OP-145 [Bee Health]
World Honey Bee Health – A COLOSS effort to monitor the global distribution of Apis mellifera pests and pathogens

James D. Ellis[1], Mohamed Alburaki[2], Humberto Boncristiani[3], Maria Bouga[4], Neloy Kumar Chakroborty[5], Samir M. Kadri[6], Irfan Kandemir[7], Ashley N. Mortensen8, Beatrice Nganso[9], Victoria Soroker[10], Guntima Suwannapong[11]
[1]Entomology and Nematology Department, University of Florida, Gainesville, Florida, USA
[2]Bee Research Laboratory, United States Department of Agriculture, Beltsville, Maryland, USA
[3]Inside the Hive Media & Consulting Inc., Odenton, Maryland, USA
[4]Laboratory of Agricultural Zoology and Entomology, Agricultural University, Athens, Greece
[5]Department of Cognitive Science, Thapar School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Punjab, India
[6]Animal Production Department, Faculty of Agrarian and Technological Sciences, Sao Paulo State University, Dracena, Brazil
[7]Department of Biology, Ankara University, Ankara, Türkiye
[8]Bee Biology and Productivity Team, The New Zealand Institute for Plant and Food Research Ltd., Hamilton, New Zealand
[9]Environmental Health Theme, International Centre of Insect Physiology and Ecology, Nairobi, Kenya
[10]Department of Entomology, Chemistry, and Nematology, Volcani Center, Rishon LeZion, Israel
[11]Department of Biology, Burapha University, Chon Buri, Thailand

The health of managed colonies of western honey bees (Apis mellifera) is a topic of international concern given the importance of honey bees to crop pollination, the overall function of natural ecosystems, and the improvement of human livelihoods through the sale of bee products. Honey bees host a suite of pests and pathogens that can compromise colony health. Knowing the global distribution of these pests and pathogens is key to developing strategies for their control and limiting their spread. In 2022, a group of scientists within the COLOSS Honey Bee Research Association (https://coloss.org/) created the World Honey Bee Health (WHBH) Task Force. The purposes of this Task Force are to monitor and document the global distribution of western honey bee pests and pathogens based on specific criteria and serve as a resource for the honey bee research community and related authorities who make science-based decisions that will improve the health of honey bees and the sustainability of beekeeping globally. We developed a website (www.worldhoneybeehealth.com) where we uploaded pest/pathogen distribution maps and tables that we can modify in real time as distributions change or more information becomes available. Furthermore, anyone can download all pests/pathogen distribution tables and maps and use them as open-source material in presentations, reports, manuscripts, and other printed material. Soon, we will finish mapping the global distribution of Varroa destructor. The results allow us to link V. destructor infestation level (# mites/100 adult bees) and prevalence (% of colonies positive for the mite) to temporal and spatial data. We will upload the results to the WHBH website and publish them as an open access database and citable refereed manuscript. Following this, we will begin developing databases to map the distributions of other honey bee pests and pathogens. Our efforts will allow the honey bee community to make science-based decisions that will improve the health of honey bees and the sustainability of beekeeping globally. We believe that the resources we develop will be a valuable tool to scientists, regulators, industry officials, beekeepers, and more as we all work together to improve the health of this invaluable bee species.

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*(jdellis@ufl.edu)
Gahan Endowed Professor
Entomology and Nematology Department
University of Florida

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Presentation and Abstract Coauthors:

