This project is funded by the European Union

TWINNING PROJECT

"Further strengthening of capacities of phytosanitary sector in the fields of plant protection products, plant health and seeds and seedlings, including phytosanitary laboratories and phytosanitary inspections" "EU-FITO-BiH"

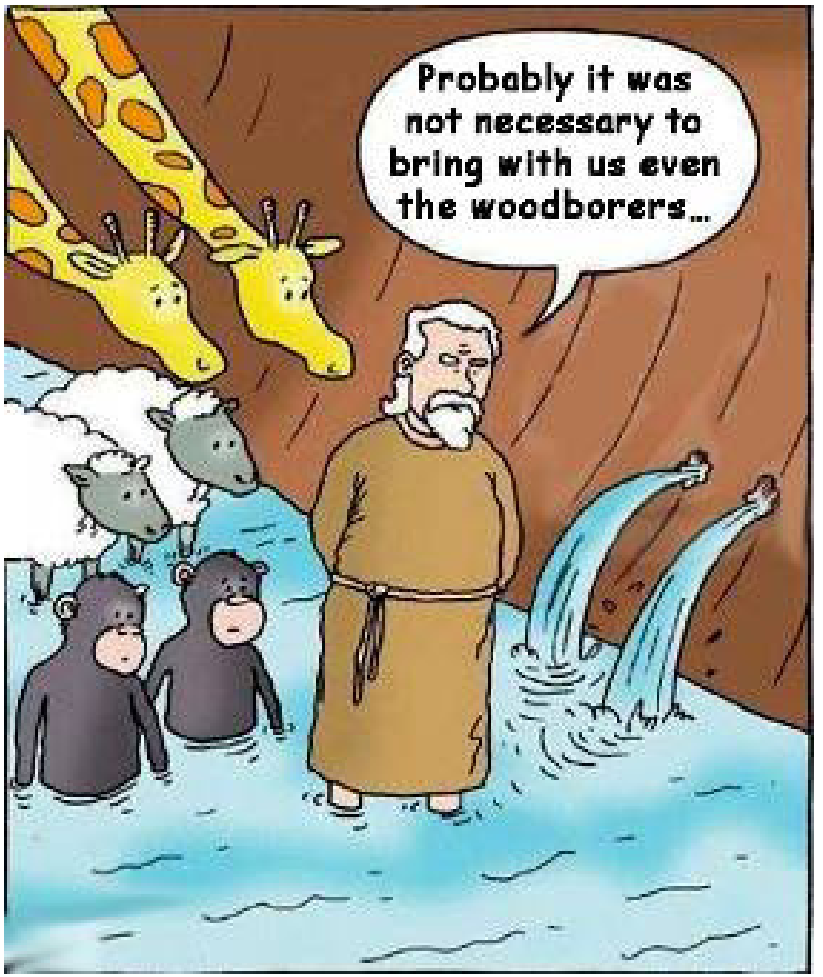
Matteo Maspero
Alessandro Bianchi
Eligio Malusà

Major threats by harmful organisms



BIOLOGICAL INVASION

- as international trade continues to expand, so does the number of pests that becomes established outside their native range



YouTube IT

eppo don't risk lombardia

“Don’t risk it, Non rischiare”

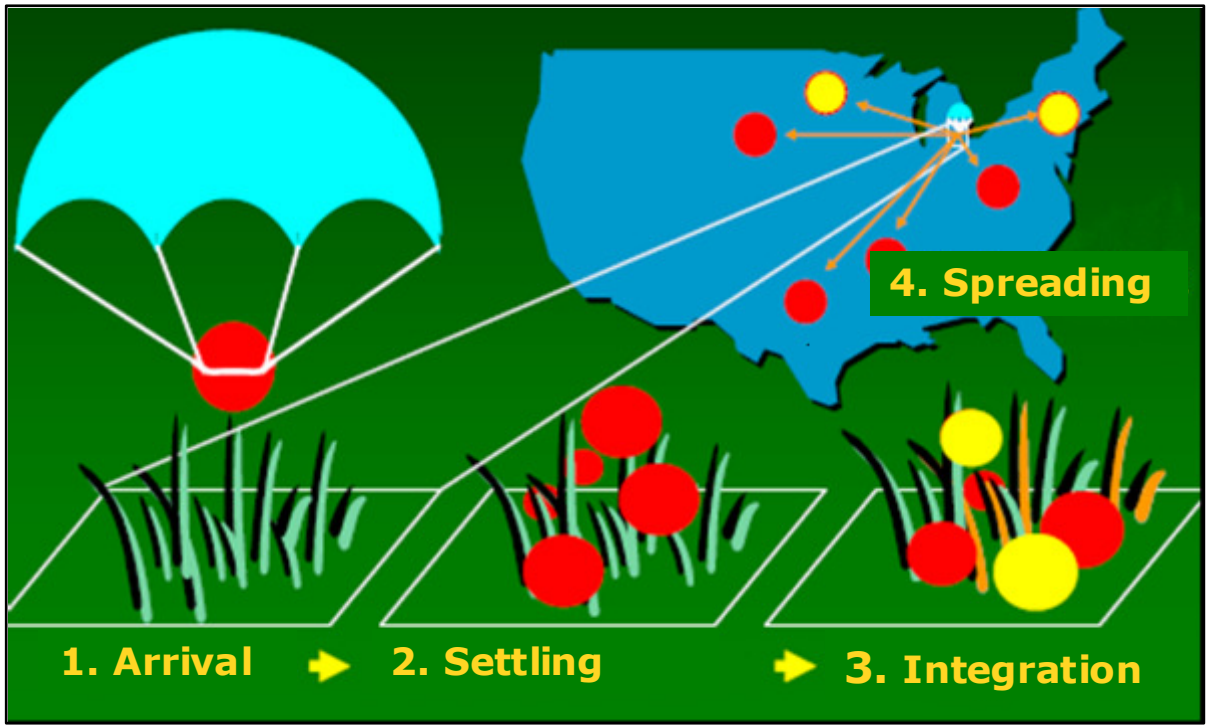
Direzione Agricoltura Lombardia

Iscriviti 273

67 visualizzazioni

To be considered “an invasive pest”, an alien specie have to pass thought the following process:

1. Arrival
2. Settling
3. Integration
4. Spreading



Not all the ALIEN species are also INVASIVES

EXOTIC SPECIES

Is a species introduced outside of its natural range. Its presence in the new habitat is due to intentional or unintentional introduction.

