Approche « évocentrée » des aires protégées

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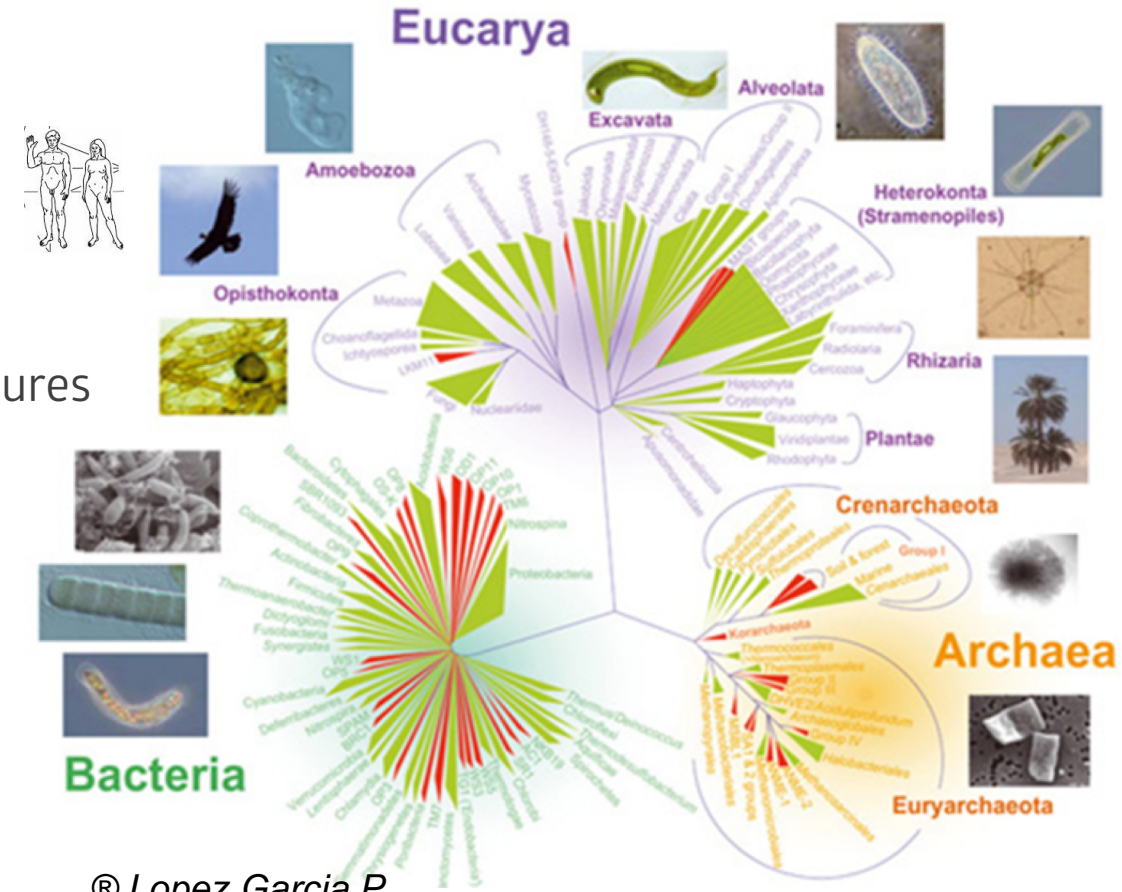
Pdt CS FRB

