LIFE ShepForBio 3rd International Conference “Pastoral Landscapes 2026”

Palazzo Bastogi, Florence (Tuscany, IT)
23 & 24 September 2026

Welcome words

Tommaso Campedelli (D.R.E.AM. Italia & LIFE ShepForBio Project)

Welcome words

Leonardo Marras (Politiche Agricole, Regione Toscana)

Welcome words

Francesca Pasetti Bombardella
(Co-Chair, European Regional Support Group, Global Alliance for Rangelands and Pastoralists)

Pastoral Landscapes Conference 2026

23 & 24 September 2026

Palazzo Bastogi - Firenze

International Year of Rangelands and Pastoralists

Global Alliance for Rangelands and Pastoralists

COP17 organised by UNCCD in MONGOLIA 08-2026

Francesca Pasetti
Co-chair GA4RP Europe (Global Alliance for Rangelands and Pastoralists)
Secretary of the Transhumances and Transitions UNESCO Club
Senior Project Manager Fundación Trashumancia y Naturaleza

Email: francesca.pasetti@trashumanciaynaturaleza.org

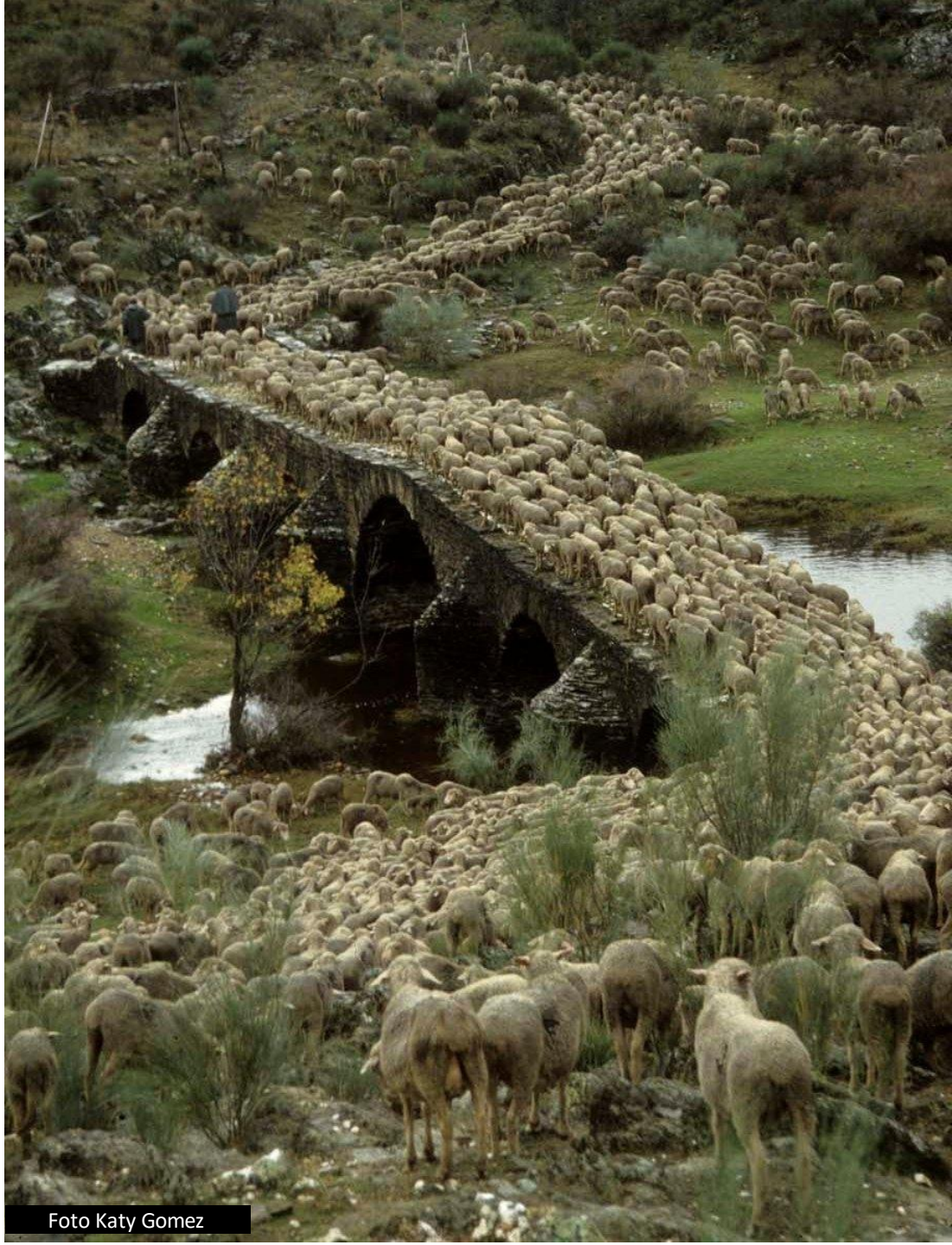
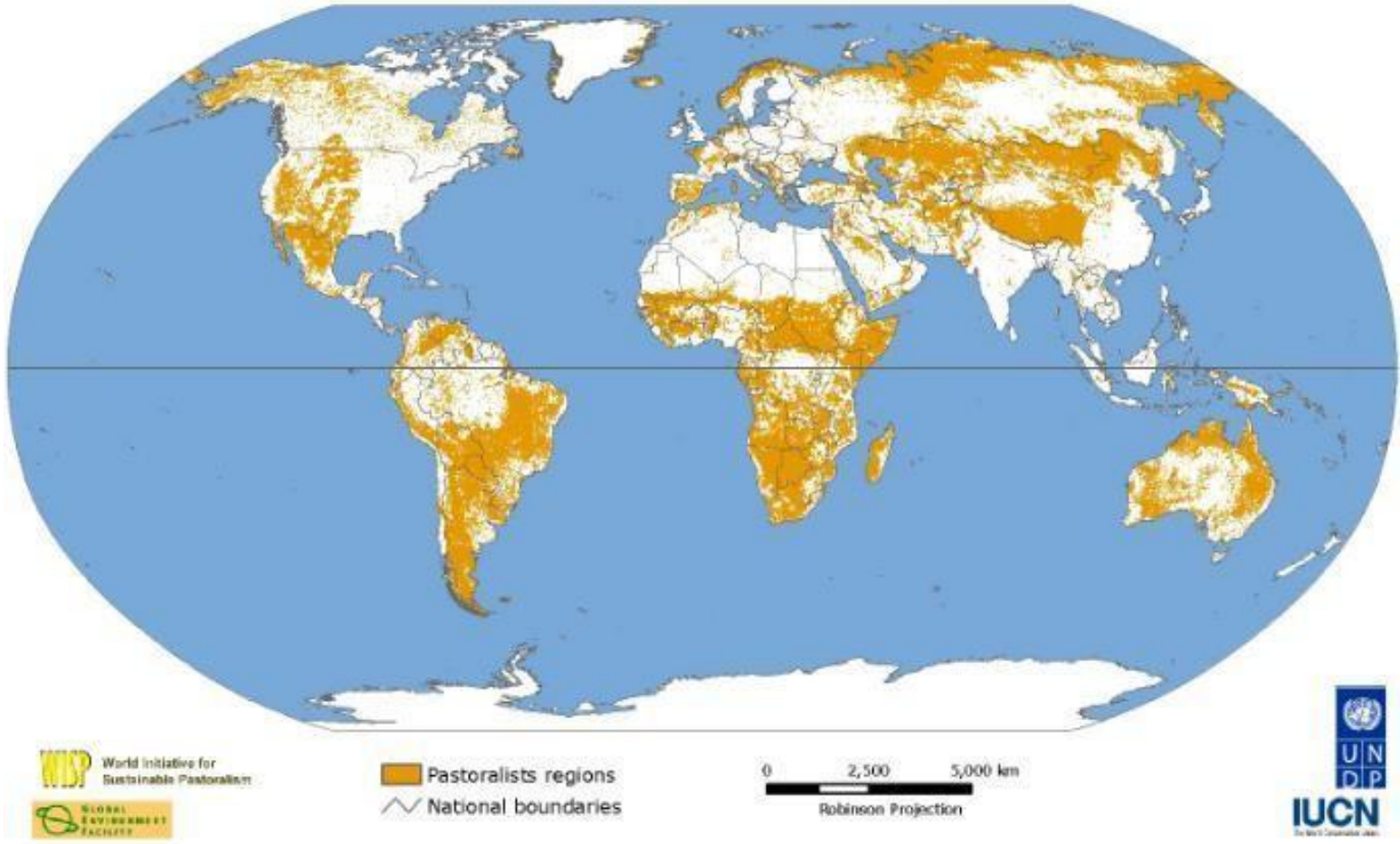


Foto Katy Gomez

- Rangelands cover about a **half of World's land**
- Pastoralists are present in **75% of countries** of the World
- support around **2 billion people**, and are managed by roughly **500 million pastoralists**
- This production system matters for **cultural, environmental, economic, and food security** purposes
- They have long suffered from **lack of representation, lack of investment, lack of recognition of land use rights and neglected public policies**



Taken from Nori y Davies (2007)

15 MARCH 2022: United Nations General Assembly (UNGA) Declared

2026 as International Year of Rangelands & Pastoralists

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

- Movement grew since 2008 into global coalition of over 300 pastoralist & supporting national and international organisations, several UN agencies
- Building on these efforts, **Government of Mongolia** proposed resolution to UNGA in **2019**, supported by over 100 countries
- Approved unanimously by UNGA in 2022

FAO facilitates implementation of IYRP 2026

https://iyrp.info/



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Pastoralists include nomadic & transhumant herders, agropastoralists and persons who manage livestock and/or wildlife for animal products



https://www.christensenfund.org/programs/us-southwest/; https://adameleyendas.wordpress.com/tag/mitos-indigenas/

Reid et al. 2014

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

What does the IYRP seek to achieve?









- Create **awareness, understanding and recognition on the importance of rangelands & pastoralists** for *biodiversity, food security, health, the economy, ecosystem services, climate change resilience & material and immaterial cultural heritage*
- **Break myths and misunderstandings** on rangelands and pastoralism
- **Fill knowledge gaps** with more participatory research and engagements,
- **Effective communication, monitoring, collaboration, and networking among practitioners,** naturalists, farmers, shepherds, and research institutions worldwide
- **Promote evidence-based policies and legislation** throughout the world in support of sustainable rangelands and pastoralism
- **Increase sustainable and ethical investment** in rangelands & pastoralist livelihoods

https://iyrp.info/

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Structure of IYRP 2026 coalition

General IYRP e-list

~1000 addresses mostly for info only

International Support Group (ISG)

~450 active partners, Friends of IYRP, including GCG members & 3 co-chairs

Global Coordinating Group (GCG)

~50 members (ISG co-chairs, Comms + WG coordinators, RISG chairs & reps from key supporting partners: FAO, Govt of Mongolia, ILRI, IUCN, UNEP, WAMIP)

Global Communications Team

11 Working Groups:

1. Afforestation
2. Biodiversity
3. Climate Change
4. Commons
5. Gender
6. Land Degradation Neutrality
7. Mountains
8. Pastoral economy
9. Water
10. Youth
11. Animal Fibres

11 Regional IYRP Support Groups (RISGs)

Africa
- South Eats Africa
- North Africa & Middle East
- West & Central Africa

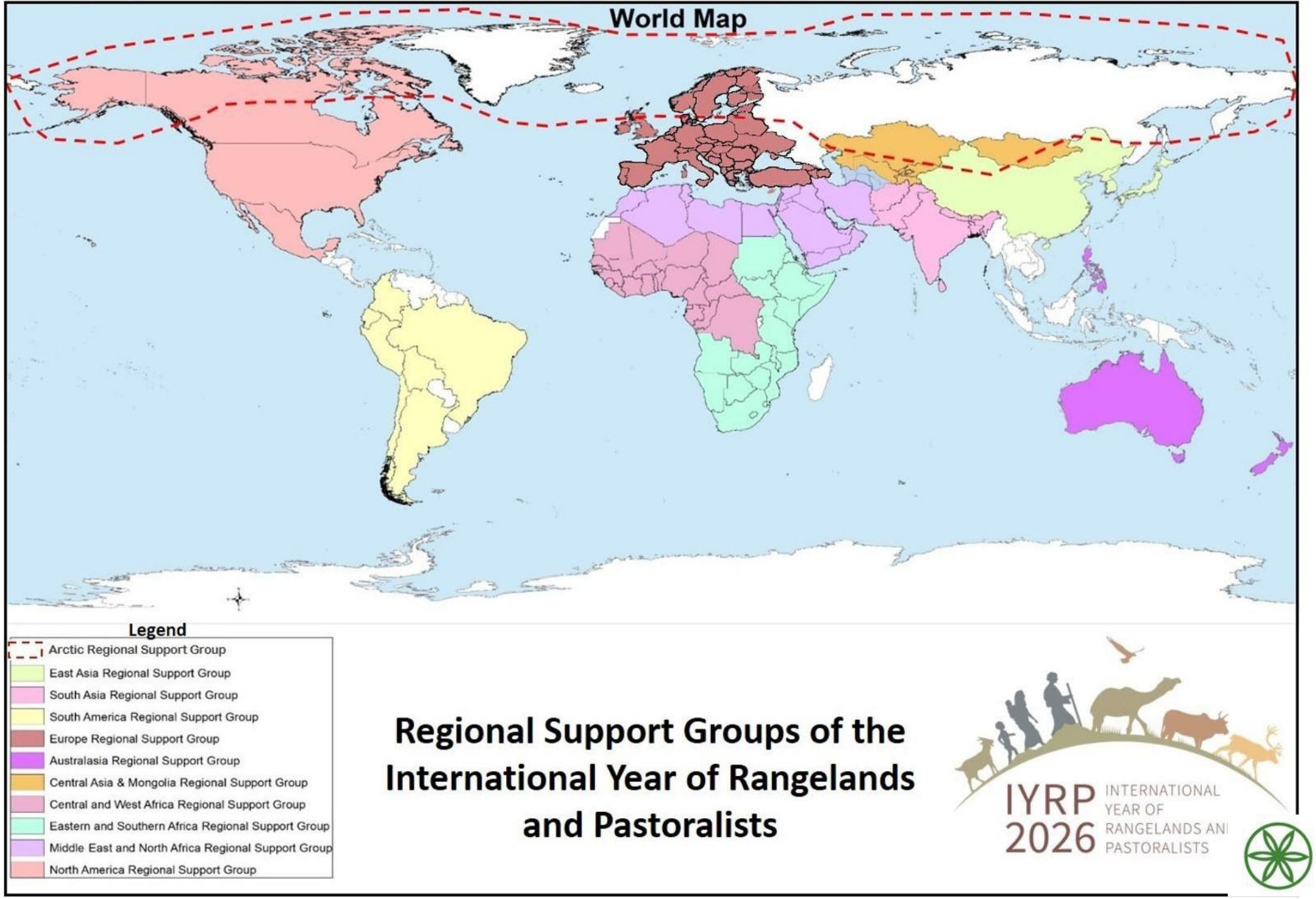
Asia
- Central Asia & Mongolia
- East Asia
- South Asia

America
- North America
- South America

Australia

Arctic Region

Europe

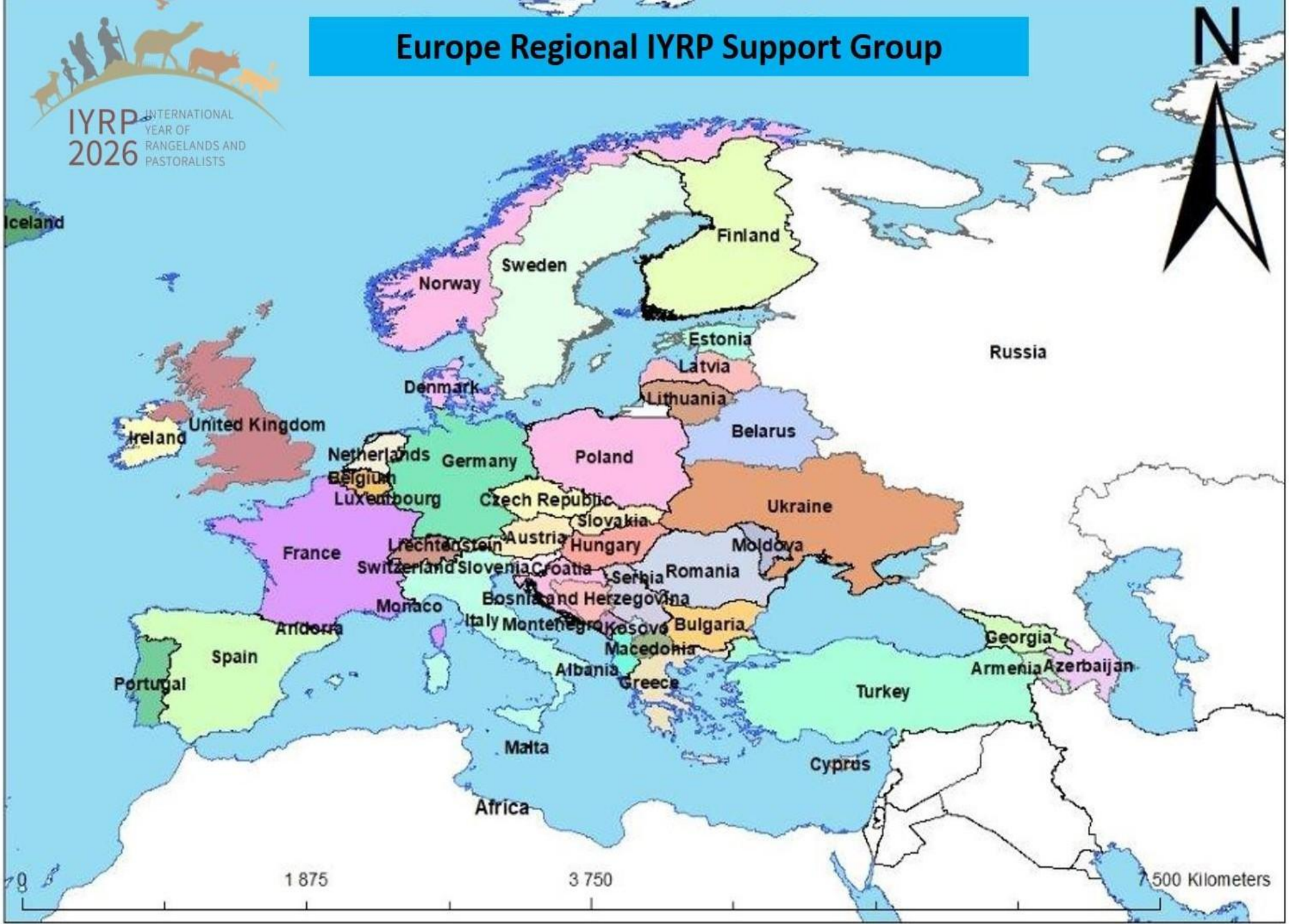


Regional Support Groups of the International Year of Rangelands and Pastoralists

IYRP 2026 INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS

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Europe Regional IYRP Support Group



IYRP 2026 INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

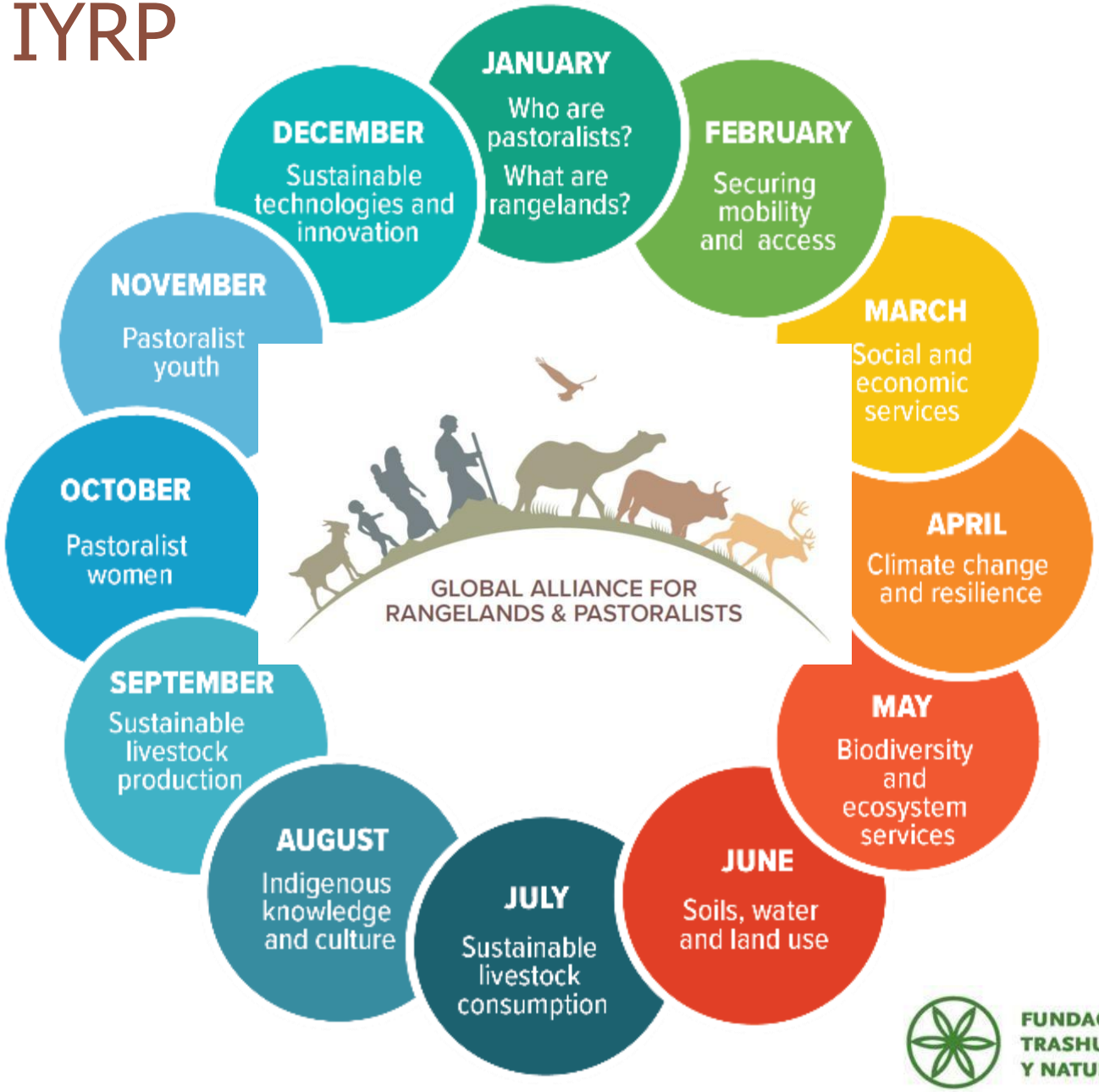
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MAIN ACHIEVEMENTS OF IYRP2026

International Year of Rangelands and Pastoralists

Activities up to & during IYRP 2026 on various themes

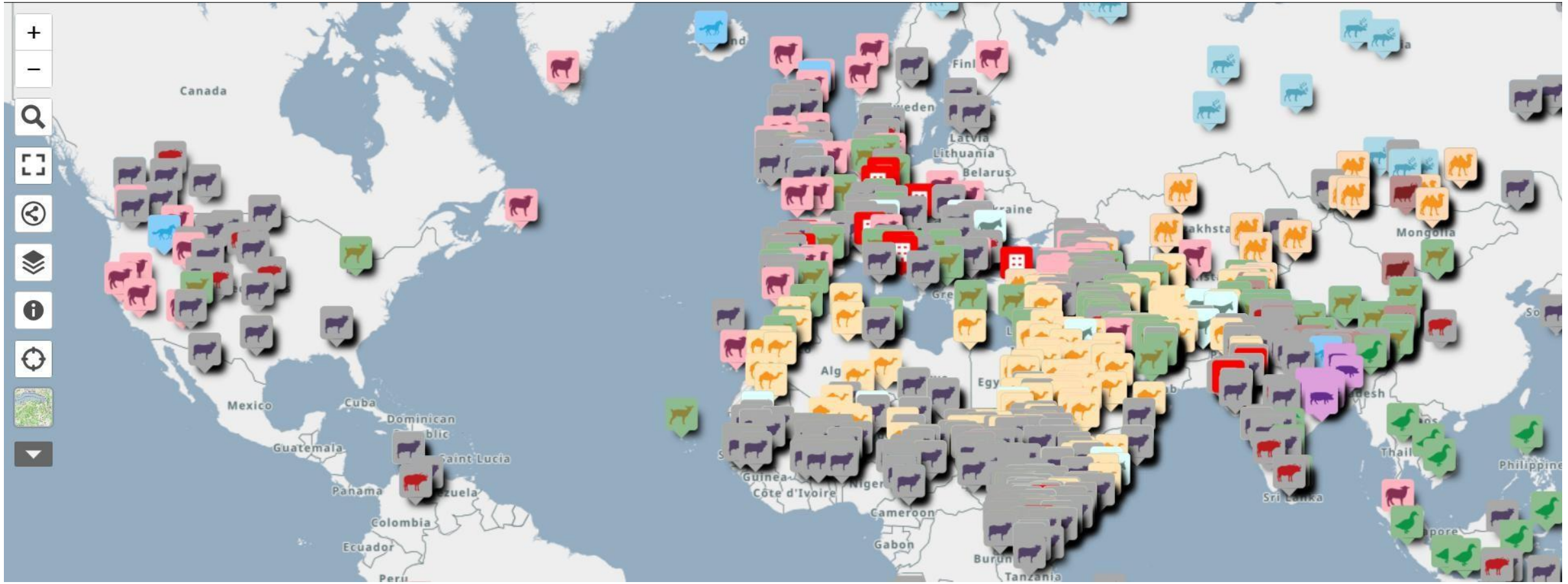
- Joint research & publishing
- Policy briefs / statements
- Pastoralist gatherings
- Social media campaigns
- Films / Photo exhibits
- Pastoralist innovation fairs
- Side events
- Conferences / Webinars … etc



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Signature of a MoC between IYRP and the Carpathian Convention during the COP 7 in Belgrade- Serbia 12-10-2023





Pastoralism Map

https://www.pastoralpeoples.org/pastoralist-map/

- Group of pastoralists
- Picture,
- Description
- Bibliography

Map on Pastoralism Threats

You can find the form here:
https://www.pastoralpeoples.org/threats-to-pastoralism/

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

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MAIN ACHIEVEMENTS OF IYRP2026

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

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11 Working Groups:

- **Afforestation**
- **Biodiversity**
- **Commons**
- **Climate Change**
- **Gender**
- **Land Degradation Neutrality (LDN)**
- **Mountains**
- **Pastoral economy**
- **Water**
- **Youth**
- **Animal Fibres**

- **All Working Groups** → **concept note**, webpage: www.IYRP.info
- Gender Working Group → sub-working Group on films

2 lists of Films

❑ On **camelids** (IYC 2024) Tropentage (Vienna 10-13 September 2024 – Göttingen 16-18 September 2026)

❑ On **Pastoralism & Gender, and Pastoralism general** (National and International fairs & festivals)

Production of **education & awareness creating material** to be used worldwide in the different languages

MAIN ACHIEVEMENTS OF IYRP2026
at national level in almost all countries

In almost all countries **several public and private institutions, research centres and NGOs :**

- **came together with a common goal thank to IYRP RISGs**
- **created networks at national and international level**
- **begun to work together** for and/or with pastoralists….
- **begun to organise together IYRP events at national level**
- **recognised the existence of Indigenous People Organisations at national and international level**

MAIN ACHIEVEMENTS OF IYRP2026

Many local, national, regional and global pastoralists events:

- **Young Pastoralists Global Gathering Madrid-Spain - April 2026 (Young Pastoralists Declaration)**
- **Women Pastoralists Global gathering in Katmandhu – Nepal - May 2026 (Women Pastoralists Declaration)**
- **Reindeer Pastoralists Global Gathering in Mongolia - July 2026 (Reindeer Pastoralists Declaration**
- **Silk Road Caravan from Riad (COP16) to Ulaanbaatar (COP 17)**
- **Global Pastoralists Gathering in Mongolia - 10-15 August 2026 (Global Pastoralists Declaration to be handed to UNCCD and Mongolian Government for COP 17 negotiations)**

MAIN ACHIEVEMENTS OF IYRP2026

Young Pastoralists Global Gathering Madrid-Spain - April 2026 **(Young Pastoralists Declaration)**





Young Pastoralists Global Gathering Madrid-Spain - April 2026
(Young Pastoralists Declaration)

60 Young Pastoralists from 37 countries
Together with CIHEAM Researchers and FAO





GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

International Land Coalition (ILC) SUMMER CAMP OF THE INTERREGIONAL SCHOOL OF YOUNG PASTORALISTS

12-18 July 2026 - Kyrgyzstan

FUNDACIÓN TRASHUMANCIA Y NATURALEZA

70 Young Pastoralists from 19 countries
Asia, Africa, Europe and Middle East



Women Pastoralists Global Gathering in Katmandhu – Nepal –
26 to 29 May 2026 **(Women Pastoralists Declaration)**



90 Women pastoralists from **40 countries** gathered in ICIMOD – Katmandu – Nepal

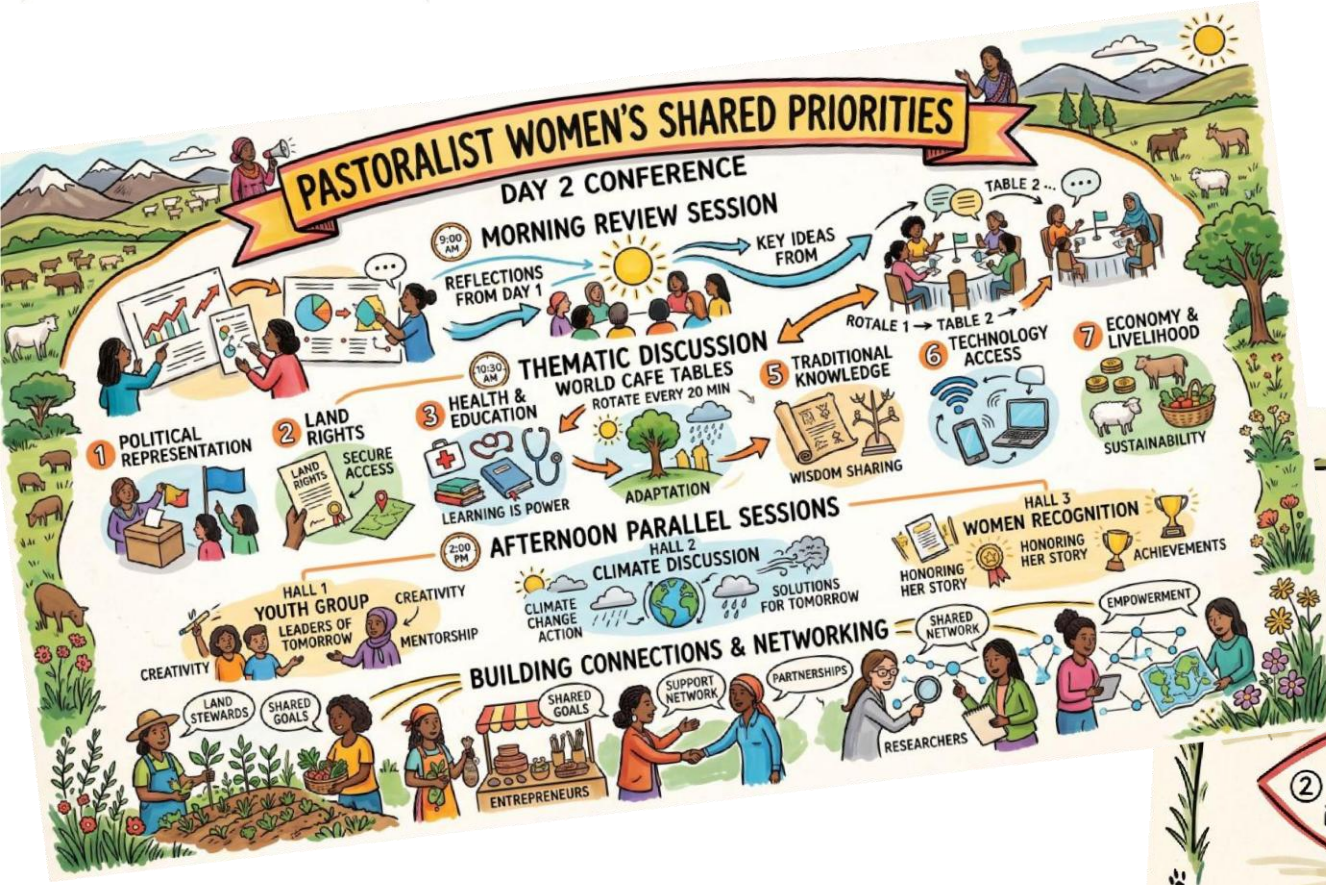
Building on the 2010 Mera Declaration, the framework sets out
10 non-negotiable principles:

- **land tenure security,**
- **freedom of movement,**
- **climate resilience,**
- **indigenous knowledge,**
- **political leadership,**
- **equitable finance,**
- **essential services,**
- **market access,**
- **peacebuilding, and**
- **intergenerational knowledge transfer**

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

Women Pastoralists Global Gathering in Katmandhu – Nepal 26 to 29 May 2026 **(Women Pastoralists Declaration)**

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https://iyrp.info/

Kathmandu-Declaration

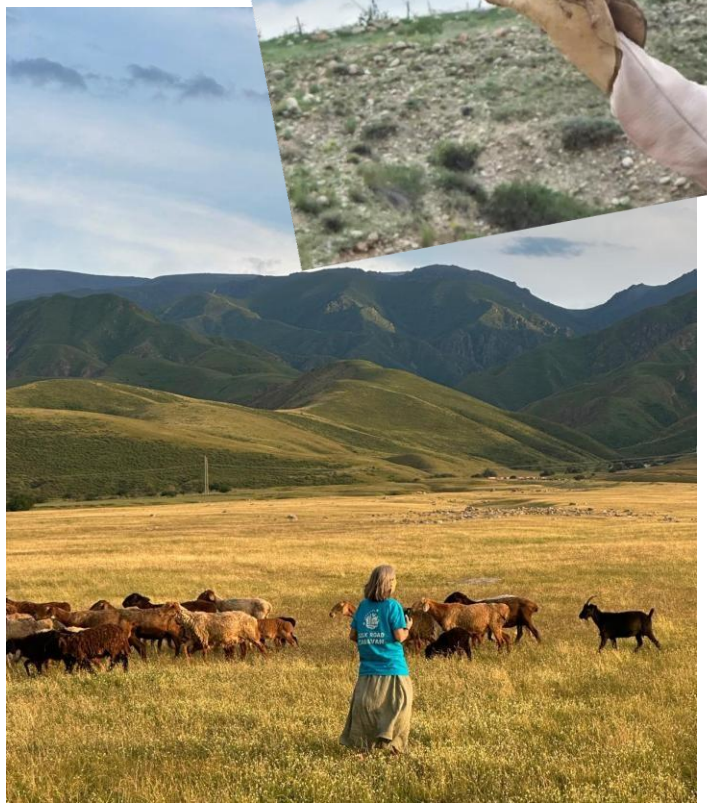
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For IYRP UNCCD organised a
Silk Road Caravan
from Riyadh (COP16) to Ulaanbaatar (COP 17**)**

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Riyadh (COP16) – Türkiye –Russia - Uzbekistan – Kazakhstan – Kyrgyzstan – China – Ulaanbaatar (COP17)

8.000 Km

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

Global Pastoralists Gathering in Mongolia - 10-15 August 2026
(**Global Pastoralists Declaration** to be handed to UNCCD and Mongolian Government for COP 17)

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276 Pastoralists from all over the world
Representing 58 countries
Plus 110 Mongolian herders





Global Pastoralists Gathering in Mongolia - 10-15 August 2026
(Global Pastoralists Declaration handed to UNCCD and Mongolian Government for COP 17**)**

https://iyrp.info
Ulaanbaatar Declaration 2026



Handing Over Declarations

The Ulaanbaatar/General Pastoralists' Declaration was handed over to H.E. Tsagaankhuu Iderbat, **Minister of Food, Agriculture** and Light Industry of Mongolia (MoFALI);

The Women Pastoralists' Declaration was handed over to Dr. Yasmine Fouad, **Executive Secretary of UNCCD;**

The Young Pastoralists' Declaration was handed over to Mr. Lkhasuren Choi-Ish, Director General of the Department of **Animal Husbandry Policy Implementation, MoFALI.**



GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

UNCCD COP17 Conference of the Parties to the United Nations Convention to Combat Desertification

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COP 17 organised by UNCCD

What were the main COP17 outcomes?