- Human activities
- Natural dispersal of species (e. g. climate change)

IMPACT

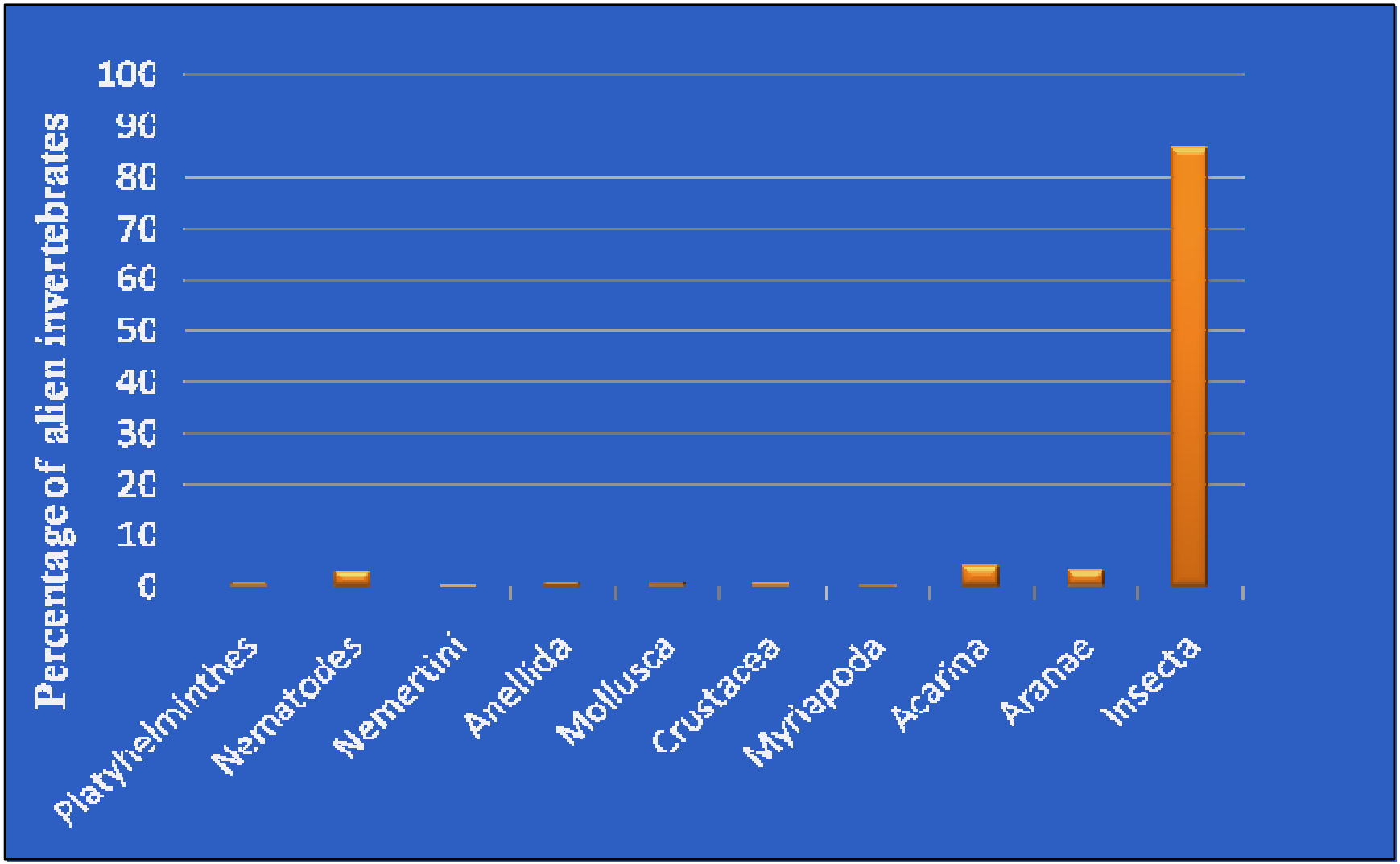
SOCIO-ECONOMIC

- Yield losses (e. g. agriculture, horticulture)
- Production costs (pest management)
- Landscape structure, public health

