



WHAT IS THE COST OF THE POLLINATION DEFICIT IN THE STATE OF SÃO PAULO?

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Nucleus of Analysis and Synthesis of Nature-based Solutions



Série Biota Síntese:
Nota Técnico-Científica 5

POTENCIAL DO SERVIÇO ECOSSISTÊMICO DE POLINIZAÇÃO

no estado de São Paulo

Partners



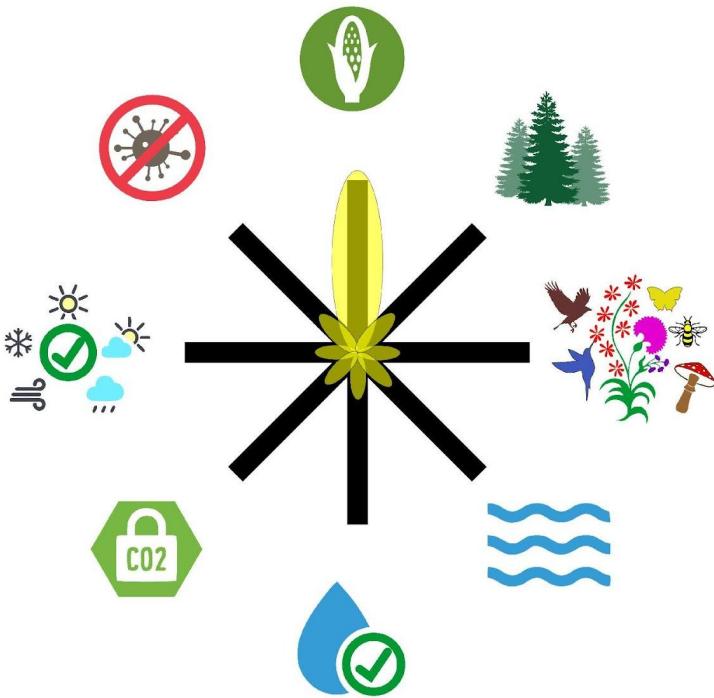
Instituto de
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Avançados da
Universidade de
São Paulo



