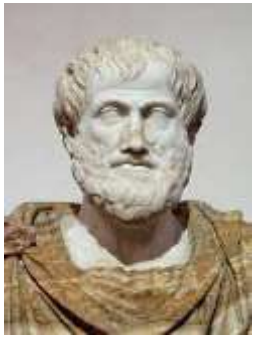
Os grandes padrões mundiais de distribuição dos seres vivos

A busca de padrões de distribuição geográfica dos seres vivos faz parte da história da Biogeografia:

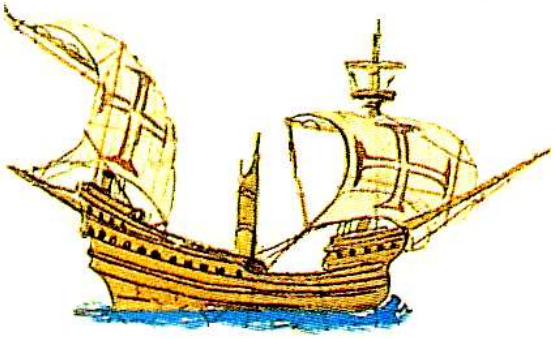
- Aristóteles (384 a.C.-322 a.C.), em seu estudos sobre peixes, já tinha observado espécies e seus hábitats ou “lugares naturais” (GANIAS et al., 2017);

Silurus aristotelis Garman (Siluridae)

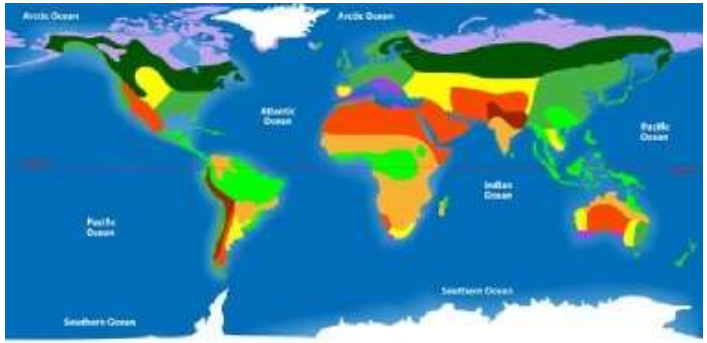


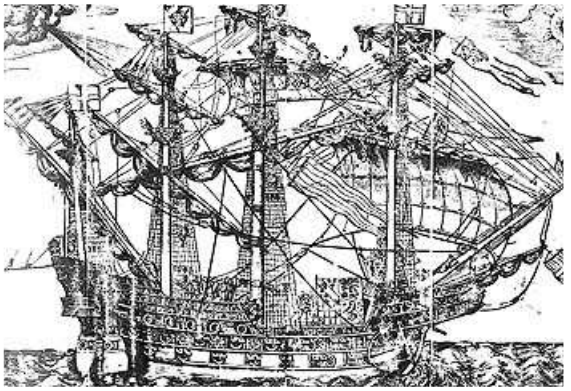
exploradores do século XVIII

grandes regiões da terra



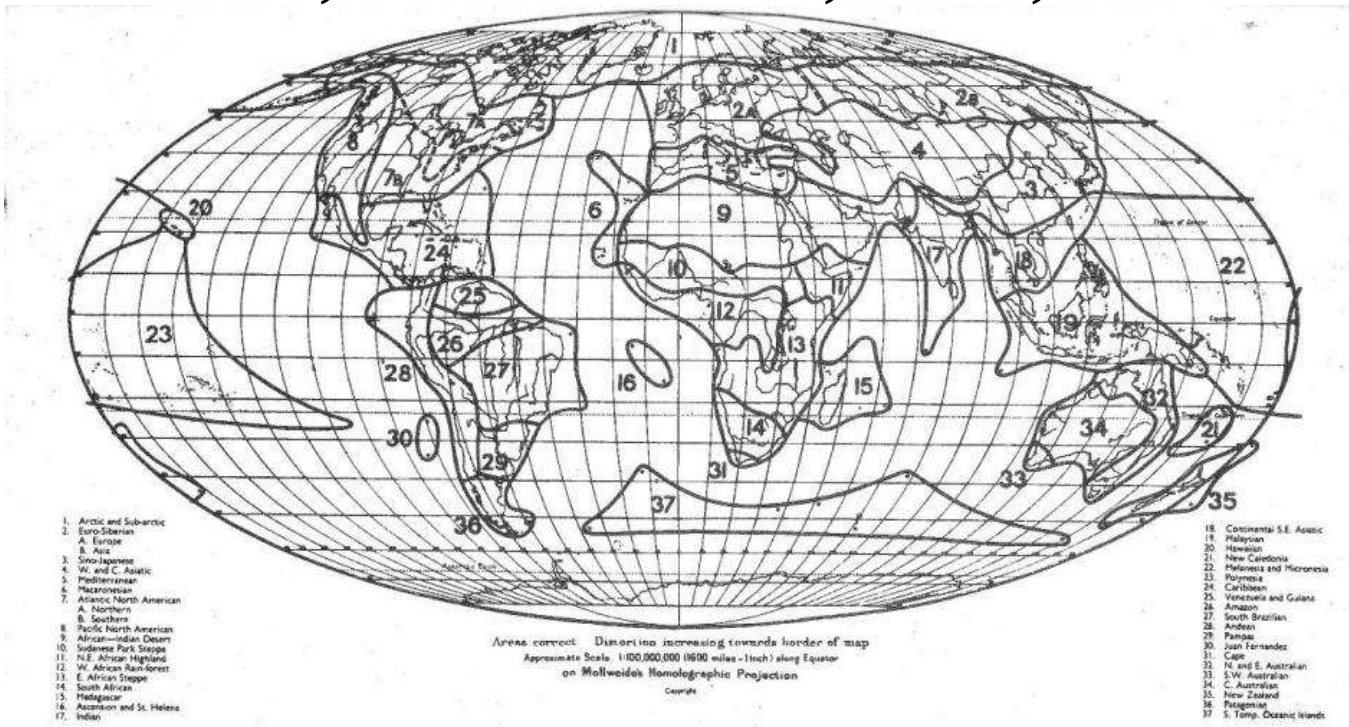
Fauna e flora em continentes diferentes





Classificação de Formações

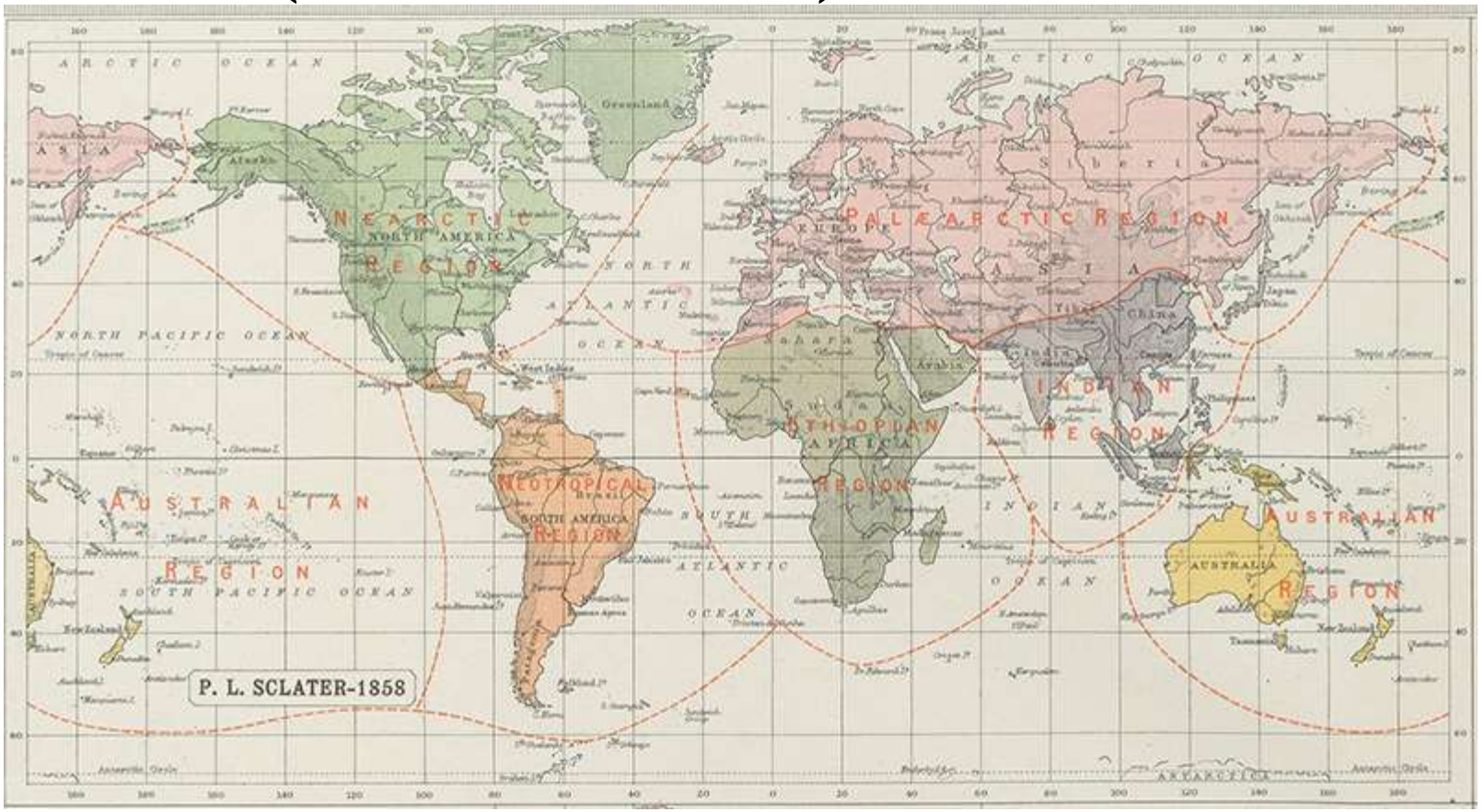
- Augustin Pyrame de Candolle (1778-1841) apresentou um proposta de regionalização dos padrões de distribuição de plantas (ROMARIZ, 2008), num artigo de 1820, dividindo o mundo em 20 grandes “regiões botânicas”, acrescentando mais 20 regiões em outra obra de 1838 (NELSON, 1978; PAPAVERO et. al. 2013; GALLO et al., 2021;



- Joakim Frederik Schouw (1789-1852) produziu em 1850, em seu atlas, as primeiras cartas fitogeográficas, com 25 regiões (TROPPMAIR, 1989);

https://commons.wikimedia.org/wiki/File:Geographical_Distribution_of_Plants_1850_Alexander_Keith_Johnston.png

- Philip Lutley Sclater (1829-1913) propôs as regiões zoogeográficas em 1858, baseada em aves e orientadas principalmente de acordo com os meridianos (COX et al., 2019);

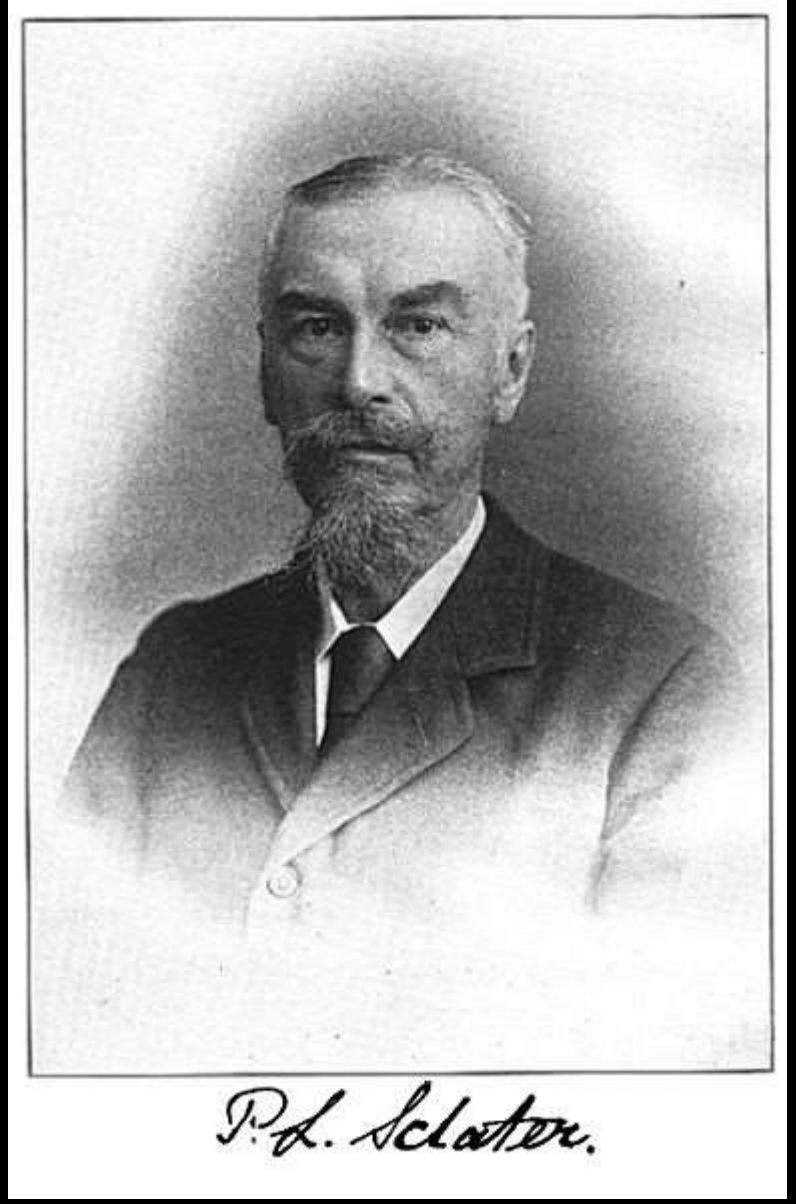


Proceedings of the Linnean Society, 1858

https://www.lindahall.org/wp-content/uploads/sites/5/2021/03/bartholomew1.jpg

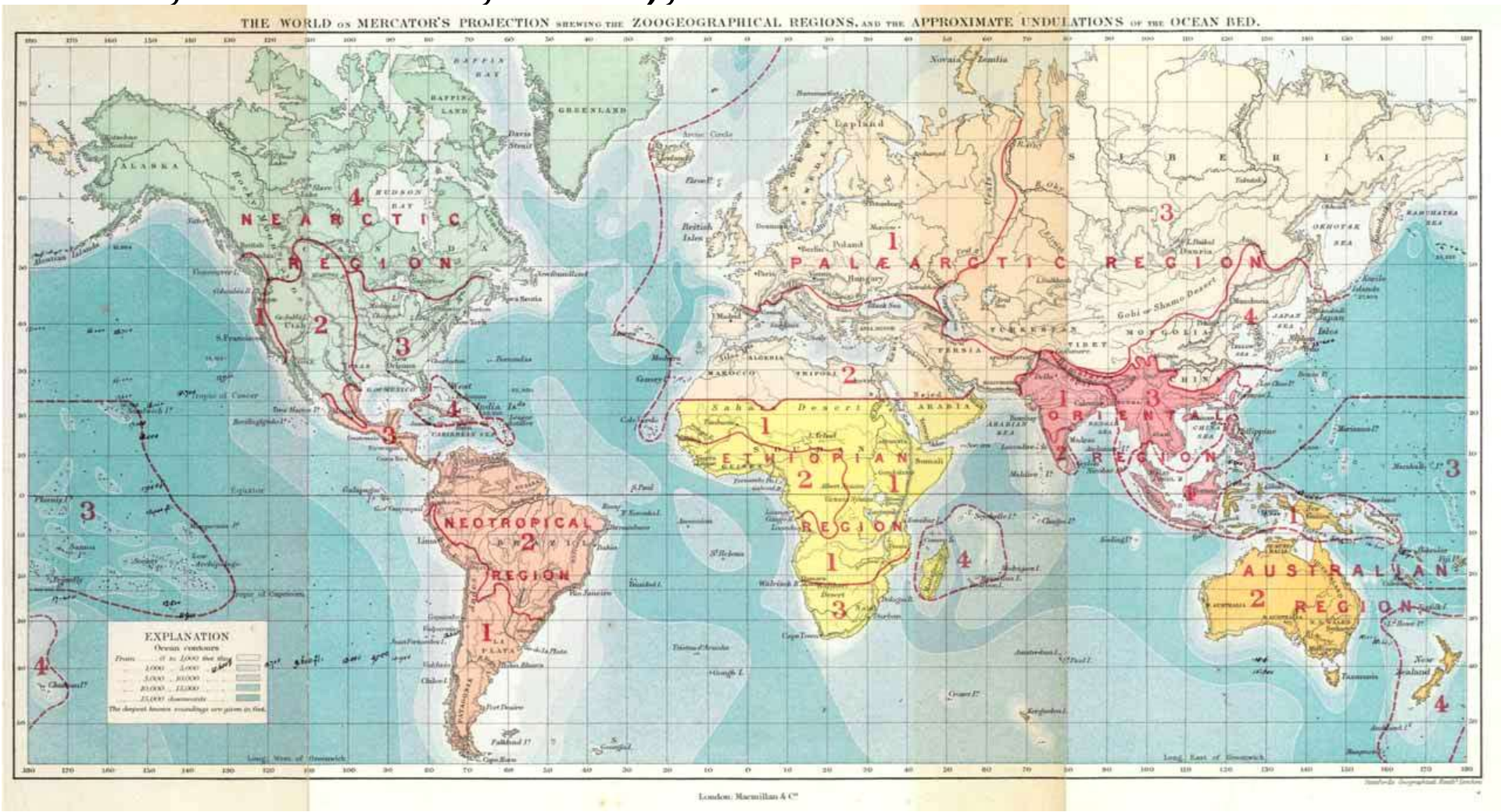
Lêmure-de-Sclater
Eulemur flavifrons

Faisão-de-Sclater
Lophophorus sclateri

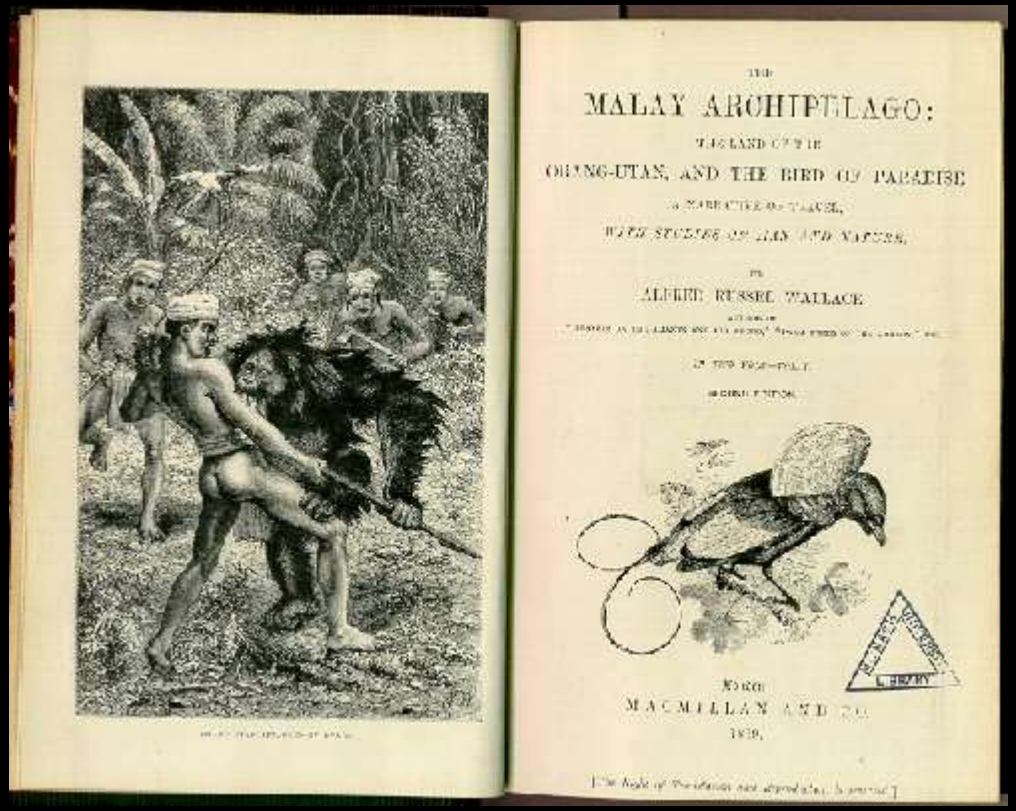


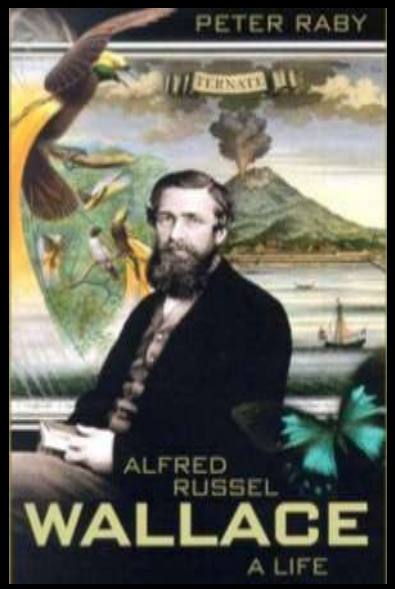
Philip Lutley Sclater
1829-1913

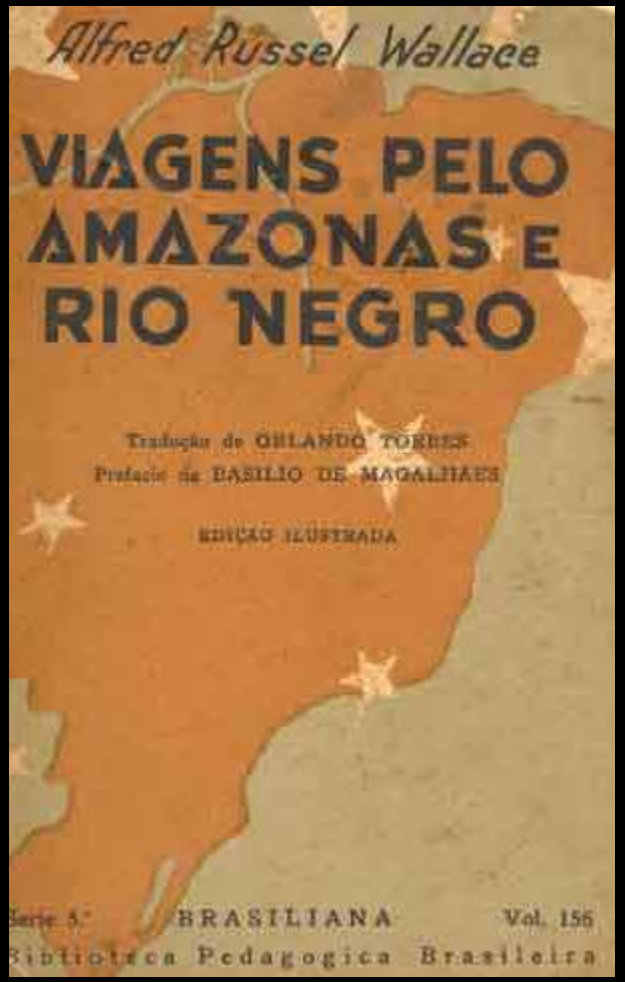
- Alfred Russel Wallace (1823-1913) expandiu a proposta de Sclater em 1876, incluindo a distribuição de mamíferos e outros vertebrados (BROWN et al., 2010; COX et al., 2019);



http://wallacefund.info/


THE
MALAY ARCHIPELAGO:
ORANG-UTAN, AND THE BIRD OF PARADISE
ALFRED RUSSEL WALLACE
MACMILLAN AND CO.


PETER RABY
TERNATE
ALFRED
RUSSEL
WALLACE
A LIFE


Alfred Russel Wallace
VIAGENS PELO AMAZONAS E RIO NEGRO
Tradução de ORLANDO TORRES
Prefacio de BASILIO DE MAGALHÃES
EDIÇÃO ILUSTRADA
Serie 5.ª BRASILIANA Vol. 156
Bibliotheca Pedagogica Brasileira

- Adolf Engler (1844-1930) identificou quatro grandes regiões florais ou domínios florísticos em 1879 (COX et al., 2019).

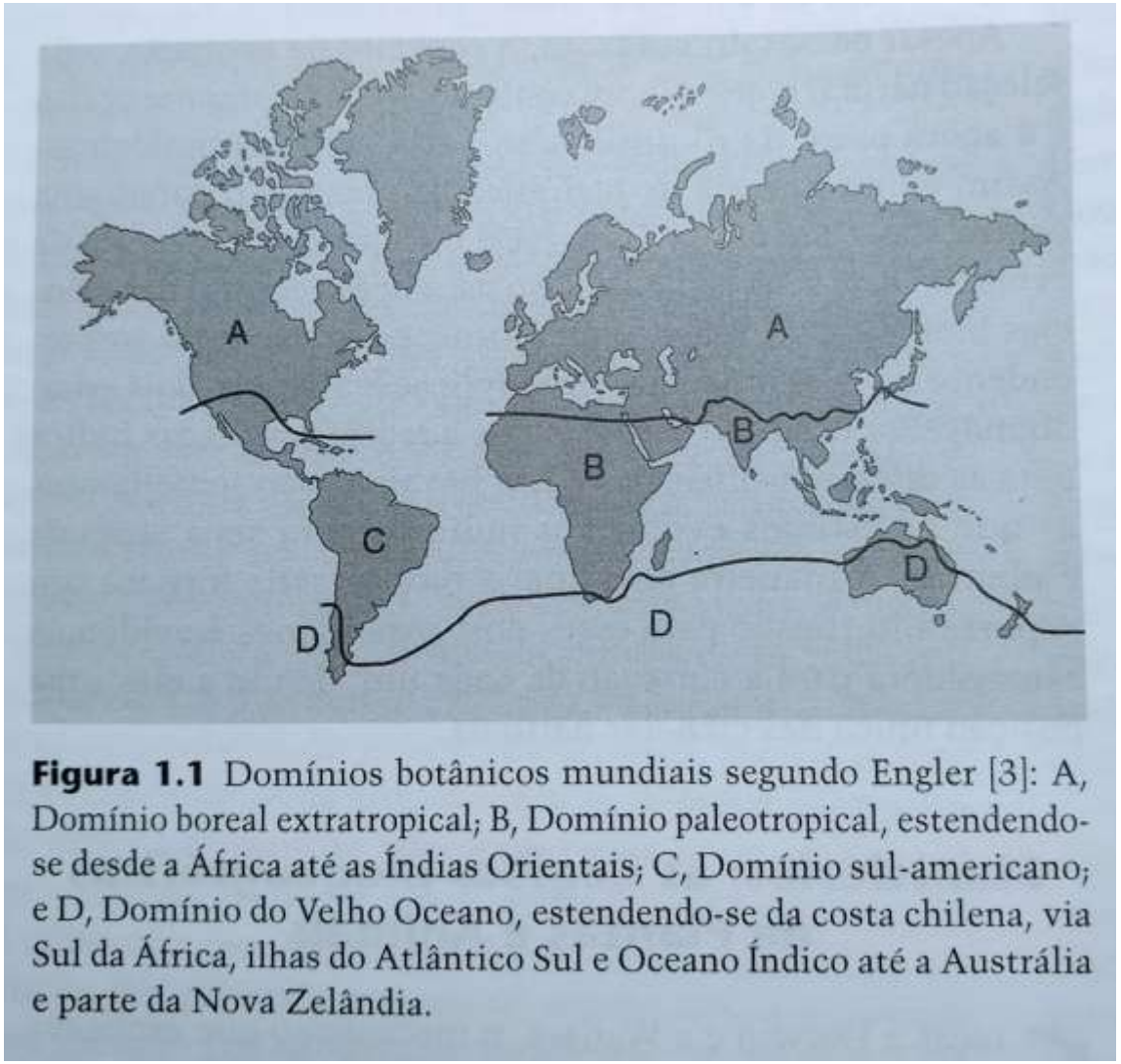


Figura 1.1 Domínios botânicos mundiais segundo Engler [3]: A, Domínio boreal extratropical; B, Domínio paleotropical, estendendo-se desde a África até as Índias Orientais; C, Domínio sul-americano; e D, Domínio do Velho Oceano, estendendo-se da costa chilena, via Sul da África, ilhas do Atlântico Sul e Oceano Índico até a Austrália e parte da Nova Zelândia.

