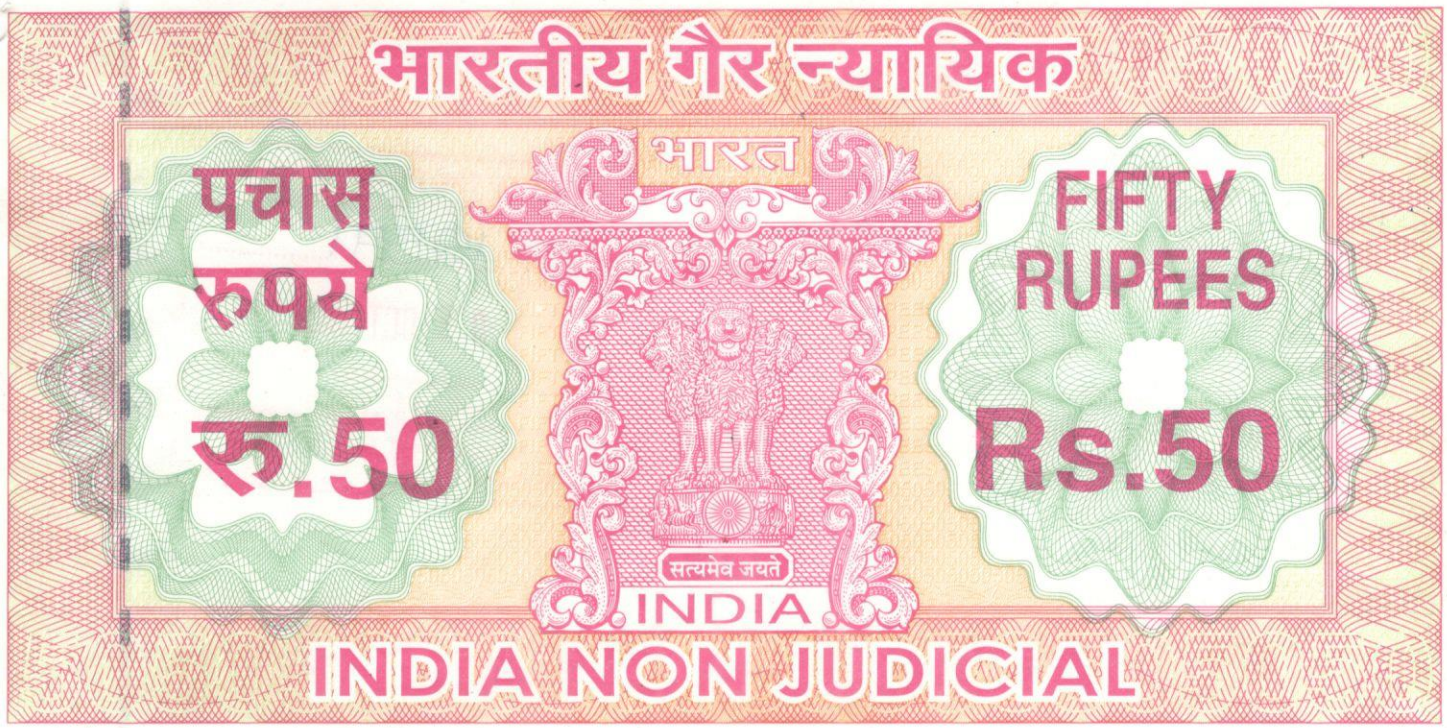


अरुणाचल प्रदेश ARUNACHAL PRADESH 725155

MEMORANDUM OF UNDERSTANDING

This MEMORANDUM OF UNDERSTANDING is made on this ~~29th November~~ 25th May, of Two Thousand Twenty ~~Two~~ Three BETWEEN University of Tübingen, Germany of the ONE PART;

AND

Rajiv Gandhi University, a central university, Govt. of India, having registered office in/at Rono-Hills, Doimukh-791112, Papum Pare district, hereinafter referred to as RGU of the other PART;

WHEREAS RGU being desirous of ecomorphological radiation of the rove beetle subfamily Steninae (Coleoptera, Staphylinidae) in Arunachal Pradesh decided to support collaboration between Prof. Dr. Jörg Oliver Betz, University of Tübingen, Germany and Dr. Hiren Gogoi, Ph.D Assistant Professor, Department of Zoology, Rajiv Gandhi University for the attainment of the objectives, hereinafter described in the Annexure I annexed hereto.

This Memorandum of Understanding (MoU) defines the role and responsibilities of the participating agencies and other matters related to the **Research project entitled:**

"Field studies in Northeast India on the ecomorphological radiation of the rove beetle subfamily Steninae (Coleoptera, Staphylinidae)".

NOW THE PARTIES HERETO AGREE AS FOLLOWS:

1.0 ROLE OF RAJIV GANDHI UNIVERSITY

1.1 To provide an official research stay to Prof. Dr. Jörg Oliver Betz and his spouse Dr. Heike Betz for close collaboration with the Department of Zoology (Dr. Hiren Gogoi) at the Rajiv Gandhi University campus during his four months research stay with the Entomology Research Group, RGU under the supervision of Dr. Hiren Gogoi.

1.2 The student staff of Dr. Hiren Gogoi (and partly himself) will guide Prof. Dr. Jörg Oliver Betz during the fieldwork in Arunachal Pradesh and help to collect the beetles according to a standardized collection protocol.

