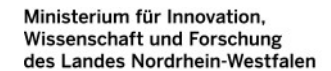


# Partnership: ZFMK-ILIAUNI

*Prof. Dr. Bernhard Misof, ZFMK, Bonn*



# Zoological Researchmuseum Alexander Koenig, ZFMK, Bonn



- Leibniz Institute of Biodiversity Research and Museum
- 1 (of 3) Natural History Museums in the Leibniz Association
- 28 permanently employed scientists,
- ~80 permanently employed staff members, in total ~ 200 members
- Annual budget 7.7 Million € + ~ 2 Million € grant money
- Member of the Leibniz Biodiversity Alliance
- Leading role in several international consortia on biodiversity research



# Ilia State University, Tbilisi, ISU



Prof. Dr. David Tarkhnishvili

(currently dean of Natural Sciences and Engineering at ILIAUNI)

worked at the molecular genetic lab of ZFMK (1998; 1999-2003)  
as a v. Humboldt- PostDoc fellow and as a coordinator of population  
genetic studies within a project “Amphibien in der Agrarlandschaft”



Humid forest refugia, speciation and secondary  
introgressi  
differentia

HERPETOLOGICAL JOURNAL, Vol. 14, pp. 1-7 (2004)

macrochen

DAVID TARKHNIS

BIAS IN ESTIMATION OF NEWT POPULATION SIZE: A FIELD STUDY AT FIVE  
PONDS USING DRIFT FENCES, PITFALLS AND FUNNEL TRAPS

KLAUS W1 150

*Herpetologia Petropolitana*, Ananjeva N. and Tsinenko O. (eds.), pp. 150 – 152

Zoologische

ELEVEN YEARS OF MONITORING: AMPHIBIAN POPULATIONS  
IN AN AGRICULTURAL LANDSCAPE NEAR BONN (GERMANY)

M. Hachtel,<sup>1</sup> P. Schmidt,<sup>1</sup> U. Sander,<sup>1</sup> D. Tarkhnishvili,<sup>1</sup> K. Weddelling,<sup>1</sup> and W. Böhme<sup>1</sup>



December 2002, Volume 47, Issue 4, pp 389-416

Morphometric, biochemical and molecular traits in Caucasian  
wood mice (*podemus/Sylvaemus*), with remarks on species  
divergence

Axel Hille, David Tarkhnishvili, Holger Meinig, Rainer Hutterer



Dynamik und Struktur von Amphibienpopu-  
lationen in der Zivilisationslandschaft

Monika Hachtel, Klaus Weddelling, P. Schmidt, U. Sander, D.  
Tarkhnishvili und W. Böhme

# Ilia State University, Tbilisi, ISU



Prof. Cort L Anderson, PhD

(currently professor at Ilia State University,  
graduate program coordinator in Applied Genetics).

Former scientific consultant at ZFMK

## A Phylogeny of the Damselfly Genus *Calopteryx* (Odonata) Using Mitochondrial 16S rDNA Markers

Bernhard Misof,<sup>\*</sup> Cort L. Anderson,<sup>†</sup> and Heike Hadrys<sup>\*,‡</sup>

<sup>\*</sup>Institute for Evolutionary Biology and Ecology, University of Bonn, An der Immenburg 1, D-53121 Bonn, Germany; <sup>†</sup>Department of Anatomy and Organismal Biology, University of Chicago, 1027 East 57th Street, Chicago, Illinois 60637; and <sup>‡</sup>Zoological Institute, Division of Ecology and Evolution, J.W.-Goethe University, Siesmayerstrasse 70, D-6054 Frankfurt, Germany



# Institutional Partnership 2006-2009



**Alexander von Humboldt**  
Stiftung / Foundation

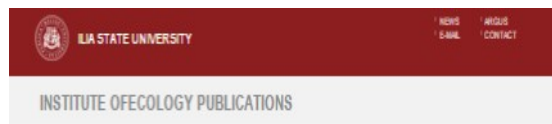


# First Molecular Genetic *University* lab in the Caucasus Region

- Created and operating: since 2007
- Funded: CRDF, Georgian SF, AvH
- Studied organisms:
  - Lizards
  - Trout
  - Horses
  - Brown bear
  - Wolves/dogs
  - Humans
  - Spruce
  - Snails



# Highest publication record in Evolution/ Biodiversity/ Ecology in the region



## Journal of Heredity

### Gene Flow Between Wolf and Shepherd Dog Populations in Georgia (Caucasus)

Natia Kopaliani, Maia Shkarashvili, Zurab Gurieidze, Tamar Qurkhuli and David Tarkhnishvili



