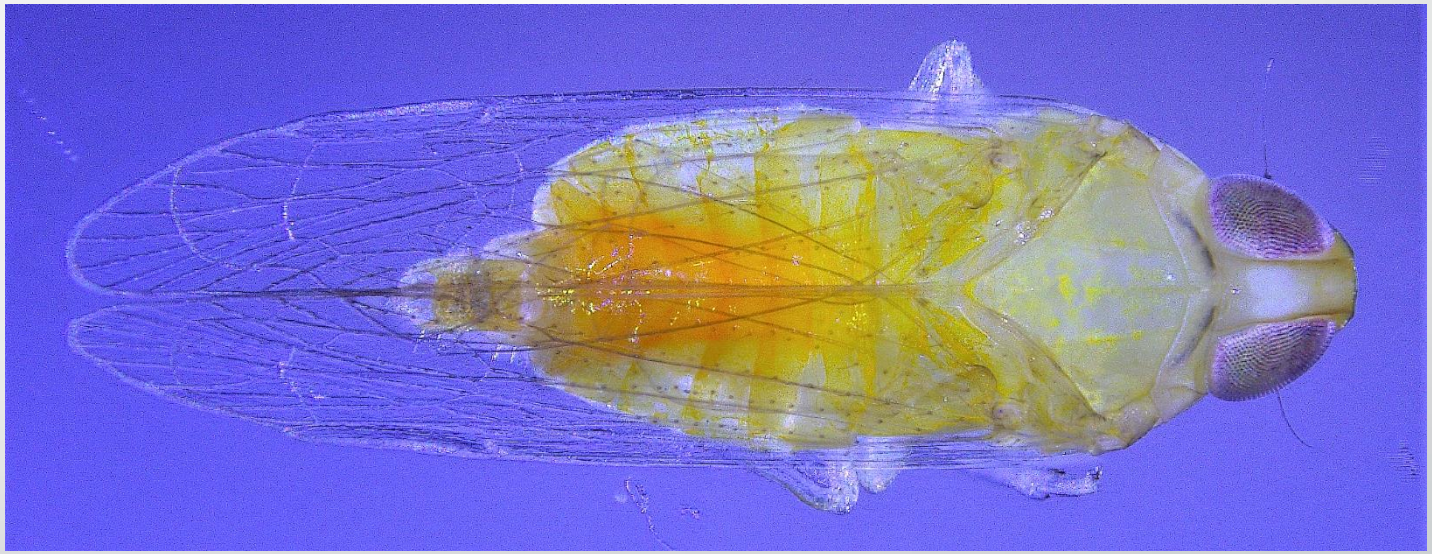
Identification and Monitoring of *Haplaxius crudus*



Brian W. Bahder, Ph.D.

UF IFAS UNIVERSITY of FLORIDA

UF UNIVERSITY of FLORIDA

Acknowledgements

- ISA-FL Chapter
- FNGLA
- National Horticultural Foundation
- USDA (NIFA/APHIS)

Topic Outline

- Justification for workshop
- Basic biology, taxonomy and morphology
- Current monitoring techniques
- LB discussion / Q & A