1. **Land restoration and drought resilience became the central implementation priorities.**
   COP17 focused on **moving from commitments to concrete action**: restoring degraded land, improving drought preparedness and connecting political decisions with science, finance and investment-ready projects.
2. **Rangelands and pastoralists gained much greater international recognition.**
   This was one of the most significant features of COP17. Rangelands cover about **54% of the world's land surface**, support around **2 billion people**, and are managed by roughly **500 million pastoralists**. The new **Rangelands Flagship Initiative** brings together a portfolio of about **US$1.2 billion across 45 projects**.
3. **More financing was announced for land restoration and drought resilience.**
   COP17 reported a **US$1.3 billion portfolio across 23 countries**, including US$644.5 million identified as new finance, of which US$216.4 million was already confirmed and moving toward implementation.
4. **Greater emphasis was placed on connecting climate, biodiversity and land policies**
5. **Pastoralists and local communities were given a stronger role.**
   COP17 emphasised that land restoration cannot be achieved only through government policies. **The knowledge and stewardship of pastoralists, Indigenous Peoples and local communities are increasingly recognised as essential to sustainable rangeland management**.
6. **However, not everything was agreed.**
   This is important. Several difficult negotiating issues were **deferred to COP18**, including elements related to drought, migration, knowledge sharing, technology transfer and innovation. **There were also disagreements concerning gender, civil society participation and synergies with other environmental conventions**

COP 17 organised by UNCCD

The decisions made at **UNCCD COP17** hit Southern European member states like **Spain** and **Italy** the hardest, as both countries are on the absolute **frontline of European desertification**. With roughly **74% of Spanish territory currently undergoing desertification** processes and Italy experiencing acute water stress across its southern regions, COP17 outcomes translate into direct operational impacts across four major areas:

1. Enforcing "Spatially Explicit" Land Use Planning

A key consensus at COP17 was that **Land Degradation Neutrality (LDN) targets must be spatially explicit, measurable, and tied directly to municipal zoning.**

- **The Impact on Spain:** The Spanish government submitted its draft national plan for the EU Nature Restoration law on August 31, 2026. COP17 frameworks force Spain to **apply hyper-localized mapping** to regions like Andalusia and Valencia. It means Spanish regional authorities will have to **use global geospatial tools to block intensive, water-guzzling olive farming** in areas flagged as irreversible desert zones.
- **The Impact on Italy:** Italy has fallen behind schedule on submitting its National Nature Restoration Plan to Brussels. The COP17 mandate forces Italy's Ministry of Environment and Energy Security (MASE)) to speed up its bureaucratic process. **Italy must explicitly map its degraded soils**—particularly in Sicily, Puglia, and Sardinia—and tie them directly to national recovery and resilience funding.

2. Transitioning from "Drought Emergency" to "Proactive Infrastructure"

COP17 formally declared a global shift from managing drought emergencies to **building systemic structural resilience *before* crises strike**.

- **Irrigation Overhauls:** Both nations must radically pivot how they deploy agricultural funding. Instead of providing emergency financial payouts to farmers after a drought ruins harvests, state funding must be legally prioritized for preventive adaptation.
- This means mandatory national investment into **closed-loop smart drip irrigation**, massive overhauls of leaking municipal water pipes, and scaling up regional rainwater harvesting systems.

GLOBAL ALLIANCE FOR RANGELANDS & PASTORALISTS

COP 17 organised by UNCCD

FUNDACIÓN TRASHUMANCIA Y NATURALEZA

1. Hardening the Legal Teeth of the EU Soil Monitoring Law

At COP17, nations formally adopted a major decision on **avoiding, reducing, and reversing land and soil degradation of agricultural lands**.

European livestock products are recognised worldwide for their quality, safety and high production standards, contributing to food security both within Europe and beyond.

Furthermore, **Europe's livestock systems are as diverse as its territories**. From mountain grazing systems and Mediterranean pastoralism to mixed family farms and specialised production systems, **livestock contributes in different ways to food security, territorial cohesion, climate resilience and the European bioeconomy.**

The Policy Shift: The COP17 decisions directly empower the European Commission to accelerate the passing of the pending **EU Soil Monitoring Law** (part of the EU Soil Strategy for 2030).

The Impact: The global mandate **shifts soil health from a vague sustainability metric to a strict legal obligation**. It enforces standard reporting on soil erosion and organic carbon depletion across EU farmlands, penalizing member states that fail to reverse land degradation.

2. Redesigning the Common Agricultural Policy (CAP) Eco-Schemes

The newly endorsed COP17 **Land & Soil Breakthroughs roadmap** establishes standardized global metrics to measure regenerative farming and agroecological practices.

The Policy Shift: The EU utilizes these international standards to refine the conditionality of its **Common Agricultural Policy (CAP)**.

The Impact: Future CAP revisions will increasingly pivot financial payments toward "eco-schemes" that reward farmers and pastoralists for measurable soil carbon sequestration and biodiversity preservation.

Practices like rotational grazing and **low-tillage farming** (Farming with less soil manipulation) **will shift from optional choices to baseline conditions for securing state funding.]**

3. Rewriting the EU Livestock and Nature Restoration Frameworks

During the COP17 summit, civil society groups—backed by the *IUCN*—pushed to align the EU Livestock Strategy EU Livestock Strategy directly with global land restoration goals, pointing out that 49% of European grasslands remain in poor conservation status.

The Policy Shift: COP17 decisions explicitly established that **sustainable agricultural landscapes and conserved natural ecosystems must be mutually reinforcing**.

The Impact: This stops EU environmental bureaus from treating livestock farming and nature conservation as opposing targets. It forces the **EU Nature Restoration Law** to favour traditional herding over raw afforestation (planting trees on grasslands), recognizing that managed grazing prevents catastrophic wildfires and protects European biodiversity.

4. Reshaping EU Foreign Aid via the Global Gateway

The EU used COP17 to showcase its financial commitments under the **Global Gateway** strategy, particularly its backing of Africa's Great Green Wall initiative and satellite-driven drought forecasting

The UNCCD COP17 in Ulaanbaatar directly influenced and shaped Europe's foreign aid allocation, driving millions of euros in new green investments, bilateral partnerships, and targeted global development funding to explicitly shifted foreign aid strategies from reactive crisis relief to proactive, long-term environmental financing

Thrivelands: The EU officially launched **Thrivelands**, a new **€20 million** foreign aid initiative specifically designated for the restoration of degraded drylands worldwide. [1]

Drought Resilience Investment Facility: Spearheaded by Luxembourg during the second week of COP17, this new facility blends public and concessional aid capital to mobilize larger pools of private investment toward global drought protection. [1, 2]

CompensActions Initiative: Germany announced the rollout of the second phase of its **CompensActions** program, expanding its foreign development footprint to target land degradation and community resilience

COP 17 organised by UNCCD



https://www.linkedin.com/pulse/cop17-keeping-ambition-focused-implementation-joint-statement-z4ogf/

COP17: Keeping Ambition Focused on Implementation - Joint EU Statement

COP17 is an important opportunity to translate commitments on land degradation, drought resilience and sustainable land management into action.

The EU recognises that negotiations are complex at the multilateral level.

The EU and its member states present in Ulaanbaatar support multilateralism as a key instrument to tackle global challenges that cannot be solved efficiently at the national level.

Desertification, land degradation and drought are such problems where international solutions are required



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Co-chair RISG Europe (Regional IYRP Support Group)
Email: francesca.pasetti@fundacionglobalnature.org Spain

10:30 – 11:00
Coffee break

Pastoralism & Climate Change

Opening keynote by Pablo Manzano (BC3 Basque Centre for Climate Change, Spain)



Pastoralism and climate change

Pablo Manzano

LIFE ShepForBio Third International Conference
Florence, 23rd Sept 2026

BC3 BASQUE CENTRE FOR CLIMATE CHANGE
Klima Aldaketa Ikergai

ikerbasque
Basque Foundation for Science

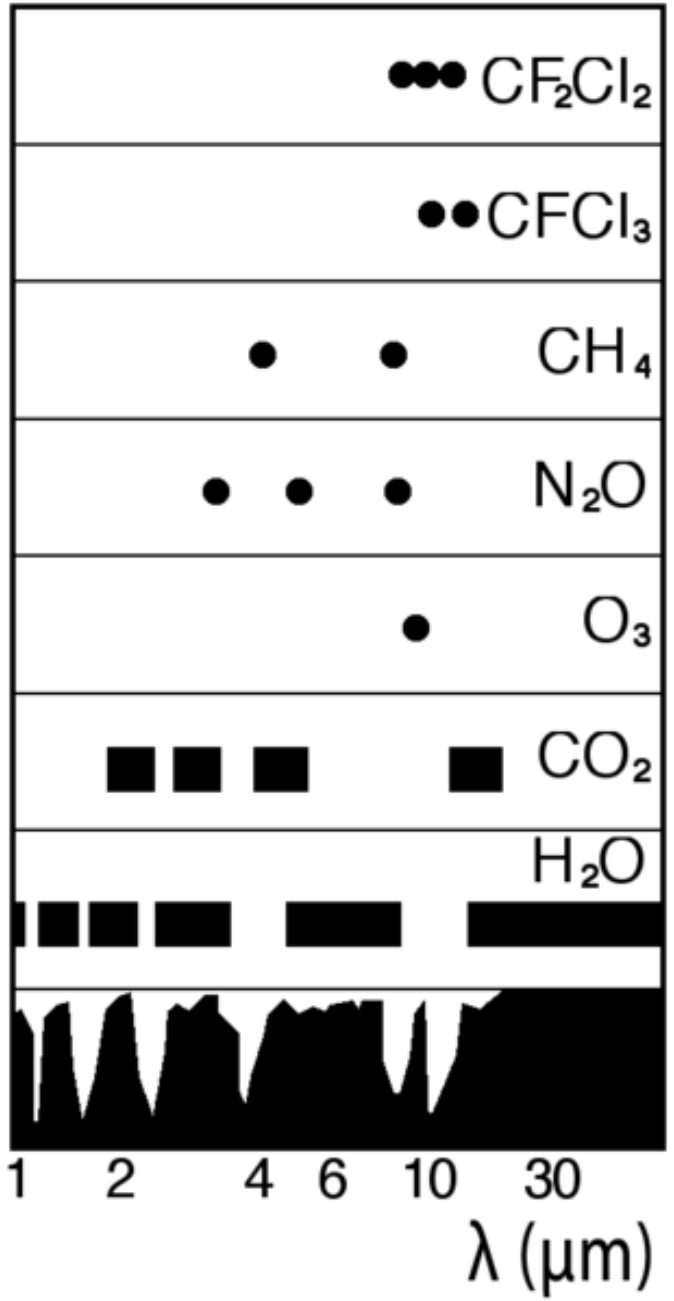
14.5 % of anthropogenic climate change (2023 update: 11.2 %)
Grazing livestock (ruminants) mainly to blame



Greenhouse gases

The main GHG is…
Water vapor (H_2O)!!

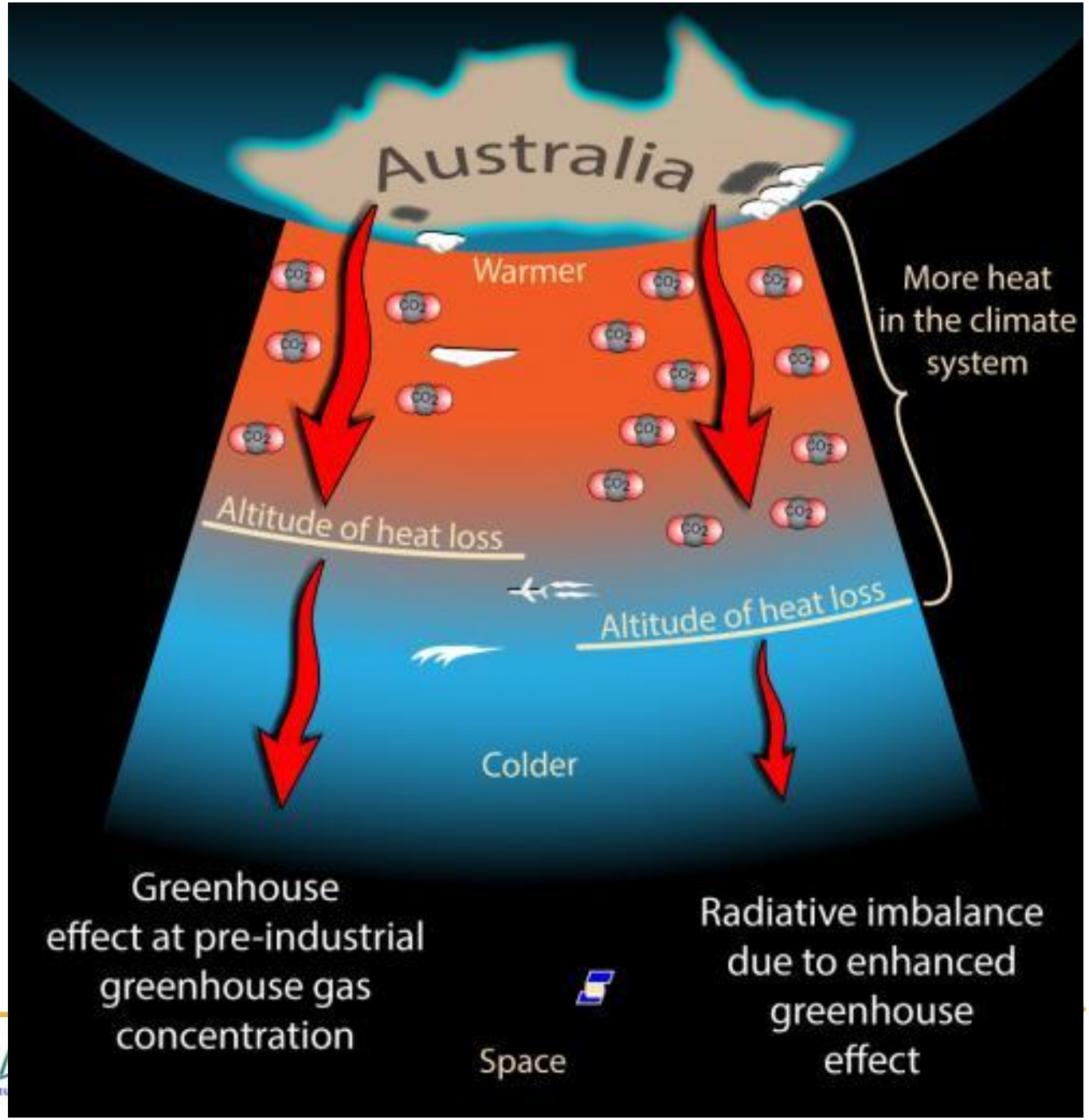
Compound	Formula	Atmospheric concentration (ppm)	Contribution (%)
Water vapor and clouds	H_2O	10–50 000	36–72%
Carbon dioxyde	CO_2	~400	9–26%
Methane	CH_4	~1.8	4–9%
Ozone	O3	2–8	3–7%



Anthropogenic greenhouse effect

⇒ It's an addition to natural greenhouse effect!!

https://skepticalscience.com/graphics.php?g=104



Public opinion stances on livestock and climate change

- Documentary «Cowspiracy»
  - General idea that the environmentalists have been weak in advocating against livestock
- Echoes on the press: examples
  - The Economist – www.economist.com/node/21594348
  - BBC – www.bbc.com/news/science-environment-34899066
  - International Business Times – www.ibtimes.com/eating-beef-harmful-environment-tells-united-nations-environment-program-2136750
- Demand for policy action – also from academia
  - Improvement in diets – more grain/protein content; switch to **monogastrics**
  - Stabulation for manure treatment

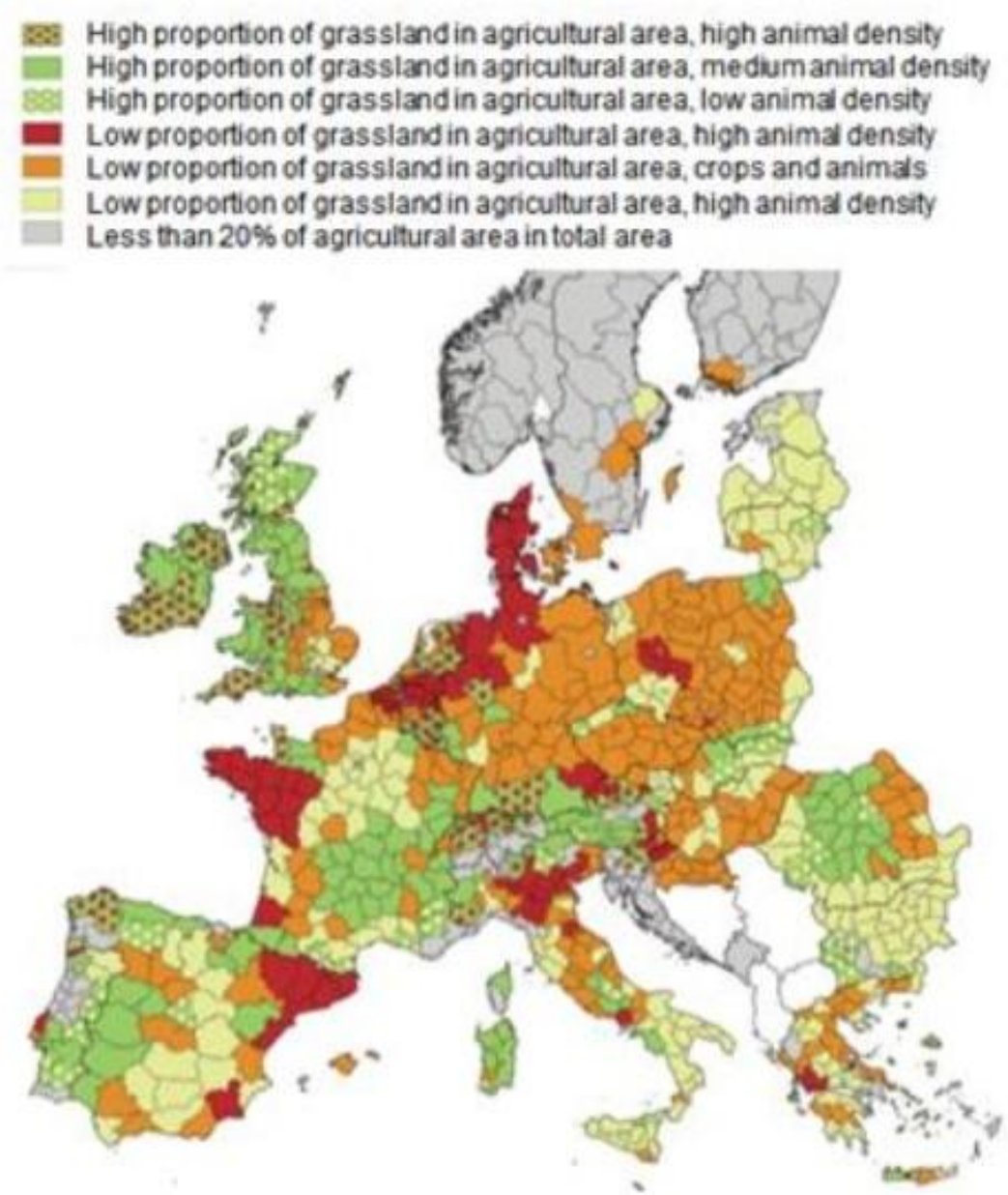


Figure 2: Typology of European livestock production areas (Source INRA based on Eurostat, 2010)

The role of the European small ruminant dairy sector in stabilising global temperatures: lessons from GWP* warming-equivalent emission metrics

Agustin del Prado[1], Pablo Manzano[1,2,3] and Guillermo Pardo[1]

Journal of Dairy Research

Source:

ATF Vision Paper – February 2019

http://animaltaskforce.eu/Portals/0/ATF_Vision_Paper_2019.pdf

LCA data that fuel public debate

- 14.5% of total annual GHGeq emissions caused by livestock
  - Demand is forecasted to increase for most of world's population, so things can just get worse
- Role of fossil fuels is limited (20% of livestock emissions)
- Big role for enteric fermentation in ruminants
  - Anaerobic cellulose fermentation path generates large CH_4 amounts, while NO_x forms in manure.

$\Rightarrow$ CH_4 & NO_2 have greater GHG potential than CO_2

But:

- Very long prevalence of CO_2 in the atmosphere ($\approx$ eternal)

Consequences from policy recommendations

- Intended target: “Sustainable Intensification”, mixed grass-fodder systems subjected to inefficiencies, whose productivity is needed to cope with demand increase

- Collateral: low input, low output systems → **pastoralism** in the broad sense
  - Occupying large areas where crop agriculture is not possible
  - Focus on natural rangelands, not on deforested areas (no LULUC impacts)
  - Wide range of environmental benefits through functional similarity with wild herbivores
  - High quality, high-value products in socially sensitive areas
- Already severely targeted by negative policies, often based on weak evidence
  - "Burden to be borne" for what is provided → vision may worsen, more so in developing countries

⇒ But what would happen to GHG emissions if pastoralist systems would disappear?

Key question: comparing livestock with global warming

- Livestock present since 10,000 yr. BP, significant presence 6,500 yr. BP (Brierley et al 2018)
- Global warming / anthropogenic climate change only since 200 yr. ago
- Why was livestock not heating the planet during millennia?

Failed attempts



Allan Savory

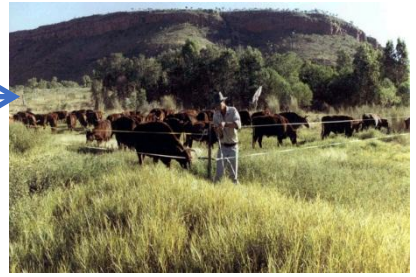








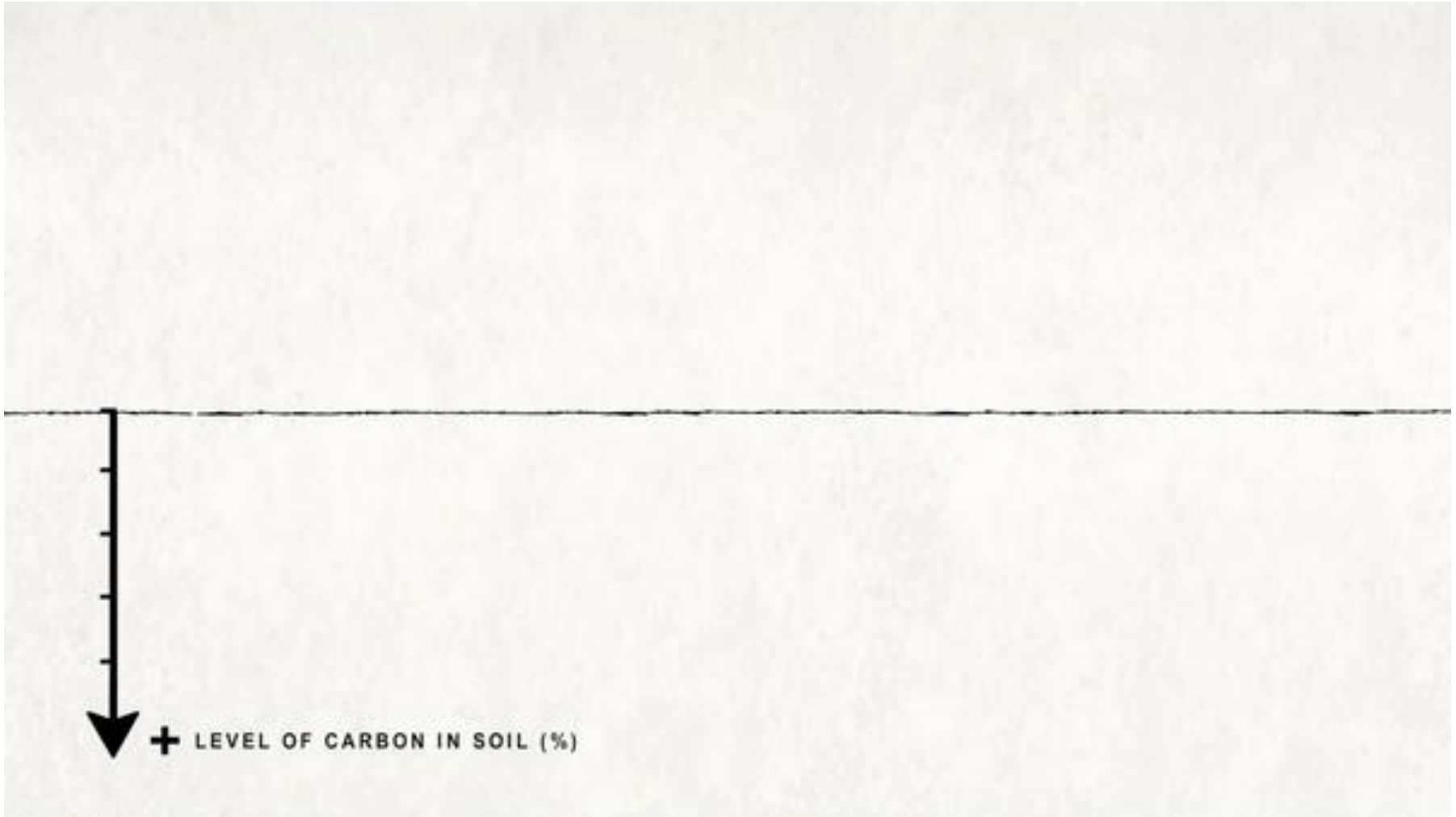




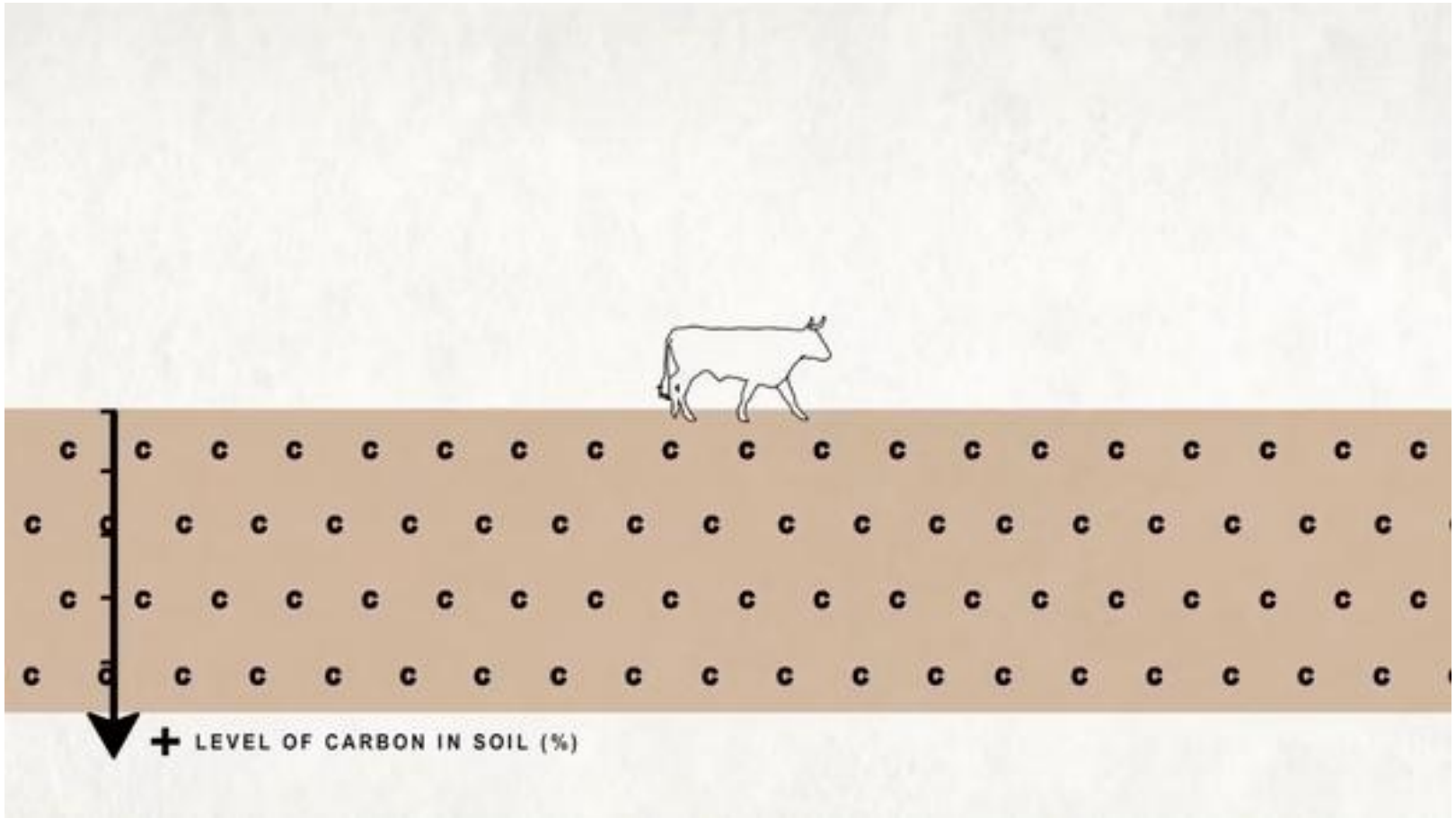




Fuente: Tony Lovell
http://www.soilcarbon.com.au/



Source: https://www.youtube.com/watch?v=nub7pToY3jU&t=18s


+ LEVEL OF CARBON IN SOIL (%)

nature communications

Article

https://doi.org/10.1038/s41467-023-43452-3

Risk to rely on soil carbon sequestration to offset global ruminant emissions

Received: 7 August 2023

Accepted: 9 November 2023

Published online: 22 November 2023

Yue Wang[1] ✉, Imke J. M. de Boer[1], U. Martin Persson[2], Raimon Ripoll-Bosch[1], Christel Cederberg[2], Pierre J. Gerber[1,3], Pete Smith[4] & Corina E. van Middelaar[1]

