



Instituto
Internacional para
Sustentabilidade



CSRIO

Planejando a restauração florestal em propriedades privadas com co-benefícios para a paisagem

Renato Crouzeilles

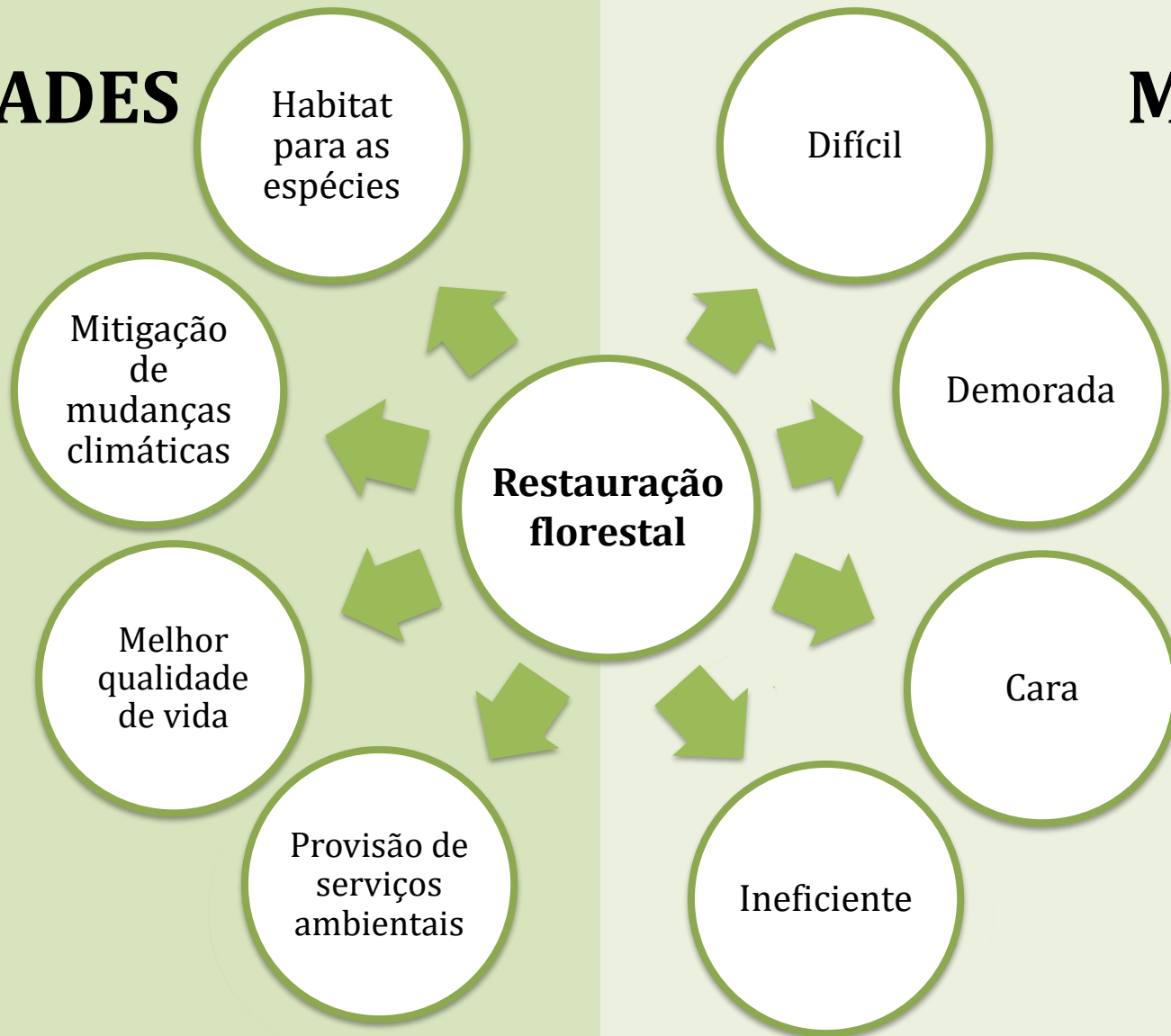
Associado Instituto Internacional para Sustentabilidade

Professor vinculado Centro de Ciência da Conservação e Sustentabilidade Rio/PUC-RJ

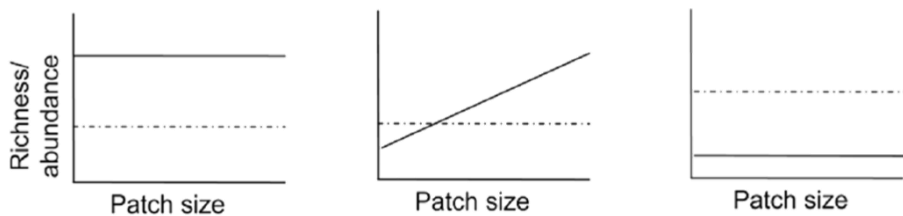
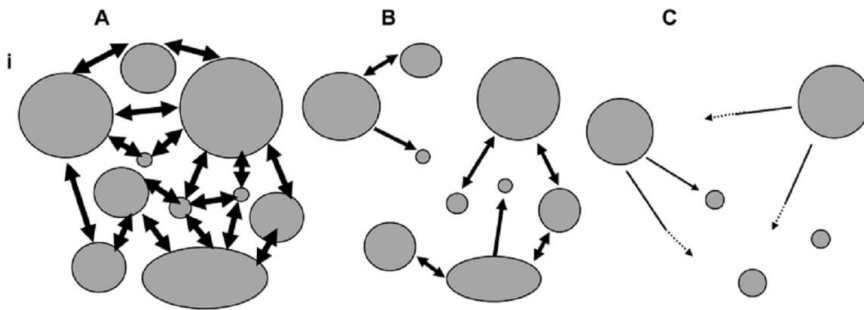
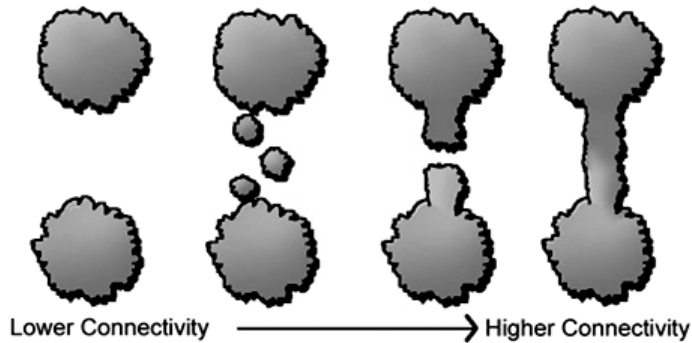
Professor colaborador Programa de Pós-Graduação em Ecologia UFRJ

