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Prevalence and pathways for introduction of small hive beetle (*Aethina tumida*)

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Introduction

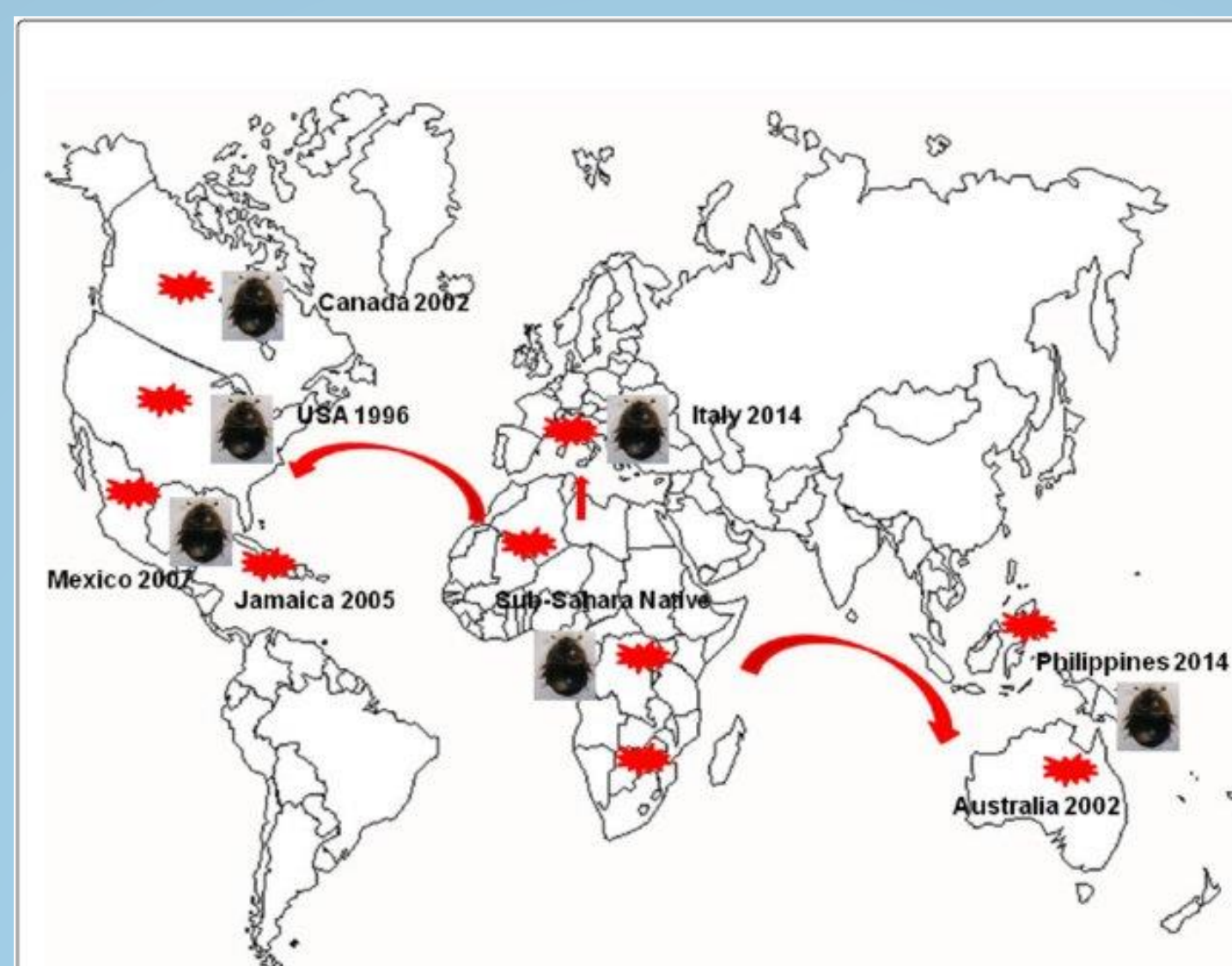
The exotic alien species *Aethina tumida*, commonly known as the small hive beetle (SHB) is a parasite and predator of honey bees and bee products. It is native to South Africa. SHB inhabit almost all colonies of honey bees in South Africa, but is generally not considered significant problems. However, over the past few decades the beetle has been found in various regions of the world. The first published estimates of the economic damages of the SHB are those resulting from the invasion of the United States of America in 1996, when SHB spread in Florida, causing losses of more than 3 million USD. Since then it has spread to Portugal, Jamaica, Mexico, Hawaii, Cuba, El Salvador, Nicaragua, Italy, Brazil, the Philippines, Belize, Canada, South Korea, Mauritius, Colombia and China.

Small hive beetle (*Aethina tumida*) in beehive



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World distribution of the small hive beetle



This figure was uploaded by Massimo Giangaspero

How can SHB invade to new uninfected territories?

The insects move quickly, prefer to escape from the light and seem insensible to cold. The adult beetles are able to fly several kilometers (up to 13 km), aiding the rapid spread of infestation. Adults small hive beetles are attracted to bee colonies to reproduce. The flying adult beetles actively infest honey bee colonies of all strengths and sizes.

The small hive beetle can spread in various ways including with honeybee colonies, honeybee queens, bee products, equipment and supplies and ripe fruit. Sea ports are therefore a potential point of entry.

Conclusion

The infestation by small hive beetles affects the conservation of indigenous bees causing a decline in native bees, such as *A. mellifera*, with negative impact on bee biodiversity. The choice of control methods or the combination of different strategies against *A. tumida* is certainly complex.

A good management by beekeepers is necessary to protect against *A. tumida*. Maintenance of strong colonies and good husbandry are key elements.

Management and Control

The choice of control methods or the combination of different strategies against *A. tumida* is certainly complex. The results obtained from different approaches followed to achieve the same goal are often difficult to compare, and stress the necessity to improve our understanding of this parasite. The most effective control against small hive beetle is maintaining colony strength, coupled with minimizing empty frames of comb. Healthy colonies, with young and vigorous queens, will be able to withstand the SHB invasion and to control their numbers in the hive. As the maintaining of colonies healthy is vital, it is even more important to treat for varroosis and ensure honeybees are as healthy as possible.

There are several mechanical traps currently available that can alert beekeepers to the presence of SHB in hive and help to control its population.

Biological methods are also effective to counter the infestation by *A. tumida*. Pseudoscorpions (*Ellingsenius fulleri* and *E. indicus*) may protect bees from pests such as the small hive beetle.

Chemical methods may be used in case of heavy infestation. Due to toxicity, risk of development of resistance, and potential residues in honey and in the environment, the use of insecticides to treat infestations should be carefully managed. Only authorized pharmacologically active substances, regularly registered as veterinary drugs should be used.

References

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