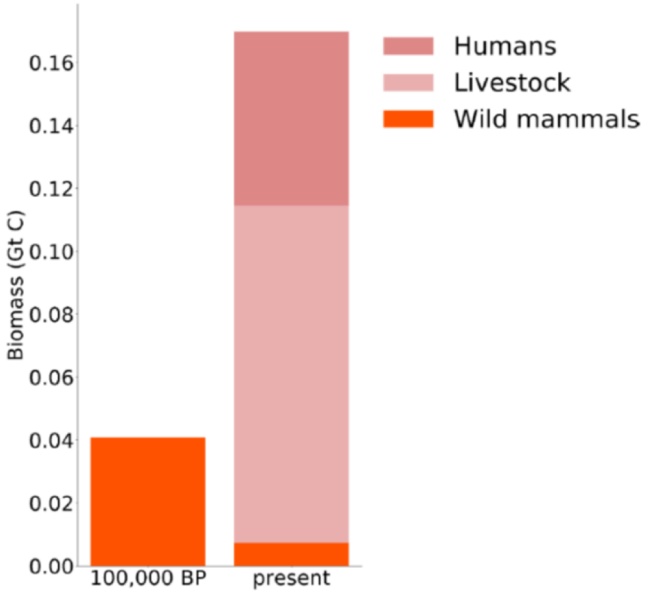
Evolution et biodiversité

- Microévolution
- Macroévolution
- Transitions évolutives majeures

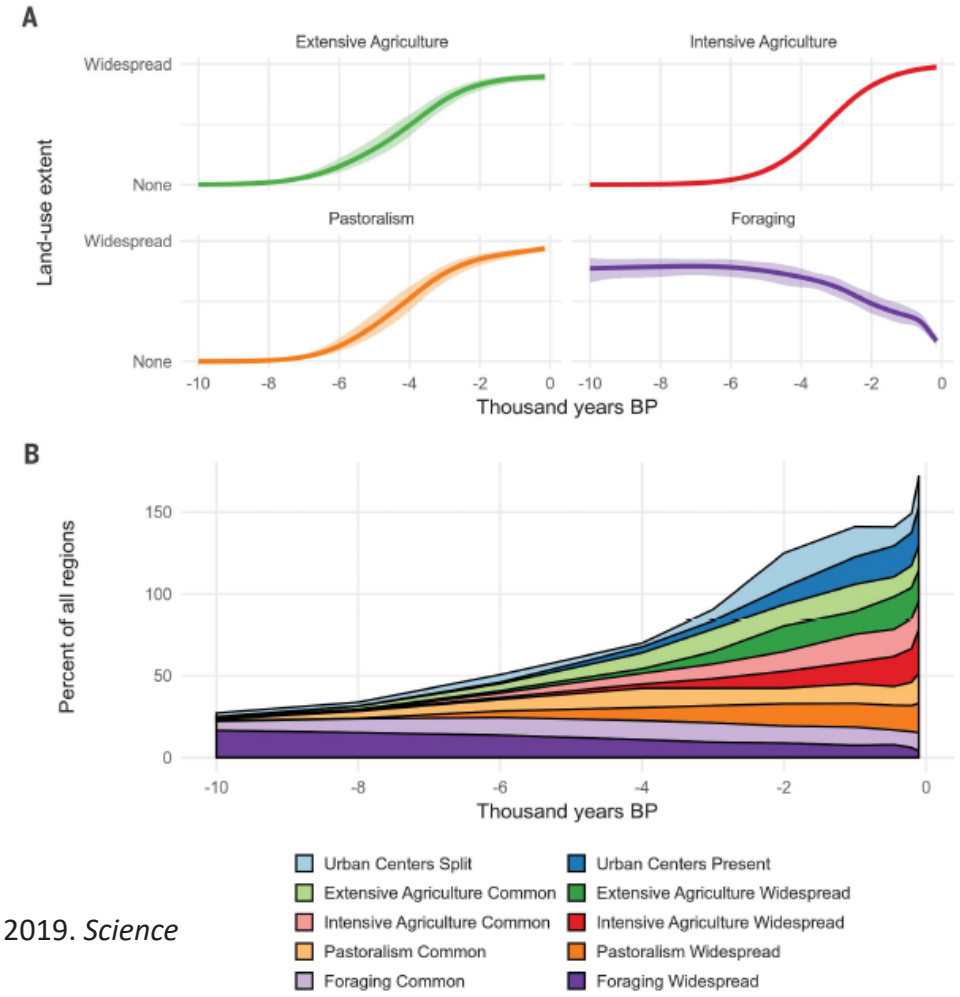


® *Lopez Garcia P.*

Pressions anthropiques et « Anthropocène »

