An aerial photograph of a lush green landscape featuring a multi-tiered waterfall. A curved wooden walkway or bridge crosses the waterfall, with a few people walking on it. The surrounding area is dense with green vegetation and rocky terrain.

APPROCHE ÉVOCENTRÉE DES RELATIONS HUMAINS ET NON-HUMAINS

04 décembre 2020

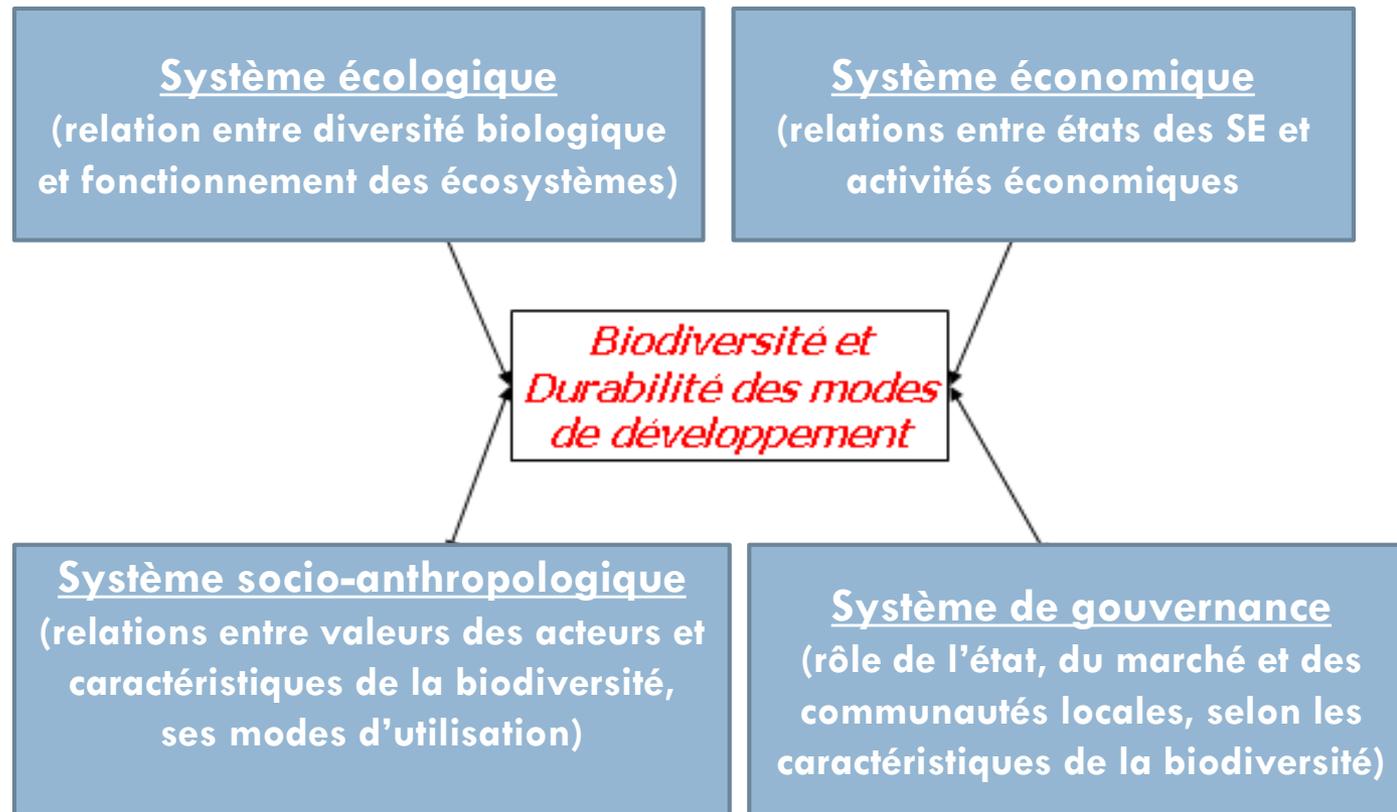
Jane Lecomte, Pr Université Paris-Saclay
ESE, UMR 8079 UPSaclay / CNRS / AgroParisTech