1.3 Dr. Hiren Gogoi will offer some laboratory space in the Department of Zoology where the beetles can be kept alive and where videographic observations and attachment force measurements on the beetle tarsi can be conducted.

1.4 All publications coming out of this research will be co-authored by the RGU collaborators.

2.0 ROLE OF THE UNIVERSITY OF TÜBINGEN

2.1 To be responsible for accomplishing objectives identified and activities listed.

2.2 To allow Prof. Dr. Jörg Oliver Betz, Department of Biology, Faculty of Science, University of Tübingen, Germany, to work with the Research Team of Dr. Hiren Gogoi, Ph.D, RGU, INDIA in all stages of the work proposed.

2.3 To prepare and submit reports to the collaborating partner and State Biodiversity Board of Arunachal Pradesh, INDIA.

2.4 To ensure the arrangement of funds by Prof. Dr. Jörg Oliver Betz for completing the work proposed, from the home university or other sources. This fund should include the payment to any staff members from RGU collaborators who are involved on-site in collecting and travel costs.

2.5 To ensure the return of the biological material (if any) to the transferor Dr. Hiren Gogoi, Ph.D., Department of Zoology, RGU.

3. DURATION OF MEMORANDUM OF UNDERSTANDING

This MoU will remain in force for the duration of the proposed work and until the claims are settled between the University of Tübingen and RGU.

4. GOVERNING LAW

This Contract shall be governed by the Law of India for the time being in force.

Sign and stamped by
Name: Dr. NabamTadarRikam
Registrar, RGU
For and on behalf of
Rajiv Gandhi University, India

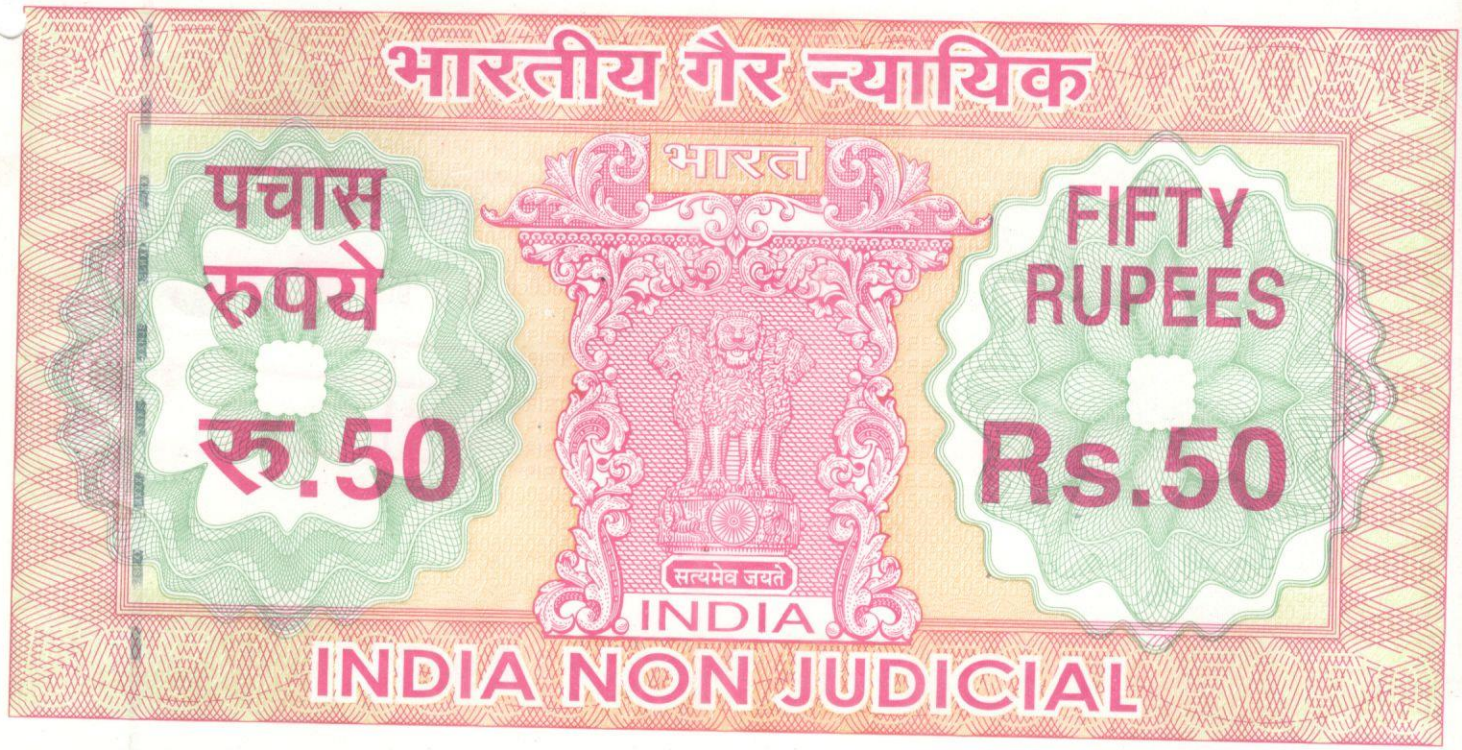
Sign and stamped by
Name:
Position:
For and on behalf of
University of Tübingen, Germany

25.05.23

Dr. Hiren Gogoi
Asstt. Prof., Dept. of Zoology
Rajiv Gandhi University
Rono Hills, Doimukh-791112

Sign and stamped by
Name: Dr. Hiren Gogoi, Ph.D.
Assistant Professor,
Department of Zoology,
Rajiv Gandhi University, India