VERDADES

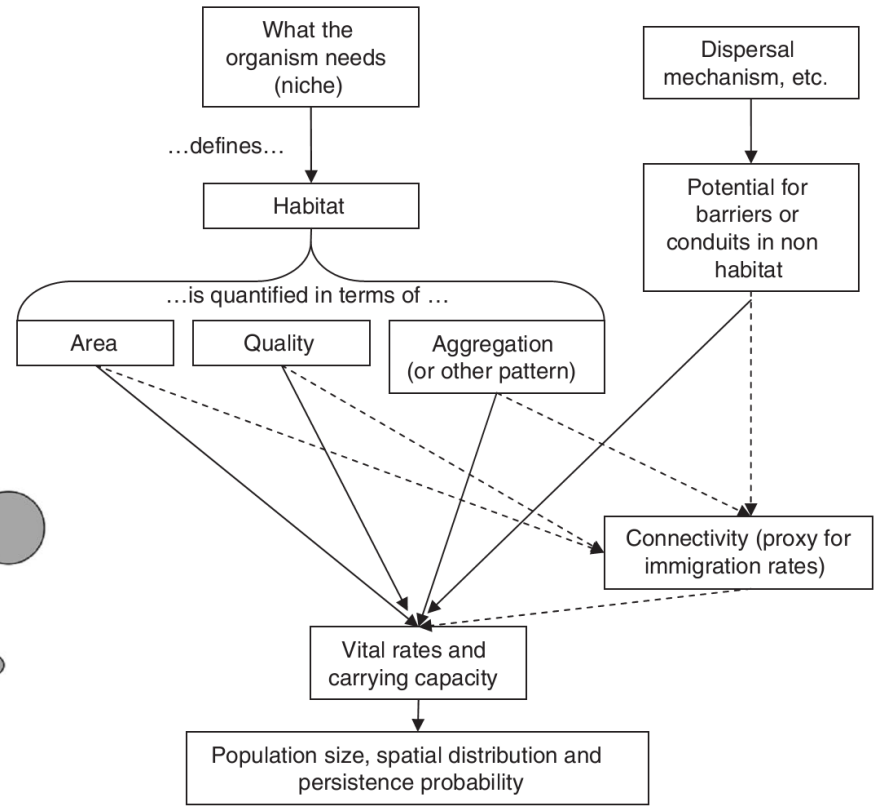
MITOS



Benefícios e conectividade na paisagem

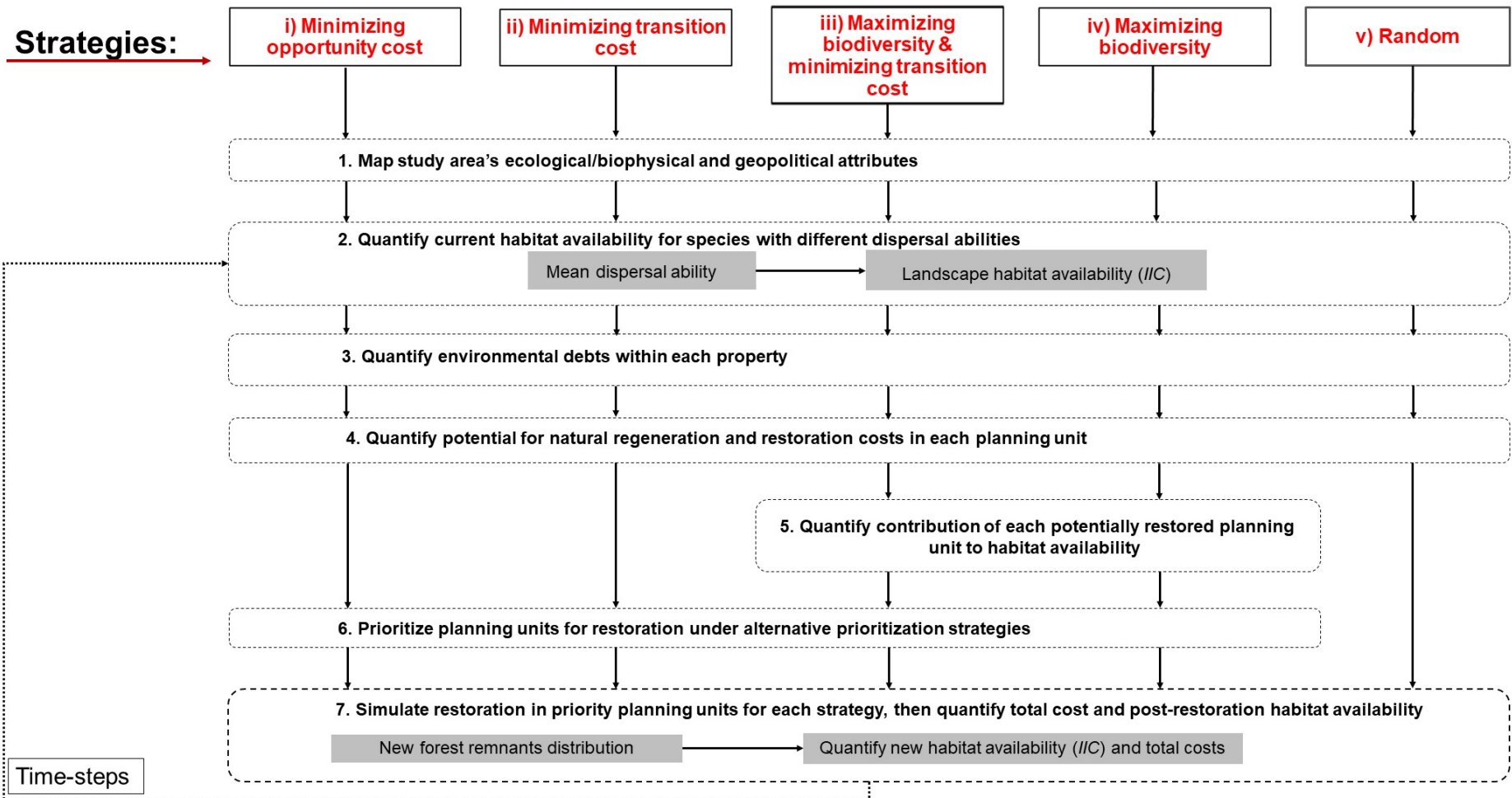


Pardini et al. 2010

