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POSITION PAPER

Tropilaelaps: The Mite the Paperwork Can’t Stop

Absence of Evidence Is Not Evidence of Absence

The case for precautionary restriction of live honey bee imports against Tropilaelaps mercedesae

Canadian Beekeepers Federation
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Contents

Field	Detail
Document	Position paper
Subject	*Tropilaelaps* spp. — import pathway risk and emergency preparedness
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A note on what is known — and how fast it is changing. Every factual claim in this paper is accurate to the best of the available evidence as of the date above. That qualification is not a formality. The science of *Tropilaelaps* is moving quickly, and much of what was confidently believed only a few years ago has since proven false — that broodless consignments pose no transmission risk, that the mite survives only a few days off brood, that adult-bee wash tests detect it as they detect *Varroa*. Each of these has been overturned by work published in the last two years, and in every case the correction has run the same way: the threat is larger, the mite hardier, and detection weaker, than previously assumed.

There is no basis for assuming this trend has finished. Findings in this paper may be revised, strengthened or qualified by future research, and no one can say today what that research will show. The precautionary case set out here rests precisely on that uncertainty: decisions must be made now, on the evidence now in hand, and cannot wait for a settled science that may arrive only after the mite does.

1. Summary

Canada's protection against *Tropilaelaps mercedesae* rests on a single mechanism: an exporting country tests its bees, does not find the mite, and certifies accordingly. The Canadian Food Inspection Agency has confirmed this, stating on 27 November 2025 that there is “no scientific evidence to suggest Canada should ban imports of honey bees from outside North America,” and that exporting countries “must certify they're free of the mite.”

The unfounded assumption inherent in that phrase is the subject of this paper. What an exporting country can honestly certify is that *Tropilaelaps* has not been detected. CFIA treats that as a certificate that the mite is absent. These are not the same. The North American beekeeping industry is struggling with the Varroa mite leading to massive losses annually that have left the industry in a precarious position

The certification mechanism used now are not up to the task of stopping Tropilaelaps, for three independent reasons.

1. **The tests do not work.** The adult-bee screening methods on which apiary inspection regimes universally rely — alcohol wash and powdered sugar shake — have low sensitivity for *Tropilaelaps*. A colony can carry roughly a 5% brood infestation and still return a “not detected” result. Even the best methods currently known will let through an infestation.
2. **The mite survives the journey — on the dead bees in the box.** Gill et al. (2024) found *Tropilaelaps* survives up to eight days on dead adult bees, roughly three times longer than on live ones, feeding on the exudate of decomposition. Every commercial package arrives with a layer of dead bees on its floor. And in 2025 a living, broodless *Apis dorsata* swarm intercepted on a ship bound for New Jersey — after an estimated 16 to 99 days at sea with no brood — was still carrying 28 *Tropilaelaps*. Transit time is not a barrier, and quarantine is not a kill switch. They also survive in swarms for similar amounts of time.
3. **Non-detection has repeatedly turned out to mean “present but unseen.”** Every major honey bee pest incursion of the past forty years was detected only after the pest had established. New Zealand, Australia and the United States had all recorded no detections of pests that were already there. There is no reason to believe Italy, Australia or New Zealand know more about *Tropilaelaps* today than Australia knew about *Varroa* in May 2022.

Against this, there is one strong precedent for what prohibition actually achieves. The United States Honeybee Act of 1922 closed the legal live-bee import channel. Sixty-two years passed before the tracheal mite the Act was written to exclude was found in an American hive. When it was, it had come overland from Mexico, not through the certified trade channel. In over sixty years, no major exotic bee parasite has ever been documented entering the United States by way of a permitted, certified import. Every breach for which a pathway has been proposed at all came through a route the Act does not govern.

> *The 1922 Act was passed on the basis of science that later proved wrong. It still bought North American beekeeping sixty-two years. CFIA's insistence on conclusive scientific evidence before acting inverts the very logic that has protected this industry for a century.*

This paper sets out the case for reassessing the *Tropilaelaps* import pathway on precautionary grounds, and for treating a certificate of non-detection as what it is — a record that the mite was not found, not evidence that it is absent. Specific recommendations are at Section 9.

2. What is at stake

Tropilaelaps mercedesae is a parasitic mite of honey bee brood, native to Asia, where it has adapted from giant honey bees (*Apis dorsata* and relatives) to the western honey bee, *Apis mellifera*. It is a WOAH-listed notifiable pest. It is not present in North America.

2.1 It is worse than *Varroa*

- **Reproduction.** *Tropilaelaps* reproduces faster than *Varroa* at the colony level — a shorter life cycle, no dependence on a phoretic adult phase, and a larger share of mites reproducing each cycle. Where both occur together it outcompetes *Varroa*: in one Thai study of co-infested colonies, worker-brood infestation ran at 19.9% for *Tropilaelaps* against 0.7% for *Varroa* — an order-of-magnitude difference in the same hives (Khongphinitbunjong et al. 2016).
- **Feeding damage.** *Tropilaelaps* feeds on both pre- and post-capped brood, opening multiple wound sites per larva where *Varroa* opens one or two. Brood mortality is correspondingly higher. Surviving adults emerge undersized and deformed.
- **Virus load.** *Tropilaelaps* is a competent vector of deformed wing virus. Infestation raises DWV titre in parasitised pupae and drives the same wing-deformity syndrome seen with *Varroa* (Forsgren et al. 2009; Khongphinitbunjong et al. 2016).
- **Host defence.** *Apis mellifera* lacks the grooming and biting defences that *Apis dorsata* deploys against this mite. Our bees have no evolved answer to it.

