International Organisation for Biological Control (IOBC)
Organisation Internationale de Lutte Biologique (OILB)

IOBC is affiliated with the International Council of Scientific Unions (ICSU) as the Section of Biological Control of the International Union of Biological Sciences (IUBS)

IOBC Global Newsletter 112 – January 2023

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IOBC Global Executive Committee, Council meeting and General Assembly + ICBC 3 2024

The International Congress of Biological Control 3 (ICBC3) which will be organized by IOBC Global and CABI, will be take place from 24 to 28 June 2024 in San Jose, Costa Rica.

Message from the President

I would like to take this opportunity to wish all of our members and the broader biological control community best wishes for 2023. After what the world has been through over the last couple of years I am tempted to wish you all a very boring, predictable year with no surprises. It is really heartening to see many face to face working group meetings planned that have taken place in the latter part of 2022, and so many more for the coming year. As much as we have developed significant online interactive skills, there is still no substitute for meeting in person with colleagues and friends to discuss aspects of our discipline.

I was privileged to have been asked to delivered the Mahesh K Upadhaya Award Lecture at the 3rd International Weed Conference in Gujarat, India entitled "Current status of biological control of weeds and future perspectives". In this lecture I stressed that with initiatives such as the European Green Deal and consumer pressure for more environmentally sound food production we are in the era of biological control. As such we need to uphold the scientific rigour of our discipline, in particular to allay fears around the safety of biological control. We need to build more capacity in biological control and we need to be active participants in the debates around increasing regulation of biological control. Further, we need to improve the way we assess the outcomes of biological control programmes both environmentally and economically. I am confident that if we can meet these challenges biological control will go become the preferred intervention for the control of crop pests and invasive alien organisms.

We are very happy to announce that the Third International Congress of Biological Control (ICBC3) – co-organised by CAB International (CABI) and the International Organisation for Biological Control (IOBC) will be held in San Jose, Costa Rica from the 24th to the 28th of June 2024. This is the IOBC's flagship meeting and will be an in person meeting and I thus urge you all to put the dates into your diaries for 2024. Our philosophy is to move this meeting around the world to regions of the world that most need out support. We hope that by hosting meetings in these areas we will increase the profile of biological control.

I would like to thank Joop van Lenteren for pulling together a packed newsletter and wish you all well for the coming year.

Martin Hill

IOBC needs your help

Worldwide education in biological control

IOBC Global often receives questions about education and training possibilities for biological control. With the help of our Regional Sections and Working Groups, we are frequently able to help finding answers, but it is not always an easy and quick procedure. Therefore, we ask you to provide information about education and training opportunities. We will summarize this information and publish it on the Global website. Please present the information to secretary-general@iobc-global.org as follows:

- Name of course / training:
- Institute / organization providing this course:
- Course period and length of course in days:
- Costs of course:
- Entrance requirements:

Upcoming Events

IOBC Global activities:

Working groups are starting to have physical meetings again. During the coming 18 months, at least SIX meetings are planned

1. Study Group Biological control of insect pests of Solanaceous Crops (IOBC-BiCoSol): first – virtual – meeting planned for 2023

2. Study Group Classical Weed Biological Control: next meeting in Argentina in 2023 (7 – 12 May): see https://isbcw-iguazu.com/

3. IOBC Global Cactus working group: next meeting in Argentina in 2023 (7 – 12 May): see https://isbcw-iguazu.com/

4. International Working Group on *Ostrinia* and other maize pests (IWGO): the 28th IOBC-Global International Working Group of Ostrinia and other maize pests (IWGO) Conference will take place in Nairobi, Kenya, from Tuesday 2nd to Thursday 4th of May 2023

5. Benefits and Risks Associated with Exotic Biological Control Agents: next meeting in Portugal (11-14 September 2023).
This will be a combined meeting of the WPRS working group (organizer) in cooperation with the Global working group. Keep an eye on the Global website for news and registration details.

6. Study Group Crop Protection and Pollination (IOBC – CROPROPO) will likely have its next meeting in conjunction with the XII International Pollination Symposium in Cape Town, South Africa in September/October 2023

IOBC Global Executive Committee, Council meeting and General Assembly + ICBC 3 2024
The International Congress of Biological Control 3 (ICBC3) will be held from 24th to 28th June 2024 in San Jose, Costa Rica. More news in our next newsletter and on the Global website. Medium – in person with the plenaries live virtual and the other papers delayed virtual.

Other biocontrol related events

Please see the complete lists of upcoming events related to biocontrol activities at the website of IOBC Global: www.IOBC-Global.org, and of IOBC-WPRS: https://www.iobc-wprs.org/events/index.html#20210908

4th International Congress on Biological Invasions (ICBI2023)

The 4th International Congress on Biological Invasions (ICBI2023) will be hosted Christchurch (Ōtautahi), New Zealand (Aotearoa) on 1-4 May 2023. The biennial Better Border Biosecurity (B3) Conference will follow on 5 May 2023. The ICBI congress will provide a forum to explore, share and develop responses to the global challenges and threats that Invasive Alien Species (IAS) present to biodiversity, ecological systems and food production and safety in terrestrial, freshwater and marine ecosystems. Theme and focus for 2023: Innovation. Collaboration. Partnership.

Biopesticides Europe 2023

Key Topics

- Overview of the European Biopesticides Market
- EU - The Most Advanced Regulators in the World?
- Overcoming the Consequences of Lengthy & Costly Regulatory Processes for Biological-Focused SMEs
- Strategies to Optimise Product Development
- Transitioning from Resistance to Acceptance
- New Innovations & Technologies
- Bridging the Gap Between Industry, Academia & Government(s)
- Strategies to Combat Arising Issues in Biopesticides Formulation
- Opportunities & Challenges of Small Molecule Biopestcides
- How Effective are GMO's within the Current European Farming Practices?
- Moving Towards the Globalisation of Biopesticides & A Healthier Ecosystem

Registration & More Information:
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ICE 2024
KYOTO
New Discoveries through Consilience

ICE2024

Japan will host the **XXVII International Congress of Entomology**
from August 25 – 30 in 2024, in Kyoto, Japan.

