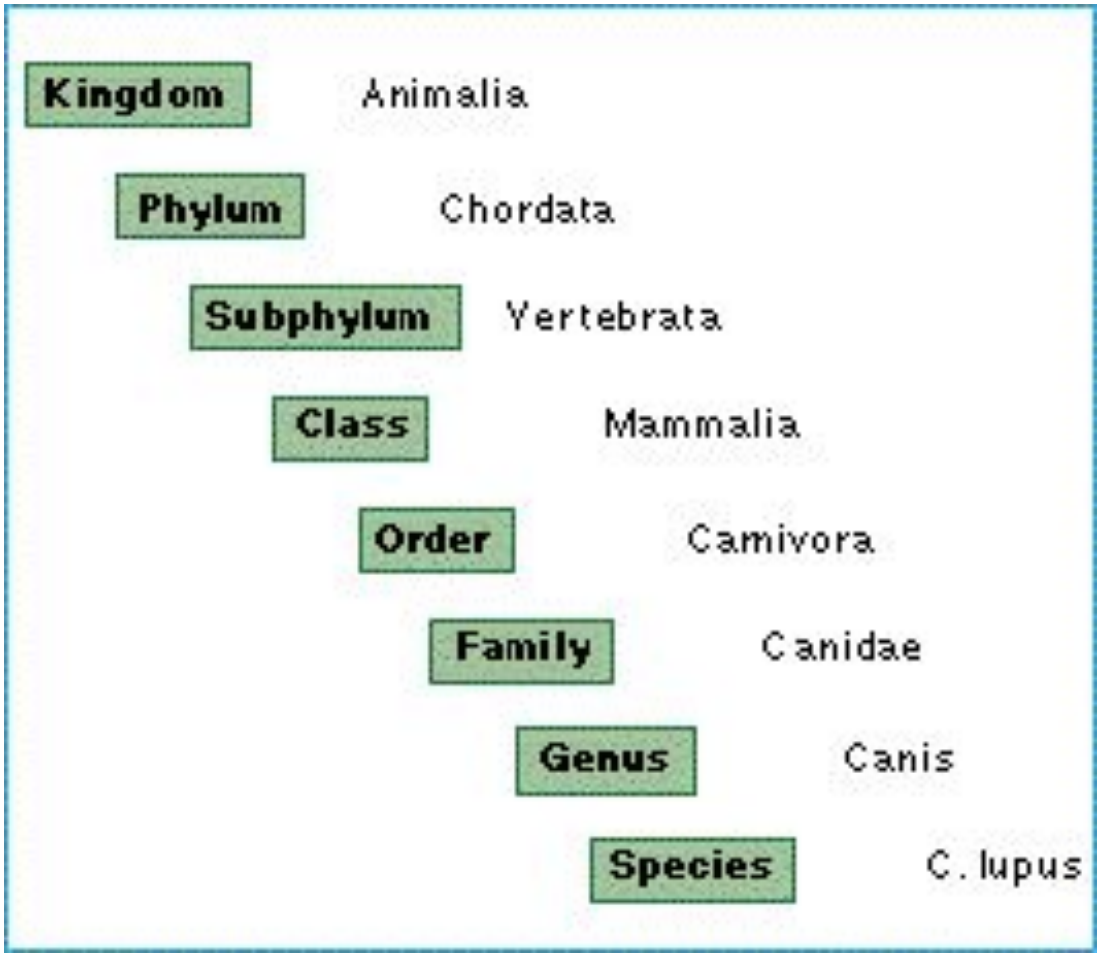
Why conservation for Sustainable development
What is conservation
What is sustainability
What is development

Assé, Rainer

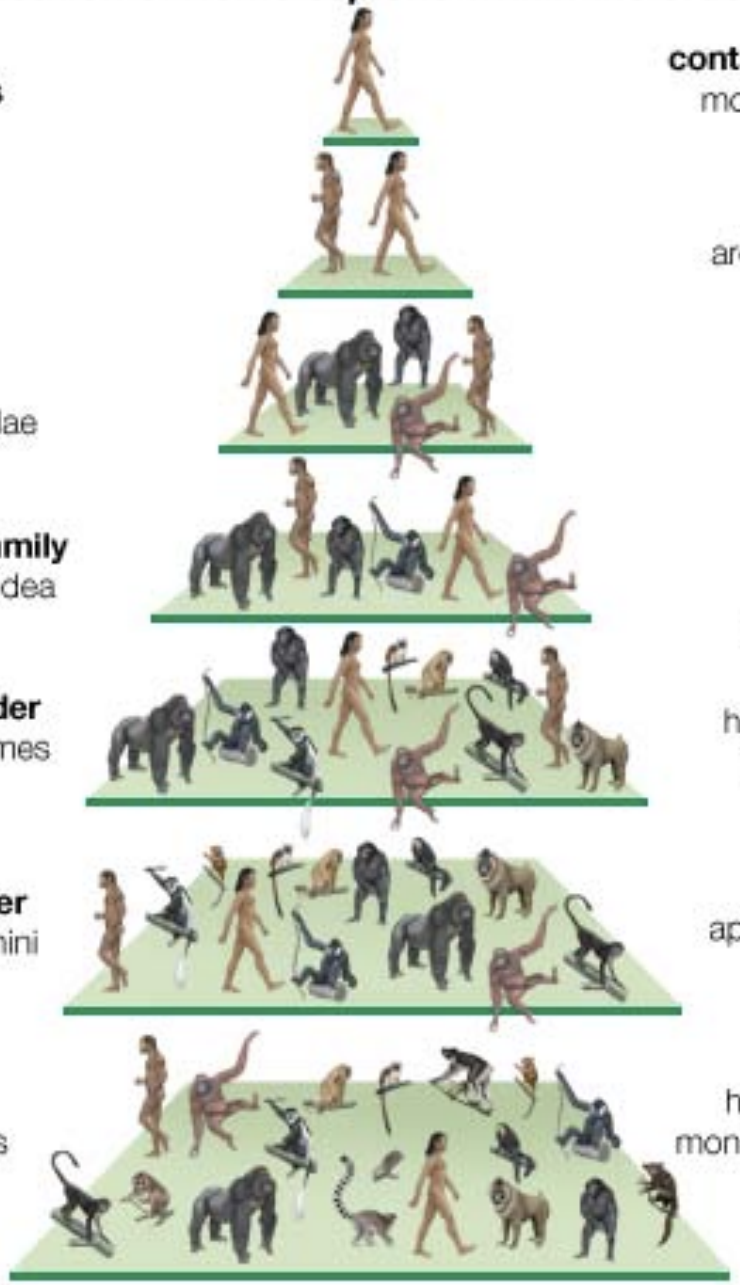
REFERENCES CITED (Photos, Diagrams, etc.) –
AVAILABLE UPON REQUEST

Conservation - definition

The study & strategy to safeguard the planet's biodiversity by protecting species from extinction through conservation of habitats and ecosystems.


Kingdom
Animalia
Phylum
Chordata
Subphylum
Vertebrata
Class
Mammalia
Order
Camivora
Family
Canidae
Genus
Canis
Species
C. lupus

Classification of *Homo sapiens* within the order Primates



	contained forms:
species *sapiens*	modern humans
genus *Homo*	modern and archaic humans
family Hominidae	humans and great apes
superfamily Hominoidea	humans and all apes (great apes and gibbons)
infraorder Simiiformes	humans, apes, and monkeys
suborder Haplorrhini	humans, apes, monkeys, and tarsiers
order Primates	humans, apes, monkeys, tarsiers, lemurs, and lorises

