Regulatory Framework for the Importation of Honey Bees in Canada

by Peter Armitage[1]

Back in the day, northern BC beekeepers killed their colonies in the fall with cyanogas (calcium cyanide) and counted on the importation of packages from the United States. to kick-start their apicultural operations the following spring. Restrictions on the use of the gas and the 1987 closure of the Canada-US border to package importation due to tracheal and *Varroa* mite concerns brought this practice to an end.[2] As a result, these beekeepers had to figure out quickly how best to overwinter their bees or find import alternatives to what they got from the US. Today, the importation of honey bees from international sources – be it packages or queens – is a fact of life, and many beekeeping operations would be in serious trouble if not for importation. Bees are imported for many reasons but primarily for spring build-up to meet the demands of pollination contracts and commercial honey production (particularly after heavy winter losses), breeding purposes (e.g., resistance to varroa mites and brood diseases), or scientific research.

Spring inspection in St. John's.
P. Armitage photo

My interest in honey bee importation was sparked in my adopted province of Newfoundland and Labrador (NL) when we had a controversial importation of packages of Western Australian honey bees in April 2016. Apart from concerns about the winter hardiness and temperament of these bees, few would blink an eye elsewhere in Canada about such imports. However, we're hypersensitive about importation in NL because we're free of varroa mites, small hive beetle (SHB), tracheal mite, wax moth, and American foulbrood (AFB), and we want to keep it that way! Beekeepers here support our provincial government's import restrictions, which require import permits and screening for all of these pathogens and pests except AFB. While the Western Australian import was legal, few if any of us knew the importation process, or its legal, regulatory framework, which contributed to distrust and acrimony surrounding the import. While Western Australia is also varroa-free, many beekeepers here had concerns about the apparent lack of risk assessment, and thoroughness of the screening of the imported bees for pathogens, pests, and diseases other than varroa mites. We were also concerned about the apparent lack of risk assessment involving a rigorous examination of the hazards of importation, the potential spread of exotic pathogens and pests, and the economic consequences of this.

It is the apparent opaqueness of the process and my personal need to make sense of it that provided the impetus for this article and the research behind it. The following is a summary of what I've learned so far about how we import honey bees into Canada, based in part on several World Organisation for Animal Health (OIE) documents such as Dr. Steve Pernal's 2014 summary of Canadian regulations in *Bee Health and Veterinarians*, Canadian Food Inspection Agency (CFIA) documents, and interviews with a number of people across Canada who are directly involved in the importation process.[3]

You may wonder why I chose to send this article to a BC publication, and why the editors have agreed to print it. The information presented here has little to do per se with beekeeping in NL. It's focus is on a topic that all beekeepers in Canada have a vested interest in (eg. importation of packages from the US), and which our associations are all called upon to consider from time to time. We do have a newsletter in NL which reaches about 50 beekeepers. Publishing it here means that the content reaches a far wider audience.

At one level, importation is as easy as contacting one of the honey bee retailers, a number of whom advertise in *BeesCene*.[4] If they're selling packaged bees, they'll provide information about the stock they carry and how best to install the packages in your hives. What you may not know is that retailers may be obtaining the packages from someone (import broker) who has established commercial relations with suppliers in the exporting country, and expert knowledge of the regulatory framework for imports, associated paper work and logistics. There are several main suppliers/importers of honey bees in Canada who provide the bulk of packages and queens for commercial honey production and pollination as well as many beekeepers who import primarily for their own operations.[5]

The Canadian Government's Role in Honey Bee Importation

The Canadian government has the constitutional authority to oversee and regulate honey bee importation because it concerns international trade. The relevant federal legislation is the *Health of Animals Act* which gives the Minister of Agriculture and Agri-Foods the power to "make regulations prohibiting the importation of any animal or other thing into Canada, any part of Canada or any Canadian port…for such period as the Minister considers necessary for the purpose of preventing a disease or toxic substance from being introduced into or spread within Canada." The pertinent regulations are called the *Health of Animals Regulations*, and they contain a number of provisions relevant to honey bees. For example, honey bees are classed as a "regulated animal" and "no person shall import a regulated animal except…in accordance with a permit issued by the Minister," or in accordance with

other provisions dealing with the conditions under which importation can occur without a permit. Other important provisions cover honey bee diseases in the exporting country, and allow the federal government to designate a country "as being free of a disease or as posing a negligible risk for a disease." However, this designation must be based on several criteria such as the prevalence of the disease in the exporting country, its veterinary-scientific capacity ("zoosanitary infrastructure"), and its capacity to monitor and manage the introduction or spread of disease.