For more information on the congress:
https://ice2024kyoto.jp

IOBC Activities during ICE2022, Helsinki, Finland, July 2022

ICE2022 was held from 17-22 July 2022 in Helsinki, Finland. About 1,000 persons attended the congress.

Five IOBC-sponsored symposia during ICE2022
The following five symposia were financially supported by IOBC Global. In the next newsletter we will summarize the papers presented at these symposiam. All symposia were well attended and had lively discussions.
1. Essential and useless ecological knowledge for applied biological control.
2. Revisiting the biosafety of exotic generalist arthropod biological control agents.
3. Omnivorous predators in augmentative biological control: blessing or nightmare?
4. Access and Benefit Sharing and Biological Control Genetic Resources.
5. Classical biological control of weeds and arthropods: Evaluation of social, economic and ecological benefits.


Audience during one of the IOBC Global supported symposia

The first physical meeting of the Executive Committee 2020-2024 of IOBC Global took place in Helsinki, Finland this year with a delay of two years due to the covid pandemic. Four Executive Committee members were present in Helsinki, two members took part in the meeting via internet. The Council also met with representatives from all Regional Sections, except EPRS. For a summary of the issues discussed during the IOBC Global meetings see the August 2022 newsletter of Global.

Summary of IOBC Global Working Group meetings 2022

Summary of the 15th Workshop of the IOBC Global Working Group on Mass Rearing & Quality Assurance (MRQA) – Bologna, Italy, 5-9 September 2022

The workshop, organized jointly with the Association of Natural Biocontrol Producers (ANBP) and the International Biocontrol Manufacturers Association (IBMA), was held in a beautiful location in the centre of Bologna. We were happy to be able to organize an in-person meeting, after we were forced to postpone it for two years due to the Covid-19 pandemic. In total, 63 delegates and 10 accompanying persons from 18 different countries worldwide accepted the challenge of joining us, a number close to our previous workshops. Participants represented both scientific institutions and private companies, which boosted communication among scientists, students and practitioners. Our sponsors included the IOBC, the Department of Agricultural and Food Sciences of the University of Bologna, the "Centro Agricoltura e Ambiente "G. Nicoli" (CAA) and the private companies Bioplanet, Koppert, Biobest, Exnovaseed and Biogard.

Norman Leppla, from the University of Florida, opened the workshop with the keynote presentation on history, purpose and importance of IOBC-MRQA. Subsequently, participants presented 30 oral contributions and 7 posters on current "hot topics" in different aspects of invertebrate rearing and quality assurance related to production and quality control. All presentations were held in-person, except four which, as an exception, were presented through video conference. The sessions were:

- Mass rearing and evaluating biological control agents for crop pests
- Special session on the book "Mass Production of Beneficial Organisms", the 2nd edition of which has just been published and which was introduced by one of the editors, Juan Morales-Ramos
- Mass rearing for SIT and other autocidal pest control
- Mass rearing insects for food and feed
- Mass rearing and evaluating pollinators (a new topic for this WG).

In addition to the sessions, a Panel Discussion on Quality Assurance was organized by Rose Buitenhuis, one of the co-convenors of our WG. We discussed the urgent need for an update of the current quality assurance guidelines and debated the concept of quality in a biocontrol context. The WG is now looking for researchers to take on this task. A video on biological control of key pests in Mauritius was also presented in person, by Lalini Unmole of the Food and Agricultural Research and Extension Institute (FAREI) of Mauritius

Eight of the participating IOBC student members received the "IOBC Student and Early Career Professional Award", which was formalized during the Closing Ceremony, held on September 9. Two "Awards of excellence" were also offered by ANBP to a PhD student and a post-doc for their poster presentation.

The workshop included a technical visit to the facilities and production lines of the Bioplanet company, in Cesena, with a demonstration of BCA releases by drone and a well-appreciated refreshment break with local food!.

The detailed workshop program and abstract book can be freely downloaded until September 2023 from the Workshop website, at the link https://www.mrqa.eu/workshop2022/program/ . Moreover, a Special Collection for the workshop will be published by the Journal of Insect Science, like it was done for the previous IOBC-MRQA Workshop, held in Mérida (Yucatan, Mexico), in 2017. The Entomological Society of America kindly offered four full publication-charge fee waivers, two of which were given to the best student presenters.

Heartfelt thanks are due to all members of the organizing, scientific and local organizing committees, to the session moderators and keynote speakers and, especially, to the participants who all contributed to the success of our workshop. We are looking forward to the XVI IOBC-MRQA workshop, which will be held in Brazil and will be hosted by Aloisio Coelho Jr., who has now joined Rose Buitenhuis and Maria Luisa Dindo as a co-convenor of the WG.

Maria Luisa Dindo, Co-convenor of the MRQA WG and workshop host
Rose Buitenhuis and Aloisio Coelho Jr,, Co-convenors of the MRQA WG

IOBC Global award receivers with WG convenors Rose Buitenhuis (4th from left) and Maria Luisa Dindo (fifth from left).

Reactions from early career biological control scientists who received an IOBC Global grant to be able to participate in MRQA 2022 in Bologna, Italy

Esther Kangah (University of Groningen, Groningen, The Netherlands)

It was a great honour to be able to attend the 15th IOBC-MRQA working group conference in Bologna, Italy in September 2022. To begin with, I would like to thank IOBC for offering me an early career award which made it possible for me to attend the conference. This was the first time I have attended a conference and it was worth to do it. The conference brought together people from different countries and I enjoyed the diverse topics of discussion about biological control. I really appreciate that the conference organizers included a session about insects for food and feed where I gave a presentation about my research. I acquired a lot of knowledge from the presentations, posters and thought-provoking discussions. During break time, I got the opportunity to interact with people to discuss their research interests and build a strong network with them. I am looking forward to the next IOBC-MRQA conference where I can share my research findings and learn from other researchers.