Research Article

### Speciation in Caucasian lizards: climatic dissimilarity of the habitats is more important than isolation time

David Tarkhnishvili, Marine Murtskhvaladze, Alexander Gavashelishvili

American Malacological Bulletin 31(2):225-234, 2013

doi: <http://dx.doi.org/10.4003/006.031.0202>

### Systematics and Evolutionary History of Large Endemic Snails from the Caucasus (*Helix buchii* and *H. goderdziana*) (Helicidae)

Levan Mumladze, David Tarkhnishvili and Marine Murtskhvaladze

Biodiversity Research Center, Institute of Ecology, Iliia State University, Kakutsa Cholokashvili st, 3/4, 0179 Tbilisi, Georgia

Correspondence: L. Mumladze: [levan.mumladze@iliasu.edu.ge](mailto:levan.mumladze@iliasu.edu.ge)

### Palaeoclimatic models help to understand current distribution of Caucasian forest species

DAVID TARKHNISHVILI, ALEXANDER GAVASHELISHVILI, LEVAN MUMLADZE



### Geographic and genetic boundaries of brown bear (*Ursus arctos*) population in the Caucasus

MARINE MURTSKHVALADZE, ALEXANDER GAVASHELISHVILI, DAVID TARKHNISHVILI



Research Paper

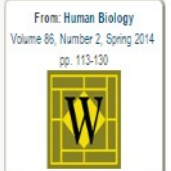
### Biomes and human distribution during the last ice age

Alexander Gavashelishvili, David Tarkhnishvili

In lieu of an abstract, here is a brief excerpt of the content:

### Human Paternal Lineages, Languages, and Environment in the Caucasus

David Tarkhnishvili, Alexander Gavashelishvili, Marine Murtskhvaladze, Mariam Gabelaia, and Givi Tevzadze



# Continuous cooperation with ZFMK / German institutions in Biodiversity studies

- In 2006 Ilia State University (**ISU**) and The Alexander Koenig Research Museum (**ZFMK**) signed **Memorandum of Understanding** which includes joint research projects and mobility of staff and students between institutions.
- The essence of the partnership project (funded by v. Humboldt Foundation, 2006-2009) “Endemic species of the Caucasus Ecoregion: Re-assessment of National and International Conservation Priorities” and CoRE Project “Exploring biodiversity of the Caucasian “biodiversity hotspot” with modern molecular-genetic methods and analytical tools” (Funded by GRDF 2007-2009) was the creation of a **laboratory consortium devoted to the exploration of biodiversity** of the Caucasus Biodiversity Hotspot.

Team leaders: Bernhard Misof, David Tarkhnishvili



# Other collaborations between ILIAUNI and German Institutions in Biodiversity Research

## Caucasian *Land Snails*



Key Georgian partners  
in international research  
projects held by German  
institutions:

- Ilia State University
- Institute of Ecology
- Institute of Botany
- Institute of Zoology



# Other important cooperation with Germany



- Graduate programs in Forest Science, Biodiversity, Management of Natural Resources supported by DAAD Langzeitdozentur program
- Negotiations held with University of Göttingen for further cooperation as University Partnerships (responsible person at the University of Göttingen: Prof. Dr. Ch. Kleinn)



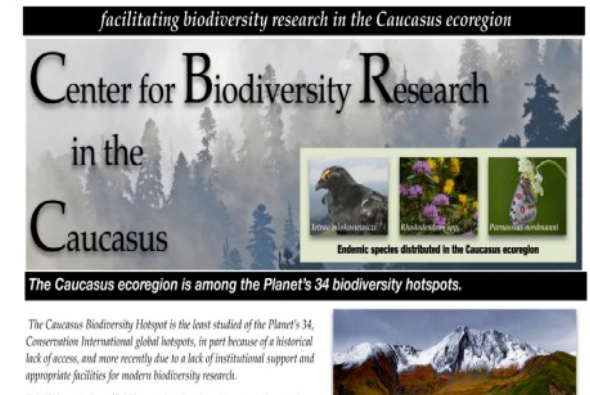
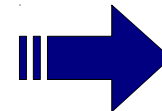
- Additional support, including visiting lecturers from Germany, provided by GIZ  
„Caucasus Integrated biodiversity management, South Caucasus“



# Workshop in Abastumani, Caucasus Regional Biodiversity (2009)



**Alexander von Humboldt**  
Stiftung / Foundation





# Center for Biodiversity Research in the Caucasus



**The Caucasus ecoregion is among the Planet's 34 biodiversity hotspots.**

The Caucasus Biodiversity Hotspot is the least studied of the Planet's 34, Conservation International global hotspots, in part because of a historical lack of access, and more recently due to a lack of institutional support and appropriate facilities for modern biodiversity research.

Establishment of an officially sanctioned, university-managed research center whose sole purpose would be to facilitate and coordinate research on this unique biological resource would be of huge benefit to the Georgian and international scientific community.



