



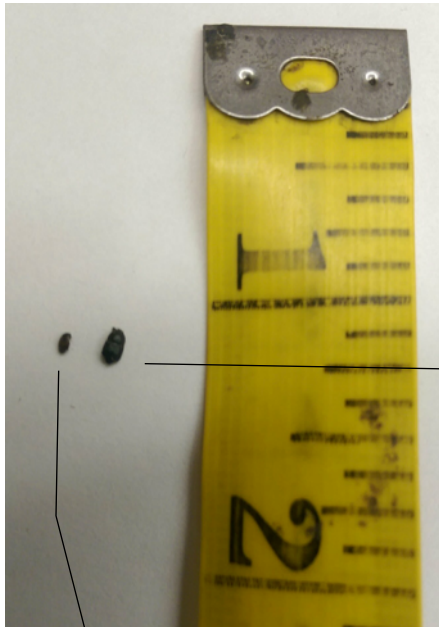
# Friends of Peninsula State Park Research Report

Winter

2016  
Issue 4

## Lab tests continue for Oak Wilt

UW-Madison student, Stephanie Jagemann processing results from field samplings



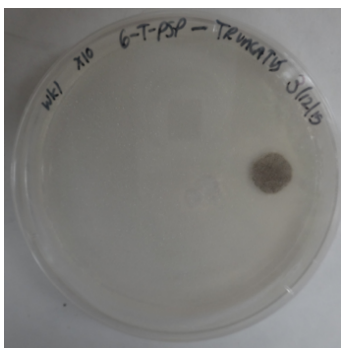
A *Carphophilus sayi* beetle trapped in Peninsula State



A *Colopterus truncatus* beetle & fungus from Peninsula

Mild fall weather kept beetles flying into November so Jagemann continued setting traps and collecting the two beetle species at the left. These are the two species of “sap beetles” under study for the spread of oak wilt fungi throughout the 12 sites under testing.

As of this writing, tests show Peninsula State Park is still free of Oak Wilt!



Jagemann's research is from the University of Wisconsin-Madison, Department of Entomology, advisor Professor Kenneth Raffa. Central grant support is from the Wisconsin DNR in addition to the Friends of Peninsula State Park. Our Park is one of twelve sites under study.

**Above:** Results from week one fungal cultivation from Peninsula yielded very little fungus, including no Oak Wilt fungus – *Ceratocystis fagacearum*. Above is a close up of an unknown fungus that this beetle was most likely visiting or feeding on in the park.



Each year, The Friends of Peninsula State Park Research Committee meets to review all applications and set topical priorities. Grant applications are welcomed from any Wisconsin college or university student at any time of the year. Students must have academic sponsorship. Awards are for expenses for one year. Further information at;  
[www.peninsulafriends.org](http://www.peninsulafriends.org)

## Past Research Projects

*Sponsored by the Friends of Peninsula State Park*

- *Forest Understory Change in Response to Altered Deer Pressure*- Sabo/Frerker, UW-Madison, Forestry, 2011
- *A Compositional Analysis of Ceramic Material from Shanty Bay (partial)* - Blrnbaum. UW- Milwaukee, Anthropology, 2012
- *Assessment of Reptiles and Amphidians/ Focus Rare or Endagered Species*- Siddons, Rucker, Steckert, UW-Stevens Point, Biology, 2012-14
- *Baseline Survey of Iris Lacustris (Dwarf Lake Iris)*- Perrigoue, UW-Stevens Point, Biology, 2013-14
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Now, more than ever before, we need help from all our “Friends”. Your time and money are necessary to continue this research for our treasured Park.

Can you contribute?

**See the following full report from our current research grant recipient, Stephanie Jagemann.**

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(Jagemann)

## Quarterly Report 3

1/2/2015

After a long field season and some unanticipated warm weather this winter, the Nitidulids stopped flying by the end of November. Peninsula State Park had its traps removed in early September with the majority of the other field sites in this study, but four sites, two in the mid-southern portion of the state and two in the northwest, stayed up and we continued trapping until we no longer caught any Nitidulid beetles, including the two species we were looking for: *Carpophilus sayi* and *Colopterus truncatus*. It was very unusual to catch beetles so late in the year. Insects cannot regulate their own body temperature and become the temperature of their surrounding environment. Flight requires heat and active muscles, which requires warm and above freezing temperatures. The warm streaks we saw going into late November appeared to be just warm enough to continue allowing flight until December, when all four of the remaining sites stopped catching beetles.

