

Wild Horses and the Prairie



Rewilding
AMERICA NOW

The American Horse

Wild horses originated in North America as an integral part of the prairie ecosystem.

Flowering plants and graminoids evolved and persisted under the influence of grazing by horses for millions of years (Naundrup & Svenning, 2015).

Research funded by the CANA Foundation provides evidence through DNA samples (Murchie et al. 2021)

Horses migrated from North America to Asia via the Bering Strait land bridge (Murchie et al. 2022). In North America, from 6,000 years ago, wild horse population declined suddenly for unknown reasons.

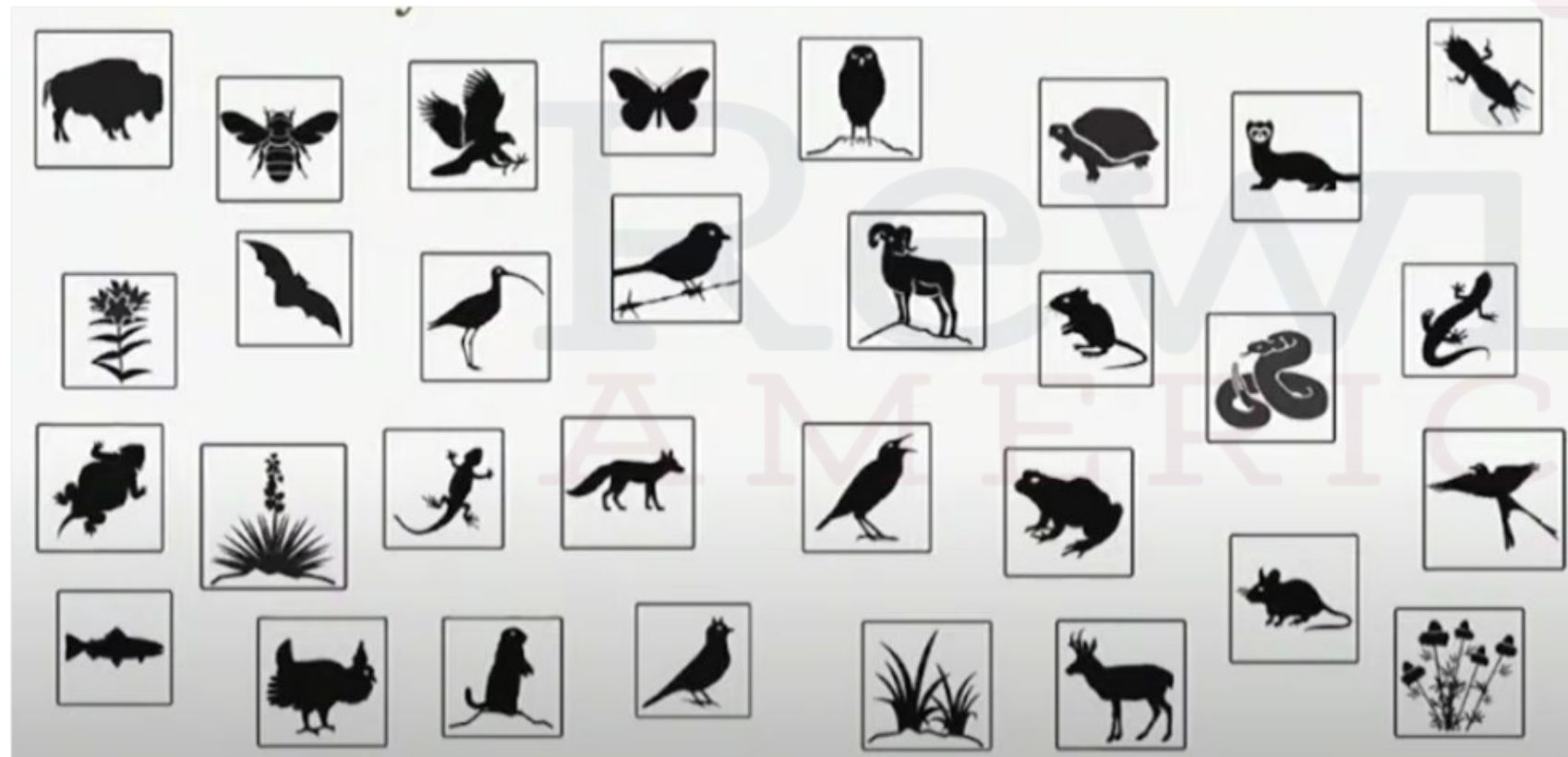
CANA is funding more DNA excavations in Illinois and eagerly awaiting results.

