

**BARK BEETLE TECHNICAL WORKING GROUP MEETING**  
**November 18-20, 2003**  
**Durango, CO**

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**Call to Order, Welcome, Etc.:** Meeting was called to order at 0800 by '03 Chair, Joel McMillin; assisted by '03 local arrangements chair, Tom Eager. First discussed agenda review and a few last-minute adjustments, for example the addition of a conference call with Rob Mangold and Jim Reaves, scheduled for Wednesday p.m. and a discussion relative to the Western Bark Beetle Research Initiative.

Introductions were made: 36 folks in attendance (note preceeding list). At a later point, but appropriately included here, Ed Holsten re-submitted his invitation to host the 2004 BBTWG Meeting in Homer, AK. Tentative dates are October 5-7. Additional information forthcoming.

Joel gave a brief summary of WFIWC, held in Guadalajara, Mexico, November 4-6.

**Western Bark Beetle Research Initiative:** A recent addition to the agenda, but a “hot” topic, nonetheless; we discussed at some length the availability of \$700,000 for FY04 to fund “bark beetle-related” research (see handout, which all received). Our charge, as a “working group,” was to discuss purposes and needs that these funds could address and help establish priorities for their allocation. We discussed at some length how those discussions might proceed, who would be included, need for “restrictions” on use of funds, etc. With that introduction, the discussion itself was tabled until Wednesday morning.

**Western Bark Beetle Internet Control Center:** Joel led a discussion—proposed by Marla Downing, FHTET—on the development of a western bark beetle website. Do we need/want one? Who would develop and maintain it? Who would be the primary users? What would it include? Apparently, FHTET (Ft. Collins) is willing to help develop and maintain, at least initially. For how long? And then what? After a somewhat extended discussion, we decided many of these questions could best be addressed, and maybe answered, by a smaller group. At some future date, a committee will be established to investigate the best way to address the issue of a western bark beetle website. We will be getting additional formation soon. Maybe.

**Proposed STDPs for FY04:** A general, round-robin sort of discussion about proposed STDPs for next year. Mostly an effort to keep all apprised of what work is being done and to foster coordination/cooperation where appropriate. Pertinent information relative to selection of proposal will be forwarded to John Wenz.

R-1: Continuing evaluation of verbenone pouch as a means of reducing MPB-caused mortality in WBP, LPP, and PP. We hope to test a new pouch being developed by Biota Control. Ongoing projects relative to fire/bark beetle relations and remote sensing of beetle-caused impacts. The latter two are being headed by RMRS (Barb Bentz).

R-4: Evaluating effectiveness of spruce beetle suppression projects. Being done in cooperation with RMRS (Logan). Seybold and others (R2/R4) have a proposal to begin evaluation of the pheromone production of the exotic scolytid *Scolytus schevyrewi*.

R-5: Evaluating verbenone and non-host volatiles as a means of reducing WPB attacks in PP. Being done in association with PSW. Also proposing to look at the influence of prescribed burning on bark beetle populations.

R-6: Attempting to determine causes of PP mortality after fire—either wild or prescribed. Also looking at monitoring systems for the introduced *Scolytus schevyrewi*, and ambrosia beetles. Done in conjunction with PNW.

R-8: Assessing effectiveness of Med-E-Cells as means of dispersing verbenone and MCH. Looking at more active means of dispersing pheromones, rather than passive ones. Done in cooperation with SRS.

**After the Fires:** Discussion of efforts to appraise effects of recent fires in the West—especially where bark beetle populations have increased in fire-damaged stands. Also discussed efforts to help determine survivability of various tree species following wild or prescribed fire—and the need for consistent marking guides to assist land managers. Interestingly, we discussed pretty much this same thing last year in Reno. The even more extensive fires in 2003 have intensified the work being done—and yet to do.

R-5: Danny discussed the work being done in CA by FHP, and in cooperation with PSW. Trying to evaluate how much damage trees can sustain and still survive wildfire (or prescribed burning) effects. One project is evaluating the benefit of removing duff from around the base of old-growth trees before a prescribed burn. They established a test in '03 that will be completed in '04 in thinned/unthinned stands. Also looking the effect of “foaming” trees, the use of leaf blowers to remove duff, etc. They are also beginning long-term studies to measure the effects of burning and survivability of fire-damaged trees—some studies in conjunction with Kevin Ryan. Looking at crown, bole, and root collar damage and associated bark beetle susceptibility. Will be evaluating affects in hundreds of trees (of several species) over the next 3-5 years.

