

SMALL HIVE BEETLE

Biology and Best Management Practices





SHB LIFE CYCLE

- “Sap beetle” family Nitidulidae
- Goes through complete metamorphosis over 21 to 94 days



ADULTS

- Reddish brown to black
- 4 x 7 mm to 2 to 3.5 mm
- Clubbed antennae
- Wings that do not extend entire abdomen
- Crescent moon shaped structure behind head



ADULTS

- Can fly up to 14 km
- Can survive on rotting fruit or go without food for 10 days
- May live up to 6 months
- “Tremendous reproductive capacity”



LARVAE

- White to beige in colour with hardened brown head
- Grow to 11 x 1.6 mm
- Three sets of legs
- Rows of brown spines along length of body
- Difficult to squish



LARVAE

- Most destructive life stage
- Tunnel through comb
- Feed on honey, brood, pollen
- Defecate in honey causing it to ferment
- Exit hive and burrow in ground to pupate

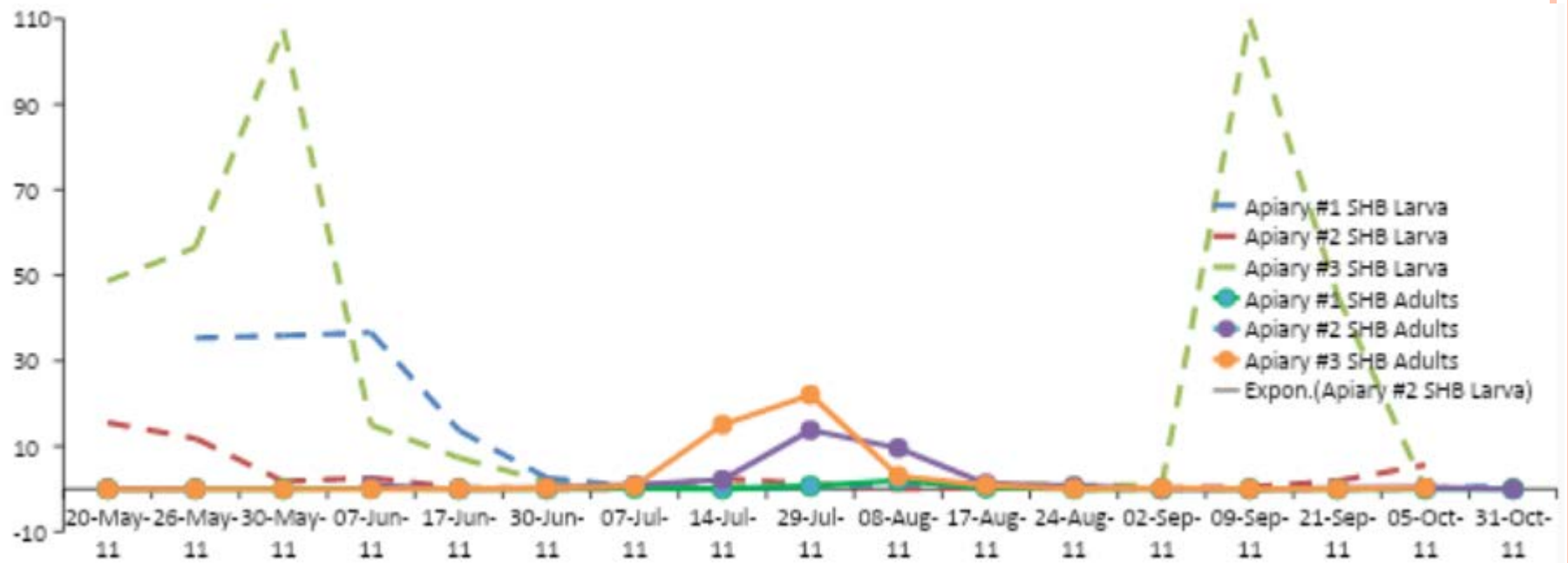


TIMING OF REPRODUCTION

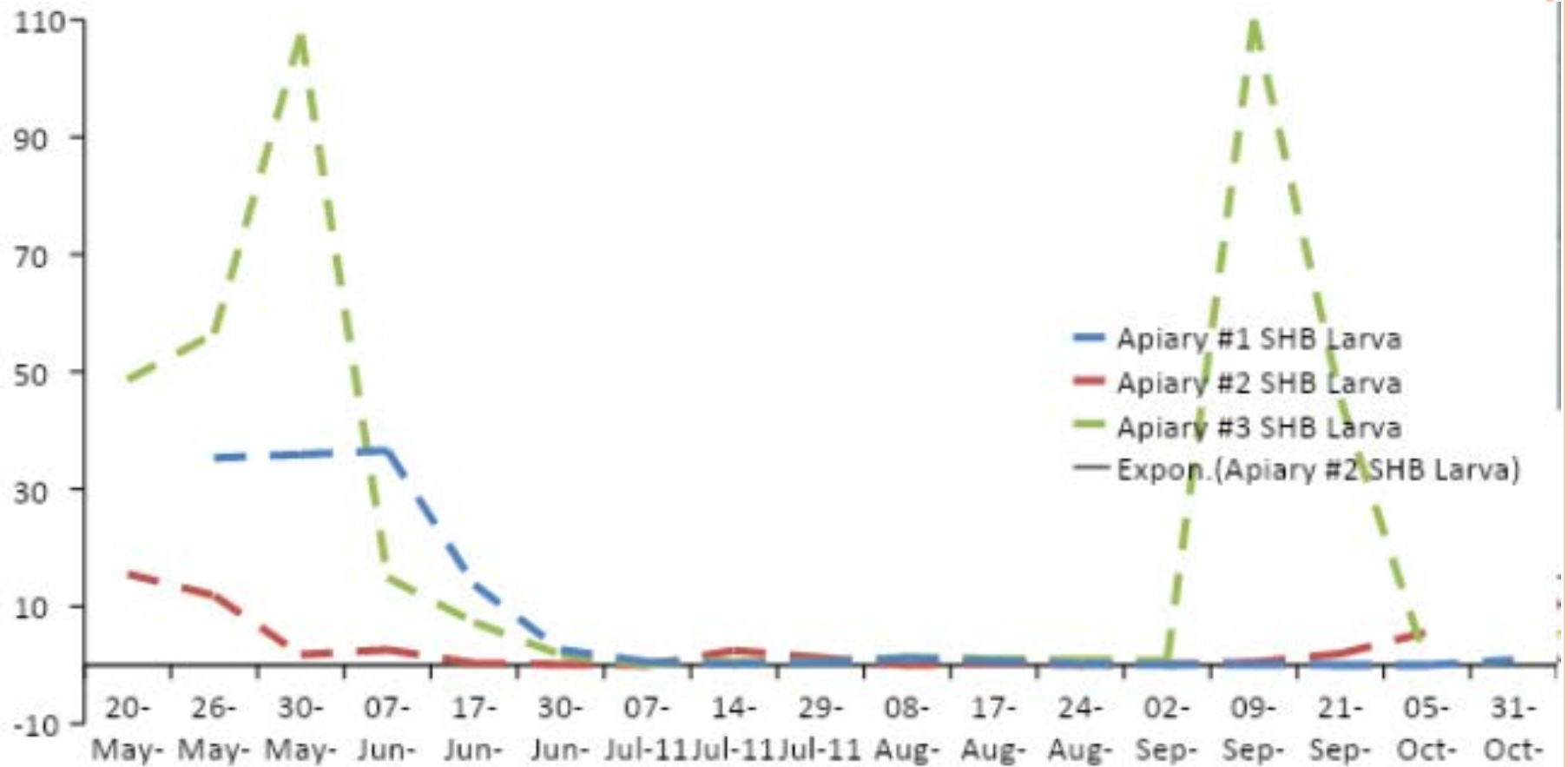
- Egg laying begins in late April
- Weak colonies are most at risk, or spring colonies with left over reserves
- Should avoid excess pollen
- Two periods of larvae production
- One re-infestation period
- Can overwinter in the honey bee cluster



ADULTS



LARVAE



WHERE DID IT COME FROM?



