

Pastoralism in the Asian Steppe

High livestock numbers and climate change threaten the health of pastures and the livelihoods of herders

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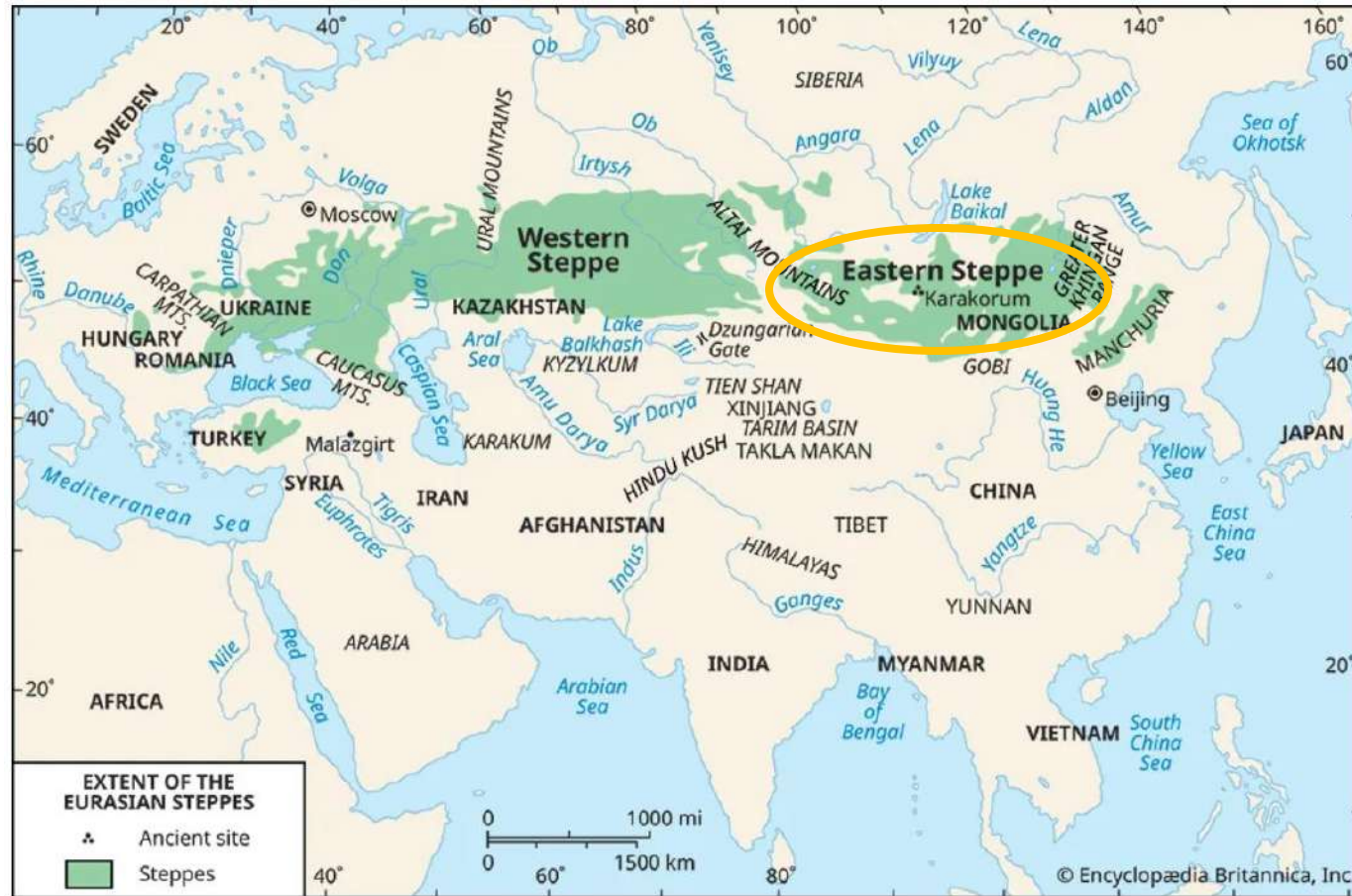


