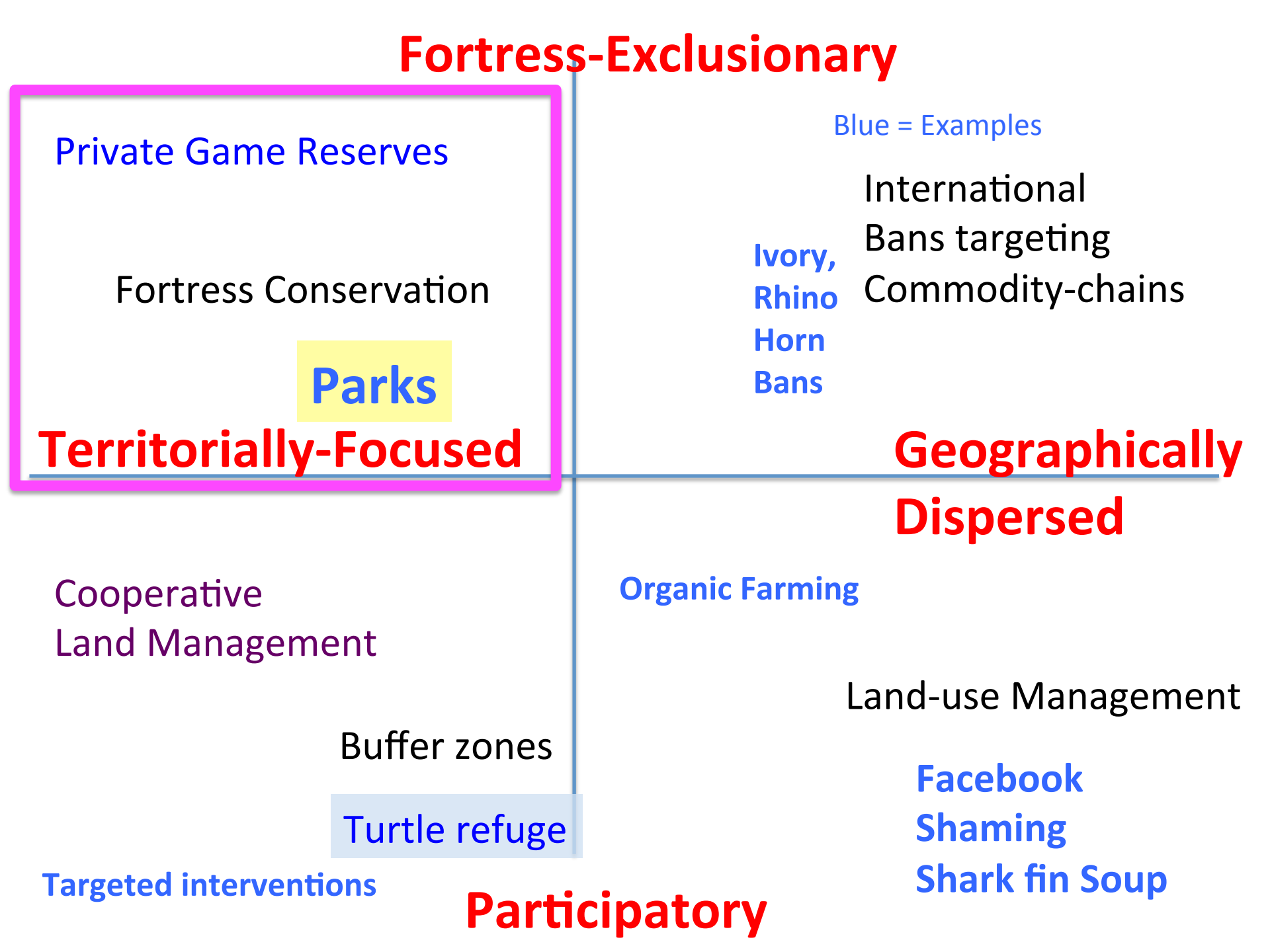
Conservation Battlegrounds, or 'Fortress Conservation'

Debate:

Fortress Conservation: Should conservation proceed by carving out and defending territories of high biodiversity, high conservation value?

OR

Participatory Conservation: Should efforts be directed towards helping farmers conserve 'in situ' by conserving species locally?


Fortress-Exclusionary
Private Game Reserves
Fortress Conservation
Parks
Territorially-Focused
Blue = Examples
International
Bans targeting
Commodity-chains
Ivory,
Rhino
Horn
Bans
Geographically
Dispersed
Cooperative
Land Management
Organic Farming
Land-use Management
Buffer zones
Facebook
Shaming
Shark fin Soup
Turtle refuge
Targeted interventions
Participatory

Territorially-focused versus geographically distributed conservation strategies

Territorially-focused Strategies: apply to specific, demarcated areas or zones. Often of high conservation value