ECOLOGICAL

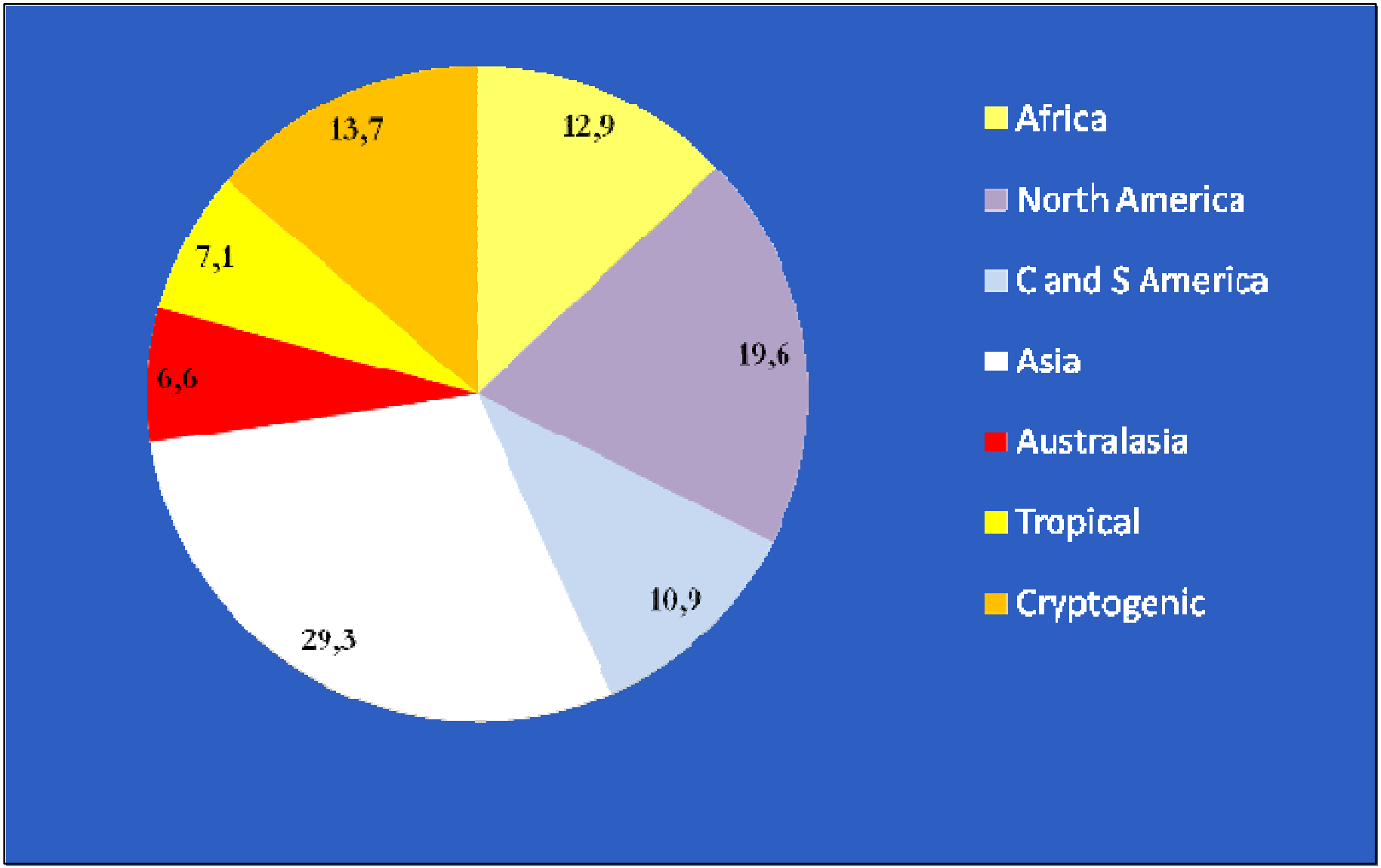
- Native biodiversity

ALIEN TERRESTRIAL INVERSTEBRATES ESTABLISHED IN EUROPE



DAISIE, *Handbook of Alien Species in Europe*

ORIGIN OF ALIEN ARTHROPODS ESTABLISHED IN EUROPE



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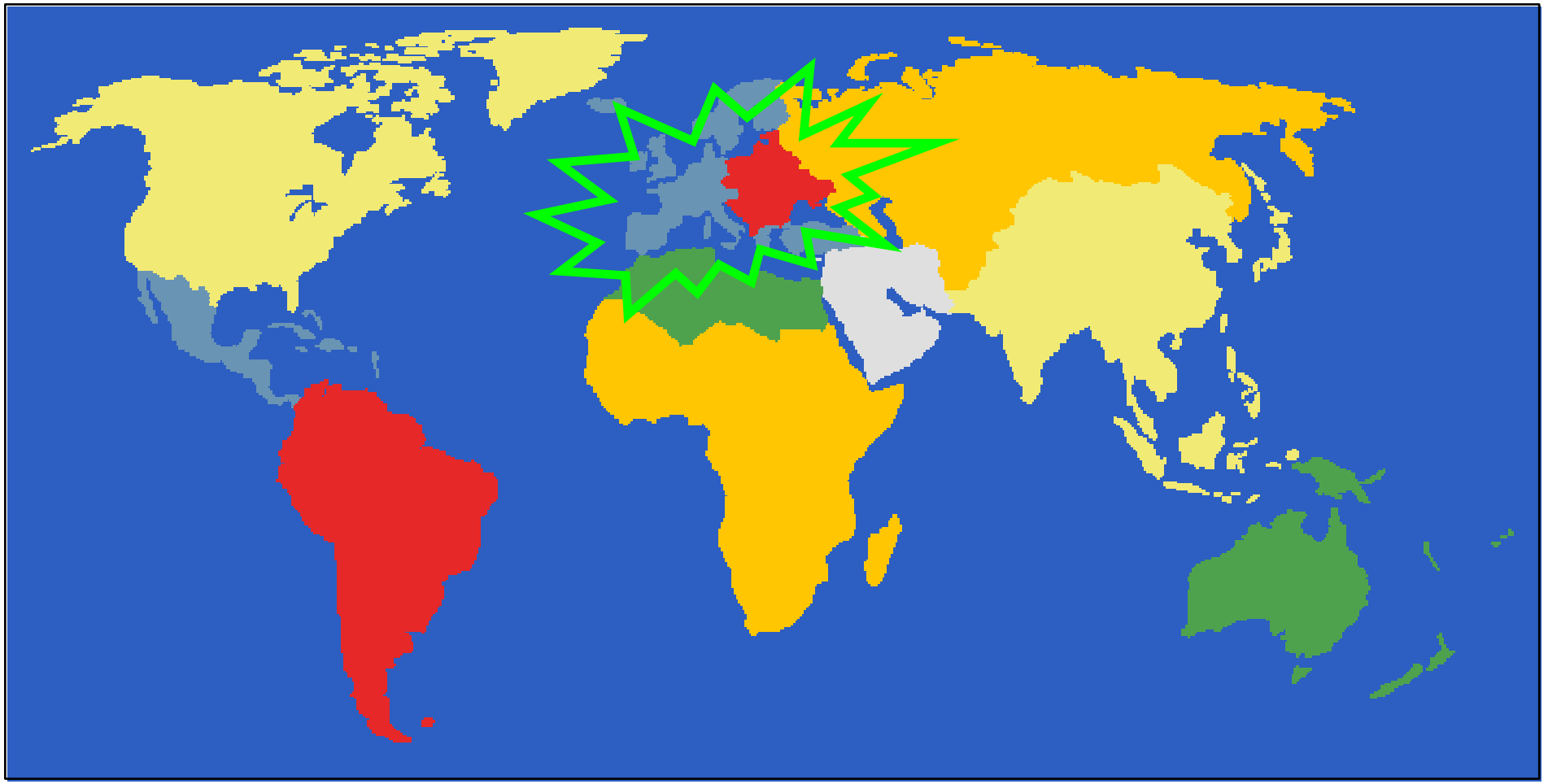
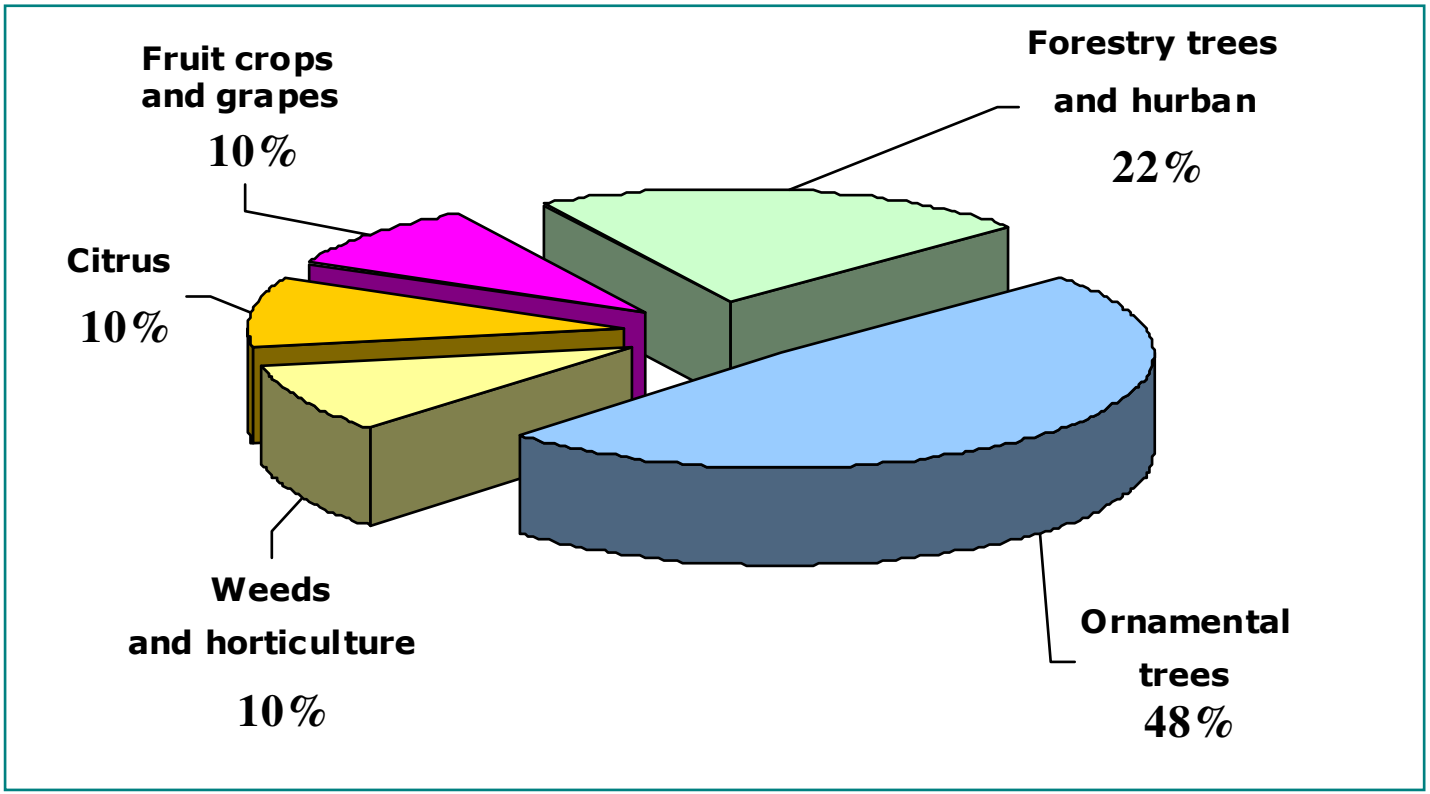