## Research Focus

The diversity of plant, animal, and microbial organisms resident in the Caucasus Biodiversity Hotspot has the potential to be a global biological bonanza, but because the infrastructure and human resources needed to study this biodiversity are lacking, these assets are not available, either to Georgian biologists, or the international scientific community.

Our understanding of the biological processes and phenomena of the northern hemisphere depends upon understanding the evolutionary relationships, distribution, function, and interactions of these species in their natural environment. Without a comprehensive catalog and understanding of the Caucasus flora and fauna we are unable to place this incredible diversity within a global conservation strategy.

## Benefits & Function

The establishment of the *Center for Biodiversity Research in the Caucasus* will be a catalyst with the potential to revolutionize graduate education and research in Georgia, and will be a model of international scientific collaboration. The CBRC will foster high profile international biological research with opportunities for Georgian students to receive advanced training and for foreign students to access Georgian biological

Working Group for the establishment of the Center for Biodiversity Research in the Caucasus

resources and experience Georgia's cultural heritage. Ultimately, the CBRC will advance both global and local appreciation of biodiversity in the Caucasus ecoregion.

## Facilities

Infrastructure of the proposed center will allow both visiting and local scientists to sample and characterize the variety of organisms resident in the Caucasus.

- Biological collections including DNA and tissue archiving
- Curatorial, laboratory, and field staff
- Research and teaching laboratories
- IT capacity and support
- Access to biota and field stations

## Implementation

Many of the basic components for the *Center for Biodiversity Research in the Caucasus* are already in place within the Ilia Chavchavadze State University. These include the consortium of extant laboratories that are engaged in biodiversity research using molecular genetic, GIS, and biometric approaches. In addition, the University has existing field research facilities, human resources, transportation infrastructure, research collections, and collaborative arrangements with affiliated research agencies that provide the nucleus of a world class research engine.

## Key areas of research that would benefit from the establishment of the CBRC include:

- Conservation Biology
- Biological responses to climate change
- Ecology of invasive species
- Historical biogeography
- Evolution and history of domestication
- Systematics



## Key areas of research that would benefit from the establishment of the CBRC include:

- Conservation Biology
- Biological responses to climate change
- Ecology of invasive species
- Historical biogeography
- Evolution and history of domestication
- Systematics

# Perspectives

- Increased attractiveness of graduate programs in biodiversity research, ecology, genetics, forestry
- Increased international interest for the unique relict biodiversity of the Caucasus Hotspot
- Optimization of biodiversity monitoring and assessment, natural resource management



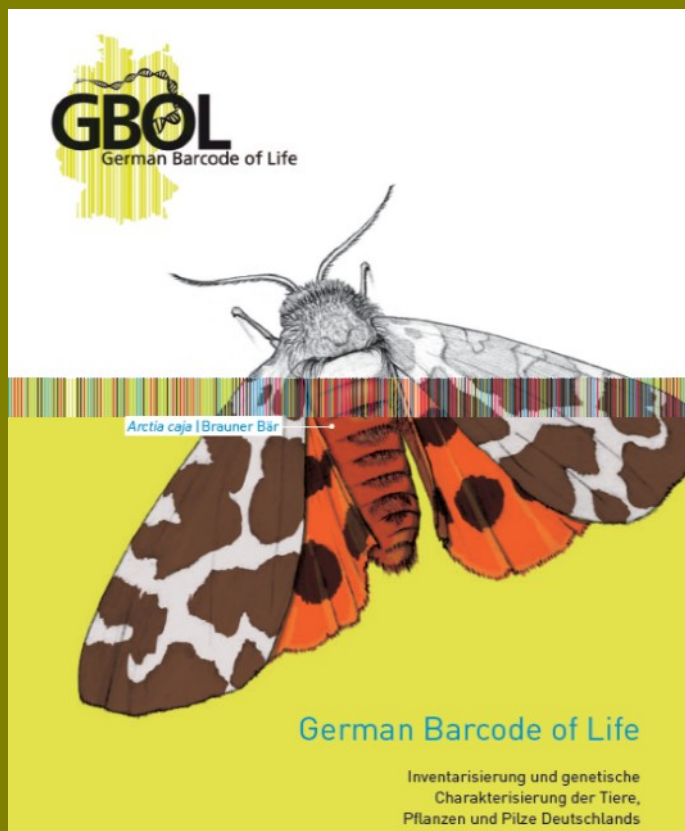
**Regional center for biodiversity studies**, focused on **research, education and nature conservation**, potentially as a joint effort of German and Georgian institutions



# GBOL - German Barcode of Life

Building a comprehensive DNA reference library of animals, plants and fungi in Germany