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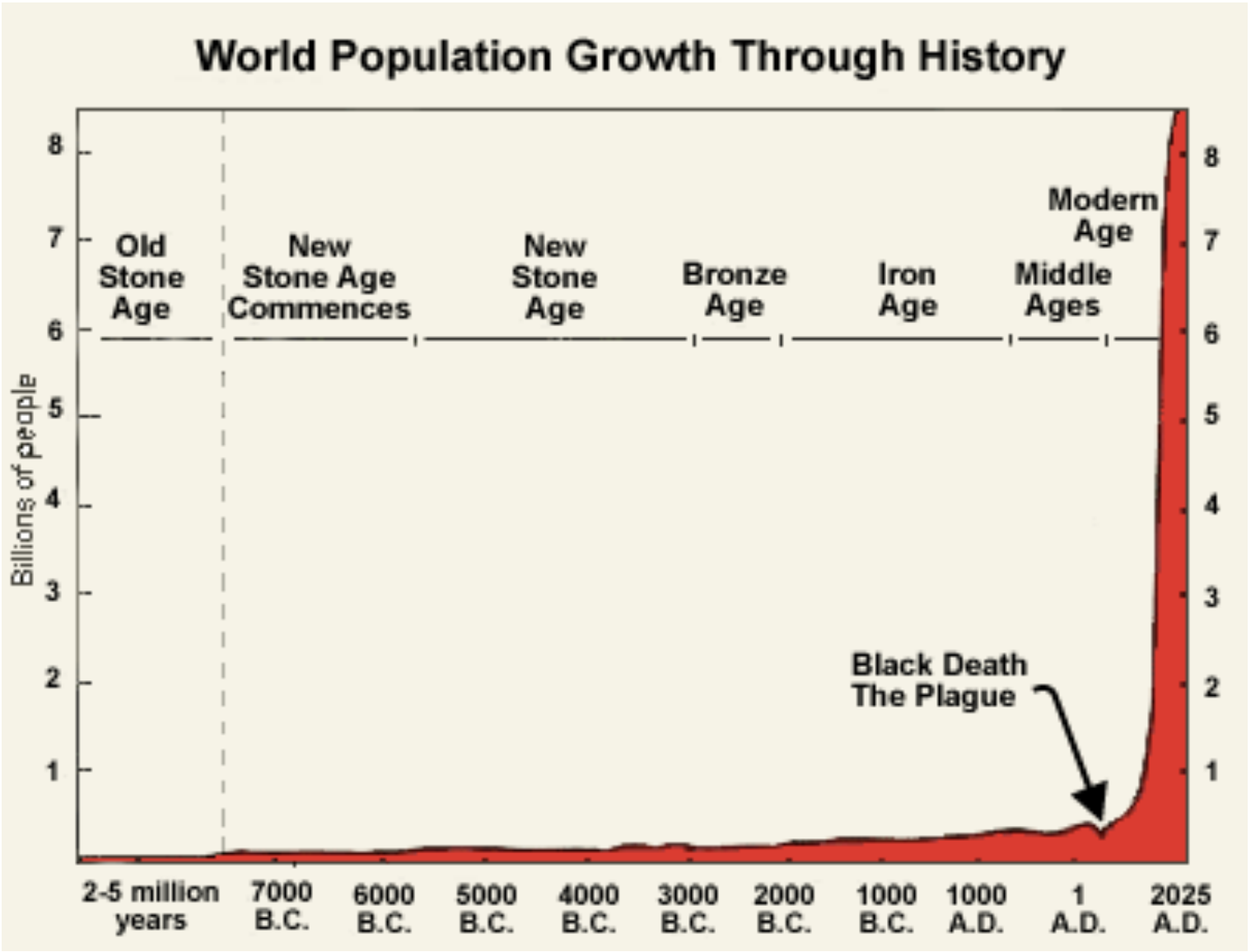
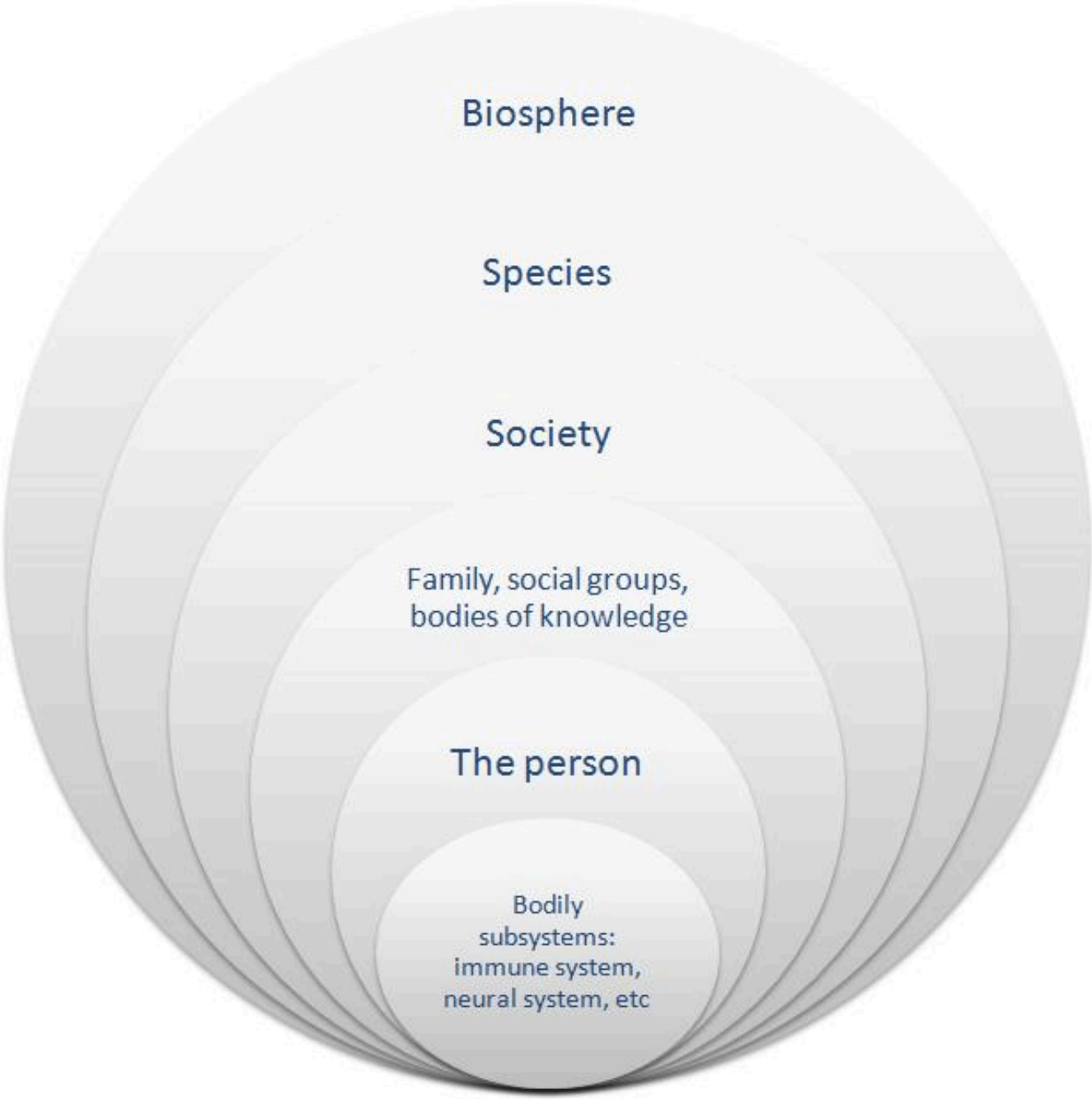
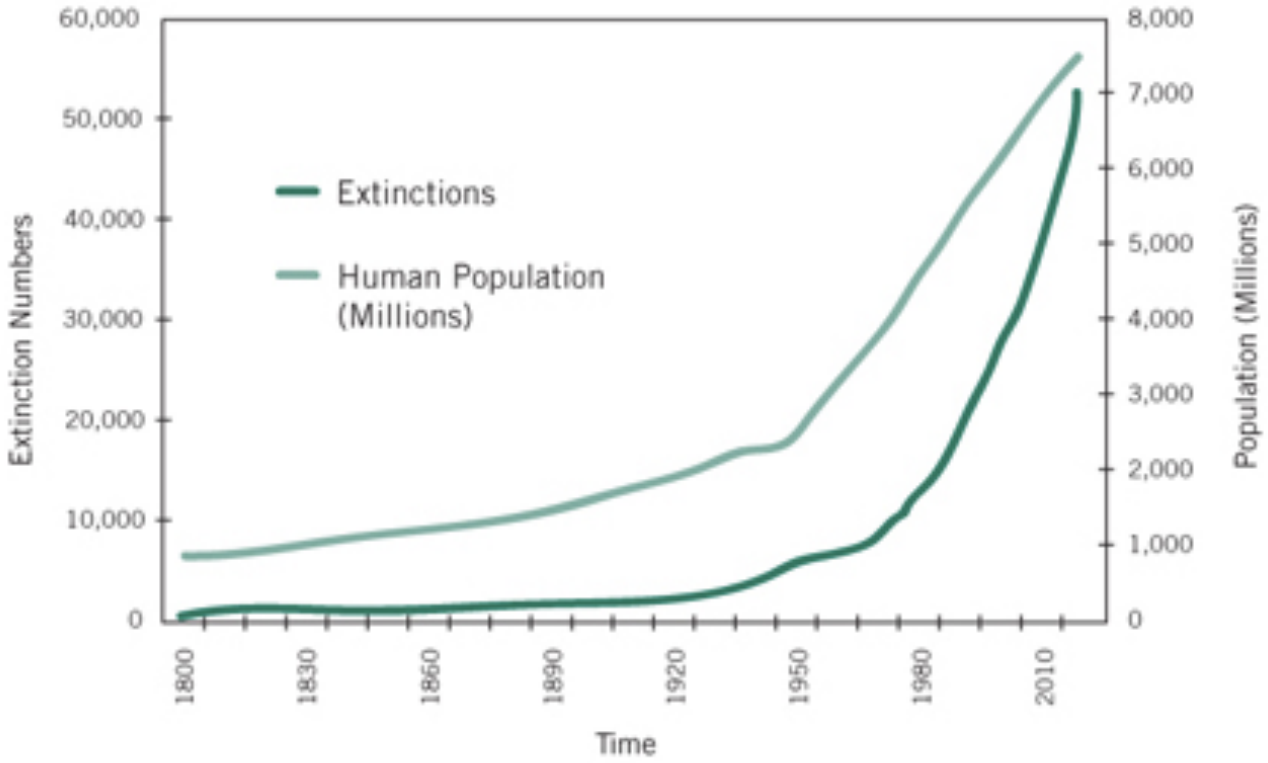

World Population Growth Through History
Billions of people
8
7
6
5
4
3
2
1
Old Stone Age
New Stone Age Commences
New Stone Age
Bronze Age
Iron Age
Middle Ages
Modern Age
Black Death The Plague
2-5 million years
7000 B.C.
6000 B.C.
5000 B.C.
4000 B.C.
3000 B.C.
2000 B.C.
1000 B.C.
1000 A.D.
1 A.D.
2025 A.D.


