

**Great Plains Tree Pest Council Meeting
Denver, CO, May 6-7, 2014
Minutes**

GPTPC members present: Mark Harrell, Laurie Stepanek, Rachel Allison, Marcus Jackson, Roy Mask, Bill Jacobi, Kyle Fratzel, Jerold Spohn, Sky Stephens, Jared LeBoldus, Aaron Bergdahl, Matt Nowak, John Ball, Brian Garbisch, Bob Cain, Rebecca Powell, Kelly Burns, James Blodgett, Ryan Armbrust, Lisa Peraino, Brian Howell, Justin Hof, Larry Cain, Justin Backsen, John H. Hart, Whitney Cranshaw, Gerard Adams, Amy Gannon and Bob Means

Chair: Bob Cain

Secretary: Mark Harrell

Welcome & Logistics

Roy Mask, Acting Assistant Director for Forest Health Protection (USFS)

Roy Mask welcomed the attendees and made announcements.

Update on status of “Diseases of Trees in the Great Plains” publication

Aaron Bergdahl, North Dakota State University

Aaron discussed the progress of the disease book. Alison Hill has taken charge of the review process. The update has 57 chapters, including 9 new chapters. About \$30,000 is available for printing. Once it is printed, we will see what is left.

Forty authors have received their reviews. Fifteen chapters are finished. Gerry Adams has agreed to do the nomenclature check to be sure everything is named properly. Indexing needs to be done. At least four people are needed to do the final review—read the book cover to cover. Jim Walla has expressed his willingness to do this. Michele Schoeneberger suggested we consider dedicating the book to Glenn Peterson and Jerry Riffle. Second reviewers are still needed on a couple of chapters. Matt Nowak offered to do some additional reviews. One author has retired and will not be able to incorporate reviewers’ comments into his chapter. Jim Blodgett asked that Aaron send out an email explaining the needs and asking for volunteers.

Aaron needs leads for the states to let him know how many copies the state needs and where they should be sent. Each chapter will be able to be downloaded separately. For the cover, meeting attendees said a collage would be fine. The current estimate of cost is about \$6 each for 2,000 copies. We are probably about two months behind schedule and will possibly have it by early 2015. Laurie Stepanek mentioned the “Disease Cycle” heading doesn’t fit environmental chapters, so we will have to discuss that.

Overview of Pine Wilt Disease

Mark Harrell, Nebraska Forest Service

Pine wilt is the biggest problem on pines in Nebraska. It was first discovered in the US in Missouri in 1979 and has been spreading out from there since then. It is in Kansas and South

Dakota also, as well as other eastern states. Pine wilt affects mostly pines that are not native to North America—mostly Scotch pine, but also Austrian and Mugo pines. Our native pine species are generally resistant to it, but jack pine has seemed to have a problem with it under certain circumstances. It can attack trees of any size, but it usually attacks larger trees more often.

It is caused by the pinewood nematode that is carried to trees by pine sawyer beetles. The nematodes enter the tree through feeding wounds. If the tree is susceptible, the nematodes survive, reproduce and begin killing the tree. The disease has entered Europe, in Portugal, and research being conducted there is indicating that bacteria on the bodies of the nematodes may play a part in killing the tree. That may explain why we are not seeing trees die all across the US, even though the pinewood nematode occurs over much of North America. The bacteria may be involved in killing the trees, and the bacteria that can do this may not be present beyond where the trees are dying.

Mark described the life cycles of the nematode and the beetle, how the nematode is brought to new trees, how the progression of symptoms of the disease can vary among trees, and how to check to see if a tree died of pine wilt by checking for the nematode. Nematodes are not uniformly distributed in the wood of a tree. Nematodes can also be brought to the tree by the beetles as they come to lay eggs, so trees dying for other reasons can also have nematodes in them.

To try to determine if a tree died of pine wilt, several key questions are asked: Is the tree a susceptible species—like Scotch pine? Did the tree die quickly—over a few months? Are there other possible causes for the tree to die? Do wood samples from the tree have a lot of nematodes—like a few hundred from a typical sample? But the diagnosis is never a sure thing. It is more like an educated guess. Pine wilt can be controlled to some degree, but the treatment is fairly costly and is not totally effective.