Sign and stamped by
Name: Prof. Jörg Oliver Betz
Professor,
Department of Biology
University of Tübingen, Germany



अरुणाचल प्रदेश ARUNACHAL PRADESH 725154

MATERIAL TRANSFER AGREEMENT

Between Rajiv Gandhi University, a Central University, Govt. of India Being the First Party (Provider of the Material), and the University of Tübingen, Germany, Being the Second Party (Recipient of the Material)

(A) The present Material Transfer Agreement (hereafter referred to as "MTA") is a Material Transfer Agreement referred to the international bilateral exchange of preserved specimens of rove beetle, subfamily Steninae (Coleoptera, Staphylinidae) under the Collaborative Research Project "Field studies in Northeast India on the ecomorphological radiation of the rove beetle subfamily Steninae (Coleoptera, Staphylinidae)" between Prof. Dr. Jörg Oliver Betz, University of Tübingen, Germany and Dr. Hiren Gogoi, Ph.D. Assistant Professor, Department of Zoology, Rajiv Gandhi University for the attainment of the objectives, hereinafter described in the Annexure I annexed hereto.

(B) PREAMBLE

Being a signatory to the Convention on Biological Diversity, 1993 1 (CBD), the Government of India enacted the Biological Diversity Act, 2002 (BDA)

hereinafter referred to as BDA, 2002 and notified the Biological Diversity Rules, 2004. The access to biological resources of India is now regulated by BDA, 2002.

(C) Agreed Between

Rajiv Gandhi University, a central university, Govt. of India, having registered office in/at Rono-Hills, Doimukh-791112, Papum Pare district, hereinafter referred to as RGU, being the first (Provider of the Materials)

And the University of Tübingen, Germany being the Second party (Recipient of the Materials) for the taxonomic and ecomorphological study of the rove beetle subfamily Steninae (Coleoptera, Staphylinidae).

(D) Description of the material (Annexure-I): Preserved specimens of rove beetle, subfamily Steninae (Coleoptera, Staphylinidae). These are only tiny inconspicuous beetles (i.e. no big and shiny ones) associated with the litter layer in forests, river banks and waterfalls. The specimens need to be temporarily exported in ethanol (70-90%) to Germany for solid identification, description of new species, morphometric analyses, comparative morphological Scanning Electron Microscopy, and molecular phylogenetics.

(E) We agree to abide by the following terms of the MTA and certify that:

1. The collaborators will abide by the provisions of existing national laws, regulatory mechanisms and international agreements and treaties.

2. The material transferred herein as above shall be used only for research specified as stated in Annexure-I (Proposal) under our close supervision and shall not be used for commercial purposes or profit making whatsoever. The material accessed shall not be used for chemical, pharmaceutical and /or other non-food/feed and industrial uses.

3. The quantity of the biological resource(s) intended to transfer will be limited to the quantity necessary for taxonomic study and as per the access and material transfer guidelines developed by National Biodiversity Authority.

4. In case of the results of research with the transferred materials subsequently prove likely to lead to any Intellectual Property Rights, the collaborating partners will enter into a fresh agreement with the National Biodiversity Authority (established under section 8 of the Act, BDA, India) to ensure sharing of benefit under provisions of section 6 of the Act, before filling of the application for Intellectual Property Right(s).

5. The voucher specimen of the biological resource occurring in India transferred or exchanged under the project shall be sent to the designated repository following section 39 of the Act.
6. The transfer of the preserved specimen(s) on loan and for taxonomic and ecomorphological studies will be done with the approval of the concerned Department/Ministries of the Government of India.

7. Collaborators shall not communicate or transfer research results of a collaborative project to any third party in any manner without entering into an agreement with the National Biodiversity Authority, India for this purpose.

8. Publication of Research paper(s), book(s), bulletin(s), registered accession(s) and output(s) based on the results shall not be done without the prior approval of the Indian collaborator.

9. Any knowledge, associated with the transfer of biological resources from India will be reported to National Biodiversity Authority for facilitating documentation of such knowledge.

10. Any publication(s) relating to knowledge associated with the biological resource transferred from India under the collaborative project will acknowledge the knowledge holder from whom knowledge was obtained.

11. Any new taxon discovered through the project shall be reported to the National Biodiversity Authority, India and a voucher specimen shall be deposited with the designated repository following the Act, BDA.

12. The recipient agrees to acknowledge explicitly the name, original identity and source in all publications brought out from the work carried out on this material.

13. All information and material supplied by RGU shall be made available to the recipient in confidence. The recipient agrees to maintain the confidential status of the material and the information.

14. The Recipient shall not claim any intellectual property or other rights on the material provided under this agreement.

15. The intellectual property protection or benefit sharing in respect of derivatives of the material(s) received/ accessed, wherever applicable, shall be as per the Biological Diversity Act 2002.

16. Permission from National Biodiversity Authority (NBA) shall be sought through RGU if the accessed material is intended to transfer to any third party. The recipient will not distribute the material provided to any other party without prior approval from the authorized provider.

17. The recipient shall not claim any intellectual property right over the products derived from the material received, including its related information and knowledge without the prior written approval of the NBA, India.

18. The recipient agrees to pay the handling and processing charges for material received/ accessed as decided on a case-to-case basis.

19. Every dispute, difference, or question which may at any time arise between the parties hereto or any person claiming under them, touching or arising out

of or in respect of this agreement or the subject matter thereof, shall be amicably settled between the parties.

