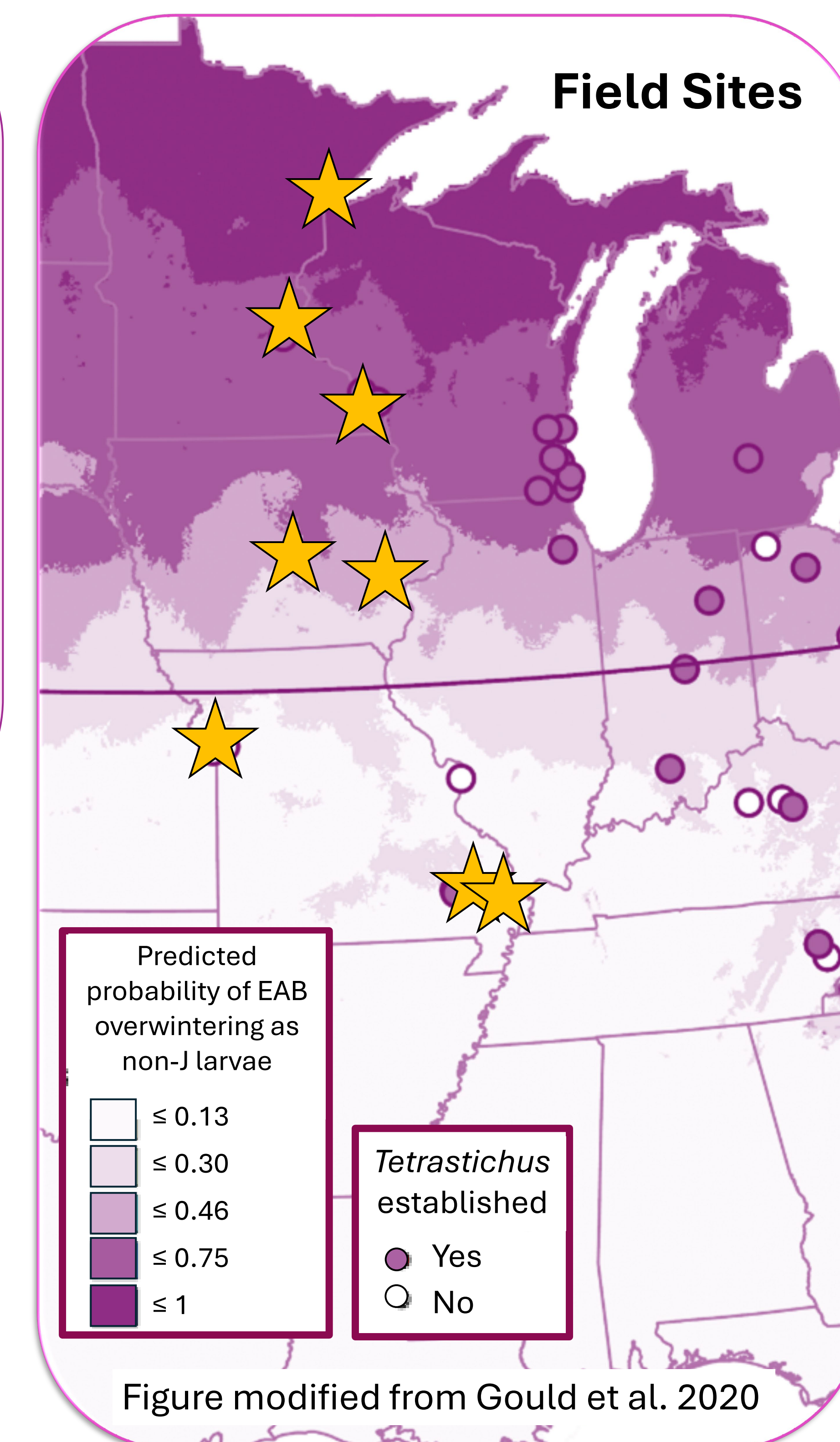


“When emerald ash borer populations crash, what happens to the released parasitoids?”