SPREAD

- 1996 - Florida
- 2002 –Australia
- **2002 – Manitoba**
- 2004 - Portugal
- 2005 - Jamaica
- 2006 – Manitoba, Alberta
- 2007 - Mexico
- 2008 – Quebec
- **2010 – Ontario, Hawaii**
- 2012 - Cuba
- 2013 – Ontario, Quebec, El Salvador
- 2014 – Nicaragua, Italy, Philippines
- 2015 - Brazil

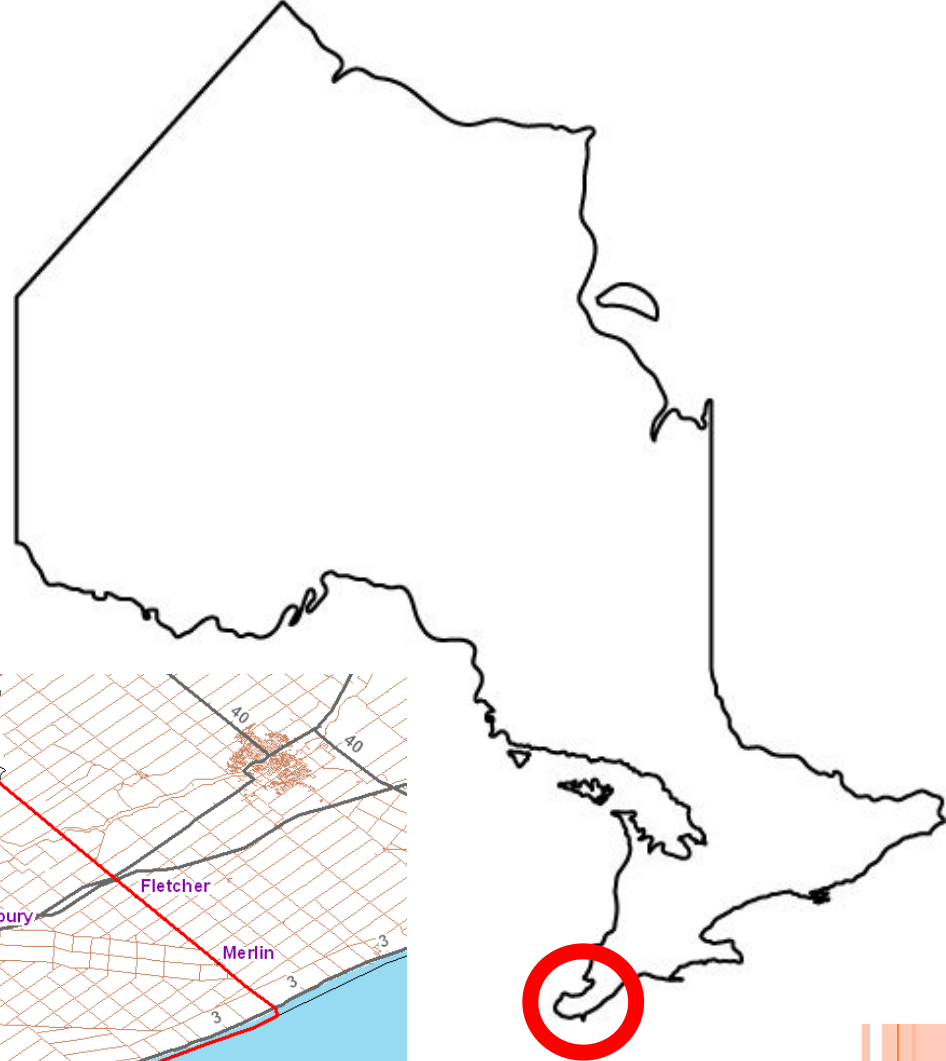


ONTARIO

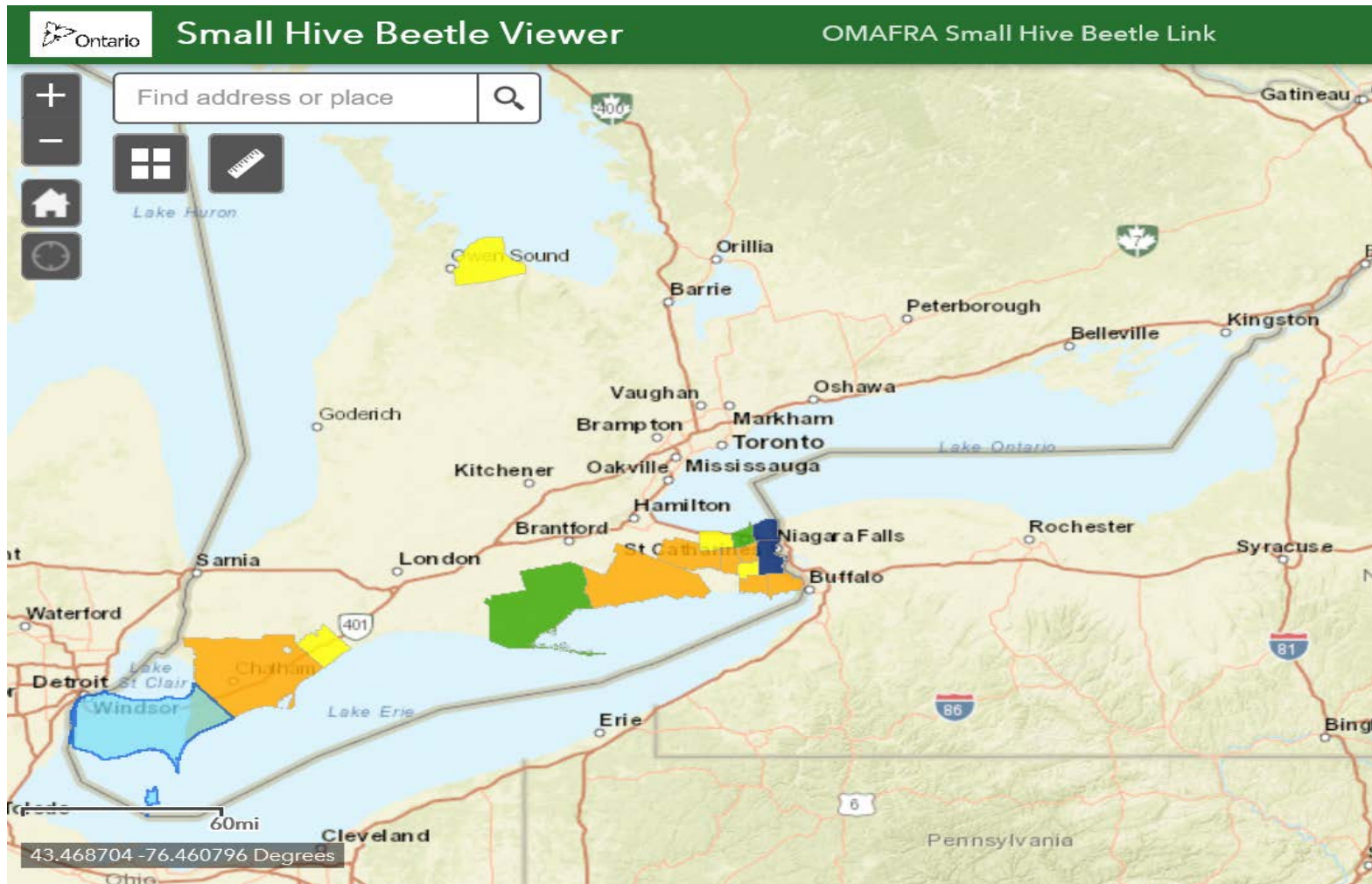
- First detected in 2010 in Essex County
- “In 2011, the Chief Veterinarian for Ontario established a **quarantine area** in southwestern Ontario under the *Bees Act* in an attempt to limit the spread of small hive beetle by restricting movement of colonies and equipment.”



THE QUARANTINE AREA



- Quarantine slowed the spread of SHB throughout Ontario
- SHB has been identified in other parts of Ontario



LIFT

“Effective March 14, 2019, the Chief Veterinarian for Ontario **has revoked the small hive beetle quarantine** that was in place for the county of Essex and the municipality of Chatham-Kent. The removal of the quarantine will allow beekeepers with colonies in the quarantine area to resume normal business and hive movement activities, subject to the requirements of the *Bees Act*.”



WHAT CAN YOU DO ABOUT IT?



- **Plan ahead!!**
- Familiarize yourself with SHB and how to identify it
- Understand your risk level
- Adopt best management practices early



BEST MANAGEMENT PRACTICES

Mitigate the impact of SHB by implementing the following:

1. Regular colony monitoring
2. Maintain a clean apiary
3. Maintain strong, healthy and populous honey bee colonies
4. Take immediate measures to manage weak colonies
5. Follow biosecurity protocols



REGULAR COLONY MONITORING

- Where to look:
 - Tops of frames, frame rests, underneath the inner cover
 - Bottom board
 - Surface of the comb
 - Pollen patties
- Pay particular attention to weak colonies and dead outs
- Oil traps



SMALL HIVE BEETLE IS STILL A REPORTABLE PEST!

