Critical considerations for pest distribution (Section 6)

Claire Gent (Defra, UK)

OEPP/EPPO
21 bd Richard Lenoir, Paris,
75011, France
www.eppo.int



Determining a pest's distribution is important because it can inform many other sections of the PRA, e.g.:

- where the pest may arrive from (pathways section)
- what climate the pest requires (establishment section)
- if/how the pest has spread within its distribution (spread section)
- if/how the pest has been successfully eradicated/contained/controlled anywhere in its distribution (management section)

Table to fill in

Continent	***Distribution*** *(list countries, or provide a general indication, e.g. present in West Africa)*	***Comments*** *(If relevant, provide comments on the pest status in the different countries where it occurs e.g. widespread, native, introduced….)*	***Reference***
Africa			
North America			
Central America and the Caribbean			
South America			
Asia			
Europe			
Oceania			

Comments (in the table or in addition)

- area of origin (native / indigenous distribution)
- areas where the pest has been introduced
  - means of spread? human assisted or natural spread
- timeline of introductions
  - lag times between introduction and detection?
- frequency of introductions
- direction of spread
- pattern of distribution within the pest's range (e.g. widespread; scattered; clumped; only at certain altitudes; only within a particular industry / environment)
- absence
  - has the pest been eradicated from anywhere?
  - are there any areas you would expect the pest to be present but there are no records?

State: Uncertainties, doubtful or invalid records

ISPM 8 Determination of pest status in an area

Table 1. Pest status – Present

Pest status	Pest status description
Present: widely distributed	The pest is present throughout the area, where conditions are suitable.
Present: not widely distributed and not under official control	The pest is present in a part or parts of the area and is not under "official control" in accordance with Supplement 1 (Guidelines on the interpretation and application of the concepts of "official control" and "not widely distributed") to ISPM 5 (*Glossary of phytosanitary terms*).
Present: not widely distributed and under official control	The pest is present in a part or parts of the area and is subject to "official control" in accordance with Supplement 1 (Guidelines on the interpretation and application of the concepts of "official control" and "not widely distributed") to ISPM 5 (*Glossary of phytosanitary terms*). The purpose of the official control should be stated alongside the pest status determination.
Present: at low prevalence	The pest is present in the area but its prevalence is low in accordance with ISPM 22 (*Requirements for the establishment of areas of low pest prevalence*).
Present: except in specified pest free areas	The pest is present in the area except in parts of the area which are free from the pest in accordance with ISPM 4 (*Requirements for the establishment of pest free areas*). These parts should be described alongside the pest status determination.
Present: transient	The pest is present but the evidence supports the conclusion that the pest is not expected to establish because conditions (e.g. hosts, climate) are not suitable for establishment or appropriate phytosanitary measures have been applied.

