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In partnership with

**u<sup>b</sup>**

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<sup>b</sup>  
**UNIVERSITÄT  
BERN**

# Proceedings of the COLOSS Workshop

## “A European strategy for small hive beetles *Aethina tumida*”



**Bologna, Italy, 19<sup>th</sup> – 20<sup>th</sup> February 2015**



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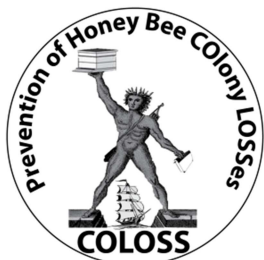


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## COLOSS workshop and extension day

### Topic

Following arrival in Italy of the small hive beetle (*Aethina tumida*) an exotic honey bee parasite listed in the OIE, COLOSS is calling a workshop to focus on the problem. The aim of the meeting is to develop a strategy to limit the dispersal of and damage caused by this beetle in Europe.

### When

Thursday 19<sup>th</sup> February – Friday 20<sup>th</sup> February 2015; one full day reserved to COLOSS members followed by an extension day reserved to beekeepers, extension technicians, veterinarians and policy makers.

### Where

Consiglio per la Ricerca e la sperimentazione in Agricoltura, Unità di ricerca di apicoltura e bachicoltura (**CRA – API**), via di Saliceto 80, 40128 Bologna (Italy).

### Who

Workshop: maximum of 80 participants. Priority will be given to COLOSS members actively involved in bee health in their countries and / or with research / field experience with small hive beetles.

Extension day: maximum 120 invited participants.

### Working language

During the COLOSS workshop (19<sup>th</sup> Feb.): English

During the extension day (20<sup>th</sup> Feb.): Italian (translation of talks by non-Italian speakers will be provided).

### Workshop registration

To participate in the workshop, send filled-in registration form and abstract by the 2<sup>nd</sup> Feb. to: [segreteria.api@entecra.it](mailto:segreteria.api@entecra.it)

Workshop registration fee: 40 € payable on site, which will cover 2 coffee breaks and lunch on the 19<sup>th</sup> Feb.

### Travel & Accommodation

International airport Guglielmo Marconi is situated near the institute, easily reachable by taxi. Alternatively, the “Aerobus” will take you to city centre and ultimately to the train station. From the station (bus stop in via Indipendenza) you can take bus 27 towards via Corticella (opposite direction from town centre) and the institute is at the stop “Caserme Rosse”. Directions and map available on CRA-API website:

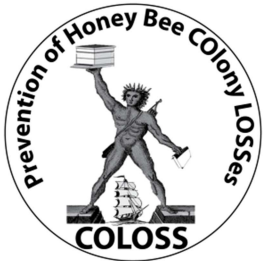
<http://api.entecra.it/index.php?c=9&ln=eng>

A list of hotels is also available on CRA-API website, the first four are near the institute, while the other two are in the city centre:

<http://api.entecra.it/index.php?c=64#bo>

Further options on where to stay can be found on the municipal website:

<http://www.bookingbolognawelcome.com/en/>



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## LOCAL ORGANIZER CONTACTS

### **Cecilia Costa**

Tel: +39 0522 285532; mob. +39 347 6665974

E-mail: [cecilia.costa@entecra.it](mailto:cecilia.costa@entecra.it)

### **Marco Lodesani**

Tel: +39 051 353103

E-mail: [marco.lodesani@entecra.it](mailto:marco.lodesani@entecra.it)

### **CRA-API secretariat**

Tel: +39 051 353103; Fax: +39-051-356361

E-mail: [segreteria.api@entecra.it](mailto:segreteria.api@entecra.it)

**Registration forms and abstracts should be sent to this address!**



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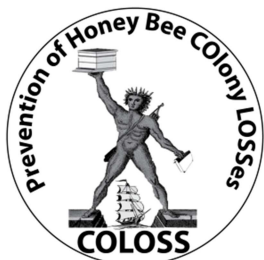
## MEETING SCHEDULE

### Wednesday, 18<sup>th</sup> February 2015 – Organizational meeting

| Time        | Executive Committee Meeting   |
|-------------|---|
| 20:00-22:00 | Meeting of COLOSS Executive Committee members, invited speakers and local organizers – Pizzeria Grotta Azzurra, Bologna |

### Thursday, 19<sup>th</sup> February 2015 – COLOSS Workshop

| Time                               | Presentations  |
|------------------------------------|--|
| 08:30-09:00                        | <b>Registration</b>  |
| 09:00-09:15                        | “Welcome and Organizational matters” by M Lodesani and P Neumann   |
| 09:15-09:30                        | “How COLOSS can contribute: ideas for dissemination” by Norman Carreck   |
| 09:30-10:15                        | “Small hive beetle in Italy: report on events” by F Mutinelli and M Lodesani   |
| 10:15-11:00                        | “Small hive beetle biology, spread and hosts other than <i>Apis mellifera</i> ” by P Neumann   |
| 11:00-11:30                        | <b>Break</b> , with drinks & snacks  |
| 11:30-12:15                        | “Small hive beetles in the US: what can we learn from that?” by J Pettis   |
| 12:15-13:00                        | “A small hive beetle lesson from Africa” by CWW Pirk   |
| 13:00-14:30                        | <b>Lunch</b>   |
| <b>Plenary focused discussions</b> |  |
| 14:30-16:00                        | <b>Diagnosis and monitoring</b><br>State of the art<br>How to adapt known methods to Italy and other European countries<br>Gaps in knowledge, research needs                               |
| 16:00-16:30                        | <b>Coffee break with snacks</b>  |
| 16:30-18:00                        | <b>Control and prevention</b><br>How to limit entrance (eradication strategy)<br>How to limit dispersal and associated damage to apiculture and wild bees (assuming eradication will fail) |
| 18:00-18:30                        | “Final conclusions” by P Neumann   |
| 20:00-                             | <b>Social dinner</b>   |



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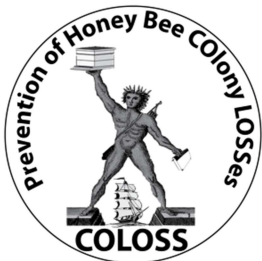
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Friday 20<sup>th</sup> February 2015 - Extension day

| Time        | Small hive beetle <i>Aethina tumida</i> in Europe: what to do?   |
|-------------|--|
| 10.00-10:30 | Welcome by local organizer, COLOSS president, Health and Agriculture Ministry representatives                    |
| 10:30-10.45 | "European approach following <i>Aethina tumida</i> detection in Italy" by M.P. Chauzat                           |
| 10:45-11:00 | "Trying to eradicate <i>Aethina tumida</i> : results of 5 months' efforts" by F. Mutinelli                       |
| 11:00-11:45 | "Small hive beetle in Italy: what can we expect in the future? incl. outcome of COLOSS meeting" by Peter Neumann |
| 11:45-12:30 | "Diagnosis and control of <i>Aethina tumida</i> in its native range" by CWW Pirk                                 |
| 12:30-13:15 | "Small hive beetle control & adjusted management in the USA" by Jeff Pettis                                      |
| 13.15-14.15 | <b>Break</b> , with drinks & snacks  |
| 14:15-17.30 | Round table discussion with beekeeping representatives and speakers  |
| 17:30-18:00 | Farewell by local officials, beekeeping organizations local organizer and the COLOSS president                   |



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## COLOSS Workshop and Extension Day

“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

How COLOSS can contribute: ideas for dissemination.