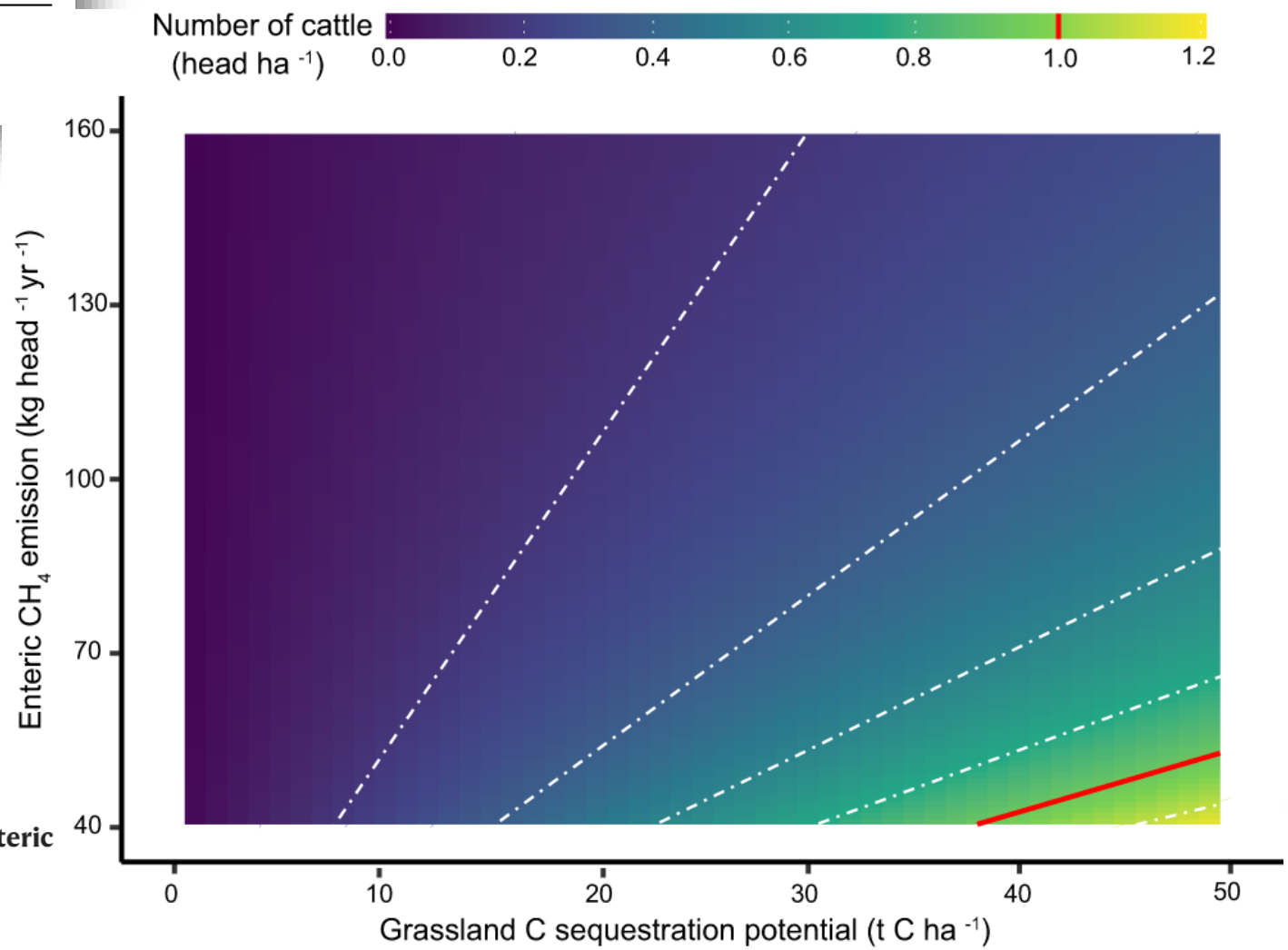
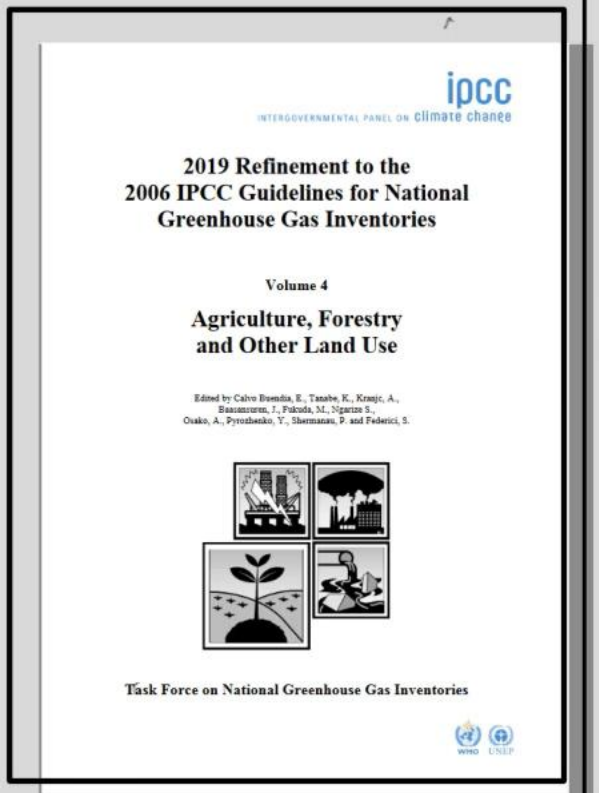
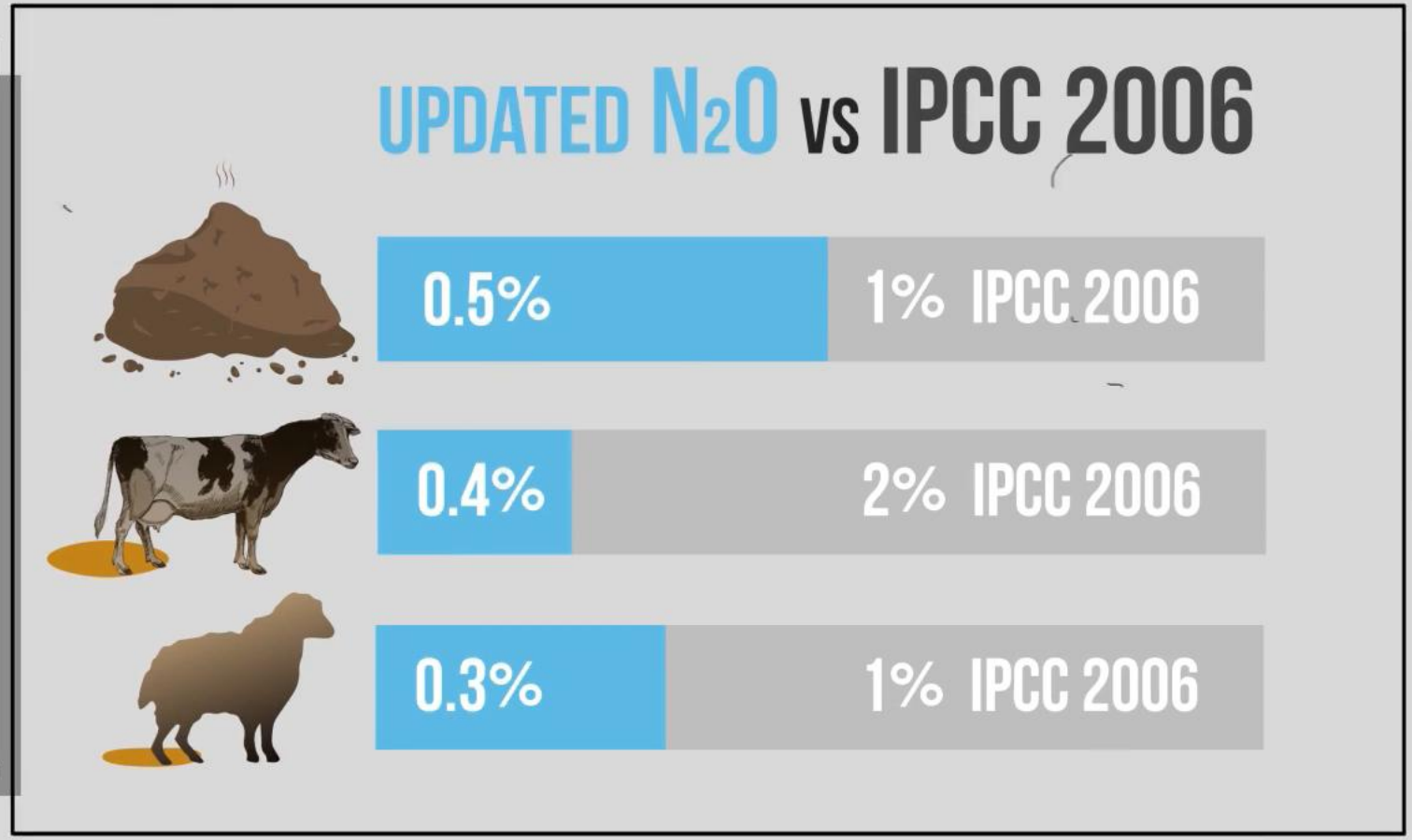


Fig. 3: Number of cattle 'allowed' for a given (maximum) soil carbon (C) sequestration in grasslands to offset the climate impact in a range of possible enteric CH_4 emissions per cattle.





https://youtu.be/NbO4EEaH7YM

Quantification of GHG emissions in an abandonment scenario

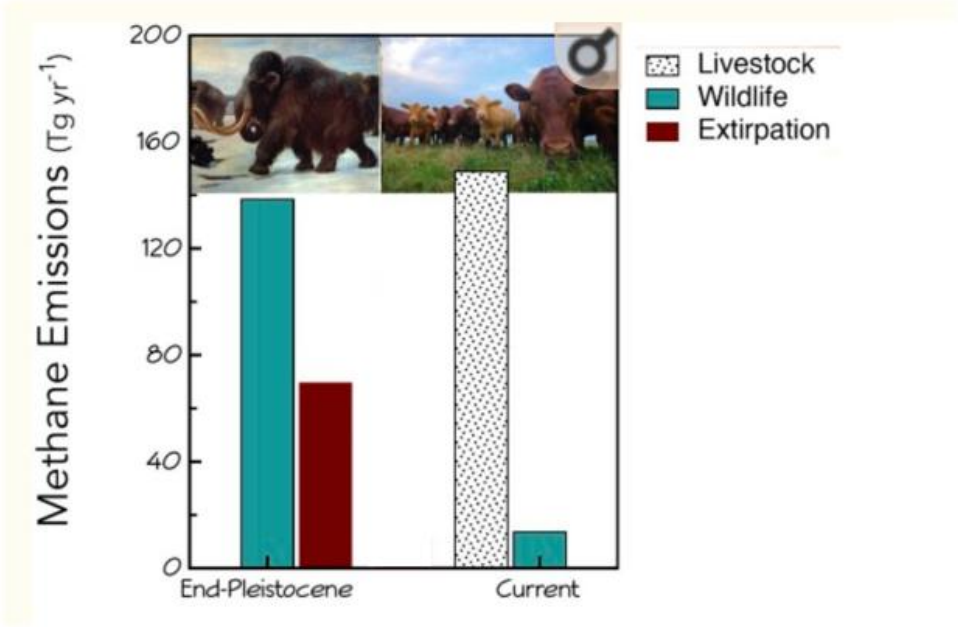
- Current assumption: no replacement of the niche currently filled by livestock
- However: either wild herbivores or termites (both degrading cellulose) would do

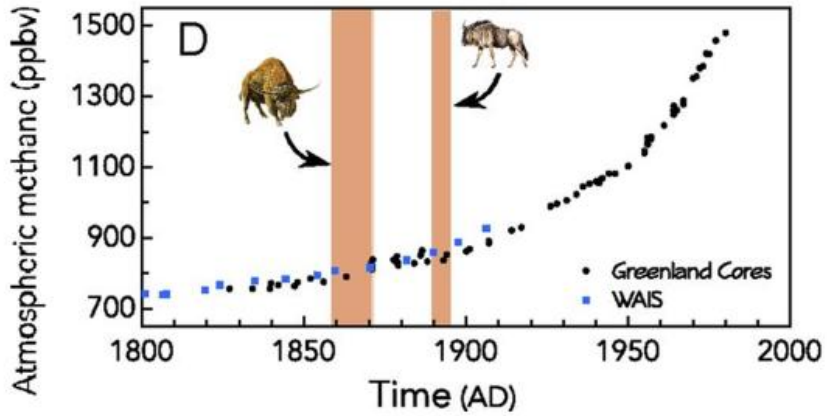
- Poor data for both groups, so estimates are currently difficult

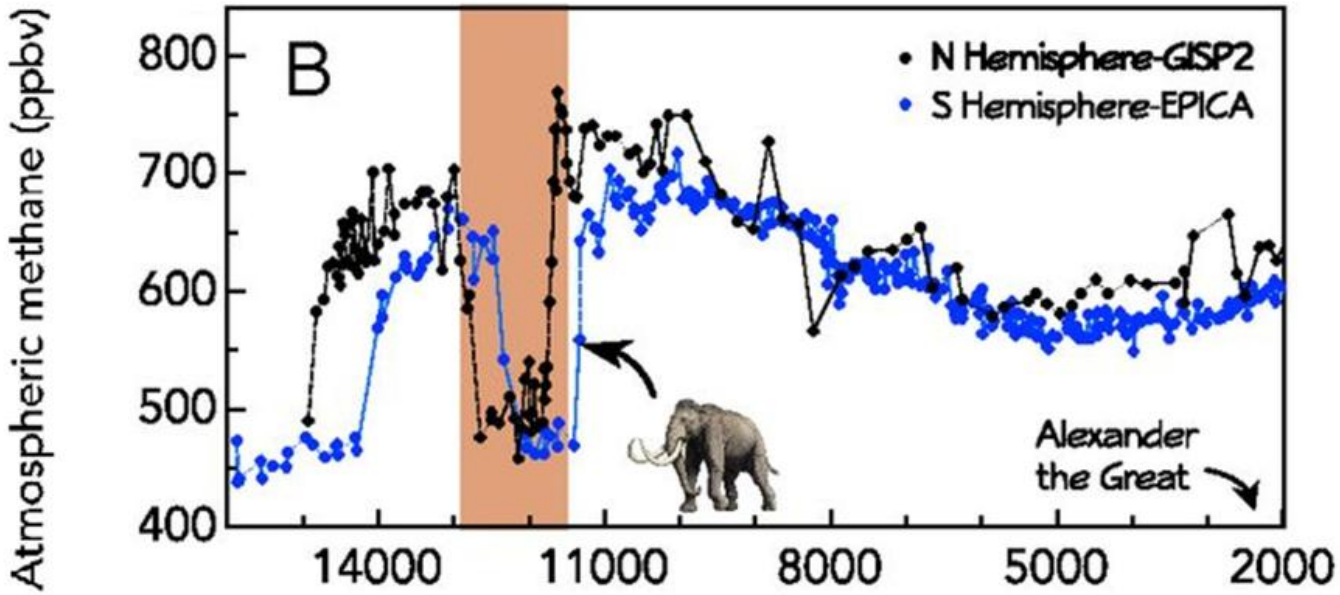
But:

- Data for North America: bison, elk and deer 86% of current domestic ruminants
  - Current-day emissions for wild ruminants are just 4.3% because of reduced numbers
  - Methane production related to herbivore size → even higher emissions from extinct megafauna
- Domestic ruminants have been selected for efficiency







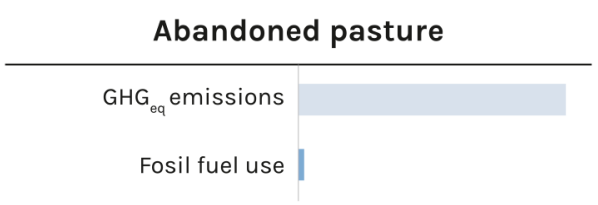


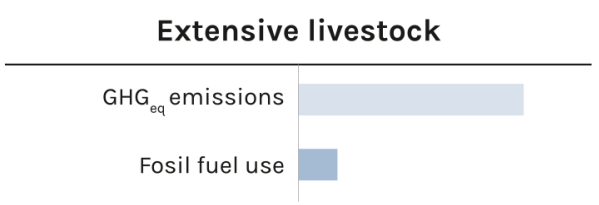
Smith et al (2016) https://doi.org/10.1073/pnas.1502547112

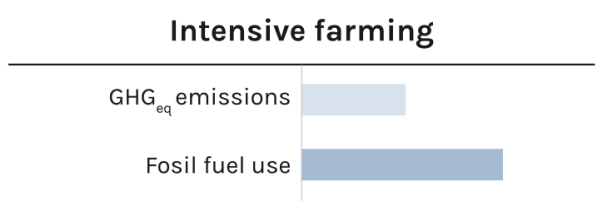












Manzano & White (2019) https://doi.org/10.3354/cr01555

Landsc Ecol
https://doi.org/10.1007/s10980-023-01783-y

RESEARCH ARTICLE

Herbivory baseline estimates in Spanish protected areas, and environmental implications

Rubén Serrano-Zulueta · Guillermo Pardo · Ferran Pauné · Agustín del Prado · Pablo Manzano

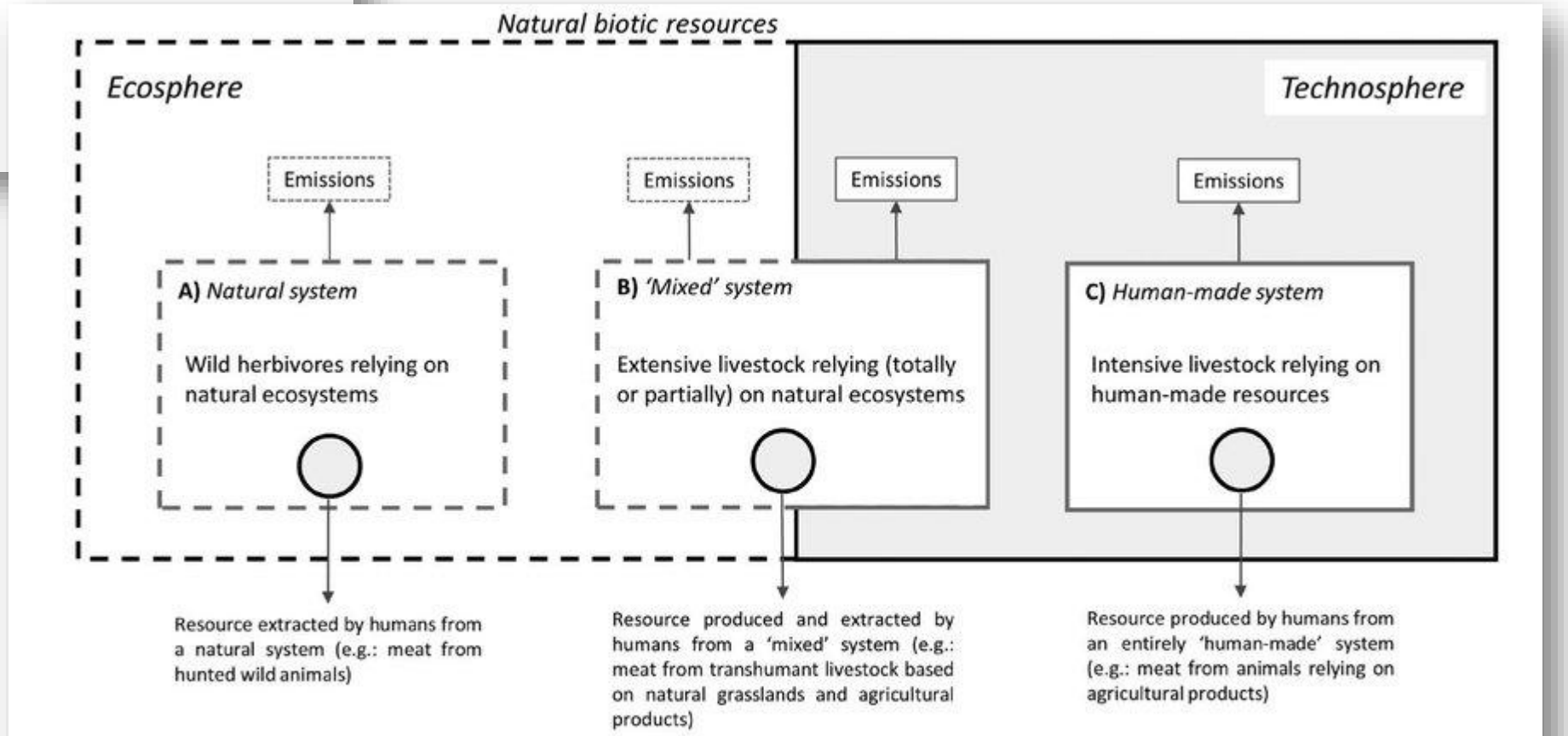


Fig. 1 System boundaries between ecosphere and technosphere for different systems producing biotic resources. In natural systems (**A**), resources are produced in natural environment, and emissions are considered within the ecosphere. Mixed systems (**B**) involve human intervention but resource production relies totally or partially on natural environment. Entirely human-made systems (**C**) are based only on resources produced through human intervention (i.e., within technosphere). Adapted from the approach developed by Alvarenga et al. (2013) and Crenna et al. (2018)

npj climate and atmospheric science
www.nature.com/npjclimatsci

BRIEF COMMUNICATION OPEN

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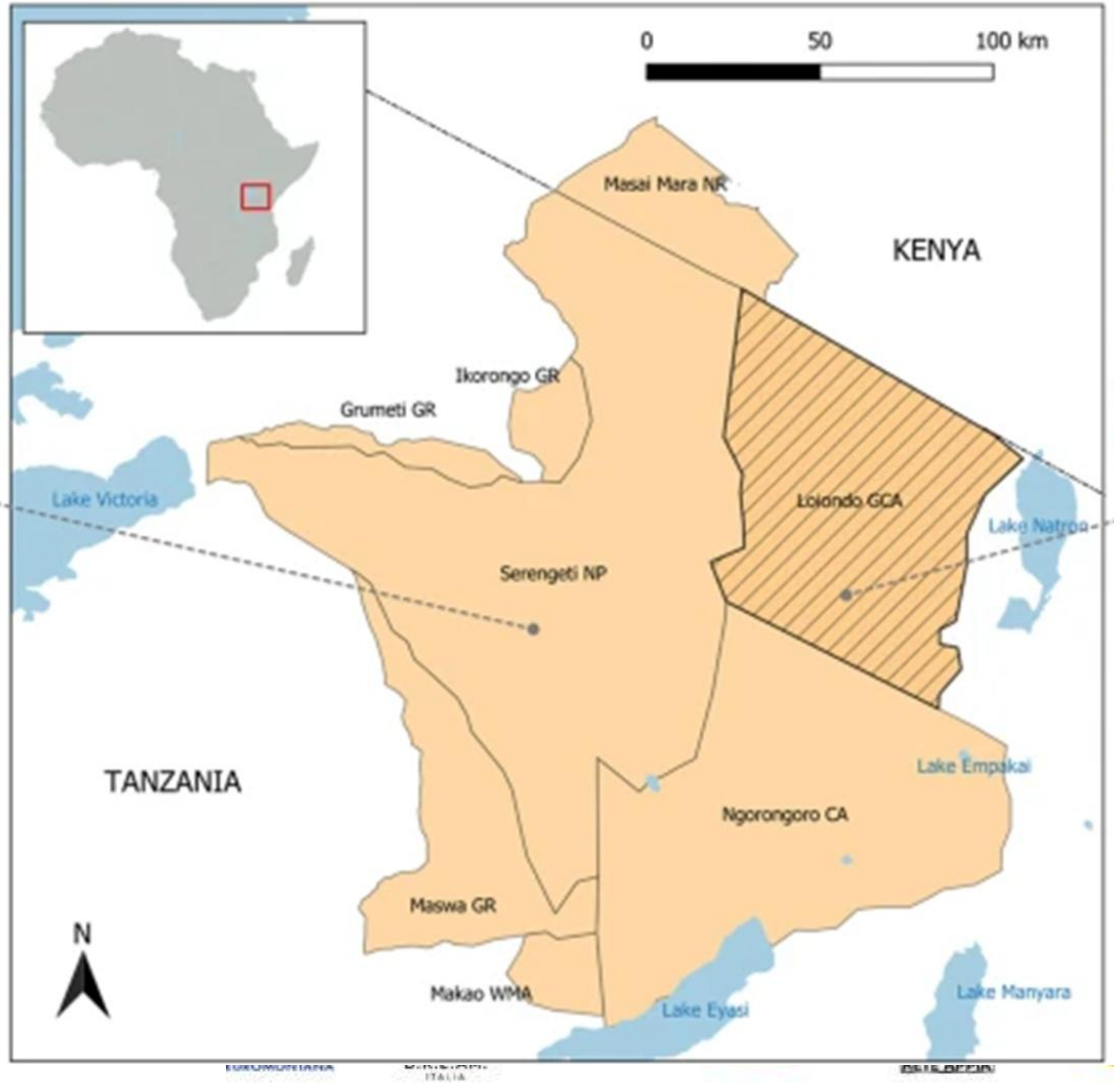
Comparable GHG emissions from animals in wildlife and livestock-dominated savannas

Pablo Manzano[1,2,3,4], Agustín del Prado[3,4] and Guillermo Pardo[3]✉

LIFE SHEP FOR BIO

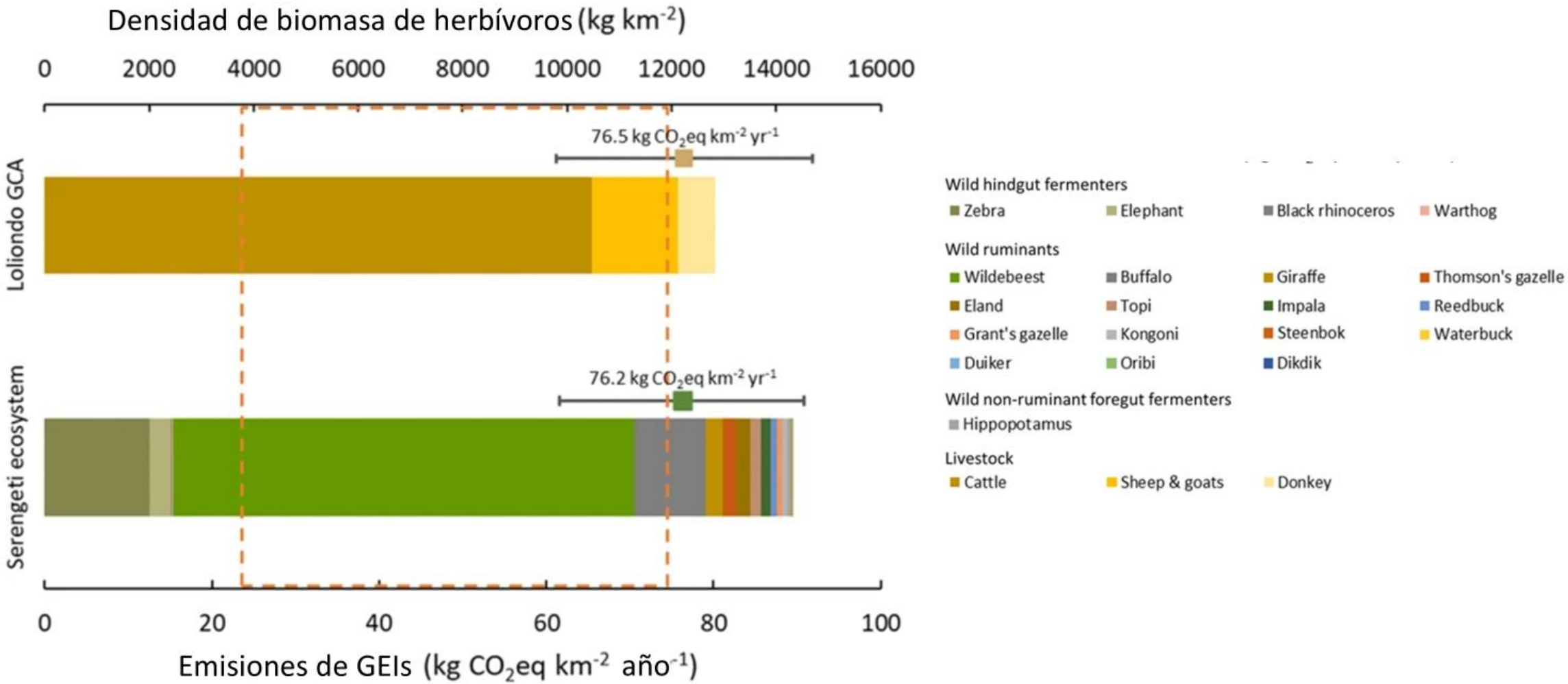


Wild herbivores





Pastoralism

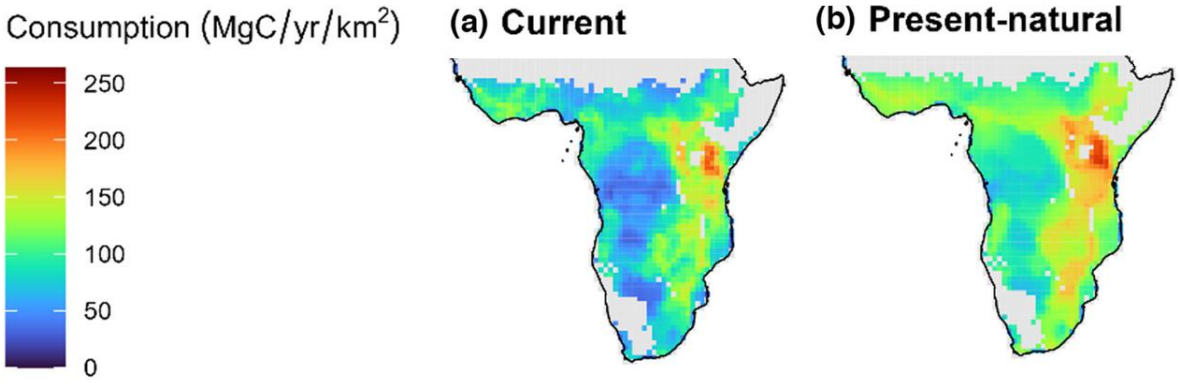

Densidad de biomasa de herbívoros (kg km-2)
0
2000
4000
6000
8000
10000
12000
14000
16000
76.5 kg CO2eq km-2 yr-1
Loliondo GCA
76.2 kg CO2eq km-2 yr-1
Serengeti ecosystem
0
20
40
60
80
100
Emisiones de GEIs (kg CO2eq km-2 año-1)
Wild hindgut fermenters
Zebra
Elephant
Black rhinoceros
Warthog
Wild ruminants
Wildebeest
Buffalo
Giraffe
Thomson's gazelle
Eland
Topi
Impala
Reedbuck
Grant's gazelle
Kongoni
Steenbok
Waterbuck
Duiker
Oribi
Dikdik
Wild non-ruminant foregut fermenters
Hippopotamus
Livestock
Cattle
Sheep & goats
Donkey