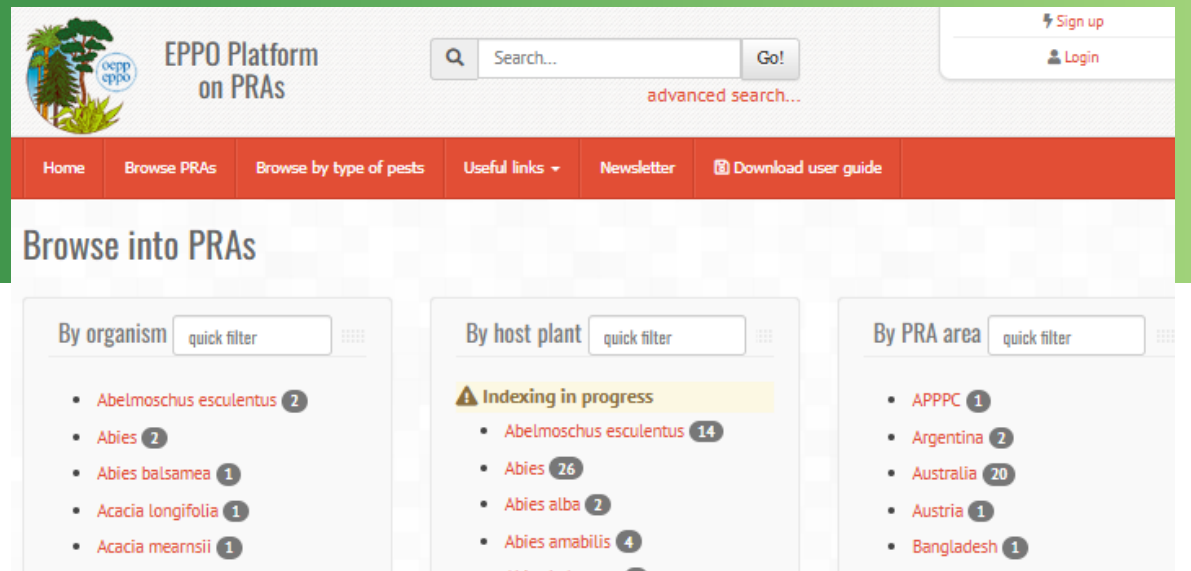
Table 2. Pest status – Absent

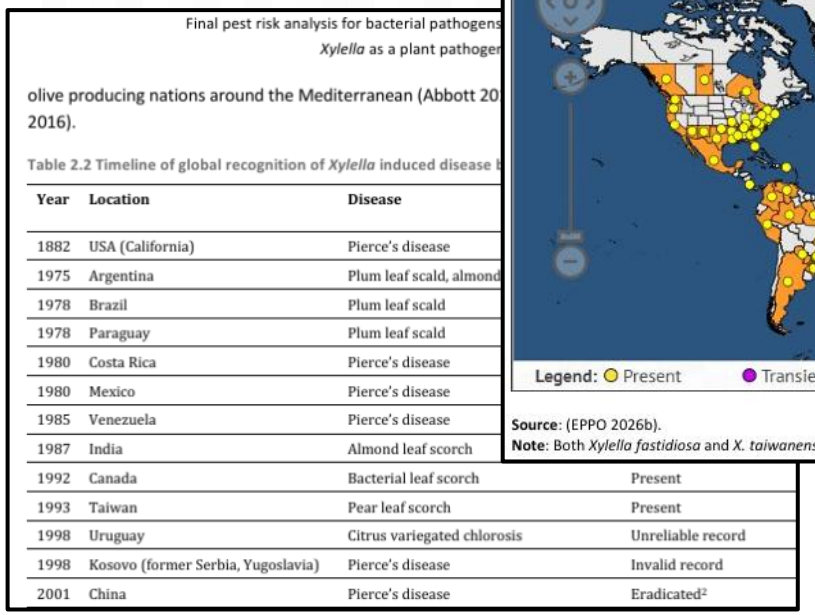
Pest status	Pest status description
Absent: pest not recorded	Surveillance supports the conclusion that the pest is absent and has not been recorded (see ISPM 6 (*Surveillance*)).
Absent: the entire country is pest free	The entire country is established and maintained as a pest free area in accordance with ISPM 4 (*Requirements for the establishment of pest free areas*).
Absent: pest records invalid	Pest records indicate the presence of a pest, but the conclusion is reached that the records are invalid or no longer valid, such as in the following cases: - changes in taxonomy have occurred; - misidentification has occurred; - the record or records have not been confirmed; - there are errors in the record or records; - changes in national borders have occurred.
Absent: pest no longer present	Pest records indicate that the pest was present in the past, but surveillance indicates that the pest is no longer present (see ISPM 6 (*Surveillance*)). The reason or reasons may include: - climate or other natural limitation to pest perpetuation; - changes in cultivated host species or cultivars; - changes in production practices.
Absent: pest eradicated	Pest records indicate that the pest was present in the past. Documented pest eradication measures were implemented and were successful (see ISPM 9 (*Guidelines for pest eradication programmes*)). Surveillance confirms continued absence (see ISPM 6 (*Surveillance*)).

