January 31st, 2025

To Whom it May Concern
Canadian Food Inspection Agency

RE: RISK MITIGATION PROPOSAL - FEEDBACK FROM ALBERTA BEEKEEPERS COMMISSION (ABC)

The following is our submission regarding the document produced by the CFIA - RDIMS # 21358303 ***"Risk Mitigation Framework on the Importation of honey bee packages from the United States".*** This document was issued by CFIA on November 5th, 2024, and our comments are directed at that version.

We have reviewed the document, and the analysis conducted in it, and have several areas of comment. These are outlined in detail below. We request your consideration of these comments and our proposed Risk Mitigation Strategy prior to making the decision to continue the complete and absolute closure of the Canada/US border for the importation of US honey bee packages into Canada.

OVERVIEW

Importation of honey bees from the US into Canada has been restricted since 1987 due to concerns over the risk of the introduction of pests and diseases of concern (i.e., hazards). CFIA has conducted several risk assessments since that time (2003, 2014, and 2024). Individual hand-picked honey queen bees have been allowed since 2004 – as a direct result of the 2003 risk assessment – but honey bee packages continue to be restricted.

Results from the 2024 risk assessment outlined CFIA's concerns over four specific hazards: Small Hive beetle (SHB); Africanized honey bees (AHB); American foulbrood (AFB); and Varroa mites (VM). While European foulbrood (EFB) was initially identified as one of the risk hazards, the Agency found issues associated with conducting a risk assessment on it.

In their report CFIA stated that *"there is currently a lack of scientific information on resistant forms of EFB in Canada or the United States. Without this information, it is not possible to carry out a risk assessment for EFB, which would be necessary to justify the implementation of import measures that would go beyond what is currently applied for interprovincial movements in Canada."*

CFIA found that in each of the other four hazards their analysis suggested that the possibility of entry, exposure and establishment would be 100% and that the impacts of this exposure would be moderate. CFIA also qualifies its criteria of Appropriate Level of Protection (ALOP) and their need to achieve an ALOP in their documents.

It is our interpretation that for CFIA to reconsider their opinion, an applicant must outline potential mitigation measures that would satisfy the concern over the risk level of hazards identified in the risk assessment. More specifically, the applicant must *"demonstrate their capability to reduce all hazards risks, and be practical, feasible and effective"* to meet the CFIA's Notional Risk Level (NRL) to be considered for implementation.

The Alberta Beekeepers Commission has worked hard to compile existing research, operating practices and potential best management practices. We also conducted a detailed assessment of the CFIA documentation that is foundation for the opinion expressed to this point.

Following this review and assessment ABC met with Canadian Honey Council, Canadian Beekeepers Federation, the Manitoba Beekeepers Association, the USDA Agricultural Research Services, among several other stakeholder groups to gather perspectives from these organizations and consider their input as part of the submission. This information and context has been critical in the development of the proposal we are making.

After all the work conducted by the ABC, it is our opinion that CFIA's current prohibition on honey bee package imports from the US is based on risk assessments that acknowledge data gaps and uncertainties. Further, we do not see evidence that the analysis included full consideration for the significant potential economic impacts of the continued closure in the assessment conducted.

ABC committed to the prioritization of a precautionary principle when it comes to pest and disease risks. However, we also believe strongly that there are other factors that are not necessarily fully considered in the assessment. Trade restrictions based on incomplete risk estimations can have, and has had, significant negative economic consequences for both US beekeepers and Canadian beekeepers reliant on package imports. These are real and material consequences and must be considered as part of a complete all hazards risk assessment in our opinion.

We also strongly believe that by taking a blanket response at the national level this potentially opens Canada to trade retaliation from the US. This potential hazard is of a magnitude that would devastate the sector, and given the current regulatory climate in the US, we strongly believe that this risk is both material and necessary as part of a more complete assessment of risks.

To be clear, we are not disputing the work completed by CFIA under the scope they have outlined, only requesting that some additional options and analysis areas be included as part of the scope. We believe that in doing so, the total risks faced by the industry can be managed effectively in a way that reduces the economic risks while not significantly increasing the risks from pests and diseases.

While many of the options for consideration are included directly in the following written submission, we recognize that our request has a more specific regional focus than the scope of the initial review conduced by CFIA. As a result, we have also provided an Annex (Annex #1 attached) that clearly summarizes what is currently being done in the region and what we feel would need to be done in both Alberta and Northern California to address the risks as part of the roadmap for an all-hazards approach on a smaller geography. The proposal we are putting forward is to use this type of an informed and systematic approach to at least consider different options.

Specific Feedback - The Background to the Proposal

Our main concerns over the approach and resulting findings from the CFIA assessment can be grouped into three main areas. Each of these is briefly discussed below, with a summary of how this consideration would impact the results of the risk assessment process.

a) Economic Impact – The lack of inclusion of the full potential impact of the continued closure on the operating and economic reality of the sector is perhaps the most significant gap in the CFIA approach. While this may not have been included in the scope, we strongly believe that there is both a financial and biological/epi risk being faced by the sector in Canada. While we are not interested in putting our sector at risk through the introduction of significant increased risks of disease or pests, we do believe that this must be considered in the context of the overall cost to the sector and what this means in terms of its economic sustainability.

ABC understands that disease and pest risks may ultimately trump economic impacts but not including them directly as part of the assessment essentially suggests these risks do not exist and should not be considered by the industry in Canada. While, potentially hard to quantify, they are most certainly non-zero, and we would suggest that they need to be considered as part of an all-hazards approach.

In terms of the specifics, based on our analysis, CFIA provides a very high-level overview of the economics of the industry starting on page "x" of their executive summary. In this they identify the number of beekeepers and colonies by province. They also provide a gross value of the industry as well as the statistics on mortality, packages imported and several other elements.

There does not appear to be any identification of how the counter factual economic impacts were calculated if they were considered at all. As an example, CFIA appears to assume the status quo in terms of industry size regardless of the access to US packages. In our opinion the potential industry reality is quite different, and this "risk" is certainly non-zero and it could be argued quite reasonably that it would provide a significant offsetting impact for at least a portion of the commercial industry. In other words, the risk of increased disease has to be considered in the context of what potentially could happen if we don't get the production base necessary for existence.

This consideration is even more broadly expressed when we consider the actual trade balance situation. The fact is that the US is a significant importer of Canadian honey, and with the current focus on trade restrictions, implementing the recommendation in the CFIA report puts the industry at significant risk if the analysis is not seen to be proactive in attempting to find ways to mitigate environmental risks that might help promote reasonable movement patterns between the two countries. The potential risks imposed by this peril are as real and material as the risks of disease and pests, especially in the context of the specific proposal outlined in this submission.

b) Geographic reality of the Analysis – Different regions not only have different risks, but also different operating realities resulting in different motivations for the implementation of biosecurity and surveillance programs and ultimately the desire and need for imports. The assessment by CFIA appears to assume that we must take a binary approach and open everything to everyone or close everything to everyone. ABC would propose revising the scope of the analysis so that the risk analysis does not proceed the format of a blanket application. The fact that there are different levels of data availability, biosecurity application, operating realities, etc., strongly suggests that there is an opportunity to investigate pilots in an area under specific, robust and well-documented approaches.

We recognize and acknowledge that there is a lack of a unanimous agreement across the country within the sector on the border issue. This reality is actually evidence that different regions may need to consider different approaches. As a result, we are submitting a sound rationale for an approach that could segment the country into regions/stakeholders that are consistent in their opinion while ensuring protection for the others. This is not a new precedent for CFIA to consider, as zoning, permitting and even compartmentalization are concepts that CFIA has considered in other species when dealing with asymmetrical risks across our Country.

c) Relative vs Absolute Risk – One of the other concerns with the study is that it does not adequately assess the reality that the industry is currently taking disease risks when importing from other countries. The relative risk of the five perils from the US vs. Australia or NZ may offer some significant insights on the extent of the total risk being taken by the sector. The opinion of ABC is that import of bee packages is an essential element of the current operational reality, especially for the bee pollination industry. The timing and age of package availability would

suggest that considering US packages would offer a lower relative risk than increasing packages from other jurisdictions where the environment is much less substantively equivalent to the Canadian environment.

This risk is similar in nature to the one regarding economics as it really relates to the counter-factual as ABC is concerned about the additional biological and ecological risks should there be a major decline or collapse in the Canadian honey bee population (ex. lack of pollination services), and the industry is forced to look to other sources.