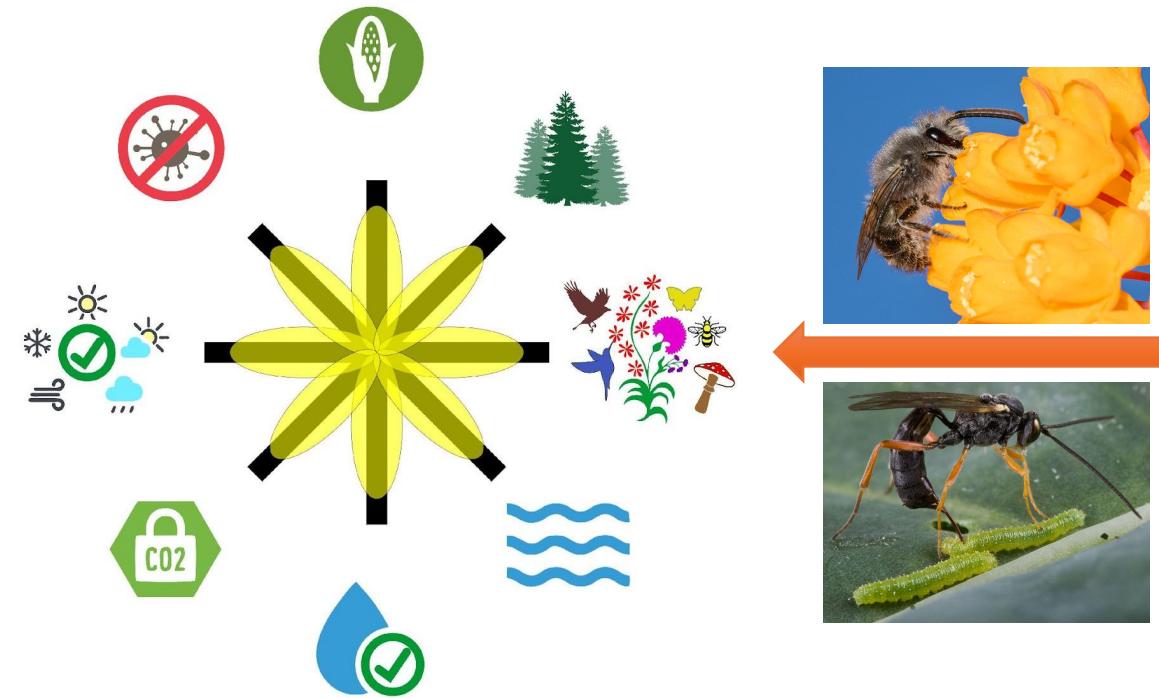
Support



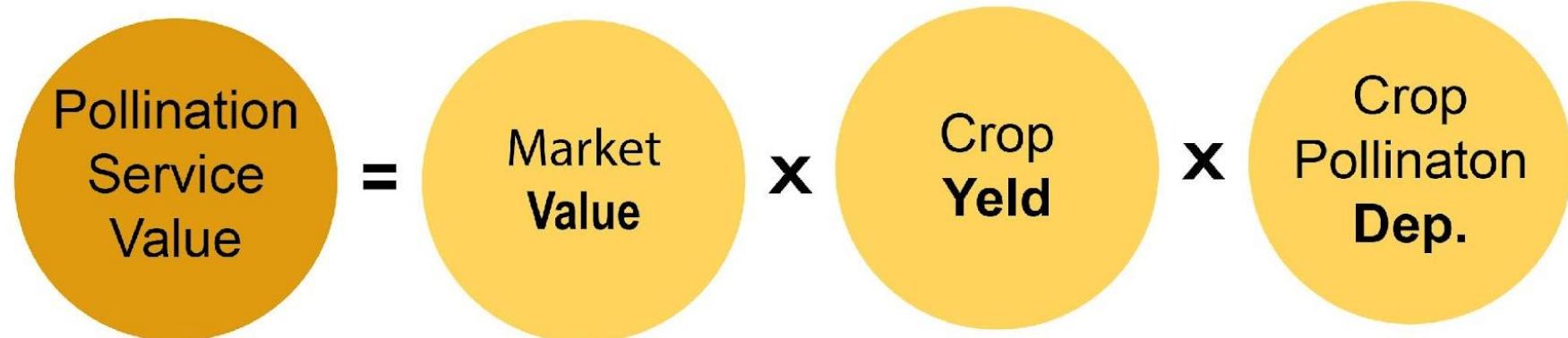
Intensive agriculture



Ecological Intensification

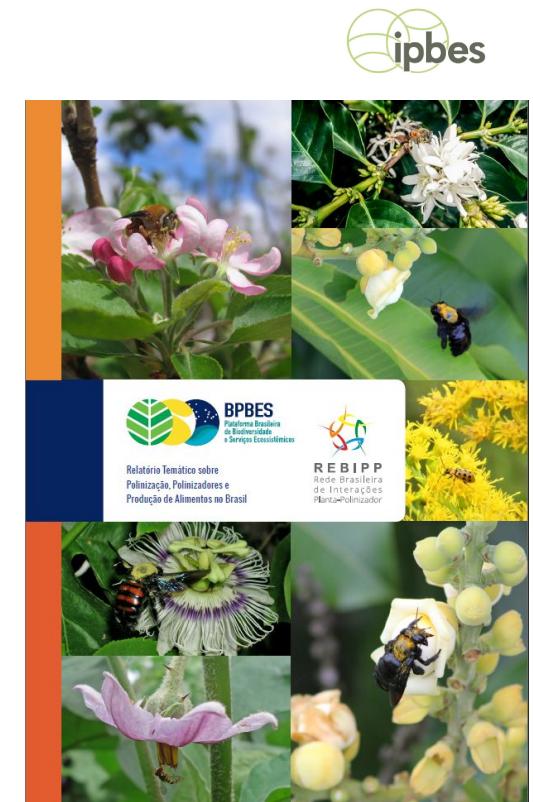
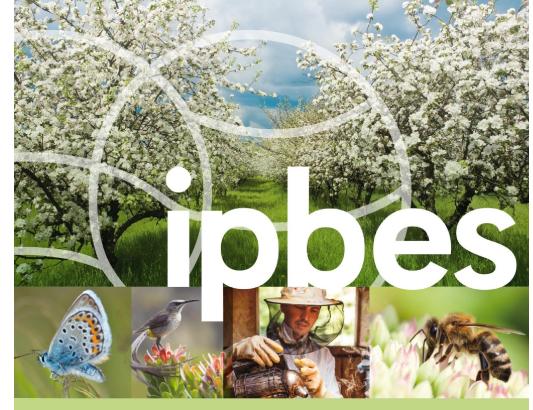


Traditional Approach (Porto et al. 2021)



