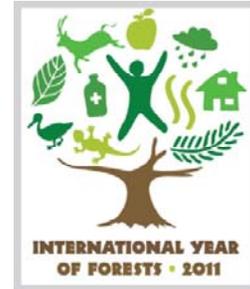


2011 Bark Beetle Technical Working Group Agenda and Meeting Notes

San Diego, CA
October 4-6, 2011



AGENDA

Tuesday, Oct. 4

- 8:00 - 8:15 Welcome, housekeeping items, local information, etc.
- 8:15 - 10:00 Status of bark beetles by Region (Conditions Reports)
* 15 min max per Region (see format at end of agenda)
- 10:00 - 10:30 Break
- 10:30 - 11:30 continue Regional Bark Beetle Conditions Reports
- 11:30 - 12:30 Lunch (on your own)
- 12:30 - 2:30 Bark Beetle R&D Projects—completed and/or planned.
- | | | |
|-----|-----|----------|
| MPB | DFB | ESB |
| JPB | WPB | Ips spp. |
| SPB | FE | WBBB |
- Others: Invasives, pheromones, pesticides...
- 2:30 - 3:00 Break
- 3:00 - 5:00 Bark Beetle R&D Projects (continued)

Wednesday, Oct. 5

- 8:00 - 11:30 Bark Beetle R&D Projects (continued, if needed)
David Wakarchuk (15 minute presentation)
FHP/State discussion of research needs
- Break
- Region and State bark beetle P/S/R projects and
2011 Western Bark Beetle Strategy (status, roll out, etc.)
- 11:30 - 12:30 Lunch (on your own)
- 1:00 - 5:00 Field trip to Torrey Pines State Natural Reserve
(guided by Patrick Shea and Park personnel)

Thursday, Oct. 6

8:00 - 12:00

Updates on specific areas of interest:

News from WO FHP: *Bob Rabaglia or other WO rep.*

EDRR update: *Bob Rabaglia or other WO rep.*

Verbenone on-line database update: ?

Western Bark Beetle Research Group: *Rob Progar*

FIDL updates: *Iral Ragenovich*

Update of "Western Forest Insects": *Iral Ragenovich*

FHTET funding for special projects in 2012: *Harold Thistle*

SAF update: *Rob Progar*

FY12 EM, STDP, or FS-PIAP projects: *everyone*

2012 NIDRM update - *Sheri Smith*

Other?

Meeting location and chair for 2012

1:00 to ?

Field trip to oak woodlands to look at goldspotted oak borer and related projects (contact Tom Coleman directly if you are interested; 909.382.2871; twcoleman@fs.fed.us).

Conditions report format (Regional reports will be 15 min. max.)

Can include:

- current years aerial survey data; if not available, then discuss observed trends, not last years numbers
- maps showing locations of outbreaks of note
- charts or graphs showing trends (5 years or so) of major bark beetles;(acres infested and/or trees per acre)
- a handout that summarizes the regional information

Can't include:

- Project work
- Dead tree photos

TORREY PINES STATE PRESERVE FIELD TRIP

1:30 PM

Arrive at visitor center

1:35 - 2:10

History of the park - Dr. Victor Walsh

2:10 - 2:40

Biology, ecology and evolution of Torrey pine - Darren Smith

2:40 - 3:40

Lower trail - Pheromone project - Patrick Shea

3:40 - 4:10

Other management activities - Charles Kearns

Meeting Notes

Tuesday, Oct. 4

Welcome, Introductions of all, discussion about future of the meeting, field trip time change due to rain potential will be on Wednesday morning at 8 AM.

Status of bark beetles by Region (Conditions Reports)

R1 – Idaho –Tom Eckberg

In 2011, much of the Nez Perce NF was not flown due to budgetary constraints. The Nez has had a lot of LPP with MPB historically. The cool, wet spring and early summer delayed Ips and DFB emergence, and may have delayed crown fading. Aerial detections surveys in 2007 were incomplete; portions of the Nez Perce and Clearwater were not flown due to smoke. In 2008-2010, all areas of State and Private and NFS in R1 were flown. Mountain pine beetle acreage increased in 2010, mostly in LPP. 2011 preliminary indications are that numbers are down (on Kaniksu, CDA and S&P). May be due to adequate moisture, host depletion or timing of flight (delayed signature).