1. **Mohamed Alburaki**, Bee Research Laboratory, United States Department of Agriculture, Beltsville, Maryland, USA - 0000-0003-4441-9391
2. **Humberto Boncristiani**, Inside the Hive Media & Consulting Inc., Odenton, Maryland, USA, 0000-0003-4782-7374
3. **Maria Bouga**, Laboratory of Agricultural Zoology and Entomology, Agricultural University, Athens, Greece, 0000-0001-7493-9158
4. **Neloy Chakroborty**, Department of Cognitive Science, Thapar School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Punjab, India, 0000-0001-8616-955X
5. **Samir M. Kadri**, Animal Production Department, Faculty of Agrarian and Technological Sciences, Sao Paulo State University, Dracena, Brazil, 0000-0003-4040-9735
6. **Irfan Kandemir**, Department of Biology, Ankara University, Ankara, Türkiye, 0000-0002-2888-1044
7. **Ashley N. Mortensen**, Bee Biology and Productivity Team, The New Zealand Institute for Bioeconomy Science Ltd., Hamilton, New Zealand, 0000-0002-4560-0574
8. **Beatrice Nganso**, Environmental Health Theme, International Centre of Insect Physiology and Ecology, Nairobi, Kenya, 0000-0001-7785-4600
9. **Victoria Soroker**, Department of Entomology, Chemistry, and Nematology, Volcani Center, Rishon LeZion, Israel, 0000-0002-0110-4931
10. **Guntima Suwannapong**, Department of Biology, Burapha University, Chon Buri, Thailand, 0000-0002-3180-4103

The Western Honey Bee: ***Apis mellifera*** L.

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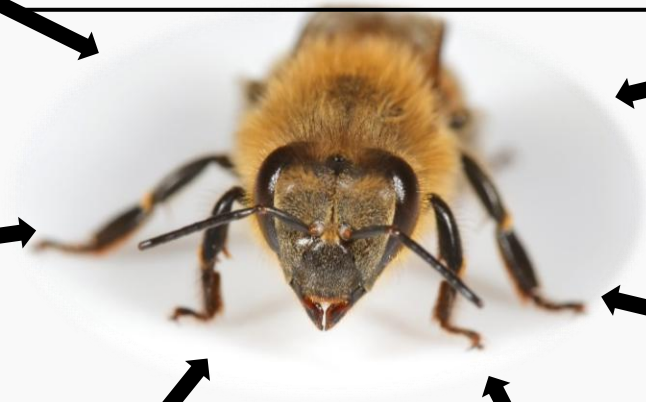
Biotic Stressors of Western Honey Bees

***Varroa*-associated pathogens**

Varroa destructor



Other mites

FDACS-DPI

Insect pests

FDACS-DPI

Fungi

Bacteria

Viruses

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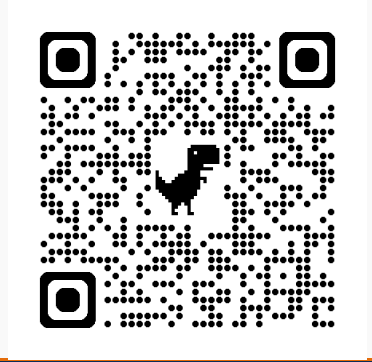
World Honey Bee Health – now a COLOSS Task Force

The purposes of this TF are (1) to monitor and document the global distribution of *Apis mellifera* (western honey bee) pests and pathogens based on specific criteria and (2) to serve as a resource for the honey bee research community and related authorities who make science-based decisions that will improve the health of honey bees and the sustainability of beekeeping globally.



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World Honey Bee Health Task Force Administration

Chair: Jamie Ellis (USA) – jdellis@ufl.edu

Vice Chairs: Maria Bouga (Greece) and Samir Kadri (Brazil) - emails below

Regional Coordinators/Executive Team:

(1) North America - Mohamed Alburaki (USA) - mohamed.alburaki@usda.gov

(2) South America – Samir Kadri (Brazil) - samirmourakadri@gmail.com

(3) Oceania - Ashley Mortensen (New Zealand) - Ashley.Mortensen@plantandfood.co.nz

(4) Russia and Israel – Vicky Soroker (Israel) - sorokerv@volcani.agri.gov.il

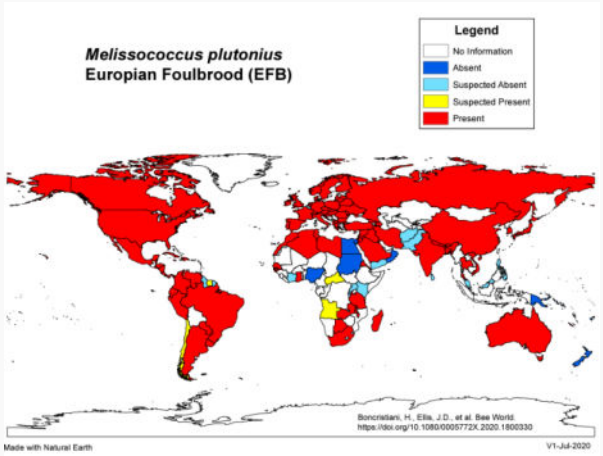
(5) North/Central Asia – Neloy Chakroborty - (India) - neloy.chakroborty@thapar.edu