Lucas Lacerda (Luiz de Queiroz College of Agriculture, São Paulo, Brazil)

It was a great pleasure to join the The 15th IOBC-MRQA Workshop where I had the chance to present the final results of my Masters dissertation. I was very honored to have my work awarded as one of the best research projects among the ones selected for the Student and Early Career Researchers Award. I would like to thank IOBC for this initiative which made possible not only my participation in the event but also the participation of other students and young researchers from different parts of the world. This event was an enriching experience, allowing me to meet incredible people from different parts of the world, who face different challenges on a daily base to make Biological Control increasingly accessible and efficient. As a young researcher from Brazil, it was a nice opportunity to expose the challenges and difficulties encountered by biological control in Brazilian agriculture.

Serena Malabusini (University of Milano, Milano, Italy)

It was a privilege to participate in the IOBC-MRQA Workshop in Bologna, which allowed me to share my research with a broad international audience. I am approaching the conclusion of my PhD, so the chance to present my work and gather feedback from others in attendance was valuable to me. Bearing in mind that, unfortunately, in previous years it was not possible for me to attend this type of event due to the COVID pandemic, this conference took on even more value by permitting me to finally meet people in person. I appreciate that the organizers selected me to win one of the early career researcher awards, and I am grateful to have received this award; it is an important way to support younger researchers who cannot afford the travel and lodging. I really enjoyed the entire program, including the technical tour and the breaks where attendees could connect with each other. I would like to

congratulate all the organizers who did a wonderful work organizing such an international event. I look forward to the next Workshop!

Marco Malfacini (University of Bologna, Bologna, Italy)
I was really happy to participate in the 15th IOBC-MRQA Workshop in Bologna, where I presented my study on the improvement of the Sterile Insect Technique. I felt really glad to receive the grant from the IOBC, which gave me the possibility to show my work. I particularly appreciated the possibility to get in touch with different researchers and companies that are dealing with mass rearing of different species. The presence of young researchers from different countries boosted the dialogue, giving me the opportunity to know different points of view and cultures. The workshop, focused on different species, gave me a wider comprension of biological control, and also showed that every country has not only to deal with different insects but also with different national realities.

Cátia Ariana Henriques Martins (University of Bologna, Bologna, Italy)
It was a great experience to participate for the first time at the IOBC-MRQA workshop. I had the pleasure to present my poster and share ideas with other researchers. I felt it was a great opportunity to connect with other experts and learn more about other realities around the world, especially because this was the first time I attended in presence at an international conference during my PhD. Overall, the workshop was within a very welcoming atmosphere and well organized with a good variety of talks. I am particularly happy with the introduction of the new topic regarding pollinators, and I am looking forward to the next meetings, where I hope to be able to contribute. As a PhD student who is about to finish, I am very grateful that IOBC provides spaces for young scientists to share their work, and to have been awarded with one of the “Student and Early Career Professional Award”.

Diletta Missere (University of Bologna, Bologna, Italy)
I participated in the 15th Workshop of the IOBC Global Working Group on Mass Rearing & Quality Assurance (MRQA) , where I was able to present a poster on my studies on the biological control of *Piophila casei* using the parasitoid *Pachycrepoideus vindemiae*. For the first time, I exhibited my work to an international audience, and I am so honoured to have been among the winners of the Student and Early Career Professional awards bestowed by the IOBC. It was a highly educational experience as I was able to learn a lot about biological control and mass rearing studies from people from all over the world and with different experiences. I am grateful that I had the opportunity to attend all the sessions and learn notions that will be fundamental for my future studies, as well as useful for my own experience in rearing useful insects for biological control. I think biological control is fundamental to environmental

protection and I thank IOBC for the work they have done so far and will continue to do, and I hope to have another opportunity like this.

Juliana Santos Oliveira (Buzz Fly R&D in Animal Nutrition, Piracicaba, São Paulo, Brazil)

It was a pleasure and an honor to participate and contribute to the 15th IOBC-MRQA Workshop. After going through a long period of social isolation due to COVID-19, it was very energizing and comforting to be able to meet again in person and be able to share so many experiences and expectations. This was my first participation in an IOBC workshop, which was only possible thanks to the financial support offered to young researchers. I am immensely grateful, and I congratulate the entire organization of the event. All topics covered have academic and economic importance and the inclusion of the topics "insects as food and feed" and "pollinators" was a great idea, since these subjects have gained prominence and deserve recognition, in addition to being able to contribute to discussions on insect rearing. I say this from experience, because, even though my presentation was about an edible insect, I have been studying the behavior of parasitoids since 2016; therefore, to discuss both these topics in the same event was sensational. Finally, I would like to thank for the award received as a young researcher, as it is very gratifying and encouraging to have your effort recognized and to have the opportunity to share your ideas with such well-known professionals in the field.

Nicolò Di Sora (Tuscia University, Viterbo, Italy)

It was a great pleasure to participate for the first time to an IOBC meeting as a speaker and to meet so many people involved in biological control from very different parts of the world. I found it particularly inspiring to meet women and men working in international companies involved in insect mass rearing. This is something very new for me, because I used to interact with academic people more focused on pure science. Speaking with companies has given me a broader view on the potential application of my daily scientific activities. The constant possibility to interact with the participants, during the meeting days, allowed me to better expose my current research to highly experienced people and to obtain many positive and constructive advice. I really want to thank the IOBC-MRQA scientific committee, in particular Rose Buitenhuis and Maria Luisa Dindo, to have selected my application for one of the Student and Early Career Professional Awards. It allowed me to take part in this meeting in Bologna and to create some important connections with the other participants. As a new IOBC-WPRS member, I can't wait to take part in the next meeting.

