INSTITUTE OF NATURE CONSERVATION

POLISH ACADEMY OF SCIENCES

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Scholarship at the Institute of Nature Conservation Polish Academy of Sciences, Kraków on artificial intelligence, citizen science and biodiversity monitoring

PROJECT DESCRIPTION

We invite applications for a **student/PhD student position** under the framework of the National Science Centre (NCN) scholarships for student/PhD students within the project **WildINTEL** "*Building a scalable WILDlife monitoring system by integrating remote camera sampling and artificial INTELligence with Essential Biodiversity Variables*" (2023/05/Y/NZ8/00104). This 3-year project started in February 2024 and is a collaboration of European research teams from Poland, Spain, Norway and Germany, funded under the BiodivMon joint call launched by **BiodivERsA+**. The Institutions involved are the Institute of Nature Conservation Polish Academy of Sciences (project coordinator); the Centre for Advanced Studies in Physics, Mathematics and Computation, Faculty of Experimental Sciences, University of Huelva (Spain); the Department of Natural Resources and Environmental Health, University of South-Eastern Norway; the German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Martin Luther University Halle-Wittenberg; GBIF Spain, Coordination Unit, Spanish National Research Council (CSIC); and, the Electrical Engineering and Computer Science (EECS)/ Computer Science and AI Laboratory (CSAIL) from the Massachusetts Institute of Technology (USA).

The main goal is to develop a cutting-edge coordinated wildlife monitoring system underpinned by the Essential Biodiversity Variables (EBVs) framework. We combine camera trapping, citizen science, artificial intelligence, and hierarchical models for the automated production of species population and community structure EBVs. This will enable stakeholders to obtain reliable and timely automated assessments of species conservation status and conservation actions to halt biodiversity loss. WildINTEL collects remote camera images in pilot study areas representing four main European biogeographical regions: Mediterranean, Continental, Alpine and Boreal; namely in Tatra National Park (Poland), Doñana National Park (Spain), Hardangervidda area (Norway) and the Oder river valley (Germany). At later stages, the WildINTEL system will help mobilise and optimise the use of existing data and integrate

camera-trap projects from other areas while supporting the analysis of the drivers of global change and biodiversity loss at spatiotemporal scales. We focus on mammals as they are condition sentinels as well as crucial indicators of ecosystem trophic integrity and global change.

KEYWORDS: camera trapping, citizen science, deep learning, artificial intelligence, convolutional neural networks, species detectability, hierarchical modelling, population trends, community indicators, biodiversity monitoring.

SCOPE OF WORK

The research will focus on the mechanisms for coexistence in mammal communities inferred from camera trap data using citizen science and artificial intelligence for species identification. The student will actively participate in tasks related to the implementation of the entire project; some of these tasks involve participation in business trips. These tasks may include supporting the following: collation and archiving image data from the field, quality control and maintenance of large image datasets and associated metadata, collation of expert-classified animal species images to train artificial intelligence systems, support the associated citizen science project to enhance the general public's involvement and knowledge of wildlife, contributions to the website and social media profiles, and general support to the development of protocols and application for the harmonisation of standardised image data collation. With the classified image data, the candidate is expected to get involved in the spatio-temporal analysis of mammal species distributions and abundance and associated drivers, as well as in other Essential Biodiversity Variables, in the project study areas under the supervision of the WildINTEL team.

CANDIDATE PROFILE

The successful candidate will conduct research in the broad and exciting area of artificial intelligence, biodiversity science and global change. We seek for a highly motivated and creative student, with good communication skills, a strong capacity for work, and ability to think independently. As the student will be part of an international and interdisciplinary research team, bringing together computer scientists and ecologists, she/he will work closely with collaborators across several institutions. Therefore, a cooperative character, a good command of English (oral and written) and willingness to travel and conduct research stays abroad are highly desirable.

The successful candidate is expected to publish results in scientific journals and present them to both scientific and non-scientific audience. Previous research experience, including data collection in the field with camera-trapping, management of citizen-science projects, statistical analysis (preferably in R), preparation of scientific publications, dissemination of scientific results and professional experience abroad are assets. Candidates must have excellent writing and verbal communication skills and demonstrated experience in scientific writing. A driving license and physical ability to work in a variety of field conditions, including mountains, are recommended. All qualified applicants will receive consideration without regard to race, color, religion, sex, sexual orientation or identity, national origin or disability status.

WORKING ENVIRONMENT

The Institute of Nature Conservation in Krakow, Polish Academy of Sciences (IOP PAN), is the leading research centre on applied ecology, nature conservation and biodiversity monitoring in Poland. IOP PAN offers a stimulating research environment with unique opportunities to develop your career and academic skills. The candidate will work closely with an international and interdisciplinary team of researchers. The institute provides excellent working conditions and great support for the development of young researchers, including specific funds for outstanding ideas, as well as for fostering scientific collaboration and professional networking. It is a very dynamic institute with a friendly working environment located in the vibrant and beautiful city of Kraków. The city has a high quality of life, with many film, music, and cultural festivals and excellent public transport infrastructure.