Huggett (2011) resumiu os principais conceitos dessa regionalização:

- Regiões em biogeografia são unidades espaciais de diferentes escalas que transportam conjuntos comparativamente distintos de animais e plantas;

- Elementos faunísticos e florísticos são grupos de espécies que compartilham um padrão semelhante de distribuição geográfica;

- O provincianismo biogeográfico é a tendência de diferentes regiões geográficas para abrigar espécies, gêneros ou famílias únicas;

- O endemismo é a condição de ser único para uma região geográfica específica, como uma massa continental, uma região biogeográfica ou um hábitat;

- As zonas de transição biogeográficas são regiões onde uma região biogeográfica pode ser classificada também como outra, contrastando com fronteiras mais definitivas.

Biogeografia Sistemática ou Neo-wallaceana

Oriunda da necessidade de organizar os conhecimentos sobre a distribuição geográfica dos componentes da Biosfera. A regionalização de Sclater e Wallace são suas bases iniciais.

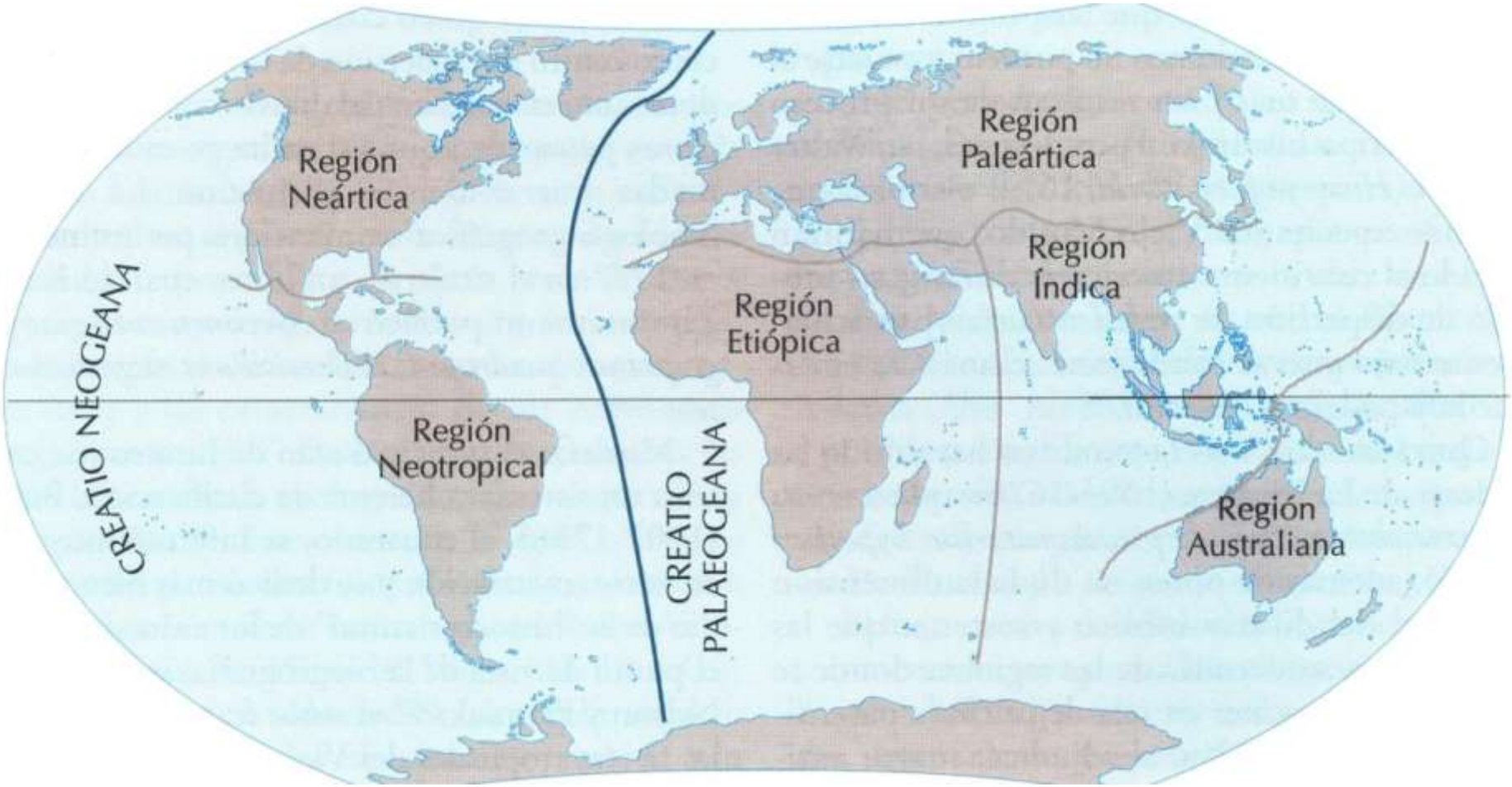
“Mediante um processo de análise comparativa de áreas de distribuição, a biogeografia tem produzido diferentes sistemas de classificação da superfície terrestre.” (ZUNINI; ZULLINI, 2003)

ENFOQUE SISTEMÁTICO-DESCRITIVO

Regiões Biogeográficas

São as regiões zoogeográficas e as fitogeográficas. Há algumas divergências entre autores quanto às suas divisões e às suas áreas ou zonas de transição.

São formadas pelas unidades biogeográficas regionais, limitadas pelas fronteiras que resultam da sobreposição de linhas fronteiriças de muitos grupos taxonômicos diferentes (animais e plantas). Tais grupos são endêmicos ou exclusivos para cada unidade (ZUNINI; ZULLINI, 2003).

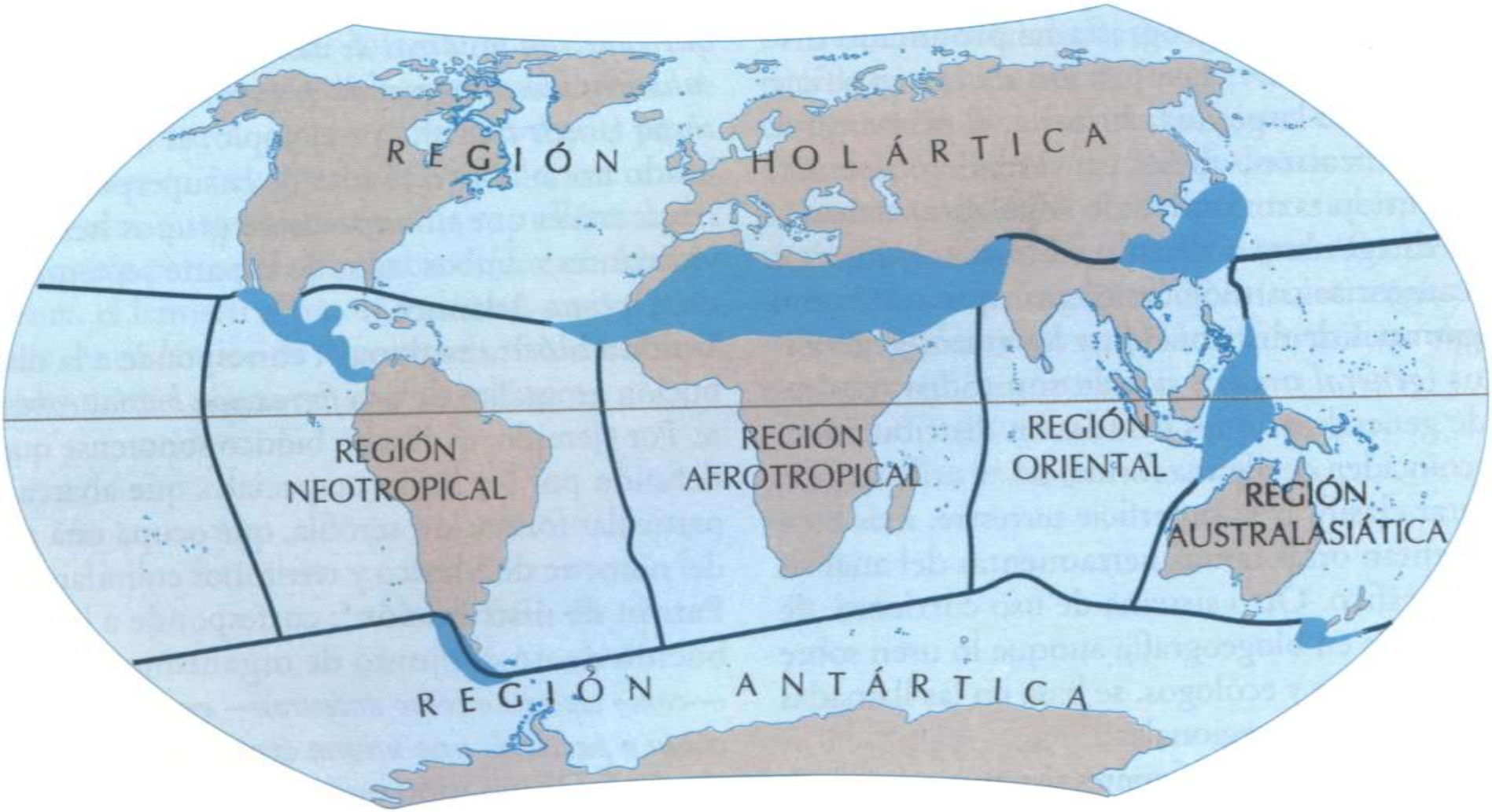


(ZUNINI; ZULLINI, 2003)

Regiões Zoogeográficas

As Regiões Zoogeográficas, também chamadas de Reinos Zoogeográficos, que podem ser subdivididas em sub-regiões, são as seguintes:

- **Holoártica**: Neoártica e Paleoártica;
- **Neotropical**;
- **Afrotropical**, **Etíope** ou **Paleotropical**: Etíope e Malgache;
- **Oriental**: alguns autores, como Müller (1979) consideram-na como sub-região da anterior;
- **Australiana** ou **Australasiática**: Australiana, Oceânica, Neozelandesa e Havaiana;
- **Antártica** ou **Arquinótica**.



Regiões zoogeográficas (Zunino & Zullini, 2003).

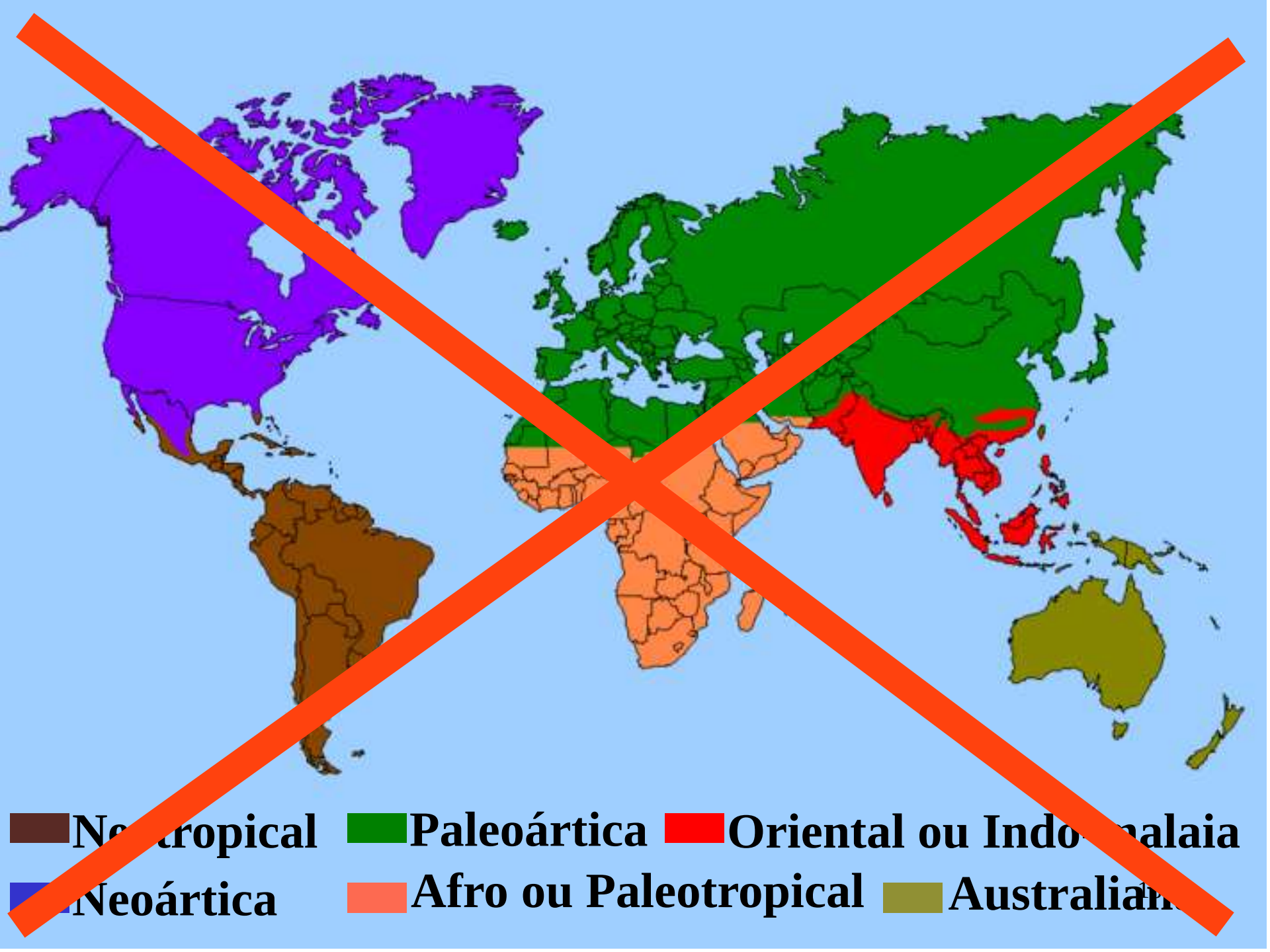
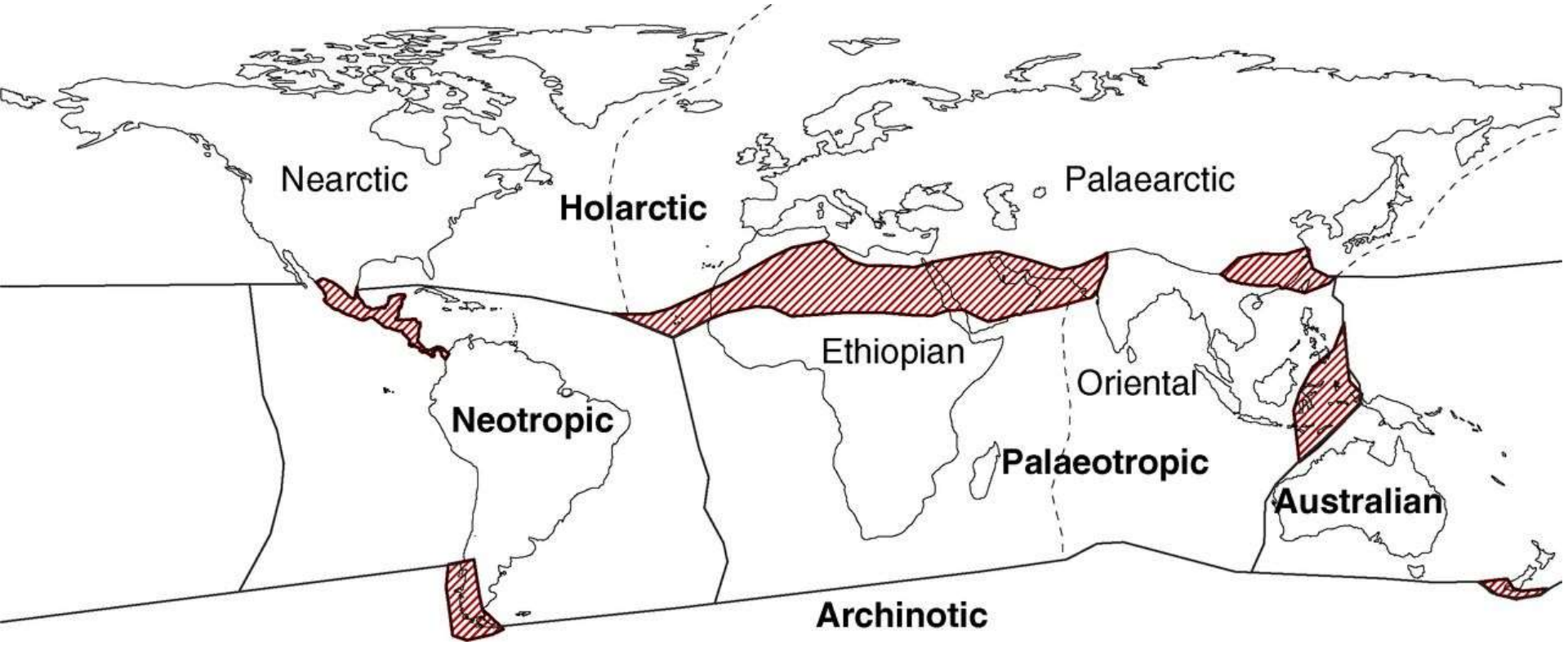

Neotropical
Paleoártica
Oriental ou Indomalaia
Neoártica
Afro ou Paleotropical
Australian

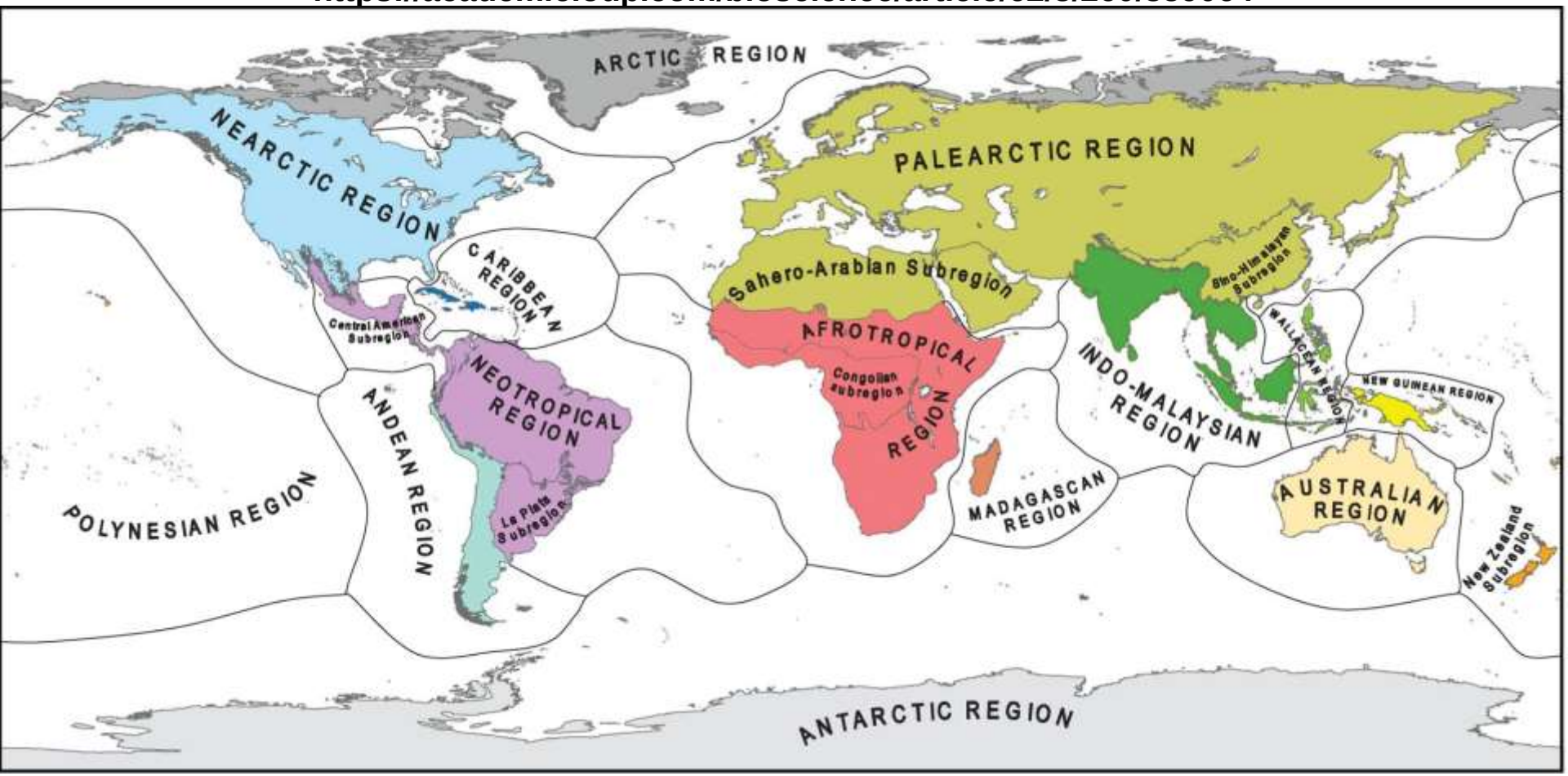
Fig. 1 Map of animal realms with broad biogeographical transition zones highlighted in red [redrawn and modified from (9)].Realm names in bold were taken from the original map; nonbold names have the rank of regions and were taken from an accompanying table.



