Alterações climáticas e biodiversidade

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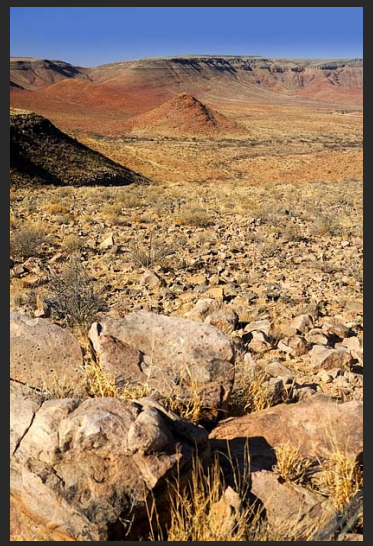
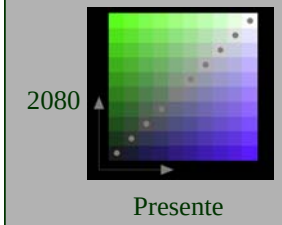
Impactes globais das alterações climáticas



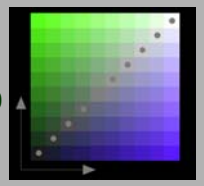


Alterações na distribuição potencial de espécies a nível Europeu

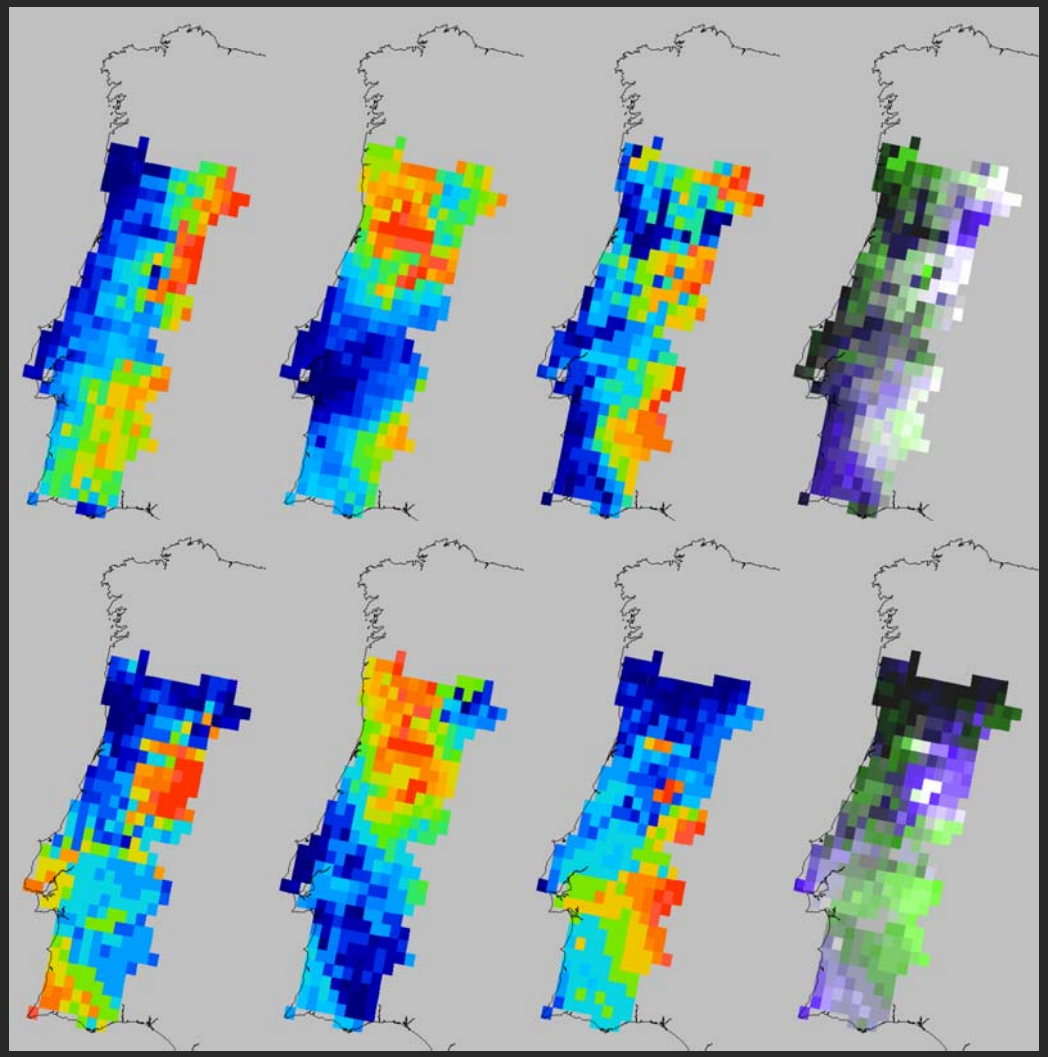
383 aves

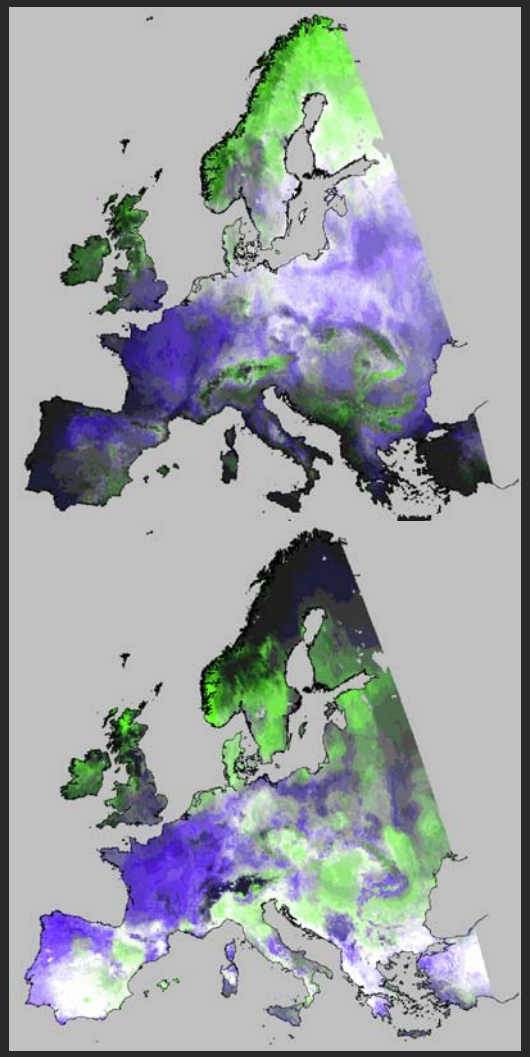
108 anfíbios e répteis

Presente | 2050 | 2080 | Risco 2080



Alterações na distribuição potencial de espécies em Portugal





Extinction risk from climate change

Chris D. Thomas[1], Alison Cameron[1], Rhys E. Green[2], Michel Bakkenes[3], Linda J. Beaumont[4], Yvonne C. Collingham[5], Barend F. N. Erasmus[6], Marinez Ferreira d[7], Lesley Hughes[8], Br[9], Guy F. Midgley[10,11], L[12], A. Townsend Peter[13]

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[6]Animal, Plant and I Private Bag 3, WITS
[7]Centro de Referênci Barão Geraldo, CEP:
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[11]Climate Change Re Botanical Institute, P
[12]Unidad Occidente, México, México, D.F.
[13]Natural History M Kansas, Lawrence, Ka
[14]Cooperative Resear Biology, James Cook

* Present address: UNEP W CB3 0DL, UK

Climate change c shifts in the dist been implicated tions of species' assess extinction the Earth's terre which the estim law relationship the basis of mid- 15–37% of speci 'committed to ex and two dispersa scenarios produ extinction (~18

Dangers of crying wolf over risk of extinctions

brief co

Biodiversity conservation

Uncertainty in predictions of extinction risk

Arising from: C. D. Thomas *et al. Nature* **427,** 145–148 (2004)

Thomas *et al.*[1] model species-distribution responses to a range of climate-warming scenarios and use a novel application of the species–area relationship to estimate that 15–37% of modelled species in various regions of the world will be committed to extinction by 2050. Although we acknowledge the efforts that they make to measure the uncertainties associated with different climate scenarios, species' dispersal abilities and *z* values (predictions ranged from 5.6% to 78.6% extinctions), we find that two additional sources of uncertainty may substantially increase the variability in predictions.

