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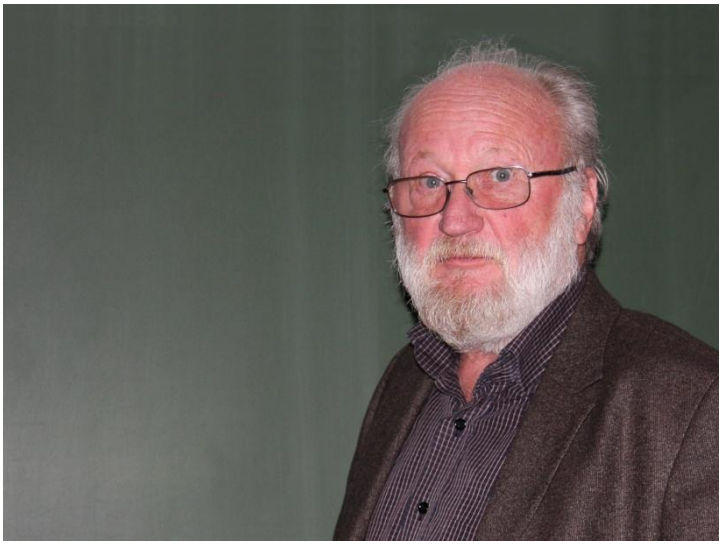
Matija Gogala celebrates his 77th birthday

Tomi Trilar[1], Thomas Hertach, Werner E. Holzinger, Stéphane Puissant and Herbert Nickel



Matija Gogala giving a talk in Ljubljana 2009
(photo: J. Polajnar)

Matija Gogala celebrates his 77th birthday on December 11th 2014. He is among the pioneer researchers of modern insect physiology and bioacoustics not only in Europe, but also worldwide. The authors and the „Arbeitskreis Zikaden" congratulate him warmly and wish him many good and busy years to come, and most of all, many more exiting days in the field that keep him busy!

Matija's curriculum vitae

Born in 1937 he has been interested in insects since his youth, just as he has been generally attracted to sound and music and, in particuar, the sounds of nature, from birdsong, the frogs croaking, the summer chirping of field crickets to the melancholic singing of tree crickets in autumn. He soon began to collect insects and to visit the curators of the Slovenian Museum of Natural History in Ljubljana. He chose the true bugs to collect and to "study" while leafing through the museum guidebook with his friend. His friend Bastian Kiauta, later professor at the University in Utrecht (Netherlands) chose dragonflies and damselflies. Both are still studying their chosen groups and are internationally renowned experts.

[1] Corresponding author, E-mail: ttrilar@pms-lj.si
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After school in Ljubljana he studied biology at the University of Ljubljana. The true attraction to and perhaps also the distinction between natural sounds and music became particularly apparent to him at the university when during his regular studies he was also employed in the radio orchestra playing the violin. During the study he met his wife Nada Gogala (1937-2013), later on professor of plant physiology at the University of Ljubljana. They have two children, daughter Jasna and son Andrej. Matija graduated in biology in 1960 and became an assistant to Prof. Štefan Michieli at the Department of Biology (University of Ljubljana). He received his doctorate in 1964. Later, he became a docent at the department and began teaching animal physiology. He obtained full professorship in 1981.

In 1964/65 Matija studied as scholarship-holder of Alexander von Humboldt Foundation at the University of Munich in Prof. Hansjochem Autrum's team. Later he made numerous study visits to colleagues in Bochum, Munich, Montreal, Odense, Göttingen, Berlin and elsewhere.

In the meantime, he worked at the National Institute of Biology in Ljubljana, where he served as a director between June 1976 and October 1979. In 1987, he began working at the Slovenian Museum of Natural History and was its director between September 1992 and October 2001. In May 1991, he became an associate, and in April 1999 a full member of the Slovenian Academy of Sciences and Arts; he was a secretary general between May 2008 and May 2011 and a vice president between April 2002 and May 2008. Since 2003 he is a member of the European Academy of Sciences in Salzburg. Matija was also a member of several international scientific committees and boards.