The Disappearing Prairie

Grasslands were historically the largest ecosystem in N. America.

They covered more than 740 million acres (Risser 1996), housing a vast diversity of species (Schulz 2022).

Overgrazing, intensive agriculture, prevention of naturally-occurring fires, and contamination have led to widespread erosion, invasive species, and biodiversity breakdown.



Elk, pronghorn antelopes, black-footed ferrets, cougars, grizzly bears and grey wolves have become extirpated. **Out of the 3 billion birds lost since 1970 in the US, one out of every 4 are grassland birds.**

Perfect Storm

2021 Marshall Fire

Drought and overgrazed soil

80mph winds

Fast-moving, grass-fueled fire

Costliest in Colorado history

Fires

Drought

1930s Dust Bowl

Intensive cultivation

35 million acres of crop failures and absence of deep-rooting prairie grasses

Massive, prolonged dust storms

Climate
Crisis

Pest
outbreak

Flooding
event

2019 Great Flood

Blizzards and extreme rainfall + oversaturated, degraded soils

Unabsorbed excess runoff

1 million acres of Midwest flooded

“Climate change is causing the Northern Great Plains to warm and dry disproportionately.

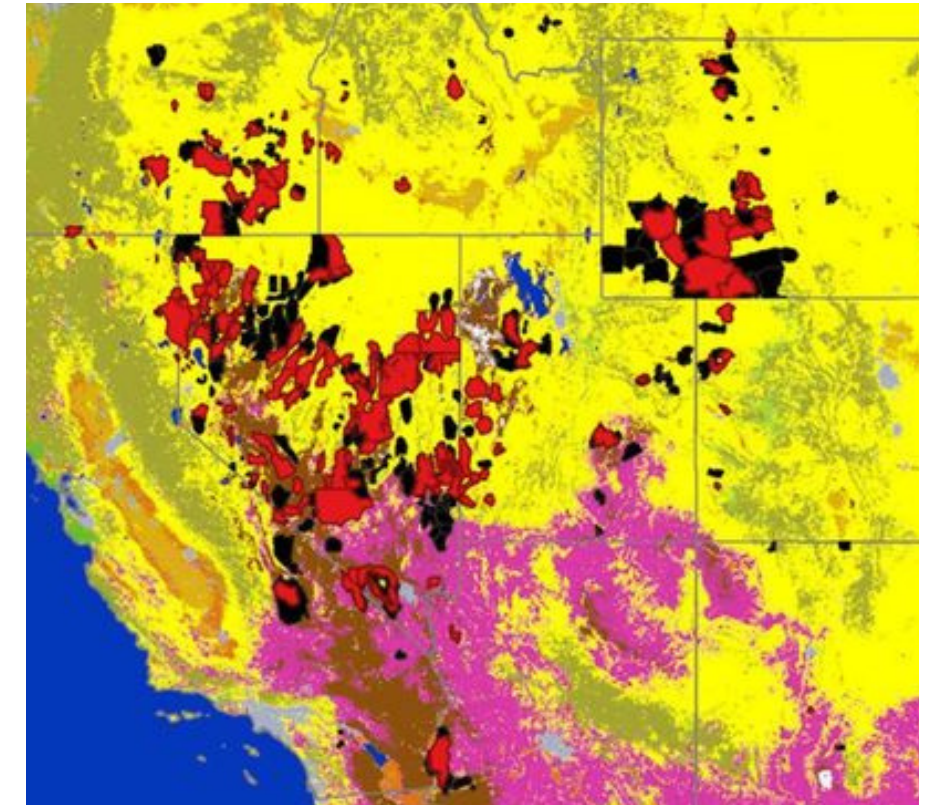
Agricultural production across the grasslands will become less and less sustainable, both ecologically and economically” (Smithsonian 2022).