Living With Uncertainty



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Mongolia: A Global Rangeland Hotspot



- Pastoral country:
1/3 of the population
(Mongolian Statistical Information Service, 2023)
- 80% of the land is used extensively
(Angerer et al., 2008)
- ~ 70 million livestock heads
(3.5 million people)
(Mongolian Statistical Information Service, 2023)

A System in Transition

Traditional pastoralism (before 1920s)



Mobility



Subsistence



Small herds

Socialist collectives (1920s - 1991)



State support



Planned grazing



Cooperative
management

Market economy (1991 - today)



Privatization

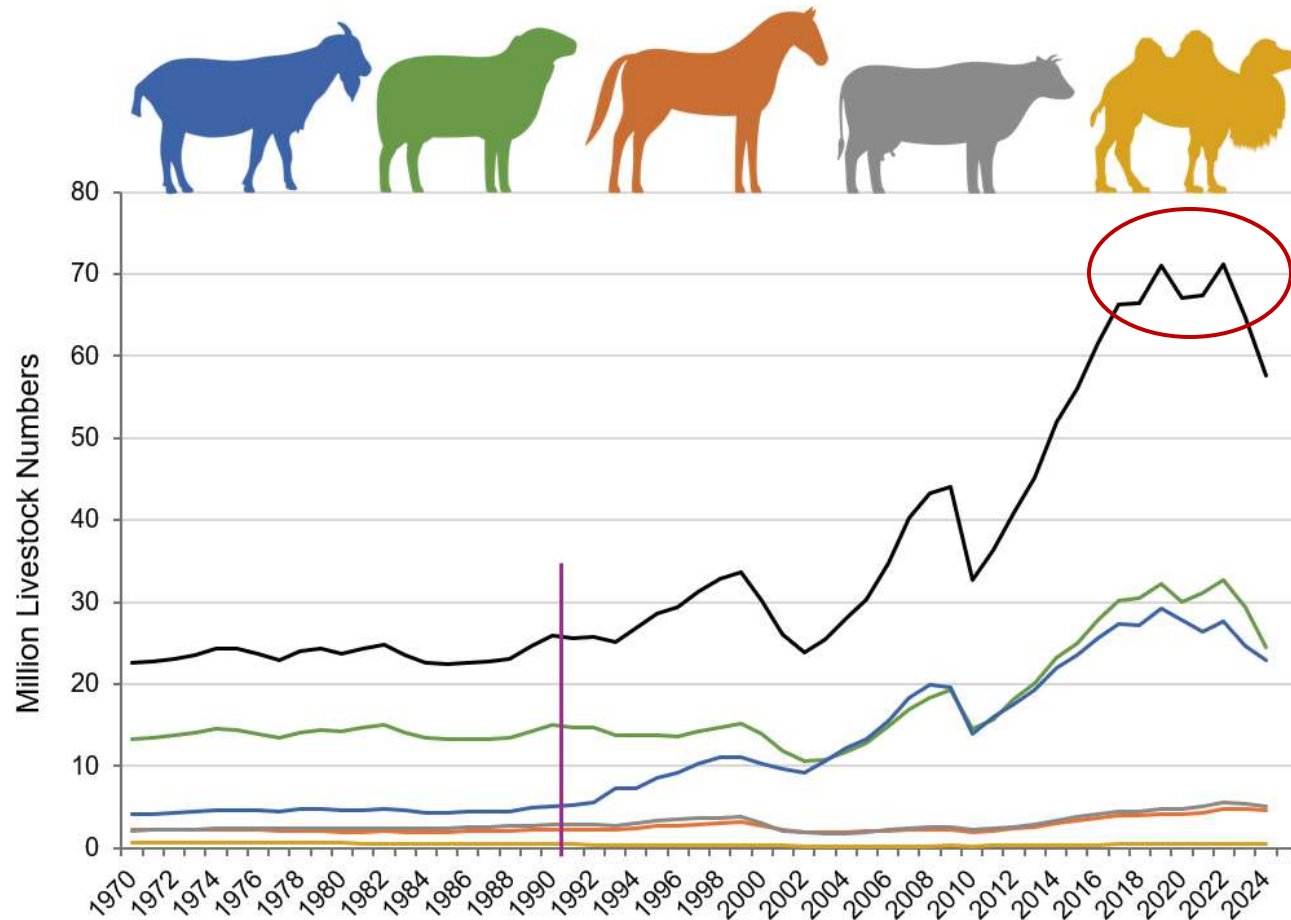


Cashmere boom



Livestock
increase

The Livestock Boom



> 70 million

Can grazing systems remain sustainable under these numbers?

Mongolian Statistical Information Service, 2024

Climate Change in Mongolia



OBSERVED CHANGES

- 2°C temperature increase
- Altered precipitation patterns
- More frequent extreme winter events

