A Draft Varroa Action Plan for NL

by Peter Armitage

> "Biosecurity is a continuum with elements operating pre-border, at the border level and beyond the quarantine border (post-border). A possible component of a biosecurity system is the use of surveillance techniques. These techniques are deployed post-border to attempt to detect incursions so that management actions can be implemented" (Barry, et al. 2010: 1).

Honey bee stocks in Newfoundland and Labrador (NL) are currently free of the pest *Varroa destructor* which causes significant honey bee colony losses throughout the rest of North America and Europe with associated economic costs and management challenges for beekeepers. A *Varroa* action plan was developed in Canada in 1990 but was unsuccessful in preventing the spread of the pest throughout the country (Armitage 2018; CAPA 1990). Australia is the only continent that remains free of *Varroa*, however, beekeepers there believe it is only a matter of time before it lands there as well (see Rooth, 2018). Nonetheless, they have implemented rigorous biosecurity measures to try to delay its arrival for as long as possible. Apart from Australia, there remain only a handful of *Varroa*-free places on the planet. In addition to NL, they include the Isle of Man in the U.K., Colonsay (a small island on the west coast of Scotland), Iceland, Ushant (a small island on the northeast coast of France), French Polynesia, and Chatham Islands (800 km to the east of the South Island of New Zealand).

Varroa mite on a honey bee thorax (photo Matt Bearup, 2012, Bug Guide. https://bugguide.net/node/view/731517)

Beekeepers in NL have an opportunity to prevent *Varroa* from becoming established on the Island of Newfoundland and in Labrador. However, achieving this objective requires rigorous preventative and detection measures which have not yet been developed. Furthermore, no clear plan has been developed to respond to an incursion should it occur, although the provincial government has the power under the *Animal Health and Protection Act* to quarantine an apiary with a *Varroa* infestation. Given the current geographic distribution and relative isolation of many apiaries and low number of colonies across the province, eradication of the pest may well be feasible. A well thought-out plan is required to organize the prevention, detection and eradication of *Varroa*, one that is widely supported by beekeepers, involves commercial beekeepers (purveyors of live bees in particular), and has active participation by the apiarist and chief veterinarian for the province.

> "Bees can fly extremely long distances if no other food sources are available closer to the colonies. This was shown in early studies in which hives placed in a barren desert area – totally devoid of pollen and nectar sources – were located various distances from an area known to have bee forage. In this extreme environment the foragers flew up to 13.7 kilometers!" (Gary 2015: 295).

The NLBKA Board decided recently to draft a Varroa Action Plan (VAP). This task has been delegated to the Association's Scientific Advisory Committee. Completion of the Plan involves background research and analysis including:

- a review of the Varroa biology/ecology/behaviour literature.
- a review of the history of *Varroa* in Canada.
- an analysis of reasons for the failure of CAPA's 1990 action plan (lessons learned).
- a review of the history of the response to *Varroa* elsewhere in the world.
- a review of action plans and sentinel programs elsewhere in Canada and worldwide, e.g., Australia, Ontario (SHB), Quebec (SHB), United Kingdom (Asian hornet), New Zealand, etc.
- obtaining more accurate information on apiary locations in NL, analyzing the geographic distribution of apiaries with the view to determining concentrations, pathway vectors throughout the province re. spread of *Varroa* geographically, etc. Map 1 below depicts preliminary georeferencing of apiary locations on the Island of Newfoundland with a 12 km buffer (maximum honey bee flight zone) around each apiary.
- a risk assessment re. vectors and incursion locations (e.g., ports of entry, illegal importation).
- an analysis of current government regulatory powers, mechanisms/processes, testing protocols, etc. (e.g., *Animal Health and Protection Act* and Regulations) to assess capacity to prevent, detect and eradicate *Varroa*.

Varroa mites on a honey bee pupa (photo courtesy Kika De La Garza Subtropical Agricultural Research Center Weslaco, Texas, USA)

Based on the literature review conducted thus far, it is likely that the draft NL VAP will rely heavily on the recruitment of volunteers for an early detection program, probably based on sentinel apiaries. The selection of these apiaries would not be based simply on commercial status. Other criteria would be considered such as apiary location in relation to high risk vectors (ports, concentrations of small scale beekeepers, etc.), effective quarantine boundaries to protect regions from spread of the mite, etc.