In general, the interprovincial movement of bees is the responsibility of provincial governments, each of which has legislation and regulations related to honey bees. However, in BC the authority of the federal government with respect to honey bee importation from outside Canada is recognized under Section 6(1) of *BC's Bee Regulation (Animal Health Act)* which states, "A person must not transport or possess in British Columbia bees originating… from outside Canada except in accordance with an import permit issued, under the *Health of Animals Act* (Canada), to a beekeeper or an association in respect of the bees."[6]

The CFIA is responsible for the administration and enforcement of the Health of Animals Act and reports to the Minister of Agriculture and Agri-Foods. It assesses the zoosanitary infrastructure and status of honey bee diseases/pests in exporting countries as well as the status of such diseases/pests across Canada, the latter with input from provincial government apiarists.

The Canadian Honey Council (CHC) and Canadian Association of Professional Apiculturists (CAPA) provide input into CFIA importation decisions. For example, in 2011, the CHC asked CFIA to "review current import conditions as they pertain to Small Hive Beetle, thus facilitating and securing the importation of healthy queens free from Small Hive Beetles into Canada for the needs of the Canadian honey and crop pollination industries."[7] As for CAPA, in 2000, its Import Committee considered a request to import French queens for "genetic evaluation for Varroa resistance and a request to import eggs and semen from the USA from the Russian Bee Project…for evaluation for Varroa resistance" (CAPA, 2000:18). CAPA recommended to the CFIA that these imports be allowed.

CAPA also is heavily involved with research into the health status of the honey bee stocks across Canada through its annual wintering loss surveys, engagement with the National Bee Diagnostic Centre in Beaverlodge, Alberta, regarding the Canadian National Honey Bee Health Survey, and other ways.[8] "Accurate disease distribution information helps to inform regulators [such as CFIA] 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."[9]

The CFIA assesses the risks of importing honey bees into Canada from specific countries, decides whether to allow importation, and if so, under what conditions. According to the CFIA,

> '...qualitative risk assessment is based on the approach recommended by the World Organisation for Animal Health (OIE) and consists of the characterization of hazards with entry, exposure and consequence assessments. The qualitative assessment includes the likelihood of the introduction of the hazards into Canada…(entry assessment); the likelihood of potential hazards spreading and/or becoming established within the domestic honey bee population in Canada (exposure assessment); and the expected magnitude of the resulting consequences (consequence assessment).'[10]

The CFIA conducted risk assessments in 2003 and 2013 regarding the importation of packaged bees from the US, and concluded that restrictions on such imports should be maintained due to concerns about Africanized genetics, antibiotic-resistant AFB, SHB, and amitraz-resistant varroa mites.[11] Following the discovery of the exotic Asian honey bee (*Apis cerana*) in Darwin, Australia, in June 1998, the CFIA reviewed Australia's eradication and surveillance efforts, and modified its import requirements to permit continued importation from all parts of Australia except the Northern Territory.[12]

Currently, imports of packaged bees and queens are prohibited from most countries due to the high risk of infecting our domestic stocks with pathogens, pests and diseases that are not already present here. Table 1 lists the countries from which imports of packaged bees and queens are permitted by the CFIA.[13] As noted by Pernal, "[i]mportation into Canada from any other country than those listed previously [Table 1] requires a separate risk assessment for the exporting country and then application for an import permit on a case-by-case basis. Importation of honey bee eggs (embryos) and semen for scientific and breeding purposes are also handled in a similar manner."[14]