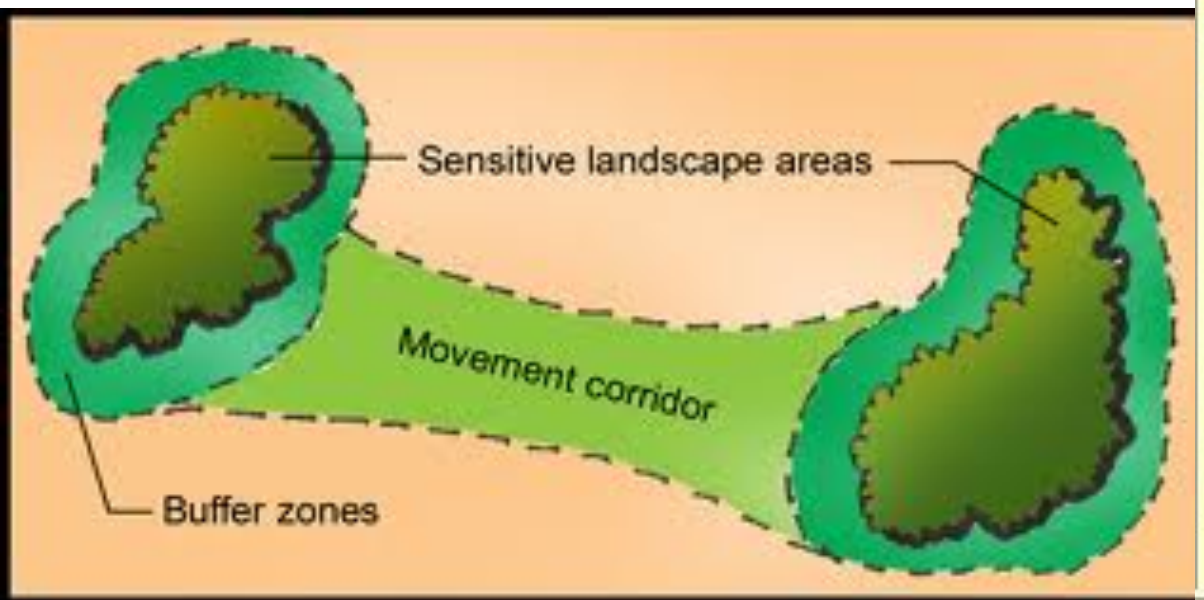
Parks and Reserves

Fortress Conservation: exclusion and creation of 'empty wilderness'

Land-use agreements: participatory conservation

Corridors and Buffers: 'soft territories'

'stepping stones' for animal movement and seed dispersal



Here we are concerned with the importance of territory in biodiversity conservation

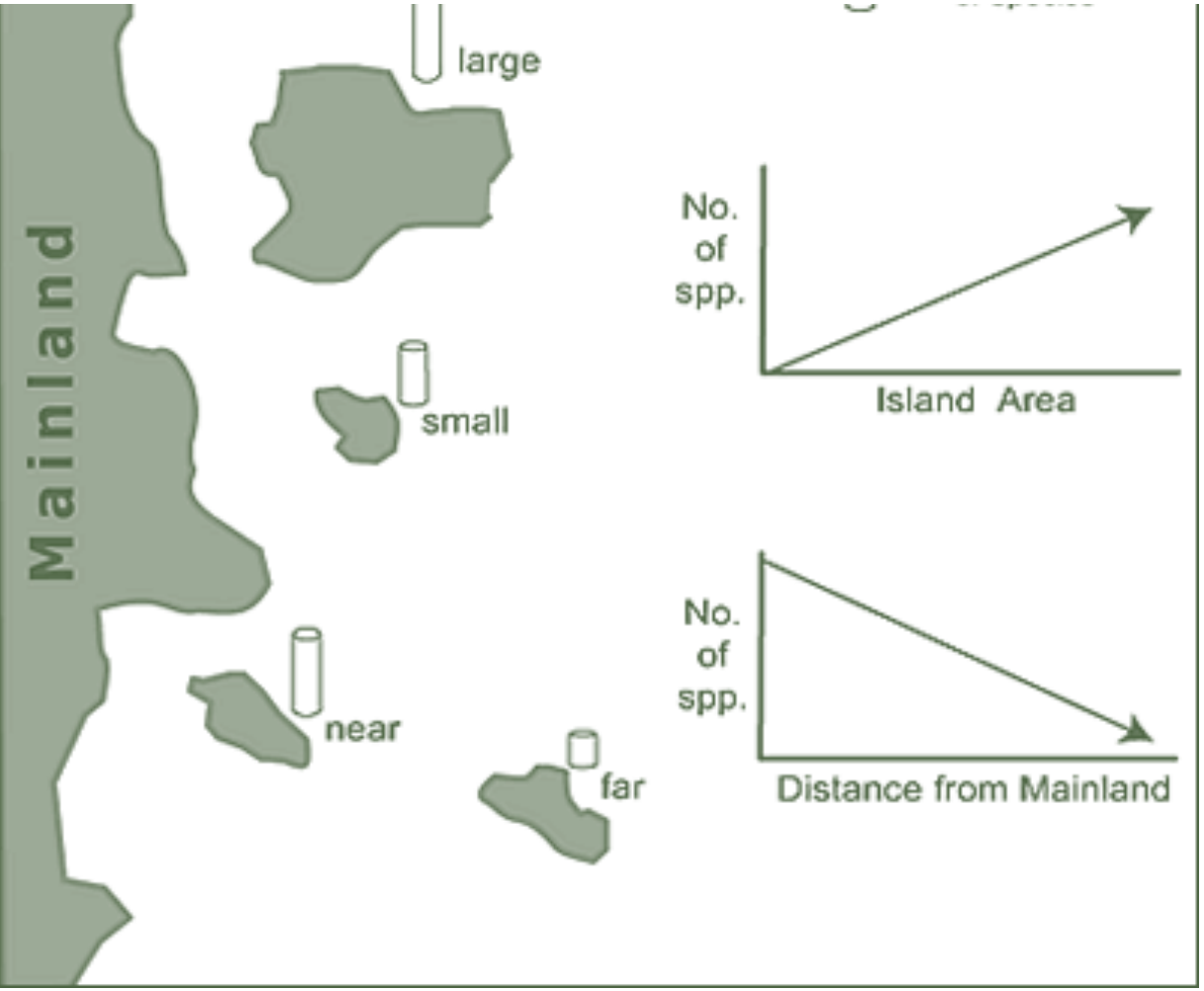
- **Genetic Diversity ‘**
  - **variation within populations of animals measured in variation between genes or DNA sequences – how does territorial dispersion support genetic diversity?**