Discussion: Q & A and Update on Status of Pine Wilt Disease by State

In Colorado, it occurs along the Front Range and on the West Slope, although it isn't a big problem yet. In earlier discussions it was mentioned that it is also in Kansas and South Dakota.

Overview of Thousand Cankers Disease (TCD)

S. Sky Stephens, USDA Forest Service, FHP

Sky gave an overview of the fungus, the beetle, the symptoms and development of the disease, and surveys. Forty-seven communities were surveyed in eastern Colorado. More than 1000 trees were examined and entered into the TCD database with location, condition, size, signs of disease if any, and photos. They have been able to give reports to communities about where walnut trees are and the characteristics of each of the trees and will be able to track the condition of the trees through time. For 2014 and beyond, they want to analyze data for trends, determine a resurvey timeline, use data for outreach to public and community officials, and monitor the TCD spread eastward.

Discussion: Q & A and Update on Status of TCD by State

Nebraska, Kansas, South Dakota and North Dakota representatives talked about walnuts in their states and their efforts to look for TCD. Whitney Cranshaw said in Boulder TCD seems to be leveling off. The spread has really slowed down. This is happening in Rocky Ford too. Boulder and Rocky Ford have had TCD the longest, and both communities lost about 70% of their walnut trees. Now in both communities the disease has slowed a lot. The two hot spots for TCD in Colorado now are Fort Collins and Pueblo. Both are new for the disease and are now losing lots of trees. In the east, such as Tennessee, the spread is a lot slower than here. It is in communities and forested areas. There are two genetic populations of *Geosmithia*, one from the west coast and one from the southwest. Colorado has both. Tennessee has just the west coast form.

Status of Emerald Ash Borer in Colorado

Lisa Peraino, USDA APHIS PPQ

Lisa gave an overview of EAB, describing the insect, damage, symptoms, distribution, impact in urban areas and quarantines. Colorado communities average 15% ash trees. Communities in eastern states average about 5%. About 1.45 million ash are along the Front Range of Colorado. Typical costs for EAB treatments, etc., are \$7-15/inch for trunk injections, \$20-45/inch for removal, \$300 for removal per tree, \$400 for replacement per tree.

EAB was found in Boulder in September of 2013. Adults were found emerging. Initially a visual survey was done and it was followed up with a delimitation survey. A grid was established over Boulder, trees were sampled and bark was peeled. The infestation in Boulder seems to have started 3-4 years earlier. They seem to be having a 2-yr life cycle in at least some of the trees, because there were really young larvae in the fall. A 2-yr life cycle is common when infestations are low. Sky said they often found late instar and early instar larvae in the same branch, suggesting a 2-yr life cycle was occurring. Whitney said a hard freeze in May of 2013 seemed to kill a lot of adults that were about to emerge.

Strategies are to conduct tree inventories, develop management plans, identify priority high value trees, implement municipal codes to help deal with regulatory issues, get information out through education and outreach, and monitor for new infestations. Colorado's EAB website is eabcolorado.com.

Whitney said they are using a 5-mile recommendation for treatments, because the EAB population is low and they have a good idea about where it is. John Ball said in eastern communities they are sometimes stretching the intervals between injection treatments, because it seems trees survive OK with an extra year between treatments. So for example, stretching intervals to three years for treatments recommended for two years.

