



The **German Centre for Integrative Biodiversity Research (iDiv)** is one of the four National Research Centres funded by the German Research Foundation (DFG). Its central mission is to promote theory-driven synthesis and experiments and data-driven theory in this emerging field. The concept of iDiv encompasses detection and quantification of biodiversity, understanding its existence and emergence, exploring its consequences for ecosystem functions and services, and developing new strategies to safeguard biodiversity. [Under one roof](#), 150 scientists and 45 support staff, associated with eight new chair professor positions, four junior research groups and central services (IT, eco- and bioinformatics, mechanics workshop, greenhouses) collaborate to achieve [iDiv's central mission](#). The highly integrated research centre also includes the [synthesis centre sDiv](#), a seminar series with weekly talks by internationally high-ranking speakers and the [graduate school yDiv](#). PhD research at iDiv thus has ample opportunities for inspiration, support and collaboration.

**Theory in Biodiversity Science (EcoNetLab)** is one of the research groups at iDiv. It aims at describing natural communities by network models comprising the species and their interactions. These complex models are used to understand environmental and anthropogenic constraints on biodiversity as well as the consequences of biodiversity changes for ecosystem functions. We offer an international, English-speaking research environment with regular integrative group activities and high-level training in ecological theory, synthesis, advanced statistics and modeling. Our scientific networks offer ample opportunities for collaborations within iDiv as well as with international research groups. More information on the working group is available under [www.idiv.de/econetlab](http://www.idiv.de/econetlab).

The University of Jena as employer offers the following position in Leipzig as place of work as soon as possible:

#### 1 PhD Researcher

#### on "Changing food webs in the anthropocene"

(limited to 3 years, 65 percent of a full-time employment, Salary: Entgeltgruppe 13 TV-L).

#### **Research topic:**

In the anthropocene, humans have become the most important drivers of ecosystem structure and dynamics. Our prior work has addressed these consequences of humans as external effects on natural communities. This included studies on nutrient enrichment (eutrophication), global warming and habitat fragmentation. The planned PhD project aims at the next step by explicitly including humans as driver nodes in the complex interaction networks of natural communities. Specifically, this will include the following topics:

- Adding the links between humans and their natural resources to a data base comprising several hundred natural food webs. This reveals the interfaces between human socio-economic and natural networks;
- Developing quantitative models of human resource exploitation depending on resource type and characteristics of the socio-economic system such as prizes, investments, social constraints and economic situations;
- Analyzing the dynamics of the complex, multilayer networks interrelating socio-economic and trophic interactions as well as their feedback effects on biodiversity and ecosystem functions.

#### **Job description:**

This PhD project will be based on developing concepts and realizing them in a fast programming language. The former is primarily based on literature research, whiteboard discussions and interdisciplinary exchange with ecological and socio-economic colleagues. The latter implies formalizing these concepts as quantitative, equation-based models and adding them to existing code. Moreover, the work will also include scientific exchange with other working groups and presentations on international conferences. In detail, this includes:

- literature search to establish synthetic data sets;
- conceptual and mathematical formulation of ecological and socio-economic relationships;
- programming ecological models in C, C++ or a similar fast programming language;
- write scientific papers on the project in internationally peer-reviewed journals;
- present the research at national and international meetings.

#### **Requirements / expected profile:**

We are searching for applicants with interest in conceptual thinking about ecosystems (marine, freshwater and terrestrial), a clear drive to develop quantitative models and interest in the interplay between ecological and socio-economic systems. Basic knowledge in programming languages (e.g. R or another interpreting language) are necessary for the project, skills in more advanced programming languages such as C are advantageous but not strictly necessary. The following points describe the expected profile:



- necessary degree for starting a PhD in biology, ecology, physics or a similar discipline;
- knowledge of ecological theory is important;
- experience in modeling ecological systems or ecological networks such as food webs, mutualistic networks or meta-communities is desirable;
- skills in creating simple programming structures are necessary;
- knowledge of C, C++ or a similar fast programming language is advantageous;
- excellent communication skills in English – writing and speaking.

Applications with reference file number 315/2017 including the following documents – detailed letter of motivation (“why you apply for this position) with a description of own research interests (“what is driving your interest in ecology”), curriculum vitae, contact details of two academic references, and copies of MSc/BSc/Diploma certificates – should be **written in English** and are **accepted until 20 December 2017 via our applicant portal under <https://apply.idiv.de>**.

We prefer applications in electronic form (hard copy applications can be sent to German Centre for Integrative Biodiversity Research - iDiv; Prof. Dr. Ulrich Brose; Deutscher Platz 5e; 04103 Leipzig Germany).

For queries on the application process or more information on the position, please contact Prof. Dr. Ulrich Brose at [ulrich.brose@idiv.de](mailto:ulrich.brose@idiv.de) or +49(0)341/97 33205.

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Applying via email is questionable under data protection law. The sender assumes full responsibility.

Severely disabled persons are encouraged to apply and will be given preference in the case of equal suitability