Holger Kreft, and Walter Jetz Science 2013;341:343

https://www.science.org/doi/10.1126/science.1237471

Vertebrate zoogeographical regions and subregions as derived from the four analyses presented in figure 1 (see the text for details).
https://academic.oup.com/bioscience/article/62/3/260/359064

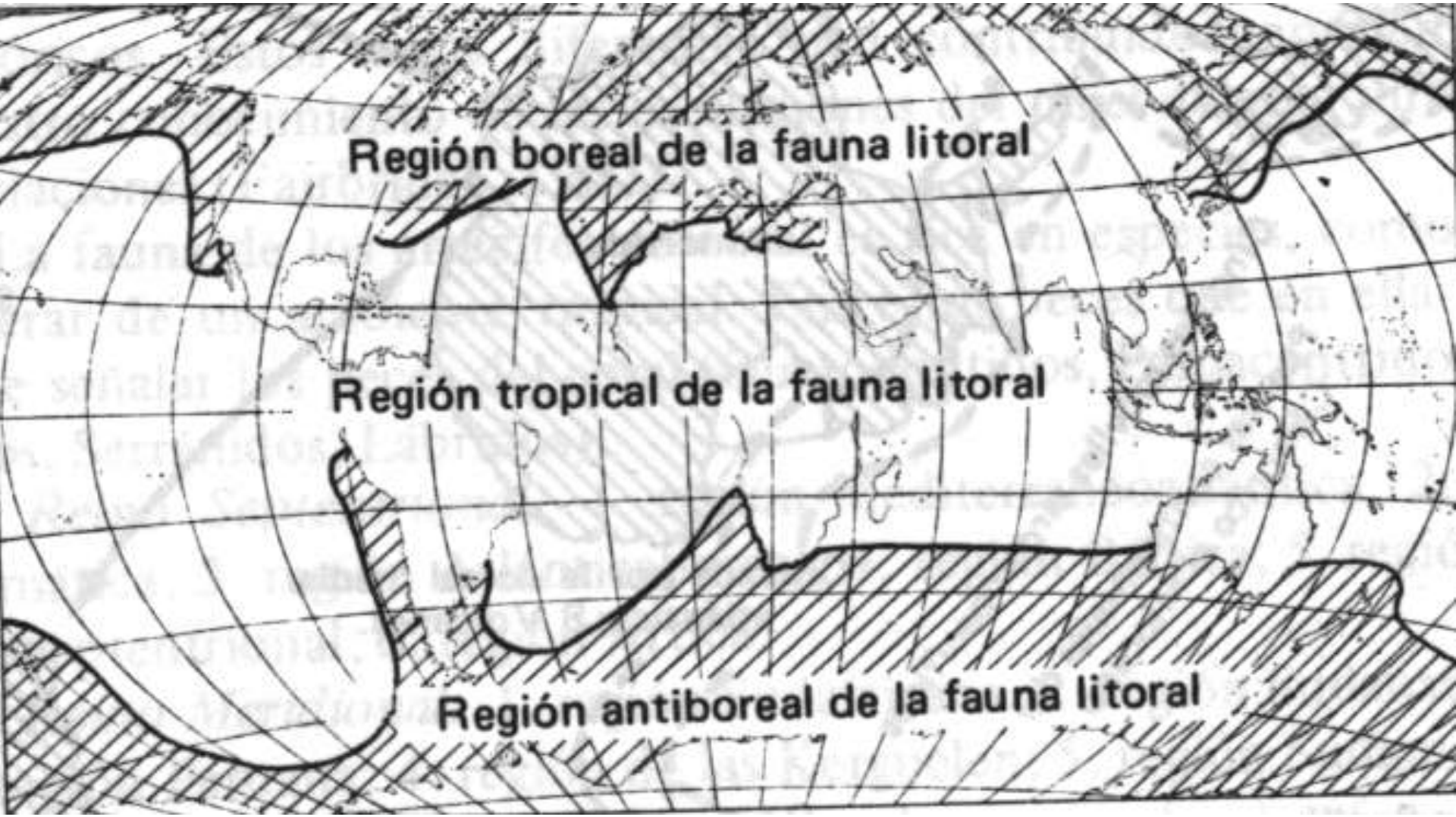


Şerban Procheş, and Syd Ramdhani BioScience
2012;62:260-270

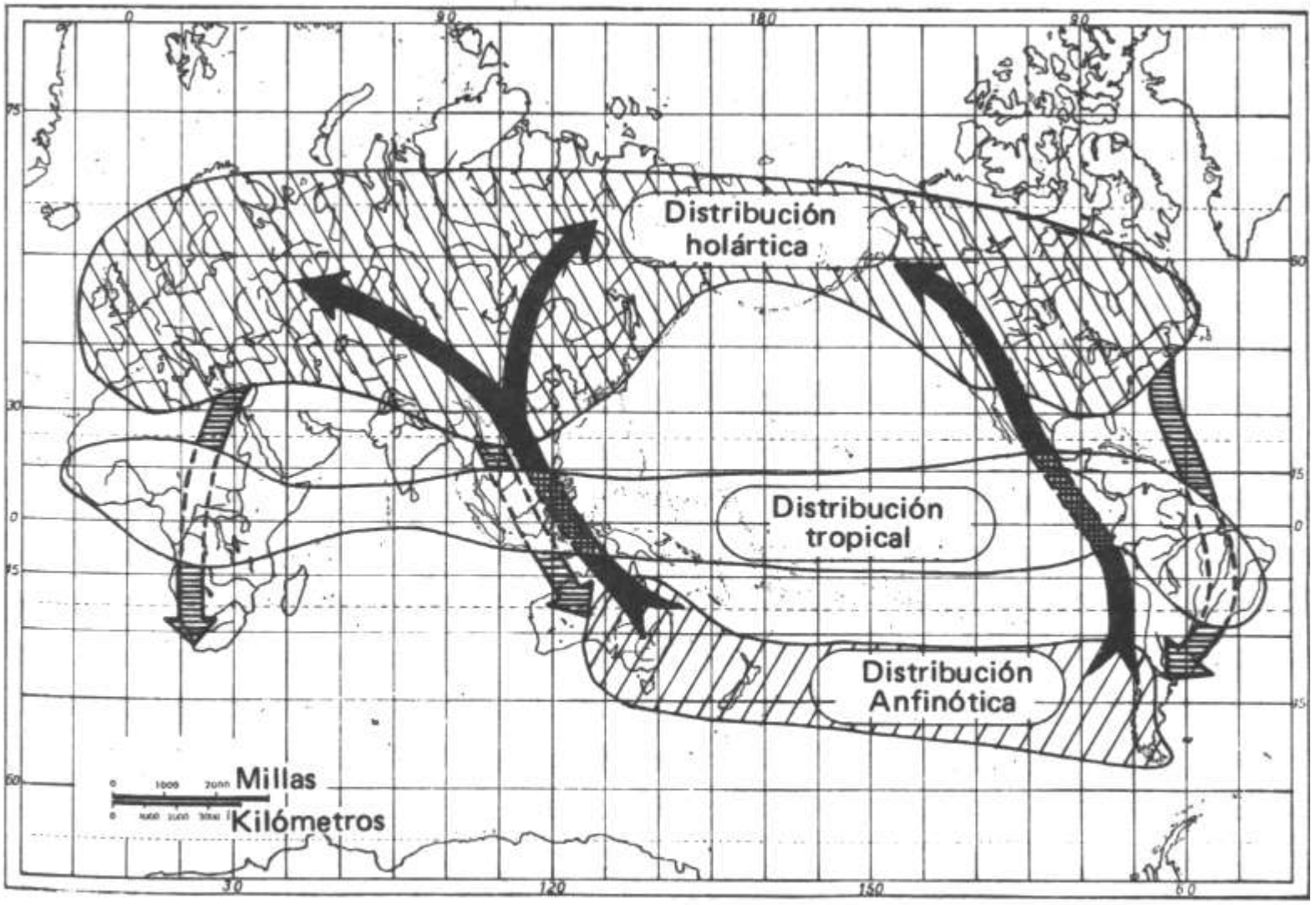
BioScience

Fig. 1 Map of the terrestrial zoogeographic realms and regions of the world. Zoogeographic realms and regions are the product of analytical clustering of phylogenetic turnover of assemblages of species, including 21,037 species of amphibians, nonpelagic birds, and nonmarine mammals worldwide. Dashed lines delineate the 20 zoogeographic regions identified in this study. Thick lines group these regions into 11 broad-scale realms, which are named. Color differences depict the amount of phylogenetic turnover among realms. (For more details on relationships among realms, see the dendrogram and NMDS plot in fig. S1.) Dotted regions have no species records, and Antarctica is not included in the analyses.

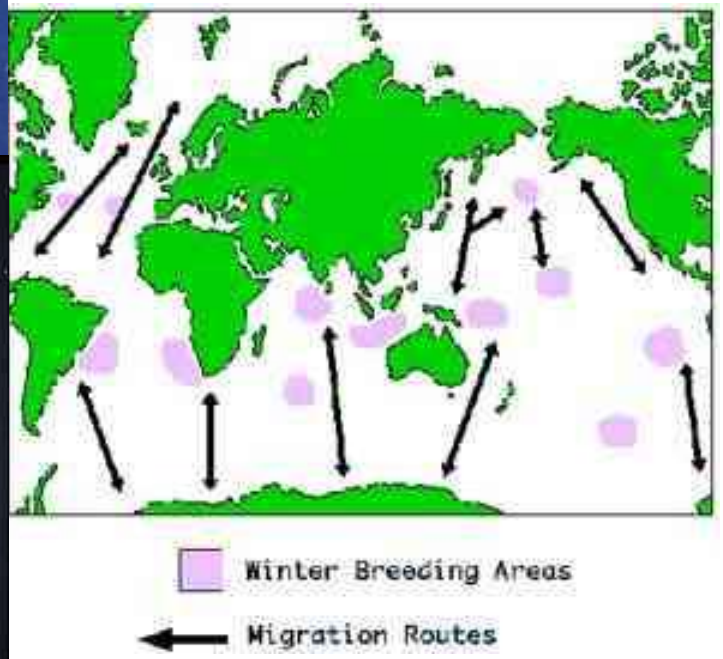
Holt et al. (2013)

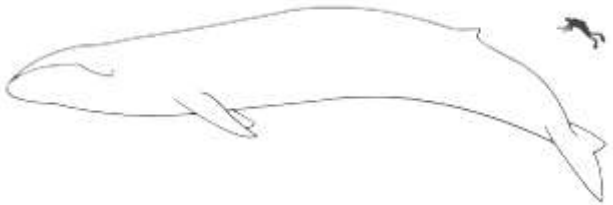


Regiões da fauna litorânea (MÜLLER, 1979)



Rotas migratórias: conexões intercontinentais das áreas de distribuição geográfica dos animais (MÜLLER, 1979).





Rotas de migração de espécies de baleia-azul

Balaenoptera musculus

Reino	Región	Zonas incluidas
1. Holártico	a) Neártica	Norteamérica, a diferencia del reino vegetal correspondiente, incluye Florida y la península de California, Groenlandia y la meseta mexicana.
	b) Paleártica	Eurasia (incluidas Islandia, las islas Canarias, Corea y Japón) y el norte de Africa.
2. Paleotropical	a) Etiópica	Africa al sur del Sáhara.
	b) Malgache	Madagascar y sus islas oceánicas.
	c) Oriental	India e Indochina en sentido amplio, hasta la línea de Wallace.

Regiões zoogeográficas (MÜLLER, 1979).

3. Australiano	a) Australiana b) Oceánica c) Neozelandesa d) Hawaiana	Australia, Nueva Guinea e islas vecinas, al este de la línea de Lydekker, parte de Nueva Zelanda, Oceanía y Nueva Caledonia, islas Hawai, islas Salomón. En la presente obra, las islas Salomón y las zonas media y norte de Nueva Zelanda y Hawai se mantienen en el reino Australiano. Sin embargo, estos grupos de islas presentan tantas conexiones filogenéticas y peculiaridades con el reino Paleotropical que su inclusión sin más en el reino Australiano no es ciertamente válida para todos los grupos de animales.
4. Neotropical		Centroamérica y Sudamérica, con las Antillas.
5. Arquinótico		Antártida, sudoeste de Sudamérica y sudoeste de Nueva Zelanda.

Biogeographical regionalisation of the Neotropical region

Morrone (2014)

Table 5. Pairs of regions, the number of shared genera, Jaccard's similarity, and the geographic distance between them. The geographic distance between the Chilean regions is calculated between the centroid of each region. The geographic distances between Chilean regions and New Zealand/the Cape Region are calculated as great-circle distances [http://www.movable-type.co.uk/scripts/LatLong.html]. Data sources as for Tables 2 and 4.

Regions	No. of shared genera	Jaccard's similarity	Geographic distance
ANT/MED	250	0.38	1150
ANT/MAG	99	0.21	3220
ANT/NZ	65	0.09	10,200
ANT/CFR	71	0.06	8450
MED/MAG	194	0.30	2100
MED/NZ	134	0.15	9370
MED/CFR	124	0.08	7960
MAG/NZ	113	0.20	7680
MAG/CFR	74	0.06	7110

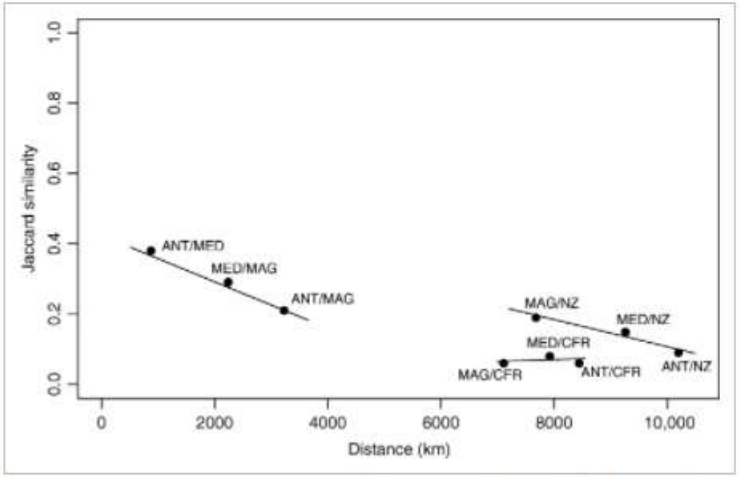
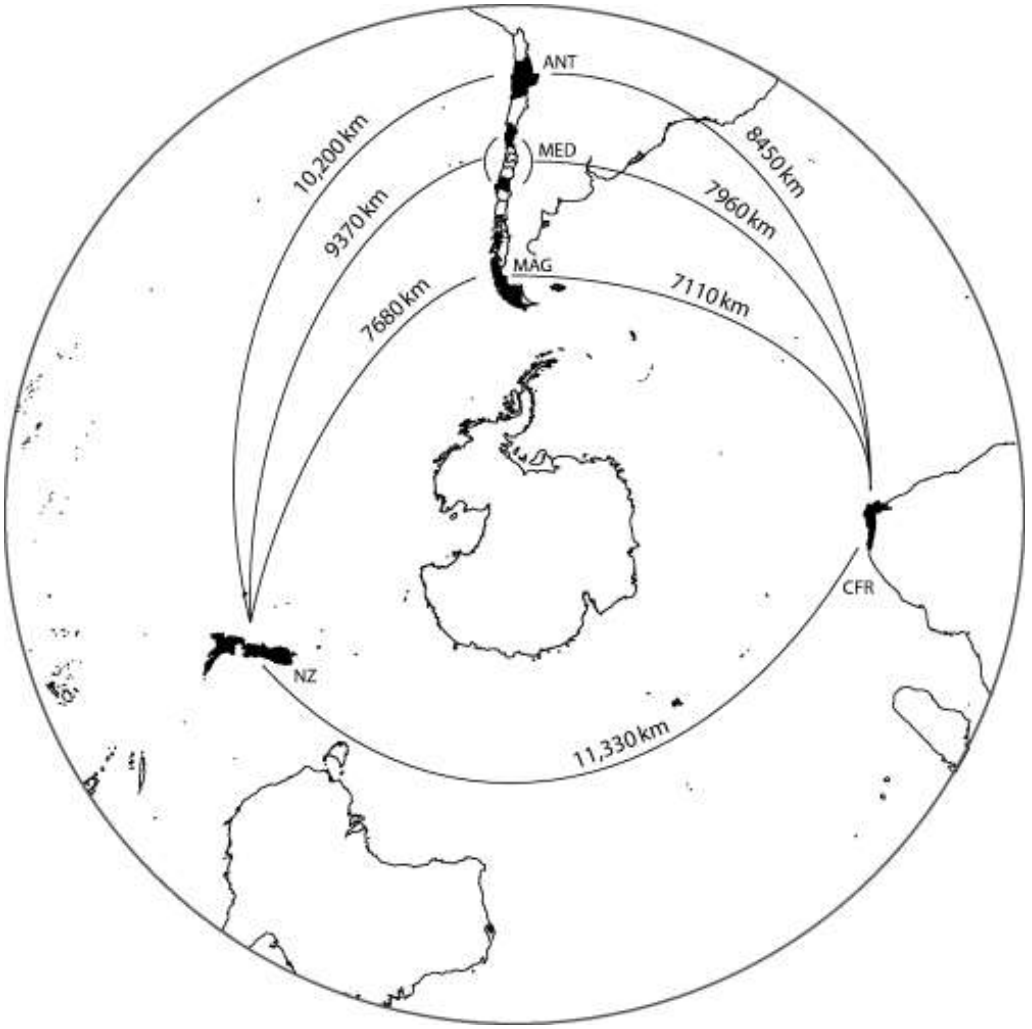


Figure 2 Open in figure viewer | PowerPoint

Geographic vs. Jaccard's distance of compared territories (ANT: Antofagasta, CFR: Cape Floristic Region, MED: mediterranean central Chile, MAG: Magallanes, NZ: New Zealand). Data source: Table 5.



The Austral floristic realm revisited

Moreira-Muñoz (2007)

Regiões Fitogeográficas

As Regiões fitogeográficas ou Reinos Florísticos são bastante coincidentes com as Regiões Zoogeográficas mas com algumas diferenças.

As regiões são:

- Holoártica;

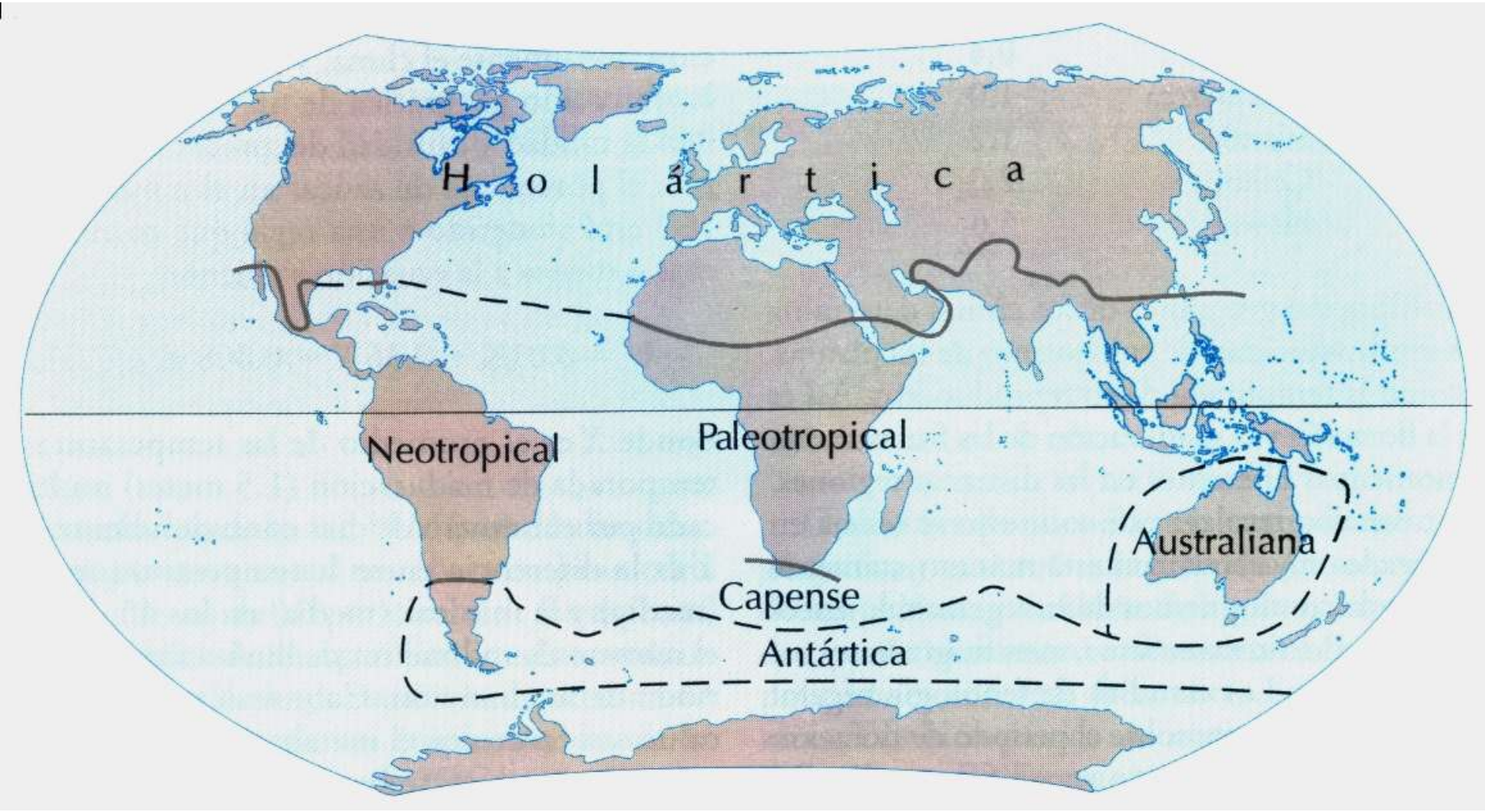
- Neotropical;

- Paleotropical;

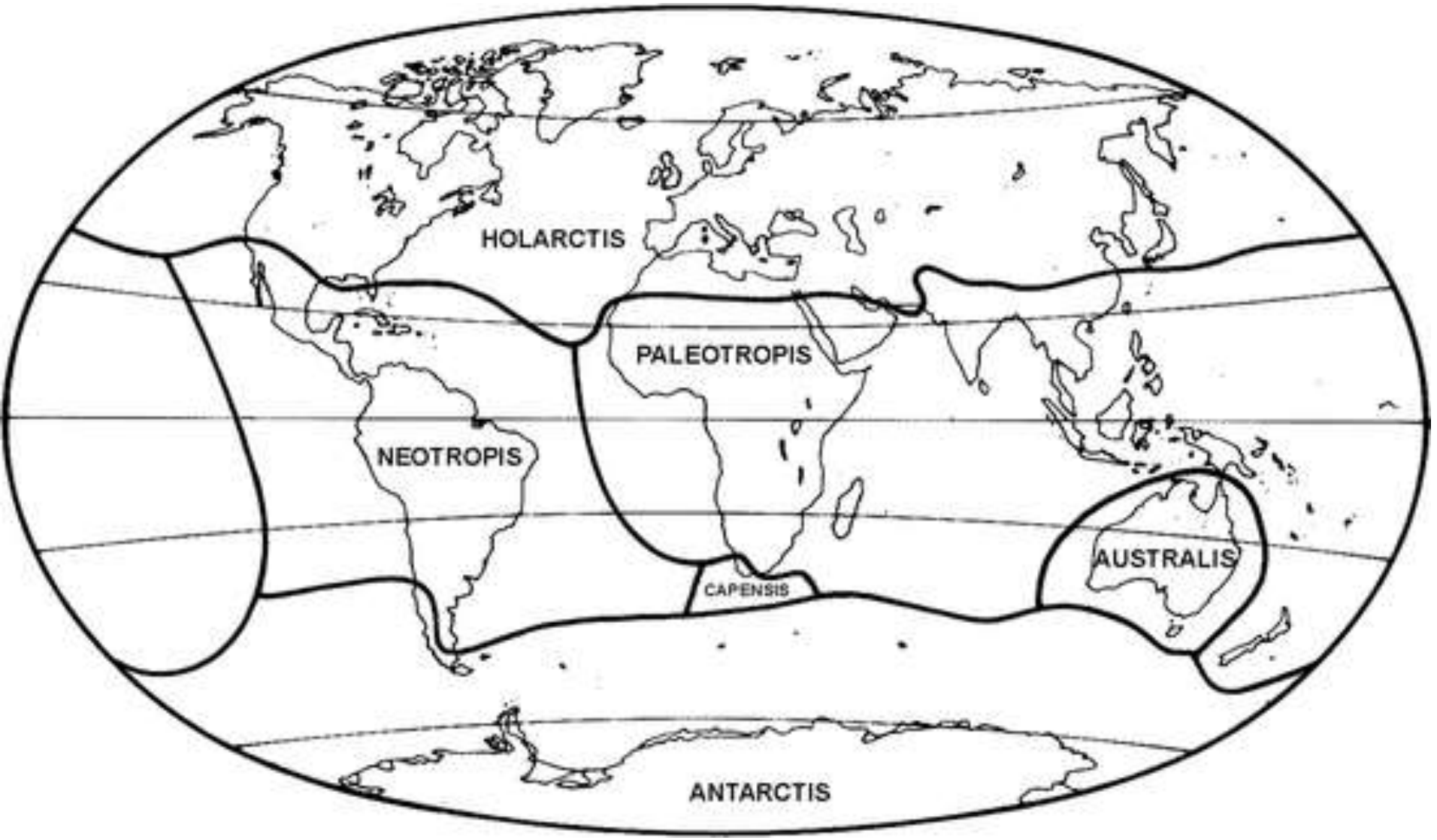
- Capense;

- Australiana;

- Antártica.

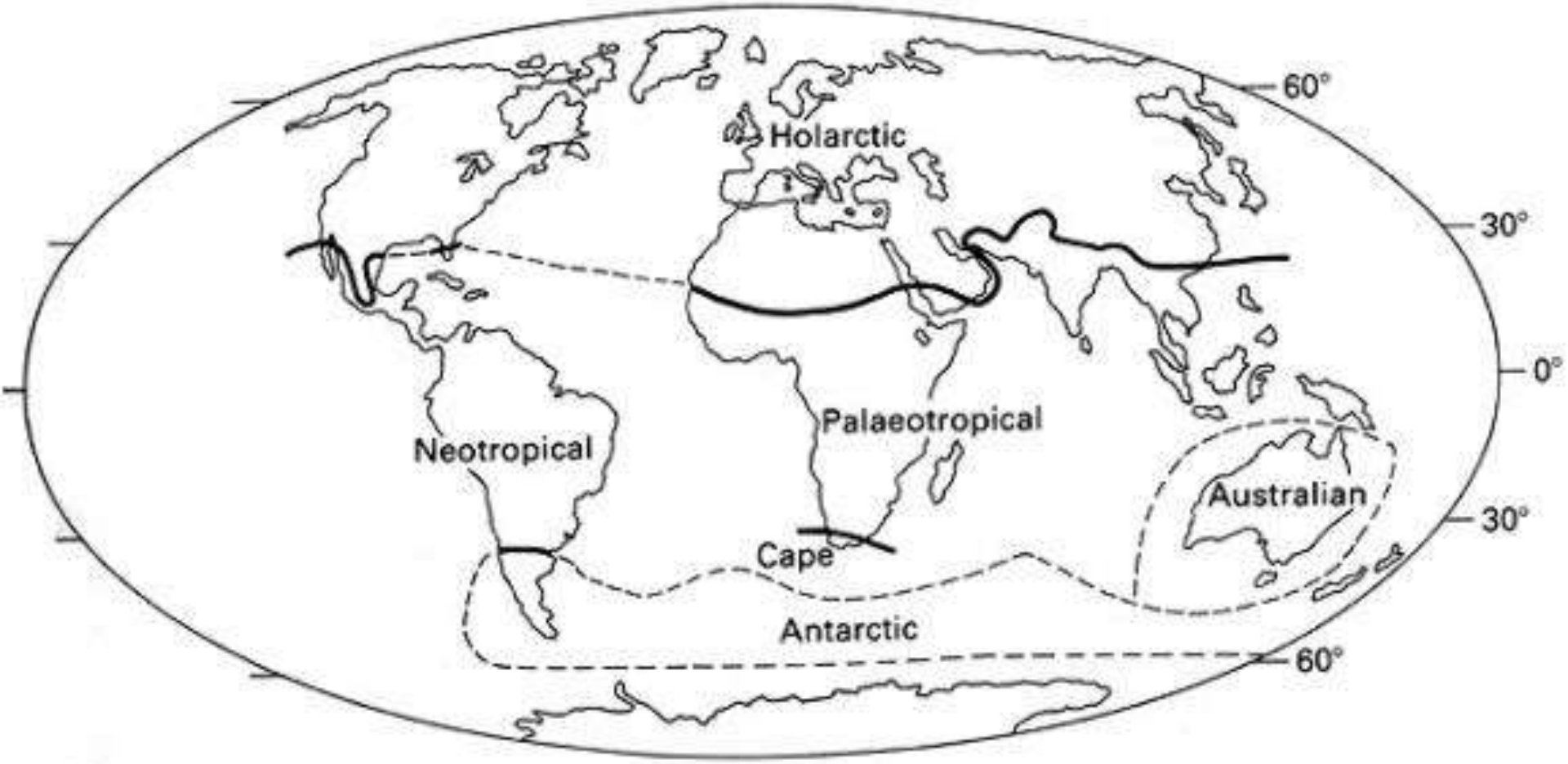


Regiões fitogeográficas (ZUNINO; ZULLINI, 2003)



