

First European Congress on Orthoptera Conservation

14. Heuschreckentagung

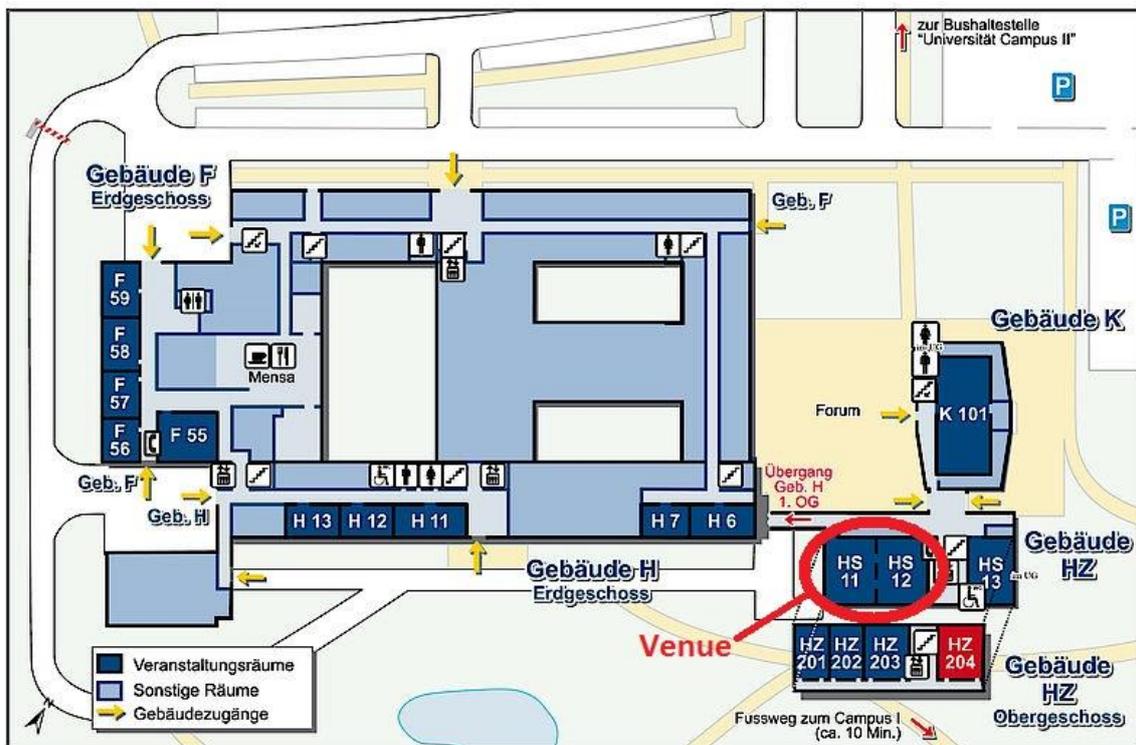
Trier, 18 – 20 March 2016



Venue

You may reach Trier either by train, car or bus. A free parking is available in front of Campus II. The next airports are Luxembourg Findel, Frankfurt Hahn (note that this airport is closer to Trier than to Frankfurt and mainly used by Ryanair) or Saarbrücken. During weekends, a direct bus connection between the city center and campus 2 exists only for Saturdays. In this case, bus line 85 leaves the city center hourly between 10:10 a.m. and 19:10 p.m. (bus station "Porta nigra"). A return to the city center is possible hourly between 09:59 a.m. and 18:59 p.m.

Campus 2 can be reached earlier/later, more frequent and on Sundays by the bus line 83, bus station "Kohlenstraße". Note that you have to calculate a ten minute walk from the bus station to campus 2. Both bus lines drive along the central train station. For detailed information please refer the bus schedule that is put up at the conference info board.



Trier University, Campus 2, HZ building.

Welcome

Dear participants,

It is a great pleasure to welcome you to the 14th Annual Meeting of the German Society of Orthopterology (14. Jahrestagung der Deutschen Gesellschaft für Orthopterologie, DGfO) and the First European Congress on Orthoptera Conservation (Grasshopper Specialist Group, GSG).

The host institution, Trier University, has a focus on humanities and social sciences. However environmental sciences are strongly represented in the Faculty of Regional and Environmental Sciences, including the Department of Biogeography. The Department of Biogeography is specialized in biodiversity research, with a focus on Zoology. We are active in many regions throughout the world. Thus, it is a pleasure for us to promote interactions of international scientists by co-organizing the traditional Orthopterists meeting of the German Society of Orthopterology with a first European Congress on Orthoptera Conservation. We hope that our concept will help to foster conservation action in Europe and lead to new fruitful cooperations on the European scale. The meeting takes place in the last year of the ongoing European red-listing of Orthoptera. This project has for the first time gathered the available knowledge on the conservation status of all European Orthoptera species. However, it has also shown how many knowledge gaps still exist, including not only the unresolved taxonomy of several taxa, but also the lack of knowledge on the distribution, population trends and threats of the European Orthoptera species. We hope that our congress will be continued in the future and help also to set a solid basis for future re-assessments of the Red List status of the European Orthoptera species.

We are glad to present you a dense program of interesting and diverse presentations of participants from about 18 different countries. We wish you an interesting congress and also a nice visit of Trier, the oldest city of Germany, with its several Roman buildings, the probably only Grasshopper Fountain and its nice environment, including the Moselle Valley, the Hunsrueck and Eifel Mountains (with two new National Parks) and the close proximity to neighboring countries, including Luxembourg, France and Belgium.

On behalf of the DGfO, the GSG and the organizing team,

Axel Hochkirch

Organized by

Axel Hochkirch, Linda Bröder, Anja Danielczak, Johanna Ewen, Claude Kolwelter, Marco Kranz, Katja Rohde, Elena Rudolf, Sarah Schüle, Sarah Wirtz

Department of Biogeography, Trier University, D-54286 Trier, Germany

Program of the First European Congress on Orthoptera Conservation

Friday, 18 March

from 18:00 Icebreaker in the restaurant Textorium

Saturday, 19 March

Chairman: Axel Hochkirch

9:00 Welcome by the President of the DGfO, Thomas Fartmann

Welcome by the Organizer and Chair of the Grasshopper SG, Axel Hochkirch

9:15 Keynote

Karim Vahed (Derby): Comparing copulating crickets: comparative studies of post-copulatory sexual selection in bushcrickets (Tettigoniidae)

10:15 Coffee Break

Chairman: Günter Köhler

10:40 Dragan Chobanov (Sofia, Bulgaria): Phylogeny and systematics of the subgenus *Odontura* (Ensifera: Phaneropterinae) with particular reference to its African taxa and their conservation status

11:00 Ionut S. Iorgu (Bucharest, Romania): The Atlas of Orthoptera from Dobrogea

11:20 Florent Prunier (Córdoba, Spain): Ecology and Conservation of Orthoptera in Sierras de Cazorla, Segura and Las Villas Natural Park (Andalusia, Spain)

11:40 Armin Landmann (Innsbruck, Austria): From *Anoconotus* to *Bryodemella*: status, ecology and threat of some rare alpine grasshopper species in the Tyrol, Austria

12:00 Lunch Break

Program

Chairman: Thomas Fartmann

14:00 Björn Beckmann (Wallingford, UK): Collection and analysis of Orthoptera records in Britain

14:20 Rob Felix (Nijmegen, The Netherlands): The Orthoptera of Socotra: Preliminary results of a study on the Island of the Dragon's Blood

14:40 Günter Köhler (Jena, Germany): Red begins, blue wins – the *Oedipoda* (com)plot

15:00 Katja Rohde (Trier, Germany): Hybridization as a threat to the Meadow Water Grasshopper, *Chorthippus montanus*?