- Climatic parameters
- Position

At the beginning, some specimen start their colonization within nurseries and then they spread within the surrounding environment…



A bit of history

1879 - *Viteus vitifoliae*

Origin:
North
America

1885 - *Pseudaulacaspis pentagona*

Origin:
Japan

Encarsia berlesei

1922 - *Leptinotarsa decemlineata*

Origin: North America

1964 - *Corythucha ciliata*

Origin:
America

1979 - *Metcalfa pruinosa*

Origin:
America

Since ‘90

SOME EXAMPLEAS OF INVASIVE INSECTS

HUMAN HEALTH
- *Aedes albopictus*

CROPS
- *Diabrotica virgifera virgifera*
- *Dryocosmus kuriphilus*
- *Tuta absoluta*
- *Drosophila suzuki*

BIOLOGICAL CONTROL
- *Harmonia axyridis*

ORNAMENTALS
- *Cameraria ohridella*
- *Leptoglossus occidentalis*
- *Acizzia jamatonica*
- *Cacyreus marshalli*
- *Anoplophora chinensis*
- *Anoplophora glabripennis*
- *Aromia bungii*
- *Popillia japonica*
- *Psacothea hilaris*
- *Cydalima perspectalis*

HUMAN HEALTH

Aedes (*Stegomyia*) *albopictus*

Diptera Culicidae
(Asian Tiger Mosquito)

ORIGIN
Asia

HOST
Humans

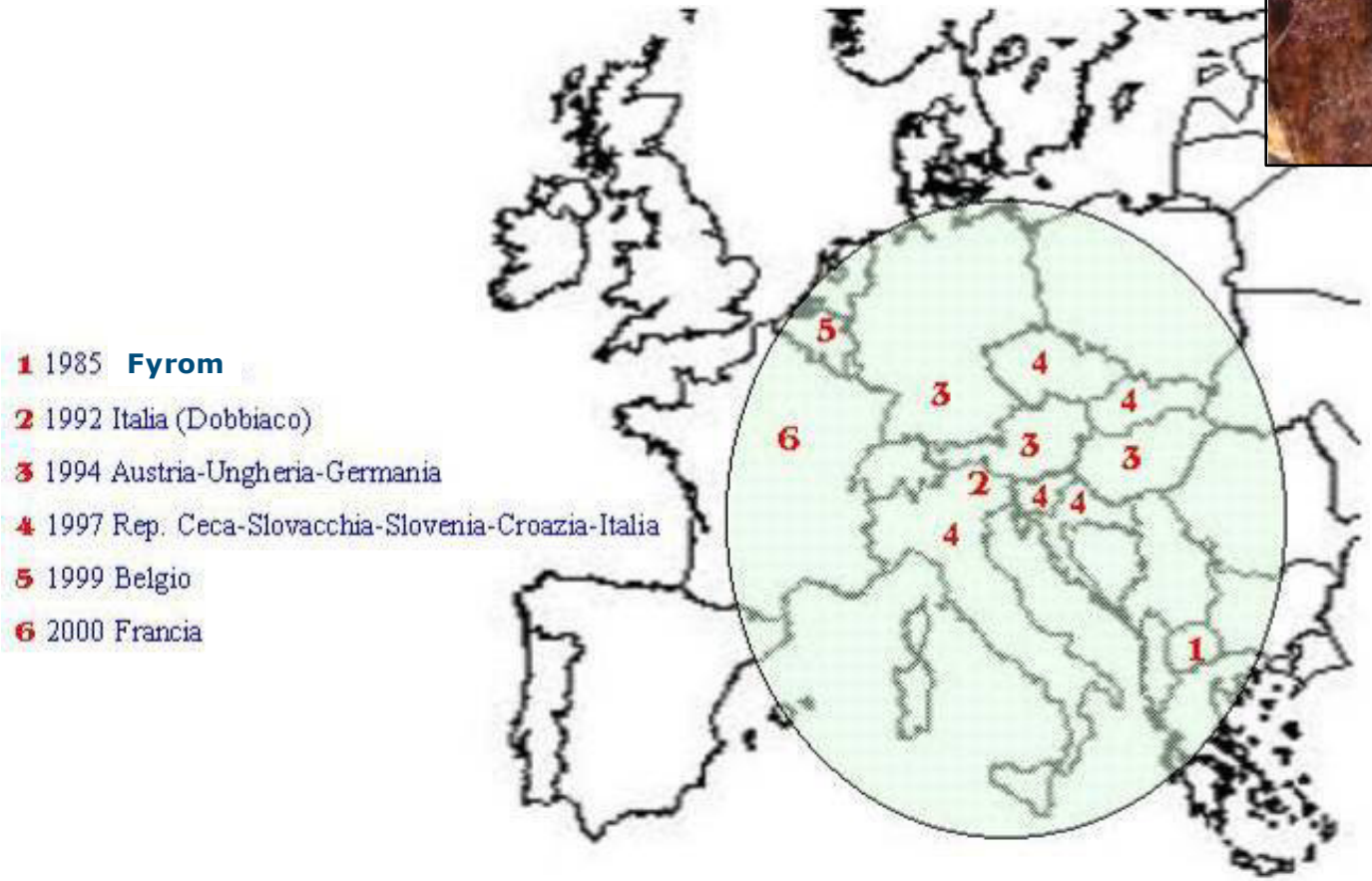
PATHWAY OF INTRODUCTION
Human activity (aircrafts, boats, tyres)

It occupy mostly anthropic area, but it can establish in non urbanized zone, like in the native countries.

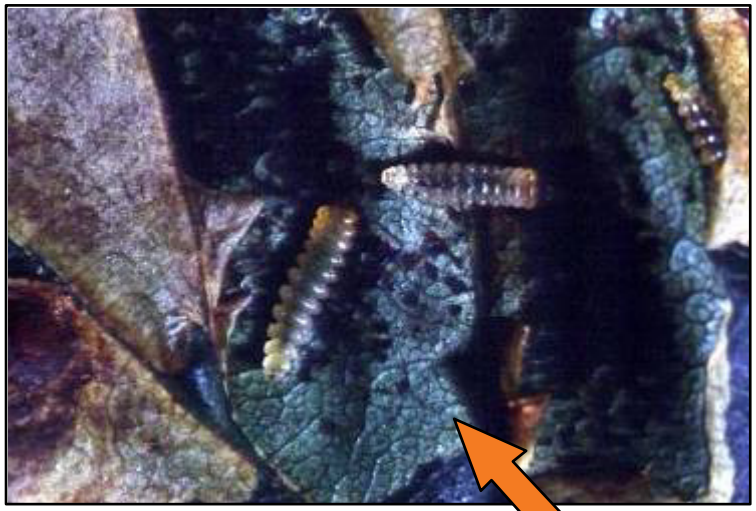
The species compete with the native mosquitos and represent an anthropic problem due to biting nuisance and transmission of different diseases.
In 2007 *A. albopictus* was found as a vector of the Chikungunya virus in Italy.