Difficulté des arbitrages

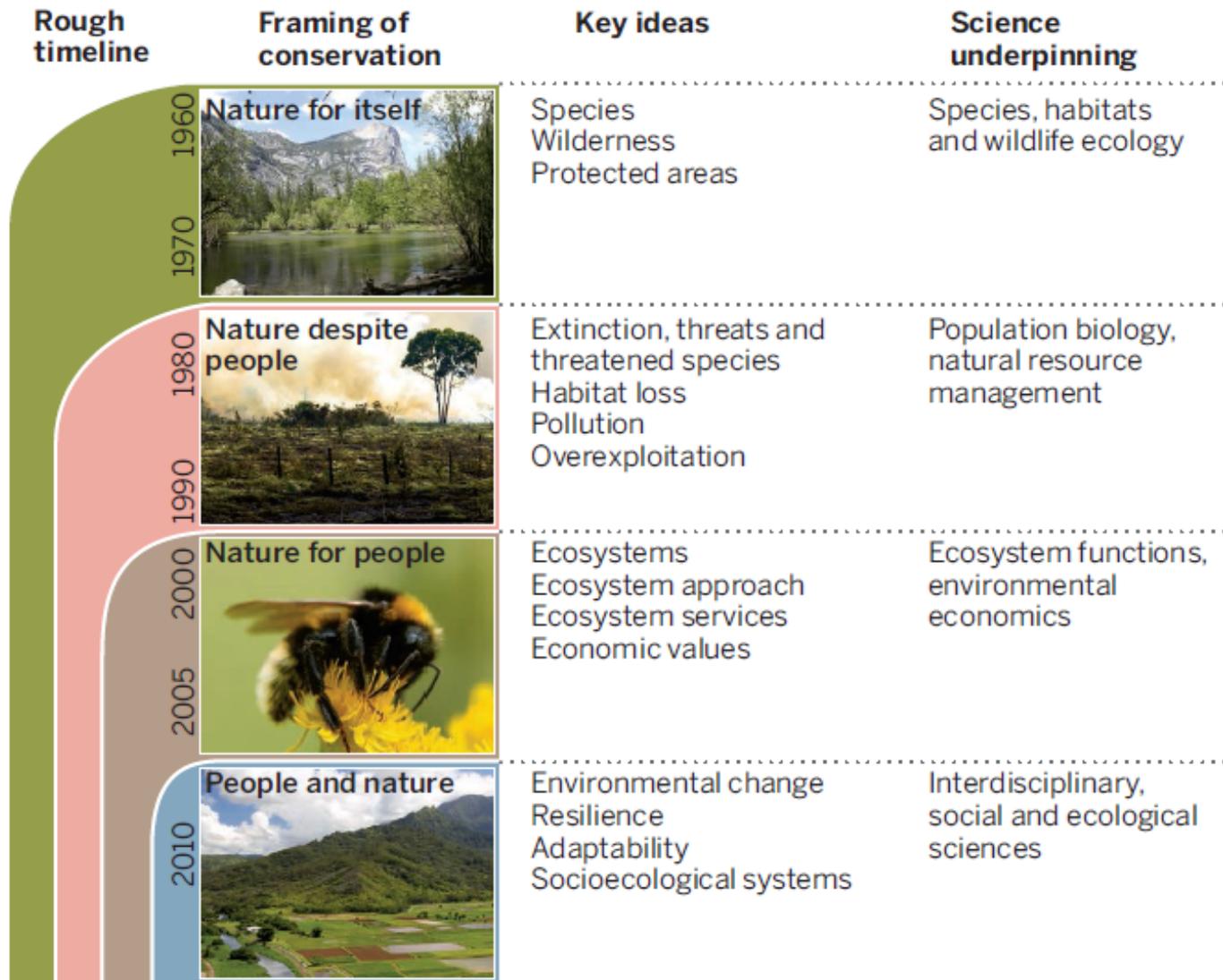
- Faut-il conserver la biodiversité ? Pourquoi ? Pour qui ?
- Peut-on et doit-on conserver la biodiversité tout en nourrissant une population croissante d'individus qui ont une demande de bien être elle-même croissante ?
- Faut-il conserver la biodiversité pour elle-même ou pour les services qu'elle nous rend ?
- Faut-il conserver les individus, espèces, populations, communautés ou écosystèmes, la biodiversité remarquable ou ordinaire, commune ou rare ?
-?

Différentes visions, arguments, valeurs



Couvet d'après Ostrom, 2007

In : Primack, Sarrazin & Lecomte, 2012



(1953-2020)

Changing views of nature and conservation. Over the past 50 years, the prevailing view of conservation has changed several times, resulting, for example, in a shift in emphasis from species to ecosystems. None of the framings has been eclipsed as new ones have emerged, resulting in multiple framings in use today.