#### Authors and Affiliations

**Norman L Carreck<sup>1,2\*</sup>**

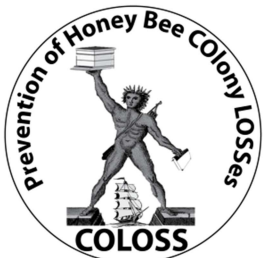
<sup>1</sup>International Bee Research Association, 6, Centre Court, Main Avenue, Treforest, CF37 5YR, UK. \*Email: norman.carreck@btinternet.com Tel: +44 (0) 1273 872587

<sup>2</sup>Laboratory of Apiculture and Social Insects, School of Life Sciences, University of Sussex, Falmer, Brighton, East Sussex, BN1 9QG, UK.

#### Text of Abstract

After the unexpected discovery of the small hive beetle (SHB) in Florida, USA in 1998, and the damage that it caused to honey bee colonies, there was huge interest by bee scientists and the media. Since then interest has waned, although research studies on the SHB have continued to be published, particularly in the Special issue of the *Journal of Apicultural Research (JAR)* in 2008. Extensive colony losses worldwide at this time led to the establishment of COLOSS (Prevention of honey bee COLony LOSSes), and although its major concerns have been varroa, pesticides and habitat changes, a chapter on the SHB was included in the COLOSS *BEEBOOK* of 2013. Following the discovery of the SHB in southern Italy in September 2014, it was recognised that there was an urgent need to ensure that scientific knowledge on the SHB is readily available and in a suitable form to ensure that reliable evidence-based advice can be given to beekeepers. The COLOSS Association, with its 448 members from 70 countries, including the majority of the scientists with research experience of working with SHB, is uniquely placed to do this. Within weeks of the discovery in Italy, a COLOSS Task Force on the SHB was established, and plans for dissemination made. A collection “Apicultural research on the SHB” containing published papers from *JAR* and *Bee World* between 2000 and 2014 is planned for publication in the Spring of 2015. The purpose of this first meeting of the COLOSS SHB Task Force in Bologna is to discuss strategies to limit the spread, dispersal and damage of the SHB in Europe, and effective dissemination will be a vital part of this. It is hoped that one outcome of this meeting in Bologna will be the production of a book for beekeepers in Italian and English, based on the presentations.





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**COLOSS Workshop and Extension Day**  
**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

European approach following *Aethina tumida* detection in Italy

**Authors and Affiliations**

MP Chauzat\*, M. Brown, P Kryger, F Mutinelli, S Roelandt, S Roels, M. Schäfer, Y van der Stede, M Ribière-Chabert, P Hendrikx  
[marie-pierre.chauzat@anses.fr](mailto:marie-pierre.chauzat@anses.fr). Tel : 00 33 1 49 77 27 04

**Text of Abstract**

The first detection of *Aethina tumida* in Italy occurred on 5 September 2014. On 10 September 2014, specimens were sent to the Italian National Reference Laboratory (Istituto Zooprofilattico Sperimentale delle Venezie). The species was confirmed through morphological identification by the NRL from Italy and molecularly by the European Reference Laboratory in Sophia-Antipolis (France). On 18 September, *A. tumida* detection in Italy was notified to the OIE (World Organisation for Animal Health).

To date (early February 2015), approximately a thousand of apiaries have been visited in Southern Italy to detect the presence of the small hive beetle. *A. tumida* has been detected in 61 apiaries located mainly in two provinces of Southern Italy (Reggio di Calabria and Vibo Valentia) with one exception in Sicily (one apiary in the province of Syracuse). Approximately 3 500 honeybee colonies have been destroyed upon discovery of *A. tumida* in the apiaries.

The EURL for honeybee health with the help of NRL from Belgium, Denmark, Germany, Italy and the United Kingdom and will provide the Member States with guide lines to harmonize *A. tumida* surveillance. This document aims at helping Member States to detect, monitor and survey *A. tumida* across Europe. The guidelines will be addressed to each Member States of the European Union, National Reference Laboratories on honeybee health (NRL), the European Commission and the scientific community.



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## COLOSS Workshop and Extension Day

“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

Preparing Dutch beekeepers for the Small Hive Beetle

#### Authors and Affiliations

##### Bram Cornelissen

bees@wur, Wageningen UR

[Bram.Cornelissen@wur.nl](mailto:Bram.Cornelissen@wur.nl)

P.O. Box 16

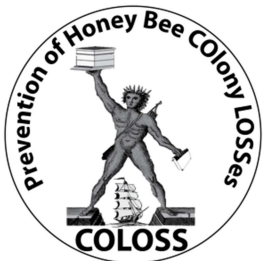
6700 AA Wageningen, The Netherlands

T: +31317481280

#### Text of Abstract

Small Hive Beetle's arrival in Italy, has received mixed reactions by Dutch beekeepers. While some consider it a minor threat, others regard it as the next big thing, since the introduction of Varroa destructor. Most agree that it will alter beekeeping to a certain extent and it might even benefit general hygienic measure in beekeeping practice. For example beekeepers in the Netherlands often give colonies too much space in relation to the cluster size. Especially in the summer colonies are often housed on two boxes, while one would suffice. With small hive beetle present, such situations will likely lead to extensive damage. Furthermore strategies for comb-storage and rotation will need to be reconsidered and adapted to the new reality of keeping bees with the Small hive beetle. The first steps have been taken to prepare Dutch beekeepers for its arrival, by bringing together stakeholders and scientists. The forthcoming plans include an update and publication of a brochure on small hive beetle, as well as presenting the information on beekeeper meetings.

For now a clear pan-European strategy is needed on legislative matters as well as practical control efforts. We would like to propose a European wide surveillance network in order to monitor the spread. For this purpose a participating role of beekeepers should be welcomed by scientists. The variety of habitats within Europe will lead to different needs to control the beetle. Existing strategies for control from areas already affected need to be tested and new possibilities investigated.



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**COLOSS Workshop and Extension Day**  
**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**IPM and Small Hive Beetle**

**Authors and Affiliations**

**Gennaro Di Prisco**

Department of Agriculture, University of Napoli Federico II, Via Università 100, 80055 Portici, Napoli. Tel. 0039 0812539197. E-mail: [gennaro.diprisco@unina.it](mailto:gennaro.diprisco@unina.it)

**Text of Abstract**

The population dynamics of invasive species is very important and worrisome due the activities colonization of new territories, with often negative consequences on the local biome and in general the environment. Among them species, certainly deserves mention *Aethina tumida* Murray (Small Hive Beetle, SHB), south-african Coleoptera, belonging to the *Nitidulidae* family, closely related to sap and pollen beetles, now arrived in Europe through South Italy. It's a parasite of *Apis mellifera* L., becoming a new target to take into account for the pathology control strategies in apiculture. SHB is an opportunistic scavenger, the damage associated with its infestation is caused by the larval stage that feed on pollen, honey and occasionally brood in the colonies and also in the stored honey super.

