



Newfoundland & Labrador Beekeeping Association

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Rod Scarlett
Executive Director
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Dear Mr. Scarlett,

On behalf of the Newfoundland and Labrador Beekeeping Association (NLBKA), I write in support of the Canadian Honey Council's (CHC) proposal for a Phase 2 of the Canadian National Honey Bee Health Survey (CNHBHS). Phase 1 was of great value to beekeepers in Newfoundland and Labrador (NL) because it allowed us to reassess our pre-existing baseline data regarding pathogens, pests and diseases in our stocks. We are now using the 2016 health survey results as our baseline for future monitoring purposes. Furthermore, it situated our honey bee health profile in relation to other provinces and countries.

Given our unique status as free of *Varroa*, wax moth, tracheal mite, small hive beetle (SHB), and apparently American foulbrood (AFB) as well, comprehensive, detailed testing of our stocks is extremely important because results inform our provincial government's decisions regarding restrictions on the importation of honey bees and used beekeeping equipment, as well as the management decisions of our beekeepers. It was important for us to know, for example, that *Nosema ceranae* has been detected in our stocks despite lack of clinical evidence, because we are now better prepared to look for symptoms and apply appropriate management solutions. Also, we recognize that at the national level, "[a]ccurate disease distribution information helps to inform regulators [such as Canadian Food Inspection Agency] when they try to determine the risk associated with the importation of bees from other regions....Without valid surveys within a country, it is impossible to claim pest-free status and the absence of bee diseases."¹

It is our understanding that the proposed Phase 2 survey is both a monitoring program and a data-collection endeavour that supports ongoing research into honey bee health. This is important to us in NL given that there remains a great deal about honey bee pathology that is unknown, and in the context of climate change, complex international trade relations, the inexorable spread of exotic species, and continuous innovations in industrial agriculture and

¹ D. vanEngelsdorp, C. Saegerman, B.K. Nguyen, and J.S. Pettis. 2014. "Honey bee health and surveillance." In Wolfgang Ritter (ed.). *Bee Health and Veterinarians*. Paris: World Organisation for Animal Health, pp.219-220.

agrochemicals, there may be any number of emerging threats to honey bee health that we must be prepared to deal with rapidly. Without a national bee health monitoring program, we seriously risk being blind-sided by an emergent threat that we are ill-prepared to deal with.

The sampling of bee bread for chemical residue analysis is also important to us because we currently have no data regarding honey bee exposures to pesticides and herbicides used in commercial agriculture as well as home gardening.² Information about chemical exposures could assist not only with honey bee health monitoring but also the development of “value-added” organic bee products by our beekeepers.

With only ~500 colonies and sixty-eight beekeeping operations (of which 10 are commercial) we lack the financial means, expertise, and research infrastructure to test our honey bees here in NL. This is a major reason why we look to the National Bee Diagnostic Centre (NBDC) and a renewed annual honey bee health survey to test our bees. We need molecular diagnostic technology and methodologies that are consistently and rigorously applied and well informed by current honey bee science and best practices so that we can be assured that the test results are credible.

In going forward with Phase 2 of the CNHBHS we ask that the CHC and NBDC address the following considerations.

1. Sample design. The NLBKA is in the process of developing a *Varroa* Action Plan (VAP) that will facilitate the early detection of a *Varroa* incursion and hopefully eradication. The VAP is likely to include a sentinel apiary and testing program involving volunteer beekeepers situated strategically at high-risk *Varroa* incursion locations and nodes of clustered beekeepers (e.g., northeast Avalon Peninsula). Beekeepers (commercial and small-scale) who sell bees will be asked to participate in the program.

We wish to be involved in all aspects of the design of the Phase 2 survey so that we can find ways to articulate the survey with our VAP. We see the Phase 2 survey, with its eight-week sampling in the period August-September, as a validation mechanism for our *Varroa* testing, and which would provide an additional level of early detection capacity.

Also, we note that currently there is no mandatory registration of apiaries in NL,³ and the provincial apiarist is not mandated to provide services to non-commercial beekeepers. The Association makes a concerted effort to identify all beekeepers including non-members. Our beekeeper information is important in part because it allows us to determine the sampling frame for our annual colony loss and management survey. We are now in the second year of

² Unfortunately, we missed an opportunity to collect chemical exposure data during the 2017 season because bee bread/pollen samples were not obtained from the three commercial operators who participated in the survey.

³ The Association strongly encourages beekeepers to register their apiary locations with the provincial apiarist. Furthermore, a commercial operator who sells nucleus colonies asks customers to register with the provincial apiarist.

this survey, which we believe will provide data relevant to the long-term monitoring of our honey bee health.⁴

2. Immediate alerts for emergent pathogens/pests/diseases. AFB infections caused problems for some of our honey bee stocks as recently as the 1990s. However, sampling and testing by the Shutler team in 2010 was negative for AFB as was testing by the NBDC as part of the CNHBHS in 2016 and 2017.⁵ Should pathogens, pests and diseases that were previously absent from our stocks such as AFB appear in future NBDC testing, we would like to be informed immediately of positive results so that our beekeepers can be alert to their presence while doing routine hive inspections and henceforth adopt appropriate management solutions if required. This is especially important with respect to serious pathogens and pests like *Varroa*, SHB, wax moth, tracheal mite and AFB. **Alerts should be transmitted immediately to our Association as well as our provincial apiarist.**⁶

We note that under our current *Animal Health and Protection Act* and associated regulations, there is no regulatory requirement to report any honey bee pathogen, pest or disease to the provincial government, other than “cases of illness or death of imported honeybees that occur within 12 months of importation.” We will be discussing this matter with government in the near future.