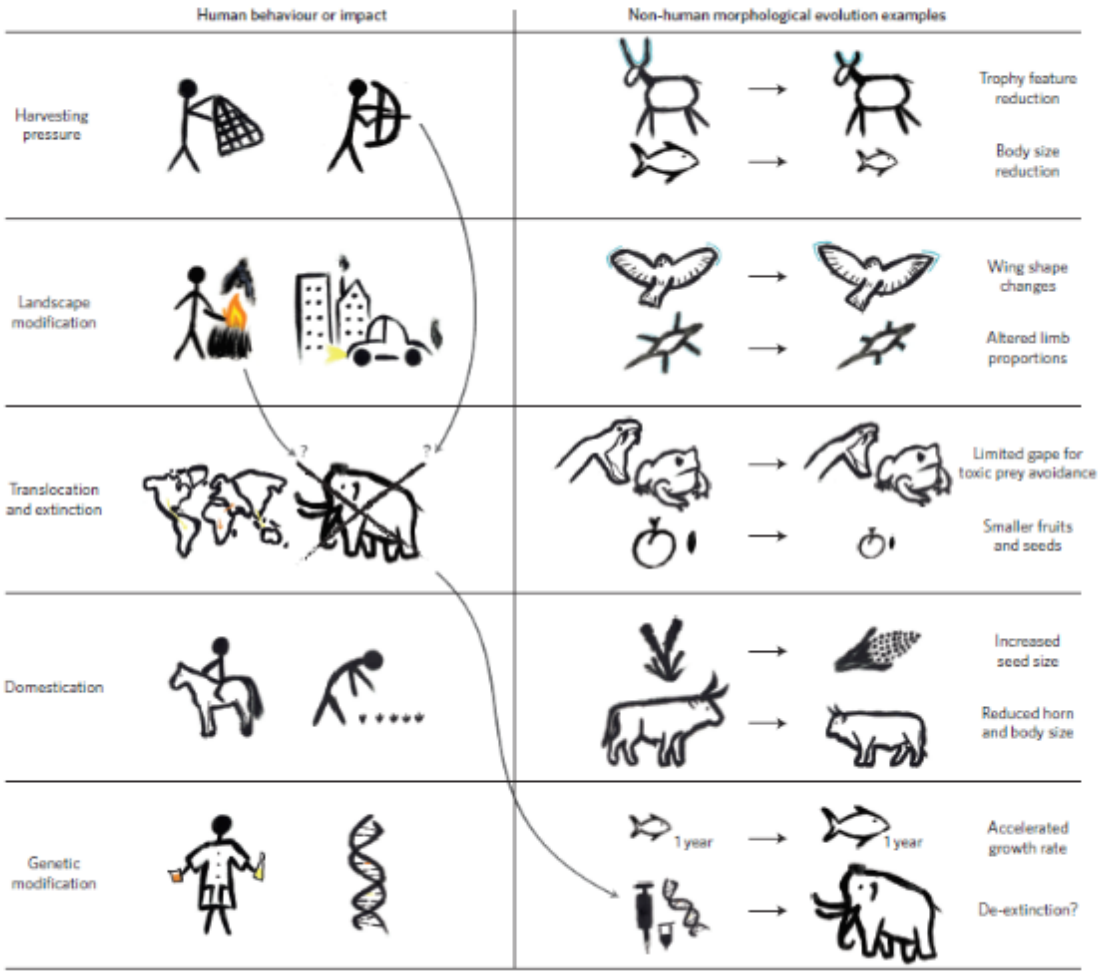


Bar-On YM *et al.,* 2018. *PNAS*



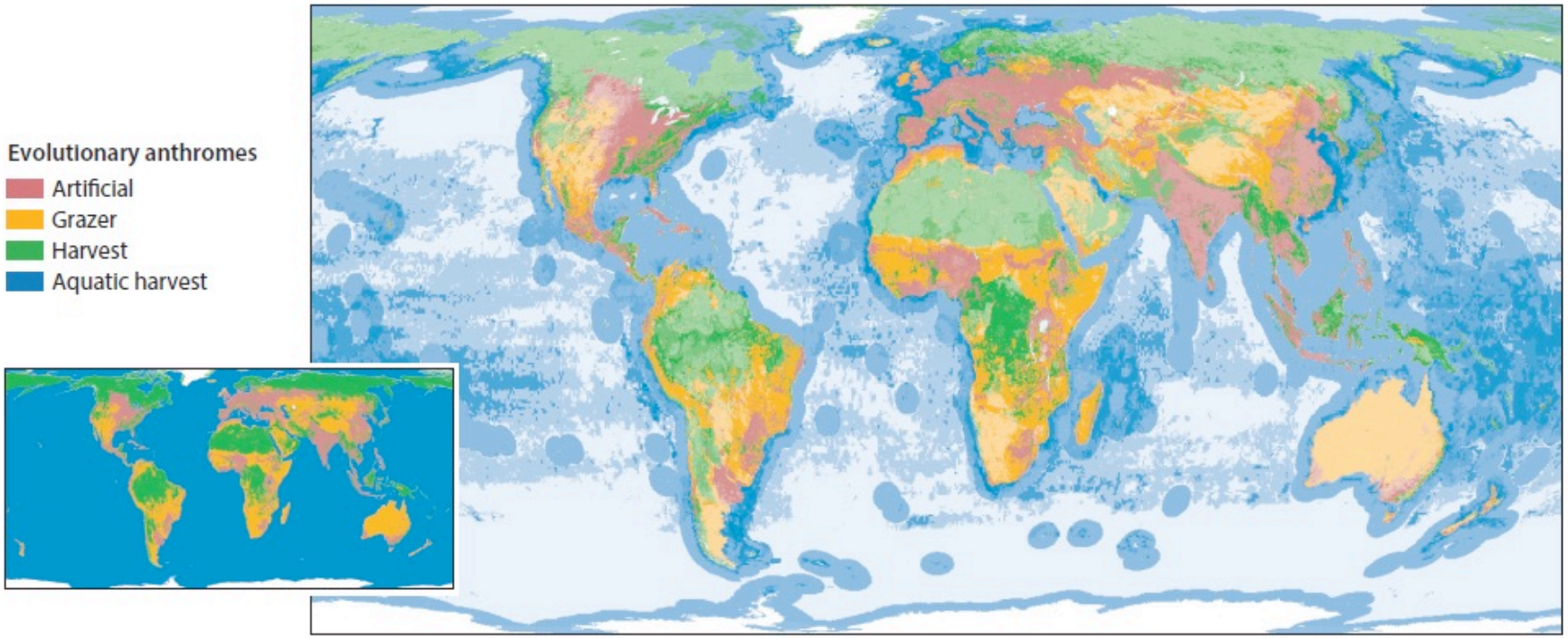
ArchaeoGLOBE Project, 2019. *Science*

« Empreinte évolutive » anthropogénique



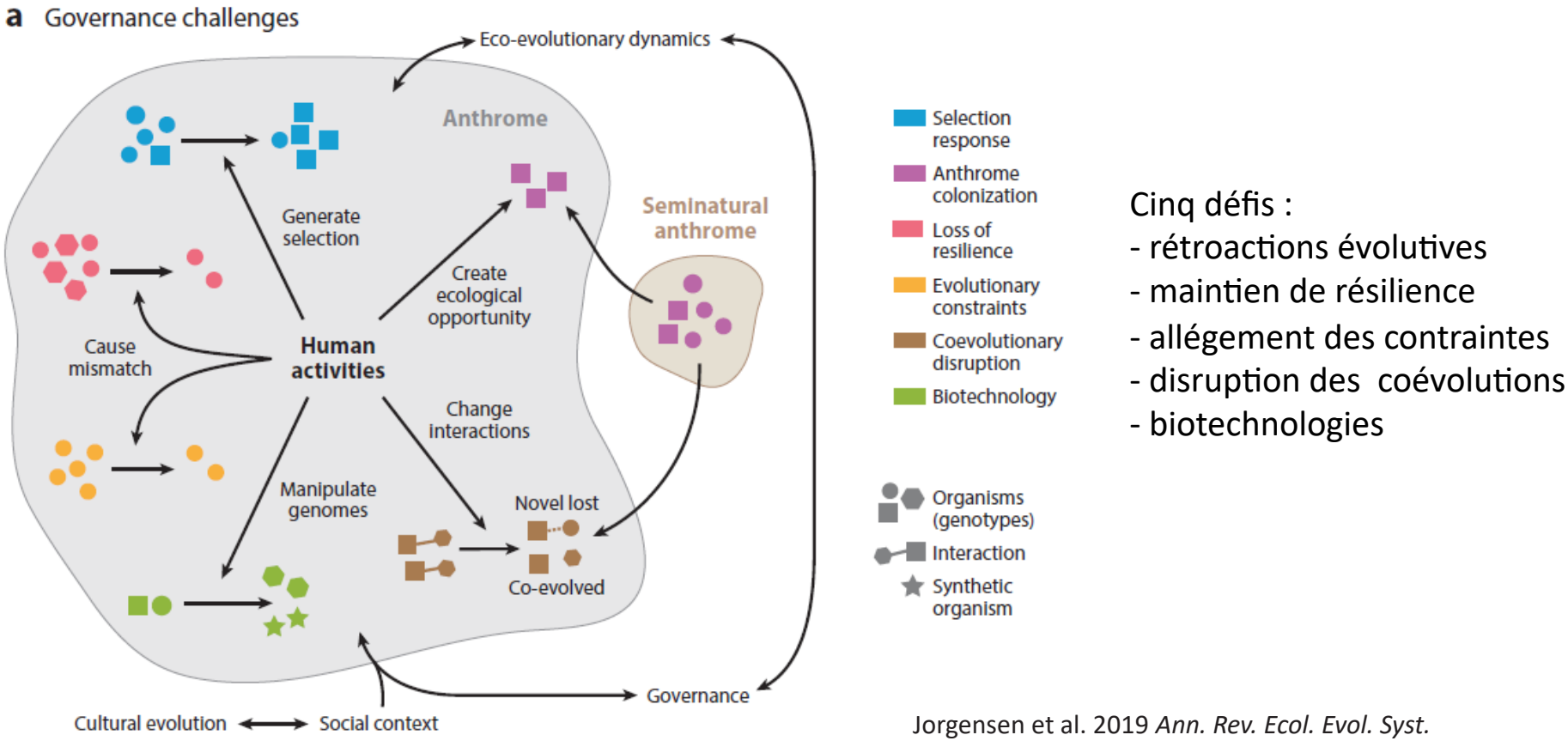
Sullivan et al. 2017
Nature Ecology & Evolution

Biomes anthropogéniques, « anthromes »



Jorgensen et al. 2019 Ann Rev. Ecol. Evol. Syst.