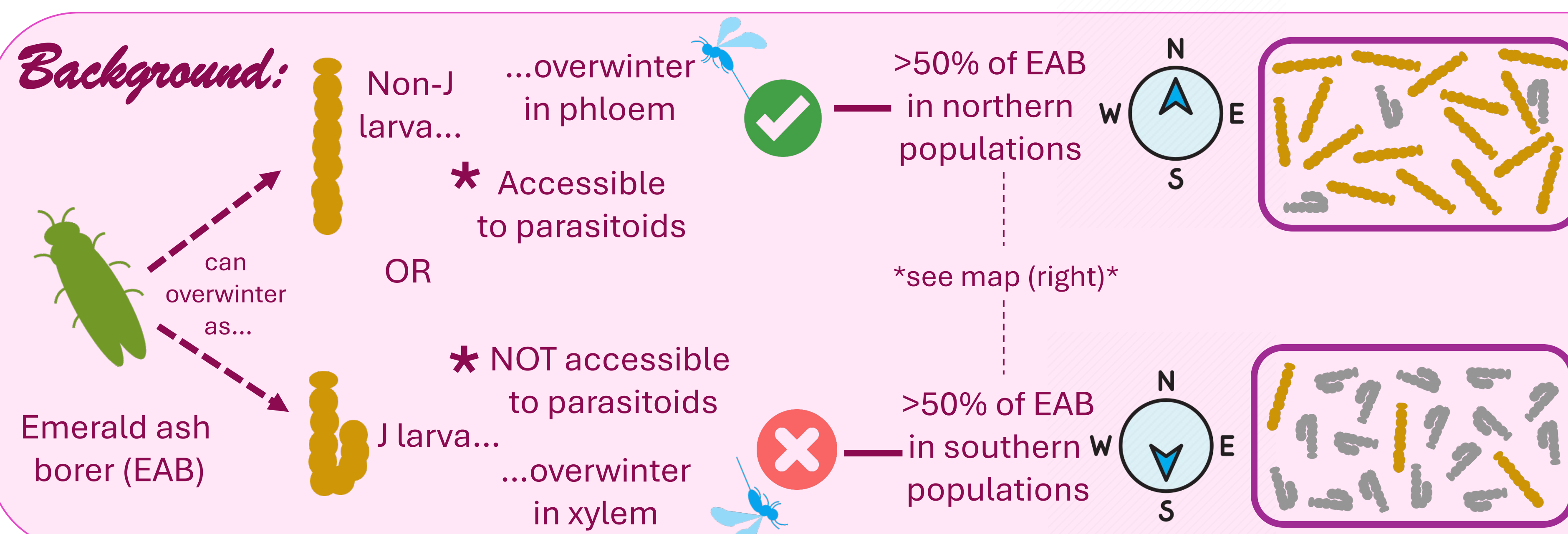
# Assessing climate effects on emerald ash borer biocontrol