Wrong place, wrong time

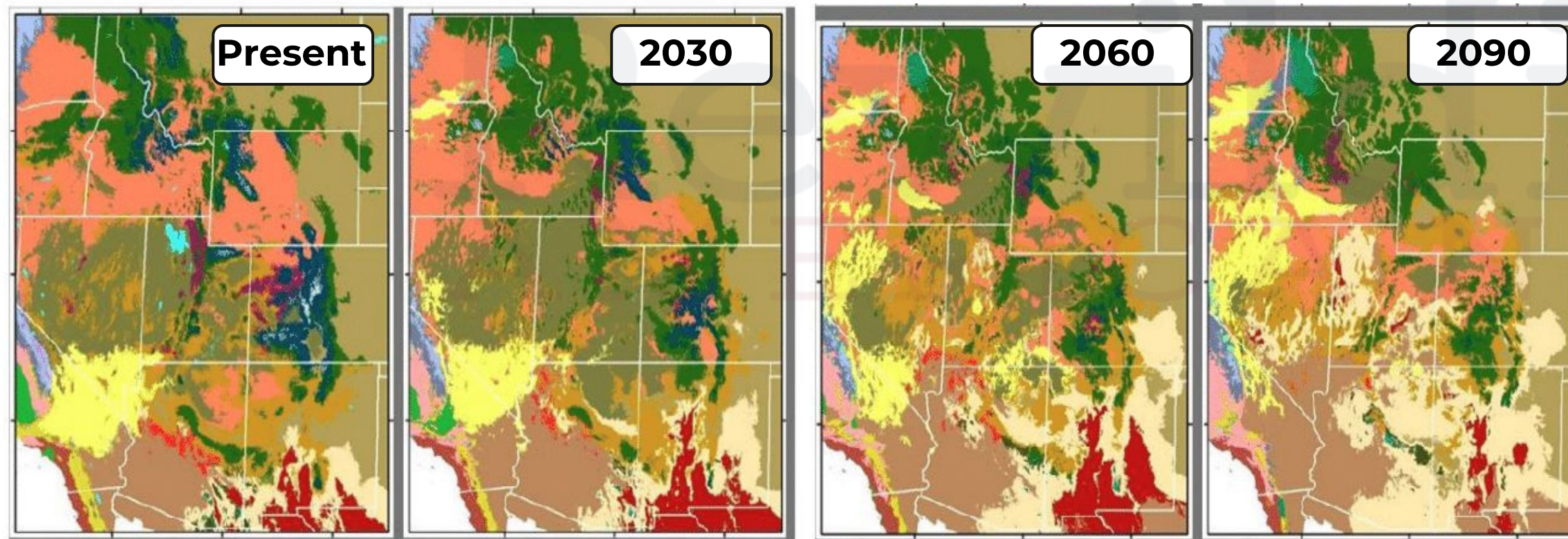
Most of the 80,000 wild horses managed by the Federal Government are in the Great Basin.

Great Basin grasslands are changing rapidly due to complex interactions of climate change and intensive land use.

Overall, models predict a northward and upslope migration of grasslands on a continental scale over the next century.



BLM herds shown by red and black patches



Friggens et al (2012) show an expansion/northward migration of semidesert grassland, Sonoran and Chihuahuan desert-scrub in the US Southwest, and a shrinking of Great Basin shrub-grassland.

Exiled and scapegoated

“The grazing of domestic livestock on federal grazing leases represents the most widespread cause of cheatgrass infestations.

Sage-grouse populations have crashed and many fish species have been moved to the Endangered Species Act. The Great Basin and Colorado Plateau were not originally inhabited by large herds of bison or other herbivores.

The introduction of cattle and sheep has resulted in catastrophic impacts to biological soil crusts that desertifies the ecosystem.”

- 2018 Federal Lands Subcommittee Hearing testimony from Western Watersheds Executive Director Erik Molvar

The Keystone



Horses sustain prairie habitat of fellow mammals, invertebrates and birds.

They enhance the functional composition and diversity of grasslands through grazing (Garrido et al. 2019). Like bison, horses take “sandbaths” (i.e. wallow) and dig up roots to create germinating opportunities for pioneer plants and foster homes for reptiles and insects.