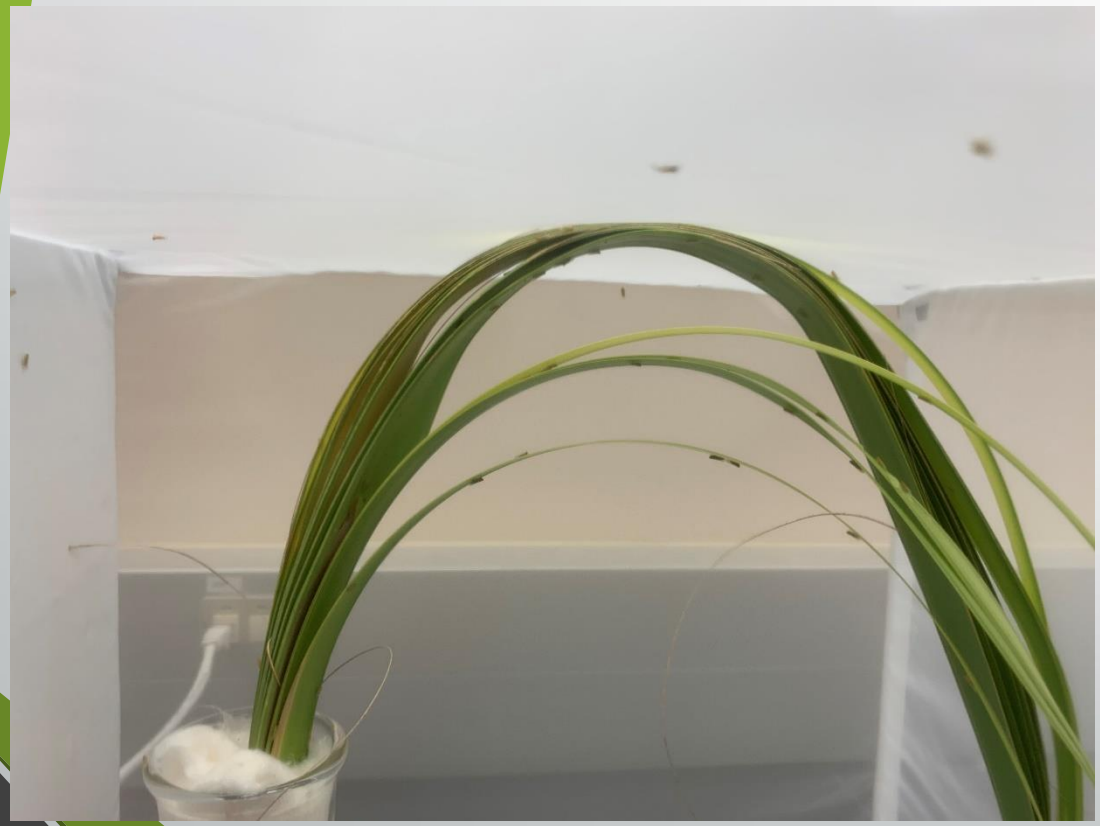
Why *Haplaxius crudus*?

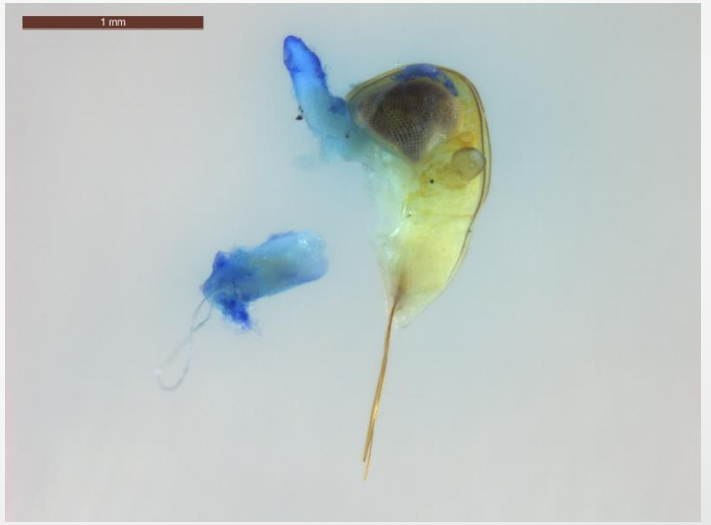
- Identified as the vector of lethal yellowing (LY) in Florida in the early 1980s.
- Recently confirmed as vector of lethal bronzing (LB) in Florida and Mexico.