Synthesis of Lower Treeline Limber Pine: Woodland Knowledge, Research Needs, and Management Considerations

Bob Means, BLM Wyoming State Forester

Limber pine is found in WY, CO, MT and NE. It is widely adaptable, has broad geographic and elevational range and is important to the ecology of birds and mammals. The projected mortality rate in the next 15 years is 58% across the populations, with a basal area reduction of 40% from mostly dwarf mistletoe, mountain pine beetle and white pine blister rust. Lower treeline limber pine woodlands tend to be younger than high elevation limber pine. Limber pine serves as a nurse tree, facilitating tree and shrub growth underneath. Stands may be moving downslope into new microsites. The lower treeline limber pine in MT, WY and CO may experience conditions caused by climate change that they have not experienced before. So we don't know what might happen. Limber pine is less resistant than the other 5-needle pines to white pine blister rust. Limber pine shows some of the least resistance to mountain pine beetle compared to 12 other pine species. Limber pine has expanded into grasslands and shrub lands as a result of management activities. Lower treeline limber pines are a unique and valuable ecosystem.

Road Deicing Salts in the Black Hills of South Dakota

John Ball, Professor of Forestry/Forest Health Specialist, SDSU

John studied the impact of deicing salt on ponderosa pines along roadways. He used paired sites, with one symptomatic site and one asymptomatic site, and took soil samples at 3 feet and 20 feet from each side of the road and foliage samples at 20 feet and 60 feet from each side of the road. Asymptomatic sites had fairly normal levels of Cl⁻ and Na⁺ in the soil. The only times the levels were high were with sodium levels near the road. At symptomatic sites where trees were showing symptoms commonly associated with the application of deicing salts, no trees at 60 feet showed any symptoms. In the trees at 20 feet, Cl⁻ levels in were higher than normal in trees upslope from the road, but not downslope, and only on the east or south side of the road. This was only in dry years. What is likely happening is salt is being blown as dust onto the trees by the prevailing winds and is not being washed off by rains during dry years.

John also talked about emerald ash borer tree failure. Ash will have a greenstick fracture, which is not typical for ash without EAB. EAB ash trees are brittle. Trees killed by EAB begin failing after about five years. Trees get more risky and more expensive to remove the longer they are there. Insurance doesn't pay when trees fall because of insects.

Update on the Nebraska Ips Beetle Outbreak

Mark Harrell, Nebraska Forest Service

Native pine woodlands in northern Nebraska are largely unmanaged areas, often with high stocking levels. In the last few years drought stress has allowed Ips beetles to build up their numbers and cause significant damage in some areas, such as along the Snake River by Valentine and on south and west facing slopes in the Pine Ridge near Chadron. Also in some logging areas, slash has allowed Ips beetles to build up as well and cause some damage to nearby trees. Trees injured by fire near Chadron have also been attacked and damaged by Ips,

and the Ips are spreading into the surrounding area. But in a stand that was aggressively thinned after fire to remove the most stressed trees, Ips beetles did not become a problem.

Highlighting Invasive Species in Kansas: Bush Honeysuckle and Salt Cedar

Ryan Armbrust, Forest Health & Conservation Forester, Kansas Forest Service

Bush honeysuckle pushes out other species once established. It has a negative ecological impact. It reduces diversity, increases erosion potential and is of little value to birds. It can be controlled mechanically by cut stump herbicide treatment and by spot spraying with glyphosate. Backpack mist blower with glyphosate seems to work well if you do it in late fall after the trees have lost their leaves. Use 8-10% glyphosate and can treat 1-2 acres per hour. This has given 90% control with one treatment because it kills roots. Any new honeysuckles are seedlings. Can spot spray as a follow-up to get new seedlings.

Eastern redcedar is a very important species for windbreaks. The public perception of eastern redcedar is generally unfavorable. A potential solution, since it's dioecious, is to produce only male seedlings from male cuttings.

Forest Pathology on the Northern Great Plains: A Research Summary

Jared LeBoldus, North Dakota State University

Septoria canker is a problem in hybrid poplar and can cause 80-100% mortality in plantations. Jared is developing a screening protocol to identify resistance, is studying the infection biology and is developing management strategies—mostly developing resistance and tolerance to the disease. Although *Septoria* is considered to be a wound associated pathogen, necrosis was found around lenticels, and he has seen direct penetration through the epidermis. When he looked at parameters in the greenhouse and compared them with what happened in the field, lesion number and percent necrotic area were the best predictors of the number of cankers and how bad the cankers were. Measures of these two parameters give a good idea of long-term field performance. The most resistant and most susceptible were predicted the best. The ones that were intermediate were not predicted as well. The recommendation is to use this screening protocol to get rid of the ones that are most susceptible. When he looked at the thickness of the periderm of susceptible and resistant trees, the periderm on susceptible trees was thinner, and splits in the periderm along with lenticels are places where infections commonly occur. In other projects, he is looking at variation in susceptibility and disease tolerance and is looking at the correlation between leaf spot caused by the pathogen and stem canker.