- **Ecological diversity (community diversity): how much does diversity vary across space?**
  - **Species diversity – ‘alpha’ biodiversity’:**
  - **landscape biodiversity – ‘gamma biodiversity’**
    - **biodiversity by increasing the complexity of ecological niches across space**

Designing Nature Reserves

- **Core natural areas**—conservation of biodiversity and ecological integrity takes precedence over other values or uses, and “where nature can operate in its own way in its own time” (Noss et al. 1999).

Biodiversity issues with Fortress conservation: what does the Matrix/(habitat)Patch model tell us about fortress conservation?

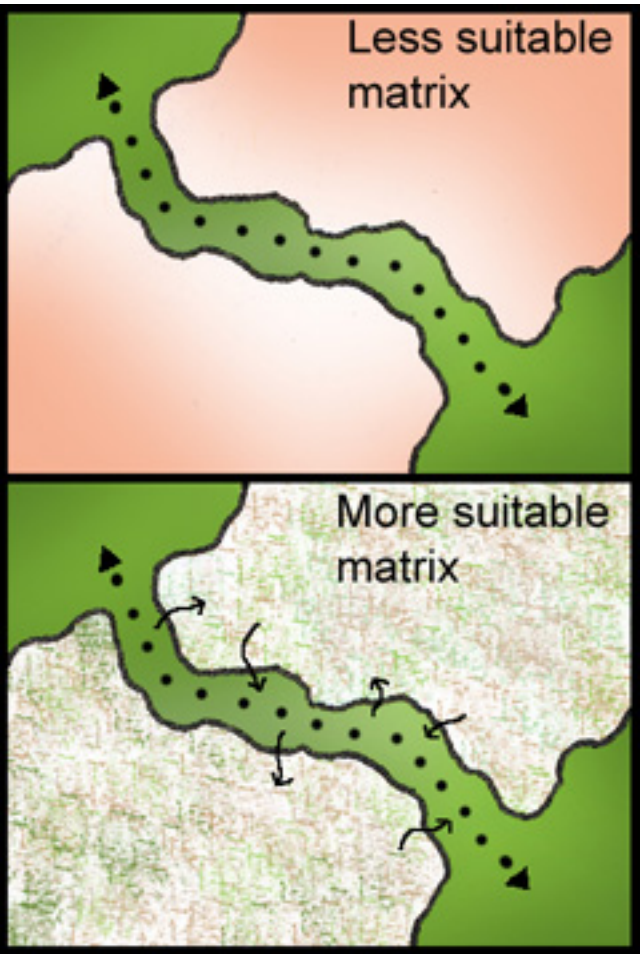


- Patch = zones of special ecological interest in conservation ecology where endemic or rare species reside
- Matrix = area in between, separating habitat patches
- Ideas based upon island biogeography studies: species numbers *increase* with size of island, but *decrease* with distance from mainland
- In Island studies, islands are the patches and the ocean forms the matrix, this matrix is very inhospitable, making travel between island 'patches' difficult

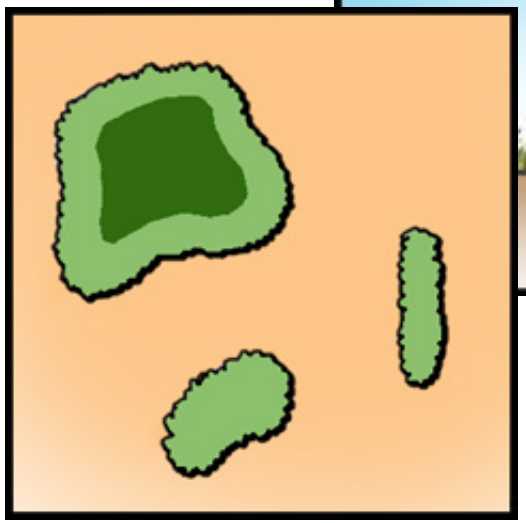
Given contemporary landscape fragmentation, biodiversity is often found in 'patches' of high-quality environment surrounded by a 'matrix' of low quality habitat (such as suburban lawns or pesticide-laced farms