Transmission Experiments

- Shotgun approach
  - Worked in FL for LY
  - Worked in Mexico for LY and LB

Current Vector Work on *Haplaxius crudus*





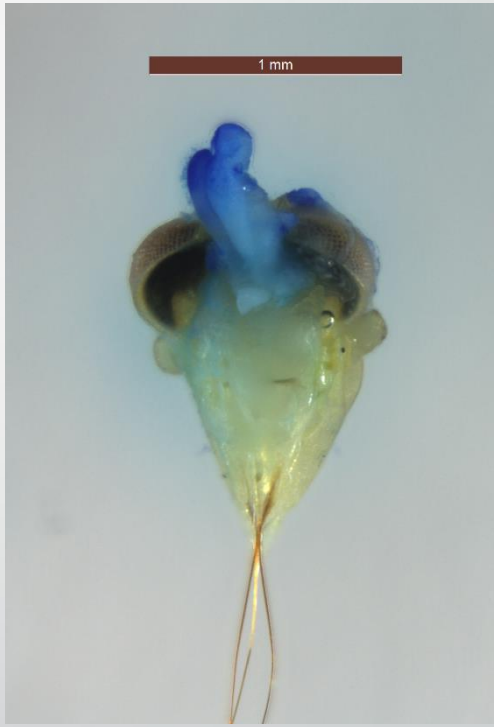
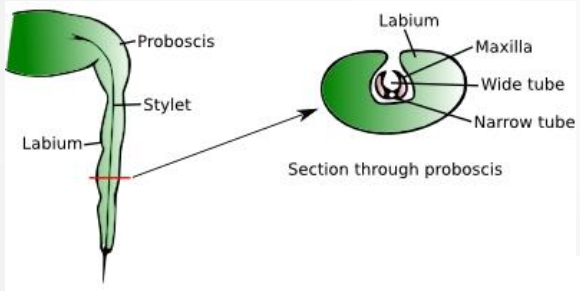
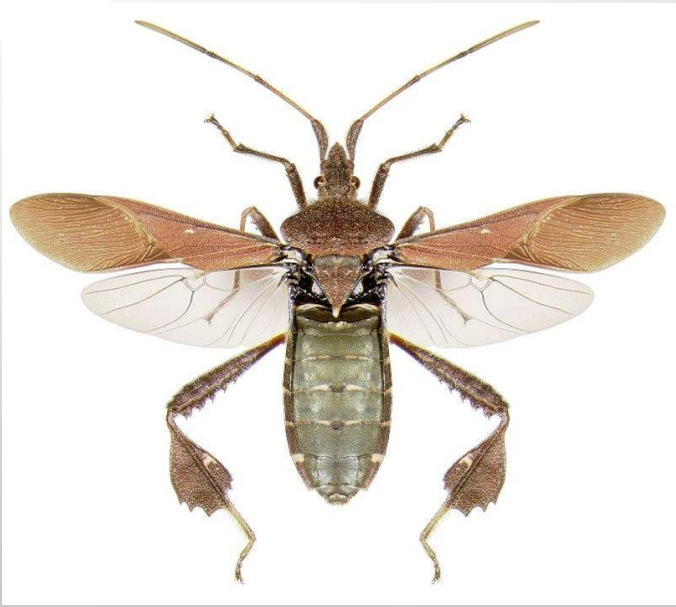


Photo: De-Fen Mou

Scientific Classification

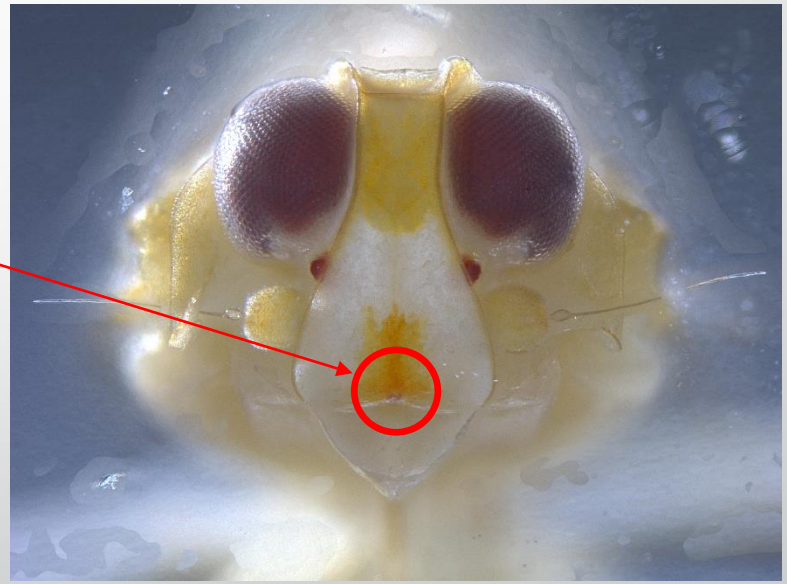
- Kingdom: Animalia
  - Phylum: Arthropoda
    - Class: Insecta
      - Order: Hemiptera
        - Family: Cixiidae
          - Genus: *Haplaxius*