Sources



https://gd.eppo.int/

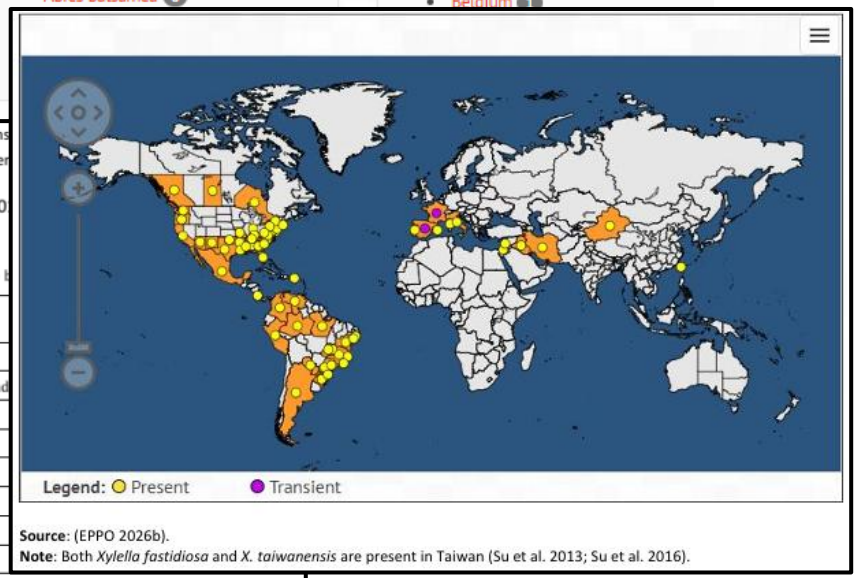



Final pest risk analysis for bacterial pathogens
Xylella as a plant pathoger

olive producing nations around the Mediterranean (Abbott 20
2016).

Table 2.2 Timeline of global recognition of *Xylella* induced disease

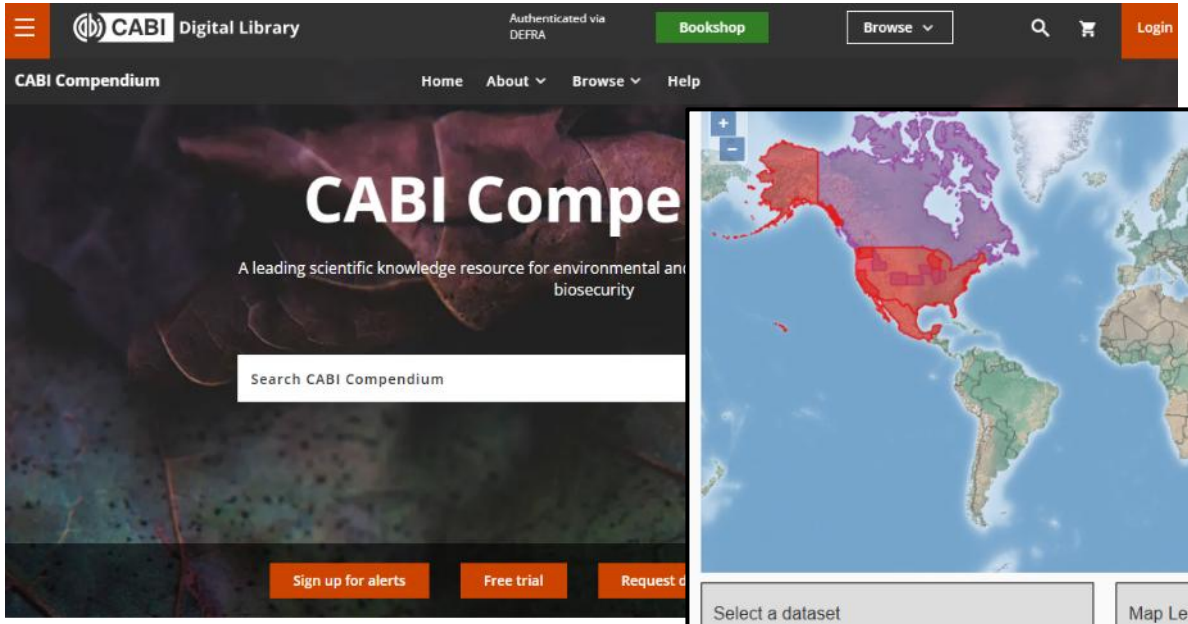
Year	Location	Disease	
1882	USA (California)	Pierce's disease	
1975	Argentina	Plum leaf scald, almond	
1978	Brazil	Plum leaf scald	
1978	Paraguay	Plum leaf scald	
1980	Costa Rica	Pierce's disease	
1980	Mexico	Pierce's disease	
1985	Venezuela	Pierce's disease	
1987	India	Almond leaf scorch	
1992	Canada	Bacterial leaf scorch	Present
1993	Taiwan	Pear leaf scorch	Present
1998	Uruguay	Citrus variegated chlorosis	Unreliable record
1998	Kosovo (former Serbia, Yugoslavia)	Pierce's disease	Invalid record
2001	China	Pierce's disease	Eradicated[2]

