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International Organisation for Biological Control (IOBC)

Asia & Pacific Regional Section, IOBC-APRS



Newsletter No. 1 - December 2014

Message from the President



It is with great pleasure that I write to say hello to everyone in our first regional newsletter.

Most will be aware that this year has been one of rebuilding IOBC-APRS. The year started with the election of a new committee to take office for three years. Old hands, Barbara, Ronny and Leigh were joined by Yulin Gao, Mark McNeill and myself. The committee has proved to be a most congenial group and we have worked very well together. Even though we span three countries we have managed some video conferences and even one physical meeting.

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Before we could get very far, we needed to address two, somewhat related issues. Our web presence had to be reconstructed and we needed to make new banking arrangements including an easy method for paying memberships across the whole region. The first objective was easily achieved; we simply appointed Madeleine Buehler as our webmaster and she proceeded to do a brilliant job including integrating our pages with those for IOBC Global (see page 3). The banking arrangements proved to be very frustrating especially for Ronny but eventually we prevailed and memberships can now be paid by credit card. We hope the present system will be robust and allow for future treasurers from other countries.

Then on to Canberra where we helped the Australian Entomological Society celebrate its 50th anniversary by holding a successful symposium 'Biocontrol in the Asia Pacific Region: highlights from the last 50 years and emerging issues for the future' (see below) with 14 excellent presentations. Eleven of our members attended these meetings so as well as the symposium we were able to have a dinner together and hold a physical committee meeting. It seems to me to be ideal if we can hold our events as part of other national meetings.

We have just formed our first regional Working Group - Predatory Mites as Biological Control Agents – to be coordinated by Professor Xuenong Xu and Dr Yulin Gao based in China. This is a very exciting development that will also link in to other IOBC mite-related working groups. You can find out more below, see page 7.

Next year we intend to sponsor a biological control session at the New Zealand Plant Protection Society meeting in August and to hold a workshop/symposium on predatory mites in China. Several other proposals are also being considered so it could be a busy year.

So now we are ready to expand our membership base. The more members we have the more can offer our members and we would like to welcome all with an interest in biocontrol into the fold. If you have colleagues who might join, please discuss with them and welcome them aboard.

With best wishes for the festive and holiday season, Bill (Palmer)

From the Treasurer

The new membership form was launched in September this year and we already have a few new members who joined via this system. The transfer of existing membership to the new membership database has progressed well and I'd like to thank everyone for persevering with my requests for action. Most of you have completed a form for the new database. If you haven't yet, please do so at: http://www.aprs.iobc.info/membership_update.html



The next communication from me will come in January 2015, with a request to pay your 2015 calendar year fees. If you have any questions or suggestions for improvements, please don't hesitate to contact me at: treasurer@aprs.iobc.info

Many thanks, Ronny Groenteman

APRS Symposium at the Australian Entomological Society Conference in Canberra



From the Conveners Bill Palmer and Leigh Pilkington...

The 50th anniversary annual meeting of the Australian Entomology Society was held in Canberra from September 28 to October 1 and what a meeting it was! IOBC-APRS hosted a symposium 'Biocontrol in the Asia Pacific Region: highlights from the last 50 years and emerging issues for the future' with 14 excellent presentations including keynotes from Andy Sheppard, Stephen Goldson and Mark Hoddle. The conference committee allocated us the 'Shine Dome' for most of Tuesday (the best day) and by serendipity we followed straight after May Berenbaum's crowd drawing plenary. The talks were excellent and covered a range of topics over regions across our Asia Pacific section. We were able to make two IOBC Young Scientist Conference Awards to our members, Gurion Ang (University of Queensland) and Shengyong Wu (Chinese Academy of Agricultural Sciences) (see below) who gave excellent presentations in our symposium.

In addition to the actual symposium, IOBC- APRS hosted a dinner for its members (11 members attended the conference) and other presenters and this was a most convivial affair. On the Wednesday, we were able to hold our first physical Committee meeting with Barbara, Mark, Leigh and Bill being in Canberra and skyping through to Ronny in New Zealand. Some on the committee met for the first time at this conference.