ORNAMENTALS

1992 - *Cameraria ohridella* Deschka & Dimic
Lepidoptera Gracillariide




Aesculus hippocastanum

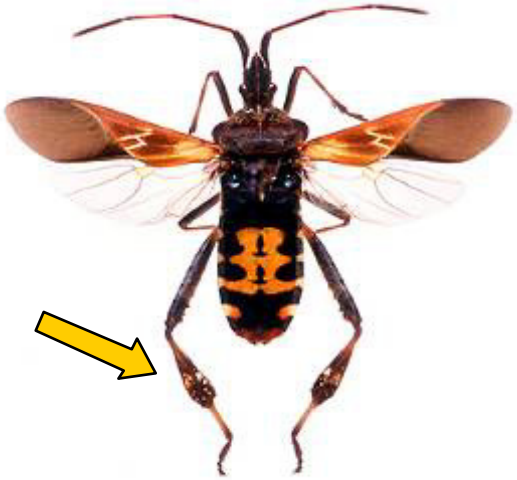


1999 - *Leptoglossus occidentalis*

Emiptera Coreidae

Origin: North America

- *Pinus* spp.
- *Picea* spp.
- *Pseudotsuga* spp.

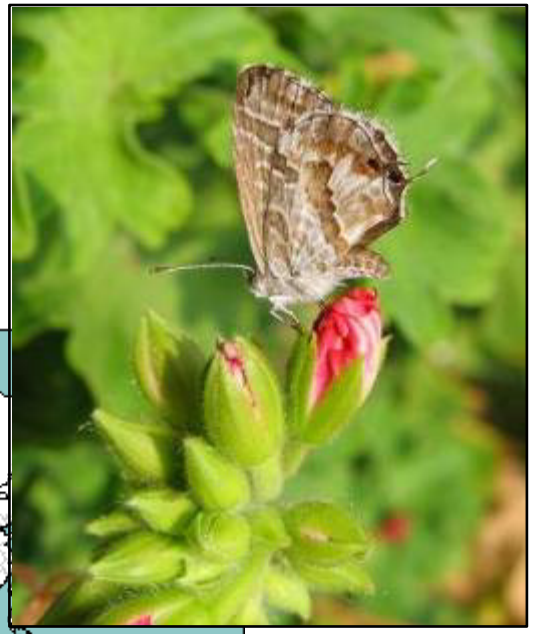


2001 - *Acizzia jamatonica*

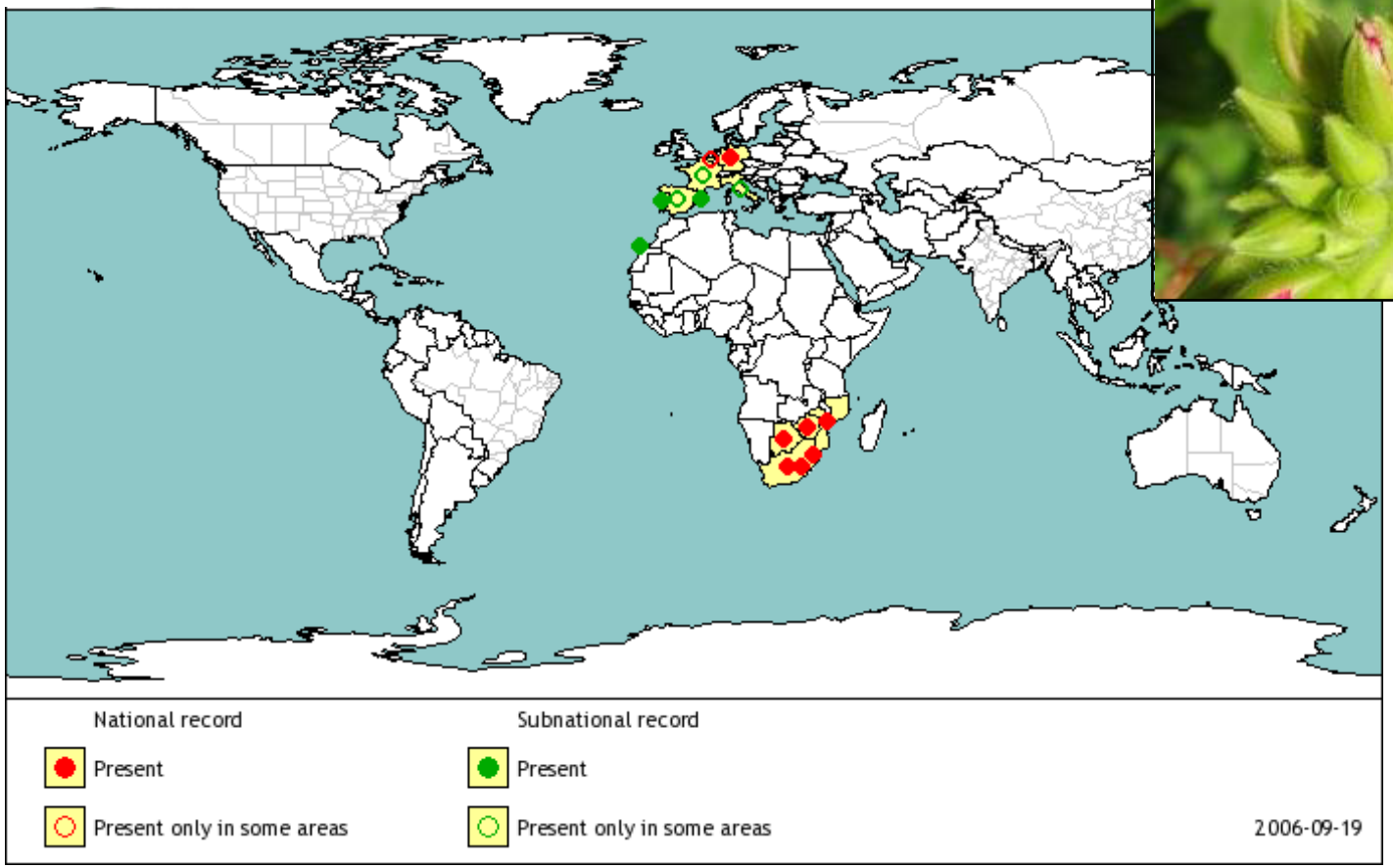
Hemiptera Sternorrhyncha Psyllidae

HOSTS: *Acizzia jamatonica* is monophagous on *Albizia julibrissin*.

Cacyreus marshalli
Lepidoptera Lycenidae
(Geranium bronze butterfly)



ORIGIN
South Africa



HOST PLANTS
Pelargonium and *Geranium*

ORIGIN

Japan,
China,
Taiwan

Psacothea hilaris

Coleoptera Cerambycidae
(Yellow-spotted Longicorn Beetle)

HOST PLANTS

Moraceae (*Ficus* spp., *Morus* spp.)