Summary of the 15th meeting of the IOBC Global Working Gorup "Ecology of Aphidophaga" – Lleida, Spain, 19-22 September 2022

The 15th Congress "Ecology of Aphidophaga" was held at the University of Lleida, in Lleida, Catalonia, Spain, September 19-23, 2022 as an 'in-person' meeting. Despite the now-familiar challenges to post-pandemic travel, the congress was attended by 71 participants from 17 countries with 35 oral presentations and 20 posters. A relatively relaxed schedule and convival atmosphere was conducive to extended discussions about many topics related to aphid biology, natural enemy ecology, and biological control. Touristic activities included a visit to la Seu Vella, an iconic 13th century cathedral at the center of Lleida, and the Poblet Monastery. We also visited a Catalan vineyard with a collection of various artistic sculptures that was the venue for a very delicious lunch, needless to say featuring a variety of wines produced on-site. The banquet featured a multi-course meal with live entertainment, dancing and socializing late into the evening.

The Steering Committee is already planning for the next congress, Ecology of Aphidophaga 16, which we tentatively expect to hold at the University of Bologna, in Bologna, Italy in fall of 2025.

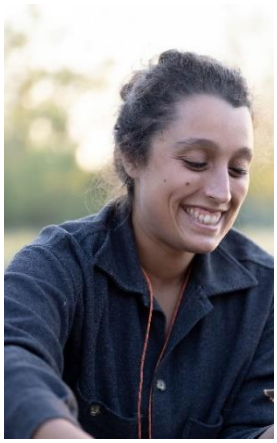
Funding from IOBC Global supported the travel expenses of four young researchers from the USA and Canada - read their testimonials below.

Organizing Committee: X. Pons, M. Eizaguirre, J. Avilla, C. López, B. Lumbierres, D. Bosch, A. Levi and R. Meseguer; Working group convenor: J.P. Michaud

Participants 15th meeting of the IOBC Global Working Gorup "Ecology of Aphidophaga"

Reactions from early career biological control scientists who received an IOBC Global grant to be able to participate in the 15th meeting of the IOBC Global Working Gorup "Ecology of Aphidophaga"

Haley Butler, Ph.D. Student, Oklahoma State University
"I feel privileged to have had the opportunity to attend Aphidophaga. As a graduate student, it was very motivating to meet and collaborate with researchers that have shaped the field of aphid biological control. I plan to apply what I learned from the meeting to my own research, in hopes that I can make my own contributions to the field as well."



Arlette Fauteux, Master's Student, Laboratoire de lutte biologique de l'UQAM. Canada."
My experience at the International Symposium « Ecology of Aphidophaga » 15 was very enriching. The lectures covered a wide range of topics ranging from biological control of aphids in greenhouses and in the field, to distribution of biological control agents in cities, landscape ecology, defensive adaptations of aphids, etc. It was a great opportunity to discuss multiple subjects with colleagues and experts and learn more about the vast world of aphidophagous organisms. Many thanks to the organizing committee for such an incredible meeting and to IOBC for giving me the opportunity to attend."

Noémie Gonzalez, PhD Student, Laboratoire de lutte biologique de l'UQAM, Canada.
"The International Symposium « Ecology of Aphidophaga » 15, was a great opportunity where researchers, students and professionals from around the world were gathered to talk about aphidophagous organisms. As one of the first face-to-face symposium since covid, I enjoyed sharing interesting conversations and making new contacts. I also appreciated being able to learn a lot in a short time thanks to multiple talks and posters. Finally, I would like to thank IOBC for their support through student travel grants and allowing us to participate in such gatherings."

Nina Rudin, Ph.D. Student, Oklahoma State University
"I enjoyed my time in Lleida for the Ecology of Aphidophaga 15 meeting. I was very inspired by everyone's presentations and the hosts for inviting us to participate in the culture of Catalonia."

BioControl, the Official Journal of IOBC

A message from the Editor-in-Chief

Over the years, *BioControl* – the official international journal of the IOBC – has established a leading role in publishing the finest and most exciting work in all aspects of biological control of invertebrate, vertebrate and weed pests, and plant diseases. The journal continuously delivers top-quality science output contributing to a sound development of efficient biological control programmes worldwide. The journal's impact factor demonstrates its recognized impact on the international scientific community. The journal offers rapid turnaround times from manuscripts evaluation and production to ensure their timely publication.

Besides original research articles, Special issues are also published on a regular basis, along with review articles. In order to maintain *BioControl* as one of the leading journals in biological control, we need to keep on publishing such Special Issues and review articles. Hence, Regional Section members (and especially officers of the corresponding Executive Committees), but also Working Group Conveners, are gently requested to submit Special Issue proposals and/or review articles. This can originate, for example, from conferences organized on the different topics addressed by the IOBC.

If you are willing to submit such Special Issue proposals and/or review articles to our journal, please contact me at the following e-mail address: eric.wajnberg@inrae.fr.

Eric Wajnberg
Editor-in-Chief of BioControl

Call for Biocontrol Training Initiatives

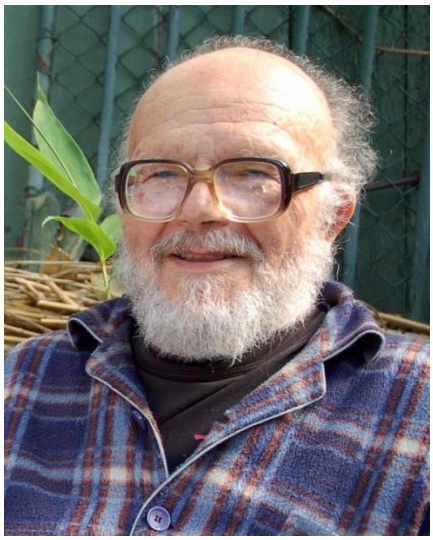
Keen to organise a practical training course in biological control? IOBC-Global may provide financial support

IOBC-Global may financially support participation of young career biological control scientists (< 35 years) who are paying member of one of the Regional Sections of IOBC, so they can take part in a training course. Applications for training courses with participation by young career biocontrol workers should be send to secretary-general@iobc-global.org who will inform you about guidelines and conditions for funding.