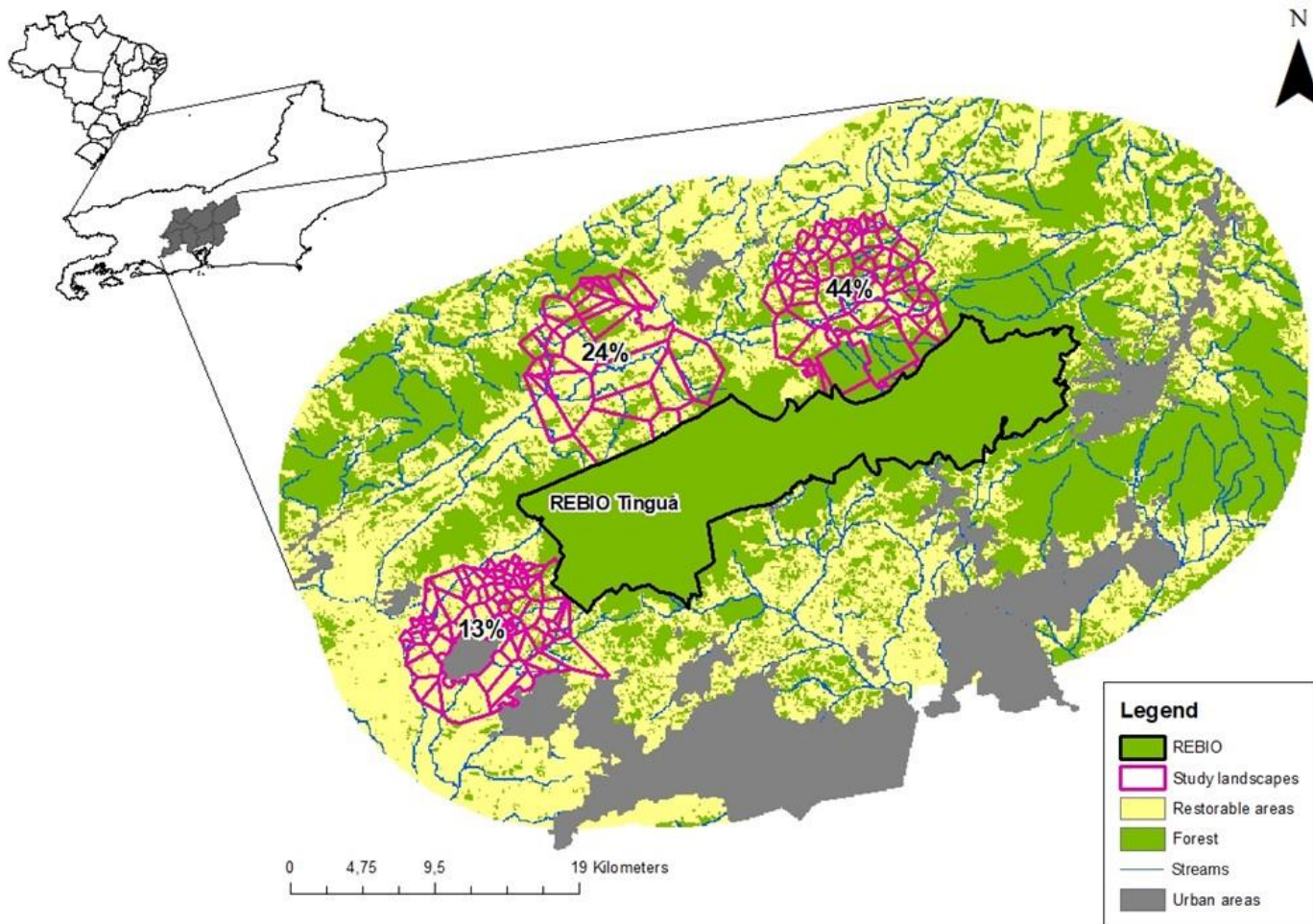


Hodges et al. 2009

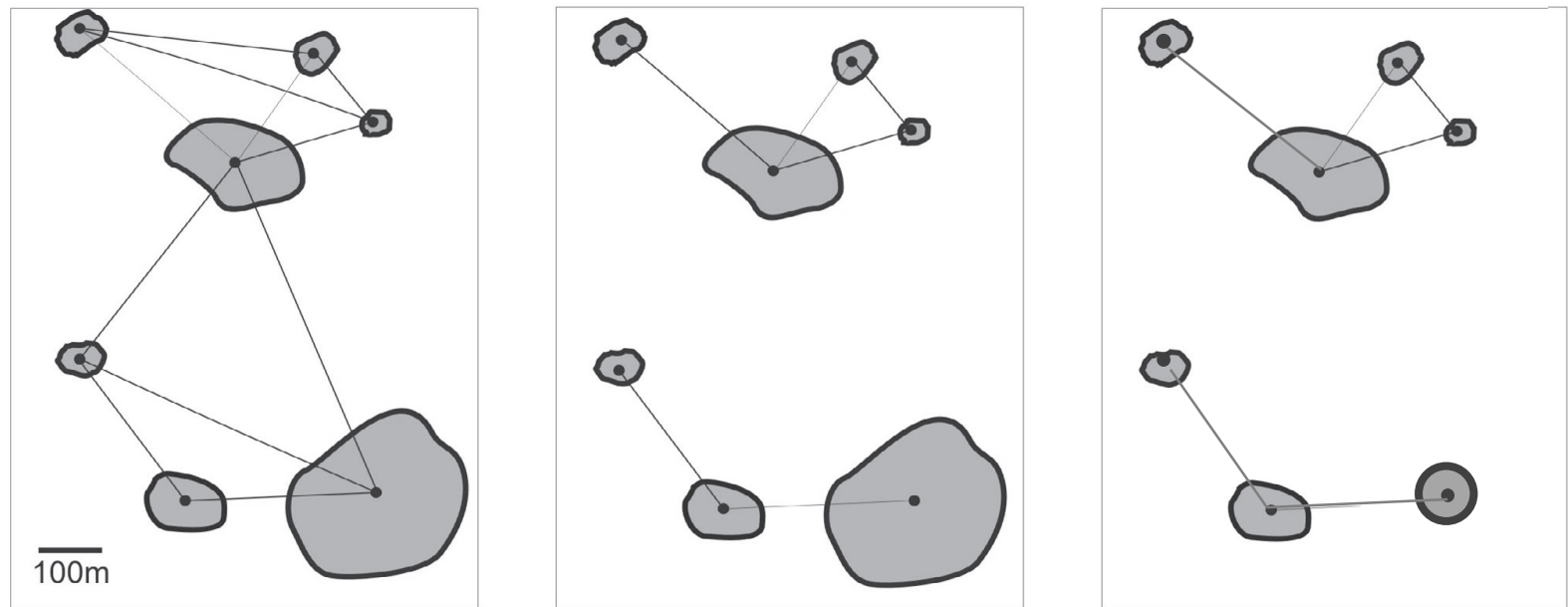
Incorporando a decisão do proprietário na priorização da restauração florestal