World: US\$ 314.76 - 772.83
Bi

Brazil: R\$ 43 Bi

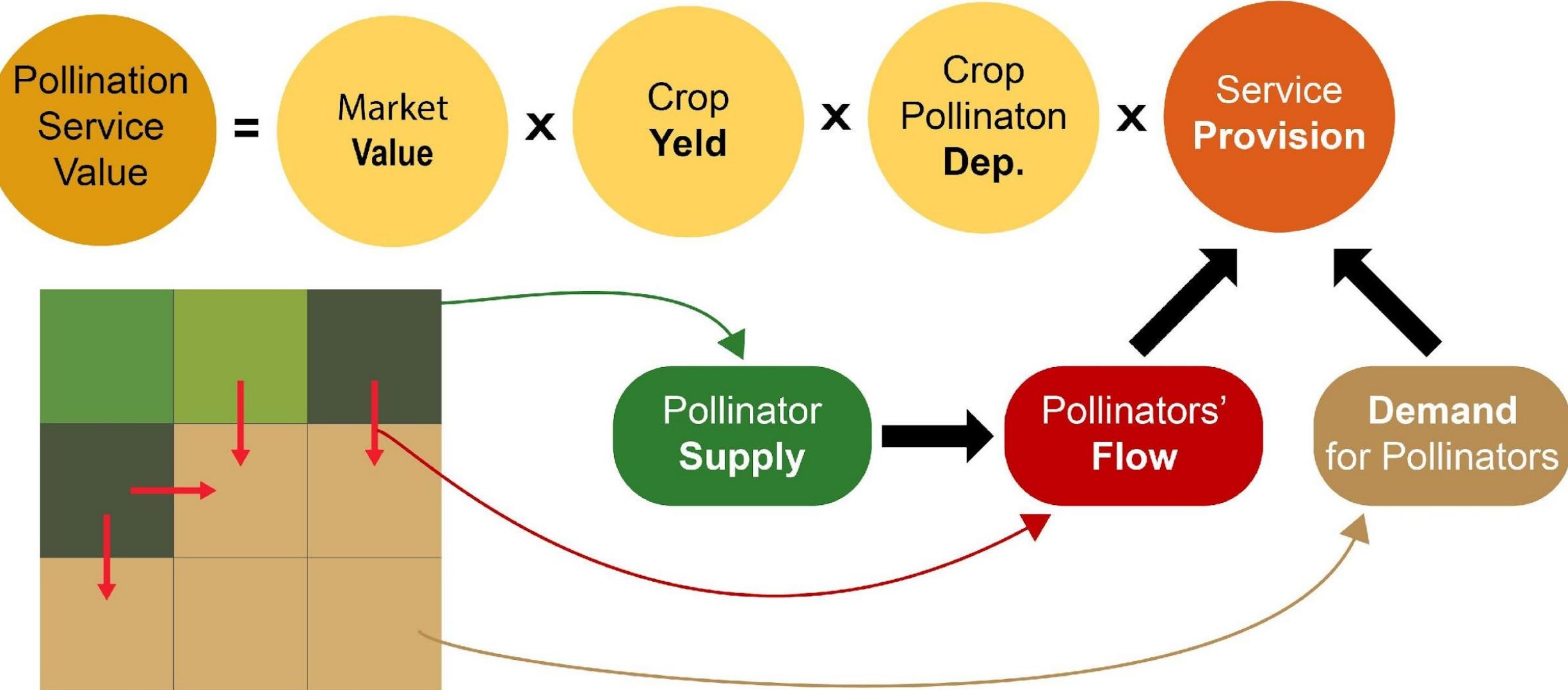


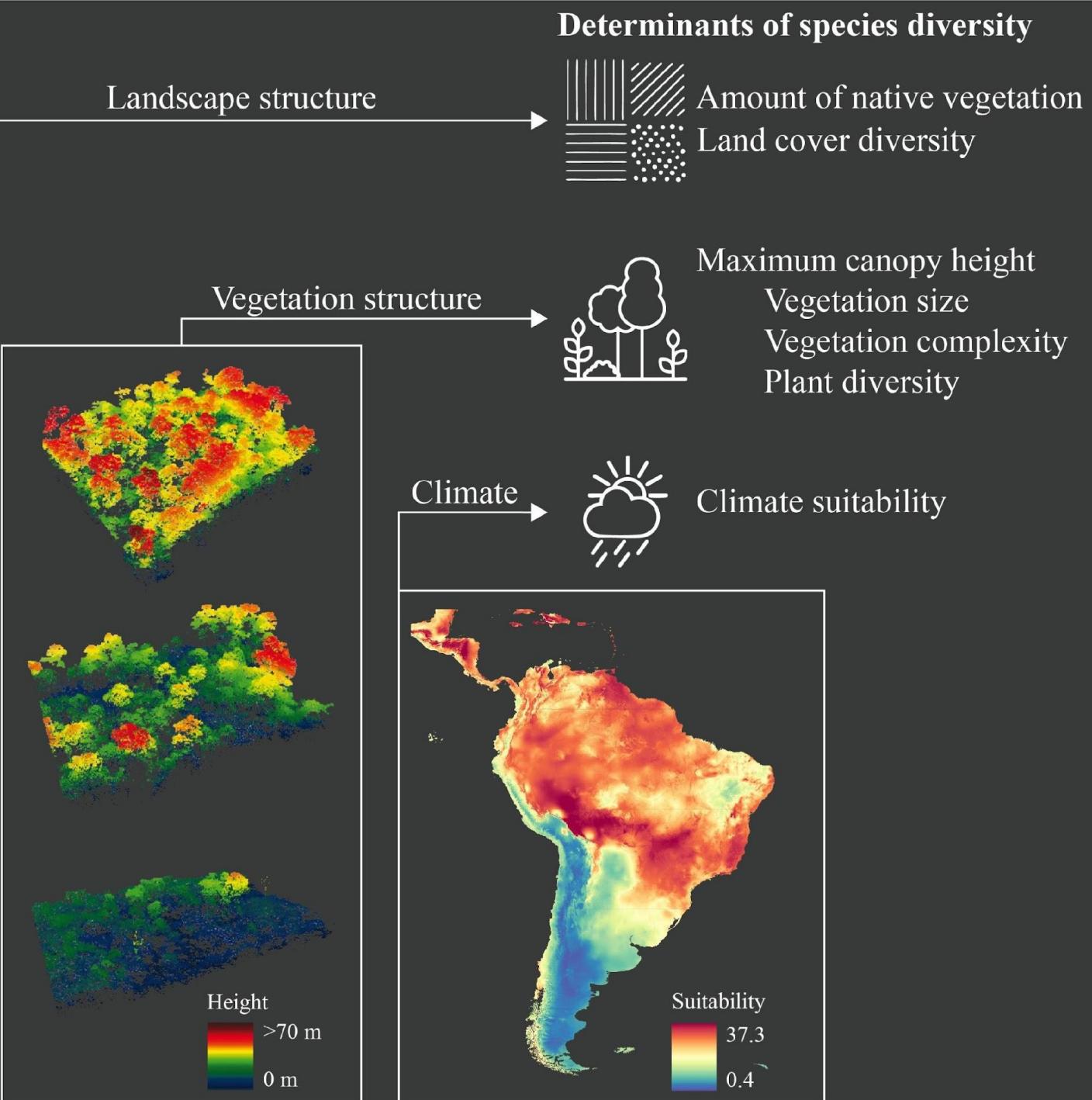
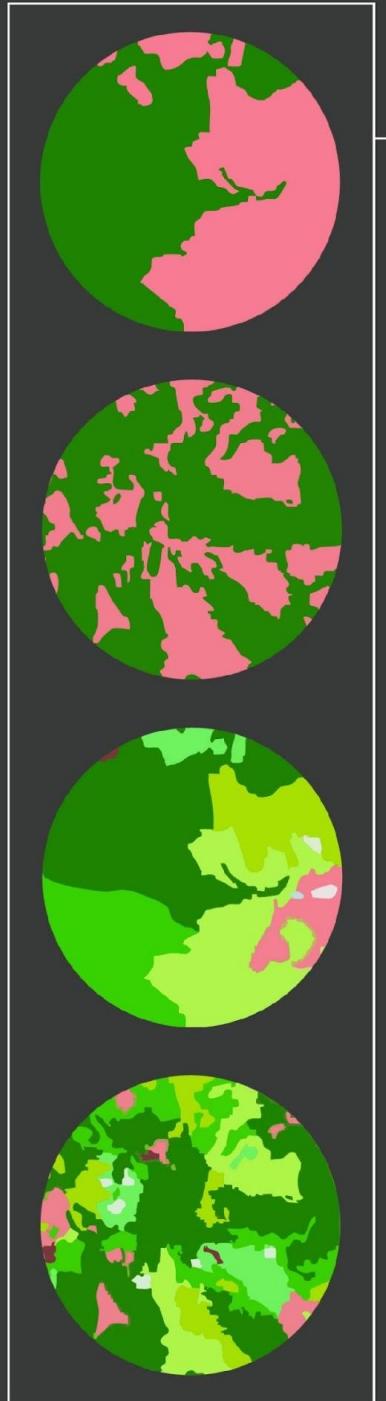


Ricketts 2004, Winfree et al 2011, Moreira et al 2015, González-Chaves et al 2020, Moreira et al 2020

Traditional Approach (Porto et al. 2021)

Biota Synthesis Approach (Metzger et al. 2021)





Moving Window Map Biomass C8
100 – 3000m Altura máxima 2022 do dossel* (2020)

Ecological Niche Models 180 bee species WorldClim 2.1



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*Lang et al 2022

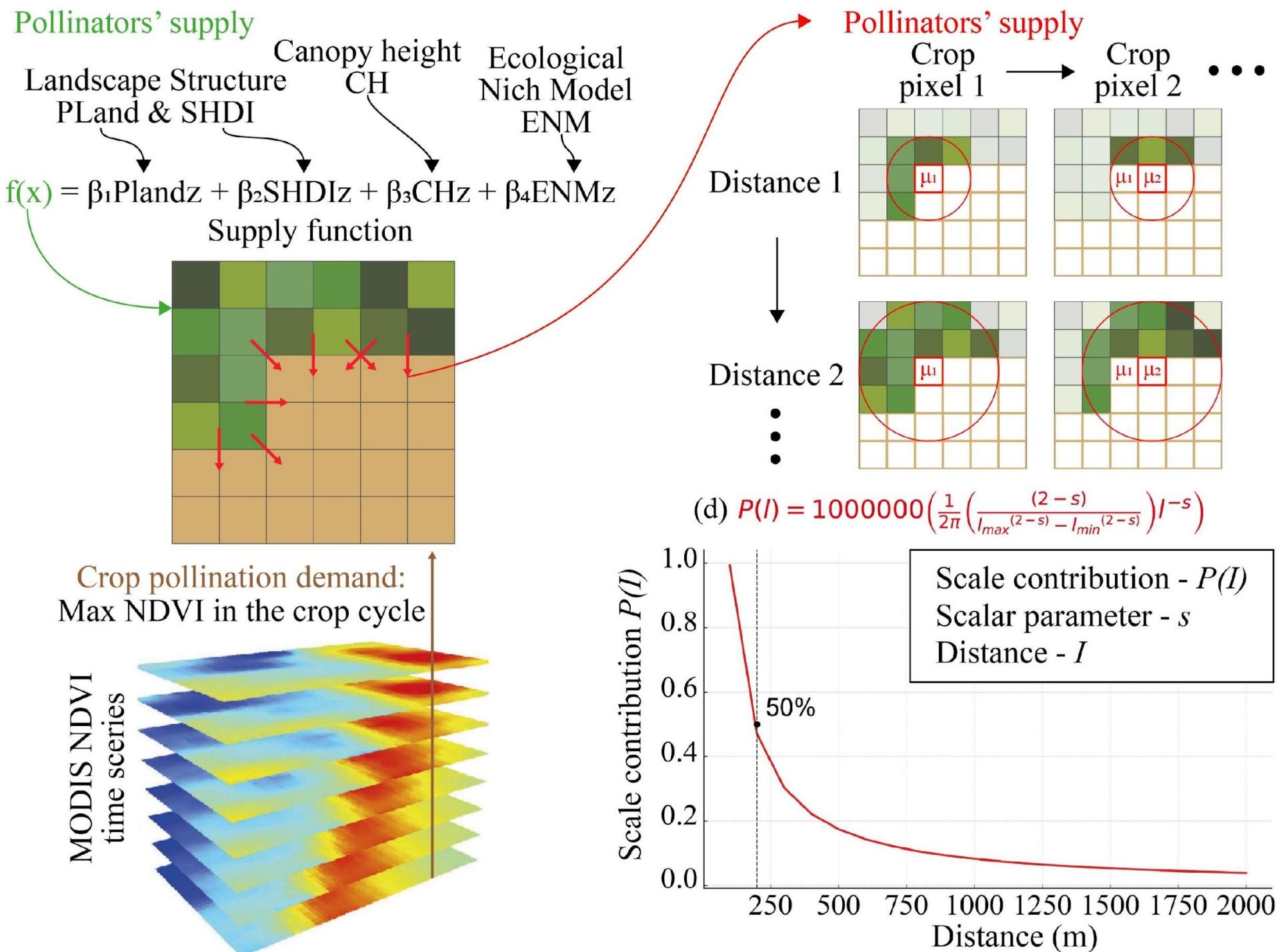


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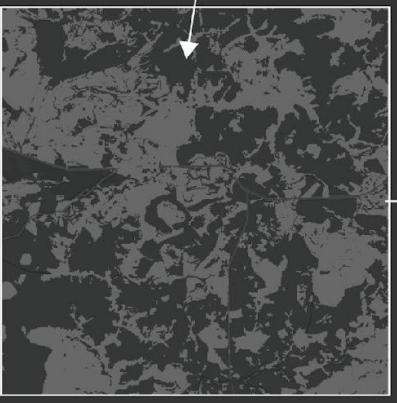