Scientific work

Matija's career in biology started with the faunistics and taxonomy of true bugs (Heteroptera) and until today he is still publishing in this field, mostly together with his son Andrej. Later on he focussed on physiology and behaviour of other insect groups. At the University of Ljubljana, he worked on seasonal pigmentation and colour change in insects, and later he used ethological, histological and electrophysiological methods to study photoreception and orientation. He discovered that the eye of the Owlfly (*Libelloides macaronius*) specializes in the detection of ultraviolet light. Together with Prof. Kurt Hamdorf (Germany) and colleagues they demonstrated that the sensory pigment in the eyes is similar to the purple pigment in the eyes of vertebrates.

Later on he primarily did research on sound and vibrational communication in Heteroptera. It became apparent how fortunate this choice was, since true bugs have an intensive acoustic life. It is mostly inaudible to the human ear since they communicate with substrate-borne vibrations, which nowadays is called vibrational communication. His deep knowledge of systematics, faunistics and ecology together with his extensive field experience have helped Matija substantially in finding ideas for laboratory approaches. He proved that the calling songs are species-specific and discovered and described the functionality of the heteropteran tymbal. He is among the pioneers of the study of vibrational communication and the mechanisms of production and perception of substrate-borne sound.

Fig 1: Matija with an ultrasound microphone attached to a Tellinga parabolic reflector, Pettersson Bat Detector and Marantz Compact Flash Recorder at Schütt rock slip area near Villach, Austria, spring 2004 (photo: W.E. Holzinger).

Fig. 2: Matija together with Hildegard Strübing at the 10th International Auchenorrhyncha Congress in Cardiff, Wales, 1999 (photo: A. Wessel).

Fig. 3: Matija in Pannonian sunshine, at the 5th European Hemiptera Congress, Velence, Hungary, 2010 (photo: W.E. Holzinger).

Fig. 4: Katja (Matija's granddaughter), Tomi and Matija at the type locality of *Cicadetta dirfica* and *Euboeana castaneivaga* below Mt. Dirfis, Euboya Island, Grecce, July 2010 (photo: T. Trilar).

After his teaching work at the University of Ljubljana, Matija worked in the Slovenian Museum of Natural History and became increasingly attracted by cicadas (Auchenorrhyncha: Cicadidae) and their songs. Along with his colleagues, he studied these insects during numerous field trips in many parts of Europe (Slovenia, Austria, Germany, Poland, Croatia, Hungary, Serbia, Montenegro, Macedonia, Greece, Romania, Bulgaria), Turkey, Iran, Thailand and Malaysia.

The study of cicadas demands considerably more fieldwork since they usually do not sing in the laboratory. Even in the wild, they require bright sunlight and fall silent instantly as soon as the smallest cloud covers the sun. Apart from the three larger cicada species, the other ten smaller Slovenian species sing at the upper physical limit of a young person's hearing ability. With increasing age this ability weakens and most cicadas become inaudible for most persons over 40 years. The need to improvise constantly due to the lack of money in his laboratory which could not afford expensive equipment stimulated him and his coworkers to put together the products of two top-class manufacturers and create an ultrasound detector with a microphone attached to a parabolic reflector.

Fig 5: Matija and his wife Nada at the base camp in Endau Rompin National Park, Malaysia, June 1999 (photo: T. Trilar).

Fig. 6: Matija with a light version of the ultrasound detector with a microphone attached to a parabolic reflector (front light reflector of Renault 4) and Compact Flash Recorder during field work in Romania, June 2008 (photo: T. Trilar).

This way, the small cicadas became audible and could be heard and recognised from a much greater distance than by the naked ear. Researchers worldwide benefit from this innovation until today. This technique opened the door to the study of the enigmatic systematics of the Mountain Cicadas (*Cicadetta montana* s. lat.). Earlier this taxon was considered as a single species that was first described by Scopoli in 1772 based on specimens collected in the mountains around Idrija (Slovenia). According to current knowledge, however, it is a diverse complex with a few widespread species with overlapping ranges, and some rather localized endemics. Morphological differences between these are often insignificant, but songs are quite distinctive. Matija published a number of scientific papers on this topic, and later the book *On the trail of Mountain Cicadas*.