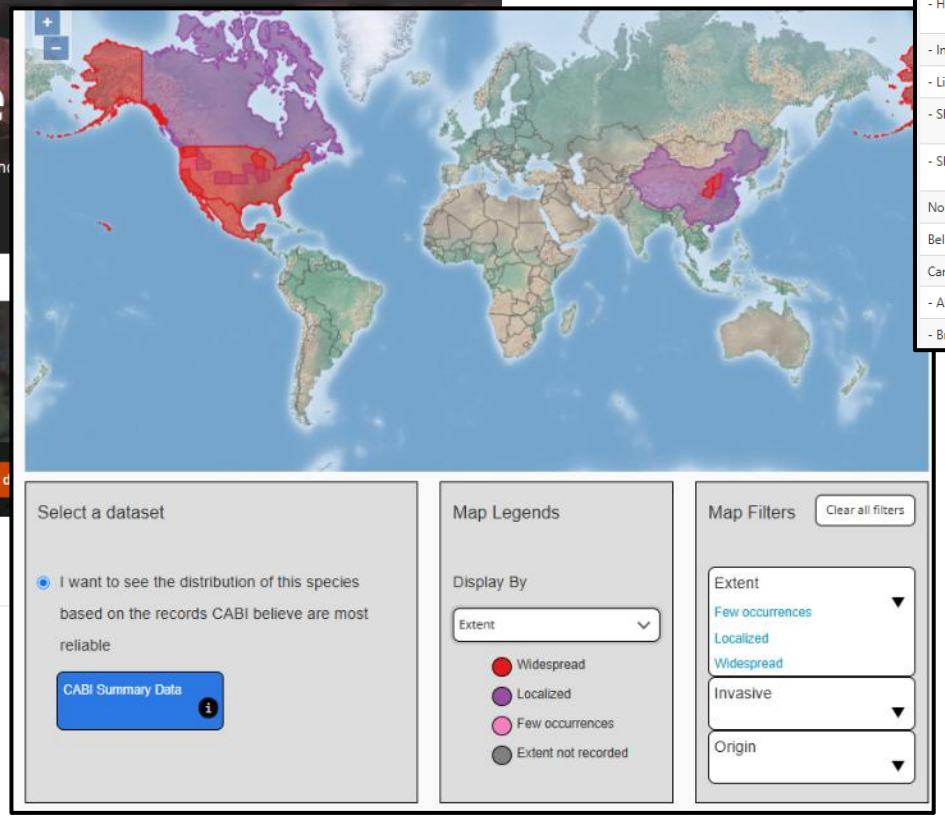


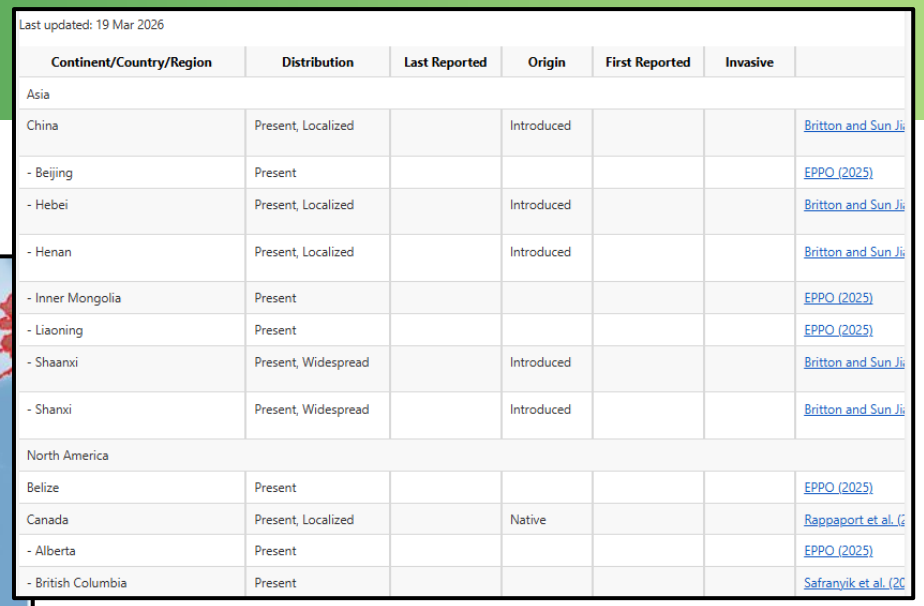
Source: (EPPO 2026b).
Note: Both *Xylella fastidiosa* and *X. taiwanensis* are present in Taiwan (Su et al. 2013; Su et al. 2016).

https://pra.eppo.int/

Sources







Last updated: 19 Mar 2026

Continent/Country/Region	Distribution	Last Reported	Origin	First Reported	Invasive	
Asia						
China	Present, Localized		Introduced			Britton and Sun Ji
- Beijing	Present					EPPO (2025)
- Hebei	Present, Localized		Introduced			Britton and Sun Ji
- Henan	Present, Localized		Introduced			Britton and Sun Ji
- Inner Mongolia	Present					EPPO (2025)