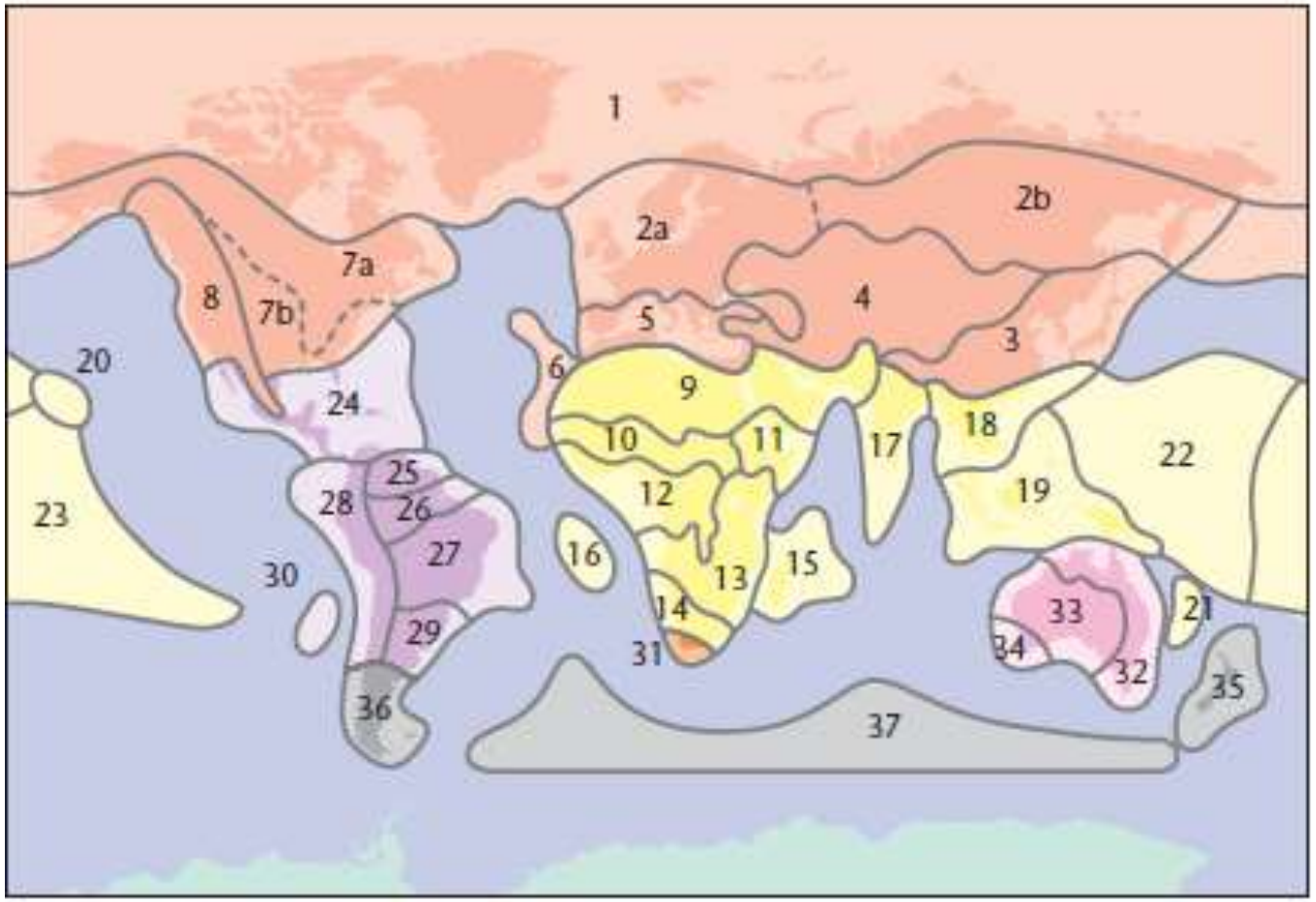
https://link.springer.com/chapter/10.1007/978-3-642-30235-0_9

https://media.springernature.com/original/springer-static/image/chp%3A10.1007%2F978-3-642-30235-0_9/MediaObjects/304512_1_En_9_Fig1_HTML.gif



http://www.floraofnepal.org/countryinformation/biogeography

http://www.floraofnepal.org/sys/imageserver/index.php?id=1479141489::1479486700032



Boreal region
1 Arctic and Sub-arctic
2 Euro–Siberian
a. Europe
b. Asia
3 Sino–Japanese
4 W. and C. Asiatic
5 Mediterranean
6 Macaronesian
7 Atlantic North American
a. Northern
b. Southern
8 Pacific North American

Neotropical region
24 Caribbean
25 Venezuela and Guiana
26 Amazon
27 South Brazilian
28 Andrean
29 Pampas
30 Juan Fernandez

South African region
31 Cape

Palaeotropical region
9 African–Indian Desert
10 Sudanese Park Steppe
11 N. E. African Highland
12 W. African Rainforest
13 E. African Steppe
14 South African
15 Madagascar
16 Ascension and St. Helena
17 Indian
18 Continental S. E. Asiatic
19 Malaysian
20 Hawaiian
21 New Caledonia
22 Melanesia and Micronesia
23 Polynesia

Australian region
32 N. and E. Australian
33 S. W. Australian
34 C. Australian

Antar ctic region
35 New Zealand
36 Patagonian
37 S. Temp.
Oceanic Islands

Figure 2 The six floral regions and 37 subregions mapped by Good.

Good (2004)
Apud
Huggett (2011)

A global regionalisation based on the present-day distribution of broad plant lineages

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DOI: https://doi.org/10.11646/phytotaxa.442.1.3

Keywords: global, plant, regionalisation, General

PDF/A (1MB)

Supplemental file (XLSX)

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Section
Article

Abstract

Although world's zoogeographical regions have been repeatedly confirmed using various clustering techniques, this has not yet been done in the case of world's floral kingdoms, due to the absence of complete and accurate distributional data sets. Here we use the distribution of 65 broad seed plant lineages across 37 regions to test for global relationships. We find support for the existence of distinct Austral, Holotropical, and Holarctic clusters. The existence of an Austral kingdom has long been considered to be one of the major differences between plant and animal regionalisation patterns. However, the homogeneity of the Holotropical cluster can be viewed as a relatively novel result.

https://www.biotaxa.org/Phytotaxa/article/view/phytotaxa.442.1.3

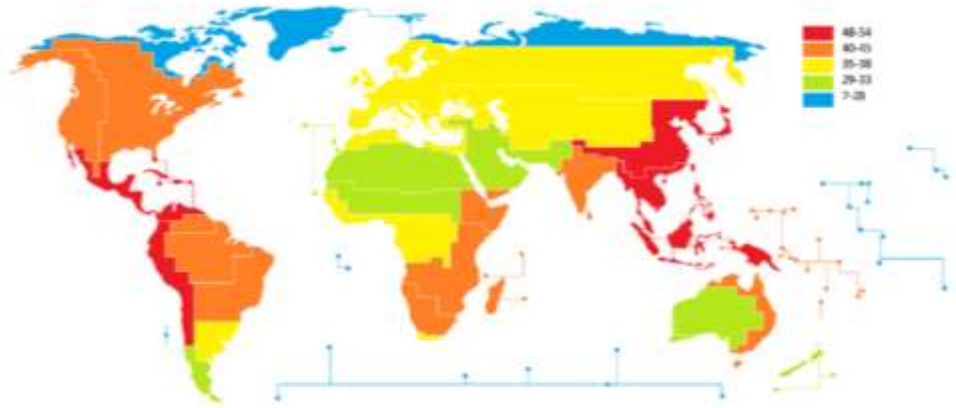
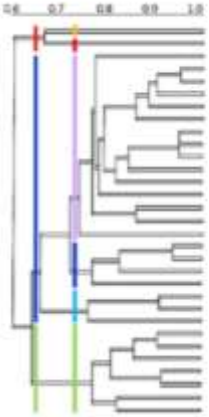


FIGURE . Global patterns in ancient plant lineage richness. Colours denote the number of 100 Mya-old lineages present.

FIGURE . Global patterns in ancient plant lineage endemism. For calculations, see Materials and Methods.



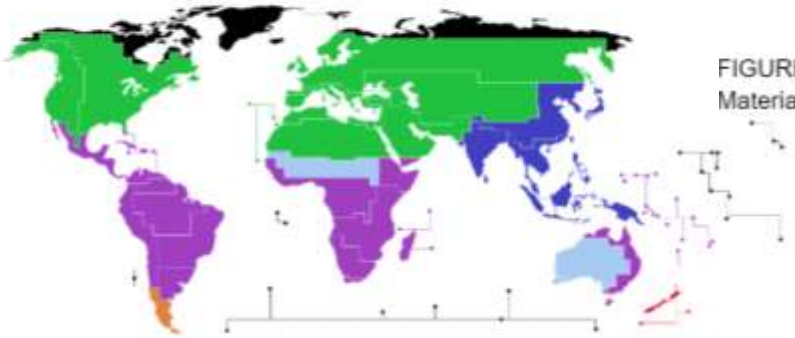
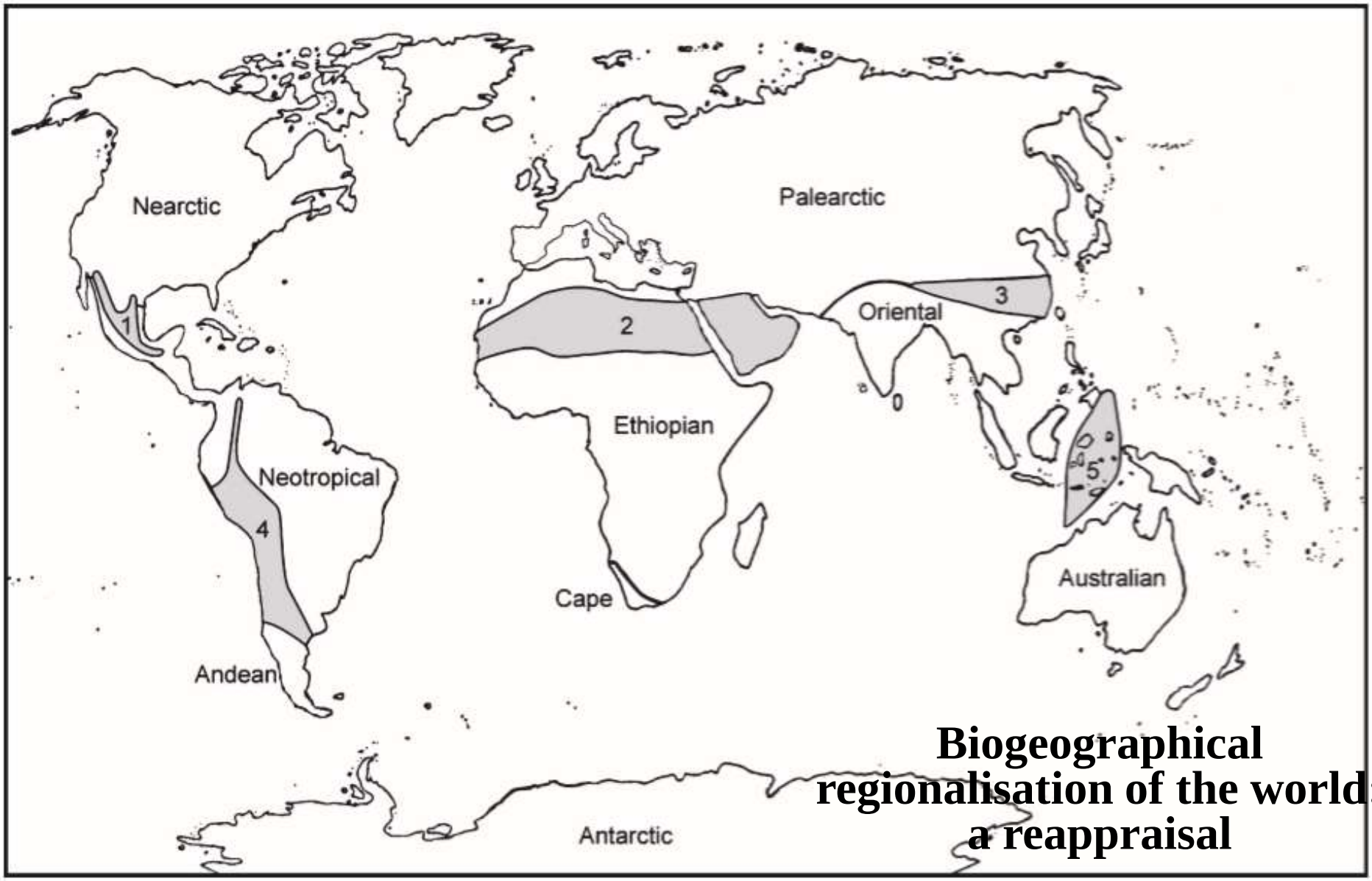


FIGURE . Global patterns of floristic similarity using cluster analysis with Jaccard's coefficient. The three and six most distinctive floral clusters are indicated on the dendrogram in different colours, and the six most distinctive clusters are mapped. Lineage-poor regions excluded from the analyses and from the mapping exercise are presented in black.

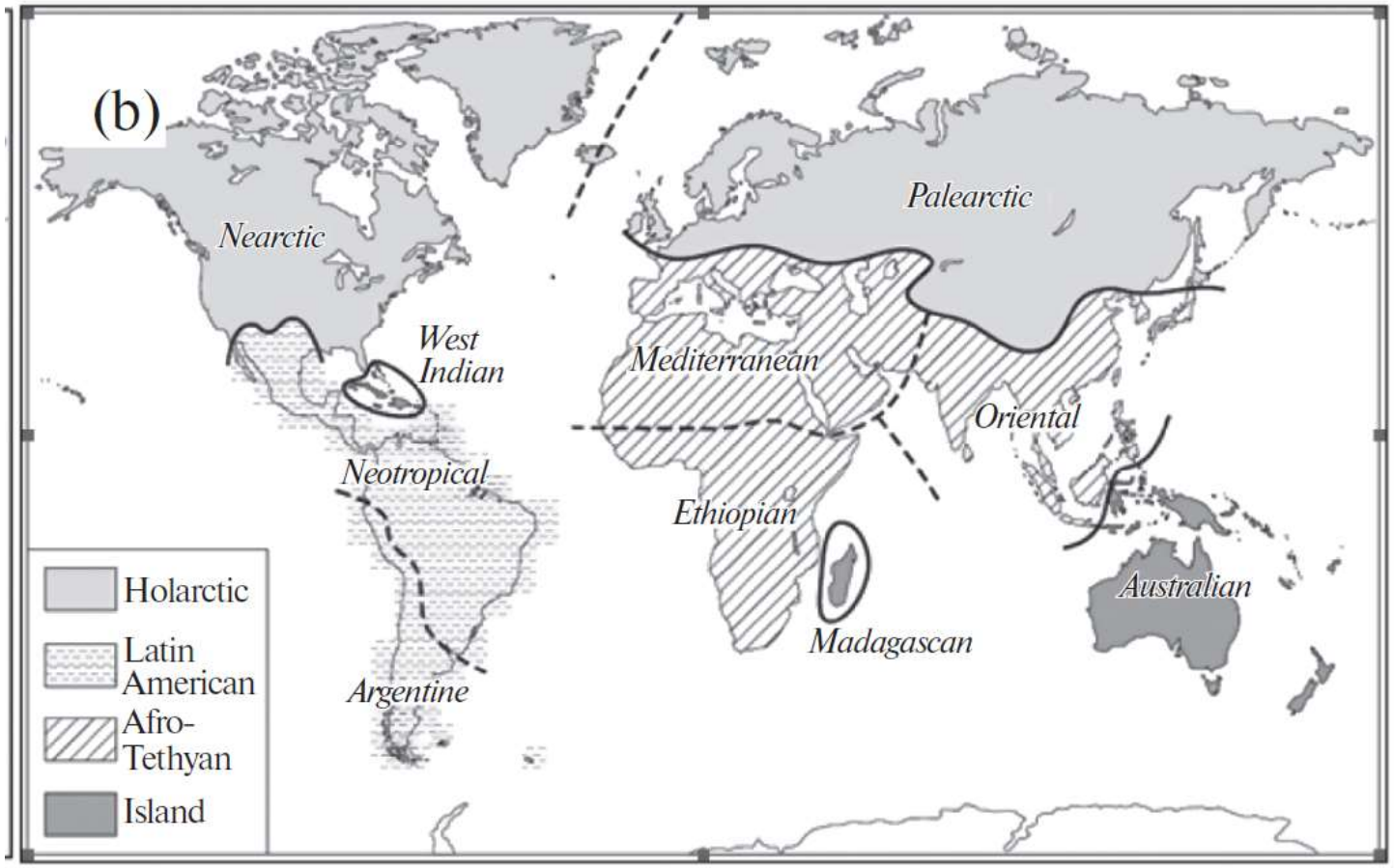
tps://www.biotaxa.org/Phytotaxa/article/view/phytotaxa.442.1.3



Biogeographical regionalisation of the world: a reappraisal

Fig. 1. World biogeographical regionalisation, with indication of the regions (white) and transition zones (grey). Transition zones: 1, Mexican; 2, Saharo-Arabian; 3, Chinese; 4, Indo-Malayan; 5, South American.

http://www.publish.csiro.au/sb/pdf/SB14042



Biogeographical map of the world based on numerical classification (Huggett, R.J., Fundamentals of Biogeography Front Cover Psychology Press, Routledge: Science, 2004.Huggett, 2004)

Bobrov et al. (2019)

Alexander von Humboldt 250th Anniversary

https://www.nature.com/collections/ceaeaabjia/ (2019)

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Celebrating Alexander von Humboldt's 250 th anniversary: Exploring bio- and geodiversity in the Andes (IBS Quito 2019)

2019 | **Author(s):** Hoorn, Carina; Guayasamin, Juan M.; Ortega-Andrade, H. Mauricio; Linder, Peter; Bonaccorso, Elisa

Published Web Location

https://doi.org/10.21425/F5FBG44178

Main Content | Metrics | Author & Article Info

Abstract

Alexander von Humboldt conducted his best-known work on the slopes of the Ecuadorian Andes. He did this by applying his own characteristic brand of multidisciplinary scientific approach. This consisted of thorough data collection while synthesizing and visualizing the data in innovative formats. Also important for his scientific success in South America was his collaborative network that helped him to identify specimens and formulate his transformative scientific thoughts. It is no surprise that Humboldt was captivated by Ecuador, as it is one of the most biodiverse places in the world, and this astounding diversity was formed in an intricate, dynamic geological and climatological setting. As of yet, this biodiversity is far from being fully documented and the processes that generated it are still poorly understood. The IBS meeting in Quito 1 and the Second Latin American Congress of Biogeography will form the perfect platform to both commemorate Humboldt while addressing current and unresolved matters concerning the biodiversity of Ecuador and South America at large.

Main Content

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https://escholarship.org/uc/item/7176d3bs

(2019)

Humboldt and the reinvention of nature

Juli G. Pausas[1] & William J. Bond[2,3]

[1] Centro de Investigaciones sobre Desertificación (CIDE-CSIC), 46113 Montcada,Valencia, Spain
[2] Department of Biological Sciences, University of Cape Town, Rondebosch 7701, Cape Town, South Africa
[3] South African Environmental Observation Network, National Research Foundation, Private Bag X7, Claremont 7735, South Africa

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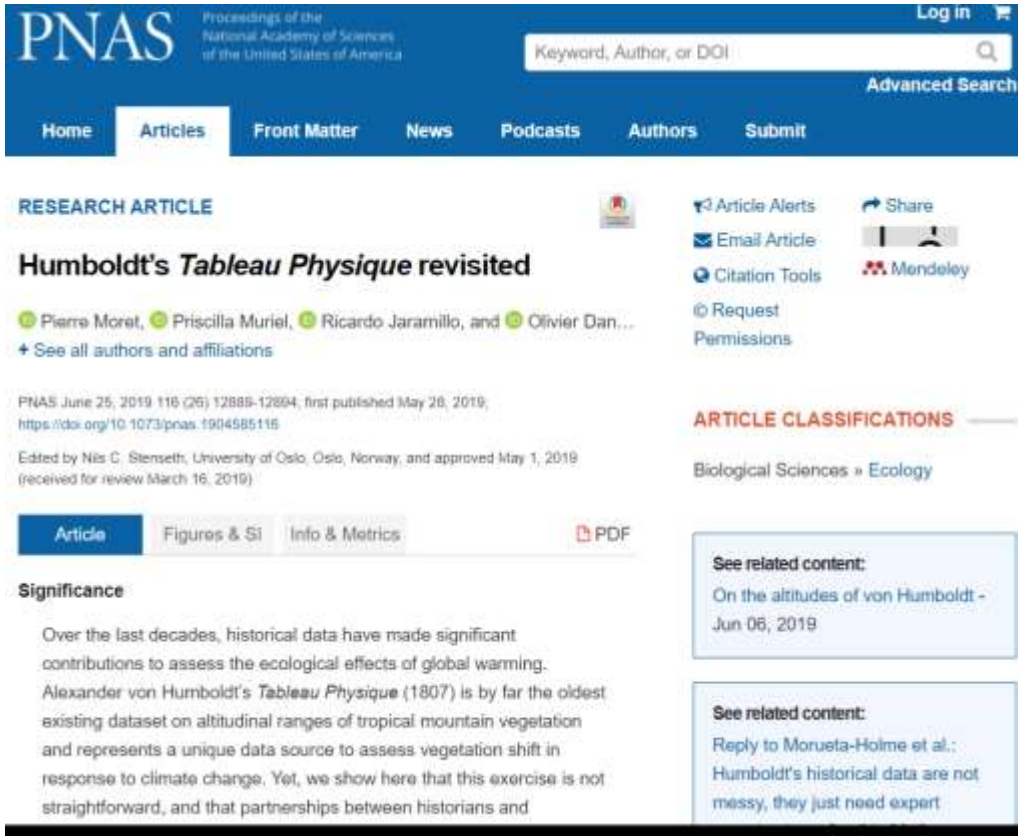
The final version of this article will be published in *Journal of Ecology* (2019):
https://doi.org/10.1111/1365-2745.13109

ABSTRACT.

1. Alexander von Humboldt is a key figure in the history of ecology and biogeography who contributed to shape what is today ecology, as well as the environmentalist movement. His observation that the world's vegetation varies systematically with climate was one of his many contributions to science.
2. Here we question to what extent Humboldt's view biased our vision of nature. The current emphasis on the role of climate and soils in ecological and evolutionary studies, and the emphasis on forests as the potential and most important vegetation, suggests that we still view nature through the eyes of Humboldt.
3. Over the last 20 years, diverse studies have shown that many open non-forested ecosystems (savannas, grasslands, and shrublands) cannot be predicted by climate and are ancient and diverse systems maintained by fire and/or vertebrate herbivory. Paleoecological and phylogenetic studies have shown the key role of these plant consumers at geological time scales. This has major implications for how we understand and manage our ecosystems.
4. *Synthesis*: We need to consciously probe the long-standing idea that climate and soils are the only major factors shaping large-scale patterns in nature. We propose to move beyond the legacy of Humboldt by embracing fire and large mammal herbivory as additional key factors in explaining the ecology and evolution of world vegetation.

Keywords: Darwin, disturbance, fire, herbivory, history of ecology, Humboldt, megafauna.



https://digital.csic.es/bitstream/10261/182537/1/Humboldt_and_reinvention.pdf

https://www.pnas.org/content/116/26/12889

The Lasting Contribution of Alexander von Humboldt to Our Understanding of the Natural World*

Ashwini Venkatanarayana Mohan and Krishnapriya Tamma

A polymath and ahead of his time, Alexander von Humboldt had numerous interests and insights that have shaped modern science. His holistic viewpoint on nature founded the principles of several branches of sciences such as comparative biology, ecology, and biogeography, and inspired scientists who went on to make notable contributions during and after his time. From geologists to founders of evolutionary principles, poets to anti-colonial revolutionists, Humboldt was an inspiration to generations of thinkers. In this article, we attempt to highlight a few of his notable discoveries that influence biologists today.

Alexander von Humboldt was a polymath with interests and knowledge that spanned geology, natural history, zoology, botany, social sciences, statistics, and economics [1, 2]. His contributions to the natural sciences, especially ecology, are immense. Although interested in Nature ever since a child, Alexander von Humboldt (henceforth just Humboldt) started his career as a mining inspector around the summer of 1872 [3], after finishing his education in a college of mining [see the Article-in-a Box in this issue]. This career was chosen in deference to his mother's expectations (not different from societal pressures we face today), but the job provided him a platform to hone his skills in mapping and geology. Apart from his contributions to geology as a mining inspector, he also started the first technical school for young miners in Germany. Seeing the detrimental conditions under which miners worked, he came up with several ideas for improving mining

*Vol.26, No.8, DOI: https://doi.org/10.1007/s12045-021-1207-z

Ashwini V. Mohan is a Marie Curie Postdoctoral fellow at the Natural History Museum, London. She recently completed her PhD in evolutionary biology, wherein, she focussed on understanding biogeographic origins, macroevolution, and diversification in the day gecko genus *Phelsuma*. Ashwini's research interests span evolutionary biogeography, genomics, and morphological evolution.

Krishnapriya Tamma is an ecologist with an interest in tropical forest diversity, dynamics, and biogeography. Her current research is focused on forest recovery in northeast India, and on the avian frugivore diversity and interactions with fruiting trees.

https://link.springer.com/content/pdf/10.1007/s12045-021-1207-z.pdf

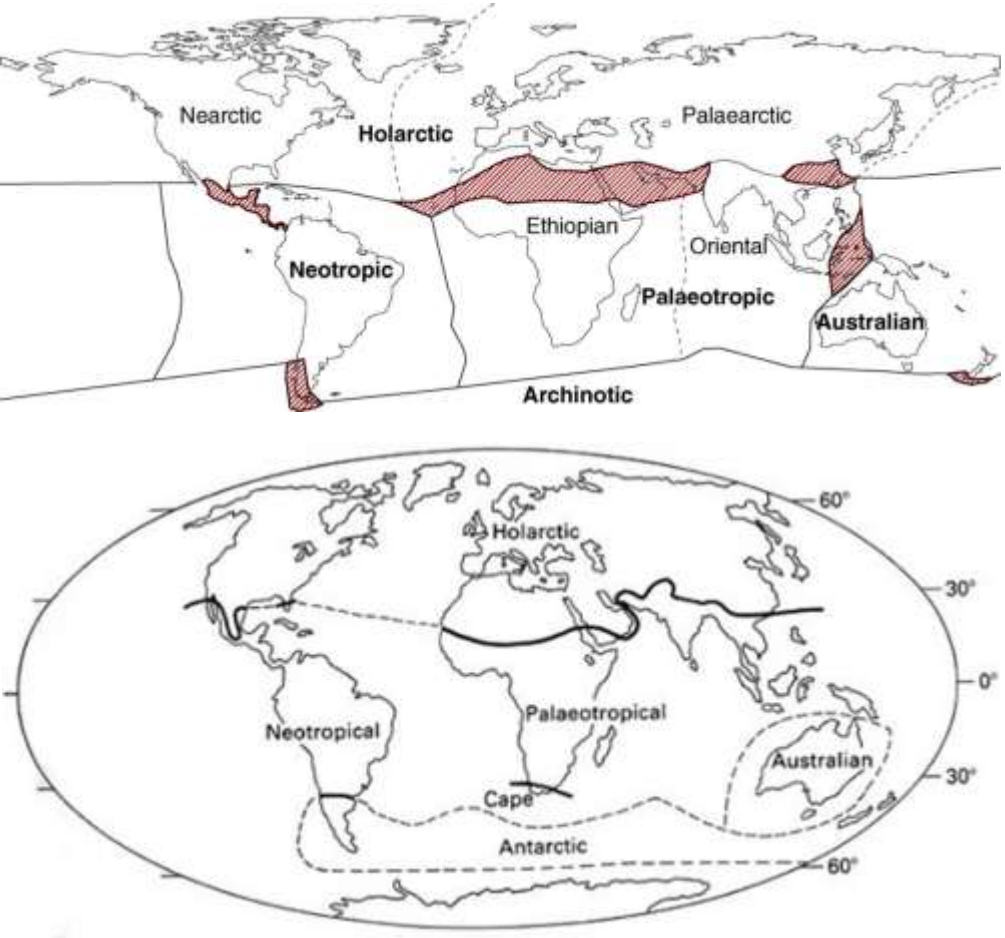
Biogeografia Ecológica ou Ecobiogeografia

É a parte da Biogeografia que interpreta ecologicamente as distribuições geográficas dos seres vivos e de suas associações, ou seja, estuda os parâmetros ecológicos que determinaram essas distribuições geográficas (ZUNINO; ZULLINI, 2003).