East Africa
Complete ecosystems

⇒ High density of wild herbivores (14.3 t/km²)

Negligible external inputs

⇒ Low productivity of domestic herbivores



Pedersen et al 2023 https://doi.org/10.1111/geb.13723

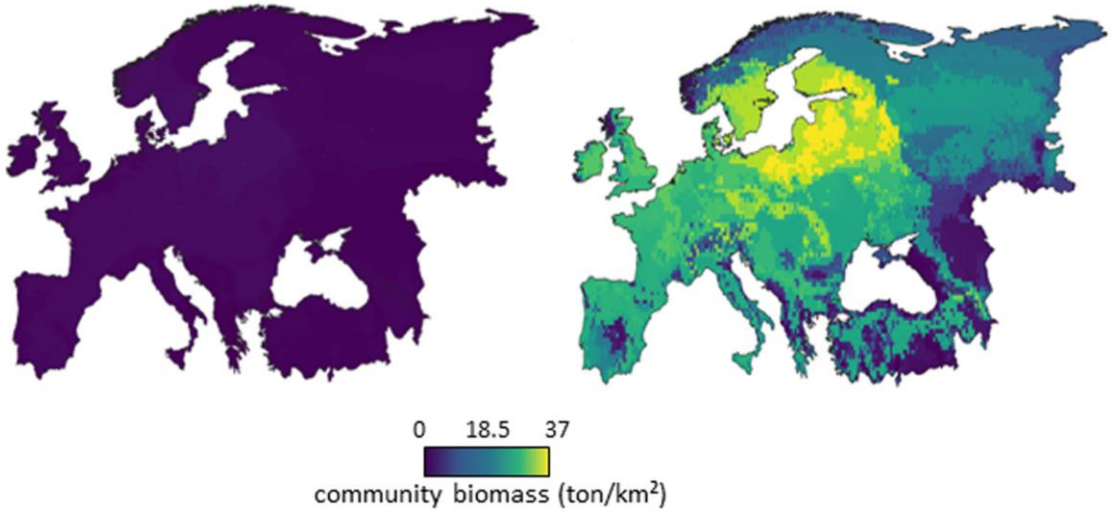
Europe

- Ecosystems suffering from herbivore extinctions

⇒ Low density of wild herbivores (4.8 t/km²)

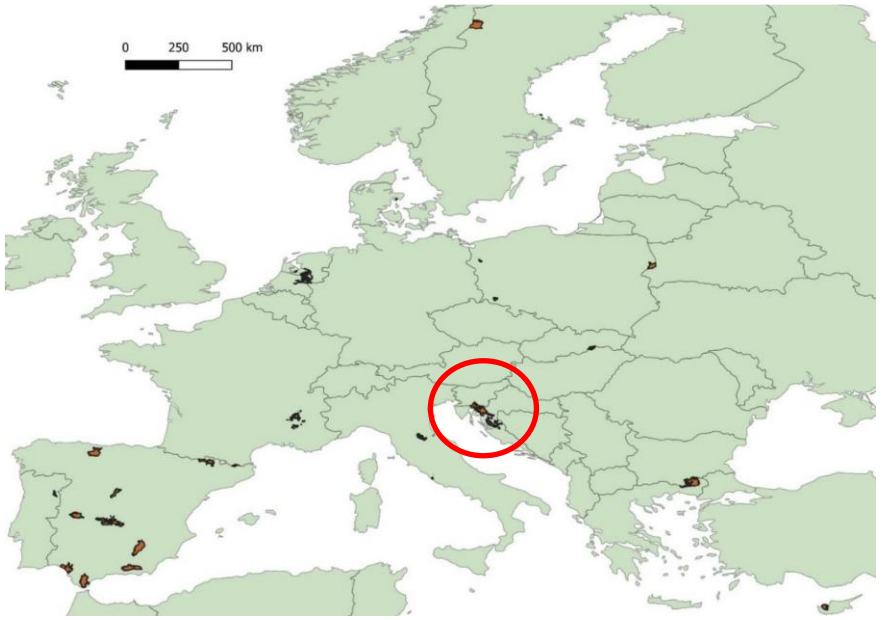
- Significant external inputs, even in the most extensive systems

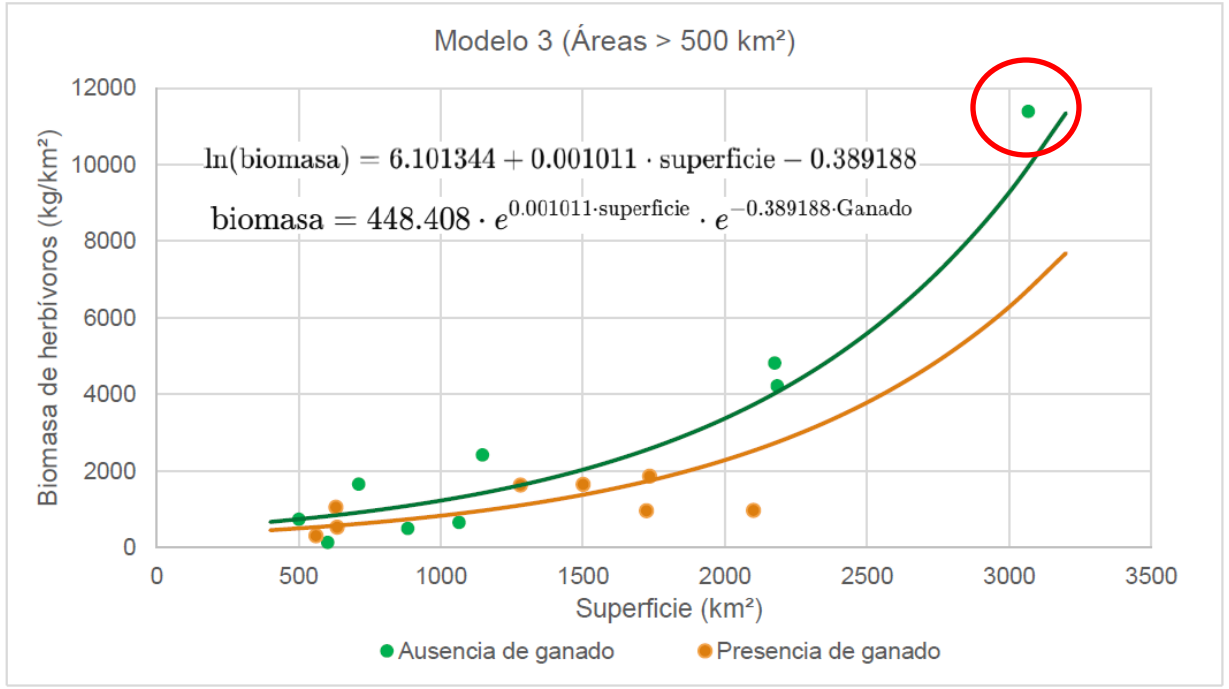
⇒ High productivity of domestic herbivores



Davoli et al 2023 https://doi.org/10.1111/geb.13778

Case study in Europe



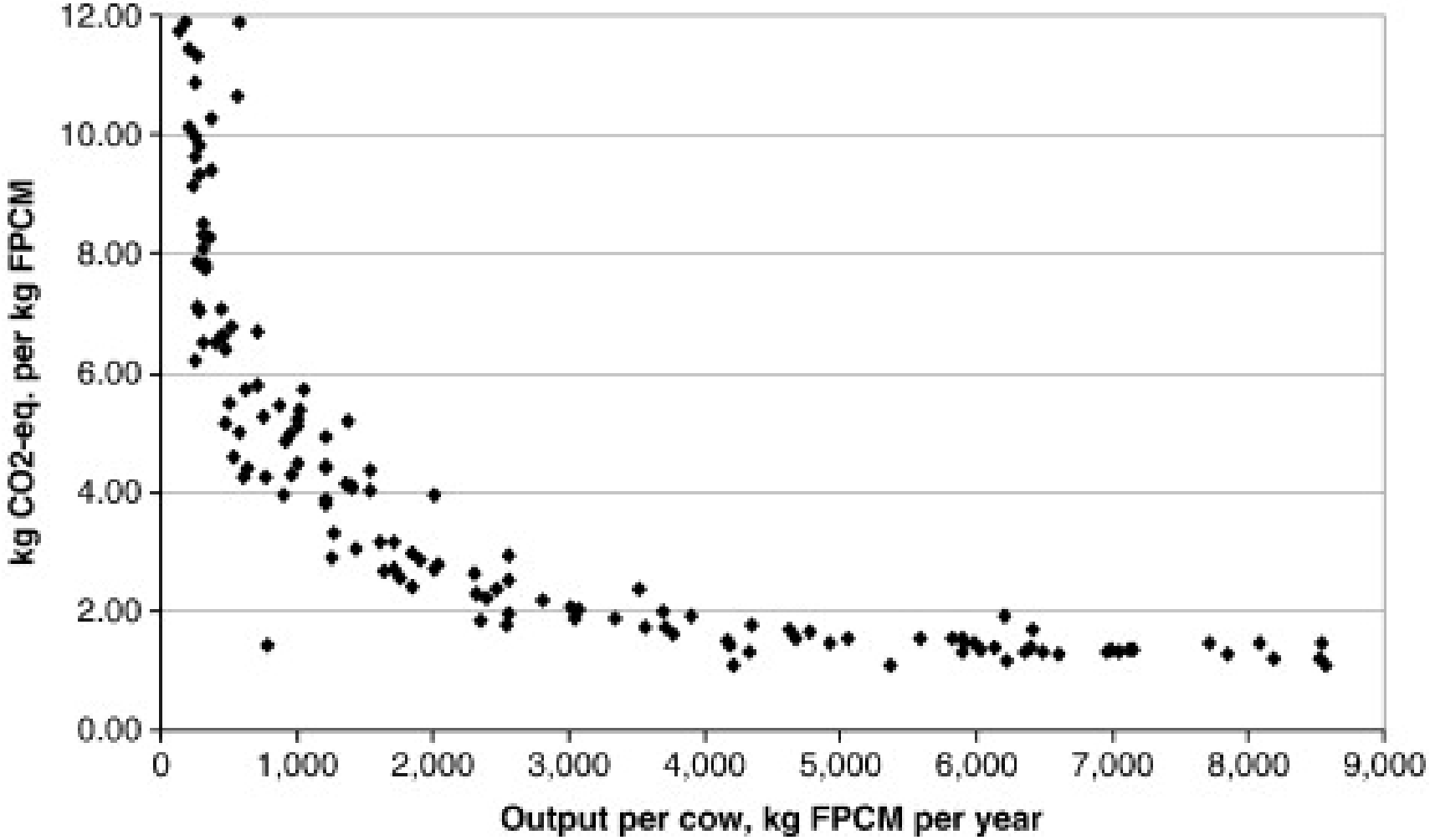


Laura Gonzalez Hernandez's Master tesis
University of the Basque Country

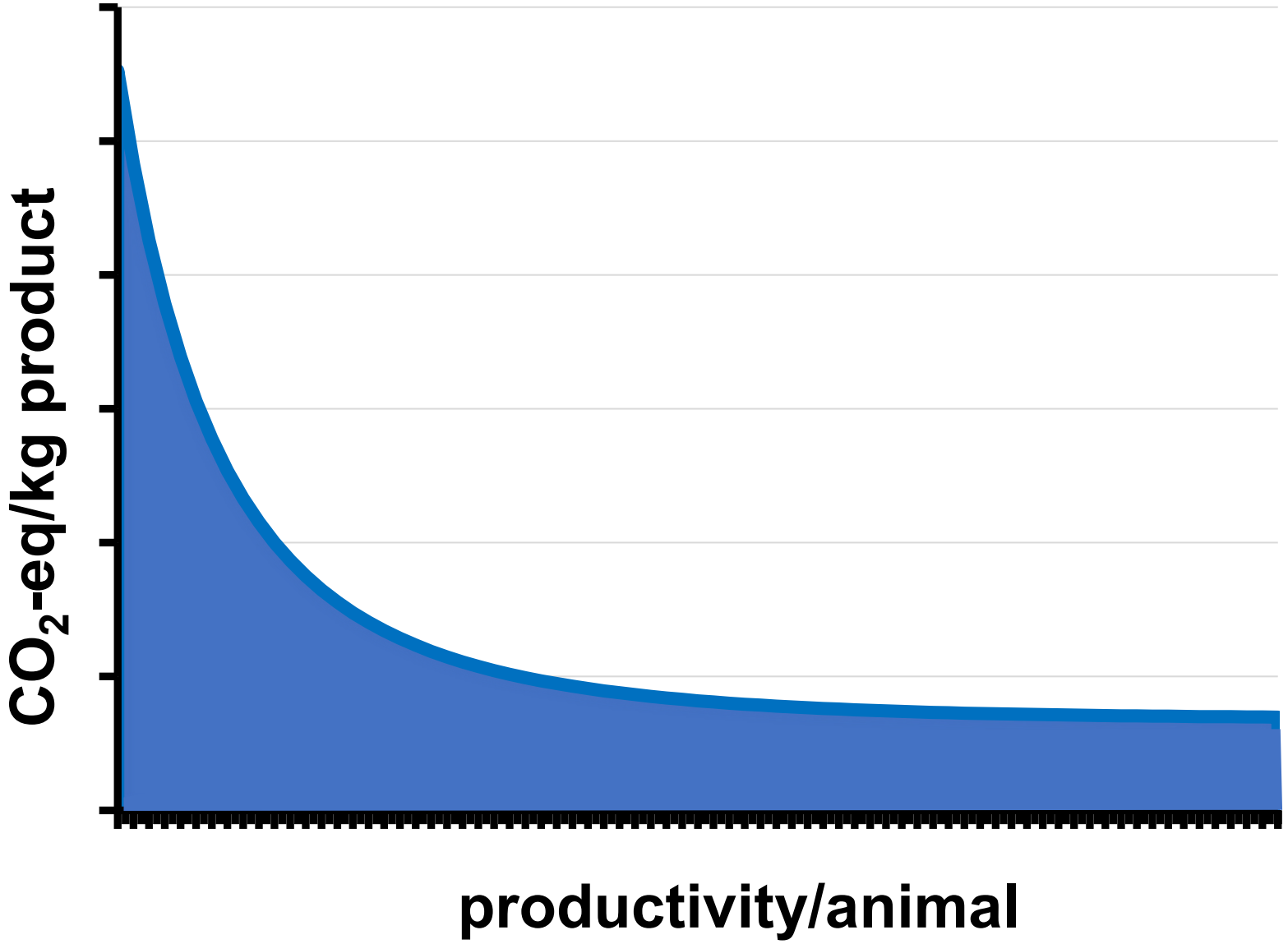
⇒ Similar post-abandonment densities as in the Serengeti
⇒ Confirms:


Received: 17 October 2022 | Revised: 30 May 2023 | Accepted: 6 June 2023
DOI: 10.1111/geb.13723
RESEARCH ARTICLE
Global Ecology and Biogeography
WILEY
Late-Quaternary megafauna extinctions have strongly reduced mammalian vegetation consumption
Rasmus Østergaard Pedersen[1,2] | Søren Faurby[3,4] | Jens-Christian Svenning[1,2]


npj | biodiversity
www.nature.com/npjbiodivers
PERSPECTIVE OPEN
Check for updates
Underrated past herbivore densities could lead to misoriented sustainability policies
Pablo Manzano[1,2,3,4✉], Guillermo Pardo[3], Moustapha A. Itani[1,2] and Agustín del Prado[3,4]

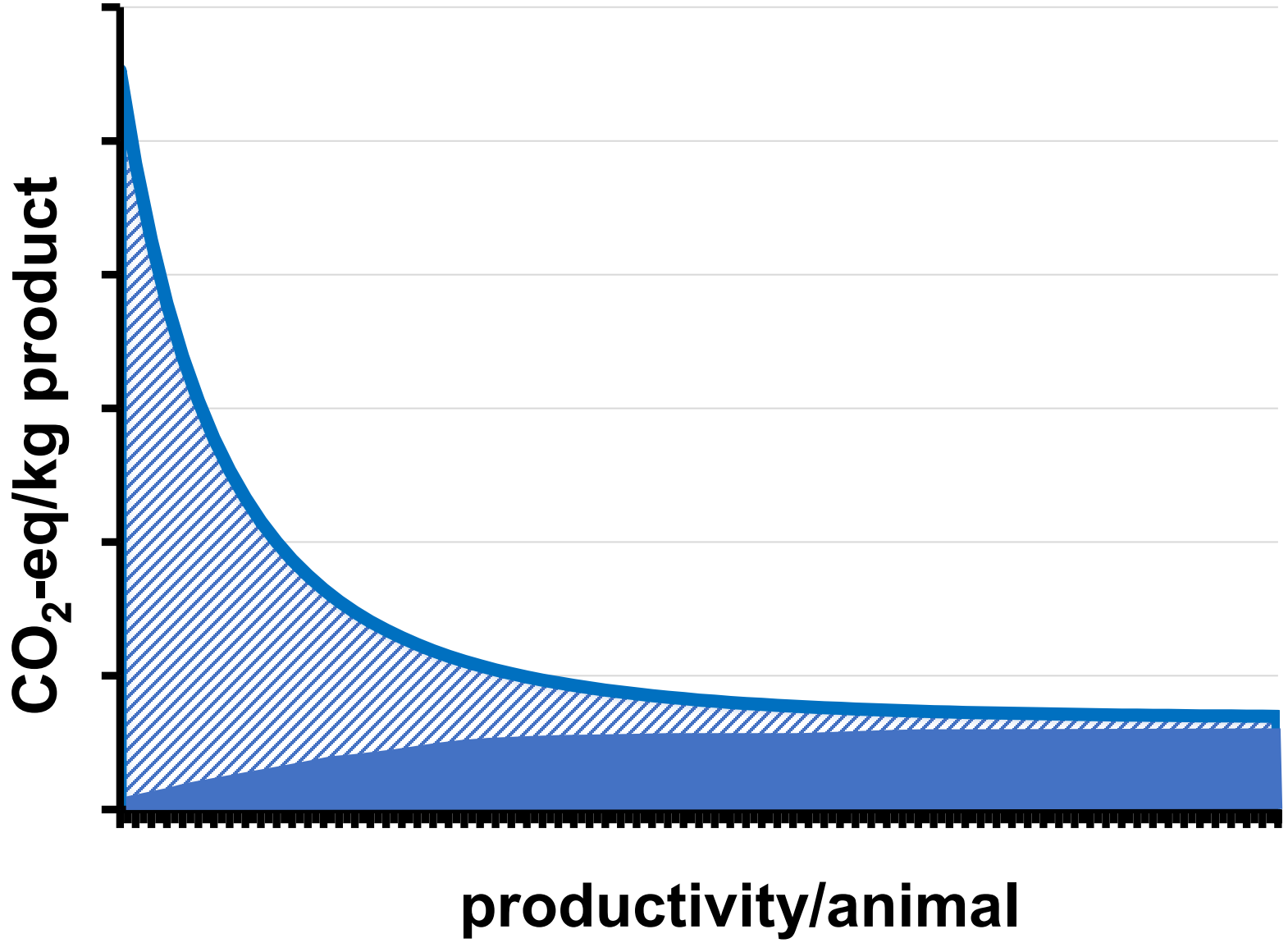


Gerber et al. 2011 https://doi.org/10.1016/j.livsci.2011.03.012



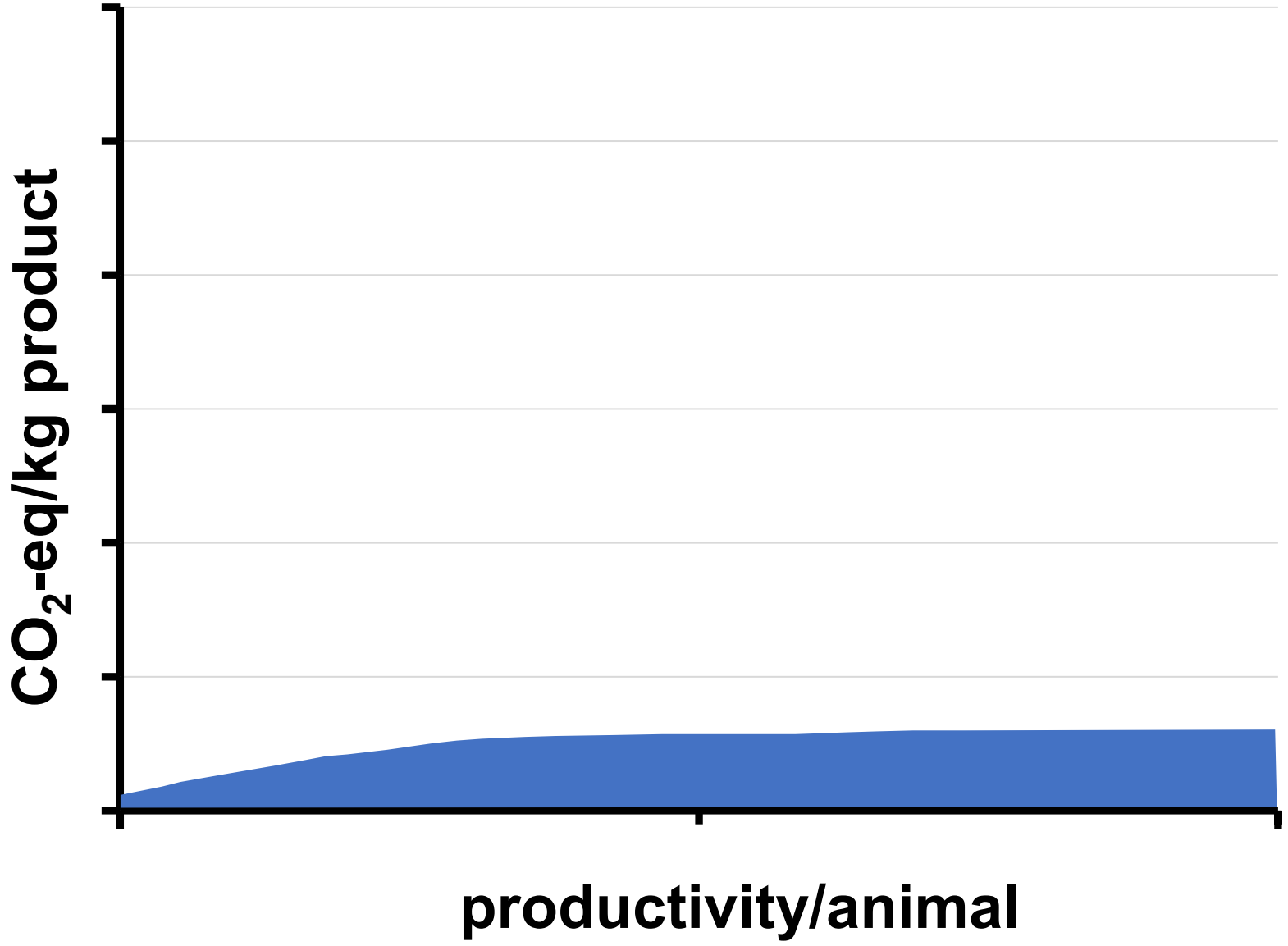
LIFE SHEP FOR BIO

EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026



LIFE SHEP FOR BIO

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LIFE SHEP FOR BIO

EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

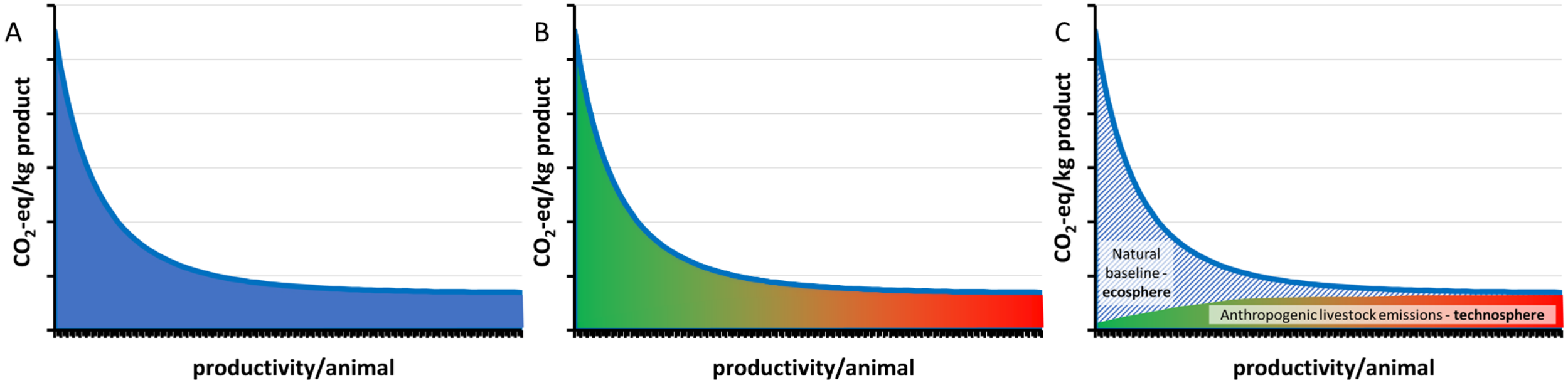
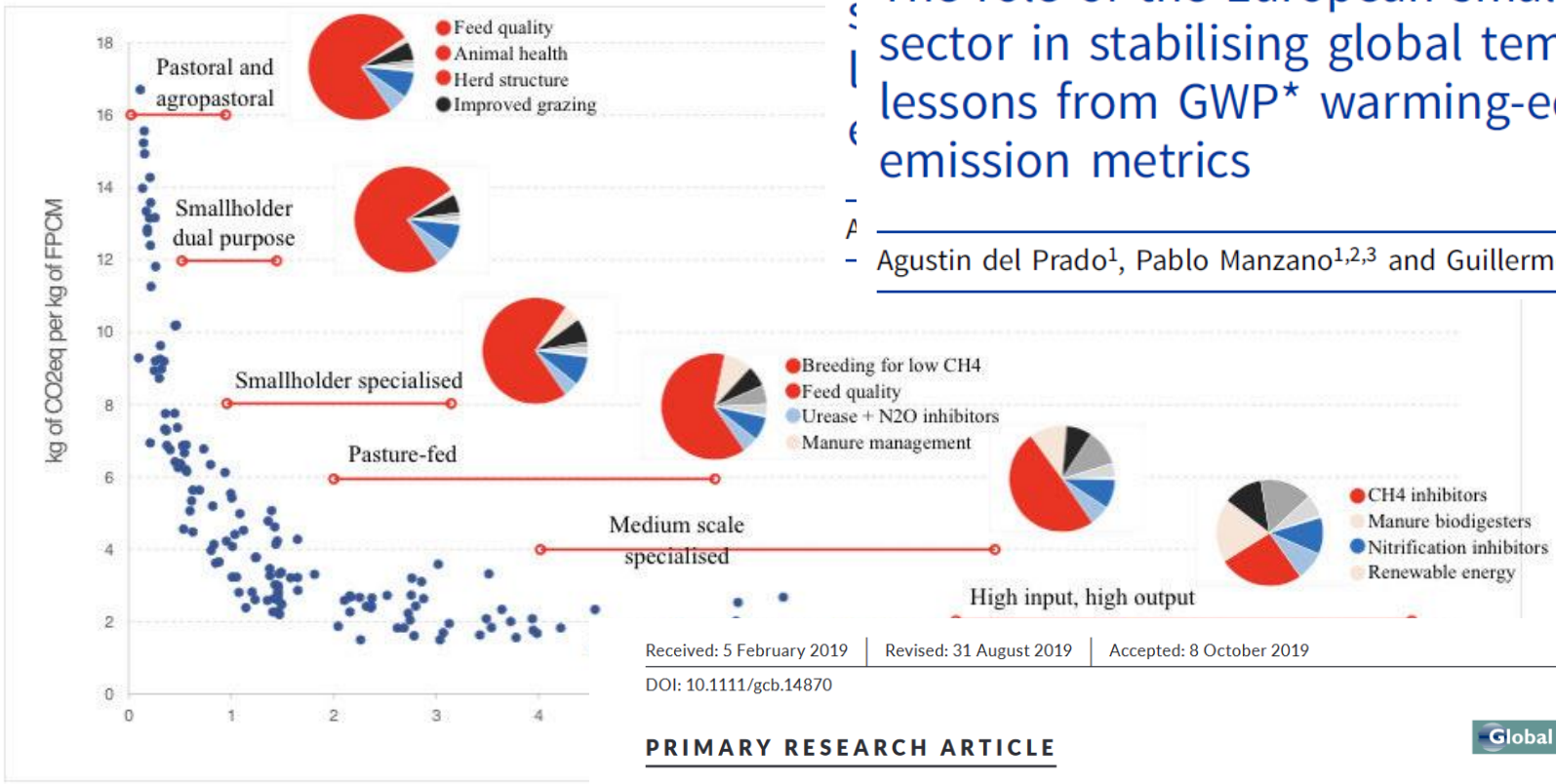


Figure 1. Interpretation of livestock emissions per product in different literature sources, with pastoralism at the left side of the spectrum and the most industrialized systems at the right one. A) Fig 5 in Gerber et al 2011 doesn't differentiate among types and sources of emissions. B) Fig 15 in FAO et al 2023 captures the weight of biogenic (mostly green) and fossil (increased amount of red) origins, showing the heavier weight of fossil fuel footprint in the most industrialized livestock systems. C) Fig 1 in Manzano et al 2023b adds a distinction on ecosphere/technosphere components (cf. Pardo et al. 2024).

