



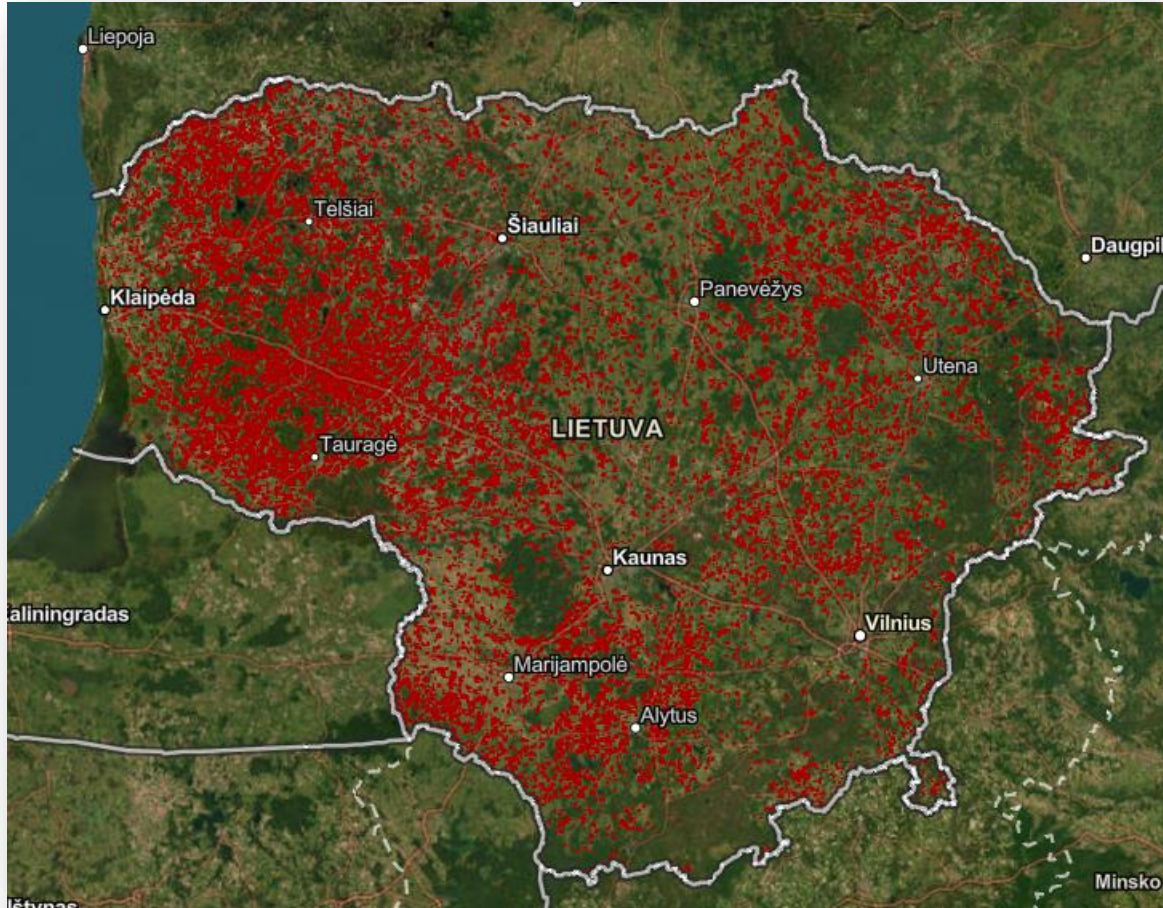
Scientific discourse on biodiversity conservation and grassland management – results of analytical review of scientific publications

Vilnius, 2024

Domas Uogintas



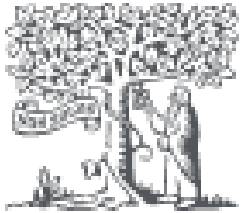
Introduction



- The grasslands have the lowest level of protection compared to all other biomes (Henwood, 2010)
- Grasslands are considered to be one of the most vulnerable and endangered habitats (Carbutt et al., 2017)
- Grasslands hold great importance in areas where they cannot be converted into farmland (Dixon et al., 2014)

Distribution of perennial grasslands which were lost
(<https://www.arcgis.com/apps/webappviewer/index.html?id=7dfe7ca37f214eb9a952f71dfad2e7ba>)

Selection criteria



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- Keywords: Europe; Mowing or cutting; Grazing
- Language: English
- ➤ Article types: Research or Review
- Subject areas: Agricultural and biological science or Environmental science
- Search all parts of the document for instances of the term (excluding references)

Selection results

Resulted: 1402 publications



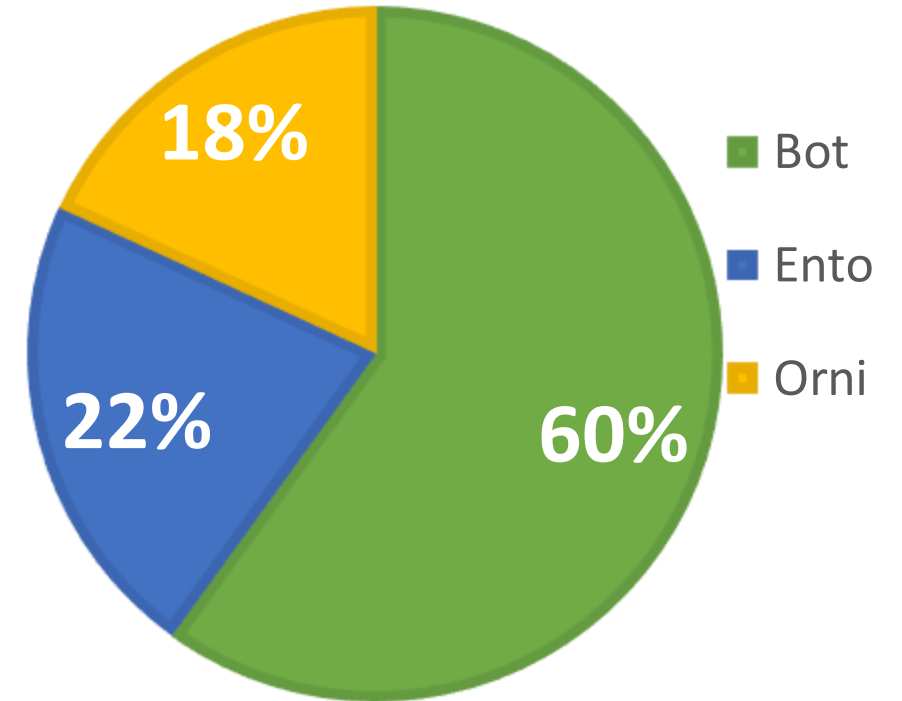
1st screening stage

Resulted: 548 publications
(1959-2021)

