World Organisation for Animal Health

Marc O. Schäfer - - GERMANY

WOAH Reference Laboratory Reports Activities 2025

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Varroosis of of honey bees
***Address of laboratory:**	Südufer 10
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Website:	https://www.fli.de/en/institutes/institute-of-infectology-imed/reference-laboratories/woah-and-nrls-for-bee-diseases/
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr. phil. nat. Marc O. Schäfer, head of the NRL for bee diseases
***Name (including Title and Position) of WOAH Reference Expert:**	Dr. phil. nat. Marc O. Schäfer, head of the NRL for bee diseases
***Which of the following defines your laboratory? Check all that apply:**	Governmental

TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

Diagnostic Test	Indicated in WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
Direct diagnostic tests		Nationally	Internationally
washing of honeybees in ethanol	Yes	87	0
visual identification	Yes	87	1

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

No

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

No

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

No

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAH Members?

No

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

Yes

Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
KOSOVO	Head of Bacteriology and Parasitology Unit of the Food and Veterinary Agency of Kosovo asked for SOPs for isolation of P. larvae, P. alvei and for a protocol on Varroa treatment	We provided 4 treatment protocolls that were produced by the regionsl German bee institutions of Bavaria, Rhineland-Palatinate, Lower Saxony and the one from the university of Hohenheim
CHILE	Médico Veterinario, Parasitología Pecuaria, Subdepto. Laboratorio Pecuario, Servicio Agrícola y Ganadero (SAG), Chile has asked for DNA of Varroa haplotypes	We recommended colleagues in Switzerland
ESTONIA	the Estonian National Centre for Laboratory Research and Risk Assessment (LABRIS) asked about proficiency testing for the detection of Nosema spp and Varroa destructor	I told them that I think such tests on Varroosis are not necessary, as Varroa is omnipresent in many countries and very easy to recognize with the naked eye. Therefore identification is straightforward and no proficiency tests are needed to my opinion. Furthermore, such a test should be on alcohol-wash, sugar-shake, sticky board etc., and those methods do not lend to an easy doable test.

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?

No

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

No

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

No

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

0

b) International conferences:

1
Small hive beetle task force (SHB TF), COLOSS, Copenhagen, Denmark; Annual achievements of the SHB TF, 22.09.2025

c) National conferences:

4
1) Aktuelles zu Tropilaelaps spp. & Aethina tumida; Beratung der AG Bienengesundheit M-V, Rostock, 10.04.2025
2) Tropilaelaps, eine zukünftige Bedrohung für unsere Bienen?, Die Bienen unter dem Druck invasiver Feinde – ohne Bienen gibt es weder Gartenbau noch Landwirtschaft, Brandenburgische Akademie Criewen, 17.03.2025
3) Einfluss von Klimawandel auf Biene und Milbenbefall? Imkerversamlung Imkerverein Insel Usedom e.V., 20.02.2025
4) Tropilaelaps, eine zukünftige Bedrohung für unsere Bienen?, Bioland e.V., online, 12.11.2025

d) Other (Provide website address or link to appropriate information):

8
1) Member of the Advisory Board of the project "Best Practices and Innovations for A Sustainable Beekeeping- B-Thenet" funded by the Horizon Europe Program of the European Commission: HORIZON-CL6-2021-GOVERNANCE-01-28- Grant Agreement number: 101059812 for its duration (from 01/09/2022 to 31/08/2026); https://www.bthenet.eu/
2) WOAH Terrestrial Manual; Chapter on Tropilaelaps was updated together with ANSES
3) WOAH Terrestrial Manual; Chapter on Aethina tumida was updated together with ANSES
4) Poster AG Tagung, Freiburg, Germany; SEA BEE: A voyage from research to industry; Sandra Ehrenberg, Lukas Rüttinger, Alina Eilers, Stas Hans, Marc O. Schäfer, Robert Kammerer
5) Poster AG Tagung, Freiburg, Germany; German bee monitoring: Monitoring results from the bee season 2023/2024; Tabea Streicher, Elke Genersch, Marina Meixner, Gretje Petersen, Marc O. Schäfer, Christoph Otten, Stefan Berg, Kirsten S. Trayner et al.
6) Poster One Health meeting Western Pomerania, Greifswald, Germany; BIODI-OH: Biodiversität erleben; Marc O. Schäfer
7) Poster Apimondia, Copenhagen, Denmark; The German Bee Monitoring Project: pestiside residues in stored pollen from 2009 tp 2024 reflects changes in agricultural practices; Kirsten S. Traynor, Elke Genersch, Marina Meixner, Christoph Otten, Stefan Berg, Gretje Petersen, Marc O. Schäfer, Tabea Streicher
8) Poster Apimondia, Copenhagen, Denmark; Diseases and parasites in managed honey bees in Europe; Severine Matthijs, Coby van Dooremalen, Dirk C. de Graaf, Marc O. Schäfer