PATHWAY OF INTRODUCTION

Plants for planting and wood

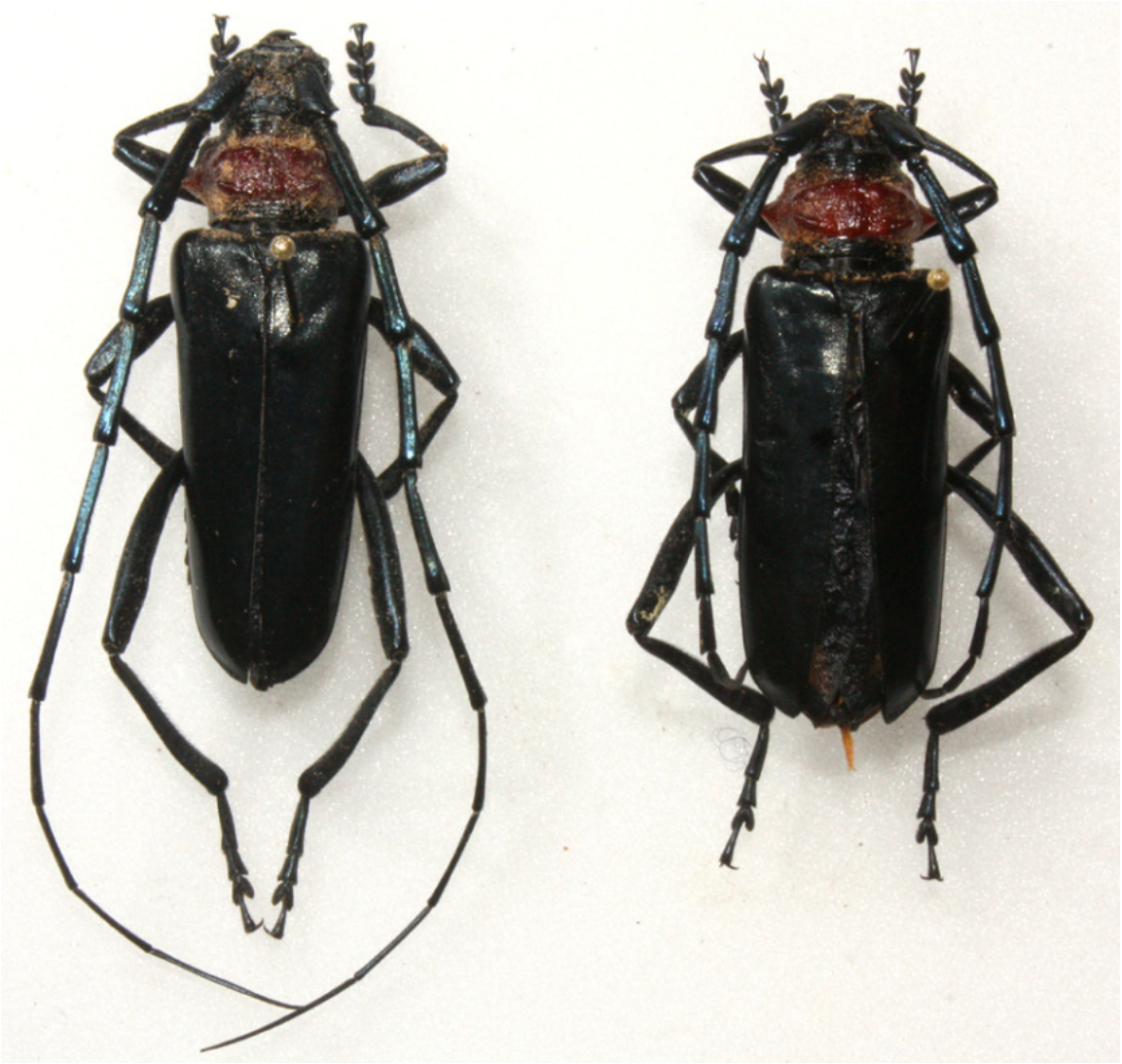
In Japan the xylophagous is considered a serious pest for mulberry trees (food source of *Bombyx mori*) and fig orchards.

In Italy up to now only fig trees were found attacked from *P. hilaris*.

Aromia bungii Faldermann

ORIGIN
Asia

Peach longicorn beetle
Redneck long horned beetle
Asiatischer Moschusbock
Cerambice delle drupacee



Red pronotum
Shiny black elitra

-Italy (2010) a picture of the beetle
was shooted in the field
-Germany (2011) a beetle was
captured in the filed
-**Italy, Naples (2012) and Milan (2013)**


Prunus (in particular *Prunus armeniaca* and *Prunus domestica*)
Azadirachta indica
Bambusa textilis
Diospyros virginiana
Olea europea
Populus alba
Pterocarya stenoptera
Punica granatum
Schima superba (Theaceae)

Cydalima perspectalis
Lepidoptera Crambidae
(Box tree caterpillar)

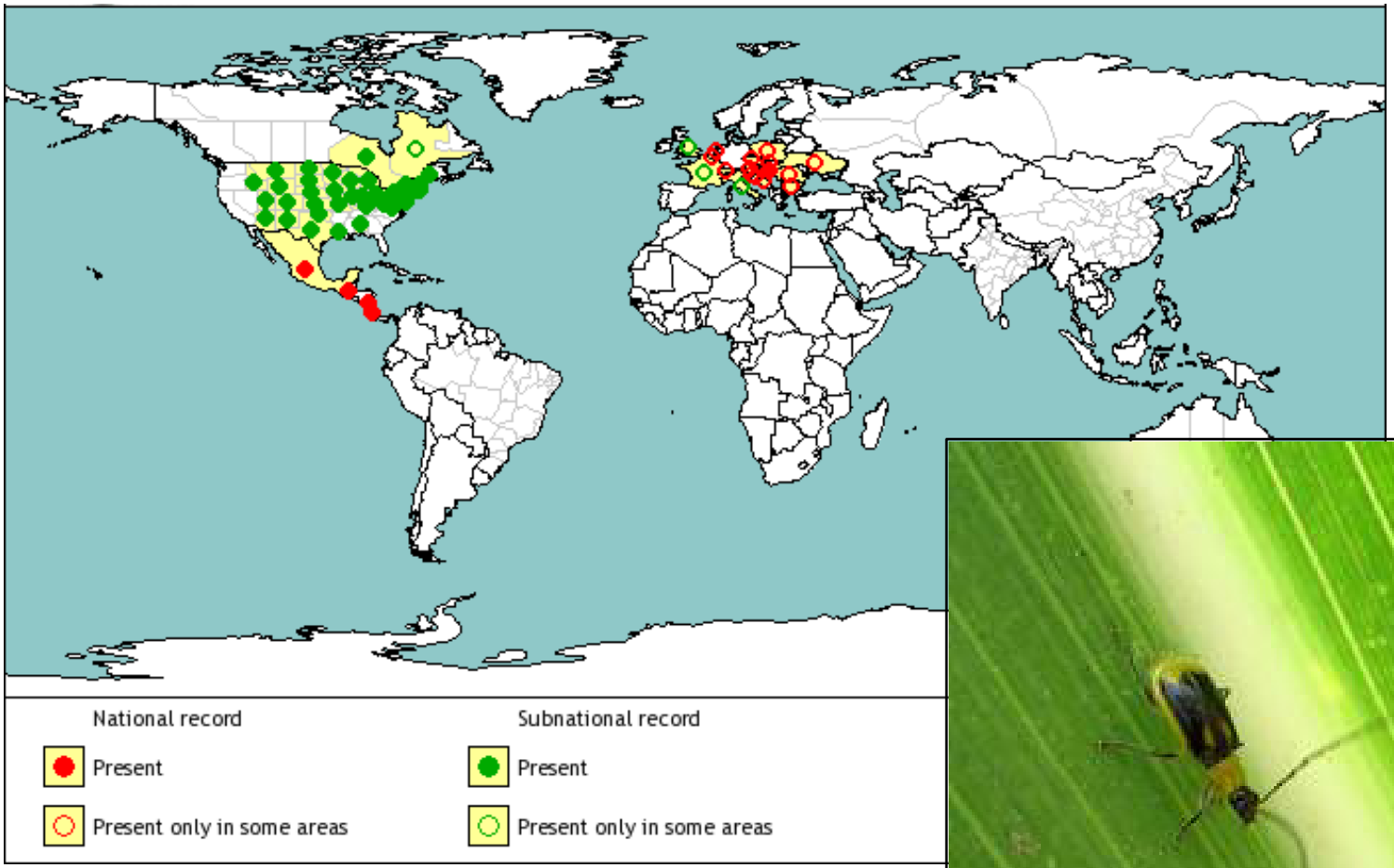
ORIGIN
Asia

CROPS

Diabrotica virgifera virgifera

Coleoptera Crisomelidae

(Western Corn Rootworm)



ORIGIN

Central America

HOST PLANTS

Mais (*Zea mais*)

PATHWAY OF INTRODUCTION

Intercontinental dispersal: trade of seeds or grain? Airplane?
Adults flights.