R-1: Nancy described the use of pheromone-baited funnel traps to reduce DFB-caused mortality in fire-damaged stands in west-central MT (Helena NF). Studies indicate trapping, along with use of trap trees, and MCH in some areas have resulted in fewer beetle-killed trees. Will try to assess long-term effect, over larger areas using future population assessments. DFB populations remain high in many fire-affected areas in western MT and beetles have moved from fire-damaged stands into undamaged, adjacent DF stands—the effects of which are exacerbated by ongoing dry conditions. Sandy described a project in northern ID in which verbenone will be used in '04 to protect fire-damaged PP following a prescribed burn.

R-3: Joel discussed a project in northern AZ where fires have damaged habitat critical to Mexican spotted owl. They have used MCH in an attempt to reduce beetle-caused mortality. Results are pending. They have also been looking at effects of MCH to reduce SB-caused mortality in fire-damaged spruce stands. Results have not been promising.

PNW/R-6: Iral described a project being done by Chris Niwa and Don Scott in which they are attempting to identify the conditions which lead to insect-caused mortality following prescribed burns in second-growth PP stands. They are specifically comparing the effects of spring versus fall burns. She also noted the efforts of Don, Craig Schmitt and Lia Spiegel in developing guidelines for marking fire-damaged trees.

A general discussion followed after which Joel suggested a fire-bark beetle-related workshop at WFIWC in San Diego next April. Everyone thought that was a good idea—but no one “volunteered” to head up such an effort.

**Bark Beetles and the “Plume Model”:** Brian, presenting information on behalf of Harold Thistle, described work that is ongoing in the southeast to measure pheromone dispersal in varying canopy densities. This is work that follows previous studies by Ed, Pat, Brian and others. Stands have been thinned to several densities—70 to 100 BA—and will measure subsequent pheromone dispersion and beetle activity. In the SE, they are also evaluating the effect of hardwood understories. Evaluations will be conducted next spring. Ed noted that a publication describing previous work will be out soon; Pat indicated they are continuing to monitor pheromone behavior in other locations and several canopy conditions.

**2003 Bark Beetle Pheromone Project Updates:** The following are brief summaries of reports. For additional or complete results, contact presenter (author).

**Verbenone/WPB:** Mike reported on Chris Fettig’s ongoing project evaluating the effectiveness of verbenone pouch in preventing WPB attacks in PP. Applied at rate of 125/ha (50/ac); replaced after one month. Early results suggest verb didn’t work very well—at least attacks in treated and untreated areas were not significantly different.

**Verbenone/MPB (LPP and PP):** Sandy discussed projects done in R-1 (Deerlodge and Helena NFs) in ’02 and ’03. Very good results in ’02 in LPP stands; not enough beetle pressure in ’03 in PP stands to tell much. Evaluated a new “slow-release” pouch, comparing results with “standard” pouch, which was replaced at mid-season. Not much difference in two treatments. Matt discussed Barb’s ongoing verbenone evaluations in LPP stands in central ID. In one treated plot there were more attacks than in controls. Believe results may have been influenced by extremely warm weather and/or late beetle flights.

Sandy also described an “operational” project using verbenone pouches to reduce MPB-caused mortality in LPP stands at a ski area in northern ID, Ken noted one RD used verb pouches in two small campgrounds, and Nancy noted use of verb to protect fire-damaged, old-growth PP. Results of all those projects were satisfactory.

**Verbenone/MPB (WBP):** Sandy also described a more successful test using verbenone pouches to protect individual WBP from MPB attacks. Evaluated both “slow-release” and standard pouches at rate of 2 per tree. Results showed good protection with pouches—but little difference in the two pouches.

**Verbenone and Non-Host Volatiles:** John discussed the massive MPB outbreak in LPP stands in British Columbia (4.2 million hectares infested in ’02) and associated testing of verbenone and non-host volatiles to protect some high-value stands or trees. He described work going back to late ’80s and the various efforts to look at verbenone dosages, dispensers, etc. Have had good results with verb pouch and some non-host volatiles. Are continuing to test several NHVs. One, “1-octen-3-ol” looks very promising.

