

# Tricho-Mite vs. Tineola bisselliella (parasitic wasps vs. webbing clothes moths)

A story in process

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## The Canadian Centre for Architecture

A museum, archive, library and research centre, dedicated to international architecture and related discourses. We mount about 5 exhibits per year in different exhibition spaces.



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## The exhibit that introduced our problem

- We mounted an exhibition that opened the fall of 2020
  - Mongolian yurt and related accessories
  - a large felt that covered the floor
  - a wool curtain
- All of these items were exposed without a vitrine or enclosure
- Phosphene treatment of objects of concern for a period of ten days, in a sealed truck on-site



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## Exhibit Mounted

The exhibit opened in September 2020....



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## Exhibit Mounted

...and after 10 days, museum closed to the public for 4 months



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## Re-opening

The exhibit re-opened to a limited public in February 2021



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## Re-opening

Discovery: Moths! (visitor reported to CCA staff)



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## Immediate Action

- Inspection of the galleries revealed that some **horsehair rope** was probably the source – living moths and larvae
- Keratinaceous material: horsehair ropes, large floor felt and orange wool curtain were removed from galleries and wrapped in plastic
- Two of these items were not collections material, so we were able to put these two outside in a secure space, in about -15 degrees Celsius

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## Immediate Action

Horsehair ropes  
removed >



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## Immediate Action

Wool felt floor covering  
removed >



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## Immediate Action

Wool curtain removed >



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## Additional Actions

- A through vacuuming of all areas of the galleries
- Localized cryonite treatment in cracks and crevices in galleries and storage
- Pheromone sticky traps in the galleries and throughout the building, in conjunction with the pest-control company that we were already using
- We alerted staff to take anything leather, wool or silk from their offices, or seal in ziploc bags, and to ensure there was no food or remnants in their offices
- Walk-through of whole building

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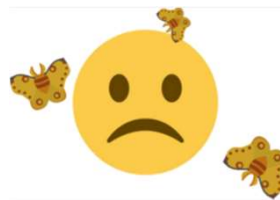
## Additional Actions

- We anoxically treated (CO2 tent) any and all possibly affected materials, for a period of 2 weeks, in our garage
- Items were thoroughly vacuumed with HEPA filter
- We put the treated material back into the exhibit (March 2021)
- Decrease in presence of moths in the galleries
- Insect experts at the Canadian Conservation Institute (CCI) for advice and species ID (*tineola biselliella*)

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## Resulting in...

- ...more moths! Was CO2 effective?!



- Possible reason (CO2): temperature in the garage was slightly too low; effective treatment requires a constant temp. of above 20 degree Celsius
- Solution to exhibition problem: removal of moth food and replacement with non-keratinaceous material; frequent monitoring of orange curtain

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## Fast Forward a few months...

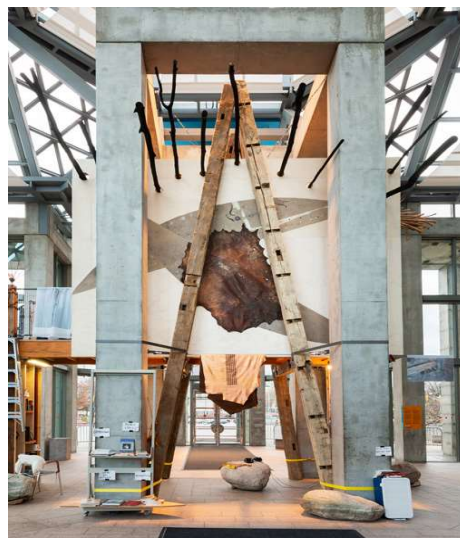
- Moth Situation is improving
- Low, but still present, female moth counts in sticky traps and a very small number of reported 'live' sightings.



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## A new challenge

- New exhibition called "Towards Home", indigenous co-curated and themed exhibition, with exposed keratinaceous material: Opening June 2022
  - How do we protect these exposed materials?
  - Some of the objects are very large and will not be able to cover with a vitrine



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## Parasitic Wasps

- Consultation with the Canadian Conservation Institute (CCI)
  - Advised on the technique of using parasitic wasps: Trichogramma
  - Parasitic because they lay their eggs amongst the eggs of moths, preventing reproduction



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## Parasitic Wasps

- Curious fact: the Conservation Lab and adjacent offices where we (ironically) were finding the most consistent low-level presence of moths
- We decided: why not try it?
  - Cost is not high
  - Ease of implementation
  - No risk to humans and risk to collection is perceived to be nothing
  - Familiarity with process in case we need to use again in future or upscale it to include gallery spaces, etc.
  - Need to do everything we can in anticipation of this future exhibition

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## Bring in the parasites!

- We located a local supplier of Biocontrol products including Trichogramma « Tricho-Mites »
- We calculated the volume of space in the Conservation lab and adjacent offices
- We ordered the number of wasp cards required for this space (8)
- They arrived the next day, chilled



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## Bring in the parasites!

- Evenly distributed the 8 cards throughout the spaces to be treated
- Kept the remaining wasps in the fridge



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## Bring in the parasites!

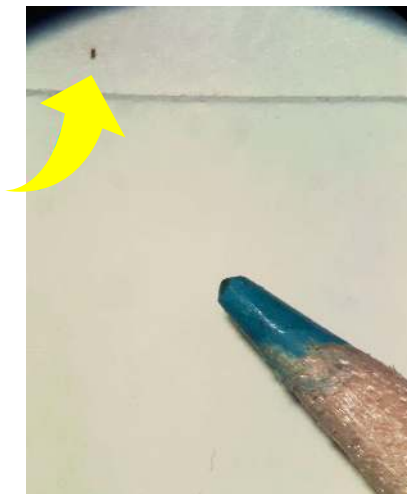
Instructions:

- Treatment should last for 8 weeks, minimum
- between 18 and 30 ° C; RH between 40 and 80%
- The emergence of Trichogramma takes place 10 days after their removal from the refrigerator
- A female lays 50-60 eggs over a period of days

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## Trichogramma(Ticho-Mite)

- They are TINY! < 1mm



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## Negative aspect

- Wasp “dust”. Over time, some wasps appear not to thrive, and they fall out of the card and onto the surface
- Requires cleaning up
- For this reason, best to keep distance from artifacts



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## How effective has it been?

- We are at week 8 of implementation in the Conservation area
- Routine monitoring of the sticky traps throughout the building indicates that it remains very low-level



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## How effective has it been?

- Recent discovery of two moths in a trap in Conservation; nothing else seen or found
- Hard to determine effectiveness when previous point of comparison is similar



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## How effective has it been?

- Many different variables to consider when treating a small area in a larger building
- Have we always had very low-level moths?
- Should we assume that we may always? (hard to fully eliminate)



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## In Summary

- It has been a learning experience
- It has done no real harm, probably good
- Minor expenditure (hundreds \$)
  - would cost a lot more for a longer period of time/larger space

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## In Summary

- Battling blind.
  - determine success is by measuring moth counts over an extended time (to also account for multiple life cycles of moths)
- Mild criticism of the wasp “pepper” that accumulates
- Happy to have any input from those with experience

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Thank you.  
Questions?

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