Google Earth Engine



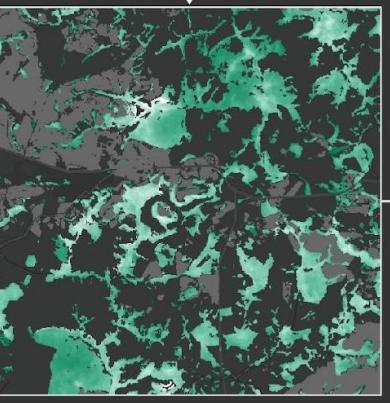
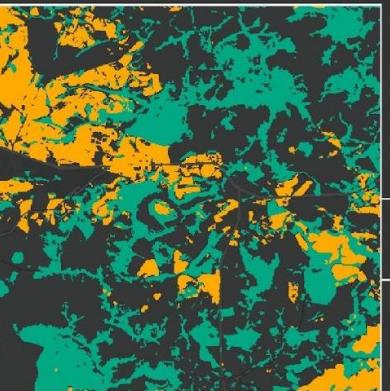
Pollination Service Model Components

a) Study area



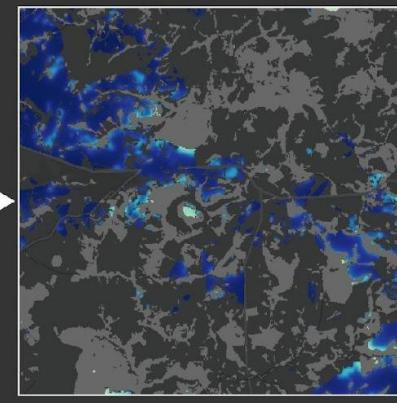
b) Illustrative highlight

c) Agricultural landscape



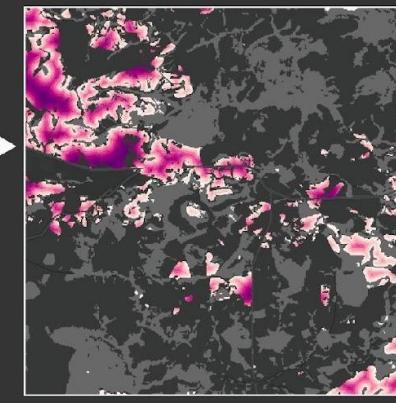
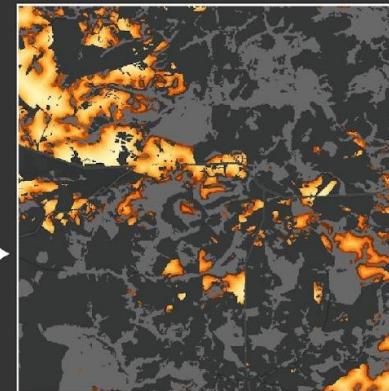
d) Supply of pollinators