Proposed Risk Mitigation Proposal – Path Forward:

ABC is proposing that CFIA consider the potential for a facilitated discussion on how a well-defined, systematic, and staged approach could be developed that could look towards a limited pilot within a very specific geographic region could be tested. There would have to be an agreement on the application and auditing of substantive biosecurity practices monitored with established traceability and surveillance. This would involve the following three elements – identified in general below but supported with specific and more detailed elements in the Annex included along as part of this proposal.

1. **Build a Very Specific and Reasonable Ask – ABC proposes to identify a more limited regional trade strategy that would meet the needs of the commercial honey and pollination bee keepers in Alberta, and potentially other jurisdictions if successful. This would be accompanied by the identification of an agreement to the biosecurity and movement control standards already available, and a commitment to evaluate additional measures as indicated by the stakeholders involved in a collaborative review process. This would involve the utilization of existing data and risk mitigation practices to support the definition of an importing region. Reducing the risk of exposure prior to entry is the highest impact strategy and is a key focus of this assessment.**

The current proposal focusses specifically on evaluating the importation of honey bee packages from specific regions in Northern California (Shasta, Tehama, Butte, Glenn, Colusa and Yolo counties), to Alberta, for stock replacement purposes to address honey bee decline. The Alberta Beekeeping industry has strong existing trade and other industry relationships with Northern California, due to their history of queen importation. The estimated current annual demand for packages in this specific context was determined by the Alberta Beekeepers Commission to be 10,000-25,000 packages per year. The outcome of the quantitative risk assessment is heavily impacted by the package volumes estimated in the report.

2. **Define a Plan Consistent with the Ask – The prime directive would be the development of a plan that generates the confidence that the strategy can be safe and productive. This would involve both defining what is currently in place and what might be considered critical gaps as well as then working to build the infrastructure necessary to monitor the pilot in order to ensure it operates within the defined parameters. The following summarizes some categories of information that would need to be addressed as part of this process.**

Define status quo and existing data gaps – We acknowledge that there is a need for a robust discussion and disclosure of specific data elements. This discussion would involve a more specific assessment of, currently applied risk mitigation practices and proposed practices, disease prevalence in Alberta, and data gaps. Two of the main elements would obviously be the mitigation practices currently in place in both of the target geographies and the extent of disease prevalence.

Currently Applied Risk Mitigation Practices: The Alberta Beekeepers and beekeeping industry rely upon existing industry programs and practices to optimize bee health and biosecurity. These include the Technology Transfer Teams or Programs (TTP), and ongoing extension activities that conduct a variety of initiatives focused on improving hive health and reducing losses in Alberta. Surveillance programs such as the Colony Health Monitoring (CHM) Program and Apivar Efficacy Program could be leveraged in the ongoing surveillance required to evaluate the impacts of trade activities.

A variety of initiatives support Alberta beekeepers in the development of Integrated Hive Management and Integrated Pest Management Plans. Alberta beekeepers also work closely and collaboratively with Alberta Agriculture and Irrigation's Bee Health Assurance Program. The various strategies utilized by industry to prevent, identify, and eliminate diseases and hazards are outlined in the Annex.

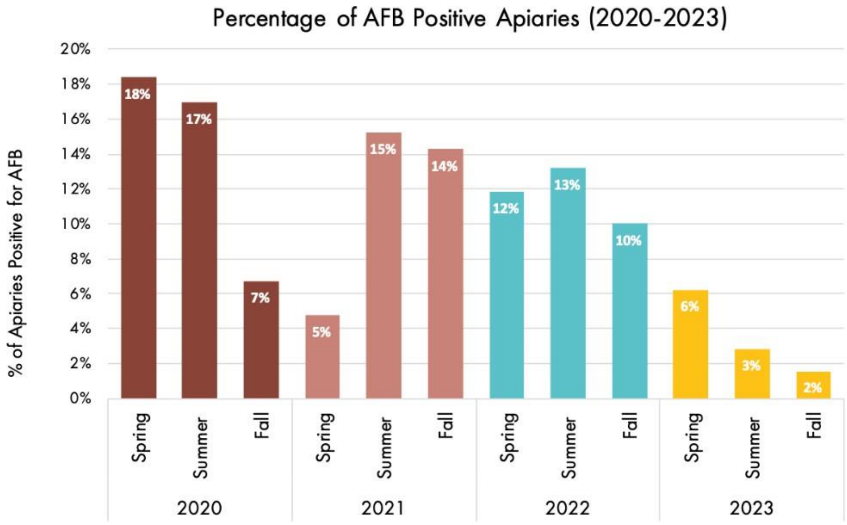
ABC has evaluated the technical, operational, and economic feasibility of employing these risk mitigation practices in the context of importing packaged bees from Northern California. ABC has also evaluated how these practices impact stakeholders such as commercial producers, hobbyist producers, and government. Through this assessment, proposed practices in the context of this exchange have been identified for further discussion with stakeholders.

We would ask for the opportunity to disclose, discuss and potentially adapt these to meet the necessary conditions for trade.

Disease Prevalence in Alberta: Disease prevalence in the importing region is a critical component in this hazard and risk assessment. Alberta producers have identified baseline data on the prevalence of the hazards, which may be addition to what was considered in the 2024 CFIA Assessment. Given the critical nature of this information in the evaluation, ABC would like to build a dialogue that would help ensure that CFIA has access to all of this data so that it can be considered as part of the process.

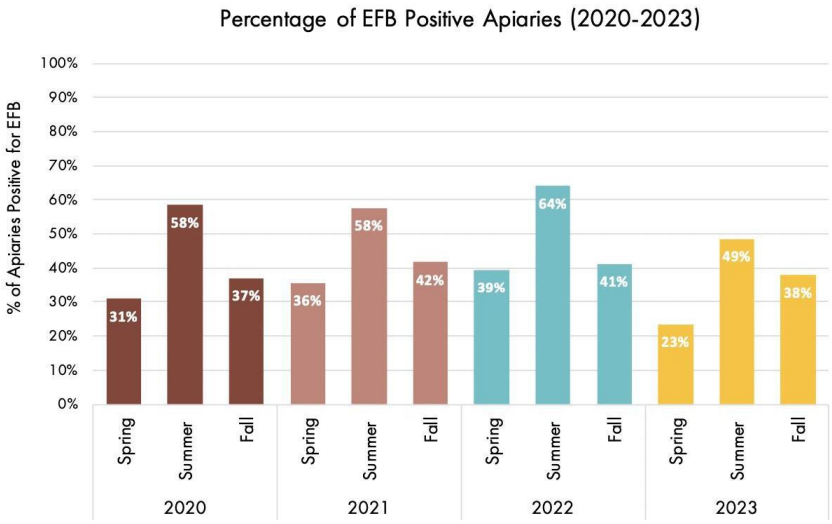
Alberta producers have baseline data on the prevalence of the following hazards considered in the 2024 CFIA Assessment. A summary of this is provided in the tables and figures below. The purpose of the proposal would be to ensure that a more robust movement of essential information be made available for regulators in order to validate the due diligence required for the proposed approach.

Hazard	Prevalence Information in Alberta
Africanized Honey Bees	Information taken directly from the 2017 Canadian National Honeybee Health Survey: mtDNA of African origin was detected in 6/128 Apiaries in Alberta with 4.7% incidence. While there have been anecdotal reports and evidence of AHB genes in Canada, there has not been a single confirmed case of established, self-sustaining AHB populations despite widespread ongoing surveillance for the behavioral expression of these genes.

Hazard	Prevalence Information in Alberta
American Foulbrood	 The number of apiaries found positive for AFB has steadily declined through 4 years of the CHM Program. In 2023 we saw the lowest levels of apiaries positive for AFB. Only 4 distinct apiaries tested positive throughout 2023. **2023 AFB Positives (CFU per bee)** Source: ABC Colony Health Program Annual Report 2023 This figure clearly suggests that the extension work getting producers to adapt practices appears to be correlated with this decline in prevalence of AFB.