For an example of a recent training course, see the report presented in the previous newsletter about the biocontrol course given in Ecuador in November 2021. You may find the Ecuadorian course report in English and Spanish at https://repositorio.iniap.gob.ec/handle/41000/5818. The reports include testimonials of

the trainees. Most of the presentations of the course can be foiund at the CCRP McKnight´s web page https://www.andescdp.org/grupo-tem%C3%A1tico-manejo-ecol%C3%B3gico-de-plagas-y-enfermedades.

Obituary Dr. Ivo Hodek (1931 – 2021)



Ivo Hodek, well-known for his professional work on ladybirds (Coccinellidae) and insect ecophysiology, and the longest serving editor of the European Journal of Entomology died on June 11, 2021, shortly after his ninetieth birthday. Ivo was born in 1931 in Prague. He studied from 1950 to 1957 at the Faculty of Science of Charles University, Prague. During his studies he became interested in ladybirds, and this group of insects was the subject of his Master graduate (in 1954) and PhD. thesis (in 1957), which were both about the ecology of the seven-spot ladybird, *Coccinella septempunctata*. In 1957 he began a fruitful career at the Institute of Entomology of the Czechoslovak Academy of Science (from 1993 Czech Academy), where he became the leader of a world-famous research group studying the biology of aphidophagous insects. Exceptionally for former Czechoslovakia, Ivo was allowed to work in two western Europe institutions: in 1972–1973 at the University of Wageningen (The Netherlands) and in 1979–1980 at the Rabelais University in Tours (France).

An important feature of Ivo's work was the synthesis of rich experimental experience and extensive knowledge of the literature written in various languages. The first of his two main research specializations was ladybird beetles (Coleoptera: Coccinellidae). Among several predatory specializations of ladybirds, Ivo preferred to study the aphidophagous one, making him also interested in syrphids, lacewings and other aphid-eating predators. The second main specialization was insect ecophysiology, including the role of photoperiodism and temperature in regulating diapause, respiration, flight, migration and cold hardiness, and their underlying hormonal mechanisms. Ivo supervised MSc and PhD students and postdocs in the Institute of Entomology, in the above-mentioned fields of research.

One of the important discoveries regarding aphidophagous ladybirds was distinction between essential and alternative food (Hodek, 1962). The essential prey species were defined as those which permitted ovarian development up to egg laying and larval development till pupation. Michaud (2005) later refined the definition of suitability of prey to distinguish between larval and egg development. The alternative food for aphidophagous ladybirds ranges from unsuitable aphid species, through pollen to sweet fruits. Ivo also defined accepted and non-accepted prey, and he found that some toxic aphids (*Aphis sambuci* with sequestered glycosides from its hostplant *Sambucus nigra*) are accepted by ladybirds (Hodek, 1956). Ivo discovered conspicuous overwintering clusters of diapausing *Hippodamia undecimnotata*. They spend a prolonged combined estivation and hibernation in massive aggregations on prominent hills. Ivo studied these aggregations on the hills in several countries.

Already in 1965, during a relatively free part of the communist era in Czechoslovakia, Ivo Hodek with a group of young entomologists in Prague organized a conference *Ecology of Aphidophagous Insects*. Czechoslovakia was accessible to both eastern and western scientists. Much later, in 1984, Ivo organized the second conference *Ecology of Aphidophaga*, which began a series of meetings that continue today. *Ecology of Aphidophaga* later became a global working group within the IOBC. The meeting in 1987 was held in Poland, and that in 1990 in Hungary, while the following ones could take place in the western countries: 1993 in France, 1996 in Belgium, 1999 in Canada, 2002 in Portugal, 2004 in Czechia, 2007 in Greece, 2010 in Italy, 2013 in Serbia, 2016 in Germany, 2019 in Canada, and 2022 in Spain. For more history of the group, see page www.aphidophaga.org.

A full list of publications authored by Ivo Hodek was completed for the article celebrating Ivo's 85th birthday (Honěk and Dixon, 2017). His articles form an ideal mixture of coccinellid and diapause studies. This duality of research interests (and influence) is mirrored in the work of Ivo's students. The most influential publications by Ivo were two review articles: *Bionomics and ecology of predaceous Coccinellidae* (Hodek, 1967) and *Multiple role of temperature during insect diapause* - a review written with his wife, Magda Hodková (Hodek & Hodková, 1988). Many articles were published in non-indexed conference proceedings, and his books and chapters are his most cited and influential works.

Among researchers working on ladybirds, the three books written and edited by Ivo are well-known and appreciated, each being a complete review of the literature and synthesis of the knowledge at the time. The first one, *Biology of Coccinellidae* (Hodek, 1973) represented all the interests of Ivo: Life history, Habitats, Food, Dormancy, Enemies, and Utilization. The huge service of this book was that it made rich ladybird literature written in Russian available to English-reading entomologists. The second book, *Ecology of Coccinellidae*, published by Kluwer in 1996, was edited and authored by both Ivo Hodek and Alois Honěk. This book remains the most widely available to authors especially in developing countries. The third book published by Wiley-Blackwell in 2012, *Ecology and Behaviour of the Ladybird Beetles (Coccinellidae)*, was edited by three editors, Ivo himself, Alois Honěk, and also Helmut van Emden. It somewhat changed structure and had many invited specialist authors producing different chapters.

Ivo Hodek was the longest-serving editor of the *European Journal of Entomology*, formerly *Acta Societatis Entomologicae Bohemiae* and *Acta Entomologica Bohemoslovaca*. Ivo's scientific reputation and close contact with colleagues worldwide were important in acquiring both valuable manuscripts and reviewers for the journal.

Oldřich Nedvěd

References

Hodek I., 1956: The influence of Aphis sambuci L. as prey of the ladybird beetle Coccinella septempunctata L. Acta Soc. Zool. Bohemoslovaca 20: 62–74.

Hodek I. 1962: Essential and alternative food in insects. Pp.: 698–699. In: Strouhal H. & Beier M. (eds.): Verhandlungen. 11. Internationaler Kongress für Entomologie, Wien, 17.–25. August 1960. Band 1. Wien, 803 pp.