**Pheromones and Spruce Beetles:** Matt described their efforts to estimate beetle-caused mortality relative to numbers of beetles caught in funnel traps. Studies done in

central UT in '01, '02, and '03. Traps collected weekly from May-August and stands were surveyed around trap sites. Number of trees attacked increased with trap catches. They have also been evaluating “natural” attractants as opposed to commercial pheromone baits. Natural attractants are beetle-infested bolts attached to a trap. Compared beetles caught in “naturally-baited” traps, artificially-baited traps, and trap trees. Trap trees attracted most beetles; natural traps looked good early in the season, but overall were not much different from commercially-baited traps.

**Developing anti-attractants for *Ips perturbatus* in AK:** Ed detailed tests done to mask attractants of *Ips perturbatus*, using combinations of verbenone and conophthorin. Tests are ongoing, but appears that combination of standard verbenone bubble capsule and conophthorin was best at reducing trap catches of beetles.

They are also continuing to test the Med-E-Cell device as a pheromone dispenser. Results looked good.

In other AK tests, Roger described a project (Tanacross Project) in which funnel traps were used in a thinned area to reduce leave-tree mortality. Stands were thinned in '01, slash infested in '02, traps put out in a grid design in '03. Few leave trees killed in '03. Will trap again in '04.

***Ips pini* and *Ips paraconfusus* flight periodicity studies:** Joel described trapping studies for *I. pini* (AZ) and Danny and Brytten described ones for *I. paraconfusus* (CA and UT, respectively). In the former, -97 Ipsdienol lures caught more beetles than 50/50 Ipsdienol lures. In the latter, this experiment designed by Steve Seybold tested 6 (in CA) or 7 (in UT) treatments including 1) blank, 2) the ‘attractant’ mix of racemic ipsdienol, racemic ipsenol, and cis-verbenol, 3) (+)-97% Ipsdienol, 50/50 Ipsenol, and cis-verbenol, 4) (-)-97% ipsdienol, racemic ipsenol, and cis-verbenol, 5) the ‘attractant’ and (-)-97% ipsdienol, 6) the ‘attractant’ and conophthorin, and in UT 7) the ‘attractant’ with (-)97% ipsdienol and conophthorin. In CA, peak *I. paraconfusus* flight varied from site to site—early April to mid-May. In both CA and UT various pheromone combinations appeared to be inconclusive although Steve had not yet analyzed the data.

**RTB studies in CA:** Danny also discussed their studies trapping RTB in CA. Several different pheromone combinations are being evaluated—looking at both attractants and anti-aggregants. Combination of + alpha pinene and - beta pinene caught most beetles; - alpha pinene showed promise as anti-attractant. Similar studies being done in China, but he did not have those results.

**“General”:** As an addendum to these discussions, John Reeve offered his opinion on the difficulty of statistical analyses of data derived from these experiments when we use “blank” treatments—which, by definition, have no variance. Those don’t address “experiment-wise” errors. He was suggesting project designs might better be served by choosing different analysis procedures than we often use.

**Bark Beetle Research Initiative:** First item of discussion on Wednesday morning was best approach for accepting proposals for \$700,000 available for applied research projects

in 2004. We concluded they should address the four “priorities” noted in the Western Bark Beetle Report (see handout provided at meeting). In brief, those priorities are:

1. Improve methods to predict bark beetle activity.
2. Clarify interactions between bark beetles and fire.
3. Develop technologies for using bark beetle pheromones.
4. Develop methods to protect high-value resources.

Next, in a “round-robin” format, we constructed a “wish list” comprised of 40-50 research topics that we believe address areas of concern. The following, not a complete listing, is representative of ideas presented: (Tom or Joel may have complete list)

- Hazard- and risk-rating models, to include loss prediction
- Affects of climate change and host distribution
- Response of bark beetles to various semiochemicals
- Fire damage and subsequent bark beetle activity
- Interpreting trap catches
- Biology/bionomics of some bark beetle species
- Efficacy of thinning in beetle-susceptible stands
- Contribution of beetle-caused mortality to fire behavior
- Improving trapping techniques
- Bark beetle behavior in several critical habitats
- Effectiveness and uses of verbenone
- Various IPM strategies affecting bark beetle behavior
- Overall review of semiochemical effectiveness
- Single-tree protection
- Affects of extensive bark beetle-caused mortality
- Effectiveness of remote sensing
- Affects of fuel mitigation efforts
- Maintaining high-value habitats (WUI, e.g.)
- Effective dissemination of technological advances
- Public involvement
- Developing “resistance” to bark beetles
- Use of natural enemies in bark beetle control
- Affects of twig beetles in pinyon pine habitats
- Affects of implementing silvicultural manipulations during outbreaks
- Modeling stand conditions and fire regimes
- Introduction of exotics (especially *Scolytus schevyrewi*)
- Economics of bark beetle “control”
- Implementing silvicultural activities after beetle outbreaks
- Silviculture to reduce beetle susceptibility and fire hazard
- Trapout strategies for bark beetles
- Monitoring of introduced bark beetle species
- Eradication of introduced species
- Pheromones/biologies of “obscure” bark beetles
- Registration status of chemicals or procedures for single-tree protection
- Resin reaction to beetle attacks