Mace, Science, 2014

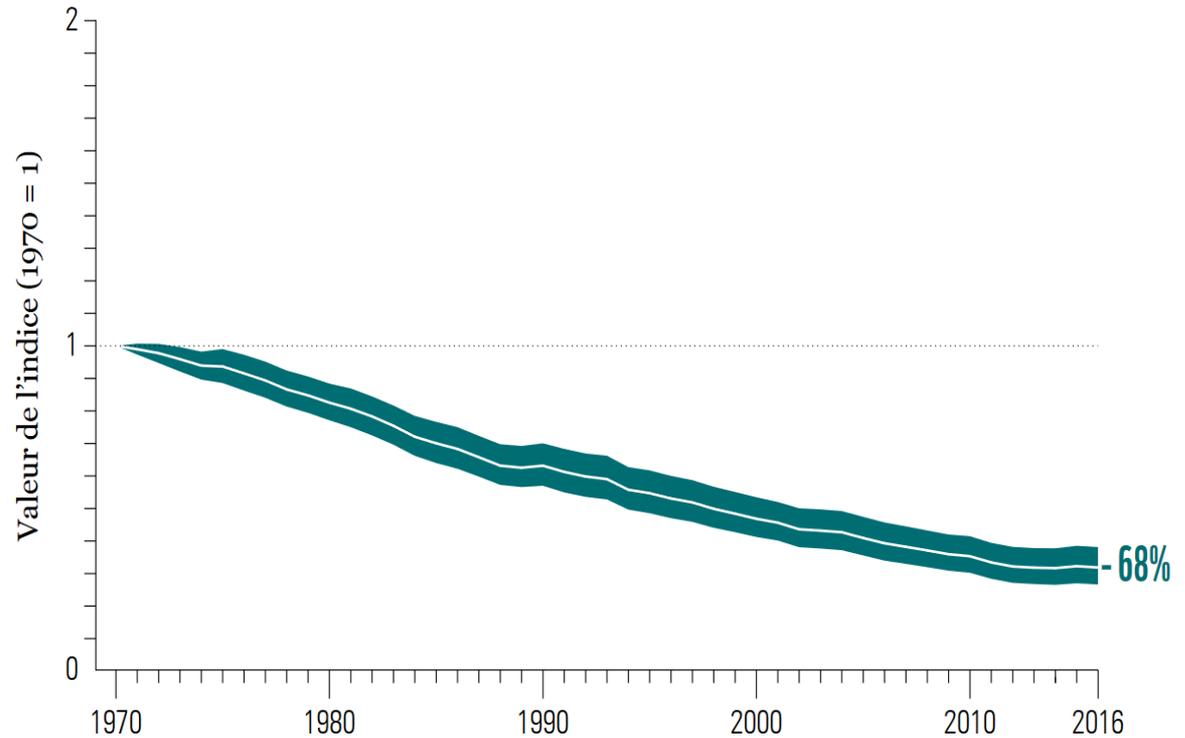
Le constat

Figure 1: L'Indice Planète Vivante mondial : de 1970 à 2016.

L'abondance moyenne de 20 811 populations représentant 4 392 espèces suivies dans le monde a diminué de 68 %. La ligne blanche indique les valeurs de l'indice, et les zones colorées l'intervalle de confiance entourant la tendance (écart : de -73 % à -62 %). Source : WWF/ZSL (2020)¹⁰⁷.

Légende

- Indice Planète Vivante global
- Intervalle de confiance



DRIVERS

INDIRECT DRIVERS

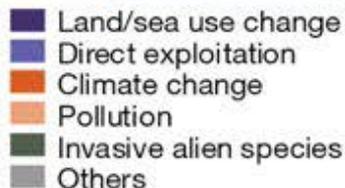
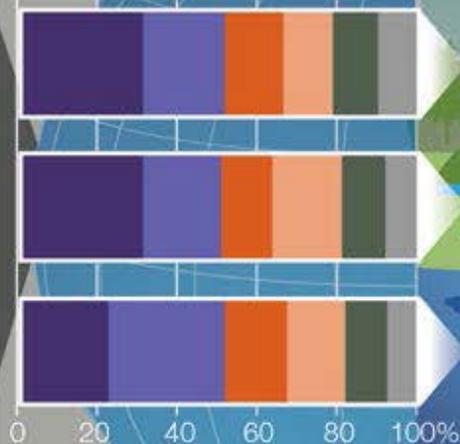
Demographic
and
sociocultural

Economic
and
technological

Institutions
and
governance

Conflicts
and
epidemics

DIRECT DRIVERS



EXAMPLES OF DECLINES IN NATURE

ECOSYSTEM EXTENT AND CONDITION

47%

Natural ecosystems have **declined by 47 per cent** on average, relative to their earliest estimated states.

SPECIES EXTINCTION RISK

25%

Approximately **25 per cent of species are already threatened with extinction** in most animal and plant groups studied.

ECOLOGICAL COMMUNITIES

23%

Biotic integrity—the abundance of naturally-present species—has **declined by 23 per cent** on average in terrestrial communities.*

BIOMASS AND SPECIES ABUNDANCE

82%

The global biomass of wild mammals has **fallen by 82 per cent**.* Indicators of vertebrate abundance have declined rapidly since 1970