Bearing in mind that eradication is almost impossible, the control of SHB presents a number of factors to consider, for example, the use of pesticides that must be extremely limited for honeybee toxicity issues, as well as the accumulation of chemicals in the wax. It's believable that the key to manage SHB, as suggested by the Integrate Pest Management rules, is to implement a set of beekeeping practices for monitoring, preventing and controlling outbreaks.

A successful IPM program requires a deep knowledge of pest biology and parasitic-host interaction strategies, host immunocompetence and stress response capability, in order to develop a range of management techniques to keep SHB populations under control in a kind of balanced coexistence with honeybees.



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**COLOSS Workshop and Extension Day**  
**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title** (within 150 characters, Arial 12 pt. bold)

**Measures planned in Greece for an early detection of *Aethina tumida* (Small Hive Beetle)**

**Authors and Affiliations**

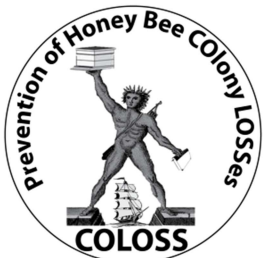
**Nikolaos Emmanouil<sup>1\*</sup>, Maria Bouga<sup>1</sup>, Fani Hatjina<sup>2</sup>**

<sup>1</sup>Agricultural University of Athens, Laboratory of Agricultural Zoology and Entomology, 75 Iera Odos St., Athens 11855, Greece mail address: ceaz2emn@aua.gr.phone number +302105294575

<sup>2</sup>Division of Apiculture, Inst. of Animal Science, Hell. Agr. Org. "DEMETER", Nea Moudania, 63 200 Greece

**Text of Abstract**

Apiculture is a sector of high importance for Greece. The number of beehives is approximately 1.5 million which accounts to almost 10% of the whole EU countries. There are about 20000 beekeepers of which 40% are professionals of all ones. Among the various threats facing greek apiculture, the possibility of *Aethina tumida* invasion is a major concern to the beekeepers, scientists and State Authorities. Taking into account the recent detection of that pest in the neighbouring Italy, that possibility is enhanced for Greece. For this reason, on November 2014, the Hellenic Ministry of Rural Development and Food organized a meeting in Athens with the participation of several scientists (agriculturists, biologists, veterinarians and others) to discuss the measures required for the early detection of SHB in Greece. For this, special attention will be given to the most vulnerable areas (ports etc) and imported items. A relevant project has already been proposed by our Institutions to the Hellenic Ministry of Rural Development and Food and the first workshop with the same subject will be held in March 2015.



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## COLOSS Workshop and Extension Day

“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

Contingency and action plan in Sweden for exotic pests and diseases of honeybees

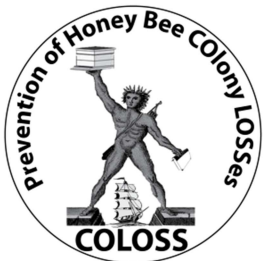
#### Authors and Affiliations

**Preben Kristiansen**

Swedish Beekeepers Association  
Borgmästaregatan 26  
596 34 Skänninge  
Sweden  
preben.kristiansen@biodylarna.se  
Phone: +46 142 482 007

#### Text of Abstract

A contingency and action plan for exotic pests and diseases of honeybees has been produced in collaboration between government and regional authorities, beekeeping organisations and the national reference laboratory for bee health. The plan which has been implemented is primarily designed to ensure quick action at the discovery of the small hive beetle, the tropilaelaps- and tracheal mites. But it can also be used as an action plan for other diseases, parasites and pests not mentioned in this document, e.g. the Asian hornet *Vespa velutina* and american foulbrood. The different roles and responsibilities of the authorities, the beekeepers, their organizations and other stakeholders have been identified and specified in order to achieve the stated objectives. In addition to being a guide for the authorities, the plan is made so it also can provide knowledge to the beekeepers about detection and control of diseases, parasites and pests. Information about the exotic pests is published in the magazines and on the websites of the beekeeping organisations and is even given at courses. In the fall of 2014 we started courses to train a number of beekeepers who can assist the authorities in case of an outbreak (especially of the small hive beetle) and even work with surveillance.



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**COLOSS Workshop and Extension Day**  
**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**An approach to the control of the small hive beetle (*Aethina tumida* M.) in Mexico.**

**Authors and Affiliations**

**Lara-Alvarez, Luis Gerardo<sup>a\*</sup>; Dosal-Alonso, Eduardo<sup>a</sup>; Reyes-Escobar, Omar<sup>a</sup>; Dorantes-Ugalde, José Antonio<sup>a</sup>; López-Mendoza, Sergio<sup>ab</sup>; Saldaña-Loza, Luz María<sup>a</sup>.**

<sup>a</sup>Servicios Apícolas de Querétaro SC de RL, DC-10 no. 194, colonia La Purísima, Santiago de Querétaro, Querétaro, Mexico.

<sup>b</sup>Universidad de Ciencias y Artes de Chiapas, 1<sup>a</sup> Sur Poniente No. 1460, Tuxtla Gutiérrez, Chiapas, Mexico.

\*laraluis.gerardo@gmail.com; (+52) 4621427272.

**Text of Abstract**

Control efficiency of different baits, based on boric acid plus an attractant, and a prototype of an in-hive trap made of a modified CD case against *Aethina tumida* in hives of *Apis mellifera* were evaluated in the state of Yucatan, Mexico, both in field trials as under conditions of confinement. Boric acid treatments showed a greater cumulative death of *A. tumida* in 120 hours. The baits which included fresh pineapple caused more death compared to the control without insecticide and the naïve group without food or insecticide ( $F < 0.0001$ ,  $\alpha = 0.05$ ,  $n = 5$ ). In toxicity tests performed on bees exposed to bait under conditions of confinement, increased mortality of bees occurred in treatments where the bait was offered freely, both accompanied by food and offered as the sole food source, while in the group in contact with the case containing the insecticide and the control group without the application of boric acid there were no statistically significant differences ( $F < 0.0001$ ,  $\alpha = 0.05$ ,  $n = 5$ ). In the field observations, the use of the device did not induce strange behavior in the colonies and SHB preference was observed for the case as a shelter, leading to its exposition to boric acid. The data support the application of boric acid as a means of population control of *A. tumida* inside the hive and use the plastic case as a trap device for the application.