Passo 1. Área de estudo



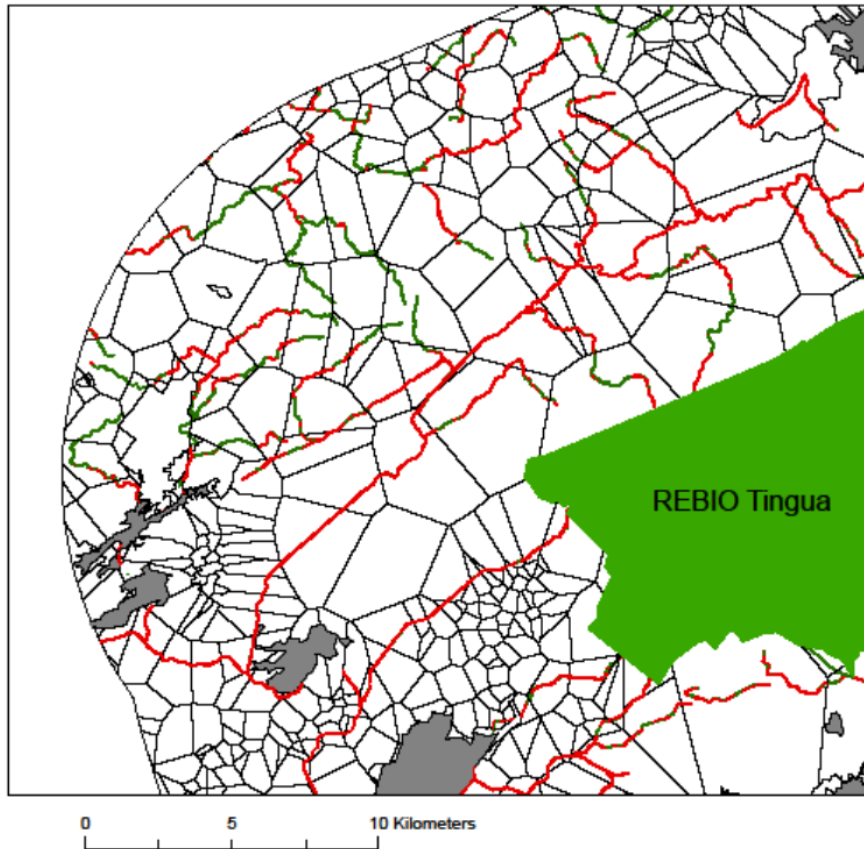
Passos 2 e 5. Como medir conectividade?



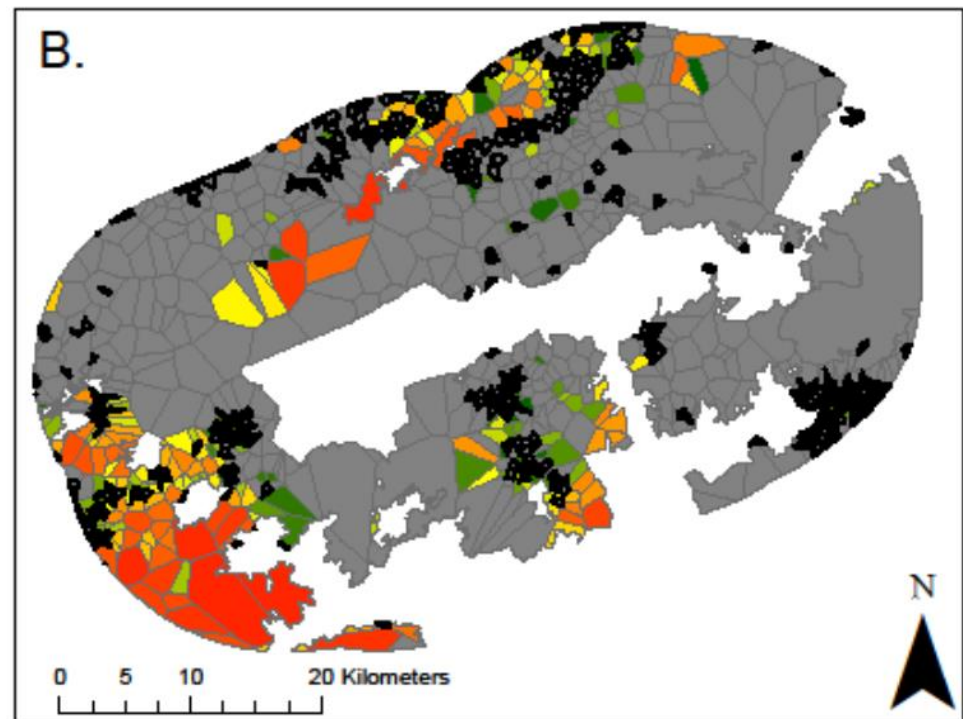
Adaptado de Forero-Medina & Vieira 2007

Passo 3. Quantificando os débitos

Área de Preservação Permanente



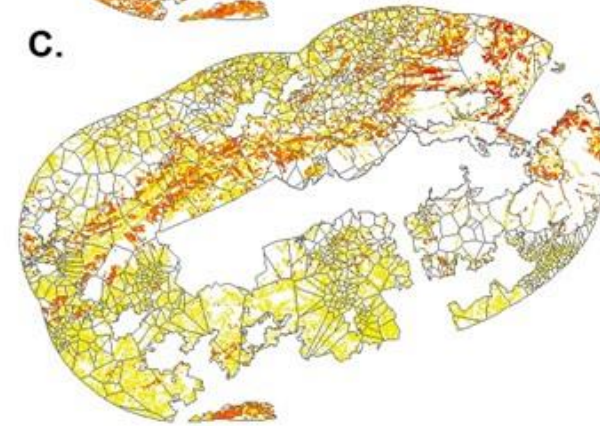
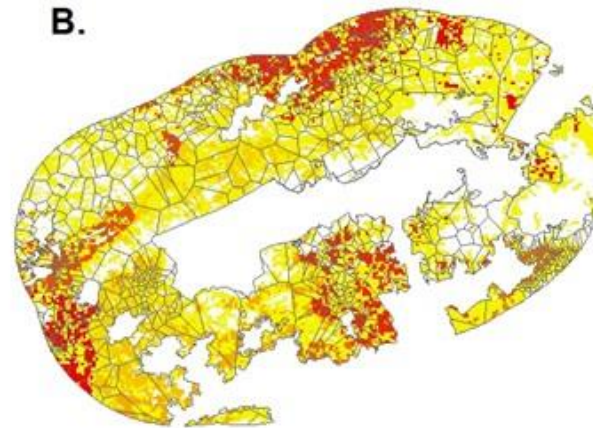
Reserva Legal