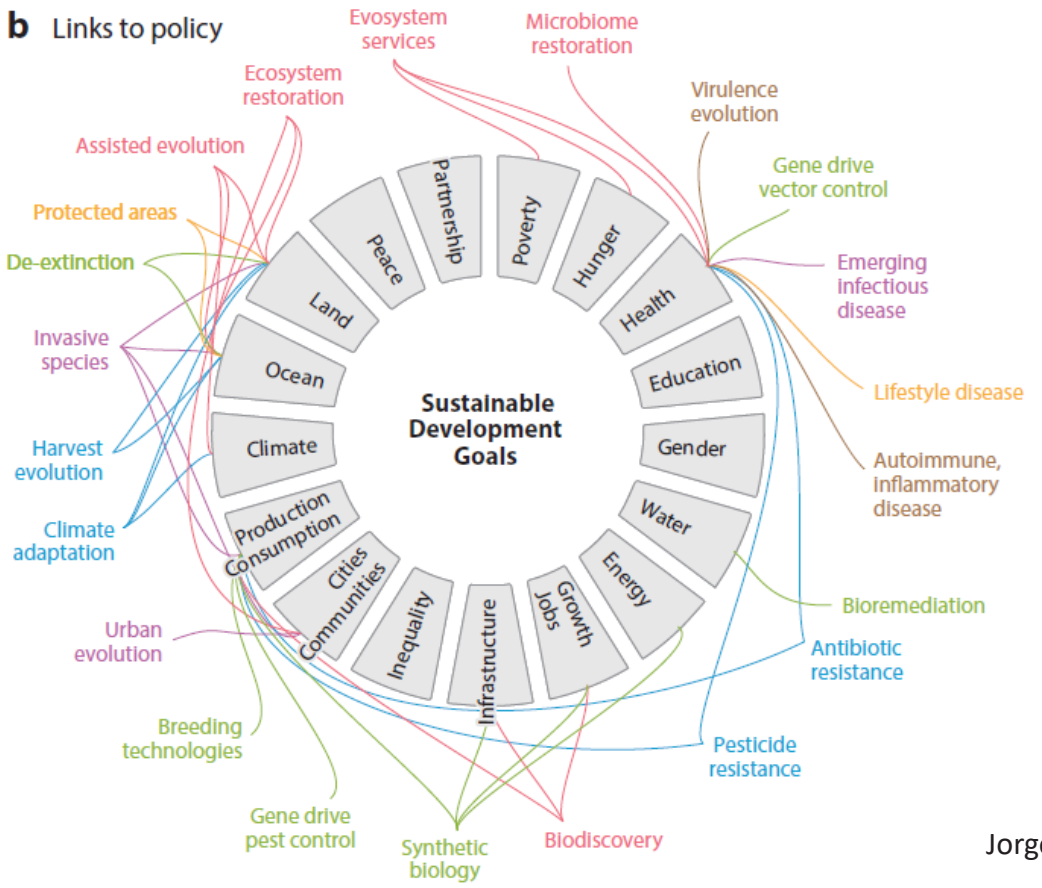
Evolution et Gouvernance



Cinq défis :
- rétroactions évolutives
- maintien de résilience
- allégement des contraintes
- disruption des coévolutions
- biotechnologies

Jorgensen et al. 2019 *Ann. Rev. Ecol. Evol. Syst.*

Evolution et ODDs



Cinq défis :
- rétroactions évolutives,
- maintien de résilience,
- allégement des contraintes,
- disruption des coévolutions,
- biotechnologie.»

Jorgensen et al. 2019 *Ann. Rev. Ecol. Evol. Syst.*

« Life Framework »