Manzano et al 2026 Routledge

Latest research



Slide prepared by FAO and GRA
Source: FAO GLEAM 3, unpublished 2020 data

The role of the European small ruminant dairy sector in stabilising global temperatures: lessons from GWP* warming-equivalent emission metrics

Agustin del Prado[1], Pablo Manzano[1,2,3] and Guillermo Pardo[1]

Received: 5 February 2019 | Revised: 31 August 2019 | Accepted: 8 October 2019

DOI: 10.1111/gcb.14870

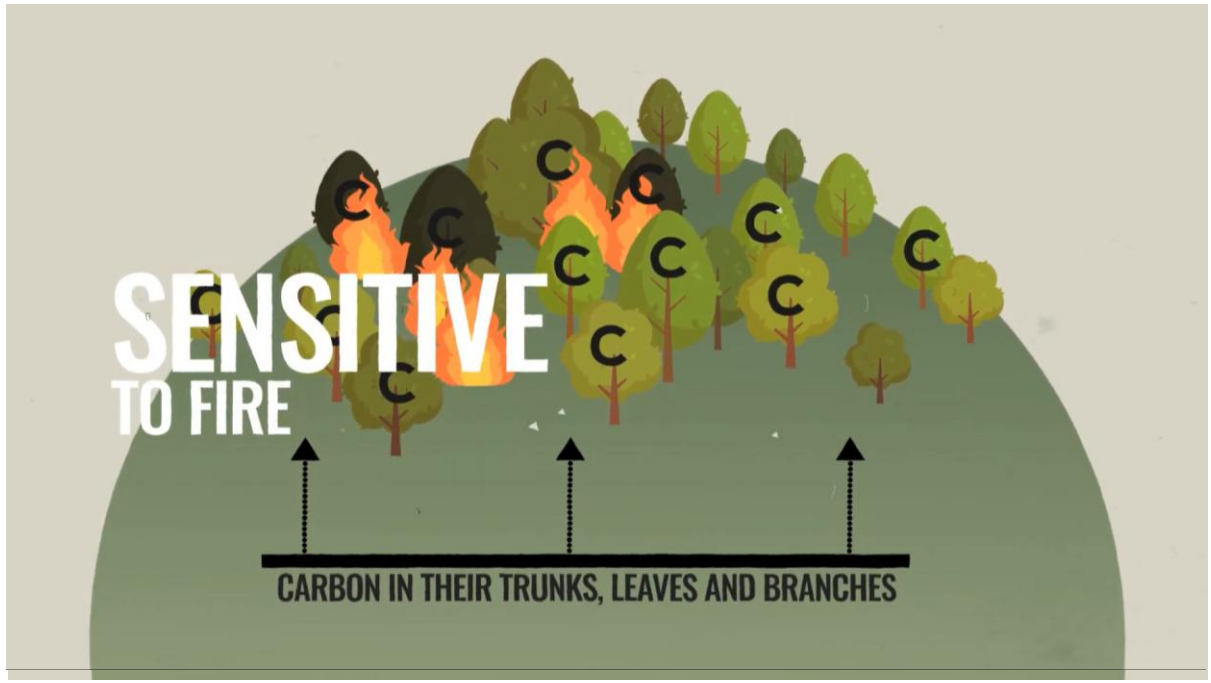
PRIMARY RESEARCH ARTICLE

Global Change Biology WILEY

Intensification of dairy production can increase the GHG mitigation potential of the land use sector in East Africa

Patric Brandt[1,2] | Gabriel Yesuf[3] | Martin Herold[2] | Mariana C. Rufino[1,3]

Carbon in soil and vegetation





OPEN ACCESS Freely available online PLOS BIOLOGY

A Disease-Mediated Trophic Cascade in the Serengeti and its Implications for Ecosystem C

Ricardo M. Holdo[1]*, Anthony R. E. Sinclair[2], Andrew P. Dobson[3], Kristine L. Metzger[2], Benjamin M. Bolker[1], Mark E. Ritchie[4], Robert D. Holt[1]

1 Department of Biology, University of Florida, Gainesville, Florida, United States of America, 2 Department of Zoology, University of British Columbia, Vancouver, British Columbia, Canada, 3 Department of Ecology and Evolutionary Biology, Princeton University, Princeton, New Jersey, United States of America, 4 Department of Biology, Syracuse University, Syracuse, New York, United States of America

IOP Publishing Environ. Res. Lett. 13 (2018) 074027 https://doi.org/10.1088/1748-9326/aacb39

Environmental Research Letters

CrossMark

LETTER

OPEN ACCESS

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10 January 2018

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8 June 2018

PUBLISHED
10 July 2018

Grasslands may be more reliable carbon sinks than forests in California

Pawlok Dass[1,5], Benjamin Z Houlton[1,2], Yingping Wang[3] and David Warlind[4]

1 Department of Land, Air and Water Resources, University of California, Davis, United States of America
2 John Muir Institute of the Environment, University of California, Davis, United States of America
3 CSIRO Oceans and Atmosphere, Private Bag 1, Aspendale, VIC 3195, Australia
4 Department of Physical Geography and Ecosystem Science, Lund University, Lund, Sweden
5 Author to whom any correspondence should be addressed.

Should tree invasions be used in treeless ecosystems to mitigate climate change?

Martin A Nuñez[1,2*], Kimberley T Davis[3], Romina D Dimarco[4], Duane A Peltzer[5], Juan Paritsis[6], Bruce D Maxwell[7], and Aníbal Pauchard[8,9]

Intentionally allowing or promoting invasion by non-native trees into areas characterized by treeless vegetation could contribute to climate-change mitigation by increasing carbon (C) sequestration. In some areas of the world, incentives exist to retain invasive non-native trees in natural systems as a mechanism for increasing ecosystem C storage and reducing atmospheric carbon dioxide levels. Although this novel opportunity for C sequestration holds appeal, such an approach is problematic for several reasons: (1) invasive trees do not always increase net C sequestration due to greater occurrence of fire or reduced soil C; (2) lower albedo in invaded areas can increase absorption of solar radiation, thereby offsetting potential C sequestration; and (3) tree invasions often also have negative effects on biodiversity, economic opportunities, and water yield. Such drawbacks are sufficient to raise doubts about the widespread use of non-native tree invasions in treeless areas as a tool to ameliorate climate change.

Front Ecol Environ 2021; 19(6): 334–341, doi:10.1002/fee.2346

⇒ lots of carbon in savanna and grassland soils; it is secure… for it doesn't burn!

Current Biology

CellPress

Review

The role of large wild animals in climate change mitigation and adaptation

Yadvinder Malhi[1,*], Tonya Lander[2], Elizabeth le Roux[1,3], Nicola Stevens[1], Marc Macias-Fauria[4], Lisa Wedding[4], Cécile Girardin[1], Jeppe Ågård Kristensen[1,3], Christopher J. Sandom[5,6], Tom D. Evans[7], Jens-Christian Svenning[3], and Susan Canney[8]

[1]Environmental Change Institute, School of Geography and the Environment, University of Oxford, Oxford OX1 3QY, UK
[2]Christ Church College, University of Oxford, Oxford OX1 1DP, UK
[3]Center for Biodiversity Dynamics in a Changing World (BIOCHANGE) and Section for Ecoinformatics and Biodiversity, Department of Biology, Aarhus University, Ny Munkegade 114, DK-8000 Aarhus C, Denmark
[4]School of Geography and the Environment, University of Oxford, Oxford OX1 3QY, UK
[5]Life Sciences, University of Sussex, Brighton BN1 9QG, UK
[6]Sussex Sustainability Research Programme, University of Sussex, Brighton BN1 9QG, UK
[7]Wildlife Conservation Society, Global Conservation Program, Bronx, New York, NY 10460, USA
[8]Department of Zoology, University of Oxford, Oxford OX1 3SZ, UK
*Correspondence: yadvinder.malhi@ouce.ox.ac.uk
https://doi.org/10.1016/j.cub.2022.01.041

Rangeland afforestation is not a natural climate solution

David D Briske[1*], Susanne Vetter[2], Corli Coetsee[3,4], and Matthew D Turner[5]

Large-scale tree planting on global rangelands is promoted as a natural climate solution (NCS), but there is little scientific evidence to support this narrative. The presumed benefits of rangeland afforestation originate from five major misconceptions: (1) conflation between reforestation and afforestation, (2) overestimation of carbon (C) sequestration potential, (3) insufficient recognition of rangeland ecosystem services, (4) potential for adverse ecological outcomes, and (5) neocolonial tendencies of afforestation programs. Rangeland afforestation possesses minimal potential for additional C storage, but it has high potential to reduce vital rangeland ecosystem services that benefit rangeland residents and non-residents alike. Conservation of existing C—most of which is stored belowground, where it is less vulnerable to loss—may prove to be the most appropriate NCS for extensively managed rangelands. Stewardship strategies promoting rangeland multifunctionality will not only contribute to climate-change mitigation but also support biodiversity conservation and sustainable production of high-protein foods for marginalized populations.

Front Ecol Environ 2024; e2727, doi:10.1002/fee.2727

nature communications

Article

https://doi.org/10.1038/s41467-024-46577-1

Accounting for albedo change to identify climate-positive tree cover restoration

Received: 22 December 2023

Accepted: 1 March 2024

Published online: 26 March 2024

Natalia Hasler[1], Christopher A. Williams[2] ✉, Vanessa Carrasco Denney[3], Peter W. Ellis[4], Surendra Shrestha[2], Drew E. Terasaki Hart[3,5], Nicholas H. Wolff[6], Samantha Yeo[3], Thomas W. Crowther[7], Leland K. Werden[7] & Susan C. Cook-Patton[3] ✉

Cloud cooling effects of afforestation and reforestation at midlatitudes

Sara Cerasoli[a], Jun Yin[b], and Amilcare Porporato[a,c,1]

[a]Department of Civil and Environmental Engineering, Princeton University, Princeton, NJ 08544; [b]School of Hydrology and Water Resources Engineering, Nanjing University of Information Science and Technology, Nanjing 210044, China; and [c]High Meadows Environmental Institute, Princeton University, Princeton, NJ 08544

Edited by William H. Schlesinger, Cary Institute of Ecosystem Studies, Millbrook, NY, and approved May 27, 2021 (received for review December 22, 2020)

Transition to linear farm systems

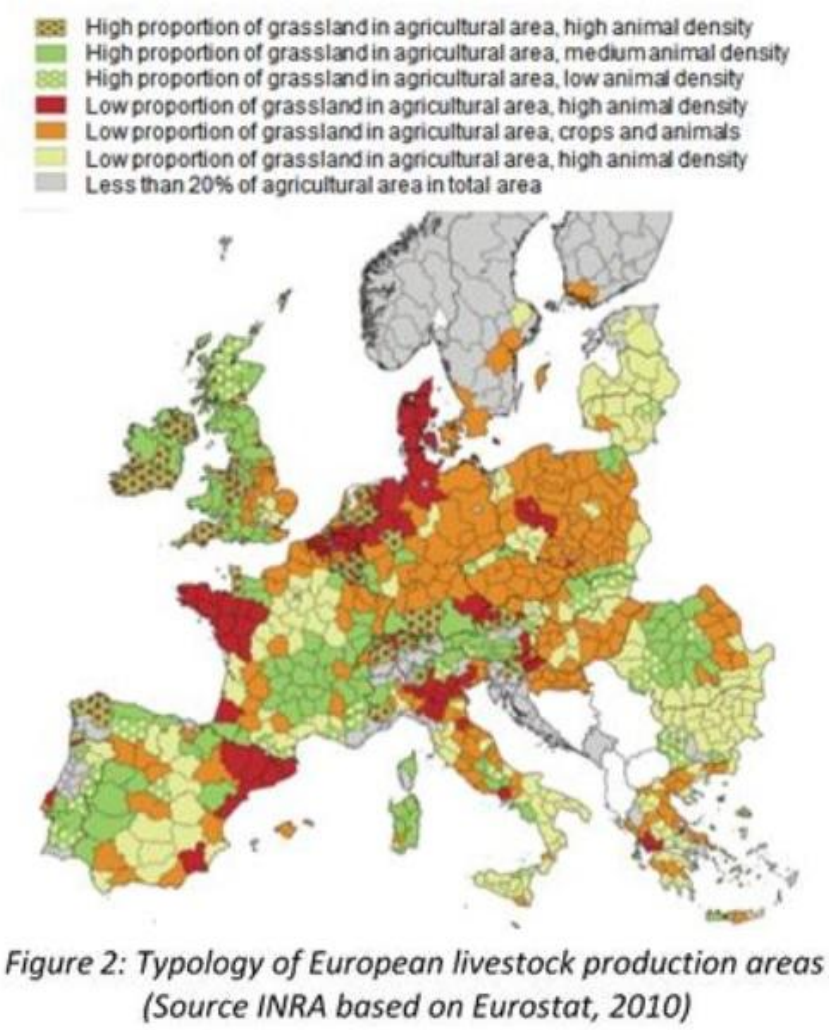
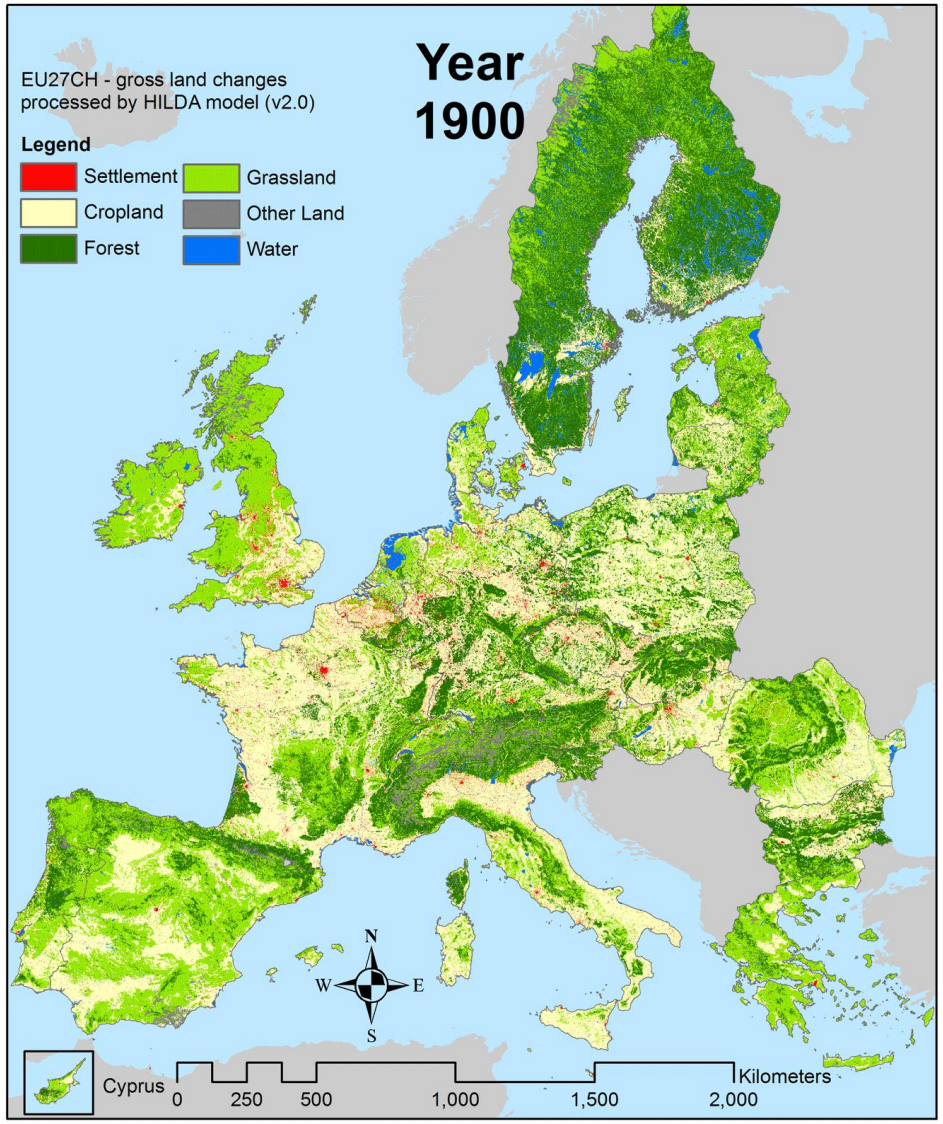
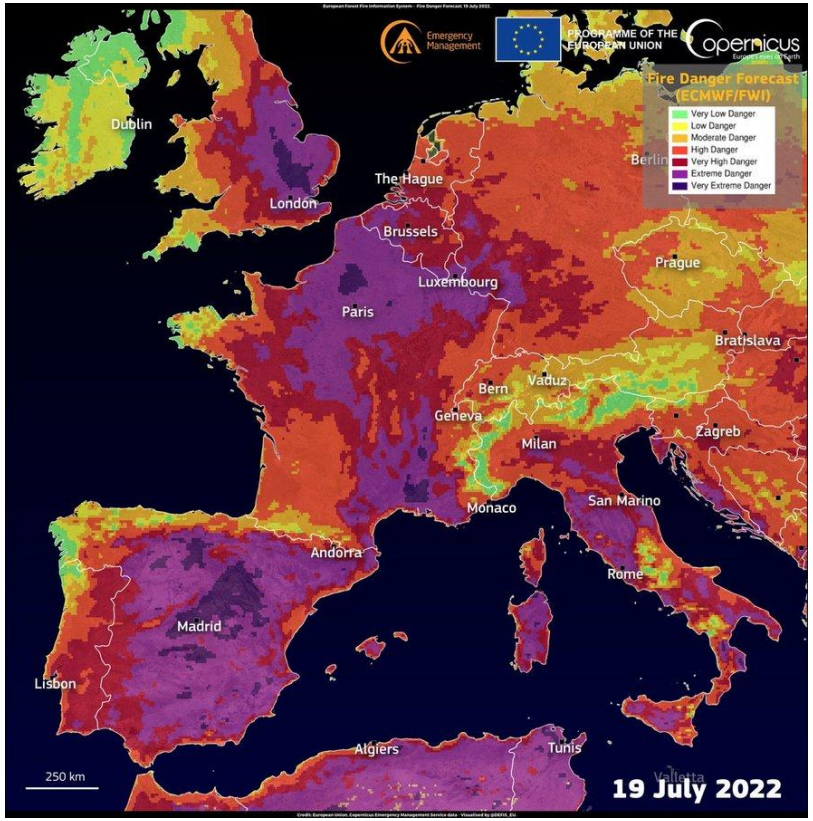


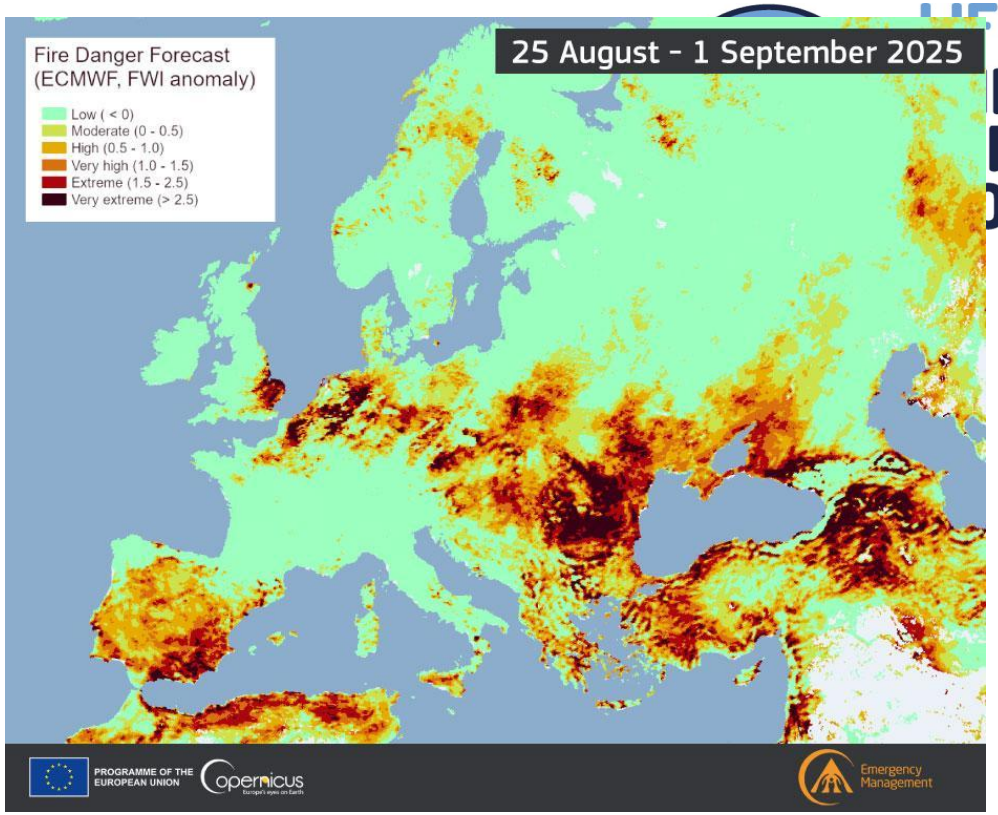
Figure 2: Typology of European livestock production areas (Source INRA based on Eurostat, 2010)

Source: ATF Vision Paper – February 2019
http://animaltaskforce.eu/Portals/0/ATF_Vision_Paper_2019.pdf



Source: http://www.geo-informatie.nl/fuchs003/#







ANIMAL FRONTIERS OXFORD ACADEMIC

Ecosystem management using livestock: embracing diversity and respecting ecological principles

Logan Thompson, Jason Rowntree, Wilhelm Windisch, Sinéad M Waters, Laurence Shalloo, Pablo Manzano ✉

Animal Frontiers, Volume 13, Issue 2, April 2023, Pages 28–34, https://doi.org/10.1093/af/vfac094

Albedo and evapotranspiration

Confronted processes:

- Humid tropics
  - Higher evapotranspiration
  - Forest fixes more C
  - No snow

⇒ forests cool up

- Dry, temperate & boreal
  - Lower evapotranspiration
  - Snow has high albedo

⇒ forests warm up



Copyright © 2006, Paper 10-011; 6,419 words, 4 Figures, 0 Animations, 0 Tables.
http://EarthInteractions.org

Evidence for the Postconquest Demographic Collapse of the Americas in Historical CO_2 Levels

Franz X. Faust and Cristóbal Gnecco
Department of Anthropology, Universidad del Cauca, Popayán, Colombia

Hermann Mannstein*
Institute for Atmospheric Physics, DLR, Oberpfaffenhofen, Germany

Jörg Stamm
ECOBAMBOO, Popayán, Colombia

Received 17 December 2004; accepted 2 March 2005

The Columbian Encounter and the Little Ice Age: Abrupt Land Use Change, Fire, and Greenhouse Forcing

Robert A. Dull,* Richard J. Nevle,† William I. Woods,‡ Dennis K. Bird,§ Shiri Avnery,# and William M. Denevan¶

Quaternary Science Reviews 207 (2019) 13–36

Earth system impacts of the European arrival and Great Dying in the Americas after 1492

Alexander Koch [a, *], Chris Brierley [a], Mark M. Maslin [a], Simon L. Lewis [a, b]

[a] *Geography, University College London, London, WC1E6BT, United Kingdom*
[b] *School of Geography, University of Leeds, Leeds, LS29JT, United Kingdom*

Global Change Biology

Global Change Biology (2014) **20**, 2344–2355, doi: 10.1111/gcb.12483

Climate warming feedback from mountain birch forest expansion: reduced albedo dominates carbon uptake

HELEEN A. DE WIT[1], ANDERS BRYN[2]*, ANNIKA HOFGAARD[3], JONAS KARSTENSEN[4], MARIA M. KVALEVÅG[4] and GLEN P. PETERS[4]

IOP PUBLISHING — ENVIRONMENTAL RESEARCH LETTERS
Environ. Res. Lett. **7** (2012) 015503 (9pp) — doi:10.1088/1748-9326/7/1/015503

On the influence of shrub height and expansion on northern high latitude climate

C J W Bonfils[1], T J Phillips[1], D M Lawrence[2], P Cameron-Smith[1], W J Riley[3] and Z M Subin[3,4]





Food system scenarios

- An increasingly relevant debate → veganism
- Need to increase consumption in developing countries, and moderate in rich countries
- Problematic previous attempts
  - EAT–Lancet Commission (2019) https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31788-4/fulltext
  - Poore J, Nemecek T (2018). https://doi.org/10.1126/science.aaq0216

  => Feed competes with humans vs. Meat co-production
- Pastoralism can achieve it
  - Sustainable land use (3 dimensions)
  - Less ploughing
- Do not miss:
  - Efficient monogastric systems (Cairo)
  - Intensification in order to optimize (Gran Chaco)

Thank you for your attention!

+ info:

@PabloPastos

With thanks to

Pastoralism & Climate Change

Antonello Franca (CNR Sassari, RETE APPIA, Italy)

Management Strategies to Enable Sustainable Resilient Agropastoralism

Antonello Franca– CNR ISPAAM/RETE APPIA

LIFE ShepForBio 3rd International Conference “Pastoral Landscapes”
23 September 2026

LIFE SHEP FOR BIO

The challenge

“What the hell is my farm worth from an environmental perspective?”

How does society recognize this role, especially in the context of climate change?



Regione Toscana

INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

The challenge

“Is it possible to develop a method suitable for extensive livestock farming systems?

The research trajectory CNR followed involved several sequential and consecutive steps:

2012 – CNR CISIA Project – Initial impact assessments based on LCA.

2016 – LIFE Sheeptoship Project – Environmental Action Plan for dairy sheep farming in Sardinia (-20% emissions).

2021 – PRIMA PASTINNOVA Project – Characterization of the environmental impact of different Mediterranean pastoral farming systems by estimating the emission intensity of small ruminant production systems, based on a simplified LCA approach.

The challenge

“Is it possible to develop a method suitable for extensive livestock farming systems?”

Key takeaways:

CNR CISIA Project – Selecting appropriate functional units for impact assessment is crucial.

LIFE Sheeptoship Project – The Environmental Action Plan for dairy sheep farming in Sardinia requires significant policy investment to recognize and support the ecological transition of farms and their capacity to deliver ecosystem services.

PRIMA PASTINNOVA Project – A wide variability in the emission intensities of pastoral systems across Mediterranean countries indicates diverse environmental impacts. We have laid the groundwork for further investigation into the key environmental challenges facing Mediterranean pastoral systems.

The challenge

"Is it possible to develop a method suitable for extensive livestock farming systems?"



Odessa centre | Pastoralism Research, Policy and Practice

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Check for updates

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Are impact assessment approaches effective for addressing researches on GHG emissions from pastoral systems?

Antonello Franca [1]*, Pasquale Arca [1], Giovanni Maria Altana [1], Mohamed Habibou Assouma [2,3], Pablo Manzano [4,5], Enrico Vagnoni [6], Jonathan Vayssières [2,7], Mathieu Vigne [2,8], Gongbu Zeren [9] and Ian Scoones [10]

SUREPASTOR

PRIMA PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

Co-funded by the European Union

LIFE SHEP FOR BIO

Consiglio Nazionale delle Ricerche

Management Strategies to Enable Sustainable Resilient Agropastoralism

Technologies, sustainability, and emerging perspectives for the sheep supply chain



EUROMONTANA

D.R.E.AM. ITALIA

Regione Toscana

RETE APPIA

INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

Management Strategies for Sustainable and Resilient Mediterranean Agropastoralism

The Consortium: Led by the **University of Florence (DAGRI)**, connecting research centers (like CNR-IBE and ISPAAM in Italy) and **10 pilot farms** across Italy, Morocco, Tunisia, and Egypt.

- **The Challenge:** Mediterranean traditional farming is highly threatened by climate change, droughts, and land degradation.
- **The Solution:** Merging **pastoral practices** with **Precision Livestock Farming (PLF)** digital technologies to boost farm resilience.

SUREPASTOR Platform:

A digital hub to share data, rotational grazing models, and socio-economic tools.

The idea

Multidisciplinary approaches to the sustainability of the sheep sector

Objective: Integrating participatory, agronomic, environmental, and social evidence for **innovation** in the Sardinian sheep sector.

Participative approach

- Engagement with supply chain stakeholders
- Stakeholder perceptions of innovation
- Opportunities, challenges, and priorities

Which innovations?

Environmental LCA

- Direct data collection
- Input, productions and emissions
- Impact assessment

Social Life Cycle Assessment

- Methodological framework
- Stakeholder engagement
- Priority social issues

Focus group

Participatory analysis of the perception of innovations

19 stakeholders

- Livestock farmers, regional agencies, and independent professionals
- Trade association representatives and local administrators
- Industry representatives and local officials

Strenghts

Elements perceived as favorable by local stakeholders

Weaknesses

Internal challenges that may limit the adoption of innovations

Opportunities

External conditions that can support change

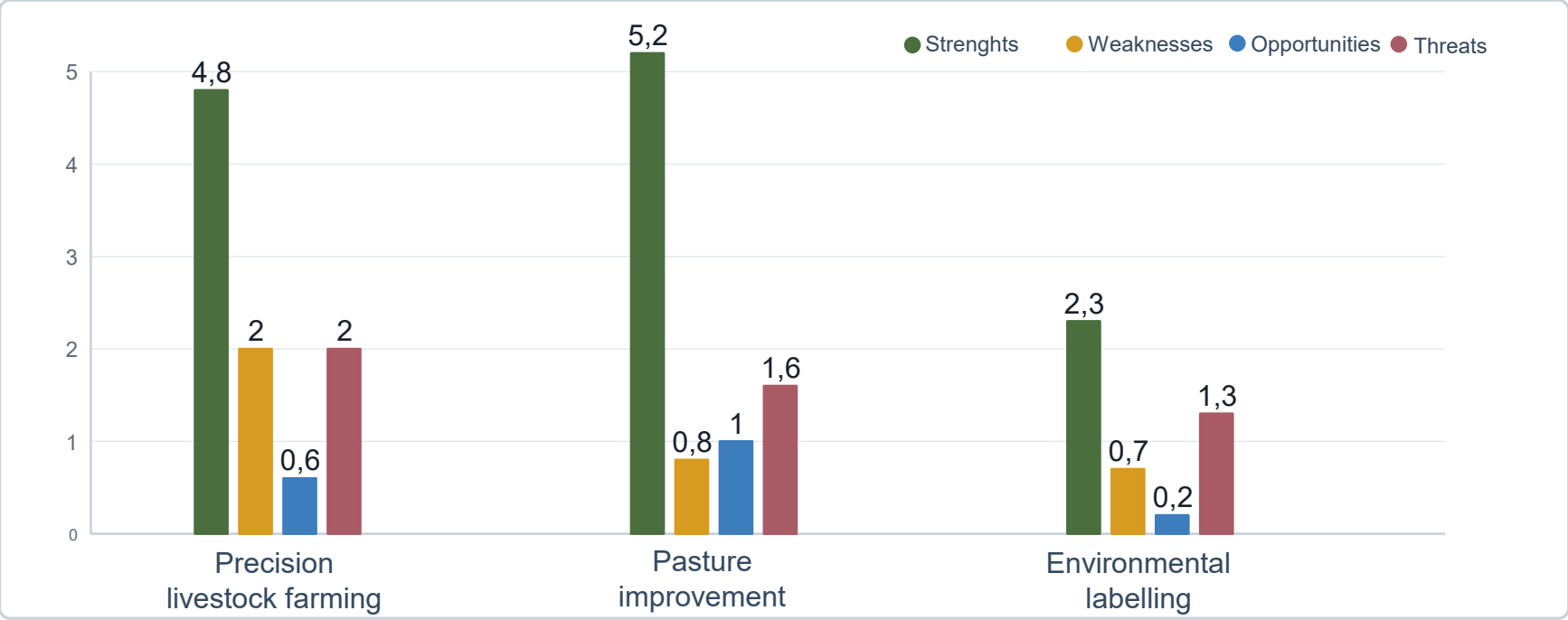
Threats

External factors that may hinder implementation

The focus group serves to link technical innovations with the real expectations, constraints, and priorities of the supply chain.

Focus group

Average assessment of internal and external factors



What we've done

Multidisciplinary approaches to the sustainability of the sheep sector

Participative approach

- Engagement with supply chain stakeholders
- Stakeholder perceptions of innovation
- Opportunities, challenges, and priorities

Pasture improvement

- Site-specific strategies
- Legume-based mixtures
- Agronomic monitoring

Environmental LCA

- Direct data collection
- Input, productions and emissions
- Impact assessment

Social Life Cycle Assessment

- Methodological framework
- Stakeholder engagement
- Priority social issues

Objective: Integrating participatory, agronomic, environmental, and social evidence for innovation in the Sardinian sheep sector.