## Flyer



## www.bolgermany.de

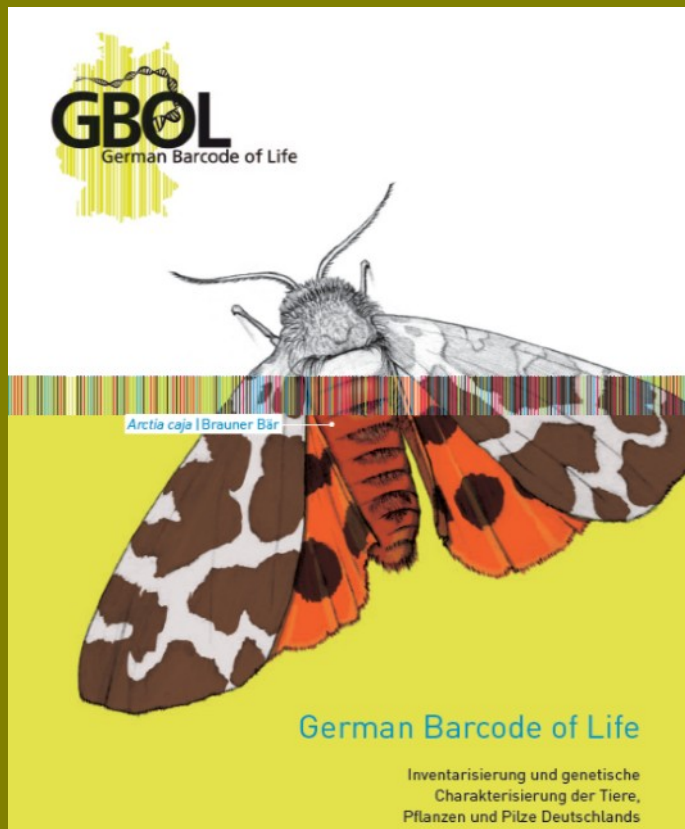




# GBOL - Georgian Barcode of Life

Building a comprehensive DNA reference library of animals, plants and fungi in **Georgia**

## Flyer




**GBOL**  
German Barcode of Life

*Arctia caja* | Brauner Bär

**German Barcode of Life**

Inventarisierung und genetische  
Charakterisierung der Tiere,  
Pflanzen und Pilze Deutschlands

## www.bolgermany.de



**GBOL**  
German Barcode of Life

Deutschlands Fauna und Flora in einer einzigartigen genetischen Bibliothek.

Das Projekt | DNA-Barcoding | Das Team | Mitmachen! | News & Publikationen | Links | Kontakt | Für Sammler

**Biodiversität – jede Art zählt!**

Was wäre, wenn wir jedes Tier, jeden Pilz und jede Pflanze exakt und schnell identifizieren könnten?

Infos zum Projekt!

**Das Projekt**  
Das Projekt "GBOL" widmet sich der Inventarisierung und genetischen Charakterisierung der Tiere, Pflanzen und Pilze Deutschlands. [weiterlesen >](#)

**DNA Barcoding**  
Kurze Genabschnitte - sogenannte DNA-Barcodes - sind für jede Art einzigartig. Sie ermöglichen die Erfassung der Artenvielfalt. [weiterlesen >](#)

**Das Team**  
Renommierete Museen und Forschungsinstitutionen aus ganz Deutschland bilden das GBOL-Team und koordinieren die GBOL-Projekte. [weiterlesen >](#)

**Machen Sie mit...**

**Registrieren!**  
Registrieren Sie sich noch heute als Sammler... [>>](#)

**Anmelden**  
Sie sind schon registriert? Loggen Sie sich ein... [>>](#)

**Newsletter**  
Bleiben Sie stets aktuell informiert! [>>](#)

**Sponsoren**  
Das GBOL-Projekt wird freundlich unterstützt von:

**Mitmachen!**  
Wir suchen deutschlandweit nach Sammlern und Artenkennern, die gezielt zur GBOL-Bioinventur beitragen wollen!

**News & Publikationen**  
Wir informieren Sie über aktuelle Fortschritte und Aktivitäten im Projekt, über Veranstaltungen und Publikationen. [weiterlesen >](#)

**Links**  
GBOL ist Teil eines Netzwerks von starken Partnern. Unsere Links führen Sie zu deren Informationsseiten. [weiterlesen >](#)

**Bundesministerium für Bildung und Forschung**

[weitere Infos >](#)

# Thank You

Ministry of Education and Science (MES)  
**Minister Aleksandre Jejelava**

Ministry of the Environment and Natural Research  
Protection of Georgia (MOE)  
**Minister Gigla Agulashvili**

Shota Rustaveli National Science Foundation (SR-NSF)  
**Director General Marine Chitashvili**