To top it off, one member, Don Sands, was honoured as foundation member of AES and another, Gurion Ang, was elected as a director to join the AES' board. Gurion, who was awarded one of our IOBC Young Scientist Conference Awards, also won the best student talk prize. From an IOBC perspective it was a most enjoyable and successful event.

Gurion Ang



Shengyong Wu



APRS Website

<http://aprs.iobc.info/index.html>



We are delighted to have our new website up and running. This has been achieved after a lot of hard work on the part of all Executive Committee members and our excellent web publisher Madeleine Buehler (right). Madeleine, who is based in Switzerland, also maintains the websites of Global IOBC and WPRS, so she understands our organization really well. Please have a good look at the website if you haven't already done so. We are



keen to get feedback and suggestions on what our members would like to see there and we are always on the lookout for 'What's New' items, so please keep these coming in.

On the 'publications' tab there is the option for you to send citations of your recent (last 5 years) published papers on biological control. They will be integrated into the list so we can build up a good collection of biological control publications from the Asia and Pacific Region. Please send full citations of your papers to Mark McNeill mark.mcneill@agresearch.co.nz



We have included a page for job opportunities, but will probably depend upon members to populate this. It can be used for permanent positions in biological control or IPM, studentships, post-doc opportunities etc. If you would like to take advantage of this please send the advertisements and details to barbara.barratt@agresearch.co.nz and we will get them posted as soon as possible.

You can see more pictures and pdfs of all the slide presentations from our symposium at the AES last month on the website. Look under 'What's New' and you will find the link.

News from IOBC-Global

The IOBC Journal 'BioControl' now has a 2013 Impact Factor of 2.253, so it is well worth considering this journal for your biological control papers. Editor Eric Wajnberg has also recently announced that the first 'virtual issue' of BioControl is now available. "Virtual Issues are compiled in close collaboration with the Editor-in-Chief Eric Wajnberg as well as the Associate Editors Patrick De Clercq and Arne Janssen, and focus on cutting-edge topics. They present key articles which have been published in the journal over the course of the last years."



VIRTUAL ISSUE No 1: Predator behaviour and life-history traits important for biological control.

This is very pertinent to the establishment of our WG (below). From the editorial "This research effort is reflected in BioControl which has received an increasing number of manuscripts on arthropod predators. Some of these are shared by authors originating from different countries, demonstrating an important cooperative effort devoted to this important topic. Some of the recently published articles in BioControl have been pooled for this Virtual Special Issue. The goal is to foster further research and publications in this direction."



A link to the June 2014 IOBC Global Newsletter is given below. There is a new newsletter due out next month, so please let us know if there are any items of importance or particular interest to biological control that you think should be featured there.

http://aprs.iobc.info/download/IOBC-Global_Newsletter_95_June-2014.pdf

LETTER

Climate warming increases biological control agent impact on a non-target species

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Shao,^{1,4} and Jianqing Ding,^{1,3*}

Abstract

Climate change may shift interactions of invasive plants, herbivorous insects and native plants, potentially affecting biological control efficacy and non-target effects on native species. Here, we show how climate warming affects impacts of a multivoltine introduced biocontrol beetle on the non-target native plant *Alternanthera sessilis* in China. In field surveys across a latitudinal gradient covering their full distributions, we found beetle damage on *A. sessilis* increased with rising temperature and plant life history changed from perennial to annual. Experiments showed that elevated temperature changed plant life history and increased insect overwintering, damage and impacts on seedling recruitment. These results suggest that warming can shift phenologies, increase non-target effect magnitude and increase non-target effect occurrence by beetle range expansion to additional areas where *A. sessilis* occurs. This study highlights the importance of understanding how climate change affects species interactions for future biological control of invasive species and conservation of native species.

Keywords

Biological control, climate change, exotic insect, life history, native plant, non-target effect, range expansion, warming.