e) Pollination demand



f) Pollinator flow

h) Service deficit

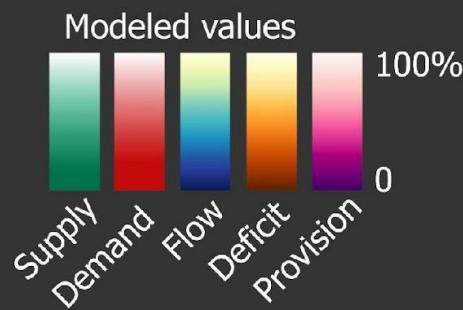


g) Pollination service



0 3 5 10 km

São Paulo
Continent
Ocean
Area of interest
Agricultural areas
Native vegetation

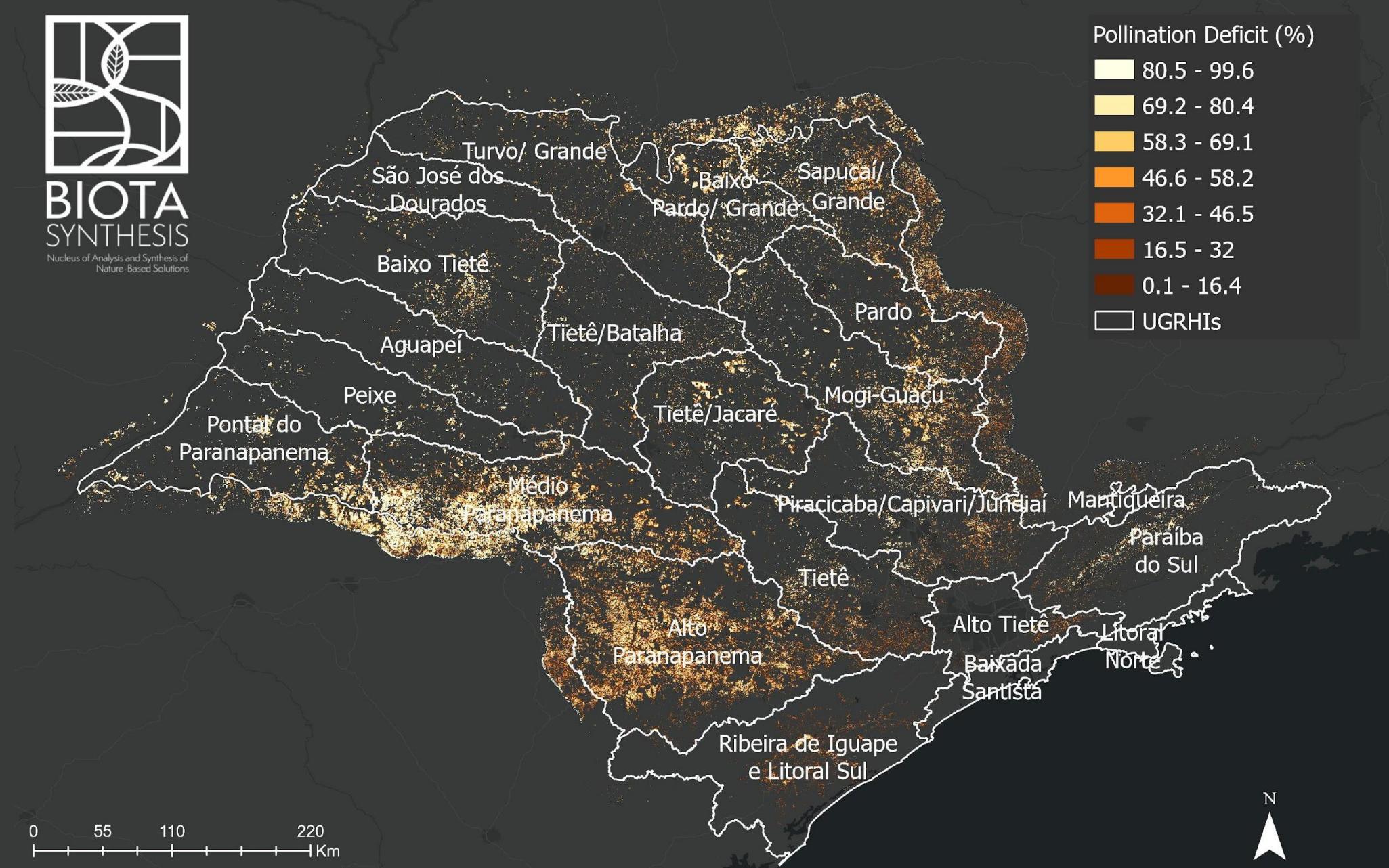


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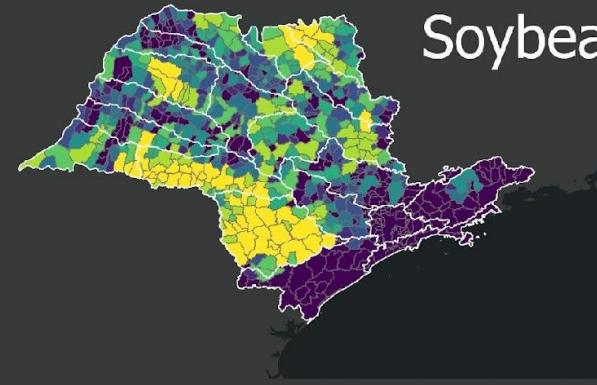


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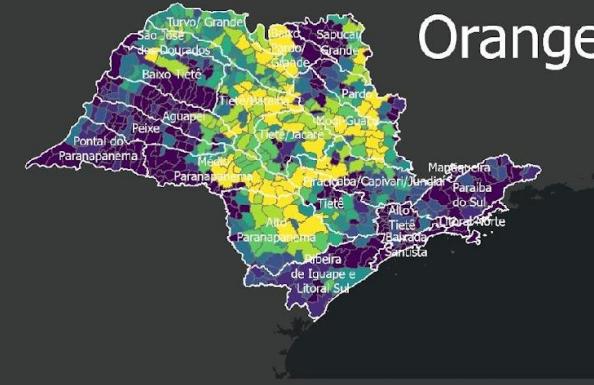
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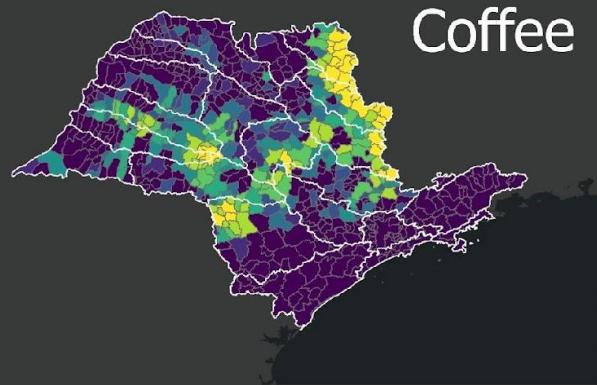
Pollination deficit in the state of São Paulo



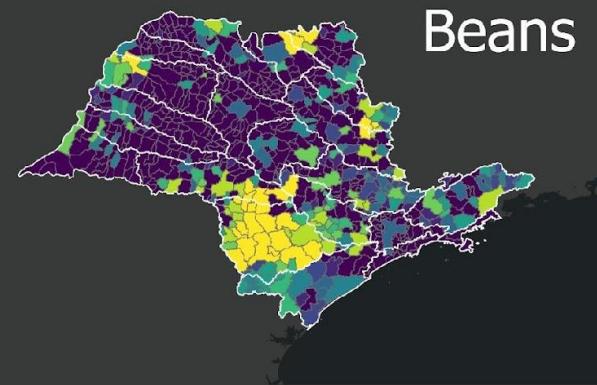
Soybean



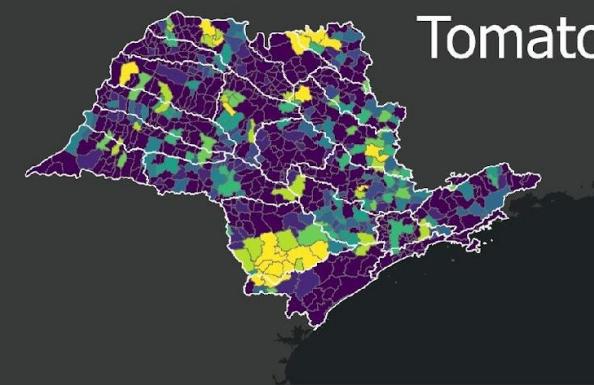
Orange



Coffee



Beans



Tomato

...

69
Crops
2022

Harvested Area (Ha)

- 0 - 115
- 115 - 232
- 232 - 400
- 400 - 700
- 700 - 1020
- 1020 - 1550
- 1550 - 2700
- 2700 - 6400
- 6400 - 81000

Pollination Deficit (%)



