

WHAT DEER FARMERS SHOULD KNOW ABOUT NO-SEE-UMS

What is a no-see-um?

- No-see-ums are small blood-feeding flies.
- They are also called "*Culicoides*", "biting midges" or "sand flies".
- No-see-ums belong to the fly family Ceratopogonidae, which means "horned beard".



Where do no-see-ums come from?

- No-see-um larvae look like tiny worms and do not have legs or wings.
- Most no-see-um larvae live in muddy areas at the edges of marshes, ponds, puddles, or streams.
- No-see-um larvae do not occur in open water.



Common no-see-um larval habitats



Edges of streams



Edges of forest pools



Wet rot-hole in tree



Wet areas of pasture

- No-see-um larvae feed on microscopic organisms such as bacteria, nematodes, tardigrades or other insects.
- When the larval stage is complete, the larva transforms into pupa.
- After a few days, the adult no-see-um emerges as an adult (biting midge).

How many kinds of no-see-ums are there?

- More than 50 different no-see-ums species occur in Florida, but only a handful of them are important as pests or in the transmission of disease agents.
- *Culicoides insignis* transmits BTV in southern Florida.
- *Culicoides stellifer* is a common pest on deer farms and may transmit hemorrhagic disease viruses.
- *Culicoides venustus* is also suspected of transmitting EHDV in Florida.
- The wings of no-see-ums (see below) have distinctive patterns that are useful for identifying each species.



Culicoides insignis



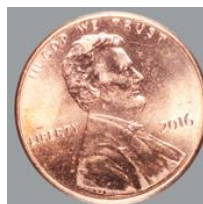
Culicoides stellifer



Culicoides venustus

How big is a no-see-um?

- Most no-see-ums are tiny - less than 1/8 inch.
- No-see-ums are much smaller than mosquitoes.



Mosquito

The black grid below is standard window screen, which no-see-ums can easily pass through.



No-see-um (actual size)

Photo not to scale

Why deer farmers care about no-see-ums?

- Some no-see-um species in North America can carry viruses that are dangerous for deer, sheep, and many other ruminant animals.
- Certain species of no-see-ums can transmit viruses that cause hemorrhagic disease in deer.
- Hemorrhagic disease (HD) is a serious ailment affecting ruminants such as deer and cattle.
- HD is caused by Bluetongue virus (BTV) and Epizootic hemorrhagic disease virus (EHDV).
- White-tailed deer are very susceptible to HD.
- Signs of hemorrhagic disease include fever, anorexia, lethargy, respiratory distress, severe swelling of the face, tongue, and neck.
- Death can occur quickly in infected animals, sometimes within 2 days of first symptoms.



White-tailed deer

No-see-um

Transmission of BTV and EHDV

How to manage HD and no-see-ums?

- A successful strategy to combat HD will require Integrated Pest Management for no-see-ums.
- EHDV vaccines are now available in Florida.
- CHeRI scientists are actively working to develop sustainable and efficient pest management tools accessible to deer farmers.

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