Also, assuming Phase 2 of Canadian National Honey Bee Health Survey goes forward, we would endeavor to articulate the VAP with this survey, which would likely occur once per year during an eight week period, August-September. The visual inspection and/or laboratory testing component of the survey would confirm *Varroa* monitoring by our volunteer sentinel

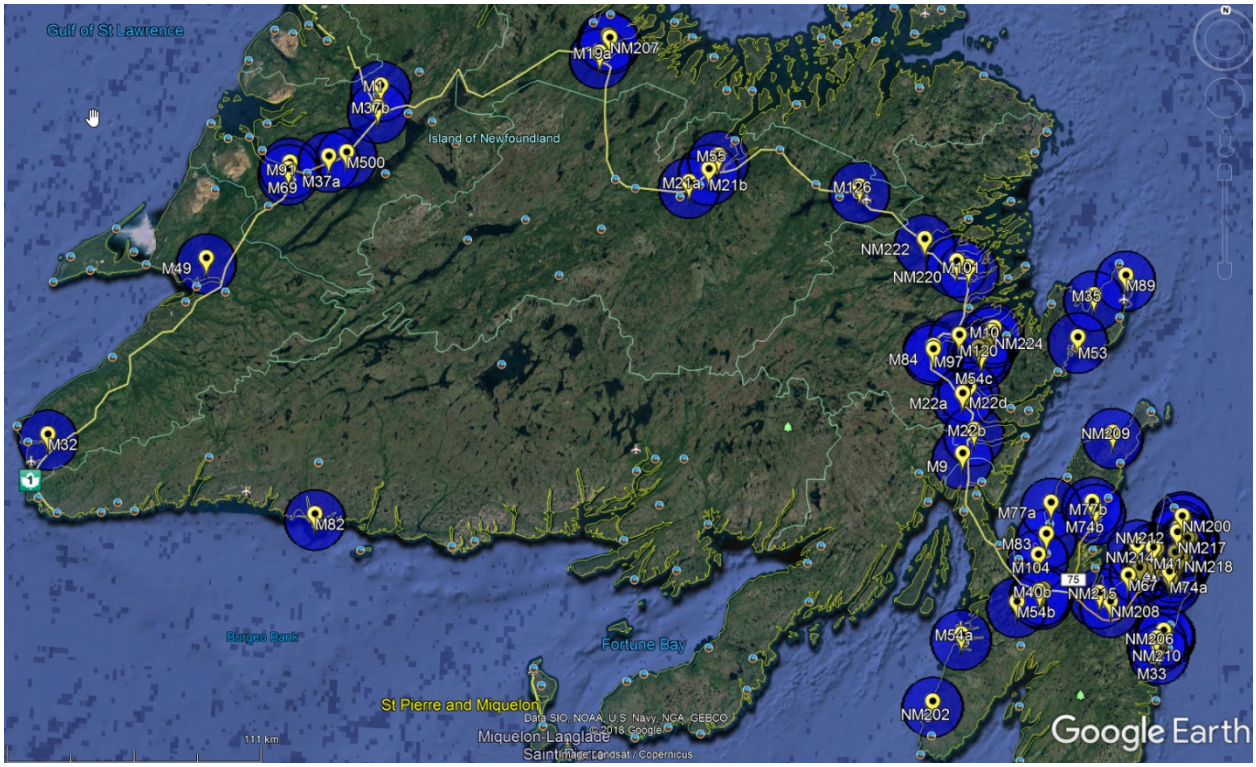
Fletcher Colpitts, Chief Bee Inspector for New Brunswick, demonstrating the alcohol wash method (photo P. Armitage, Aug. 2018)

beekeepers. Note that the VAP's sentinel program would likely require training in the alcohol wash method, the immediate reporting of results, a recipient of this information (NLBKA Research Committee and provincial apiarist), etc. Note, too, that reporting a *Varroa* incursion to the provincial government is mandatory under the *Animal Health and Protection Act* (Animal Reportable Diseases Regulations). We certainly need the regulatory and enforcement powers of the Government of NL to make the VAP work (e.g., quarantine, enforcement with punishment for illegal importers, etc.).

We intend to submit the VAP to review by our partners in the Government of NL (e.g., provincial apiarist and chief veterinarian) and a selection of experienced provincial apiarists, honey bee scientists, and bee inspectors in other parts of Canada as well as internationally. Furthermore, we intend to distribute the VAP to NLBKA members for feedback and present a draft at the upcoming NLBKA Workshop in November this year. Beekeepers who are not members of the NLBKA will also be consulted. In order for a VAP to work, we will need the cooperation of as many beekeepers as possible whether they are NLBKA members or not.

Once the draft VAP has been reviewed and our consultations completed, the VAP will be finalized and implemented. There should be an ongoing publicity component to the VAP to reinforce our message about the perils of illegal importation, encourage the full participation of all provincial beekeepers, etc.

Stayed tuned for more news about the VAP. We hope to see you at the upcoming NLBKA Workshop where we can discuss the Plan in some detail.



Map 1. Preliminary georeferencing of apiaries on the Island of Newfoundland with 12 km buffers (flight zones, blue circles) around each apiary.

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