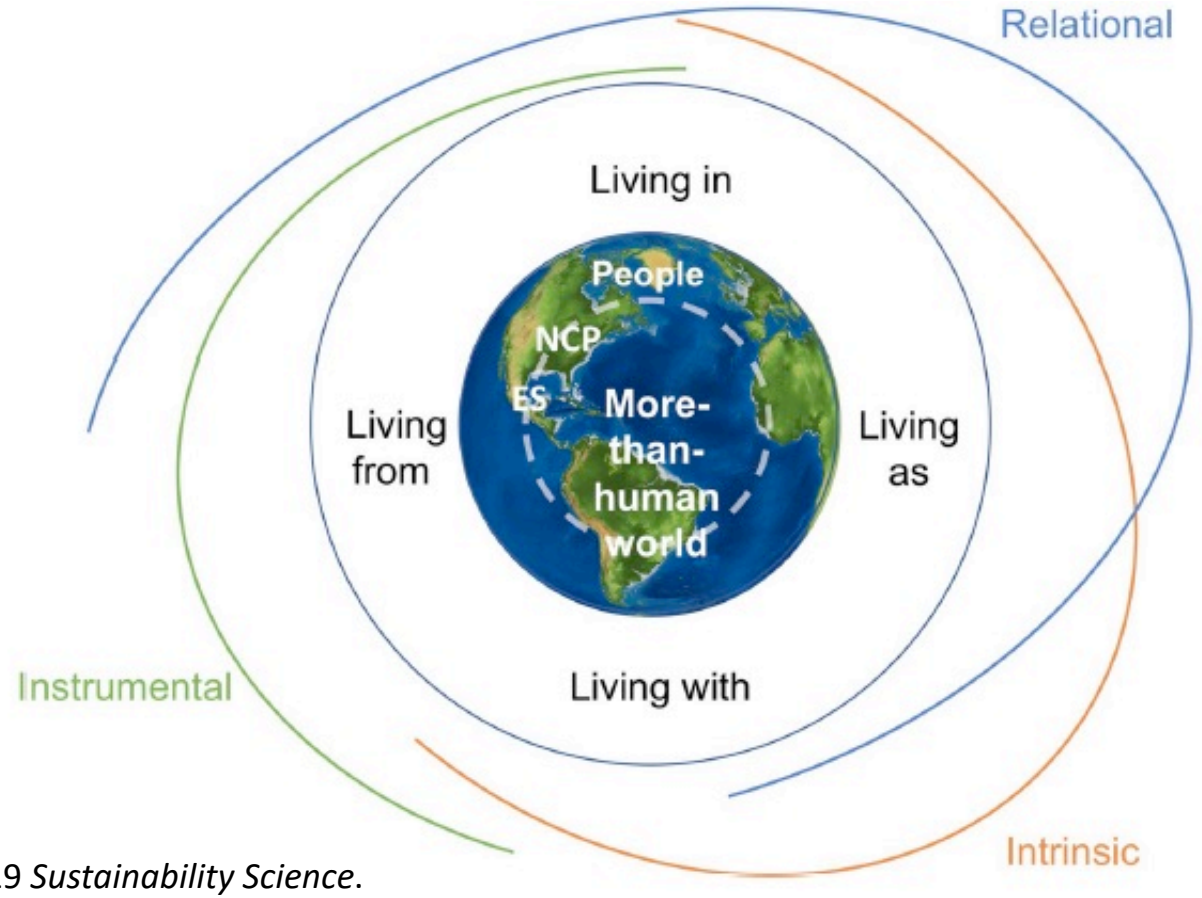


Fig. 1 The four Life Frames of Values and their relation to the IPBES (2016) categories of intrinsic, instrumental and relational values. *ES* ecosystem services, *NCP* nature's contributions to people

O'Connor, S., & Kenter, J. O. 2019 *Sustainability Science*.

Evolution et stratégies de conservation

- Gradient d'anthropisation
- Echelles spatiales et temporelles

Evolution et stratégies de conservation

	Roots			Challenges		
SHOULD WE . . .	INTRINSIC VALUE	CONSERVATION	WILDERNESS	ECOSYSTEM SERVICES (ES)		
abandon attempts at biodiversity conservation?	None	None	None	Runaway consumption of biodiversity resources		**Blind Anthropocene**

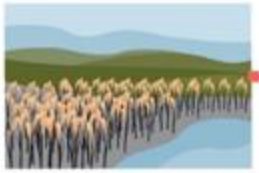
Sarrazin F. & Lecomte J. 2016 *Science*

Evolution et stratégies de conservation

SHOULD WE . . .	Roots: INTRINSIC VALUE	Roots: CONSERVATION	Roots: WILDERNESS	Challenges: ECOSYSTEM SERVICES (ES)		
abandon attempts at biodiversity conservation?	None	None	None	Runaway consumption of biodiversity resources		Blind Anthropocene
conserve for the resilience of future human generations?	Human fitness	Anthropocentric	None	Long-term provisioning and regulating ES		Deliberate Anthropocene
conserve for the immediate well-being of human individuals?	Human well-being		Scenic wilderness	Short-term provisioning and cultural ES		
conserve for the well-being of future human generations?	Human well-being and fitness		Scenic wilderness	Long-term provisioning, regulating, and cultural ES		

