



# INSTITUTE OF NATURE CONSERVATION POLISH ACADEMY OF SCIENCES

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Mickiewicza 33, 31-120 Kraków  
tel. (12) 370-35-00, fax: (12) 632-24-32

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## Post-doctoral position in ecological modelling of camera trap data for biodiversity monitoring

### PROJECT DESCRIPTION

We invite applications for a **postdoctoral position** 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 is a collaboration of European research teams from Poland, Spain, Norway and Germany, funded under the [BiodivMon 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; 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 of the project is to develop a cutting-edge coordinated wildlife monitoring system underpinned by the Essential Biodiversity Variables (EBVs) framework. We will 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 will collect 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). The project includes the development of artificial intelligence systems, integrated with citizen science projects, for species identification and counting of individuals in camera-trap images from these areas, as well as the maintenance, periodic evaluation and improvement of these systems. 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 will focus on mammals as they are condition sentinels and crucial indicators of ecosystem trophic integrity and global change.

**KEYWORDS:** artificial intelligence, biodiversity monitoring, camera trapping, citizen science, deep learning, hierarchical modelling, random-encounter models, mammal communities, occupancy modelling.

## **SCOPE OF WORK**

The postdoc will focus on developing ecological models using camera trap data classified by artificial intelligence models and citizen scientists. The data consists of images from unmarked mammals collected in Tatra National Park, Doñana National Park and other study areas within the WildINTEL project, collected following specific sampling designs. Additionally, the researcher will contribute to the maintenance, regular evaluation and improvement of the WildINTEL semi-automated flow, which includes artificial intelligence systems and periodical reporting of ecological parameters of both species and communities. Responsibilities also include the creation, storage, quality control and management of large databases. The successful candidate will work closely with an interdisciplinary team of mathematicians, computer engineers and ecologists. She/he will also support the development of infrastructure for the semi-automated monitoring system as well as participate in field data collection.

## **CANDIDATE PROFILE**

We are looking for a highly motivated researcher with a solid background in statistical modelling and/or quantitative ecological modelling, with a special focus on hierarchical and random encounter models of camera trap data. The candidate should have demonstrated skills in population and community ecology and in the analysis of camera trap data of unmarked animals (e.g. occupancy and N-mixture models, unmarked spatial capture-recapture models, random encounter models). Knowledge and skills in deep learning and data science, as well as experience with AI models for species classification are desirable. Prior involvement in environmental and biodiversity monitoring projects using camera trapping is a valuable asset.

The successful candidate will conduct research in the broad and exciting area of biodiversity science, artificial intelligence, and global change. We seek a highly organized, proactive, and results-driven person, with a proven ability to deliver tasks on time and meet deadlines efficiently, with good communication skills, a strong capacity for work, and the ability to think independently. She/he will be part of an international and interdisciplinary research team, and, thus, she/he should have the capacity to collaborate and work with multiple people and groups in an international environment. A cooperative character, a good command of English (oral and written) and a willingness to travel and conduct research stays abroad are highly desirable. The successful candidate is expected to publish results in scientific journals and disseminate them to scientific and non-scientific audiences. Professional experience abroad is an asset. All qualified applicants will receive consideration regardless of 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 join an international and interdisciplinary research team, whose mission is to investigate the impact of global environmental change on species, ecosystems and ecological interactions. The successful candidate will conduct research visits abroad to the WildINTEL partners. 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 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. It is quite safe, most people speak English, and it hosts many university students, also from abroad.

## CONDITIONS OF EMPLOYMENT

- Contract: 140 000 PLN/year total costs (approx. 11,700 PLN/month total costs) in a full year of contract according to NCN regulations.

This amount is the maximum possible contractual amount for a post-doc in projects funded by the National Science Centre in Poland and includes the employer's costs, full health insurance according to the national system, social security and pension contributions (total costs = gross gross salary).

WildINTEL will cover travel, accommodation and per diem expenses for project meetings, research stays at project partners and attendance at scientific conferences. Additional financial benefits are available through IOP PAN, including publication bonuses and internal grant opportunities, as well as IOP PAN internal grants. There is also the possibility to apply for future own research projects through various funding agencies in Poland.

- Duration: the starting date is negotiable, with a preferred start on 1<sup>st</sup> October 2025. The contract will run for the full duration of the project, which is scheduled to conclude in February 2027, unless extended.
- Location: Kraków, with research stays at our project partners at the University of Huelva (Spain) , University of South-Eastern Norway and the German Centre for Integrative Biodiversity Research (iDiv). The working schedule has some flexibility (e.g., remote work, task-based approach).

## CANDIDATE REQUIREMENTS

Obligatory qualifications are:

- PhD in ecology, theoretical ecology, applied statistics, biostatistics, applied mathematics, environmental sciences, or other related disciplines.
- Robust knowledge of population and community ecology to derive related Essential Biodiversity Variables.
- Demonstrated fluency in at least one scientific programming language commonly used in ecological modelling (R, Python).
- Proven ability to publish impactful scientific research, appropriate to the candidate's level of experience.
- Excellent command of oral and written English.
- The applicant must comply with the requirements of the competition rules of the National Science Centre in Poland, in particular, the PhD degree must be obtained in the year of employment in the project or within a period of 7 years before 1 January 2024. This period must be extended in certain cases; please check [the NCN rules here](#).

Additional assets are:

- Documented participation in research projects and/or leadership of research projects/work packages
- Knowledge of deep learning and artificial intelligence systems.
- Knowledge of different platforms to store and classify camera trap data.
- Experience in camera trap projects and field work.
- Experience in dissemination and transfer of scientific knowledge.
- Working experience in foreign institutions.

## APPLICATION FOR THE POSTDOC POSITION

The required documents are:

- (1) A copy of the PhD degree in ecology, biogeography, biostatistics, applied mathematics, environmental sciences, or other related disciplines. The PhD degree must be recognised as equivalent to Polish title or, alternatively, must have passed the nostrification procedures to obtain such recognition by the time of application. The [system KWALIFIKATOR](#) is a tool to assess the level and status of qualifications in the country of issue and to know which foreign degrees are recognised in Poland. Please, check in the KWALIFIKATOR system whether you are eligible before sending the application.
- (2) A letter of interest (maximum 2 pages) detailing the candidate's qualifications for the position, her/his research and professional experience, and how this position will help fulfil personal career goals. The letter should include the candidate's contact information, as well as the contact information of two academic referees or people with whom the candidates have worked.
- (3) 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 scientific associations, and awarded distinctions and scholarships.

- (4) 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. The selection will be based on the qualifications of the candidates, including demonstrated skills and competences, scientific achievements, professional experience, awards and internships. Recruitment is a two-stage process and includes: 1) an evaluation of the candidates' documentation and 2) an interview with selected (top-ranked) candidates. The Evaluation Committee will be appointed by the Director of IOP PAN.

The documents should be **combined into a single PDF** and sent by email to the address [sekretariat@iop.krakow.pl](mailto:sekretariat@iop.krakow.pl) by **1<sup>st</sup> September 2025, 14:00 CET** with the subject **"WildINTEL-postdoc application"**. The pre-selected candidates would be invited for an interview in September. The decision of the Evaluation Committee will be announced at the IOP website before the 30<sup>th</sup> of September 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