NATURE FOR INDIGENOUS PEOPLES AND LOCAL COMMUNITIES

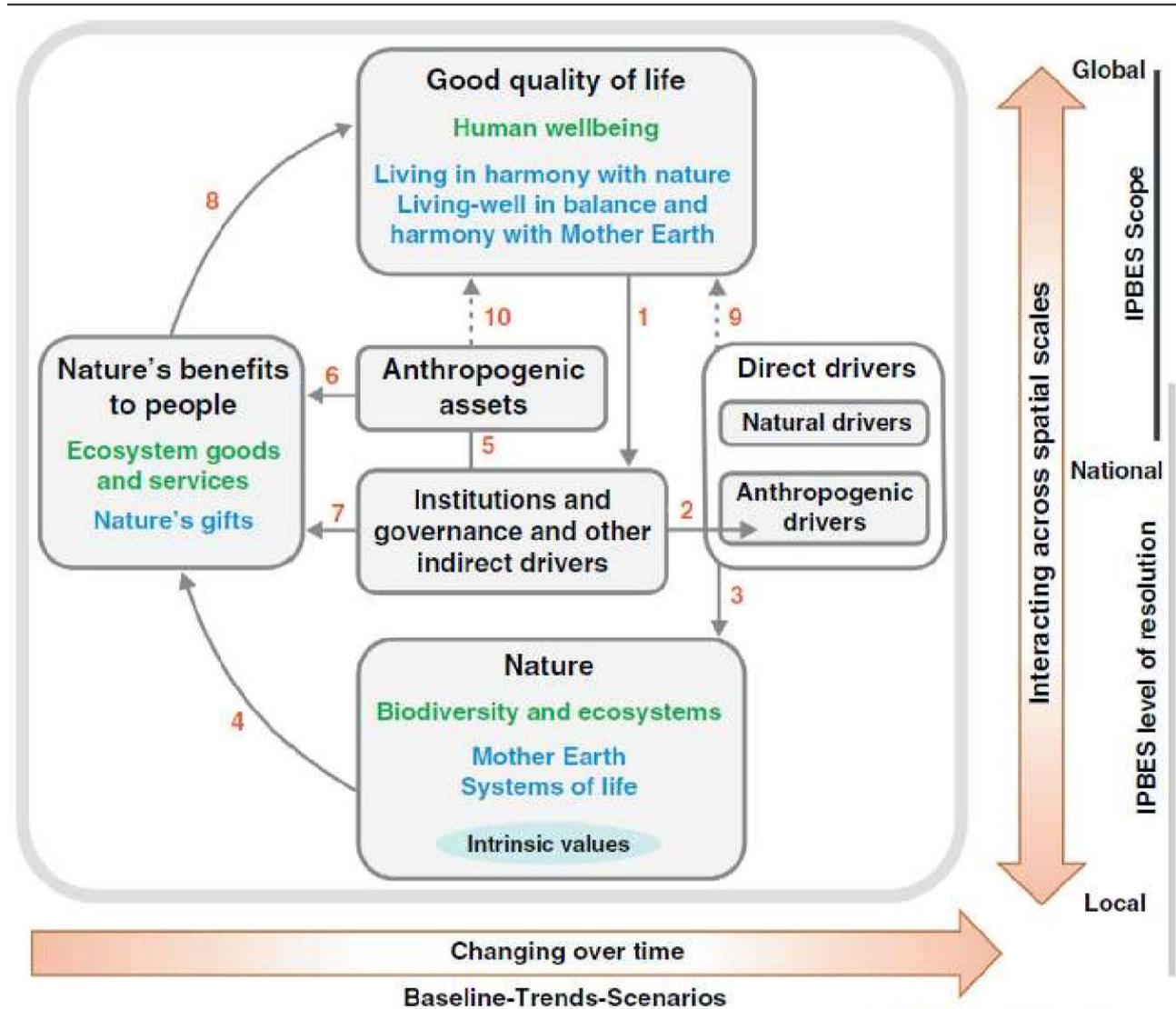
72%

72 per cent of indicators developed by indigenous peoples and local communities show **ongoing deterioration** of elements of nature important to them

* Since prehistory

IPBES Framework

Nature contribution to people versus ecosystem services



Valeurs instrumentale/intrinsèque/relationnelle : une histoire de fins et de moyens

- Valeur instrumentale (ou extrinsèque)
 - ▣ Valeur qu'a une entité en fonction du moyen qu'elle constitue pour les fins d'une autre entité
 - ▣ Définie par l'utilisation réelle ou potentielle de l'entité considérée
 - ▣ Biens, services, information, ressources psycho-spirituelles
 - ▣ Mesures notamment économiques
- Valeur intrinsèque (ou non instrumentale)
 - ▣ Valeur de ce qui est une fin en soi
 - ▣ Non divisible en catégories
 - ▣ Comment la mesurer ?
- Valeur relationnelle
 - ▣ Liens, représentations, attachements aux non-humains
 - ▣ Valeurs esthétiques, spirituelles, « care »

Différentes visions dans le monde occidental

- ▣ Préservation de la nature
- ▣ Conservation des ressources
- ▣ Ethique environnementale
- ▣ Ethique de la conservation

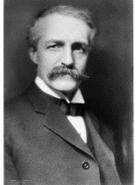


Hetch Hetchy Valley, Parc national de Yosemite
Albert Bierstad, 1875
Hudson River School

Différentes visions dans le monde occidental



▣ Préservation de la nature



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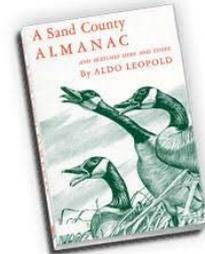
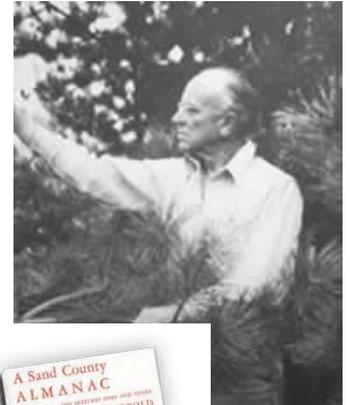
Vers une éthique environnementale

Ecocentrisme

Valeur intrinsèque à la communauté biotique incluant l'homme

Aldo Leopold (1949)

- ▣ "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise."