First, the study by Thomas *et al.* is based on projections of species-range shifts from a variety of niche-based models supplied by different contributors using different modelling methods. For instance, generalized linear models were used to model plants in Europe, whereas generalized additive models were used for *Protea* species in South Africa, and genetic algorithms for taxa in Mexico. Although niche-based models are all based on the same principle, they use a variety of assumptions, algorithms and parameterizations. Therefore, combining assessments from different models is likely to introduce further unquantified model effects.

With no dispersal. By contrast, when using method (3) and only one model (generalized linear model), the range for predictions across the three climate scenarios was reduced: a range of 2.7–3.6% with universal dispersal, and 8.2–10.0% with no dispersal.

Second, although Thomas *et al.*[1] show (their Table 4) that their models are highly sensitive to the 'slope' (*z* value) of the species–area relationship, neither their models nor ours yet provide any means of quantifying the uncertainty arising from the simplistic link between proportionate reduction in area and extinction likelihood. Cases of long-term species persistence in remarkably small ranges (for example, on mountain tops and oceanic or land-bridge islands[3]) demonstrate that, although range reduction is a key driver of species decline, we need to investigate the scale-sensitivity of model outputs and translate projections of range reduction into projections of species losses.

These uncertainties mean that the range of possible extinction risks arising from climate change may be even wider than that reported by Thomas *et al.*[1].

Wilfried Thuiller*†, Miguel B. Araújo‡, Richard G. Pearson‡, Robert J. Whittaker‡, Lluís Brotons*, Sandra Lavorel§

extinct. No reports specified the full range of uncertainty (5.6% to 78.6% of the species studied would be committed to future extinction) and only two correctly stated that most species would become extinct well after 2050 (full details of our survey can be seen at www.geog.ox.ac.uk/research/biodiversity/pubs/index.html).

Politicians and conservationists repeated these statements. The European Union's environment commissioner Margot Wallström, for example, commented on "the recently published study that suggests global warming could wipe out a third of the planet's species by 2050".

How can the conservation community prevent a repeat of such wide-scale media misrepresentation? Practical steps might be for high-profile journals to restrict press releases in the climate-change arena to research papers that present clear and unequivocal findings, and for scientists to write to newspaper editors and politicians to clarify misleading media articles. More generally, any institute, journal or individual involved in putting out a press release has a responsibility to ensure that it is both accurate and perfectly clear.

Richard J. Ladle, Paul Jepson, Miguel B. Araújo, Robert J. Whittaker

Biodiversity Research Group, School of Geography & the Environment, Oxford University, Mansfield Road, Oxford OX1 3PS, UK

Incerteza é inerente ao processo de decisão

A decisão é: A verdade é:	Acreditar	Não acreditar
Deus existe	VERDADEIRO POSITIVO Consequência: *Paraíso*	FALSO NEGATIVO Consequência: *Inferno*
Deus não existe	FALSO POSITIVO Consequência: *Ter fé em vão*	VERDADEIRO NEGATIVO Consequência: *Ateísmo*

"Se Deus não existe, nada perdemos se nele não acreditarmos, mas se ele existe, podemos perder tudo se nele não acreditarmos... Não temos outra alternativa se não arriscar..."