Climate Risk Country Profile: Mongolia (2021): The World Bank Group and the Asian Development Bank.

Multiple Pressures on Rangelands



LIVESTOCK INCREASE

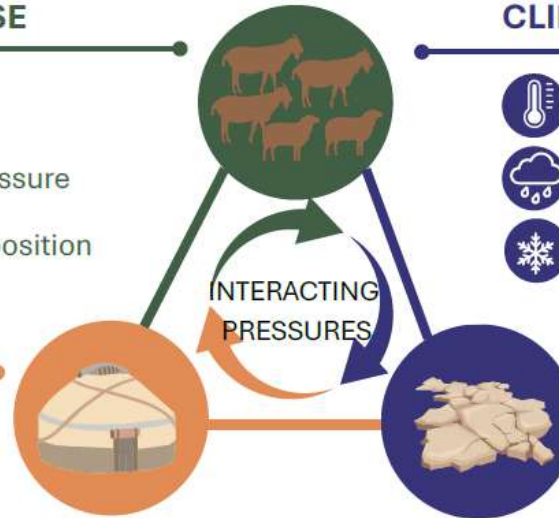
-  More animals
-  Higher grazing pressure
-  Shift in herd composition

CLIMATE CHANGE

-  Rising temperatures
-  Changing precipitation patterns
-  More frequent dzud events

SOCIO-ECONOMIC CHANGES

-  Market economy and cashmere demand
-  Privatization and changing policies
-  Sedentarization and infrastructure development



IMPACTS ON RANGELANDS

-  Vegetation Change
-  Land Degradation & Soil Erosion
-  Reduced ecosystem resilience

CONSEQUENCES FOR PASTORAL LIVELIHOODS

- Lower pasture productivity
- Higher risks (e.g. dzuds)
- Greater livelihood vulnerability

Understanding Complex Pastoral Systems

Adaptation strategies of herders in the Dzungarian Gobi desert

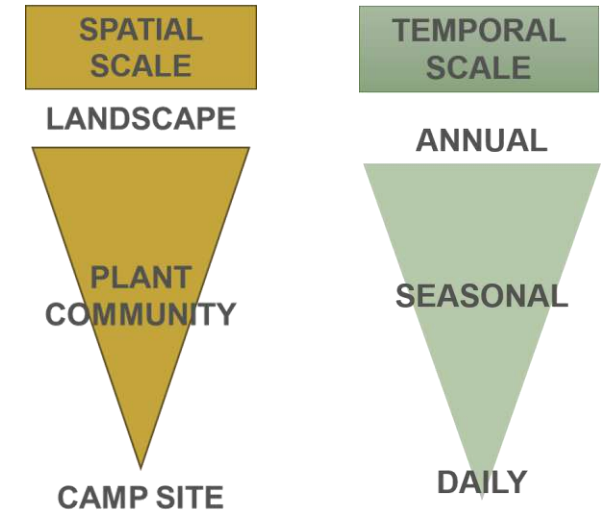
- Area 18,000 km² (since 2019)
(Sansarbayer, 2019)