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**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**A two year national surveillance for *Aethina tumida* reflects its absence in Spain**

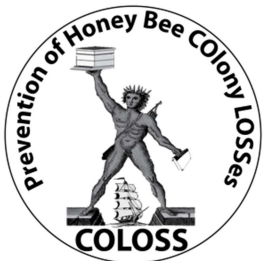
**Authors and Affiliations**

**Raquel Martín-Hernández\*; Almudena Cepero; Cristina Rodríguez; Mariano Higes**

Centro Apícola de Marchamalo; Camino de San Martín sn  
[rmhernandez@jccm.es](mailto:rmhernandez@jccm.es); +34949885014

**Text of Abstract**

Surveillance and reporting are important practices in the early detection of exotic pests and diseases, helping to maintain effective biosecurity controls. In beekeeping, these activities involve collecting, analysing and interpreting information on the presence or absence of pests and diseases, and the reporting of any unusual or suspect detection to the relevant authorities. In preparation for the detection of exotic pests and the supervision of other common honey bee diseases, a surveillance program has been developed over recent years in Spain. As part of this study, the possible presence of *Aethina tumida* (Small hive beetle; SHB) in honey bee colonies in Spain is evaluated by qPCR, employing a protocol previously described to detect this pathogen in hive debris (Ward et al., 2007). We analyzed samples coming from 10 Autonomous Communities. The analyzed regions represented the 59.62 % in 2010 and 57.13 % in 2012 of the total beekeeping farms declared in Spain for those years. As expected, all the hive debris samples analyzed from Spanish colonies were negative and thus, further analysis of the independent samples was not necessary. The method used was able to detect the DNA from just one SHB larva in the second positive control sample, validating the failure to detect the pathogen in the samples. Accordingly, the method described proved to be a valuable tool in the surveillance efforts to identify the appearance of this species, since it permits rapid screening of hive debris, as it can detect DNA from SHB eggs, larvae and adult specimens (Ward et al., 2007). The SHB free-status in Spain is shown. This monitoring system allows a large number of samples to be processed rapidly, and in an economical and reliable way. Actions such as that described are important for protecting beekeeping activity by detecting exotic pests and diseases early, and to validate control and regulatory measures for established pests and diseases. The implantation of a surveillance procedure in each country together with the setting of the molecular technique [9] for a fast and accurate detection could help to limit the spreading of this pest in areas monitored around outbreaks.



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“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

Susceptibility of small honey bee colonies to invasion by the small hive beetle, *Aethina tumida* (Coleoptera, Nitidulidae)

#### Authors and Affiliations

S. G. Mustafa\*, S. Spiewok†, M. Duncan‡, R. Spooner-Hart‡ & P. Rosenkranz\*

\* Apicultural State Institute, University of Hohenheim Stuttgart, Germany

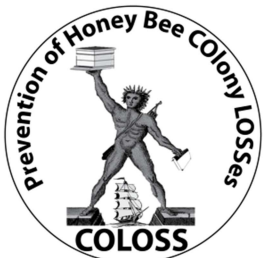
† Deutsches Bienen Journal, Bauernverlag GmbH Berlin, Germany

‡ School of Science and Health, University of Western Sydney, Penrith South, NSW, Australia

#### Text of Abstract

Weak and small honey bee colonies are supposed to be more susceptible to infestations by the small hive beetle [*Aethina tumida*, small hive beetle (SHB)]. To test this, we established 24 nucleus colonies [12 with and 12 without previous SHB removal (= screening)]. Four weeks later, we compared beetle numbers and the occurrence of SHB reproduction to the corresponding full-sized colonies. Full-sized colonies with no screening were infested with significantly more SHBs than all other groups (mean  $\pm$  standard deviation = 46.9  $\pm$  26.7). Regardless of this, none of the full-sized colonies showed damage or evidence of SHB reproduction. In contrast, five nucleus colonies collapsed and SHB larvae were found in an additional seven colonies. Our study demonstrates that SHB infestation levels which are harmless to full-sized colonies may have a negative impact on small nucleus colonies.





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## COLOSS Workshop and Extension Day

“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

The small hive beetle situation in Italy

#### Authors and Affiliations

**Franco Mutinelli<sup>1\*</sup>, Anna Granato<sup>1</sup>, Giovanni Federico<sup>2</sup>, Fabrizio Montarsi<sup>1</sup>, Gianluca Grandinetti<sup>3</sup>, Andrea Maroni Ponti<sup>4</sup>**

<sup>1</sup>Istituto Zooprofilattico Sperimentale delle Venezie, Viale dell'Università, 10 - 35020 Legnaro (PD) Italy, Tel.: + 39 049 8084287, e-mail: fmutinelli@izsvenezie.it

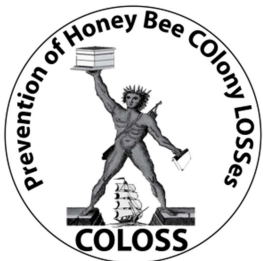
<sup>2</sup>Istituto Zooprofilattico Sperimentale del Mezzogiorno, Reggio Calabria, Italy

<sup>3</sup>Veterinary Service Task Force, Regione Calabria, Italy

<sup>4</sup>Ministero della Salute, DGSAF, Rome, Italy

#### Text of Abstract

The first detection of *Aethina tumida* Murray (Small Hive Beetle) in Italy occurred on 5 September 2014 in Calabria region, followed by other infested apiaries detected in the same region in a radius of 20 km from the first infested site. On 7 November, an apiary was found infested in Sicily region. Early reaction measures consisted of immediate notification of the parasite and restriction of any movement related to honey bee colonies of the established protection (20 km radius) and surveillance (100 km) zones. Compulsory visit of all apiaries in the protection zone with georeferentiation and colonies inspection according to 5% expected prevalence (95% CI) are applied. Destruction of infested apiaries is compulsory and the soil is ploughed and treated with pyrethroids. If negative, traps are applied. In the surveillance zone, apiaries are visited according to risk analysis (migration in infested areas, honeybees or materials exchanges) or randomly and colonies are inspected according to 2% expected prevalence (95% CI). Until now a total of 59 infested sites have been detected, of which 58 in Calabria region and one in Sicily region. Investigations are in progress to make the inventory of all bees' exchanges from Calabria and Sicily during 2014 and apiaries inspections have already been carried out in several Italian regions. None of the inspected apiaries was found positive. Furthermore, a surveillance program involving the whole Italian territory has already been drafted and will be applied in Spring 2015.



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**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**Keep calm and don't let the panic spread faster than *Aethina tumida***

**Authors and Affiliations**

**Francesco Nazzi\*, Desiderato Annoscia**

Dipartimento di Scienze Agrarie e Ambientali  
Università degli Studi di Udine  
Via delle Scienze, 206  
33100 Udine, Italy

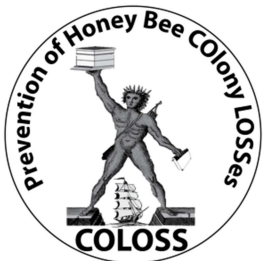
[francesco.nazzi@uniud.it](mailto:francesco.nazzi@uniud.it) - +39 0432 558513

**Text of Abstract (maximum 400 words)**

The most appropriate first reaction to any sudden emergency is to maintain the clear mind that is necessary to do the right things at the right time.

The recent history of honeybee pathology taught us that honeybee health is fragile and exposed to a variety of stress factors interacting with each other. In general, there is a need of a clear understanding of the possible impact of any such factor in order to take the most appropriate actions.

We believe that the Small Hive Beetle emergency must be considered along with the other stressors affecting honeybee health, giving to this latter problem the due attention, trying, at the same time, to avoid any disproportionate reaction.



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**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**“Small hive beetle in Italy: what can we expect in the future? incl. outcome of COLOSS meeting”**

**Authors and Affiliations**

**Peter Neumann<sup>1,2</sup>**

<sup>1</sup> Institute of Bee Health, Vetsuisse Faculty, University of Bern, Bern, Switzerland

<sup>2</sup> Department of Zoology and Entomology, University of Pretoria, South Africa

**Text of Abstract**

Small hive beetles, *Aethina tumida*, are scavengers and parasites of social bee colonies originating from sub-Saharan Africa and have now been confirmed from Italy, where eradication efforts are currently being conducted. Based on the biology of this pest and prior experiences in its new ranges in the USA and Australia, this talk will address possible future scenarios for Italian bees and beekeeping taking into account chances for successful eradication of this pest as well as established beetle populations.