- Effectiveness of bark beetle “control” procedures
- Use of “landscape” models to predict bark beetle hazard and risk

Although the following is out of chronological order, it completes the discussion of the Research Initiative: In the afternoon, we took part in a conference call with Rob Mangold (FHP) and Jim Reaves (FIDR). Rob explained the \$700,000 was being made available to do bark beetle-related “applied” research as a companion effort to \$7 million soon to be made available for prevention and restoration work. Rob asked the BBTWG to assist identifying needs for ongoing (or new) research specifically in the areas of survey, assessment, and technology development (1, 3, and 4 on “priority” list from bark beetle report). He further asked that the group assist in soliciting proposals from scientists in the West, that we help review proposals received, and assist in allocation of funds. In this effort there will be close cooperation between FHP and FIDR.

Joel explained the process we used to generate the list of research areas. Rob then asked us to reduce that list to 10-15 proposal areas from which we could solicit proposals. Once that was done, we (Joel) would send that list to Rob, who would then incorporate that list into a letter to be sent to research station directors. Rob wanted our list within the next couple of weeks, then a joint FHP/FIDR letter would be sent to station directors in early December, asking for proposals to be submitted by early January. A sub-committee of the BBTWG would review proposals in mid-January, with a decision being made by end of January. Monies could then be allocated by early February. Rob would like larger (>\$50,000) projects; and each would require an FHP sponsor (similar to STDP proposals).

Later in the meeting, we each “voted” on five of the several research areas, which had been consolidated from the larger list. The subcommittee (one from each western Region: Joel, Tom, Paul, Ken, Brytten, Danny, and Mark) then counted votes and compiled the top 14, to be included in the letter to Rob. **(Joel, I didn’t end up with a copy of those 14—you might want to include them here.)**

**Pinyon Pine Mortality Assessments:** Back to meeting, per se; we discussed at length the ongoing and very extensive mortality being experienced in pinyon pine stands in the Southwest. A function of the severe and prolonged drought in the area, pinyon pines are being killed by the pinyon ips (*Ips confusus* [LeConte]) in unprecedented numbers.

The following are reports of work being done in the SW to either assess the situation or make some effort to deal with it from a management perspective. Summaries are brief. For more information, contact the presenter.

**AZ:** John and Joel discussed surveys and mortality assessments made during ’03. This year, more than 7 million acres were surveyed (ADS). Beetle-caused mortality was estimated at about 5.5 million trees on approximately a half-million acres. Permanent plots are being established in most heavily infested areas. Data will be collected for at least 3 years. They are assessing the role of range expansion of P-J type in outbreak

dynamics. They also noted that in some places, pinyon-juniper woodlands are being converted to juniper woodlands.

Tom DeGomez reported on trapping near Flagstaff. Peak flights in May and late-September. Fewer beetles caught during summer months.

**NM:** Deb discussed the situation, ongoing for 2-3 years, and now affecting more than 770,000 acres (of 6.6 million acres surveyed in '03). They estimate in NM there are approximately 45 million dead pinyon pines. Ground-collected data showed up to 80% mortality in some stands. They spent \$19.4 thousand on ADS, another \$8 thousand on ground surveys. She also detailed trapping studies—testing various pheromone combinations—in an effort to learn more about flight periodicity and life cycle in NM. Seems to be 2 generations per year, with peak flights in May and October.

**CO:** Tom Eager noted early ips-caused mortality in pinyon pine seemed to be related to blackstain root disease. No longer see that association. They aerially surveyed 600,000 acres in '03—about 550,000 acres currently infested, with an estimated 3.5 million trees killed. Ground surveys over 4.7 million acres showed 1.6 million acres infested, on which there were 8.4 million dead trees. Ground plot mortality ranged from 0-90%.

