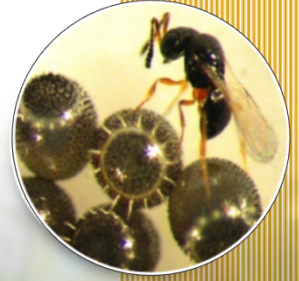




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Agri-Food Canada

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Agroalimentaire Canada

CANADA – CABI COLLABORATION



An Integral Partnership Influences Global Management of the Invasive Alien Brown Marmorated Stink Bug

Tara Gariepy

Agriculture and Agri-Food Canada
London Research and Development Centre

Canada

Brown Marmorated Stink Bug:

An Example of the Canada-CABI Collaboration

- Native to east Asia (China, Japan, Korea, Taiwan)
- Establishment outside of native range
 - Fairly rapid spread in non-native range
 - Severe economic damage in a number of crops
- Highly polyphagous (>200 host plants)



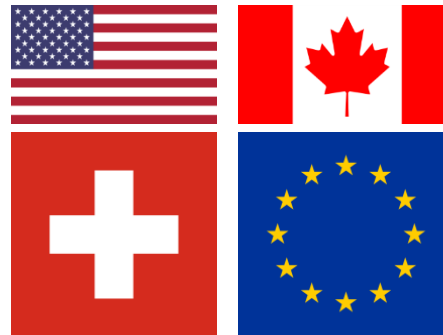
Brown Marmorated Stink Bug:

A Global Perspective on Pest Management

Areas of Origin



Areas of Establishment



Areas at Risk

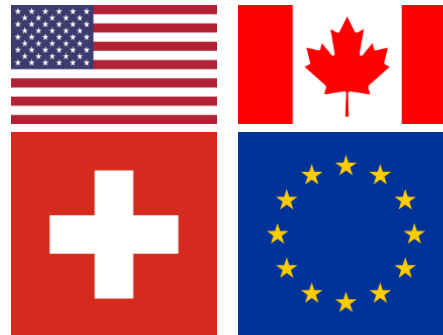


Brown Marmorated Stink Bug: A Global Perspective on Pest Management

Areas of
Origin



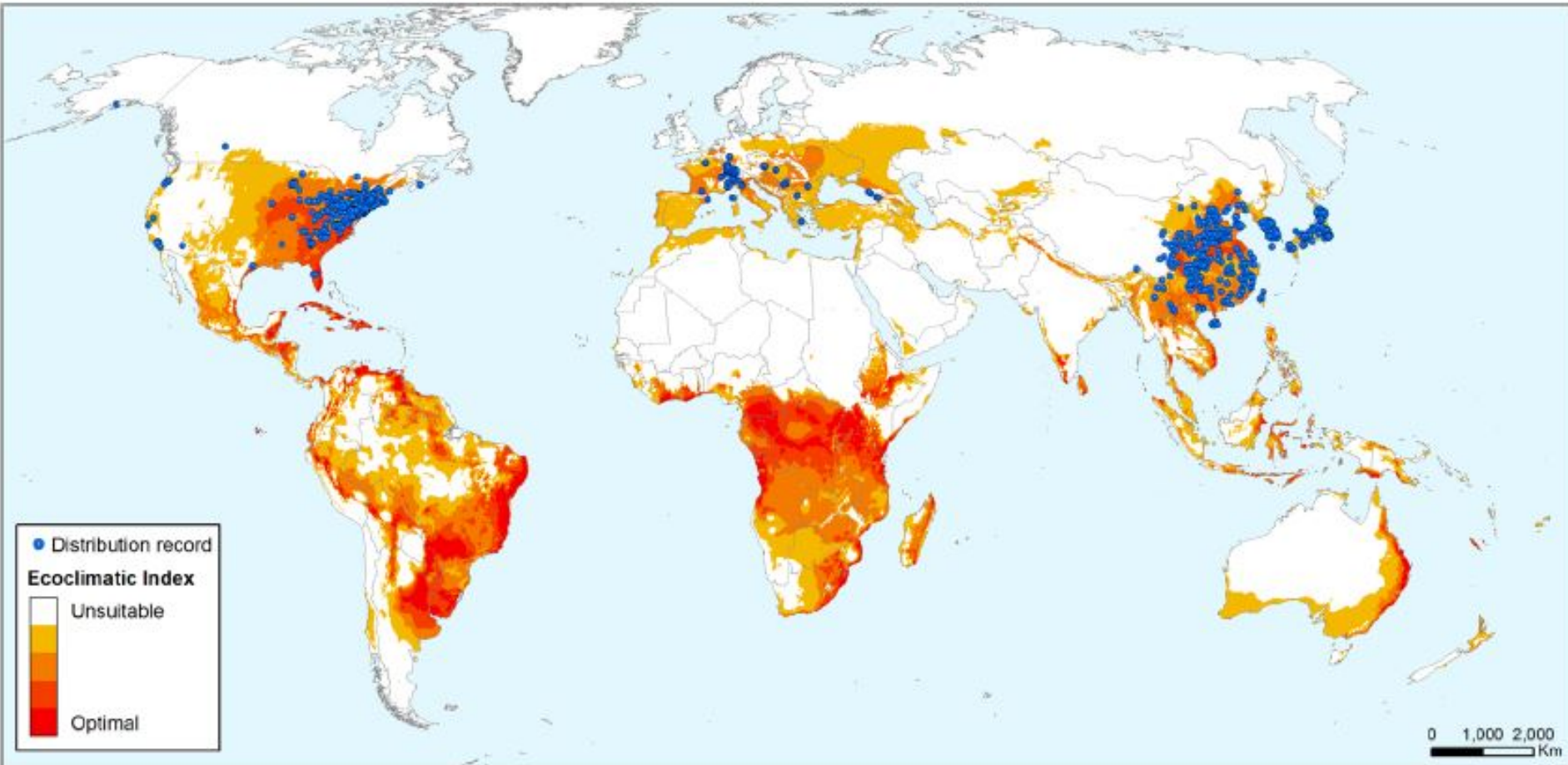
Areas of
Establishment



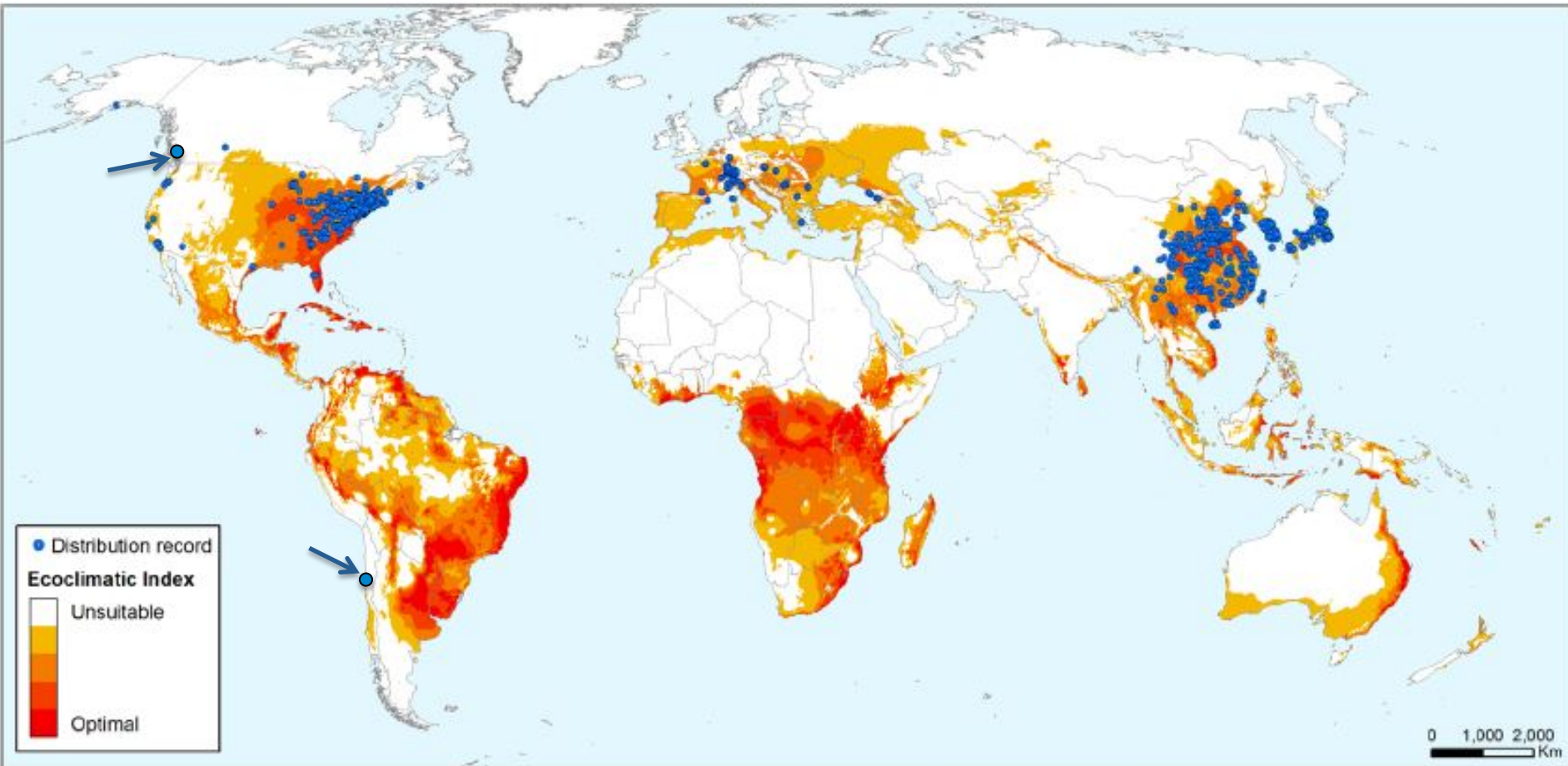
Areas at
Risk



Brown Marmorated Stink Bug: Distribution and Spread



Brown Marmorated Stink Bug: Distribution and Spread



Brown Marmorated Stink Bug: Global Collaboration



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Brown Marmorated Stink Bug: Global Collaboration



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Brown Marmorated Stink Bug: Global Collaboration



Agriculture and
Agri-Food Canada



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA



**Saint Petersburg
State University**

FERRERO



**SZENT ISTVÁN
UNIVERSITY**

Brown Marmorated Stink Bug

Why Collaborate?



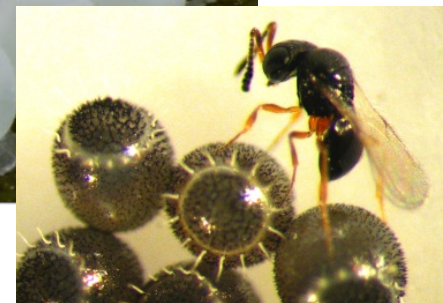
Brown Marmorated Stink Bug

How Do We Collaborate?