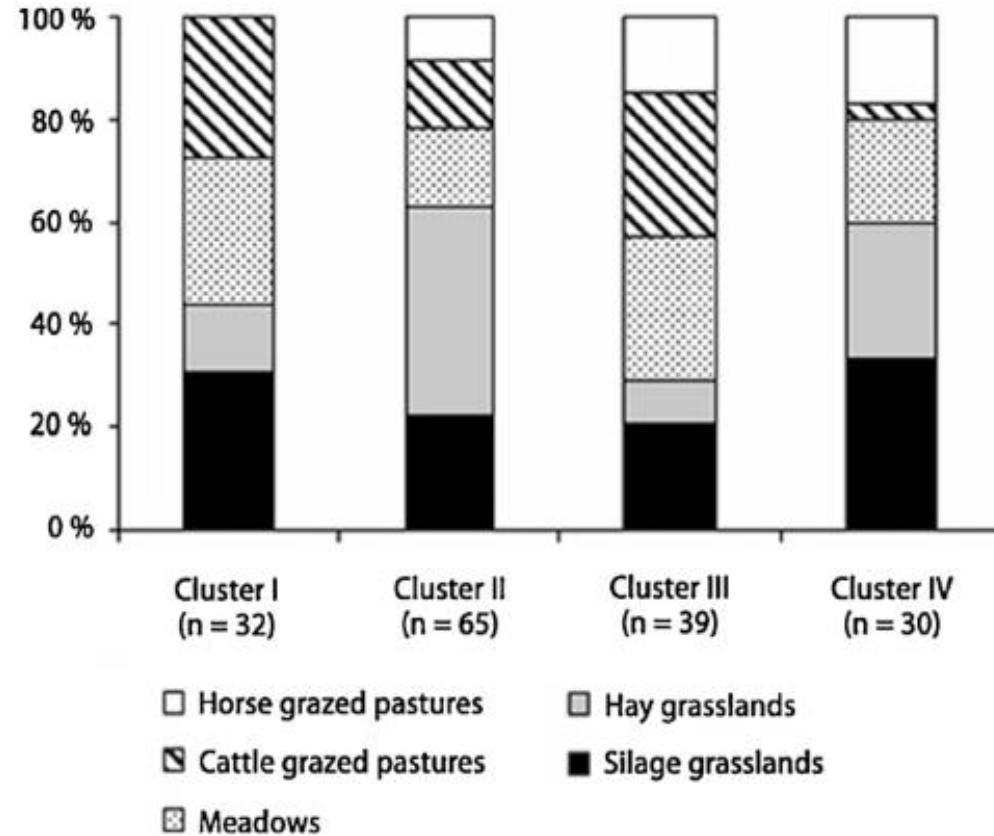


2nd screening stage

Resulted: 162 publications

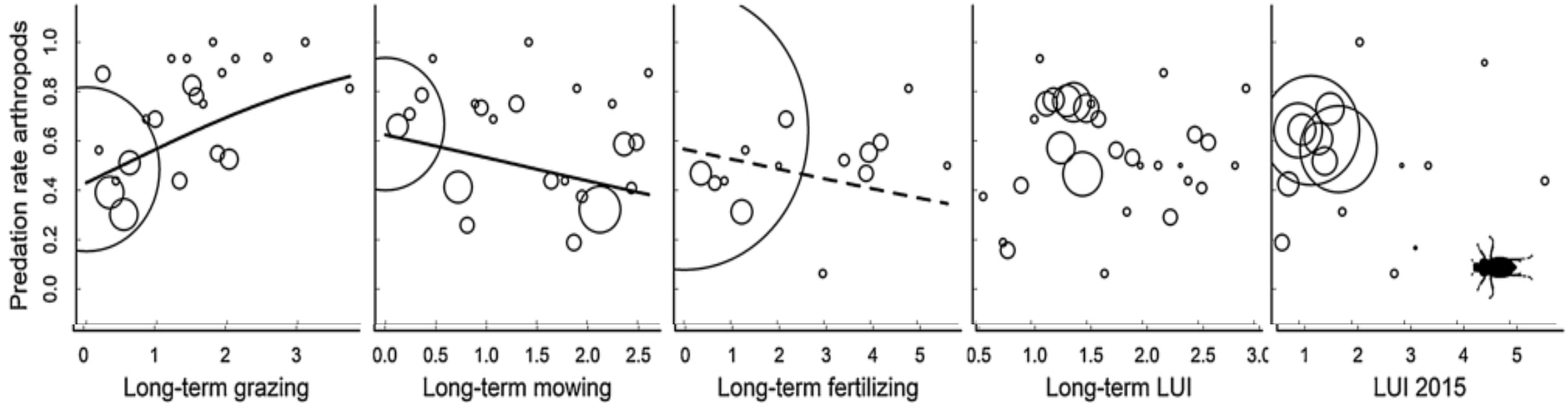


Management type: extensive to intensive grazing



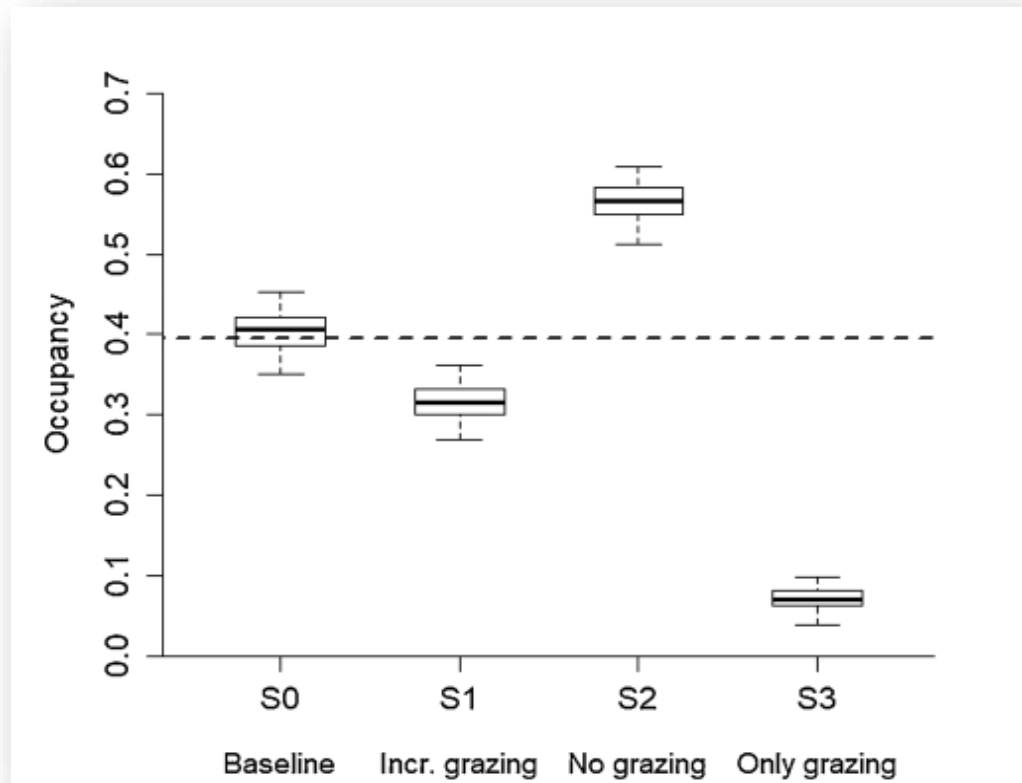
Wellstein, C., Otte, A., & Waldhardt, R. (2007). Impact of site and management on the diversity of central European mesic grassland. *Agriculture, Ecosystems & Environment*, 203-210.

Management type: extensive to intensive grazing