Apiary	Region	Spring	Summer	Fall	AFB Nominal Risk	Oxytetracycline Resistance
1	Peace	275,000	Not Sampled	1,875	High	Yes
2	South	5	3	Not Detected	Low	No
3	South	3	Not Detected	Not Detected	Low	No
4	South	3	Not Detected	Not Detected	Low	No

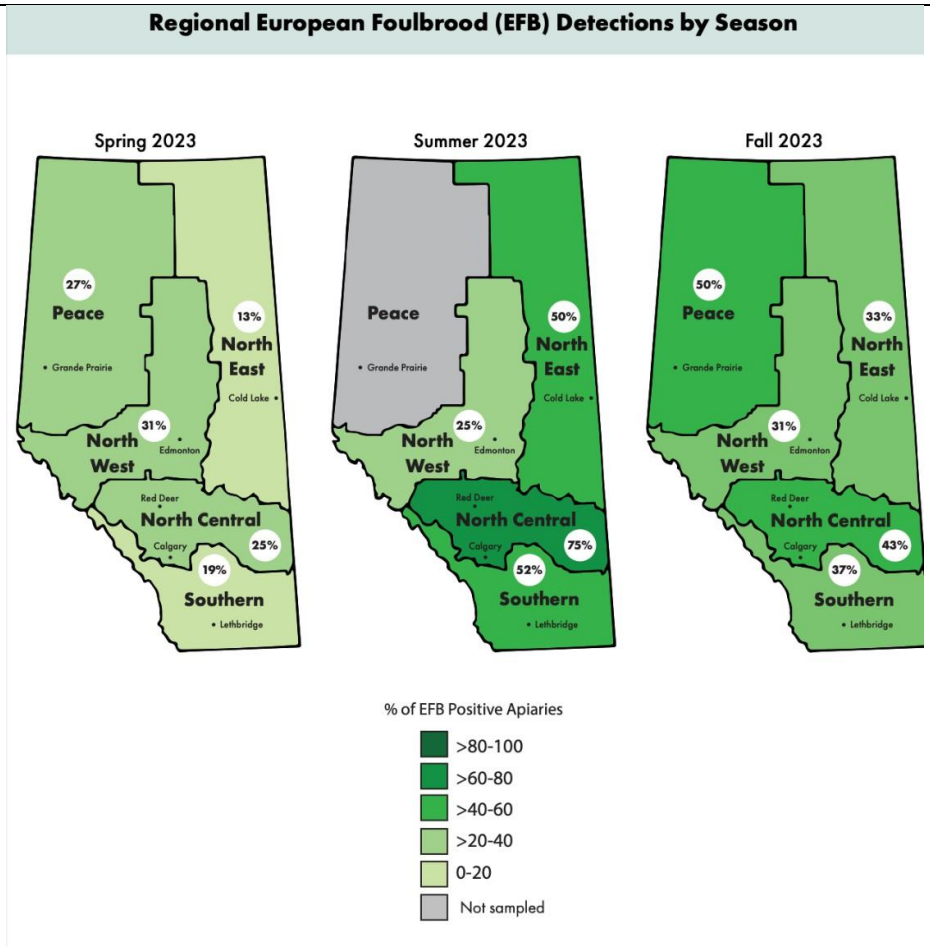
Hazard	Prevalence Information in Alberta
European Foulbrood	:



EFB detections have largely been stable with the same seasonal trends through 4 years of the CHM Program.

Detections have consistently been highest for the summer sampling period.

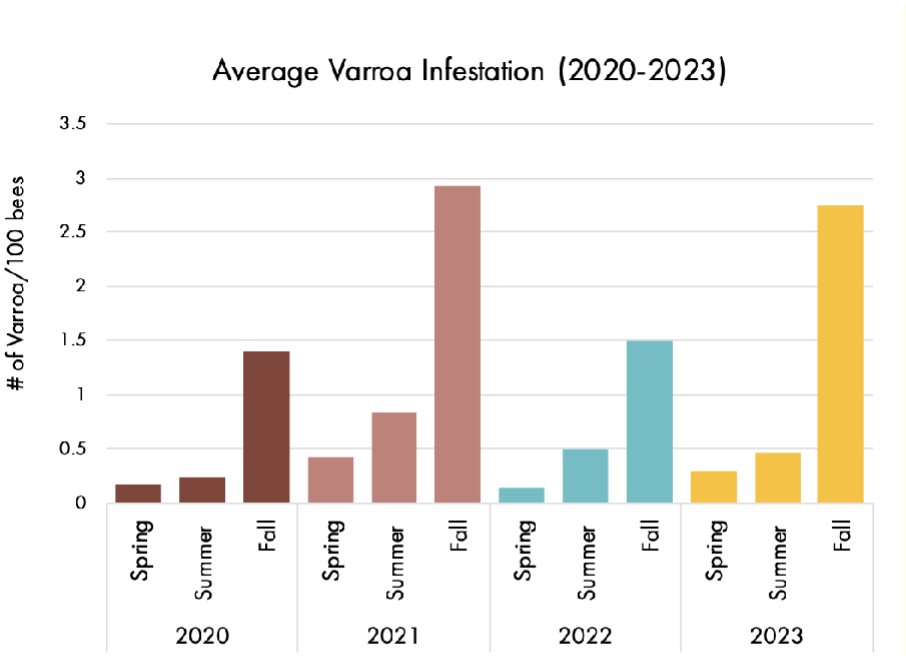
This data is from the EFB laboratory tests, but for visual symptoms, the TTP technicians find it easiest to spot EFB when there are large amounts of larvae in spring and summer.

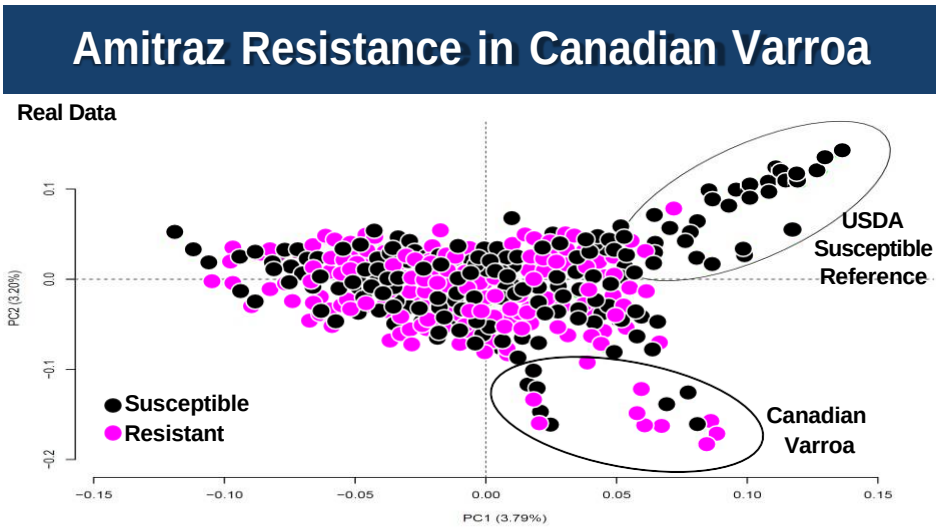


Source: ABC Colony Health Monitoring Program 2023 Annual Report 2023

These figures demonstrate that ABC currently maintains prevalence data by region that could be valuable for future analysis and risk management decision making.

Hazard	Prevalence Information in Alberta
Small Hive Beetle	Reported incursions have failed to establish in Alberta according to various sources. Given that this is a reportable disease, this would strongly suggest that this hazard has not been established in Alberta likely due to climate.

Hazard	Prevalence Information in Alberta
Varroa Mite	 The Varroa infestation population trends have been similar over 4 years, with low levels in spring and the highest levels seen in fall. The TTP tends to sample in mid-late August for fall, so in the absence of management, the fall Varroa levels seen on this chart would likely double (or more) by late September. Data recently published by Bahreini et al., 2025, identified the presence of amitraz-resistant mites in the population of Alberta. The mutation Y215H in 90% of tested apiaries with local allele frequencies ranging from 5 to 95%. *Ref: Arising amitraz and pyrethroids resistance mutations in the ectoparasitic Varroa destructor mite in Canada.* Additionally, data indicates that amitraz resistance in Alberta has arisen independently, but by the same genetic mechanism as it has in the US. In risk assessment the CFIA was concerned about the risk of importation of amitraz resistance mites. This paper is evidence of this already being an issue dealt with in Alberta. There are already multiple initiatives in place in Alberta to address this risk, and these are identified and discussed in the Annex.

	It is important to note that this issue is emerging, and information has only very recently come to light. As an example, there is a paper in the Journal Nature by Bahreini et al. (2025) which clearly validates the presence of amitraz resistance varroa mites in Canada. As further evidence, the following figure comes from another piece of work done by the USDA Agricultural Research Services and shows additional evidence that resistance had risen independently and by the genetic mechanism as in the US. 

Additional Data gaps of note: The ABC is not performing ongoing surveillance for Africanized genetics; however, they are conducting surveillance for behavior during all routine activities. Consideration as to whether genetics should be included in ongoing surveillance can be made with all stakeholders. The National Bee Diagnostic Center, in Beaverlodge, is a potential partner should these activities be pursued during pilot protocols or ongoing surveillance.