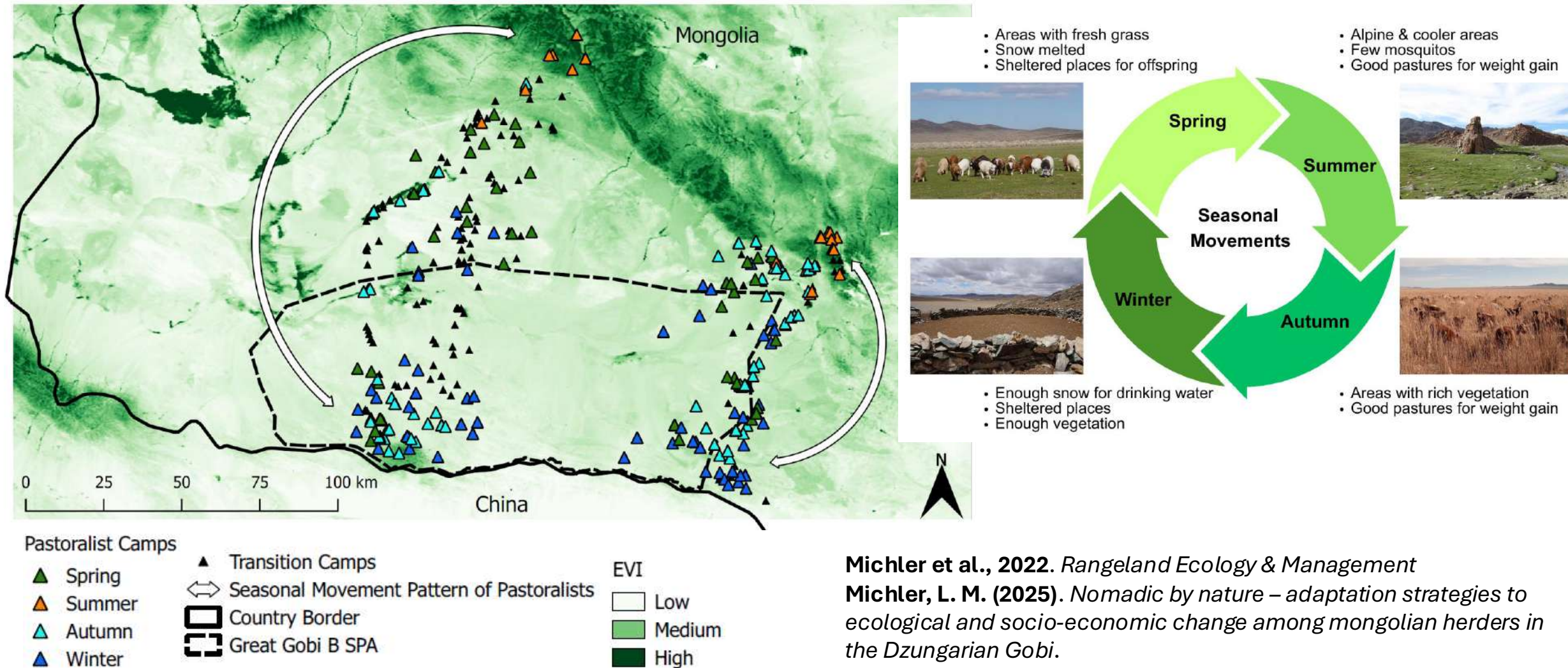
Understanding Complex Pastoral Systems

Adaptation strategies of herders in the Dzungarian Gobi desert

- Mobility patterns of herders & their livestock
- Grazing impacts on the Gobi pastures
- Socio-economic challenges of herder households