Meyer, S. T., Heuss, L., Feldhaar, H., Weisser, W. W., & Gossner, M. M. (2019). Land-use components, abundance of predatory arthropods, and vegetation height affect predation rates in grasslands. *Agriculture, Ecosystems & Environment*, 84-92

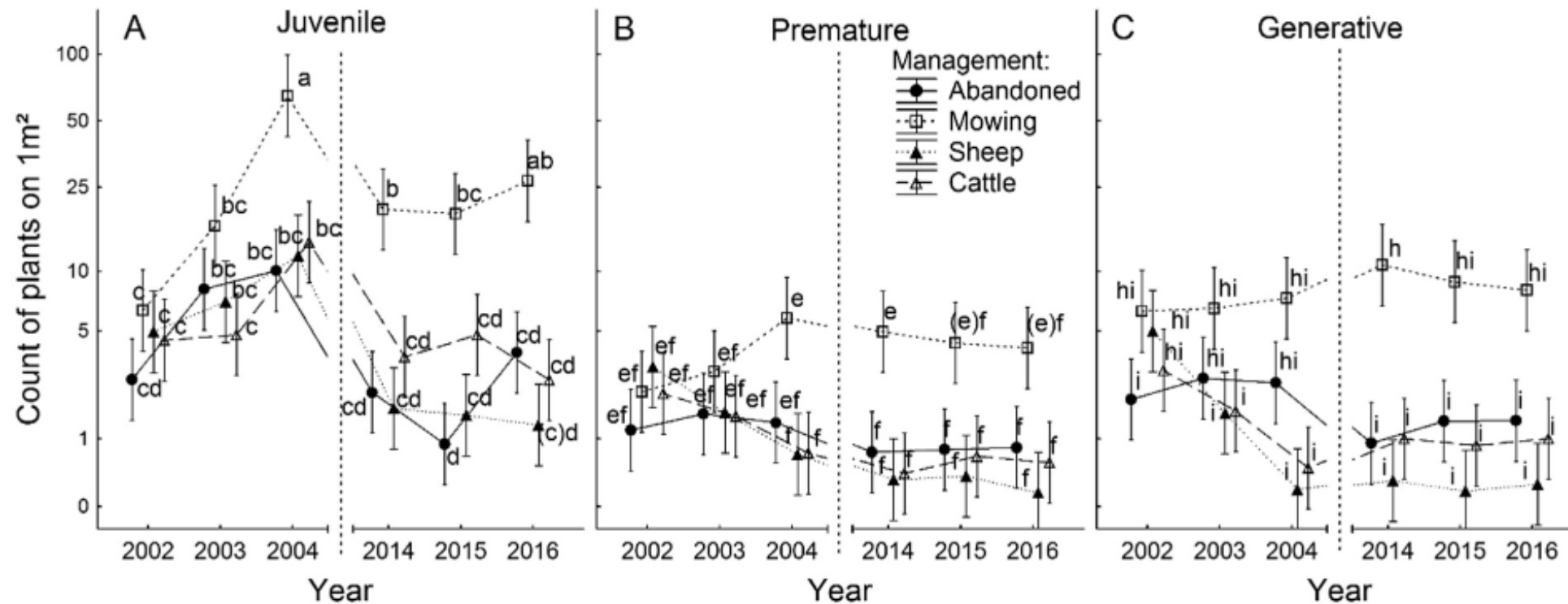
Management type: extensive to intensive grazing



- S0 The same grazing as today
- S1 Increased grazing following the most likely future grazing regime
- S2 No grazing at all
- S3 Grazing in all patches