3) Potential Requirements For Importing Party - As the key focus of reducing importation risk is reducing the likelihood of exposure prior to entry, the requirements of the importing parties should be clearly defined. This includes definition of the importing region, strategies employed by the importing region, and processes and regulation in the importing region. As a starting point, the following would need to be considered and included in the structure of any initiative.

a) Definition of the importing region: The current proposal focusses specifically on evaluating the importation of honey bee packages from specific regions in Northern California (Shasta, Tehama, Butte, Glenn, Colusa and Yolo counties), to Alberta, for stock replacement purposes to address honey bee decline. The rationale for the selection of this region is outlined.

Alberta and Northern California beekeepers have an ongoing trade relationship which has proven to be collaborative and productive. ABC has observed that the Northern California group has a reputation within the North American industry for being innovative, taking a leadership role, and being extremely focussed on biosecurity.

There are numerous advantages for Alberta producers to bring in packaged bee replacements from Northern California as opposed to current alternatives Approximately 10-15% of bees that arrive after air travel are dead or non-viable, which significantly impacts the cost to the producer. Additional airline challenges have resulted in the accidental death of entire pallets of bees, or refusals to ship prepared packages which is a cost that falls onto the importing party (as insurance is not available). Not only is ground shipping more cost effective, but there are health advantages for the bees. Rapid ground transportation reduces stress and increases the chances that bees arrive in good condition.

Northern California has a climate which is closer to Alberta's, so the bees are more adapted to their ultimate conditions than those imported from the Southern Hemisphere. They are also on a more aligned seasonal cycle, increasing their resilience for the production cycle in Alberta.

The specified counties (Shasta, Tehama, Butte, Glenn, Colusa and Yolo) have also been selected based on more favorable climatic conditions which have, thus far, resulted in lack of establishment of AHB populations.

Figure 4: Counties presumed free (in green) of established AHB populations based on literature (Lin et al., 2018) and testing by California Apiary Inspectors (Nino, Personal Communication, September 2023).

b) Processes and Regulation in the importing region: The Northern California beekeepers have an ongoing and comprehensive strategy to reduce the exposure of Alberta producers to the hazards of concern through queen importation. They have extended a commitment to continue and work towards a strategy that supports the importation of bee packages. After a 2003 Canadian risk management assessment, Northern California beekeepers were permitted to resume shipment of queens to Canada in 2004 under strict protocols. These requirements include:

- Prior application and approval by the Canadian government to export queens to Canada
- Inspection of the U.S. apiary of origin with mitochondrial DNA testing of breeder queens by USDA inspectors. The results must be negative for Africanization of the bees from that apiary.
- Queens shipped without honey in the feed to prevent possible transmission of American and European foul brood
- Inspection of all shipments of queen bees by Canadian authorities on arrival to Canada
- The destruction of attendant bees prior to the installation of shipped queens into Canadian beehives

The country of origin possesses the primary responsibility to mitigate the risks. Northern California beekeepers have stated they support these requirements by CFIA and believe they are reasonable. Northern California beekeepers have consistently practiced the prevention and/or treatment of the five identified hazards of concern. They have identified they utilize a dynamic approach to continually improve their practices based on current and emerging challenges. This vigilant approach is in their interest as maintaining the health of their hives allows them to continue to conduct business within the US.

The proposed risk mitigation strategies specific to packaged bee importation from specified counties in Northern California, are outlined in the attached Annex. These detailed measures are included to specify the current and proposed practices to reduce exposure prior to entry, and upon import and inspection.

4. **Propose import inspection procedures - Inspection practices are an explicit category of risk mitigation measures and can be explicitly defined in regard to each hazard of concern. Current inspection practices for packages from allowed countries could be applied or modified in the context of a pilot program. ABC views discussions around inspection procedures as a part of the next phase of stakeholder collaboration.**

5. **Evaluate and Consider the Impact on Inter Provincial Movement – ABC recognizes that there may be concerns from other provinces in Canada regarding the potential movement the imported packages once they arrive. We respect this concern and are fully committed to working on developing an approach that addresses it. Part of the proposal is to engage in collaborative discussions on how this can be monitored and restricted based on a systematic approach following science-based procedures.**

6. **Propose active surveillance - Ongoing data collection and reporting strategies will be conducted to assess the impacts of new practices. Alberta beekeepers are open to considering additional surveillance activities if proposed by stakeholders such as Alberta Agriculture and Irrigation as well with the CFIA. This could play a role in a more comprehensive national surveillance strategy. Funding for ongoing surveillance activities is a factor for consideration.**

7. **Define pilot parameters and timelines - Prior to complete implementation of the new strategy, a pilot could be defined with the hypothesis of demonstrating that a more limited strategy regional trade strategy between Northern California and Alberta results in acceptable outcomes. ABC suggests that this**

could involve evaluation of exchange between a very limited number of operators or importers, and quantitative assessment of the data outcomes.

8. **Define success of pilot - Following the implementation of a pilot program, there must be a consensus regarding acceptable outcomes that would warrant the movement into a complete implementation. Consensus amongst stakeholders must exist regarding these parameters determined in the consultation period**

9. **Propose triggers for complete implementation - Should successful outcomes be demonstrated; a plan can be made to address the necessary steps for implementation of an increased number of packages (beyond the pilot scale). There will be multiple factors involved in addressing increased importation volume such as, increased volume of inspection procedures and movement requirements, and beekeeping practices. This plan can be for implementation.**

Summary

ABC greatly appreciates the work done by CFIA to ensure the safety of the industry through the application of regulations and border controls. Our proposal in no way suggests a lack of confidence with the work conducted by CFIA in assessing the risks faced by the Canadian bee keeping industry.

We do have concerns that the broad-based application of border restrictions will ultimately create significant impacts on our industry and the individual producers within it. This is especially true for the commercial sector and the stakeholders they represent. We believe that these risks are real and material and this is the genesis of the proposal we are asking CFIA to consider.

We respect the reality that all quantitative models have limitations, and while they offer significant insight, it is our opinion that there is an opportunity to refine the findings at a more granular level. A coordinated and cooperative assessment of potential options targeted at a specific segment and geographic region could potentially significantly reduce the risks we have outlined without significantly increasing the risks that you have previously quantified. As a result, we are respectfully asking that you consider our request and thank you in advance for this opportunity to work together on this critical opportunity.