Dryocosmus kuriphilus

Hymenoptera Cynipidae
(Oriental chestnut gall wasp)

ORIGIN
China

HOST PLANTS

Castanea spp. and their hybrids.

PATHWAY OF INTRODUCTION

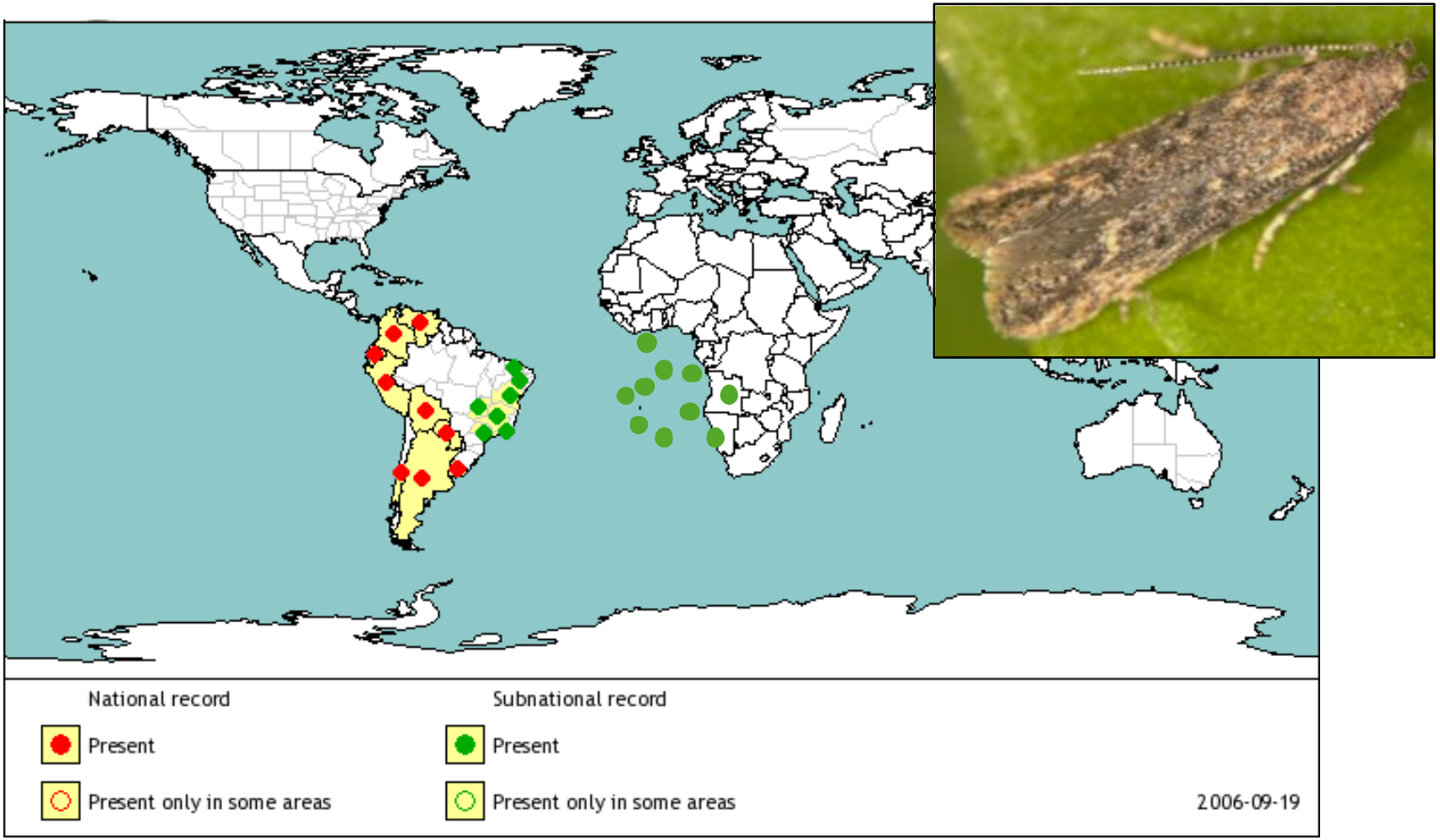
Infested twigs or shoots.

Local spread: infested twigs, young plants, flight of females.

Tuta absoluta

Lepidoptera Gelechiidae

(South AmericanTomato Pinworm)



ORIGIN

South America

HOST PLANTS

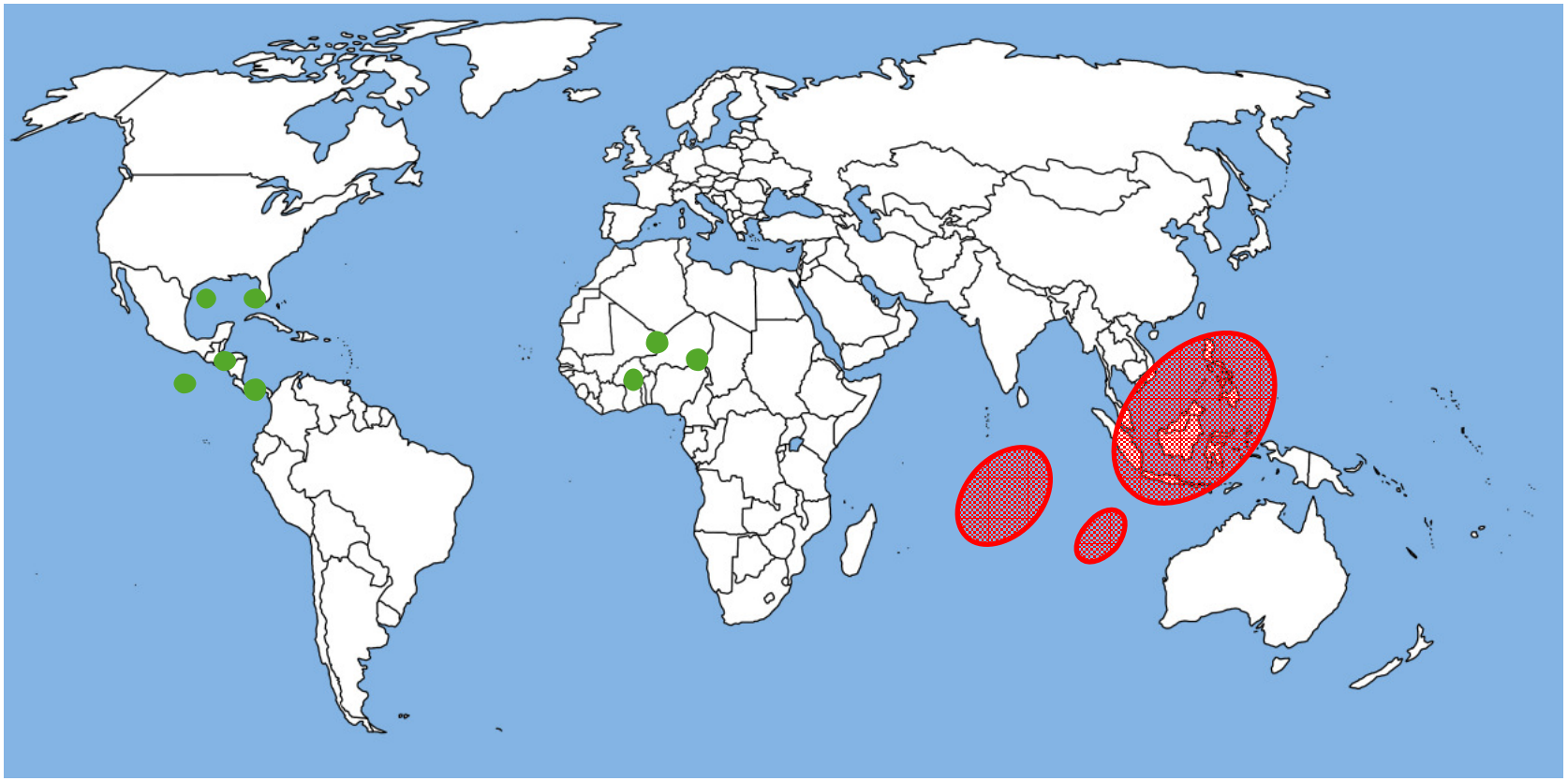
Tomato (*Solanum lycopersicon*). Potato (*Solanum tuberosum*) and other Solanaceaea are also reported as a host.