They digest more lightly than other ungulates (e.g. ruminants) and **dynamically spread native seeds**. Their dung hosts fungi and mushrooms while burrowing owls use it to attract beetles. Horses are natural fertilizers and can help increase the absorptive humus component of soils.

They control encroaching woody vegetation (e.g. Eastern Red Cedar) by gnawing at sapplings and reducing understory density.

They help other animals survive droughts through their unique ability as dowsers to smell underground water near the surface (Lundgren et al. 2021).

Fellow Keystones



Both horses and bison disperse native seeds, they build ecological corridors (Cosyns et al. 2005).

Bison graze closer to the ground and upend roots, while horses clip grasses. Unlike horses, bison aren't able to digest all of the cellulose from grass, **they develop healthy bacteria in their gut useful for the environment.**

Native grazing herbivores are intrinsically connected to the movement of vegetative cover.

The “green wave” is the progression of spring green-up from low to high elevations or latitudes: herbivores can directly influence this wave as they migrate and graze (Geremia et al. 2019).

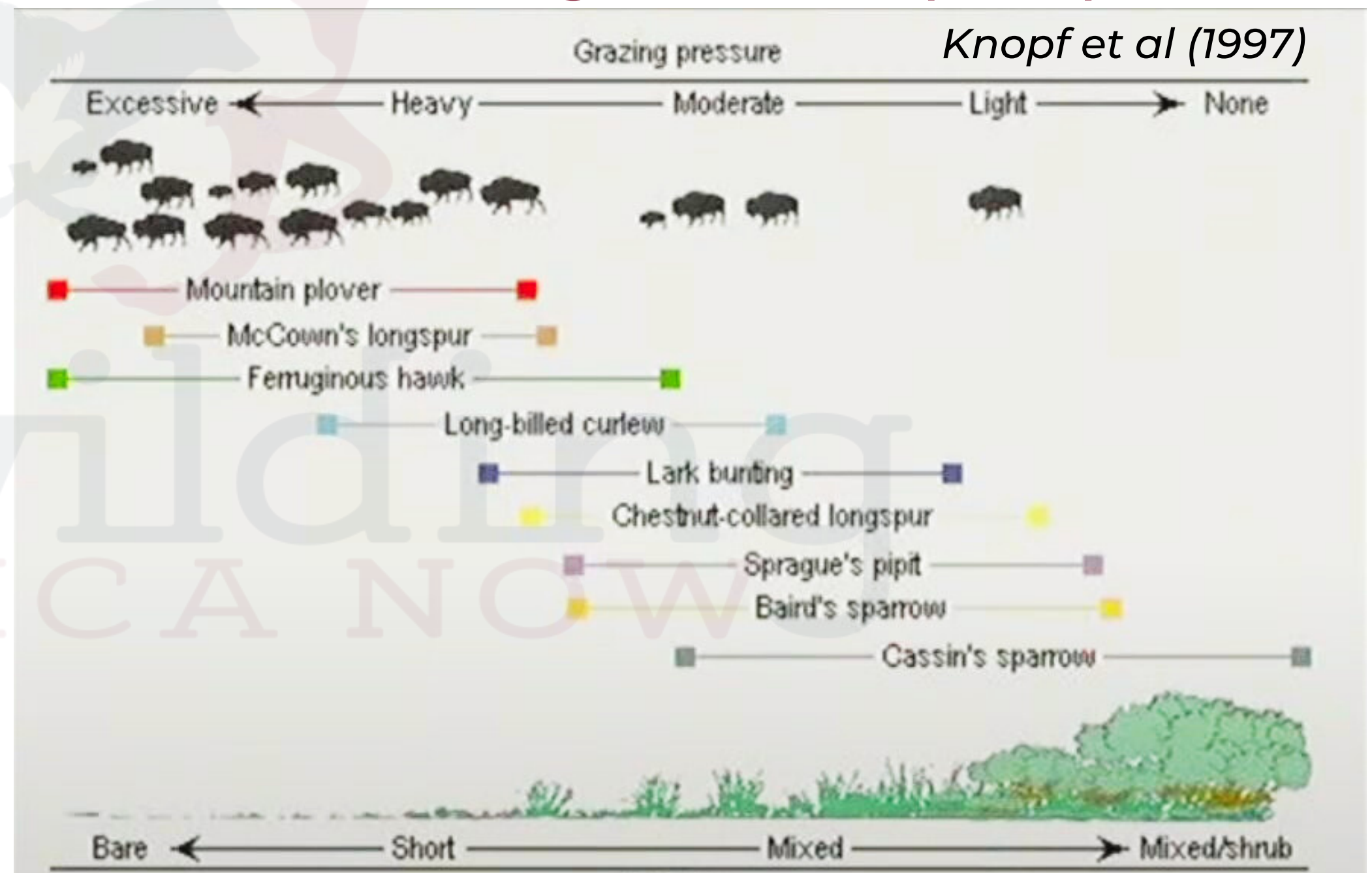
In a wild environment, this relationship is more likely to take place. In an interim, more controlled environment, rotational grazing (periods of dense grazing followed by long forage rest periods) can also support vegetative recovery (Spratt et al. 2021).