- Identify pathways of invasion and track global spread

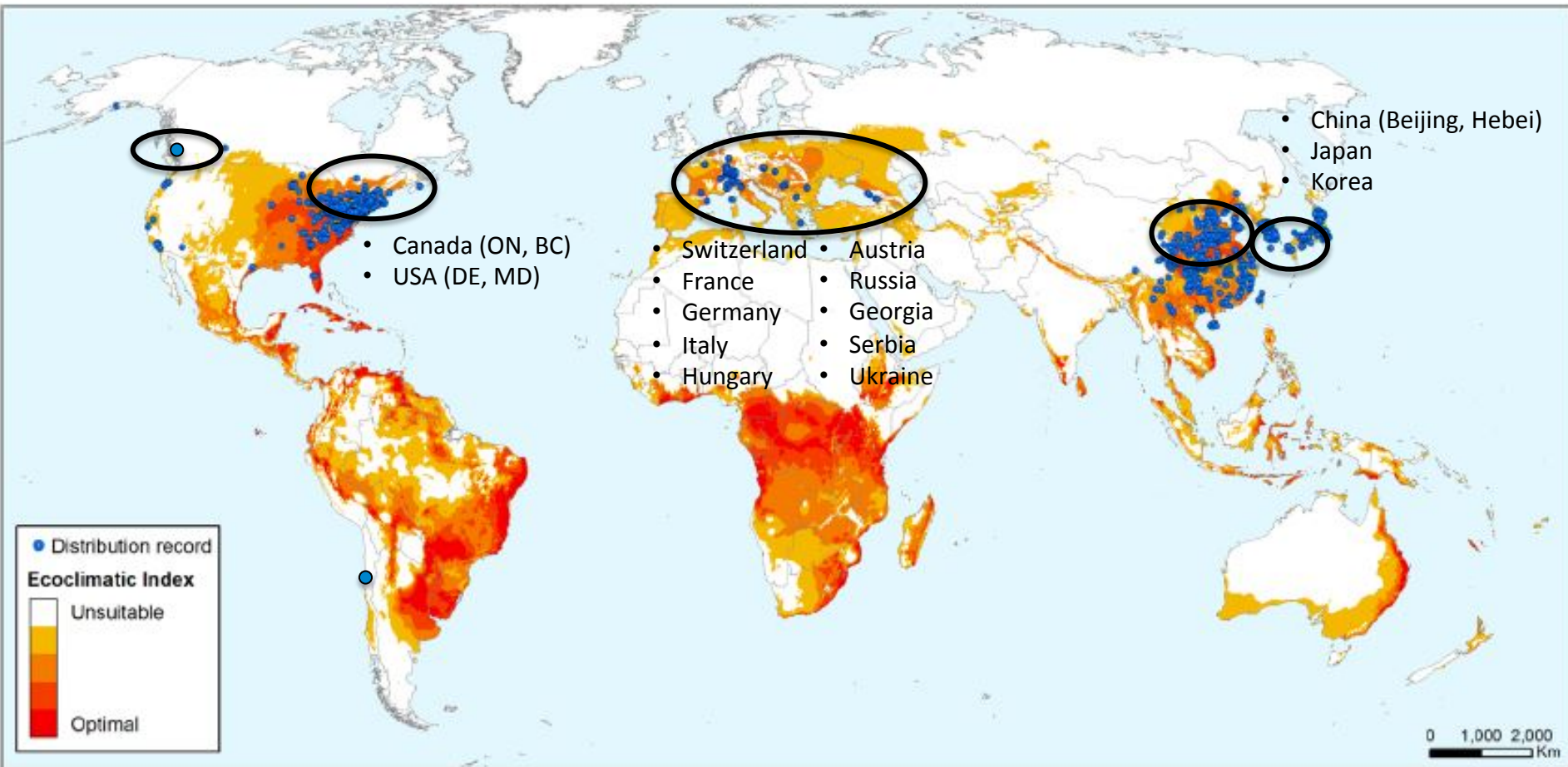


- Develop classical biological control strategies



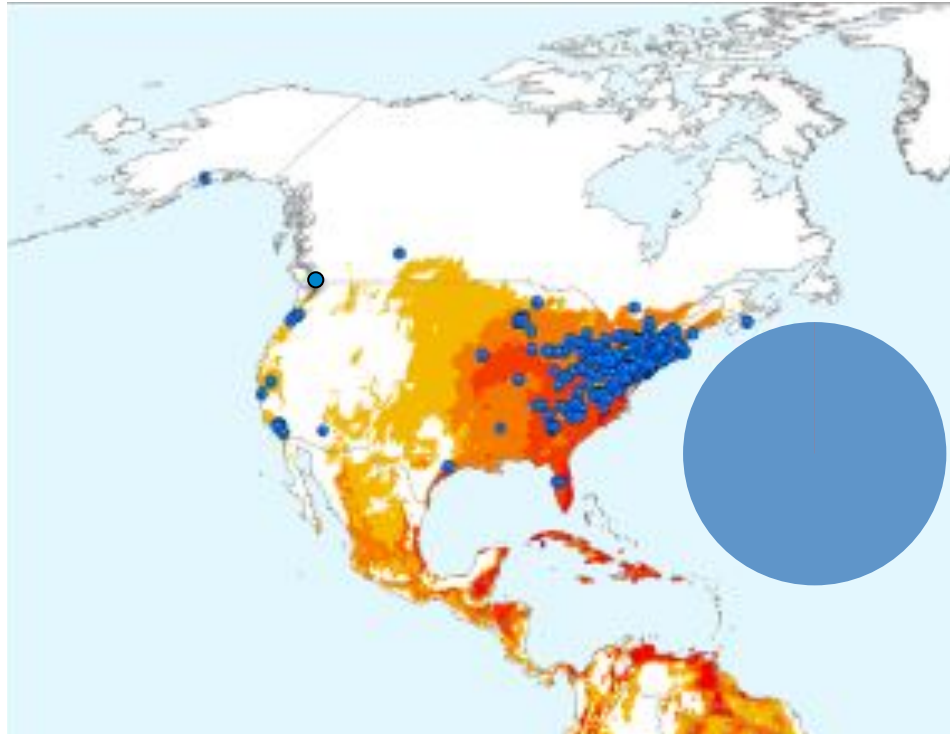
Brown Marmorated Stink Bug

Global Movement and Spread



Brown Marmorated Stink Bug

Source and Spread of NA Populations



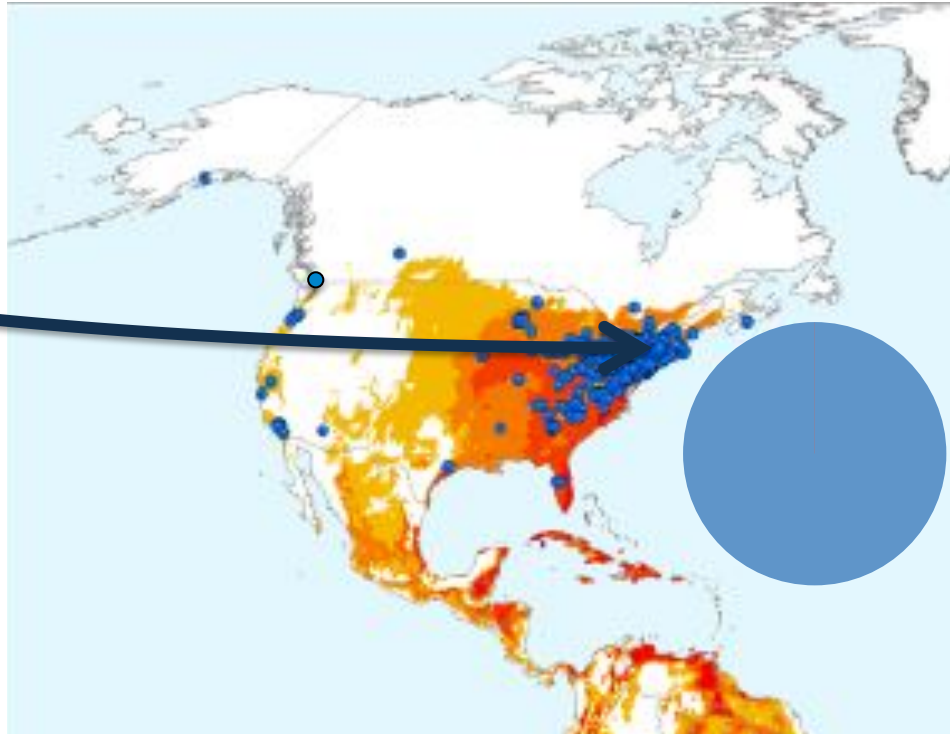
Eastern NA

- 1 population
 - Genetically uniform
 - Single introduction from Asia



Brown Marmorated Stink Bug

Source and Spread of NA Populations



Eastern NA

- Originates from China (Beijing)

