Spotted Lanternfly Detection Research at the PVWDC

Jennifer L. Essler, PhD

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Invasive Species Meeting

Spotted Lanternfly: Background

- Spotted Lanternfly is a planthopper insect native to China and Vietnam
- Became invasive to the United States – first seen in Pennsylvania in 2014
- Feeds on woody plants (any!) be eating the phloem (living tissue) through the bark
  - Their sugary excrement, termed “honeydew”, causes mold development on the trees

Spotted Lanternfly: Lifecycle

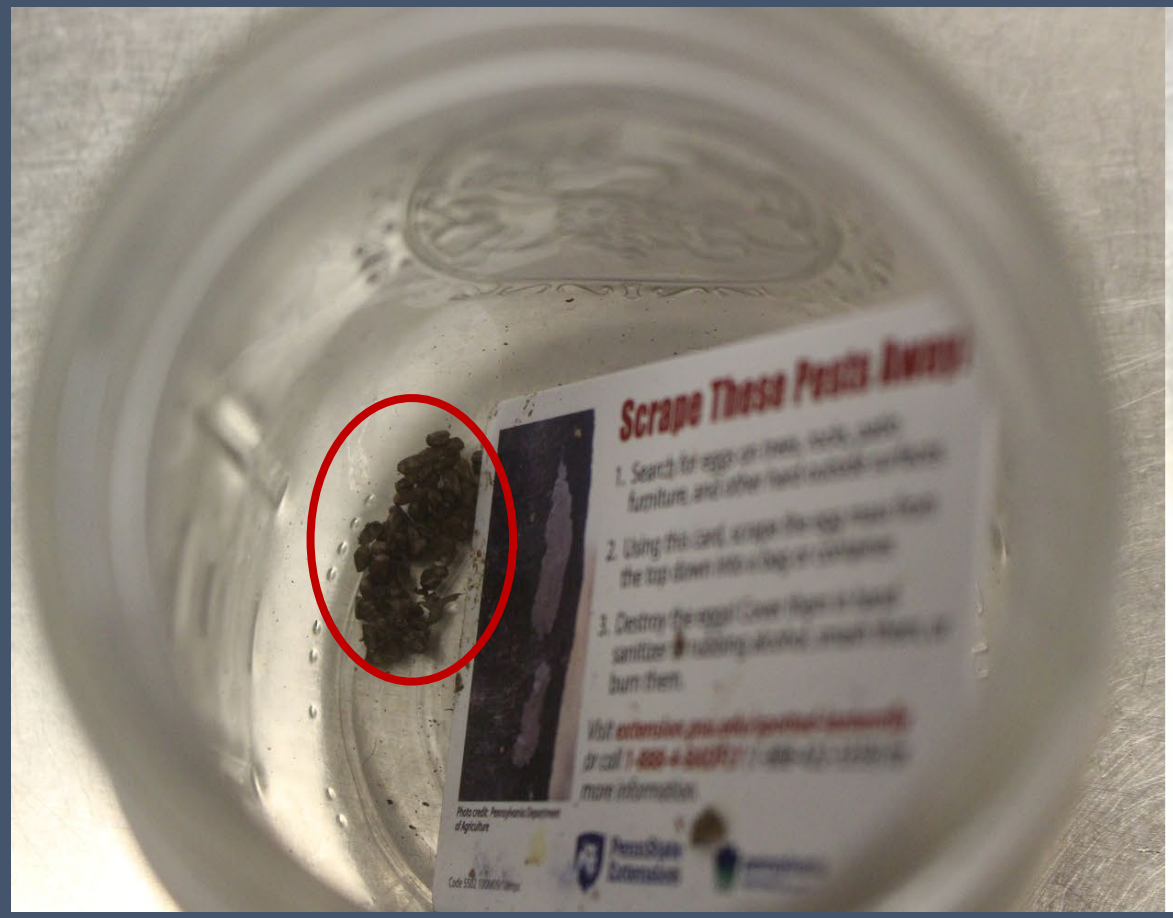
- This insect lays eggs in one season per year, from September until early November
  - Eggs typically seen on trees but can be found on other substrates
- Once laid, they have a brown mud-like covering
- Eggs ‘overwinter’ and nymphs are seen in May
  - This overwinter period presents an opportunity to enter infested areas to begin quarantine and management of spread

Spotted Lanternfly Detection Dogs?