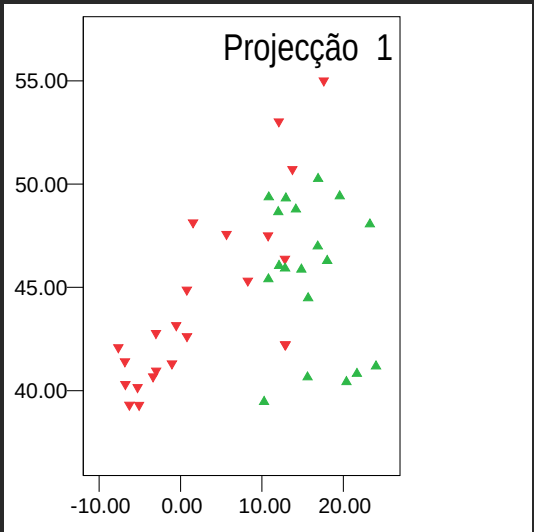
Blaise Pascal in 'Pensées', 1656-1658

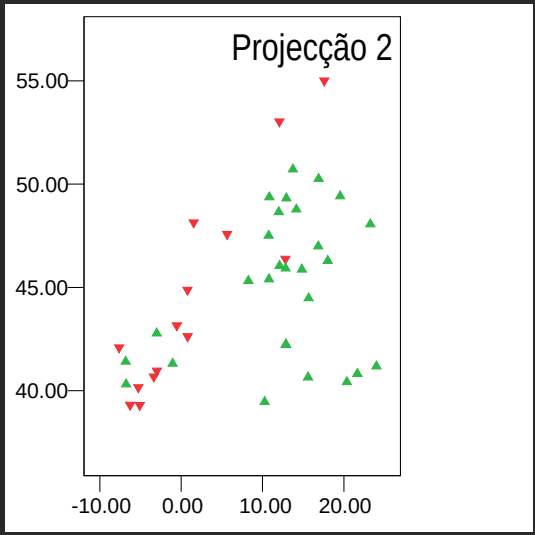
Incerteza sobre alterações climáticas e seus impactes

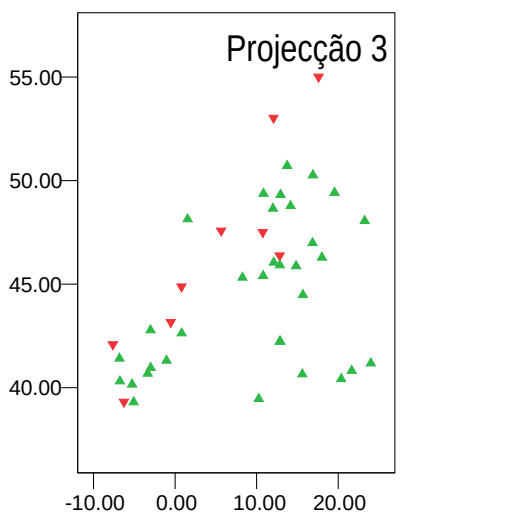
A decisão é: A verdade é:	Acreditar	Não acreditar
Alterações climáticas existem	VERDADEIRO POSITIVO Consequência: *Agir, minimizar impactes*	FALSO NEGATIVO Consequência: *Não agir, sofrer impactes*
Alterações climáticas não existem	FALSO POSITIVO Consequência: *agir, não sofrer impactes*	VERDADEIRO NEGATIVO Consequência: não agir, não sofrer impactes

Gestão da incerteza:

"Não assumir projecções literalmente mas considerá-las seriamente"

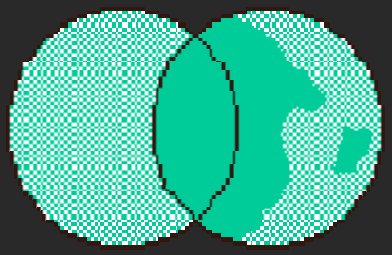






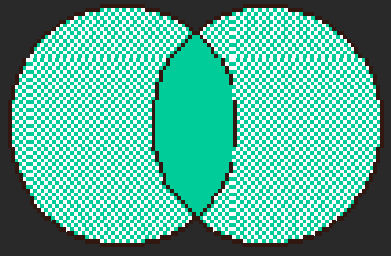
Desafios à sobrevivência num mundo em mudança