20. In case of misuse/ transfer of material by the recipient and use other than the intended purpose, as stated under Clause (i) of MTA, the recipient shall be liable for penalties as defined under Section 55 of BDA, 2002.

Agreed and Accepted:

Provider	Recipient
Name: Dr. Hiren Gogoi, Ph.D. Designation: Assistant Professor Institution/ Organization full address with PIN code: Department of Zoology, Rajiv Gandhi University, Rono Hills, Doimukh-791112, Papum Pare district, Arunachal Pradesh, India E-mail: hirengogoi2007@yahoo.co.in Phone: 919957285547 Signature: Date: 25.05.2023	Name: Prof. Dr. Jörg Oliver Betz Designation: Professor Institution/ Organization full address with postal code: University of Tübingen, Institute of Evolution and Ecology, Evolutionary Biology of Invertebrates, Auf der Morgenstelle 28, 72076 Tübingen, Germany E-mail:oliver.betz@uni-tuebingen.de Phone: +49-7071-2972995 Signature: Date:
Authorized Institutional Official	Authorized Institutional Official
Name: Dr. Nabam Tadar Rikam Designation: Registrar Institution/ Organization full address	Name: Prof. Dr. Thilo Stehle Designation: Dean of Faculty of Science Institution/ Organization full address with

with PIN code: Department of Zoology, Rajiv Gandhi University, Rono Hills, Doimukh-791112, Papum Pare district, Arunachal Pradesh, India Phone/ Fax/ E-mail: 0360-2277253/ registrar@rgu.ac.in Signature: Date:	pin code: Dean of Faculty of Science, Central Management Office, University of Tübingen, Auf der Morgenstelle 8 72076 Tübingen, Germany Phone/ Fax/ E-mail: +49-7071-2978090 / dekan@mnf.uni-tuebingen.de Signature: Date:

Details of the Proposed Work

1. Full particulars of the applicant

I. Name: Prof. Dr. Jörg Oliver Betz

II. Permanent address: Schieferweg 3, 72119 Ammerbuch, Baden-Württemberg, Germany;
telephone: 0049-(0)7073-500255,
mobile phone: 0049-017654072207,
email: oliver.betz@uni-tuebingen.de

III. Address of the contact person / agent, if any, in India: Dr. Hiren Gogoi, Department of Zoology, Rajiv Gandhi University, Rono-Hills, Doimukh-791112, Arunachal Pradesh, India;
telephone:
fax:
mobile phone: 919957285547
email: hirengogoi2007@yahoo.co.in

IV. Profile of the organization (personal profile in case the applicant is an individual). Please attach relevant documents of authentication):

Current position: Full Professor at the Institute of Evolution and Ecology (https://uni-tuebingen.de/en/faculties/faculty-of-science/departments/biology/institutes/evolution-and-ecology/) of the Department of Biology (https://uni-tuebingen.de/en/faculties/faculty-of-science/departments/biology/department-of-biology/) of the Faculty of Science (https://uni-tuebingen.de/en/faculties/faculty-of-science/faculty/) at the University of Tübingen (https://uni-tuebingen.de/en/university/profile/) in Germany.

fauna of this region. More generally, it will contribute to our understanding of a prominent example of adaptive radiation in insects, evaluating how insect functional morphology is linked to ecological performance and how this can be interpreted in a macroevolutionary framework based on a molecular phylogeny of the collected species.

7. Estimation of benefits, that would flow to India/ communities arising out of the use of accessed bioresources and traditional knowledge.

Apart from the scientific benefits mentioned in the previous chapters, this project will strengthen the Faculty of Life Sciences of the Rajiv Gandhi University in its activities to assess, understand, and protect the natural heritage of Arunchal Pradesh. This will be supported by the following activities:

(i) Joint publications together with the Indian collaborators;

(ii) Strengthening of the faunal insect knowledge and collections of the Zoological Survey of India (ZSI), with its headquarter in Kolkata as a leading research institution in India focusing on faunal diversity studies. All holotypes, 50% of paratypes and example specimens of all the other collected and needled Steninae material will be returned to the National Zoological Collections of ZSI (Coleoptera Section, Kolkata, headed by Dr. Devanshu Gupta).

(iii) Production of a poster that summarizes the results and that can be displayed at the Zoology Department of the Rajiv Gandhi University;

(iv) If desired, training of involved student staff with regard to (i) general entomological knowledge and methods, (ii) special collecting techniques, (iii) improvement of ecological knowledge and (iv) taxonomic skills.

(v) Potential for establishing future collaborations in the field of insect biodiversity research between both the involved Indian and German universities in the

framework of bilateral Indo-German funding programmes launched by the German and / or Indian Science Foundations.

All the expenses that will arise during my research stay for the host institutions will be paid by the proposer, his home institute, and his project proposal to be submitted to the German Science Foundation (DFG) in case of general approval by the National Biodiversity Authority. This will also include the payment of any student workers and car drivers involved in the project

8. Proposed mechanism and arrangements for benefit sharing.

The transfer of all holotypes, 50% of paratypes and example specimens (needled and labeled) of all the collected Steninae species will be guaranteed by a formal material transfer agreement (signed by both partners) between the applicant and the National Zoological Collections of ZSI.

9. Any other information considered relevant.

Not applicable.