Ecology Letters (2014)

Biological Control 72 (2014) 76–79



Contents lists available at ScienceDirect

Biological Control

journal homepage: www.elsevier.com/locate/ybcon



Perspective

If and when successful classical biological control fails



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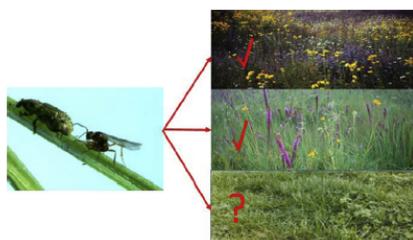
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HIGHLIGHTS

- The reason for persistence of successful classical biological control is discussed.
- Possible mechanisms for classical biological control failure are considered.
- NZ control failure because of host sexual versus control agent asexual reproduction.
- Unique species-depauperate nature of NZ pastoral ecosystems is described.
- Simple ecosystem exaggerates effect of parasitoid/host reproductive differences.

GRAPHICAL ABSTRACT



Assessing invasion threats: novel insect-pathogen-natural enemy associations with native New Zealand plants in southern California

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Received: 6 August 2014 / Accepted: 25 October 2014
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Abstract The potential for novel pests to attack indigenous plants can be examined in non-native ranges of these plants. We used perennial native New Zealand plant species growing in botanic gardens and on public spaces in southern California to explore new associations between these plants, the bacterium *Xylella fastidiosa*, and its vector, the invasive insect pest, *Homalodisca vitripennis* (the glassy-winged sharpshooter), both of which are not yet present in New Zealand. Further, we examined the biocontrol

potential of egg parasitoids against *H. vitripennis* on New Zealand plant hosts in southern California. We make the case for the inclusion of biocontrol as an early-response strategy against *H. vitripennis* should this pest invade New Zealand, and outline the steps required to make biocontrol part of a rapid-response management plan should an incursion and localized establishment occur.

Keywords Pre-emptive biocontrol · Glassy-winged sharpshooter · *Homalodisca vitripennis* · *Xylella fastidiosa* · Plant–insect–disease interactions · Sentinel plants

Electronic supplementary material The online version of this article (doi:10.1007/s10530-014-0804-0) contains supplementary material, which is available to authorized users.

Austral Entomology

Austral Entomology (2014) **, **--**

Host testing of the parasitoid *Cotesia urabae* (Austin & Allen, 1989) (Hymenoptera: Braconidae) to assess the risk posed to the New Zealand nolid moth *Celama parvitis* (Howes, 1917) (Lepidoptera: Nolidae): do host deprivation and experience influence acceptance of non-target hosts?

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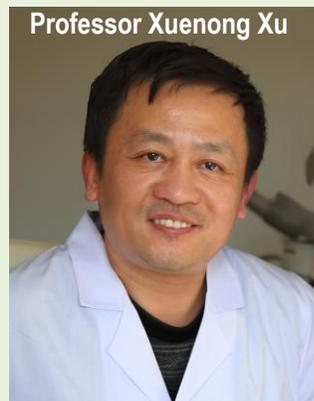
Abstract Retrospective host specificity testing of the recently introduced biological control agent *Cotesia urabae* Austin & Allen, 1989 against *Uraba lugens* Walker, 1863 was conducted to assess the potential risk posed to the endemic nolid moth *Celama parvitis* Howes, 1917. The effect that different periods of host deprivation and prior host exposure ('experience') had on the parasitoid's readiness to attack a non-target species was examined in a sequence of consecutive no-choice tests. Even though *C. urabae* was observed to oviposit on *C. parvitis* in 91% of the no-choice tests, no parasitoids emerged from the 52% of larvae that survived to complete larval development. Host larvae that died during the laboratory rearing were dissected revealing that 63% contained a parasitoid larva, none of which had developed beyond the second instar within the larvae of *C. parvitis*. These results show a high level of developmental failure of *C. urabae* within *C. parvitis*, confirming that it is not a suitable physiological host. Therefore, potential negative impacts of *C. urabae* on *C. parvitis* in the wild are likely to be negligible. Significant differences were found in the attack times between parasitoids with different levels of host deprivation, with younger parasitoids taking longer to initiate attack behaviour. Also, it was observed that the lag until first attack decreased significantly after previous experience with the same host in a succession of no-choice tests. These results suggest that host deprivation and experience may play an important role in increasing the responsiveness to non-target species by *C. urabae*.