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**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**The role of National Center for Verification in Animal Health (CENAPA) in the diagnosis and monitoring of *Aethina tumida* in regions of the Republic Mexican.**

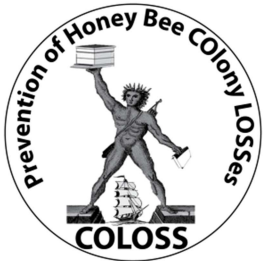
**Authors and Affiliations**

**Juan Diego Perez de la Rosa<sup>a</sup>, Marisol Karina Rocha Martínez<sup>a</sup>, Carlos Enrique Jasso Villazul<sup>a</sup>, José Javier Pérez de la Rosa<sup>a\*</sup>.**

<sup>a</sup>Centro Nacional de Servicios de Constatación en Salud Animal (CENAPA), SENASICA, Carretera Federal México-Cuautla No.8534. Col. Progreso, Jiutepec, Morelos, México. C.P.62550. email address: [josej.perez@senasica.gob.mx](mailto:josej.perez@senasica.gob.mx), phone number: 55 5905 1000 ext. 53147

**Text of Abstract**

In the sector of the rural population around 400, 000 beekeepers with few resources economic could be affected by the introduction and spread of *A. tumida* in regions of Mexico, where is not yet confirmed the presence of this coleopteran, placing at risk the honey production and loss of hives. Also the risk of contamination of the products of the honey bees with the use of chemicals products and consequently noncompliance with European standards and the programs safety of quality of the honey in Mexico. In this project, was carried out the monitoring of apiaries suspect to SBH during the years 2011, 2012 and 2013. The identification of the coleoptera was realized with morphological analysis of larvae and adults, while the confirmation was performed with molecular techniques. Briefly, after carrying out the morphological analysis, was performed the extraction of nucleic acids using a non-destructive method (to allow the preservation of the specimens for subsequent analysis). The DNA obtained from the specimens was amplified by PCR end point, the primers used in this study were designed based in the region of the gene citocromo C oxidase I (COI) from mitochondrial DNA. Amplicons generated by PCR were cloned and sequenced to confirm the presence of *A. tumida*. The analyzing sequences using the algorithm Blast (megablast) showed more than 99% homology to *Aethina tumida* with sequences previously reported in the GenBank. Since the first outbreak of *A. tumida* in Northern of the Mexican Republic in October 2007, the federal government followed the guidelines for the containment of *Aethina tumida* (affected apiaries were destroyed by burning, epidemiological surveillance, newsletters to the beekeepers, restriction in mobilization of apiaries). However the results obtained in this study during three years demonstrated the presence of *A. tumida* not only in the region North of Mexico, but also in apiaries of region Central-North and Southeast of the Mexican Republic. Despite all efforts, our containment system is not functioning properly, therefore it is necessary to make a



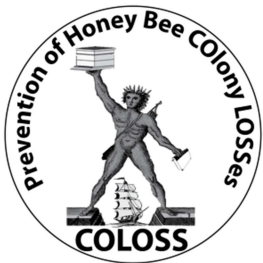
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review of the strategic points to determine which are the points that are not working properly to avoid the spread to *A. tumida* in others regions of the Republic Mexican.



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### Abstract form

#### Title

Small hive beetles in the United States

#### Authors and Affiliations

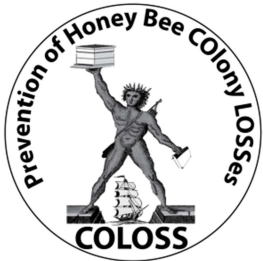
Jeff Pettis

USDA Agricultural Research Service, Beltsville, MD, USA. 301 504-7299,  
jeff.pettis@ars.usda.gov

#### Text of Abstract

The small hive beetle was first collected in 1996 in South Carolina but not observed as a pest until two years later, 1998, in Florida. Surveys in 1998 found the beetle to be present in four adjacent states in the South Eastern US, Florida, Georgia, and North and South Carolina. By 2002 the beetle was reported in 27 states in the central and eastern US and this rapid spread is likely due to the long distance transport of bee colonies for pollination. Genetic analysis of beetles in the US showed them to be very similar to beetles in South Africa and Botswana but how the beetles reached the US remains a mystery. Bee swarms on ships, movement of SHB in trade goods, fruit, soil etc., or SHB being present in bees or queens smuggled into the US are all possible means of introduction.

Beekeepers did begin to have problems with SHB as it moved to new areas but they also learned simple management tricks to reduce but not eliminate beetle damage. Bee breeders in the SE US had problems with SHB infesting the small queen mating colonies in nucs and many beekeepers had larval damage to honey supers that were stored before being extracted. Beekeepers adapted by and using baited traps in the mating nucs and learning to extract honey in 3-5 days or limit the amount of brood and pollen in the honey combs; often by using queen excluders. Other adaptations included removing weak or dead hives and managing strong colonies without a great deal of unprotected comb; or comb with no adult bee coverage. Beetles also appear to prefer hives in the shade to hives in the sun and will seek out weak or queenless hives to infest. Small hives beetles have caused changes in management but have not been as problematic as Varroa mites in the US. The beetle is well established and causes the most damage in the warmer moist areas such as the Southeast and is less problematic in the drier areas and the colder northern states. Cold alone will not prevent SHB problems as a few beetles brought into a warm honey house can ruin a crop of honey and cause beetle numbers to increase locally if the larvae escape the honey house and pupate in the soil. Beekeepers have learned to adapt their management in

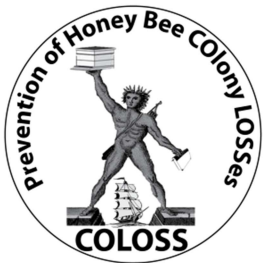


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both the apiaries and honey house to limit the impact of small hive beetles. That said the US and US beekeepers would be better off if SHB had never reached its shores. We need to know how the beetle is moving to new areas like the US, Australia and now Italy or it is likely to spread to all areas of the world.



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**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**Practical tips for the inspection of the hives in case of low levels *Aethina tumida* infestation: the italian case**

**Authors and Affiliations**

**<sup>1</sup>Marco Pietropaoli, <sup>2</sup>Andrea Maroni Ponti, <sup>3</sup>Francesco Artese, <sup>1</sup>Giovanni Formato\***

<sup>1</sup>Istituto Zooprofilattico Sperimentale del Lazio e della Toscana  
Via Appia Nuova 1411 – 00178 Rome

\* <[giovanni.formato@izslt.it](mailto:giovanni.formato@izslt.it)>; +39.349.5330816 (mobile); +39/0679099328 (work)

<sup>2</sup>Ministry of Health

<sup>3</sup>FAI Calabria

**Text of Abstract**

*Aethina tumida* (Small Hive Beetle, SHB), native coleoptera of sub-Saharan Africa, was discovered in 1996 in colonies of European subspecies of honey bees in the south-eastern USA and over a decade has established over the USA and part of Australia. In September 2014 it was officially detected in Calabria (southern Italy, EU).