15:20 Coffee Break

Chairman: Luc Willemse

15:50 Linda Bröder (Trier, Germany): The Conservation Strategy for the Crau Plain Grasshopper, *Prionotropis rhodanica*

16:10 Alexandra Franzke (Freiburg, Germany): Transgenerational effects of diet environment on life-history of *Chorthippus biguttulus*

16:30 Axel Hochkirch (Trier, Germany): What we know and what we don't know on the conservation status of Orthoptera on the Canary Islands

16:50 Coffee Break

17:00 Members Assembly of the DGfO

Chairman: Axel Hochkirch

18:30 Public Evening Lecture

Christian Roesti (Bern, Switzerland) and Florin Rutschmann (Nussbaumen b. Baden, Switzerland): Magic Orthoptera diversity on the Balkan Peninsula

Sunday, 20 March

Chairman: Dragan Chobanov

09:00 Karim Vahed (Derby, UK): The life cycle of the Scaly Cricket
Pseudomogoplistes vicentae (Gorochov, 1996)

09:20 Ionut S. Iorgu (Bucharest, Romania): Acoustic behaviour of *Isophya fatrensis*, the last phaneropterine species with unknown acoustic signal pattern from Central Europe

09:40 Josip Skejo (Zagreb, Croatia): Social networks as a modern tool in discovering biodiversity: case study "Orthoptera"

10:00 Waheed Ali Panhwar (Pakistan): Records of the genus *Decticus* Serville, 1831 (Decticinae: Tettigoniidae: Orthoptera) from Pakistan

10:20 Coffee Break

Chairman: Sigfrid Ingrisch

10:50 Raimund Klatt (Potsdam, Deutschland): Veränderungen in der Heuschreckenfauna Brandenburgs und Berlins von 2000 bis 2015

11:20 Franz Löffler (Münster, Deutschland): Auswirkungen des Landnutzungs- und Klimawandels auf Heuschreckengemeinschaften in montanen Kalkmagerrasen

11:40 Manfred Alban Pfeifer (Bobenheim-Roxheim, Deutschland): Die Roten Listen der Heuschrecken in den Bundesländern Deutschland sind veraltet - Erarbeitung einer Petition an die Umweltministerien der Länder

12:00 End of the Congress

Posters

- Ewen J., Kolwelter C.: Habitat preferences of endemic groundhoppers and their distribution on the Seychelles (Orthoptera, Tetrigidae)
- Ivkovic S., Horvat L.: Orthoptera of the Vršac Mountains (Serbia): a preliminary checklist
- Landmann A., Zuna-Kratky T.: Die Heuschrecken Tirols – eine Buchpräsentation
- Puskás G., Szövényi G.: Present knowledge of the Albanian Orthoptera fauna – a preliminary check-list
- Skejo J., Rebrina F., Szövényi G., Puskás G., Tvrokovic N.: Overview of Croatian grasshoppers' (Orthoptera: Ensifera, Caelifera) fauna
- Stahi N., Derjanschi V.: The diversity of orthopteroid insects (Dermaptera, Dictyoptera, Orthoptera orders) from the Republic of Moldova
- Szövényi G., Nagy B., Puskás, G.: Evaluation of the Orthoptera fauna of Hungary - a nature conservation approach
- Yilmaz G., Sevgili H., Gür H.: Does the global climate change threat to small-range bushcrickets in Anatolia
- Zacharopoulou P., Willemse L., Kati V.: Orthoptera diversity patterns and community structure in Tzoumerka National Park, Greece

Comparing copulating crickets: comparative studies of post-copulatory sexual selection in bushcrickets (Tettigoniidae)

Karim Vahed^{1,*}

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Abstract:

Post-copulatory sexual selection entails the related processes of sperm competition, cryptic female choice and sexually antagonistic co-evolution. This presentation will examine the contribution of comparative studies to our understanding of post-copulatory sexual selection and the evolution of mating behaviour in bushcrickets. The comparative approach is a powerful way of testing hypotheses relating to the selective pressures responsible for the evolution of a trait. It involves quantifying the magnitude of a trait in a range of species and determining the extent to which other traits, environmental variables and/or shared ancestry predict the state of the character in question. This approach has been used to examine the selective pressures behind the evolution of a range of traits in bushcrickets, including nuptial gift (spermatophylax) size, copulation duration, genital structures and testes size. Comparative studies suggest that inter-sexual conflict over the amount of ejaculate transferred per mating has shaped nuptial gift evolution, copulation duration and the evolution of the male's cerci. In the case of testes size, however, comparative data indicates that selection on males to maximize their mating rate has shaped this trait, rather than selection resulting from sperm competition. There is much scope for further comparative studies of reproductive traits in tettigoniids and other Orthoptera.

Phylogeny and systematics of the subgenus *Odontura* (Ensifera: Phaneropterinae) with particular reference to its African taxa and their conservation status

Dragan P. Chobanov^{1,*}, Jorge Gutiérrez-Rodríguez², Beata Grzywacz³

(1) *Institute of Biodiversity and Ecosystem Research, BAS, Sofia, Bulgaria*, (2) *Museo Nacional de Ciencias Naturales, Madrid, Spain*, (3) *Institute of Systematics and Evolution of Animals, PAS, Krakow, Poland*

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Abstract:

Genus *Odontura* characterizes with a complicated communication system and low mobility that may have led to an allopatric speciation promoted by geomorphological and climatic factors. Subgenus *Odontura* comprises 10 of the 12 recognized species of its genus, most distributed in northwestern Africa. Presently, some of its taxa are known from single specimens and only the European representatives of *Odontura* have been recently systematically reviewed. Therefore, the phylogenetic relationships within this genus are still unclear. In this talk we present an attempt to reconstruct the phylogenetic relationships and revise the systematics of the African representatives of *Odontura* based on morphological, bioacoustic and molecular (NADH2 dehydrogenase subunit 2 gene) data. The taxonomy of the group is discussed based on automatic (Statistical parsimony, GMYC, ABGD) and descriptive species delineation tests. A short discussion on the phylogeographic splits between the European and African taxa is based on a rough time estimation for lineage divergence based on the NADH2 sequences. The conservation status of the studied taxa is discussed based on own and literature data.