Jared is also looking at the damage caused by flooding in 2011 along the Missouri River. Flooding is common along the river, but not at a time when the trees have leaves, so this is different. Live to dead ratios show ash trees were mostly dead, but cottonwoods were mostly alive. These were the most extreme among the tree species looked at. Ash had a wide range of diameter classes, and the large trees survived better than the smaller trees. Cottonwood was mostly big trees, and those trees survived. The survival of trees varied a lot among sites, and it seemed to be related to the amount of sediment deposited.

Jared will also be working on a project to monitor riparian forest health in the northern Great Plains, looking at *Armillaria*-induced mortality and other stresses. Data will be collected to use in risk models and to get an idea of the distribution and species of *Armillaria* that might be affecting trees in the riparian ecosystems.

Highlights from Several Studies from the Great Plains Portion of the Rapid City Service Center Zone

Jim Blodgett, USDA Forest Service, FHP

Jim looked at limber pine in southwest Nebraska for mountain pine beetle and white pine blister rust, but didn't find any. He found cow/ungulate and porcupine injury and engrave beetles (*Ips pini*). He also looked at ponderosa pine for mountain pine beetle and didn't find any, but found *Ips caligraphus*, *Ips pini* and porcupine. The declining trees in Nebraska look like they are dying from drought stress. The ponderosa pine typically had on one or two years of needles, and limber pine typically had only one to three years of needles.

In a study of aspen conditions in three national forests in the northern Rocky Mountains, some trees were found to have seven to eight damage agents on them, and three to four damage agents per tree was common. Cytospora canker, sooty bark canker, bronze poplar borer and *Cryptosphaeria* canker were significantly correlated with tree condition. Sooty bark disease was also correlated with mortality. No other damage agents were correlated. Crown health was correlated with mortality, but only in the year of the observation; it was not correlated with mortality in a later year.

In aspen regeneration, the most common damage agents were animal browsing, cankers and foliage diseases. Nothing was correlated with a reduction in regeneration, but animal browsing was correlated with height growth. Animals go to browse where there is more vegetation.

In all, there were 33 damage agents in forests and 30 in regeneration. Mean live crown in the stands was 88%, and tree mortality was 6%/year. Aspen regeneration averaged 3083 stems/acre. *Ganoderma* root disease was found in all forests and in 13% of the stands. *Armillaria* spp. was found in all forests and 55% of the stands. Most of the stands in the three forests are healthy—75% of the stands had less than 8% mortality. In aspen regeneration, 80% of the stands had more than 1000 stems/acre.

From observations in the Black Hills, it looks like mountain pine beetle is decreasing.

State Reports

Colorado: Sky Stephens reported that Colorado is responding to the emerald ash borer and that preparing for EAB had helped a lot. Thousand cankers disease and spruce beetle are also problems. Colorado is also dealing with climate related issues and pine wilt—wondering if trees are dying from it or just have it.

Lisa Peraino said the Colorado EAB site has information about lessons learned in the Colorado EAB experience.

South Dakota: Brian Garbisch reported that the biggest issue is mountain pine beetle in the Black Hills. Most insect and disease calls are for conifers. State money is available to help landowners in priority areas. Sioux falls had an ice storm last spring, and other areas have had a lot of storm damage.

USDA Forest Service: Jim Blodgett reported that mountain pine beetle is declining in the Black Hills and referred to the written report from the Rapid City Service Center for additional information about their current work.