Biosphere
Species
Society
Family, social groups,
bodies of knowledge
The person
Bodily
subsystems:
immune system,
neural system, etc

Species Extinction and Human Population

Graph source: USGS



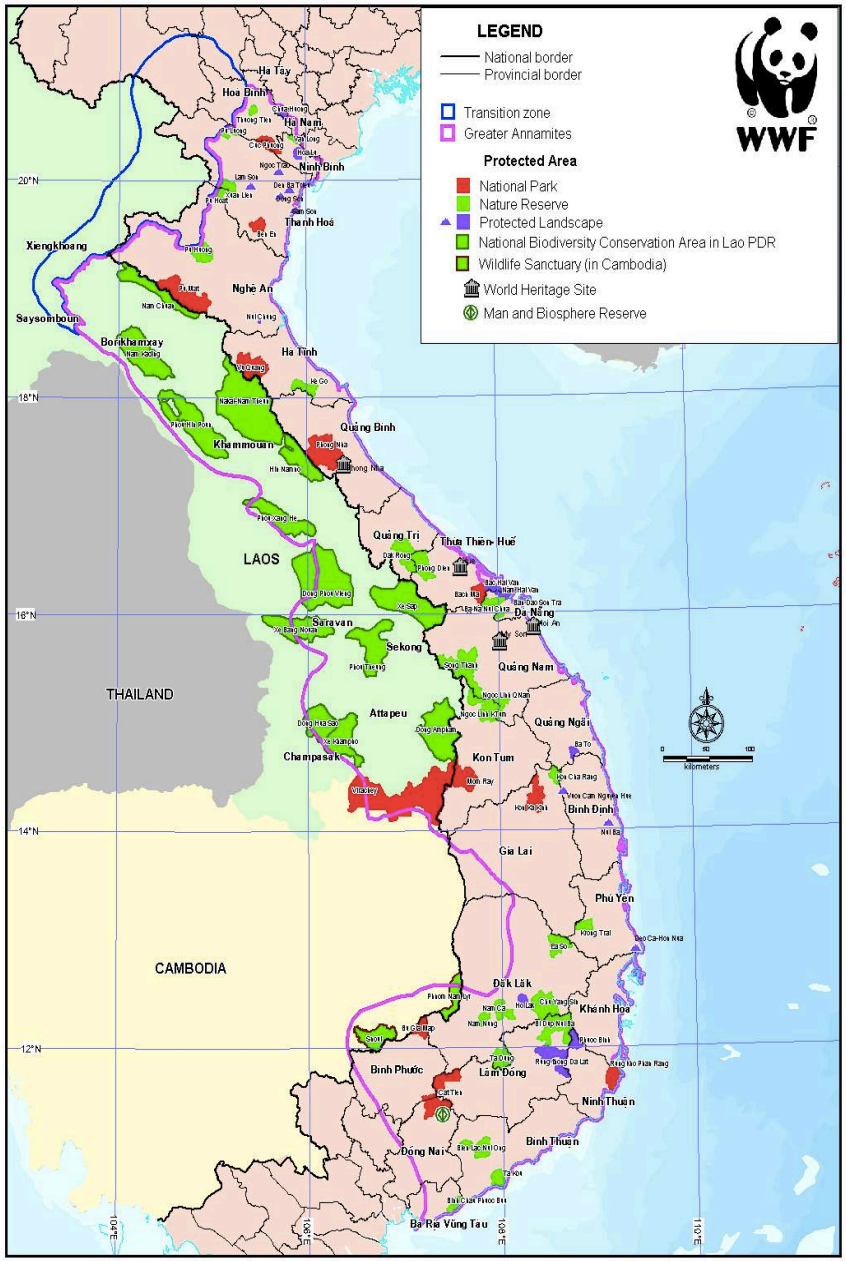
Saola (*Pseudoryx nghetinensis*)

Identified as new species – 1992

Discovered live – 2010

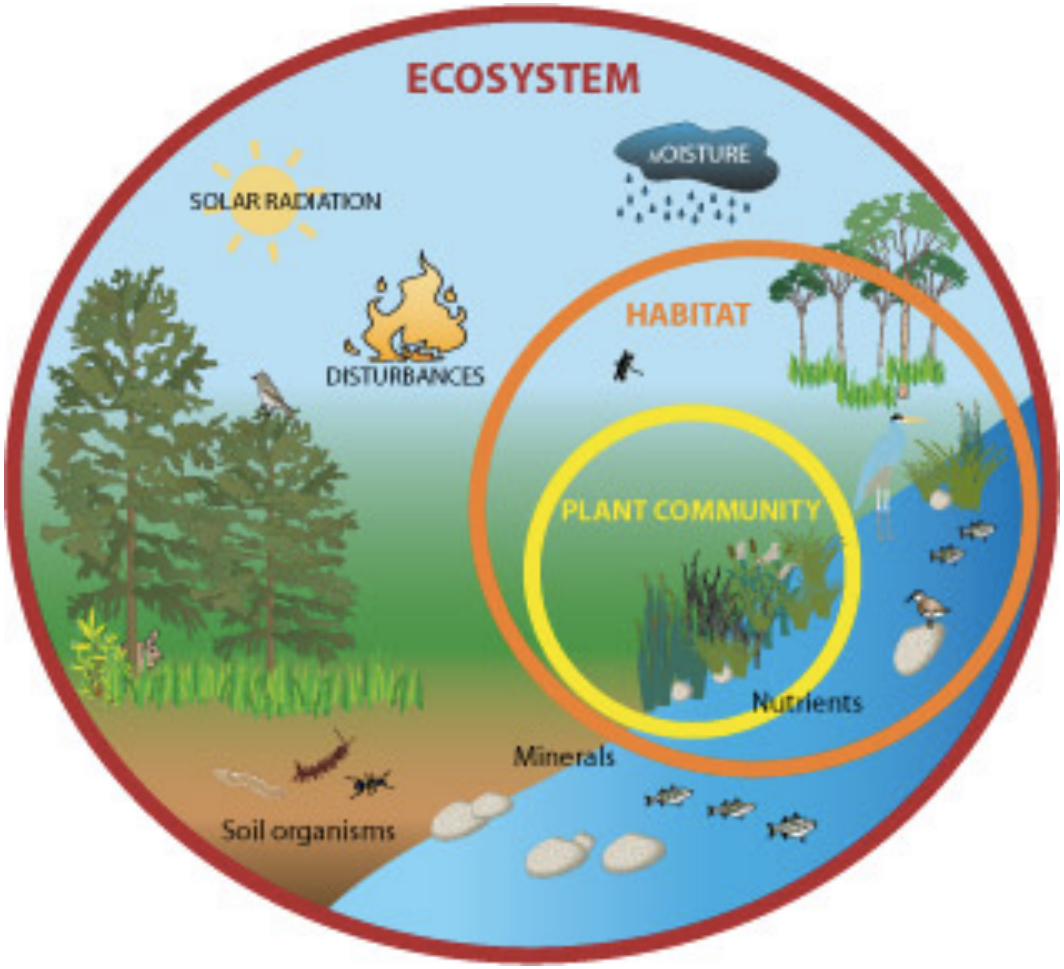
WWF-CANON/DAVID HULSE

PROTECTED AREAS IN GREATER ANNAMITES



Habitat - definition

A particular type of ecological, geographical, or environmental area inhabited by a specific species of animal or plant.


ECOSYSTEM
SOLAR RADIATION
MOISTURE
DISTURBANCES
HABITAT
PLANT COMMUNITY
Nutrients
Minerals
Soil organisms

DI SẢN THIÊN NHIÊN THẾ GIỚI
VƯỜN QUỐC GIA PHONG NHA - KẺ BÀNG
WORLD NATURAL HERITAGE PHONG NHA - KE BANG NATIONAL PARK

Sustainability - definition

In terms of ecology – strategies that assure the diversity, resistance, and resilience of biological systems for long-term functioning of such systems (e.g., ecosystems).