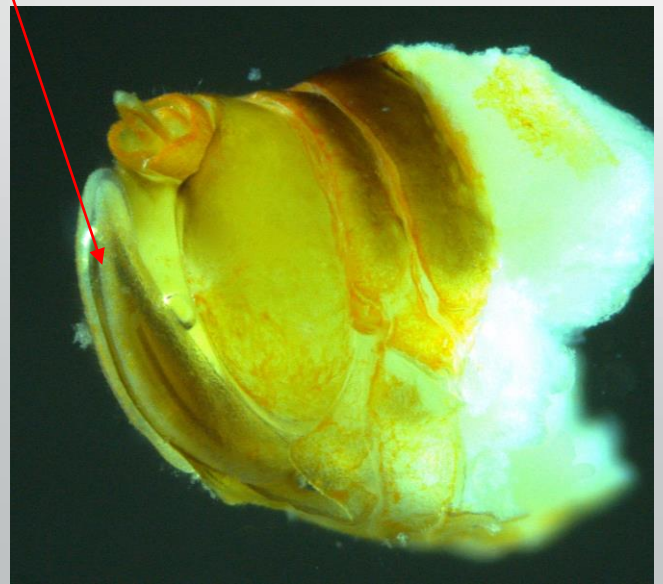




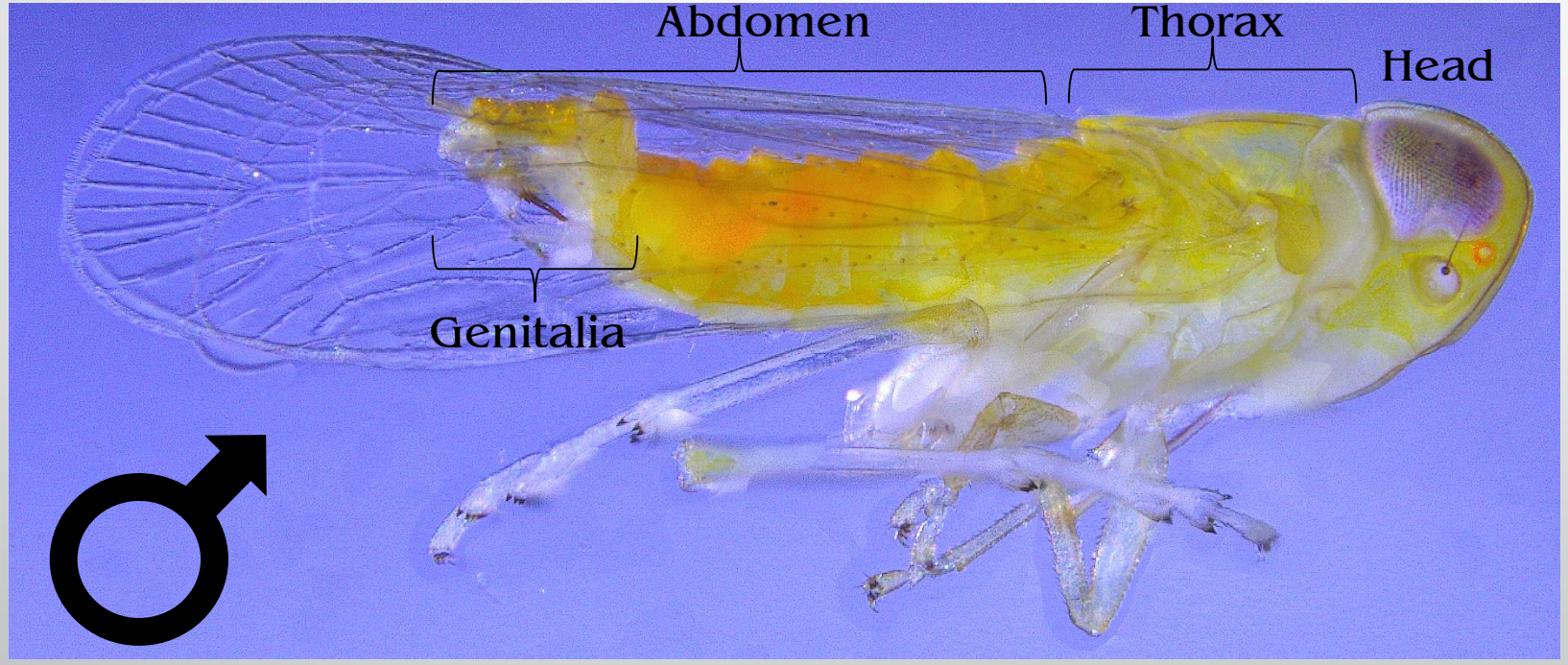
Cixiidae

- Plesiomorphic: defined by a lack of features/generic
- Approximately 2,500 species worldwide
- Median ocellus present
- Sword-like ovipositor