2.2 Colony outcomes in the field

Location	Documented impact	Source
Korea	30–70% of *A. mellifera* colonies lost, attributed to *Tropilaelaps*	Woo & Lee 1997, via APHA PRA
Afghanistan	~90% of colonies lost to ectoparasitic mites; areas around Kabul had no *Varroa* at all — *Tropilaelaps* alone	Wokye 1984, via APHA PRA
Russia (Krasnodar / Rostov)	53% mortality in monitored colonies	Brandorf et al. 2024
Georgia (Samegrelo)	Up to 24% of capped brood cells infested	Janashia et al. 2024
General	Colonies killed within one year of infestation	APHA Rapid PRA, Sept 2025

The UK's Animal and Plant Health Agency rates the economic impact of establishment as “large,” with high confidence. For a Canadian industry underpinning canola, blueberry, tree fruit and forage seed pollination, the equivalent assessment is not seriously in doubt.

2.3 It is moving toward us

- Established in Russia (Krasnodar and Rostov) since at least summer 2021; also detected in Tyumen, western Siberia.
- Confirmed in Georgia (2024) and Uzbekistan (2024). Suspected in Tajikistan, Iran and Azerbaijan.
- Great Britain suspended honey bee and apiculture imports from Ukraine on 7 October 2025. Canada banned Ukrainian imports in 2024.

3. The first failure: the tests do not detect this mite

Import certification is only as good as the diagnostic method behind it. For *Tropilaelaps*, that method is inadequate — and this is now quantified.

A 2026 study in Scientific Reports compared the sensitivity of standard monitoring methods across 26 infested *Apis mellifera* colonies. Its central finding is that the adult-bee methods used as the workhorse of apiary inspection worldwide — because they work well for *Varroa* — perform poorly for *Tropilaelaps*.

Method	What it samples	Detection threshold (*T. mercedesae*)	Suitability
Bottom board sticky trap	Mite fall	Most sensitive method tested	Impractical for export certification
Brood frame bump test	Brood	1.15% of cells infested	Best of the practical field methods
Alcohol wash	Adult bees	5.20% of cells infested	Low sensitivity — unreliable
Powdered sugar shake	Adult bees	5.67% of cells infested	Least sensitive — unreliable

> *"Unlike for* V. destructor*, adult bee-based methods (alcohol wash and powdered sugar shake) had low sensitivity to detect* T. mercedesae*… further research is needed to develop sensitive detection methods that can be employed on a broad scale to allow timely intervention when* T. mercedesae *mites expand into new regions." — Scientific Reports, 2026*

The practical consequence is stark. *Tropilaelaps* lives and reproduces in the brood; it does not spend a settled phoretic phase on adult bees the way *Varroa* does. An inspection regime built around shaking adult bees is looking in the wrong place. A colony can be roughly 5% brood-infested and still return "not detected" on an alcohol wash. An exporting country can run a diligent, honest, well-resourced inspection programme using internationally accepted methods, find nothing, and certify an infested apiary.

This is the crux. CFIA is not relying on a bad-faith certifier. It is relying on a good-faith certifier using a test that the peer-reviewed literature says does not work for this pest. The certificate can be entirely truthful and entirely worthless at the same time — because what it truthfully records is a failure to detect, not an absence.

4. The mite survives the journey — including in a box of dead bees

A regime that cannot detect the mite might still hold if the mite could not survive transit. That was the assumption. It is now known to be false.

4.1 The package bee graveyard

Gill and colleagues (Chiang Mai, 2024) ran survival assays on *Tropilaelaps mercedesae* using situations the mite would actually encounter in a shipment. The results invert the conventional wisdom.

Matrix	Mean survival	Maximum survival
Empty container (control)	13.3 hours	90% dead within 24 hours
Live *A. mellifera* adults	15.0 hours	A small proportion (~10%) survived markedly longer
Live *A. dorsata* adults	21.8 hours	Under 48 hours
Dead *A. mellifera* pupae	54.6 hours	Up to 168 hours (7 days)
Dead *A. mellifera* adults	55.6 hours	Up to 192 hours (8 days)

Read that table again. The mite survives roughly four times longer on *dead* bees than on live ones. Gill's team observed the mites spending most of their time on the corpses and apparently feeding on the exudate produced by decomposition. Dead bees are not a hostile environment for this mite. They are a food source.

Now consider what a commercial package of bees actually looks like on arrival. Every package carries a layer of dead bees on the floor of the box — ordinary transit mortality, present in every consignment, expected and unremarkable. Gill's work establishes that this layer is a survival substrate capable of carrying *Tropilaelaps* through the entire shipping period.

