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# Reliability of Morphological and PCR Methods for the Official Diagnosis of *Aethina tumida*: A European Inter-Laboratory Comparison

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**The Small Hive Beetle**  
**An invasive scavenger of honeybees**  
 Most of Europe free from this pest  
*A. tumida* only present in the South of Italy

**Early detection is crucial in case of introduction:**

Awareness of beekeepers

Field surveillance

Sentitive detection tools

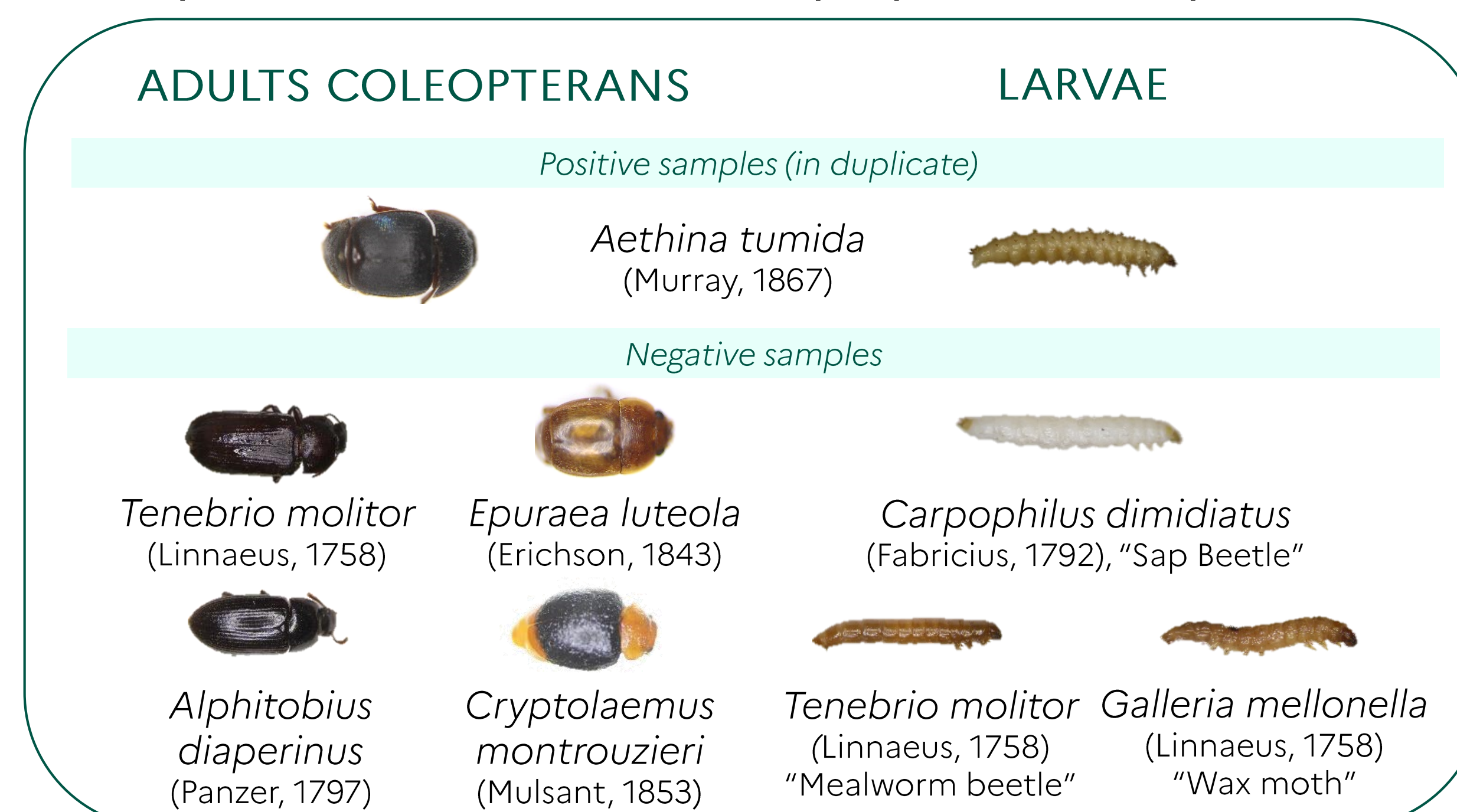
**Reliable identification of specimens by laboratories**



## An inter laboratory comparison organised in 2020 by the European Reference Laboratory for Bee Health

- 22 participants from Europe (National Reference Laboratories)
  - 2 official methods evaluated: Morphology and PCR
- Methods referenced in the World Organisation for Animal Health Manual
- 12 samples for blind testing
  - In compliance with the international standard ISO/IEC 17043

Specimens included in the sample panel for comparison:



## Results

- Sensitivity: satisfactory
- Specificity: globally satisfactory except for 2 participants

Minor anomaly for one

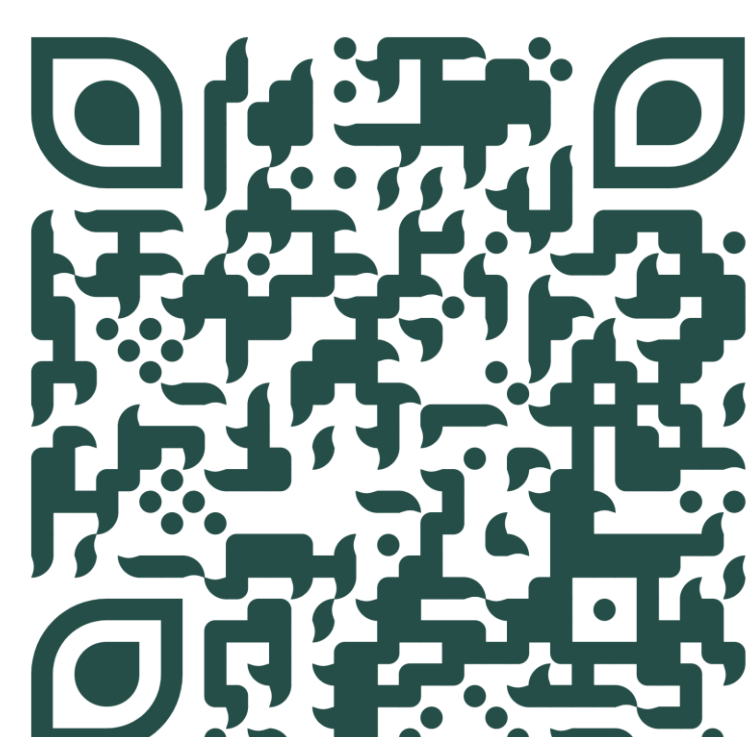
For the other, issues for a larger number of results, especially real-time PCR (probably related to inexperience with the method)

Overall performance of the official laboratory network:

Predicted Result	Morphology		PCR		Analytical Conclusion	
	Compliant Results	Non-Compliant Results	Compliant Results	Non-Compliant Results	Compliant Results	Non-Compliant Results
Positive	88	0	88	0	88	82
Negative	152	2	150	4	148	6
Sensitivity	100%		100%		93.2%	
Specificity	98.7%		97.4%		96.1%	
Accuracy	99.2%		98.3%		95.0%	

**First interlaboratory comparison organised at the European level**

**The study proved the reliability of official diagnosis, including the entire analytical process of identification: from the first step of the analysis to the expression of opinions**



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