Key words host range, no-choice test, parasitism, readiness to attack.

doi:10.1111/aen.12121

New APRS Working Group: Predatory Mites as Biological Control Agents

We are very pleased to announce that a new working group has been established. This was proposed by Professor Xuenong Xu and Dr Yulin Gao from the Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, China



Professor Xuenong Xu

Predatory mites are important natural enemies of small arthropod pests. Based on a recent review of commercial augmentative biological control Acari is the second largest group of commercial biological control agents after Hymenoptera. Some 30 predatory mite species were listed in that review, consisting of 13.1% of all arthropod natural enemies.



Dr Yulin Gao

Traditional target pests of predatory mites are small plant feeding arthropods in cropping systems, such as spider mites, thrips, and

whiteflies, etc. These pests are small in size, and have a very fast rate of population increase. They also develop resistance to chemical pesticides rapidly. Therefore, chemical control is often not efficient in controlling them. In addition, some of the host plants of these pests are fruiting vegetables that have a continuous fruiting season, which does not allow a chemical safety interval. With all these concerns, it is very necessary to find efficient alternatives to chemical controls. Predatory mites in the Phytoseiidae family contribute to some of the most successful commercial natural enemies of these small pests.



Neoseiulus californicus

Lately, more predatory mite species that attack a range of different pests, and which are suited to different environmental conditions have come to the attention of researchers and producers. Besides phytoseiids, attention is being given to biological control candidates from other families, such as Laelapidae, Ascidae, and Erythraeidae, etc. The range of their target pests is also being broadened to include leaf hoppers, nematodes, and even pests in other agricultural fields such as stock farming, etc.

For a better understanding of predatory mites and better utilization, numerous studies are being conducted worldwide, focusing on different aspects of using predatory mites as biological control agents. Fundamental studies that focus on the impact of environment and genetic variability provide detailed information about mechanisms of predatory mite biology. Some leading research is being carried out on:

- the interaction between pest, predatory mites and the leaf micro-environment;
- biochemical mechanisms for searching behavior;
- food preferences of predatory mites;
- genetic mechanisms for resistance and tolerance to extreme environments.

In relation to application and utilization, mass rearing techniques and application strategies, such as alternative prey and artificial diets that improve the procedure and reduce costs and integrated applications of predatory mites and other management methods (eg. *Beauveria bassiana*) are also being investigated.

Overall, predatory mites play an increasingly important role in modern biological control. The predatory mite WG will attract governmental, scientific and commercial organizations in the Asia and Pacific Region that focus on, or are interested in, predatory mite research. The WG will foster research and practical application, organize meetings, symposia, offer training and information, and encourage collaboration in promoting research and applications of predatory mites. Major activities also include developing standards for predatory mite products, assessing biological control efficiency, and evaluating predatory mite related integrated pest management.

Contacts: Professor Xuenong Xu xnxu@ippcaas.cn and Dr Yulin Gao ylgao@ippcaas.cn

Finally, have you seen on our website..?

Go to the 'Links' tab on the website <http://aprs.iobc.info/links.html> and you will find some very good video clips of weed and insect biological control topics.

You will find Dr Toni Withers (Scion, New Zealand) talking about the biological control programme for buddleia using *Cleopus japonicus* https://www.youtube.com/watch?v=FFr_4cgg-g0

<http://www.goodbugs.org.au/> is a link to 'ABC Australian Biological Control'. This really well illustrated site lists all commercially available biological control agents in Australia and New Zealand, and much more.

Under 'What's New' is a link to Gonzalo Avila's website <http://www.cotesiaurabae.com/> This includes video clips of *Cotesia urabae*, a parasitoid of *Uraba lugens*, the gum-leaf skeletoniser. Gonzalo is a PhD student at the University of Auckland, New Zealand.