Hodek I. 1967: Bionomics and ecology of predaceous Coccinellidae. Annual Review of Entomology 12: 79–104.

Hodek I., 1973: Biology of Coccinellidae. Academia.

Hodek I. & Honěk A. 1996: Ecology of Coccinellidae. Kluwer.

Hodek I., van Emden H. & Honěk A. 2012: Ecology and Behaviour of the Ladybird Beetles (Coccinellidae). Wiley-Blackwell.
Honěk A. & Dixon A.F.G. 2017: Ivo Hodek: 85th Birthday. Acta Soc. Zool. Bohem. 81: 89–98.
Hodek I. & Hodková M. 1988: Multiple role of temperature during insect diapause: a review. Entomologia Experimentalis et Applicata 49: 153–165.
Michaud J.P., 2005: On the assessment of prey, suitability in aphidophagous Coccinellidae. Eur. J. Entomol. 102: 385-390. DOI10.14411/eje.2005.055

Regional sections of IOBC Global

APRS

Asia-Pacific Regional Section (APRS)
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ICAR-NBAIR organised conference for Green and Clean India to meet SDGs Global one health goals

ICAR- National Bureau of Agricultural Insect Resources, Bengaluru, India & Society for Biocontrol Advancement (SBA), Bengaluru organized 7th National Conference on Biological Control - "75 years of Biological control of Pests and Diseases in Agriculture: Challenges and the Way Forward" at Ramada Wyndham, Yelahanka, Bengaluru, India. The conference addressed the issues faced by researchers, commercial entrepreneurs, farmers and policy makers in the adoption of biological control measures. The conference provided a platform to deliberate about the challenges faced in the registration and commercialization. The conference was

conducted in 8 themes. Dr S.N. Sushil, Director, ICAR-NBAIR and President, SBA threw light on the history of the establishment and achievements of the ICAR - NBAIR in support of the plant protection efforts of the country in terms of promotion of biological control of pests and diseases. Biological control will prove to be a major resort in our nation's bid to align with the theme of India's G20 Presidency - "Vasudhaiva Kutumbakam" or "One Earth · One Family · One Future" which affirms the value of all life – human, animal, plant, and microorganisms – and their interconnectedness on the planet Earth and in the wider universe. ICAR-NBAIR while upholding its duties and responsibilities also cater to the idea of (Lifestyle for Environment LiFE) with its associated, environmentally sustainable and responsible strategies for eco-friendly pest management leading to transformative actions resulting in a cleaner and a greener future. The chief guest, Dr Ashok Dalwai, CEO, National Rainfed Area Authority, Ministry of Agriculture and Farmers Welfare, Govt. of India, N. Delhi highlighted the climate change and wrong uses of pesticides aggravates pest problem. Dr A.N. Mukhopadhyay, Former Vice Chancellor, AAU, Jorhat highlighted his experiences on biological of plant diseases using Trichoderma and the way forward. Dr Sanjay Arya, Secretary (CIB & RC), New Delhi briefed the recent guidelines and policies on simplified registration of biopesticides. Dr S.C. Dubey, ADG (PP&B), ICAR urged to strengthen the public private partnership to test, validate, mass produce and register the potential biocontrol products. Twenty-five industries participated and showed future will be transformation from chemical to biological control. The public-private partnerships with global operators would be beneficial for the regional and national agricultural systems. By organizing this conference, ICAR–NBAIR continues a tradition of bringing together researchers, academics and professionals. More than 250 delegates participated in the three-day conference.

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NTRS

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WPRS

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Ecology of Aphidophaga

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Biological Control and Management of Eupatorieae Weeds

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Benefits and Risks Associated with Exotic Biological Control Agents

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Next meeting in Portugal (11-14 September 2023). This will be a combined meeting of the WPRS working group (organizer) in cooperation with the Global working group. Keep an eye on the Global website for news and registration details.

International Working Group on *Ostrinia* and other maize pests (IWGO)

Contact: Ulli kuhlmann; Email: u.kuhlmann@cabi.org

The 28th IOBC-Global International Working Group of Ostrinia and other maize pests (IWGO) Conference will take place in Nairobi, Kenya, from Tuesday 2nd to Thursday 4th of May 2023

Biological Control and Management of Parthenium Weed

Contact: Lorraine Strathie; Email: strathiel@arc.agric.za

***Zygogramma bicolorata,* a Natural Enemy of *Parthenium hysterophorus* in Bangladesh**

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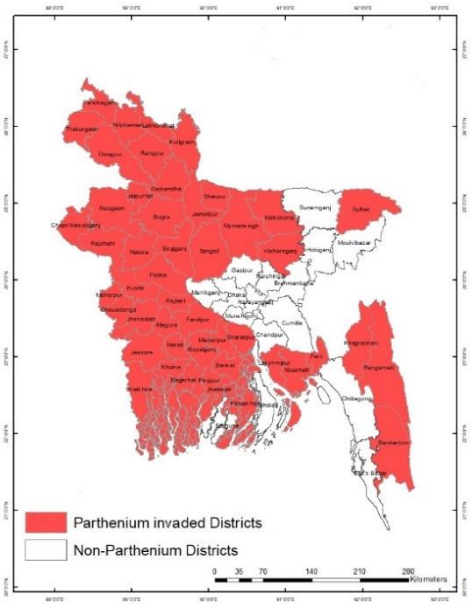

Fig. 1. Current distribution of *Parthenium hysterophorus* in Bangladesh

Fig. 2. Papaya field infested by Parthenium at Chuadanga, Bangladesh

The invasive weed Parthenium (*Parthenium hysterophorus* L. (Family: Asteraceae) is a native of Mexico. It has spread to many countries in Africa, Asia, and Australasia. It has entered Bangladesh from its western side bordering India and has started to spread eastwards

(Fig.1). It was first reported at Rajshahi division in Bangladesh in 1988. It has invaded most of the upland crop lands (Fig. 2) in addition to establishing on roadsides, vacant lots, parks, and recreation areas. It causes human and animal health issues, such as dermatitis.