(6) Southeast Asia – Guntima Suwannapong - (Thailand) - beefambuu@gmail.com

(7) Europe – Maria Bouga (Greece) - mbouga@aua.gr

(8) Africa – Beatrice Nganso (Kenya) - bnganso@icipe.org

(9) Middle East - Irfan Kandemir (Turkey) - ikandemir@gmail.com



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Overview of Existing Website

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World Honey Bee Health – COL

coloss.org/activities/taskforces/whbh/

COLOSS honey bee research association

HOME | WHO WE ARE | WHAT WE DO | BEEBOOK | SUPPORT | JOIN | ACCOUNT

PATHOGENS AND PESTS

What follows is a list of the pathogens and pests known to be associated with honey bees. The criteria used to select the data presented in the tables below can be found HERE.

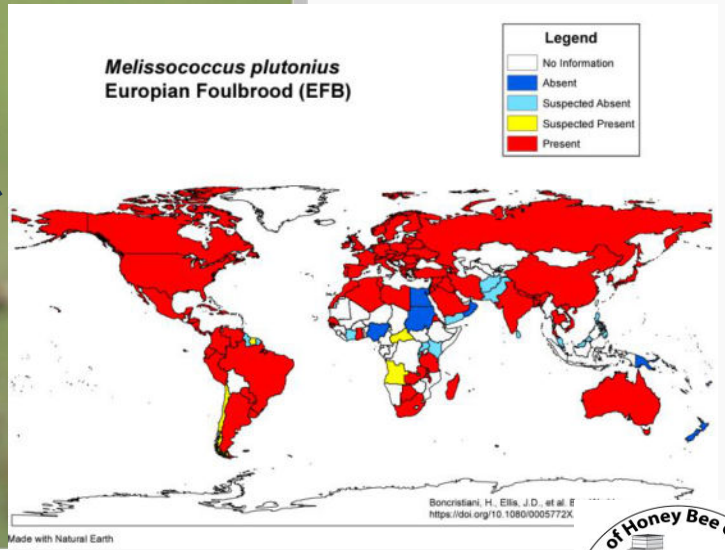
Bacteria

Common name	Organism	Map Link	Table Link
European foulbrood	*Melissococcus plutonius*	MAP	TABLE
American foulbrood	*Paenibacillus larvae*	MAP	TABLE
Spiroplasma apis	*Spiroplasma apis*	MAP	TABLE
Spiroplasma melliferum	*Spiroplasma melliferum*	MAP	TABLE
Wolbachia	*Wolbachia*	MAP	TABLE

Fungi

Chalkbrood	*Ascosphaera apis*	MAP	TABLE
Nosema ceranae	*Nosema ceranae*	MAP	TABLE
Nosema apis	*Nosema apis*	MAP	TABLE
Nosema neumanni	*Nosema neumanni*	MAP	TABLE
Nosema spp.	*Nosema apis + Nosema ceranae + Nosema neumanni*	MAP	TABLE

Facebook



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Our Recent Activities

- The Regional Coordinator Committee meets once monthly to discuss TF goals.
- Held a virtual workshop on collecting and entering *Varroa* data into our database (29 January 2025).
- Developed a comprehensive, global database for *Varroa destructor.* The data are currently being curated and analyzed for a future publication on the global distribution of *V. destructor*.
- Developed a draft database for *Tropilaelaps* spp. Completing this database and developing an accompanying refereed manuscript will be a main goal for 2026.
- Developed a draft manuscript entitled "Best practices for reporting information about pests and pathogens of the Western honey bee (*Apis mellifera* L.) in the refereed literature and formal reports."
- Revised the World Honey Bee Health website, which is now hosted solely at COLOSS.org.
- Presented lecture during the Food and Agriculture Organization of the United Nations/Apimondia/World Organization of Animal Health – World Bee Day Event (16 May 2025).