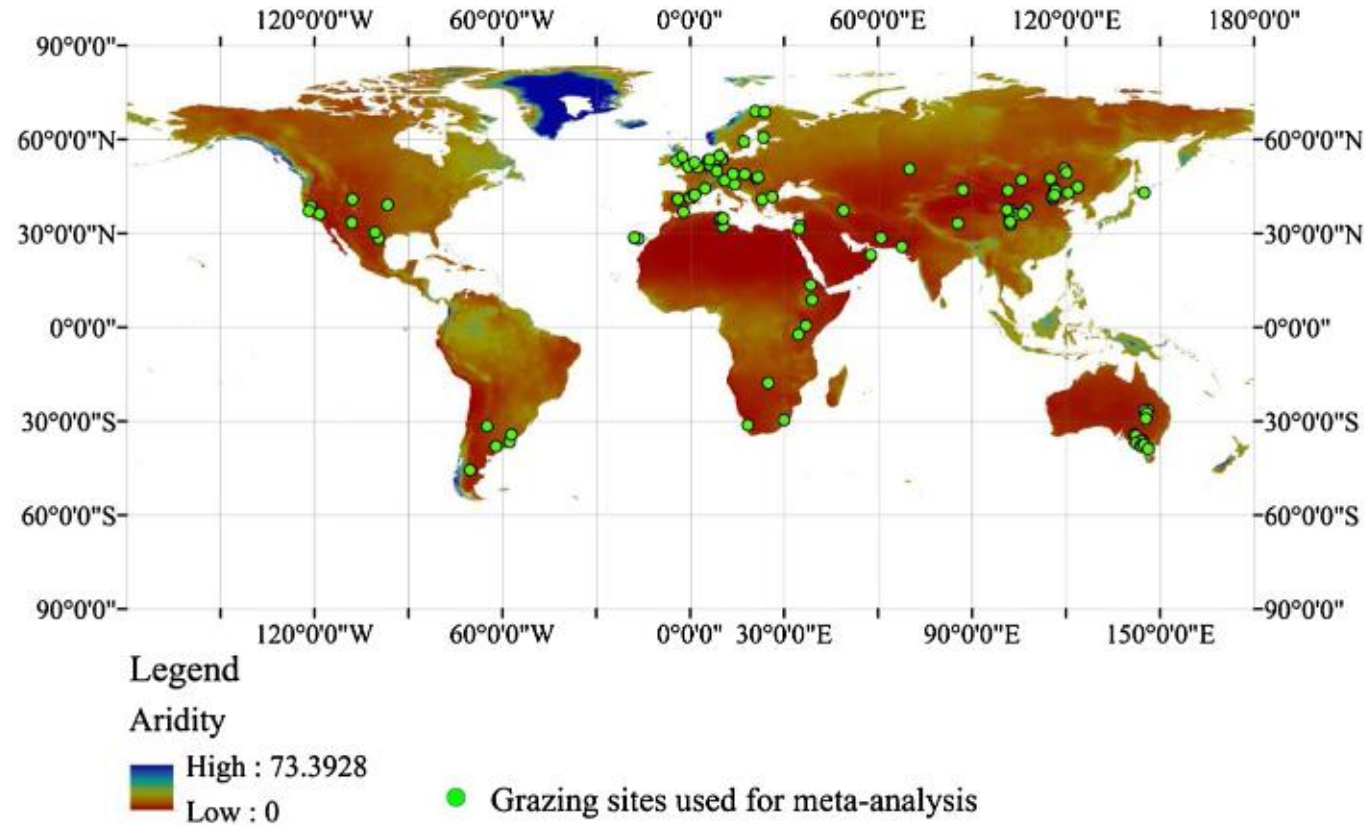
Johansson, V., Kindvall, O., Askling, J., & Franzén, M. (2019). Intense grazing of calcareous grasslands has negative consequences for the threatened marsh fritillary butterfly. *Biological Conservation*, 108280

Management type: extensive to intensive grazing



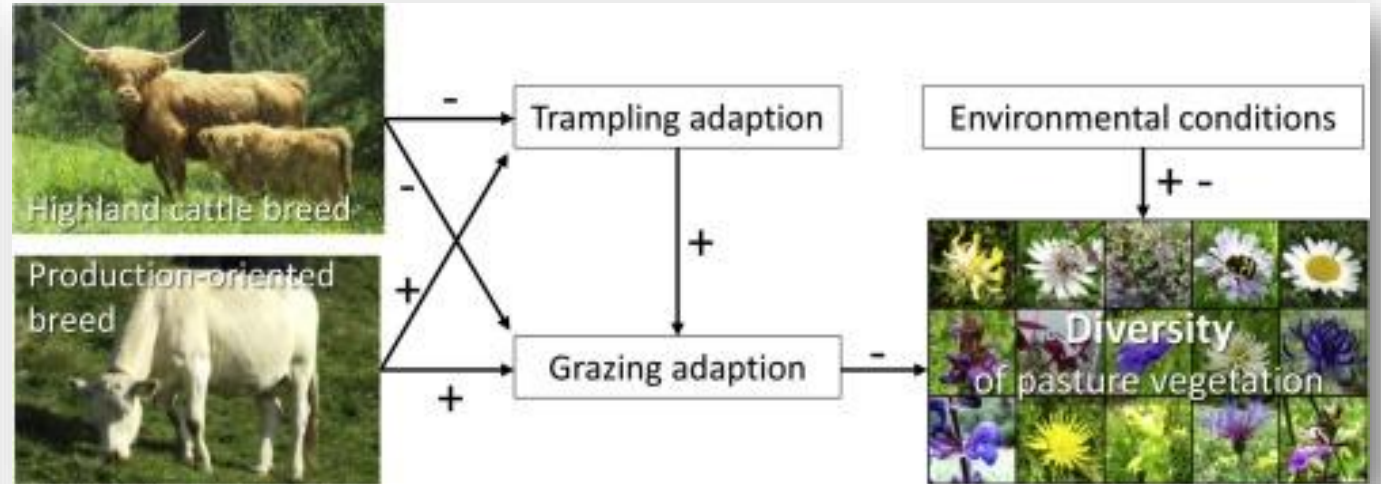
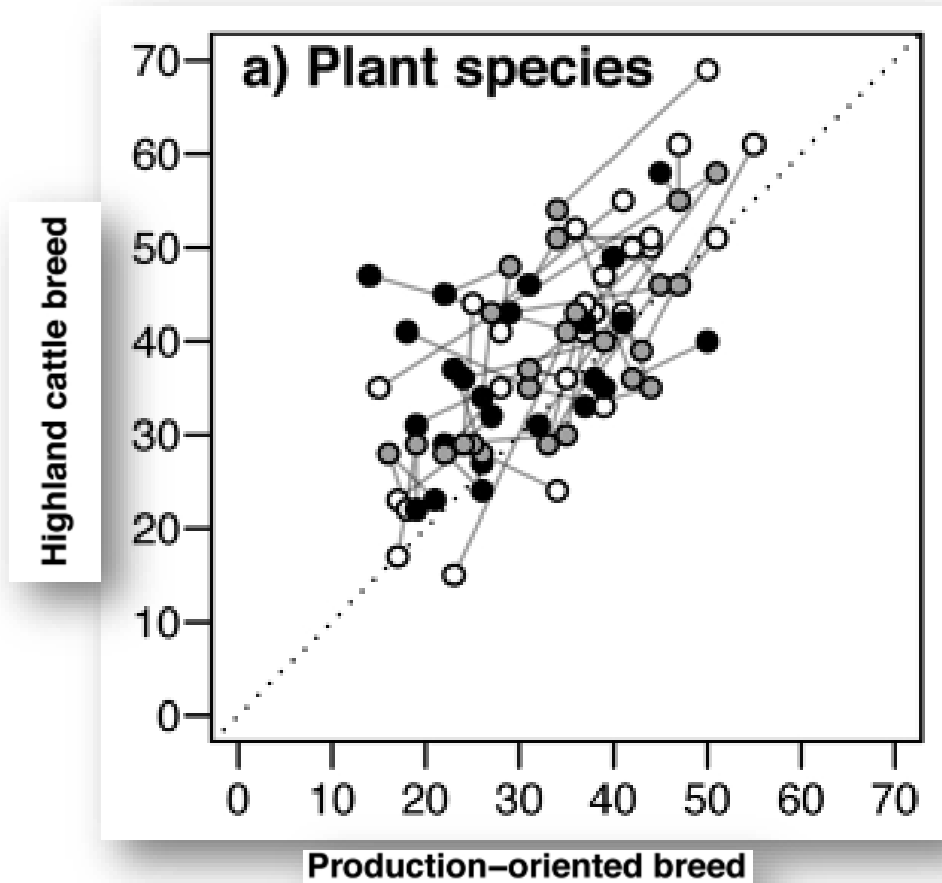
Kose, M., Liira, J., & Tali, K. (2019). Long-term effect of different management regimes on the survival and population structure of *Gladiolus imbricatus* in Estonian coastal meadows. *Global Ecology and Conservation*, e00761