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?

No

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
DIN EN ISCVIEC 17025:2018	Akkreditierungsurkunde_2024.pdf	Akkreditierungsurkunde_2024.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Identification of Varroa destructor	Deutsche Akkreditierungsstelle GmbH (DAkkS)

20. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

Yes

Extensive biosecurity management with monthly meetings of a biosecurity council including an ethical council for validation of gainoffunction/ DURC-related research.

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

No

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?

Yes

24. Are you a member of a network of WOAH Reference Laboratories designated for the same pathogen?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS
WOAH Reference Laboratories designated for Varroosis	Member	3	FLI (Germany), ANSES (France), MPI (New Zealand)

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAH Ref. Labs/ organising WOAH Ref Lab
Identification of Varroa destructor by morphological examination	Organizer	2	FLI (Germany), ANSES (France)

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

No

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen during the past 2 years?

No

We routinely perform diagnostic tests for Varroosis and regularly discuss the disease with colleagues at scientific meetings and in many presentations that I gave. Varroosis is a frequent topic in my professional exchanges with colleagues worldwide, esspecially now that Tropilaelaps mites are on their way to Europe.
However, Varroosis is ubiquitous. Varroosis diagnosis relies on visual identification of mites, which is straightforward due to their size and their characteristic morphology. Therefore, no proficiency tests are needed to my opinion. The standard diagnostic method (washing adult bees) is routinely performed in our lab, with samples received annually from various German apiaries as part of the national bee monitoring project.
Due to the nature of Varroa sampling, interlaboratory proficiency testing is not practical, as sample variability precludes standardized comparison.

TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOAH?

Yes

Kind of consultancy	Location	Subject (facultative)
Revision of the chapter of the WOAH Terrestrial Manual on Tropilaelaps	Not applicable	The revision was carried out in collaboration with ANSES (France), the WHOA reference laboratory for Tropilaelaps

29. Additional comments regarding your report:

Yes

Varroosis is very well known by honey bee scientists and beekeepers worldwide and only a few locations where honey bees are kept are still free of infestation with Varroa spp.. Therefore, also diagnostic methods are well known and already described in the Terrestrial Manual. Varroosis is either diagnosed by catching Varroa spp. on the bottom of colonies, when it naturally falls of bees, or adult bees are sampled from colonies to count the number of mites that are attached to the adult bees. Also sampling of honey bee brood is often performed by carefully opening the capped cells to count the numbers of infested cells and/or the number of mother mites and their offspring inside single cells. The washing of adult bee samples in ethanol to dislocate and count the mites, is routinely performed in our lab, with samples received three times per season from various German apiaries as part of a national bee monitoring project. However, all these tests are not practical for proficiency tests, as sample variability

precludes standardized comparison.
The identification of Varroa spp. relies on visual identification of mites, which is straightforward due to their size and their characteristic morphology. Therefore, to my opinion, no proficiency tests are needed. However, our laboratory organized a bilateral proficiency test with the French WOAH reference laboratory for Varroosis (ANSES), where different parasites of honey bees have to be identified visually in December 2025.
Together with the WOAH reference laboratories of ANSES (France) and MPI (New Zealand) we are regularly having virtual meetings to discuss about joint actions. Therefore, we are discussing our activities on Varroosis at least once a year.