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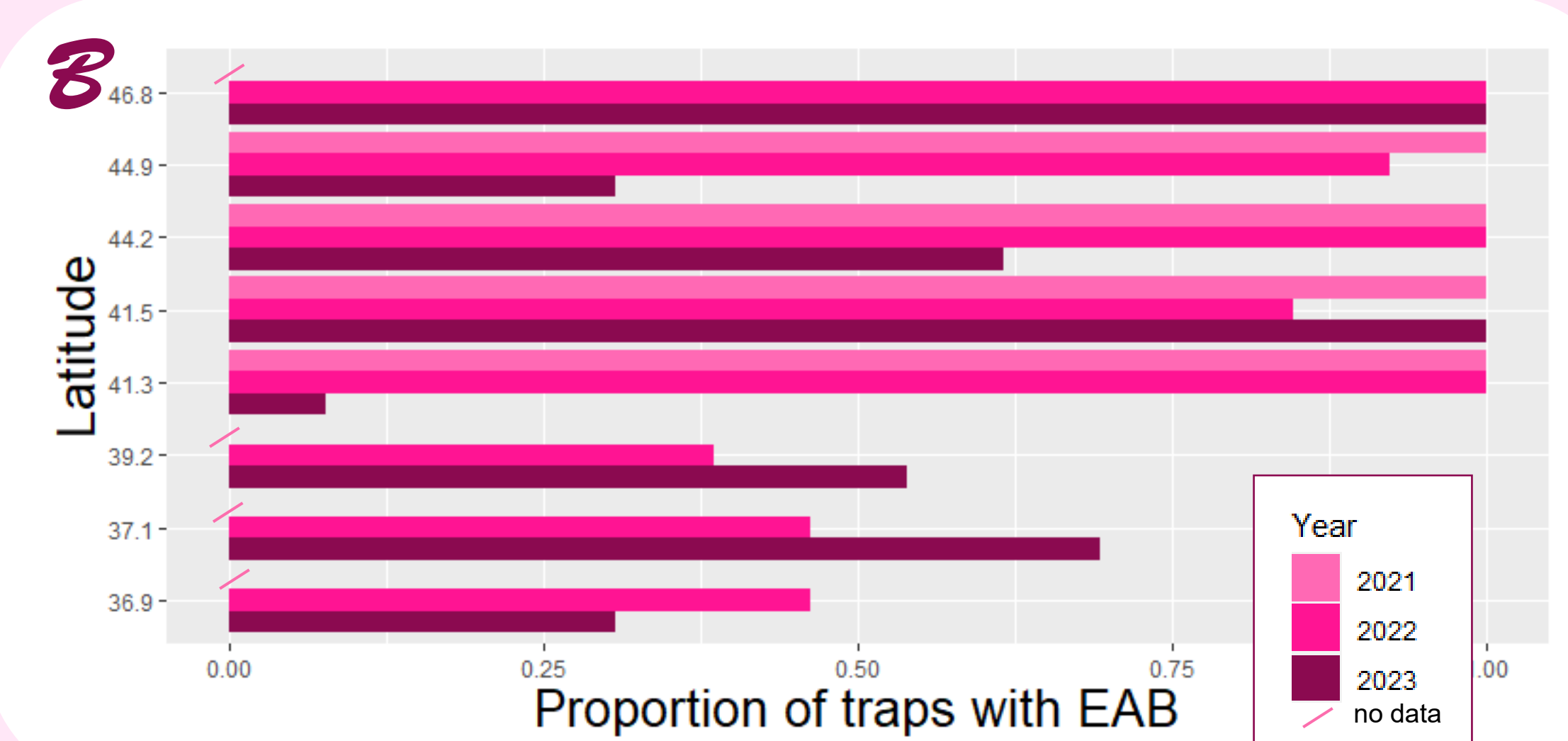