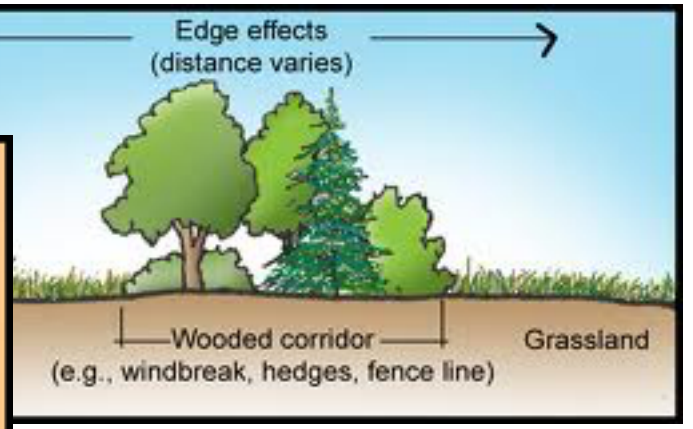
We will use concepts of Patch and Matrix: used in both US and international conservation

Matrix

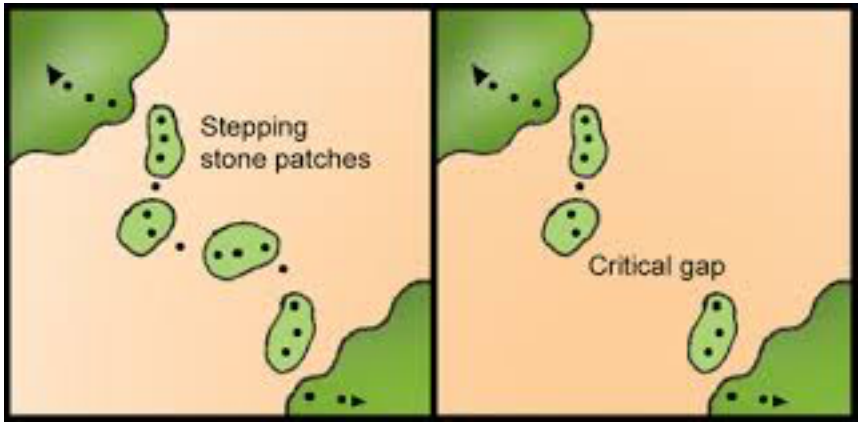


Patch





Stepping Stones across matrix from patch to patch

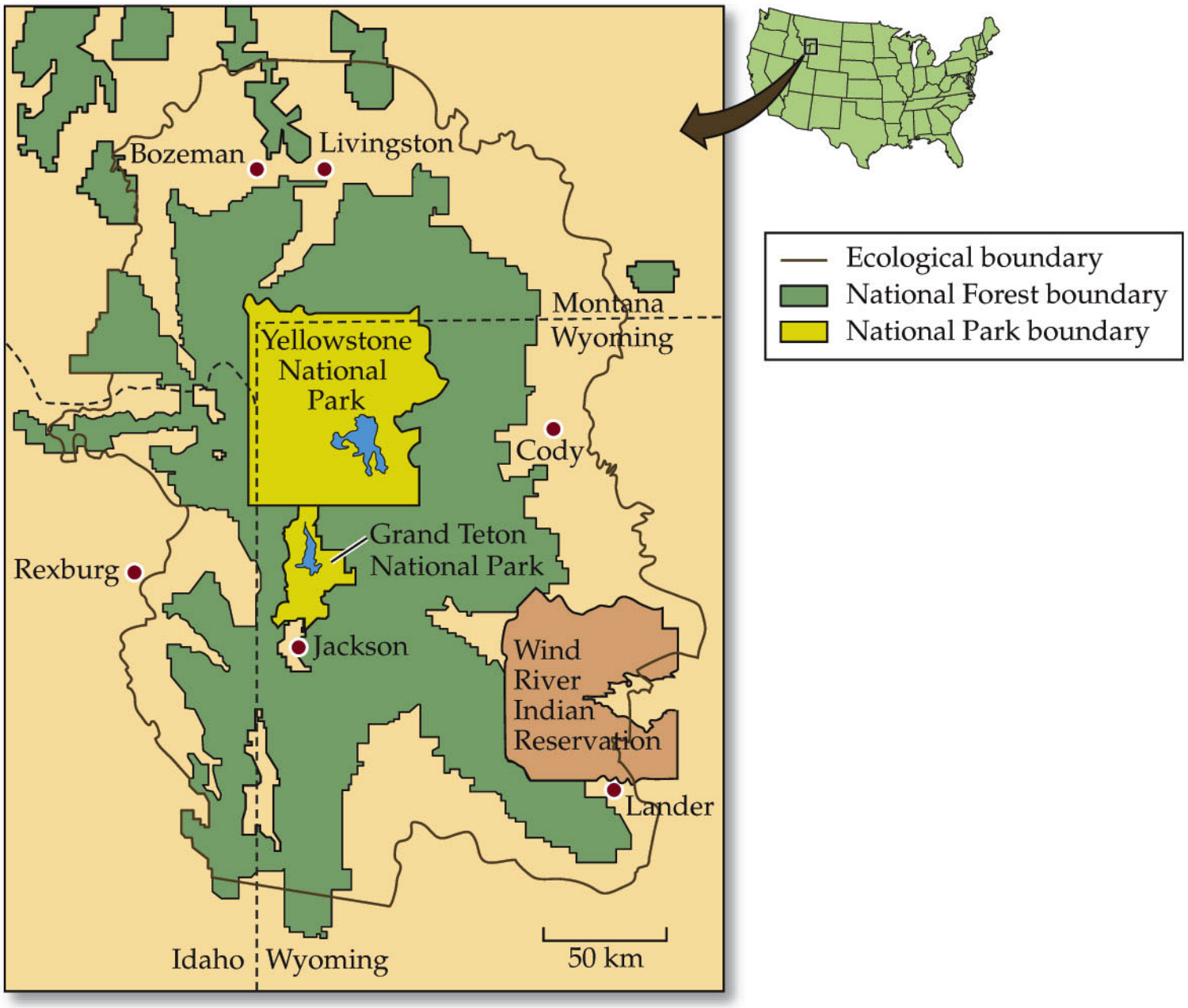


Case Study: Wolves in the

Figure 23.1 A Top Predator Returns

- Wolves, absent from Yellowstone National Park for 70 years, were reintroduced in 1995.

Figure 23.2 The Greater Yellowstone Ecosystem



ECOLOGY, Figure 23.2

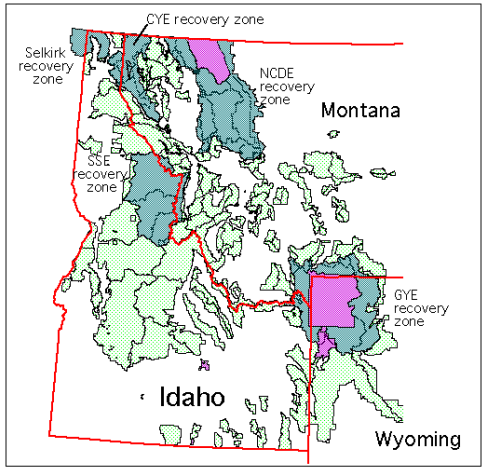
Conservation Corridors:
Combining Territorial Strategies
reserves & buffers

Example: rewilding

https://www.youtube.com/watch?v=ysa5OBhXz-Q

PLEASE STOP CRACKER BOMBING MY MOMMY