John Baird Callicott (2006) « Ethique de la Terre »

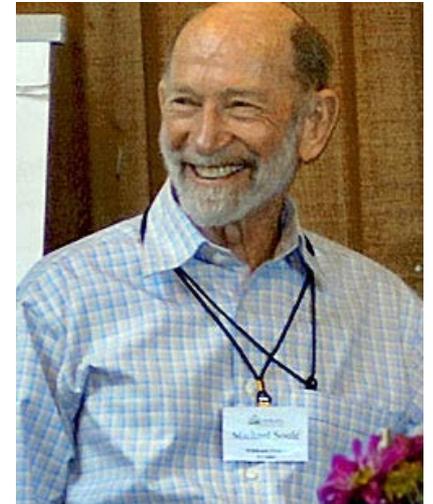
- ▣ Prise en compte des flux écologiques
- ▣ « A thing is right when it tends to disturb the biotic community only at normal spatial and temporal scales. It is wrong when it tends otherwise. »



Fondements éthiques de la conservation

Michael Soule (1936 - 2020)

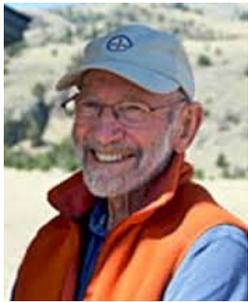
- ▣ La diversité des espèces et des communautés biologiques devrait être préservées
- ▣ L'extinction précoce des populations et des espèces doit être évitée
- ▣ La complexité écologique doit être maintenue
- ▣ L'évolution doit se poursuivre
- ▣ La diversité biologique a une valeur intrinsèque



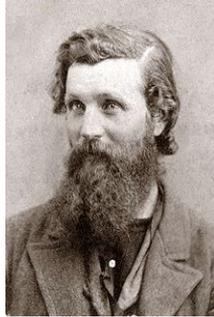
What is Conservation Biology ? Soule, Bioscience, 1985

“Old” versus “New conservation” ?

“Old”



M. Soulé

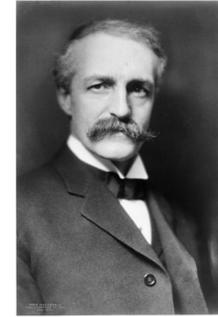


J. Muir

For Nature



For both



G. Pinchot

For People

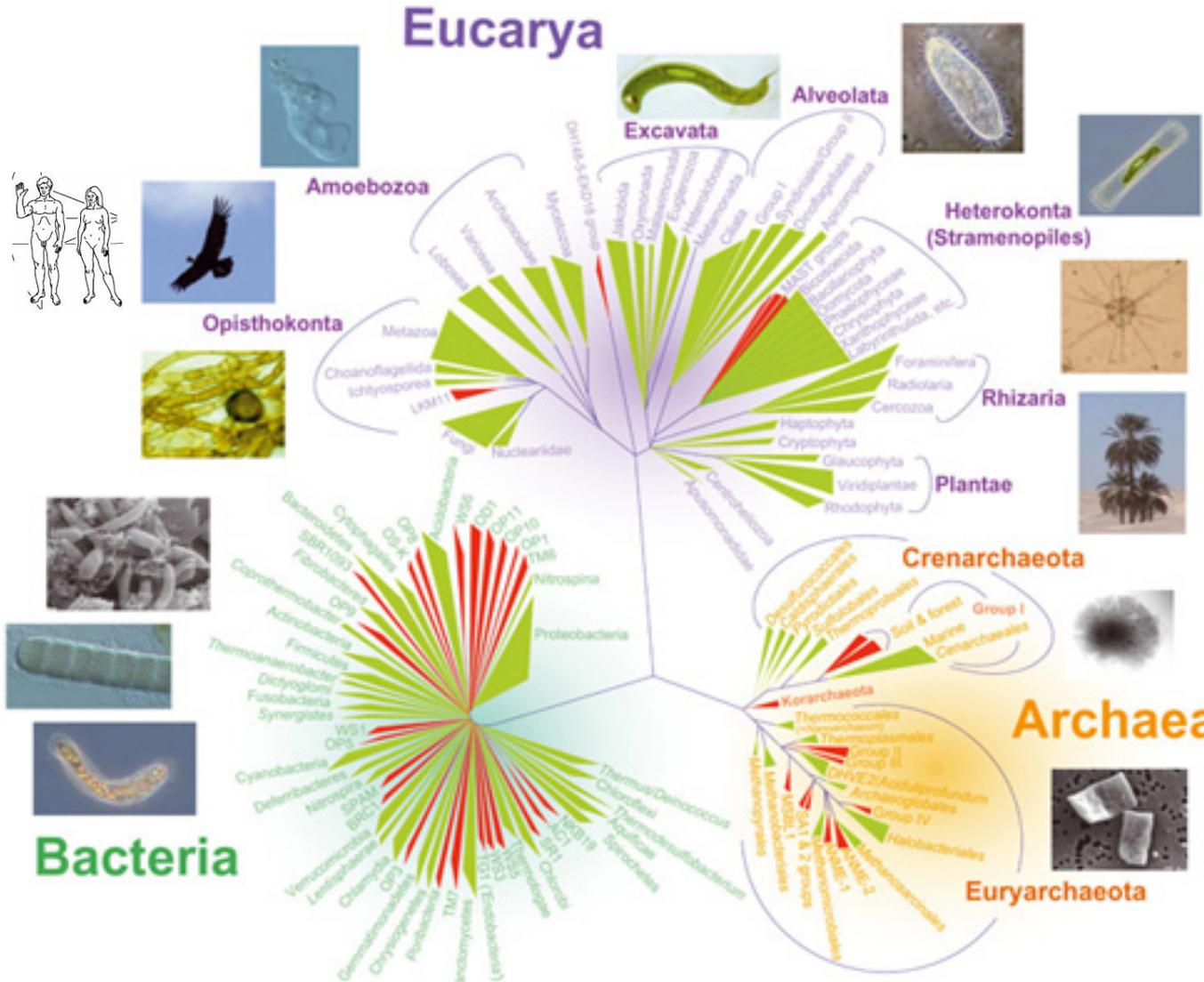
“New”



