



# INSTITUTE OF DENDROLOGY

## POLISH ACADEMY OF SCIENCES

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### **Announcement about recruitment to the Poznan Doctoral School Institutes of the Polish Academy of Sciences at the Institute of Dendrology Polish Academy of Sciences No 15/2020/ID/PSD**

**I. Position type:** doctoral student

**II. Number of vacancies:** 1

**III. Discipline:** biological sciences

**IV. Application deadline:** 18.09.2020

**V. Detailed information about recruitment process can be found on the website:**  
<http://www.idpan.poznan.pl/poznaska-szkola-doktorska> and  
<https://www.ibch.poznan.pl/pl/main-pl/st-doktoranckie/psd-ipan/>

**VI. Research topic:** Linking soil substrate biogeochemical properties and spontaneous succession on post-mining areas: novel ecosystems in a human-transformed landscape.

**VII. Principal Investigator / Research group:**

dr hab. inż. Andrzej M. Jagodziński, prof. ID PAN, Laboratory of Ecology

**VIII. Project Description:**

In this research project we aim to assess the differences in functioning of natural and novel ecosystems, spontaneously developing in post coal mining spoil heaps. We will also assess when novel ecosystems will be similar to natural ecosystems. We will conduct our study in Upper Silesia, region with long-term tradition of coal mining industry. In our research project we will test the following hypotheses:

1. Functions of spontaneous ecosystems on post-mining areas will trend towards the levels of natural ecosystems, increasing ecosystem values along successional gradients of time since abandonment. Due to low resources availability, initial successional stages will reach low biomass and nutrients cycling rates.
2. Alpha and beta diversity of post-mining areas will increase in the first phase of successional development and decrease in the second phase. We assume the peaks of abundance and biodiversity in the intermediate stages of succession, as well as that this patterns will differ among various groups of organisms.
3. Level of completeness of the interaction network among ecosystem functions and diversity of particular organism groups will increase along successional gradients.

*Andrzej M. Jagodziński*

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This will be due to encroachment of late-successional species and increase of resources availability.

4. Levels of ecosystem functions and biodiversity will be strongly dependent on landscape context, i.e. spoil heap shape and area, surrounding ecosystems characteristics and connectivity to their species pools.

In the study we will integrate field measurements with remotely sensed data, which allow us to expand our conclusions for multiple sites. Results will significantly expand the knowledge about mechanisms of assembling and development of post-industrial ecosystems. This will bridge the gap in knowledge about relationships among biodiversity, ecosystems functioning and their productivity. We assume that our results will help in developing novel analytical frameworks, supporting further studies on ecosystems restoration and biological conservation in post-industrial lands.

PhD student tasks will cover analyses of biodiversity along successional gradient of the studied ecosystems, analyses of relationships between biodiversity and ecosystem services and analyses of differences between post-industrial and natural ecosystems functioning. We expect that we will publish these results in the best international scientific journals regarding vegetation ecology and ecosystems restoration. We also aim to present the results during international conferences focused on the study scopes.

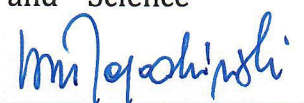
In our research project we offer a collaboration with a wide team of scientists, analyzing biodiversity of various groups of organisms: bryophytes, lichens, fungi, bacteria, mites, insects and birds, as well as nutrients cycling specialists. Joining to our research team will support wider studies aimed to increase our understanding of mechanisms of ecosystems shaping in post-industrial landscape. We offer ability to wide exchange of ideas and scientific development in a dynamic team, focused on broad scope of ecological research.

#### **IX. Additional information:**

1. Research and doctoral dissertation will be conducted under research project: Linking soil substrate biogeochemical properties and spontaneous succession on post-mining areas: novel ecosystems in a human-transformed landscape (2019/35/B/ST10/04141, National Science Centre, Poland).
2. The doctoral student will receive a doctoral scholarship in the amount of 4180 PLN monthly during the entire doctoral studies (4 years).
3. The doctoral student will have the social insurance costs referred to in art. 6 clause 1 point 7b of the Act of October 13, 1998 on the social insurance system (Dz. U. z 2019 r. poz. 300, 303 i 730).