Current Emphasis: Mapping the Global Distribution of *Varroa destructor*

Countries included in the database

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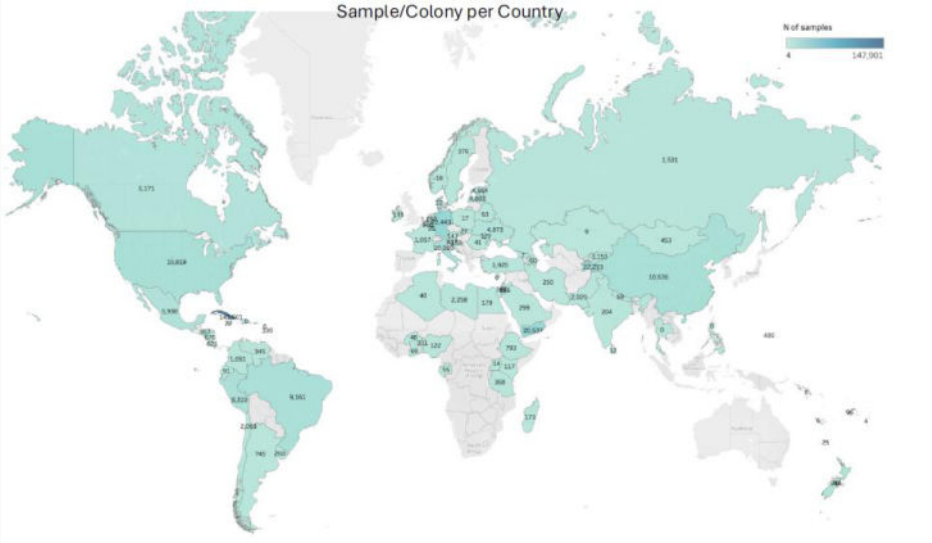
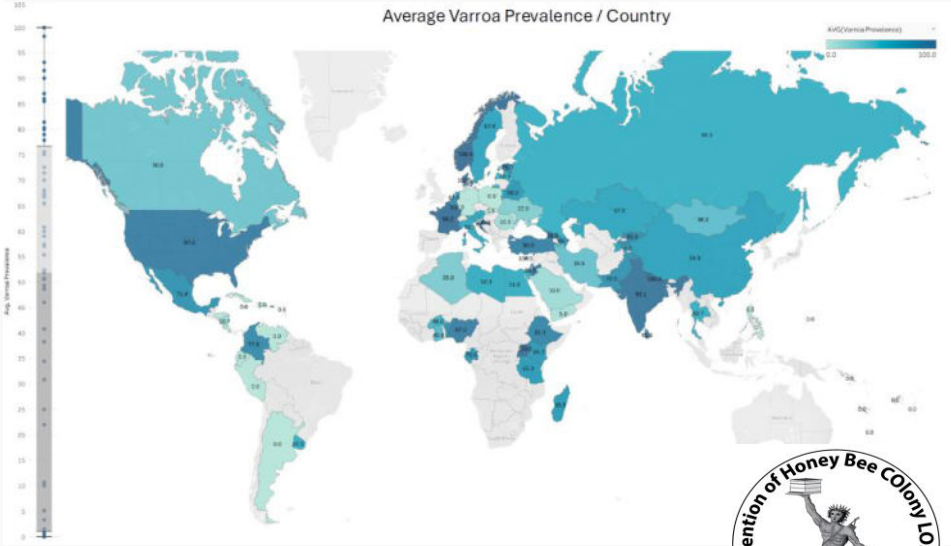
Mapping the Global Distribution of *Varroa destructor*





191 countries in database
V. destructor absent in 12 countries
V. destructor present in 126 countries
No information: 53 countries