The authors say so themselves, and their wording should be put in front of CFIA verbatim:

> *"This finding suggests that* T. mercedesae *could be transported in scenarios where live* A. mellifera *brood and adults are not present, such as in used beekeeping equipment containing decaying brood and bees, or in queen shipments and packages where bees have died during the caging / packaging and transportation process." — Gill et al., 2024*

This directly overturns the assumption on which the current regime rests. Gill's paper notes that it "has been assumed that broodless colonies and colonies that have died at sea do not pose a transmission risk for *Tropilaelaps* spp. (EFSA, 2013)." That assumption is what allows a broodless consignment to be treated as low-risk. It is now known to be wrong. A short transit or a brief quarantine is clearly not going to work.

4.2 How long is "long enough"? A broodless swarm carried the mite for weeks

Gill's assays run to days. A recent field interception indicates the ceiling is far higher. In July 2025, a living bivouac of several hundred adult giant honey bees, *Apis dorsata dorsata*, was found aboard a cargo vessel inbound to Port Elizabeth, New Jersey. There was no comb and no brood. The crew contained the swarm and froze it aboard ship at −6 °C to prevent its release at port; on later inspection of the frozen material, 28 *Tropilaelaps mercedesae* were recovered and confirmed by morphology and DNA barcoding.

CO1 phylogenetics placed the swarm in a southern India lineage. On that basis — the establishment scenario the genetics actually support — the swarm had been aboard, alive and broodless, for somewhere between 29 and 99 days before it was frozen. Even the most conservative alternative scenario gives 16 to 18 days.

What the case establishes is that *Tropilaelaps* persisted in association with a living, broodless adult swarm for weeks — the mite depends on brood, the swarm had none, and the mites were still there. Phoretic mites do not remain on a colony they cannot feed from. The relevant number is therefore not "a few days" but weeks.

4.3 The package is the pathway — and there is no way to check it

A commercial package is a screened box of several thousand adult worker bees and a caged queen, shipped live. It is not brood, so it looks low-risk under the old assumption. But:

- **It arrives with its own dead-bee substrate.** Transit mortality accumulates on the floor of every package. Gill's work shows that layer will keep *Tropilaelaps* alive for the length of the journey — longer, in fact, than the live bees will.
- **The survival window comfortably exceeds the shipping period.** A package moves from an offshore apiary to a Canadian one in days. The Port Elizabeth swarm shows the mite persisting on a broodless colony for weeks. The journey is well inside the mite's tolerance.
- **There is no practical way to certify a given package free of the mite.** A live package cannot be alcohol-washed or brood-uncapped without destroying the product being sold, and those are precisely the tests that fail on *Tropilaelaps* in any case (Section 3). Molecular screening of the dead-bee residue could flag an infested box — a positive there would be meaningful — but a clean result doesn't mean safe. A low-level infestation will likely not be detected (Section 4.5).

This is the mechanism by which live mites could very easily enter the country. Not a stowaway swarm on a ship, but an approved, sealed, unremarkable package of live bees — carrying live *Tropilaelaps* on the dead ones at the bottom.

4.4 Swarming, and the limits of what we know

Recent work in the Journal of Economic Entomology confirms that swarming transfers *Tropilaelaps* between *Apis mellifera* colonies: in a single natural swarming event, eight female mites moved with the swarm. No brood was present.

The Port Elizabeth authors identify the conundrum: laboratory work suggests mites survive only four to six days broodless on *Apis mellifera*, yet their natural host *Apis dorsata* spends weeks broodless during migratory cycles, and the mites persist. Something is happening that has not been identified.

That uncertainty is not a reason for CFIA to wait. It is the reason to act. Every time this question has been examined in the last two years, the answer has been that *Tropilaelaps* survives longer, and in more circumstances, than previously believed. A regime built on an assumed survival ceiling is being revised downward by the literature in real time — and it is being revised in only one direction.

4.5 Why molecular testing does not provide a reliable answer

PCR is sometimes offered as the answer to the detection problem of Section 3. It has a genuine role, but its usefulness depends entirely on the commodity — and on the direction of the error it produces. PCR detects DNA, not live mites. What that means in practice is different for live bees than for hive products.

A clean PCR result cannot certify a package free of the mite. A cryptic, low-level, brood-dwelling parasite is easily missed by a sub-sample, so a negative describes what was tested, not the box. And live bees cannot be held indefinitely awaiting a laboratory result. PCR is not a testing method that will ensure safety. It is likely to muddy the waters.

Tropilaelaps DNA persists in wax and comb long after the mite that shed it is dead. Product originating in *Tropilaelaps*-infected countries can therefore carry mite DNA that is genuinely present but non-viable, generating PCR positives that overstate the live-mite risk. Here the failure is not false assurance but false detection, and it is a reason to interpret PCR results with caution rather than to rely on them either way.

The result is simple. Molecular testing detects genetic material, not live infestation.