- Traditional hotspots are the IPNF and Clearwater NF, (along MT border), Nez Perce NF.
- Most problems are in LPP, but it is moving into PP in the Craig Mountain-Camas Prairie area near Grangeville. Also attacking PP in the Salmon area of R4, both NFS and S&P (WUI).
- Much of the large diameter, high elevation WPB in ID R1 is dead from MPB/WPBR.
- MPB mostly gone from State and Private lands in the Stanley Basin, and there are still green trees. Beetle seems to have moved up and south into WBP and LPP near Galena Summit.

Western pine beetle continues to be scattered problem in lower elevation PP

- IDL receives many requests for assistance concerning WPB
- No large outbreaks, dispersed mortality.

Ips pini acreage is small, but common problem throughout R1

- IDL receives many requests for assistance concerning pine engraver
- Landowners and operators commonly work in low elevation pines early in season
- Large scale wind event in November Clearwater county caused extensive PP damage; EFRP funding has helped clean up trees on S&P.

Fir engraver is most important bark beetle affecting State and Private lands in North Idaho. Indications are that 2011 numbers are down, possible due to adequate moisture the last two years.

- Fir engraver attacking trees weakened by root disease and dry site grand fir
- Also common on Packer John State forest near Smith's Ferry killing WSBW-attacked trees (R4)
- Fir engraver very common on grand fir of all age classes, also affecting trees left after harvest

Douglas-fir beetle is widely scattered in R1, often on ridge tops.

- Root disease infected trees often attacked
- DFB killing trees weakened by spruce budworm
- Serious problem along Salmon River in north part of R4, and S&P in eastern Idaho (Idaho Falls-Island Park areas near Caribou-Targhee NF's). Also common in S&P in Stanley Basin.
- Clearwater County wind event of November 2010 caused serious damage to DF. Much of the accessible timber has or will be removed.

Carl Jorgensen – Southern Idaho Bark Beetle Conditions

Aerial survey data for 2011 was being collected right up to the end of the fiscal year and was not available for the 2011 BBTWG meeting. However, the following is a summary of the major trends that were observed.

Mountain Pine Beetle: The MPB outbreak continues to be quite active in some areas. Those areas include: Northern portions of the Salmon NF in lodgepole, white bark, and ponderosa; southern portion of the Challis NF in white bark, lodgepole and limber pine; southeastern portion of the Caribou NF in lodgepole pine and limber pine; Boise and Payette NFs have sustained activity, primarily in the lodgepole pine and whitebark pine; Sawtooth National Recreation Area where MPB was very active a few years ago, have dropped off significantly; Targhee NF has some sporadic activity in the whitebark pine, but little activity in the lodgepole pine.

Douglas-fir Beetle: Following the 2007 fires, DFB had a significant increase in conjunction with those fires. As those outbreaks are beginning to subside, western spruce budworm activity continues to be heavy on most Douglas-fir dominant stands on the Boise, Payette, Salmon-Challis, NFs as well as portions of the Caribou-Targhee, and Sawtooth NFs. Sporadic DFB outbreaks within the defoliated areas are prevalent. DFB-infestations range from tens to hundreds of tree pockets.

Western Pine Beetle is at relatively low numbers in the ponderosa pine. The last two years have had cool wet springs that help reduce this beetle's activity after a significant increase in some areas in conjunction with the 2007 fires. WPB activity could increase in some areas with the recent outbreaks of pine butterfly in many ponderosa stands in southern Idaho.

Fir Engraver Beetle in Grand fir continues to be a relatively low numbers, but I expect that FEB to increase with all the western spruce budworm activity, especially if the next few years are drier than normal. Red Turpentine Beetle and Ips beetles continue to be at relatively low numbers in the ponderosa pine. Subalpine fir decline, a.k.a. western balsam bark beetle is sporadic and at relatively low numbers. Engelmann Spruce Beetle is almost non-existent. Although I did find 2 adult beetles in a blowdown east of Donnelly, Idaho.