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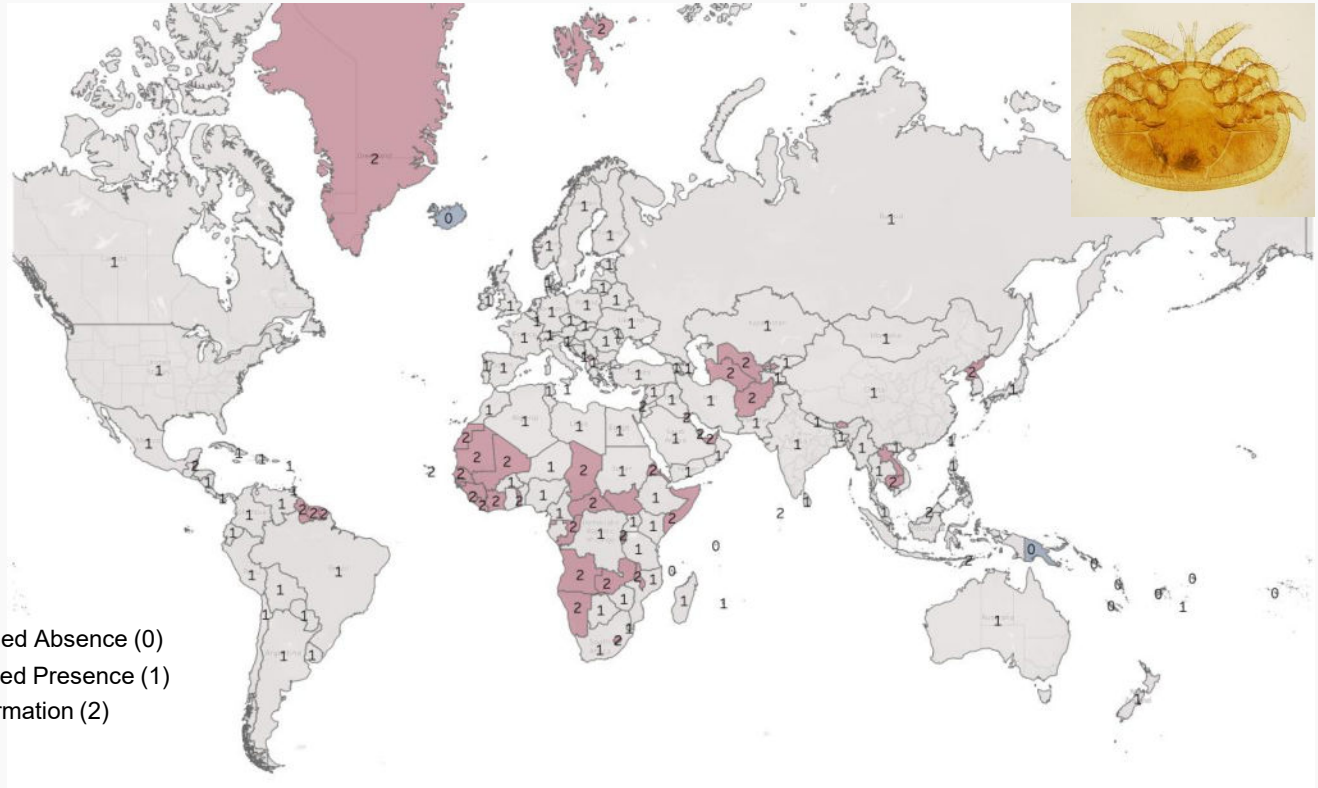
Worldwide *Varroa destructor* Occurrence