Management type: extensive to intensive grazing



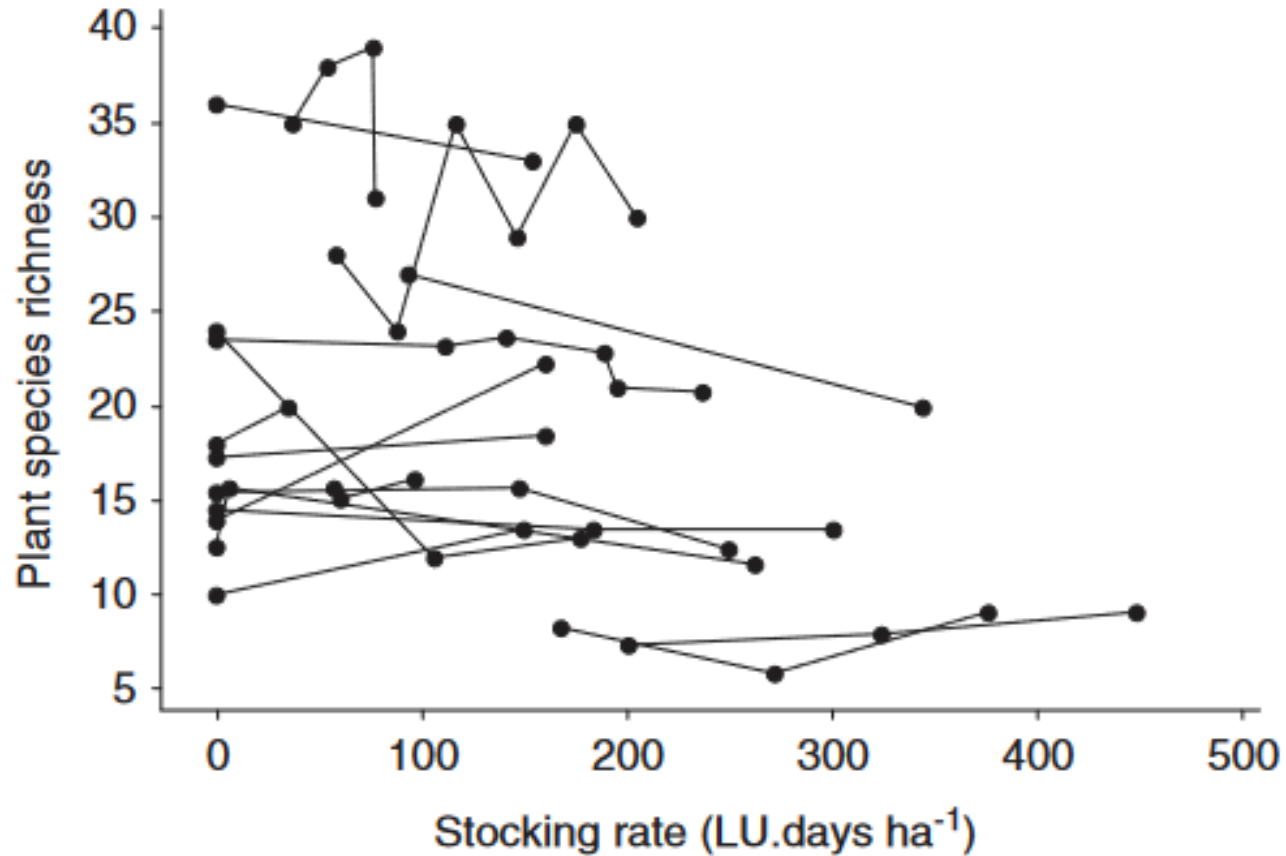
Gao, J., & Carmel, Y. (2020). A global meta-analysis of grazing effects on plant richness. *Agriculture, Ecosystems & Environment*, 107072

Management type: grazing by cattle



Pauler, C. M., Isselstein, J., Braunbeck, T., & Schneider, M. K. (2019). Influence of Highland and production-oriented cattle breeds on pasture vegetation: A pairwise assessment across broad environmental gradients. *Agriculture, Ecosystems & Environment*, 106585

Management type: grazing by sheep



Schoier, A., & Dumont, B. (2012). How do sheep affect plant communities and arthropod populations in temperate grasslands? *Animal*, 1129-1138