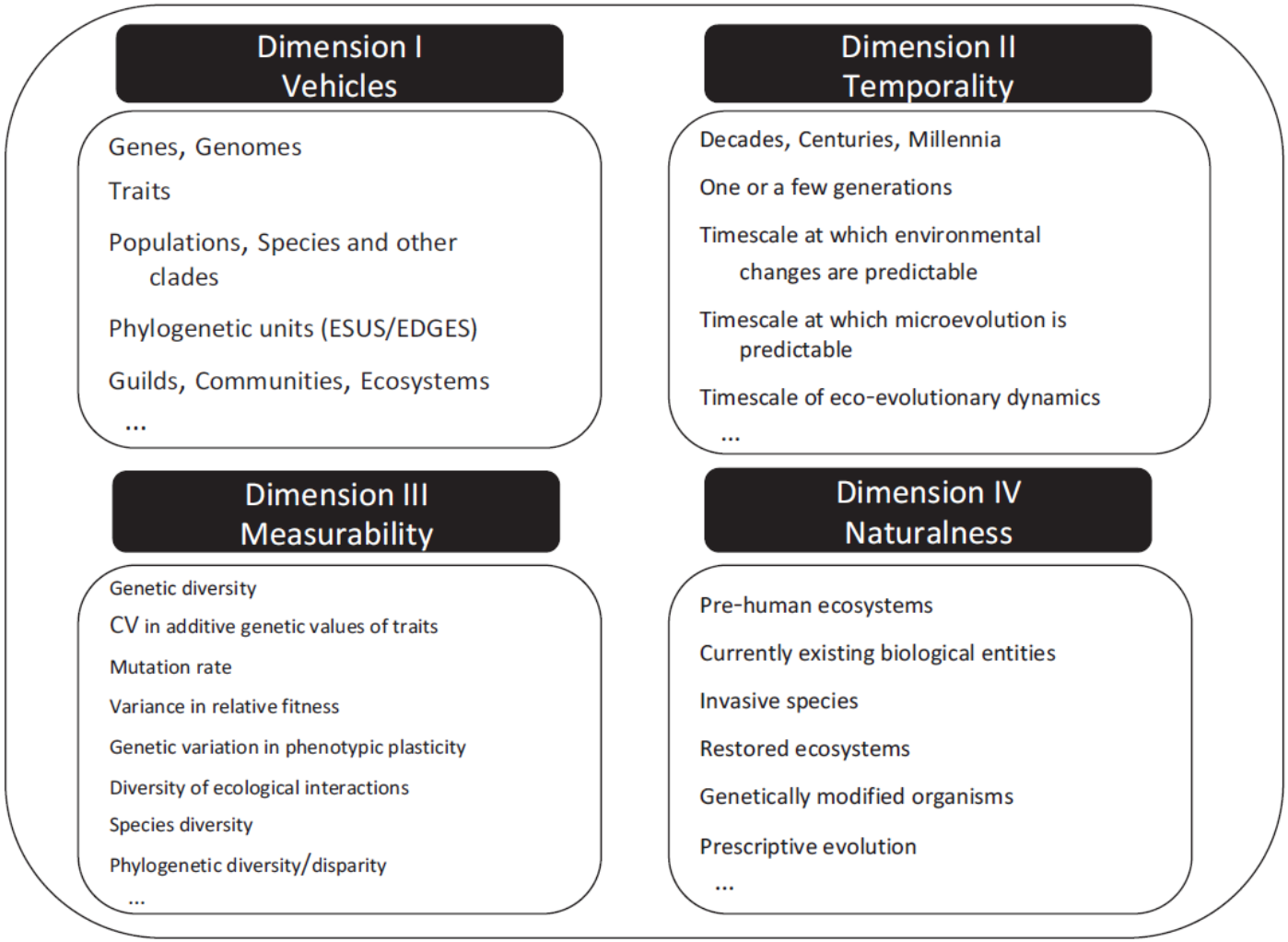
Sarrazin F. & Lecomte J. 2016 *Science*

Evolution et stratégies de conservation

SHOULD WE . . .	Roots: INTRINSIC VALUE	Roots: CONSERVATION	Roots: WILDERNESS	Challenges: ECOSYSTEM SERVICES (ES)		
abandon attempts at biodiversity conservation?	None	None	None	Runaway consumption of biodiversity resources		Blind Anthropocene
conserve for the resilience of future human generations?	Human fitness		None	Long-term provisioning and regulating ES		
conserve for the immediate well-being of human individuals?	Human well-being	Anthropocentric	Scenic wilderness	Short-term provisioning and cultural ES		Deliberate Anthropocene
conserve for the well-being of future human generations?	Human well-being and fitness		Scenic wilderness	Long-term provisioning, regulating, and cultural ES		
conserve for the well-being of future human generations and nature?	Human well-being and fitness Nonhuman fitness	Evocentric	Wildness beyond wilderness	Long-term evolutionary trajectories beyond ES		Deliberate overcoming of the Anthropocene

Sarrazin F. & Lecomte J. 2016 *Science*

Dimensions du potentiel évolutif



Milot E. *et al.* 2020 *Evolutionary Applications*

Aires protégées et macroévolution

Journal for Nature Conservation 42 (2018) 28–35

Contents lists available at ScienceDirect

Journal for Nature Conservation

journal homepage: www.elsevier.com/locate/jnc

How effective are protected areas in conserving tree taxonomic and phylogenetic diversity in subtropical Brazilian Atlantic Forests?

Daniel Dutra Saraiva[a,*], Anita Stival dos Santos[a], Gerhard Ernst Overbeck[a,b], Eduardo Luís Hettwer Giehl[c], João André Jarenkow[a,b]

nature COMMUNICATIONS

ARTICLE

Received 18 May 2015 | Accepted 3 Dec 2015 | Published 12 Jan 2016 DOI: 10.1038/ncomms10359 OPEN

Global marine protected areas do not secure the evolutionary history of tropical corals and fishes

D. Mouillot[1,2], V. Parravicini[3], D.R. Bellwood[2], F. Leprieur[1], D. Huang[4], P.F. Cowman[5], C. Albouy[6], T.P. Hughes[2], W. Thuiller[7,8] & F. Guilhaumon[1]

Received: 5 July 2017 | Revised: 13 December 2018 | Accepted: 19 December 2018

DOI: 10.1111/geb.12888

RESEARCH PAPER

WILEY Global Ecology and Biogeography

Spatial overlaps between the global protected areas network and terrestrial hotspots of evolutionary diversity

Barnabas H. Daru[1] | Peter C. le Roux[2] | Jeyanthi Gopalraj[3] | Daniel S. Park[4] | Ben G. Holt[5,6] | Michelle Greve[2]

Diversity and Distributions, (Diversity Distrib.) (2015) 21, 175–187

BIODIVERSITY RESEARCH

Representing taxonomic, phylogenetic and functional diversity: new challenges for Mediterranean marine-protected areas

François Guilhaumon[1,2†], Camille Albouy[2,3†], Joachim Claudet[4,5], Laure Velez[2], Frida Ben Rais Lasram[6], Jean-Antoine Tomasini[2], Emmanuel J. P. Douzery[7], Christine N. Meynard[7,8,9], Nicolas Mouquet[7], Marc Troussellier[2], Miguel B. Araújo[1,10,11,12] and David Mouillot[2,13]

Ecology Letters, (2010) 13: 1030–1040 doi: 10.1111/j.1461-0248.2010.01493.x

LETTER

Spatial mismatch and congruence between taxonomic, phylogenetic and functional diversity: the need for integrative conservation strategies in a changing world

Vincent Devictor[1]*, David Mouillot[2], Christine Meynard[1], Frédéric Jiguet[3], Wilfried Thuiller[4] and Nicolas Mouquet[1]

Biological Conservation 224 (2018) 34–46

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Do United States protected areas effectively conserve forest tree rarity and evolutionary distinctiveness?