A Biogeografia Ecológica trabalha com o **enfoque causal na escala de tempo ecológico (sincrônico)**.

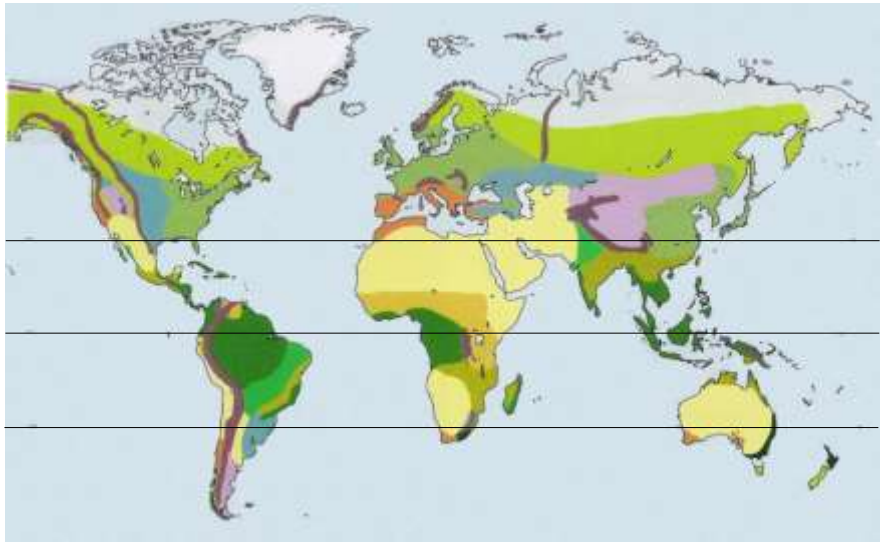
Os parâmetros ou fatores ecológicos, como fisiologia, competições interespecíficas, equilíbrio ambiental, uso de recursos, etc., são utilizados para identificar áreas nas quais as formas de vida e os processos de adaptação são parecidos.

Regiões Biogeográficas – enfoque sistemático-descritivo

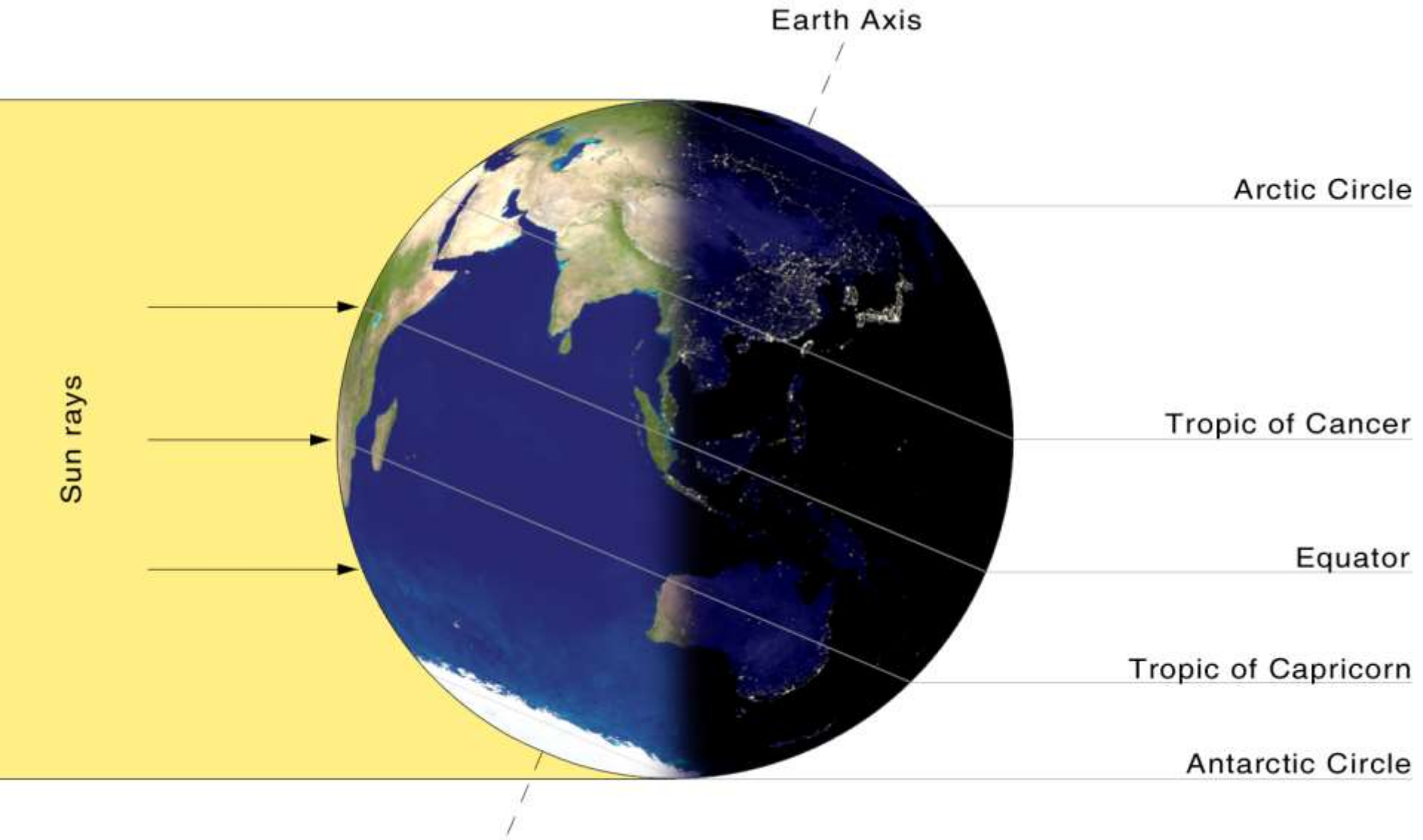


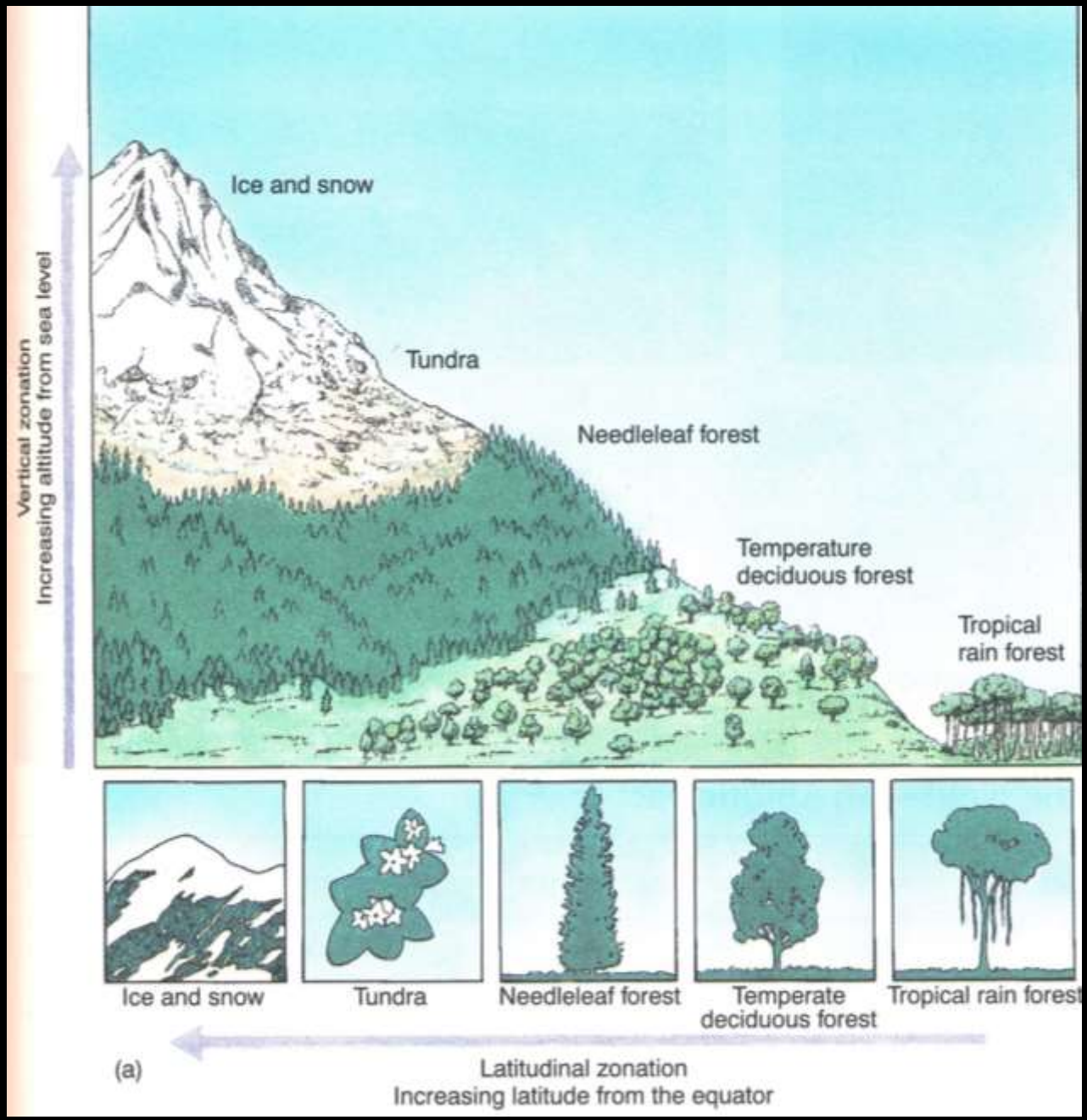
Semelhanças endêmicas e taxonômicas

Biomas – enfoque causal, perspectiva ecológica (tempo sincrônico)



Semelhanças ecológicas e adaptação de organismos


Earth Axis
Arctic Circle
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
Sun rays



Zonação latitudinal e altitudinal (CHRISTOPHERSON, 1997)

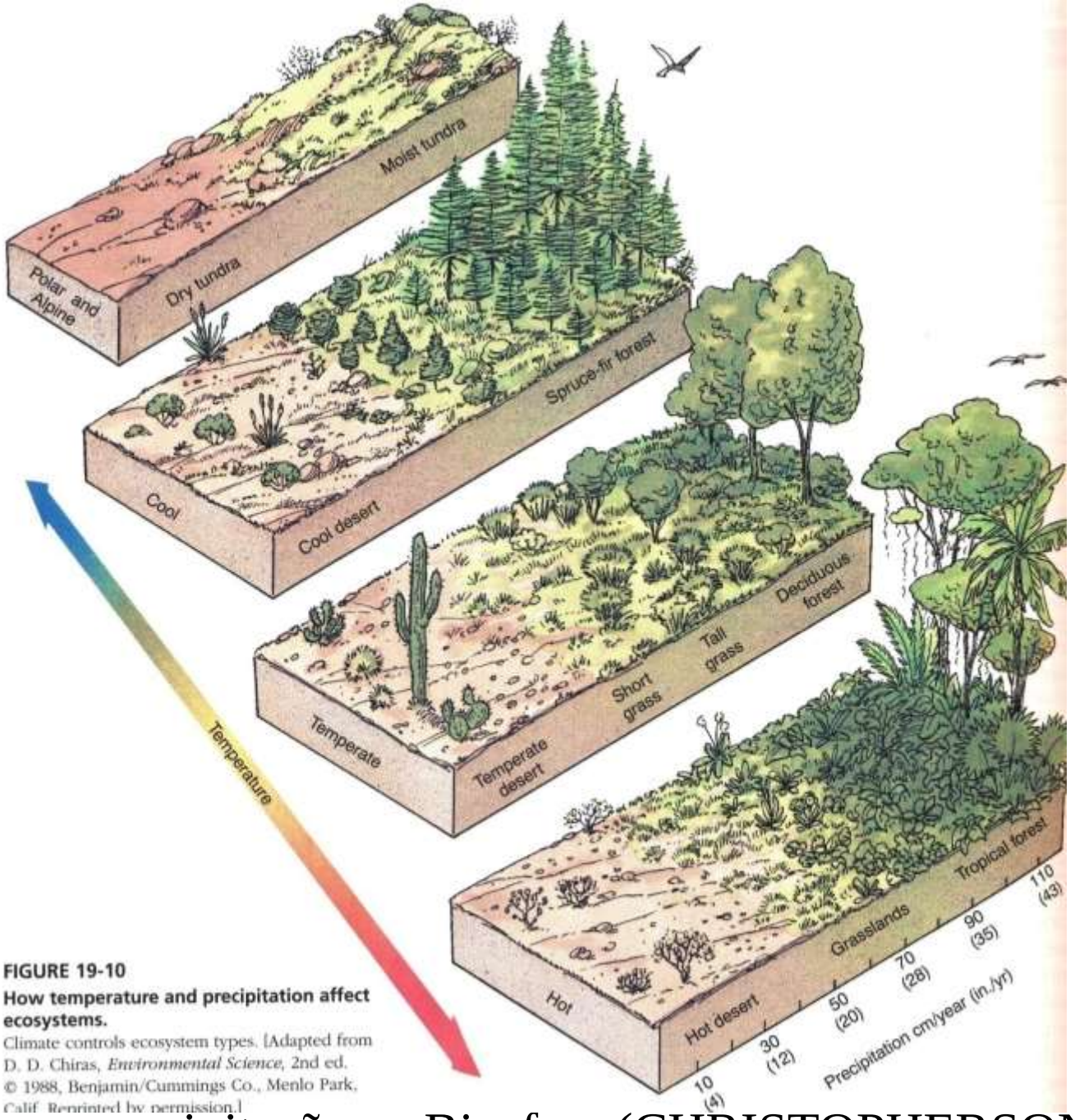
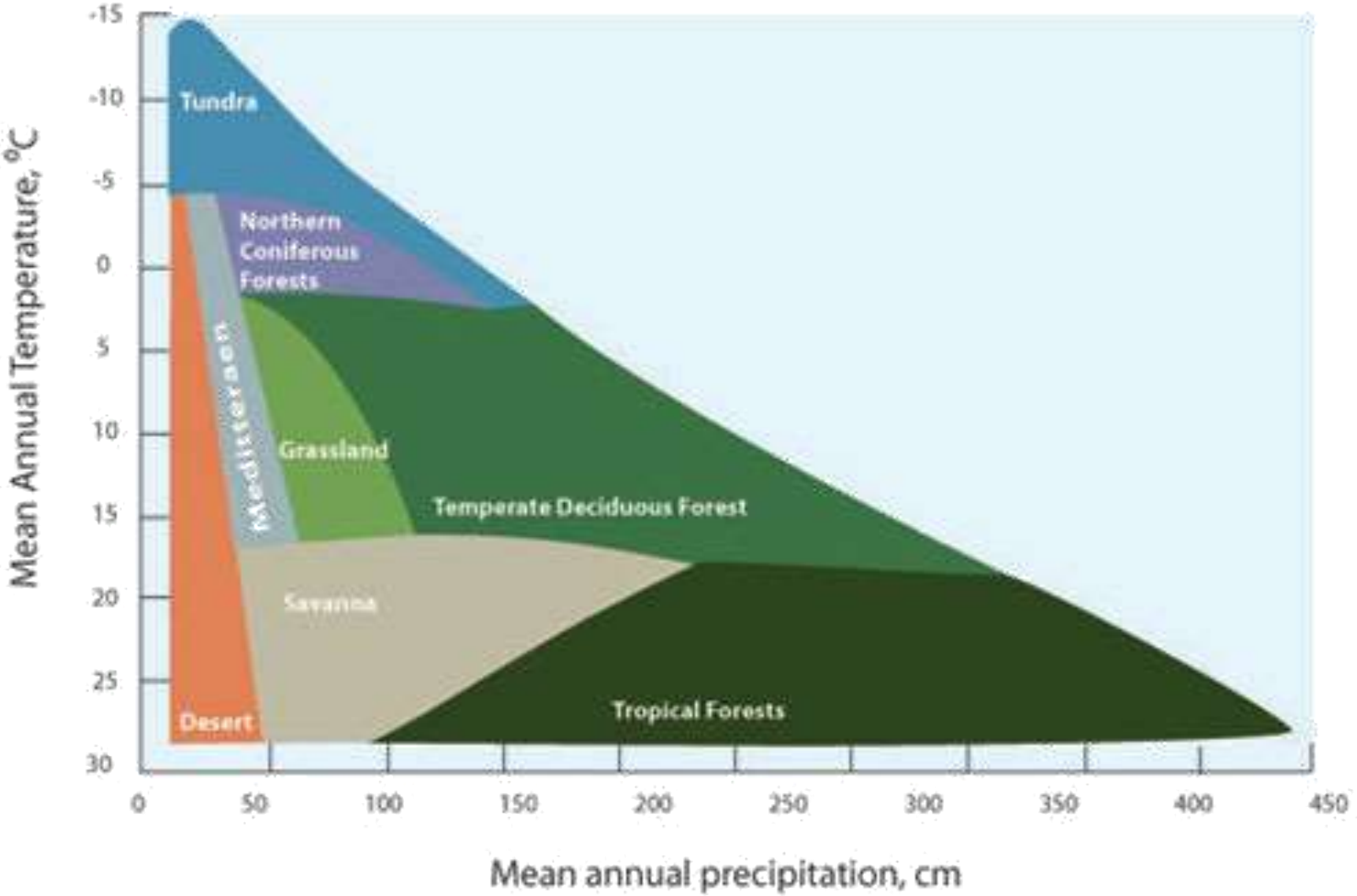
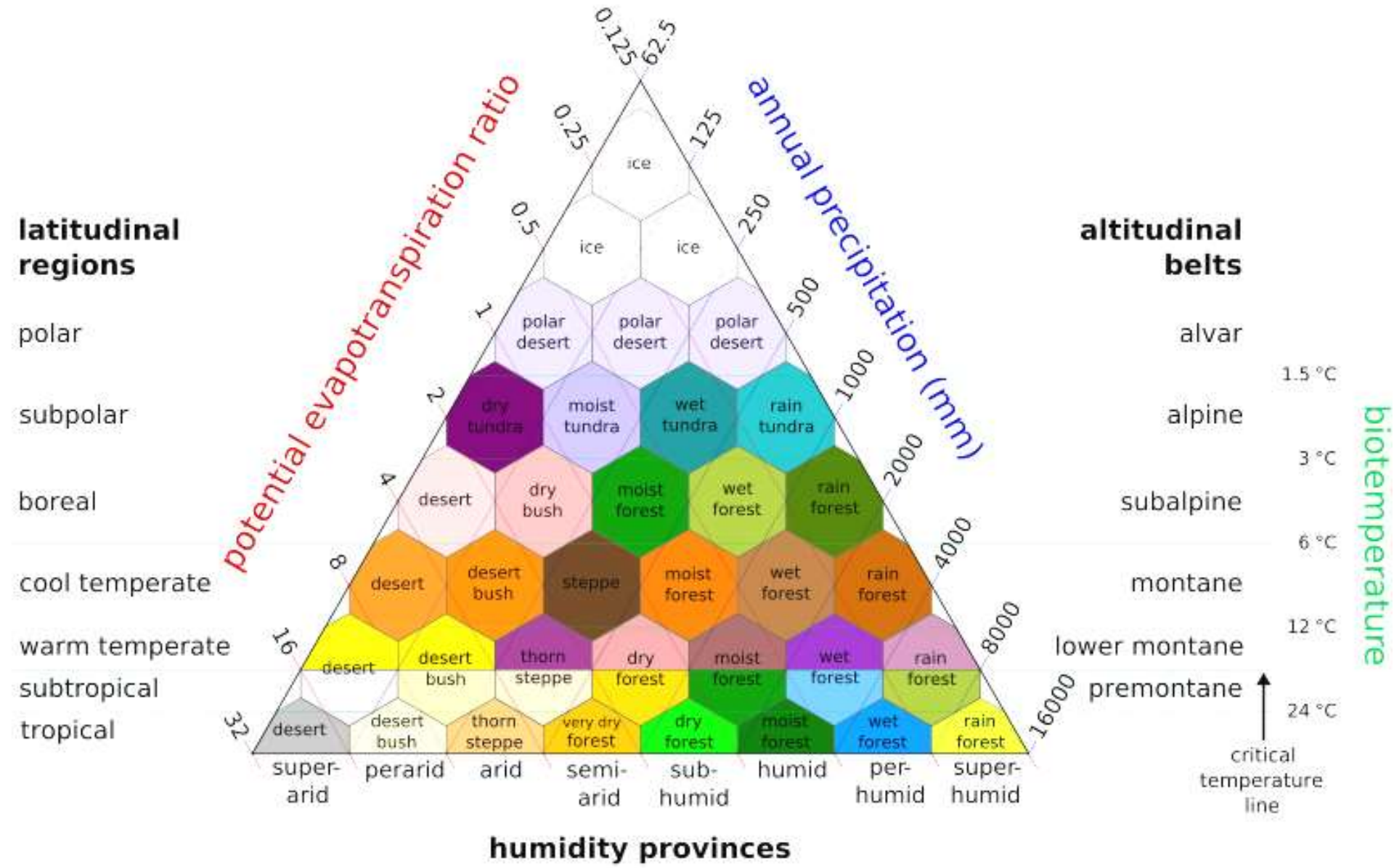


FIGURE 19-10
How temperature and precipitation affect ecosystems.
Climate controls ecosystem types. [Adapted from D. D. Chiras, *Environmental Science*, 2nd ed. © 1988, Benjamin/Cummings Co., Menlo Park, Calif. Reprinted by permission.]

