

BARK BEETLE TECHNICAL WORKING GROUP

Annual Meeting
Homer, Alaska
October 12-14, 2004

Meeting called to order at 0800 by 2004 Chair, Tom Eager. Ed Holsten, local arrangements chair, welcomed folks to Homer, discussed some “housekeeping” notes, and explained the “drawing” for the scenic flight to be held Thursday afternoon. (Copy of the final agenda is at the end of this file.)

About 45 folks in attendance (does some one have the sign-in sheet).

Following introductions, started off with a brief “round robin” of things upcoming in 2005.

This is out of chronological order, but Jerry Boughton, R-10, Anchorage, announced Ed Holsten’s retirement in March 2005. Gave Ed an award for always “going the extra mile.” Also noted an announcement for Ed’s replacement would be out within the next month or so.

Proposals for 2005—Some are STDPs:

Matt Hansen discussed ongoing MPB/WBP work in RMRS, Logan. Much of that work being done in Stanley Basin, ID.

Steve Seybold discussed his proposal for methyl jasmonate work in AK.

Iral, representing R-6 and PNW, talked about continuing DFB work and trapping of *Scolytus schevyrewi*.

Steve Munson discussed a proposal to work with Nancy Gillette on aerial applications of Hercon flakes loaded with MCH.

Terry Shaw mentioned the Title IV (HFI) opportunities for coordination between FS research and FHP.

Ken Gibson discussed the four STDP proposals submitted thru the Missoula field office—two are a continuation of work begun in '04, two are new.

Steve Clarke described the study of a systemic insecticide that appears to affect *Ips* spp. survival.

Finally, Brian Strom detailed some trapping studies being done with SPB in the SE.

2004 Project Updates:

Ron Billings: Texas FS. SPB in TX. Preventive work still ongoing, despite presently low SPB populations. Still have lots of high-hazard stands; trying to lessen stand hazards while beetle populations at low levels.

Nancy Gillette: PSW. Verbenone flakes (Hercon)—both aerial and ground applications. Ground applications applied flakes to tree boles. Tested against WPB in PP and MPB in LPP. All trees were baited with pheromone tree baits. Aerial application of 150 grams/acre verbenone (against WPB only) didn't work very well. Had trouble with sticker for flakes. Better results were obtained against MPB—bole application only. Working with relatively low beetle populations.

The summary states that the aerial application of verbenone flakes "didn't work very well," and that I had worked with low beetle populations. In fact, the aerial application resulted in a roughly 70% reduction in beetles trapped at peak flight (six weeks following application), and beetle populations were moderate, not low (ca. 330 per trap at peak flight).

Alan Ager: FHTET. Landscape analysis of fuels, fire, and bark beetles. Trying to quantify long-term effects of beetles and fire on stand dynamics at landscape level. Also trying to measure affect of various stand treatments on fire behavior. Can these programs be long-term planning tools? Trying to link to FVS. Hope to show thinning and good stand maintenance can reduce fire and beetle hazards over time.

Drew McMahon: FHTET. Use of FVS/PPE to model stand, beetles, and fire interactions. Simulated MPB outbreak. Seem to show thinned stands have higher amounts of beetle kill! Sounds like a problem with model simulations.

From Drew:

The simulations (a) thinned from below all "eligible" stands each decade; and (b) preferentially removed NON-host tree species. Eligibility for cutting was a function of stand density as measured by SDI. Landscape-scale thinning prescription was thus "extreme" in the sense most of the landscape (ca 100,000 acres, I believe) was thinned over time. Over simulated time the thinned landscape contained a greater proportion of host trees and larger host trees relative to the unthinned landscape. The main "problem" with the simulations was that the simulated thinnings did not remove beetles from the simulation (an artifact of how FVS simulates thinnings--it cannot "thin" already-dead (i.e. beetle-killed) trees.) The observed modeled phenomenon that the thinned landscape experienced greater beetle mortality than the unthinned landscape may or may not be a "problem". It may indeed be the case that IF these two different landscapes experience an outbreak in the future (and note that the model says nothing about the likelihood of the outbreak, but merely how the outbreak would manifest should one occur) THEN the thinned landscape might experience higher rates of host tree mortality.

Mechanistically: Over time, as average tree size become larger, SDI-based cutting can result in post-thin stand densities (in terms of BA/acre) that can be still be construed as moderate-high hazard for bark beetles. Also, the increased diameters of host trees (greater in the thinned landscape due to thinning effects on growth rates) contributes towards increasing beetle reproduction rates in the thinned landscape.