R2- report submitted by Bob Cain (partial summary included below)

In the Rocky Mountain Region, the number acres of mountain pine beetle activity detected by aerial survey is decreased from 1,840,000 in 2008 to 1,663,000 acres in 2009, and 1,539,000 acres in 2010. 2011 acres are not yet available. Nebraska - mountain pine beetle was officially confirmed in Nebraska for the first time in 2009 in the "Panhandle" of Nebraska. Documentation of this new record was published in 2011 in the Coleopterists Bulletin (Sheryl L. Costello and Willis C. Schaupp, Jr. First Nebraska State Collection Record of the Mountain Pine Beetle, *Dendroctonus ponderosae* Hopkins (Coleoptera: Curculionidae: Scolytinae). Coleopterists Bulletin, 65(1):21-23. 2011).

Spruce beetle has been active on much of the Region's spruce since 2000. Through 2010, 993,000 acres have been affected in the Rocky Mountain Region, with host depletion occurring on many of these acres (Figure 8). 2011 acres affected are not yet available.

Douglas-fir beetle (*Dendroctonus pseudotsugae*) has been an important disturbance agent in the Rocky Mountain Region in the past 15 years. Population increases in this Region often occur in areas where trees have been damaged by fire or stressed by heavy defoliation from western spruce budworm or Douglas-fir tussock moth. Between 1996 and 2010, aerial survey has detected Douglas-fir beetle caused mortality on 632,000 acres within the USFS Rocky Mountain Region.

In 2009, subalpine fir mortality was detected to varying levels on 233,000 acres and in 2010, 332,000 affected acres were detected. All national forests in the Region continue to see significant mortality in subalpine fir. Acres affected in 2011 are not yet available.

R-3- John Anhold, AZ – good spring – 6500 Acres mortality, Ips on LP = ½ and Cedar BB on Ft Apache off the Rim. Very green this year but big fires.

NM- lots of drought mortality and freeze damage to alligator juniper. 20,000 to 165,700 acres this year PP with Ips and WPB -mostly SB (900 acres) along CO border. DFB light -3600 acres, SB. WBBB on 14,500 acres on spruce fir. Pinyon ips on 3,000 acres.

R-4 –Darren Blackford – Good spring/winter moisture – so things looking good. SAF-down since 2003 loss of host of material, DFB up from last year mostly in ID mostly associated with SBW activity. FEB way down in 2010. JPB up in 2011, MPB down for 2011 – NE UT can't find it – mostly E. into PP – 50-80 miles over; still in N. Slope of Uintas. B-T running out of host but still there. Pine and pinyon engraver - down 2010, but Ips pini up taking over in some areas for MPB

SB- WY and UT – biggest concern in UT up in 2011, Cottonwood canyon area with ski resorts. Carbaryl treatments up. Seeing it in LP in some areas in lower boles with MPB in upper and mid boles. Gail – Pinyon scale still there but less –

R-5 – Sheri Smith

Northeastern CA – provided by Danny Cluck - mountain pine beetle continued to attack and kill lodgepole pine and whitebark pine throughout the Warner Mountains, Modoc National Forest. Most lodgepole pine stands have experienced approximately 75% and greater basal area loss. Whitebark pine stands are still suffering high levels of mortality, especially when mixed with or adjacent to lodgepole pine stands. Previously expanding whitebark pine mortality pockets that were not associated with lodgepole pine had no new green infested trees in 2011. Some whitebark pines that were attacked in 2010 appeared to have very limited brood development. Mountain pine beetle-caused mortality increased dramatically in the Medicine Lake area, Modoc National Forest, in pure lodgepole pine stands. This mortality is occurring within a high use recreation area causing concern for private homeowners and Forest Service recreation staff. Approximately 15 acres of ponderosa pine adjacent to the 2007 Moonlight Fire, Plumas National Forest, were attacked and killed by the western pine beetle.