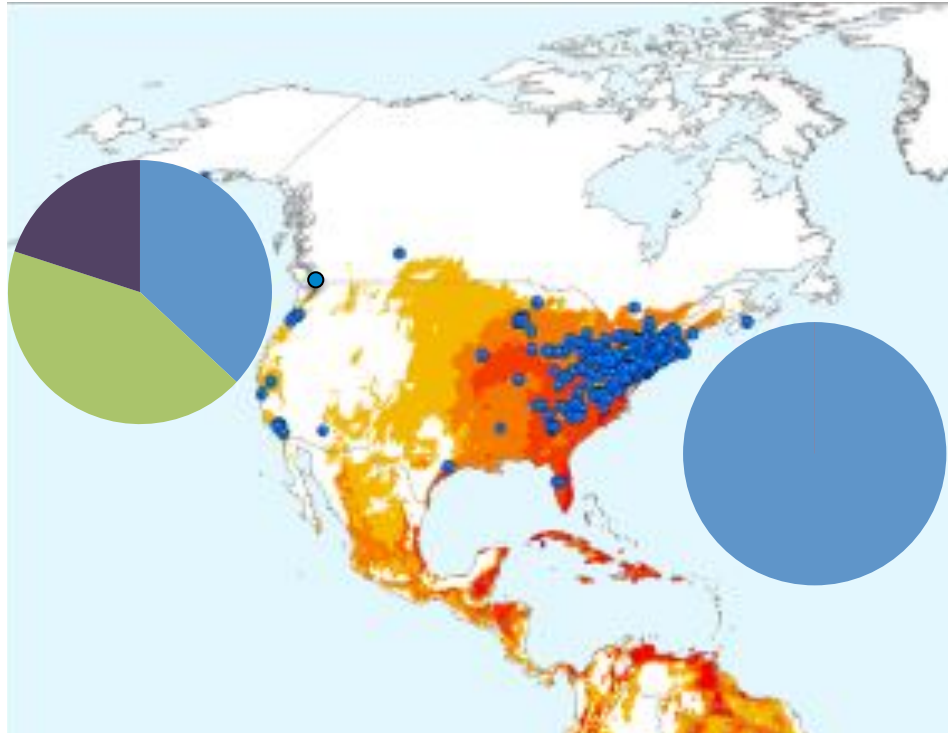


Brown Marmorated Stink Bug

Source and Spread of NA Populations

Western NA

- 3 populations



Eastern NA

- 1 population
 - Originates from China (Beijing)

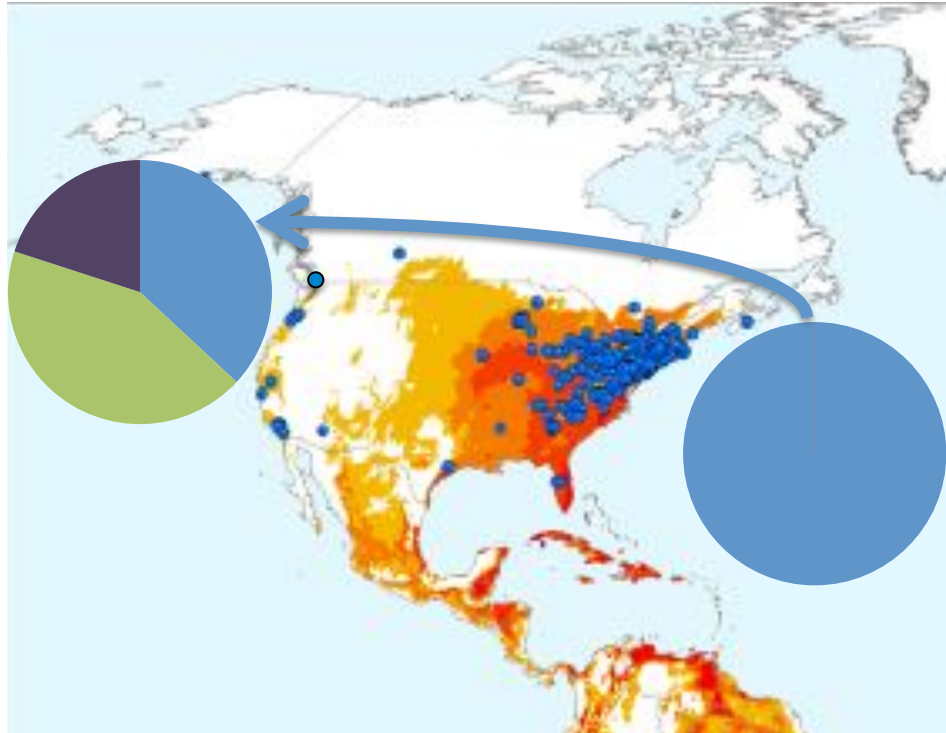


Brown Marmorated Stink Bug

Source and Spread of NA Populations

Western NA

- 3 populations
 - 1 from E. NA



Eastern NA

- 1 population
 - Originates from China (Beijing)

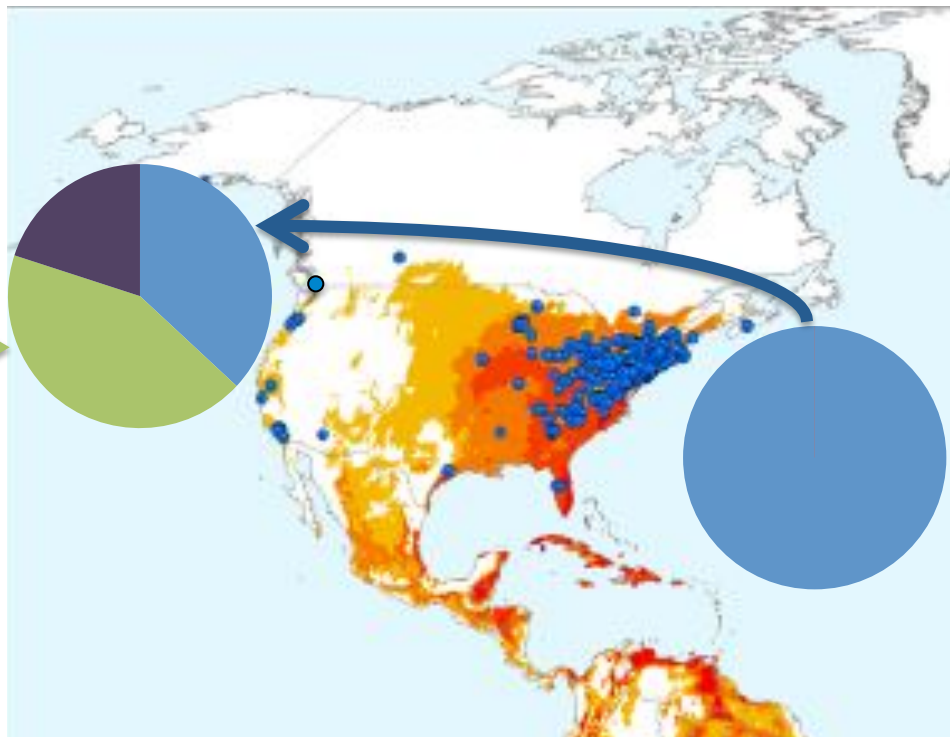


Brown Marmorated Stink Bug

Source and Spread of NA Populations

Western NA

- 3 populations
 - 1 from E. NA
 - 1 from China
 - 1 unknown



Eastern NA

- 1 population
 - Originates from China (Beijing)