Passo 4. Quantificando os custos de transição

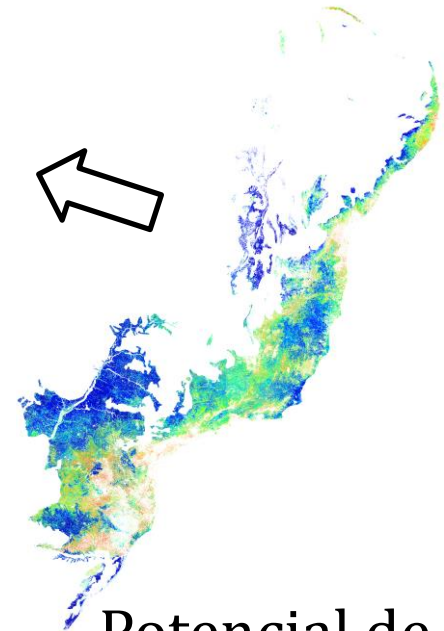
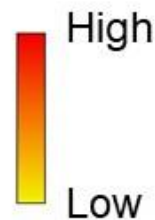
Oportunidade

Implementação



Transição

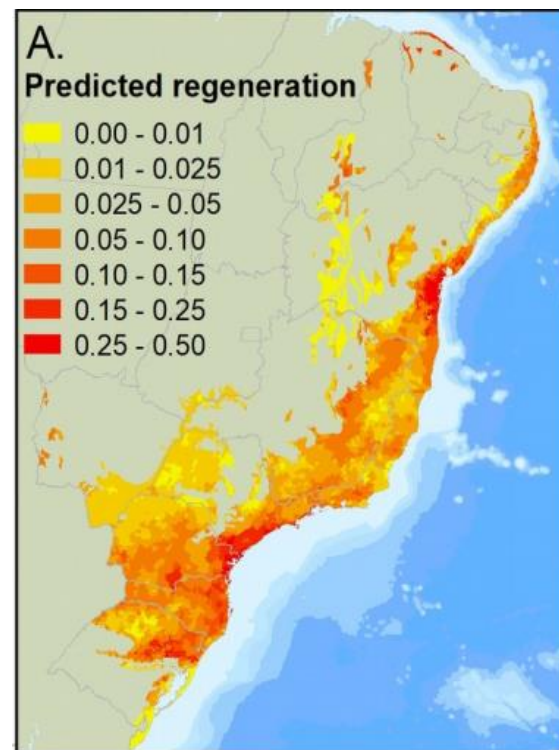
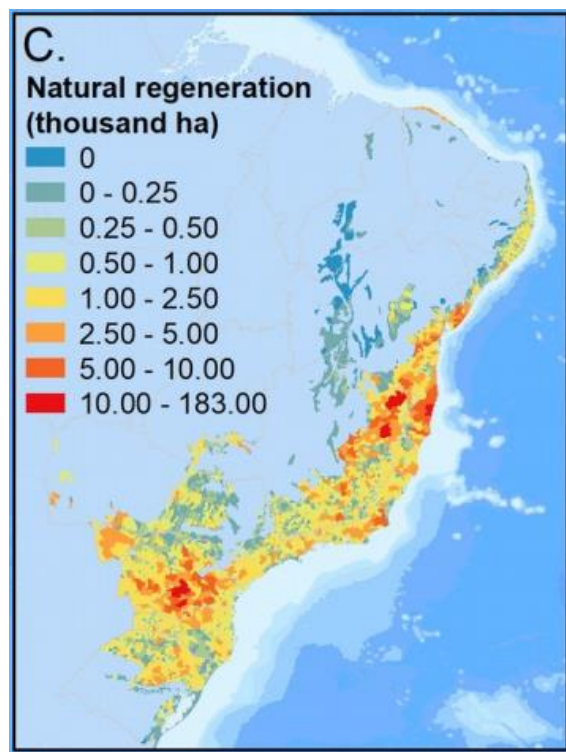
0 4,75 9,5 19 Kilometers



Potencial de regeneração natural

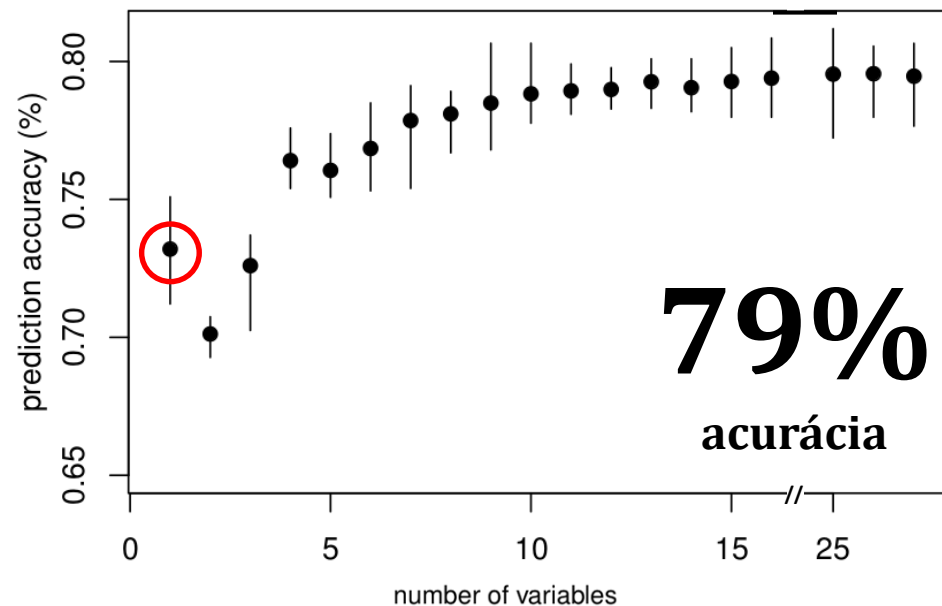
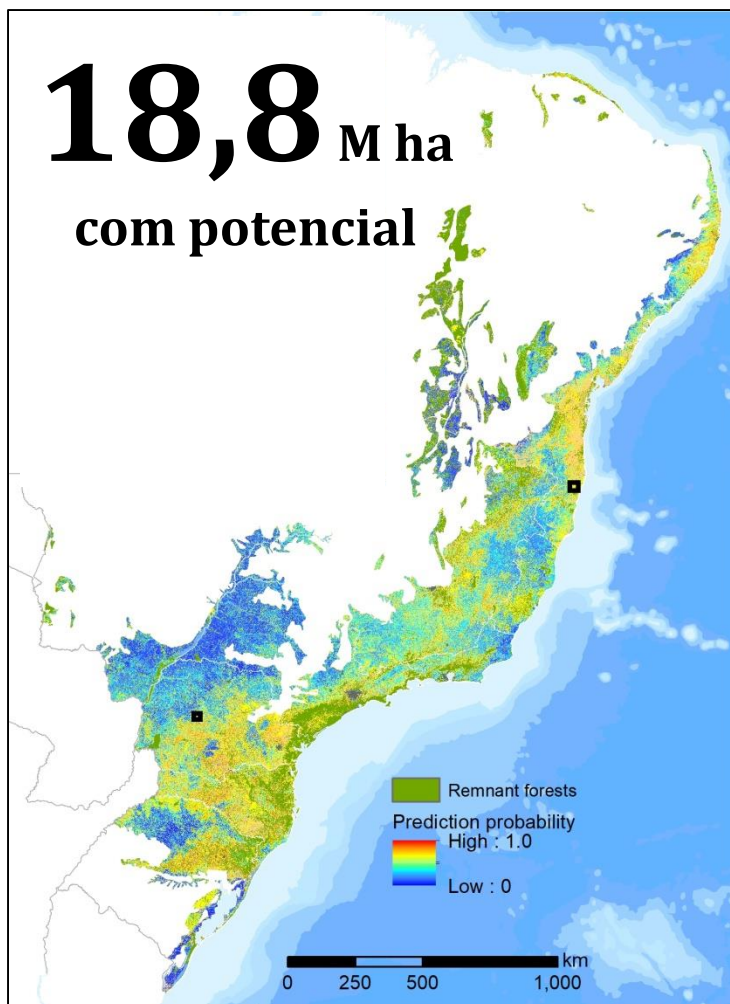
Regeneração natural