P. Kareiva

- ⇒ Vision à court terme, pas d'interrogation sur fins et moyens
- ⇒ Nécessité d'une approche évolutive pour :
 - ▣ Reconnecter les histoires évolutives des humains et non-humains
 - ▣ Comprendre les inerties des trajectoires humaines
 - ▣ Envisager des scénarios de transitions possibles

Une histoire évolutive partagée

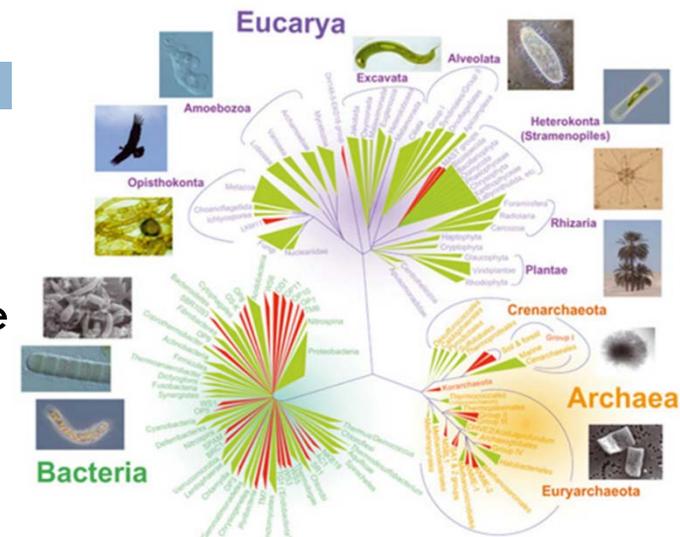


Micro – évolution
Macro-évolution

Histoire évolutive partagée

□ Valeur adaptative

- Phénotypes vecteurs de génotypes
- Processus épigénétiques, plasticité phénotypique
- Taux de croissance des populations
- Compétition, prédation, parasitisme
- Coopération intra- et interspécifique



© Lopez Garcia P.

Histoire évolutive partagée

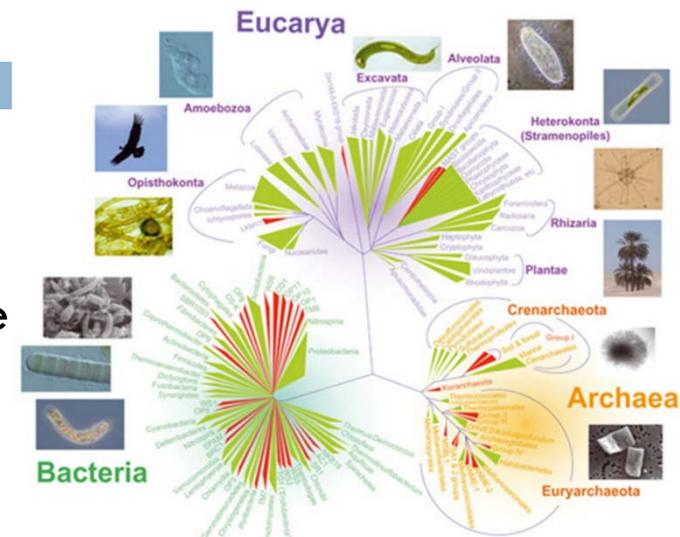
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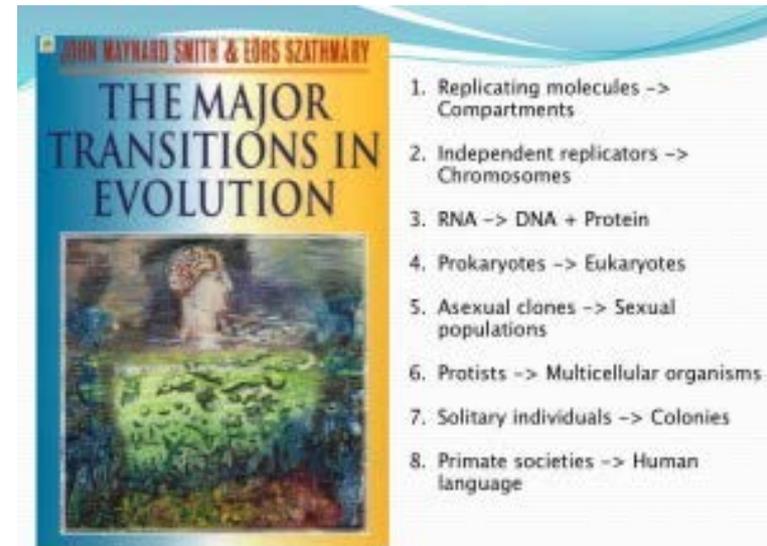
□ Transitions évolutives majeures