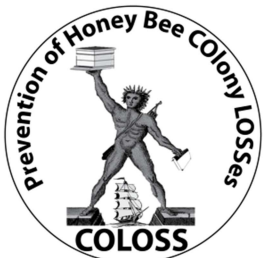
As verified during our hive inspections in Calabria, the SHB identification in the hives was very difficult due to: the low-density of the parasite in the hives, the SHB dark colour of the body and the behaviour of this pest to escape from light, hiding in crevices or cavity of the hives. In this conditions, specific techniques were realized to optimize the beetle detection.

To inspect the hives the best technique resulted in the extraction and in the inspection in sequence of all the single frames, except the last one; finally, this last frame was extracted very quickly and the focus had to be posed to observe carefully the angles of the bottom hive to search for the adults of SHB.

Moreover, some behavioural characteristics of *Aethina tumida* not cited in the references was observed, probably due to the low infestation levels of the parasite in the italian outbreaks: the presence of the beetle was more probable in strong colonies/apiaries than in the weaker ones; it was easier to find the beetle on new/clear comb, than on darkened combs. Finally, we observed that the beehives located on open fields, resulted quicker infested than those located in the shadow.

Considering the above mentioned characteristics and the particular behaviour noted in the SHB in Italy, we realized a didactic video for beekeepers to ease and hasten the identification of this new pest (<http://www.izslt.it/apicoltura/aggiornamento-su-aethina-tumida-video/>).





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## COLOSS Workshop and Extension Day

“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

A small hive beetle lesson from Africa

#### Authors and Affiliations

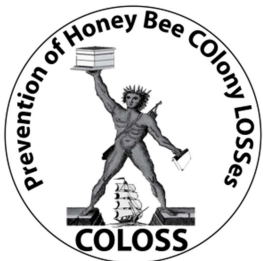
Christian W W Pirk

Social Insect Research Group, Department of Zoology & Entomology, University of Pretoria, South Africa

[cwwpirk@zoology.up.ac.za](mailto:cwwpirk@zoology.up.ac.za)

#### Text of the Abstract

Small hive beetle (*Aethina tumida*) is native to sub-saharan Africa and till 1990 it was largely ignored by the research community. Only since its introduction in Northern America, small hive beetle (SHB) research has gathered momentum due to the the devastating effects on honeybees of European origin. Being a major pests in its new distribution area and only of minor importance in its native area raised questions the interactions between the host subspecies and SHB. Based on our present knowledge there are no qualitative differences between the subspecies with respect to SHB but rather quantitative which could potentially explain the different level of susceptibility. The lesson from Africa is that small differences, like for example general activity levels of the individual honeybees, and also interactions between SHB and other pests might result in small hive beetle being such a low level problem in southern Africa.



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**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**Observations on the impact of small hive beetle *Aethina tumida* on local beekeeping in Sub-Saharan Africa**

**Authors and Affiliations**

**Marco Porporato<sup>(1)</sup> \*, Daniela Laurino<sup>(1)</sup>, Aulo Manino<sup>(1)</sup>**

<sup>(1)</sup> Dipartimento di Scienze Agrarie, Forestali e Alimentari

\*Largo Paolo Braccini 2 – 10095 Grugliasco (Torino) Italy

[marco.porporato@unito.it](mailto:marco.porporato@unito.it) - +39 011 6708584

**Text of the Abstract**

During the years 2001-2010, several Sub-Saharan Africa beekeepers were contacted and their apiaries, both of traditional model and/or top-bar hives were visited, in the context of cooperation projects in Burkina Faso, Niger and Mali.

Beekeepers working with traditional straw, wood or earthenware hives don't visit their hives, except for honey removal, they don't assess colony development, and often they aren't even able to recognize pests, parasites and other causes of failed productions. When they are able to identify a parasite, they don't know its development cycle and its real impact on bees. On the contrary, beekeepers using top-bar hives are able to visit their colonies during the year - although this activity is very little practiced - and have the opportunity to observe the presence of any anomaly. Sanitary problems, however, are little known and beekeepers aren't able to assess damage caused by the presence of parasites.

*Aethina tumida* was found in every visited beehive and a high presence of adults was observed in any top-bar hive, because they are hiding within the space between top-bar and roof, mainly as a consequence of an unsatisfactory top-bar lay down at the end of the visit to the colony.

The local honey bees, which belong to the subspecies *Apis mellifera adansonii*, seem able to withstand fairly well the presence of *A. tumida*, but they are prone to absconding when the population of the parasites becomes too high. Beehive deserting by honey bees is not particularly worried by beekeepers, since they are not interested into colony development according to the nectar or honeydew flows. In general, traditional beekeepers usually are satisfied of the honey harvest they can get at end of blooms.



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**COLOSS Workshop and Extension Day**  
**“A European strategy for small hive beetles *Aethina tumida*”**  
**Bologna (Italy), 19th February, 2015**

**Abstract form**

**Title**

**Poland as a potential new region for *Aethina tumida* population establishment**

**Authors and Affiliations**

**Grażyna Topolska\*, Anna Gajda, Urszula Grzęda,**

Laboratory of Bee Diseases, Faculty of Veterinary Medicine, Warsaw University of Life Sciences,  
Ciszewskiego 8, 02-786 Warsaw, Poland

grazyna\_topolska@sggw.pl, tel +48225936140

**Text of Abstract**

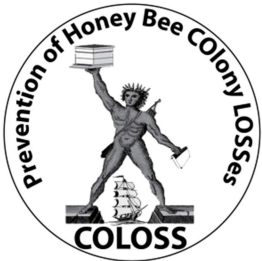
Poland is quite a large country, with about 50 thousand beekeepers and about 1300 thousand bee colonies.

After arrival of *Aethina tumida* to Italy this pest became a very serious threat to Polish apiaries since:

- studies in the USA showed that the adult beetles can survive during winter within the winter clusters inside honey bee colonies, so they can survive Polish winters,
- studies in Ontario showed that minimum development temperature for pupae is between 10.2 and 13.2°C (depending on soil water content) and for instance in the years 2000-2004 on the Polish coast of the Baltic Sea the mean annual temperatures of soil at a depth of 10 cm (suitable for beetle pupation) was 10-11°C.

Also, a limiting factor for eradication of the beetle would be the potential for populations to survive in wild feral bees and bumble bees. What is more, according to unofficial information, during recent years queen bees from the Calabria region were imported to Poland.

In Poland the veterinary service is the only structure involved in the control of bee diseases. Its work is regulated by the Act on animal health protection and fighting against infectious animal diseases. The infestation of small hive beetles is among those diseases incidents of which have to be recorded. However, no action leading towards diagnosis and control is required and no public money can be spent on such an activity. After inclusion of this disease on the list of notifiable diseases, many restrictions in apiaries with outbreaks of the disease (and surroundings) would be necessary. This seems to be too strict in the case of a disease which cannot be eradicated and even limited to a particular region. I have been invited to a series of meetings in the Ministry of Agriculture and Rural Development dedicated to solving recent problems

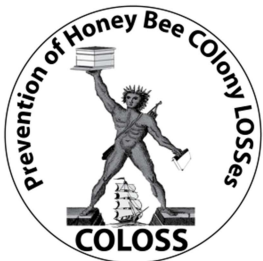


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concerning bee health and one of the main issues is the small hive beetle situation. We are invited speakers at the meetings of many beekeeper organizations and have the unique opportunity to spread the proper information about control measures and diagnostic methods in the case of this pressing matter. Very many beekeepers send various samples to our laboratory, so we would like to be able to also extend our diagnosis to the small hive beetle.



