

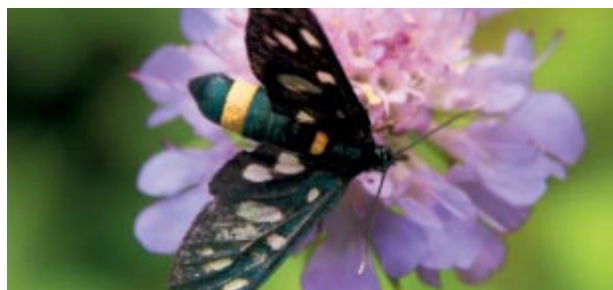


Göttingen Centre for Biodiversity and Ecology (GCBE)



Biodiversity

Biodiversity, the diversity of organisms from the genetic to the landscape level, is an essential element of the earth's ecosystems. It is endangered to an increasing extent by the spread of human population and their ever-growing demand for natural resources. Since, according to scientific estimates, up to 90 percent of all existing biological species are still unknown to science, and since the role of many species for processes and functions of ecosystems is still not understood, a better knowledge of biodiversity and its interrelation with the environment is crucially important. Thus, studies into biodiversity are up-to-date and forward-looking. Moreover, the improvement of knowledge in biodiversity is a pivotal challenge for the subsistence of mankind.



GCBE – Göttingen Centre for Biodiversity and Ecology

In 2001, the Göttingen Centre for Biodiversity and Ecology (GCBE) was founded with the aim to promote – in both research and education – studies into biodiversity from the genetic to the landscape level using an interdisciplinary approach. The evolution of biodiversity, the role of biodiversity for the functions and processes in ecosystems, and the preconditions for a sustainable management of biodiversity shall be investigated using modern methods. To this end, 19 working groups of the Georg-August-Universität Göttingen, which belong to four faculties (Biology, Agricultural Sciences, Forest Sciences and Forest Ecology, Geosciences and Geography) and are engaged in biological and environmental research, have joined together to form a broad scientific foundation for interdisciplinary research. The results of the research shall provide a scientific basis for the conservation of the biodiversity of species and of biological communities on earth. The focus of GCBE is on terrestrial ecosystems; studies are being conducted on all continents (except for Antarctica).

Tasks of GCBE

- ▶ Interdisciplinary research into the evolution, functions and management of biodiversity in terrestrial ecosystems with five foci:
 - Biodiversity analysis and taxonomy,
 - Spatial distribution of biodiversity and identification of biodiversity hot spots,
 - Ecological functions of biodiversity,
 - Temporal dynamics of biodiversity at historical and geological time scales,
 - Development of strategies for the conservation of biodiversity;
- ▶ Organization of degree programs and specific courses in biodiversity;
- ▶ Organization of seminars, lectures and symposia on biodiversity;
- ▶ Support for the maintenance and extension of scientific collections and research facilities in Göttingen;
- ▶ Extension of experimental equipment for research into biodiversity and maintenance of complex research infrastructure;
- ▶ Communication of scientific results to the public.



GCBE's working groups

Complete addresses can be found at
www.biodiversitaet.gwdg.de

1. Biodiversity analysis and taxonomy:

- ▶ Geobiology
Research areas: phylogeny and biology of marine invertebrates; deep biosphere; biodiversity and ecology of extreme environments; geomicrobiology; organo- and biomineralization; biogeochemistry
Head: Prof. Dr. Joachim Reitner
Faculty of Geosciences and Geography
Geoscience Centre Göttingen, Department of Geobiology

GCBE's working groups

2. Spatial distribution of biodiversity:

- ▶ Vegetation analysis and phytodiversity research
Research areas: effects of wood pasture on plant biodiversity; habitat types and vegetation in the Mediterranean; network of plant micro-reserves
Head: Prof. Dr. Erwin Bergmeier
Faculty of Biology
Albrecht von Haller Institute of Plant Sciences,
Department of Vegetation Analysis and Phytodiversity