Altogether he has published more than 90 scientific works (articles, chapters within monographs) and participated in numerous international conferences. In addition he also wrote popular science works, school textbooks and others. He was and still is part of an international network dealing with a wide span of entomological topics and organized numerous scientific meetings. For instance he led the organization of the „International Meetings on Insect Sound and Vibration“ (1980 and 1990), the „3rd International Meeting of Rhynchota Fauna of Balkan and Adjacent Regions“ in 1989 (all in Piran, Slovenia) and the „XXth International Bioacoustics Congress“ in Portorož, Slovenia, in 2005. In 2001 he and his colleagues organized the „2nd European Hemiptera Congress“ in Fiesa, Slovenia, and participated in the organization of the „XVIIth SIEEC Congress“ (Symposium Internationale Entomofaunisticum Europae Centralis) in Radenci, Slovenia.

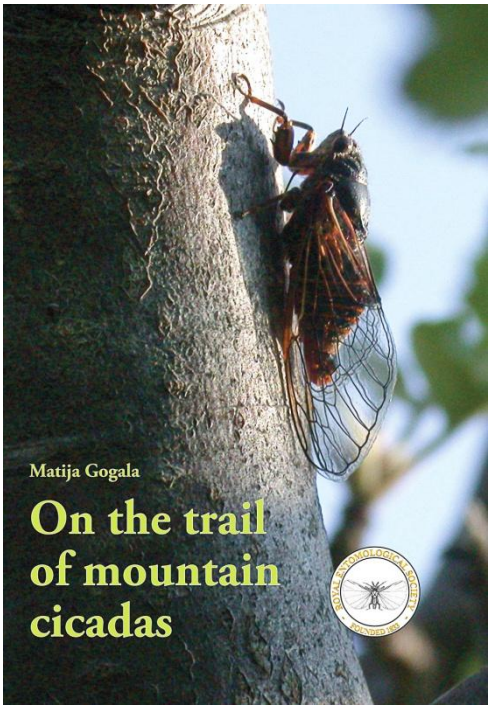

Fig. 7: Cover page of Matija's book „On the trail of Mountain Cicadas" (2013, Slovenian Academy of Sciences and Arts, Ljubljana).

Of course he is a member of a number of scientific societies and fulfilled his share of administrative tasks, including functions within the Biophysical Society of Slovenia (Društvo biofizikov Slovenije), the Slovenian Physiological Society (Slovensko fiziološko društvo), the Natural History Society of Slovenia (Prirodoslovno društvo Slovenije) and the International Bioacoustic Council (IBAC). He was the president of the Global Biodiversity Information Facility (GBIF) board for Slovenia. He is or was also a member of editorial boards, including „Bioacoustics" (published by the International Bioacoustic Council in London), „Proteus" (a popular Slovenian magazine of natural history) and „Entomologia Croatica".

Matija as a teacher and friend

Apart from these more chronical and enumerative points the authors appreciate him as a patient, always curious and stimulating teacher and elder friend who readily shares his enormous experience with the younger ones. We give some personal impressions below.

„Besides an almost perfect musical ear, Matija is distinguished by his enthusiasm for technological innovations and also by an elementary childlike curiosity as he finds there is nothing better than discovering the unknown and unexplored. During fieldwork, we have experienced together the excitement at hearing new song patterns in our earphones. However, the recording of the song pattern is not enough in itself, the cicada needs to be caught as well. They often sing high in the tree canopies and out of reach. And even when they do sing within the net's reach, they are either camouflaged by their protective colouring or hiding among dense branches. When we approach them, they stop singing and there begins patient examination to find the cautious singer. Although cicadas are not persistent

fliers they are able to take off in a flash and quickly escape from the collector. Great agility, perseverance, resourcefulness and of course many failed attempts are required before the cicada ends up in the net. Many adventures and misadventures happen along the way, including some funny ones, when we look back. I remember most clearly the hunt for the Olympian cicada (*Cicadetta olympica*), still undescribed at the time. We had already recorded quite some acoustic material but all cicadas were singing high in the treetops. Matija stood under a tree in the middle of a forest clearing for a long time and steadily gazed at the branches above him with a microphone directed upwards. Slowly and without making noise I approached the tree while he slowly extended the handle of the net and swung towards the branch. Halfway through the swing he slipped on the steep moist slope and ended on his back but nevertheless skimming the lower branch of the tree with the net along the way. In a flash he was on his feet again and we both agreed that the cicada hadn't flown away. He swung once more towards a higher branch, again we did neither see the cicada flying away nor found it in the netbag. But almost simultaneously we both saw the specimen sitting on the inner rim of the net, and after a routine swing with the net the new species was ours.