PATHWAY OF INTRODUCTION

Plants for planting and fruits of tomato.

Drosophila suzukii

Diptera Drosophilidae
(Spotted Wing Drosophila)



ORIGIN

Asia (China,
India, Japan,
Thailand, Korea)

HOST PLANTS

Fruits crops: small fruits crops (strawberries, raspberries, blackberries, blueberries,…) fruit trees (peaches, plums, apples…) and grapevine.

PATHWAY OF INTRODUCTION

Fruits infested by *D. suzukii*.
Adults fly within local area.

Popilia japonica

Coleoptera Scarabaeidae

HOSTS: In the USA, *P. japonica* has been recorded feeding on at least 295 species of plants. Economic damage has been recorded on 106 of these species. The food preference of the beetles changes during the year but preferred hosts include species of: *Acer*, *Aesculus*, *Betula*, *Castanea*, *Glycine*, *Juglans*, *Malus*, *Platanus*, *Populus*, *Prunus*, *Rosa*, *Rubus*, *Salix*, *Tilia*, *Ulmus* and *Vitis*.

HOST COMMODITIES: The adults disperse locally by flight. In international trade, *P. japonica* adults have been intercepted on agricultural produce, on packaging and on ships and aircraft. Larvae may be transported in soil around the roots of plants for planting.

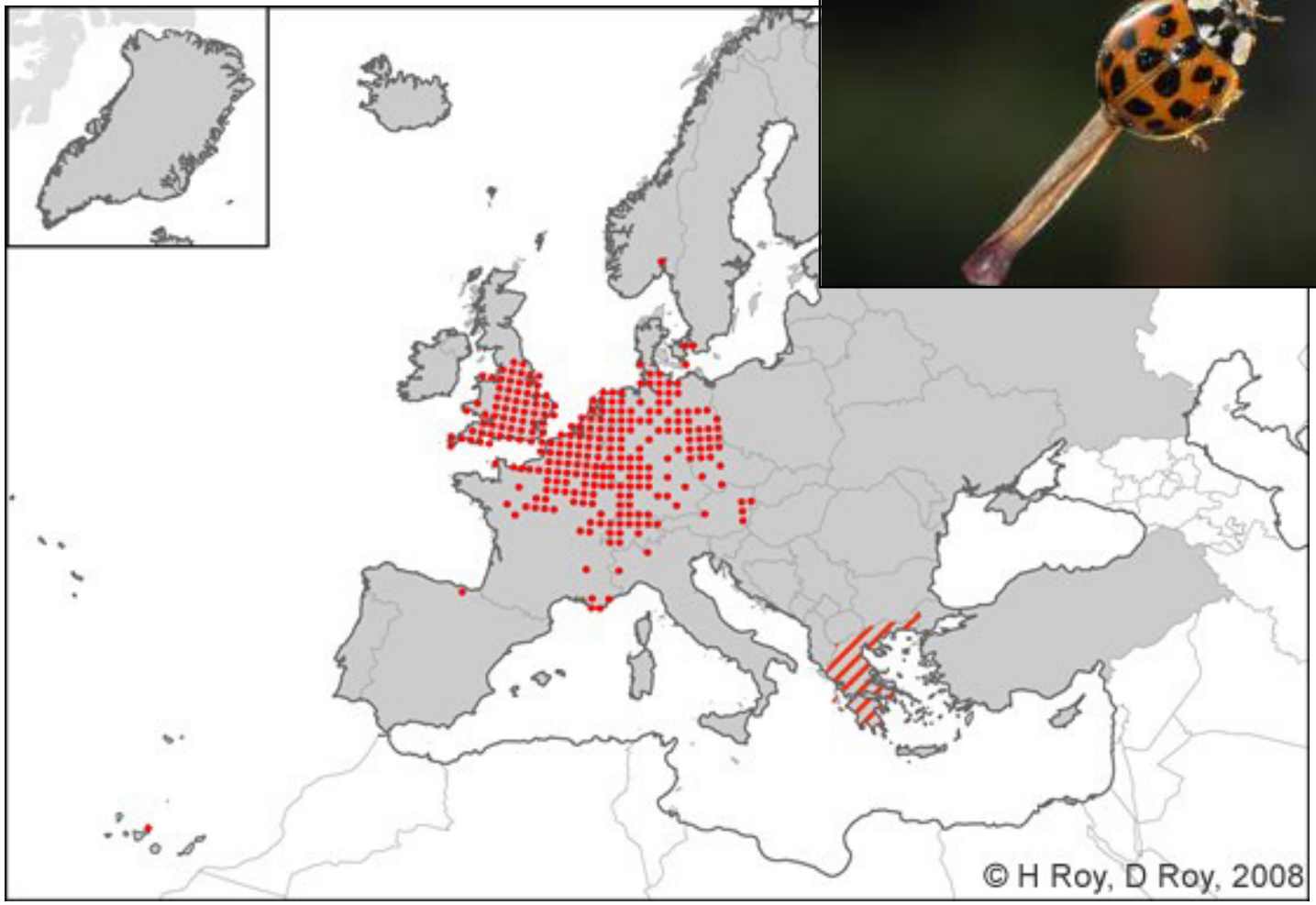
BIOLOGICAL CONTROL

Harmonia axyridis

Coleoptera Coccinellidae

ORIGIN

Asia



HOST

Aphids and scales

PATHWAY OF INTRODUCTION

Release as biological control

In Europe *H. axyridis* was introduced in 1982 to be used as a biological control agent in orchards . In Italy, it was commercialized and released in protected crops against aphids from 1995 to 1999. Since the year 2000 the commercialization of *H. axyridis* has been interrupted due to the concern aroused by its invasiveness and, in particular, its impact on the indigenous coccinellids and other predators.

Thank you
for you
attention...