Recognizing the need for creating awareness surrounding the negative impacts of Parthenium and its management among administrators, scientists, extension staff, and the public in Bangladesh, the U.S. Agency for International Development (USAID) Mission in Bangladesh-funded project Feed the Future Bangladesh Integrated Pest Management Activity (IPMA) conducted a webinar on February 23, 2022.

Dr. Kunjithapatham Dhileepan, Entomologist, Queensland Department of Agriculture and Fisheries, gave a detailed account of biological control activities carried out for management of this weed in Australia. Dr. A.N. Shylesha, Entomologist, National Bureau of Agricultural Insect Resources, explained various methods attempted to control this weed in India. Dr. Pramod Jha, Tribhuvan University, presented aerial surveys being carried out on spread of Parthenium and its fortuitously introduced natural enemies in Nepal. Dr. Ilias Hossain discussed the spread of Parthenium in Bangladesh and its invasion in different crop fields. Dr. Rezaul Karim emphasized the importance of the creation of an awareness campaign for the policy makers, administrators, scientists, and public in Bangladesh to address this invasive weed problem. Mr. Ranjit Kumar Pal, Director of Plant Quarantine Wing, Department of Agricultural Extension, stressed the importance of quarantine concentrating on prevention of invasive species including weeds. Mr. Md. Abdul Mazed, Director of Plant Protection Wing, Department of Agricultural Extension, gave the concluding remarks by summarizing all presentations and expressed support of the Plant Protection Wing in management of Parthenium in Bangladesh. While this webinar focused on Parthenium presence and management in Bangladesh, participants from Australia, Bhutan, India, Malaysia, Nepal, Pakistan, South Africa, and Sri Lanka – where the weed is a threat – attended.Parthenium beetle or Mexican beetle, *Zygogramma bicolorata* (Coleoptera: Chrysomelidae), is one of the natural enemies of Parthenium collected in Mexico, and was first host specificity tested and released in Australia in 1980 (Dhileepan et al., 2019). It was introduced to India in 1983 (Jayanth, 1987). First it was released in the fields in Bengaluru and eventually it spread throughout India. The population of the beetle that established in India moved to Pakistan in 2003 (Javaid and Shabbir, 2007), Nepal in 2009 (Shrestha et al., 2010), Sri Lanka in 2019 (Pakeerathan, 2019), and Bhutan in 2020 (Dorji and Adkins, 2020), without human aid (Fig. 3).

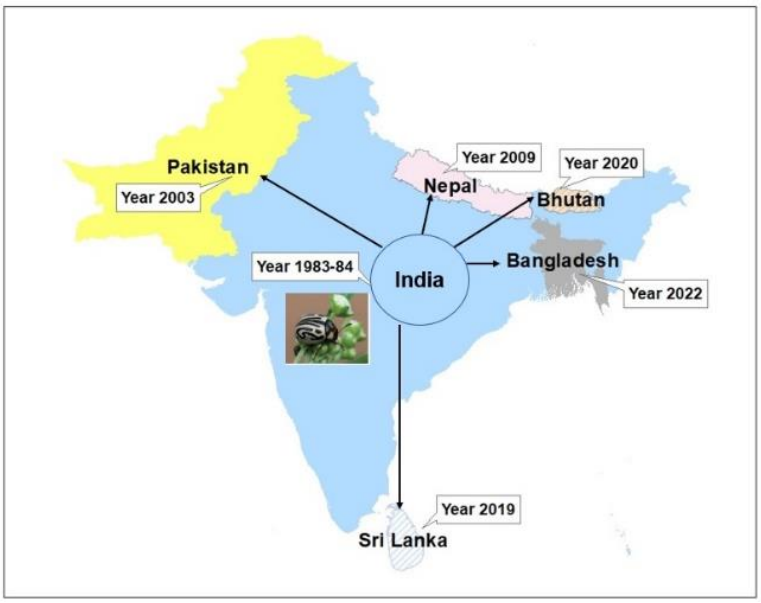

Fig. 3. Reported establishment of *Zygogramma bicolorata* into South Asian countries

The IPMA team surveyed Jessore and Chaudanga areas of Bangladesh in early 2022 for the possible fortuitous introduction of this beetle from India without success. However, recognizing the occurrence of this beetle at Malda in the West Bengal state of India, surveys were then conducted closer to this area in Bangladesh.

On October 24, 2022, the IPMA team traveled to Rajshahi city and surveyed Bholarhat subdistrict area and found the beetle feeding on Parthenium at Choto Jambaira village. This is the first report of occurrence of *Z. bicolorata* in Bangladesh.

The IPMA will be coordinating with the local Department of Agricultural Extension and surrounding universities to assist in developing the multiplication and distribution of *Z. bicolorata* collected in Choto Jambaira to other parts of the country where parthenium has established.

References:

Dhileepan, K., McFadyen, R., Strathie, L., and Khan, N. 2019. Biological control. In, S. Adkins, S. Shabbir, and K. Dhileepan (eds.) Parthenium Weed: Biology, Ecology and Management. CABI, pp. 131-156.

Dorji, S., and Adkins, S. 2020. First record of the beetle *Zygogramma bicolorata* and the rust fungus *Puccinia abrupta* var. *partheniicola* on *Parthenium hysterophorus* in Bhutan. International Parthenium News 15: 6-8.

Jayanth, K.P. 1987. Introduction and establishment of *Zygogramma bicolorata* on *Parthenium hysterophorus* in Bangalore, India. Current Science 56: 310-311.

Javaid, A., and Shabbir, A. 2007. First report of biological control of *Parthenium hysterophorus* by *Zygogramma bicolorata* in Pakistan. Pakistan Journal of Phytopathology 18: 199-200.

Pakeerathan, K. 2019. First report of the Mexican leaf-feeding beetle *Zygogramma bicolorata* on *Parthenium hysterophorus* in Sri Lanka. IOBC Global Newsletter 106.