Temperatura e precipitação na Biosfera (CHRISTOPHERSON, 1997)



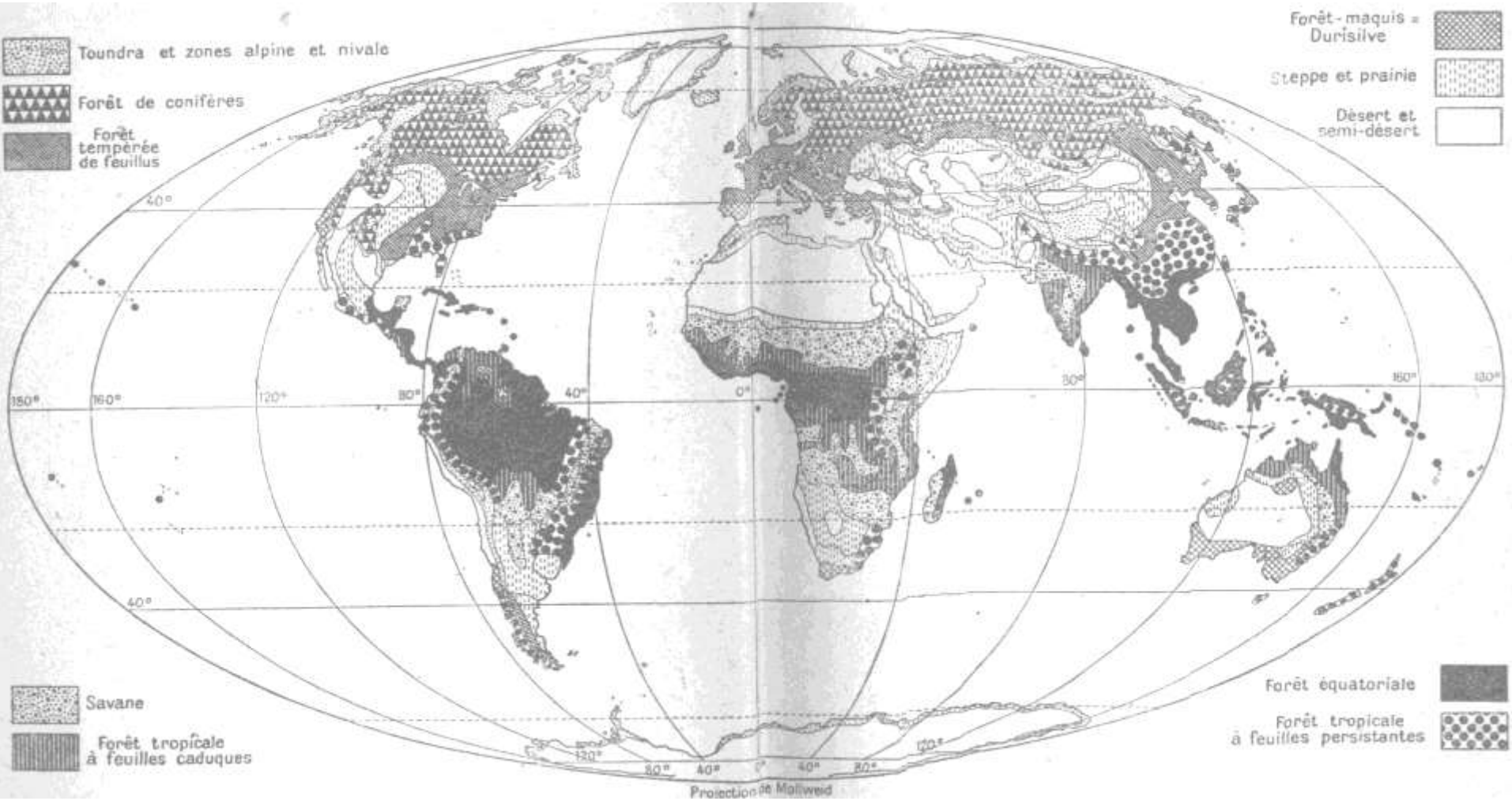
Forseth (2010)



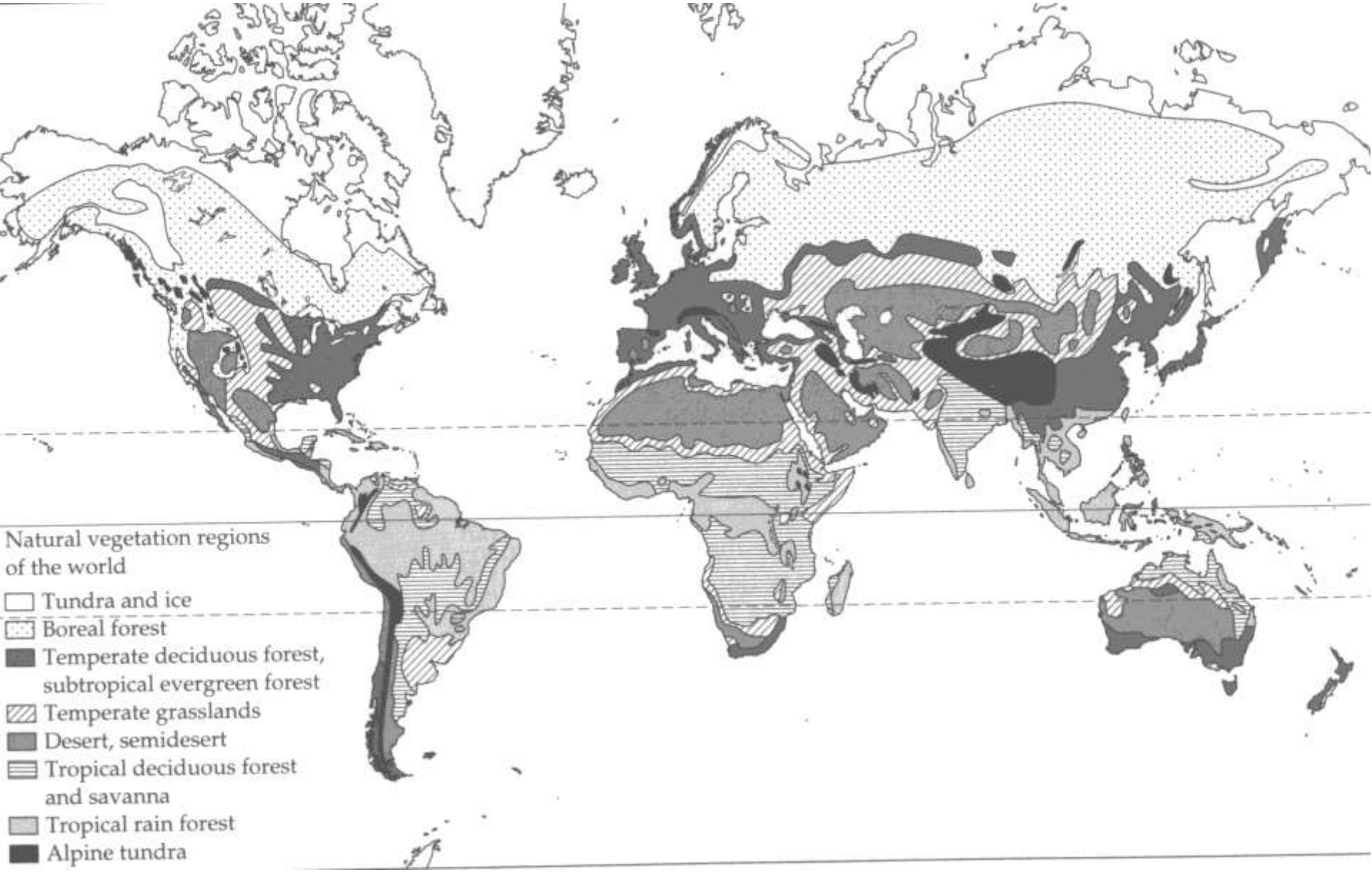
Classificação das formações vegetais de acordo com temperatura média, precipitação e taxa de evapotranspiração (ARCHIBOLD, 1995)

6 a 10 biomas de acordo com diversos autores

Cailleux (1953)
Kormondy & Brown (2002); Odum (1988);
Zunino e Zullini (2003);
Purves et al. (2005).

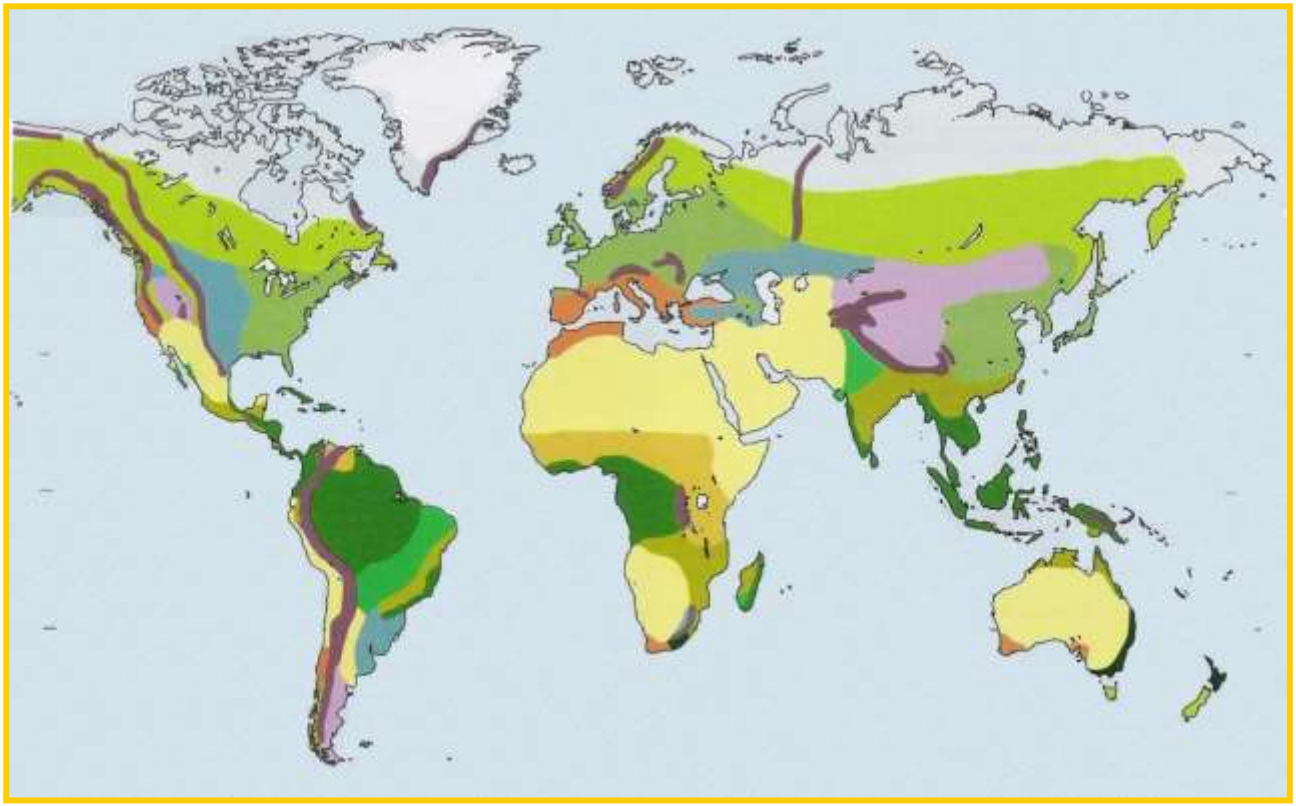


Biomas (CAILLEUX, 1953)



Biomas (BROW et al., 2010)

Biomas



Tundra
- Ártica
- Alpina

Taiga
(Floresta Boreal)

Floresta
Temperada Decídua

Pradarias
Temperadas

Deserto
- Quente
- Frio

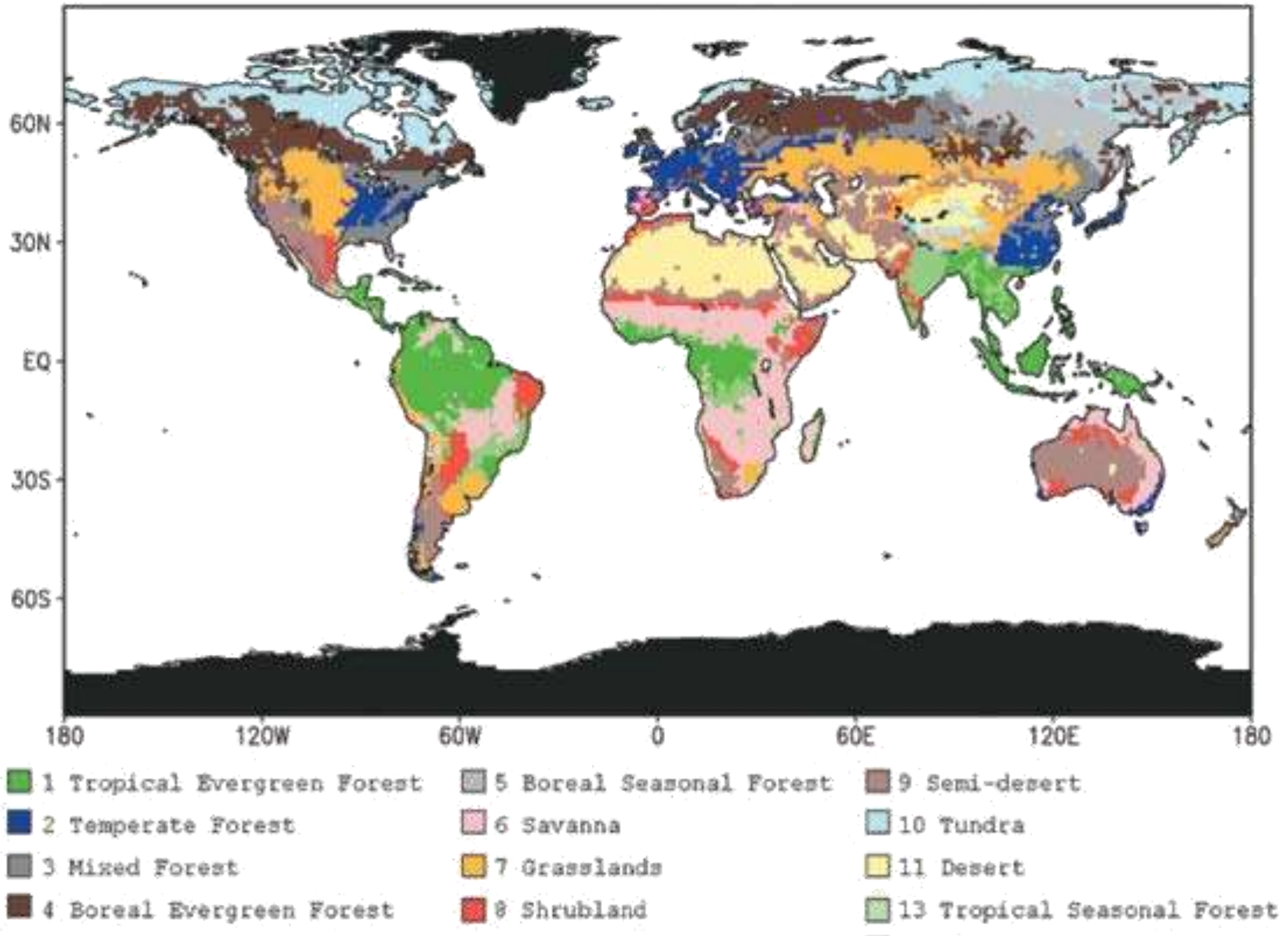
Mediterrâneo

Savanas Tropicais

Bosques
Espinhosos

Floresta Tropical
- Perenifólia
- Decídua

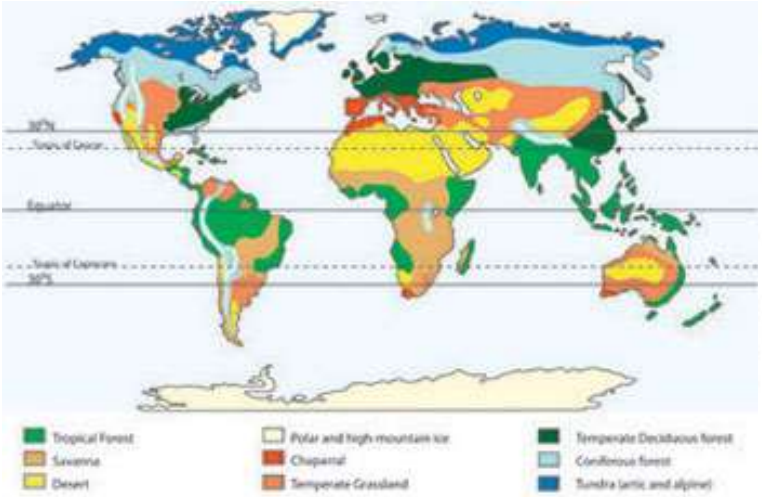
Purves et al. (2005)

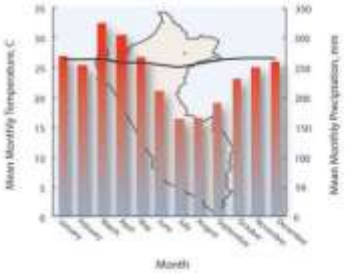


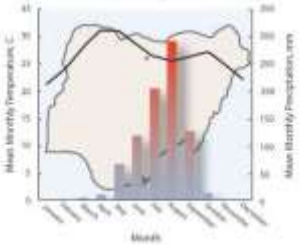
http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0001-37652008000200017&lng=en&nrm=iso

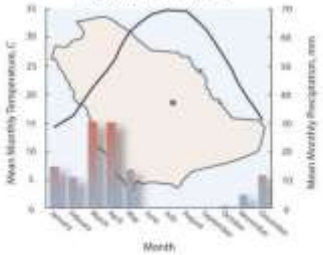
Fig. 2 – The new global natural vegetation map under LONS08 classification.

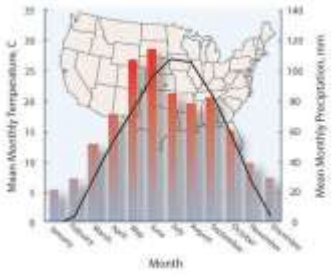
http://www.scielo.br/img/revistas/aabc/v80n2/a17fig02.jpg

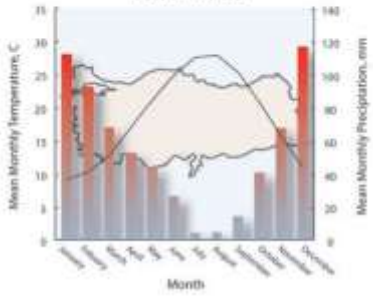


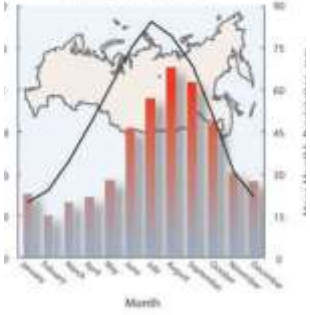


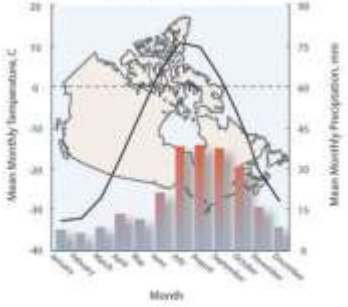












Forseth (2010)

Biomas

Odum (1988) - "a **forma de vida da vegetação** (herbácea, arbustiva, arbórea - árvore decídua, árvore conífera etc.) verificada no estádio de **clímax climático** é a chave para se delimitarem e reconhecerem os biomas terrestres".

Kormondy & Brown (2002) definem os biomas como **os grandes ecossistemas terrestres do mundo** que ocorrem nas principais áreas regionais ou subcontinentais.

Purves et al. (2005) – um **tipo principal de ecossistema** que difere dos outros na **estrutura de sua vegetação predominante**.

Bioma

“(...) um conjunto de ecossistemas (pradarias, rios, florestas, etc.) que, por ocupar uma mesma faixa climática, estão integrados por formas de vida similares e mostram certa coerência ambiental. Assim mesmo, conformam uma rede trófica relativamente unitária e entram em ciclos biogeoquímicos definidos. A tundra, a floresta pluvial são biomas (ZUNINO; ZULLINI, 2003).

Indivíduos → Populações → Comunidades

↓

Ecossistemas

↓

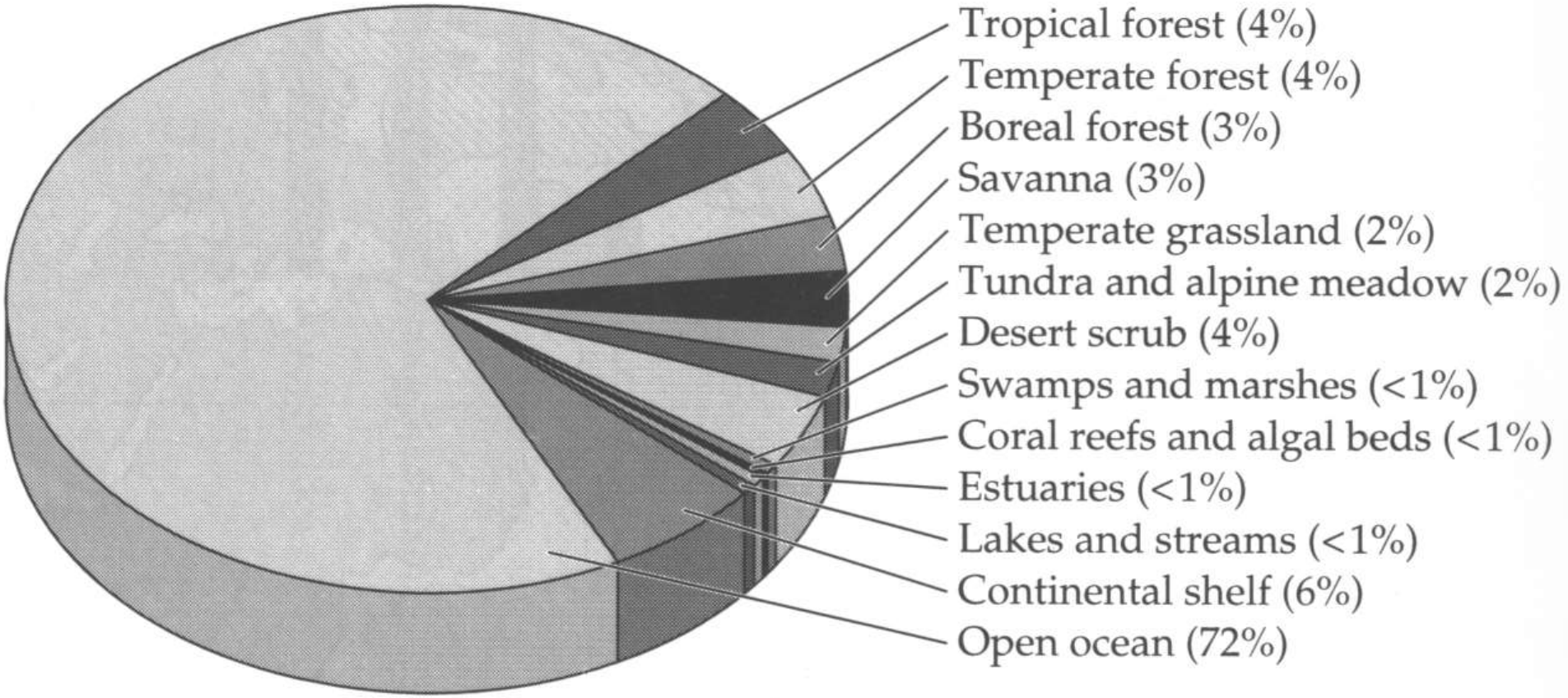
Domínios ou Províncias

↓

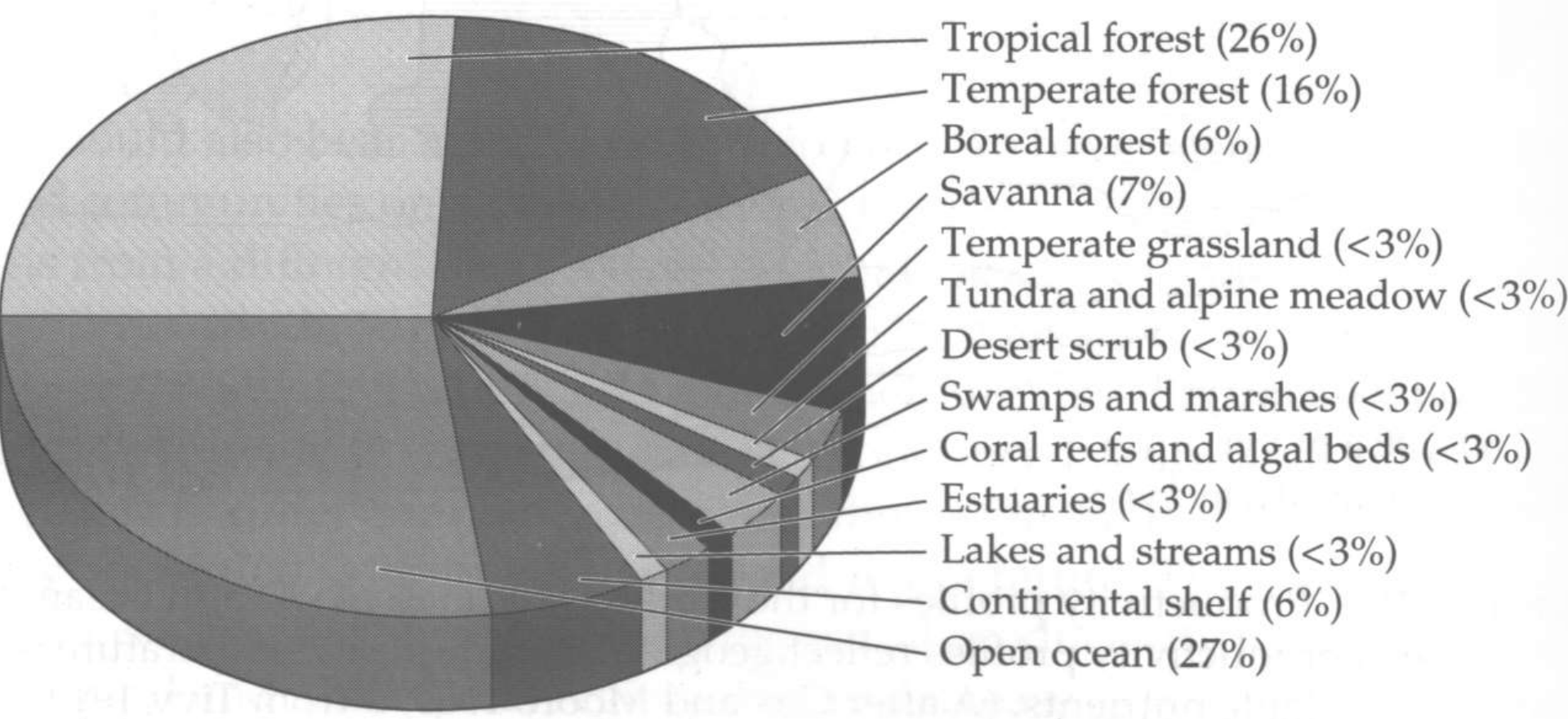
Biomas

↓

Biosfera

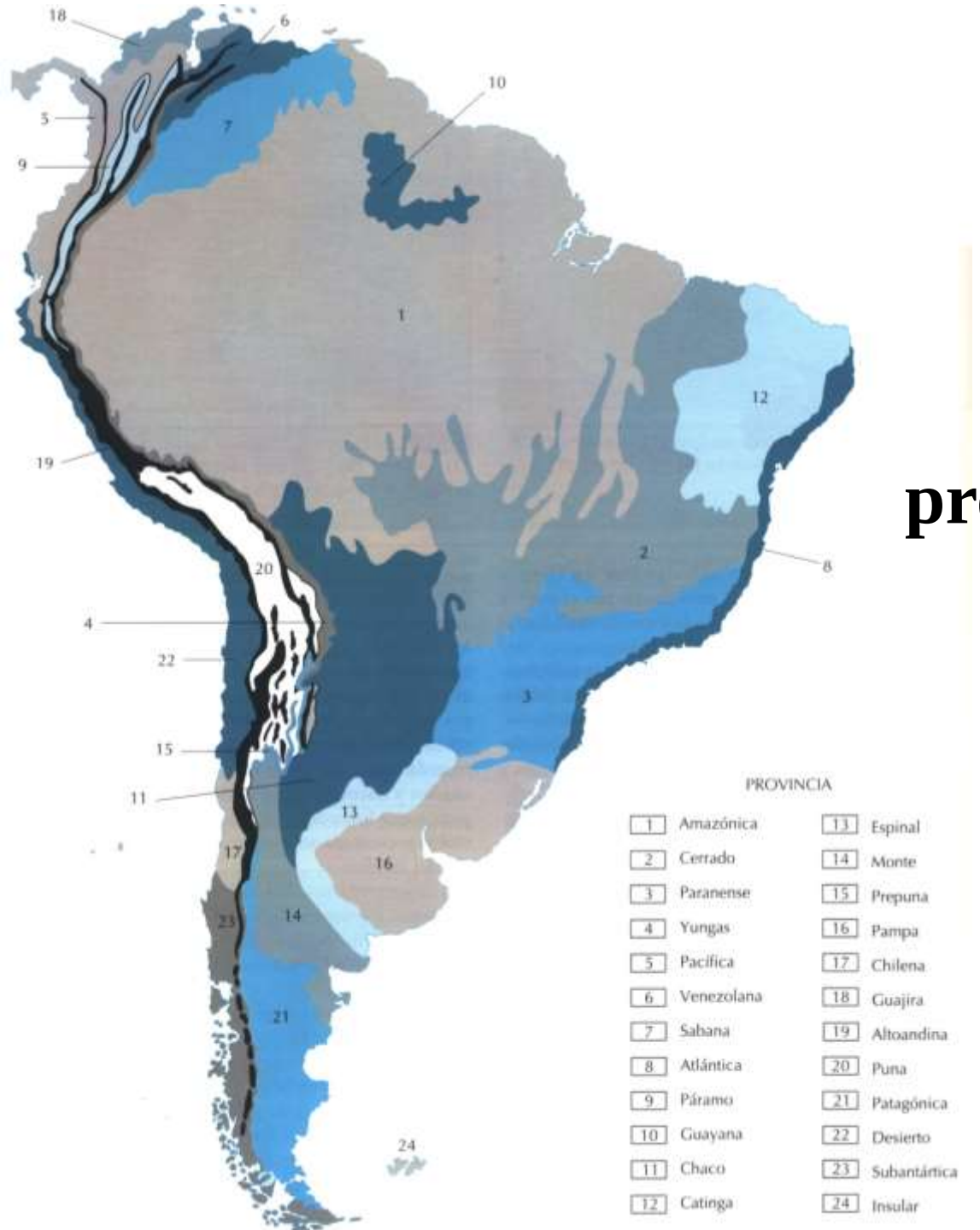


Áreas relativas dos biomas (BROW et al., 2010)