5. The second failure: the surveillance record

If a certificate of non-detection were a reliable proxy for absence, we would expect the historical record to show pests being intercepted at borders, or at least detected before establishment. It shows the opposite. In every significant case, the pest was found only after it had established — often years after it arrived.

5.1 The record

Case	What the surveillance said	What was actually true
New Zealand — *Varroa*, 2000	Live bee imports had been prohibited for 40 years. Surveillance ran on ~600 samples a year, and “approved beekeepers” filed annual returns certifying their apiaries free from exotic disease.	Detected 11 April 2000 in South Auckland — by a hobbyist reporting a collapsed hive, not by the surveillance programme. MAF assessed the mite “may have been present and undetected for up to five years,” inferred from the degree of infestation found in the delimiting survey. Eradication abandoned 12 July 2000; the Technical Advisory Group put the probability of success at ~17%. The Auditor-General concluded the surveillance programme “can be regarded as a ‘failed’ programme.”

Case	What the surveillance said	What was actually true
Australia — *Varroa*, 2022	The last *Varroa*-free major beekeeping nation, running the world's most intensive bee biosecurity programme: sentinel hives at ports, floral sweep-netting, catch boxes.	A sentinel hive at the Port of Newcastle flagged *Varroa destructor* on 22 June 2022 — but the delimiting surveys that followed found a heavier, older infestation well inland, and NSW DPIRD concluded the mite had probably not entered through the port at all. The sentinel network detected the mite only after it was already established and spreading in the managed population; infestation data place the outbreak's start between June 2021 and March 2022, "possibly earlier." Eradication was abandoned in September 2023. The most intensive bee surveillance in the world did not catch this incursion at entry — and could not eradicate it once it did.
United States — tracheal mite, 1984	Excluded by statute since 1922. No US detection for 62 years.	Found in Mexico in 1980, some 200 miles south of the Texas border. Detected 3 July 1984 at Weslaco, Texas, and in Louisiana, Florida, the Dakotas, New York and Nebraska within four months. Some operations reported severe winter losses in the early years, though the mite's economic impact was contested at the time and is now regarded as modest. The route was overland — migratory beekeeping and natural colony movement — not the certified trade channel.
United States — *Varroa*, 1987	Excluded by the Honeybee Act. No legal live-bee imports permitted.	Found 25 September 1987 in Florida, in colonies owned by a Wisconsin package supplier; in 19 states within two years. Illegal importation of queens from South America is the most commonly cited explanation, but it has never been established: it remains unknown how and when *Varroa* first entered the United States.
United States — *Nosema ceranae*	Not recognised as present. Not looked for.	Chen et al. (2007) found *N. ceranae* in archived US samples going back to 1995 — roughly a decade before it was identified as present in 2007. It was never detected at a border. It was found in a freezer.

Case	What the surveillance said	What was actually true
Canada — small hive beetle in certified queen imports	Queens from Hawaii are imported under the CFIA–Hawaii Protocol, which requires whole-operation inspection for AFB, *Varroa* and small hive beetle.	Live small hive beetle was found in the packaging material of a Hawaii queen shipment, and SHB larvae have been detected in queens received in Alberta and Manitoba. The protocol did not stop the pest.
Canada — SHB into New Brunswick	Domestic movement of certified colonies from Ontario for blueberry pollination.	SHB infestation discovered on the Acadian Peninsula, arriving with the imported Ontario bees; colonies were quarantined. Even domestic certification did not suffice.
Tropilaelaps — Russia	No WOAH notification.	Established since summer 2021. Not published in the scientific literature until 2024 — a three-year lag.
Tropilaelaps — Georgia	No prior notification.	Confirmed 2024; the study concluded it had already been present for at least a year.
Tropilaelaps — Uzbekistan	No notification.	Mites collected near Tashkent in 2022; not confirmed and published until 2024.

5.2 What the pattern shows

These are not isolated lapses. They are a consistent, forty-year, multi-country pattern with three features.

1. **Detection lags introduction, and by how much is never precisely known.** Up to five years in New Zealand; three years in Russia; roughly a decade for *Nosema ceranae*; “possibly earlier” than March 2022 in Australia. Note that every one of these figures is an inference drawn after the fact — from infestation levels, from archived samples, from spread patterns. Nobody has ever measured the lag directly, because measuring it would have required detecting the pest, which is the thing that failed. The lag is not a failure of diligence. It is a property of the biology: low-level infestations are cryptic.
2. **Non-detection is recorded; absence is inferred.** A country reports “no detections.” That is not the same as “no mites” — but an export health certificate treats the first as if it were the second. That gap between what was found and what is actually there, not any dishonesty, is what has let these pests through. New Zealand's programme, tellingly, ran partly on beekeepers certifying their own apiaries free from exotic disease.
3. **Even a detection does not ensure eradication.** Australia is the instructive case, and we put it plainly because it does not flatter the surveillance model. Australia ran the most intensive bee-biosecurity programme in the world, and it still did not detect *Varroa* until the mite was established and spreading. When a sentinel hive finally flagged it, the delimiting surveys found a larger population already loose inland, and DPIRD judged the port was probably not even the point of entry. The detection was real, but late — and fourteen months

of funded response could not eradicate. New Zealand fared no better. It detected its incursion only three to five years in. Its Technical Advisory Group put the probability of eradication at roughly 17%, and it abandoned the attempt within three months. There is no example anywhere of a successful eradication of an established *Varroa* or *Tropilaelaps* population in a country with contiguous managed and feral bee populations.