The Yellowstone National Park Service and Bear Management have Cracker Bombed this Sow and Cub twice so far this year. This is a plea to Kerry Gunther and his team at Bear management to cease this harassment and take the time to manage this situation with care and observation. We the people are appalled by this lack of human compassion.



National Forests
Grizzly Bear Recovery Zones
National Parks
State Boundaries

The biggest threat to biodiversity:

Loss of Keystone Species

A keystone species is a species that has a disproportionate effect on its environment relative to its abundance. Such species affect many other organisms in an ecosystem and help to determine the types and numbers of various others species in a community.

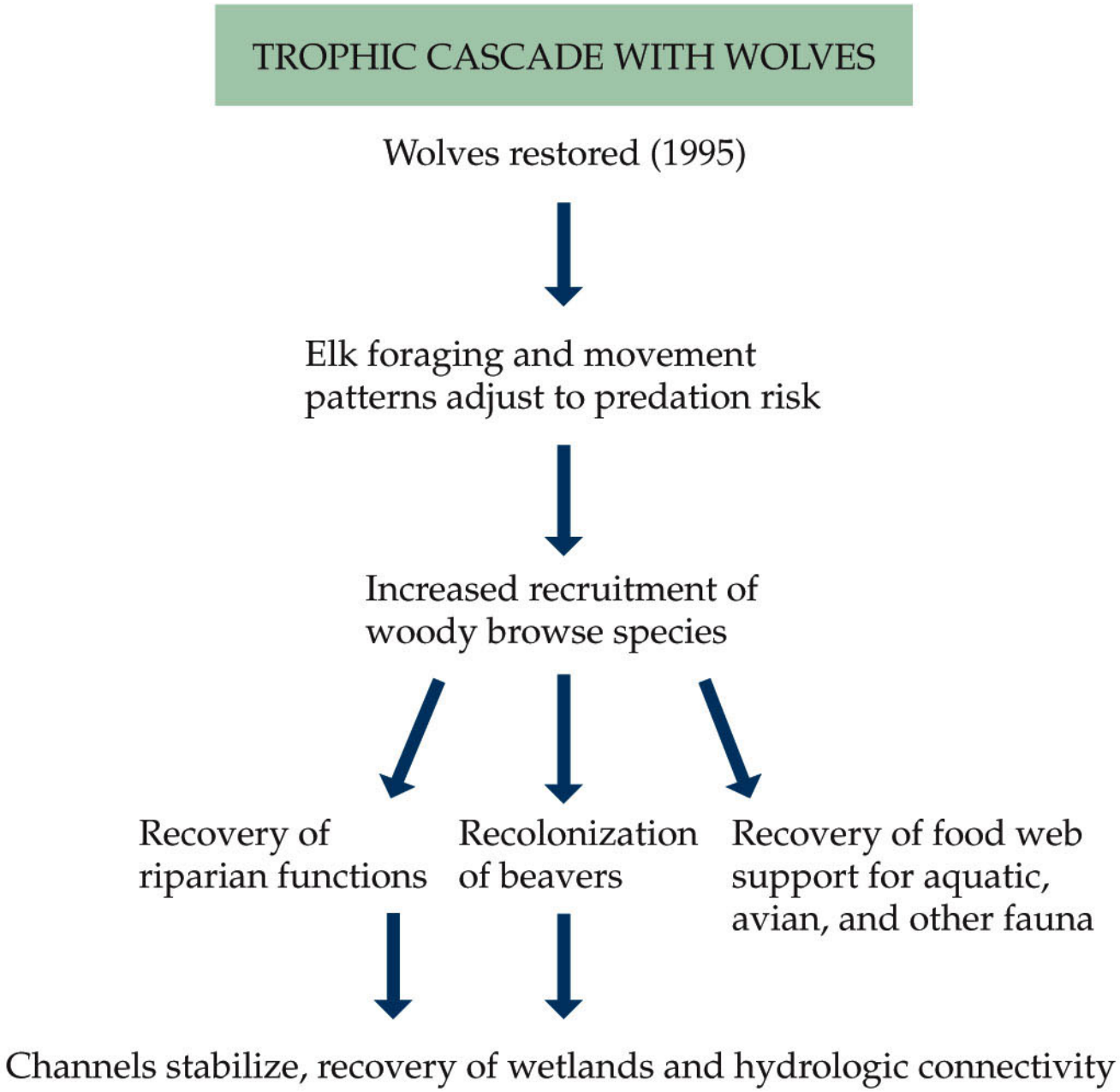
The prairie dog has long been hated by farmers and ranchers, but it is vital to many prairie species.

