

English version

Announcement about the competition for the position of a postdoc in a research project *

* this announcement is not an offer within the meaning of the Polish law

Where: Polish Academy of Sciences, Institute of Nature Conservation in Krakow, Poland

Salary: total amount of 10000PLN/month (approx. 6500 netto) – 3 years, opportunity to apply for your own research grant affiliated with the same institute during the project and later after the project is finished

Extras: Financial bonuses for publications in JCR journals

Starting date: 1 October 2022

International collaboration: 1 week visit in Australia (prof. Hugh Possingham's Lab)
1 week visit in China (prof. Johannes Knops Lab)

Conferences: 1 international conference in Oceania or North America

Professional development: advancing skills in: supervising PhD student
own research grant writing
publishing in high impact journals
communication skills & soft skills development
advanced stats and data visualization

Work environment: you will be part of a collaborative, friendly, dynamic, diverse research group that also values work-life balance

Fun: lab retreats etc. 😊

Head of the project: Magdalena Lenda, PhD Magdalena.lenda1@gmail.com
lenda@iop.krakow.pl

Project in collaboration with

prof. Hugh Possingham from University of Queensland, Brisbane, Australia

<https://scholar.google.com.au/citations?user=ISYOB3cAAAAJ&hl=en>

prof. Johannes Knops from Xi'an Jiaotong Liverpool University in Suzhou, Jiangsu, China.

<https://scholar.google.com/citations?user=wQzqO0MAAAAJ&hl=en>

Deadline for application:

submission of documents to the head of the grant:

until August 19

interviews: August 19 - August 30

Background information

Who are we searching for?

Your qualifications:

- excellent written and spoken English (certificate or leading author in at least 5 publications in English or at least 2 year experience as postdoc in any English speaking country)
- proven by publication record ability to write and publish articles in quality, ideally, medium high impact peer-reviewed scientific journals (IF equal or higher than 4, as it would be still early career scientist up to 7 years after completing PHD)
- proven by publications ability to perform advanced statistical analyses
- experience in advanced GIS analyses
- proven by publications or education experience in mathematical modelling

- any teaching record would be much appreciated
- any experience in talking or writing about science to public would be much appreciated
- basic knowledge about economy
- knowledge in land sharing/land sparing models
- knowledge in Species Distribution Models

What will you do?

Postdoc will mostly work on the topic: “Land sparing is the best strategy only in regions where agriculture encroaches into pristine and intact areas, but land sharing is better in areas already highly altered by agriculture such as cultural landscapes” - this topic will require following activities and duties:

- systematic review and metaanalyses
- advanced spatial and statistical analyses
- advising PHD student,
- supervising statistical analyses in PHD thesis of PHD student,
- participating in data collection in field on birds, pollinators, spiders, ants
- *most of such data will be collected by field assistants, PhD student and the PI
- * extra money secured in this project to cover costs of travels in field and help of field assistants
- leading training workshops teaching advanced statistics and modelling relevant to project tasks for all members of the group.
- building mathematical models urgent in the project (land sharing/sparing and the economy one).
- *with help provided from qualified economist
- advanced GIS analyses
- writing your own manuscripts
- you will be encouraged to develop and work on your scientific ideas as side projects
- you will be encouraged to write your own research grant

Questions?

More info about the grant you can get from the head of the project:

email: Magdalena.lenda1@gmail.com, lenda@iop.krakow.pl

Aim of the project: An increasing demand for food production is one of the main concerns in and nature conservation and agronomy. There are modern theoretical strategies in spatial conservation landscape planning, attempting to solve the problem of feeding 9 billion people by 2050 and preserving biodiversity. One of them is the land sharing or land sparing framework proposed by researchers from Cambridge University in the Science magazine in 2005. Two concepts from classic landscape ecology were proposed to resolve this problem: 1) land sparing and 2) land sharing (Green et al. 2005). Land sparing involves intensifying agriculture in cropland and protecting intact, natural, or restored areas (so-called spared land). Land sharing involves improving the quality of the agricultural landscape by increasing crop mosaic area that is extensively managed; thus, it may be suitable for many wild species. Should we use land sparing which assumes intensification of agriculture on one hand and protection of intact remnant areas or release areas from agriculture and leave it for the natural succession? Or should we improve the quality of the agricultural landscape for biodiversity by increasing the share of more extensively managed crops in the mosaic (land sharing)? The land sharing/sparing dilemma has been mostly studied in intact, pristine, and tropical forests. Recent studies in such forests suggest that land sparing is a better strategy for sustaining species diversity and for agricultural production (Phalan et al. 2011; Kamp et al. 2015). However, in the Anthropocene, few pristine intact areas are remaining on Earth to be spared. Therefore, in many regions where human-wildlife relationships have been established in cultural landscapes with long agricultural traditions, new areas for nature conservation could be created from abandoned post-agricultural land. There are some ideas, such as the newly proposed “rewilding” strategy in Europe to set new areas for nature conservation by agricultural land abandonment or using previously abandoned post-agricultural land (Navarro 2012; Sylven 2015; Pereino et al. 2019). The European Union (EU) has also advised abandoning at least 5% of farmland for conservation purposes (“Greening policy”). Not all such ideas propose buffer zones to control the colonisation of invasive species, especially since sometimes areas for nature conservation may be too small to create buffer zones. In my project, we adapt the land sharing/sparing concepts to a fully managed landscape, which could be previously abandoned or is abandoned for nature conservation, as proposed in the “rewilding” and “greening” strategies. Thus, in this proposal, I define land sparing as the intensification of agriculture in cropland and abandonment of fields for nature conservation, and land sharing as increasing the crop mosaic area that is extensively managed. This definition is well established in the literature (Kamp et al 2015). Many studies have shown that abandoned agricultural land or land set-aside is highly threatened by the invasion of alien plant species that often create monocultures (Lenda et al. 2021). Such species disturb the natural succession (Gusev 2015) and decrease biodiversity (Moroń et al. 2009; Skórka et al. 2013). This is important because biodiversity in agricultural ecosystems has practical functions in ecosystem services, such as pollination, pest control, and nutrient cycling. Invasive alien plant species colonise abandoned farmland globally (Cramer et al. 2008) but the risk of plant invasions has never been addressed in the land sharing/land sparing conceptual framework. I predict that land sharing may be a profitable policy for sustaining biodiversity when the risk of invasion is high. This could be because land management practices may prevent biodiversity by damaging populations of invasive alien species. The land sparing policy may be a threat to biodiversity if invasion risk is high, because spared land, which in this project refers to abandoned post-agricultural land, may be colonized by alien species. They may remain uncontrolled in early invasion stages; thus,