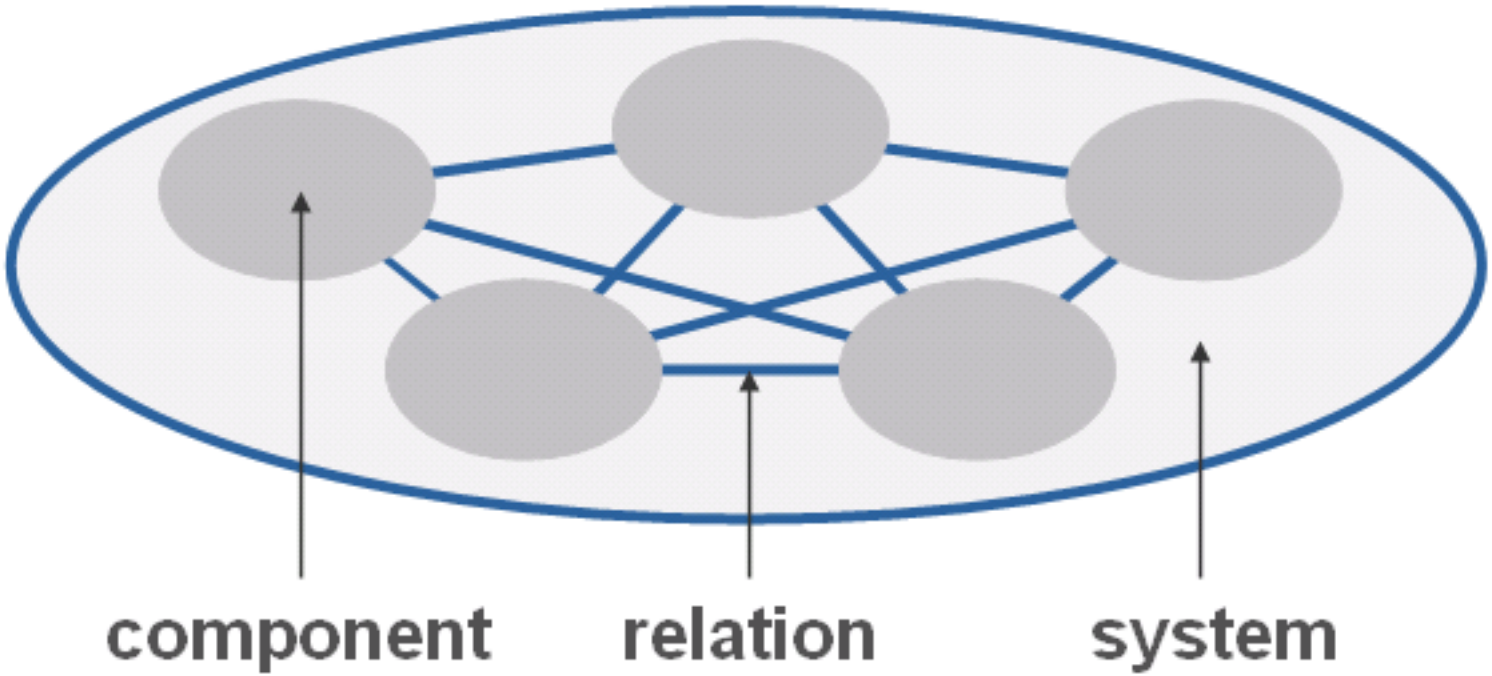
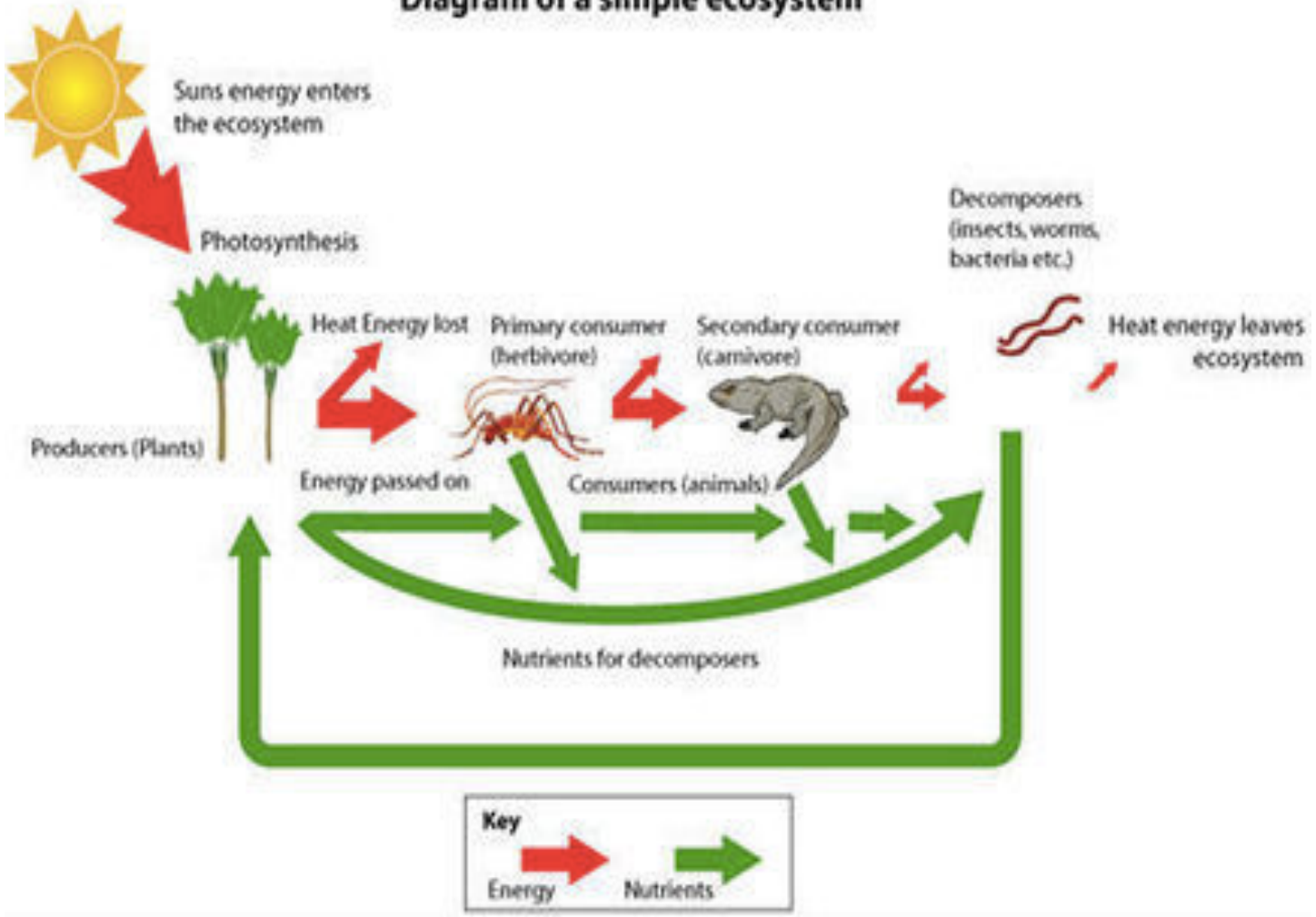
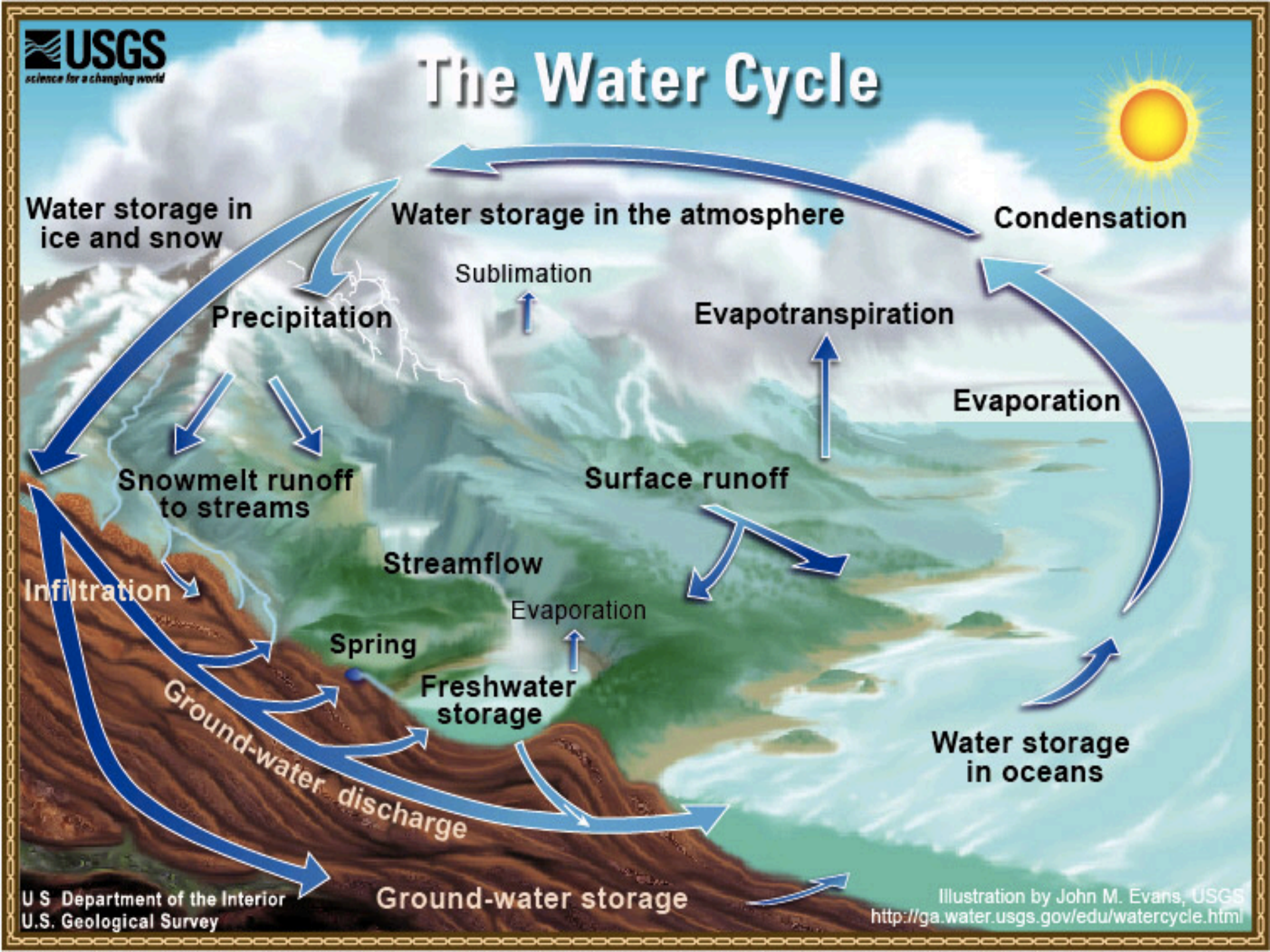