- Liaoning	Present					EPPO (2025)
- Shaanxi	Present, Widespread		Introduced			Britton and Sun Ji
- Shanxi	Present, Widespread		Introduced			Britton and Sun Ji
North America						
Belize	Present					EPPO (2025)
Canada	Present, Localized		Native			Rappaport et al. (2
- Alberta	Present					EPPO (2025)
- British Columbia	Present					Safranyik et al. (20

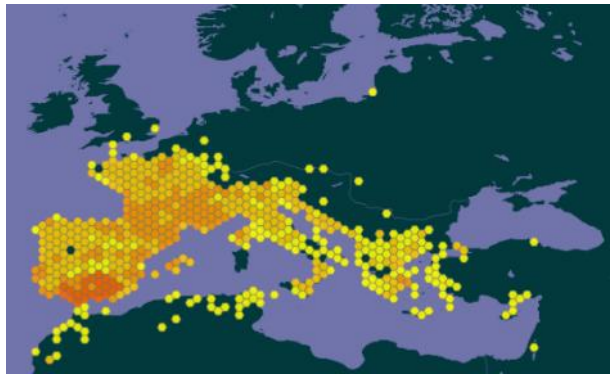


https://www.cabidigitallibrary.org/journal/cabicompendium

Sources

Peer-reviewed articles from:
Google Scholar
Web of Science
Scopus
ProQuest
JSTOR

Naturalist databases and citizen science:



https://www.gbif.org/



https://www.inaturalist.org/

Grey literature:
Conference proceedings
Industry reports

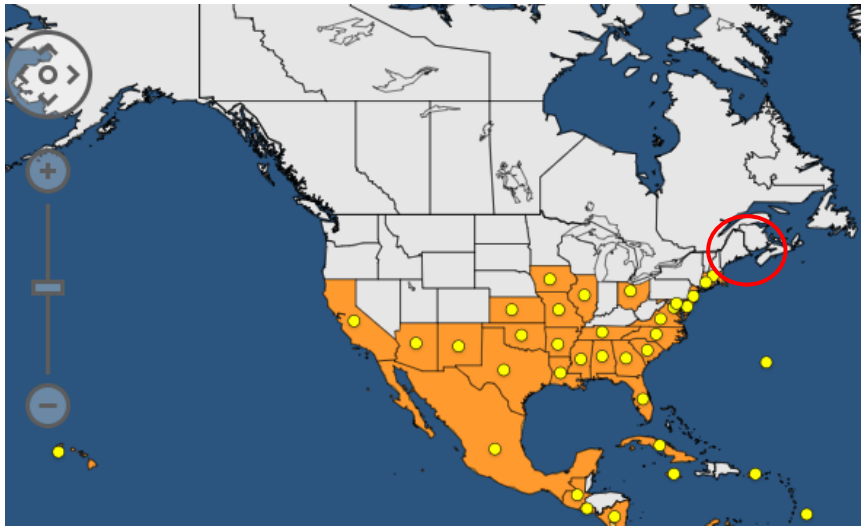
National databases and museum checklists

Interception databases

Ask your diagnosticians for recommendations

Distribution maps

Elasmopalpus lignosellus (lesser cornstalk borer)



EPPO: Country/state presence

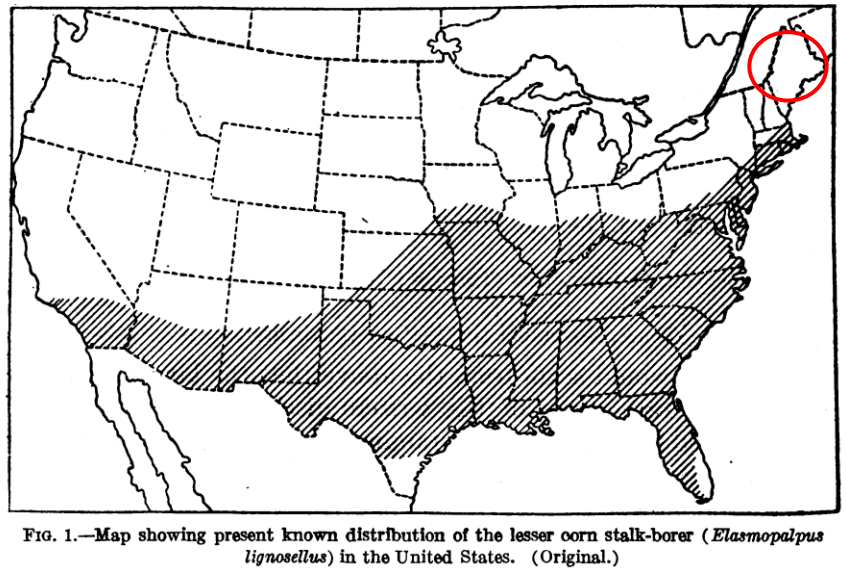
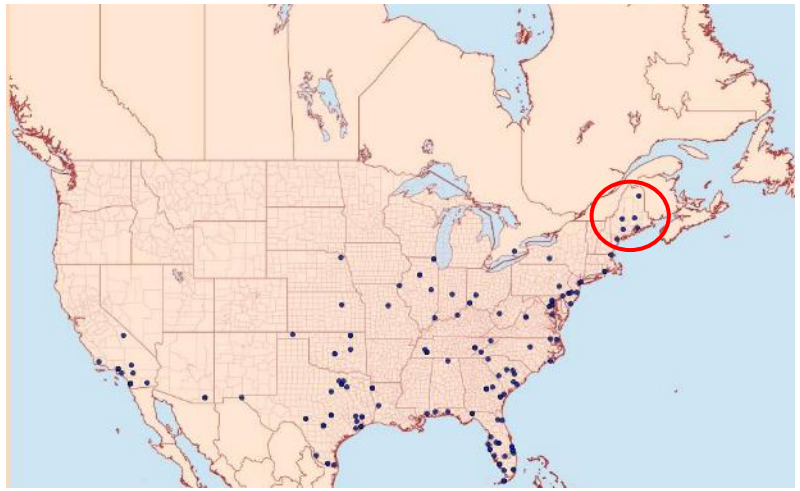


FIG. 1.—Map showing present known distribution of the lesser corn stalk-borer (*Elasmopalpus lignosellus*) in the United States. (Original.)