Over the past month beetles taken from the field have been processed, stored, and are now being identified under a microscope to guarantee species were accurately counted. Although this part of processing has just begun, it appears that so far the total number of beetles currently being identified and counted is coming out very close to the original counts. Along with identification of *Carpophilus sayi* and *Colopterus truncatus*, the other species Nitidulids caught in traps are being identified and counted as well. This will give us a better estimate of the range and number of Nitidulid species across the state.

Fungal cultivation has also begun and is now in full swing at the lab. This is a big aspect of the project and a lot of effort is put into testing individual beetles for the presence of Oak Wilt fungus – *Ceratocystis fagacearum*. Out of the 28 total weeks of trapping this season, we will test for Oak Wilt presence in 15 of the weeks, putting emphasis on the beginning and end of current Oak Harvesting Guidelines. For each of the tested weeks, 3 beetles of each species (for a total of 6 beetles) will be tested per field site. Giving a grand total of 72 beetles tested per week. Each of these beetles is placed in 0.5 ml of sterile DD H<sub>2</sub>O and tip sonicated to dislodge fungal particles from the outside and guts of the beetles. This solution that the beetles is then sitting in is serially diluted and plated onto four individual petri plates. The plates are placed in a Percival, or growth chamber, at 24°C in darkness, and left to grow for 14 days. After two weeks, the plates are removed and analyzed and presence or absence of Oak Wilt is recorded.

So far, we have processed two weeks completely and Peninsula State Park did not have Oak Wilt fungus grow for either week. This is great news for the park, since other field sites with Oak Wilt fungus did test positive, and these first two weeks of testing landed on a very active time for Oak Wilt. I have included several

(Jagemann)

photos below of what plates from beetles look like, including negative plates from Peninsula State Park, a positive plate from Governor Knowles State Forest, and an isolation of Oak Wilt fungus, *Ceratocystis fagacearum*, to see what it looks like without other fungi, molds or bacteria, present.

As always, Peninsula State Park is one of my favorite parks to work with, not only because of its proximity to my hometown and where I grew up, but also because of its great staff and wonderful research program that was so welcoming to my project. I always look forward to giving updates and talking to the staff at the park.

**Below:** A *Carpophilus sayi* beetle trapped in Peninsula State Park in July 2015.



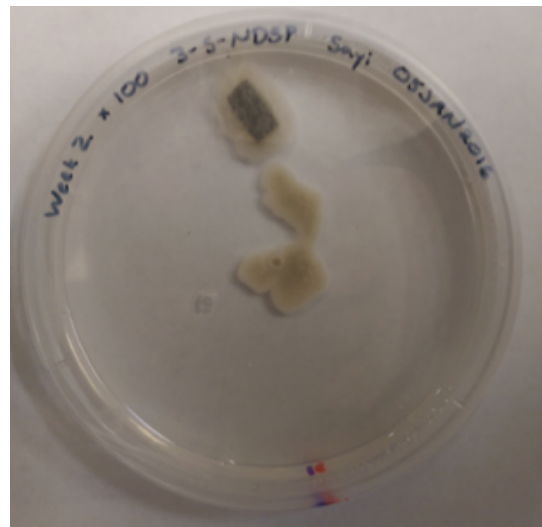
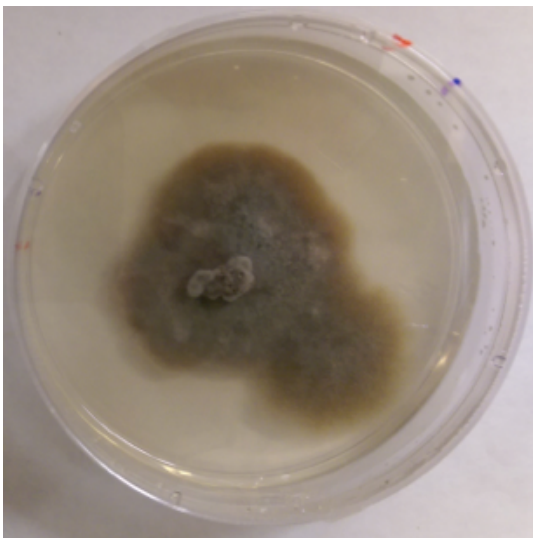
**Above:** A *Colopterus truncatus* beetle trapped in Peninsula State Park in July 2015.