- Dogs are used in many areas to detect different odors, including wildlife detection
- Recently dogs have been trained to detect infections of citrus huanglongbing, or ‘citrus greening disease’, before the disease can be seen visually or with other molecular methods
- Biggest hurdle with potential SLF detection dogs = lack of a training tool
  - Eggs only found certain times of the year
  - Unsure if training on ‘dead’ eggs would allow the dogs to find ‘live’ eggs
  - Allows use of a safer training aid, rather than moving/using live eggs, to prevent further accidental spread

First Aim: Training Aids

- Train dogs on ‘dead’ SLF eggs
  - MUST distinguish this from bark/leaves background odor
- Test dogs on ‘live’ SLF eggs and egg masses
  - Determine if dead masses are of use as a training aid

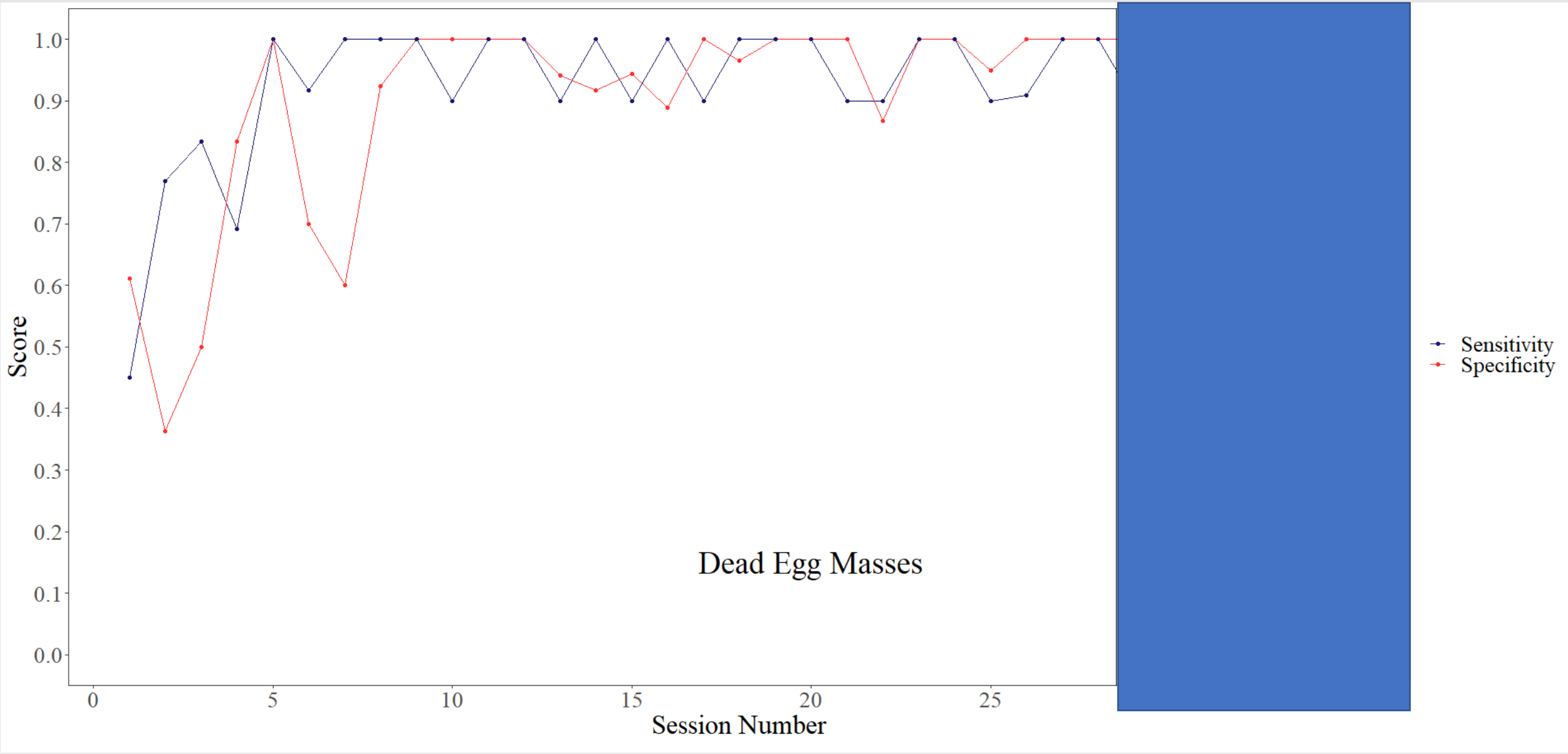


Training on Dead SLF Eggs/Egg Masses

- Eggs frozen in -80c freezer for 96 hours to ensure eggs were dead
- Kept in 16oz mason jars in a refrigerator between 0-4c when not being used
- Dogs trained on scraped eggs (left) and egg masses on bark (right)

Those Pests Away!