- If you suspect a SHB infestation, you must contact the OMAFRA Apiary program:

1-877-424-1300

apiary@ontario.ca

You can send samples IN ALCOHOL to the **Animal Health Lab** at the University of Guelph to confirm:

(519) 824-4120 ext. 54530



MAINTAIN A CLEAN APIARY

- Reduce locations for SHB egg laying and larval feeding (wax debris, etc)
- Do not overfeed pollen supplements during larva production
- Remove dead or weak colonies
- Clean bottom boards



MAINTAIN STRONG COLONIES

- Ensure colonies are queenright
- Reduce colony damage or stress by managing other pests and diseases
- Ensure nucleus colonies are of sufficient strength, meaning not < 3 frames of bees
- Queen producers..

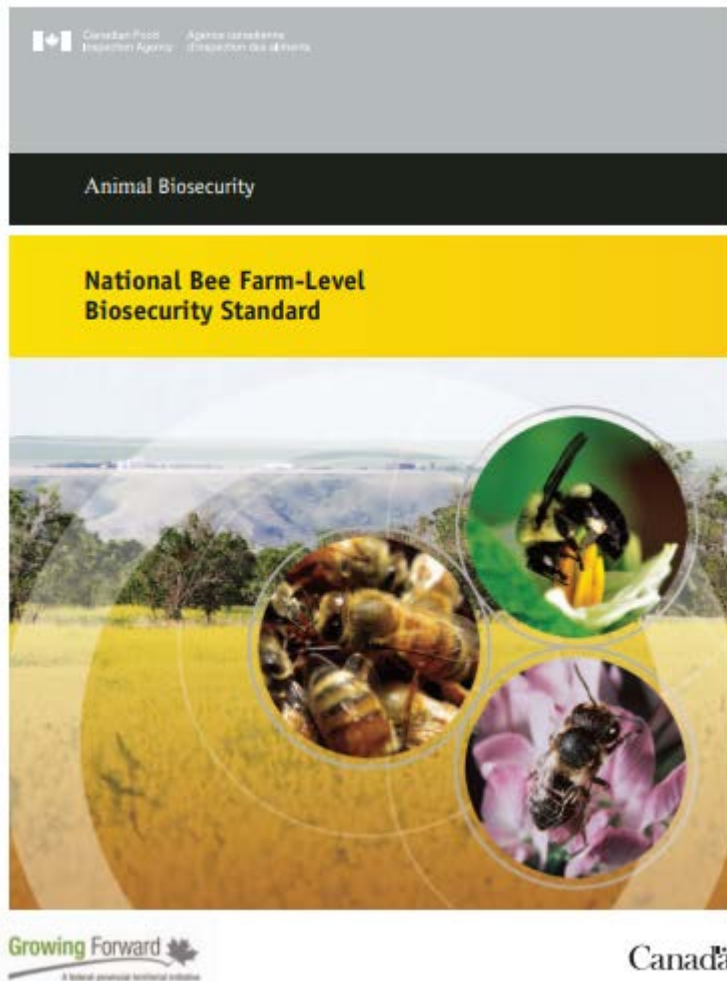


DEAL WITH WEAK COLONIES PROMPTLY

- Requeen queenless colonies immediately
- Cull or combine weak colonies
- Do not over super – minimize amount of unprotected comb



FOLLOW BIOSECURITY PROTOCOLS



- Available online
- Prevent and minimize exposure to pests/diseases
- Mitigate pests/diseases when found
- OSCIA Biosecurity workshops



HONEY EXTRACTION BMPs

- Promptly extract honey supers. Do not bring more honey supers to the extraction facility than can be extracted within a week (ideally within 24 to 48 hours).
- If possible, manage colonies with queen excluders. If queen excluders are not used, ensure honey bee brood is not brought into the honey house in honey supers.
- Run dehumidifiers in hot rooms to maintain relative humidity below 50%.
- Ensure that extraction facilities are kept clean.
- Remove unprotected comb, wax cappings and slumgum, or store them in beetle-tight containers.
- Store honey comb, extracted frames and unused honey supers in a freezer or a cold room ($< 10^{\circ}\text{C}$) and/or a room with low humidity ($< 50\% \text{ RH}$).



TREATMENT

- Checkmite
 - Not effective
 - Contamination issues
 - Resistance

- *Permanone® Multi-purpose*
 - No field testing to support effectiveness
 - Toxic to bees
 - Contamination of soil and water