**CA:** Danny noted similar outbreak conditions, but not as much total area as other states. Surveyed about 7 million acres, total ADS and ground. Average mortality over surveyed area about 25%.

**UT/NV:** Brytten reported they had flown about 9 million acres of the 25 million or so acres of P-J type they have in the Region. Not all data analyzed, but mortality estimates ranged from 1-75 trees per acre with some areas as large as 1300 acres.

Jim Ellenwood described the FHM risk mapping effort and attempts to map where ips-caused pinyon pine mortality is located. Looking at wide-scale and long-range projections. Remote sensing studies being carried out in CO, AZ, and NM. Working with ARSAC on these studies—high-resolution satellite imagery. Supplementing FIA data. Want to establish 120 plots in infested areas—one-third are done.

What is (will be) long-range impact on pinyon-juniper habitat types? What will be effect on juniper. Need to look at more long-term relationships, management options, habitat (tree) protection, etc.

**Bark Beetle Specific Projects:** Brief summaries of presentations. Contact authors for more details or complete reports.

**Southern Pine Beetle Prevention and Restoration:** John Nowak. Described a new, \$10 million program for NFs and States in SE fostering a more proactive approach to SPB prevention. Currently soliciting projects for '04. Hope to develop extension materials and a better reporting system. Also wanting to get better information to homeowners. Prevention activities to include pre-commercial and commercial thinning,



prescribed burning, hazard rating, management plans for individuals, and hiring foresters to work specifically on SPB-related projects. Restoration activities will include planting site-specific tree species, planting at appropriate densities, and encouraging mixed-species stands. Eligibility criteria: Minimum 10 acres loblolly or shortleaf pine in need of thinning, high-hazard for SPB infestation, 6-12 years old, less than 700 trees per acre.

**Pinewood Nematodes.** Roger Burnside. Monitoring export areas in Anchorage and Juneau in cooperation with FS (FHP). Several survey locations trapping for long-horned borers (carriers of pinewood nematode). Not finding many—only 3-5 species—but found in most wood exports. Implementing mandatory fumigation of all wood exports. Has become a very political issue.

**Western Balsam Bark Beetle in AK.** Mark Schultz. Assessing causes of widespread SAF mortality in southeastern AK. Not confirmed yet, but suspected of being WBBB. Similar conditions to where WBBB is found in lower 48 states. A suspected outbreak is in Klondike Gold Rush National Monument. Warmer-than-normal temperatures seem to favor outbreaks. Will continue monitoring in '04.

**Automated SPB Reporting.** Alex Mangini. Reporting for Steve Clark on automated monitoring system for SPB. Other work involving verbenone pouch evaluations (data inconclusive); use of baited trap trees (few beetles located—to re-do in '04 and will look at different pheromone blends); evaluating regeneration of beetle-infested stands; establishing permanent plots to measure mortality; working with plume model.

**Augmenting Clerid Populations:** John Reeve. Ongoing project to develop means of mass rearing clerids for use in bark beetle control projects. Still having difficulty rearing larvae on artificial diet. Some do well on some types of diets, but long-term effects on beetle survival and propagation not known. Trying to develop better diets, more efficient feeding techniques, etc.

**Chips and DIPS:** Joel McMillin. Work done in AZ and CA, in cooperation with PSW. Chipping pine slash seems to attract undesirable amounts of RTB and engraver beetles. Looking at timing of chipping—spring versus late summer. On one-acre plots, evaluating late summer and spring applications of: random scattering of chips; chips scattered, but raked away from tree boles; and lopping and scattering of slash. Stands thinned by about 100 trees per acre, removing trees less than 9 inches d.b.h. Evaluating number of live trees attacked. So far, more attacks in chipped areas, than in chipped and raked, than in lop and scatter, than in controls. Also conducting brood production studies in these areas, and evaluating amount and duration of volatile release.

**Westwide Pine Beetle Model.** Eric Smith. Still working to refine model. Installed on Red River RD, Nez Perce NF, in central ID. Model can estimate losses and landscape expansion of outbreaks. Doing sensitivity analyses. Model outputs depend on quality of data inputs. Linked with root disease and fire/fuel extensions of FVS. Work is continuing.