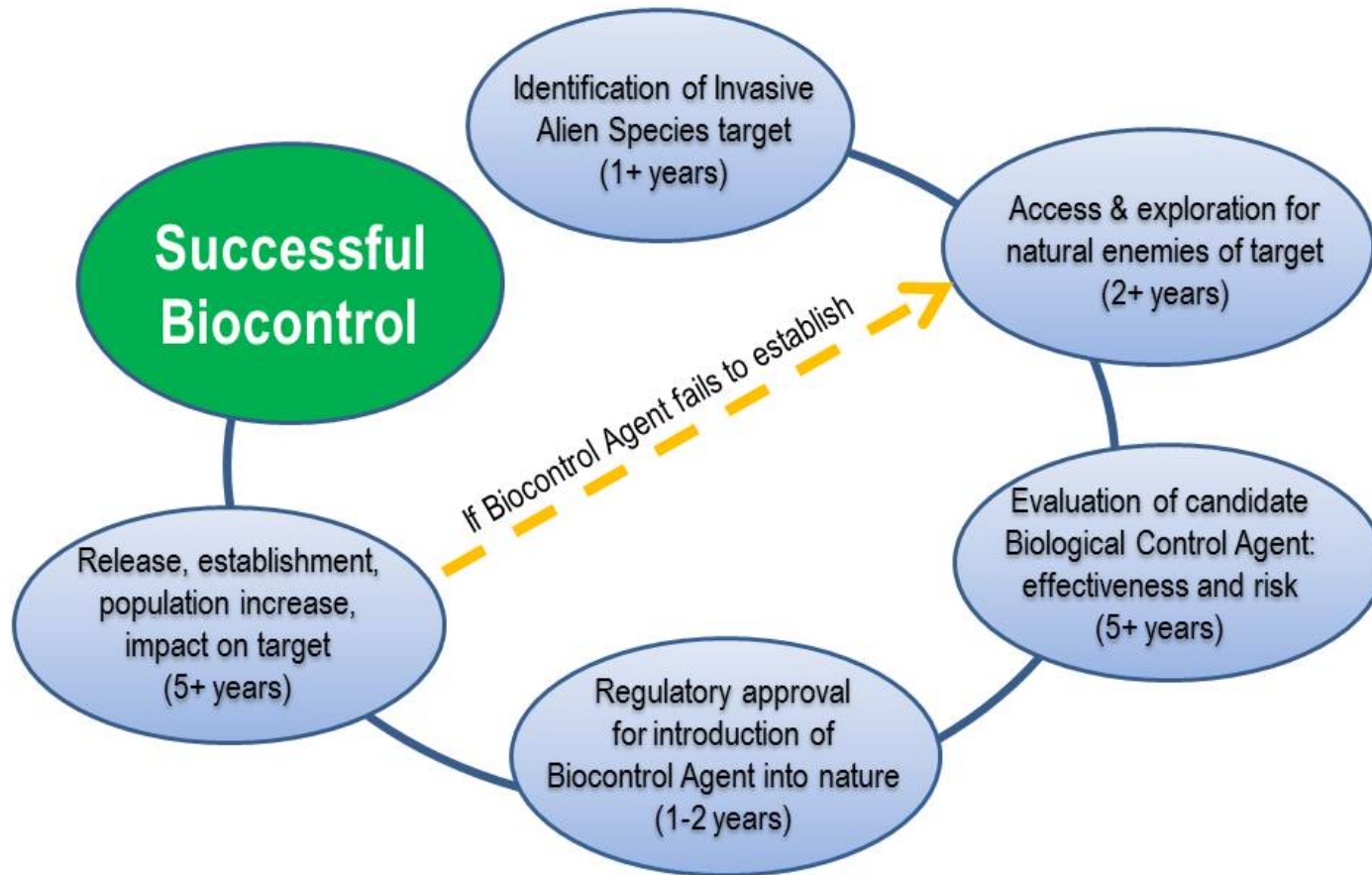
Brown Marmorated Stink Bug:

Classical Biological Control

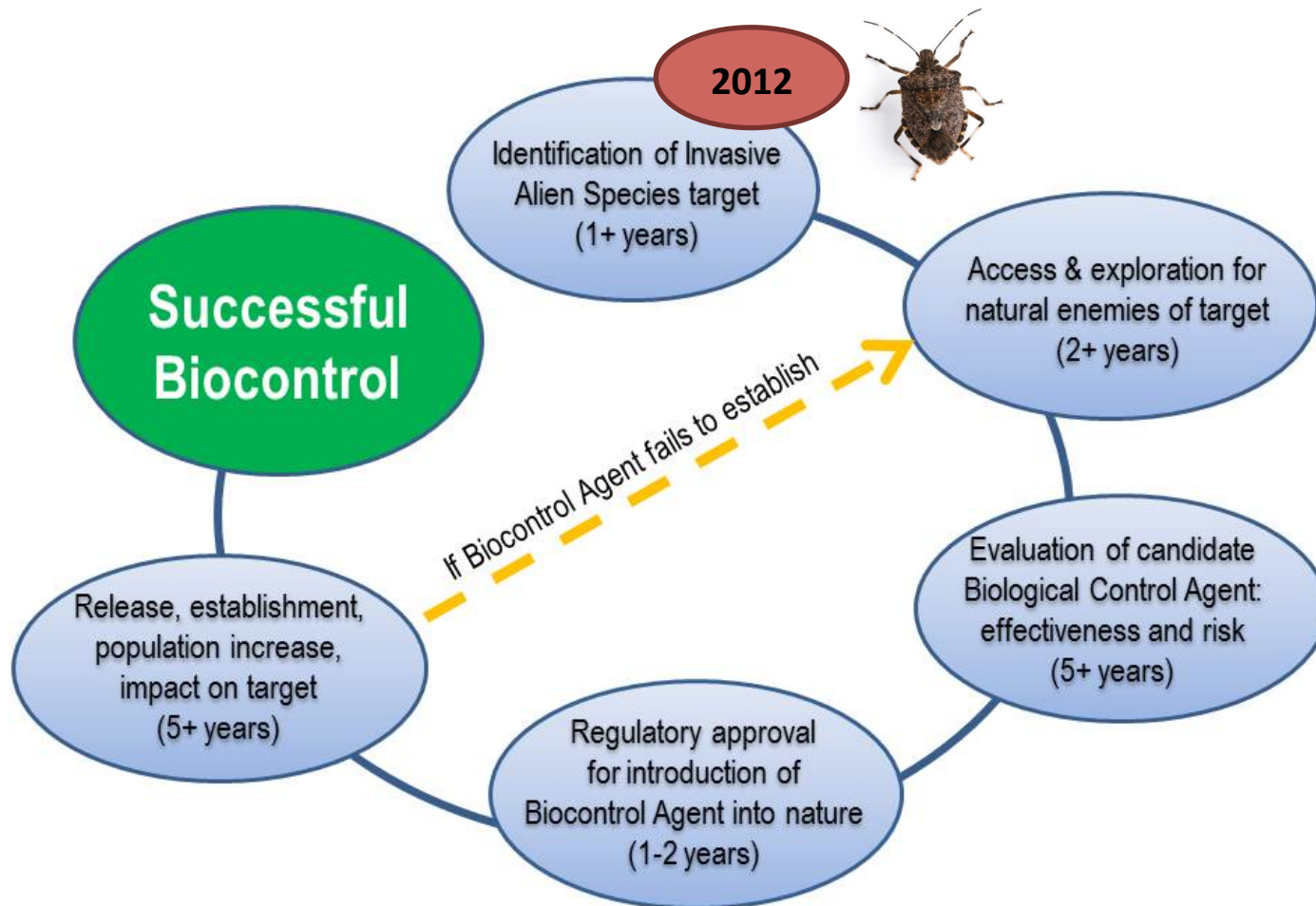
- Pesticides = limited impact
 - Regulatory issues / toxicity
- Native natural enemies
 - Not effective
- Classical biological control
 - Asian egg parasitoid:
 - *Trissolcus japonicus*
 - 70 – 80% parasitism of BMSB