The Atlas of Orthoptera from Dobrogea

Ionuț Ștefan Iorgu^{1,*}, Elena Iulia Iorgu¹, Dragan Petrov Chobanov²

(1) “Grigore Antipa” National Museum of Natural History, Bucharest, Romania, (2) Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria

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Abstract:

Comprising South-eastern Romania and North-eastern Bulgaria, the historical region of Dobrogea contains some of the oldest geological structures in Europe. A unique territory with wide steppe grasslands, sub-Mediterranean forests and Pontic sandy dunes along the Western shores of the Black Sea, Continental Dobrogea is bordered to the North-east by the Danube Delta, the largest compact reed surface on the planet. To date, 108 species of Orthoptera are known to occur in this region, including new reports, such as *Poecilimon ukrainicus* Bey-Bienkoi, *Vichetia oblongicollis* (Brunner von Wattenwyl), *Zeuneriana amplipennis* (Brunner von Wattenwyl), *Myrmecophilus acervorum* (Panzer), *Gryllotalpa stepposa* Zhantiev, *Aiolopus strepens* (Latreille), or *Stenobothrus eurasius* Zubovski. Unfortunately, several species seem to have disappeared since the last citations available (1960's to 1970's), despite authors' efforts in the past decade: *Ancistrura nigrovittata* (Brunner von Wattenwyl), *Montana medvedevi* (Miram), *Bradyporus macrogaster* (Lefebvre), *Paratettix meridionalis* (Rambur) and *Podisma pedestris* (Linnaeus). The atlas provides a photographic guide for the bush-crickets, crickets and grasshoppers of Dobrogea, detailed distribution maps and oscillographic and spectrographic stridulation analyses. The acoustic behavior of many species is showcased in the accompanying discs, as both audio and video recordings.

Ecology and Conservation of Orthoptera in Sierras de Cazorla, Segura and Las Villas Natural Park (Andalusia, Spain)

Florent Prunier^{1,*}, Didier Morin²

(1) Asociación de Educación Ambiental El Bosque Animado, Spain (2) ASCETE (Association pour la caractérisation et l'étude des entomocénoses), France

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Abstract:

Several field trips were carried out between 2008 and 2013 in order to survey the orthopterofauna of the Natural Park Sierras de Cazorla, Segura & Las Villas (Andalusia, Spain). With a total surface area of 209,920ha, this is Spain's largest protected area and one its most extensive forested zones.

The inventory of the park is updated with 93 species currently recorded. New information dealing with altitudinal distribution, the frequency of species in open habitats and an evaluation of the state of conservation of the most important species are discussed.

Several populations of the three Spanish Red Data Book species present within the park, *Canariola emarginata*, *Coracinotus politus* and *Omocestus femoralis* have been recorded, sometimes in large numbers. They have also been recently discovered in neighbouring mountains, indicating a better conservation status than previously thought.

Hedgehog-heaths, characteristic of high altitude in Iberian mediterranean ranges, support higher diversity and density of Orthoptera, especially the Baetic endemics, than grasslands. Unfortunately this habitat is under increasing grazing pressure by livestock (sheep) and wild mammals (deers and wild boar). The threat on the habitat has not been sufficiently addressed until now. Large and iconic areas of hedgehog-heaths are currently severely damaged, where few and mostly opportunistic and common species can flourish.

From *Anoconotus* to *Bryodemella*: status, ecology and threat of some rare alpine grasshopper species in the Tyrol, Austria

Armin Landmann^{1,*}

(1) Institute of Zoology, University of Innsbruck

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Abstract:

Tyrol is a mountainous country at the heart of the Alps, The composition of its grasshopper fauna amongst others is influenced by (1) the countries geographical position at the intersection of the western, eastern and southeastern chains of the Alps, (2) the climatic variability with a suboceanic wet climate at the northern and dry conditions at the inner and southern parts, and (3) steep altitudinal gradients, allowing grasshopper habitats to extend over an altitudinal range of nearly 3000 m. With about 75 extant species the Orthoptera fauna of the Tyrol is rich and varied. Moreover, in Austria, Tyrol is the sole or most important stronghold of a number of rare and partly endangered specialists adapted to alpine, riverine or dry rock and grassland habitats. This applies i. e. to alpine species like *Anoconotus alpinus*, *A. italoaustriacus* or *Bohemanella frigida*, for riverside dwellers like *Bryodemella tuberculatum* or *Chortippus pullus* and for species of xeric rocks like *Antaxius pedestris* or *Oedipoda germanica*.

The talk exemplifies patterns of altitudinal and horizontal distribution of such species and gives an overview of the range of habitats inhabited. In addition, information about the threat status and conservation needs of the habitat specialists at focus is given.

Collection and analysis of Orthoptera records in Britain

Björn C. Beckmann^{1,2,3,*}, Peter G. Sutton¹, Helen E. Roy², David B. Roy², Bethan V. Purse², Stephen N. Freeman², Chris D. Thomas³

(1) *Orthoptera Recording Scheme of Britain and Ireland* (2) *Biological Records Centre, Centre for Ecology & Hydrology, Wallingford, UK* (3) *University of York, Dept. of Biology, York, UK*
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Abstract:

The accumulation of long-term, large-scale datasets through biological recording has made major contributions to research on environmental change. The Biological Records Centre supports national recording schemes in Britain, including the Orthoptera Recording Scheme, launched in 1968. The scheme currently holds 150,000 records, contributed by over 2,000 recorders. Records are mostly gathered in a non-standardised way, the main aim being to record distributions. Traditionally collected on recording cards, data is now mostly submitted in electronic formats, online, or through a dedicated mobile app. Scheme data has been used to produce two national atlases (Marshall & Haes 1987, Haes & Harding 1997) and Red Data Books (Shirt 1987, Sutton 2015). The data has also informed research to assess drivers of biodiversity change (Burns et al. 2016, *PLoS One*), calculate a threatened species indicator (Eaton et al. 2015, *Biodiversity*), range margin shifts (Mason et al. 2015, *Biol.J.Linn.Soc.*) and to assess resilience of ecosystem services (Oliver et al. 2015, *Nat.Commun.*), effects of biological traits on distribution change (Beckmann et al. 2015, *PLoS One*) and climatic effects on colonisation success (in prep.). Future aims include addition of audio recording functionality to the mobile app, improved standardisation of distribution recording, and development of a protocol for abundance monitoring of Orthoptera.

The Orthoptera of Socotra: Preliminary results of a study on the Island of the Dragon's Blood

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Abstract:

Originally part of the Gondwana supercontinent, Socotra Island (Yemen) became isolated since Oligocene – Miocene times. The island is well known for its high degree of endemism in both flora and fauna. Until the end of the 20th century comparatively little study was done on the island's Orthoptera.

In 2009 and 2010 the authors carried out a field study on the Orthoptera and other insect fauna of Socotra. Grasshoppers and crickets were collected, as well as sound recordings of singing species, and photographs of all species in their natural habitat. Research continued in the NHM London and Vienna and on several private collections. Type specimens were photographed. Site information of all available Socotran specimens was collected and stored in GIS for generating distribution maps.

Up to now 57 Orthoptera species, of which 35 endemic, are known to occur on Socotra. A new species of cave cricket has been described. Several other new species will be described in the near future. The distribution data will be used for a Red List assessment. A next visit is in line for the near future, focused on the highest regions of the Hagher mountains, to extend the knowledge of species richness and distribution, and the phylogeny of the islands Orthopteran fauna.