In all cases, importation comes with conditions, and it is the CFIA that establishes them. For example, the CFIA requires competent personnel (e.g., veterinarians) to inspect bees destined for export and to certify that they are disease-free and/or have been inspected according to CFIA standards. No matter what type of live bee product is being imported, an Import Permit from the CFIA and a Zoosanitary Export Certificate from the exporting country are required. These requirements are spelled out in the Automated Import Reference System (AIRS) information available on-line.[15]

country/jurisdiction	packages	queens
California	no	yes
Chile	yes	yes
Denmark	no	yes
Hawaii	no	yes
New Zealand	yes	yes
Tasmania	yes	yes
United States (other than California and Hawaii)	no	yes
Western Australia	yes	yes
Other countries	no	no

Table 1. CFIA Restrictions on honey bee importation by country/jurisdiction.

Regarding packaged bee imports from Australia, for example, an inspector of the Australian Department of Agriculture and Water Resources must certify that the exporting zone (e.g., Western Australia or Tasmania) is free of Africanized genetics, varroa mites, *Tropilaelaps* spp., SHB and Asian honey bee, and that exporting apiaries are free from AFB and European foulbrood (EFB). A bee sampling and inspection protocol for visible evidence of these brood diseases is specified. Also, the

bees must be shipped by a route approved by the CFIA and in a manner that prevents them from acquiring pests en route such as SHB.

International Trade and the World Organisation for Animal Health

Canada cannot act arbitrarily with respect to its import decisions because its regulatory framework must be consistent with the protocols it agrees to as a member of the World Trade Organization (WTO), an intergovernmental organization of 164 member states that regulates international trade. In general, no member state can create artificial barriers to trade in animals or animal products unless it can argue, based on a scientific risk assessment, that importation poses a risk to the health of domestic stocks or humans.

As noted previously, the standards for risk assessment and protocols for testing and monitoring honey bee pests and diseases are recommended by the OIE which is recognized by the WTO as "the international standard setting organisation for animal health and zoonotic diseases"[16] under the terms of its Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). According to this agreement, "WTO Members should align their import requirements with the recommendations in the relevant standards of the OIE" as set out in the *Terrestrial Animal Health Code (Terrestrial Code)*. The code "sets out standards for the improvement of terrestrial animal health and welfare and veterinary public health worldwide, and for safe international trade in terrestrial animals (mammals, reptiles, birds and bees) and their products."

The OIE recommends that,

> '...the health measures in the *Terrestrial Code* should be used by the Veterinary Authorities of importing and exporting countries for early detection, reporting and control of agents pathogenic to terrestrial animals and, in the case of zoonoses, for humans, and to prevent their transfer via international trade in terrestrial animals and their products, while avoiding unjustified sanitary barriers to trade.'[17]

The OIE also publishes a *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (Terrestrial Manual)* to assist laboratories and regulatory authorities in member countries with the design of their veterinary diagnostic tests and surveillance protocols for pathogens, pests and diseases. A primary objective of the *Manual* is to "provide internationally agreed diagnostic laboratory methods and requirements for the production and control of relevant vaccines and other biological products."[18]

Standards related to honey bee pathogens, pests and diseases are designed by one of the OIE's specialist commissions known as the "Scientific Commission for Animal Diseases."[19] In recent years, the hard labour of drafting new standards and revising existing ones for honey bees was delegated to an "*Ad Hoc* Group on Diseases of Honey Bees" which met several times between 2010 and 2012. The current OIE standards for honey bees were drafted by the seven honey bee scientists who were members of this group.[20]

In order to be listed in the *Terrestrial Code*, a disease or pest must have spread internationally, at least one country remains free of it, it causes significant symptoms or mortality, there are reliable means of detecting and diagnosing it, and cases can be distinguished clearly from other diseases, infections or infestations. While recognizing that honey bees have many pathogens, pests, predators, and diseases, the OIE's *Terrestrial Code* focuses on those that currently have a significant impact on honey bee health and commercial beekeeping (e.g., pollination services). Currently, for honey bees, the *Code* lists AFB, EFB, Varroosis (caused by varroa mites and the viruses they vector), Acarapisosis (caused by tracheal mites), *Tropilaelaps* spp. and SHB infestations. Honey bee viruses, of which 24 have now been identified, are not included here due to lack of data concerning their clinical signs, impact on honey bee health, or distribution in the absence of varroa mites.[22]