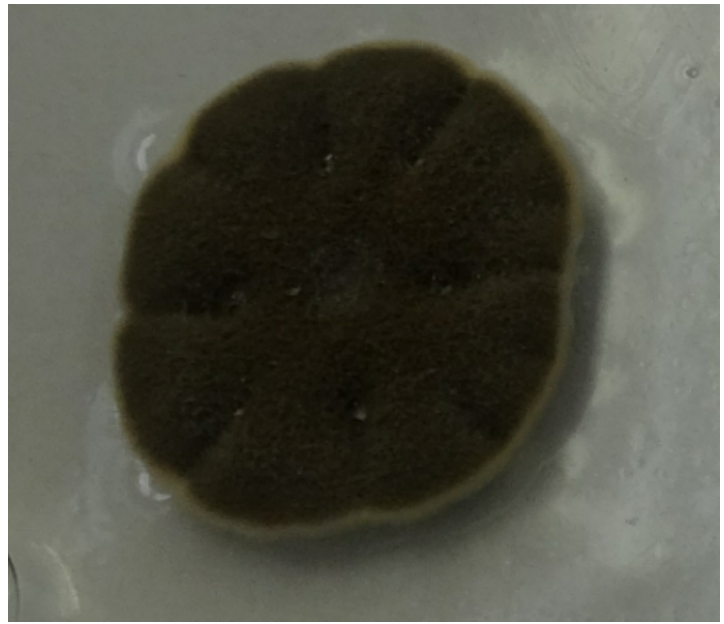
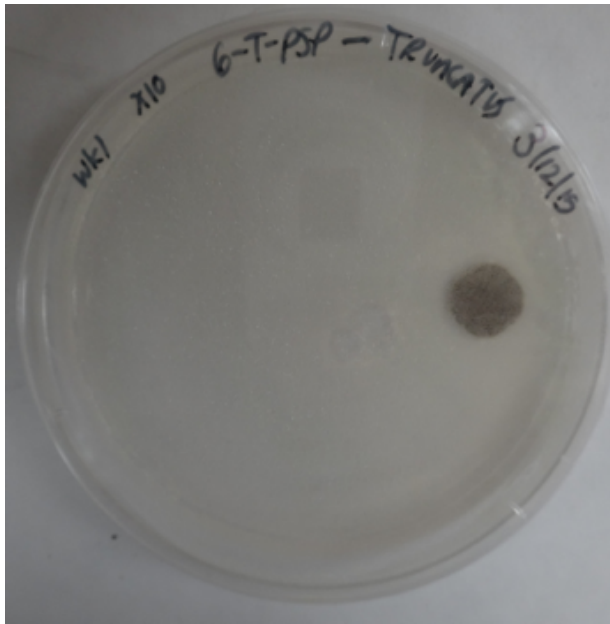
(Jagemann)



**Above:** A photo of the *Colopterus truncatus* beetle, left, and the *Carpophilus sayi* beetle, right, next to a regular tape measure for size comparison. These species of beetle are very small, *truncatus* measuring ~1.9 -2.6 mm and *sayi* measuring a slightly larger ~3.5 – 5.1 mm (USDA Forest Service). Both of these beetles were taken from Peninsula State Park in July, 2015.

**Below: Left:** An example of Oak Wilt fungus, *Ceratocystis fagacearum* growing alone, from a laboratory stock, in a Lactic Acid amended Potato Dextrose Agar petri dish. **Right:** An example of what Oak Wilt fungus grown from a beetle taken from a field site (in this case, Nelson Dewey State Park), looks like when I try to isolate the fungus for identification. You can see the fungal “plug” I took out of another petri dish at the top of the tray. This isolated sample can be grown and used for PCR for better, more accurate identification.





**Above:** Fungus grown from a *Colopterus truncatus* beetle captured at Peninsula State Park in Week One of trapping, May 19<sup>th</sup> - 26<sup>th</sup>, 2015. Week One fungal cultivation from Peninsula yielded very little fungus, including no Oak Wilt fungus – *Ceratocystis fagacearum*. Above is a close up of an unknown fungus that this beetle was most likely visiting or feeding on in the park.

**Below:** Fungus grown from two *Carpophilus sayi* beetles captured at Peninsula State Park in Week Two of trapping, May 26<sup>th</sup> – June 2<sup>nd</sup>, 2015. Week Two fungal cultivation from Peninsula State Park yielded many more samples of different bacteria, molds, and fungi, than Week One, but no Oak Wilt fungus was present. Below are examples of fungal plates taken from beetles in the park.