The inference for Canada is uncomfortable. Canada has no sentinel apiary network for *Tropilaelaps* at all. Australia had the best in the world, and it detected *Varroa* only after establishment and still lost. Once the mite is here, the industry will not survive intact. Already struggling with Varroa, it is likely the combination of both mites will push hive size down below populations strong enough to survive the winter in most regions of the country.

5.3 What it cost New Zealand

New Zealand is the closest analogue to Canada's position, and it priced the failure. MAF's economic impact assessment put the cost of *Varroa* at between NZ$400 million and NZ$900 million over 35 years. An attempted eradication would have cost NZ$55–70 million — and the Auditor-General records that eradication "would therefore have been worthwhile from an economic perspective if it were technically feasible."

It was not technically feasible, because it was found too late. The Minister for Biosecurity described the incursion as "probably the most serious breach of our biosecurity in recent times." Among the technical impediments the Technical Advisory Group identified was one that should be read directly into the *Tropilaelaps* file:

> *"the available surveillance tests might not be sufficiently sensitive to enable new infestations to be detected and treated before they spread further."* — Varroa *Technical Advisory Group, New Zealand, 2000*

That was said of *Varroa*, for which the alcohol wash works well. Section 3 shows that for *Tropilaelaps* the standard tests are materially worse.

The EU Reference Laboratory for Bee Health reached the same conclusion about certification in its March 2025 assessment. It is worth quoting in full.

> *"It should be noted that almost no notification has been made to WOAH on the different cases of introduction… the various sources of information often report late detection of the mite (generally at least one year after the presumed period of introduction). Data of* Tropilaelaps *geographical distribution should be considered with caution and call for increased vigilance in the context of imports of bees from territories considered 'officially free' of* Tropilaelaps *spp. mites but geographically close to infested areas, or involving commercial or 'beekeeping' links with infested areas."*

The EU's own reference laboratory is telling regulators, in terms, that "officially free" is a status conferred by not having found the mite — and that for this pest it cannot be trusted. That is the exact assurance on which CFIA is relying.

6. The precedent: prohibition works, and we have the evidence

6.1 What the Honeybee Act of 1922 did

Between 1905 and 1919, roughly 90% of honey bee colonies on the Isle of Wight were destroyed by what became known as Isle of Wight disease. In 1921 Rennie described the tracheal mite *Acarapis woodi* from those colonies and concluded it was the cause.

The United States responded within a year. The Honeybee Act of 1922 prohibited the importation of live adult honey bees into the United States except under USDA authorisation, expressly to keep *Acarapis woodi* out.

6.2 What it achieved: sixty-two years

Acarapis woodi was not found in the United States until 3 July 1984, when it was detected in a commercial operation at Weslaco, Texas. Sixty-two years passed between the statute and the first detection.

In the end the result was:

- **The mite was found in Mexico in 1980, roughly 200 miles south of the Texas border, and in Texas four years later.** The route was overland — migratory beekeeping and natural colony movement across a land border. No certificate failed. No approved exporter was at fault.
- **Across the entire operative life of the Honeybee Act, no major exotic bee parasite has ever been documented entering the United States through the permitted, certified import channel.** Every breach for which a pathway has been proposed at all runs through a route the Act does not govern.

Varroa is consistent with this, though it must also be stated carefully. It appeared in Florida in September 1987 and in nineteen states within two years. Illegal importation of queens from South America is the explanation most often given — but it has never been established. It remains unknown how and when *Varroa* first entered the United States. What is known is that it did not come in on a permit.

6.3 How Honey Bee pests have entered:

Pathway	Closed by import law?	Record
Legal, certified live bee imports	Yes — Honeybee Act 1922	No documented entry of an exotic bee parasite into the United States by this route in over sixty years.
Illegal imports and smuggling	Prohibited, but certification cannot police it	Implicated in US *Varroa* (1987, unproven) and in New Zealand *Varroa* (2000 — the Minister's assessment was illegal queen importation by a beekeeper).
Land-border spread	Not addressable by import law at all	Tracheal mite into the United States, 1984.
Unknown	—	Australia, 2022. The federal investigation (Operation Decker), reported 17 March 2026, found no direct evidence of illegal importation and inconclusive physical and digital evidence; it could not determine when or how *Varroa* entered.

Restricting imports gives time to understand how to deal with this pest: It removes the one high-volume, high-risk route we can actually control.

This distinction matters enormously for the *Tropilaelaps* question, because Canada's situation demonstrates this is a viable and reasonable course of action.