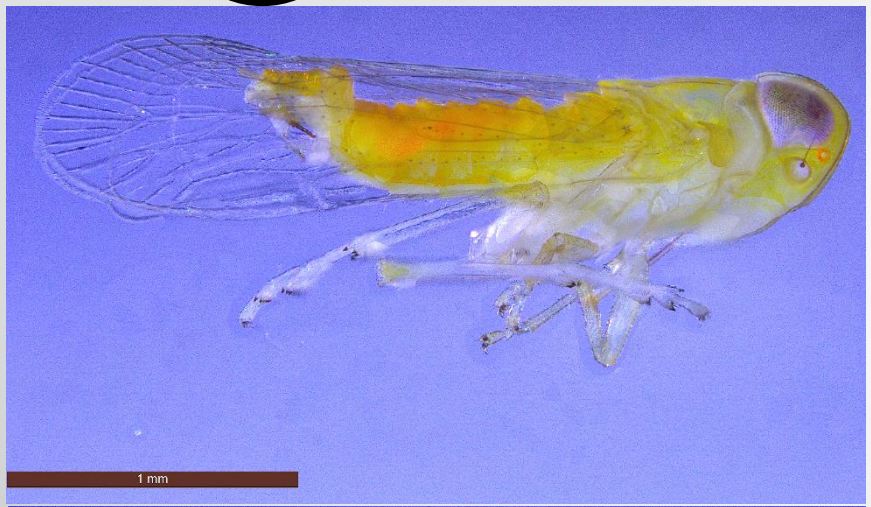
Body Morphology

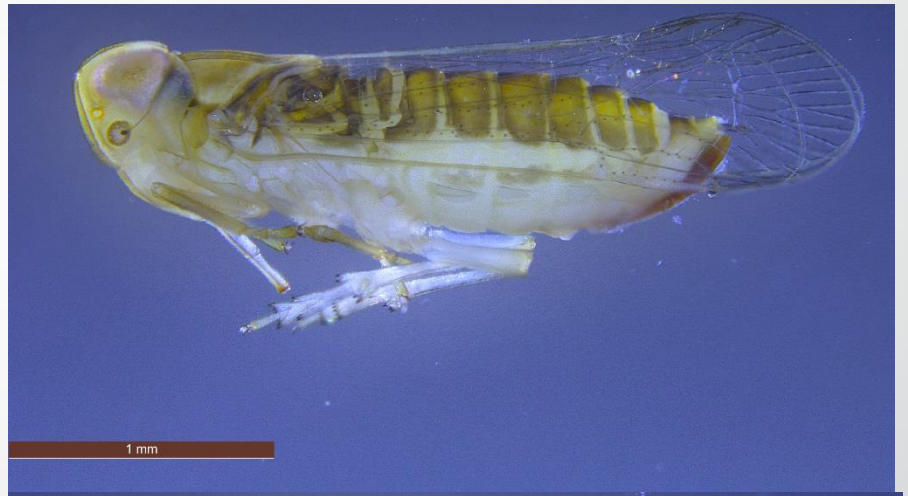


Haplaxius

Oecleus

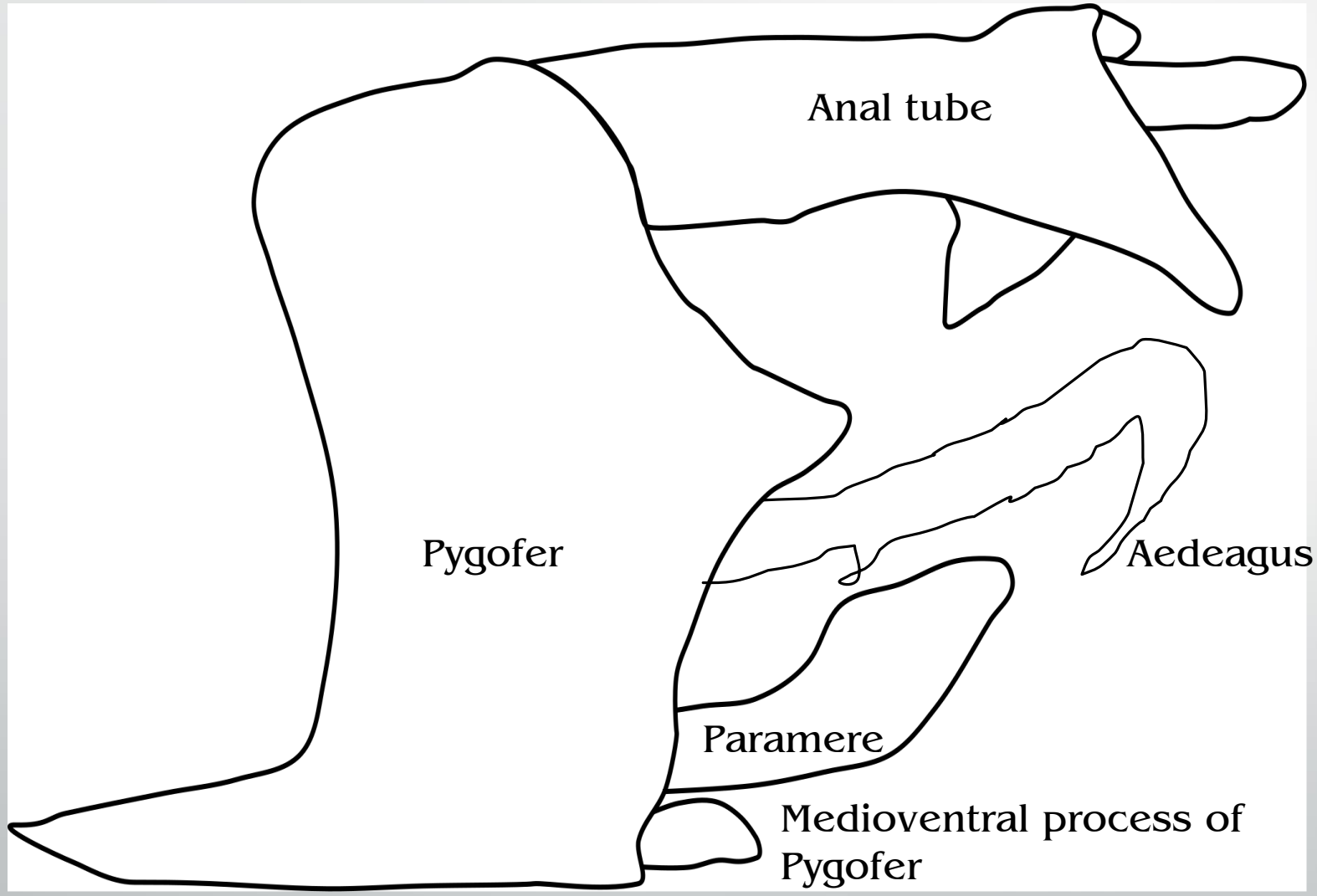
Haplaxius crudus





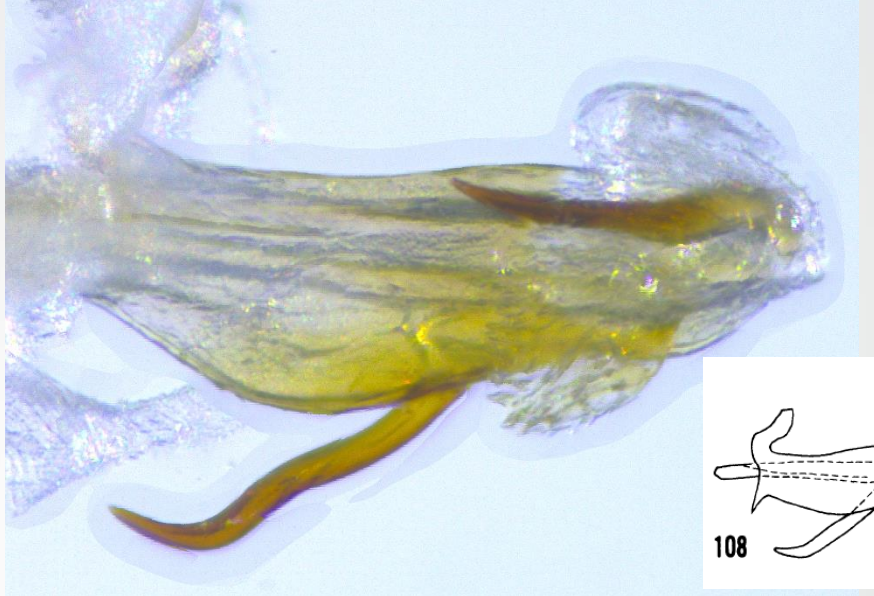