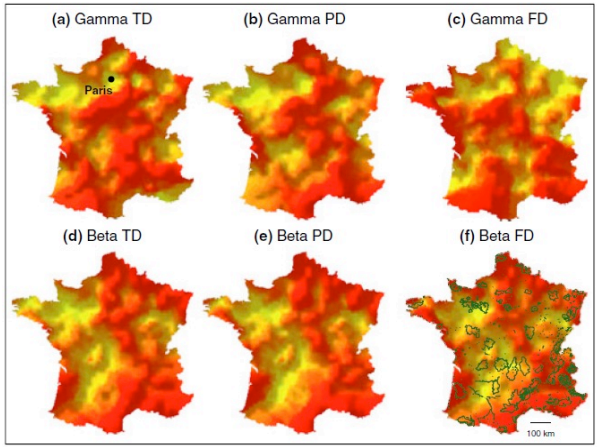
Kevin M. Potter

Diversity and Distributions, (Diversity Distrib.) (2014) 20, 674–685

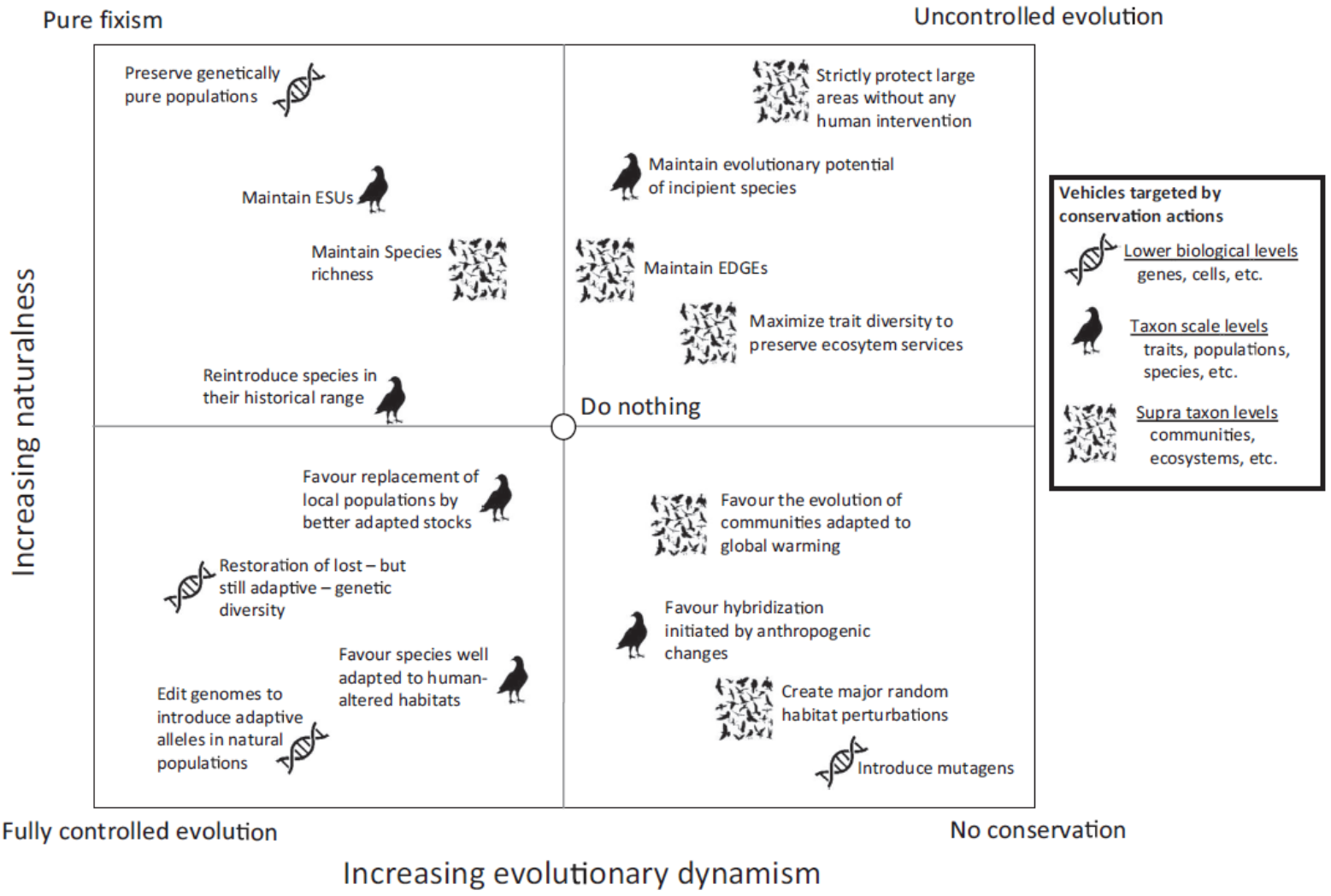
BIODIVERSITY RESEARCH

Spatial mismatch of phylogenetic diversity across three vertebrate groups and protected areas in Europe

Laure Zupan[1*], Mar Cabeza[2], Luigi Maiorano[3], Cristina Roquet[1], Vincent Devictor[4], Sébastien Lavergne[1], David Mouillot[5], Nicolas Mouquet[4], Julien Renaud[1] and Wilfried Thuiller[1]



Pilotage évolutif ou naturalité



Milot E. *et al.* 2020 *Evolutionary Applications*

Aires protégées et microévolution

Received: 25 October 2016 | Accepted: 15 January 2017
DOI: 10.1111/eva.12460

ORIGINAL ARTICLE

WILEY Evolutionary Applications

Evolution of movement rate increases the effectiveness of marine reserves for the conservation of pelagic fishes

Jonathan A. Mee[1] | Sarah P. Otto[2] | Daniel Pauly[3]

Received: 24 November 2015 | Revised: 2 July 2016 | Accepted: 14 August 2016
DOI: 10.1002/aqc.2718

WILEY

RESEARCH ARTICLE

Do protected areas mitigate the effects of fisheries-induced evolution on parental care behaviour of a teleost fish?

William M. Twardek[1,2] | Chris K. Elvidge[2] | Alexander D.M. Wilson[2] | Dirk A. Algera[2] | Aaron J. Zolderdo[2] | Stephen C. Lougheed[1] | Steven J. Cooke[2]

Aquatic Conserv: Mar Freshw Ecosyst. 2017;27:789–796.

Received: 28 October 2019 | Revised: 16 April 2020 | Accepted: 23 April 2020
DOI: 10.1111/eva.12992

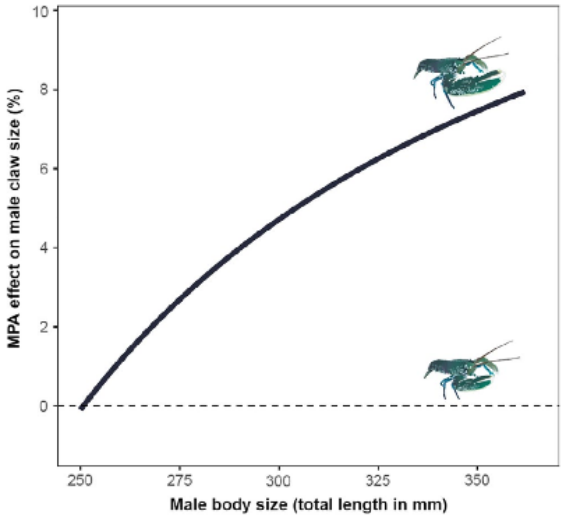
Check for updates

ORIGINAL ARTICLE

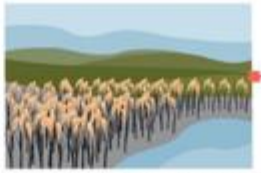
Evolutionary Applications WILEY

Marine protected areas rescue a sexually selected trait in European lobster

Tonje Knutsen Sørdalen[1,2] | Kim Tallaksen Halvorsen[2] | Leif Asbjørn Vøllestad[3] | Even Moland[1,2] | Esben Moland Olsen[1,2]