- **There is no land pathway.** *Tropilaelaps* is in Asia, the Caucasus and Russia. It cannot walk to Canada. Unlike *Acarapis woodi* in 1984, it has no Mexico.
- **The illegal pathway is real but small.** It should be addressed by enforcement — not used as a reason to leave the legal channel open on the grounds that the illegal one exists.
- **The legal, certified import channel is the principal realistic entry route into Canada, and it is the one route we can actually close.** The 1922 precedent is the best evidence available that closing it works.

6.4 The precautionary point — and it is the strongest one

Modern scholarship largely holds that *Acarapis woodi* was not in fact the cause of Isle of Wight disease. The 1922 Act was legislated on a scientific premise that turned out to be wrong.

It was vindicated anyway — and, tellingly, not in the way its authors imagined. The tracheal mite was not the cause of Isle of Wight disease, and its eventual impact proved contested: some operations reported severe early losses, others little effect, and *Acarapis woodi* is today regarded as a comparatively minor pest that bees can be bred to tolerate. Congress could not have known any of this in 1922. It acted on incomplete and partly mistaken science to close a pathway — and in the six decades that followed, no exotic bee parasite is known to have entered the United States through that certified channel. The precaution held even though the premise was wrong and the threat milder than feared, which is precisely how precaution is supposed to work when the science is unsettled and the downside is irreversible. The contrast with Canada in 2026 is not close: here the threat is not milder than feared but already documented as severe, and the evidence is not mistaken but converging.

> *Congress acted in 1922 on incomplete and partly mistaken science, and was vindicated. CFIA declines to act in 2026 on clear and converging science, because it wants more of it. That is not caution. It is the inverse of caution.*

CFIA's stated position is that there is “no scientific evidence to suggest Canada should ban imports.” This sets the evidentiary bar in the wrong place. The precautionary principle, as applied across every other domain of Canadian animal biosecurity, asks whether the consequence of being wrong is tolerable — not whether the harm has already been proven. The consequence of being wrong here is the loss of the Canadian commercial beekeeping industry's operating model and the pollination capacity that depends on it. It is not recoverable. There is no eradication precedent to fall back on.

7. Canada's approved sources are not a safe harbour

CFIA's assurance rests on the claim that *Tropilaelaps* “has not been found in Australia, New Zealand, Italy or Chile.” Note the verb. Not found is precisely what CFIA said, and precisely what the exporting countries can support. It is being used to mean not there. Examine that inference source by source.

Source	Approved for	Why the assurance is weak
Australia	Packages and queens	Australia had never detected *Varroa*, and certified on that basis, until June 2022 — when *Varroa* was found already established. Eradication was abandoned in September 2023. The country running the world's best bee surveillance programme had a run of clean results and a mite in its ports at the same time. Australia is also approximately 93 km from *Tropilaelaps*-affected Papua New Guinea at the closest point.
Italy	Packages and queens	An EU member state. The European Beekeepers' Association has formally asked the European Commission to remove Turkey, Ukraine and Russia from the approved third-country list because current EU import conditions do not adequately control *Tropilaelaps*. The Commission has not acted. Italy's clean record is downstream of an EU perimeter that the EU's own beekeepers say is inadequate.
New Zealand	Packages and queens	Missed *Varroa* for up to five years (see 5.1). There is no basis to assume its *Tropilaelaps* surveillance is more sensitive — particularly given that the standard adult-bee methods do not detect this mite.

Source	Approved for	Why the assurance is weak
Chile	Packages and queens	No public evidence of a targeted, brood-based *Tropilaelaps* surveillance programme. Absence of detection, in the absence of appropriate testing, is not evidence of absence.
United States (CA, HI), Denmark, Malta	Queens only	Hawaii has already exported live small hive beetle to Canada under an inspection protocol specifically designed to catch it. Malta is currently pursuing a CETA complaint against Canadian provincial import restrictions — an indication that commercial pressure runs toward opening, not tightening.

7.1 CFIA has already accepted this reasoning once

In 2024 CFIA banned honey bee imports from Ukraine. Its stated reason was not that *Tropilaelaps* had been found there. It was that CFIA “couldn't be sure that Ukraine was completely mite-free.” In other words, CFIA declined to treat non-detection as absence — and acted.

Great Britain took the same step on 7 October 2025, on identical logic: “Surveillance for *Tropilaelaps* mite in Ukraine is currently limited… there are concerns that current surveillance efforts may not be sufficient to reliably identify its presence.”

The principle is therefore already established in Canadian practice: where surveillance is not capable of finding the mite, a record of not having found it counts for nothing, and that alone is sufficient grounds for suspension. We are not asking CFIA to adopt a new standard. We are asking it to apply the standard it has already used, consistently, to every source whose testing cannot detect this mite — which, per Section 3, is currently all of them.

8. What restriction would actually cost

The standard objection is that Canadian beekeeping depends on imported bees to replace winter losses. The numbers do not support it. Canadian beekeepers already replace the overwhelming majority of their losses themselves, by splitting existing hives. Offshore imports are a marginal input.