I declare that:

- Collection of proposed biological resources shall not adversely affect the sustainability of the resources;
- Collection of proposed biological resources shall not entail any environmental impact;
- Collection of proposed biological resources shall not pose any risk to ecosystems;
- Collection of proposed biological resources shall not adversely affect the local communities;

I further declare the Information provided in the application form is true and correct and I shall be responsible for any incorrect / wrong information.

Signed

Oliver Betz

Place Tübingen (Germany)

Date December 1 2022

Name Oliver Betz

Title Prof. Dr.

University training and degree: Biology (1983 – 1990); Technical University Braunschweig and Philipps-University Marburg, Germany.
Advanced academic qualifications: Habilitation in Zoology and Ecology (2002); Christian-Albrechts-Universität Kiel, Germany.
Doctorate: PhD Biology (1994); University of Bayreuth (Germany)
Postgraduate professional career: 1994 – 1999: Scientific assistant (C1), Christian-Albrechts-University Kiel, Institute of Zoology
1999 – 2001: DFG-research scholar, Field Museum of Natural History, Chicago (USA)
2001 – 2002: Scientific assistant (C1), Christian-Albrechts-University Kiel, Institute of Zoology
2002 – 2004: Senior scientific assistant (C2), Christian-Albrechts-University Kiel, Institute of Zoology
since 2004: Full Professorship (C3) for Evolutionary Biology of Invertebrates, Eberhard Karls University Tübingen, Institute for Evolution and Ecology, Evolutionary Biology of Invertebrates
Research interests: Morphology, ecology and evolution of insects, especially Staphylinoidea (Coleoptera); conservation issues in the urban area; soil ecology.
Website: https://uni-tuebingen.de/en/fakultaeten/mathematisch-naturwissenschaftliche-fakultaet/fachbereiche/biologie/institute/evolution-und-oekologie/lehrbereiche/evolutionary-biology-of-invertebrates/evolutionary-biology-of-invertebrates-evolutionsbiologie-der-invertebraten/

V. Nature of business:
Not applicable

VI. Turnover of the organization in US $:
Not applicable

2. Details and specific information about nature of access sought and biological material and associated knowledge to be accessed

a. Identification (scientific name) of biological resources and its traditional use:

(a) Scientific names of the biological resources: Beetle genera *Stenus* and *Dianous*, Staphylinidae (Coleoptera)

(b) Common names of the biological resources: Rove beetles

(c) Details of traditional use: not applicable

b. Geographical location of proposed collection:

(a) Name of village, panchayat, block, taluk, district and state where the biologcial resources are to be collected

(1) Arunachal Pradesh: Walong - Namti - Dong region (28.07'°N, 97.01'°E), Anjaw District; eight collection points across an elevational gradient between 400 - 2500 m (Salamgam, Hayuliang, Khupa, Sarti, Hawai, Walong, Tilam, Dong)
(2) Arunachal Pradesh: Eaglenest Wildlife Sanctuary (27°.05' N, 92°23' E), West Kameng District; six collection points across an elevational gradient between 900 - 2500 m (Lama camp to Eagle nest pass, Sunderview, Bompu, Sessni)
(3) Arunachal Pradesh: Pakhui Tiger reserve (27°05' N, 92°49' E), Pakke Kessang District; two collection points at ~500 m (Firing Nala/Majo Nala, Dhuna nala/Khari)

(b) Biological resources to be collected or procured from the Institute / Organization / Company / local trader / individual

Not applicable

(c) Indicate whether material is to be sourced from wild / cultivated:

The beetles need to be collected in their specific habitats (litter layer, barks of rivers, waterfalls) in the wild

c. Description / nature of traditional knowledge (oral / documented):

Not applicable

d. Any identified individual / community holding the traditional knowledge:

Not applicable

e. Quantity of biological resources to be collected (give the schedule):

About 4000 specimens comprising about 100 species. Note that these are only tiny inconspicuous beetles (i.e. no big and shiny ones) associated with the litter layer in forests, river banks and waterfalls. The specimens need to be temporarily exported in ethanol to Germany for solid identification, description of new species, comparative morphological Scanning Electron Microscopy and molecular phylogenetics .

f. Time span in which the biological resources is proposed to be collected:

Four one-week collection trips between November 15 2024 - March 15 2025.

November 2024: 1 week in Walong - Namti - Dong region

December 2024: 1 week in Eaglenest Wildlife Sanctuary (5 days) / Pakhui Tiger reserve (1 day)

January 2025: 1 week in Walong - Namti - Dong region

February 2025: 1 week in Eaglenest Wildlife Sanctuary (5 days) / Pakhui Tiger reserve (1 day)

g. Name and number of person authorized by the company for making the selection:

Prof. Dr. Oliver Betz, University of Tübingen, Germany
Dr. Hiren Gogoi, Rajiv Gandhi University, India.

h. The purpose for which the access is requested including the type and extent of research, commercial use being derived and expected to be derived from it:

Research project title: Field studies in Northeast India on the ecomorphological radiation of the rove beetle subfamily Steninae (Coleoptera, Staphylinidae)

Scientific background: The Steninae is a subfamily within the Staphylinidae (rove beetles), containing two genera, i.e. *Stenus* (> 3000 species worldwide) and *Dianous* (> 300 species worldwide). Adult *Stenus* beetles are optically oriented predators of springtails and other small arthropods. The most obvious autapomorphic character defining *Stenus* is a protruding elongated lower lip (labium) with the terminally located paraglossae being modified into sticky pads (Fig. 1). This exceptional adhesive prey-capture apparatus can be rapidly protruded towards the prey. Steninae beetles prefer moist habitats, where they inhabit waterside environments or the moist litter and humus layer in tropical forests.