Eric Smith: FHTET. Described “envision” program used to illustrate landscape changes over time—from fuel treatments, beetle outbreaks, etc.

Ann Lynch: RMRS, Flagstaff. Described paleoecological reconstructions of spruce stands on White River plateau in northern CO. Showing spruce beetle, fire, and climatic interactions.

Tom Hofacker: WO. Discussed the introduced emerald ash borer in the NE. Has spread considerably throughout OH, MI and IN in the last 3 years. Appears ash populations may be seriously declining. May spread throughout Lake States and into Canada.

John Nowak: R-8. Described current SPB prevention program. Detailed economic impacts of SPB from 1999-2002 in SE. Detailed cost-share programs for preventing beetle-caused mortality on lands of various ownerships. Treated about 100,000 acres in 12 states and 12 national forests in '04.

Rob Progar: PNW. Detailed a study on the use of verbenone on the SNRA, ID over 4 field seasons (2000-2003). Good results in 2000 and 2001, but poor in 2002 and poorer still in 2004. Questioning the use of verbenone above a certain population threshold of MPB. (A somewhat general discussion followed, during which several offered opinions about the future use of verbenone. No real conclusions were reached.)

Sandy Kegley: R-1, Cd'A. Described an individual-tree test of verbenone, using both Phero Tech and Biota pouches in LPP; and another using just the Biota pouches in WBP. Somewhat disappointing results in LPP study—nearly 50% of the trees attacked in both treated sets. In WBP, better results; but still nearly 20% of treated trees were killed. Also discussed an area test in PP, but beetle populations were too low to measure results.

Carol Randall: R-1, Cd'A. Discussed an “operational” test of verbenone to protect LPP in strips between runs at a ski resort in northern ID. Second year of treatments, and results have been good. Not sure about next year's treatments.

Tom DeGomez: Univ. of AZ. Protecting PP from several bark beetles. Tested several chemicals—carbaryl, a few pyrethroids. Some looked better than others. Also treated pinyon pine to prevent attacks by pinyon *Ips*—but seems populations have seriously declined.

Steve Seybold: Provided updates on studies of attractant pheromones for MPB and *Ips* spp. Testing effectiveness of various combinations of myrcene, terpinolene, and beta-phellandrine. Trying to develop a more effective attractant for MPB. Study sites in ID, SD, CO, and AZ. Comparing his combinations with commercially available lure of myrcene, exo-brevicomin, and trans-verbenol. Combination of exo-brevicomin, trans-verbenol, and terpinolene caught the most beetles in 2001. In 2002, that combination was still the best at catching female beetles. Some suggestion that central Rocky Mountain and British Columbia populations of MPB may be different. Also looked at *Ips confusus*

attractants in CO, UT, and CA. Combinations of Ipsenol and Ipsdienol were best overall, but adding conophthorin resulted in catching more male beetles.

Harold Thistle: FHTET (Morgantown). Still studying pheromone dispersion in a forest canopy—and especially the effect of thinning on pheromone behavior. In 2004, study done in LA. Similar to previous studies done in 1999 (oaks in VA), 2000 (LPP in MT), and 2001 (PP in OR). Leaf area index similar, despite species in canopy. Sulfur hexafluoride used as surrogate for pheromone. Observing behavior of chemical over time and space.

Steve Clark: R-8, Lufkin, TX. Detailed new mapping technologies for tracking SPB outbreaks. Testing a new Geo-Data Recorder. Looked promising in '04, will be evaluated again in '05. Collecting data on formerly infested stands, some of that in cooperation with Univ. of KY. Also discussed ongoing work with SPB and other *Dendroctonus* spp. found in Central America. Assessing effectiveness of verbenone plus exo-brevicomin in preventing SPB attacks. Results are promising. Other things looking at: Fall surveys to predict SPB trends, trap trees, testing new lures, etc.

Ed Holsten: R-10, Anchorage. In 2004, evaluated spruce beetle attractants in both Med-E-Cell and passive releasers. This was one of the warmer summers on record in AK, so results were confounded. Med-E-Cell releaser attracted more beetles.

Brian Strom: SRS. Testing a new Med-E-Cell releaser for verbenone. Standard pouches affected by temperature—new releaser is not. Still analyzing results, but new releaser looks pretty good. Not sure about costs.