Canada and other OIE-member states are required to notify the OIE about the status of listed diseases and pests in their countries. This requirement is reflected in the federal *Health of Animals Act* which lists fluvalinate-resistant varroa mites and SHB as "immediately notifiable," and acarine disease (tracheal mite), AFB, EFB and Nosematosis as "annually notifiable" diseases. When SHB turned up in colonies in Manitoba, Ontario, and Quebec, the provinces reported the infestations to the CFIA which in turn notified the OIE. Similar notifications by countries like Australia facilitate the monitoring of their honey bee diseases and pests and import decisions by the CFIA.

Countries can adopt "a level of protection requiring measures more stringent than the standards of the OIE, [however] these should be based on an import risk analysis conducted in accordance with Chapter 2.1" of the *Terrestrial Code* dealing with import risk analysis. Canada has, in fact, adopted more stringent measures for one pest and has also added Africanized genetics to its import restrictions, as a comparison of OIE recommendations with CFIA requirements shows (see Table 2).

Pathogen/pest/issue	OIE[23]	CFIA[24]
American foulbrood	yes	yes
European foulbrood	yes	yes
Acarapis woodi (trachael mite)	yes	no
Tropilaelaps spp.	yes	yes
Varroa spp.	yes	yes
Small hive beetle	yes	yes
Africanized genetics	no	yes
Apis cerana (Asian honey bee)	no	yes

Table 2. OIE listing of pathogens, pests and other import issues compared to CFIA screening regarding package bee imports from Australia.

Protecting Honey Bee Health in the Context of International Trade and Globalization

Beekeepers know that honey bees provide an extremely valuable ecosystem service through pollination of cultivated and wild plants. The value of their contributions to the environment and agriculture is far greater than the value of honey and other honey bee products. While international trade agreements and national laws and regulations were designed to manage honey bees and their diseases using science-based risk assessment, management has various challenges,

especially in a globalized world with a human population expected to reach 9.8 billion people by 2050. For a start, demand for pollination by honey bees in many countries is increasing faster than the number of honey bee colonies, which challenges existing capacity to provide pollination services, and results in increased migratory beekeeping and associated risks of pathogen and pest transmission.[25]

Key parts of the world's food supply are dependent upon migratory beekeeping (e.g., almonds, apples, blueberries, cranberries, canola, etc.), a type of apiculture where disease management is difficult without robust methods of surveillance, reporting, and control as well as the active participation of beekeepers in the process. In effect, the CFIA recognized this challenge in its 2013 risk assessment of packaged bee imports from the US when it referenced the "highly migratory nature of the US beekeeping industry" and related this to "increased exposure to diseases and increased levels of treatment (higher dose and multiple prolonged periods of treatment), leading to increased resistance of parasites and diseases in the USA honey bees."[26] The absence of interstate colony movement controls and the wide variation in disease control and inspection programs from one state to the next were of major concern to the CFIA.

Honey bee on mountain alder in Newfoundland. *P. Armitage photo*

The vast scale of migratory beekeeping and the often widely dispersed beekeeping operations across their jurisdictions stretch the resources of government apiarists and their inspectors, particularly during times of fiscal restraint, making it difficult to detect incursions of pathogens and pests and to enforce regulations concerning the movement of honey bee colonies across internal boundaries (provincial, state).

Furthermore, pathogens and pests cross borders despite risk assessments, inspection, and surveillance, sometimes because of imperfect inspection methodologies, but also because of the risky actions of beekeepers themselves. For example, transported north from southern American states by migratory beekeepers, varro mites crossed the border from Maine into New Brunswick in 1989 as a result of drifting or swarming honey bees from infested colonies.[27] The parasitic mite is rumoured to have been introduced to PEI, Nova Scotia and Thunder Bay, Ontario, by way of careless or illegal importations.