Sincerely,

Curtis Miedema, President
Alberta Beekeepers Commission

ANNEX #1
PROPOSED RISK MITIGATION STRATEGY BY HAZARD – IMPORTING AND EXPORTING REGIONS

This assessment pertains to beekeepers in Alberta:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments re: Impacts on CFIA
Africanized Honey bees	**Disease Status:** This hazard is not listed in the WOAH Terrestrial Code. The **CFIA developed sanitary measures** to allow the safe trade of honey bee queens from the US. Statement: *"A risk assessment should be conducted to evaluate the risk of introduction, establishment and spread of AHBs in Canada as a result of importation of approximately 50,000 honey bee packages per year from the US. Then, should the risk estimate be above the CFIA's acceptable level of risk, a risk management evaluation could determine if current measures for the importation of queens or any other additional sanitary measures could ensure the safe trade of the commodity with regards to this specific hazard."*	Conduct risk management evaluation (underway).	7	1. Conducting a risk assessment and risk management evaluation is technically feasible	1. Conducting a risk assessment and risk management evaluation is operationally feasible	1. Conducting a risk assessment and risk management evaluation is economically feasible and has potential economic benefits	A risk management evaluation involves participation and cost incurred by commercial producers for initiatives that require resources of producer groups.	A risk management evaluation involves participation and cost incurred by hobbyist producers for initiatives that require resources of producer groups.	Limited new investment/structural costs. Incremental costs based on volume of import permits issued.	A risk management evaluation involves participation and cost incurred by government for review and subsequent action.
	Import Regulations: Canada has import regulations in place to minimize the risk of AHB entry. These regulations include inspections, testing, and quarantine procedures for honey bee packages.	**Regional Approach to Imports**: Canada has imported queens from northern California, a region with moderate AHB, for over 20 years without any reported AHB establishment. This suggests that existing testing protocols and beekeeper practices are effective in mitigating the risk. The current proposal is a limited trade approach focused on importation of honey bee packages from specific regions in Northern California (Shasta, Tehama, Butte, Glenn, Colusa and Yolo counties), to Alberta, for stock replacement purposes to address honey bee decline. Current import practices could be applied to Northern California imports.	3	1. Applying current import regulations to Northern California imports is technically feasible (ongoing)	1. Applying current import regulations to Northern California imports is operationally feasible (ongoing)	1. Applying current import regulations to Northern California imports is economically feasible (ongoing)	Access to Northern California packages has numerous benefits outlined in supporting documents (including economic and bee health benefits).	Access to Northern California packages has numerous benefits outlined in supporting documents (including economic and bee health benefits). These will benefit hobbyists through increased access to quality stock within Canada.	Significant new investment/structural costs. Incremental costs based on volume of import permits issued.	Implementation of import regulations with a new trading partner requires significant government investment in protocol development and assessment.
	Climatic Barriers: Cold winters in most parts of Canada are considered a major barrier to AHB establishment.	Vigilant screening in climatic regions of concern, ongoing re-evaluation with climatic pattern changes.	1, 6	1. Technically feasible	1. Operationally feasible	Economically feasible but requires investment at industry and government (provincial level) for ongoing and comprehensive surveillance program as well as data compilation and review.	Commercial producers must participate and invest in surveillance procedures.	Hobbyists benefit from ongoing surveillance activities.	Limited new investment/structural costs. Incremental costs based on volume of import permits issued.	Government investments may be required in control programs and surveillance.
	Colony Management: Regular hive inspections and the destruction of aggressive colonies help beekeepers identify and eliminate potential AHB introductions early on.	All commercial beekeepers are evaluating behavior on a regular basis. Hives with aggressive traits should be identified and requeened if they exhibit swarming behavior, nesting in uncommon places or decreased honey production.	1, 6	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - no increased cost to the producer. Producer education presents some cost to industry group but would be included in current extension activities	Commercial producers perform colony management in their own interest to increase success of operation and sustainability of package sales.	Hobbyists should also be aware of monitoring for abnormal activities. Any commercial activities to identify and destroy this hazard also benefits hobbyists.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Assessing the impacts of colony management is included in any government surveillance activities.
American Foulbrood	**Disease Status:** AFB is listed in the WOAH Terrestrial Code, and there are sanitary measures recommended for the safe trade of live bees (Chapter 9.2, Article 9.2.5). These measures are considered to be above those that are currently required for interprovincial movement of honey bees in Canada for AFB control. AFB is on Canada's annually notifiable list of diseases: veterinary laboratories are required to report the presence or absence of AFB to the CFIA on an annual basis. This information is used to produce Canada's annual and bi-annual WOAH notification reports. AFB and in some cases its oxytetracycline resistant form (rAFBOTC) is a listed disease in all provinces which have control programs in place and/or provide pest management strategies. Alberta has a Colony Health Monitoring Program which does AFB monitoring.	Continuation of current status related practices	5,6, 1, ABC	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence of AFB to reduce the likelihood of their own exposure.	Limited new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government cost associated with meeting these requirements, and benefit to having the data and measures in place including reduction of disease.

This assessment pertains to beekeepers in Alberta:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments re: Impacts on CFIA
	Use of Antibiotics - antibiotic use is avoided when possible in Alberta. Oxytetracycline, tylosin and lincomycin are the only approved antibiotics for the treatment of clinical AFB in Canada. While treatment with antibiotics will prevent the bacteria from infecting developing larvae, it will not completely eliminate AFB from a colony due to the presence of spores. Use is mostly recommended in the fall because of concerns related to residues and withdrawal period in honey. Alberta's beekeepers use oxytetracycline sensitivity testing during routine inspections to assess AFB risk	Ongoing prudent use of antimicrobials under the oversight of the Veterinary Authority (CFIA). Continue OTC sensitivity testing during routine inspections.	3, 5, ABC	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices	Antimicrobial Resistance Concerns - Treatment failures impact commercial producers so it is in their best interest to utilize practices that reduce selection for resistance	Antimicrobial resistance could affect hobbyists and hobbyist producers use of antimicrobials can also contribute to selection for resistance. Hobbyists should participate in surveillance activities	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Antimicrobial Resistance Concerns - Tylosin and Lincomycin high importance for human health so prudent use is important
	AFB Active Monitoring Program: The Province of Alberta started an AFB active monitoring program in 2020 (Alberta tech transfer program, 2023). The objective is to provide temporal trends and evaluation of pests and pathogens at the hive level. In 2023, 165 apiaries were sampled 2-3 times during the year (spring, summer, fall). Live bees from 10 colonies in each apiary were collected and were pooled into one sample per apiary and shipped for AFB analysis as well as for other disease diagnostics.	Continuation of this program	5, ABC	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices (requires ongoing investment)	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence of AFB to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.
	Burning infected equipment: Should a significant AFB disease challenge occur, burning colony and contaminated equipment can prevent spread as an emergency measure.	Continued producer education regarding emergency measures and incorporation into IHM and biosecurity plans (tech transfer teams). Evaluation of monitoring and data reporting regarding response to a significant event.	1, 5, Alberta's inspection program, practiced in Europe (Abx use not allowed)	1. Technically feasible if implementation is required	1. Operationally feasible if implementation is required	1. Economically feasible but challenging to producer if implementation is required	Destruction and replacement cost of equipment, labor intensive method, potential for severe economic impacts on producer in this situation.	Destruction and replacement cost of equipment, labor intensive method, potential for severe economic impacts on producer in this situation.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Benefit to awareness of emergency measures that reduce transmission.
	Dalan AFB Vaccine: Approved in the Fall of 2023 by the CFIA for use in honey bee queens.	An available tool which can be utilized on an as needed basis to reduce risk of AFB. Currently cost is a major limiting factor but utilization could be increased if it were more accessible.	5, ABC	1. Technical feasibility to reduce risk is not currently fully defined due to limited field data.	1. Operationally feasible	1. Economically feasible under specific circumstances but presents increased cost to producers	Cost to producers is high	Unlikely to be implemented by hobbyists at this time	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Benefit to awareness of emergency measures that reduce transmission.
European Foulbrood	**Disease Status:** AFB is listed in the WOAH Terrestrial Code, and there are sanitary measures recommended for the safe trade of live bees (Chapter 9.2, Article 9.2.5). These measures are considered to be above those that are currently required for interprovincial movement of honey bees in Canada for AFB control. Official control program at the provincial level: EFB is a listed disease in Alberta and an annually reportable disease at the federal level. Alberta requires absence of clinical signs in the apiary/colony in the source province for interprovincial movement and has control programs in place to eradicate and/or treat colonies with EFB.	Continuation of current status related practices	5	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence of AFB to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government cost associated with meeting these requirements, and benefit to having the data and measures in place including reduction of disease.
	Surveillance: Passive surveillance based on inspections and beekeepers' reported suspicions. In each province, when an inspection is conducted it includes the search for clinical signs of AFB and EFB. Alberta has a specific program (Colony health monitoring program) with active surveillance where the same apiaries are sampled two or three time during the season.	Continuation of Colony Health Monitoring program surveillance	5, 3	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices (requires ongoing investment)	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence of AFB to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.