Pat Shea: PSW. Also tested a new Med-E-Cell device in 2004. Some worked well, others did not. Will be easy to eliminate variation on operational basis.

Matt Hansen: RMRS, Logan. Assessed spruce beetle-caused mortality associated with pheromone traps. Compared “natural” attractants (infested logs) with standard and “cocktail” formulations of pheromones. Differences in single and trap clusters? Not much. Determined 300-400 trapped beetles in a short amount of time probably indicate epidemic populations.

Joel McMillin: R-3, Flagstaff. Discussed the developing Western Bark Beetle Information System. Mostly being done by Marla Downing at FHTET. Coming along, but not yet operational. Publications to be listed by author, category, title, and perhaps other designations. Also described his continuing work with chipping of PP slash and the “D.I.P.S” program. Has found several bark beetle species are attracted to chipped slash. Trying to determine when is best time to chip to avoid attracting too many beetles. Chipping in spring resulted in 22% of residual trees being attacked. Looking at terpene degradation in chips.

Caroline Brea (?): NAU. Looking at bark beetle and bird activity following wildfires. Started in '04, will continue in '05.

Ed Holsten: R-10, Anchorage. Described standing, single-tree protection against *Ips perterbatus* attacks. Combinations of verbenone and conophthorin shut down attractance in traps. Possibility of its protecting standing trees. Studies continuing.

Steve Seybold: PSW. Described early work with methyl jasmonate, a possible tool to be used against spruce beetle in AK. “JM” causes changes in tree physiology—making them less susceptible to beetles. Very expensive so far, about \$120/tree.

Pat Shea. PSW. For Chris Fettig, described results of Westwide Single-Tree Protection Study of 2003-2004. Tested bifenthrin (Biflex, Onyx) at 0.03, 0.06, and 0.12%, and carbaryl at 2%. Studies conducted in CA, AZ, MT, SD, CO, NV, and UT. Not all results are in, but bifenthrin so-so at 0.06%, pretty good at 0.12%. Excellent results with carbaryl as usual.

Update on projects funded with WBBi money (\$700,000) in 2004:

Nancy Gillette: Already described verbenone work. That project completed.

Matt Hansen: Trap catches for MPB, strategies for reducing MPB-caused mortality in WBP. They noted significant differences timing of peak funnel trap catches and emergence traps on infested trees. Believe funnel traps may not represent flight periodicity very well. More re-emerging females caught in traps? Verbenone work in WBP looked promising, but concerned that at “high” beetle populations, it may not work.

Skeeter Werner: Looking at flight periodicity and distribution of spruce beetle as determined but pheromone-baited (alpha-pinene and frontalin) funnel traps. Didn’t seem to work very well in interior AK, better in south central part of State. Highest trap catch in June—another peak in August. Not too many beetle caught. Two or three traps about the same. Peak flight most years in June, but this year much warmer than normal. Seems two traps per acre can predict population trends.

Harold Thistle: Additional studies of diffusion of insect pheromones in forest canopies. See correlations between tracer studies and antennal signals of insects.

Steve Seybold: Follow-up to sulfur hexafluoride studies. Can help determine where and when insects are trapped.

Sally (?)—for Jose Negrón: Determining a better attractant for *Scolytus schevyrewi*. Trying to determine when introduced into U.S. Maybe several years ago. Found mostly on Siberian elm, but also American elm, and rock elm. Beetle has “banded” elytra, and is larger than *S. multistriatus*. Lures have varied over last few years. Methyl butenol lures seem to catch mostly *S. schevyrewi*. Catch in early April in CO. Not sure about DED connection. Also described a project attempting to measure coarse woody debris accumulation as a result of bark beetle outbreaks.

Karen Clancy: PP and Pinyon pine bark beetles—especially pheromone traps relative to silvicultural management strategies. How is water stress related to resistance to bark beetles? Looking at thinned, thinned and burned, and unthinned stands. Funds were received late, so will complete in '05. Preliminary data showed fewer WPB trapped in thinned stands. Evaluating trap catches and associated mortality for several bark beetle species: *Ips pini*, *I. lecontei*, and WPB in PP. Monitoring populations at various elevations and over time.

Pat Shea (for Chris Fettig): Assessing NHV and verbenone for disrupting trap catches for several bark beetle species. Testing GLV, bark volatiles—mostly from hardwoods. Some combinations showed promise—but efficacy, cost, availability still questions. What is relationship between verbenone and NHV? Needs more work. Also attempting to predict WPB-caused mortality using trap-catch data. No data yet.