Red begins, blue wins – the *Oedipoda* (com)plot

Günter Köhler ^{1,*}

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Abstract:

In a limestone quarry in the central Saale-river valley (Thuringia) the construction of a new road (2002) would have destroyed a subpopulation of the red-winged grasshopper (*Oedipoda germanica*), which is listed as Critically Endangered in Germany. Therefore, in July 2002 a total of 30 individuals was removed and translocated to a limestone slope near Jena, selected as the most suitable (i.e. most extreme) one by comparing three similar slopes. The development of the established population has been monitored each August (recently in 2015) until it became obviously extinct in 2013. Unexpectedly, since 2007 the blue-winged grasshopper (*Oedipoda caerulescens*) gradually took its place, which before was unknown from this locality and must have immigrated from a bordering slope. These reverse developments have no logical explanation within the context of other local *Oedipoda* populations.

Rot beginnt, blau gewinnt - das *Oedipoda*-Komplott

Kurzfassung:

Durch den Bau einer Arbeitsstraße in einem Kalksteinbruch im mittleren Saaletal (Thüringen) (2002) wäre eine Teilpopulation der Rotflügeligen Ödlandschrecke (*Oedipoda germanica*) verschwunden. Deshalb wurden im Juli 2002 vor Beginn der Arbeiten 30 Tiere entnommen und an einem Kalksteilhang bei Jena ausgesetzt, der sich von drei zuvor untersuchten Hängen als der vermeintlich geeignetste (extremste) erwies. Mittels jährlicher Kontrollen im August (zuletzt 2015) wurde die Entwicklung der Population bis zu ihrem vermeintlichen Aussterben (2013) verfolgt. An ihre Stelle trat allmählich ab 2007 die Blauflügelige Ödlandschrecke (*Oedipoda caerulescens*), die zuvor dort unbekannt war und sich von einem unmittelbar angrenzenden Oberhangbereich her ausgebreitet haben muss. Diese gegenläufigen Befunde - in den Kontext anderer lokaler *Oedipoda*-Populationen gestellt – lassen sich nicht schlüssig erklären.

Hybridization as a threat to the Meadow Water Grasshopper, *Chorthippus montanus*?

Katja Rohde^{1,*}, Axel Hochkirch¹

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Abstract:

Climate change and habitat fragmentation modify the natural habitat of many wetland biota and lead to new compositions of biodiversity in these ecosystems. While the direct effects of climate are often well known, indirect effects due to biotic interactions remain poorly understood. The water meadow grasshopper, *Chorthippus montanus*, is a univoltine habitat specialist, which is adapted to permanently moist habitats. Land use change and drainage led to highly fragmented populations of this generally flightless species. In large parts of the Palaearctic *Ch. montanus* occurs sympatrically with its widespread congener, the meadow grasshopper *Chorthippus parallelus*. Due to their close relationship and their similar songs, hybridization is likely to occur in syntopic populations.

Despite the widespread assumption that hybridization between two sympatric species is rare due to complete reproductive barriers, the genetic analyses of 16 populations provided evidence for wide prevalence of hybridization between both species in the wild. Reproductive barriers such as habitat isolation, behavior or phenology seem to prevent the genetic swamping of *Ch. montanus* populations. However, climate change and other anthropogenic disturbances alter reproductive barriers and promote hybridization, which may threaten small populations by genetic displacement.

The Conservation Strategy for the Crau Plain Grasshopper

Linda Bröder^{1,*}, Laurent Tatin², Mark Stanley Price³, Cathy Gibault⁴, Mark Bushell⁵,
Antoine Foucart⁶, Axel Hochkirch¹

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Abstract:

The Crau Plain Grasshopper, *Prionotropis rhodanica* is endemic to the Crau plain, a Mediterranean stone steppe in southern France. It strongly declined during the last decade and is therefore listed as Critically Endangered on the IUCN Red List of Threatened Species. In 2014, a conservation strategy for the species has been developed under the supervision of the Species Conservation Planning Sub-Committee (SCPSC) and the Invertebrate Conservation Sub-Committee (ICSC) of the *International Union for Conservation of Nature* (IUCN) involving the key stakeholders of the area. The strategic plan for the Crau Plain Grasshopper includes several activities and research targets: A threat analysis surveys potential reasons for the population decline and ecological studies investigate the current population size of the remaining populations and the microhabitat preferences of *P. rhodanica*. Microsatellites are used to compare the present genetic situation with genetic data from samples collected before the population declined. A captive breeding project, conducted by Thoiry Zoo (France), is one further important component of the Conservation strategy.

Transgenerational effects of diet environment on life-history of *Chorthippus biguttulus*

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Abstract:

Phenotypic plasticity can be due to environmental conditions experienced during an individual's lifetime, but can also be based on parental effects, that is the responses of the parental generation to their own environment. Such transgenerational responses might be adaptive by allowing fine-tuning of offspring traits to the present environment. We examined whether the parental and offspring diet affect offspring life history traits in the grasshopper *Chorthippus biguttulus*. In a full factorial design, parents and offspring were reared on high-quality or poor-quality diet. We found significant positive effects of parental high-quality food on offspring developmental time, body mass and weight of egg pods in adult females. In all cases, these effects were larger than direct effects of the diet environment experienced during ontogeny, even though some of these were significant, too. Interactions between parental and ontogenetic treatments were all nonsignificant, indicating that offspring traits are not adjusted to enhance performance on the same diet as the parent. We conclude that parental effects are unexpectedly stronger than effects of the offspring diet environment in *C. biguttulus*. These parental effects do not seem to constitute adaptive phenotypic plasticity, but nevertheless show that the nutritional environment of the parents has a large influence on traits in *C. biguttulus* grasshoppers.

What we know and what we don't know about the conservation status of Orthoptera on the Canary Islands

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Abstract:

The Canary Islands belong to the global hotspots of biodiversity. They maintain many endemic species. A total of 89 Orthoptera species have been recorded from the Canary Islands so far, 36 of them (40%) being endemic. However, the taxonomic exploration of the Canary Islands is not yet completed. Some endemic taxa (e.g. *Ariagona margaritae*, *Oedipoda canariensis*, *Arminda brunneri*) may consist of several species. During the last 15 years, we have studied the distribution, phylogeny and ecology of Canarian Orthoptera. The conservation status of the endemic species was recently assessed. Altogether, the number of threatened species is high. There are two major threats on the archipelago: (1) touristic and industrial development at the coasts, which is threatening coastal endemics and (2) the increasing wildfire frequency, which affects arboreal species at higher elevations. Two species have not been seen for ca. 50 years: *Evergoderes cabrerai* (which was known from Agaete Valley on Gran Canaria) and *Dericorys minutus* (which has only been found once at the beach of Maspalomas, which is meanwhile heavily degraded by touristic development). We still have a lack of knowledge concerning population trends, ecology and threats. Without this knowledge, it will be difficult to preserve these fascinating species.