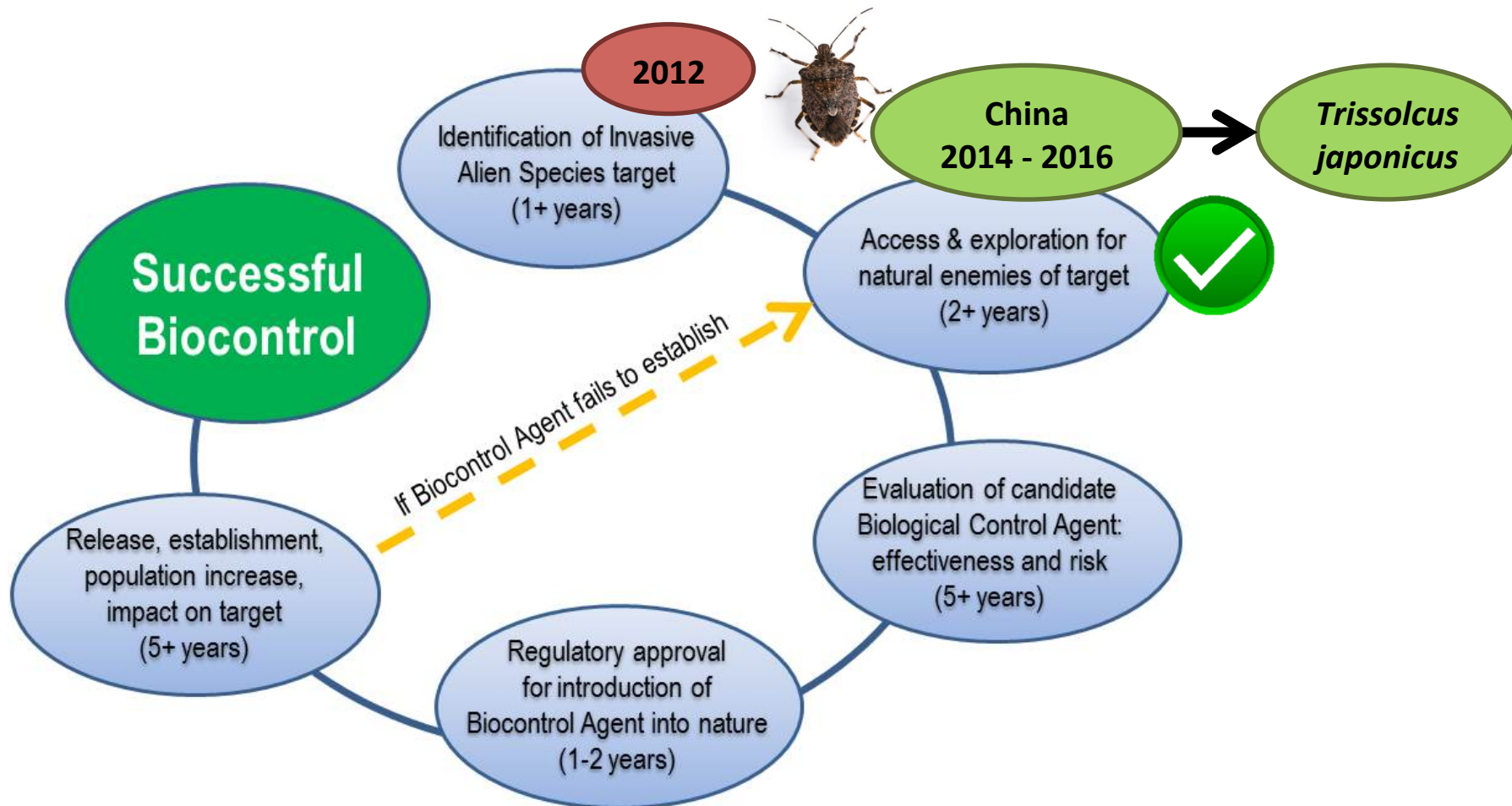
Classical Biological Control Timelines



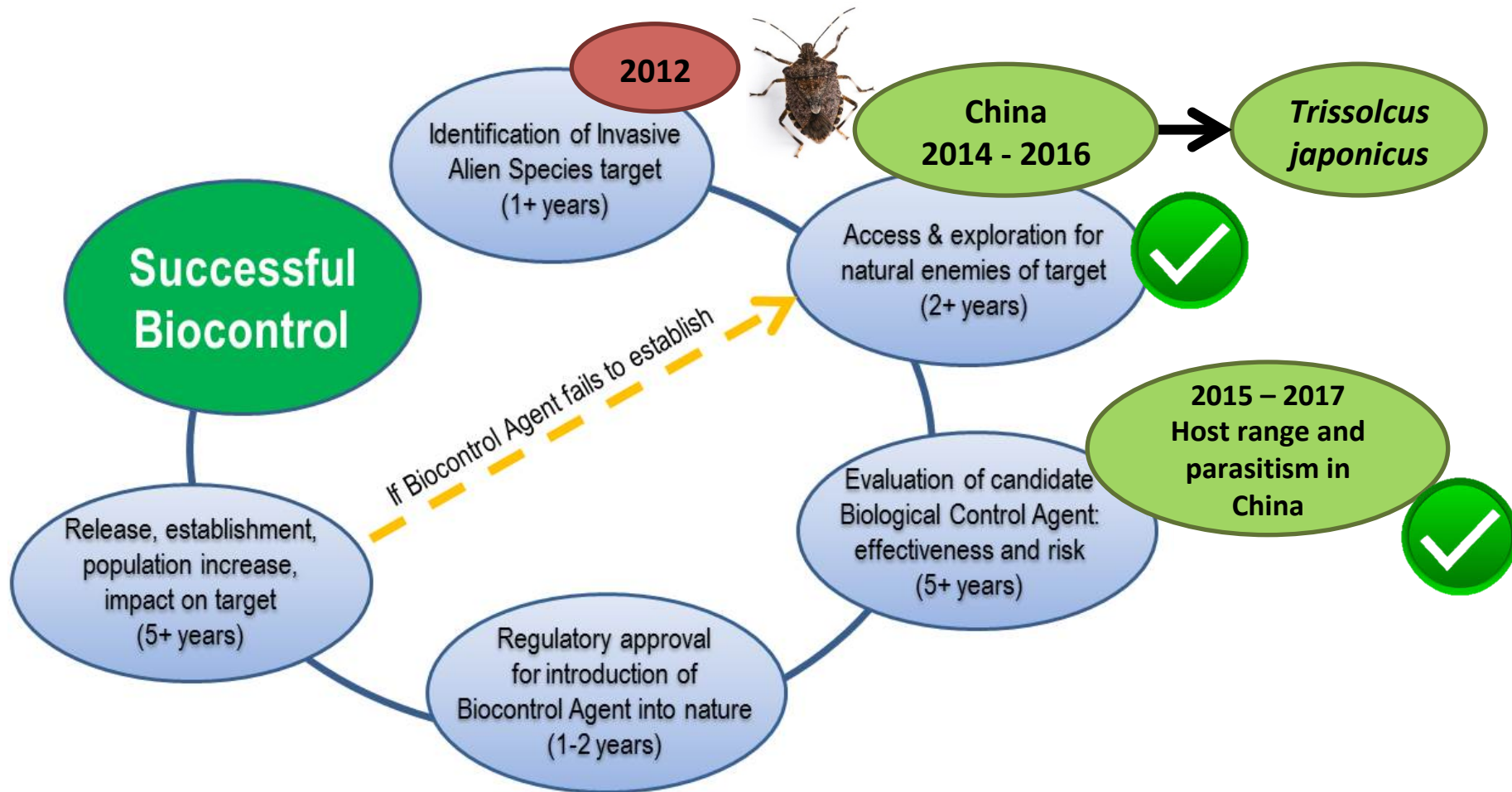
Brown Marmorated Stink Bug: Classical Biological Control Timelines