Tom Eager (for Jose Negron): Determining susceptibility of PP in Black Hills to MPB. Are there different hazard-rating criteria of uneven-aged PP stands? Data collected, not yet analyzed. Also evaluating MCH beads in DF stands. Does it work as well in drier-site stands? Trying to protect leave trees in thinned areas. In '03 bubble capsules used; in '04 beads (hand applied). Results not yet in. Will complete in '05.

Steve Seybold (for Kimberly Wallin): Can pheromone trap catches reduce DFB-caused mortality? How much mortality occurs around traps—and does that affect stand mortality? Ten pairs of traps, in 2 population densities placed in DF stands in southwestern MT. Analyzing trap catches now, will evaluate stand mortality in '05.

Rob Progar: In conjunction with Nancy Sturdevant (FHP, Missoula) assessing the ability to suppress DFB populations with funnel traps. Triplets of baited traps—three sets of three traps placed 200 meters apart in “triangular” pattern. Surveyed interior of triangle to see if mortality reduced by trap catches. Trapped lots of beetles; but quite a bit of tree mortality as well. Data is being analyzed.

Terry Shaw: Not a project “report”—rather conjecturing on what we may have learned from these several projects. Would be do anything different as far as allocating funds if available in the future? Who should be involved in selection process? Should criteria for project selection be any different? Some of those questions were never completely answered.

Bark Beetle Conditions by Region:

Region 1: MPB at 20-year highs (more than 600,000 acres, most in LPP); DFB declining, but still high (89,000 acres); WBBB and FE at all-time high levels (143,000 acres and 164,000 acres; resp.). WPB and *Ips* spp. at higher than normal levels, but not extreme. An 8,000-acre spruce beetle outbreak in Yellowstone NP. Drought continues, although moisture in '04 has been good.

Region 2: Spruce beetle in areas of CO and WY. MPB outbreaks in CO, SD, and WY in both LPP and PP. Other drought-related beetle activity scattered. WBBB affecting stands in CO. Outbreaks of pinyon ips continue in CO and twig beetles causing mortality in some locations.

Region 3: In AZ, *Ips* activity in PP declining, but WPB increasing. RHPB also building. Pinyon *Ips* mortality still high, as is mortality attributed to twig beetles. Also finding bark beetle-caused mortality in juniper stands. In NM, WPB activity is down, but DFB, DF pole beetle, and FE activity all increasing. FE-caused mortality found on more than 19,000 acres. Pinyon ips mortality, found on 800,000 acres, may be declining. Cedar bark beetle activity is increasing.

Region 4: MPB activity in LPP stands in UT and WY is high; as are DFB and spruce beetle populations. Spruce beetle has affected 60% of the mature ES in UT. Drought-related WBBB-caused mortality found in many SAF stands. Pinyon ips activity still high in southern UT and NV. In southern ID, MPB and DFB very active, though in some parts of southeastern ID, DFB populations are declining. Finding very little spruce beetle activity, but lots of FE in GF stands and MPB in WBP.

Region 5: Most bark beetle activity drought related. Lots of WPB activity in southern CA, and in rest of State becoming more active, but still scattered. JPB populations static, as are MPB in LPP. MPB activity up in SP stands in some areas. RTB is static. FE-caused mortality higher in WF and RF. Pinyon ips populations higher, but not building as rapidly as before.

Region 6: Spruce beetle activity increased in '04, as did MPB In LPP—up to 500,000 acres. WPB-caused mortality noted on 200,000 acres. DFB-infested areas declined. WBBB activity observed on 50,000 acres and FE on 600,000 acres. Silver fir beetle and *Ips* mostly static.

Region 8: SPB activity fairly low throughout the Region, but more active in MS and AL than elsewhere. Some SPB were trapped in OK. Not sure about affects from hurricane damage yet.

Region 10: Spruce beetle activity still declining, but still active on about 129,000 acres. Other beetles recorded: *Ips*, 16,000 acres; larch beetle, 12,000 acres; WBBB, 190,000 acres.

Competition for \$20,000 FHTET Money:

1. Verbenone flake study—Nancy Gillette
2. Methyl jasmonate study—Steve Seybold ****Selected****
3. “Distance” sampling for bark beetles—Jose Negrón
4. Coarse woody debris survey—Jose Negrón

Decided at future meetings, would be desirable to have proposals prior to the meeting.