Management type: grazing by horses

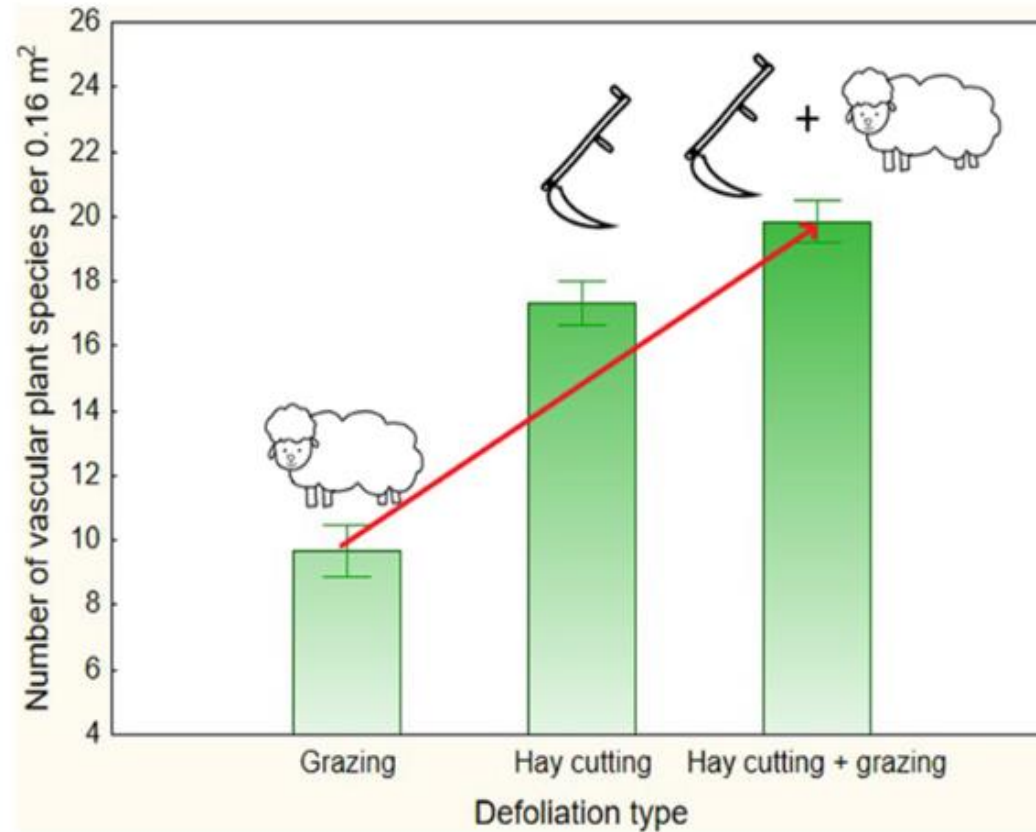


Phot. 2. Koniks grazing on wetlands, Biebrza National Park. (Photo: A. Chodkiewicz).

- successfully contribute to the reduction of undesirable species e.g. *Phragmites australis*
- long-term effect of grazing remains unknown, it can increase nitrophilous species abundance

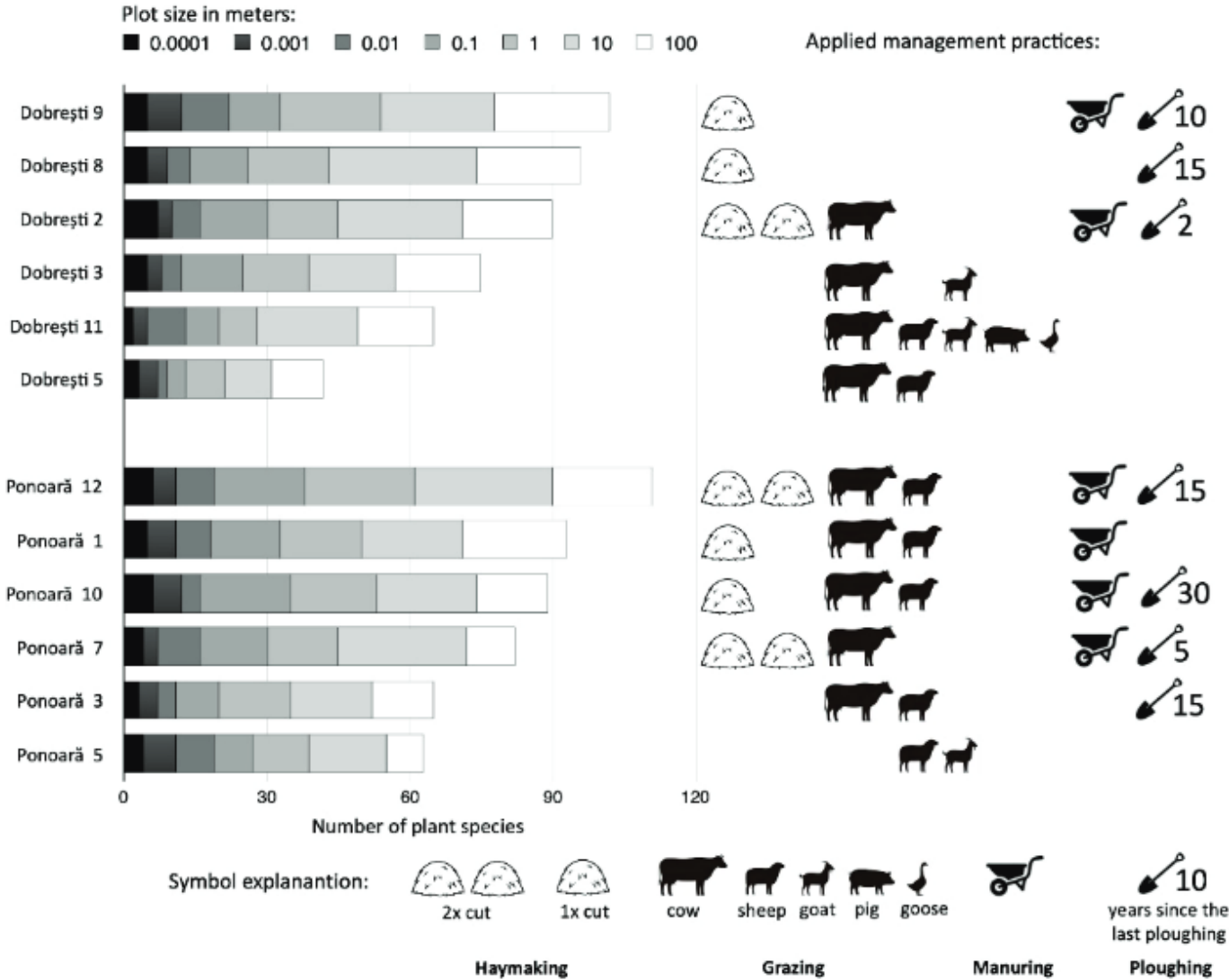
Chodkiewicz, A. (2020). Advantages and disadvantages of Polish primitive horse grazing on valuable nature areas – A review. *Global Ecology and Conservation*, e00879.