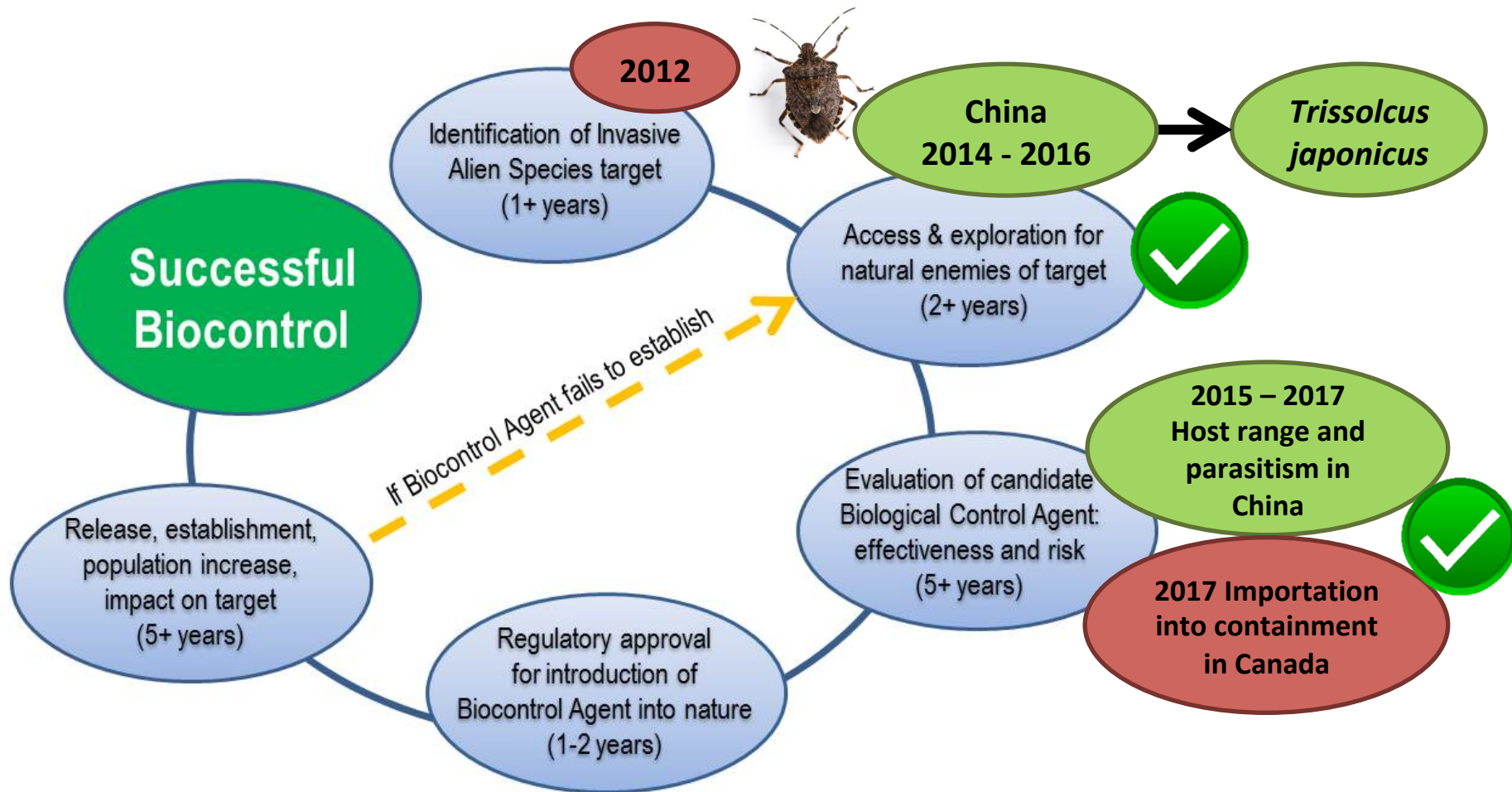
Brown Marmorated Stink Bug: Classical Biological Control Timelines



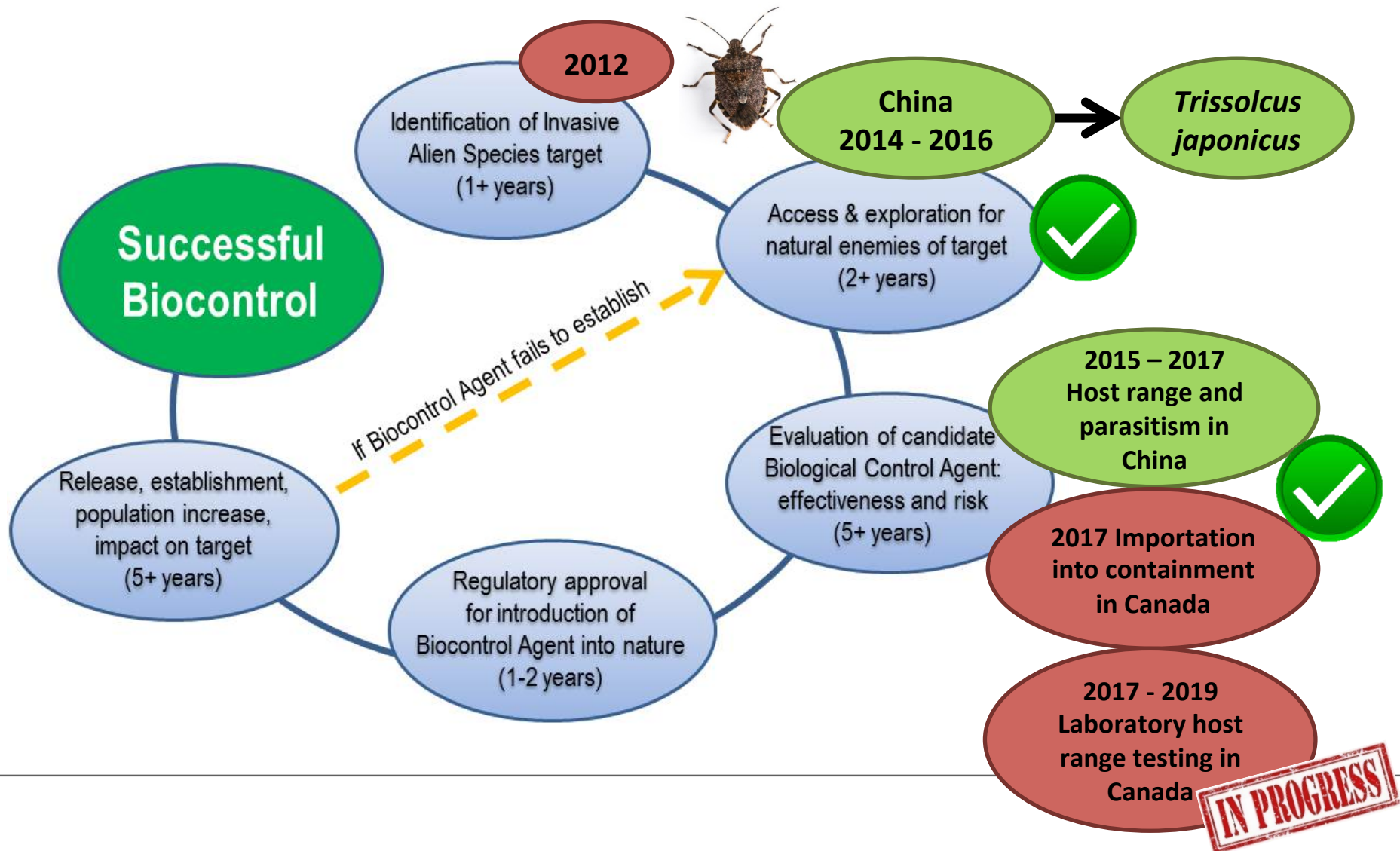
Brown Marmorated Stink Bug: Classical Biological Control Timelines