3. Survey technicians. We need an assurance that technicians retained to conduct Phase 2 of the CNHBHS are properly qualified to inspect colonies for AFB and other diseases, are capable of undertaking inspection and sampling work in a timely manner, and will complete all survey components including bee bread samples for chemical residue analysis.

4. Reporting results. We agree that the dissemination of the test results during Phase 1 of the CNHBHS in simple report format (e.g., with a table showing viral incidence per province) may be adequate for the general beekeeping public, but it otherwise lacks detail necessary for the proper evaluation/interpretation of the results for comparison purposes on a temporal scale, and is not consistent with scholarly, research standards of methodological transparency. We note, however, that methodological details are available from the NBDC upon request (e.g., the “Field Technician Protocol”). In addition to a public-friendly report, **we ask that a detailed methods statement also be prepared for the research community, provincial apiarists, apicultural technicians, and beekeeping associations consistent with scholarly, research**

⁴ See Preliminary Analysis of the 2017 NL Colony Loss and Management Survey (2016-2017).

<http://nlbeekeeping.ca/data/documents/2017loss-management-survey.pdf>

⁵ Shutler, D., K. Head, K. L. Burgher-MacLellan, M. J. Colwell, A. L. Levitt, N. Ostiguy, and G. R. Williams. 2014. “Honey Bee *Apis mellifera* Parasites in the Absence of *Nosema ceranae* Fungi and *Varroa destructor* Mites.” *PLOS One*. 9(6): E98599. Doi:10.1371/journal.pone.0098599; National Bee Diagnostic Centre, 2016. National Honey Bee Health Survey. https://www.gprc.ab.ca/research/initiatives/nbdc/projects/current/nat_survey.html

⁶ We note the quick response this year by the CFIA, Quebec Ministry of Agriculture, Fisheries and Food, and Fédération des apiculteurs du Québec to a discovery by the CFIA on June 6th of small hive beetles in 459 queen cages imported from California. CFIA notified the Quebec ministry on June 7th, and the Fédération sent out an alert to provincial beekeepers on June 8th (“Avis de vigilance – petit coléoptère de la ruche”) (email from Christèle Mbounja, Direction recherches et politiques agricoles, Fédération des apiculteurs du Québec, 8 June 2018).

standards of methodological transparency. The methods statement should include the following details:

- Full survey instrument (e.g., field technician protocol);
- Information from each provincial inspection and sampling technician about whether there were any deviations from the methodology, with explanation (e.g., reason for inability to collect bee bread samples);
- Sample handling prior to PCR testing. How were the samples shipped/received, RNA extraction performed and RNA stored prior to any PCR tests. The way in which RNA integrity was assessed;
- For viruses, the RT-PCR and/or qPCR protocols used, information on primers, cycling conditions, controls for false positives or negatives, visualization and quantification of gel data, etc.;
- Analogous information for tests for pathogens other than viruses (e.g. *Nosema* spp.) would be also greatly appreciated;
- Etc.

5. Long-term storage of testing samples. Prior to 2016, our baseline for most pathogens, pests and diseases in NL honey bee stocks is the data obtained by the Shutler team in 2010. We had questions about the results of their deformed wing virus (DWV) testing at Penn State University, and entered into correspondence with Dr. David Shutler, Dr. Abby Levitt (who did the laboratory work), Dr. Geoff Williams, and Randy Oliver on the topic. Dr. Levitt said she had re-examined the testing work and re-affirmed efforts taken to control for false positives, etc. Unfortunately, the NL samples were destroyed following the 2010 testing, and no further investigations are possible. Had these samples been safeguarded for the longer term, it is possible that we may have been able to undertake supplementary testing to confirm/validate the original work.

It is our understanding that the NBDC stores survey samples for several years, and that samples are not discarded without consulting partners first. We strongly endorse this practice and argue strenuously for the NBDC to retain this capability well into the future. **We wish to be consulted in the future regarding the disposition of samples obtained from our honey bee stocks.**

In closing, despite our current colony numbers, we are eager to expand our apicultural industry as quickly and sustainably as possible within the constraints imposed by climate, forage habitat, and economics. We recognize that we are “new kids on the block” with respect to the Canadian apicultural industry and that we have little to offer the national beekeeping community in the way of financial resources. However, our uniqueness as the only *Varroa*-free place in North America may have some value to the rest of Canada in the future. We need a national honey bee health survey to help us retain this status and otherwise protect the health of our stocks.

Our Association needs to be an active participant in Phase 2.

We thank the CHC for its efforts to organize and secure funding for the Phase 2 survey.

Sincerely,



Catherine Dempsey, President

c.c. Mario Swinkels, Atlantic Canada representative, CHC

Lauren Park, Nova Scotia Beekeepers' Association

Chris Lockhart, New Brunswick Beekeepers Association

Dave MacNearney, Prince Edward Island Beekeepers Association

David Jennings, Agrifoods Development Branch, Government of Newfoundland and Labrador