3. Ecological functions of biodiversity:

- ▶ Agroecology
Research areas: plant-insect and multitrophic interactions; biological control; insect communities; landscape complexity; habitat fragmentation; tropical ecology
Head: Prof. Dr. Teja Tscharntke
Faculty of Agricultural Sciences, Department of Agroecology
- ▶ Agroentomology
Research areas: integrated pest control; plant-pathogen interactions; multitrophic interactions
Head: Prof. Dr. Stefan Vidal
Faculty of Agricultural Sciences,
Department of Agroentomology
- ▶ Animal Ecology
Research areas: soil biology; faunal diversity; ecosystem studies in forests; ecology of mixed forests
Head: Prof. Dr. Matthias Schaefer
Faculty of Biology
Johann Friedrich Blumenbach Institute of Zoology and Anthropology, Department of Ecology
- ▶ Forest Ecology
Research areas: forest ecosystem research; forest vegetation ecology; forest nature conservation
Head: Prof. Dr. Wolfgang Schmidt
Faculty of Forest Sciences and Forest Ecology
Institute of Silviculture, Department of Silviculture of the Temperate Zones and Forest Ecology
- ▶ Landscape Ecology
Research areas: water and nutrient fluxes on a regional scale; ecology of catchments and watersheds
Head: Prof. Dr. Gerhard Gerold
Faculty of Geosciences and Geography,
Department of Landscape Ecology

GCBE's working groups

- ▶ Marine Biodiversity
Research areas: molecular diversity; phylogeography and systematics of marine sponges; biomineralization; ecology and conservation of coral reefs
Head: Juniorprof. Dr. Gert Wörheide
Faculty of Geosciences and Geography
Geoscience Centre Göttingen, Department of Geobiology
- ▶ Neurobiology
Research areas: neuroethology and neuroanatomy of acoustic communication in singing insects
Head: Prof. Dr. Norbert Elsner · Faculty of Biology
Johann Friedrich Blumenbach Institute of Zoology and Anthropology, Department of Neurobiology
- ▶ Phycology
Research areas: diversity, phylogenetics and taxonomy of microalgae; bioactive substances in microalgae; algae-dominated biofilms; culture collection of algae (SAG)
Head: Prof. Dr. Thomas Friedl · Faculty of Biology
Albrecht von Haller Institute of Plant Sciences,
Department of Experimental Phycology and SAG
- ▶ Sociobiology
Research areas: diversity and evolution of primate social systems; primate ecology
Head: Prof. Dr. Peter Kappeler
Deutsches Primatenzentrum (DPZ; German Primate Center), and Johann Friedrich Blumenbach Institute of Zoology and Anthropology, Department of Sociobiology/Anthropology
- ▶ Systematic Botany
Research areas: tropical biodiversity; molecular phylogeny; taxonomy; biogeography; bryophytes; ferns; angiosperms; lichens; epiphytes; Flora Neotropica
Head: Prof. Dr. S. Robbert Gradstein
Faculty of Biology
Albrecht von Haller Institute of Plant Sciences,
Department of Systematic Botany
- ▶ Systematic Zoology
Research areas: phylogeny and animal evolution; animal taxonomy, morphology and biogeography; entomology; Mollusca; Lower Bilateria; Vertebrata; theoretical biology
Head: Prof. Dr. Rainer Willmann · Faculty of Biology
Johann Friedrich Blumenbach Institute of Zoology and Anthropology, Department of Animal Morphology, Systematics and Evolutionary Biology and Zoological Museum

GCBE's working groups

- ▶ Plant Ecology
Research areas: plant ecophysiology; plant community ecology; ecosystems research; tropical ecology
Head: Prof. Dr. Christoph Leuschner
Faculty of Biology
Albrecht von Haller Institute of Plant Sciences,
Department of Ecology and Ecosystems Research
- 4. Temporal dynamics of biodiversity:
- ▶ Historical Anthropology and Human Ecology
Research areas: historical anthropology; human ecology; environmental history; historical biodiversity; ancient DNA
Head: Prof. Dr. Bernd Herrmann
Faculty of Biology
Johann Friedrich Blumenbach Institute of Zoology and Anthropology, Department of Historical Anthropology and Human Ecology
- ▶ Palynology and Climate Dynamics
Research areas: vegetation history; archaeobotany; dendroecology; paleoecology; paleoclimatology
Head: Prof. Dr. Hermann Behling
Faculty of Biology
Albrecht von Haller Institute of Plant Sciences,
Department of Palynology and Climate Dynamics
- 5. Development of strategies for the conservation of biodiversity:
- ▶ Conservation Biology
Research areas: landscape ecology; agroecology; forest ecology; landscape planning; conservation politics
Head: Prof. Dr. Michael Mühlenberg
Faculty of Biology, Centre for Nature Conservation
- ▶ Didactics of Biology
Research areas: biodiversity education; environmental education; education for sustainable development
Head: Prof. Dr. Susanne Bögeholz · Faculty of Biology
Zentrum für empirische Unterrichts- und Schulforschung, Didactics of Biology
- ▶ Diversity in Animal Production
Research areas: population genetics and quantification of biodiversity in livestock
Head: Prof. Dr. Henner Simianer
Faculty of Agricultural Sciences
Institute of Animal Breeding and Genetics,
Department of Animal Breeding