Mudança

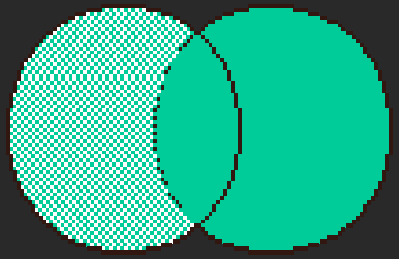


- Dispersão
- Estabelecimento
- Reprodução

Sem dispersão

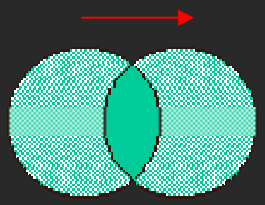


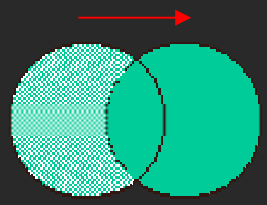
Com dispersão

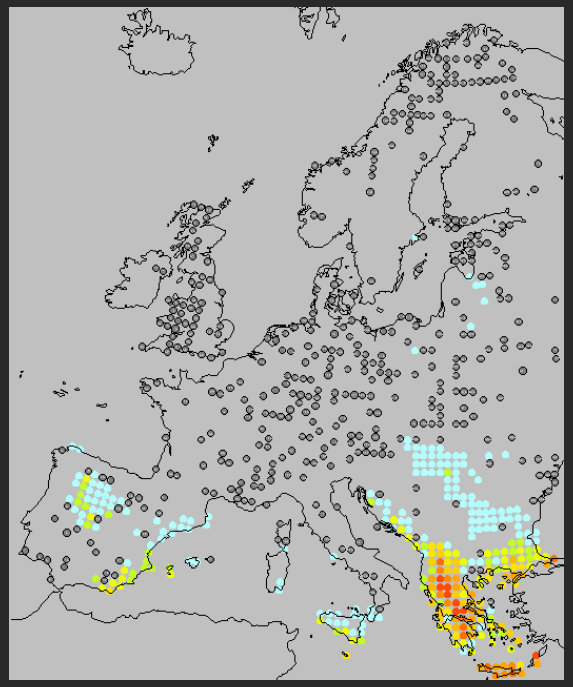


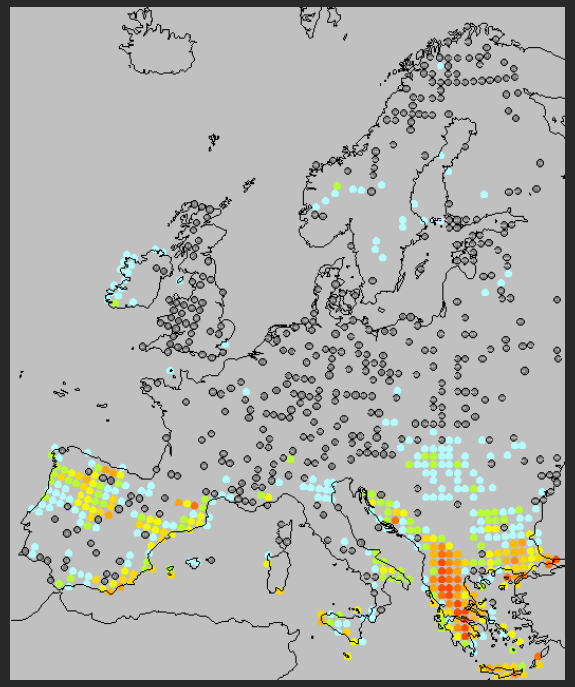
Eficácia das áreas protegidas

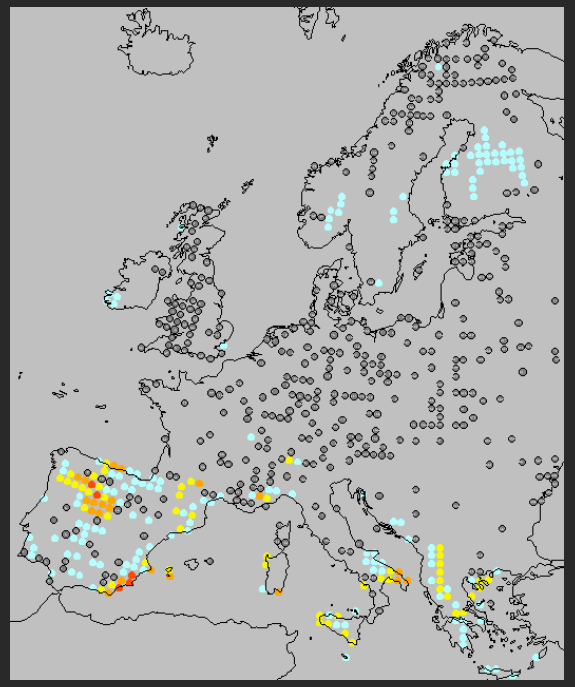
Quando expostas a alterações climáticas (exemplo com 1200 plantas da flora Europeia)