#### **X. Requirements for candidates:**

1. Master degree in discipline of biological sciences, forest sciences, Earth and environment sciences or related or meeting the conditions specified in art. 186 section 2 of the Act of July 20, 2018 Law on Higher Education and Science (Dz. U. z 2018 r., poz. 1668 z późn. zm.).





2. Very good skills in oral and written English, allowing for preparing manuscripts of scientific publications and oral presentations during national and international conferences.
3. Ability to conduct field investigation in various environmental conditions (forests, spoil heaps), and prior experience in fieldwork, including vegetation surveys.
4. Experience in vegetation diversity analyses, supported by earlier publication records.
5. Basic data analyses skills using statistical software (preferably R, alternatively Python).
6. Favorably: experience with specialized R packages for vegetation analyses (vegan, FD, ade4) and machine learning (caret, random forest, support vector machine, neural networks), spatial analyses skills and experience in spatial data processing in QGIS or R.

#### **XI. Required documents:**

1. An application to PDS IPAS, including consent for the processing of personal data for the purposes of the recruitment procedure, and a declaration of familiarity with these rules.
2. A copy of the degree certificate confirming graduation or a certificate of graduation; in the case of degree certificates issued by foreign higher education institutions, the certificate referred to in Article 326(2)(2) or Article 327(2) of the Act, giving the right to seek to obtain a doctoral degree in the country under whose higher education system the issuing institution operates. A candidate who does not have the aforementioned documents will be obliged to supply them before being admitted to PDS IPAS. Additional information on foreign diplomas is available on the website: <https://nawa.gov.pl/en/recognition/recognition-for-academic-purposes/applying-for-admission-to-doctoral-studies>
3. A curriculum vitae showing previous education and employment, information on involvement in scientific activity (membership of student scientific groups, participation in scientific conferences, completed internships and training courses, prizes and distinctions received) a list of publications.
4. A motivation letter, containing a short description of interests, scientific accomplishments, and reasons for wishing to study at the doctoral school.
5. Certificates or other documents confirming the candidate's knowledge of English, if the candidate has such.
6. Contact details of at least one previous academic supervisor or other academic employee who has agreed to provide an opinion regarding the candidate.

**XII.** The application should be sent by e-mail to the address mgr Magdalena Łukowiak, lukowiak@man.poznan.pl, with the subject "**Competition for the position of doctoral student No. 15/2020/ID/PSD**" in the form of a pdf attachment. If sending by electronic means is not possible, applications sent to the address Institute of Dendrology, Polish Academy of Sciences, Parkowa 5, 62-035 Kórnik, Poland, with the note on the envelope "**Competition for the position of doctoral student No. 15/2020/ID/PSD**" are also accepted. Please do not send original documents.



**XIII. Application deadline: 18.09.2020.**

Incomplete applications and applications submitted after the deadline will not be considered.

**XIV. Criteria for assessing candidates:**

1. The candidate's academic accomplishments, based on grades attained during studies, scientific and popular science publications, scholarships, awards and distinctions resulting from research or student activity, and other achievements.
2. The candidate's academic and professional experience, based on participation in conferences, workshops, training courses and internships, participation in research and commercial projects, involvement in scientific groups and associations, international and professional mobility, and experience in other fields, including in industry.
3. Candidate's knowledge in the biological science discipline.
4. Knowledge of the topics listed in the recruitment notice.

**XV. Competition results: until 30.09.2020.**

**XVI. A description of the recruitment process can be found in the Recruitment Regulations for PDS IPAS. After the recruitment is completed, unaccepted candidates will be informed of the strengths and weaknesses of their applications.**

**XVII. Admission to PDS IPAS is refused by administrative procedure. The decision may be appealed with to the Director of the Institute of Dendrology of the Polish Academy of Sciences.**

**XVIII. Additional information may be provided Principal Investigator / Research group: dr hab. inż. Andrzej M. Jagodziński, prof. ID PAN.**

DYREKTOR  
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