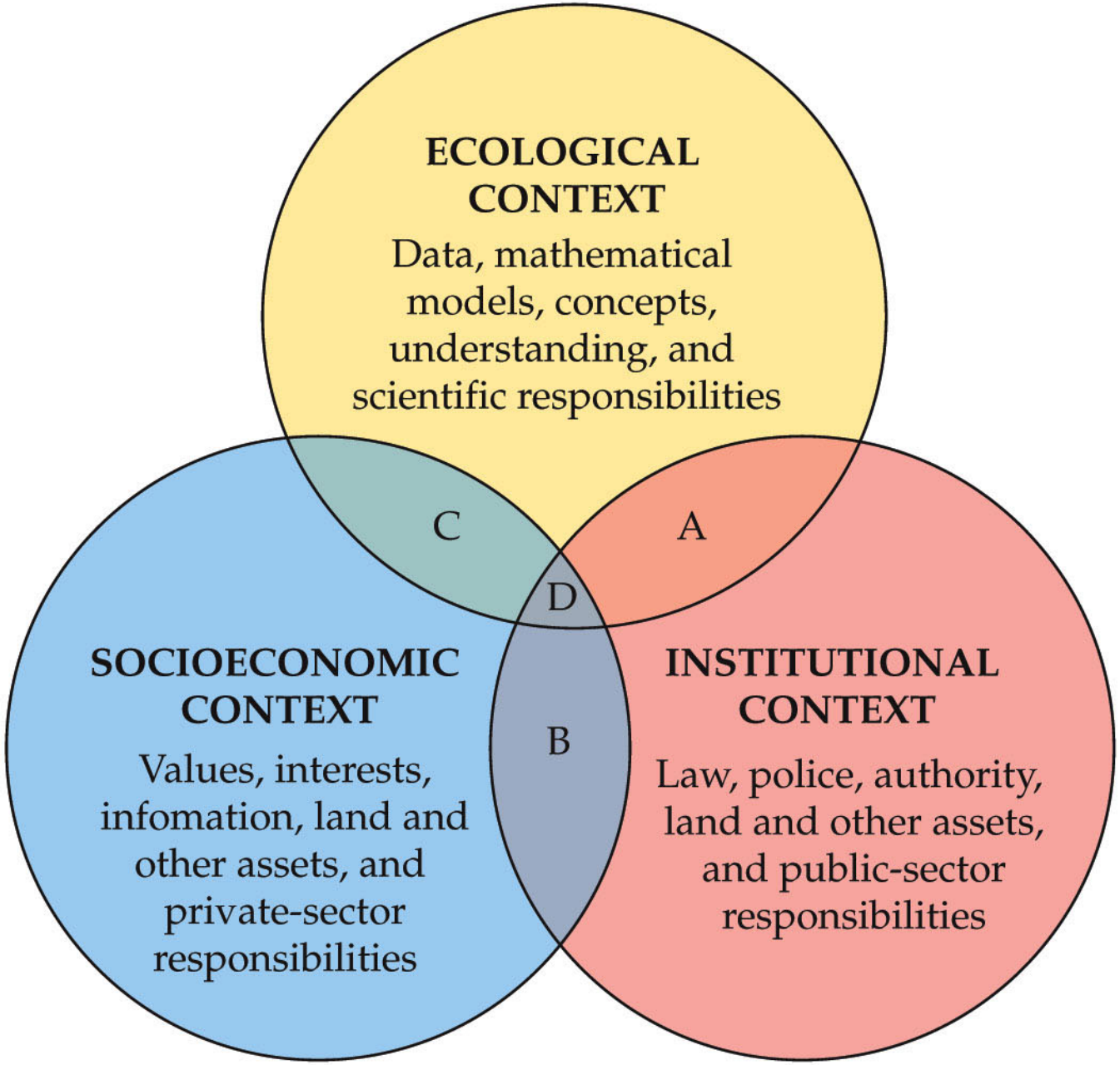
This gopher-tortoise is a an endangered keystone species, under protection in Mobile Country, AL.

