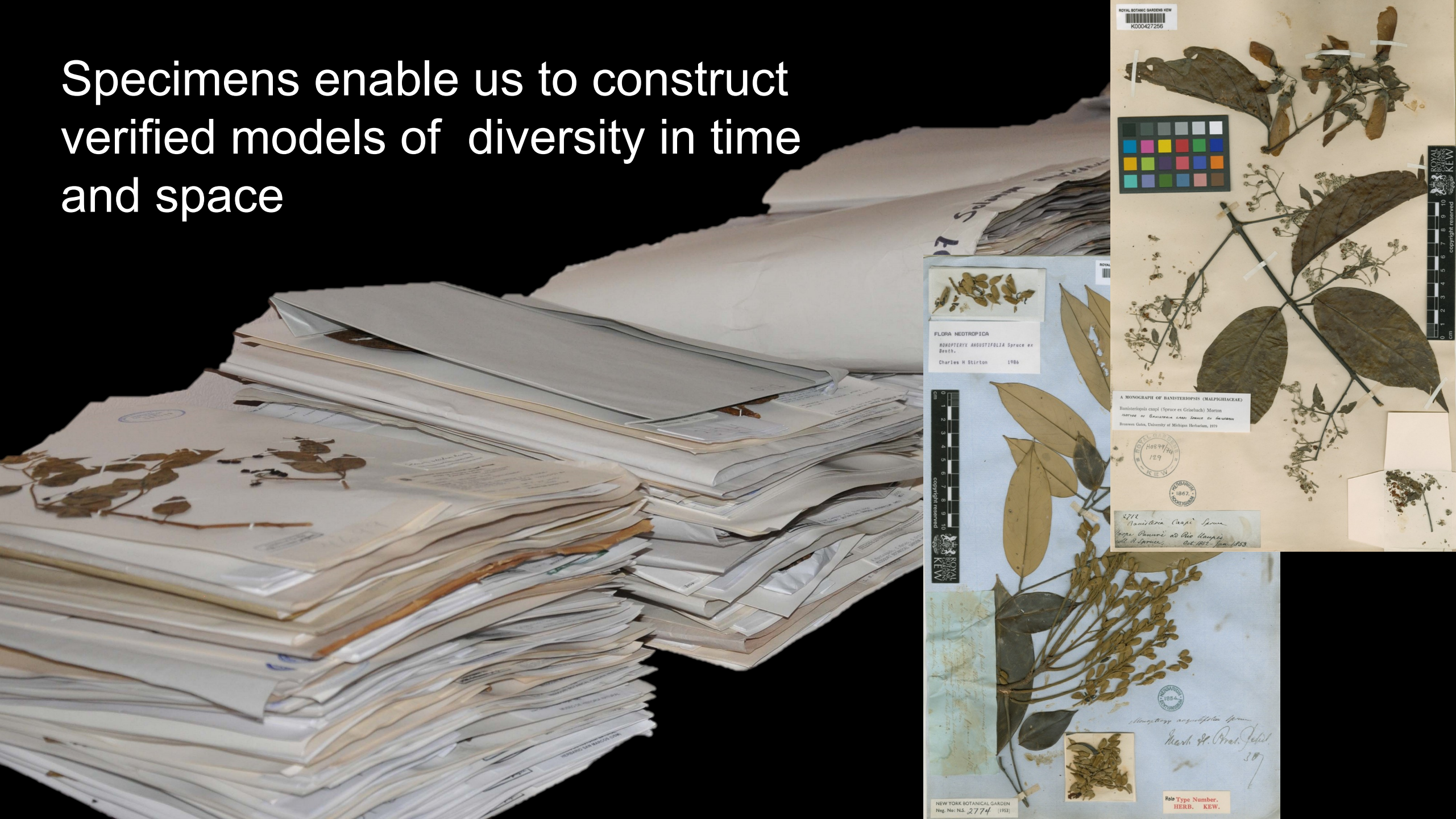
Collecting collaboratively







Specimens enable us to construct verified models of diversity in time and space










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Thanks to….

- My amazing Brazilian partners in Tsiino Hiiwiida
- The Tukano, Baniwa and Yanomami communities of the upper Rio Negro











CNPq FAPEAM Fundação de Amparo à Pesquisa do Estado do Amazonas FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro Fapespa Fundação Amazônia de Amparo a Estudos e Pesquisas FAPEMA Fundação de Amparo à Pesquisa e ao Desenvolvimento Científico e Tecnológico do Maranhão FAPESP fapdf FACEPE Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco FapesQ-PB UKRI