2,7 M ha
entre 1996-2015



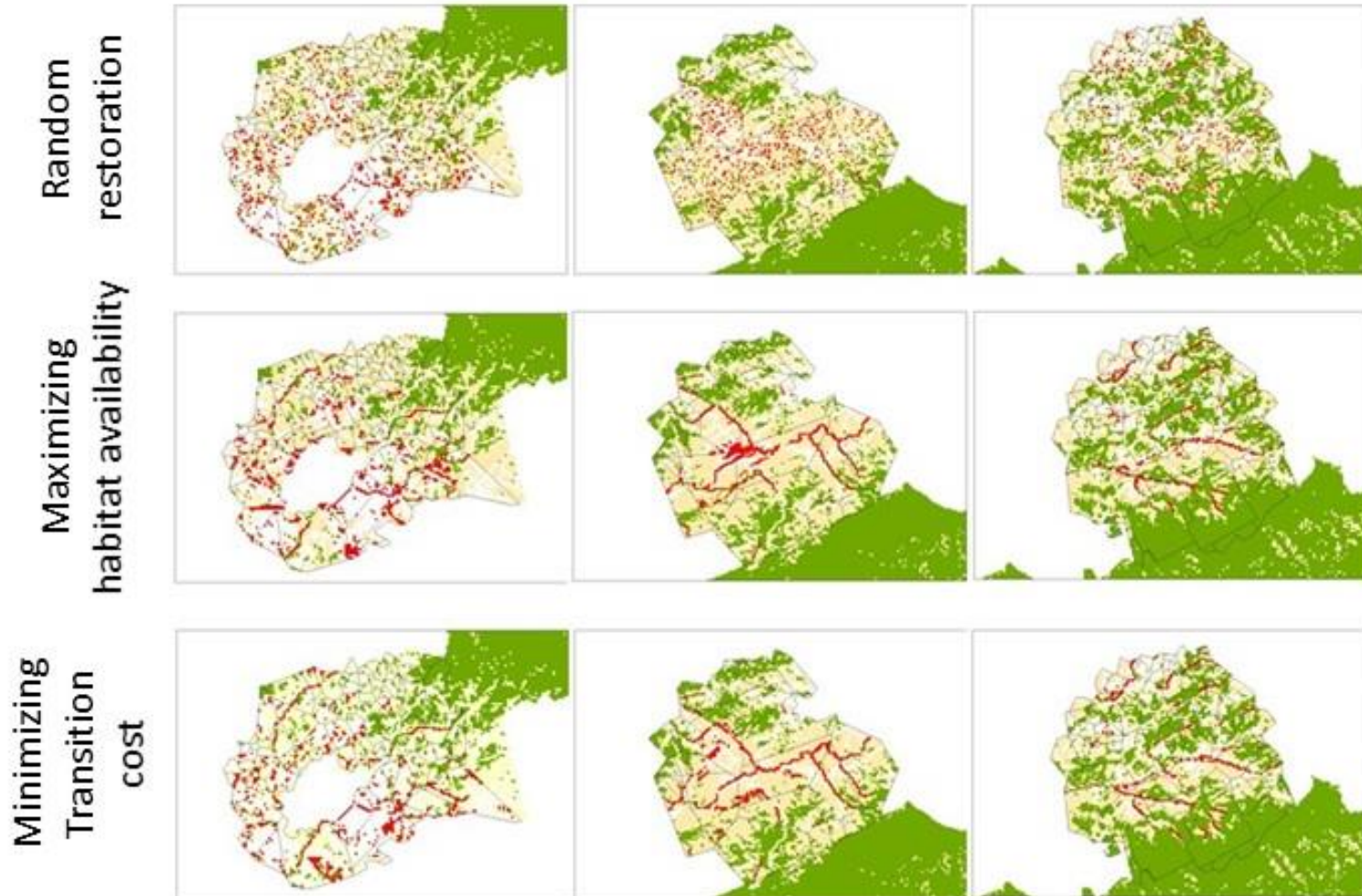
2,8 M ha
nos próximos 20 anos

Regeneração natural



90% até 192 m
de um remanescente
florestal

Passos 6 e 7. Priorização e simulação

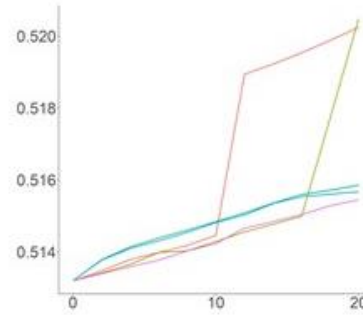
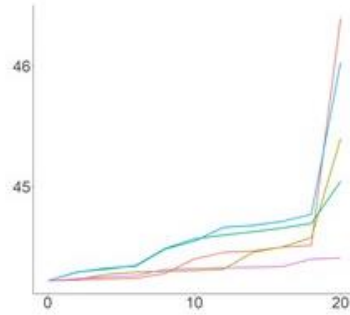
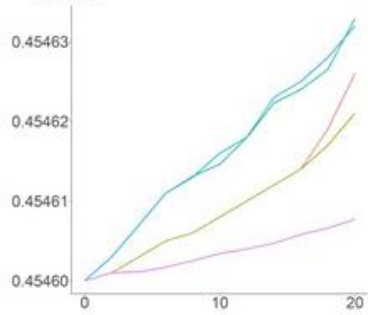