Magic Orthoptera diversity on the Balcan Peninsula

Florin Rutschmann^{1,*}, Christian Roesti^{2,**}

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Abstract:

In our evening talk, we want to prepare the participants for the upcoming Orthoptera season. We present a variety of typical Orthoptera species between the Italian Tagliamento river in the Northwest and some Greek Island in the Southeast. The presentation covers lots of fascinating species they documented during several trips on the Balkan Peninsula, such as the newly recorded *Bruntridactylus irremipes* at sea level as well as mountainous species like *Psorodonotus fieberi*. Furthermore, some spectacular species like *Saga natoliae* or *Bradyporus oniscus* are shown as well as some endemics, such as *Poecilimon soulion*, but also nice and widespread species like *Oedaleus decorus* are part of the talk. Just enjoy Orthoptera and collect some power for the next Grasshopper season coming soon!

The life cycle of the Scaly Cricket *Pseudmogoplistes vicentae* (Gorochov, 1996).

Karim Vahed^{1,*}

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Abstract:

The Scaly Cricket, *P. vicentae*, inhabits shingle beaches, close to the strand line and has a range that extends from the UK to Morocco. It is considered to be vulnerable in the UK, but little is known about the natural history of this species. In the present study, a combination of field sampling (by pitfall trapping and direct searching) at different times of year and rearing eggs and nymphs in captivity was used to determine the life cycle of the species in the UK. The oviposition preference of females was also examined. It was found that eggs laid in August overwintered prior to showing any visible embryonic development and hatched the following July. Nymphs typically developed to their 7th instar before the beginning of the winter and resumed development the following spring. Overwintered nymphs reached adulthood by July or August, two years after the eggs from which they hatched were laid. In captivity, adult males died by the end of November, while at least half of adult females survived until the end of the winter, and a few persisted until the following summer. Females preferred to oviposit in drift-wood rather than in sand. It is therefore probable that the species can disperse by rafting at the egg stage.

Acoustic behaviour of *Isophya fatrensis*, the last phaneropterine species with unknown acoustic signal pattern from Central Europe

Ionuț Ștefan Iorgu^{1,*}, Anton Krištín², Gergely Szövényi³, Peter Kaňuch², Benjamín Jarčuška², Tiberiu Constantin Sahlean¹, Elena Iulia Iorgu¹, Kirill Márk Orci⁴

(1) "Grigore Antipa" National Museum of Natural History, Bucharest, Romania, (2) Institute of Forest Ecology SAS, Zvolen, Slovakia, (3) Department of Systematic Zoology & Ecology, Eötvös Loránd University, Budapest, Hungary, (4) Ecology Research Group of the Hungarian Academy of Sciences, Eötvös Loránd University and Hungarian Natural History Museum, Budapest, Hungary

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Abstract:

Widespread amongst orthopterans, acoustic communication plays an important role in the mate recognition system of these insects. Within the *Isophya camptoxypha* group, three distinct subgroups have been identified: species with simple acoustic repertoires, consisting of a repetitive single syllable type (e.g. *I. camptoxypha* (Fieber)), species producing two distinct syllables (e.g. *I. posthumoidalis* Bazyluk) and one species producing regular one syllable-type-groups: *I. fatrensis*. This study provides a complex description of male song and male-female duetting of *Isophya fatrensis* Chládek, an endemic bush-cricket species from Vel'ká Fatra, Nízke Tatry, Kremnické vrchy and Poľana Mountains, Western Carpathians. The stridulation pattern consists of syllable groups, each group composed of 1-10 syllables and intersyllabic intervals tend to decrease within each syllable group. Females emit their acoustic response after the last syllable of the male's syllable groups, during the inter-syllable-group interval. The male-female acoustic duet can be formulated as: (M...M)F-(M...M)F-(M...M)F, where "M" means one male syllable, "... " means a varying number of male syllables, "round brackets" enclose male syllable-groups, "F" stands for female response, and "-" means a longer intersyllable interval. Our results confirm the validity of *Isophya fatrensis*, the last phaneropterine species with unknown stridulation from Central Europe. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS – UEFISCDI, project number PN-II-RU-TE-2014-4-2093.

Social networks as a modern tool in discovering biodiversity: case study 'Orthoptera'

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Abstract:

There are a lot of kinds of social networks with different aims: for selling and buying, posting photos, connecting people and sharing all kinds of media. In all those networks, there is a significant number of people interested in nature photography and many groups that gather the photos of interesting, usually unidentified animals. For example, on Facebook there are numerous groups specialized in entomology (e.g. 'Entomology' with 49,000 members), some of them specialized only in Orthoptera (e.g. 'the Orthopterists' Society' with 1,400 members). In all of these groups, one can find tremendous amount of interesting photographic data that can be used for documenting biodiversity. We can categorize these photos in the following five areas: 1) first photographic records of living specimens for the species known only from museums' collections or solely from the descriptions (lacking drawings); 2) new data on species distributions; 3) new data on variability of species known from few individuals; 4) new information on morphology of unknown sex and 5) discovery of new species. New species can be recognized from a few facts—unusual biogeographical records (not at all related to known species from some group) and unusual and different morphology. With the latter, researchers should take into account the variability of *known* species. After the recognition of the potentially new species, it is critical to acquire physical specimens that can be designated as type specimens in order to follow the rules of the International Code of Zoological Nomenclature. I present use of social networks (*social-networks-taxonomy*) as a very important and brand new method in gathering data for conservation.

Records of genus *Decticus* Serville, 1831 (Decticinae: Tettigoniidae: Orthoptera) from Pakistan

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Abstract:

Decticus Serville, 1831 fauna of Pakistan has enabled the discovery of two species i-e: *Decticus verrucivorus* (Linnaeus, 1758) and *Decticus albifrons* (Fabricius, 1775). *Decticus* species are having significant biometrical and morphological differences with each other. In *Decticus albifrons* genital plate transverse with thickened posterior margin with small median cerci in *D. verrucivorus* restrain with denticles near middle. All morphological differences were highlighted by appropriate illustration and digital photograph. Furthermore, the species of *Decticus* are having jumping capacity when approached. Finding of these species from Pakistan constructed new records. Beside this, a simplified taxonomic key for the separation of species has also been provided.

Verbreitungsatlas der Heuschrecken in Brandenburg und Berlin Entwicklungen von 2000-2015

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Abstract:

Im Jahr 2000 wurde ein „Vorläufiger Verbreitungsatlas der Heuschrecken Brandenburgs“ vorgelegt. 2017 soll nun ein Verbreitungsatlas der Heuschrecken Brandenburgs und Berlins erscheinen.

Die Entwicklungen der Heuschreckenfauna und die Veränderung des Kenntnisstandes von 2000 bis 2015 werden an ausgewählten Beispielen vorgestellt. Derzeit sind 68 Arten bekannt, davon wurden vier neu nachgewiesen, weitere Arten haben ihr Areal zum Teil deutlich verändert. Dieses sind insbesondere Arten, die sich nach Norden ausbreiten. Dramatisch stellt sich demgegenüber die Situation von *Platycleis montana* dar. Sie konnte im Berichtszeitraum nicht mehr nachgewiesen werden und muss als in Brandenburg und deutschlandweit verschollen gelten. Als besonders zu beachtende Arten gelten die individuenarmen Restbestände von *Psophus stridulus* und *Stenobothrus nigromaculatus*. Für die weitere Bearbeitung haben wir Fokusarten definiert, die vorrangig bearbeitet werden.