Degree programs in Biological Diversity and Ecology

Since the winter semester 2004/2005, new Bachelor's, Master's and Ph.D. degree programs in Biological Diversity and Ecology are running at the University of Göttingen. The Faculty of Biology is in charge of the programs, with the Faculty of Agricultural Sciences and the Faculty of Geosciences and Geography contributing to them. In addition, the Faculty of Forest Sciences and Forest Ecology, the Faculty of Law and the Deutsches Primatenzentrum are involved in the Master's and Ph.D. courses. Upon successful completion of the study units, credits are awarded in accordance with the European Credit Transfer System (ECTS). Most courses of the Bachelor's and the Master's program are given in German; whereas fluency in English is a precondition for the admission to the internationally orientated Ph.D. program with its main seminars being held in English.



Large collaborative research projects

- Sonderforschungsbereich 552 (Collaborative Research Centre)
STORMA – Stability of Rain Forest Margins in Indonesia
Funded by: Deutsche Forschungsgemeinschaft (DFG)
Spokesperson: Prof. Dr. Teja Tscharntke
Participating institutions: University of Göttingen (principal institution); University of Kassel; Institut Pertanian Bogor; Universitas Tadulako, Palu (Indonesia)
Homepage: www.storma.de
- Graduiertenkolleg (Research Training Group) 1024
Interdisciplinary Environmental History: Natural Environment and Societal Behaviour in Central Europe
Funded by: Deutsche Forschungsgemeinschaft (DFG)
Spokesperson: Prof. Dr. Bernd Herrmann
Participating institution: University of Göttingen
Homepage: www.anthro.uni-goettingen.de
- Graduiertenkolleg (Research Training Group) 1086
The Role of Biodiversity for Biogeochemical Cycles and Biotic Interactions in Temperate Deciduous Forests
Funded by: Deutsche Forschungsgemeinschaft (DFG)
Spokesperson: Prof. Dr. Christoph Leuschner
Participating institutions: University of Göttingen (principal institution); Max Planck Institute for Biogeochemistry, Jena
Homepage: www.forest-diversity.uni-goettingen.de
- Research Unit 402 of the DFG (Forschergruppe 402)
Functionality in a Tropical Mountain Rainforest: Diversity, Dynamic Processes and Utilization Potentials under Ecosystem Perspectives
Funded by: Deutsche Forschungsgemeinschaft (DFG)
Spokesperson: Prof. Dr. Erwin Beck (Bayreuth)
Participating institutions: Universities of Bayreuth, Berlin, Darmstadt, Dresden, Erlangen, Göttingen, Hohenheim, Marburg, München, Tübingen
Homepage: www.bergregenwald.de
- Research Unit 571 of the DFG (Forschergruppe 571)
Geobiology of Organo- and Biofilms: Coupling of the Geosphere and the Biosphere by Microbial Processes
Funded by: Deutsche Forschungsgemeinschaft (DFG)
Spokesperson: Prof. Dr. Joachim Reitner
Participating institutions: Universities of Braunschweig, Göttingen; Max Planck Institute for Marine Microbiology, Bremen; UFZ Centre for Environmental Research, Leipzig-Halle
Homepage: www.geobiologie.uni-goettingen.de/index_research_group.html

Main features of the degree programs:

- Bachelor's program:
 - 3-year program (6 semesters)
 - 4 semesters of fundamental education in biology and natural sciences including extensive training in the recognition of species;
 - 2 semesters of advanced courses in the Central European flora, fauna and vegetation and in modern approaches to ecology and systematics;
 - Study units organized in modules comprising practical and theoretical elements;
 - Internship of 6-8 weeks at external institutions that are working in the field of biological diversity, ecology or nature conservation;
 - Bachelor's thesis (6 weeks);
 - Degree awarded: Bachelor of Science (B.Sc.)
- Master's program:
 - 2-year program, consecutively continuing the Bachelor's program;
 - 1 year (2 semesters) of intensive training on plant or animal ecology or systematics;
 - Interdisciplinary module »Biodiversity« with excursions, field courses, and training in taxonomy
 - Large selection of subsidiary-subject and supplementary-subject modules, from ecophysiology to landscape ecology and policy of nature conservation;
 - Study units organized in modules comprising practical and theoretical elements;
 - Master's thesis (6 months) on the basis of experiments or field studies, with a preparatory module of 2 months in intense training of research methods;
 - Degree awarded: Master of Science (M.Sc.)
- Ph.D. program:
 - 3-year program with interdisciplinary seminars in English;
 - Supervision by a personal Ph.D. commission;
 - Doctoral thesis (dissertation) in English, as a monograph or a compilation of publications accepted by peer-reviewed journals;
 - Degree awarded: Doctor of Philosophy (Ph.D.) or Doctor rerum naturalium (Dr. rer. nat.)

