Geosmithia morbida spores found on Stenomimus pallidus weevils from Indiana: How we found G. morbida and what it means

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2011 Project Goals

• Identify other beetles that might attack stressed walnut trees
• Determine what fungi were associated with those beetles

Sampling locations

• Sites: Plantation, natural forest, urban planting

12 MO and 15 IN sites

• 104 trees girdled and treated with glyphosate
• 3 months standing to permit attack
• Removed stem and branch logs

Beetles

• 15 ambrosia beetle spp. (16,270 beetles)
• 4 bark beetle spp. (48 beetles)
• 7 weevil spp. (569 weevils)
**Most abundant species**

- *Xyleborinus saxesenii*, 55%
- *Xylosandrus crassiusculus*, 27%
- *Xylosandrus germanus*, 7%

*Photo Credits: Natasha Wright, Florida dept. of ag. and consumer services, bugwood.org*

**Abundant weevils**

- *Stenomimus pallidus* (4% of collection)
- *Himatium errans* (1% of collection)

*Photo credit: Tom Murray, BugGuide.net*

**Other beetles of interest**

- Exotic
  - *Ambrosiodmus rubricollis*
  - *Ambrosiophilus atratus*
  - *Clytus arietis* (Panama)
  - *Dryoxylon onoaharensum*
  - *Euwallacea validus*

- Relative of WTB
  - *Pityophthorus laetus*

*Photo credit: Janet Ciegler*

**Fungi of importance**

- Putative pathogens
- Putative insect pathogens
- Putative pathogens of fungi
- Other Geosmithia

**G. morbida on Indiana weevils**

Yellowwood State Forest plantation

Initially,
- 1 of 2 weevils *G. morbida* positive

After further isolations,
- 3 of 21 weevils
  - Direct DNA sequence (2)
  - *G. morbida* grown on nutrient media (1)

No *G. morbida* on 107 *S. pallidus* weevils tested from 12 other Indiana counties

*Photo credit: Tom Murray, J. Ciegler*
**Stenomimus pallidus**

- Indiana
  - 435 individuals
  - 12 of 15 locations

- Missouri
  - 9 individuals
  - 2 of 12 locations (St. Louis and Kansas city regions)

**Habits of S. pallidus**

- Living under bark of black walnut
  
  *C. Drury 1915*

- Living under loose bark of freshly fallen oak logs
  
  *Entomological News, 1900*

- Breeding in wounded places on living hickory trees
  
  *Journal of the New York Entomological Society, 1893*

  - Information provided by Rick Hoebeke

**Additional isolations from beetles**

Other species found in logs from 2 trees at Yellowwood

Wood-boring beetles (147 isolations)

- Xylosandrus crassiusculus
- Xylosandrus germanus
- Xyleborinus saxeseni
- Euwallacea validus

*No G. morbida detected!*

**S. pallidus widely distributed**

- Harvard Museum of Comparative Zoology
- Insect Museum, North Carolina State University

**Stenomimus pallidus**

- 31 trees between 15 and 30 cm diameter (6 – 12 in)

- 427 of 435 specimens from main stem

- Up to 10 other species using same trees as *S. pallidus* for breeding material

**Implications.......**