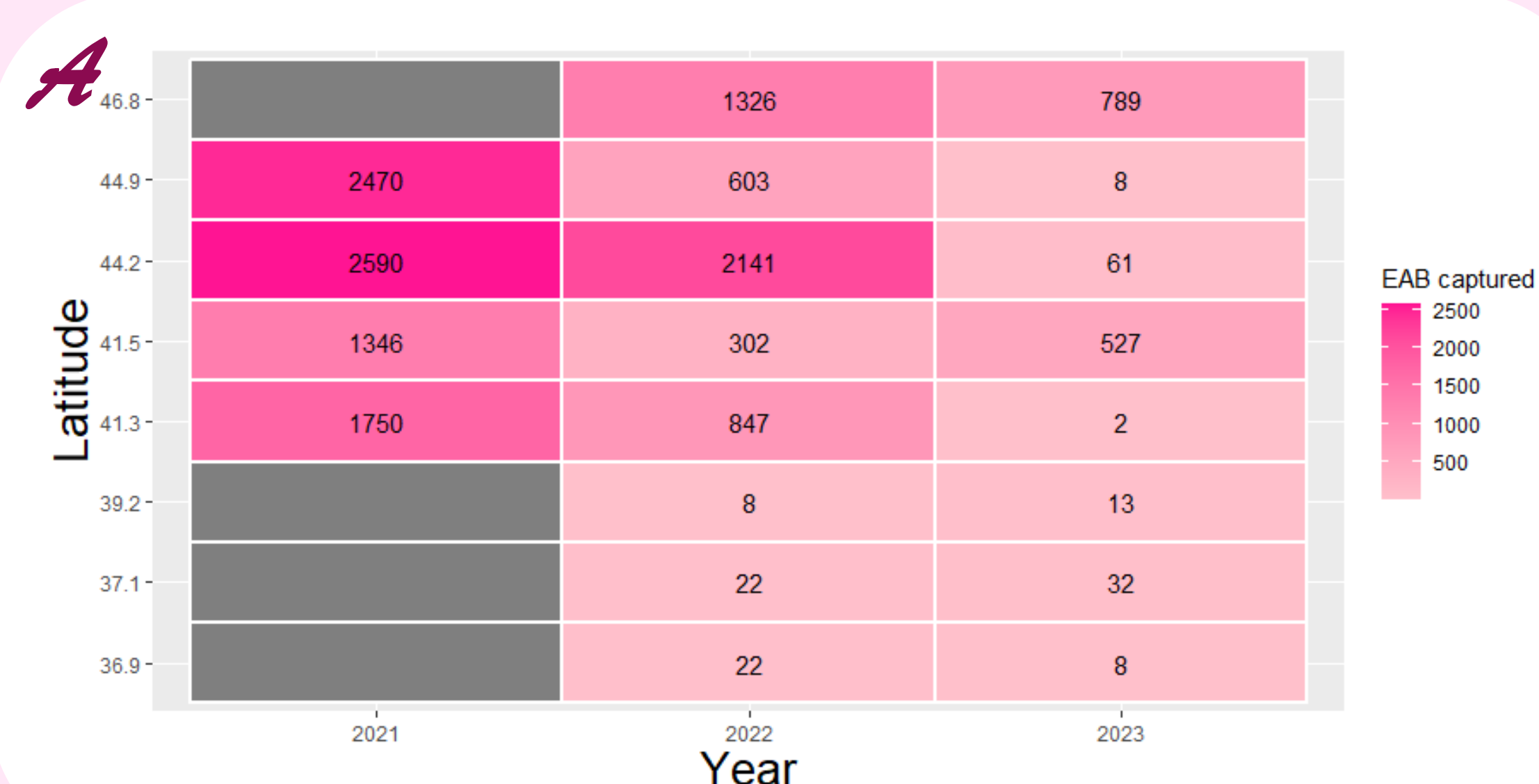
## Background:



- It was predicted that parasitoids would not establish well in the south due to low % of non-J larvae.
- However, they seem to be establishing.
- This is likely because a small % of a large EAB population is still enough non-J larvae to persist.

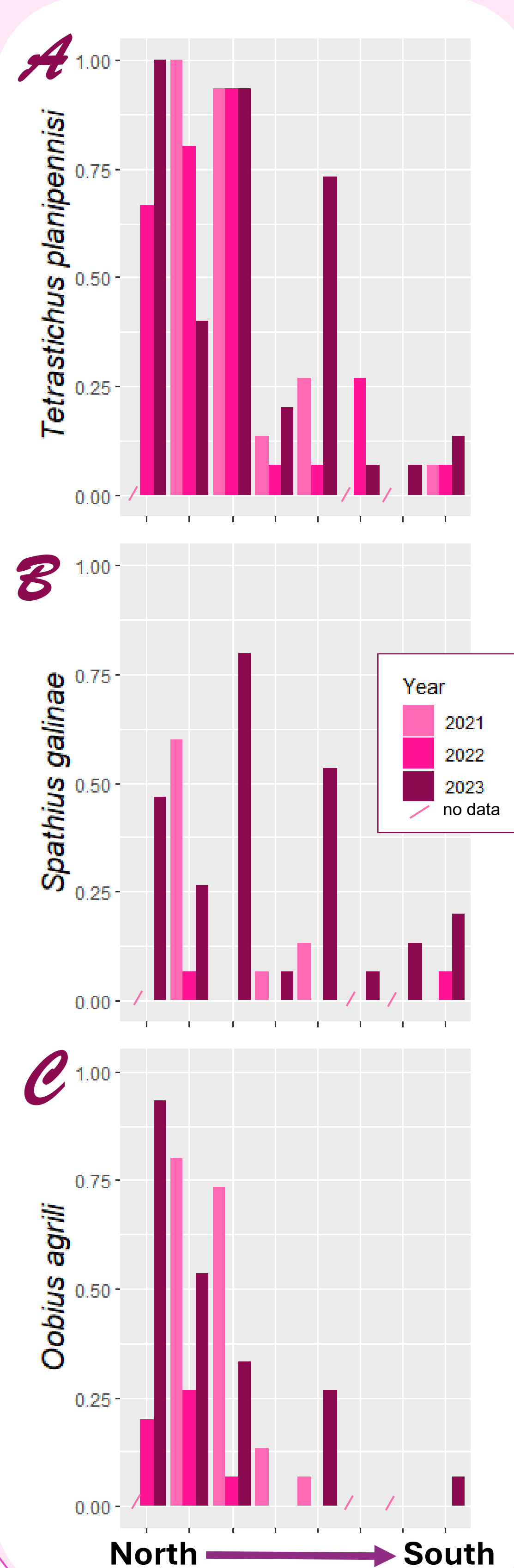
**BUT, what will happen to the parasitoid populations when the EAB population crashes?**

## Part 1: Are the EAB populations different across our North to South gradient?



**Figure 1.** Emerald Ash Borer population sizes over time at each site, from North (top) to South (bottom). **A)** Heatmap with the number of EAB adults captured in traps (N=13) at each site from 2021-2023. **B)** Bar graph showing the proportion of traps (N=13) at each site that had at least 1 positive capture of EAB. Both graphs show a **general decrease in EAB populations** over time at each site. Importantly, the **southern sites have very low population levels**, which will allow us to determine if parasitoids can persist with limited host numbers.