Um den Kenntnisstand noch zu verbessern rufen wir zur Mitarbeit auf.

Auswirkungen des Landnutzungs- und Klimawandels auf Heuschreckengemeinschaften in montanen Kalkmagerrasen

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Abstract:

Der Rückgang der Biodiversität ist weltweit eines der gravierendsten Probleme unserer Zeit. Als Hauptursache für den Biodiversitätsverlust gilt der Landnutzungswandel. Aktuell steht zunehmend die Bedeutung des Klimawandels für den Rückgang der Artenvielfalt im wissenschaftlichen Fokus. Heuschrecken reagieren sehr empfindlich auf Änderungen der Umweltbedingungen. Während der Landnutzungswandel überwiegend negative Auswirkungen auf Heuschrecken im Grasland hat sind bei vielen Heuschreckenarten aufgrund des Klimawandels Arealexpansionen in Mitteleuropa festgestellt worden. In dieser Studie analysieren wir die Auswirkungen des Klima- und Landnutzungswandels auf Heuschreckengemeinschaften in montanen Kalkmagerrasen der Eifel. Wir vergleichen die Heuschreckenfauna aus dem Jahr 1994 mit 2015 und analysieren Veränderungen der Habitatbedingungen. Dazu wurde 2015 auf 21 Probeflächen den Methoden der Untersuchung von 1994 folgend die Heuschreckenfauna erneut erfasst. Auf 10 Probeflächen gab es keine Änderungen der Landnutzung, wohingegen sich die Nutzung auf 11 Probeflächen geändert hat. Der Klimawandel hat im Untersuchungsgebiet zu einer Erhöhung der Jahresmitteltemperatur und einer Abnahme der jährlichen Niederschlagsmengen geführt. Insgesamt ist die Artenzahl signifikant angestiegen. Insbesondere Generalisten haben stark zugenommen, während die Anzahl der Spezialisten weitestgehend konstant geblieben ist. Die Artenzahlen haben vor allem auf Probeflächen ohne Änderungen des Nutzungsregimes zugenommen. Wir führen die Zunahme auf diesen Probeflächen auf den rezenten Klimawandel zurück.

Die Roten Listen der Heuschrecken in den Bundesländern Deutschland sind veraltet

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Abstract:

Rote Listen stellen Veränderungen in der Abundanz und im Areal von Arten dar und leiten daraus deren Gefährdung ab. Sie zeigen auch Wissensdefizite auf, wo z. Bsp. nicht genügend bekannt ist, ob eine Art seltener oder häufiger wird.

Im föderalen Deutschland sind die kleinsten Bezugsräume für Rote Listen in der Regel die Bundesländer. Sie sollten als Grundlage dienen, um aus ihnen übergeordnete Rote Listen des Bundes, Europas oder der Welt zu erstellen. Sie helfen auch bei der Ermittlung der Verantwortlichkeit einer Region für eine bestimmte Art.

Leider ist in Deutschland zu beobachten, dass die Mehrzahl der Bundesländer versäumt, die Roten Listen auf einem aktuellen Stand zu halten. Ca. 3/4 der Roten Listen der Heuschrecken sind älter als 10 Jahre. Die „aktuellste“ amtliche Rote Liste von Rheinland-Pfalz ist sogar 25 Jahre alt. Die Folge sind massive Fehleinschätzungen z. Bsp. bei der Bewertung von Eingriffen.

Im Anschluss an den Vortrag soll eine Petition erstellt und möglichst von den Tagungsteilnehmern beschlossen werden, in dem eine Aktualisierung der Roten Listen der Heuschrecken in einem Turnus von – Vorschlag: maximal 10 - Jahren gefordert wird.

Auf der zeitgleich stattfindenden Tagung der Deutschen Gesellschaft für Odonatologie wird vermutlich ein ähnlich lautender Text verabschiedet.

Habitat preferences of endemic groundhoppers and their distribution in Seychelles (Orthoptera, Tetrigidae)

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Abstract:

The Seychelles belong to the global hotspots of biodiversity. They maintain a high number of endemic species, including ca. 40 endemic Orthoptera. Seven Tetrigidae occur on the Seychelles, six of which are endemic, such as *Amphinotus nymphula* and *Coptottigia cristata*. The former one is listed as Endangered and endemic to Mahé and Silhouette. The latter is even Critically Endangered, endemic to Mahé and was not found since 1994. We studied the habitat preferences and distribution of these two species to obtain more knowledge on their conservation status and their requirements. Altogether, we found 126 specimens of *A. nymphula* and rediscovered *C. cristata* on Mahé with 13 specimens, mostly on Morne Blanc, Morne Seychellois and Congo Rouge. Almost 90% of all *A. nymphula* specimens were found between 400-800 m a.s.l. and 85% of *C. cristata* were found between 700 and 800 m a.s.l. Some significant differences were found between nymphs and adults of *A. nymphula*. The percentage of cinnamon leaves in the leaf litter was higher in the surrounding of adults compared to nymphs. There was one significant difference between the sexes: the occurrence of the invasive plant *Clidemia hirta*. The female specimens were found more often closely to *C. hirta*. It has been hypothesized that *C. hirta* has a negative effect on Tetrigidae because it changes the habitat structure and provides more shade. Possibly, the males are more sensitive to such changes, as they are more active than females.

We found three factors differing between the localities of *A. nymphula* and our blind samples. The temperature was higher in the habitat of *A. nymphula* compared to the blind samples, the cover of moss smaller and the leaf litter height greater. This suggests that the species prefers warmer and lighter localities in the forest. In conclusion, the invasion of *C. hirta* may represent a threat to *A. nymphula* as it changes the microclimate in its forest ground habitat. *C. cristata* was only found in primary forest at higher altitudes and may generally be more sensitive to degradation of its habitat and climate change.

Orthoptera of the Vršac Mountains (Serbia): a preliminary checklist

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Abstract:

Vršac Mountains represents one of the two island mountains in Panonian region of Serbia. Their genesis and position caused the richness and diversity of flora which developed under the influences of the Pannonian, Dakian and Moesian floral-geographical provinces intersect. These impacts are directly connected to the richness and diversity of fauna in these mountains.

This poster shows results of first orthopterological researches made on Vršac Mountains which were performed in June and July 2015. On 6 different sites we recorded 52 species (32 Ensifera and 20 Caelifera) which represents 28% of the total known Orthoptera in Serbia. The commonest species were *Oecanthus pellucens* and *Pezzotetix giornae*. The most significant founding is a population of *Pholidoptera transsylvanica*, Carpathian endemic species which was known only from mountains in eastern and western Serbia. Very important is record of *Stenobothrus crassipes* on three sites, which shows there are preserved steppic habitats on this mountain. Species: *Isophya speciosa*, *Barbitistes serricauda*, *Leptophyes discoidalis*, *Pholidoptera littoralis similis* and *Pholidoptera fallax* are for the first time recorded in this part of Serbia.