Haplaxius

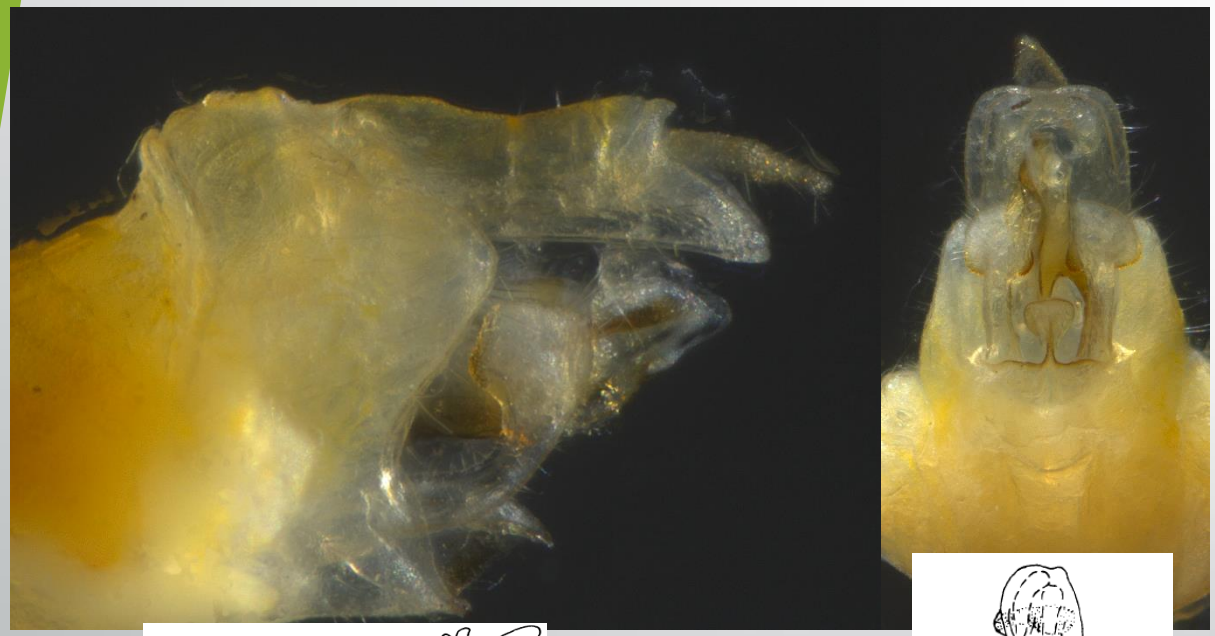
crudus *jamaciae* *meadi* *skarphion* New species *dougwalshi*

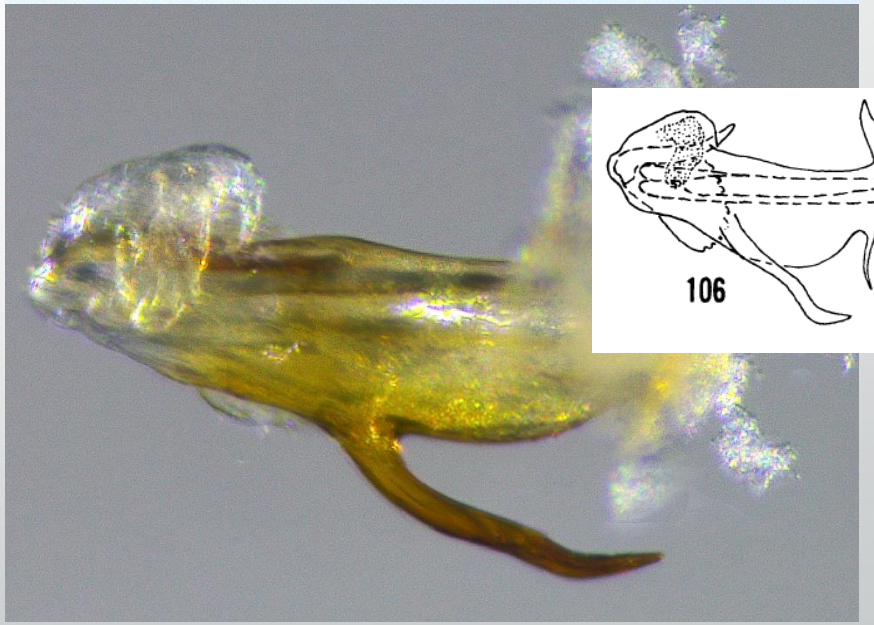

Anal tube
Pygofer
Aedeagus
Paramere
Medioventral process of Pygofer

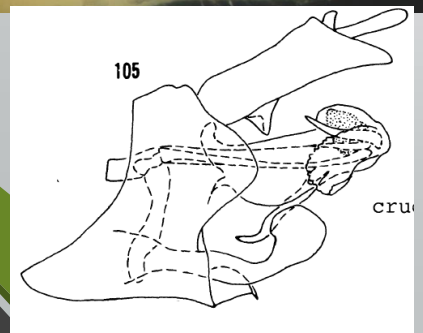
Haplaxius crudus

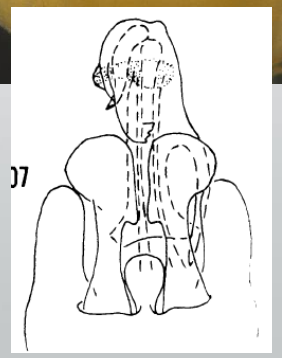
- Described from Jamaica in 1907
- First found in Florida in 1921