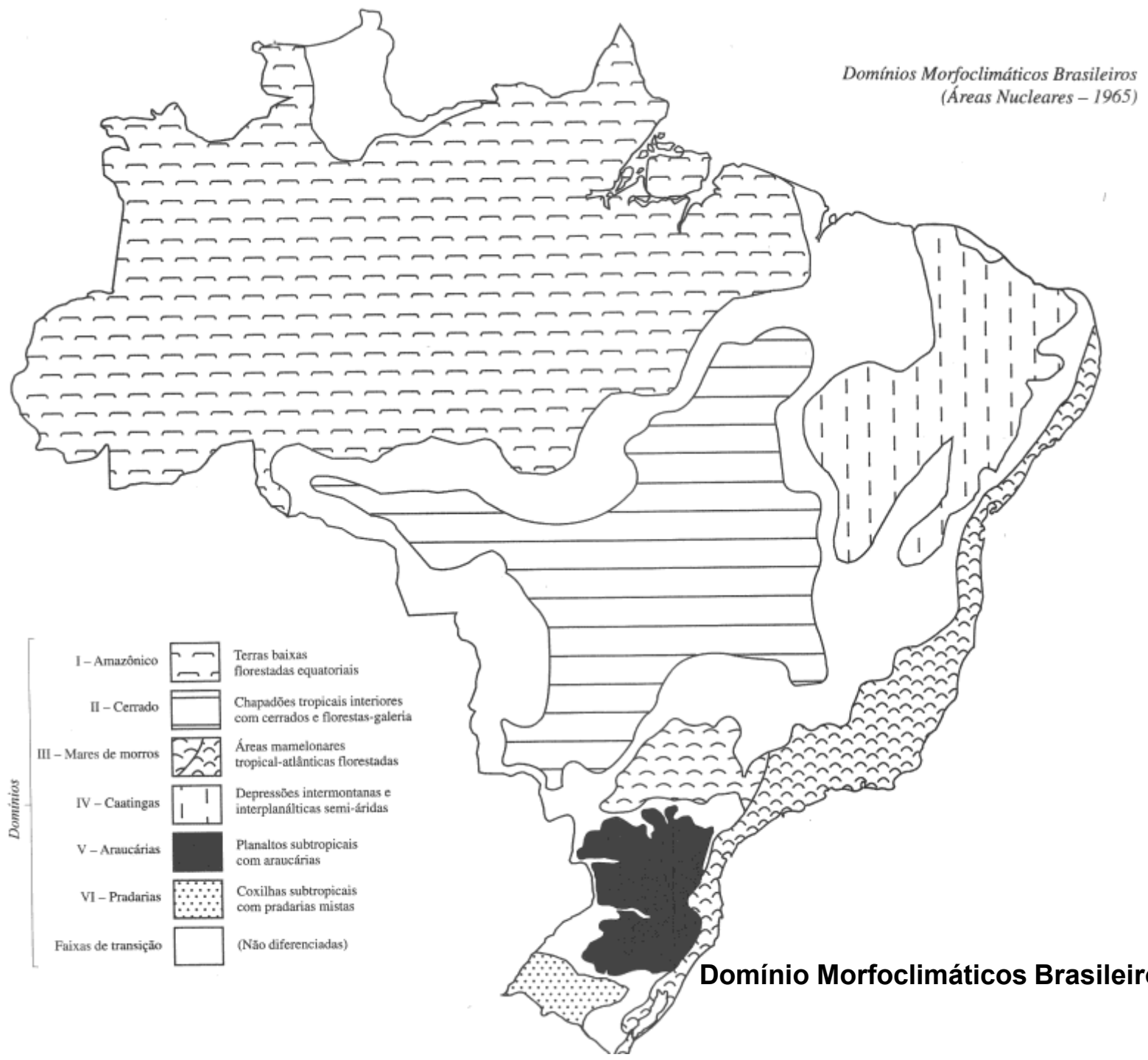


Produção primária dos biomas

(BROW et al., 2010)



Domínios ou províncias da América do Sul (ZUNINO; ZULLINI, 2003).



Domínio Morfoclimáticos Brasileiros (Ab'Saber, 1965)


BIOMAS
Costeiros
Amazônia
Caatinga
Cerrado
Pantanal
Mata
Atlântica
Campos
Sulinos

CUIDADO!

IBGE lança mapa inédito de Biomas e Sistema Costeiro-Marinho

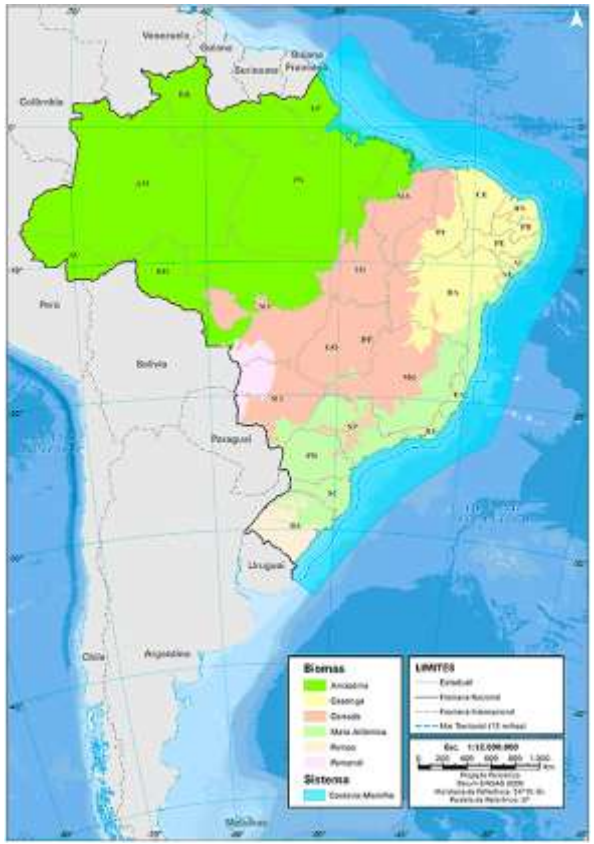
Editoria: **Geociências**

30/10/2019 10h00 | Última Atualização: 30/10/2019 10h06

Compatível com a escala 1:250.000, recorte traz aperfeiçoamentos na representação dos limites dos Biomas e o inédito Sistema Costeiro-Marinho, além de incorporar atualizações e avanços conceituais e tecnológicos. O mapa é fruto do aprimoramento de processos de investigação, revisão bibliográfica e contatos interinstitucionais, além da verificação e consolidação de levantamentos de campo que, ao longo dos limites entre os ambientes considerados, tanto confirmou o ambiente físico-biótico quanto os indícios da vegetação pretérita.

Clique aqui para acessar o mapa.

Aprimoramento do Recorte de Biomas e introdução do Sistema Costeiro-Marinho



https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/25798-ibge-lanca-mapa-inedito-de-biomas-e-sistema-costeiro-marinho

PÁGINA INICIAL > UNIDADES DE CONSERVAÇÃO > UNIDADES NOS BIOMAS

Unidades de Conservação

ICMBio
INSTITUTO CHICO MENDES
MMA

- Quem é quem
- Planos de Manejo
- Planos de Ação
- Geoprocessamento
- Painel dinâmico

QUEM SOMOS

O QUE FAZEMOS

ACESSO À INFORMAÇÃO

BIODIVERSIDADE

SERVIÇOS

COMUNICAÇÃO

CENTRAL DE CONTEÚDOS

Listagem de UCs por biomas:

Amazonia,
Cerrado,
Pantanal,
Caatinga,
Mata Atlântica,
Pampa,
Marinho

Todas Unidades

Clique aqui e faça um filtro da unidade desejada

Nos Biomas

No menu ao lado você encontrará as 334 unidades de conservação federais geridas pelo Instituto Chico Mendes de Conservação da Biodiversidade.

Elas estão espalhadas em todos os biomas brasileiros - Amazônia, Caatinga, Cerrado, Mata Atlântica, Pampa, Pantanal e Marinho.

Clique nos biomas ao lado e conheça as Unidades de Conservação federais do Brasil.

O ICMBio criou um mapa interativo georeferenciado para ajudá-lo a visualizar as Unidades de Conservação dentro do território brasileiro.

Clique na imagem ao lado e explore as informações contidas no mapa.

http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros

Agenda de Dirigentes
Editais e Chamadas
Eventos do MMA
MMA em Números
Programas do MMA
Quem é Quem

ASSUNTOS

Água
Apoio a Projetos
Áreas Protegidas
Biodiversidade
Biomas

Biomas

Paulo de Araújo/MMA

O Brasil é formado por seis biomas de características distintas: Amazônia, Caatinga, Cerrado, Mata Atlântica, Pampa e Pantanal.

Cada um desses ambientes abriga diferentes tipos de vegetação e de fauna.

Como a vegetação é um dos componentes mais importantes da biota, seu estado de conservação e de continuidade definem a existência ou não de hábitats para as espécies, a manutenção de serviços ambientais e o fornecimento de bens essenciais à sobrevivência de populações humanas.

http://www.mma.gov.br/biomas

EDUCAÇÃO

Professora inclui aluno cego com materiais 100% táteis e viraliza nas redes sociais

A professora de Geografia Fabiana Rocha criou para Nathan gráficos com diversas texturas, pirâmides etárias de Lego, mapas com divisões em linhas e grãos, entre outros materiais táteis para incluir o aluno nas suas aulas.

Por Gabriel Pietro 1 dia atrás

https://razoesparaacreditar.com/educacao/professora-inclui-aluno-cego/?utm_source=facebook&utm_medium=post&utm_campaign=rpa&utm_content=professora-inclui-aluno-cego&fbclid=IwAR3t07yaHPRhgJU6TR9APJoY5BDuqGo6RRubdzt4dIWenKWLv7KziH6hzdk (Acesso em 24 set 2019)

Resumindo... Os principais biomas terresres são:

Tundra

Taiga

Estepe

Floresta temperada

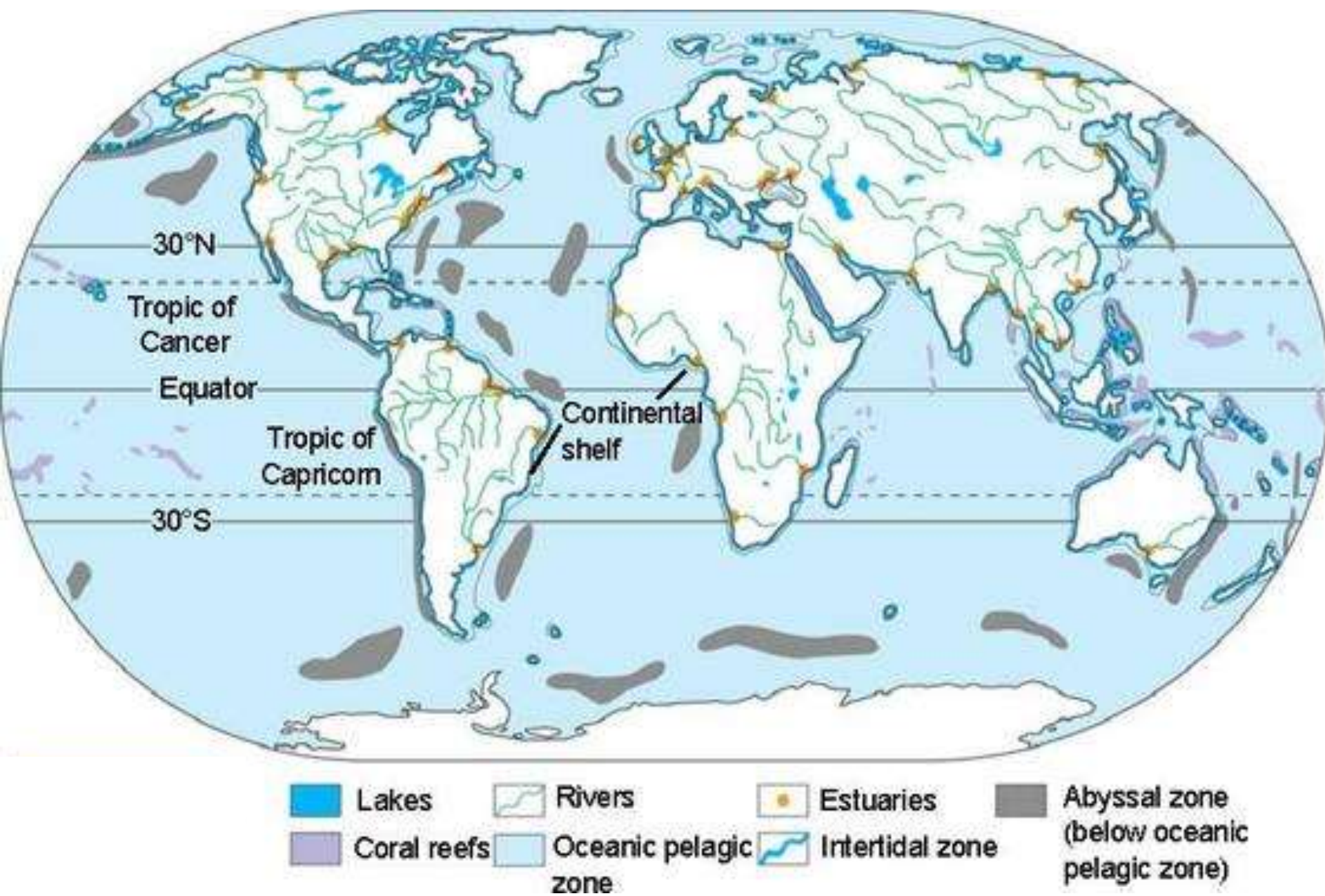
Savana

Ecossistemas mediterrâneos

Floresta tropical úmida

Desertos

Alguns autores também consideram os ambientes aquáticos continentais e os mares e oceanos.



Biomas aquáticos

https://public.wsu.edu/~rlee/biol103/ecologybiosphere/img040.gif

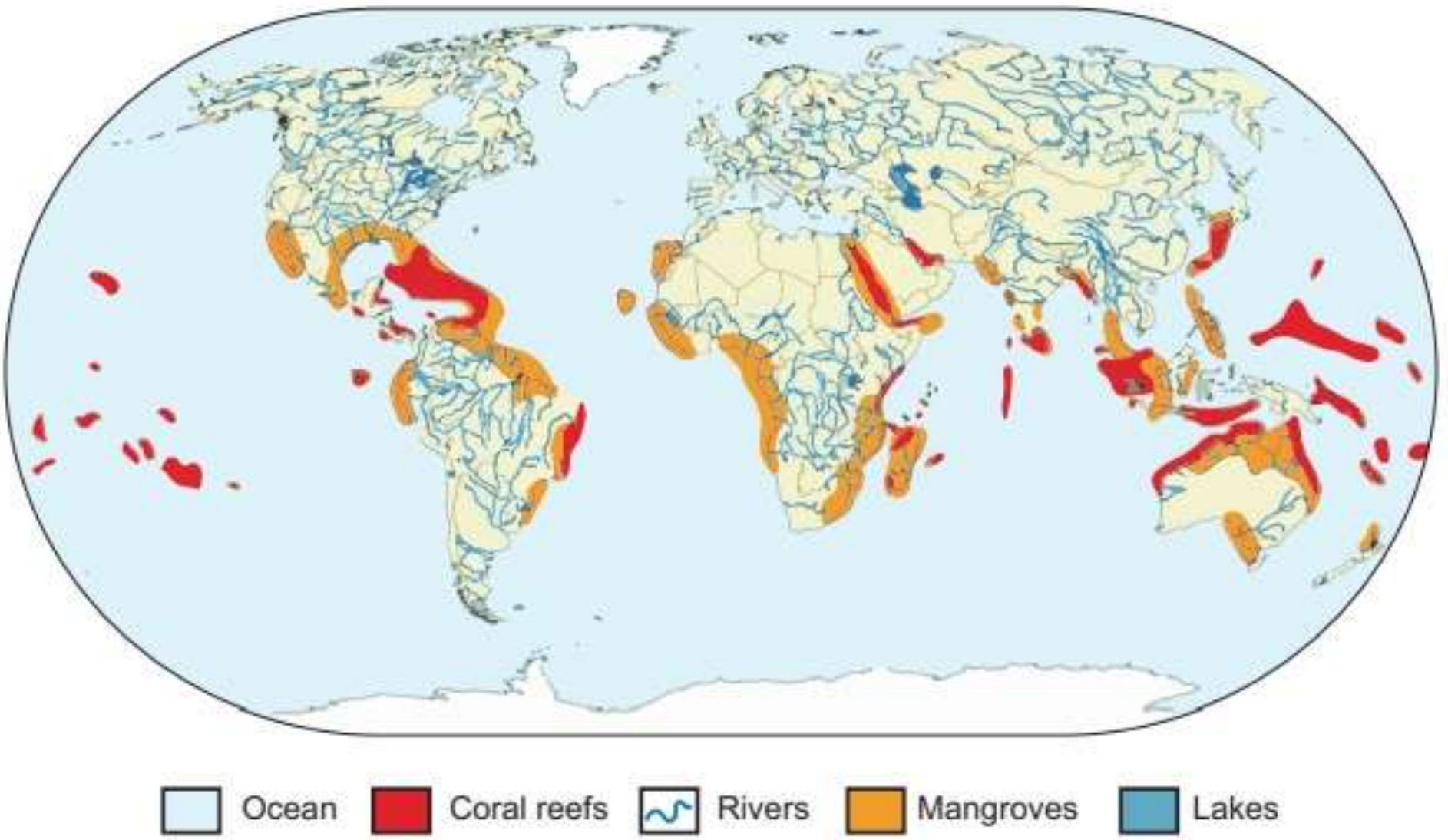


Fig. 11.6 Aquatic Biomes

Biomas aquáticos

https://www.brainkart.com/media/extra3/l4k39qX.jpg

Putting people in the map: anthropogenic biomes of the world

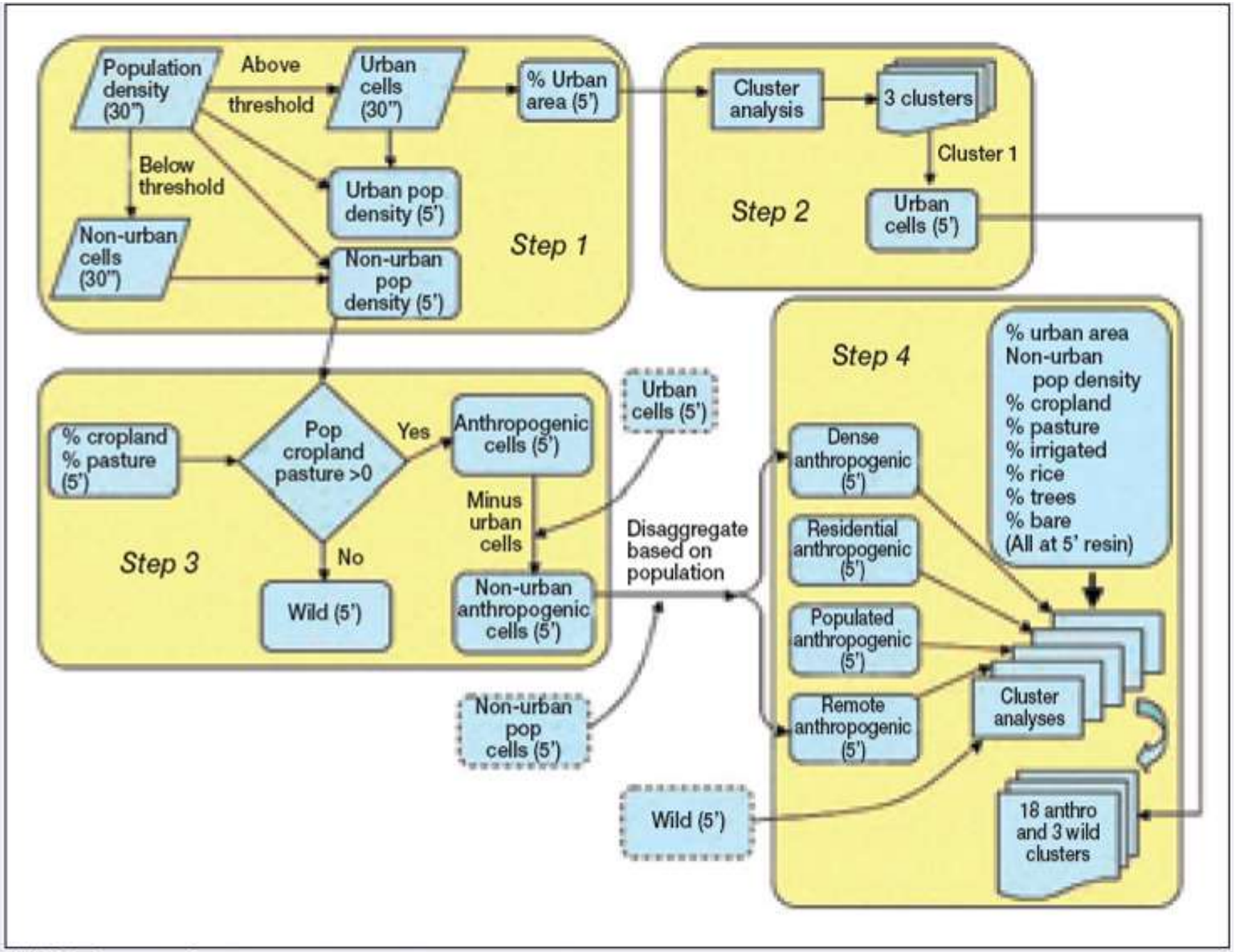
Erle C Ellis[1*] and Navin Ramankutty[2]

Humans have fundamentally altered global patterns of biodiversity and ecosystem processes. Surprisingly, existing systems for representing these global patterns, including biome classifications, either ignore humans altogether or simplify human influence into, at most, four categories. Here, we present the first characterization of terrestrial biomes based on global patterns of sustained, direct human interaction with ecosystems. Eighteen "anthropogenic biomes" were identified through empirical analysis of global population, land use, and land cover. More than 75% of Earth's ice-free land showed evidence of alteration as a result of human residence and land use, with less than a quarter remaining as wildlands, supporting just 11% of terrestrial net primary production. Anthropogenic biomes offer a new way forward by acknowledging human influence on global ecosystems and moving us toward models and investigations of the terrestrial biosphere that integrate human and ecological systems.