SHB has crossed borders with human help more than once. In 2002 it was brought accidentally to a beeswax rendering plant near MacGregor, Manitoba, in raw wax cappings from Texas.[28] In 2006, it was accidentally imported into Alberta and Manitoba in a shipment of package bees from Australia.[29] In 2011, an adult SHB "as well as first and second star larvae, were found on the packing material of queens imported from Hawaii…with destinations in Manitoba and Alberta."[30] SHB was discovered in the Peace River region of Alberta in July 2017, having been imported illegally with colonies coming back from pollination in Ontario.[31] The beetle was also discovered in June 2017, in legally imported colonies transported from Ontario to New Brunswick for blueberry pollination, despite "rigorous requirements for beekeepers moving hives out of SHB-positive yards."[32]

Accidental importations of pathogens and pests unrelated to the transport of honey bee colonies have occurred in some countries as well. For example, the bee killing Asian hornet arrived in France around 2005 in pottery from China, and the Asian honey bee (*Apis cerana*) arrived at Australian ports on several occasions by way of commercial shipping and cargo. Chalkbrood infection in South Perth, Australia, was traced to robbing of contaminated pollen in a drum imported by a health food business.[33]

Another consideration is that "[d]iseases and threats are continuously evolving, and in the current context of globalization, Canada must remain vigilant in maintaining our bee health status," as noted by Canada's Deputy Chief Veterinary Officer, Dr. Jaspinder Komal.[34] One example of an evolving threat is the spread of Africanized genetics in Californian honey bee colonies, an important source of queens for many Canadian beekeepers.[35] The CFIA, our provincial apiarists and their counterparts in Australia, New Zealand, the US and other countries, monitor these developments and adjust importation protocols if necessary to protect domestic stocks.

Viruses are another ball of beeswax. As noted previously, they are not included in the OIE's *Terrestrial Code* and international import/export decisions because much is still unknown about their virulence and distribution. An exception is Israeli Acute Paralysis Virus which factored significantly in the US government's 2010 decision to prohibit importation of adult honey bees from Australia. "Viruses once thought to be inconsequential…[were] reevaluated in light of transmission by *Varroa* mite, interactions with *Nosema ceranae*, and further complications from Colony Collapse Disorder."[36] Canada has never restricted importation because of concerns about particular viruses, although restrictions related to varroa are a "package deal"; efforts to manage the mite also help us manage the spread of viruses.

Arguably, the chances of exotic pathogens and pests entering Canada could be reduced were our border totally closed to all honey bee imports. Some beekeepers argue, moreover, that we can meet the demand for packages and queens through increased domestic production, which would reduce the risk of introducing exotic pathogens and pests to our bees. However, without greatly increased domestic production, the economic consequences of closed borders for our commercial beekeepers and agricultural production in many parts of the country would be severe.

Looking to the future here in NL, we will need to import honey bees from other parts of the world if for no other reason

than to better prepare our stocks for a possible varroa mite invasion. While formal risk assessment is the best way to weigh the pros and cons of any import, we can reduce the risk of introducing exotic pathogens and pests by more thoroughly testing bees prior to import, particularly for viruses not already present in our stocks. Nonetheless, importation will always carry some level of risk. This is why all importation proposals and risk assessments must be transparent processes, so that our beekeeping community can collectively weigh the benefits of importation in relation to the costs. ❀

End Notes

1. Peter Armitage was born and raised in B.C. where he was introduced to beekeeping in the 1960s by his late step-father, Dave Laidman, and beekeeping pioneer, Leo Fuhr, both residents of Vernon. In preparing this article, he consulted a number of bee scientists and long-time beekeepers including commercial operators. The views expressed in this article are entirely those of the author.

2. D.M. McCutcheon. 2013. A History of Beekeeping in British Columbia from 1950 to 2000. B.C. Honey Producers' Association. p.63.

3. See S.F. Pernal. 2014. "National regulations for beekeeping in North America (Canada and the United States of America." In Wolfgang Ritter (ed.). Bee Health and Veterinarians. Paris: World Organisation for Animal Health, pp.275-280. Pernal is a research scientist with Agriculture and Agri-Food Canada.