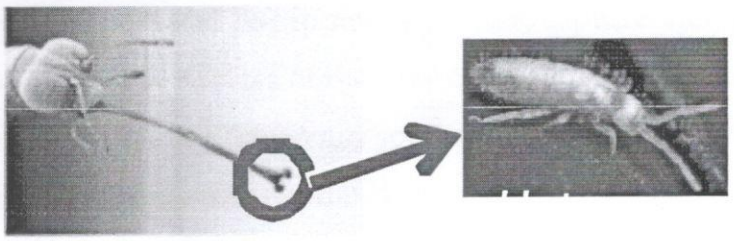


Fig. 1: SEM image of a *Stenus* beetle with protruded elongated labium to capture elusive prey such as springtails (right image) via two sticky pads at the labial tip (encircled).

Research goals: In order to develop a more comprehensive understanding of the ecological radiation that has occurred in the megadiverse Steninae, ecomorphological studies on this taxon shall be performed in the state Arunachal Pradesh, since this group of beetles has its supposed origin in the Lesser Himalayas of NE India. During a four months research stay at the laboratory of Dr. Hiren Gogoi (Department of Zoology, Rajiv Gandhi University, Rono-Hills, Doimukh-791112), field studies along two elevation gradients in the mountain forests of (1) the Walong - Namti - Dong region and (2) the Eaglenest Wildlife Sanctuary / Pakhui Tiger reserve shall be performed to evaluate the ecomorphological disparity and the community structure of NE Indian Steninae beetles. Since the ecology of tropical Steninae is largely unknown, these studies will provide fresh ecological, morphological and behavioral data that can be used in further analyses of the ecomorphological radiation and niche evolution of this taxon. Focusing on the largely neglected genus *Dianous*, whose center of distribution is in the mountain areas between the Palaearctic and the Oriental regions south of 31° northern latitude (Indochina Peninsula and southern slopes of the Himalaya), this research is aimed at contributing to the remaining open question as to whether *Stenus* is paraphyletic with respect to *Dianous* and whether the diversity of ecomorphs observed in *Dianous* has arisen via a process of iterative convergent ecological radiation, which means that species flocks are produced not by single but by multiple adaptive radiations, whereupon subclades radiate across similar ecomorphs related to similar adaptive zones. A special interest will be to investigate the way that *Dianous* species, lacking a

protrudible elongated stick-capture apparatus, capture their prey and interact with characteristic requisites of their habitat. The ecological and behavioral comparison of *Dianous* with *Stenus* species will provide important insights into the ecological consequences of the absence of an elongated adhesive prey-capture apparatus in *Dianous* and show to what extent the ecomorphological diversity of *Stenus* is actually repeatable in a convergent manner without such a specialized prey-capture device.

Type and extent of research: The four months field study (four collection trips interrupted by behavioural experiments of the collected beetles in the host's lab), exclusively following basic research interests (no commercial interests are involved).

i. Whether any collection of the resource endangers any component of biological diversity and the risks which may arise from the access:

These beetles (Fig. 2) are only tiny (~5 mm long) inconspicuous rove beetles (i.e. no big and shiny ones) associated with the litter layer, river banks and waterfalls. Their collection will not provide any harm to the local biodiversity, since this taxon is common and widely distributed. The collection methods comprise manual litter sieving and direct collections from river banks and waterfalls; they do not have any negative effect on the environment.

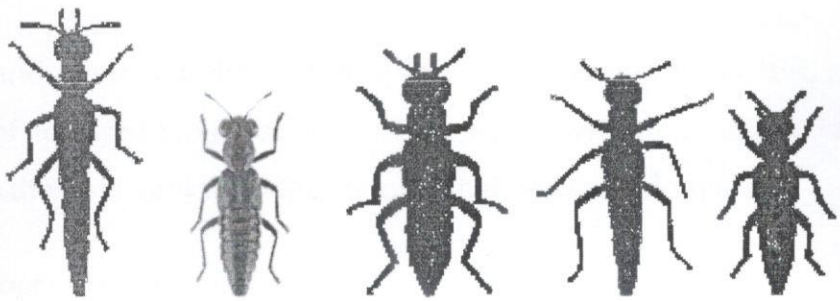


Fig. 2: Examples of *Stenus* beetles (Coleoptera, Staphylinidae) giving an example of their disparity regarding body shape, leg morphology or eye size.

3. Details of any national institution which will participate in the Research and Development activities.

This research stay will be performed in close collaboration with the Department of Zoology (Dr. Hiren Gogoi) at the Rajiv Gandhi University, Rono-Hills, Doimukh-791112, Arunachal Pradesh, India. Dr. Gogoi is an entomologist who has offered to collaborate and host me during my four months research stay in his research group. His student staff (and partly himself) will guide us during the field work and help to collect the beetles according to a standardized collection protocol. Dr. Gogoi will offer some lab space in his department where the beetles can be kept alive and where videographic observations and measurements can be conducted. All publications coming out of this research will be co-authored by the Indian collaborators. The project will be funded by my home university and our National Science Foundation DFG. This funding will also imply the payment of any staff members from my Indian collaborators who are involved on site in collecting and travel costs.

4. Primary destination of accessed resource and identity of the location where the R&D will be carried out.

Dr. Hiren Gogoi, Assistant Professor
Department of Zoology,
Rajiv Gandhi University, Rono-Hills, Doimukh-791112,
Arunachal Pradesh, India.