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**Abstract form**

**Title**

**The Norwegian Beekeepers Associations' surveillance project**

**Authors and Affiliations**

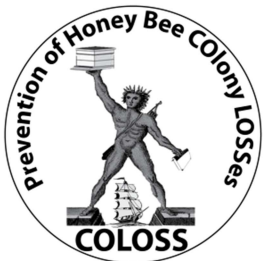
**Flemming Vejsnæs\* & Bjørn Dahle**

Norwegian Beekeepers Association  
Dyrskuveien 20  
2040 Kløfta  
Norway  
fv@norbi.no  
0047 95442069

**Text of Abstract**

Norway has approximately 40.000 bee colonies kept by 3.000 beekeepers mainly in the southern, middle and costal part of the country. Norway has due to the outermost location of Europe a low general disease load. Diseases are general low and varroa is still not spread to the whole country. Winter losses measured by the COLOSS winter loss monitoring is always one of the lowest of the participating countries. Due to the geographic features of the country, it has been possibly to isolate certain diseases to local areas or even wipe them out. Therefore it is important to have a surveillance program on potential new risk factors.

In Norway there is no existing surveillance program in regard to honeybees and trained beekeepers are allowed to check and certify their own colonies. The Norwegian Beekeepers Association is working on the different risk factors that can become a risk in the future in a minor project. As standard we take out additional samples from beekeeper operations, where we are doing other field-testing. In the near future the Norwegian Beekeepers Association will implement a surveillance program, where we will establish observations apiaries on high risk localities. To do this we try to be up to date on relevant new risk factors. At the moment especially the SHB and the situation in Italy.



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## COLOSS Workshop and Extension Day

“A European strategy for small hive beetles *Aethina tumida*”

Bologna (Italy), 19th February, 2015

### Abstract form

#### Title

Activities for surveillance and early identification of small hive beetle (*Aethina tumida*) in Slovenia

#### Authors and Affiliations

**Vlasta Jenčič, Suzana Skerbiš, Lidija Matavž**

Veterinary Faculty University of Ljubljana, National Veterinary Institute

[Vlasta.jencic@vf.uni-lj.si](mailto:Vlasta.jencic@vf.uni-lj.si)

++38614779145

#### Text of Abstract

In Slovenia for small hive beetle (*Aethina tumida*) as an exotic pest of honeybee to the EU several necessary actions are performed. In previous years we have implemented control over the SHB especially in queen breedings. With regard of the EURL for honeybee health the leaflet with basic characteristics for the beetle and its developing stages recognition was translated to Slovene language and published on the website of the Veterinary Faculty as well the Slovene Beekeeping Society website. The veterinary team of the National Veterinary Institute also included the topic of small hive beetle in their lectures for the beekeepers. Since the small hive beetle has been found in South Italy we are aware that the risk of its introduction to Slovenia is even higher. With regard with this risk we have intensified the earlier activities. The program for the active control for the presence of hive beetle of certain number of apiaries and bee colonies has been created which will be realized through the next beekeeping year. With the cooperation of Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection we have prepared a program of actions in case of introduction of small hive beetle to Slovenia. We are also in the creation of the regulations in the field of the diagnosis and the eradication of the small hive beetle.



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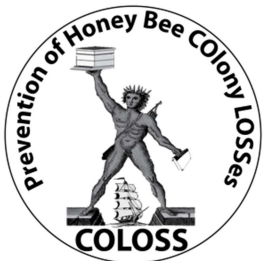


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## Workshop Conclusions (also in Italian)

- 1. Strategy:** Italian, European and global concerted efforts are urgently required to achieve standardized approaches to mitigate SHB impact  
**Strategia:** sforzi concertati a livello italiano, europeo e globale per sviluppare un approccio standardizzato per mitigare l'impatto di *Aethina tumida*
- 2. Research tools:** Specific, sensitive and feasible diagnostics need to be refined to enable reliable and timely use. Gaps in our knowledge (R&D resistance and resilience) need to be researched.  
**Strumenti di ricerca:** metodi diagnostici specifici, sensibili e pratici devono essere migliorati per dare maggiore affidabilità e rapidità nell'uso.
- 3. Awareness:** Raising appropriate awareness and training amongst stakeholders and policy makers, incl. reporting of suspicious SHB finds and adequate compensation  
**Consapevolezza:** fornire le informazioni appropriate e provvedere alla formazione degli operatori del settore, con il fine di segnalare casi sospetti e di fornire compenso adeguato
- 4. Adaptive shift:** from eradication to control and management when SHB is established  
**Cambiamento adattivo:** dall'eradicazione al controllo, quando *A.t.* sarà endemica
- 5. Cooperation:** maintain beekeeper trust to ensure success of any strategy  
**Cooperazione:** mantenere la fiducia degli apicoltori per assicurare il successo di qualsiasi strategia



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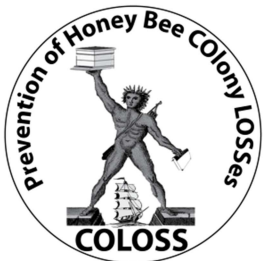
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## List of participants