Critical Equilibriums

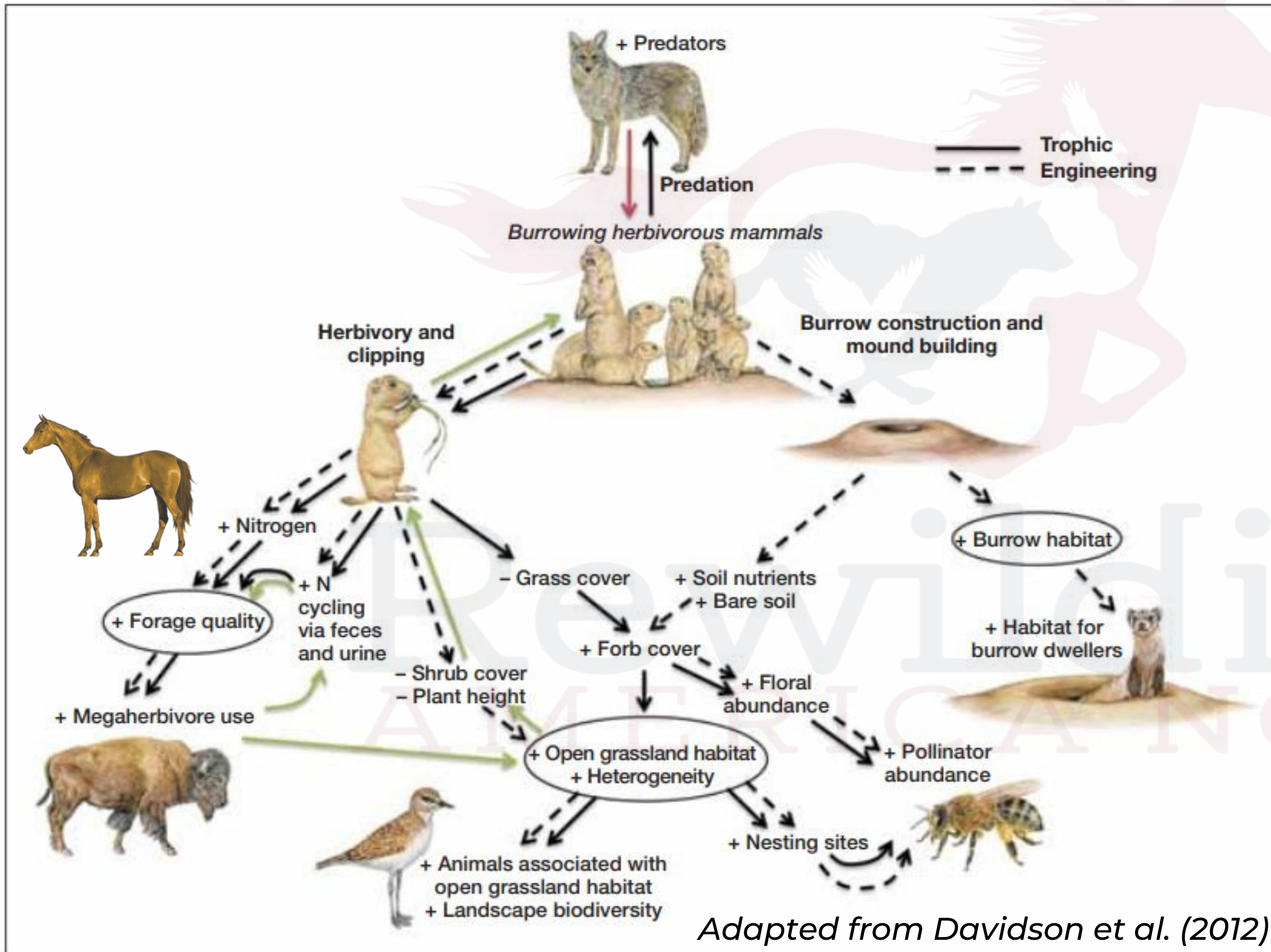
The prairie has 30-50 species of birds, many of which are found nowhere else on Earth. Herbivores open up space for birds to move through what can otherwise be a thick, tall grassland (Knopf et al. 1997).