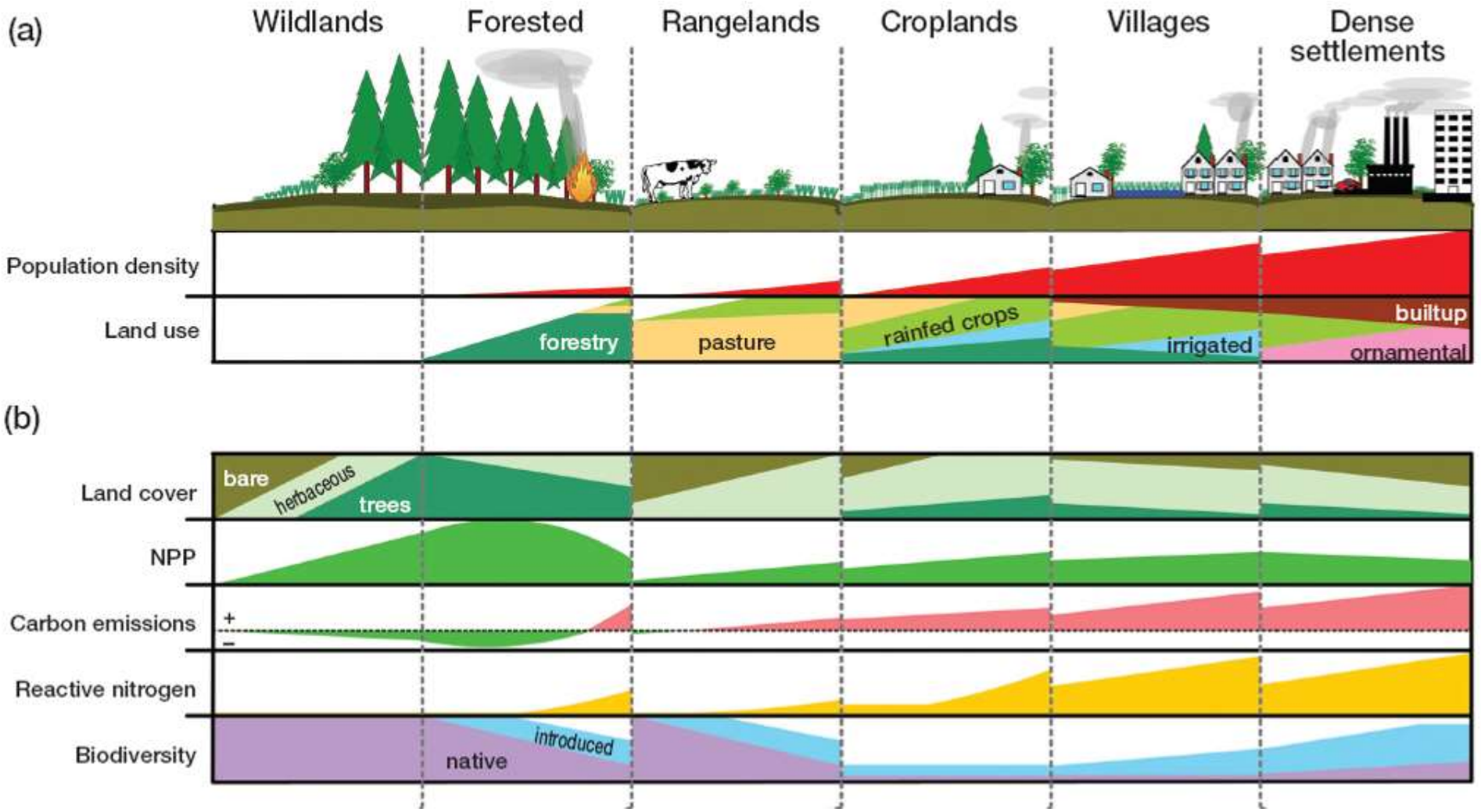
Front Ecol Environ 2008; 6(8): 439–447, doi: 10.1890/070062

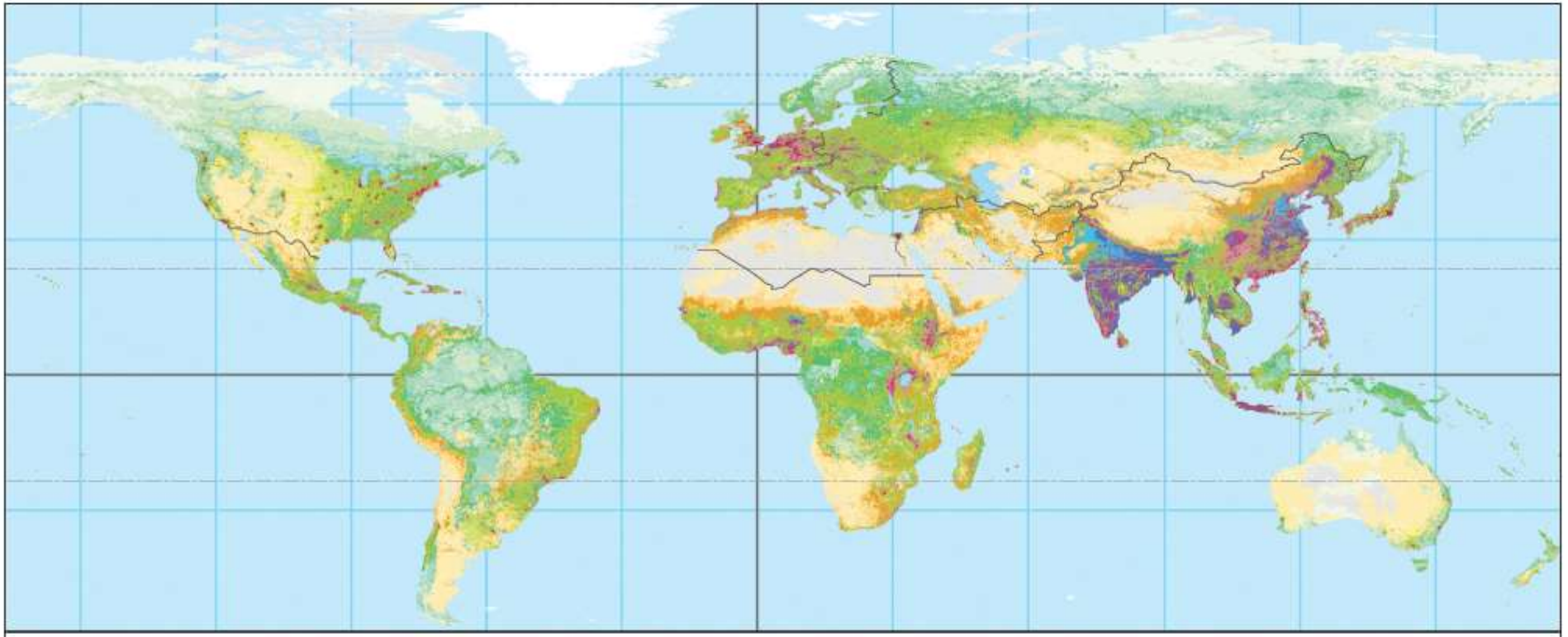
Biomas antropogênicos (http://www.ecotope.org/anthromes/)

(http://ecotope.org/people/ellis/papers/ellis_2008.pdf)



WebFigure 1. Flow chart of biome analysis.


(a)
Wildlands
Forested
Rangelands
Croplands
Villages
Dense settlements
Population density
Land use
forestry
pasture
rainfed crops
irrigated
builtup
ornamental
(b)
Land cover
bare
herbaceous
trees
NPP
Carbon emissions
+
−
Reactive nitrogen
Biodiversity
native
introduced



Anthropogenic biomes: legend

Dense settlements
- 11 Urban
- 12 Dense settlements

Villages
- 21 Rice villages
- 22 Irrigated villages
- 23 Cropped and pastoral villages
- 24 Pastoral villages
- 25 Rainfed villages
- 26 Rainfed mosaic villages

Croplands
- 31 Residential irrigated cropland
- 32 Residential rainfed mosaic
- 33 Populated irrigated cropland
- 34 Populated rainfed cropland
- 35 Remote croplands

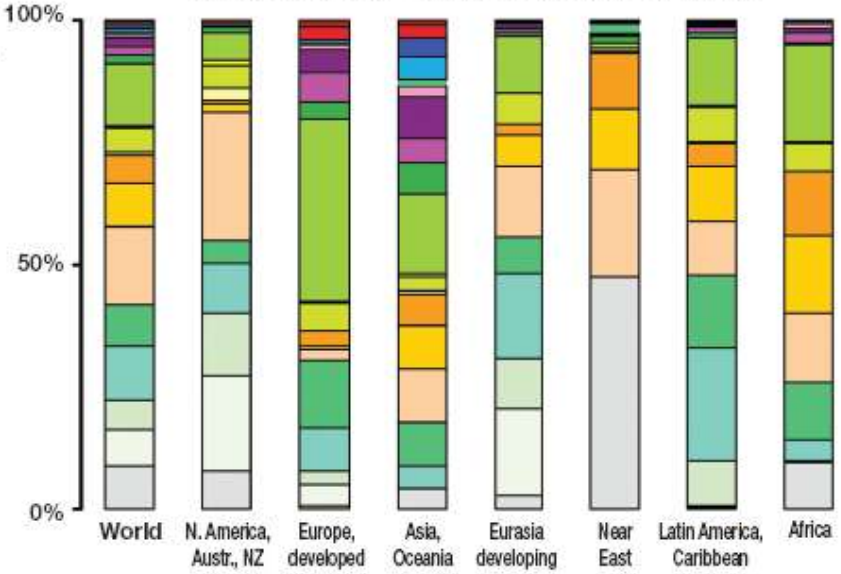
Rangelands
- 41 Residential rangelands
- 42 Populated rangelands
- 43 Remote rangelands

Forested
- 51 Populated forests
- 52 Remote forests

Wildlands
- 61 Wild forests
- 62 Sparse trees
- 63 Barren

Region boundary

Anthropogenic biomes: % world regions



Laboratory for Anthropogenic Landscape Ecology

Anthropogenic Biomes

Human Landscapes

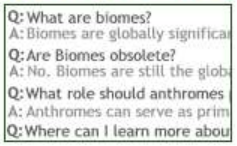
ABOUT | PEOPLE | PROJECTS | PRODUCTS | ANTHROMES | AEM SYSTEM

We have moved! Please visit us at ANTHROECOLOGY.ORG. This website is for archival purposes only.

Humans have reshaped the biosphere.

Anthromes (*Anthropogenic Biomes*, or *"human biomes"*) represent the global ecological patterns created by sustained direct human interactions with ecosystems.

Anthrome FAQ

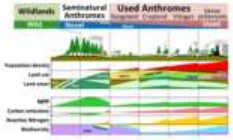


For Educators

Media & Web

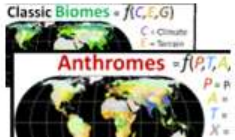
Maps

For Researchers



Planetary Stewardship

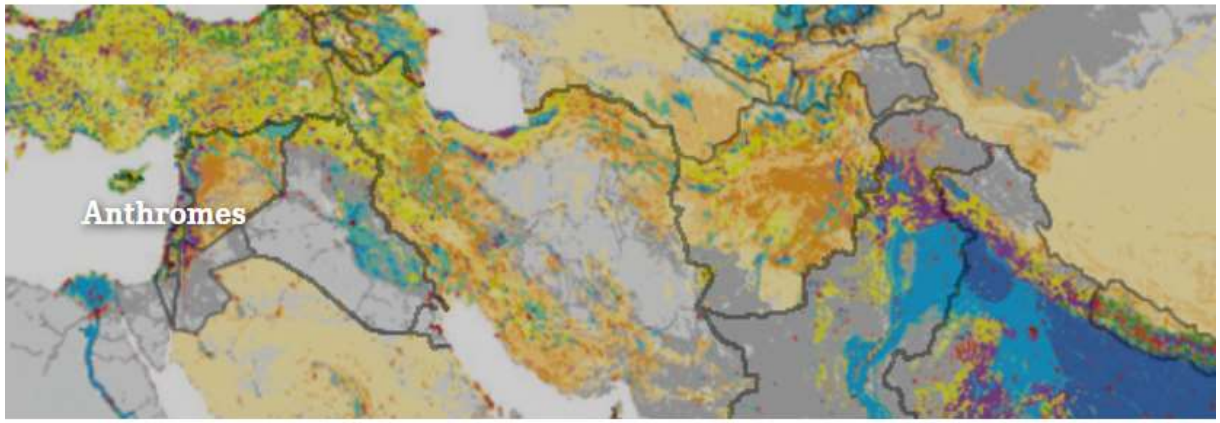
Paradigm



https://ecotope.org/anthromes/

Anthroecology Lab

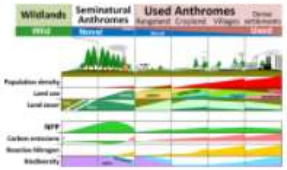
ABOUT | ANTHROMES | PROJECTS | PEOPLE | PRODUCTS | BLOG



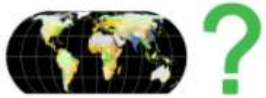
People have reshaped the biosphere.

Anthromes are the global ecological patterns created and sustained by direct human interactions with ecosystems. Also known as "human biomes", **anthromes are "anthropogenic biomes"**, a term coined in a 2008 publication by Erle Ellis and Navin Ramankutty. This site is the home page for all anthromes work produced by Erle Ellis and collaborators since 2008.

Maps



Research



Anthromes FAQ

Anthromes for Education

Media

https://anthroecology.org/anthromes/

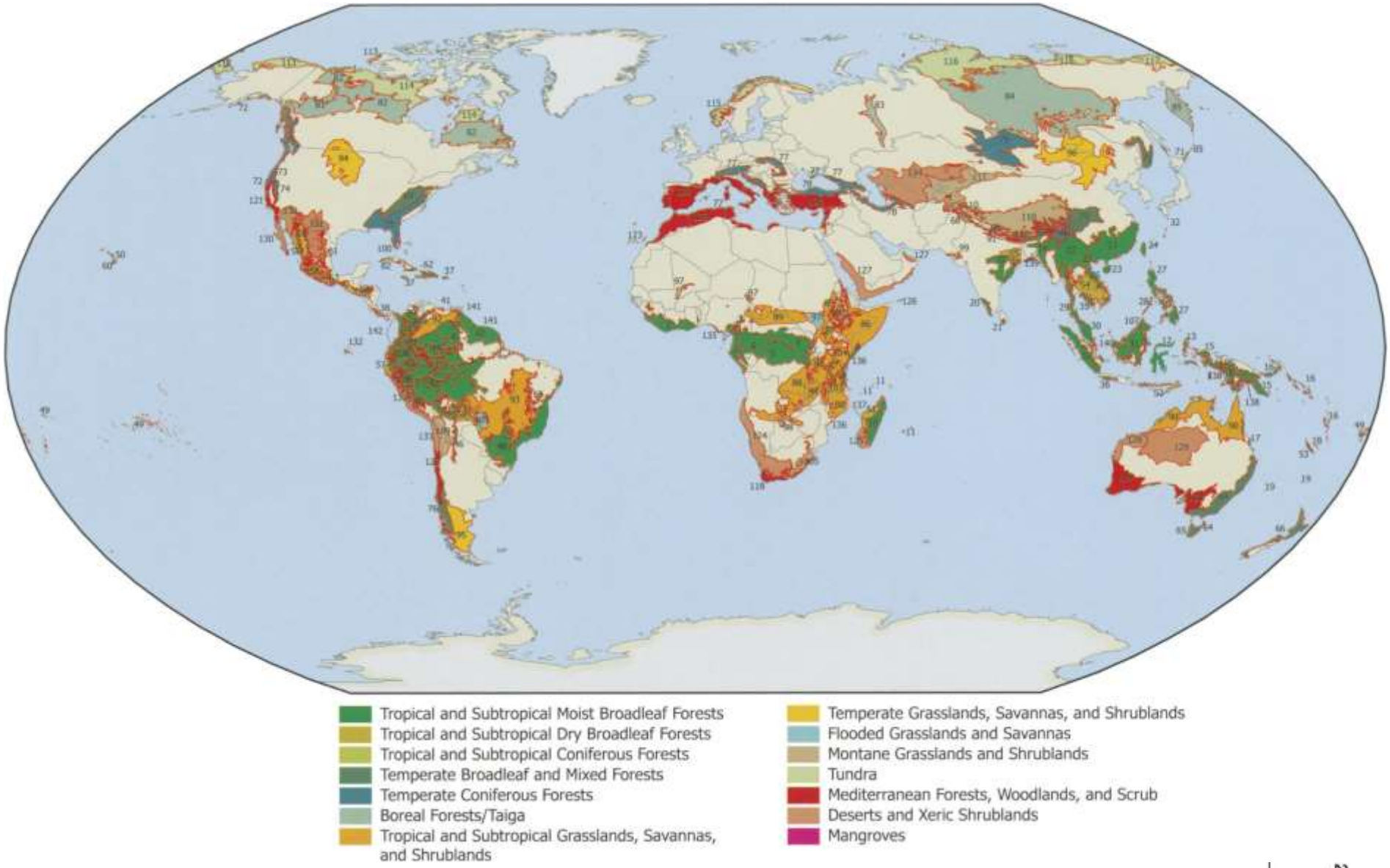


Figure 2. The terrestrial Global 200 ecoregions targets ecoregions with outstanding biodiversity features and representative value. The numbers correspond to the ecoregions listed in Table 1.

Ecorregiões

Olson e Dinerstein (2002)

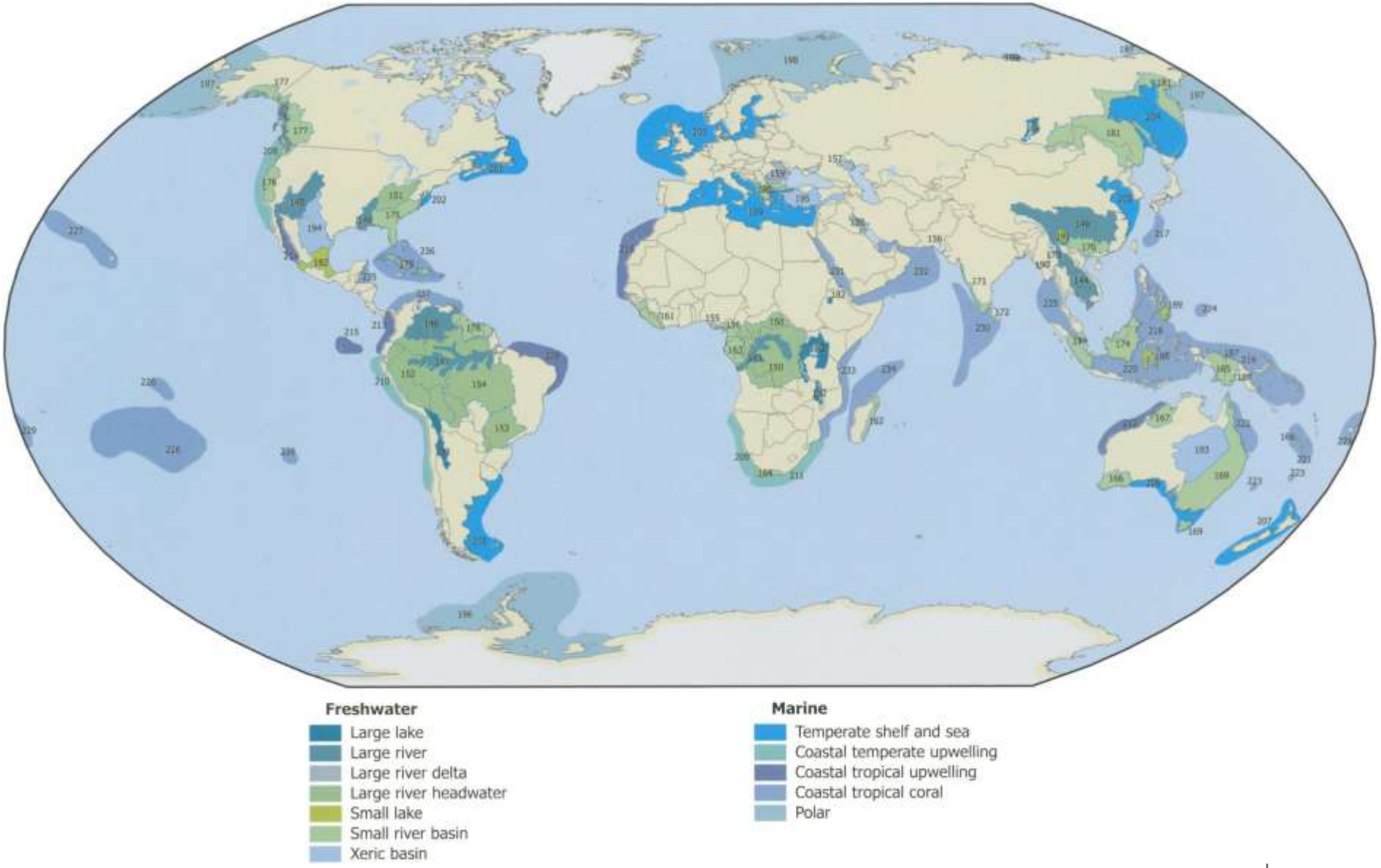


Figure 3. The freshwater and marine Global 200 ecoregions. The numbers correspond to the ecoregions listed in Table 1.

Ecorregiões

Olson e Dinerstein (2002)

Global 200

DATE:
August 01, 2012

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WWF's Global 200 project analyzed global patterns of biodiversity to identify a set of the Earth's terrestrial, freshwater, and marine ecoregions that harbor exceptional biodiversity and are representative of its ecosystems.

We placed each of the Earth's ecoregions within a system of 30 biomes and biogeographic realms to facilitate a representation analysis. Biodiversity features were compared among ecoregions to assess their irreplaceability or distinctiveness. These features included species richness, endemic species, unusual higher taxa, unusual ecological or evolutionary phenomena, and the global rarity of habitats.

This process yielded 238 ecoregions--the Global 200--comprised of 142 terrestrial, 53 freshwater, and 43 marine priority ecoregions.

Effective conservation in these ecoregions would help conserve the most outstanding and representative habitats for biodiversity on this planet.

Download (22.8 MB)

Citation: Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224.

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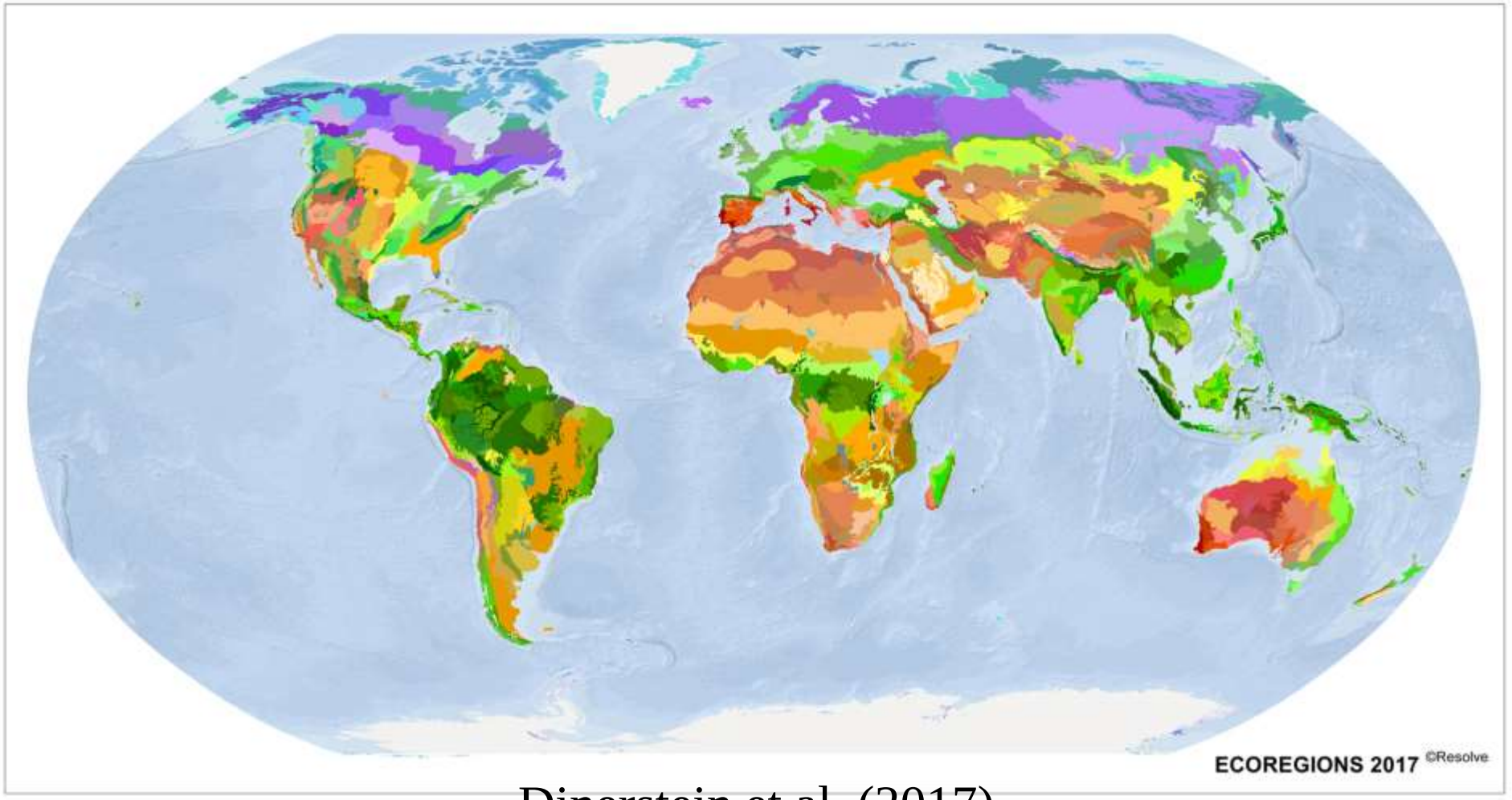
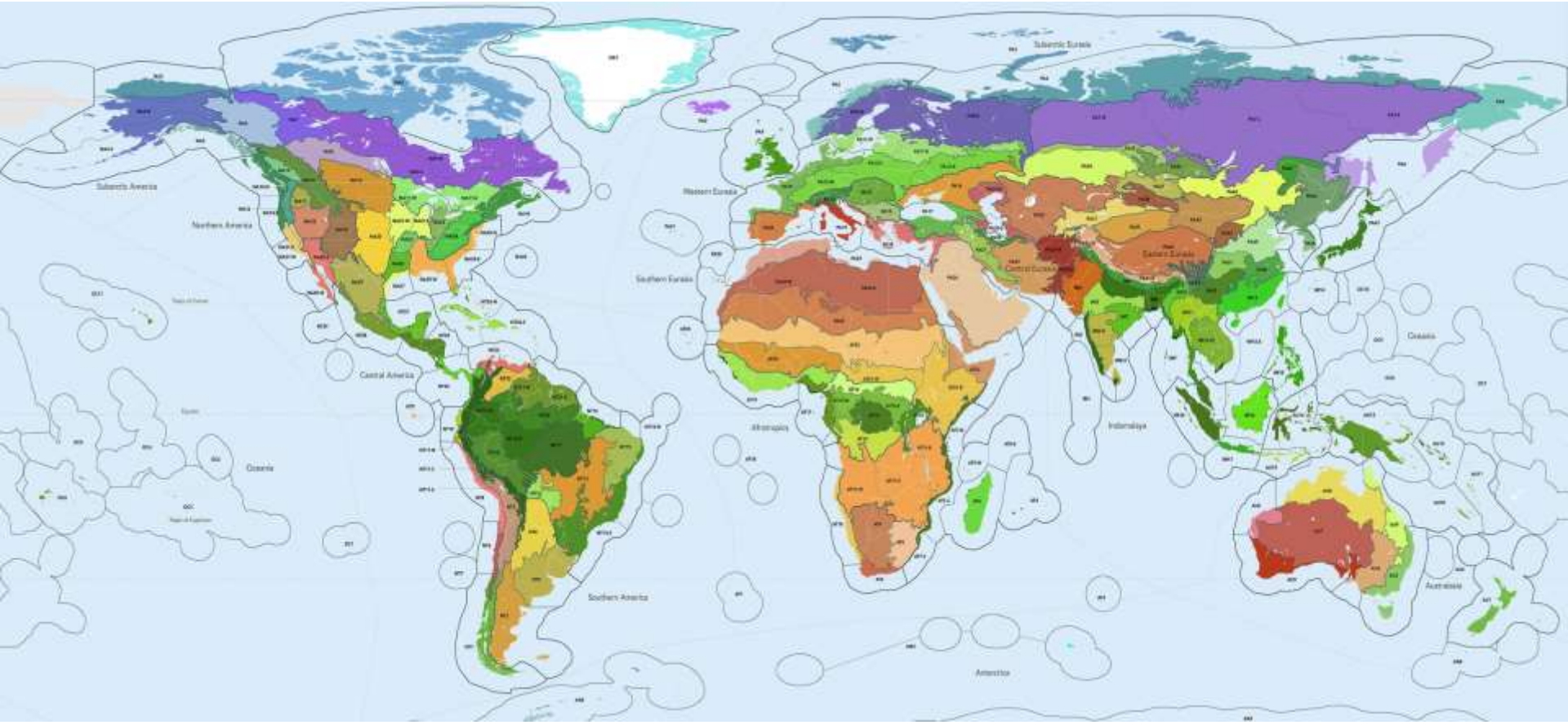
Figure 1. The 846 global ecoregions that comprise Ecoregions2017©Resolve nested within 14 terrestrial ...



Dinerstein et al. (2017)

BioScience, Volume 67, Issue 6, June 2017, Pages 534–545, https://doi.org/10.1093/biosci/bix014



Bioregiões

https://www.oneearth.org/bioregions-2020/

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