Keystone Predator: Northern Rocky Mountain Gray Wolf

- Removed from Endangered Species List February 2008, after only having been reintroduced into Idaho and Wyoming in 1984

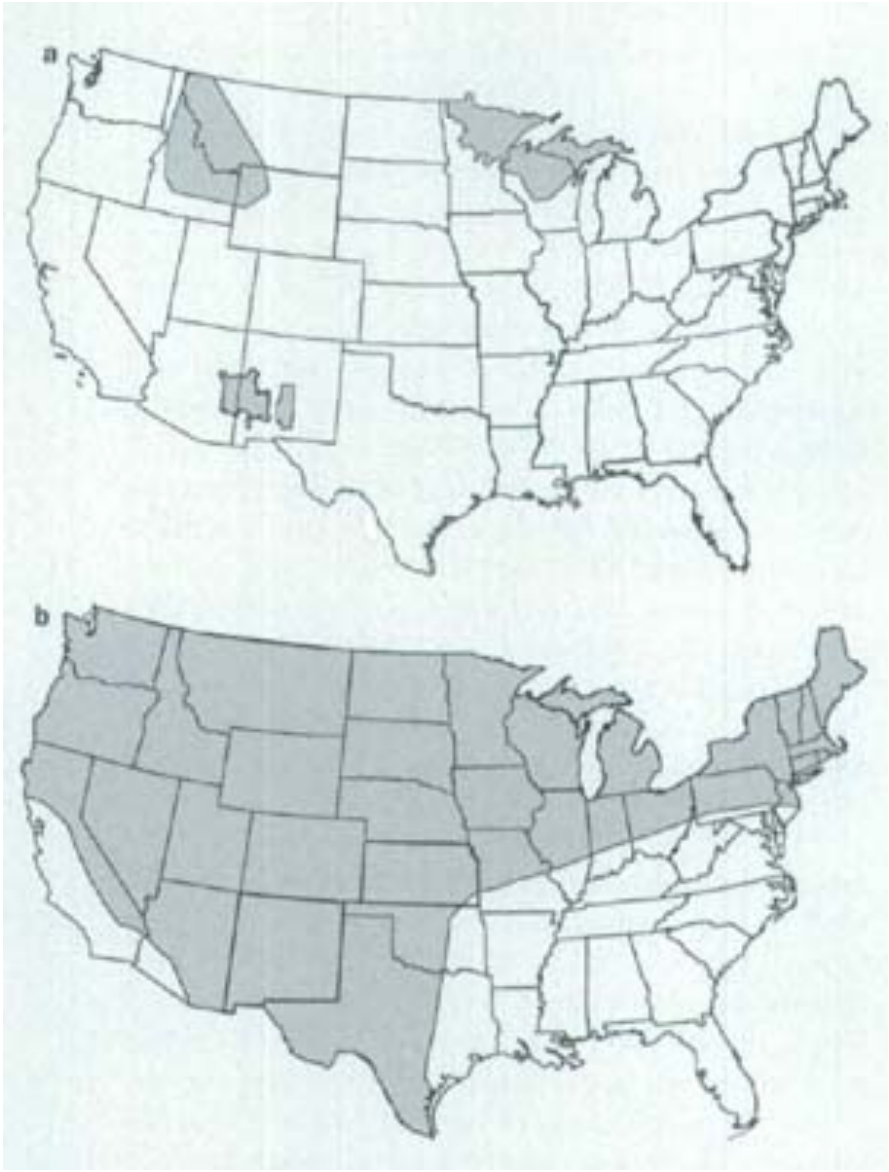
Currently there are 1500 wolves and 100 breeding pairs


TROPHIC CASCADE WITH WOLVES
Wolves restored (1995)
Elk foraging and movement patterns adjust to predation risk
Increased recruitment of woody browse species
Recovery of riparian functions
Recolonization of beavers
Recovery of food web support for aquatic, avian, and other fauna
Channels stabilize, recovery of wetlands and hydrologic connectivity


ECOLOGICAL CONTEXT
Data, mathematical models, concepts, understanding, and scientific responsibilities
C
A
D
B
SOCIOECONOMIC CONTEXT
Values, interests, infomation, land and other assets, and private-sector responsibilities
INSTITUTIONAL CONTEXT
Law, police, authority, land and other assets, and public-sector responsibilities

Conservation Success Story?

- "The wolf population in the Northern Rockies has far exceeded its recovery goal and continues to expand its size and range. States, tribes, conservation groups, federal agencies and citizens of both regions can be proud of their roles in this remarkable conservation success story" -Deputy Secretary of the Interior Lynn Scarlett
- Republican governor of Idaho, C. L. "Butch" Otter: He hopes to be the **first to legally shoot** a wolf in Idaho, as soon as the animals lose ESA protection, and wants no more than the **federal minimum recovery target** of 100. There are 650 now. (It is now legal, and the 2009 limit was 220 wolves.)