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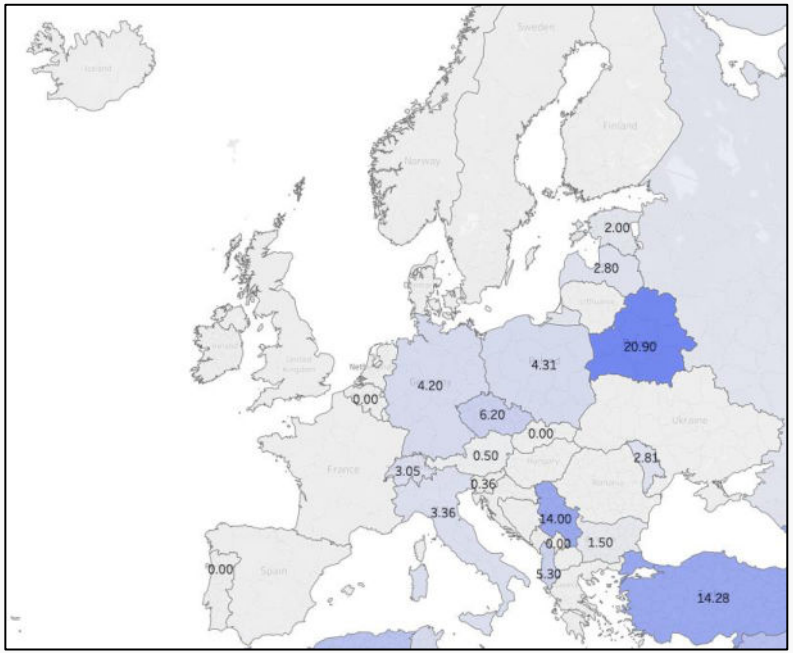
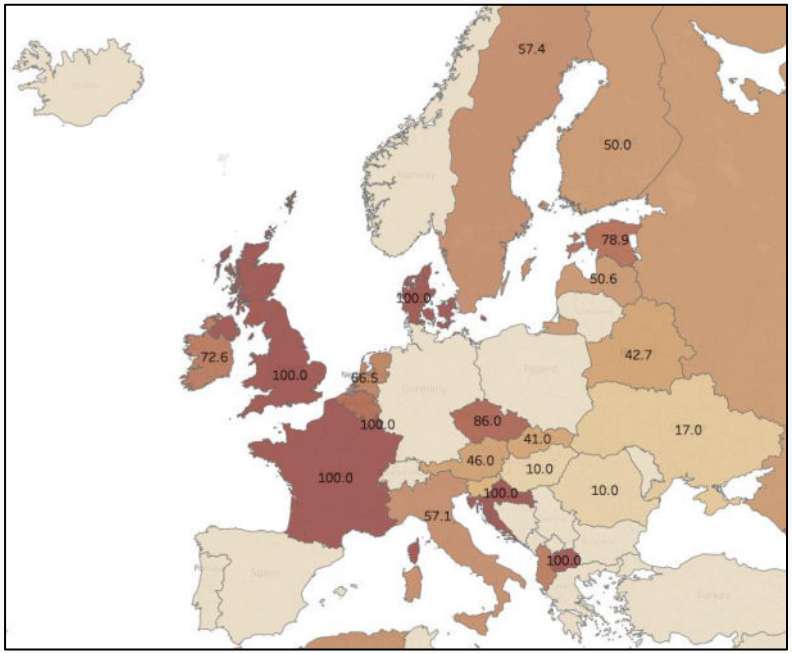
Varroa Incidence Level and Prevalence Data: Example - Europe



Varroa incidence level (VIL) = Average number of *Varroa* per 100 adult bees



Prevalence = Average percentage of samples that were positive for *V. destructor*