4. Some basic information on how to import bees into BC is provided by the Plant & Animal Health Branch, of the provincial Ministry of Agriculture. See Apicultural Bulletin #2, https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/animal-production/bee-assets/api_fs002.pdf

5. Some beekeepers organize their imports through group purchases but they do this with the assistance of import brokers. Some of the bigger Canadian importers include Bartel Honey Farms (Manitoba), Bee Maid (Prairies), Early Queen Arrivals (Ontario), Kemnay Apiaries (Manitoba), Morley Clarke (Saskatchewan), Oaknook Honey Products (Manitoba), and Scandia Honey (Alberta). Import brokers may have exclusive arrangements with suppliers in the exporting countries, e.g., as sole source agents for the sale of a given stock from an exporting country. Some BC beekeepers also organize their own queen imports each year primarily for personal use. They resell to few if any other beekeepers.

6.See the Government of British Columbia's Bee Regulation (Animal Health Act), BC Reg. 3/2015, O.C. 18/2015, http://www.bclaws.ca/civix/document/id/complete/statreg/3_2015#section6

7. Minutes of the Canadian Honey Council Annual General Meeting, 4 Jan. 2011. Hivelights. 2011.24(2): 19-20.

8. CAPA's members include provincial apiarists, researchers, apiary inspectors, apicultural technicians and other professionals who work with managed bee species. See CAPA. 2000. Proceedings 2000. http://capabees.org/content/uploads/2013/02/CAPAProceedings2000.pdf

9. 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.

10. See CFIA. 2013. Risk Assessment on the Importation of Honey Bee (Apis mellifera) Packages from the United States of America. Animal Health Risk Assessment, Animal Health Science Division, Animal Health Science Directorate. p.i. http://www.ontariobee.com/sites/ontariobee.com/files/Final%20V13%20Honeybeepackages%20from%20USA_Oct21_2013.pdf Paul van Westendorp, B.C.'s Apiculture Program Manager, provided a succinct description of the risk assessment process in the fall 2013 issue of BeesCene (Vol. 29, 3). http://bcbeekeepers.com.s205363.gridserver.com/wp-content/uploads/2016/04/BeesCene-Fall-2013.pdf

11. ibid.

12. See CFIA, Additional References, Automated Import Reference System, Import Requirements for Australia, "BEES – EXPLANATORY NOTES: Fees for Import Permits – Honey Bees from Australia – 1999-12-14. For a succinct history of exotic honey bee pests in Australia see Table 2, "A list of incursions and potential incursions involving honeybee pests" (Barry, S., D. Cook, R. Duthie, D. Clifford, and D. Anderson. 2010. Future Surveillance Needs for Honeybee Biosecurity. Government of Australia. Rural Industries Research and Development Corporation. RIRDC Publication No. 10/107. p.10).

13. Imports of queens only are permitted from Denmark. However, Danish stock is primarily Buckfast, and there is currently little demand for it in Canada, hence, little in the way of imports. New Zealand was the biggest exporter of packages to Canada in 2015, followed by Australia (measured in CDN dollar value). The U.S. was the biggest exporter of queens to Canada the same year (measured in dollar value) followed by Chile, New Zealand, and Australia. See Statistics Canada (CATSNET, May 2016), and Agriculture and Agri-Food Canada. "Statistical Overview of the Canadian Honey and Bee Industry, 2015."

14. Pernal (2014:279).

15. CFIA, Automated Import Reference System, 29 June 2016, http://airs-sari.inspection.gc.ca/airs_external/english/decisions-eng.aspx)

16. Canada is a member of the OIE. "Zoonotic diseases" (zoonosis, zoonoses) are diseases that can be transmitted to humans from animals.