Nebraska: Mark Harrell reported that drought has been a big problem in Nebraska for a couple of years. This year, with some additional rain, conditions in some parts of the state are getting better. Mountain pine beetle is now difficult to find in Nebraska, but Ips beetles are more of a problem now, probably because of the drought. Nebraska has been doing visual surveys for thousand cankers disease for several years. Pine wilt is still the biggest problem on pines, except where Ips is a problem. Diplodia blight is a big problem on Austrian pines, and we are losing a lot of pines because of the additional stress from drought. Cytospora canker in spruce has been more of a problem recently, probably because of the drought. Zimmerman pine moth used to be a big problem, but is not so much now. Mark reported that Jim Blodgett had gone out with Laurie and Rachel to look for white pine blister rust in western Nebraska, but didn't find it. Emerald ash borer has not been found yet, but a big effort is being made to get communities and arborists ready for it. Communities are beginning to wake up to it and get ready for it, but arborists are getting tired of hearing about it. Mark passed out copies of Nebraska's EAB Key Points and Recommendations that have been developed by the Nebraska EAB Working Group.

Laurie Stepanek discussed Nebraska's new publications.

North Dakota: Aaron Bergdahl reported North Dakota is working on EAB readiness, including a first detector program and EAB awareness week. Their aerial survey program has been growing—especially to look at forest tent caterpillar and root rot. Plans are in place to survey the Missouri River, Mouse River and Turtle Mountain area this year.

Montana: Amy Gannon reported finding no white pine blister rust in limber pine. Colorado blue spruce has quite a bit of damage, but don't know what's causing it yet. Some Ips activity is present in the southeast part of the state and where there's been fire. Mountain pine beetle is decreasing. Amy is also working on herbicide damage—how to identify it and provide training on it—and is spending a lot of time on urban inventories. Some communities have 25-50% ash. Montana is also working on an emerald ash borer plan. A large amount of time has been spent looking at what insecticides could be used in Montana by commercial applicators and homeowners. They are also doing destructive sampling for EAB. Amy has a poster on *Agilus* spp. in Montana and a postcard with a message about not moving firewood that she sends to

hunters and campsite visitors, etc. She sends out about 20,000 per year. It seems pretty effective as an outreach tool.

Marcus Jackson has been looking at possible pine wilt sites and has found some nematodes in trees with pine wilt symptoms, but the problem there could be environmental as well.

Kansas: Ryan Armbrust reported that in the Kansas thousand cankers disease response plan, they have been relying a lot on the “Don’t move firewood” campaign. For emerald ash borer in the Kansas City metro area, they are trying to slow the spread, get a utilization plan going and are replating with diversity. But outside the metro area, the rest of the state is getting tired of hearing about EAB because it’s not there yet.

Drought is still a major issue in Kansas. They are seeing a decrease in tree vigor that is masking other issues—causing problems with identifying pine wilt and thousand cankers disease. Most problems they see relate back to drought issues.

Jerold Spohn showed the publication Tree and Shrub Problems in Kansas by Kennelly, et al. At Fort Riley, they’re dealing with pine wilt, Dutch elm disease and honeysuckle. They are preparing for EAB. One problem they’re dealing with is a lack of a tree inventory.

Wyoming: John Hart reported he has been participating in the trapping of EAB and has been doing educational activities and distributing information. Mountain pine beetle seems to be decreasing in Wyoming. Bark beetle surveys have been done to determine the bark beetles present in the state. Wyoming hasn’t had a gypsy moth positive catch in the last five years.

Business Meeting – Select 2015 Officers and Priorities

Amy Gannon offered Montana for the 2015 meeting. Laurie Stepanek moved and Jared LeBoldus seconded a motion to have the meeting there. The motion passed.

Sky Stephens moved and Brian Garbisch seconded that those from Montana sent out an email with suggestions for three dates to be considered. The motion passed.

Sky moved and Laurie seconded that Marcus Jackson be the new secretary. The motion passed.

Mark Harrell should send minutes to Aaron Bergdahl to post on the website.

Aaron moved and Kelly Burns seconded that we approve the minutes from the 2013 meeting. The motion passed.

The meeting was adjourned.