This assessment pertains to beekeepers in Alberta:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments re: Impacts on CFIA
	Burning infected equipment: Should a significant EFB disease challenge occur, burning colony and contaminated equipment can prevent spread as an emergency measure.	Continued producer education regarding emergency measures and incorporation into IHM and biosecurity plans (tech transfer teams)	1, 5, Alberta's inspection program, practiced in Europe (Abx use not allowed)	1. Technically feasible if implementation is required	1. Operationally feasible if implementation is required	1. Economically feasible but challenging to producer if implementation is required	Destruction and replacement cost of equipment, labor intensive method, potential for severe economic impacts on producer in this situation.	Destruction and replacement cost of equipment, labor intensive method, potential for severe economic impacts on producer in this situation.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Benefit to awareness of emergency measures that reduce transmission.
Small Hive Beetle	**Disease Status:** Notifiable to the WOAH and immediately notifiable in Canada as per the Health of Animals Act and Regulations. For importation of live worker and drone bees with or without associated brood combs (i.e. honey bee packages), the only sanitary measure recommended in the Terrestrial Code (Chapter 9.4, Article 9.4.6.) is: "Veterinary Authorities of importing countries should require the presentation of an international veterinary certificate attesting that the bees come from apiaries situated in a country or zone free from A. tumida." As per the Terrestrial Code, only the trade of honey bee queens with a limited number of attendants is considered safe (when sanitary measures are applied) from SHB affected countries. ***"Given that the WOAH Terrestrial Code recommends that country or zone freedom be required by the importing country in the case of small hive beetle, and that the CFIA has not received any information pertaining to an officially-recognized SHB-free zone in the US, the import risk analysis process could be terminated at this point."*** Official control program at the provincial level: SHB is a listed agent in Alberta.	The risk mitigation assessment recognizes this barrier in the WOAH Terrestrial Code. Due to the prevalence data, regional control programs, and climatic barriers to establishment, the proposed course of action is for the Veterinary Authority to work with industry to address this barrier and identify potential solutions.	5, 6	1. The technical feasibility of implementing an aligned industry effort is difficult but possible	1. The operational feasibility of implementing an aligned industry effort is possible	1. The economic feasibility of implementing an aligned industry effort is possible	Evaluating potential solutions to this barrier to importation could significantly impact commercial producers due to severe negative economic and bee health impacts of current import restrictions.	Economic viability of the commercial industry impacts hobbyists producers, and is impacted by current import restrictions. These efforts could benefit hobbyist producers by providing them access to required inputs and support from a more viable industry which will be better positioned to address their needs.	Significant new investment/structural costs. Incremental costs based on volume of import permits issued.	A significant government investment is required in this initiative.
	Climatic Barriers: Cold winters limit reproduction and survival. Despite incursions in many places in Canada they have failed to establish outside of the Niagara peninsula. Natural migration presents a possible route of SHB spread but this has not resulted in establishment in Alberta.	Vigilant screening in climatic regions of concern, ongoing re-evaluation with climatic pattern changes.	1, ABC	1. Technically feasible	1. Operationally feasible	Economically feasible but requires investment at industry and provincial level for ongoing and comprehensive surveillance program as well as data compilation and review.	Commercial producers must participate and invest in surveillance procedures.	Hobbyists benefit from ongoing surveillance activities.	Limited new investment/structural costs. Incremental costs based on volume of import permits issued.	Government investments may be required in control programs and surveillance.
	SHB Traps: Approved SHB cloths and/or drowning traps are designed for capturing the SHB**.** These practices have also been recommended by Plant and Bee Health Assurance Section as part of inspections in Alberta for detection and control.	This tool can be utilized by producers on an as needed basis as a method to reduce the risks of SHB transmission.	5	1. Technically feasible	1. Operationally feasible	1. Economically feasible when usage is justified by producer	Additional tool for commerical producers to reduce risk of effects and transmission	Additional tool for hobbyist producers to reduce risk of effects and transmission	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
Varroa Mite	**Disease Status:** Notifiable to the WOAH and immediately notifiable in Canada as per the Health of Animals Act and Regulations. **Official control program at the provincial level:** Varroa mite is a listed agent in Alberta.	Continuation of current status related practices	5	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is an ongoing government cost associated with meeting these requirements, and benefit to having the data and measures in place including reduction of disease.

This assessment pertains to beekeepers in Alberta:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments re: Impacts on CFIA
	Interprovincial Movement Controls: Related to amitraz resistance, most provinces require an apiary to be inspected and have an average Varroa infestation level below 1-2% in order to move, export or sell honey bees across Canada, preventing operations with an uncontrolled amitraz resistance problem from this trade.	Continuation of this practices and implementation with Northern California imports	5	1. Applying current import regulations to Northern California imports is technically feasible (ongoing)	1. Applying current import regulations to Northern California imports is operationally feasible (ongoing)	1. Applying current import regulations to Northern California imports is economically feasible (ongoing)	Access to Northern California packages has numerous benefits outlined in supporting documents (including economic and bee health benefits). This control will reduce risk of additional resistance challenge.	Access to Northern California packages has numerous benefits outlined in supporting documents (including economic and bee health benefits). These will benefit hobbyists through increased access to quality stock within Canada. This control will reduce risk of additional resistance challenge.	Significant new investment/structural costs. Incremental costs based on volume of import permits issued.	Implementation of import regulations with a new trading partner requires significant government investment in protocol development and assessment.
	Integrated Pest Management Program (Varroa): All beekeepers across Canada are encouraged to follow an Integrated Pest Management program that includes on-farm training on pathogens and pests biology, detection, regular sampling for the assessment of the level of infestation and treatment. The objective is to increase the awareness of integrated Varroa mite management and to promote a standardized method to detect Varroa mites.	Continue with Technology Transfer Program's efforts related to Varroa in Alberta including development of tools such as: 1. Integrated pest management plan template for Varroa destructor, 2. Varroa treatment decision tree, 3. Tools for Varroa management (guide to effective sampling and control)	5,6	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.
	Alberta Government Surveillance: Is achieved through passive surveillance by beekeepers who will report infestations requiring provincial assistance. Alberta government's inspectors have been carrying out a surveillance for the past 3 years. Due to shortages of funds and people they will not be doing that this year. However if it was a requirement they would continue the surveillance.	Alberta Government plans to continue active surveillance if circumstances change	ABC	1. Technically feasible - previously implemented practices	1. Operationally feasible - previously implemented practices	1. Economically feasible with further investment - previously implemented practices	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.
	Determination of best management practices to improve miticide efficacy: Treatment options include Amitraz, essential oils (thymol, etc.), extended-release Oxalic acid treatments. Package bees can also be treated with a number of different miticides to eliminate phoretic mites (Oxalic, Thymol, formic Acid, Hopguard, etc.) prior to brood production. Ongoing efforts to identify, develop, and test alternative options.	Ongoing efforts and evaluation to determine best practices for managing varroa mite and reducing selection for resistance are ongoing in every area where varroa mite is found (including Alberta). New tools are being developed and tested.	1, 5, 6, 8, ABC	1. Technically challenging to implement these practices, however efforts are feasible if resources prioritized - evaluation of impacts ongoing	1. Operationally feasible to implement these practices - evaluation of impacts ongoing	1. Economically challenging to study and develop alternatives, however efforts are feasible if resources prioritized - evaluation of impacts ongoing	Determining best practices to maintain miticide efficacy involves commitment and investment from commercial producers. Success benefits commercial producers.	Determining best practices to maintain miticide efficacy benefits hobbyist producers due to reduction in disease challenge.	Limited new investment/structural costs. Incremental costs based on volume of import permits issued.	Determining best practices to maintain miticide efficacy involves commitment and investment from government.
	Apivar Efficacy Program: Goal is to randomly screen Varroa mite populations from across the province before treatments are applied in the fall.	Continue ongoing efforts to evaluate Apivar Efficacy and provide data to producers.	1, ABC	1. Technically feasible - previously implemented practices	1. Operationally feasible - previously implemented practices	1. Economically feasible with further investment - previously implemented practices	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.
Any Hazard	**Inspection upon arrival:** Beekeepers in Alberta must report the purchase of live bees (queens or packages) to the provincial apiarist. Requirements for movement of honey bees to the province of Alberta include the following inspection criteria: •AFB: No clinical signs in the colonies inspected •EFB: No clinical signs in the colonies inspected •SHB: Colonies positive for small hive beetle are not allowed to enter the province •Varroa mite: Apiary infestation level below 1% An inspection report is valid for 45 days.	Apply these inspection procedures to imported packages arriving from Northern California.	5	1. Applying current import regulations to Northern California imports is technically feasible (ongoing)	1. Applying current import regulations to Northern California imports is operationally feasible (ongoing)	1. Applying current import regulations to Northern California imports is economically feasible (ongoing)	Access to Northern California packages has numerous benefits outlined in supporting documents (including economic and bee health benefits).	Access to Northern California packages has numerous benefits outlined in supporting documents (including economic and bee health benefits). These will benefit hobbyists through increased access to quality stock within Canada.	Significant new investment/structural costs. Incremental costs based on volume of import permits issued.	Implementation of import regulations with a new trading partner requires significant government investment in protocol development and assessment.
	Beekeeper Registration: A requirement for any person keeping bees or equipment in Alberta	Continuation of this program provides an ongoing safeguard for industry	ABC	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices	No negative impacts	No negative impacts	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Irradiation: This is a sterilization method which is currently under further evaluation for practical implementation in Alberta as the capacity is not accessible within the province.	Further evaluation of the process and technology is underway, as well as assessment of the feasibility of building this capacity within the province.	5, ABC	1. Technical feasibility assessment is ongoing - potential future direction	1. Operational feasibility assessment is ongoing - potential future direction	1. Economic feasibility assessment is ongoing - potential future direction	Currently the cost/ benefit analysis to commercial producers has not been completed	Currently the cost/ benefit analysis to hobbyist producers has not been completed	Currently the cost/ benefit analysis to government has not been completed	

This assessment pertains to beekeepers in Alberta:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments re: Impacts on CFIA
	The Colony Health Monitoring (CHM) Program - provides Alberta beekeepers with apiary disease reports based on colony inspection and laboratory analysis. Beekeepers can then use this information to evaluate their Integrated Pest Management (IPM) plan and make changes if needed.	Continuation of Colony Health Monitoring program surveillance	5, 3	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices (requires ongoing investment)	Commercial producers benefit from reports of incidence and monitoring programs to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence of AFB to reduce the likelihood of their own exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.
	IPM On Farm Training - This on-farm training will cover Integrated Pest Management (IPM) principles, basic honey bee biology, pathogens (AFB, EFB, Chalkbrood, Nosema, Viruses), parasites (Varroa mite), pests (small hive beetle, wax moth), IPM strategies and plan. Participants receive a certification of completion	Continuation of IPM on Farm Training Program	5, 3	1. Technically feasible - ongoing practices	1. Operationally feasible - ongoing practices	1. Economically feasible - ongoing practices (requires ongoing investment)	Commercial producers benefit from programs and training to plan biosecurity and other interventions.	Hobbyists benefit from commercial activities that reduce the incidence of diseases and pest exposure.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	There is government benefit to having the data and measures in place including reduction of disease.