“a collective name for a group of events [...], during which natural selection transformed formerly free-living organisms into mere parts in new, higher-level wholes.”

Clarke, E. *J. of Biosciences* 2014



© Lopez Garcia P.



Sarrazin F. & Lecomte J. *Science*, 2016

Histoire évolutive partagée

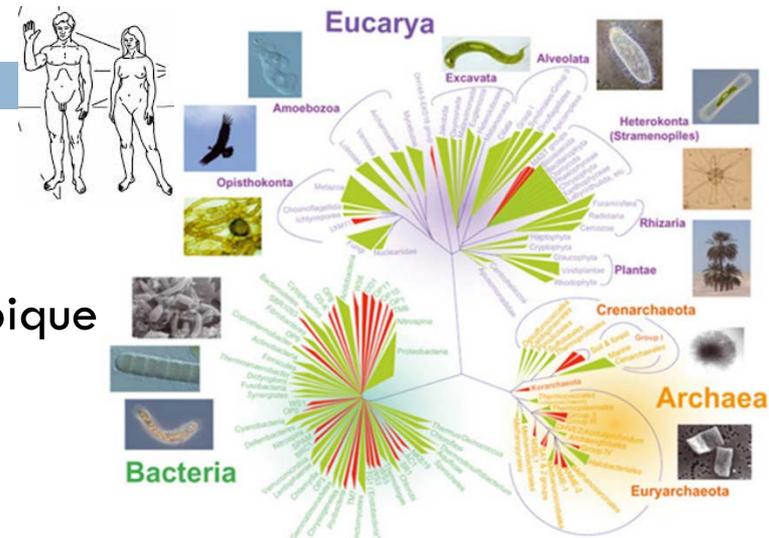
□ Valeur adaptative ou sélective

- Phénotypes vecteurs de génotypes
- Processus épigénétiques, plasticité phénotypique
- Taux de croissance des populations
- Compétition, prédation, parasitisme
- Coopération intra- et interspécifique

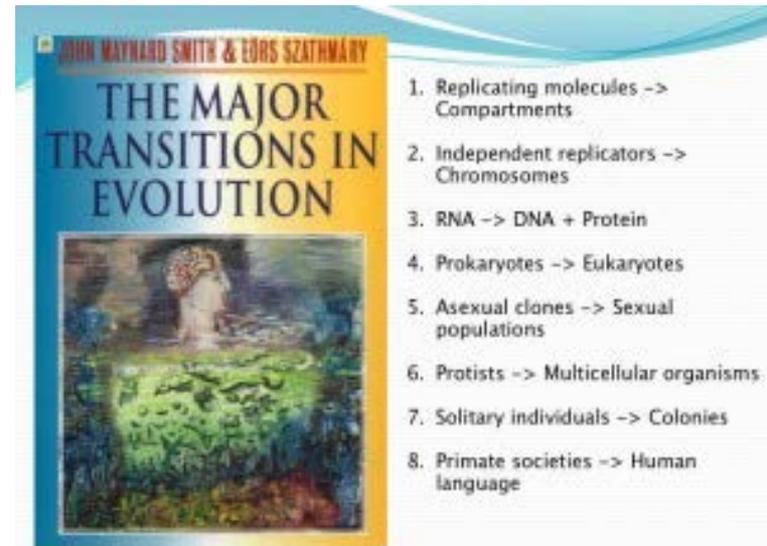
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Et les humains dans tout cela ?

- ▣ Résilients vis-à-vis des fluctuations environnementales
- ▣ Evolution des capacités cognitives, liens sociaux, construction de niche

Et les humains dans tout cela ?

- ❑ Résilients vis-à-vis des fluctuations environnementales
- ❑ Evolution des capacités cognitives, liens sociaux, construction de niche
- ❑ Quête de bien-être humain au delà des besoins en terme de valeur sélective
 - ❑ Energie croissante pour les fonctions sensorielles et cognitives au-delà de gains en valeur adaptative
 - ❑ Conscience individuelle et recherche de bien-être
 - ❑ « Emancipation phénotypique »



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Empreinte évolutive anthropique

nature
ecology & evolution

REVIEW ARTICLE

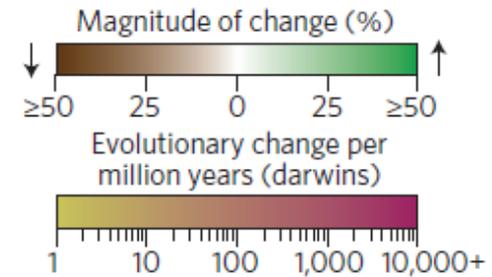
PUBLISHED: 21 FEBRUARY 2017 | VOLUME: 1 | ARTICLE NUMBER: 0065