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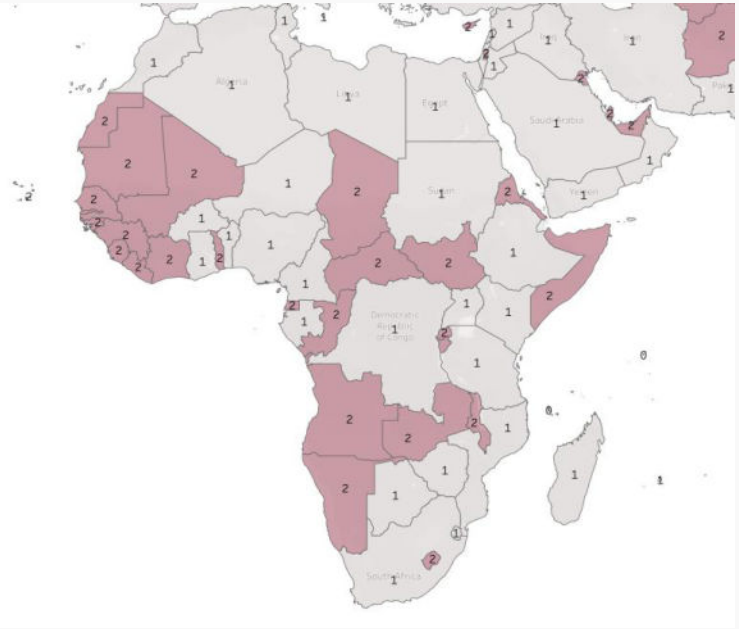
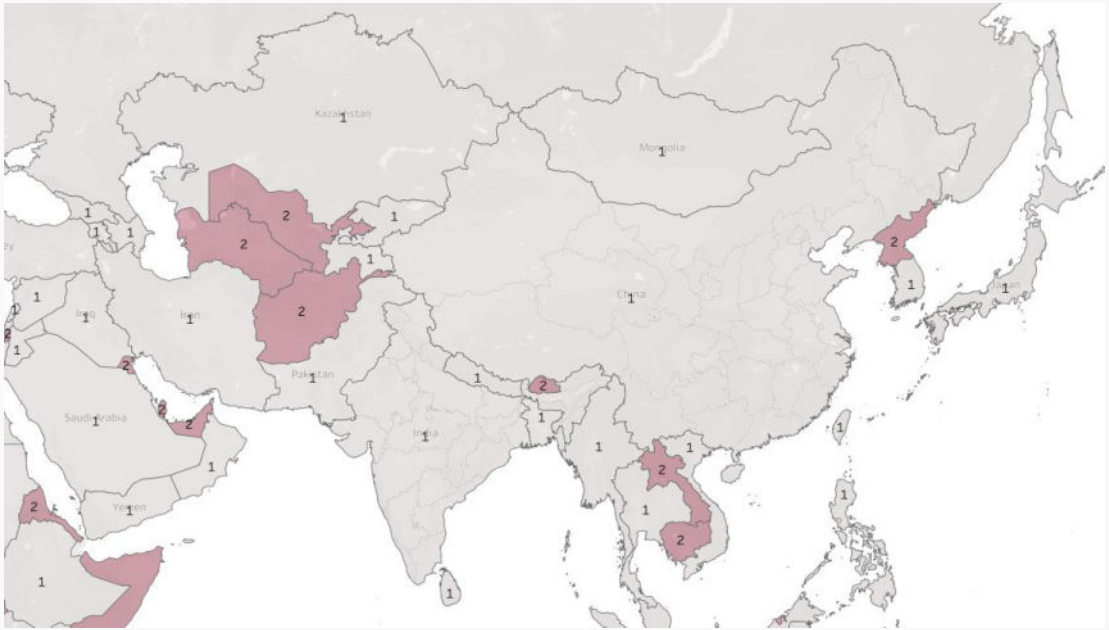
Examples of areas for which we need more information: Africa and Asia





Confirmed Absence (0)
Confirmed Presence (1)
No Information (2)