This assessment pertains to beekeepers/producers/exporters based in California:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments Re: Impacts on CFIA
Africanized Honey bees	**DNA Testing prior to Queen Importation:** Inspection of the U.S. apiary of origin with mitochondrial DNA testing of breeder queens by United States Department of Agriculture inspectors. The results must be negative for Africanization of the bees from that apiary.	Northern California beekeepers have made a proposed commitment to continue to use this testing method if the Canada/U.S. border opened for packaged bees, in addition to the present DNA testing of all breeder queen production apiaries. The Northern California Queen Breeders supports the use of mitochondrial DNA testing of apiaries of origin for all bees entering Canada from both Northern California and the United States.	3, 5	1. Technically feasible to conduct the testing and utilize results to identify hazards (lab capacity exists)	1. Operationally feasible as per Northern California beekeepers	1. Economically feasible as per Northern California beekeepers	Loss of associated revenue from hives where AHBs are detected vs. economic benefits of maintaining favorable genetics	Positive impact on hobbyists if risk is reduced prior to entry	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Colony Management: Regular hive inspections and the destruction of aggressive colonies help beekeepers identify and eliminate potential AHB introductions early on.	All commercial beekeepers are evaluating behavior on a regular basis. Hives with aggressive traits should be identified and requeened if they exhibit swarming behavior, nesting in uncommon places or decreased honey production.	1, 6, ABC	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - no increased cost to the producer. Producer education presents some cost to industry group but would be included in current extension activities	Commercial producers perform colony management in their own interest to increase success of operation and sustainability of package sales.	Hobbyists should also be aware of monitoring for abnormal activities. Any commercial activities to identify and destroy this hazard also benefits hobbyists.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Assessing the impacts of colony management is included in any government surveillance activities.
	Queen breeding activities: the majority of queens imported into the Canada come from California. These breeders favor qualities such as gentleness, health, robustness. These selective breeding activities result in preferred qualities for Alberta beekeepers.	Northern California queen breeders avoid the selection of queens that may pass on aggressive traits. This is to enhance the marketability of their queens for public health reasons and to maintain a labor force. These activities would be continued by these breeders regardless of trade activities.	3	1. Technically feasible practice as it is being done, and feasible for producer groups to educate producers on the benefits	1. Operationally feasible as it is being done, and feasible for producer groups to educate producers on the practice	1. Economically feasible for individual producers and producer groups	Commercial producers who purchase queens or these descendants benefit from these selective breeding activities.	Hobbyist producers who purchase queens or these descendants benefit from these selective breeding activities.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Government benefits from these activities which reduce incidence of disease and behavior challenges to industry and the public.
	Climatic Barriers: Specific counties in the Northern part of California have favorable climatic conditions which have, thus far, resulted in lack of establishment of AHB populations	Ongoing re-assessment of these patterns in response to climate change	5	1. Technically feasible to monitor for AHB establishment (ongoing practice)	1. Operationally feasible to monitor for AHB establishment (ongoing practice)	1. Economically feasible to monitor for AHB establishment with investment (ongoing practice - benefits justify the cost)	Commercial producers would be involved in ongoing surveillance activities and would require commitment and investment in monitoring.	Ongoing surveillance is of benefit to hobbyists, reduces their risk of exposure to the hazard	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Ongoing surveillance allows government to address concerns of multiple stakeholders.
	Queen Excluders: When the packages are filled, a set of size-sorting screens is utilized that excludes queens and drones from the package. This is common practice.	Continuation of these ongoing practice and education.	ABC	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible and required equipment is common	Part of routine operations for commercial producers, no significant impact.	Hobbyist producers who purchase packages benefit from these selective breeding activities.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Positive impacts of practice benefit inspection process.
American Foulbrood	**Regular Hive Inspections** - Because of varroa, Northern California beekeepers conduct hive inspections with much greater frequency than in years past, with more opportunities to treat for and detect AFB.	Continuation of this ongoing practice and education.	3	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - no increased cost to the producer. Producer education presents some cost to industry group but would be included in current extension activities	Commercial producers perform hive inspections in their own interest to increase success of operation and sustainability of package sales.	Hobbyists should also be aware of monitoring for diseases and pests. Any commercial activities to identify and destroy this hazard also benefits hobbyists.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Use of Antibiotics - ex. The use of Tylosin has been highly effective and AFB is rare in Northern California hives.	Northern California producers will continue the prudent use of antimicrobials under advisement from their Veterinary Authority.	3, 5	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - cost to the producer of treatments. Producer education presents some cost to industry group.	Awareness that while treatment with antibiotics will prevent the bacteria from infecting developing larvae, it will not completely eliminate spores. Use is mostly recommended in the fall because of concerns related to residues and withdrawal period in honey. Low incidence of AFB offers benefits to importing producers.	Antimicrobial Resistance Concerns - Importance of prudent use of antimicronials applies to hobbyists as well.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Shaking packages: AFB is a brood disease, so when bees are shaken off of the comb, there is a significantly reduced risk of transferring AHB into the package.	Part of process to produce package - inherent reduction in risk.	1, 2, 5, RA also documents the work in Beaverlodge, common practice in Europe (where Abx usage is not allowed)	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - no increased cost to the producer as required step in package production.	Reduction in AFB transmission through required step in package production benefits commercial producers.	Reduction in AFB transmission through required step in package production benefits hobbyist producers.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	

This assessment pertains to beekeepers/producers/exporters based in California:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments Re: Impacts on CFIA
	Transport Methods: Queens shipped without honey in the feed to prevent possible transmission of American and European foulbrood	**Transport Methods**: Packages shipped without honey in the feed to prevent possible transmission of American and European foulbrood	1,3,5	1. Technically feasible	1. Operationally feasible	1. Economically feasible	Duration of travel and reduction of delays important to ensure reliability of transport conditions for stock.	Reduction in AFB transmission through transport practices benefits hobbyist producers.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Packaging: All packages containing bees and queens will be made of new materials, either wooden or plastic, and not be returned to California to be refilled with bees.	Continuation of this ongoing practice and education.	1, 3	1. Technically feasible	1. Operationally feasible	1. Economically feasible but presents increased cost to producers	Cost to producers - ongoing assessment of benefits of this practice would be considered by industry	If practice results in reduction in AFB transmission, this benefits hobbyist producers.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Dalan AFB Vaccine: Approved in the Fall of 2023 by the CFIA for use in honey bee queens.	This is not widely used because ABF is rare in Northern California. The vaccination adds 7 to 9 days to the production cycle so currently, Northern California package producers do not consider this an option for packages that will be shipped to Canada due to the extra time in production and the cost of it, which is approximately 20 extra dollars per queen. It would be considered if Dalan could improve the timing of production and the cost.	5, ABC	1. Technical feasibility to reduce risk is not currently fully defined due to limited field data.	1. Operationally feasible	1. Economically feasible under specific circumstances but presents increased cost to producers which is prohibitive under most circumstances	Cost to producers is currently prohibitive	Unlikely to be implemented by hobbyists at this time	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Benefit to government for producers and industry to have more tools available to reduce AFB risk.
	Queen breeding: : California queen producers actively select for hygienic bees and the USDA has a new program in place to improve selections for Varroa Sensitive Hygiene for US queen producers and honey bee breeding programs.	Evaluate the impacts of these practices on AFB transmission (ongoing).	8	1. Technically feasible to implement these practices - evaluation of impacts ongoing	1. Operationally feasible to implement these practices - evaluation of impacts ongoing	1. Economic feasibility will be evaluated once benefits are fully understood	Potential benefit to producers	Potential benefit to hobbyists to purchase superior stock	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Potential benefits to government of reduced disease risk if successful.
European Foulbrood	**Regular Hive Inspections** - Because of varroa, Northern California beekeepers conduct hive inspections with much greater frequency than in years past, with more opportunities to treat for and detect EFB.	Continuation of this ongoing practice and education.	3	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - no increased cost to the producer. Producer education presents some cost to industry group but would be included in current extension activities	Commercial producers perform hive inspections in their own interest to increase success of operation and sustainability of package sales.	Hobbyists should also be aware of monitoring for diseases and pests. Any commercial activities to identify and destroy this hazard also benefits hobbyists.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Use of Terramycin: EFB is unusual in Northern California honey bee colonies. Terramycin to treat bee colonies is available by a veterinarian prescription only. California is the only U.S. state to impose this stricter requirement.	Northern California producers will continue the prudent use of antimicrobials under advisement from their Veterinary Authority.	3, 5	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - cost to the producer of treatments. Producer education presents some cost to industry group.	Awareness that while treatment with antibiotics will prevent the bacteria from infecting developing larvae, it will not completely eliminate spores. Use is mostly recommended in the fall because of concerns related to residues and withdrawal period in honey. Low incidence of AFB offers benefits to importing producers.	Antimicrobial Resistance Concerns - Importance of prudent use of antimicronials applies to hobbyists as well.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Antimicrobial resistance concerns, concern with residues (prudent use of antimicrobials)
	Transport Methods: Queens shipped without honey in the feed to prevent possible transmission of American and European foul brood	**Transport Methods**: Packages shipped without honey in the feed to prevent possible transmission of American and European foul brood	1,3,5	1. Technically feasible	1. Operationally feasible	1. Economically feasible	Duration of travel and reduction of delays important to ensure reliability of transport conditions for stock.	Reduction in EFB transmission through transport practices benefits hobbyist producers.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Packaging: All packages containing bees and queens will be made of new materials, either wooden or plastic, and not be returned to California to be refilled with bees.	Continuation of this ongoing practice and education.	1, 3	1. Technically feasible	1. Operationally feasible	1. Economically feasible but presents increased cost to producers	Cost to producers - ongoing assessment of benefits of this practice would be considered by industry	If practice results in reduction in EFB transmission, this benefits hobbyist producers.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	