Pasture improvement

Two agronomic approaches adapted to farm conditions

Strategy A – from forage crop to permanent grassland

1. Seedbed preparation
2. Mixture with 75–80% legumes and 20–25% grasses
3. Seed coverage and/or soil rolling
4. Rotational grazing and self-reseeding management

Strategy B – Improvement of natural pasture

1. Mowing or mulching of weeds
2. Minimal tillage or direct overseeding
3. Site-specific mixtures selected in Sardinia
4. Appropriate stocking rate and seasonal weed control







What we've done

Monitoring of improved pastures









Soil
Physicochemical properties, organic matter, carbon, nitrogen, and water infiltration

Floristic composition
Qualitative and quantitative assessment of plant communities

Biomass
Biomass, fodder production and pasture use

Grazing
Rotations, grazing duration, and the role of tree cover

What we've seen

Pasture improvement: preliminary evidence and conditions for success

Scenario A
From forage crop to permanent pasture

-36 – 40%	Reduction in production costs
+23%	Forage yield (offset over time)
–0,6 h/ha	Reduction in labour requirement

Scenario B
From natural to improved pasture

-10%	Production costs
+183%	Forage yield
+2,42 t/ha	Additional biomass/year





Conditions for success

- Site assessment and site-specific mixtures
- Rotational grazing at an appropriate stocking rate
- Management to ensure self-reseeding
- Targeted weed control

Limitations and barriers

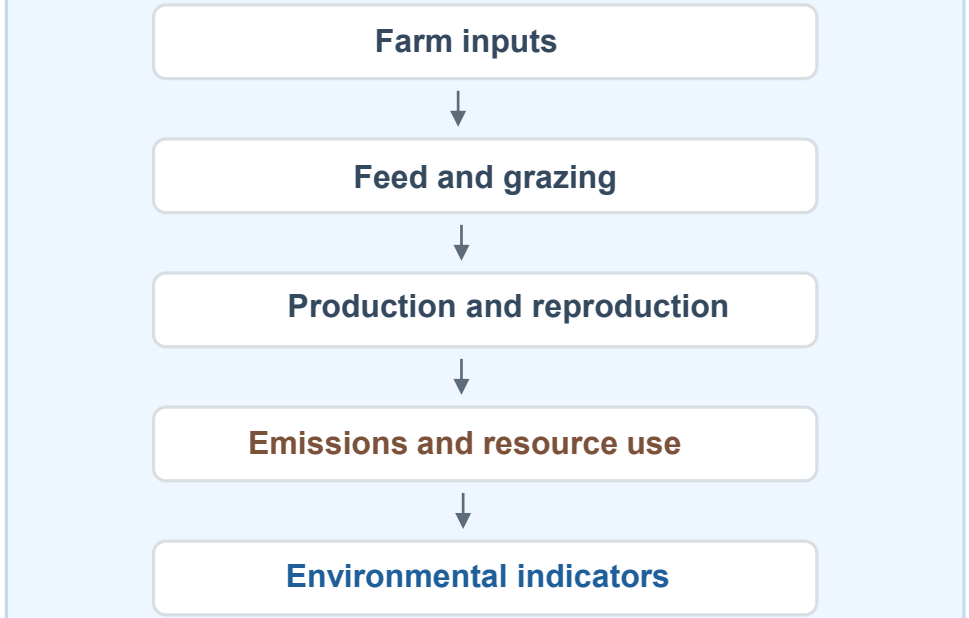
- Seed cost
- Availability of suitable mixtures
- Need for technical support
- Critical first year

Environmental Life Cycle Assessment of pilot farms

Life cycle inventory, environmental impacts, and the role of pasture management

Objectives

- Estimation of the environmental footprint
- Identification of environmental hotspots
- Assess the role of pasture management in environmental performance
- Support comparison between current practices and improvement options



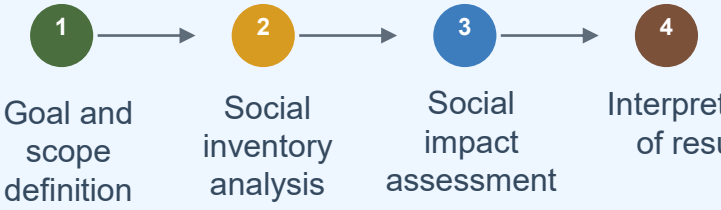
What remains to be done?

Social Life Cycle Assessment (S-LCA)

Why a context-specific S-LCA?

- Pastoral sheep systems are multifunctional
- Social effects extend across farms, supply chains, communities, and institutions
- Social issues vary according to the territorial context
- A participatory, context-specific assessment is required

Phases of S-LCA



Social topics considered

Work

Health and safety; wages and social protection; work-life balance; equal opportunities; role of women

Community and territory

Community engagement; employment and development; access to resources and services; living conditions

Future of the sector

Generational renewal; skills development

Supply chain, products, and responsibility

Animal welfare; safety and quality; communication and transparency; fair relationships; administrative burden









Thank you for your attention

Pastoralism & Climate Change

André Mota (Viseu Dão Lafões Intermunicipal Community & LIFE Landscape Fire, Portugal)

The use of Fire and Grazing @Viseu Dão Lafões

LIFE Landscape Fire

André Mota – Intermunicipal Community of Viseu Dão Lafões

LIFE ShepForBio 3rd International Conference “Pastoral Landscapes”
23 September 2026

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VISEU DÃO LAFÕES

The Region

Viseu Dão Lafões





NUT II – Center
NUT III – Viseu Dão Lafões
14 municipalities
259.590 inhabitants
3.238 Km2

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VISEU DÃO LAFÕES

The Region

Viseu Dão Lafões

Cultural and Natural heritage











LIFE LANDSCAPE FIRE PROJECT

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VISEU DÃO LAFÕES

The Region

Viseu Dão Lafões

Extrem events









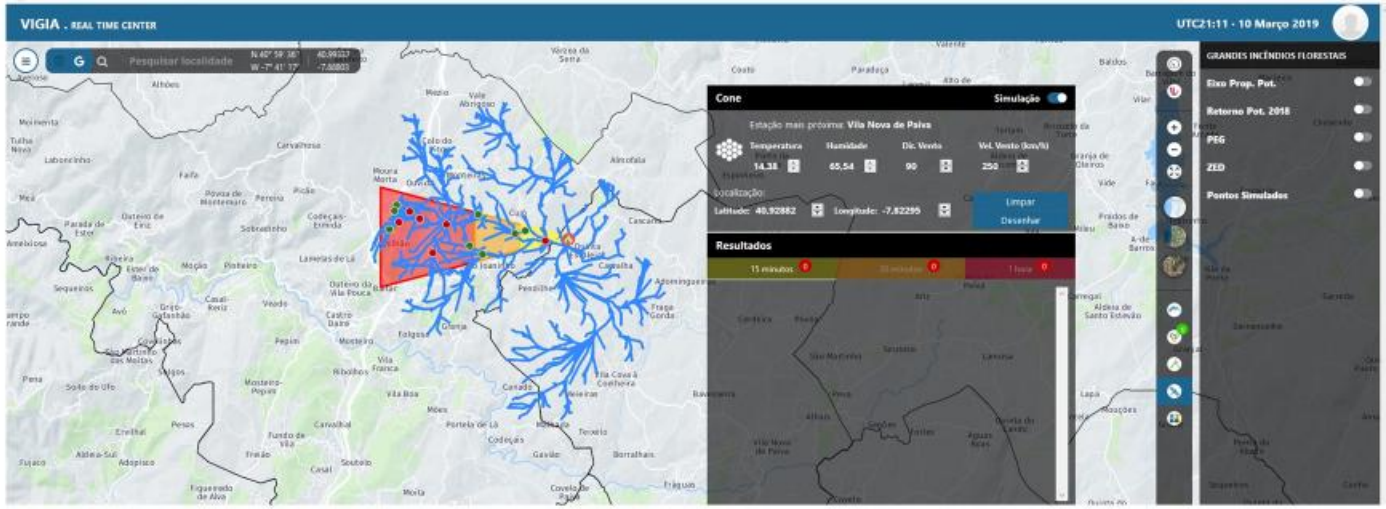
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Before LIFE Landscape Fire

- Region heavily affected by severe wildfires;
- Study of all wildfires that ignited in the region between 1990 and 2017:

Axes of fire spread | Strategic management points | Recurrence period



- Need to define alternative ways of managing fuels in the region:

Hand tools - 1,000 €/ha | Controlled fire - approx. 180 €/ha | Grazing - 60 to 80 €/ha.

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The Project

LIFE LANDSCAPE FIRE – New methodologies for forest fire prevention

COMUNIDADE INTERMUNICIPAL
VISEU DÃO LAFÕES

Partner organisations

Instituto Politécnico de Viseu

Mancomunidad Sierra de San Pedro

Junta de Extremadura

Universidad de Extremadura

Project objective

Implementation of new methodologies for the prevention of forest fires through the use of prescribed burning and grazing for fuel management.

LIFE LANDSCAPE FIRE PROJECT

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Implemented actions

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Implemented actions

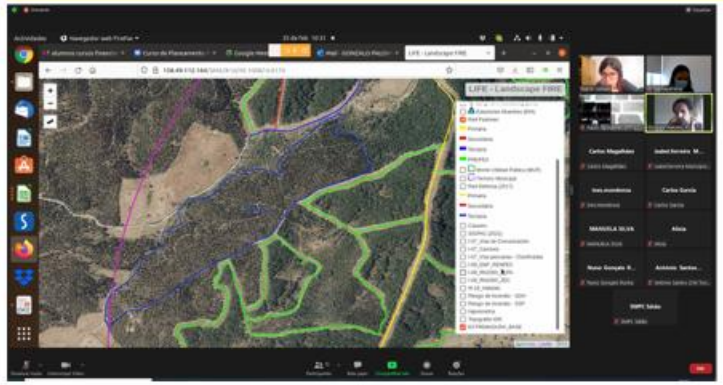
Using of grazing for wildfires prevention

- Training in Techniques for Planning Grazing Activities: 15 technicians





- Training in Pasture Management:15 technicians





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Implemented actions

Using of grazing for wildfires prevention

Instalation of Drinking facilities
- **São Macário (São Pedro do Sul)**
- **Aguiar da Beira**











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Implemented actions

Training of professionals, volunteers and municipal technicians

Prescribed fire training

- **Prescribed Fire Technitians: 25**
- **Burn operators: 75**
- **Fire analysts and use of simulation tools: 30**

Forestry Technical Offices
Municipal Civil Protection Services
Municipal Firemen Sappers, Volunteer Firemen
Forest Sappers
Emergency Protection and Rescue Unit (UEPS) of the National Republican Guard
Institute for Nature Conservation and Forests (ICNF)
National Emergency and Civil Protection Authority (ANEPC)







LIFE LANDSCAPE FIRE PROJECT

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Implemented actions

Execution of the demonstration actions





LANDSCAPE FIRE 2021 — 2ND INTERNATIONAL SEMINAR

Implemented actions

Execution of the demonstration actions





LANDSCAPE FIRE 2021 — 2ND INTERNATIONAL SEMINAR

Implemented actions

Execution of the demonstration actions







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Implemented actions

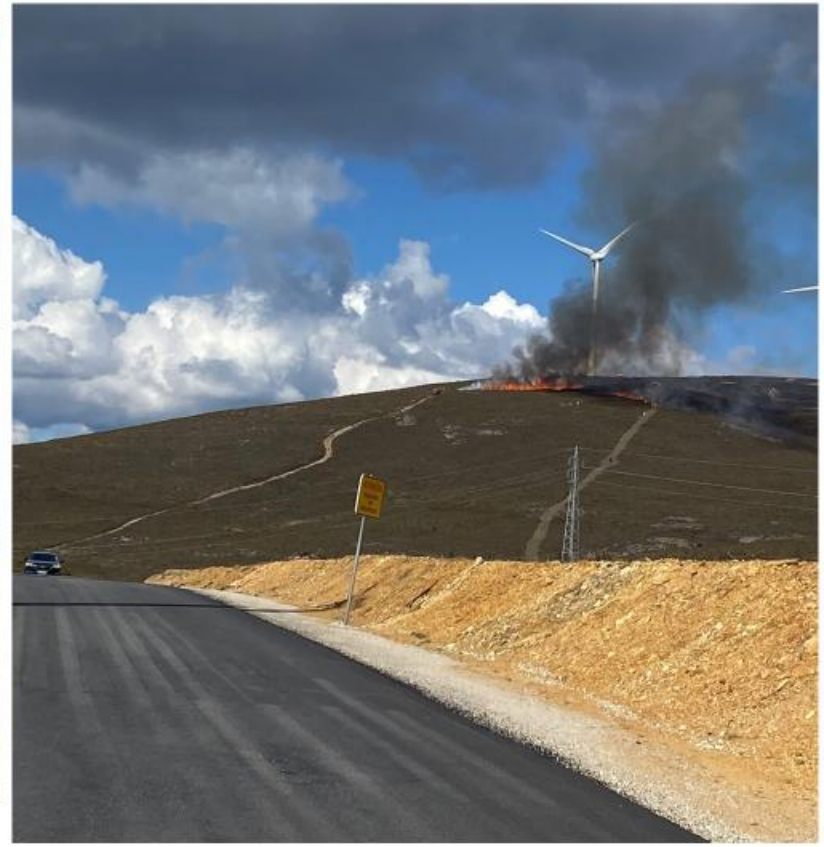
Execution of the demonstration actions

Wildfire response | august and september 2024

Póvoa das Leiras/Coelheira | São Pedro Sul

Controlled Fire – January and February 2023





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Implemented actions

Execution of the demonstration actions

Wildfire response | august and september 2024

Póvoa das Leiras/Coelheira | São Pedro Sul

Wildfire – 17/08/2024





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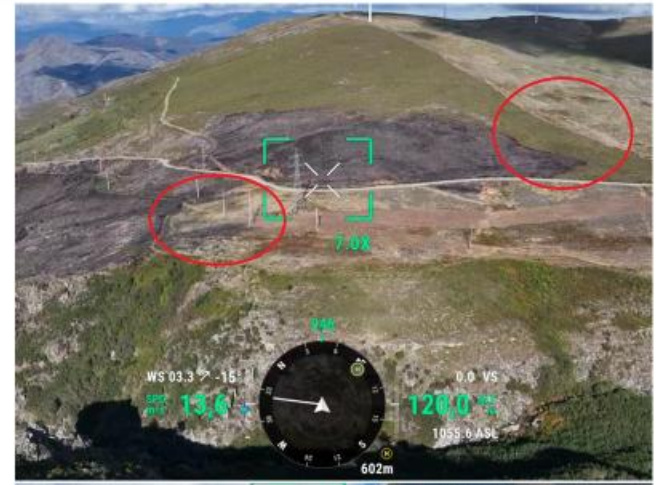
Implemented actions

Execution of the demonstration actions

Wildfire response | august and september 2024

Póvoa das Leiras/Coelheira | São Pedro Sul







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Implemented actions

Execution of the demonstration actions

Wildfire response | august and september 2024

São Macário| São Pedro Sul



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JUNTA DE EXTREMADURA

Implemented actions

Execution of the demonstration actions

Virtual fencing





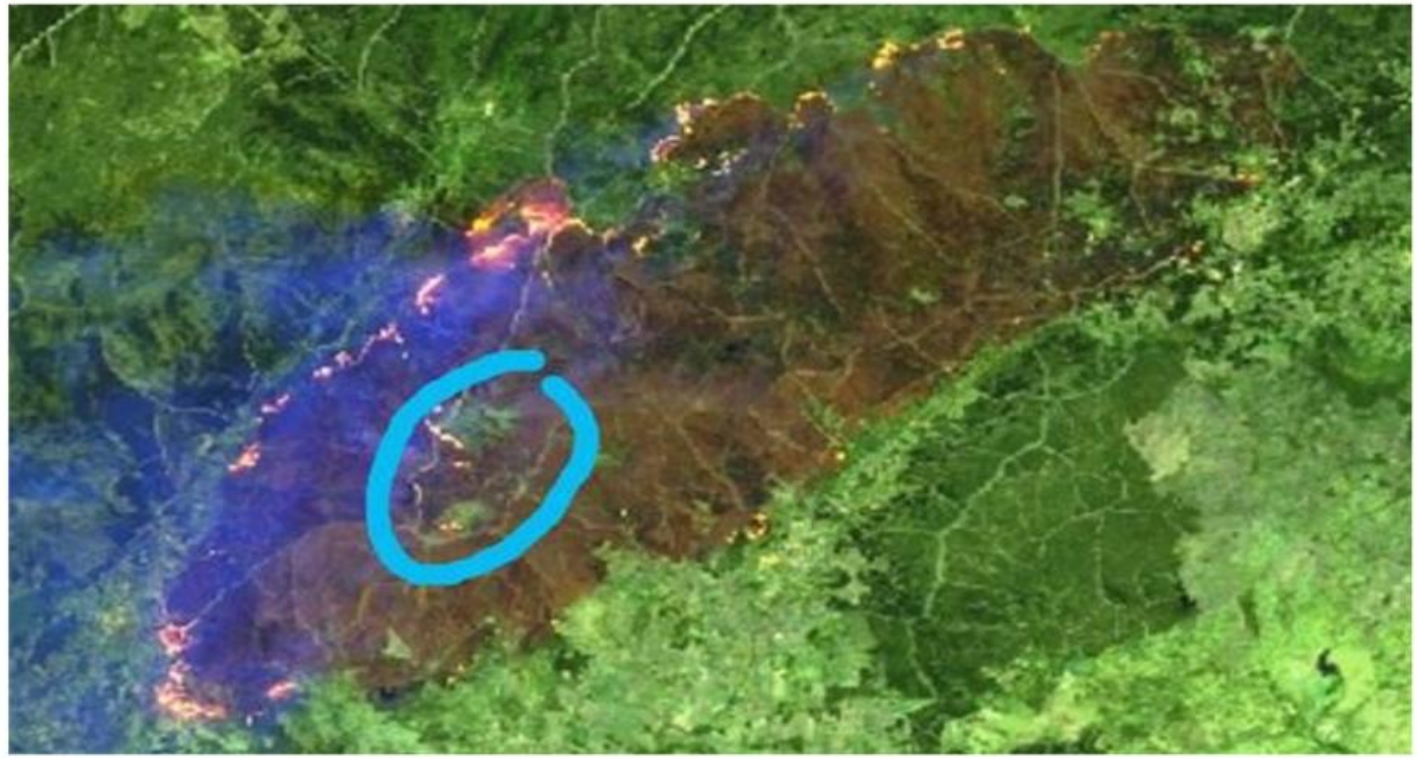
An environmental payment depending between 102 and 126 €/ha

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Implemented actions

Execution of the demonstration actions

The effect of a Strategic Management Point during the wildfire of Pinofranqueado, Las Hurdes, May 2023



Strategic Management Point: 38,11ha (58% saved).
Habitat restauration (2021): 6,4 ha (43% saved).

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LIFE LANDSCAPE FIRE PROJECT

Implemented actions

Difficulties faced:

- ‘Pandemic’-related difficulties;
- Social and cultural challenges;
- Institutional difficulties;
- Weather-related difficulties;
- Legal difficulties.

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Socio-economic impact and conclusions of the Project

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Socio-economic impact of the Project

Livestock farmers/farms surveyed:

- They gave the project an overall rating of 7.8/10;
- 75% are willing to participate in similar initiatives;
- Improved quality and quantity of milk production;
- 'Contributes positively to forest fire management'





LANDSCAPE FIRE 2021 — 2ND INTERNATIONAL SEMINAR

Socio-economic impact of the Project



Production of knowledge in the following areas:

- Environmental service provision;
- Animal behaviour and grazing preferences in burnt areas;
- Regeneration of vegetation and soil after prescribed burning;
- Effects of grazing and fire on soil quality;

LIFE LANDSCAPE FIRE PROJECT

LANDSCAPE FIRE

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Project Conclusions

The method used in the LIFE Landscape Fire Project, by combining prescribed fire and extensive grazing at strategic management points, is more efficient and cheaper, while at the same time reduces the area of intervention

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After
LIFE Landscape Fire

After LIFE Landscape Fire



Name Surname

email@email.com

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After
LIFE Landscape Fire





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LANDSCAPE FIRE

OBRIGADO!

LIFE
LANDSCAPE FIRE
PROJECT



Any questions or comments?

12:30 – 13:30
Lunch break

Pastoralism & Biodiversity

Opening keynote by Zsolt Molnár & Marianna Biró (HUN-REN Centre for Ecological Research, Hungary)

Pastoralism (traditional herded grazing) and biodiversity



Molnár, Zsolt
Biró, Marianna
HUN-REN Centre for Ecological Research, Hungary

Structure of the talk

- Learning ecology from herders (Zsolt)
- Loss of ecosystems that need traditional management (Mariann)
- Indirect drivers of land-use change (Mariann)
- Diverse values, need for dialogues between knowledge systems (Zsolt)
- Case study I.: grazing on species-rich meadows (Zsolt)
- Case study II.: grazing in wetlands (Mariann)
- Some points for discussion (Zsolt)

Herders are invisible for many people…



The shepherd *Sándor Árvai* ’alone’ at a festival…

We are learning ecology from herders



”This is the *goose tippan* and this is the *normal tippan*.”



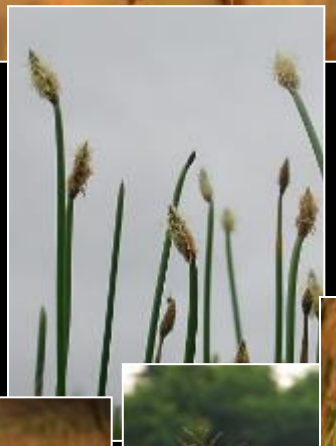
ca. 29 grass/sedge-like taxa are distinguished by herders























„A good herder tastes all plants.”
„The herder’s duty is to think!”



Erdenetcogt
Jigjid lama
Arbulag, Mongolia

„The vegetation is saturated!”




”It does matter who leans on the stick.”
Photo: Ábel Molnár


”We have to feel with our animals!”
Photo: Ábel Molnár

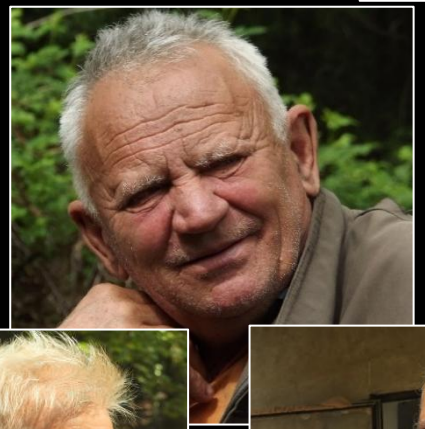
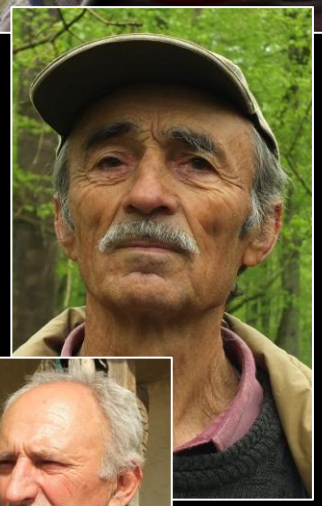
”They do not eat with their legs!”
”Look how nicely they are spread out!”



”Pigs know the forest six times better than me, though I also know all individual trees!”
”Well, it’s a prison - a prisoner’s life in freedom.”

Ajvazović, Milutin
Stojaković, Jovica
Mandušić, Vlada
Milanović, Lazar (Joza)
Purić, Zdravko
Runjanin, Borislav
Vukić, Živan
Morovic, Visnicevo







”My father scolded me: yesterday the dog herded the sheep not you!”
(the sheep was scarced, gave less milk)



Márki, Piroska
Karcag



Conscious restoration of an abandoned meadow (by mulching *Phragmites*, *Typha* and *Carex* spp. followed by grazing and planned deliberate 'seed translocation')







Regular noon resting and bringing seeds from a species-rich patch (learnt from father)

Invasive alien plants

***Cenchrus*: ”when it doesn’t have these spines yet and only has these leaves, it makes the sheep produce a lot of milk”**

Becespergel, Richárd Kunbábony







An unexpected discovery:
Herders modify livestock behaviour with bells based on a rich understanding of animals, pastures, sounds etc.
(needs a highly multi- and transdisciplinary research approach)





Herders as research partners and co-authors

Barta, Sándor (Kunmadaras)



Máté, János (Kunpeszér)



Sáfián, László (Hajdúsámson)



Molnár Ábel Péter

What we know: livestock graze on plants



Cattle are choosy: *Molinia* is grazed, *Genista* is avoided

Molnár Zs., Kelemen A., Kun R., Máté J., Sáfián, L., Biró, M. Máté A., Vadász Cs.(2020) *J. Applied Ecology*

Easier to ban grazing
Easier to let it disappear
than going into dialogues

Positive effects of livestock grazing on biodiversity (examples)

Historically: species-rich and heterogenous pastoral cultural landscapes

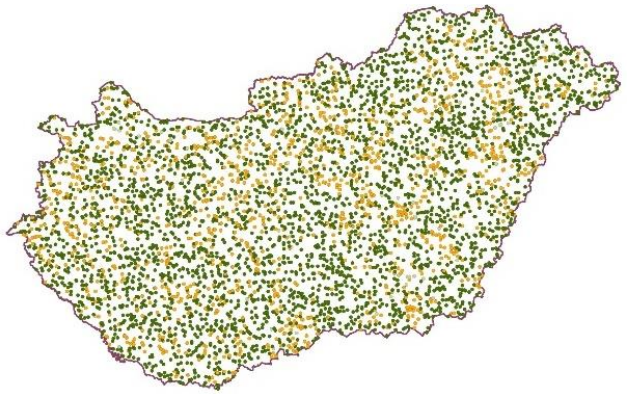
At present: maintenance of species-rich pastures & landscape heterogeneity

Negative effects of livestock grazing on biodiversity (examples)

Historically: turning oldgrowth forests to grasslands, homogenizing vegetation

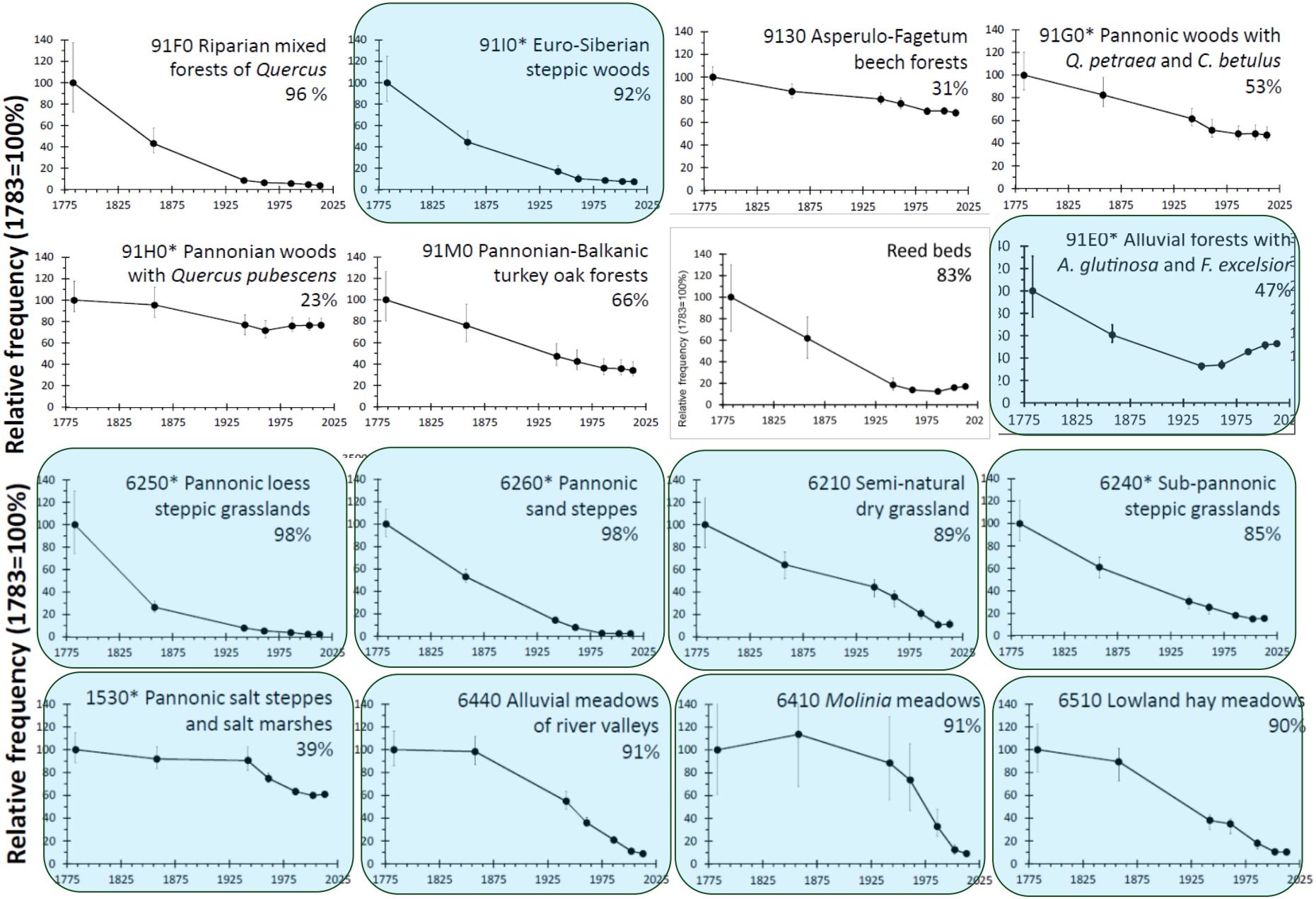
At present: overgrazing grasslands and forests, loss of rare sensitive species

Long-term trends of habitat change since the 18th century (1783-2013)



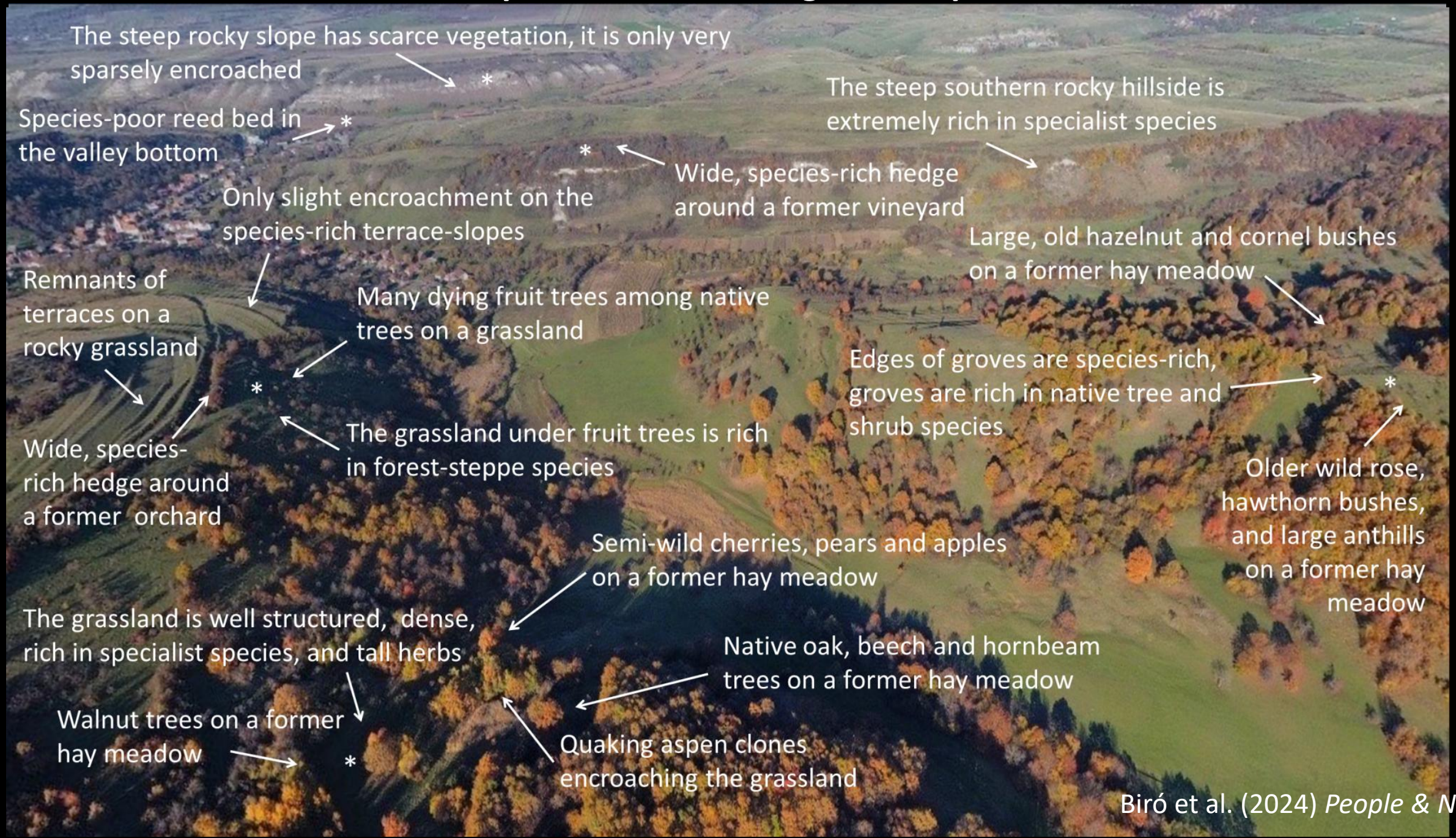
- 5000 sample points
- 7 time periods
- 7 habitats lost more than 90% of their area since 1783