Luginbill & Ainslie, 1917

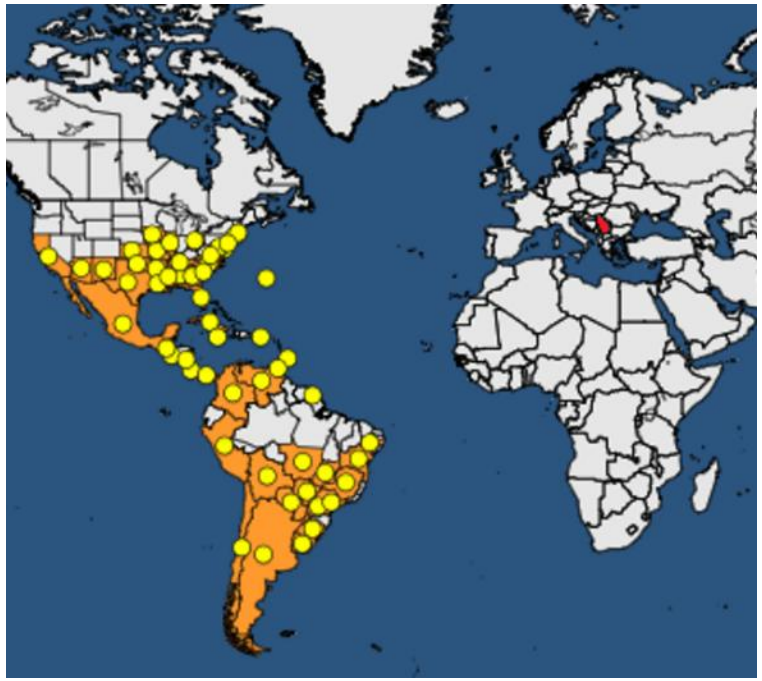


http://mothphotographersgroup.msstate.edu/large_map.php?hodges=5896

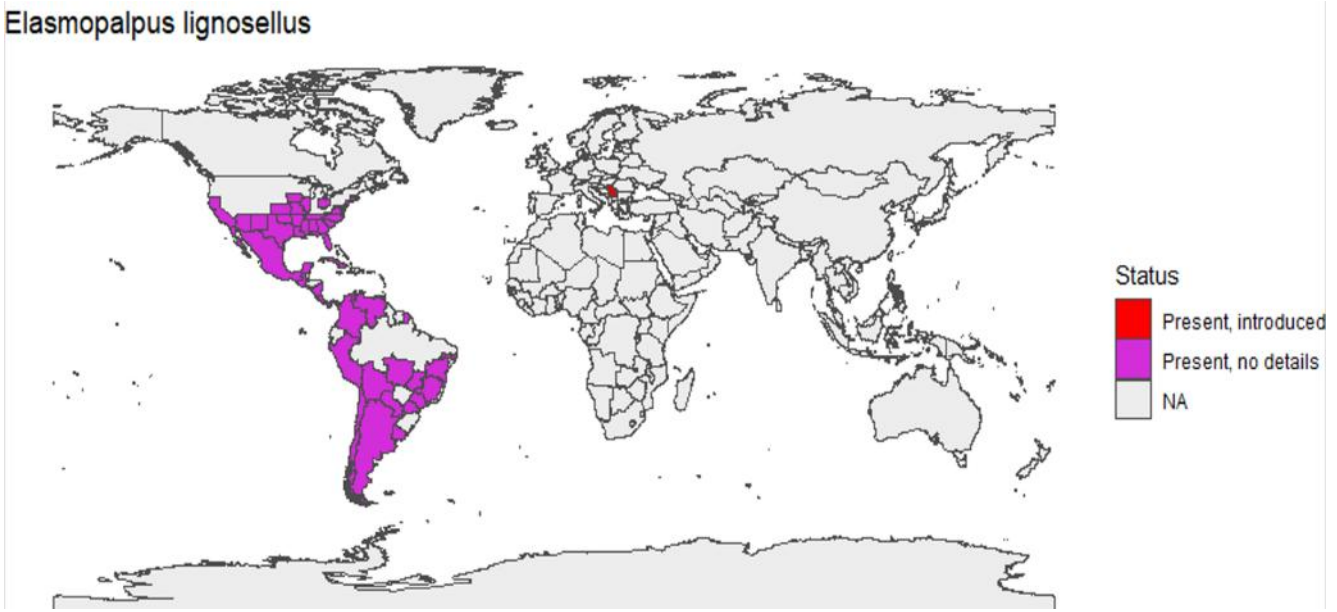
Uncertainty: some records in the north are for adult moths only i.e. not larvae
What is the exact northern limit of breeding populations?