This assessment pertains to beekeepers/producers/exporters based in California:

Hazard	Current Practices/ Considerations	Proposed Risk Mitigation Strategy	References Supporting Strategy	Feasibility to reduce risk to negligible (technical)	Feasibility to reduce risk to negligible (operational)	Feasibility to reduce risk to negligible (economic)	Effects on Stakeholders: Commercial Producers	Effects on Stakeholders: Hobbyists	Impacts on Stakeholders: CFIA (Government)	Comments Re: Impacts on CFIA
Small Hive Beetle	**Transport Inspections upon entering Northern California**: Trucks carrying beehives are visually inspected, including moving and tipping hives to inspect the undersides. Trucks arriving out of normal business hours are delayed if inspection is not possible at night. Hives on the trucks may be baited for SHB on entry. If the pests are evident, the trucks are turned away or rerouted to the state border in the south. Additionally, an inspection must also occur within 30 days after the bees arrive in California.	Continuation of these ongoing practice and education.	3,8	1. Technically feasible	1. Operationally feasible	1. Economically feasible	Inspection procedures upon entry reduce risk of SHB establishment for commercial producers. Identification of hazards prior to entry may have economic costs.	Inspection procedures upon entry reduce risk of SHB establishment for producers	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Climatic Barriers: Although SHB have entered Northern California from the southern part of the state, the arid conditions and soil types in the northern parts of California have prevented the insect from becoming an invasive species. SHB is not established in Northern California.	Ongoing re-assessment of these patterns in response to climate change	3	1. Technically feasible to monitor for SHB establishment (ongoing practice)	1. Operationally feasible to monitor for SHB establishment (ongoing practice)	1. Economically feasible to monitor for SHB establishment (ongoing practice - benefits justify the cost)	Commercial producers would be involved in ongoing surveillance activities and would require commitment and investment in monitoring.	Ongoing surveillance is of benefit to hobbyists, reduces their risk of exposure to the hazard	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Regular hive inspection: Northern California beekeepers are aware of SHB and know how to identify the insect and treat for the insect if were to appear.	Continuation of this ongoing practice and education.	3	1. Technically feasible - common and ongoing practice	1. Operationally feasible - common and ongoing practice	1. Economically feasible - no increased cost to the producer outside of treatment or losses if identified. Producer education presents some cost to industry group but would be included in current extension activities	Commercial producers perform hive inspections in their own interest to increase success of operation and sustainability of package sales.	Hobbyists should also be aware of monitoring for diseases and pests. Any commercial activities to identify and destroy this hazard also benefits hobbyists.	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	SHB Traps: Approved SHB cloths and/or drowning traps are designed for capturing the SHB**.** These practices have also been recommended by Plant and Bee Health Assurance Section as part of inspections in Alberta for detection and control.	This tool can be utilized by producers on an as needed basis as a method to reduce the risks of SHB transmission.	5	1. Technically feasible	1. Operationally feasible	1. Economically feasible when usage is justified by producer	Additional tool for commerical producers to reduce risk of effects and transmission	Additional tool for hobbyist producers to reduce risk of effects and transmission	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
Varroa Mite	**Queen Breeding:** Selecting for varroa resistance is a strategy employed by Northern California producers and it has been suggested this can play a role in miticide efficacy.	Ongoing performance and evaluation of the benefits of this practice	8	1. Technically feasible to implement these practices - evaluation of impacts ongoing	1. Operationally feasible to implement these practices - evaluation of impacts ongoing	1. Economic feasibility will be evaluated once benefits are fully understood	Potential benefit to producers to purchase superior stock, reduced requirement for miticide can play a role in ensuring ongoing miticide efficacy	Potential benefit to hobbyists to purchase superior stock	No new investment/structural costs. Incremental costs based on volume of import permits issued.	Potential benefits to government of reduced disease risk if successful.
	Management practices: Most beekeepers in Northern California keep varroa under control because of their management practices. Treatment options include Amitraz, essential oils (thymol, etc.) and a number of different miticides to eliminate phoretic mites (Thymol, formic Acid, Hopguard, etc.) prior to brood production.	Ongoing efforts and evaluation to determine best practices for managing varroa mite and reducing selection for resistance are ongoing in every area where varroa mite is found (including Alberta).	8, ABC	1. Technically challenging to implement these practices, however efforts are feasible if resources prioritized - evaluation of impacts ongoing	1. Operationally feasible to implement these practices - evaluation of impacts ongoing	1. Economically challenging to study and develop alternatives, however efforts are feasible if resources prioritized - evaluation of impacts ongoing	Determining best practices to maintain miticide efficacy involves commitment and investment from commercial producers. Success benefits commercial producers.	Determining best practices to maintain miticide efficacy benefits hobbyist producers due to reduction in disease challenge.	Determining best practices to maintain miticide efficacy involves commitment and investment from government.	
Any Hazard	**Registration**: All apiaries in California must be registered with the state, this requires the owner's information, the location of the apiary, and the number of colonies within 30 days of arrival. In 2019 additional rules were introduced which would allow owners of unregistered hives to be fined. With the required registration it is possible to ensure colonies are not moved into areas where packages are made.	Continuation of this ongoing practice and education.	8	1. Technically feasible - ongoing practice	1. Operationally feasible - ongoing practice	1. Economically feasible - ongoing practice	No impact - status quo	No impact - status quo	No new investment/structural costs. Incremental costs based on volume of import permits issued.	
	Prior application and approval by the Canadian government to export queens to Canada	Continuation of this ongoing practice and education.	3	1. Technically feasible - processes in place	1. Technically feasible - processes in place	1. Economically feasible - some investment in updating processes	Approval process has potential to reduce risk to commercial producers by ensuring all requirements are met	Approval process has potential to reduce risk to hobbyist producers by ensuring all requirements are met	Limited new investment/structural costs. Incremental costs based on volume of import permits issued.	Approval process requires government resources but reduces risk to all stakeholders by ensuring all requirements are met

Number	Reference
1	Alberta Beekeepers Commission Brief, 2023
2	Issues with the CFIA Risk Assessment
3	Northern California Beekeepers' Response to the CFIA Risk Management Framework on the Importation of Packaged Honey Bee with Queens from the United States
4	A Response from the Alberta Beekeepers Commission to the Risk Assessment on the Importation of Honey Bee (Apis Mellifera) Packages from the United States of America (V13) by the Canadian Food Inspection, 2013 Agency
5	CFIA Hazard identification - importation of honey bees packages from the United States
6	CFIA Risk Assessment - importation of honey bees packages from the United States
7	CFIA Risk Management Framework - importation of honey bees packages from the United States
8	Response to CFIA 2023 risk assessment regarding importing packages from the USA (Albert J. Robertson, PhD)
ABC	ABC communications and TTP Documentation