Based on purely morphological systematics cicada experts claimed that everything was known about the European cicada fauna until 40 years ago. But today acoustic methods have disproven this claim entirely. Slovenia soon became too small for Matija; his travels in search of mountain cicadas took him abroad and I often joined him. We presented our discoveries at scientific meetings, and interesting findings and fruitful discussions have opened us the doors into other countries, mostly in Central and Eastern Europe and the Balkans. Manifold collaborations arose which brought us together with many interesting people, both ordinary locals as well as scientists who joined us on our travels bridged linguistic barriers and led us to wonderful places where we experienced many unforgettable moments in nature and of course found interesting cicadas. By staying together in sometimes very modest circumstances, overcoming the obstacles during fieldwork, constant learning from each other, mutual respect of cultural differences and last but not least the local cuisine genuine and lasting friendships have been formed. I have always admired Matija's ease and skill at establishing contacts and his ability to communicate."

Tomi Trilar

„When I wrote my first letter to Matija, I was a scientific nobody. Nevertheless, Matija answered immediately and was interested in my observations on the *Cicadetta montana* species complex. One year later, he invited me and my wife Sibille to Slovenia and his home for more intense discussions and introduced me in some bioacoustic methods. It is this openness towards other scientists, which is fascinating and resulted in a network of friends all over the world. The same openness and interest is obvious, when Matija in his old age is still the first to introduce new technical instruments and computer-based analyses for his research."

Thomas Hertach

„Matija ist für mich sowohl als Mensch als auch als Wissenschaftler ein großes Vorbild. Es ist für mich stets eine große Freude, ihn auf Tagungen zu treffen oder mit ihm im Gelände unterwegs zu sein. Durch seine Herzlichkeit, Gastfreundschaft und Großzügigkeit in Kombination mit seinem unglaublichen Sprachtalent und seinem Humor kann er Herzen öffnen,

und sein unglaublich breites Wissen in allen Bereichen der Biologie, gepaart mit fast kindlicher Neugier, Offenheit und Bescheidenheit machen ihn zu einem wunderbaren Gesprächspartner, Forscher und Lehrer."

Werner Holzinger

„I still remember the first time I heard Matija speaking about the mountain cicada issue in Graz in 1996. I simply could not believe that some of the largest insects in front of our door carried (and still carry!) such a secret at the eve of the 21th century. I gazed in awe at Matija's equipment and still admire him for the enthusiasm and power that leads him to the remotest field localities in Europe and elsewhere while others are sitting in their armchairs.

Unforgotten to me and many colleagues was the Second European Hemiptera Congress, held in Fiesa, June 2001, which was organized by Matija and the first author of this paper, when he hosted the entire group in his wild and wonderful vineyard garden offering his home-grown wine and nice collecting possibilities."

Herbert Nickel

Species described by Matija Gogala

Tettigetta golestani Gogala et Schedl 2008
Cicadetta hannekeae Gogala, Drosopoulos et Trilar 2008
Cicadetta kissavi Gogala, Drosopoulos et Trilar 2009
Cicadetta olympica Gogala, Drosopolous et Trilar 2009
Cicadetta dirfica Gogala, Trilar et Drosopoulos 2011
Euboeana castaneivaga Gogala, Trilar et Drosopoulos 2011
Cicadivetta goumenissa Gogala, Drosopoulos et Trilar 2012
Cicadetta concinna arachnocepta Gogala, Trilar et Krpač 2014

Nomen gogalae

Duvalius (Platyduvalius) gogalai Pretner, 1963 (Coleoptera: Carabidae: Trechinae)

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Addresses of authors:

Tomi Trilar, Slovenian Museum of Natural History, Presernova 20, SI-1001 Ljubljana, Slovenia

Thomas Hertach, University of Basel, Department of Environmental Sciences, Biogeography, St. Johanns-Vorstadt 10, CH-4056 Basel, Switzerland

Werner E. Holzinger, Ökoteam - Institute for Animal Ecology and Landscape Planning, Bergmanngasse 22, A-8010 Graz, Austria

Stéphane Puissant, Département scientifique - Responsable du Pôle Collections, Muséum - Jardin des Sciences, CS 73310, F-21033 Dijon Cedex, France

Herbert Nickel, Ehrengard-Schramm-Weg 2, D-37085 Göttingen, Germany