- ’Halada’ habitats (Halada et al. 2011): need traditional management



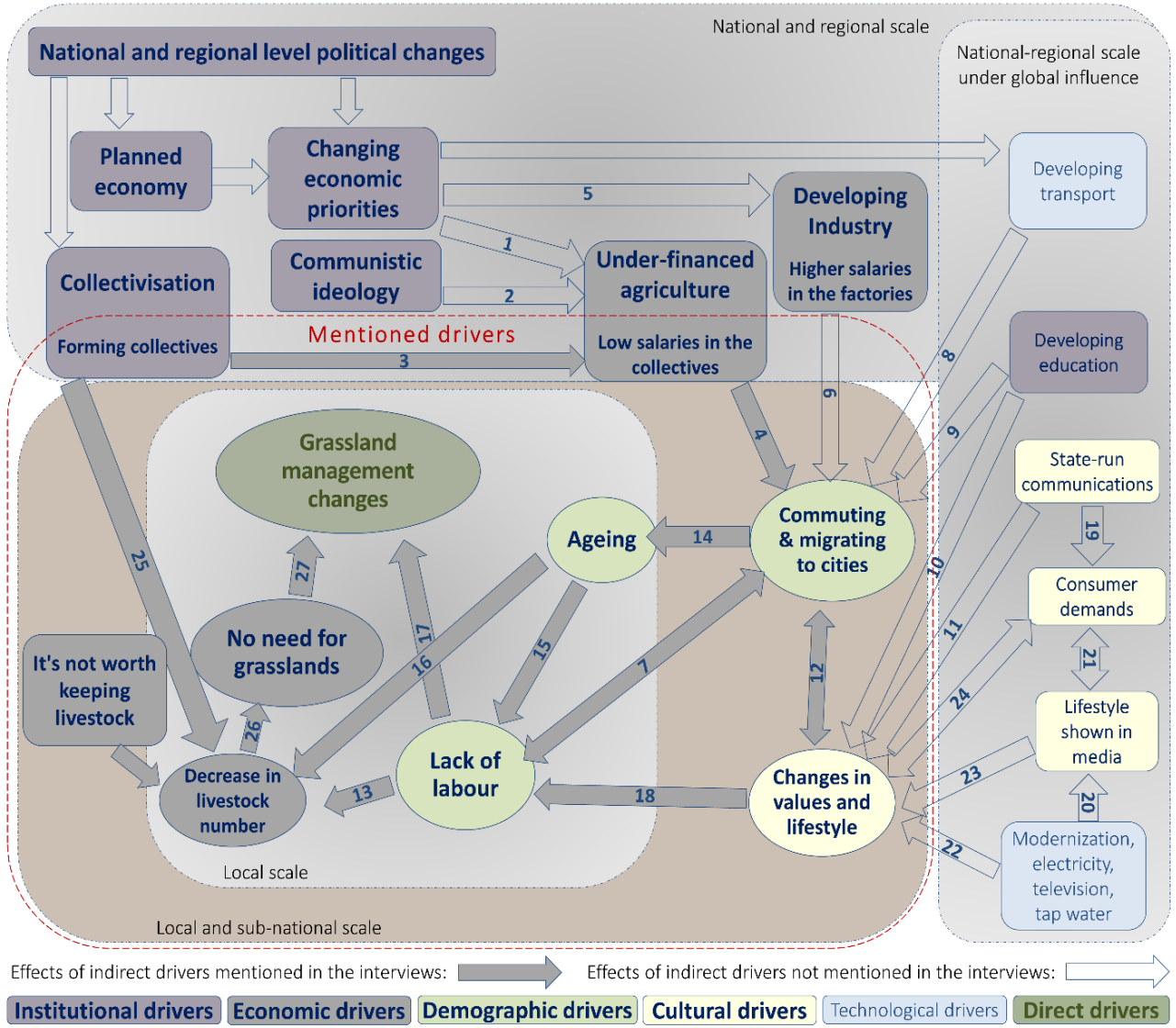
Biró, M., Bölöni, J. and Molnár, Zs. (2018): *Conservation Biology*

Our landscapes are full with legacies of past land-use

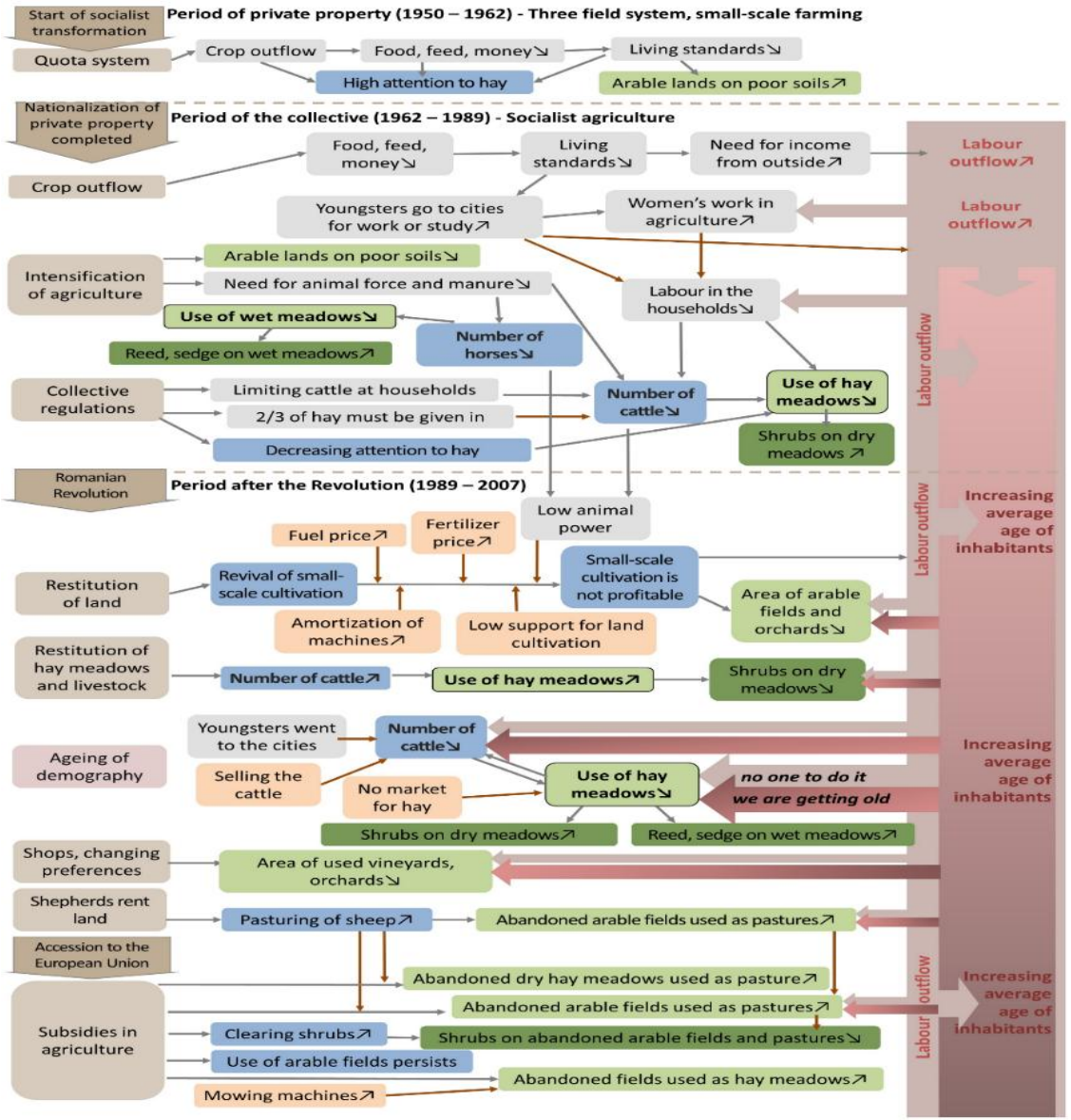


Biró et al. (2024) *People & Nature*

Indirect drivers of vegetation and land-use change are often complex and invisible

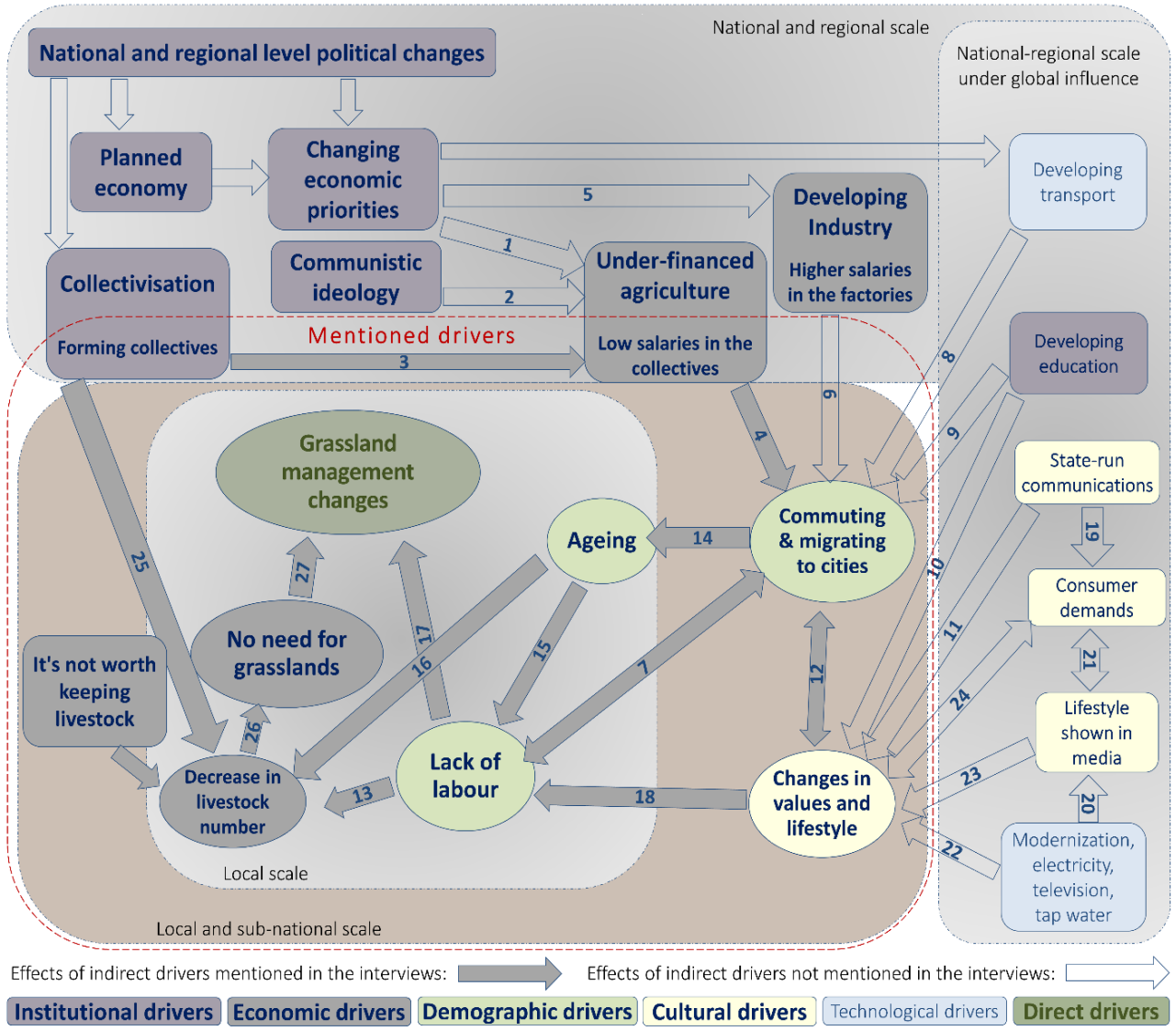


Biró, M... & Molnár, Z. (2026). .*Journal of Ethnobiology and Ethnomedicine*, *22*(1), 18.



Biró et al. (2024) *People & Nature*

Indirect drivers of vegetation and land-use change are often complex and invisible





State-organized public bus transport, mass commuting, decreasing village labour



Change in values and demands



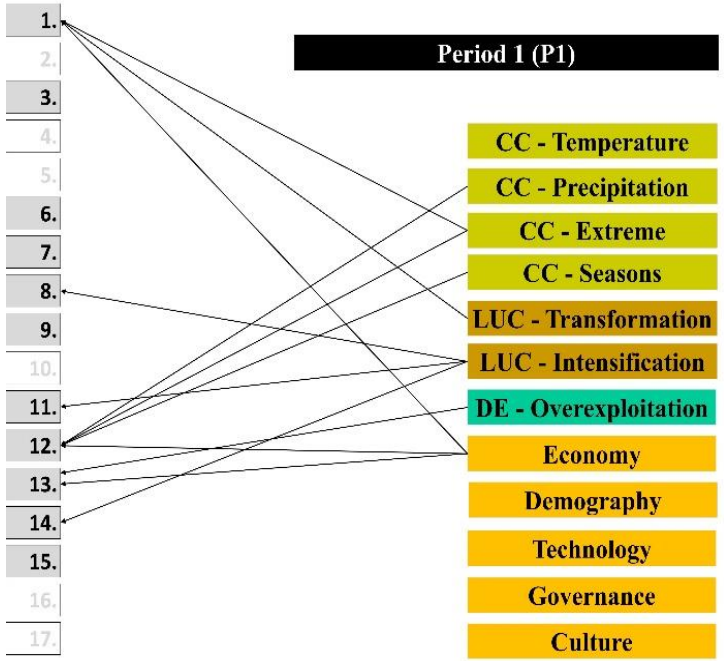
Modernisation, the rise of new demands required more money

Biró, M... & Molnár, Z. (2026). .*Journal of Ethnobiology and Ethnomedicine*, *22*(1), 18.

Ever changing and often inappropriate regulations made land-use decisions more complex and weakened local adaptation capacity

Compromises and trade-offs (and their drivers) around **one single decision** in traditional hay meadow management: **on which day should I cut my hay?**

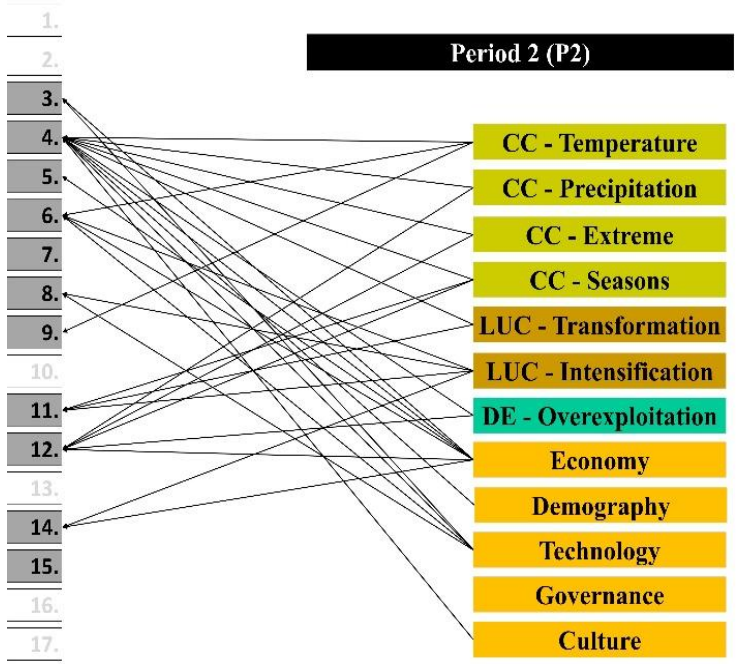
1950-70s



Trade-offs, compromises

Drivers

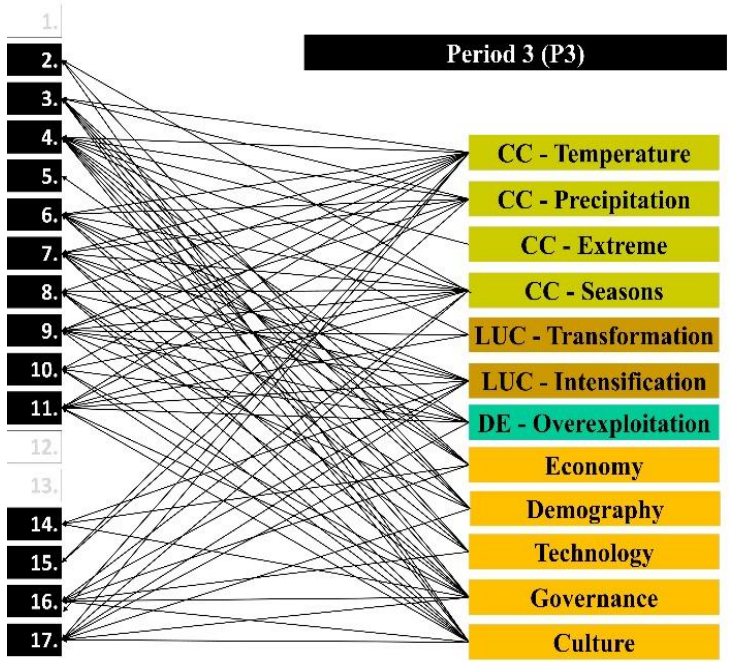
Around 2000



Trade-offs, compromises

Drivers

Around 2020



Trade-offs, compromises

Drivers

Babai D., Jánó B., Molnár Zs. 2021. *Ecology and Society*

Meeting of values and knowledge systems

Multiple meanings of appropriate grazing, overgrazing, undergrazing?

Overgrazing is the process in which grazing animals consume vegetation faster than it can naturally regenerate.

Pastoralists, conservationists, and ecologists **can easily disagree on what constitutes overgrazing (or undergrazing)** because they assess healthy grasslands from different perspectives (e.g. species diversity, rare sensitive species vs. livestock needs, palatable species).

A whole-day teaching course by a herder in 2016 at the Academy of Sciences for conservationists and ecologists (incl. professors and

”It was good to get a chance to talk about ourselves for outsiders, but it was strange to share my experiences.” (László Sáfián)






Conservation rangers wouldn’t
talk to us 20 years ago.
11:03 / 17:47
CC


They criticised us without
asking us anything.


Now they stop. We agree
on about 90% of things.
1:25 / 17:47


If you want to learn more about traditional Hungarian herding
AN AFTERNOON ON THE PASTURE
WITH THE SHEPHERD
LÁSZLÓ SÁFIÁN

WASHINGTON STATE UNIVERSITY
EXTENSION

Stephen Bramwell

People on the Land

- **People** as conservation value



Two case studies

Case study I. How cattle feeds on species-rich grasslands (>150 species / hectar)







Visual observation… with the minimal disturbance to the animal (tame herded animals)



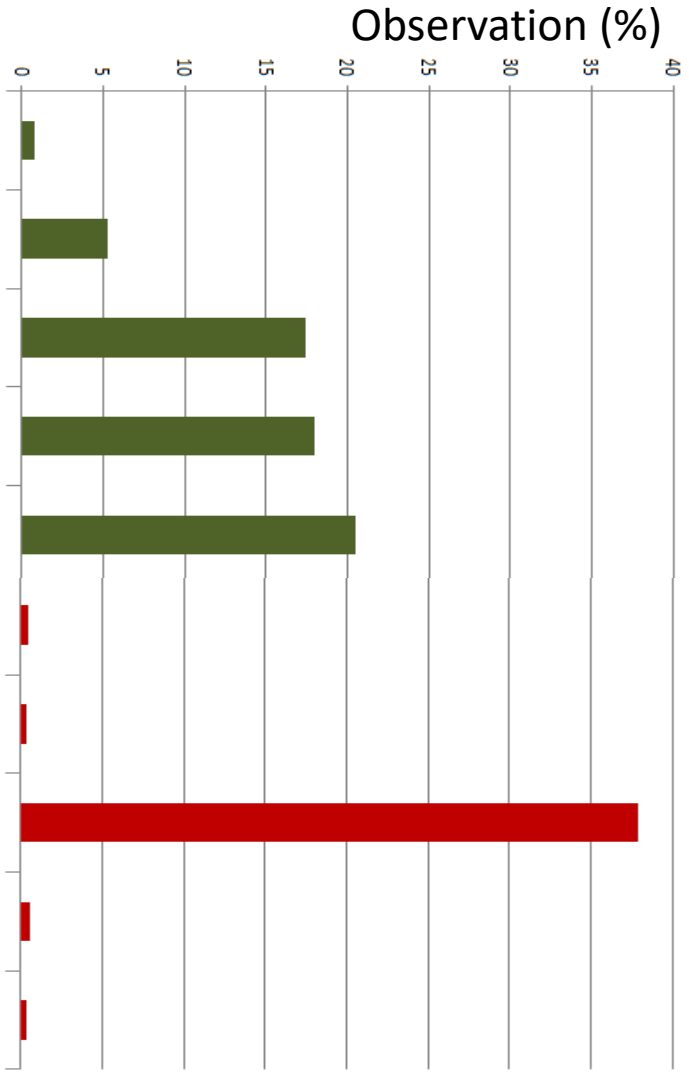
A well-grazed species-rich meadow steppe

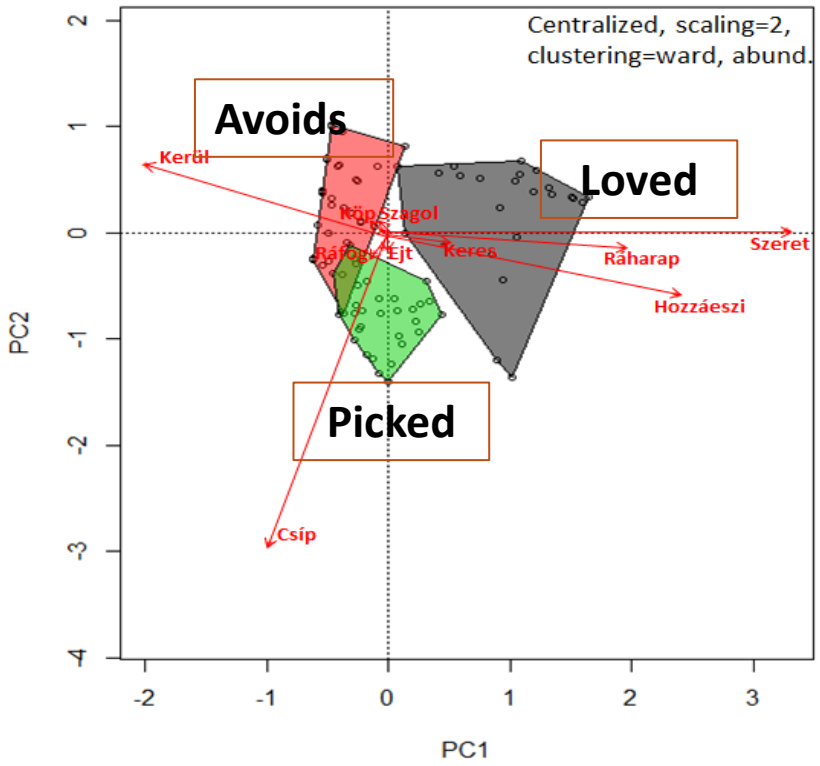


Knowledge co-production is needed to agree on targets (herder and conservationist)

Ten behavioral elements towards 117 plant species (ca. 33 000 observations)

- Steps for it
- Turns head for it
- Likes and eats...
- Eats only with something
- Only picks, tries
- Touches but releases
- Smells only
- Avoids
- Let it fall out
- Shakes out from mouth





Cattle are excellent botanists!
Herders modify grazing selectivity!

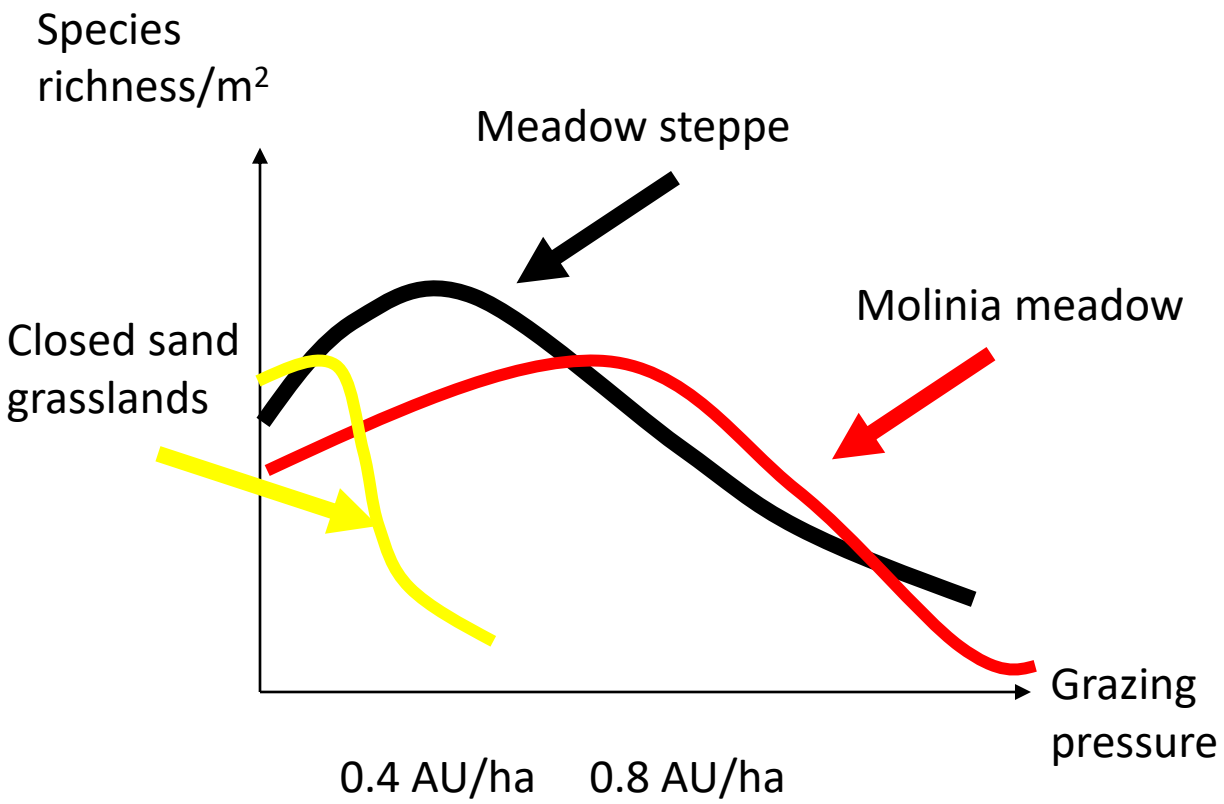
Molnár Zs. et al. 2019. *J. Applied Ecology*

Even moderate(!) grazing intensities can easily lead to the loss of sensitive species (= overgrazing from a conservation perspective)

(Vadász, Cs., conservation ranger)



Peucedanum arenarium





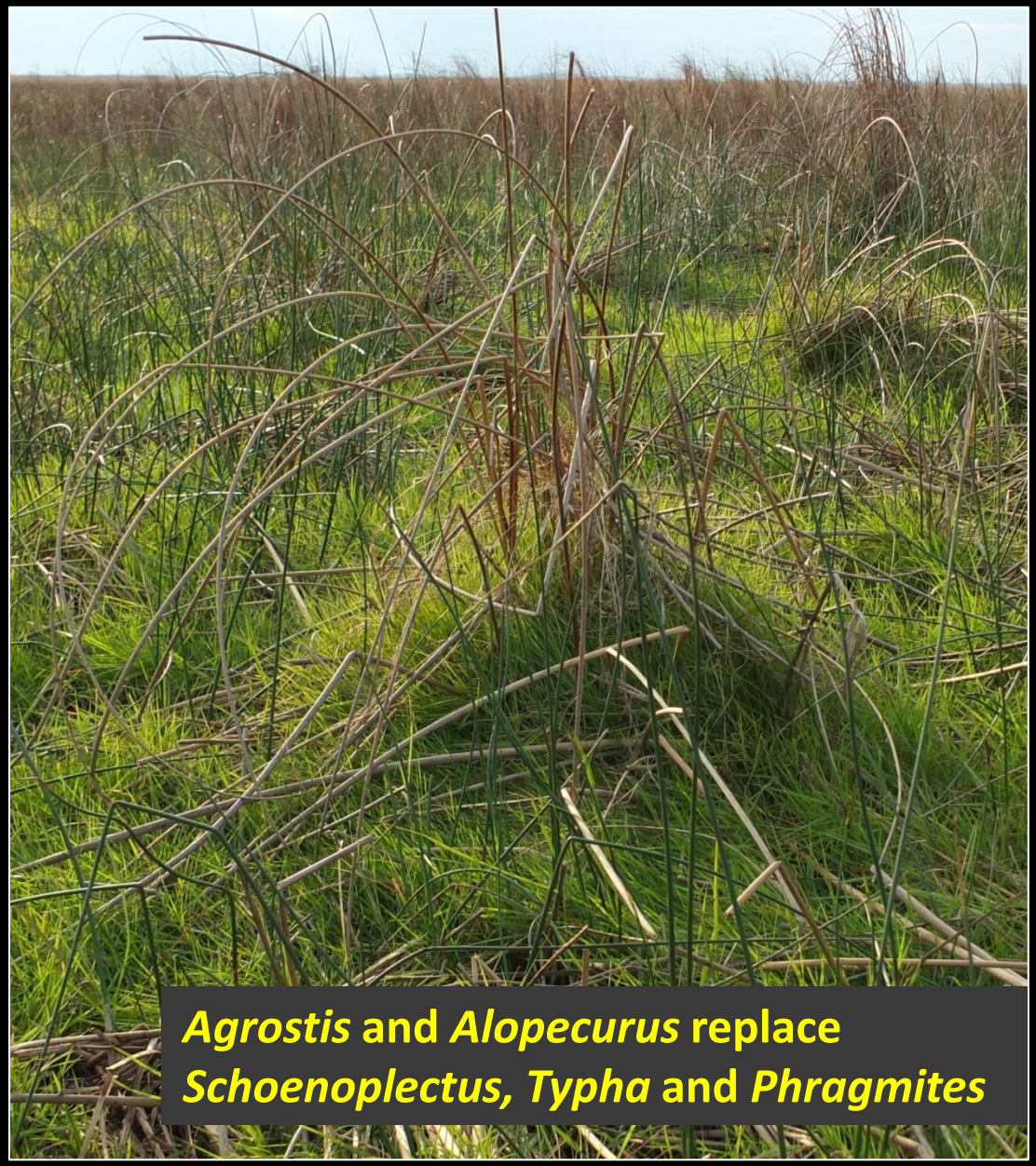
Gladiolus palustris

Vadász, C., Máté, A., Kun, R., & Vadász-Besnyői, V. (2016). Quantifying the diversifying potential of conservation management systems: An evidence-based conceptual model for managing species-rich grasslands. *Agriculture, Ecosystems & Environment*, *234*, 134-141.

Case study II. Wetland grazing: indicators of herders and conservationists

Herders manage tall marsh plants to increase grass dominance.
Conservation benefit: create open water (bird habitat) and increase diversity (mud specialist species).
A collaboration between herders and the national park.





Agrostis* and *Alopecurus* replace *Schoenoplectus, Typha* and *Phragmites

Grazing intensity gradient in 3 landscapes co-designed with herders

15 indicators of wetland habitat quality in grazed wetlands: what is good for biodiversity and what is good for grazing?



