Four-year PhD student position (one position) at the Museum and Institute of Zoology, Polish Academy of Sciences (Warsaw, Poland)

- **Project title/Tytuł projektu:**

Ring species and mixed geographic modes of speciation: what drives evolution of flightless arthropods in the Central Asian arid zone – using an extremely diverse tribe Dorcadionini (Coleoptera: Cerambycidae) as a model group.

Gatunki pierścieniowe i mieszane geograficzne tryby specjacji: co napędza ewolucję nielotnych stawonogów w strefie suchej Azji Środkowej – na przykładzie grupy modelowej niezwykle zróżnicowanego plemienia Dorcadionini (Coleoptera: Cerambycidae).

- **Project background:**

Reduced gene flow plays a critical role in speciation, which has traditionally been divided into three major modes depending upon the spatial distribution of diverging populations: **allopatric, parapatric,** and **sympatric**. However, there is new evidence for the hypothesis of **mixed modes of speciation**, in which the geographic context and levels of gene flow temporally vary during the divergence process. **Ring species** are a special case of parapatric speciation, where the original population spreads in two directions around a significant geographic barrier (encircling it); although neighbouring populations around the ring show free exchange of genes, at a single location two adjacent populations are reproductively isolated, though there is still a potential gene flow between each population. Arid regions are characterised by relatively fewer species compared to the better-watered biomes, but also by high levels of endemism, and particularly high functional diversity. While this makes them unique regions regarding biodiversity conservation, they are still poorly understood. This especially concerns **the Central Asian Arid Zone (CAAZ)**. Numerous studies have shown that flightless, sedentary arthropods can serve as excellent models for evolutionary studies, and that their phylogenesis may more often reflect their history of colonisation. Central Asian representatives of the **tribe Dorcadionini Swainson, 1840 (Coleoptera: Cerambycidae)**, a taxonomically highly complex group, are endemic to the region, making them a perfect model group for inferring the geographic modes of speciation and revealing the evolutionary and ecological mechanisms that underlie the generation of biodiversity of the CAAZ. This project aims at building the first large-scale, time calibrated phylogeny of Central Asian Dorcadionini, and by applying a total evidence approach, at reconstructing the most likely evolutionary scenarios that have been driving the speciation of this characteristic group. The results will also serve as a general model for other apterous arthropod groups distributed or evolved in this vast region and will lay the foundations for the genesis of the CAAZ fauna.

- **Offer:**

We are looking for a highly motivated PhD student to participate in the project funded by the National Science Centre, Poland (SONATA 18, grant no 2022/47/D/NZ8/01956). The project will be carried out at the Museum and Institute of Zoology, Polish Academy of Sciences in Warsaw, Poland. The PhD student will be supervised by **Prof. Wioletta K. Tomaszewska** and co-supervised by **Dr. Lech Karpiński** (**ResearchGate profile**). The selected PhD student will receive a monthly stipend of **~4500 PLN net** (after tax; NCN PhD scholarship) for the **first three years**, and a stipend of **~3200 PLN net** (standard PhD scholarship) funded by the BioPlanet Doctoral School for the **fourth year**.

Moreover, the selected student will be involved in **three fully funded sampling expeditions to the region of Central Asian: Mongolia, Kazakhstan, and Kyrgyzstan!**

- **Requirements** (**bold** = mandatory; up to two non-bold points may be waived)**:**

a) **MSc in Biology/Evolutionary Biology**;
b) **at least Upper Intermediate (B2), preferably Advanced (C1), English skills**;

c) **at least basic experience in molecular lab work** + (ideally) basic experience in bioinformatics;
d) basic understanding of Evolutionary biology (speciation, etc.) and Phylogeography, ideally in beetles (Coleoptera);
e) **at least one relevant scientific publication in peer-reviewed journal** (in Entomology or Evolutionary Biology);
f) **no contraindications (physical or mental) to work in difficult field conditions** (*project involves three one-month field sampling expeditions to arid ecosystems of Central Asia – Mongolia, Kazakhstan, and Kirgizstan; spending nights mainly in tents; high temperature*);
g) willingness to learn software for statistical analysis (in the R environment) and geo-mapping (QGIS);
h) strong interest to learn/work on longhorned beetles (Col: Cerambycidae);
i) perseverance, commitment, and teamwork skills.

- **Work description:**

Collecting material in the field (together with the PI) and subsequent performing laboratory work (i.e. DNA extractions, PCRs), processing raw sequences, and preparing phylogenetic analyses in various programs (e.g. IQ-Tree, MrBayes). Taking and stacking images of beetle specimens and subsequent graphics processing. Participating in preparation of the morphological data matrix. Participating in statistical analyses. Writing publications with other members of the team, which will provide the basis for his/her PhD achievements. Presenting and disseminating the obtained results in the form of conference posters/talks and scientific papers.

- **How to apply:**

Please contact **Dr. Lech Karpiński** (**lechkarpinski@gmail.com**; **lkarpinski@miiz.waw.pl**) (*for possible initial queries – due to the fieldwork, I will answer in mid-July at the latest*) providing the following documents (please title your email "Application for a PhD position"):

1) **CV with detailed information on your education, scientific career, including the list of publications**, (IMPORTANT) with the following statement provided at the end:
"*I give my consent to the processing of personal data provided in my application documents by the Museum and Institute of Zoology PAS for the purpose of the recruitment process, pursuant to the Personal Data Protection Act of 10 May 2018 (Journal of Laws 2018, item 1000) and in agreement with Regulation (EU) 2016/679 of the European Parliament and of the Council 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 Data Protection Regulation; L 119 from 04.05.2016)*";
2) one-page **cover letter** describing your motivation and research experience;
3) certified **copy of the MSc diploma**;
4) names and emails of at least **two reference persons** familiar with your qualifications;
5) filled **form to the BioPlanet Doctoral School**.

Application deadline: **15 Sep 2023**

- **Recruitment:**

The recruitment rules will follow **regulations of the BioPlanet Doctoral School of the Polish Academy of Sciences**. The selection will be based on the qualifications of the candidates including scientific achievements, experience, awards, internships, skills and competences. An interview (in early **October, 2023**) will be part of the selection of candidates. Candidates selected for PhD position will be asked to apply to **the BioPlanet School** and participate in the entrance examination (via Zoom/Microsoft Teams). The school does not charge tuition fees and provides compulsory and optional courses (conducted in English) for doctoral students.

Results will be announced **in mid-October, 2023**.

Ideally position will start in **November, 2023** (negotiable).