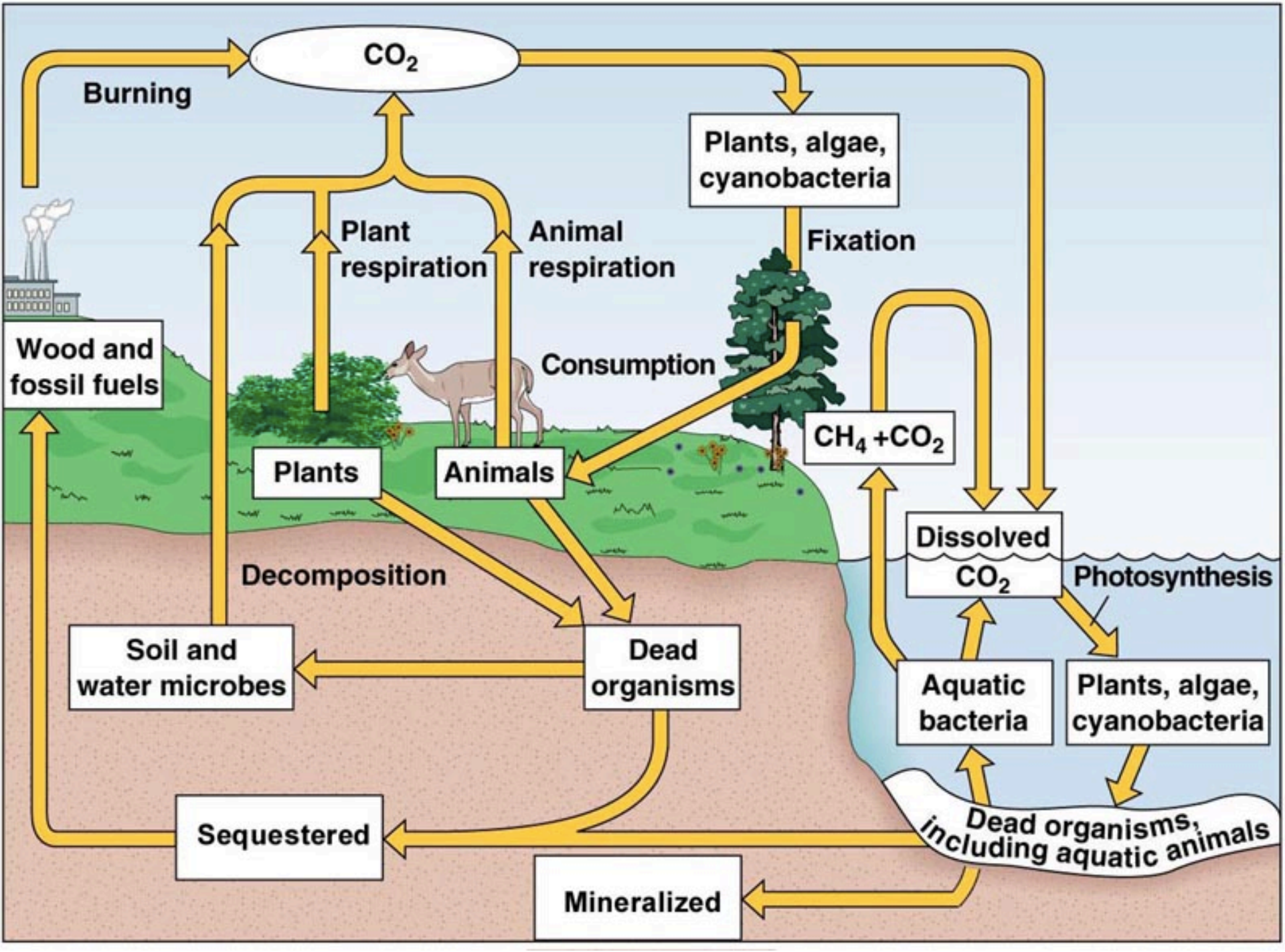
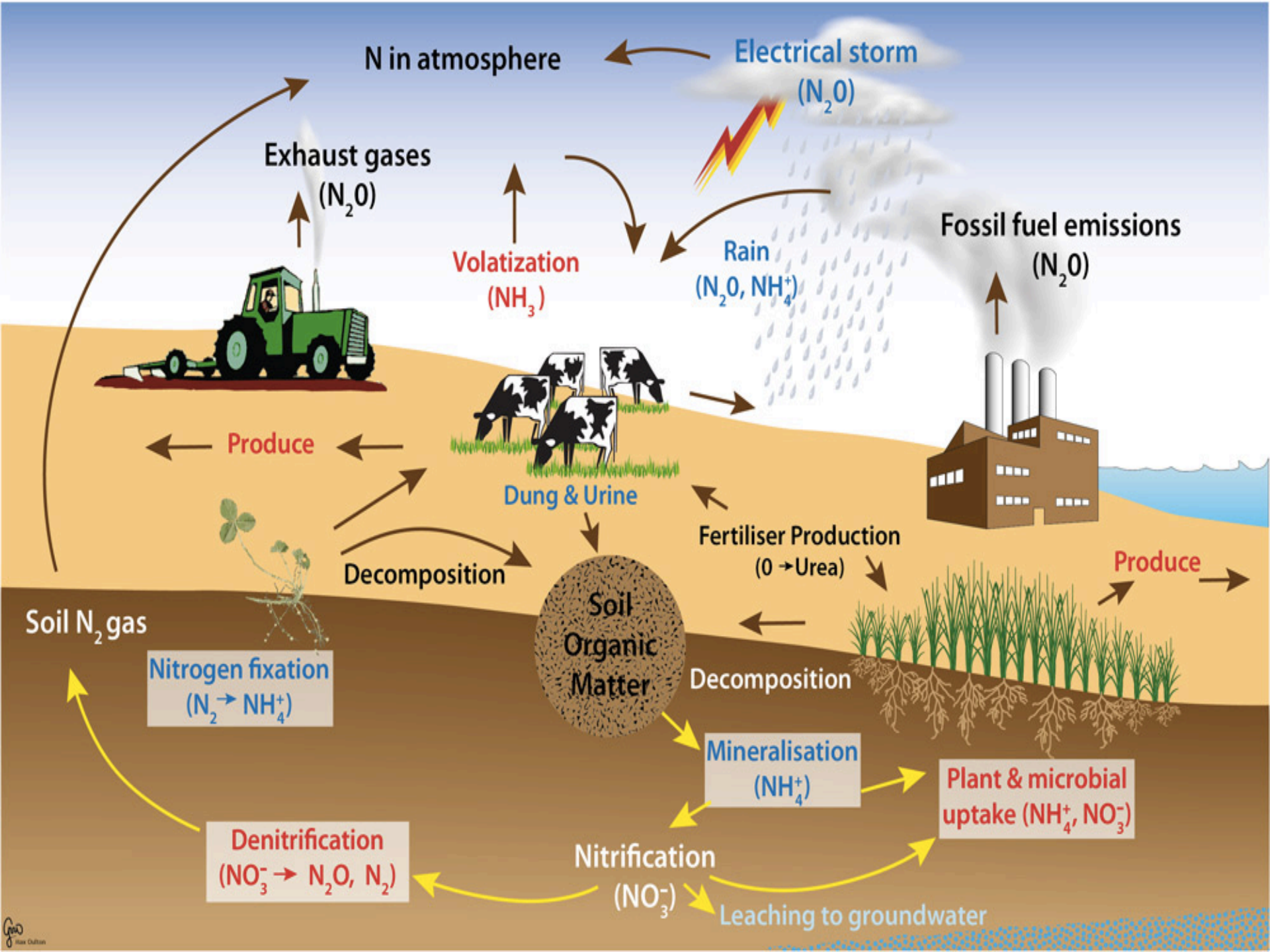