Heavily grazed

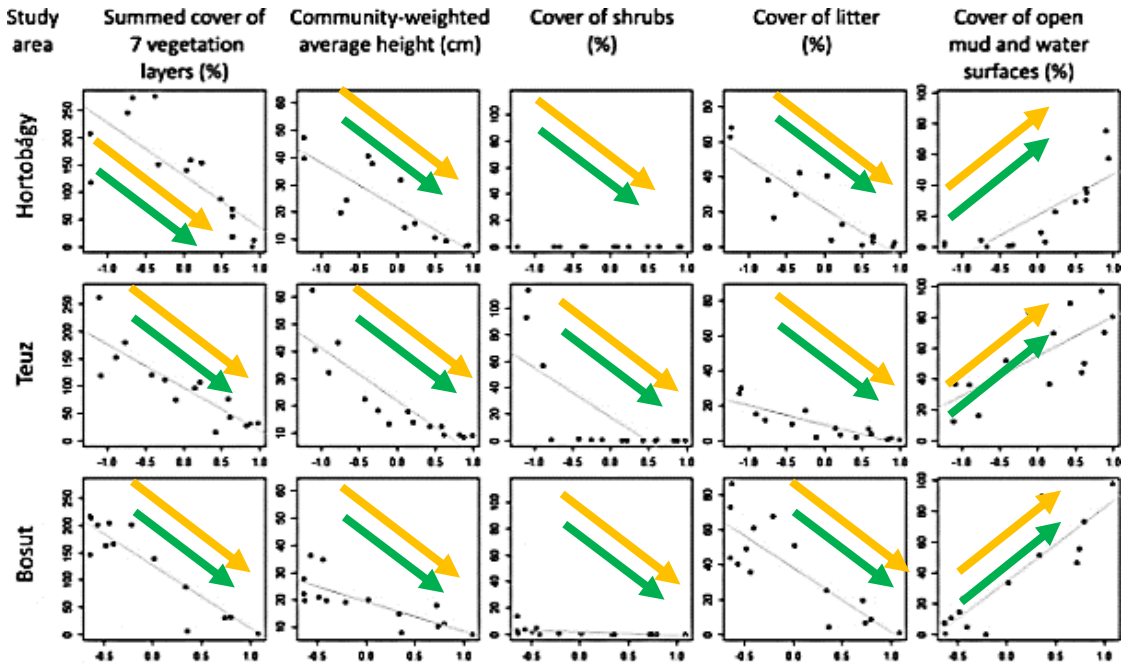


Marsilea quadrifolia
Hottonia palustris
Ludwigia palustris

Wetlands on the Sava floodplain (Bosut forest)

Photos: Viktor Ulicsni

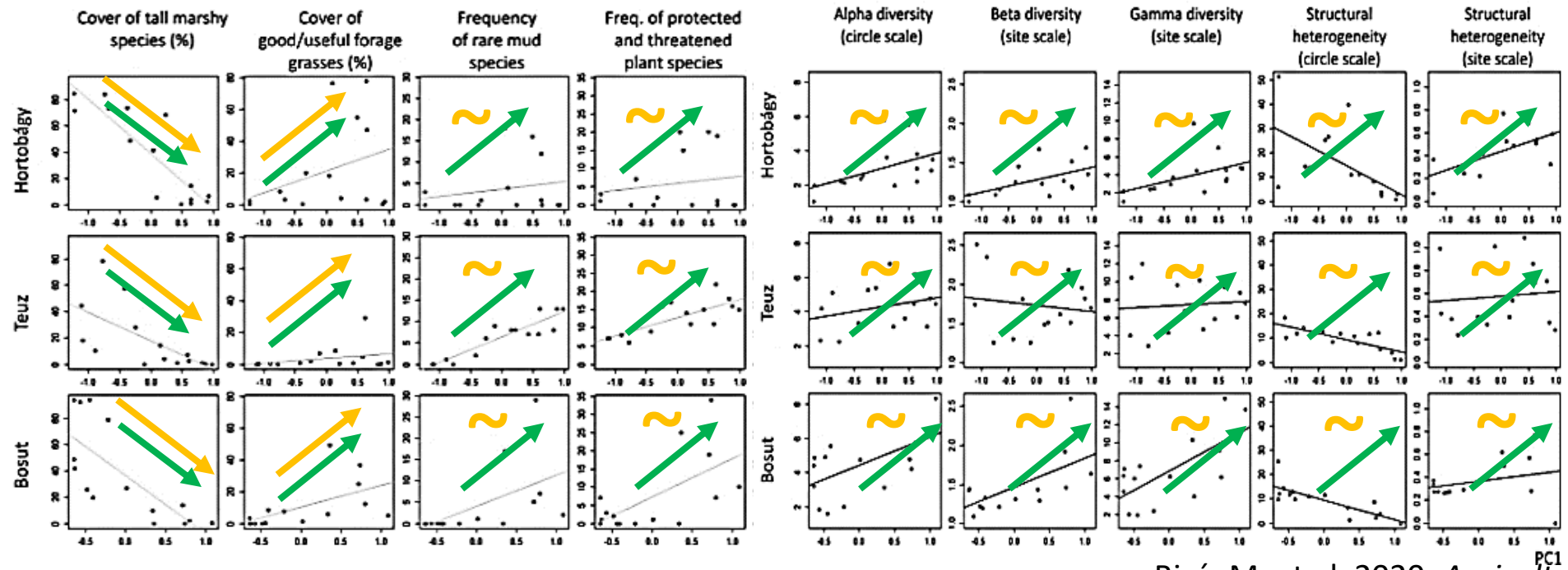
Biró, M. et al. 2020. *Agriculture, Ecosystems and Environment*



Indicators of herders and conservationists in grazed wetlands: they mostly agree!

There were no key indicators where the two groups had opposing preferred trends

Herders and conservationists co-benefit from intense(!!) grazing!



But: we are losing the people who know how to do traditional land managenent in marshes!

Biró, M. et al. 2020. *Agriculture, Ecosystems and Environment*

Take-home messages, discussion points…

- Grazing can be either beneficial or harmful to biodiversity.
- Moderate grazing intensity may still constitute overgrazing from a biodiversity perspective.
- Intense grazing can sometimes be beneficial to biodiversity.
- What constitutes appropriate grazing, overgrazing, or undergrazing is context- and value-dependent.
- Spatially and temporally heterogeneous grazing can often be an effective solution.
- There is much to learn from herders and their traditional knowledge.
- Local knowledge may be disappearing even faster than biodiversity...
- People as conservation value! (S. Bramwell)
- Without meaningful herder-conservationist-researcher dialogues, addressing inappropriate, over- and undergrazing in protected areas will remain challenging, while pressures on local livelihoods and biodiversity loss are likely to persist.


Appropriate grazing


Overgrazing

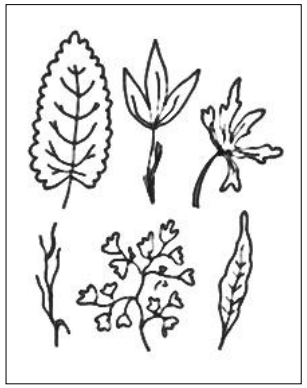

Undergrazing







Diversity of diversities on a pasture that influence management



3) Trait diversity
(palatability, taste, smell, physical and chemical defense, changing with development stage)

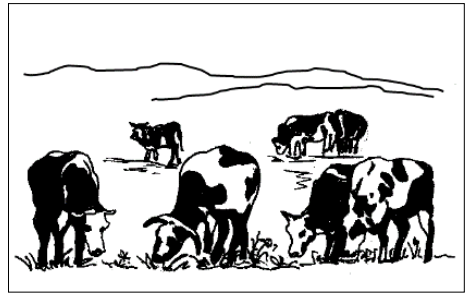


2) Species diversity
(species richness, abundance of species)

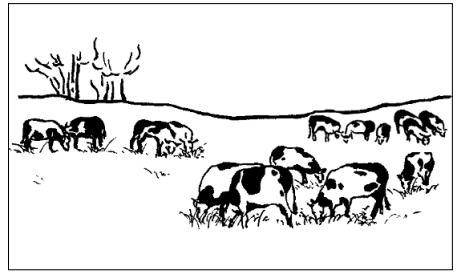


1) Habitat diversity
(beta diversity, spatio-temporal landscape-scale heterogeneity)

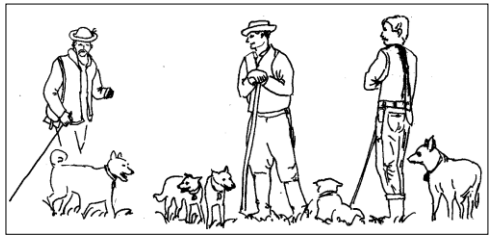
4) Cattle diversity
(age, breed, personal nutritional needs, health, personality, learning experience)



5) Herd diversity
(breed, age structure, health conditions, learning experience)



6) Herder diversity
(herding skill, personality, affection to livestock)

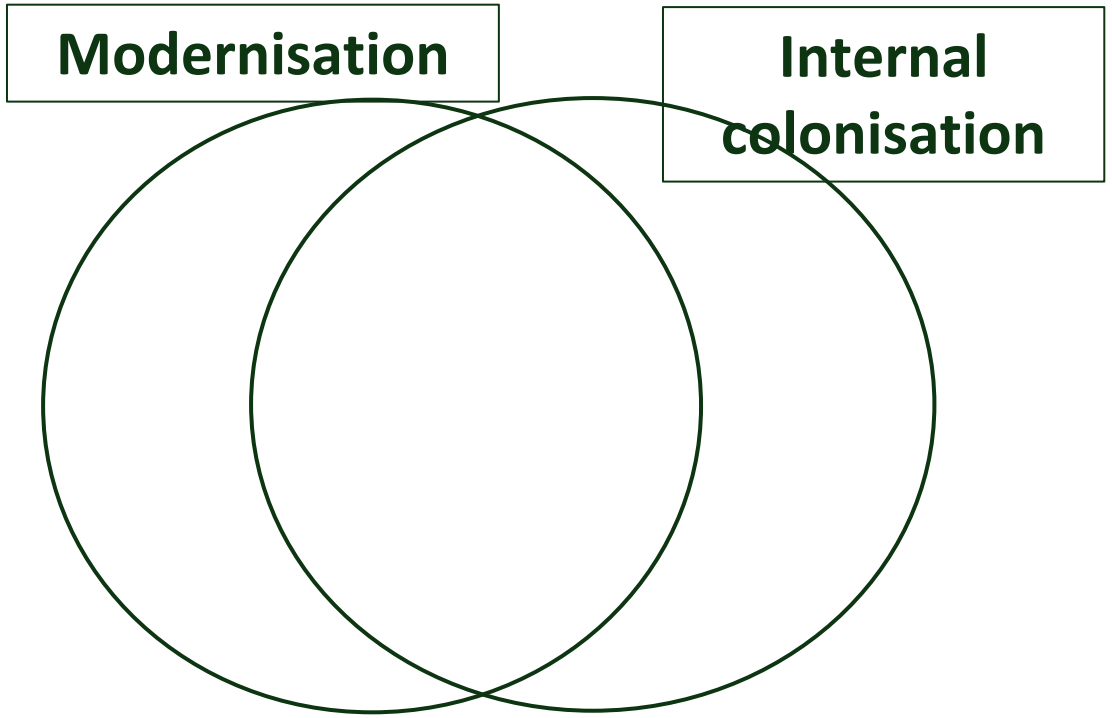


Molnár Zs. et al. 2020. *Journal of Applied Ecology*

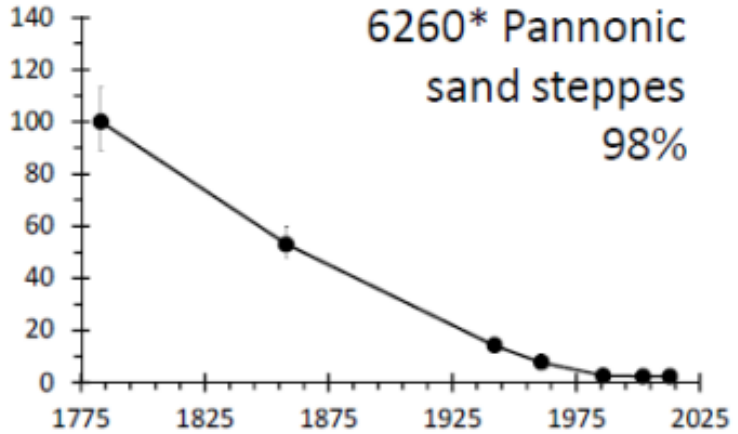
Internal colonization: a key overarching driver impacting herders' land use

WHAT IS INTERNAL COLONIZATION?

Internal colonization is the colonial-type subordination and exploitation
of a country's **own** regions, land and inhabitants,
primarily by central and regional **governments**, as well as by **urban elites**.



Much of this loss happened on the place of former commons



Capacity building and networking among traditional herders and with scientists

International Herder-Scientist Meeting (Olaszfalu, 2023)



I. Hungarian Herder Forum (Szolnok, 2023)
a dialogue workshop with decision makers



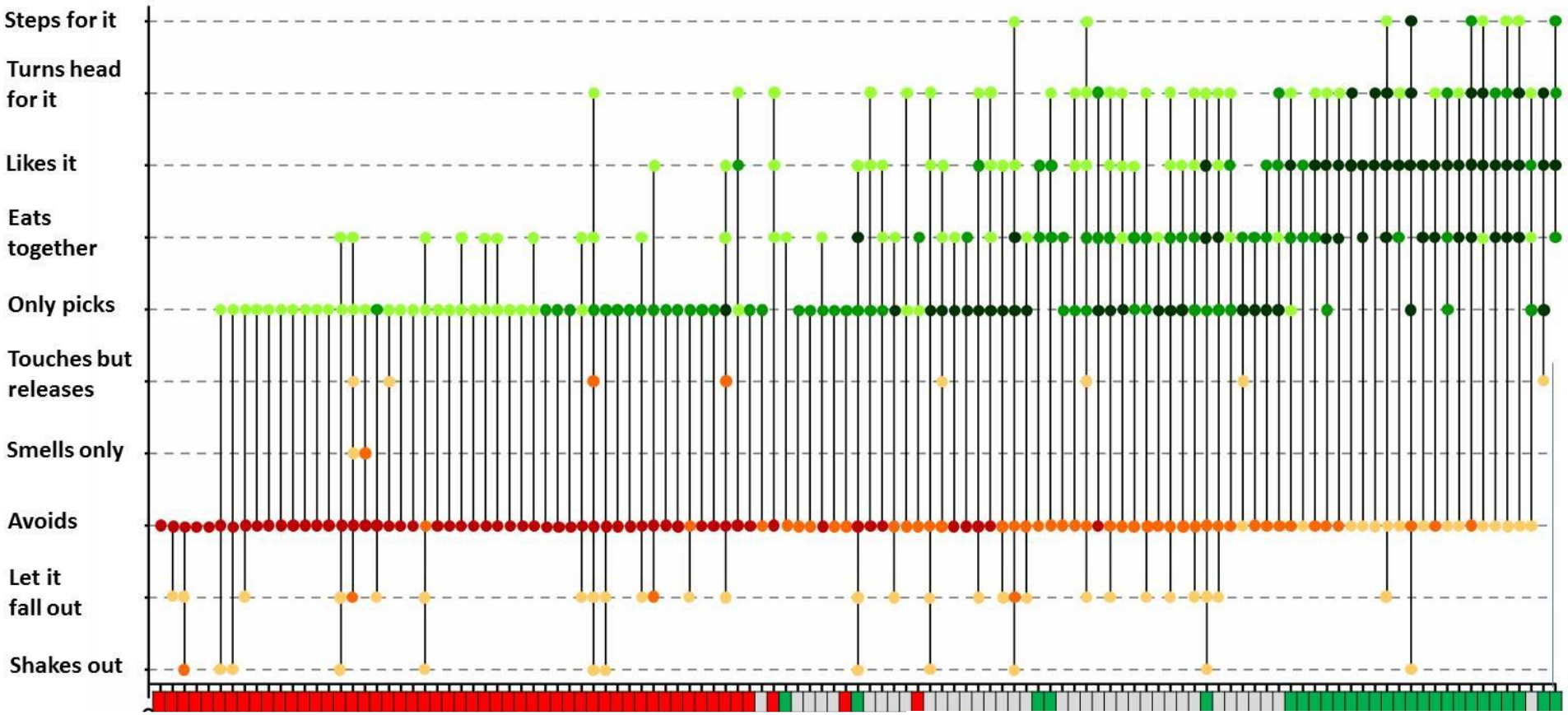






Desirability of 117 plant species (vertical lines)

Cattle like it very much



Cattle hate it...

Species rank (desirability index)
(proportion of intake-positive bites, %)

Most species were **both eaten and avoided** …
Herders target less preferred species (e.g. tall and invasive spp.)

Conservation benefits of controlled grazing!

Frequently observed
…..
Rarely observed

Molnár Zs. et al. 2019. *J. Applied Ecology*

LIFE RestoRED



lace

Logo(s)

Carina Greiff –Project Manager
County Administrative Board of
Östergötland, Sweden



LIFE RestoRED project



- Restoration of EU Redlisted Annex I habitats, dependent on grazing or hay cutting in 76 Natura 2000 sites in Sweden
- 1100 ha of 17 different habitats
- Coordinating Beneficiary: County Administrative Board (CAB) of Östergötland
- 8 other County Administrative Boards and SEPA
- DURATION: 2021- 2027
- Total amount: 14.5 M Euro

LIFE RestoRED

Länsstyrelserna

Why?



- The habitats and the species that lives there have declined during a long period
- The result is loss of biodiversity
- Without grazing or mowing, open habitats become overgrown.
- Poor profitability
- A shortage of grazing animals

LIFE RestoRED

Länsstyrelserna

Main actions



- Remove overgrowth
- Restore infrastructure through fencing (we also test virtual fencing at one site)
- Reintroduce grazing animals or mowing

LIFE RestoRED

Länsstyrelserna

Before and after





LIFE RestoRED

Länsstyrelserna

Before and after





LIFE RestoRED

Länsstyrelserna

Before and after







Restoration of alkaline fens



- Restoration of 4 ha alkaline fens with excavator



LIFE RestoRED

Länsstyrelserna

What changed?



- In these projects we share experiences and learn from each other
- Through previous projects, we have developed effective GIS tools that make it easy to plan and monitor our work
- Results from a few project about habitat 9070 (wooded pastures) – shows good results on national level

LIFE RestoRED

Länsstyrelserna

What changed?



- We create better conditions for the farmers
- We review and conduct on-site assessments of the subsidy regulations in CAP.
- At the conclusion of previous projects, approximately 50 % of the restored areas received these subsidies directly, and more area will have received them after a few years.

LIFE RestoRED

Länsstyrelserna

Lessons learned



- **People drive the process.**

Successful restoration needs someone who actively drives it forward.

Engaged landowners make implementation easier

- **Time and funding matter**

You need funding — and time for dialogue.

Taking restoration in steps can give landowners time to understand and appreciate the work.

- **Acceptance is part of restoration**

Guided walks can help build understanding and acceptance, especially at sites frequently visited by the public.

Things never go exactly as planned — but sometimes they turn out even better than expected!

LIFE RestoRED

Länsstyrelserna

Message from Sweden



- Large-scale restoration can feel overwhelming. But our experience is that you make progress by taking it one site, one landowner and one step at a time.



Thank you!

- You can find more information about the project on the website [Startsida - LIFE restoRED]
- And also on both

LIFE RestoRED LIFE RestoRED

LIFE RestoRED

Länsstyrelserna

Saving the the karstic grassland in Croatia

Dinara back to LIFE LIFE18 NAT/HR/000847

Mosaic of LIFE LIFE24-NAT/HR/101202651

Ivan Budinski
Association Biom / BirdLife Croatia

LIFE ShepForBio 3rd International Conference “Pastoral Landscapes”
23 September 2026

LIFE SHEP FOR BIO

Shrub encroachment on karstic grasslands that results in negative impact on biodiversity, wildfire safety, grazing efficiency and wildlife conflicts



EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

LIFE SHEP FOR BIO

Shrub encroachment on karstic grasslands that results in negative impact on biodiversity, wildfire safety, grazing efficiency and wildlife conflicts





EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

LIFE SHEP FOR BIO

Shrub encroachment on karstic grasslands that results in negative impact on biodiversity, wildfire safety, grazing efficiency and wildlife conflicts



- long list of irrational bureaucracy pressures

- the *holly forest* ideology

- legislation does not follow Nature 2000 obligations

https://winnetou-filmplace.com/clanek/vrlika-suho-polje



LIFE SHEP FOR BIO

DINARA
BACK TO LIFE

How to returrn the grasslands back to the favourable state?

- traditional way (grazing, cutting the bushes, winter burning)

- conservation only approach (rewilding)?

- how to do all that respecting other habitat types?

- how to do all that in changing climate?

LIFE SHEP FOR BIO

- 15.01.2020-15.11.2023
- 1,296,509€

DINARA
BACK TO LIFE

- Focusing on biodiversity/Natura2000 species core areas

- Finding all the livestock breeders (we knew many of them before)

- Finding other important landscape features (e.g, ponds)

- Meetings with other landscape users (stakeholders)

- Prioritizing locations of activities in the field















OM / ASSOCIATION

Financijski podržava
Nacionalna zaklada za razvoj civilnoga društva

- Grassland restored by shrub cutting (105 ha)

- More grasslands with extensive grazing (605 ha)

- Controlled burning (57 ha)

- Buying more livestock (16 farms)

- Increase in target bird species that followed restoration

Lessons learned

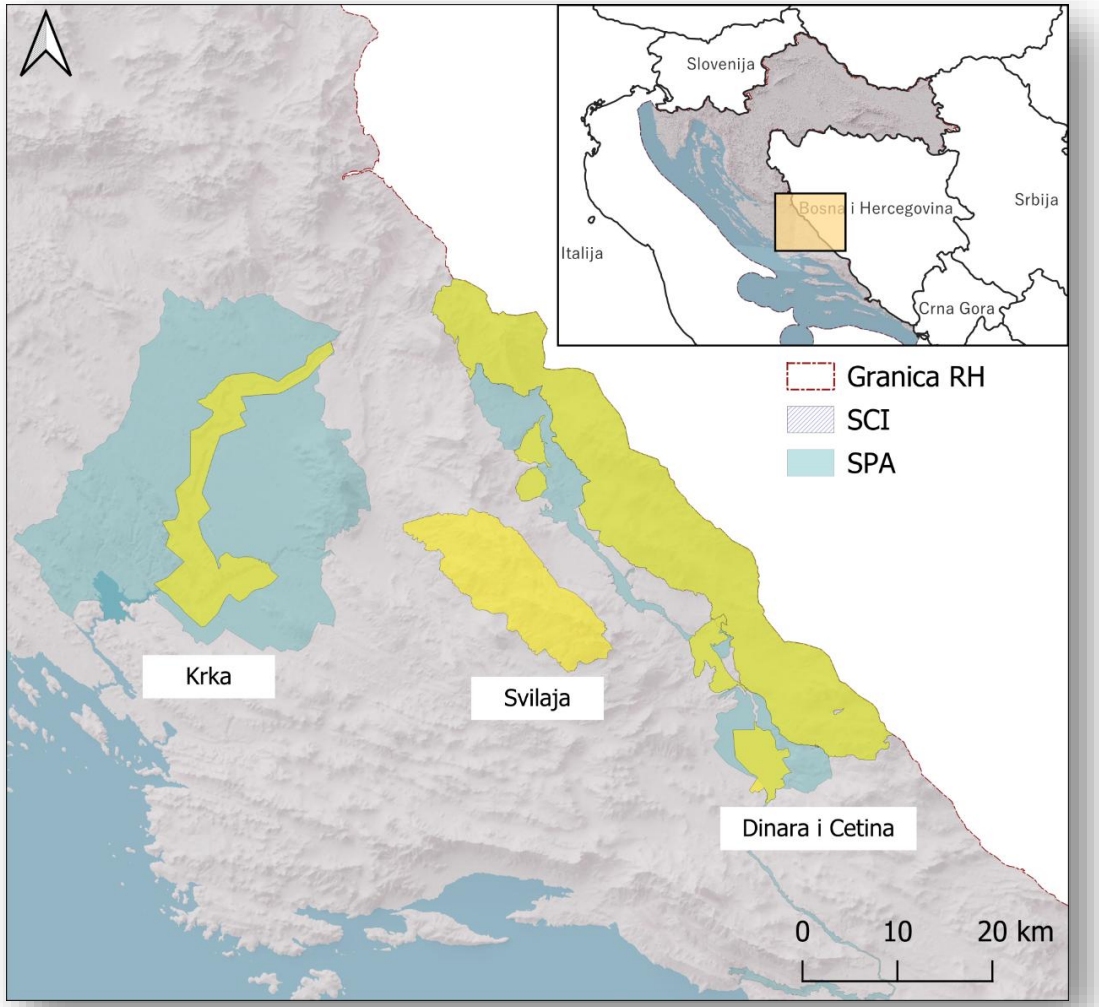
- Huge proportion of work is fighting with obsolete and uncoordinated legislation and bureaucracy; leave more time for this activity
- Environmental response is slow; aim for long-term projects
- Do your own research before the project for as much data as possible and do not believe official data

LIFE SHEP FOR BIO

MOSAIC OF LIFE

01.09.2025-31.08.2030

4.850.315,57€



MOSAIC OF LIFE

LIFE SHEP FOR BIO

3 areas

Direct restoration of 560 ha

Better management on 1020 ha

4 target bird species

4 grasland types

8 Natura 2000 sites





EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

Thank you!



Any questions or comments?

15:00 – 15:30
Coffee break

LIFE SHEP FOR BIO

From Sallanches to Florence

Extensive grazing, viable farming and the future of Europe's grasslands

EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026


What is the role of grazing in European grassland systems?
defours.com




Beatrice Bellavia (Euromontana)
beatrice.bellavia@euromontana.org
www.euromontana.org
LIFE
SHEP FOR BIO


defours.com

Our central takeaway from Sallanches

LIFE SHEP FOR BIO

If we want grazing to maintain grasslands and biodiversity, we also need to secure the farming systems and people that make that grazing possible.

ECONOMY
Farm income
Value chains
Processing & markets

ECOLOGY
Grasslands
Biodiversity
Landscape management

EXTENSIVE GRAZING & PASTORALISM

TERRITORY
Land access
Services
Governance

PEOPLE
Labour
Skills & training
Generational renewal

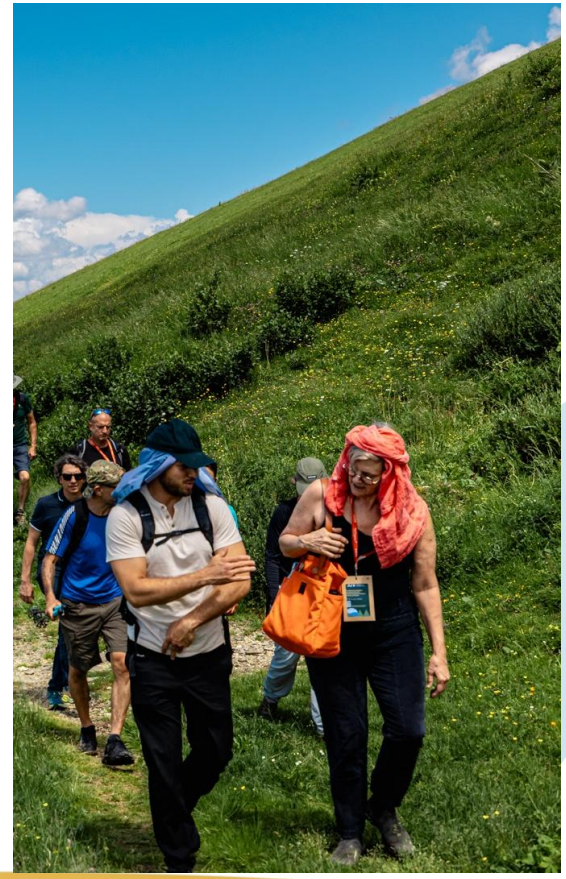
EUROMONTANA D.R.E.AM. ITALIA Regione Toscana RETE APPIA INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS 2026

What can grazing deliver for grasslands?

Where grazing intensity, timing and stocking are adapted to the habitat, extensive grazing can help maintain and restore open and semi-natural grasslands.

- Maintain species-rich grasslands and habitat mosaics
- Limit shrub and tree encroachment
- Maintain open landscapes and ecological functions
- Contribute, in appropriate contexts, to climate resilience and wildfire-risk management

The ecological effect depends on the place and on how grazing is managed — there is no single grazing prescription.



Ecological function depends on economic viability

Restoration planning can help identify where grazing is needed. But grazing will only continue if farmers and shepherds can make a living and the profession remains workable.

CONDITIONS FOR VIABLE GRAZING

- Fair income & value chains
- Land access & mobility
- Labour & working conditions
- Skills, advice & training
- Infrastructure & workable rules

→ **VIABLE FARMERS & SHEPHERDS**

→ **CONTINUED GRAZING MANAGEMENT**

→ **GRASSLAND & BIODIVERSITY OUTCOMES**

↺ *Generational renewal* is ultimately the test of whether this system can continue

The Sallanches message: support the whole system



- **Recognise territorial and production diversity**
  Extensive, grassland-based systems should not be treated like all other livestock systems.
- **Recognise and reward environmental and territorial services**
  Including biodiversity, grassland management and other public goods delivered through appropriate grazing.
- **Keep more value in mountain areas**
  Through fairer value chains, quality products, local processing and stronger producer organisation.
- **Invest in the profession itself**
  Land access, working conditions, skills, shepherd schools, advisory services and generational renewal

The Sallanches message: support the whole system



- **Recognise territorial and production diversity**
  Extensive, grassland-based systems should not be treated

territorial

ent and other
grazing.

ts, local processing

Land access, working conditions, skills, shepherd schools, advisory services and generational renewal

Agricultural, environmental and territorial policies therefore need to work together rather than addressing different parts of the same system separately.

Why this matters now: three policy processes are converging

EU Livestock Strategy 7 July 2026	Nature Restoration September 2026	CAP & MFF 2028–2034
Recognises the diversity of European livestock systems, including territorially specific systems, and their environmental and territorial roles.	Member States have submitted draft National Restoration Plans identifying restoration needs and potential synergies with agriculture and other policies.	The future CAP and its funding architecture are now being shaped within the proposed National and Regional Partnership framework.

The opportunity is to make these policy processes reinforce one another rather than operate in parallel.

From recognition to action: our core policy asks

- A strong CAP for mountain farming
  Secure adequate funding and target support to extensive, grassland-based systems. At least 15% of CAP funding for Areas facing Natural Constraints.
- Reward the public goods grazing delivers
  Recognise and remunerate biodiversity, grassland management and other ecosystem services. Support must make environmentally valuable grazing economically viable, not simply add obligations.
- An EU budget that delivers for mountain areas
  Make Article 174 operational in the 2028–2034 MFF. Mountain areas must be visible in territorial targeting, funding, indicators and monitoring, with investment through agricultural, rural & cohesion.
- Territorial policies designed with territories.
  No one-size-fits-all approach. Keep a meaningful role for regions, local authorities and farmers, and connect CAP programming with restoration planning and the Livestock Strategy.

The question for Florence

How can the post-2027 CAP and Nature Restoration implementation work together so that extensive grazing is both ecologically effective and economically viable?

1/ EVIDENCE

Where is grazing needed, and under what management conditions?

2/ VIABILITY

What support and enabling conditions keep farmers and shepherds in the system?

3/ GOVERNANCE

How should restoration planning, CAP programming, regions and land managers connect?

Group 1



Enrico Mezzacapo
DIRPOLIS Institute of the Sant'Anna School of Advanced Studies



Federica Luoni
LIPU - BirdLife Italia



Andrea Hagyó
European Commission's Joint Research Centre



Gennaro Giliberti
Regione Toscana's Dept. of Agriculture and Rural Development



Bilena Hyseni
Albania Ministry of Environment's Forest Agency

Group 2



Jacopo Goracci
Rete Appia



Luca Colombo
FIRAB - Italian Foundation for Research in Organic and Biodynamic Agriculture



Mattia Bertocchi
ERSAF – Lombardy Region's Agency for Agricultural and Forestry Services

Sándor Kecskeméti
Hungary Ministry of Agriculture &Food, Dept. for Agri-Environmental Development

Thank you for your participation!

See you tomorrow morning at 8:30