Measure	Figure	Source
Colonies operated nationally	~790,000	CAPA 2025 (435,059 wintered = 55% of national)
National winter loss, 2024–25	39.3% — on the order of 310,000 colonies	CAPA 2025
Long-run average loss, 2007–2024	27.7% — on the order of 220,000 colonies	CAPA
Package bees imported, 2024	46,985 kg — down 32.4% year on year	AAFC Statistical Overview 2024
Package sources, 2024	New Zealand 52%, Italy 22.7%, Australia 16.4%, Chile 8.1%	AAFC
Queens imported, 2024	300,000 — of which 84.1% came from within North America	AAFC
Queens from the four offshore sources	~48,000 (Italy 6.0%, Australia 4.7%, Chile 4.1%, New Zealand 1.0%)	AAFC

Set the two sets of figures against each other. Canadian beekeepers replace somewhere between 220,000 and 310,000 colonies a year. Offshore package imports amount to roughly 47,000 kg, with 1-1.5 kg in each package so we are realistically only accounting for 30,000-35,000 hives out of 250-300,000 that die over winter – and that these replacement colonies are well known to be highly susceptible to the Canadian disease environment and often require requeening with North American stock. Colony replacement in Canada is overwhelmingly a domestic operation carried out with domestic splits. The outside of North America trade is small.

This reframes the trade-off. The choice is not between an existential biosecurity risk and the survival of the industry's replacement model. It is between an existential biosecurity risk and a modest commercial convenience.

It is worth noting what this does not require. The great majority of Canada's imported queens already come from within North America, where *Tropilaelaps* is not present. A precautionary restriction aimed at *Tropilaelaps* therefore falls almost entirely on the offshore trade, and does not depend on any change to the North American arrangements in either direction.

9. Recommendations

Four measures follow from the evidence above. They fall across federal, provincial and industry responsibilities; none of them requires waiting for the mite to arrive.

1 — Convene a *Tropilaelaps* preparedness table

- Stand up a dedicated *Tropilaelaps* working group bringing together federal and provincial regulators, provincial apiarists, the Canadian Honey Council and provincial associations.
- Deliver a national *Tropilaelaps* emergency response plan. Canada currently has no published hazard-specific plan for this pest. Given that neither New Zealand nor Australia was able to eradicate an established mite, the effective response window is measured in weeks from first incursion. A plan written after detection is a plan written too late.

2 — Treat certification-based assurance as not fit for this pest

- The diagnostic evidence in Section 3 shows that exporting-country certification cannot reliably exclude *Tropilaelaps*. The import risk assessment should be reopened on that basis.

3 — Precautionary suspension of live bee imports from outside North America

- Pending a reopened risk assessment, suspend imports of packages and queens from all non North American areas.
- It is the position Great Britain already occupies in respect of Ukraine, and the position Canada already occupies in respect of Ukraine. It is also the position the US has taken since 2010.

4 — National brood-based surveillance

- Establish sentinel apiary surveillance at ports of entry and in high-risk regions.
- Australia's sentinel programme did not prevent *Varroa* establishing, but it did detect it and it did date it. Canada currently has neither capability for *Tropilaelaps*.

10. The question this leaves

> *If* Tropilaelaps *establishes in Canada, what will the review conclude that we should have done — and why are we not doing it now?*

Australia and New Zealand have already run this experiment — with *Varroa* rather than *Tropilaelaps*, but the lesson carries directly. Both were mite-free, both trusted detection to protect them, and both found the mite only after it had established and could no longer be eradicated. New Zealand asked the question in July 2000, three to five years after the mite had quietly arrived, and put the bill at NZ$400–900 million. Australia asked it in September 2023, after the most intensive surveillance programme in the world caught *Varroa* too late to matter. Neither got a second chance at *Varroa*.

On *Tropilaelaps*, all three countries are still in the same position: none has it, and each is trying to keep it out. That is the point — the chance is not lost, for Canada or for them. What separates Canada is how it is spending that chance: with no sentinel network, no hazard-specific response plan, a certification regime resting on tests that cannot find this mite, and an open offshore package pathway that carries live bees — and any mite riding the dead ones beneath them — directly into Canadian hives. Australia and New Zealand show what the end of the story looks like when detection is the whole defence. The time to change the defence is while the mite is still on the other side of the ocean.

Annex A — Timeline of *Tropilaelaps* westward spread

Date	Event
1961	*Tropilaelaps* first described, from the Philippines (Delfinado & Baker).
Summer 2021	*T. mercedesae* established in Krasnodar and Rostov, Russia (per Brandorf et al. 2024, retrospectively). First presence on the European continent.
2022	Mites collected near Tashkent, Uzbekistan (confirmed only in 2024). A Russian beekeeping association reports major colony losses linked to *Tropilaelaps*.
2023	Present in Samegrelo-Zemo Svaneti, Georgia (per Janashia et al. 2024, retrospectively).
2024	First confirmed European populations published (Russia). Georgia confirmed and notified to WOAH — the only such notification made. Uzbekistan confirmed. Canada bans imports from Ukraine.
March 2025	EU Reference Laboratory publishes its assessment: spread toward the EU; notification to WOAH almost nil; detection lags introduction by at least a year.
September 2025	APHA publishes its Rapid Pest Risk Analysis: economic impact of UK establishment rated “large.”
7 October 2025	Great Britain suspends honey bee, apiculture by-product, used equipment and comb honey imports from Ukraine.
25 November 2025	Alberta Beekeepers Commission calls for a Canadian ban on all bee imports from outside North America.
27 November 2025	CFIA responds: “no scientific evidence to suggest Canada should ban imports.”
2026	Scientific Reports publishes the sensitivity analysis showing adult-bee monitoring methods have low sensitivity for *T. mercedesae*. Journal of Apicultural Research publishes an updated global range.