17. OIE. 2017. Terrestrial Animal Health Code. p.i. See http://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/current/preface.pdf

18. See http://www.oie.int/manual-of-diagnostic-tests-and-vaccines-for-terrestrial-animals/

19. A detailed description of how the OIE operates is beyond the scope of this article. For more information on the work of the OIE's specialist commissions and ad hoc groups, see "Procedures used by the OIE to set standards and recommendations for international trade, with a focus on the Terrestrial and Aquatic Animal Health Codes." http://www.oie.int/fileadmin/Home/eng/Internationa_Standard_Setting/docs/pdf/A_OIE_procedures_standards_2016.pdf

20. Members of the Ad Hoc Group included Dr. Mike Allsopp (South Africa), Dr. Mariano Bacci (Argentina), Dr. Pierangelo Bernorio (Belgium), Dr. Rafael Calderon (Costa Rica), Dr. Marie-Pierre Chauzat (France), Dr. Jeffery S. Pettis (United States), Dr. Howard Pharo (New Zealand), and Dr. Wolfgang Ritter (Germany). See Meeting of the OIE Ad Hoc Group on Diseases of Honey Bees, Paris, 10-12 July 2012, Appendix 2, https://www.oie.int/doc/ged/D12109.PDF

21. See Michael Brown. 2007. "Overview of the Regulatory Framework for Apiculture." In Michel Aubert, et al. [eds.]. Virology and the Honey Bee. European Commission, Directorate-General for Research. Brussels. p.402; also OIE. 2012. Report of the Meeting of the OIE Ad Hoc Group on Diseases of Honey Bees. Paris, 10-12 July 2012. In OIE Report of the Meeting of the OIE Scientific Commission for Animal Diseases, Paris, 27-31 August 2012. Annex 7.

22. Pernal (2014:278).

23. World Organization for Animal Health (OIE). 2017. The OIE Terrestrial Animal Health Code (Terrestrial Code).

24. CFIA Automated Import Reference System for Australia.

25. OIE. nd. "General introductory text providing background information for the chapters of the Terrestrial Animal Health Code on diseases of bees." http://www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/A_Introduction_Bees_July2013.pdf

26. See CFIA. 2013. Risk Assessment on the Importation of Honey Bee (Apis mellifera) Packages from the United States of America. p.18.

27. CAPA. 1990. Minutes of the Annual Meeting of the Canadian Association of Professional Apiculturists, Winnipeg, Manitoba, January 21-23, 1990, p.17. http://capabees.org/content/uploads/2013/02/CAPAProceedings1990.pdf

28. Phil Veldhuis report. 2002. "Cross Canada Reports." Hivelights. 15(4): 5. Strict protocols were imposed regarding the importation of beeswax shortly after this incident.

29. S.F. Pernal and H. Clay. 2013. Honey Bee Diseases and Pests. Beaverlodge: CAPA. 3rd edition. p.37.

30. CFIA. 2011. "Small Hive Beetle in Honeybee Queen Shipments from Hawaii." Hivelights. 24(3): 3.

31. M. Nasr. 2017. "Quarantine area in the Peace River region established for small hive beetle found in honey bee colonies." http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/prm13239/$FILE/SHB_Letter-MN_%2019072017.pdf

32. According to the Ontario Beekeepers' Association, "Ontario currently imposes rigorous requirements for beekeepers moving hives out of SHB-positive yards. This includes both 100% top bar and 10% brood nest inspections. Beekeepers from Niagara or others with small hive beetle finds are obligated to file movement plans with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) before they are permitted to move bees." "Update on Small Hive Beetle." 2 Nov. 2017. http://www.ontariobee.com/sites/ontariobee.com/files/document/OBA_SHB_Bulletin_November_2_2017_ver_3.pdf

33. Government of Western Australia. 2013. "Endemic Honey Bee Diseases and Pests in Western Australia. Department of Agriculture and Food."

34. Dr. Jaspinder Komal statement to House of Commons Canada, Standing Committee on Agriculture and Agri-Food, June 6, 2016, Evidence, Number 016, 1st Session, 42nd Parliament.

35. Kono, Y. and Kohn JR. 2015. "Range and Frequency of Africanized Honey Bees in California (USA)." PLoS ONE. 10(9): e0137407. https://doi.org/10.1371/journal.pone.0137407

36. See Federal Import Order. Prohibit Importation of Adult Honey Bees (Apis mellifera) from Australia. December 21, 2010. http://www.michiganbees.org/wp-content/uploads/2011/01/Australia-Honey-bee-Prohibition-FO_12-20-2010.pdf See also, "Virus implicated in Colony Collapse Disorder in bees" https://www.sciencedaily.com/releases/2007/09/070906140803.htm