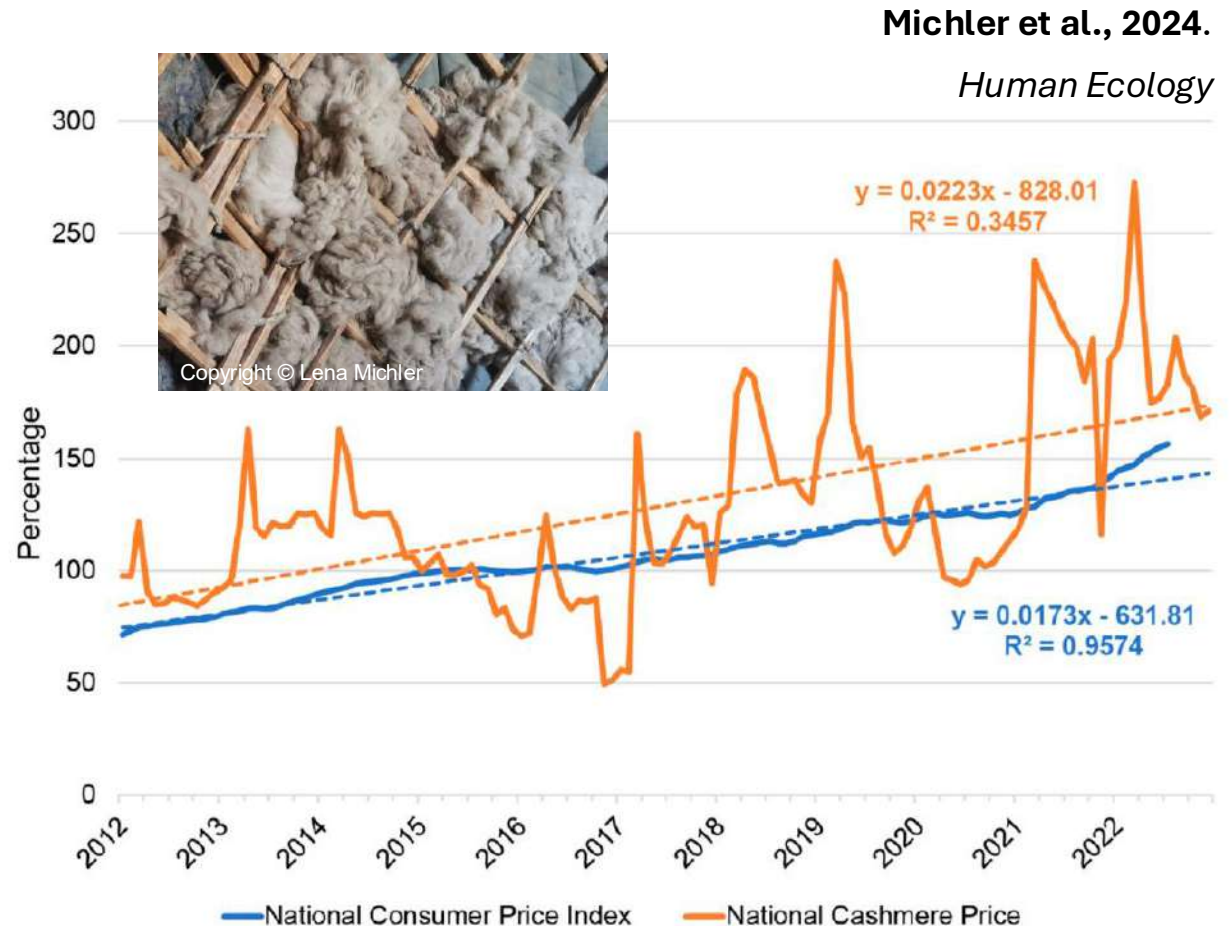
Mobility: The Mechanism Behind Resilience



Michler et al., 2022. *Rangeland Ecology & Management*
Michler, L. M. (2025). *Nomadic by nature – adaptation strategies to ecological and socio-economic change among mongolian herders in the Dzungarian Gobi.*

Between Tradition and Markets

- Increasing livestock numbers
- Market dependency → **CASHMERE**
- Livelihood practices rooted in traditional ecological knowledge
- Strong kinship networks, but demographic change



Pastoral Resilience under Transition

HIGH MOBILITY & FLEXIBILITY



**INCREASING LIVESTOCK NUMBERS
DEPENDENCE ON CASHMERE
CHANGING DEMOGRAPHICS**



Pastoral mobility remains strong, but the foundations of pastoral resilience are changing.



Mobility remains fundamental

Resilience is changing

Integrated research is essential

THANK YOU