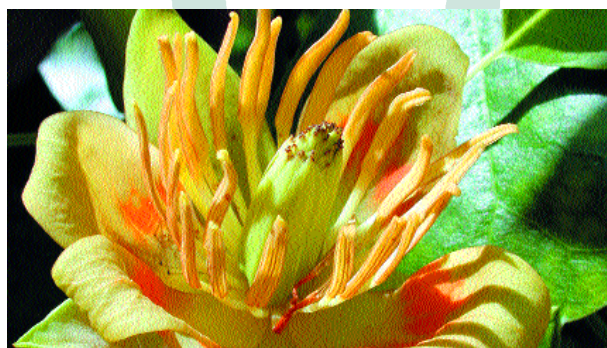
Scientific collections and research facilities

- Botanical Garden
The University of Göttingen has a Botanical Garden with three sections that suit different purposes:

Systematics Section (»Old Botanical Garden«):
Untere Karspüle 2, 37073 Göttingen
Head: Prof. Dr. S. Robbert Gradstein
Arrangement of the families of flowering plants according to their phylogenetic relationships; selection of the Central European flora according to typical habitats; greenhouses with ferns and tropical plants; collection of alpine plants

Section Experimental Ecology (»New Botanical Garden«)
Grisebachstr. 1, 37077 Göttingen
Head: Prof. Dr. Christoph Leuschner
Diverse selection of plant communities from the temperate, boreal and Mediterranean regions of the world; outdoor growth containers under a mobile roof; rhizolab; long-term succession experiment; greenhouses and plant growth chambers; laboratory facilities

Garden of the Faculty of Forest Sciences
Büsgenweg 2, 37077 Göttingen
Head: Prof. Dr. Andrea Polle
Collection of about 2,000 woody plant species; plant-geographical arboretum



- Göttingen University Herbarium
Albrecht von Haller Institute of Plant Sciences
Untere Karspüle 2, 37073 Göttingen
Head: Prof. Dr. S. Robbert Gradstein
About 800,000 specimens of dried plants from all parts of the world, including a set of plants from the South Sea collected by Georg Forster on the second voyage of James Cook

Publications of GCBE

- The GCBE Bulletin
ISSN 1860-2266 (print),
ISSN 1860-2274 (www.biodiversitaet.gwdg.de)

The GCBE Bulletin is the news bulletin of the Göttingen Centre for Biodiversity and Ecology. It intends to inform about the Centre, its member departments and their research areas, current research activities, student training and education, seminar series of the Centre, and about forthcoming events. It is distributed by GCBE's office and is available as PDF files from the homepage of GCBE (www.biodiversitaet.gwdg.de).
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- The Biodiversity and Ecology Series (Universitätsverlag Göttingen)

The Biodiversity and Ecology Series comprises Ph.D. theses in the fields of biodiversity, ecology and environmental sciences that have been completed in the working groups of GCBE and related faculties, proceedings of workshops and symposia organized by GCBE as well as topical monographs written by GCBE members or invited authors. Starting in 2006, it is published by the Universitätsverlag Göttingen. The contributions are peer-reviewed by members of GCBE.

Scientific collections and research facilities

- Collection of microalgae — SAG
Albrecht von Haller Institute of Plant Sciences
Nikolausberger Weg 18, 37073 Göttingen
Head: Prof. Dr. Thomas Friedl
Culture Collection of Algae (SAG, Sammlung von Algenkulturen der Universität Göttingen): more than 2,200 culture strains of eukaryotic algae and cyanobacteria; cryopreservation techniques
- Zoological Museum
Institute of Zoology and Anthropology
Berliner Str. 28, 37073 Göttingen
Head: Prof. Dr. Rainer Willmann
Sections: Animal system; Adaptations to the habitat; Biology and evolution of whales; Fauna of Lower Saxony
- Museum of the Geoscience Centre Göttingen
Geoscience Centre Göttingen
Goldschmidtstr. 3, 37077 Göttingen
Head: Prof. Dr. Joachim Reitner
Paleontological collection of fossils; stratigraphic collection of stones and fossils from all parts of the world; mineralogical collections
- Library of the University of Göttingen
Niedersächsische Staats- und Universitätsbibliothek Göttingen
Platz der Göttinger Sieben 1, 37073 Göttingen
Head: Prof. Dr. Elmar Mittler
Approximately 3.9 million volumes of books; ca. 16,000 scientific journals (6,000 online); 150 CD-ROM data bases

Contact

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