Site of 2005 BBTWG Meeting:

1. Western Montana
2. Utah/Western Wyoming ****Selected****
3. Western Oregon
4. New Orleans
5. Lufkin, TX
6. Estes Park, CO

Ed Holsten will chair the 2005 meeting.

Closing discussion on how to improve the BBTWG meeting:

- Longer breaks
- No “formal” presentations
- Time limits on presentations
- Group presentations by topic (or beetle)
- “Futuring” exercises

Decided yearly chair and local arrangement folks will deal with those issues!

Meeting adjourned at 1200, 14 October. Scenic flight for selected few occurred from 1300 to 1500. Saw LOTS of dead spruce (and a few live moose!) on the Kenai Peninsula. Hosted by Cyndi Snyder.

2004 Bark Beetle Working Group Conference
October 12-14, 2004
Homer, AK

Hotel Contact information:

Land's End Resort. Homer AK, 907.235.0400

www.lands-end-resort.com

www.homer-alaska.org

Chair: Tom Eager, teager@fs.fed.us , (970)642-1144

Local Arrangements Chair: Ed Holsten, eholsten@fs.fed.us, (907) 743-9453

Local Arrangements: A/V Equipment: Overhead, slide, and 2 laptops/computer projectors will be available. If additional a/v equipment is needed, please contact Ed.

Tuesday, 10/12

8:00 – 8:15: **Welcome, housekeeping items, including drawing for 8 – 10 individuals to participate in Thursday's "aerial survey" (Holsten)**

8:15 – 8:30 **Review and adjust meeting agenda (Eager)**

8:30 – 9:30 **Brief descriptions of proposed bark beetle related STDP's in 2004 (all)**

9:30 –10:00: **BREAK**

10:00 – 12:00 **Brief descriptions of proposed bark beetle related STDP's in 2004 (cont'd)**

12:00- 1:30: **LUNCH**

1:30 – 3:00 **Bark Beetle Project Updates**

The southern pine beetle prevention program - John Nowak (R8)

Texas Forest Service southern pine beetle prevention program and New Strategic Plan for SPB suppression in Texas - Ron Billings (Texas FS)

Integrating bark beetle modeling into fuel treatment planning. - Alan Ager, PNWRS, Drew McMahan, INTECS, Eric Smith, FHTET

Landscape modeling tools for bark beetle impacts: Recent accomplishments and future projects. - Eric Smith, FHTET,

Verbenone flake for individual tree protection (ground application, MPB and WPB) and area-wide effects (aerial application, WPB) – Nancy Gilette

Verbenone study - 5 year review, Stanley ID – Rob Progar

"Flight Periodicity and Population Levels of the Spruce Beetle in Alaska as Determined by Pheromone-Baited Trap Catches". – Skeeter Warner

Update on pheromone attractants for mountain pine beetle and pinyon ips in the western US – Steve Seybold

Spruce beetle paleo-ecology project – Ann Lynch

Current and Proposed SPB projects – Steve Clarke

Med-e-Cell and the 3-component spruce beetle attractant – Ed Holsten

Single tree protection for *I. perturbatus* using conophthorin & verbenone – Ed Holsten

Plume model and EAG results – Harold Thistle

Western Bark Beetle Information System – Joel McMillin for FHTET

“Some other stuff that I’ll get back to you later on” – Joel McMillin

3:00 – 3:30: **BREAK**

3:30 – 5:00: **Bark Beetle Projects (cont’d)**

5:00 **Adjourn**

Wednesday, 10/13

8:00 – 9:30 **Review of FY2004 Western Bark Beetle Initiative Projects**

9:30 –10:00: **BREAK**

10:00 – 12:00: **Review of FY2004 Western Bark Beetle Initiative Projects (cont’d)**

12:00- 1:30: **LUNCH**

1:30 – 3:00: **Status of Bark Beetles by Region (each Region will have 10- 15 minutes to cover latest developments in bark beetle populations)**

3:00 – 3:15: **BREAK**

3:15 - 4:15: **Status of Bark Beetles by Region (continued)**

5:00: **Adjourn**

Thursday, 10/14

8:00 – 8:30: **Discussion of proposals submitted for \$20,000 from FHTET – Harold Thistle**

9:30- 10:00: **BREAK**

10:00- 11:00: **Review / Edit WBI Projects Power Point**

11:00 – 12:00 **Final Wrap-Up**

12:00 **Adjourn**

1:00 **8 – 10 individuals to fly in Turbo-Otter to view spruce mortality.**