component
relation
system

Diagram of a simple ecosystem

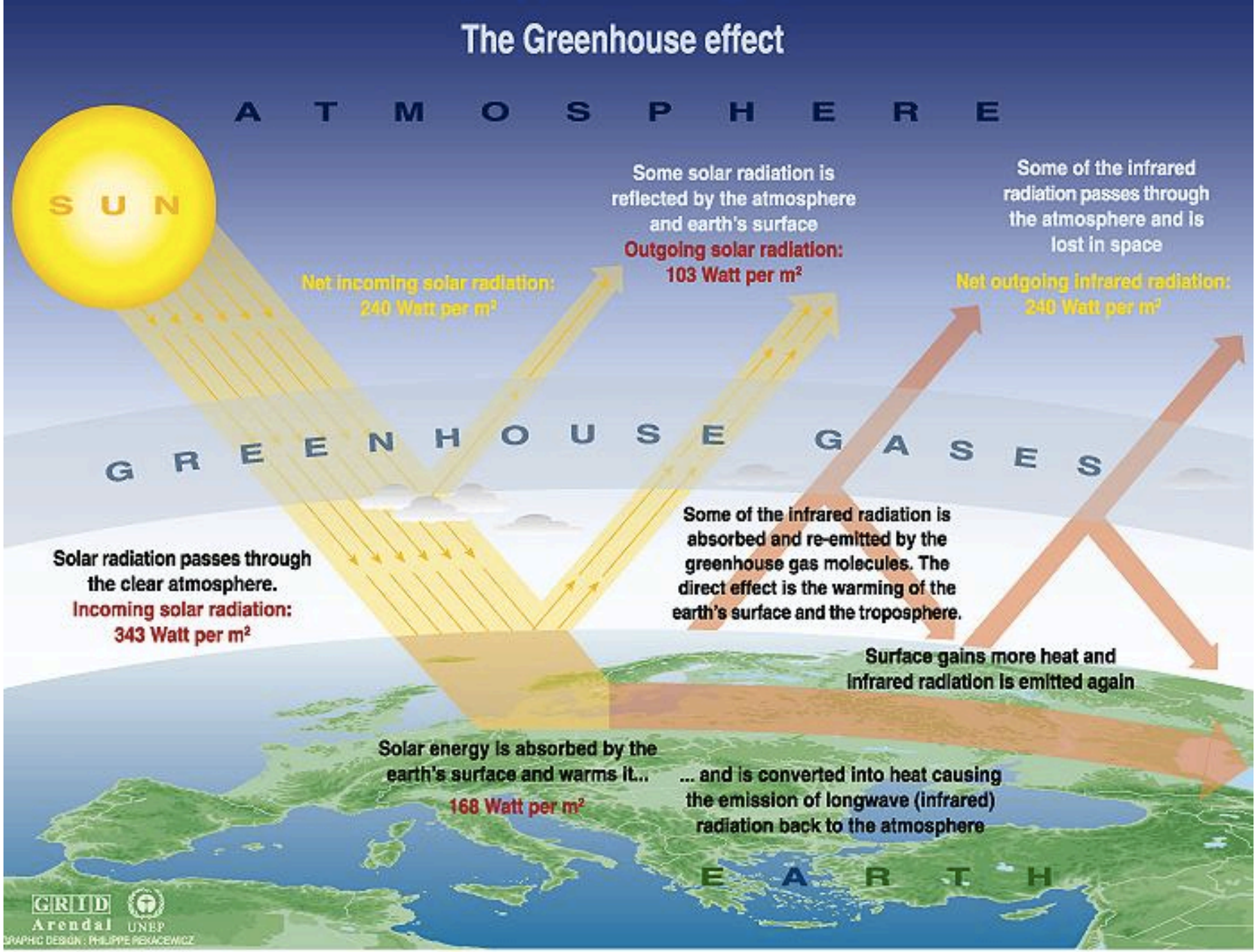



USGS
science for a changing world
The Water Cycle
Water storage in ice and snow
Water storage in the atmosphere
Condensation
Sublimation
Precipitation
Evapotranspiration
Evaporation
Snowmelt runoff to streams
Surface runoff
Streamflow
Infiltration
Evaporation
Spring
Freshwater storage
Ground-water discharge
Water storage in oceans
Ground-water storage
U S Department of the Interior
U.S. Geological Survey
Illustration by John M. Evans, USGS
http://ga.water.usgs.gov/edu/watercycle.html

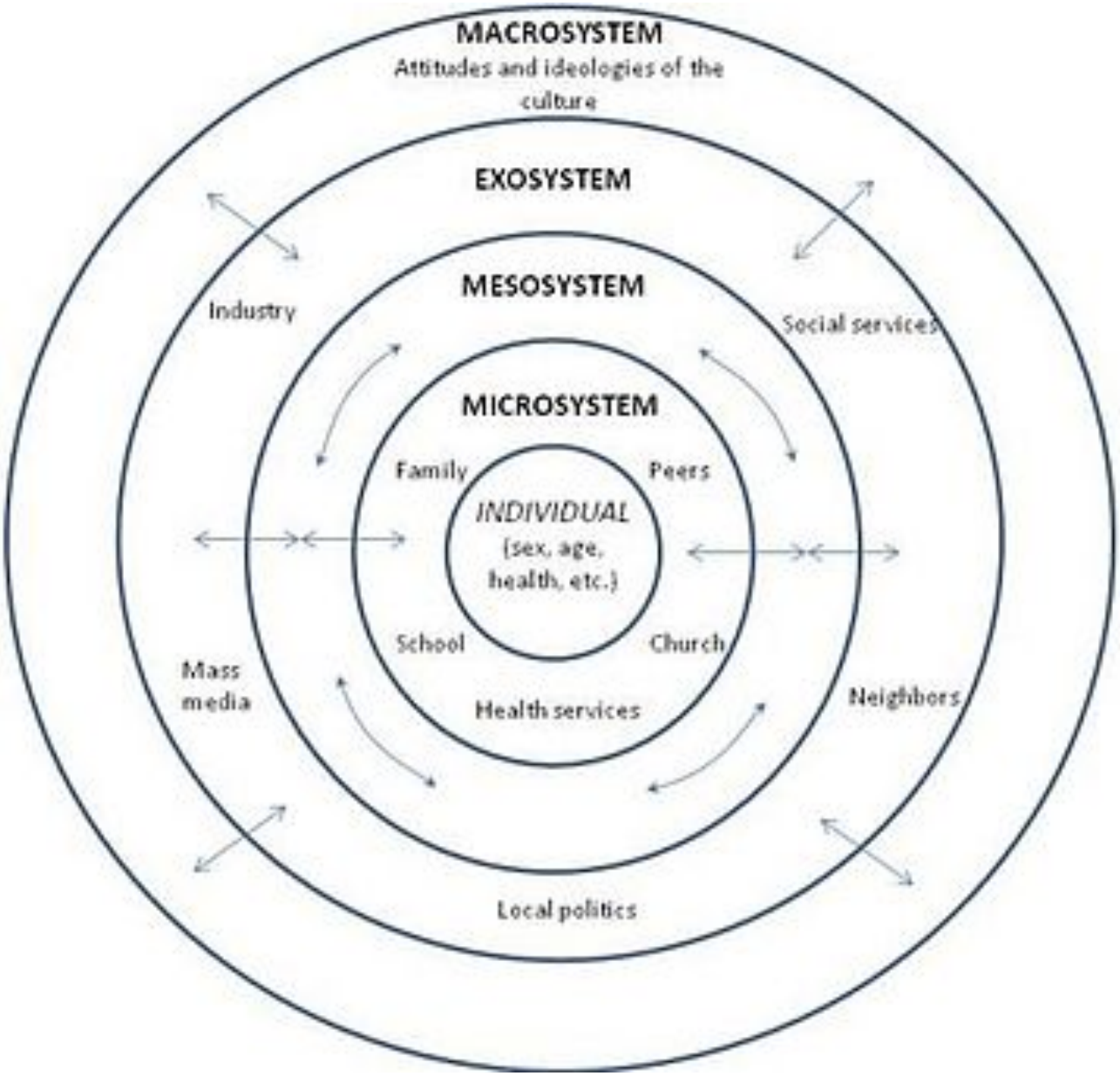

CO_2
Burning
Plants, algae, cyanobacteria
Plant respiration
Animal respiration
Fixation
Wood and fossil fuels
Consumption
$CH_4 + CO_2$
Plants
Animals
Dissolved CO_2
Photosynthesis
Decomposition
Soil and water microbes
Dead organisms
Aquatic bacteria
Plants, algae, cyanobacteria
Dead organisms, including aquatic animals
Sequestered
Mineralized