A represents three populations of grey wolves. B represents the original populations.

http://web.ebscohost.com/ehost/detail?vid=10&hid=15&sid=b8130dec-4eb4-42cb-bc31-2f1384f55ae9%40sessionmgr14&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=aph&AN=46987264

PROBLEMS

POACHING:

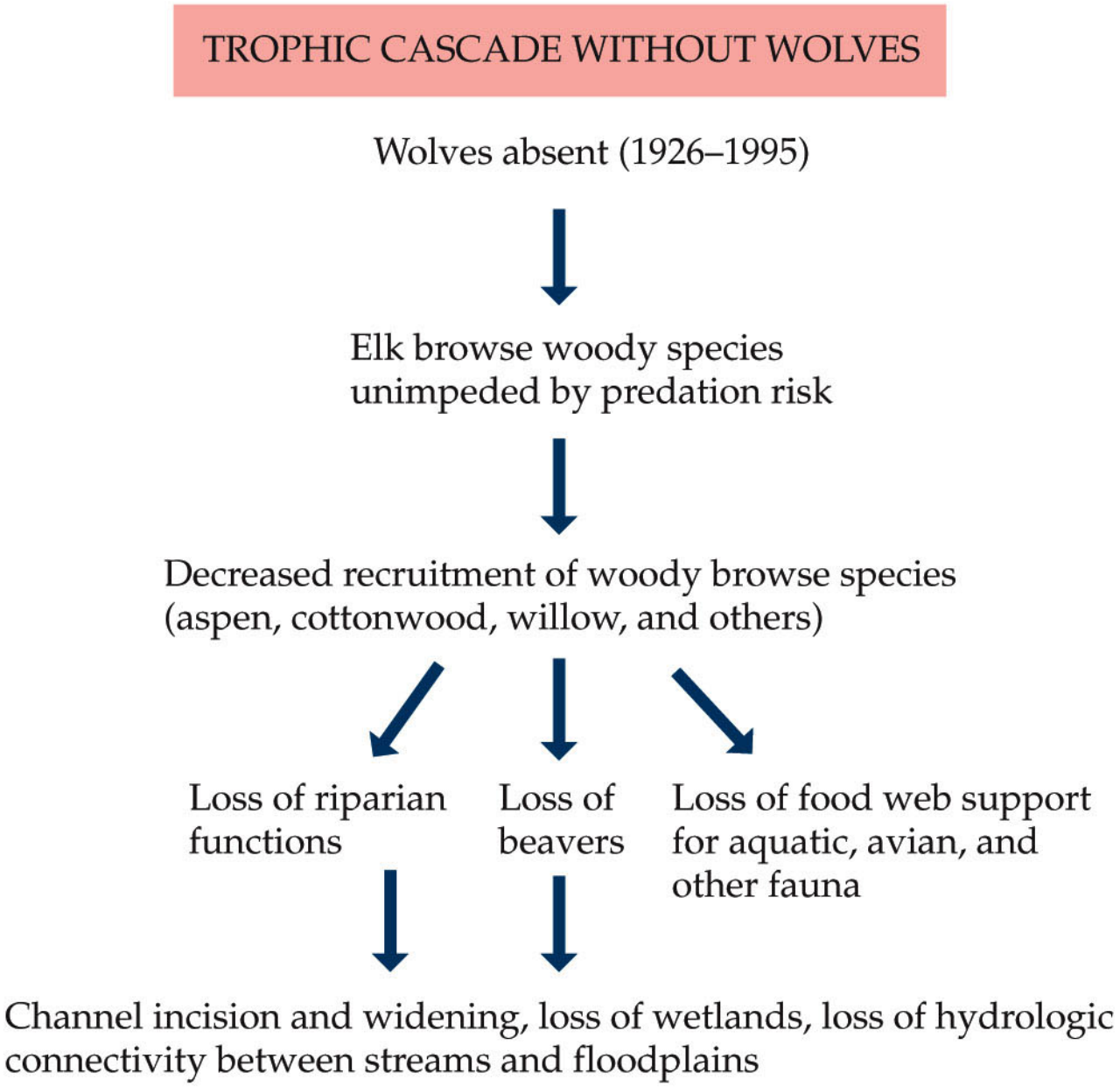
- At current poaching rate, African elephants face extinction by 2020
- Elephant death rate from poaching: 8 per cent, (higher than the 7.4 per cent rate which led to the 1989 international ivory trade ban) [Samuel Wasser, U. Washington]
- In the 1980s, the elephant population was 1 million, with around 70,000 elephants being killed a year. Now the total African elephant population is now less than 470,000.
- Rhino poaching: http://www.youtube.com/watch?v=KZxgHik8uI0

1. Mgahinga Park's Conservation refugees:

The Nyarusisa community is landless.

Families pushed out of Mgahinga National Park squat on other people's land or live in shabby camps with no sanitation.

There is no available land next to Mgahinga Park 's boundaries: adjacent mountains are intensively cultivated and settled by Bufumbira and Hutu people.


TROPHIC CASCADE WITHOUT WOLVES
Wolves absent (1926–1995)
Elk browse woody species unimpeded by predation risk
Decreased recruitment of woody browse species (aspen, cottonwood, willow, and others)
Loss of riparian functions
Loss of beavers
Loss of food web support for aquatic, avian, and other fauna
Channel incision and widening, loss of wetlands, loss of hydrologic connectivity between streams and floodplains