Annex B — Sources

Primary regulatory and reference sources

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- Animal & Plant Health Agency (UK). Rapid Pest Risk Analysis for *Tropilaelaps* spp., September 2025.
- DEFRA / APHA. OVS Note 2025/65: *Tropilaelaps* mite restrictions — Ukraine, 6 October 2025 (updated 26 June 2026).
- World Organisation for Animal Health (WOAH). Infestation of honey bees with *Tropilaelaps* spp. — Terrestrial Code, and Terrestrial Manual Ch. 3.2.6.
- United States Honeybee Act of 1922, 7 U.S.C. § 281 et seq.

Peer-reviewed literature

- Sensitivity of current *Tropilaelaps mercedesae* monitoring methods in *Apis mellifera* colonies. Scientific Reports, 2026. Detection thresholds: brood frame bump test 1.15%; alcohol wash 5.20%; powdered sugar shake 5.67%.
- Gill, M. et al. (2024). An in vitro investigation into the survival of *Tropilaelaps mercedesae* on a range of matrices. bioRxiv 2024.12.10.627759. Mean survival: 13.3 h (empty control), 15.0 h (live *A. mellifera* adults), 21.8 h (live *A. dorsata* adults), 54.6 h (dead *A. mellifera* pupae), 55.6 h (dead *A. mellifera* adults). Maximum survival up to 168 h on dead pupae and up to 192 h on dead adults. Source for the authors' conclusion that the mite could be carried in "queen shipments and packages where bees have died during the caging / packaging and transportation process," and for the overturning of the EFSA (2013) assumption that broodless consignments pose no transmission risk. Note: the preprint's Results and Discussion sections state the maximum on dead adults as 168 h and 192 h respectively; we cite the range.
- Interception of an *Apis dorsata* swarm with *Tropilaelaps mercedesae* and *Kuzinia morsei* mites on a cargo vessel inbound to the United States. Frontiers in Insect Science, 2026 (10.3389/finsc.2026.1829350). Source for: July 2025 interception bound for Port Elizabeth, New Jersey; a living, broodless, combless bivouac of adult *A. dorsata* dorsata contained and frozen aboard ship at −6 °C to prevent release; 28 *T. mercedesae* recovered from the frozen swarm and confirmed by morphology and DNA barcoding; survival (broodless, in association with the living swarm) estimated at 29–99 days on the southern-India establishment scenario supported by CO1 phylogenetics, and 16–18 days on the most conservative alternative. Note: the mites were recovered from frozen material and were not observed alive; the survival inference rests on their persistence on a living broodless swarm, not on observed mite viability at interception. Pathogen prevalences (BQCV 38%, DWV-B 7%) were affected by suboptimal storage (−6 °C rather than −80 °C).

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- Janashia, I., Uzunov, A., Chen, C., Costa, C. & Cilia, G. (2024). First report on *Tropilaelaps mercedesae* presence in Georgia: The mite is heading westward! Journal of Apicultural Science.
- Mohamadzade Namin, S. et al. (2024). Exploring genetic variation and phylogenetic patterns of *Tropilaelaps mercedesae* populations in Asia. Frontiers in Ecology and Evolution.
- de Guzman, L.I., Williams, G.R., Khongphinitbunjong, K. & Chantawannakul, P. (2017). Ecology, Life History, and Management of *Tropilaelaps* Mites. Journal of Economic Entomology 110(2): 319–332.
- Khongphinitbunjong, K. et al. (2016). Prevalence and reproduction of *Tropilaelaps mercedesae* and *Varroa destructor* in concurrently infested *Apis mellifera* colonies. Apidologie 47: 1–11. Source for the co-infested worker-brood infestation figures (*T. mercedesae* 19.9% vs *V. destructor* 0.7%) and *Tropilaelaps*' competitive dominance.
- Phokasem, P., de Guzman, L.I., Khongphinitbunjong, K., Frake, A.M. & Chantawannakul, P. (2019). Feeding by *Tropilaelaps mercedesae* on pre- and post-capped brood increases damage to *Apis mellifera* colonies. Scientific Reports 9:13044. Source for multiple feeding wounds per larva (3.4- to 6-fold increase versus uninfested brood).
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- Uzunov, A., Janashia, I., Chen, C., Costa, C., Kovačić, M. & Gill, M.C. (2026). Swarming promotes *Tropilaelaps mercedesae* dispersal in *Apis mellifera*. Journal of Economic Entomology. Source for eight female mites transferring in a natural swarming event, with subsequent reproduction in the swarm's first sealed brood.
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