Making your own maps

- GIS e.g. ESRI ArcGIS / ask a colleague ?



- Paint ?

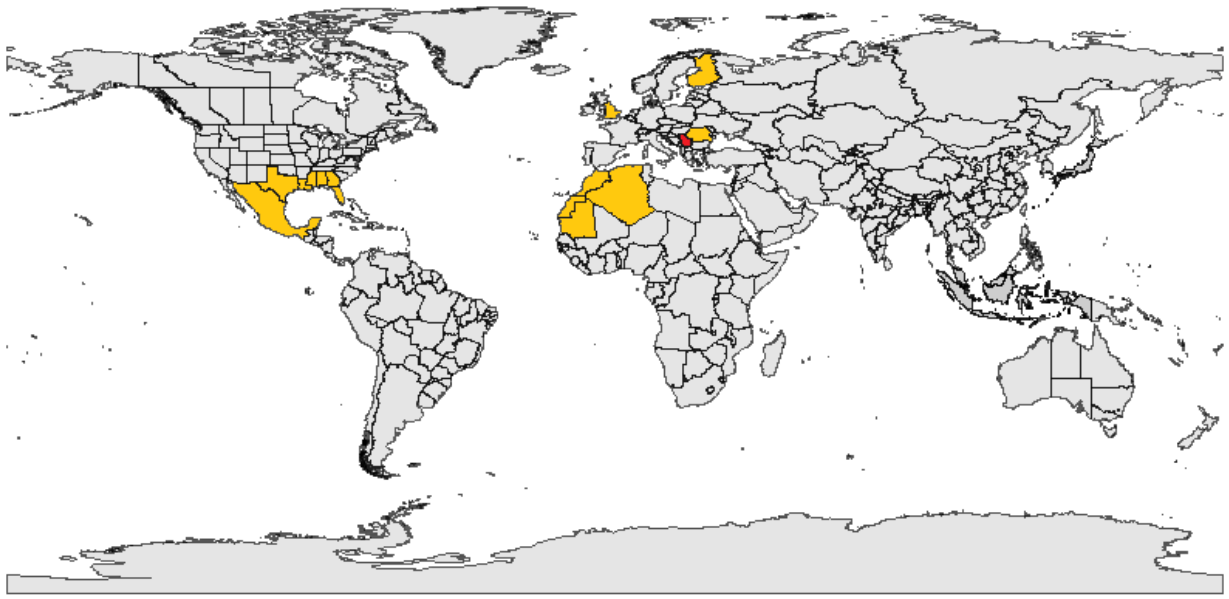


- R Studio (free) +
  EPPO exported csv (add new areas) +
  EPPO / FAO administration boundary layers +
  AI e.g. CoPilot (free) for guidance

EPPO & FAO boundary layers .Rdata files at https://zenodo.org/records/5780031

Making your own maps

Blank map



EPPO 0 layer .Rdata file at https://zenodo.org/records/5780031

Making your own maps



EPPO PRA *Agrilus bilineatus*
Google map
Recorded locations added from literature

Group exercise

- Assess distribution data on EPPO Global Database.
- Cross check with other databases and sources.
- Fill in distribution table including country status and references.
- Note any uncertainties as well as any doubtful or invalid records.
- If possible, update map.

Thank you

linkedin.com/company/eppo-oepp/

bsky.app/profile/epponews.bsky.social

www.facebook.com/EPPOsecretariat/