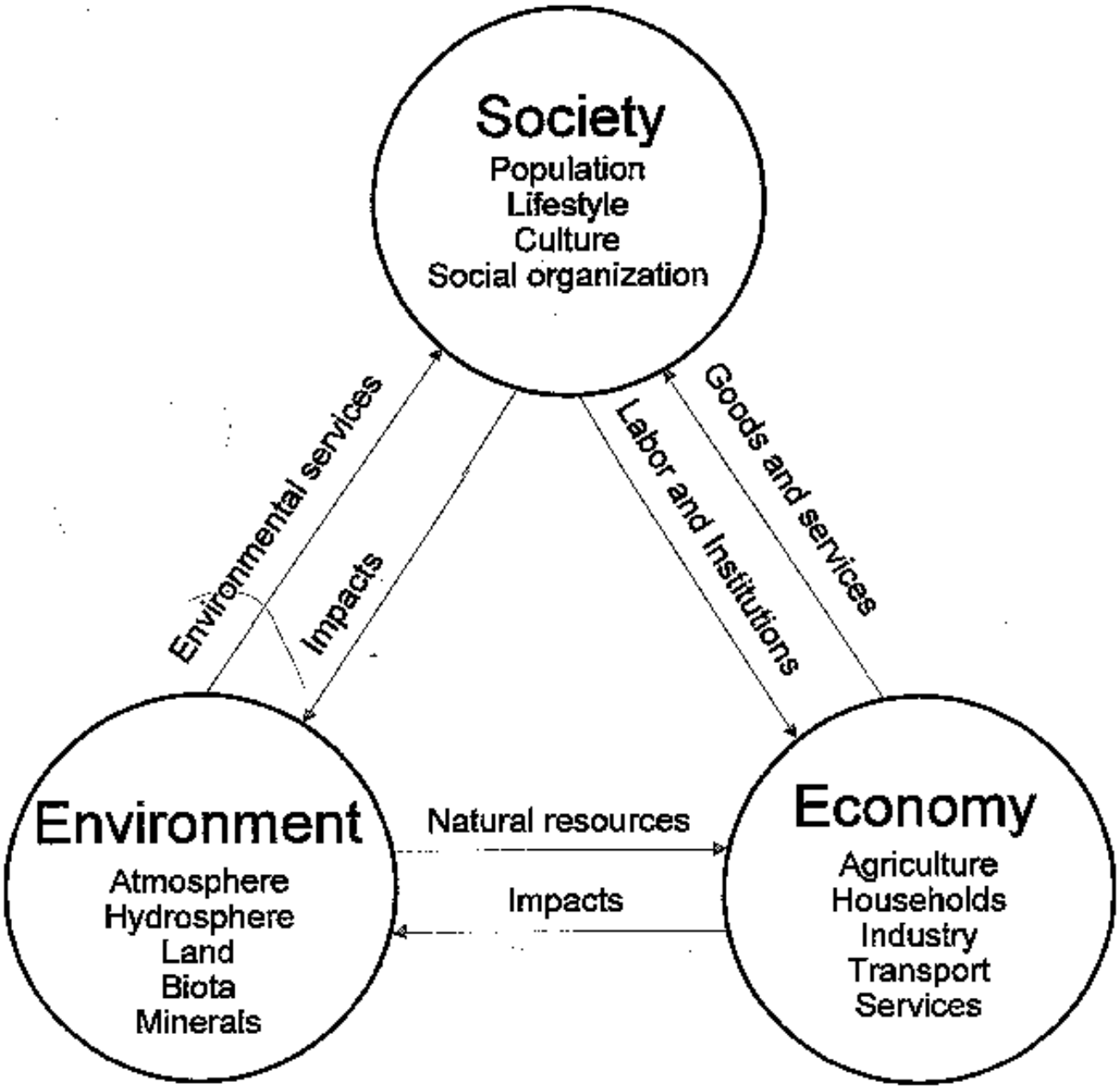

N in atmosphere
Electrical storm
(N_2O)
Exhaust gases
(N_2O)
Volatization
(NH_3)
Rain
(N_2O, NH_4^+)
Fossil fuel emissions
(N_2O)
Produce
Dung & Urine
Fertiliser Production
(0 → Urea)
Produce
Decomposition
Soil N_2 gas
Nitrogen fixation
($N_2 \rightarrow NH_4^+$)
Soil Organic Matter
Decomposition
Mineralisation
(NH_4^+)
Plant & microbial uptake (NH_4^+, NO_3^-)
Denitrification
($NO_3^- \rightarrow N_2O$, N_2)
Nitrification
(NO_3^-)
Leaching to groundwater

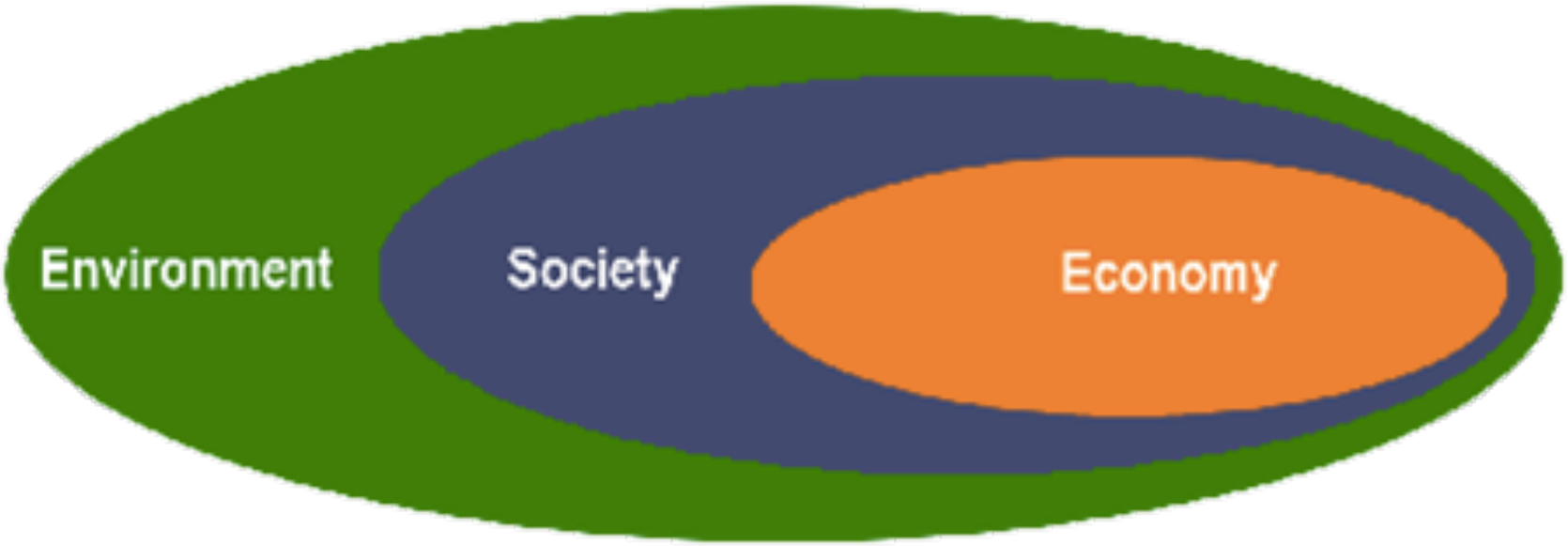
The Greenhouse effect



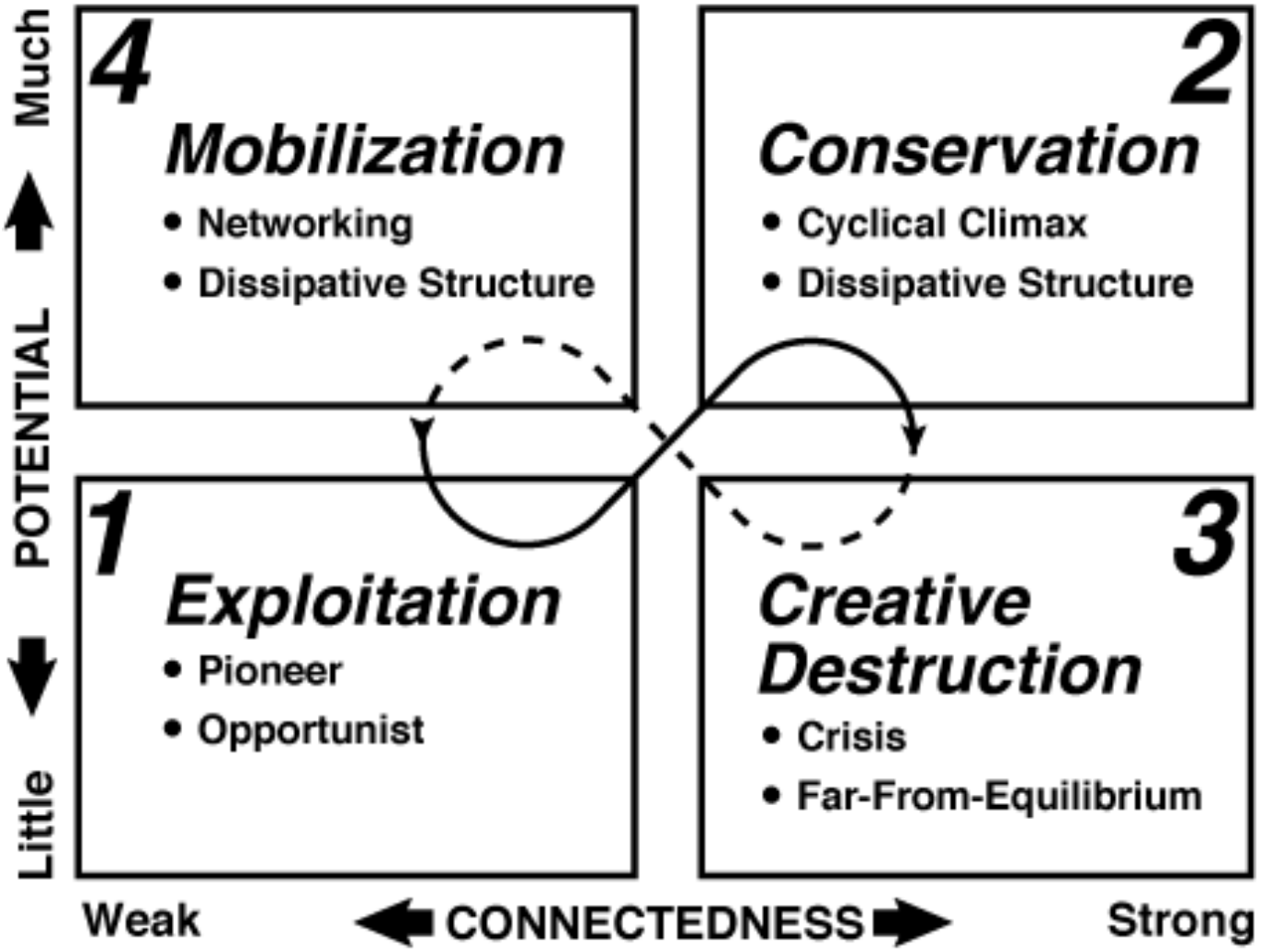
Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.