13%

24%

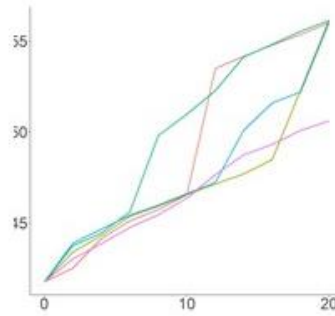
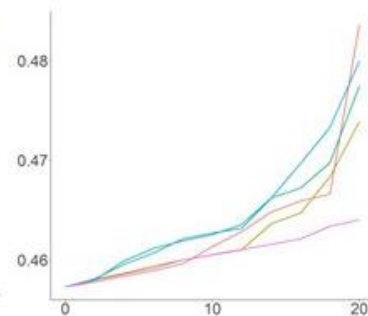
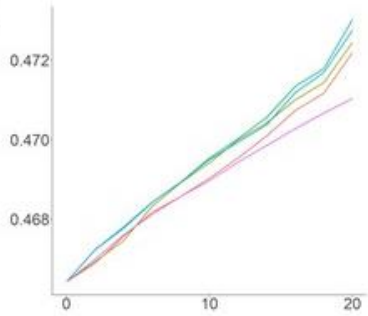
44%

10m



Habitat availability (I/C)

700m



Minimizing opportunity cost (—)

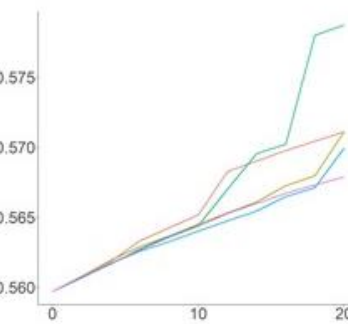
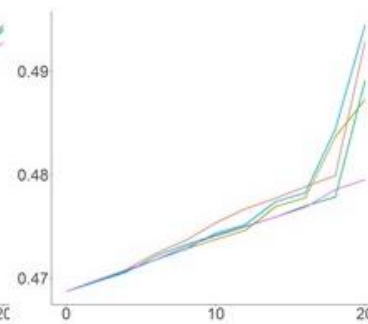
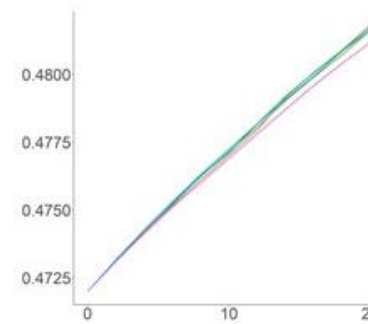
Minimizing transition cost (—)

Maximizing habitat availability (—)

Maximizing habitat availability while minimizing cost (—)

Random restoration (—)

3000m



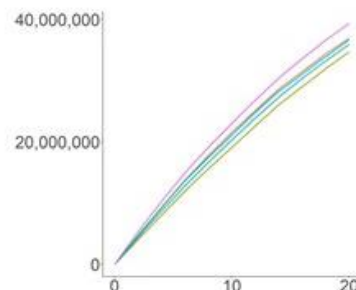
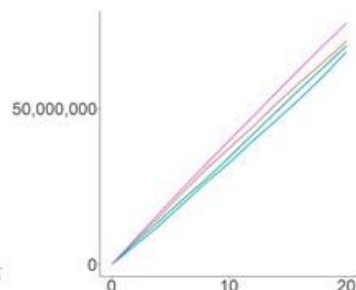
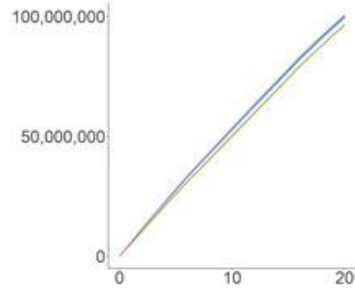
Time (years)

13%

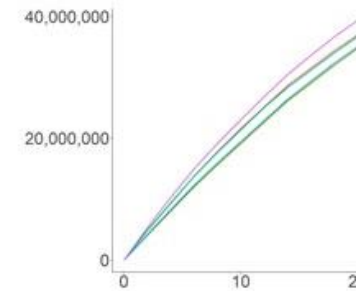
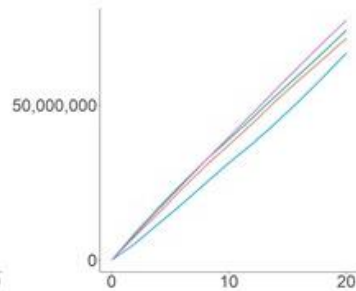
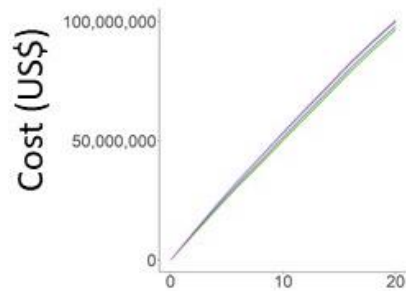
24%

44%

10m

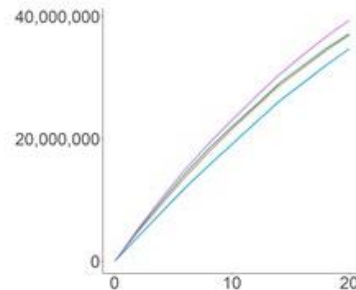
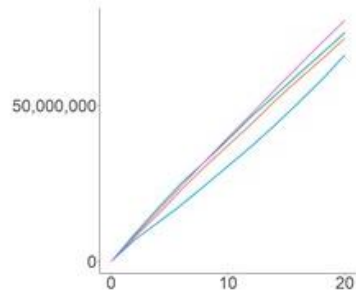
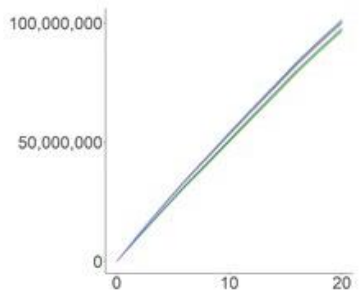