| N° | Surname       | Name         | Affiliation  | email address  | Country         |
|----|---------------|--------------|--|--|-----------------|
| 1  | Annoscia      | Desiderato   | Università Degli Studi Di Udine  | desiderato.annoscia@uniud.it   | Italy           |
| 2  | Bortolotti    | Lugino       | Azienda Provinciale per i Servizi Sanitari Provincia Autonoma di Trento        | luigino.bortolotti@apss.tn.it  | Italy           |
| 3  | Bouga         | Maria        | Lab of Agricultural Zoology and Entomology, Agricultural University of Athens  | mbouga@aua.gr  | Greece          |
| 4  | Cabbri        | Riccardo     | CRA-API  | riccardo.cabbri@entecra.it   | Italy           |
| 5  | Carreck       | Norman       | International Bee Research Association   | <a href="mailto:norman.carreck@btinternet.com">norman.carreck@btinternet.com</a>     | United Kingdom  |
| 6  | Chauzat       | Marie-Pierre | ANSES  | <a href="mailto:Marie-pierre.chauzat@anses.fr">Marie-pierre.chauzat@anses.fr</a>     | France          |
| 7  | Cornelissen   | Bram         | bees@wur, WageningenUR   | Bram.Cornelissen@wur.nl  | The Netherlands |
| 8  | Costa         | Cecilia      | CRA-API  | cecilia.costa@entecra.it   | Italy           |
| 9  | Derakhshifar  | Irmgard      | AGES, Department for Apiculture and Bee Protection                             | irmgard.derakhshifar@ages.at   | Austria         |
| 10 | Di Prisco     | Gennaro      | University of Napoli Federico II   | gennaro.diprisco@unina.it  | Italy           |
| 11 | Emmanouil     | Nikolaos     | Lab of Agricultural Zoology and Entomology, Agricultural University of Athens  | ceaz2emn@aua.gr  | Greece          |
| 12 | Fontana       | Paolo        | Fondazione Edmund Mach   | paolo_api.fontana@fmach.it   | Italy           |
| 13 | Formato       | Giovanni     | Istituto Zooprofilattico Sperimentale Del Lazio E Della Toscana                | giovanni.formato@izslt.it  | Italy           |
| 14 | Hatjina       | Fani         | Division of Apiculture- Inst. of Animal Science, Hell. Agr. Org. 'DEMETER'     | fani.hatjina@yahoo.com   | Greece          |
| 15 | Higes Pascual | Mariano      | Centro Apicola Marchamalo  | mhiges@jccm.es   | Spain           |
| 16 | Jenčič        | Vlasta       | Veterinary Faculty University of Ljubljana, National Veterinary Institute      | vlasta.jencic@vf.uni-lj.si   | Slovenia        |
| 17 | Kristiansen   | Preben       | Swedish Beekeepers Association   | <a href="mailto:preben.kristiansen@biodlarna.se">preben.kristiansen@biodlarna.se</a> | Sweden          |
| 18 | Lara Alvarez  | Luis Gerardo | Servicios Apicolos de Querétaro  | laraluis.gerardo@gmail.com   | Mexico          |
| 19 | Laurino       | Daniela      | Università di Torino - Dipartimento di Scienze Agrarie, Forestali e Alimentari | daniela.laurino@unito.it   | Italy           |
| 20 | Lodesani      | Marco        | CRA-API  | <a href="mailto:marco.lodesani@entecra.it">marco.lodesani@entecra.it</a>             | Italy           |
| 21 | Malagnini     | Valeria      | Fondazione Edmund Mach   | valeria.malagnini@fmach.it   | Italy           |



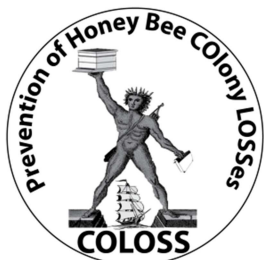


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|    |                  |             |   |  |              |
|----|------------------|-------------|---|--|--------------|
| 22 | Manino           | Aulo        | DISAFA – Università di Torino   | Aulo.manino@unito.it   | Italy        |
| 23 | Martín Hernández | Raquel      | Centro Apícola Marchamalo   | rmhernandez@jccm.es  | Spain        |
| 24 | Matavž           | Lidija      | Veterinary Faculty University of Ljubljana, National Veterinary Institute, Unite Murska Sobota      | lidija.matavz@vf.uni-lj.si   | Slovenia     |
| 25 | Mortarino        | Michele     | University of Milan   | Michele.mortarino@unimi.it   | Italy        |
| 26 | Mustafa          | Sandra      | Apicultural State Institute, University of Hohenheim Stuttgart                                      | s.mustafa@gmx.net  | Germany      |
| 27 | Mutinelli        | Franco      | Istituto Zooprofilattico Sperimentale delle Venezie   | <a href="mailto:fmutinelli@izsvenezie.it">fmutinelli@izsvenezie.it</a>                 | Italy        |
| 29 | Nanetti          | Antonio     | CRA-API   | <a href="mailto:antonio.nanetti@entecra.it">antonio.nanetti@entecra.it</a>             | Italy        |
| 30 | Nazzi            | Francesco   | Università Degli Studi Di Udine   | francesco.nazzi@uniud.it   | Italy        |
| 31 | Neumann          | Peter       | Institute of Bee Health, Vetsuisse Faculty, University of Bern                                      | <a href="mailto:peter.neumann@vetsuisse.unibe.ch">peter.neumann@vetsuisse.unibe.ch</a> | Switzerland  |
| 32 | Otten            | Christoph   | DLR Fachzentrum Bienen  | Christoph.Otten@dlr.rlp.de   | Germany      |
| 33 | Perez De La Rosa | Jose Javier | Centro Nacional de Servicios de Constatación en Salud Animal  | josej.perez@senasica.gob.mx  | Mexico       |
| 34 | Pettis           | Jeff        | USDA Agricultural Research Service  | jeff.pettis@ars.usda.gov   | USA          |
| 35 | Pietropaoli      | Marco       | Istituto Zooprofilattico Sperimentale Del Lazio E Della Toscana                                     | marco.pietropaoli@izslt.it   | Italy        |
| 36 | Pirk             | Christian   | Department of Zoology & Entomology, Social Insect Research Group (SIRG), University of Pretoria     | <a href="mailto:cwwpirk@zoology.up.ac.za">cwwpirk@zoology.up.ac.za</a>                 | South Africa |
| 37 | Porporato        | Marco       | Università di Torino - Dipartimento di Scienze Agrarie, Forestali e Alimentari                      | marco.porporato@unito.it   | Italy        |
| 38 | Ritter           | Wolfgang    |   | bienen@gmx.de  | Germany      |
| 39 | Rodriguez        | Cristina    | Centro Apícola Marchamalo   | crodriguezgarcia@externas.jccm.es  | Spain        |
| 40 | Schäfer          | Marc        | Friedrich-Loeffler-Institut   | marc.schaefer@fli.bund.de  | Germany      |
| 41 | Schiebel         | Fabian      | Bee Institute, University of Hohenheim  | Fabian.Schiebel@uni-hohenheim.de   | Germany      |
| 42 | Sesso            | Lorenzo     | University of Milan   | Lorenzo.sesso@gmail.com  | Italy        |
| 43 | Skerbiš          | Suzana      | Veterinary Faculty University of Ljubljana, National Veterinary Institute                           | suzana.skerbis@vf.uni-lj.si  | Slovenia     |
| 44 | Tlak Gajger      | Ivana       | Department for Biology and Pathology of Fish and Bees, Faculty of Veterinary Medicine University of | ivana.tlak@vef.hr  | Croatia      |



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|----|--------------|----------|--|--|---------|
|    |              |          | Zagreb   |  |         |
| 45 | Tomljanovic  | Zlatko   | Advisory service   | zlatko.tomljanovic@savjetodavna.hr           | Croatia |
| 46 | Topolska     | Grażyna  | Laboratory of Bee Diseases, Faculty of Veterinary Medicine, Warsaw University of Life Sciences | grazyna_topolska@sggw.pl                     | Poland  |
| 47 | Tosi         | Simone   | Università di Bologna  | s.tosi@unibo.it                              | Italy   |
| 48 | Vallon       | Julien   | ITSAP-Institut de l'abeille  | julien.vallon@itsap.asso.fr                  | France  |
| 49 | Vanderdussen | David    | NOD Apiary Products Ltd.   | davidv@nodglobal.com                         | Canada  |
| 50 | Vejsnæs      | Flemming | Norwegian Beekeepers Association   | <a href="mailto:fv@norbi.no">fv@norbi.no</a> | Norway  |
| 51 | Venturini    | Nicola   | Aboca  | nventurini@aboca.it                          | Italy   |
| 52 | Zardin       | Erika    | Fraunhofer Institute IVV   | erika.zardin@ivv.fraunhofer.de               | Germany |