CONDITIONS OF THE SCHOLARSHIP

- Scholarship: between 2500 and 5000 PLN/month, according to qualifications and time devoted.
- Period: starting with a 6-months contract with the possibility of extension till the end of the project, starting not earlier than mid-June 2025.
- Location: Kraków, with potential research stays at University of Huelva (Spain) and other partner institutions, and flexible working schedule (e.g., remote work, task-based approach).

NCN scholarships may be awarded to persons who are not PhD holders and meet any of the following terms:

a) is a student of full-time first or second-cycle degree programmes or uniform Master's studies at any university in Poland;

b) participate in a doctoral programme in Poland;

c) are PhD students at a doctoral school in Poland.

More information on NCN scholarships can be found here. WildINTEL will cover travel and accommodation costs during project meetings, research stays at project partners and eventually the participation in scientific conferences.

CANDIDATE REQUIREMENTS

- Bachelor student/MSc student/PhD student in biology, ecology, environmental sciences, bioinformatics, or other related disciplines to the topic of the project.
- Good command of oral and written English and good skills in scientific writing.
- Biological and ecological background.
- Basic knowledge of statistics and database management.

Additional assets are:

- Documented previous research experience (publications, participation in scientific conferences or research projects).
- Good skills in the identification of European mammal species.
- Experience with camera trapping.
- Experience with fieldwork.
- Experience in knowledge of statistical methods and analysis in ecology using the R software.
- Experience in programming.
- Experience in preparing press notes and dissemination of scientific outputs.
- Driver's license.
- Previous working experience in foreign research institutions.

APPLICATION FOR THE SCHOLARSHIP

The required documents are:

(1) A copy of the Master or Bachelor degree or document confirming the completion of first- or second-degree studies in biology, ecology or other areas related to the topic of the project.

(2) Certificate of student status (Zaświadczenie o posiadaniu statusu studenta) to confirm the fulfilment of the requirements of the NCN regulations.

(3) A letter of interest (maximum 2 pages), detailing the qualifications of the candidate for the position, his/her research experience, and how this position will help to fulfil personal career goals. The letter should include contact information of the candidate.

(4) Curriculum vitae, including education, employment and research experience with a list of publications and a short description of scientific achievements, particularly information on participation in scientific conferences, workshops, training and internships, participation in research projects, involvement in learned societies and students' scientific associations, and awarded distinctions and scholarships.

(5) A copy of maximum three main scientific contributions of the candidate (articles, congress presentations, popular articles).

(6) Contact information (e-mail) to two academic referees or people with whom you have worked.

(7) Declaration of consent for processing of personal data for the purpose of recruitment (see below).

The recruitment rules will follow the National Science Centre regulations (in particular https://ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2022/uchwala124_2022-zal1_ang.pdf). The selection will be based on the qualifications of the candidates including scientific achievements, experience, awards, internships, skills and competences. An interview will be part of the selection of candidates. Recruitment is a two-stage process and includes: 1) evaluation of candidates' documentation and 2) an interview with selected candidates, which may be complemented with additional testing (e.g. presentation, writing an essay) at the request of the Evaluation Committee.

The documents should be combined into **a single pdf** (it is important that the Evaluation Committee will get one single document per candidate) and sent by email to the addresses sekretariat@iop.krakow.pl and wildintel@iop.krakow.pl by **15th May 2025, 12:00 CET** with the **subject "WildINTEL- student application"**. The pre-selected candidates would be invited for an interview in the second half of May or beginning of June. The decision of the Evaluation Committee will be announced in the IOP website by 13th June 2025.

Declaration of consent for processing of personal data within the framework of the competition procedure for granting scientific scholarships in research projects funded by the National Science Centre

I consent for my personal data to be processed by the Institute of Nature Conservation Polish Academy of Sciences for the purposes necessary for the recruitment process on the award of scientific scholarships in research projects funded by the National Science Centre (in accordance with the Regulation of the European Parliament and of the Council (EU) 2016/679 of 27 April 2016, on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Regulation on Data Protection) (J.L. EU. 2016, No. 119, p. 1) - hereinafter referred to as RODO, and national data protection regulations issued on its basis.

Place, date Signature

I consent for my personal data to be processed by the Institute of Nature Conservation Polish Academy of Sciences in Kraków for the purposes necessary for the recruitment process on the award of scientific scholarships in research projects funded by the National Science Centre (required if the data provided include special categories of data referred to in Article 9(1) of the RODO).

Place, date Signature