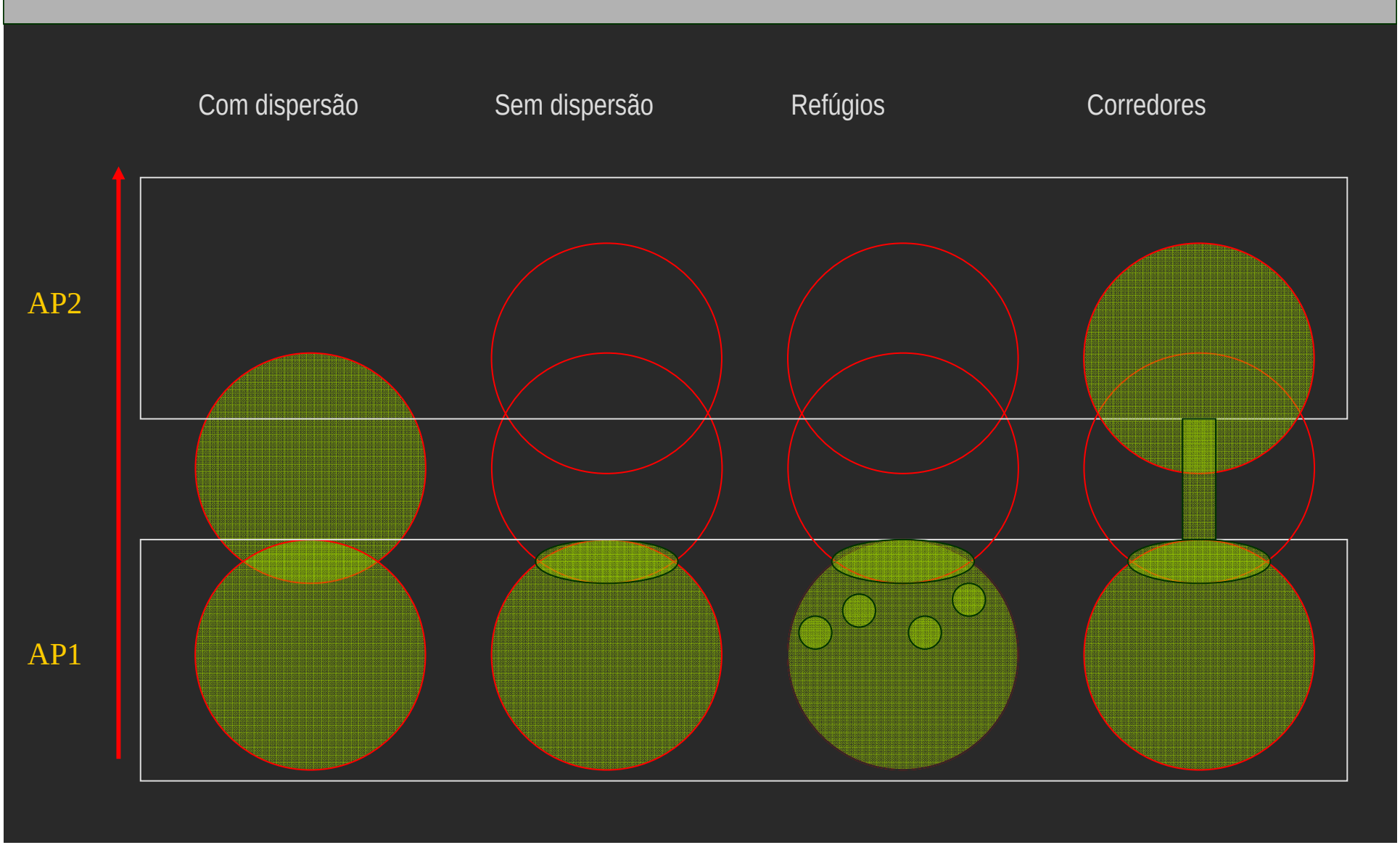
3% das espécies
fora das APs

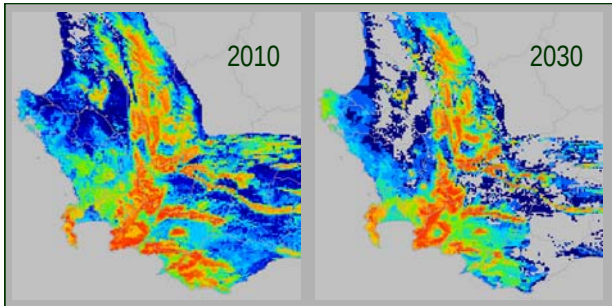
14% das espécies
fora das APs

7% das espécies
fora das APs

Novos paradigmas de gestão das áreas protegidas

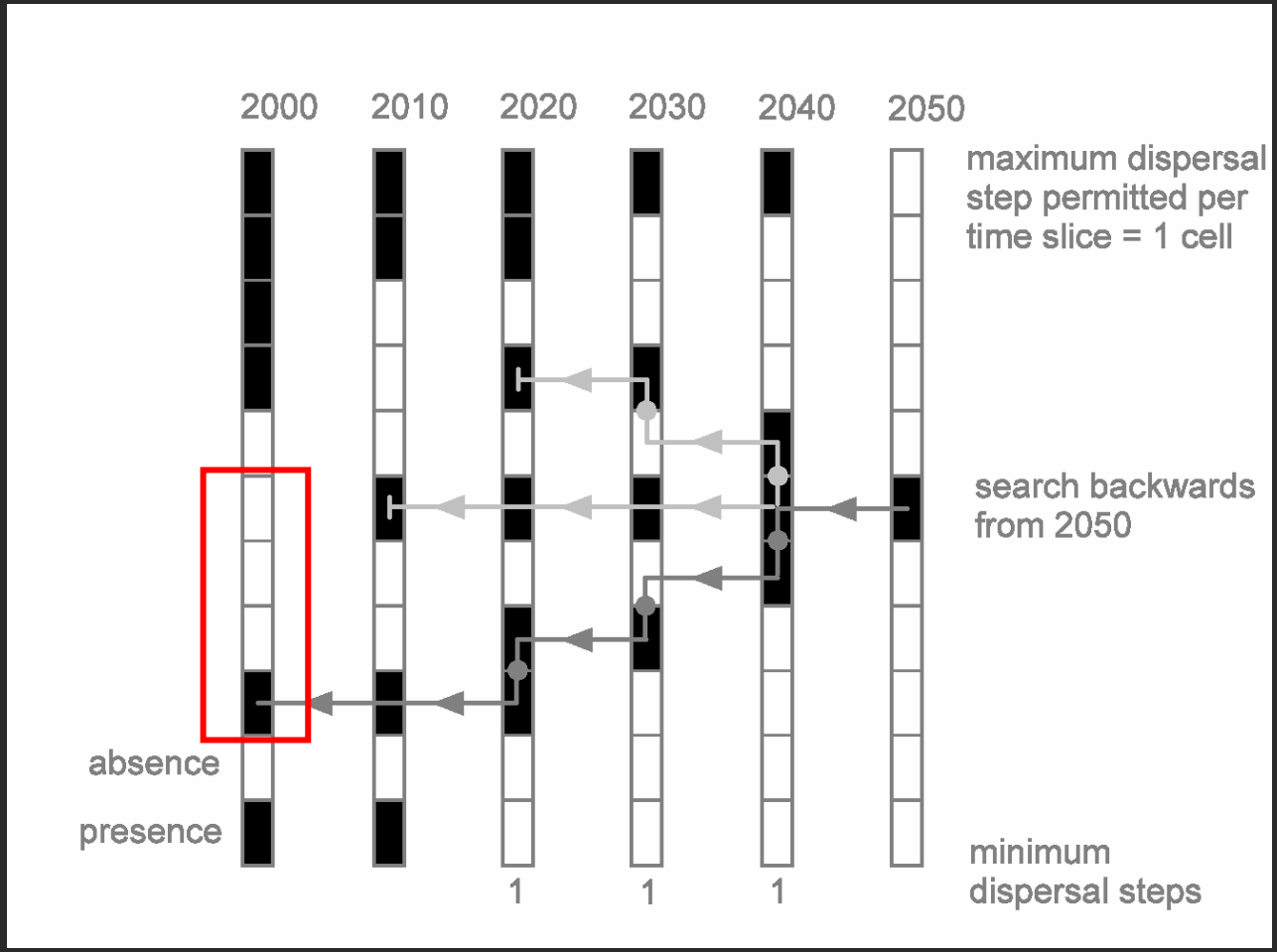