5. The economic and other benefits including those arriving out of any IPR, patent obtained out of accessed biological resources and knowledge that are intended, or may accrue to the applicant or to the country that he/she belongs

(a) The nature of benefits envisaged

This project has no economic interest, pursuing basic research questions only. However, through the involvement of the Indian office of the German Science Foundation (DFG) in New Delhi it has the potential to strengthen Indo-German collaborations in the fields of evolutionary biology, insect systematics & ecology and biodiversity research, which will be beneficial for both the Indian and the German side.

(b) Investment in Research and development

In addition to the scientific benefits mentioned in chapter 2 h, this research will strengthen the Faculty of Life Sciences of the Rajiv Gandhi University in their activities to assess, understand, and protect the natural heritage of Arunchal Pradesh. This will be supported by the proposer with respect to joint publications together with the Indian collaborators. The German Science Foundation (DFG) maintains an office in New Delhi (https://www.dfg.de/en/dfg_profile/head_office/dfg_abroad/india/index.html) to initiate and improve Indo-German scientific collaborations, setting up funding opportunities in cooperation with its partner agencies. Therefore, the proposed project has the potential to build up and strengthen international collaborations in the field of biodiversity research.

6. The biotechnological, scientific, social or any other benefits obtained out of accessed biological resources and knowledge that are intended, or may accrue to the applicant or to the country that he/she belongs

The project will contribute to a better understanding of the evolution and ecology of the megadiverse rove beetle genus *Stenus*, which is the most speciose insect genus on earth with its assumed center of radiation in NE India. The better knowledge of the Arunachal Pradesh fauna will not only help to provide a checklist of the Steninae

DEPARTMENT OF ZOOLOGY
RAJIV GANDHI UNIVERSITY
DOIMUKH, RONO HILLS

NO. RGU/ZOO/DBM/2022-1 **Dated 13th December, 2022**

A Departmental Board (DB) meeting was held on 13.12.2022 from 11 a.m. onward in the office chamber of Head, Department of Zoology to distribute odd semester (Next semester) syllabus and to discuss other matters relevant to department. The agendas discussed and resolutions adopted are as follows:

1. **Nomination of faculty member/s to attend 'Brain storming-cum-state level consultation workshop on sustainable Himalayan Ecosystems**

   That, the DB members unanimously decided to recommend for nomination of Dr. Hiren Gogoi, Assistant professor and Mr. Mairembam Stelin Singh, Assistant Professor for the aforementioned consultative programme.

2. **Purchase of laboratory consumables/chemicals/minor equiptments for the upcoming session**

   That, the DB members unanimously decided to ask requisition of chemicals/lab consumables/ minor equipments from faculty members as per Practical paper/s portion allotted to them. Further, the head was directed to issue a circular immediately calling for submission of requisition.

3. **Sessional examination/ Internal assessment In Charge for one session**

   That, the DB unanimously decided to an appoint sessional examination In charge for every odd/even semester to look after works related to sessional exam.

4. **The I and IV Semester syllabus distribution**
   That, DB members unanimously distributed the syllabus of both theory & Practical papers of I and II semester among the faculty members, which details is as in the table hereinafter.

Semester	Papers	HNS	JC	DM	PK	MSS	HG	GKS	AG
II	411	-	-	1& 2	-	3	4	-	-
	412	3	-	-	1&2	-	4	-	-
	413	2	-	-	-	1	-	3	4
	414	-	1&2	-	-	-	-	3	4
	415	10	8 &9	1-4 &6	13,14 &16	8 &9	1-4	5,11 &12	6,7 &15
IV	511	-	-	1	4	3	-	-	2
	512	1	2	-	-	-	4	3	

5. **Constitution of departmental purchase committee for purchase of Equiptments/chemicals.**

That, DB members unanimously decided to constitute three members Departmental purchase committee for purchase of equipment and chemical for the department of Zoology. The committee will verify and finalize the equipment and chemical to be purchase for the department of Zoology.

As there was no more item to discuss, the meeting was ended with vote of thanks by head of the Department

Prof. H.N. Sarma
Member

Prof. J. Chakravorty
Member

Dr. Pankaj Kumar
Member

Dr. M. S. Singh
Member

Dr. Hiren Gogoi
Member

Dr. Gunjan Kumar Saurav
Member

Dr Arnab Ghosh
Member

Dr. Daniel Mize
Head (i/c)- Chairman

Introduction to Speaker and Guest:

A warm and graceful morning to our esteemed Vice-Chancellor, Registrar, Dean of Life Sciences, distinguished speaker, and honored guest Professor Jorg Oliver Betz and Prof. Klaus Harter from the University of Tubingen, Germany.

I am delighted to introduce to you Professor Oliver Betz.
Dr. Oliver Betz holds the position of a Professor of Evolutionary Biology of Invertebrates at the prestigious Institute of Evolution & Ecology, University of Tübingen, Germany, where he conducts ground-breaking research on various aspects of invertebrate biology.

His research primarily focuses on rove beetles, and he has authored over 150 research articles covering diverse areas such as morphology, ecology, evolution, and biology of various insect groups including parasitoid wasps, wild bees, cockroaches, and others.