alien invasive species may benefit from the land sparing strategy. Therefore, the aim of this project is to verify which strategy—land sparing or land sharing—is better for biodiversity, conservation of nature, and yield production in regions under varying risk of invasion of alien species.

The main questions to be addressed in the project

The aim of this project is to verify which strategy—land sparing or land sharing—is better for biodiversity conservation and yield production in regions under varying risk of invasion of alien plant species.

Main hypothesis: If the invasion risk is high, land sharing is a better strategy for protecting biodiversity and ecosystem services than land sparing, allowing effective control of invasive species via fieldwork (data will be collected in field)

2. Is land sparing the best strategy only in regions where agriculture encroaches into pristine and intact areas, and land sharing - better in areas already highly altered by agriculture such as cultural landscapes?

To answer that question, we will perform systematic reviews and meta-analysis.

You will develop and advance your skills with us

- advanced analyzes in R.
- advanced analyzes in GIS
- learn basics of Marxan (on a course in Australia or Europe) and MaxEnt (on a course in Europe or Australia)
- more advanced analyzes in these programs as you like
- collecting data for scientific papers from available databases and the Internet
- research planning
- write high-quality typescripts for scientific journals
- write research grants for the National Science Center
- soft skills (cooperation in a large research team, building lasting cooperation with scientists from abroad, methods of self-presentation, methods of short, effective communication of information in speech and writing)

Money issues

- research (materials, costs of field staff, some species identification, business trips) financed by the National Science Center grant (Head of the grant – dr. Magdalena Lenda).
- 1 week internship with prof. Possingham in Australia, funded by a grant from the National Science Center
- 1 week internship with prof. Knops in China, funded by a grant from the National Science Center
- 1 international conference are financed by a grant from the National Science Center
- high bonuses for publications from the ministerial list (eg 12,000 PLN total amount for being the first or correspondence author in a journal for 140 points, more details of the bonus in the current regulations of bonuses for publications in the Institute), financed by the Institute of Nature Conservation, more information in the Institute's regulations.
- you can apply for small (usually around PLN 1,000-10,000 per year) internal funds of the Institute of Nature Conservation - subsidies for young researchers for research minigrants; subsidies for mini-internships in Poland and abroad. More information in the Institute's

regulations.

- you will be encouraged to apply for own grant – Sonata/Opus from National Science Centre which would provide extra salary and funds for your own research.

Working conditions

- you will be part of a dynamic international team of scientists that has been cooperating for a long time and has already published about 10 high-grade scientific papers (publications, among others, in Ecology Letters, Conservation Biology).

- we value good communication, collaboration, stress-free problem solving, supporting environment and individual talents.

- flexible working hours adapted to the work mode and effectiveness of team members

- we value our own ideas, including the interdisciplinary, even weird ones!

Recruitment

1. An open competition which will include:

- CV - please attach a contact (e-mail address) to 3 people with whom you worked (e.g. the supervisor and members of his team or people from any previous work (bachelor's, master's, ornithological camps, nature valuation)

- cover letter

- your doctoral supervisor's opinion

- interview with the head of the project (Magdalena Lenda)

- an interview with the supervisor- Piotr Skórka, and one person from outside the team

- your questions to us

Required documents

- diploma (PhD degree in biology/geography/ecology)

- confirmation of the knowledge of English at least at B2 level

- driving license (for inspection, please do not send scans)

- CV

- letter of motivation

- your doctoral supervisor's opinion

- signed General Data Protection Regulation (available form sekretariat@iop.krakow.pl)

please send it to the grant manager at the following address: [magdalena.lenda1@gmail.com](mailto:magdalenalenda1@gmail.com)

and to sekretariat@iop.krakow.pl

Deadlines

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until August 19

interviews: August 19 - August 30

References

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