OCSA 2017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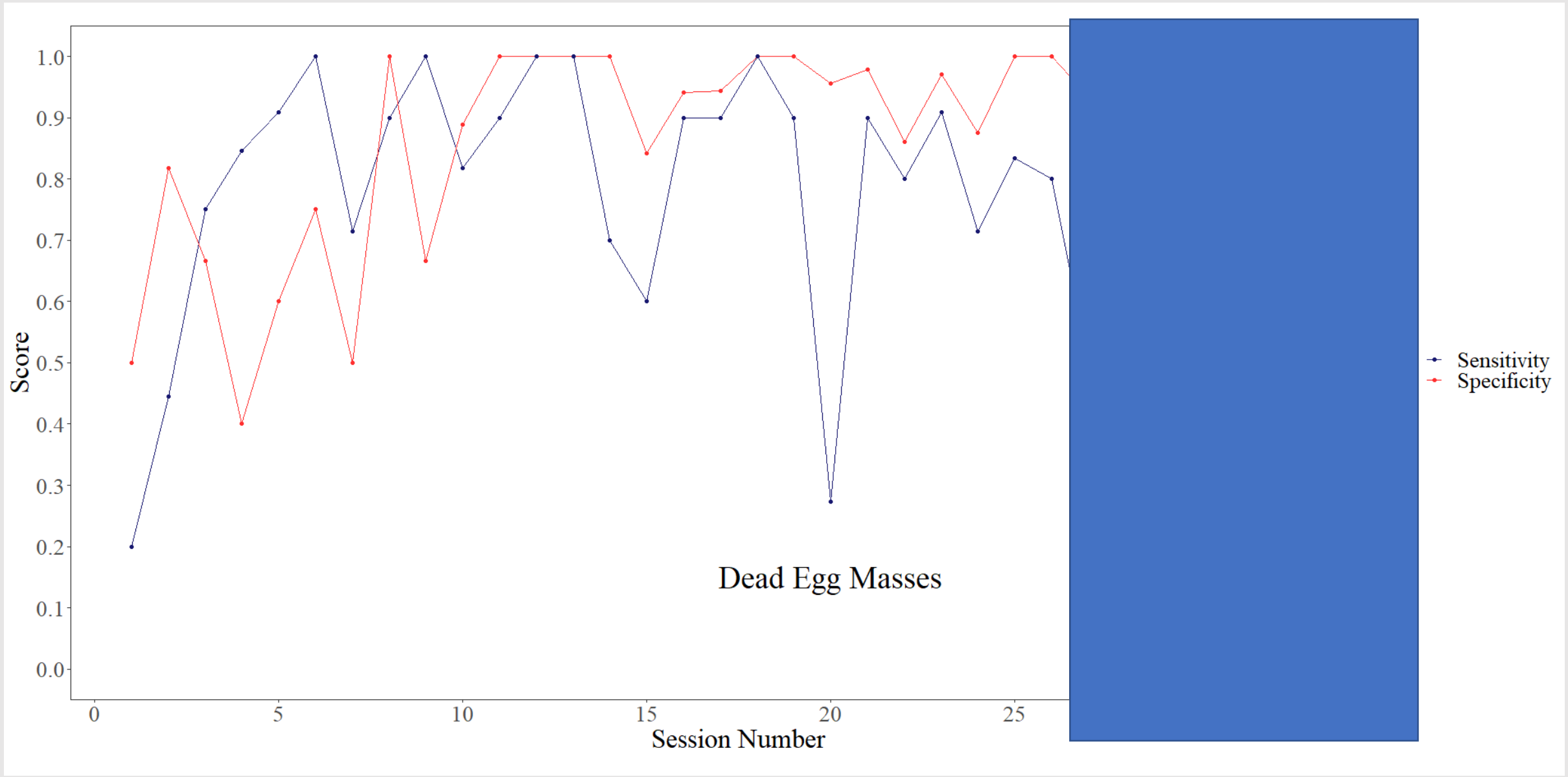
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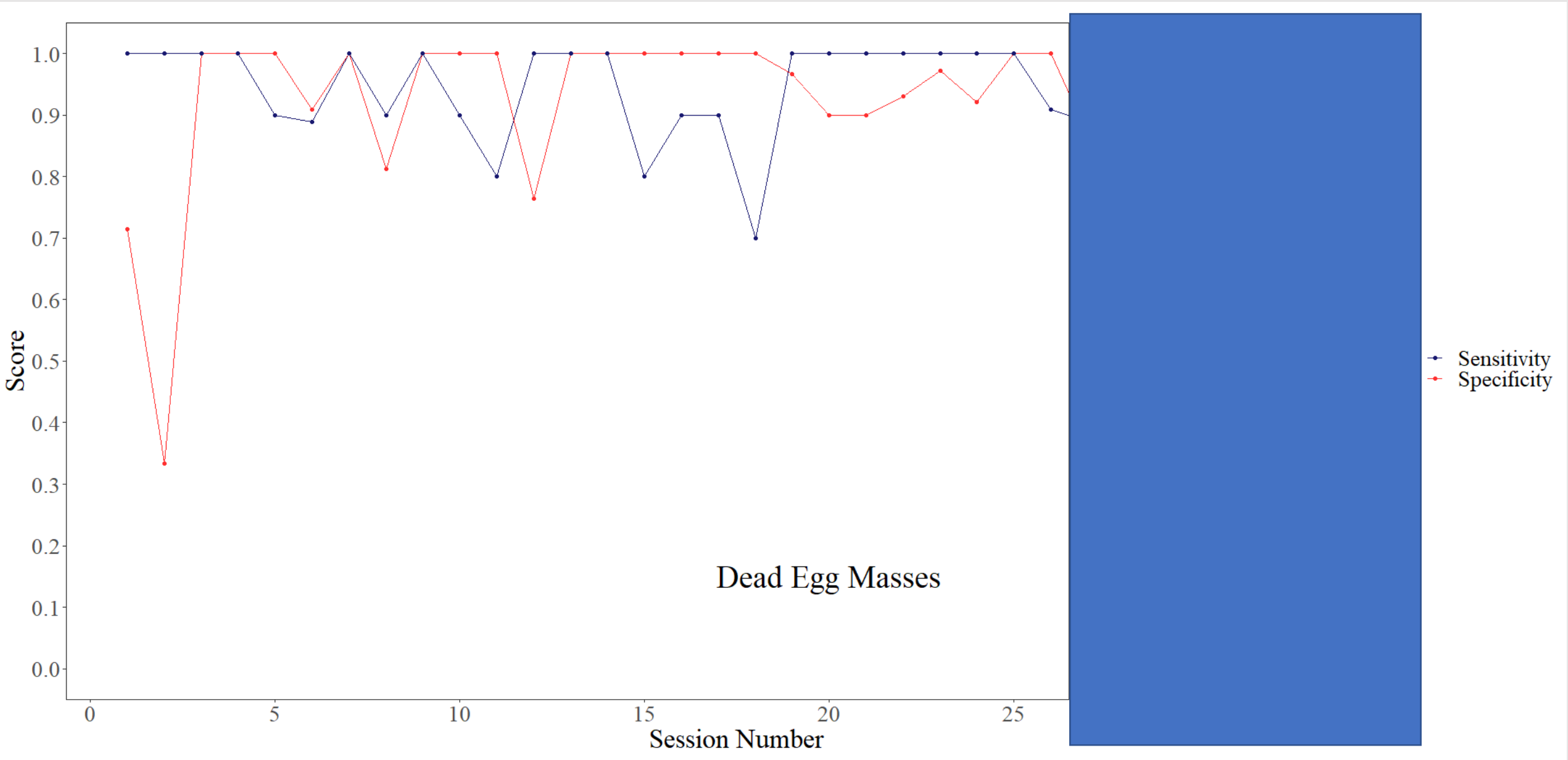
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Discussion

- Three dogs were able to…
  - Learn to distinguish dead SLF egg masses on bark
  - Quickly recognize live SLF egg masses after training on dead egg masses

But what about in a real-world scenario?

Future Directions & Training

- Necessary to train the dogs to find the eggs on trees/flat surfaces
  - They seem to look for ‘hides’
- Test the dogs in known infestation areas

Questions?