Die Heuschrecken Tirols – eine Buchpräsentation

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Abstract:

Tirol liegt im Zentrum der Alpen, an einer Nahtstelle zwischen West-, Ost- und Südostalpen und ist im Norden von atlantischen, im Süden von mediterranen Klimabedingungen und Einflüssen mitbestimmt. Das Land ist mit nur 12.647 km² Fläche klein, weist aber eine große Vielfalt an Lebensbedingungen und Lebensräumen für Heuschrecken auf. Besonders markant ist, dass bei einer Nord-Süd Erstreckung von knapp 100 km das Höhenspektrum über 3300 m, von der Nivalstufe der Zentralalpen bis zu collinen Talwiesen am Alpennordrand reicht. Die insgesamt 80 Arten umfassende Heuschreckenfauna Tirols wird im Grundlagenwerk „Die Heuschrecken Tirols“, das im Frühjahr 2016 im Berenkamp Verlag, Innsbruck erscheint, erstmals umfassend vorgestellt.

Das Buch ist mit über 200 Abbildung, Farbfotos und Verbreitungskarten reich ausgestattet und erschließt mit vielen Grafiken und Tabellen auf 300 Seiten Details der Verbreitung, Lebensräume, Ökologie und Gefährdung tiroltypischer Gebirgsspezialisten und anderer Heuschreckenarten. Es wird ergänzt durch eine ausführliche Einführung in die Evolution, Vielfalt und Biologie der Heuschrecken und durch 80 allgemeine Artsteckbriefe. Das Poster gibt eine Übersicht über das Layout und die Gliederung des Buches und präsentiert exemplarisch Ergebnisse aus den allgemeinen und speziellen Kapiteln.

Present knowledge of the Albanian Orthoptera fauna – a preliminary check-list

Gellért Puskás^{1,*}, Gergely Szövényi²

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Abstract:

Albania is among the countries of Europe with the least studied biodiversity. First Orthoptera data originate from 1910. In 1975 137 species were known from the country, then no new data were published for 36 years. Research of the Albanian Orthoptera fauna intensified in the last decade with numerous published and unpublished results. Until present days 174 taxa were reported, however, at least 16 of them are fals data. Own data and critical review of the literature resulted a check-list with 181 taxa (178 species and 3 subspecies): 85 Caelifera and 96 Ensifera (74 Acrididae, 1 Pamphagidae, 8 Tetrigidae, 2 Tridactylidae, 13 Gryllidae, 1 Gryllotalpidae, 2 Mogoplistidae, 1 Trigonidiidae, 4 Rhaphidophoridae and 75 Tettigoniidae). 149 taxa have data from the last years (23 unpublished, at least 2 of them are new to science, descriptions are in preparation). Occurrence of 14 taxa are uncertain and further 18 species have only historical data.

'Overview of Croatian grasshoppers' (Orthoptera: Ensifera, Caelifera) fauna

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Abstract:

Short overview of poor history of Orthoptera research in Croatia, as well as insight into grasshoppers' diversity in the country is presented. Last systematic work published on Orthoptera is Us (1967) listed 164 Orthopteran species for Croatia. We made systematic review of grasshoppers occurring in Croatia and omitted about 20 species from Us' catalogue, while added more than 40 species that were reported after Us (in literature or by authors of this study). The overview presents richness per every region (Pannonian, Dinaric and Adriatic) of Croatia. Besides new records for country, a lot of taxonomic issues were solved in last 4-years-research by morphology, bioacoustics and genetic studies. Mentioned are some of the most interesting - (I) *Odontopodisma* revision with new data on identity of *O. rammei* Harz, and with two potentially new species from the genus, (II) *Poecilimon elegans* group revision with discovery of two new cryptic species, (III) *Chorthippus biguttulus* group preliminary revision with new data on distribution of *Ch. eisentrauti*, *Ch. mollis lesinensis* and *Ch. biguttulus* cf. Durmitor form. Systematic work on Orthoptera of Croatia continues with new projects and new problems, and we want to give emphasis on rich karst (Dinaric) area of Croatia which hides a lot of new and interesting, especially endangered and localized, taxa that are waiting to be discovered/protected.

Us, P. (1967) *Catalogus Faunae Jugoslaviae*. III/6: Orthopteroidea. Academia Scientiarum et Artium Slovenica, Ljubljana. 47 pp.

The diversity of orthopteroid insects (Dermaptera, Dictyoptera, Orthoptera orders) from the Republic of Moldova

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Abstract:

In this study is presented a checklist of the orthopteroid insects from the Republic of Moldova. The data are based on examination of the major public insect collections; records from relevant literature works published since 19th century till present; also included an extensive survey of material collected from 2005 till present throughout of the territory of the republic. Thereby, following of research carried out in recent years have been fixed 129 orthopteroid species as present on the territory of the Republic of Moldova. From these species 115 are attributed to Orthoptera order, 5 species to Dermaptera and 9 to Dictyoptera order (3 species from Mantodea suborder, 4 from Blattodea and 1 from Isoptera). Taxa above the species-level are listed in accordance with their actual taxonomy (order, suborder, family, subfamily, etc.), based on Fauna Europaea. Also this checklist presents the distribution of these species on the territory of the republic and a special attention is given to rare and protected orthopteroid species.

Evaluation of the Orthoptera fauna of Hungary - a nature conservation approach

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Abstract:

A faunistic overview and a simple nature conservation evaluation was performed on the Orthoptera of Hungary. On the basis of the published and authors' unpublished distributional data, rough frequency categories for each species were estimated (extinct, rare, locally distributed and widespread) for the seven main geographical regions of the country. Altogether 126 species were found to be actually occurring in Hungary, two of which were introduced during the last century. However, eleven published species were excluded from the list (mainly due to false determination), and two of the formerly occurring species have become locally extinct about a century ago. Fragmentation, stability and relative importance of the Hungarian population of each occurring species were scored, and the species were evaluated based on the combination of these attributes and their summarized Hungarian distribution frequency. The rank order of the species, established via the summarized scores, denotes the actual nature conservation value of each of them. This proved to be mostly in alignment with the national law of nature conservation, however, some locally really rare and threatened species are missing from the official lists, whereas some of more widely distributed ones are actually protected.

Does the global climate change threat to small-range bushcrickets in Anatolia?***

Gülşah Yılmaz¹, Hasan Sevgili^{1,*}, Hakan Gür²

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** This study was supported by ODUBAP project (no: TF-1307, Ordu University, Scientific Researches Project Coordination Unit, Turkey).

Abstract:

Insects that have limited mobility represent a potential model organism for predicting the effects of climate change on species distributions in the future. The species of the bush-cricket genus *Isophya* have limited mobility and are known for preferring cold, rainy climatic conditions and herbaceous vegetation. Most species of the genus have a small distribution and restricted to specific and isolated topography. Endemic species are moderately sensitive to climate change. We aimed to identify the response of three species of the genus *Isophya* to climate change, from the Last Glacial Maximum (LGM) and to the present and to the future (2050 and 2080). We studied on three species of the genus (*Isophya major*, *I. nervosa*, *I. rectipennis*) in Turkey. We used CSIRO and MIROC general circulation model simulations for the LGM and CSIRO, HADCM3, and MIROC general circulation model simulations for the future (2050 and 2080). The LGM and the current distribution models indicated that populations were forced to narrow their distributions from the LGM to the present. The future distribution models suggested that this narrowing will continue and reach to a dangerous extent for the species. We argue that protecting and restoring the habitats is essential for safeguarding these species.