Birds are social animals and need large expanses of contiguous grasslands to use both wintering and breeding areas.

Overall, dynamic and diverse grazing regimes will lead to higher bird species diversity.



Prairie Ecological Web



Davidson et al. (2012) found that **prairie dogs benefit from large grazing herbivores opening up grassland habitat.**

Prairie dogs will in turn enhance plant nitrogen uptake, resulting in increased forage quality for herbivores. Their burrows also benefit arthropods, predators, rodents and groundnesting birds. Megaherbivores will use burrows for wallowing and shedding their hair during the Spring, which is used by bird species for their eggs.

Grassland Families



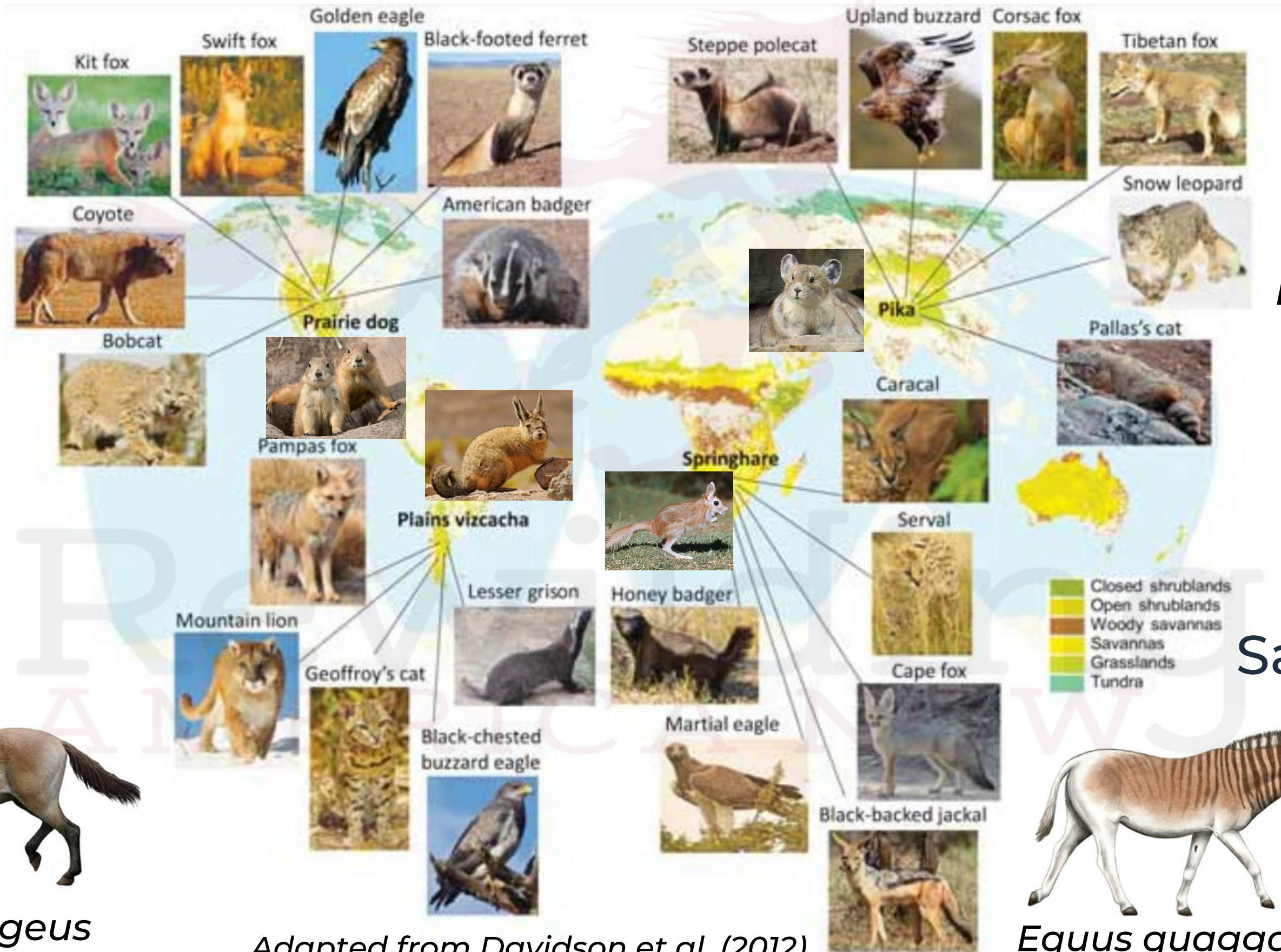
Equus caballus

Prairie

Pampas



Equus neogeus



Adapted from Davidson et al. (2012)



Equus przewalskii

Steppe

Savanna



Equus quagga

*“Of all the animals, the horse is the best friend of the Indian.
The four winds are blowing, some horses are coming.”*

Brave Buffalo, Songs of the Sioux, Fort Yates, ND

(Densmore 1951)

Traditional Ecological Knowledge

TEK speaks to the central role of horses in the prairie and communities.

TEK is instrumental for jointly understanding ecological, hydrological, climate, fire, soil systems of grasslands, combined with the role of keystone species.

Western science often focuses on “parts to a whole”, while TEK is based on holistic observation (Stephens 2000).

Taylor et al. 2023 conducted a comprehensive analysis of dispersal of horses among indigenous people in western US beginning in early 16th combining genetic, oral historical, paleontological, archaeological, and ethnographic research:

“Horses have been part of us since long before other cultures came to our lands, and we are a part of them.
The Horse Nation is our relative.”

Freeing the Prairie