Shrestha, B.B., Poudel, A., KC. J., Karki, D., Gautam, R.D., and Jha, P.K. 2010. Fortuitous biological control of *Parthenium hysterophorus* by *Zygogramma bicolorata* in Nepal. Journal of Natural History Museum 25: 333-338.

Biological Control of Diamondback Moth & other Crucifer Insects

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IOBC Global Cactus Working Group

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The 2nd International Organization for Biological Control (IOBC) Global Cactus Working Group (GCWG) Meeting will be taking place in Argentina in 2023 (7 – 12 May): see https://isbcw-iguazu.com/.
Aims of the meeting:

- Raise awareness about the threat of invasive alien Cactaceae to natural and agricultural ecosystems
- Highlight recent research and developments in cactus biological control
- Encourage collaboration on common problems and the sharing of effective biological control agents with countries that need them
- Developing an early warning network for new species that do not have effective biological control agents
- Increase communication between biocontrol of cactus pests and biocontrol of the pests of cactus crops

CroProPol - Using Managed Pollinators to Disseminate Biological Control Agents & Natural Products

Contact: Peter Kevan; Email: pkevan@uoguelph.ca
The next meeting of this group will likely take place in conjunction with the XII International Pollination Symposium in Cape Town, South Africa in September/October 2023. More news later on the IOBC Global website.

Study Group: Classical Weed Biological Control (CWBC)

Contact: Harriet Hinz (CABI, Switzerland), h.hinz@cabi.org
Website: https://www.iobc-global.org/global_sg_Classical_Weed_BC.html
Upcoming meeting of this group: XVI International Symposium on Biological Control of Weeds, 7th – 12th of May, 2023; Puerto Iguazú, Misiones, Argentina.
Iguazú Events and Conventions Center (Amérian Hotel): https://isbcw-iguazu.com/

Study Group: Biological control of insect pests of Solanaceous Crops (IOBC-BiCoSol)

Contact: Yulin Goa (Institute of Plant Protection, Chinese Academy of Agricultural Sciences) gaoyulin@caas.cn

The first – virtual – meeting of this group is planned for 2023. Please check the IOBC Global website for dates and access.

IOBC Global Commission on Biological Control and Access and Benefit Sharing

Contact: Peter Mason; Email: peter.mason@agr.gc.ca

2020-2022 Actions: A symposium, *Access and Benefit Sharing and Biological Control Genetic Resources*, was organized by Peter Mason and Barbara Barratt for the International Congress of Entomology in Helsinki, Finland.
A proposal was made to BioControl to publish a special issue that will include full papers based on the symposium presentations plus contributions by others.

Future actions: The IOBC Global Commission on Access and Benefit-Sharing revised the questionnaire, which is now circulated to the wider IOBC community (via IOBC Global newsletter and website). The Commission has also been tasked to document examples of experiences by recipients to access biological control agents from countries with and without ABS legislation. Some of these could be included in the proposed BioControl special issue and Commission members are encouraged to express their interest to contribute.

Access and Benefit Sharing and Biological Control Genetic Resources ICE XXVI July 2022 , Report to IOBC 9 August 2022

The symposium, Access and Benefit Sharing and Biological Control Genetic Resources, was held on 19 July 2022 during the XXVI International Congress of Entomology. The session was organized by Peter G. Mason (Agriculture and Agri-Food Canada, Canada) and Barbara I.P. Barratt (AgResearch, New Zealand) and co-chaired by Fernando McKay (Fundación para el Estudio de Especies Invasivas, Argentina) and Philip Weyl (CABI, Switzerland).

The session consisted of Opening remarks, including notes from the Convention on Biodiversity, followed by seven presentations:

- Dan Leskien, FAO Commission on Genetic Resources – Access and Benefit-Sharing and Food Security
- Peter Mason & Barbara Barratt – Biological Control Genetic Resources and Access and Benefit-Sharing
- Philip Ivey – Willingness to share biological control agents: how accessible is Africa?
- Fernando McKay – Accessing biological control genetic resources: The South American experience
- Andy Sheppard, Raghu Sathyamurthy & Matthew Purcell – Impact of the Nagoya Protocol on biological control activities in Australia
- Philip Weyl, Hariet Hinz & David Smith – The role CABI plays in building trust for sustainable access and benefit-sharing of biological control genetic resources
- Luciana Silvestri & Peter Mason – Improving access to biological control genetic resources

Three of the presentations were recorded due to employer travel restrictions that prevented the presenters from attending in person. Overall, the symposium went smoothly with approximately 30 attendees. The session ended with an excellent discussion for about 15 minutes. It was concluded that the Nagoya Protocol needs to remain on the agenda at meetings such as ICE and we need to continuously provide insights and updates from the grassroots.

We thank the XXVI ICE organizers for accepting this session, allowing us to bring a very important topic to the attention of the global entomological community.
Peter, Barbara, Fernando and Philip

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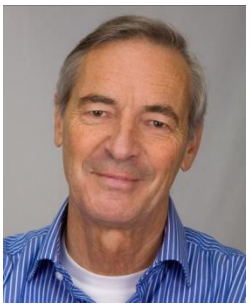

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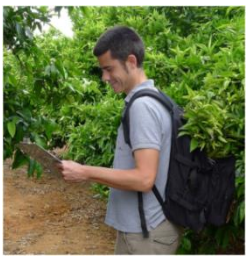

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Join IOBC

Membership in IOBC is open to all individuals and all organizations, public or private, who desire to promote the objectives of biological control. There are four categories of membership:

- Individual Membership is open to all individuals engaged or interested in biological control.
- Institutional Membership is open to any institution, including government departments, academies of science, universities, institutes and societies participating in biocontrol activities.
- Supporting Membership is open to any person or institution interested in promoting the objectives of the Organization.
- Honorary Membership may be conferred by the Council to anyone who has made outstanding contributions to biological control.

For more information and application forms:
http://www.iobc-global.org/membership.html