

Book of abstracts

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“Biodiversity positive by 2030”

17-21 June 2024 – Bologna, Italy



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Bibliography

- Geissmann, T. (2002). Duet-splitting and the evolution of gibbon songs. *Biological Reviews*, 77(1), 57-76.
- Mather, R. (1992). A field study of hybrid gibbons in Central Kalimantan, Indonesia. (Ph. D. thesis). Department of Veterinary Anatomy, Cambridge University.
- Vu, T. T., & Doherty, P. F. (2021). Using bioacoustics to monitor gibbons. *Biodiversity and Conservation*, 30(4), 1189-1198.

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PI@ntBERT: leveraging large language models to enhance vegetation classification through species composition analysis

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Biodiversity is under pressure, as many disturbance events threaten natural areas. Therefore, habitat distribution mapping is increasingly relevant for monitoring their statuses. It aims to quantify the mathematical relationships between predictors and occurrences of categorized locations. Thus, advanced numerical technologies are more required than ever. They help summarizing our knowledge of species assemblages. Herein, we present PI@ntBERT, a framework that encodes vegetation patterns and enhances their classifications. This tool leverages computer science and linguistic processes based on transformers. In particular, the pipeline implements two artificial intelligence tasks: fill-mask and text classification. Firstly, masked language modeling gets a statistical understanding of vascular plant compositions. Then, subsequent training assigns a label to sentences describing phytosociological relevés. The fine-tuning of a pretrained foundation model on in-domain words shows significant upgrade and clearly outperforms previous state-of-the-art methods. The software pushes the accuracy score on a database containing millions of European surveys to 92.48%. Finally, our results showcase that flora is a strong marker of ecosystems and doesn't need to be coupled with environmental data to train neural networks. The proposed application has a vocabulary covering over ten thousand organisms. This approach offers a methodology for advancing our comprehension in community ecology and conservation biology.

Bibliography

Chytrý, M., Tichý, L., Hennekens, S. M., Knollová, I., Janssen, J. A., Rodwell, J. S., ... & Schaminée, J. H. (2020). EUNIS Habitat Classification: Expert system, characteristic species combinations and distribution maps of European habitats. *Applied Vegetation Science*, 23(4), 648-675.

Devlin, J., Chang, M. W., Lee, K., & Toutanova, K. (2018). Bert: Pre-training of deep bidirectional transformers for language understanding. arXiv preprint arXiv:1810.04805.

Gu, Y., Tinn, R., Cheng, H., Lucas, M., Usuyama, N., Liu, X., ... & Poon, H. (2021). Domain-specific language model pretraining for biomedical natural language processing. *ACM Transactions on Computing for Healthcare (HEALTH)*, 3(1), 1-23.

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Population trends of terrestrial mammals in community forests of Indonesian Borneo

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Anthropogenic activities threaten tropical biodiversity, particularly in the Rungan-Kahayan landscape of Central Kalimantan, Indonesian Borneo. This region comprises largely-unprotected forest habitats, and has experienced mounting anthropogenic pressures from logging, oil palm and gold mining. Over the past decade, social forestry has emerged as a way to conserve Indonesia's forests, while bringing tangible benefits to people. Yet, studies assessing wildlife population trends and the underlying stressors in these socioecological systems are scarce. We studied the occurrence of terrestrial mammals and identifying drivers of population variation at a landscape level in Rungan-Kahayan via intensive camera-trapping inside and outside social forestry areas. We combined this information with mapped environmental and social covariates using Multi-Species Occupancy modelling to examine their influence on wildlife at a community and species level. Social forests supported substantial mammalian diversity and species occupancy tended to be greater with increasing distances from gold mining sites, limited rural infrastructure, reduced human population pressures, closer to forest edges and high aboveground forest biomass. Environmental factors had an overall higher impact on species throughout the landscape. Understanding how these socioecological predictors influence biodiversity in social forestry systems will help us evaluate whether these interventions bring co-benefits to wildlife and people in the region.

Bibliography

Benítez-López, A., Santini, L., Schipper, A. M., Busana, M., & Huijbregts, M. A. (2019). Intact but empty forests? Patterns of hunting-induced mammal defaunation in the tropics. *PLoS biology*, 17(5), e3000247.

Dirzo, R., Young, H. S., Galetti, M., Ceballos, G., Isaac, N. J., & Collen, B. (2014). Defaunation in the Anthropocene. *science*, 345(6195), 401-406.

Deere, N. J. (2018). Informing tropical mammal conservation in human-modified landscapes using remote technologies and hierarchical modelling. University of Kent (United Kingdom).

Gardner, T. A., Barlow, J., Chazdon, R., Ewers, R. M., Harvey, C. A., Peres, C. A., & Sodhi, N. S. (2009). Prospects for tropical forest biodiversity in a human-modified world. *Ecology letters*, 12(6), 561-582.

Tilker, A., Abrams, J. F., Nguyen, A. N., Hörig, L., Axtner, J., Louvrier, J., ... & Wiltling, A. (2020). Identifying conservation priorities in a defaunated tropical biodiversity hotspot. *Diversity and Distributions*, 26(4), 426-440.

Tobler, M. W., Zúñiga Hartley, A., Carrillo-Percegué, S. E., & Powell, G. V. (2015). Spatiotemporal hierarchical modelling of species richness and occupancy using camera trap data. *Journal of Applied Ecology*, 52(2), 413-421.

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Contribution of agricultural fields for conservation of arthropod populations

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The intensification of agriculture has been identified as one of the main causes of arthropod declines. To reverse this, changes in farming practices and management of surrounding habitats should occur, but a key challenge is identifying which changes in management approaches are effective in restoring biodiversity. Therefore, this study examines arthropod abundance and diversity in different agricultural habitats and management types. Arthropods were sampled three times in spring and summer of 2022 with pyramid traps in 120 sites in Buittenland van Rhoo (Netherlands). These sites included a variety of crops as well as semi-natural habitats. Our study showed that on average the abundance and diversity of arthropods of several taxa was lower in crop fields compared to