MACROSYSTEM
Attitudes and ideologies of the culture
EXOSYSTEM
MESOSYSTEM
MICROSYSTEM
Industry
Social services
Family
Peers
INDIVIDUAL
(sex, age, health, etc.)
School
Church
Health services
Mass media
Neighbors
Local politics

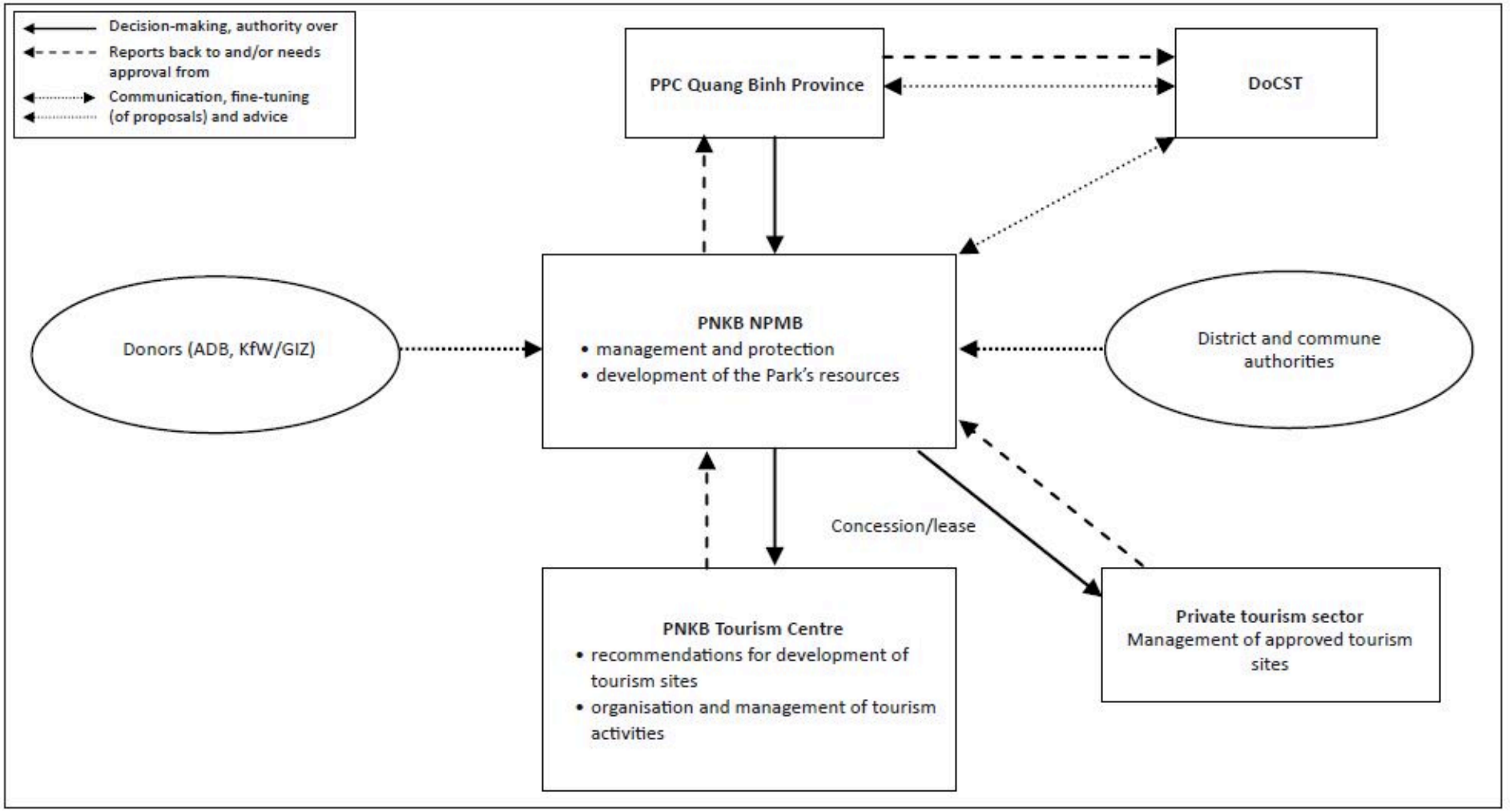

Society
Population
Lifestyle
Culture
Social organization
Environmental services
Impacts
Labor and Institutions
Goods and services
Environment
Atmosphere
Hydrosphere
Land
Biota
Minerals
Natural resources
Impacts
Economy
Agriculture
Households
Industry
Transport
Services



Nested systems



Adaptive cycle of Complex Systems –
Hollings 2001



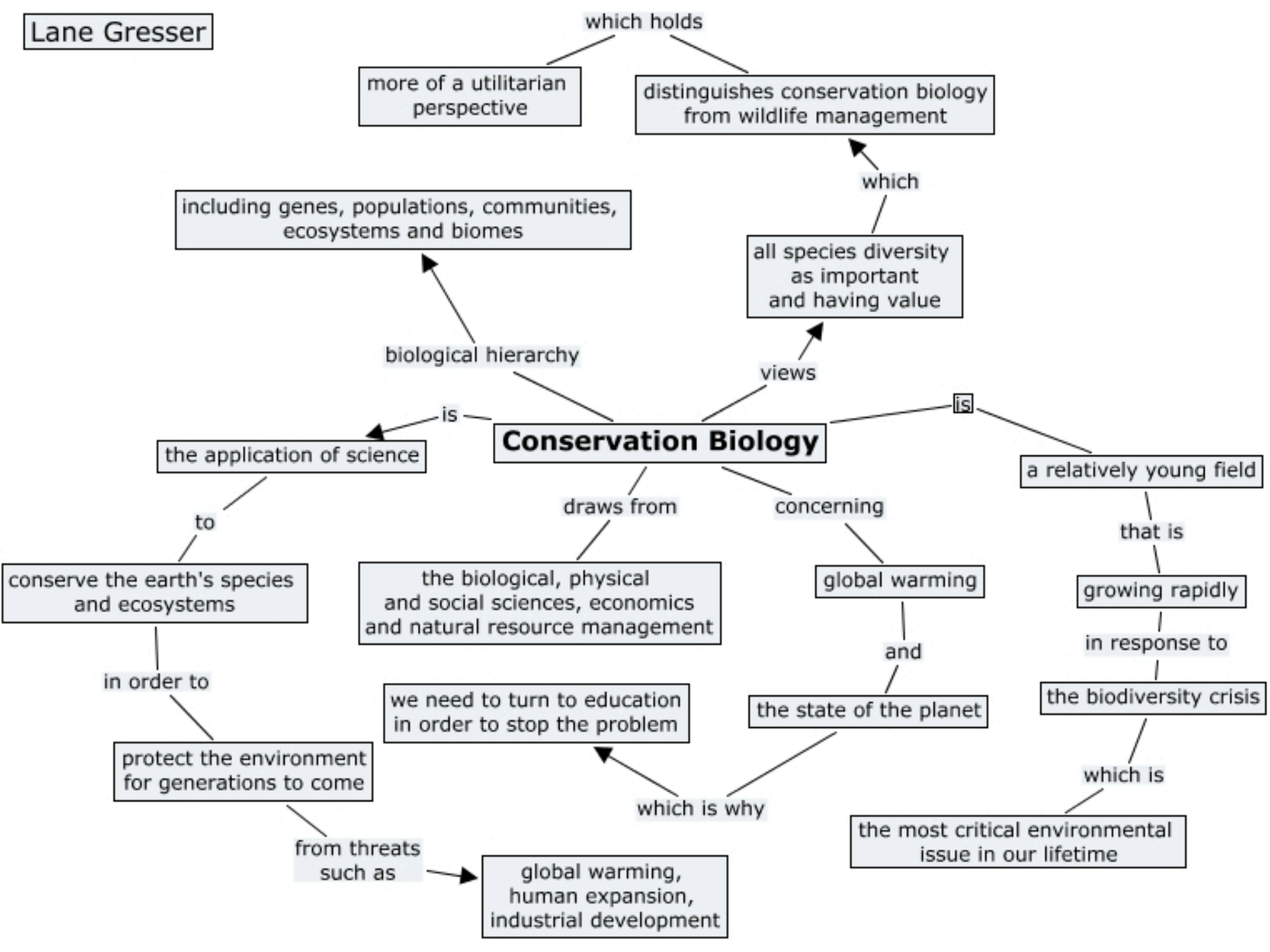
Source: Based on People's Committee of Quang Binh Province, 2010, *Sustainable tourism development plan 2010 to 2020: Phong Nha-Ke Bang National Park region*, Tourism Resource Consultant, GIZ, Dong Hoi

PPC, Provincial People's Committee; DoCST, Department of Culture, Sports and Tourism; ADB, Asian Development Bank; KfW, Kreditanstalt für Wiederaufbar; GIZ, Gesellschaft für Internationale Zusammenarbeit; PNKB NPMB, Phong Nha-Ke Bang National Park Management Board.

FIGURE 2: Ideal management model in the Phong Nha-Ke Bang National Park.

Organizational structure

Vision built in?


Lane Gresser
which holds
more of a utilitarian perspective
distinguishes conservation biology from wildlife management
which
including genes, populations, communities, ecosystems and biomes
all species diversity as important and having value
biological hierarchy
views
is
is
Conservation Biology
the application of science
a relatively young field
to
draws from
concerning
that is
conserve the earth's species and ecosystems
the biological, physical and social sciences, economics and natural resource management
global warming
growing rapidly
and
in response to
in order to
we need to turn to education in order to stop the problem
the state of the planet
the biodiversity crisis
protect the environment for generations to come
which is
which is why
from threats such as
the most critical environmental issue in our lifetime
global warming, human expansion, industrial development