0 160 320 640 km



PAM



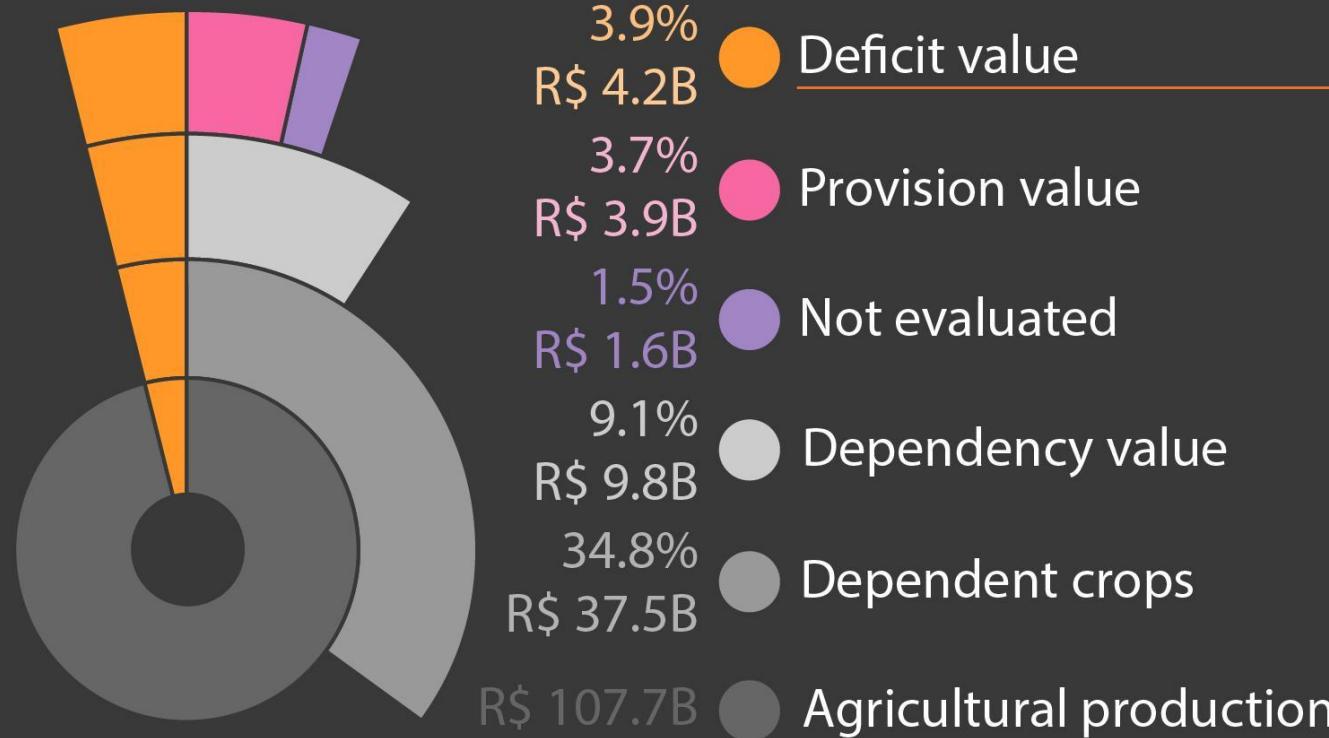
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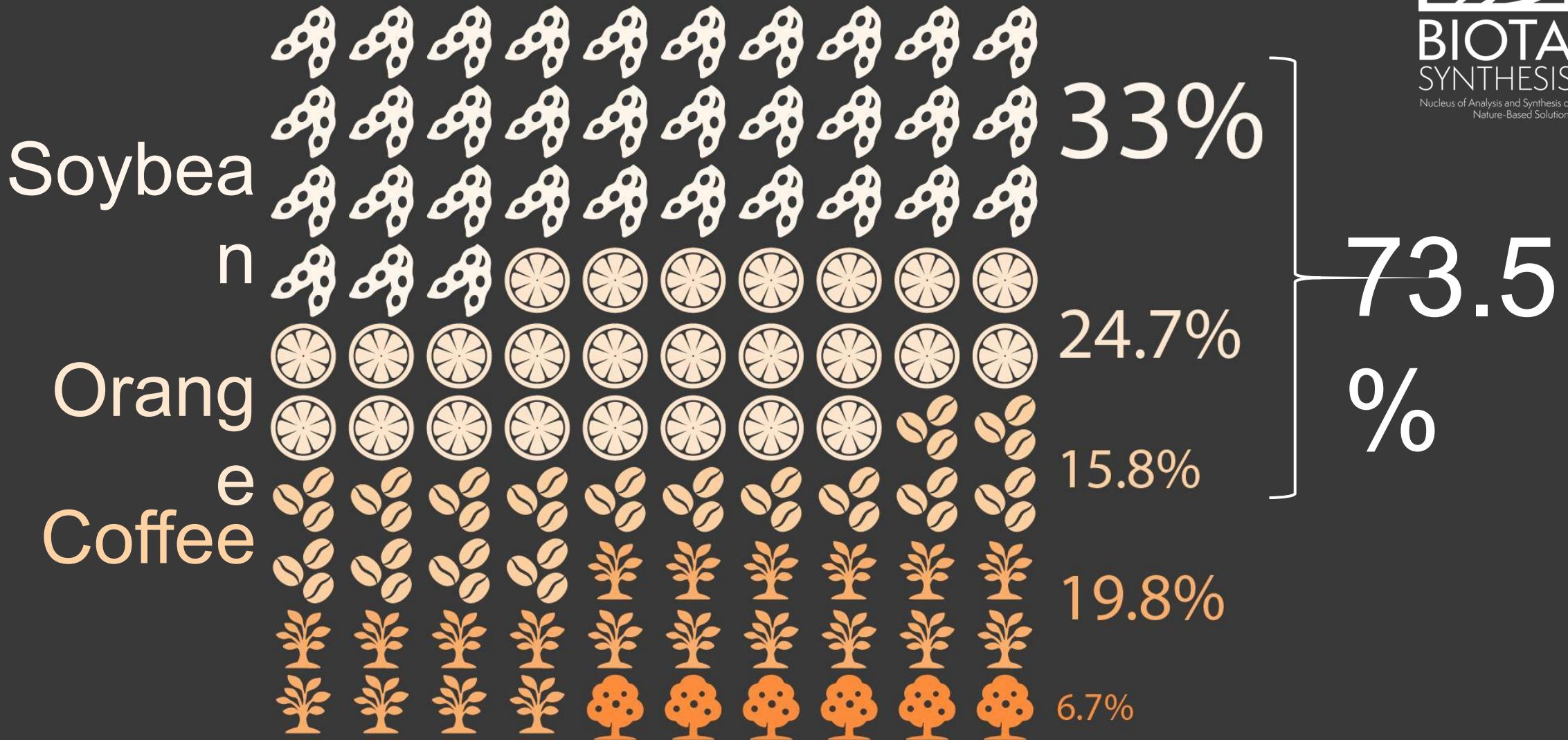
How much does the deficit in pollination services cost agriculture in the state of São Paulo?

In 2022, the deficit in pollination services cost between 4.2 and 5 billion reais to the agricultural sector.



Pollination deficit represents a cost, but it can also be seen as an **opportunity to** more than **double the contribution** of pollinators **to agricultural production**