Management type: Mowing



Pavlů, L., Pavlů, V. V., & Fraser, M. D. (2021). What is the effect of 19 years of restoration managements on soil and vegetation on formerly improved upland grassland? *Science of The Total Environment*, 142469

What is the optimal management type for biodiversity?



Janišová M., Biro A., Iuga A., Širka P., Škodová I., 2020. Species-rich grasslands of the Apuseni Mts (Romania): role of traditional farming and local ecological knowledge. *Tuexenia* 40: 409–427

Unmanaged vs Managed (Mowed): A Case Study from Lithuania

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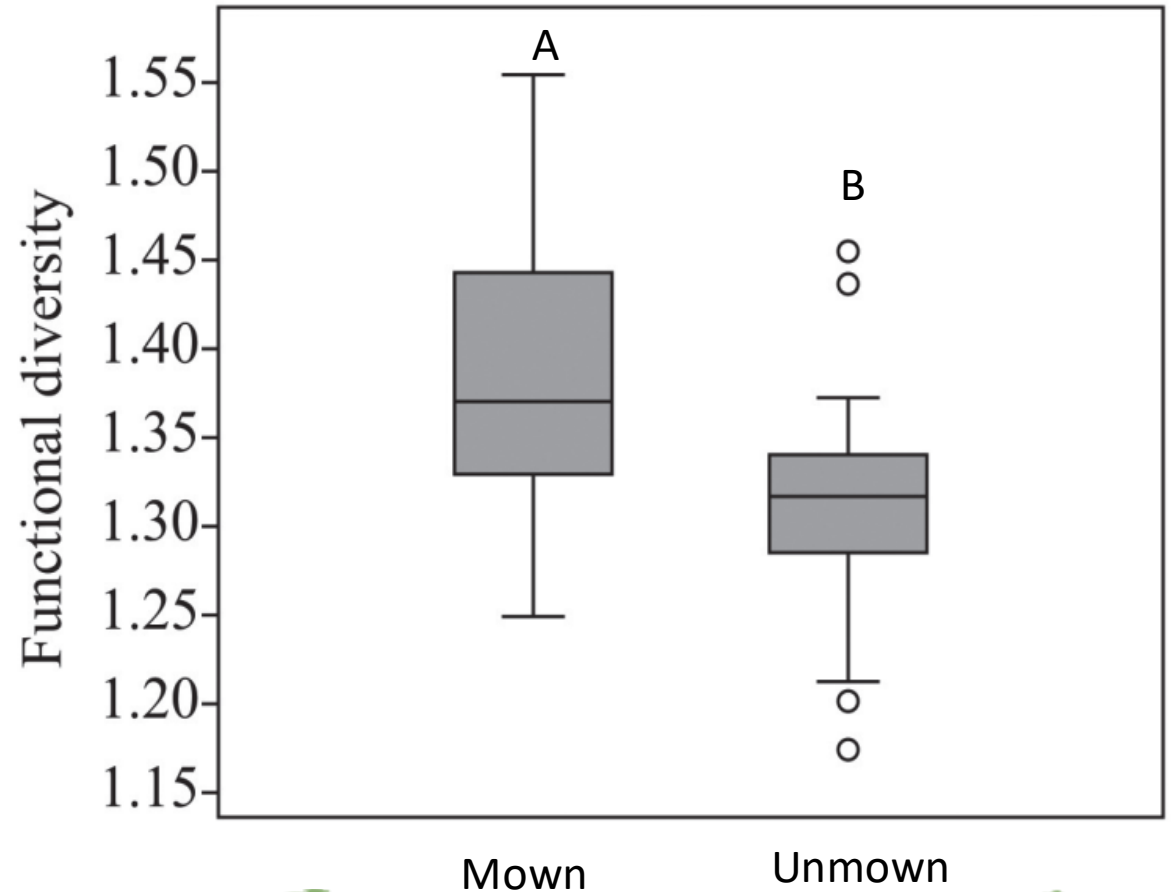
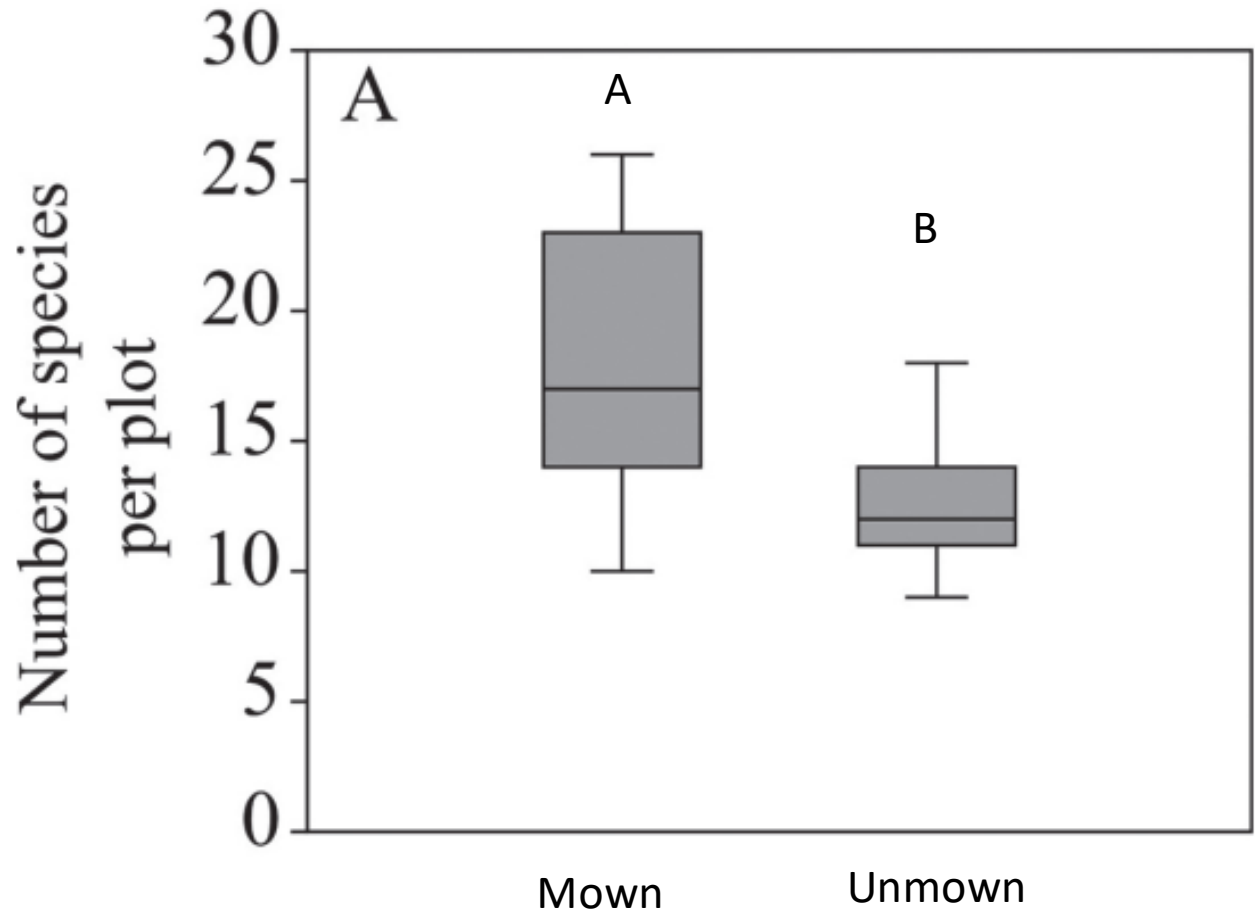
2020, 26(1): 40–48