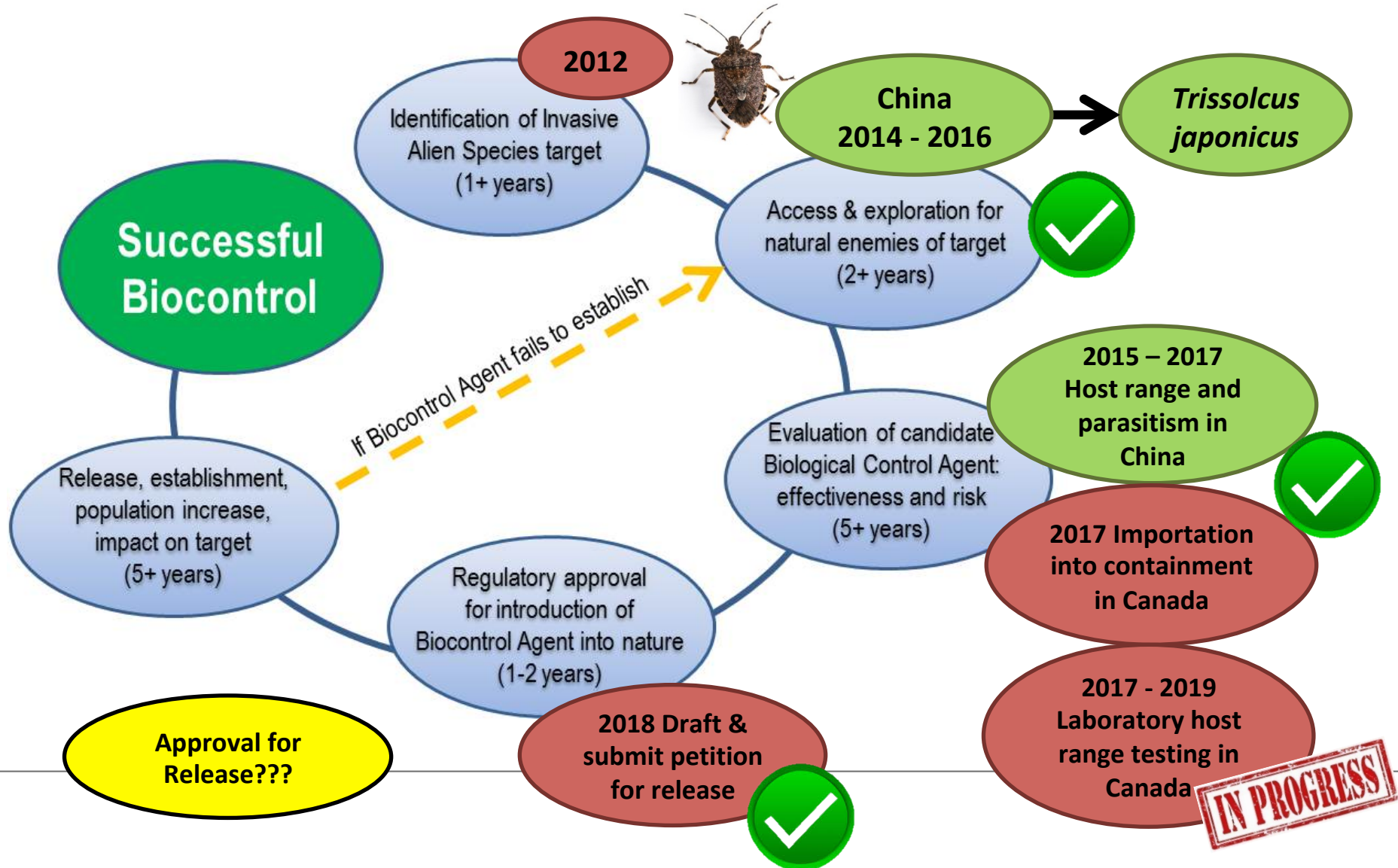
Brown Marmorated Stink Bug: Classical Biological Control Timelines



Brown Marmorated Stink Bug: Classical Biological Control Timelines



Brown Marmorated Stink Bug: Classical Biological Control Timelines



Brown Marmorated Stink Bug: Canada-CABI Outputs

- 2013 – 2018: 14 peer-reviewed publications co-authored by CABI & AAFC on the Brown Marmorated Stink Bug
 - Journal of Pest Science
 - Molecular Ecology
 - Ecology & Evolution
 - 2018: 1 Petition for release
 - “Petition for the release of *Trissolcus japonicus* (Hymenoptera: Scelionidae) for biological control of *Halyomorpha halys* (Hemiptera: Pentatomidae) in Canada”.
 - Submitted by: Paul K. Abram, Tim Haye, Kim A. Hoelmer, Tara D. Gariepy, and Peter G. Mason.
-

Brown Marmorated Stink Bug: Developing Global Solutions

- Very productive team of CABI & AAFC scientists, along with other international collaborators
 - Characterizing the movement & spread of the brown marmorated stink bug
 - Developing reduced-risk management strategies for the brown marmorated stink bug
 - Generate a “blueprint” for biological control of this pest that can be implemented in other countries
-

CANADA – CABI COLLABORATION

Brown Marmorated Stink Bug

- CABI
 - Tim Haye
(Switzerland)
 - Jinping Zhang
(China)
- AAFC
 - Peter Mason
(Ottawa)
 - Paul Abram
(Agassiz)