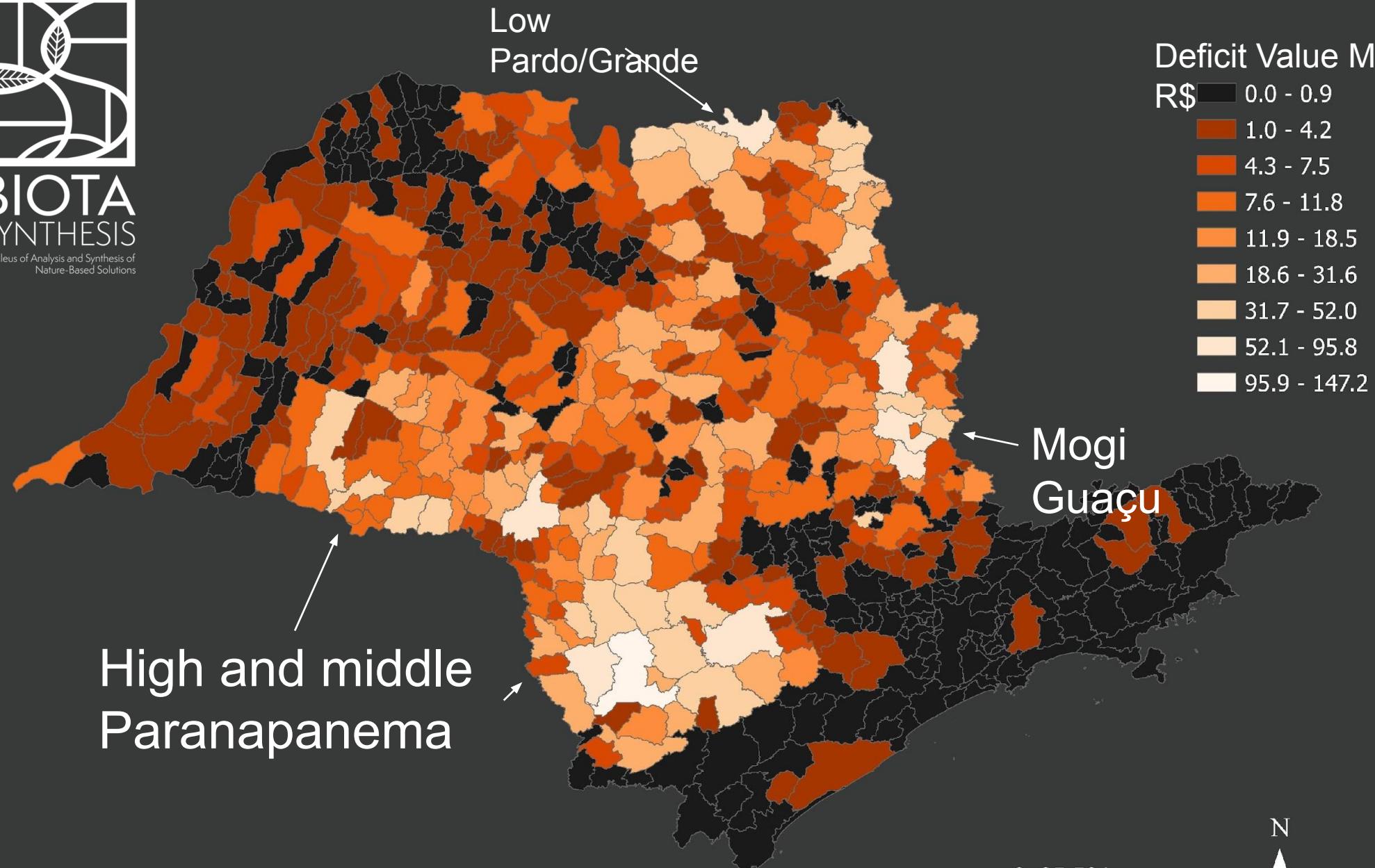
Contribution of each crop category to the total value of the pollination service deficit





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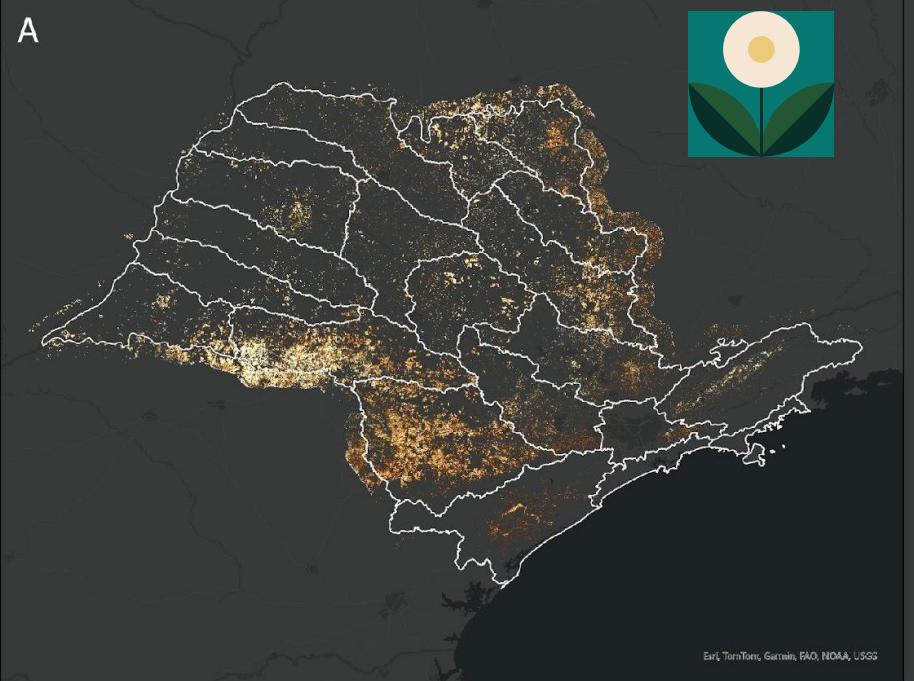
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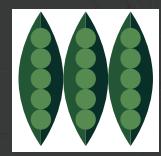
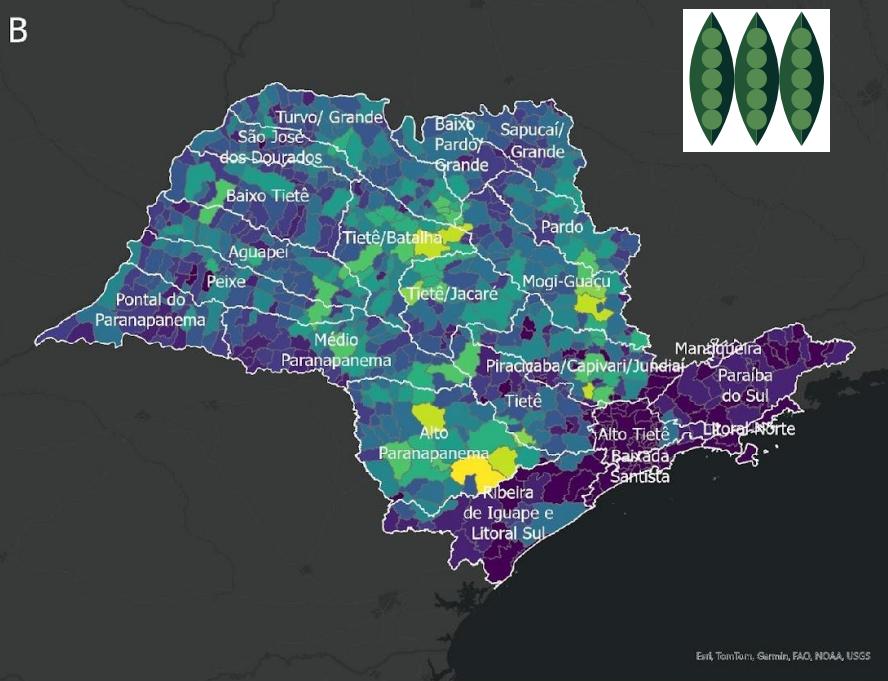
0 25 50 km