Orthoptera diversity patterns and community structure in Tzoumerka National Park, Greece

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Abstract:

A sampling scheme of 70 plots (100 m²) was conducted in July 2015 in the mountainous complex of Tzoumerka National Park (NW Greece) for Orthoptera sampling. The Park holds a species-rich Orthoptera community, including 64 species. *Paracaloptenus caloptenoides* (Annex II of Habitats Directive) holds an important population in the Park, together with *Poecilimon jonicus lobulatus*, a Greek endemic. *Poecilimon gracilioides*, an endangered species after IUCN criteria, and three more Greek endemics, *Parnassiana tenuis*, *Ovaliptila newmanae* and *Chorthippus pulloides* were found in small and localized populations. The diversity patterns differed significantly across different habitat types, with the subalpine grasslands being more species rich than the open microhabitats in the thermophilous oak zone. Elevation, stone cover and grass height were the main environmental parameters regulating the diversity patterns of Orthoptera community in the study area (Canonical Correspondence Analysis). Grass height (negative factor), grass cover and elevation (positive factors) were found to well predict overall Orthoptera species richness (Generalized Linear Models). Grazing in the subalpine grasslands was pinpointed as an important human-induced disturbance factor. A livestock management plan is recommended, in order to maintain the Orthoptera diversity and the populations of conservation concern in the National Park.

Food Service

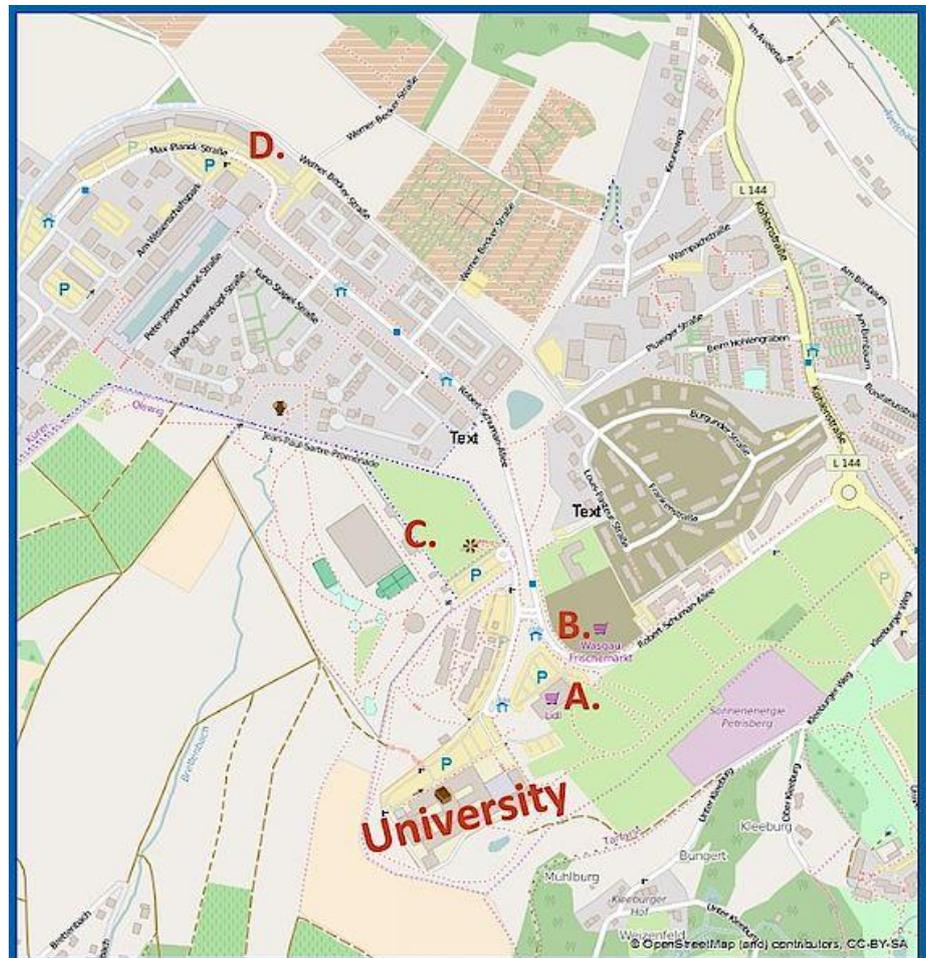
Shops:

- A. Lidl, grocery store (0.3km), monday-saturday:
07:00 am - 09:00 pm
- B. Wasgau, grocery store and bakery (0.5km)
monday-friday: 08:00 am - 10:00 pm
saturday: 08:00 am - 10:00 pm
bakery mo-fr: 06:30 am - 10:00 pm

Restaurants:

- B. Sushi Petris, sushi & grill restaurant (0.5km)
monday-friday: 12:00am - 10:00pm
- B. Subway (0.5km)
monday-thursday: 09:00am - 12:00 midnight
friday-saturday: 09:00am - 01:00am
sunday: 11:00am -12:00 midnight
- C. Jahreszeiten, gastronomy (menu) (0.8km)
monday-saturday: 11:00am - 01:00am
sunday: 09:00am - 01:00am
kitchen, daily: 12:00 noon - 10:00pm
- D. Monte Petris, gastronomy (menu) (1.5km)
monday-friday: 09:00am - 11:00pm
saturday: 11:00am - 11:00pm
sunday: 09:00am - 10:00pm

Overview of shops and restaurants in the surrounding of the congress.



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Veranstaltungshinweis: Heuschrecken in Nordrhein-Westfalen – Jahrestreffen

Termin: Samstag, 27.8.2016

Ort: Biologische Station Westliches Ruhrgebiet, Oberhausen (www.bswr.de)

Auf der Jahrestagung des Arbeitskreises Heuschrecken in Nordrhein-Westfalen wird in Vorträgen zur Situation und zum Schutz der Heuschrecken in NRW berichtet. Auf einer anschließenden Exkursion (Leitung: Tobias Rautenberg) werden unter anderem die Heuschreckenarten von nahegelegenen Industriebrachen vorgestellt.

Es können noch Vorträge, gerne auch Kurzbeiträge, zum Jahrestreffen angemeldet werden, vorzugsweise mit Bezug zu NRW. Anmeldungen von Beiträgen bis 30.3.2016 bitte an Frank Herhaus (Herhaus@BS-BL.de), Tel. 02293 / 901518.

Ausrichter: Arbeitskreis Heuschrecken Nordrhein-Westfalen

Leitung: Dr. Andreas Kronshage (Arbeitskreis Heuschrecken NRW), Frank Herhaus (NABU LFA-Entomologie NRW)

Kosten: keine Tagungsgebühr. Ein Verpflegungsbeitrag wird vor Ort in bar erhoben.

Anmeldung: bis 15.7.2016 bei: NABU NRW, Landesfachausschuss Entomologie, Völklinger Str. 7-9, 40219 Düsseldorf, Tel. 0211 / 1592510, Fax 0211 /15925115; www.NABU-NRW.de