Human behaviour as a long-term ecological driver of non-human evolution

Alexis P. Sullivan¹, Douglas W. Bird² and George H. Perry^{1,2,3*}



Domestication



Species	Human activity	Timeframe	Affected phenotype	Magnitude of change	Evol. rate (darwins)
 Barley <i>Hordeum vulgare</i>		~4 kyr BP–Present	Grain weight	+256%	238
	 Trophy hunting  Net/trap fishing  Habitat modification/urbanization	 Hunting  Angling  Translocation	 Plant harvesting  Invertebrate harvesting  Defaunation		
 Bighorn sheep <i>Ovis canadensis</i>		1972–2002 (30 years)	Male horn length Male body mass	-31%	12,126
 Sheephead <i>Semicossyphus pulcher</i>		1969–1998 (29 years)	Body mass	-41%	18,018
 Palm seeds <i>Euterpe edulis</i>		Present day (large fauna vs not)	Seed size	-16%	N/A

Empreinte évolutive anthropique

nature
ecology & evolution

REVIEW ARTICLE

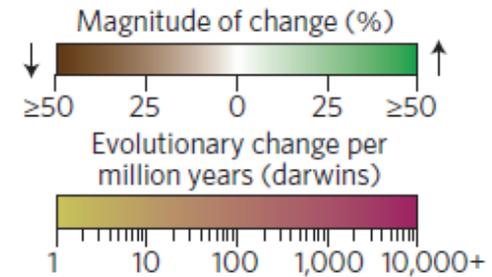
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Trophy hunting



Net/trap fishing



Habitat modification/urbanization



Hunting



Angling



Translocation



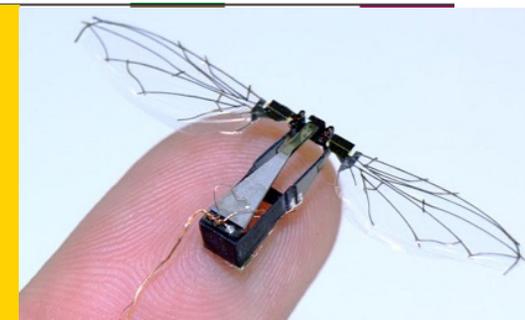
Plant harvesting



Invertebrate harvesting



Defaunation



Quelles interactions humains / non-humains ?

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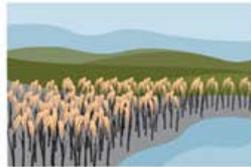
SHOULD WE ...

abandon attempts
at biodiversity
conservation?

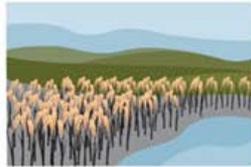
Quelles interactions humains / non-humains ?

	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

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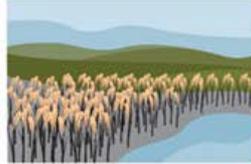
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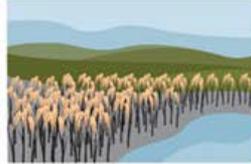
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conserve for the well-being of future human generations?	Human well-being and fitness		Scenic wilderness	Long-term provisioning, regulating, and cultural ES	

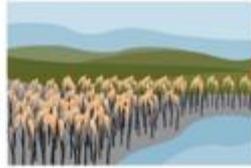
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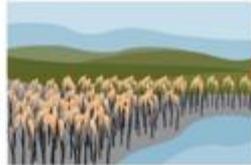
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conserve for the well-being of future human generations and nature?	Human well-being and fitness Nonhuman fitness	Evocentric	Wildness beyond wilderness	Long-term evolutionary trajectories beyond ES	 <p>Deliberate overcoming of the Anthropocene</p>	

Quelles interactions humains / non-humains ?

	Roots			Challenges		Consequences	
SHOULD WE ...	INTRINSIC VALUE	CONSERVATION	WILDERNESS	ECOSYSTEM SERVICES (ES)		EVOLUTIONARY TRANSITIONS	IMPACTS
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Implémentation de l'éthique évocentrée

- Eviter les pressions de sélection directionnelles des échelles locales aux échelles globales
- Eviter les extinctions ciblées sur les espèces ou communautés pour réduire les impacts sur les trajectoires évolutives
- Poser les questions relatives aux : socio-écosystèmes, espaces protégés, agro-écosystèmes, services-écosystémique, nature-based solutions, biotechnologies, à la biologie synthétique, etc... dans une perspective évolutive
- Implications éthiques
 - ▣ Prise en compte des droits humains et capacités
 - ▣ Identification des convergences et conflits avec des considerations non-scientifiques
- Implications pour la recherche
 - ▣ Approches transdisciplinaires sciences de l'Homme et des sociétés, écologie, évolution

Merci de votre attention



Plitvice Lakes National Park, Croatia.