The more free-roaming the horse, the more resilient and thriving the prairie.

Migration between seasonal habitats is critical for ungulate populations in the western U.S., as they can negotiate changes in weather, food availability and predator activity (Pew 2022).

Grasslands require two fundamental processes to thrive: grazing and fires.

These lead to varying plant succession stages and mosaics, giving the prairie its diversity of life (Stevens 1993).

Liberating the prairie means **restoring lost herbivore migrations** where they freely aggregate, intensely graze, and move in sync with landscape-level patterns of plant phenology (Geremia et al. 2019)

Horses, Prairies & Medicine (i)

Horses help spread native plants with medicinal value adapted to climatic extremes.

Arrowleaf balsamroot: *can treat burns, wounds and bruises, tuberculosis and whooping cough, stomach pain and headaches; nutritional*

Buffalo rose: *pain reliever and used to remove warts; nutritional; attracts prairie wildlife*

Butterfly milkweed: *diarrhea and respiratory illnesses*

Chokecherry: *used for sedatives, blood-fortifying tonics, coughs, tuberculosis, malaria, stomachaches and intestinal worms; nutritional; attracts prairie wildlife*



Horses, Prairies & Medicine (ii)

Purple coneflower (echinacea): *Antibiotic and immune system stimulant; venomous bites, toothaches, headaches*

Rough blazing star: *pain reliever for headache, arthritis, and earaches; fevers, upset stomach, and antiseptic wash*

Thyme-leaf spurge: *for nursing mothers, dysentery and abdominal bloating*

Wild tomatillo: *contains steroids; antimicrobial, antitumor and anti-inflammatory*



These plants attract prairie wildlife and have biological defenses against grazing herbivores, **thus they evolved together.**

Their secondary compounds are in 25% of the prescription drugs used in the US today (Steinauer 2013).