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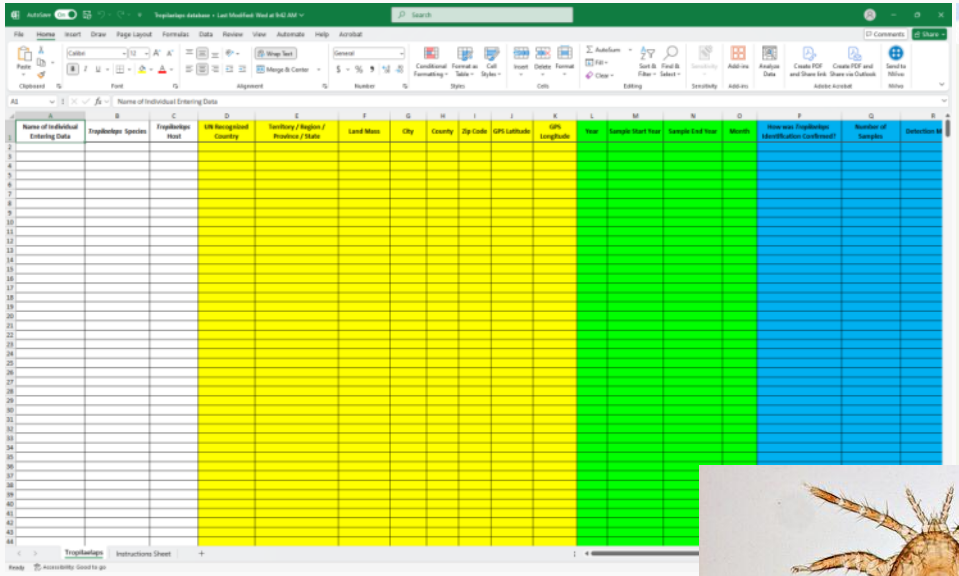
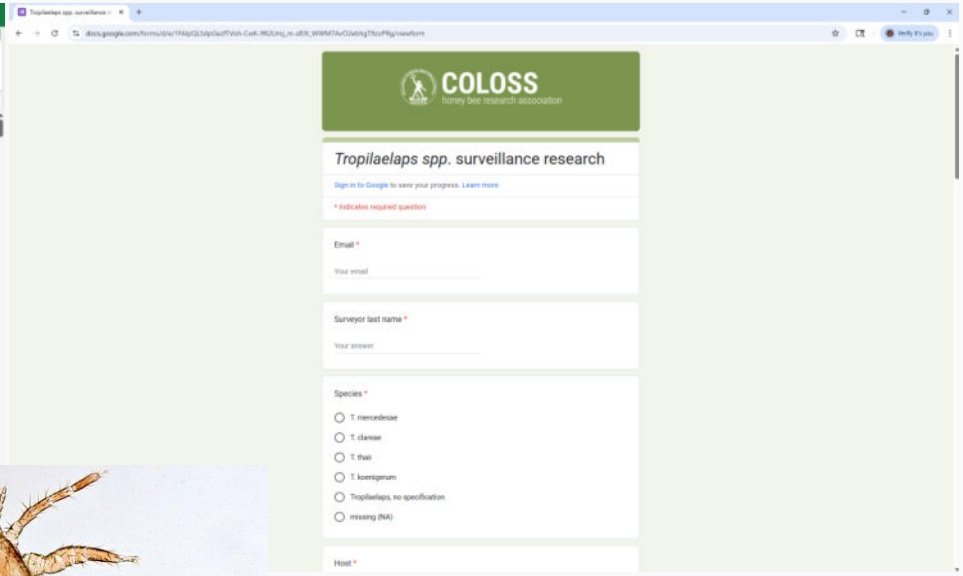
Emphasis in 2026: Map the Global Distribution of *Tropilaelaps* spp.





Pest and Disease Image Library, Bugwood.org

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Long Term Goals of the World Honey Bee Health Task Force

- Development of interactive maps that allow one to visualize organism spread over time.
- Improved resolution to show organism presence in a specific location, not just within a country.
- Provision of links to original manuscripts first documenting presence of a disease/pest in a specific location.
- Increased impetus within under-reporting countries/regions to conduct disease/pathogen surveys.

Michael Bentley

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We need your help! Why join this COLOSS Task Force?

- Opportunity to grow and learn from local, regional, national, and international leaders about honey bee pests and pathogens.
- Can become local ‘go to’ expert on pest/pathogen distribution and biology.
- Contribute to an international body of knowledge on honey bee pest/pathogen distribution and spread.
- Potential for development of collaborative research and extension projects on honey bee pests and pathogens.
- Join international effort to limit spread of honey bee pests and pathogens.
- Be a part of improving honey bee health and beekeeping sustainability.
- A landslide of refereed manuscripts☺.

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Acknowledgements

Our amazing coauthors/collaborators

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Our World Honey Bee Health Task Force members

The entire University of Florida Honey Bee Team

COLOSS's funding partners (logos below)

Thank You for Your Attention.

For more information, visit: **www.UFhoneybee.com**

Follow my laboratory on X, Instagram and Facebook**: @UFhoneybeelab**

Two Bees in a Podcast (visit our laboratory's website)

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Jamie Ellis (jdellis@ufl.edu)
Gahan Endowed Professor
Entomology and Nematology Department
University of Florida