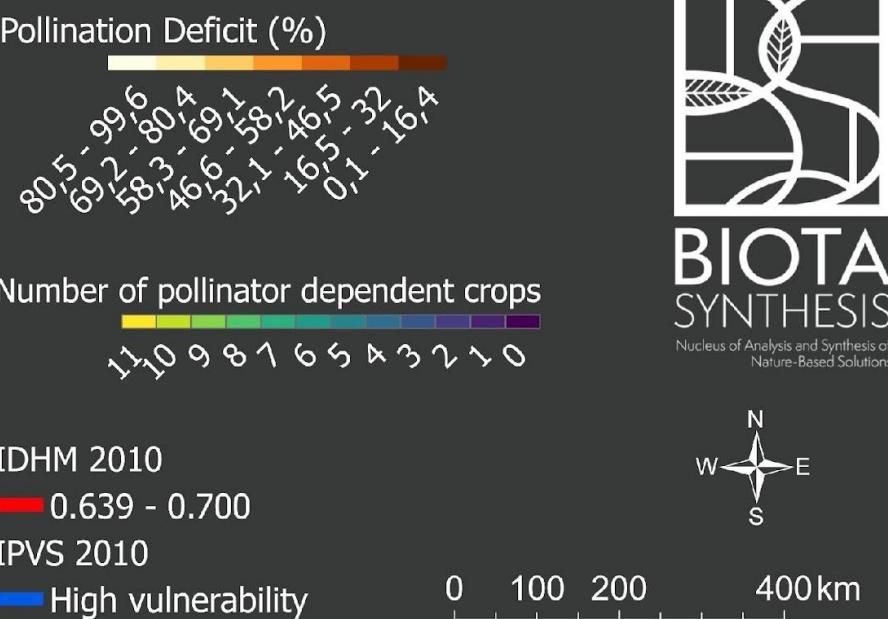
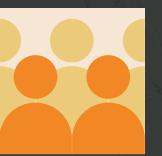
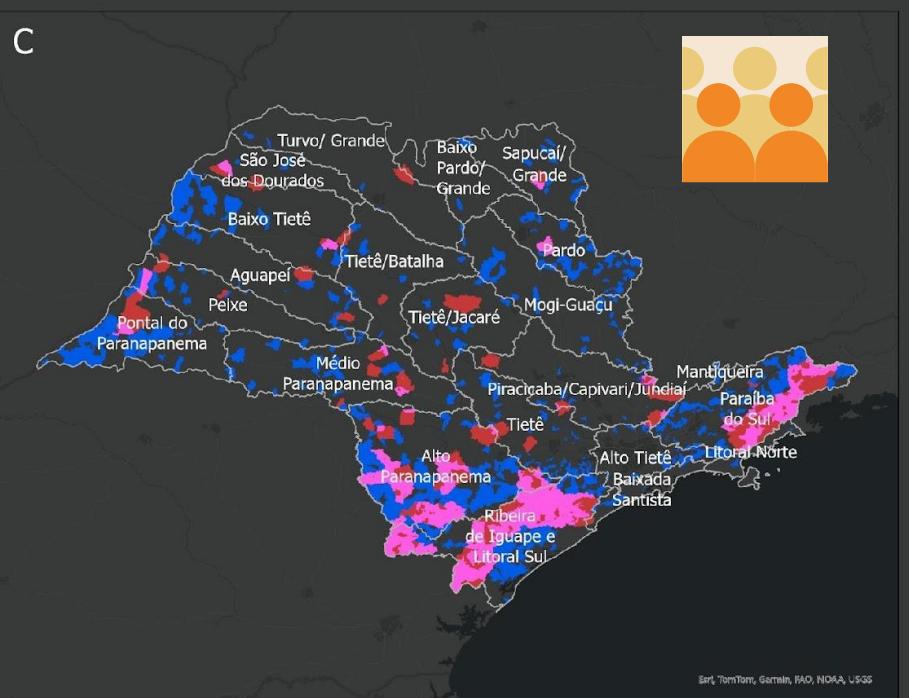
A



B



C



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Focal territory

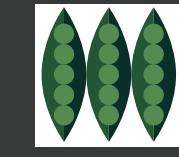
Criteria for prioritizing focal territories for public policies aimed at pollination services:

1. + déficit do serviço
2. + diversity of dependent crops
3. + Social vulnerability

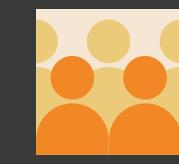
Biodiversity

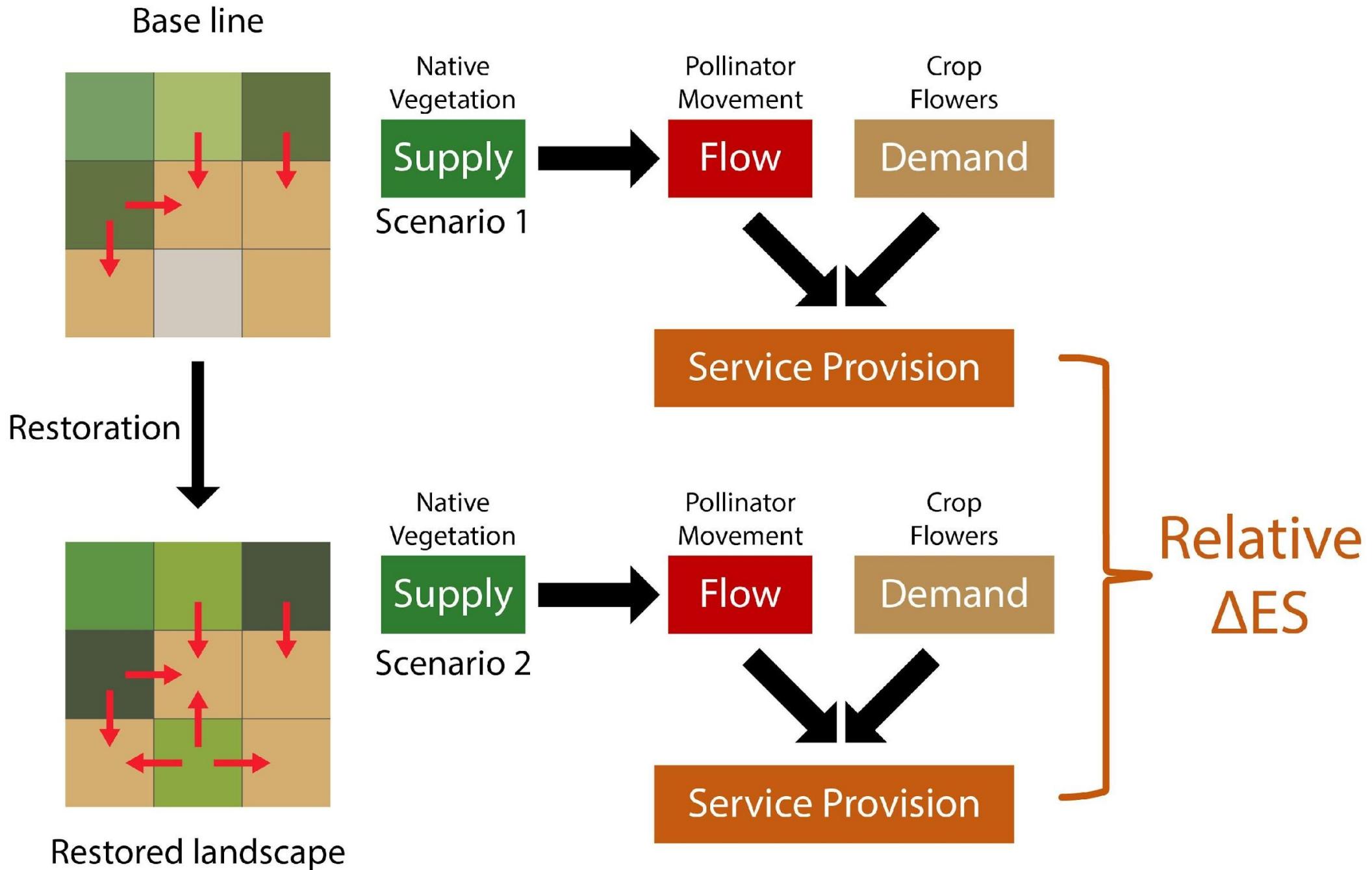


Segurança alimentar



Climate Justice







Thank you!

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