As a leading authority on Stenus and Dianous beetles, he is a trailblazer in the study of rove beetle morphology, ecology, and evolution. He has contributed significantly to the field, serving as an author and editor of the book 'Biology of Rove Beetles (Staphylinidae): Life History, Evolution, Ecology, and Distribution'.
He has conducted recent research in various areas such as elevational gradients of species richness of tropical rove beetles, the musculoskeletal ovipositor system of an ichneumonid wasp, morphologies of adhesive predatory mouthparts, adhesion and friction of the attachment system of the cockroach, adhesive exocrine glands in insects, comparative morphology and evolutionary pathways of mouthparts of spore-feeding Staphylinoidea, tracheal respiration in insects visualized with synchrotron X-ray imaging, and the performance and adaptive value of tarsal morphology in Stenus rove beetles.

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

Research Information Tübingen (FIT)

The research database of the University of Tübingen: projects, portfolios, cooperations

portfolio

Klaus Harter

person data

Academic title:	Prof. Dr.
Surname:	Klaus Harter
Organizational units:	Faculty of Science University of Tubingen Center for Plant Molecular Biology (ZMBP) Department of Biology
URL:	website Harter

Contact data

Curriculum vitae

Our present research focuses on the specific features of plant signal perception, signal transduction and information integration with our main concentration on the processes which are unique for higher plants.

These include:

(i) The role of plant two-component systems in the perception, transduction and integration of exogenous and endogenous signals.

(ii) Target genes and the post-translational regulation of the Arabidopsis subclass C basic leucine-zipper (bZIP) transcription factors and the analysis of their function in plant growth and development.

(iii) The function of calcineurin B-like calcium sensors (CBL) and CBL-dependent kinases (CIPK) in calcium signaling (this research is carried out in collaboration with Prof. Dr. J. Kudla, Universitaet Muenster

(iv) The identification of regulatory gene networks using bioinformatic approaches.

projects

- **7dSherbizid - joint project: 7dSh - a natural sugar from blue-green algae on the way to a sustainable herbicide - 7dSherbizid; Sub-project: Validation of the 7dSh mechanism of action and production of resistant plants**
  2021 - 2024
  Klaus Harter
  Federal Ministry of Education and Research (BMBF)

- **Dynamics and specificity of RLP-associated signaling processes in the plasma membrane**
  2020 - 2023
  Klaus Harter
  German Research Foundation (DFG)

- **Designer Transcription Activator Effector Chromatin Affinity Purification (dTALE-ChAP) - a novel in planta method to elucidate the protein occupancy of any promoter of choice**
  2019 - 2022
  Klaus Harter
  German Research Foundation (DFG)

- **Molecular Coding in Specificity in Plant Processes**
  2018 - 2022
  Klaus Harter
  German Research Foundation (DFG)

- **Dynamic protein complexes of the plasma membrane ATPase AHA2**
  2017 - 2020
  Klaus Harter
  German Research Foundation (DFG)

- **Quantum beat - A Quantum Beat for Life**
  2017 - 2018
  Alfred Meixner
  Volkswagen Foundation

- **Integration of cell wall mediated signaling processes and intracellular growth regulation**
  2015 - 2018
  Klaus Harter
  German Research Foundation (DFG)

- **SFB - Molecular coding of specificity in plant processes**
  2013 - 2022
  Klaus Harter

German Research Foundation (DFG)

▼ Show older projects

Publications

Excerpt of publications from the **university bibliography**

ARTICLE

A data management infrastructure for the integration of imaging and omics data in life sciences

Cuellar, Luis Kuhn; Frederick, Andrew; Gabernet, Gisela; de la Garza, Luis; Fillinger, Sven; Seyboldt, Adrian; Koch, Tobias et al., 2022

Bmc Bioinformatics, vol. 23 (1), iss. Article 61

ARTICLE

The Minus-End-Directed Kinesin OsDLK Shuttles to the Nucleus and Modulates the Expression of Cold-Box Factor 4

Xu, Xiaolu; Hummel, Sabine; Harter, Klaus; Kolukisaoglu, Uener; Rieman, Michael; Nick, Peter, 2022

International Journal of Molecular Sciences, vol. 23, eat. 11

ARTICLE

Three-Fluorophore FRET Enables the Analysis of Ternary Protein Association in Living Plant Cells

Gloeckner, Nina; zur Oven-Krockhaus, Sven; Rohr, Leander; Wackenhut, Frank; Burmeister, Moritz; Wanke, Friederike; Holzwart, Eleonore et al., 2022

Plants-Basle, vol. 11, eat. 19

ARTICLE

Strong coupling between an optical microcavity and photosystems in single living cyanobacteria

Rammler, Tim; Wackenhut, Frank; zur Oven-Krockhaus, Sven; Rapp, Johanna; Forchhammer, Karl; Harter, Klaus; Meixner, Alfred J., 2022

Journal of Biophotonics, vol. 15 (2), iss. Article e202100136

ARTICLE

Computational modeling and quantitative physiology reveal central parameters for brassinosteroid-regulated early cell physiological processes linked to elongation growth of the Arabidopsis root

Grosseholz, Ruth; Wanke, Friederike; Rohr, Leander; Gloeckner, Nina; Rausch, Luiselotte; Scholl, Stefan; Scacchi, Emanuele et al., 2022

Elife, vol. 11, eat. Article e73031

ARTICLE

Dietary preferences and feeding strategies of Colombian highland woolly monkeys

Fonseca, Manuel L.; Ramirez-Pinzon, Marcela A.; McNeil, Kaylie N.; Guevara, Michelle; Gomez-Gutierrez, Laura M.; Harter, Klaus; Mongui, Alvaro et al., 2022

Scientific Reports, vol. 12, eat. 1

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