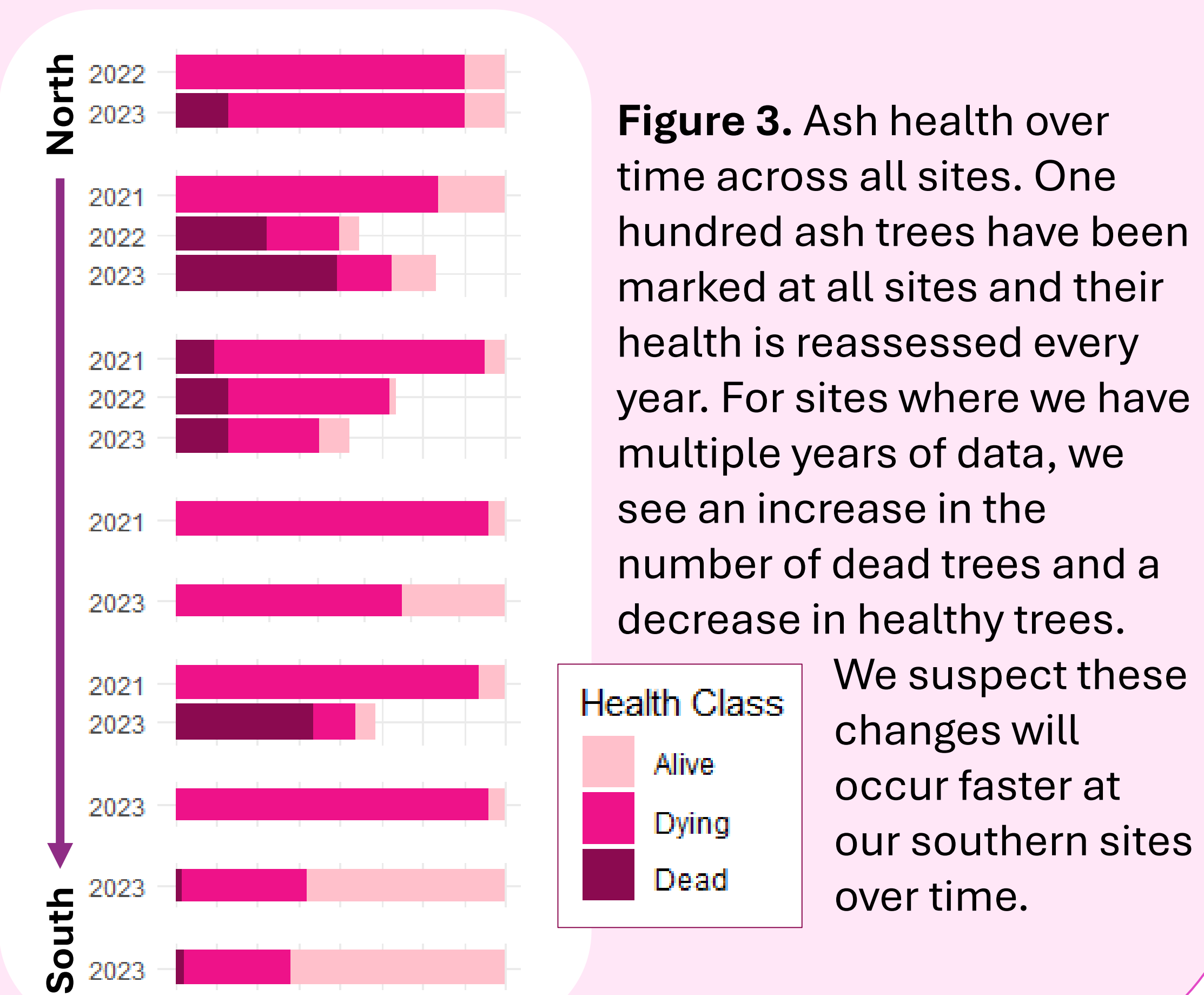
## Part 2: Are the released parasitoids establishing and persisting?



**Figure 2.** Parasitoid population sizes at each site, from North (left) to South (right), over the last 3 years. All three graphs show the proportion of traps (N=15) with positive capture at each site. **A) *Tetrastichus planipennisi* (*Tets*):** The population trend resembles that of EAB. Notably, *Tets* have been capture at every site in 2023, including sites with low EAB numbers. **B) *Spathius galinae*:** Though the populations seem to be smaller than that of the *Tets*, the general trend still matches *Tets*, and they have also been found at all sites in 2023. **C) *Oobius agrili*:** *Oobius* are much harder to detect given their size, but a recent capture in the south shows they are still present, despite the last release being in 2018.

Note: *Spathius agrili* has not been recaptured at these sites.

## Part 3: Are there healthy ash at these sites?



## What's next? Life table study

- Insects tend to have faster life cycles in warmer areas.
- How much more quickly does EAB develop in the south compared to the north?
- How does this affect their replacement/ growth rate?
- Are the parasitoids contributing significantly to EAB mortality?

**Plan:** To place EAB eggs on trees in 5 of our sites this Spring and then recover the developed insects 1 year later.

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Talk: Mon 4:15pm, room 1021

Not a fan of the font/ pink? See alt. here