700m

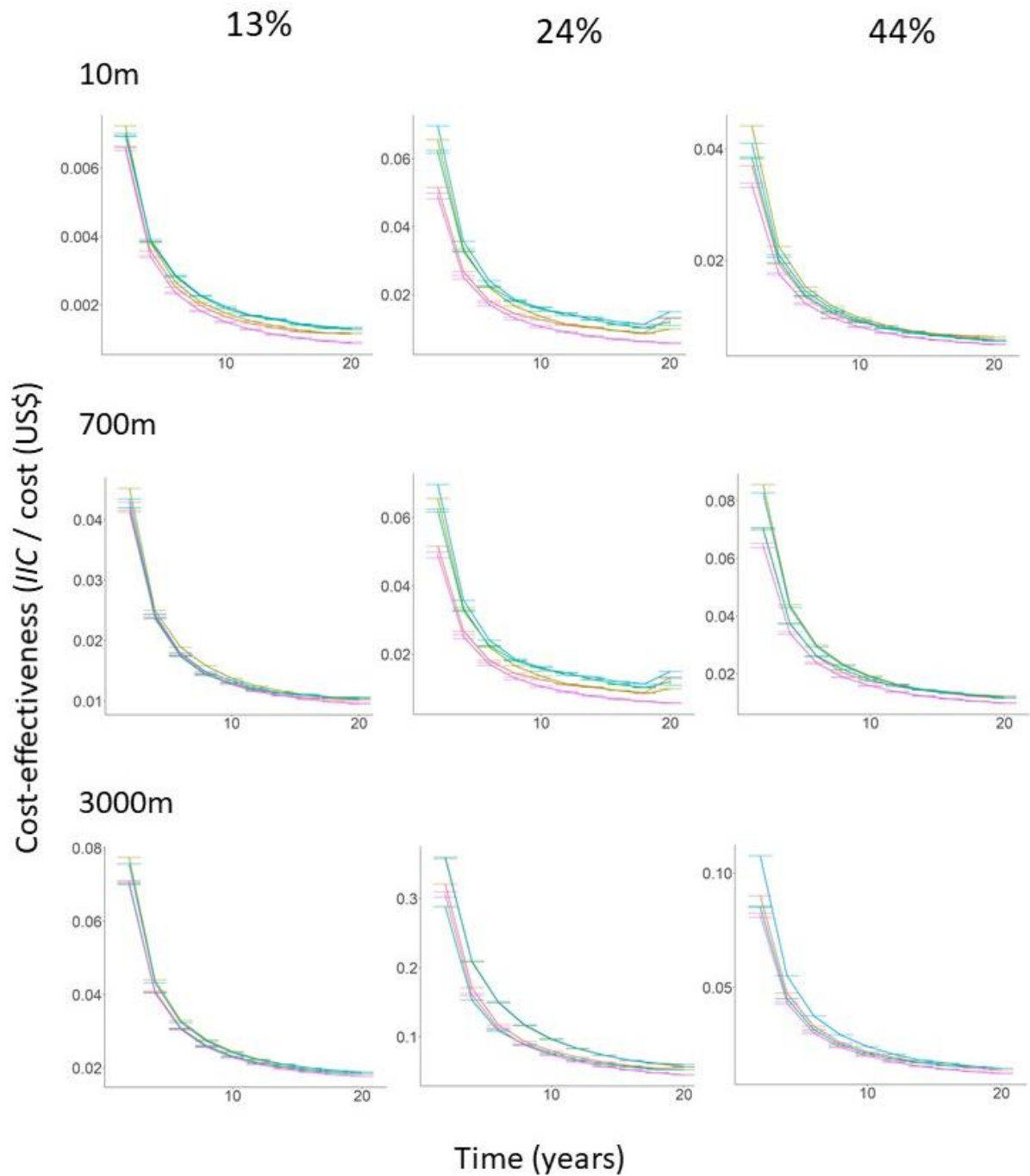


- Minimizing opportunity cost (—)
- Minimizing transition cost (—)
- Maximizing habitat availability (—)
- Maximizing habitat availability while minimizing cost (—)
- Random restoration (—)

3000m



Time (years)



| | Increment in habitat availability | | | Cost-effectiveness (IIS/Cost) | | |
|---------------------------------------|-----------------------------------|--------|--------|-------------------------------|--------|--------|
| A. Landscape with 13% of forest cover | 10m | 700m | 3000m | 10m | 700m | 3000m |
| Min. Opp. Cost | 60.09 | 132.26 | 155.78 | .00120 | .01012 | .01841 |
| Min. Trans. Cost | 48.51 | 129.32 | 153.64 | .00115 | .01033 | .01887 |
| Max. Hab. | 76.96 | 145.59 | 159.52 | .00131 | .01060 | .01850 |
| Max. Hab./Min. Trans. Cost | 75.60 | 134.93 | 155.61 | .00133 | .01039 | .01868 |
| Random | 18.31 | 120.39 | 147.83 | .00088 | .00957 | .01777 |
| | | | | | | |
| B. Landscape with 24% of forest cover | | | | | | |
| Min. Opp. Cost | 141.78 | 98.23 | 66.65 | .01324 | .04174 | .05586 |
| Min. Trans. Cost | 71.65 | 72.78 | 59.24 | .01070 | .04099 | .06003 |
| Max. Hab. | 119.49 | 99.27 | 59.77 | .01186 | .04096 | .05219 |
| Max. Hab./Min. Trans. Cost | 159.82 | 90.03 | 67.46 | .01519 | .04227 | .05919 |
| Random | 12.97 | 42.11 | 47.23 | .00572 | .02740 | .04511 |
| | | | | | | |
| C. Landscape with 44% of forest cover | | | | | | |
| Min. Opp. Cost | 21.37 | 26.86 | 18.88 | .15317 | .30318 | .36199 |
| Min. Trans. Cost | 22.62 | 26.87 | 18.89 | .16467 | .32263 | .38521 |
| Max. Hab. | 16.46 | 27.03 | 26.61 | .14743 | .30452 | .38671 |
| Max. Hab./Min. Trans. Cost | 12.80 | 26.48 | 18.66 | .14931 | .31702 | .37895 |
| Random | 8.93 | 16.82 | 14.34 | .12903 | .26203 | .32677 |

Mensagens

- Estratégias que buscam aumentar a conectividade antecipam os benefícios para biodiversidade, mesmo com altas restrições
- A estratégia mais custo efetiva depende de ambos - quantidade de floresta na paisagem e espécie de interesse
- Priorização espacial podem aumentar a custo-efetividade das iniciativas de restauração
- A custo-efetividade diminui ao longo do tempo