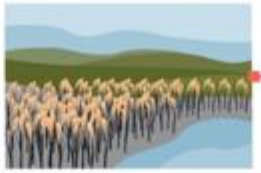


Evolution et stratégies de conservation

SHOULD WE . . .	Roots: INTRINSIC VALUE	Roots: CONSERVATION	Roots: WILDERNESS	Challenges: ECOSYSTEM SERVICES (ES)		Consequences: EVOLUTIONARY TRANSITIONS	Consequences: IMPACTS
abandon attempts at biodiversity conservation?	None	None	None	Runaway consumption of biodiversity resources		Blind Anthropocene	Major
conserve for the resilience of future human generations?	Human fitness		None	Long-term provisioning and regulating ES			
conserve for the immediate well-being of human individuals?	Human well-being	Anthropocentric	Scenic wilderness	Short-term provisioning and cultural ES		Deliberate Anthropocene	
conserve for the well-being of future human generations?	Human well-being and fitness		Scenic wilderness	Long-term provisioning, regulating, and cultural ES			
conserve for the well-being of future human generations and nature?	Human well-being and fitness Nonhuman fitness	Evocentric	Wildness beyond wilderness	Long-term evolutionary trajectories beyond ES		Deliberate overcoming of the Anthropocene	Minor

Sarrazin F. & Lecomte J. 2016 *Science*

Evolution et stratégies de conservation

SHOULD WE . . .	Roots: INTRINSIC VALUE	Roots: CONSERVATION	Roots: WILDERNESS	Challenges: ECOSYSTEM SERVICES (ES)		Consequences: EVOLUTIONARY TRANSITIONS	Consequences: IMPACTS
abandon attempts at biodiversity conservation?	None	None	None	Runaway consumption of biodiversity resources		Blind Anthropocene	Minor / Major
conserve for the resilience of future human generations?	Human fitness		None	Long-term provisioning and regulating ES			
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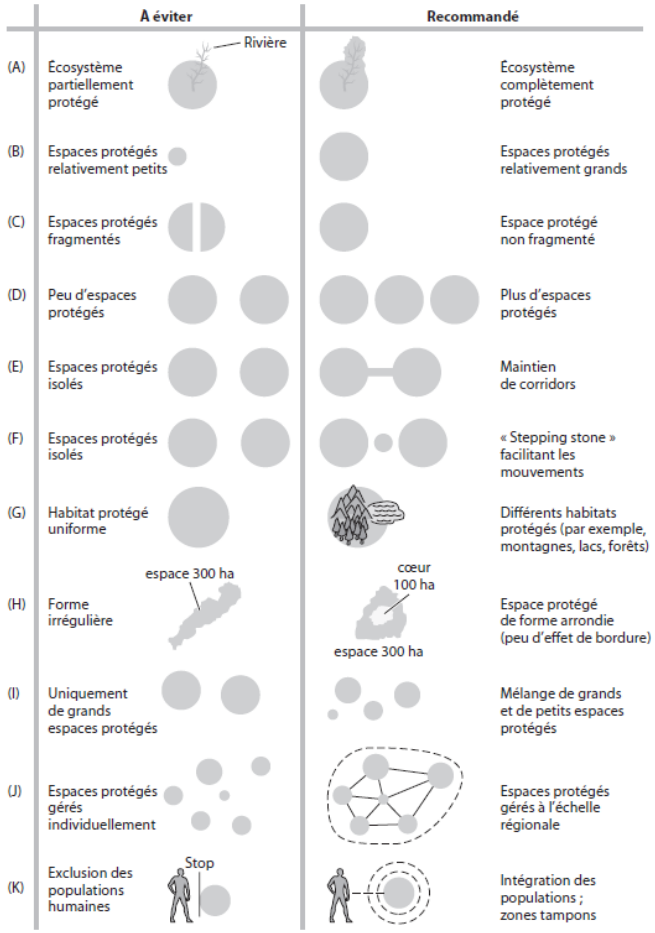
conserve for the well-being of future human generations and nature?	Human well-being and fitness; Nonhuman fitness	Evocentric	Wildness beyond wilderness	Long-term evolutionary trajectories beyond ES		Deliberate overcoming of the Anthropocene	Major / Minor

Sarrazin F. & Lecomte J. 2016 *Science*

Vers une approche évocentrée des aires protégées

- « Reserve design »
- « Land sparing » et « land sharing »
- Multifonctionnalités
- Solutions fondées sur la nature
- Solidarités écologiques
- Restauration et réensauvagement
- Libre évolution



Primack *et al*. 2012 Biologie de la Conservation

Aires protégées pointes d'une transition écologique …

- Indispensables mais pas suffisantes
- D'une naturalité historique à une naturalité des processus
- Renversement de la charge de la preuve :
  - de « pourquoi protéger ? »
  - à « pourquoi détruire ou laisser détruire ? »
- Des choix individuels et collectifs
- Innovations éthiques, sociales, politiques, économiques, juridiques, foncières, autour des aires protégées

… et, au-delà, d'une transition évolutive majeure ?

- Des « aires protégées » … aux « espaces de libertés »
- Un gradient d'anthropisation et de respect de la libre évolution
- Un défi en Europe … et singulièrement en France
- Soutien aux populations en pointe de ces transitions
  - tout sauf une « désertification » ou « un retour en arrière »
- Un point de bifurcation entre :
  - une extension du domaine de la domestication
  - une affirmation et extension de notre humanité