### **Bark Beetle Conditions in Western US and Canada:**

**R-1:** Ken. MPB has become the most significant mortality-causing agent in the Region. In 2002 (data for '03 not yet compiled) more than 517,000 acres were infested in northern ID and western MT—on all host species. That figure will probably exceed 600,000 in '03. DFB is still prevalent in western MT, especially in areas affected by fires of 2000; less so in northern ID. About 100,000 acres are currently infested. FE-killed trees were noted on more than 118,000 acres—the most ever recorded in the Region. Most of that was in northern ID. WBBB-caused mortality in SAF stands was found on about 169,000 acres. A 6,000-acre outbreak of ESB was detected in Yellowstone NP in '02 and expanded somewhat in '03. WPB and engraver beetles increased some in '03, but are not at unusually high levels. Much of the Region continues to suffer from effects of a 4- to 5-year drought.

**R-2:** Tom/Bob Cain. Still dry, but somewhat improved conditions in '03. MPB and ESB are major bark beetle problems in the Region—CO, WY, SD—although pinyon ips (described earlier) is increasing because of warm and dry weather in southern CO. MPB causing serious amounts of PP mortality in Black Hills and CO Front Range; and LPP mortality in northern CO and WY. ESB outbreak has expanded to 72,000 acres on Routt NF in WY. Still many SAF stands infested by WBBB—now totaling more than 353,000 acres. DFB, while not a major problem, is found in areas recently affected by fires. The exotic elm bark beetle (*Scolytus schevyrewi*) has been found in several locations in CO.

**R-3:** Deb/Joel. Major problem in both NM and AZ, as previously noted, is pinyon pine mortality caused by pinyon ips. Significant amounts of PP mortality caused by WBP in northern NM. That outbreak covered about 80,000; compared to nearly 10 times that infested by *Ips*. In AZ, in addition to half-million acres infested by *Ips*; another one million acres are experiencing mortality caused mostly by WPB. Bark beetle problems in spruce stands being exacerbated by spruce aphid outbreaks.

**R-4:** Brytten. ESB decreasing overall with increases in some areas such as on the Manti LaSal and Fishlake NFs. Also increasing amounts of MPB in northern UT, southeastern ID, and western WY, largely in lodgepole pine but also in ponderosa, limber, and whitebark. Noticeable amounts of JPB-caused mortality were also observed in NV. Also important in the region was mortality of both *Pinus edulis* and *P. monophylla* due to *Ips confusus* and drought-related stress. WBP, RHPB, and PE complexes active in Southeastern UT. WPB and PE also active on ponderosa in southern Idaho. However, overall R4 activity is low. DFB and FE causing some mortality on all forest due to drought conditions. WBBB increasing since 2001 with highest levels since peak in 1990's.

**R-5:** Danny. Drought- and bark beetle-related mortality increased on drier sites in CA, but in other areas not as bad in '03. Most dramatic increases noted in southern CA where WBP-caused mortality in PP was significant, as was JPB in JP stands. MPB

activity in fire-affected sugar pine stands increased. Engraver beetle-caused mortality (several species) increased in PP and JP stands. Increases in RTB and FE activity were also noted—those most often being drought- or fire-related. Mortality attributed to pinyon ips also increased in '03. In southern CA, much of Coulter pine has been killed by WPB.

**R-6:** Iral/Paul. DFB activity was down throughout the Region, largely as a result of depletion of susceptible hosts. ESB activity also declined in the northern Cascades in WA, after being at outbreak levels for 5 years. Now have about 150 square miles of dead spruce. FE activity up significantly, also as a result of drought. MPB infested over 200,000 acres, most in LPP in eastern OR; but also infested 100,000 acres PP and more than 30,000 acres WBP. WPB activity increased Region-wide.

**R-8:** Alex. SPB still the major mortality-causing agent east of the Mississippi River, although populations have declined in last few years. There is some scattered engraver beetle activity in the SE. Not much SPB activity in TX right now—likely due to host depletion.

**R-10:** Mark. Spruce beetle populations continued to decline, statewide. The once 3 million-acre outbreak now covers only about 90,000 acres. Lowest level in 50-60 years. Populations have declined because of host depletion. *Ips* activity also declining—down to about 5,000 acres. ELB activity has increased to about 20,000 acres in central AK larch stands. Some (suspected) WBBB activity noted in southeastern AK.

**British Columbia:** John Borden. In addition to the 4.2 million hectare MPB outbreak in central B.C. LPP stands; significant amounts of 1- to 4-year old alder saplings are being killed by the alder bark beetle. Comes in after harvests, breeding in stumps and slash. If older, decadent trees not available, will infest lower bole of smaller trees. Are learning to rotate crop trees.