Quando expostas a alterações climáticas

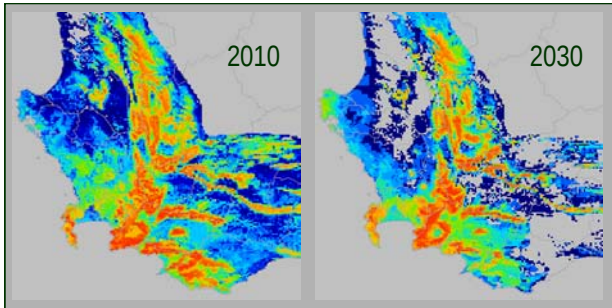




Identificação de corredores

Região do Cabo, África do Sul





Planeamento para a biodiversidade com alterações climáticas

Áreas protegidas

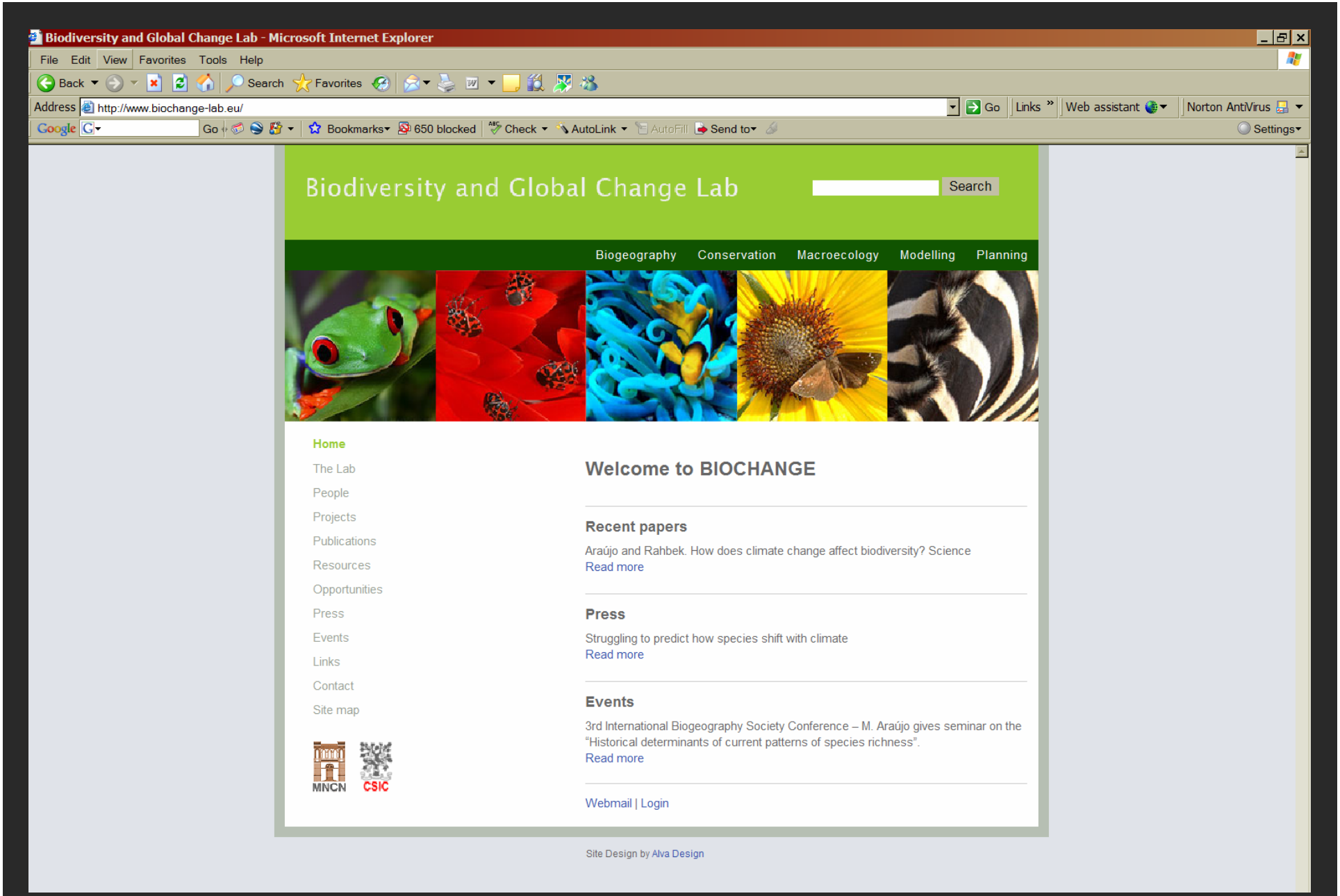
Novas áreas insubstituíveis

Áreas contíguas flexíveis

Outras áreas flexíveis

E Portugal?

Os vales encaixados dos rios, as regiões montanhosas e costeiras criam situações de refúgio e permitem a dispersão de espécies



Mais informação em: www.biochange-lab.eu