IMPACT OF SHORT-TERM ABANDONMENT ON THE STRUCTURE AND FUNCTIONS OF SEMI-NATURAL DRY GRASSLANDS

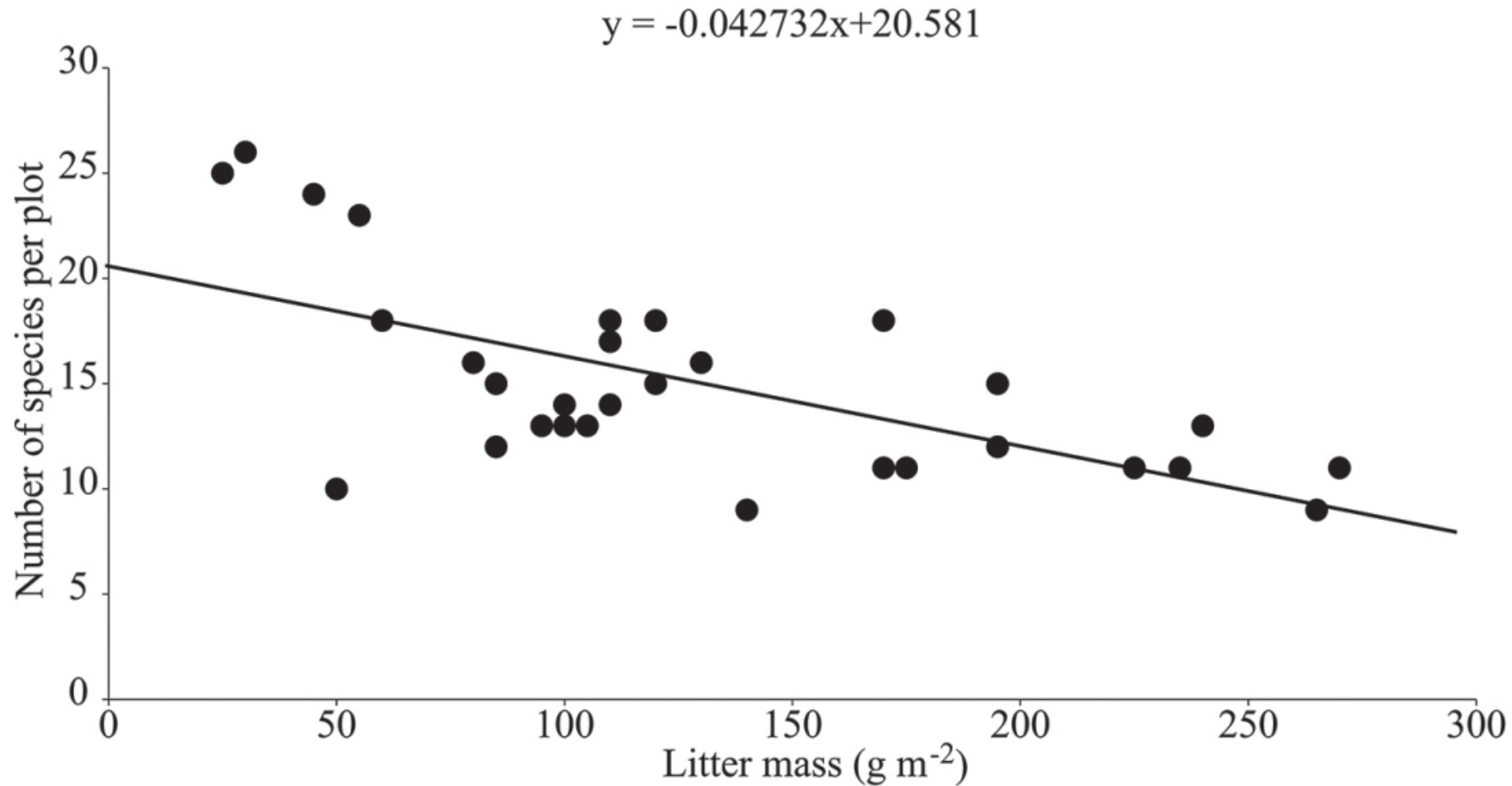
Domas UOGINTAS*, Valerijus RAŠOMAVIČIUS



Species richness and functional diversity



The impact of litter accumulation on vascular plant species diversity



Take home messages

- There is no one optimal or universal management solution for all biodiversity in all types of habitats
- The most important aspect is the heterogeneity of land use at the landscape/farm level
- All kinds of homogenisation (one type of grazing intensity, one species of grazers, one intensity of mowing, etc.) lead to losses of biodiversity
- The most suitable management of grassland is mowing in the mild-growing season and grazing after or extensive grazing

Thank you for your attention!

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