**Rapid Detection Pilot Project for Exotic Scolytids, Especially *Scolytus schevyrewi*:** Iral described a NASF-mandated project to USFS and Aphis, demanding a better job of detecting introduced pests—especially bark beetles. This project has developed over the past 3 years and is charged designed to detect newly introduced species and monitor their population and distribution. They are doing that by:

- Establishing 3 Regions in the US—NE, SE, and West,
- Monitoring 3-4 ports and 3 urban sites in each Region,
- Installing funnel traps at each monitoring site using 3 different attractant lures: “Standard” *Ips* lure, ethanol, and alpha-pinene.

In the West, they trapped at 4 “inland” ports: Denver, Ogden, Spokane, and Fairbanks. Traps were in place from March to October. In Denver and Ogden, they found the “banded elm bark beetle” (*Scolytus schevyrewi*), a native of central Asia. Not sure of its life cycle in US, nor damage of which it is capable. Appears to have 2-3 generations per year, flying first in late-April. Apparently attacks recently dead or very weak Siberian

elms. Not known if it vectors a pathogenic fungus. Lures for *S. multistriatus* will attract this beetle; but unsure of a specific pheromone.

In '04, will increase trapping sites in CO and UT—have been found outside Denver and Ogden. Not sure of range nor hosts. May consider trapping in adjacent states. Much yet to be learned about this introduced “pest.”

**Discussion of proposed projects for FHTET-sponsored \$30,000:** FHTET

(Morgantown) has been in a position to assist with pheromone-development projects in the last few years—and will again in 2004. Has made available \$30,000 for our use. How best to use? We identified three potential projects and subjected selection to a vote of the group:

1. Development of an improved MPB lure for central Rockies (Steve Seybold, PSW).
2. Quantify DFB trapping results (Darrell Ross, OSU).
3. Identification of attractant pheromone for introduced *Scolytus* (Jose Negron, RMRS).

After some discussion and vote, we agreed that we would apply the money to the development of an improved MPB lure. This will headed up by Steve Seybold, PSW. Steve was not present, but will be contacted.

**West-wide Single-Tree Protection Study:** In 2003, we voted to use the \$20,000 FHTET-sponsored money to fund a west-wide Bifenthron study in 2003 to evaluate the efficacy of bifenthron as a single-tree protectant (and possible replacement for carbaryl). The study was coordinated by Chris Fettig and Pat Shea, PSW; but conducted at six sites throughout the West. Sites, beetles, hosts were:

- Montana, MPB/LPP
- Arizona, *Ips*/Pinyon
- California, WBP/PP
- Colorado, *Ips*/Pinyon
- Utah, ESB/Spruce (Fall '03 treatment)
- Nevada, *Ips*/Pinyon (Fall '03 treatment)

All projects were basically the same: 35 trees each treated with one of 5 treatments: none (control), 2% carbaryl, 0.03% bifenthron, 0.06% bifenthron, or 0.12% bifenthron. All trees were baited with appropriate beetle lures. Results differed somewhat from place to place; but in summary, the 0.12% concentration provided “pretty good” protection (not as good as carbaryl, but better than lower concentrations of bifenthron). Trees will be baited again in '04 to assess multiple-year protection.

**BBTWG meeting in 2004:** As noted earlier, Ed has agreed to host the meeting in Homer, AK. A tentative date is October 5-7, and meeting site is Land's End Resort in Homer. Ed will provide additional information. According to established “protocol” (by virtue of his having hosted the 2003 meeting), Tom will chair the 2004 meeting (although that was not actually discussed). We have in the past discussed the desirability to encourage less “formal” presentations (perhaps even imposing time limits), to limit the

“indoor” part of the meeting to 2 days, and to encourage a “field trip” for the third day. Those seem to be still appropriate for next year’s meeting.

**Field Trip:** Indoor portion of the meeting was adjourned at 1130, Thursday. At noon, we traveled to Anasazi Heritage Center, the Colorado Welcome Center near Cortez, and Mesa Verde National Park. At each site we observed mortality caused by pinyon ips, drought, fire, or a combination of all three. Our hosts discussed management alternatives—including preventive treatments and thinning—and means by which they are striving to accommodate the extreme conditions being presently experienced.