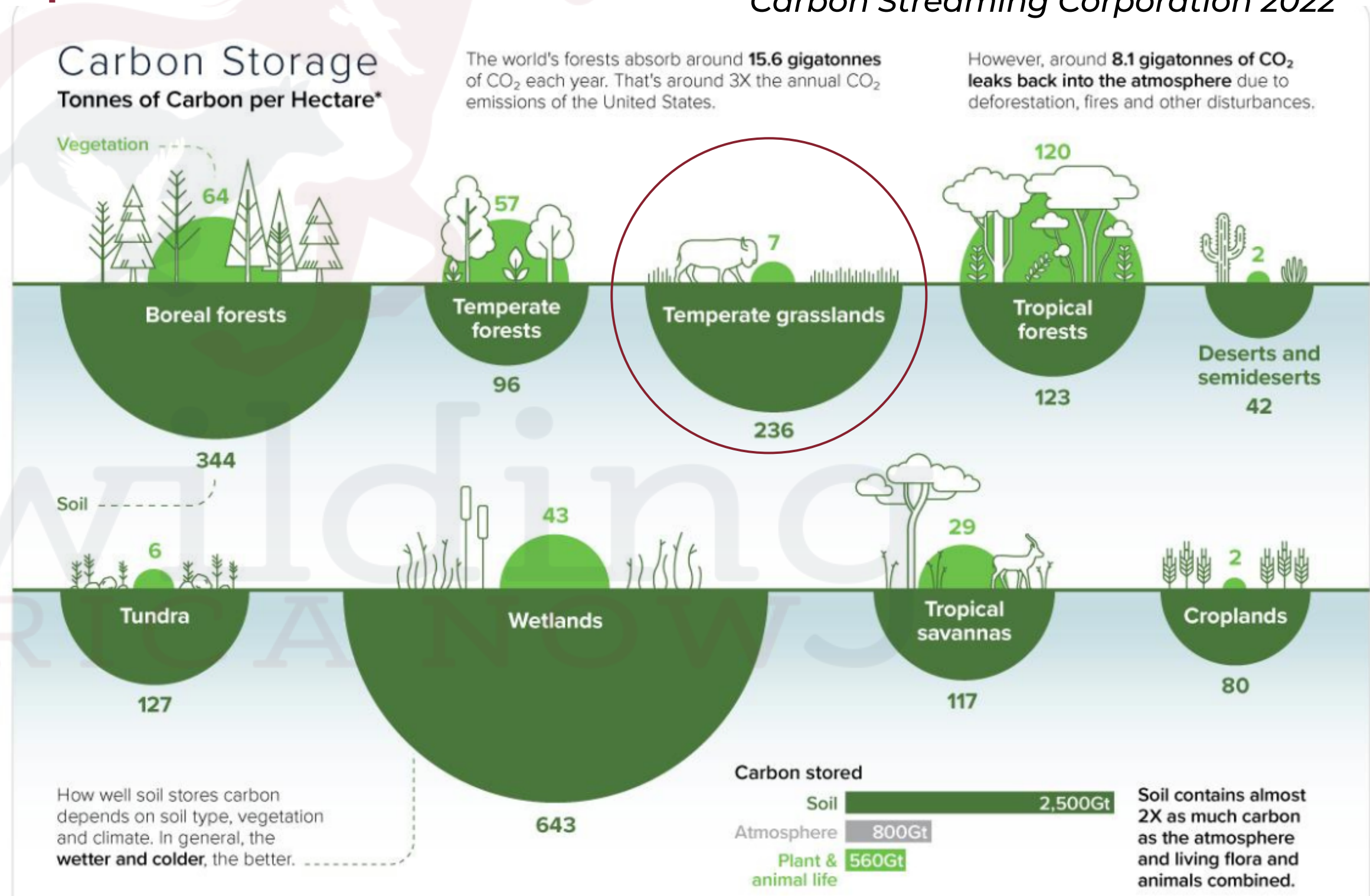
Agents of Climate Stabilization

Temperate grasslands are the third most effective carbon storing ecosystem, more than tropical rainforests.

Carbon Streaming Corporation 2022

Keystone species enable plants, soil and sediments to capture carbon, as they redistribute seeds and nutrients and disturb soil through digging, trampling, and nest-building (Schmitz et al. 2023).

As keystones, horses play a critical role in climate change mitigation.



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