Adult Behavior

- Adults prefer feeding on the underside of the leaf
  - In the folds created by leaflets in pinnate palm leaves
  - Also in folds of palmate leaves
- Easier to spot in the morning

Sampling for Adults

- Sweep net
- Light trapping
- Sticky traps

Sticky traps

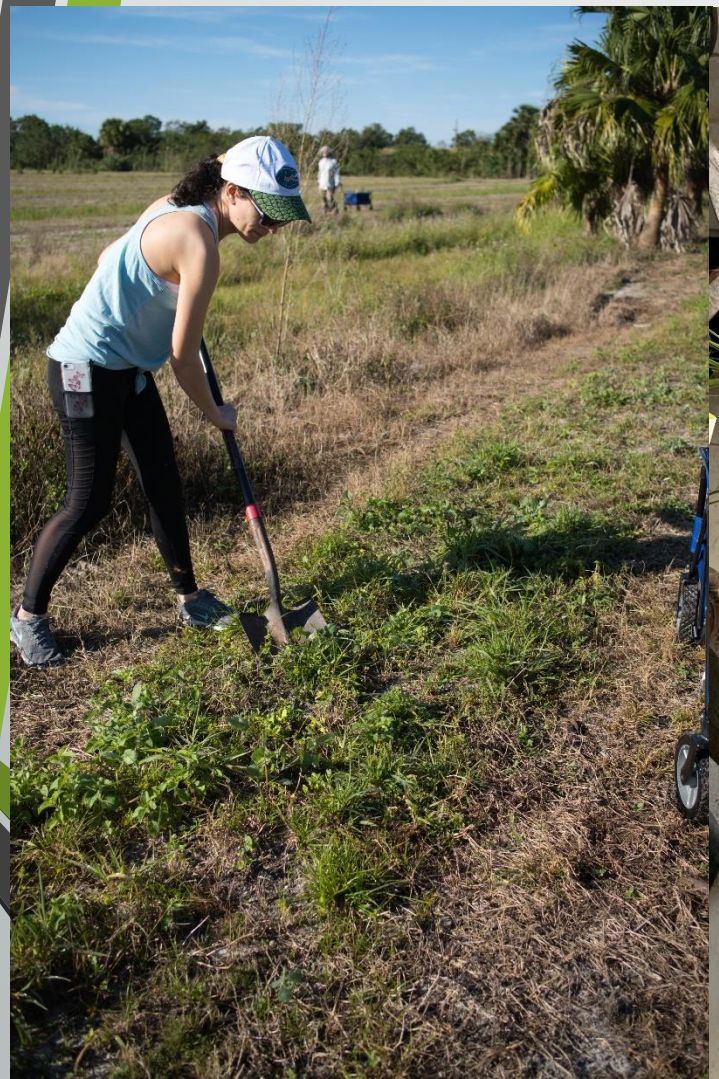
- Traps have to be within canopy
  - Only practical for smaller palms
- Switched bi-weekly if desiring to test for phytoplasma
  - Monthly if only monitoring populations
- Cover with Saran wrap

Monitoring for Nymphs

- Nymphs feed at base of wide variety of grass species.
- Cannot use sticky traps, light trap, or nets
- Soil samples/Berlese funnels needed

Nymph Habitat

Sampling



Distribution of Nymphs

- Over 95% of nymphs collected from ditches.
- Still determining seasonal phenology.
- Effective monitoring and management will need to combine both practices.

Summary

- *Haplaxius crudus* is a vector of LB in Florida
- Likely the only vector at the moment
- Monitoring for adults essential for assessing management practices
- Monitoring for nymphs essential for implementing management options

Implications for LB Management

- Most spread appears to be occurring in nurseries.
- Highest levels of *H. crudus* in palm nurseries.
- Monitoring and management of *H. crudus* in the nurseries will result in fewer infected palms being shipped and lower risk of infective insects being transported from nursery.

New Services Coming Soon!

- Processing sticky traps for stakeholders
  - Assess vector population on property
  - Assess risk of property to LB
  - Can help with regulatory requirements/quarantine issues
- Processing soil samples for nymphs
  - Help guide nurseries where to implement management decisions

Current Research Efforts

- Assessing insecticide use against adults and nymphs
  - Once we have this data, we can implement new monitoring services to that we can reliably recommend treatments tailored to specific scenarios.

Thank you!!! Q & A time!

- 3205 College Ave. Davie, FL 33314-7719
- 954-577-6305
- www.bahderlab.com
- bbahder@ufl.edu