Southern CA – provided by Tom Coleman - sugar pine, Jeffrey pine, and ponderosa pine mortality were aerially mapped across 8,698 acres on the San Bernardino National Forest, Mountaintop Ranger District in the boundaries of the 2007 Slide and Butler fires. Singleleaf pinyon pine infected with black stain root disease continues to be attacked by *Ips confusus* on the San Bernardino National Forest, Mountaintop Ranger District. Low-levels of tree mortality continue for the fourth straight year, covering an estimated 15 acres. *Ips paraconfusus* continued to kill Jeffrey pine in dense conifer stands on the Los Padres National Forest, Mt. Pinos Ranger District. Top-kill and tree mortality spanned an estimated 1,200 acres. Oak mortality from the goldspotted oak borer continued in San Diego County for the tenth consecutive year. Large diameter coast live oak and California black oak continue to be impacted by this new exotic. Tree mortality has expanded approximately 39 miles from the believed area of origin.

Southern Sierra Nevada range – provided by Beverly Bulaon

Small diameter, dense stands of ponderosa pines severely damaged by wind and snow facilitated small outbreaks of *Ips paraconfusus* in the damaged trees and adjacent stands. The Sierra National Forest has continuing western pine beetle activity, primarily in mature pine plantations. Mountain pine beetle continues to kill whitebark and limber pines on the Inyo National Forest and legacy sugar pines in westside National Forests. Northern CA – provided by Cynthia Snyder - With increased precipitation over the past two years, there has been an overall decline in western pine beetle mortality across much of Northern California. Fir engraver beetle activity continued to be elevated in Northwestern California in areas closely associated with overstocking and annosus root disease infections. Mountain pine beetle-caused mortality of whitebark pine continued in an approximately 80-acre area on the northern flank of Mt. Shasta, Shasta-Trinity National Forest. These whitebark pines are heavily infected with limber pine dwarf mistletoe.

R-6 - Iral – Preliminary 2011 – decline overall in WA & OR, MPB down – peaked in 2008 and declined since then, 350,000 acres in 2011. Projects focusing on thinning stands Ips slight increase maybe assoc with burned over PP stands. DFB – acres declined to 31,000 acres from the over 100,000 acres in 09. Now DFB in E. WA with significant WSBW defoliation areas. SB up 13,000 acres in Pasay ten Wilderness near Canada. Silver Fir Beetle and FEB down. Flatheaded Fir Borer on SW OR on the Rouge River. Down in 2011. 250,000 acres defoliated by pine butterfly this year - 30 to 40 year return interval.

R-8- Steve Clarke: SPB at very low levels south-wide. We are preparing a paper on possible explanations for the continued low population levels. *Ips* populations are at high levels due to drought. We do not have a good method for estimating the impacts of *Ips* bark beetles in the southeast, so we are not sure of total #s acres. 270 acres total were reported in the SPB data portal for all bark beetles. Redbay ambrosia beetle still spreading along the Atlantic and Gulf coasts and now has been found infesting sassafras.

R-9 – Steve Clarke: NE region. Most current SPB activity now is in New Jersey. Not much suppression has occurred due to regulations in NJ. Right now most infestations are on private lands in the southern third of the state. This area primarily has mixed pine-hardwood stands, so infestations not spreading rapidly in most cases. If populations move into the pure Pinelands area to the north, then infestations may spread quickly. The NJ State Forest Service has treated 18 acres of the 500 acres on state lands using cut-and-leave. 1400 acres statewide affected. The wet weather this year seems to have help slow infestation expansion, so the predicted population explosion did not occur. There are two to three generations per year in NJ, and there are a lot of clerids (natural enemies) in the area. Bob R. – EAB 15 states now – APHIS is relooking at strategy, funding will be cut by about 2/3; ~36 down to 13 million – regulatory now no treatment. ALB in MA has expanded into forest now outside of Wooster, moving faster and more aggressive -maple concern there. No real pheromones yet just using injections and removals now. Walnut twig beetle in 2010 in TN, now in Richmond VA in 5 counties. Also in Penn. where walnut was brought in from Chico, CA for woodworking. Trying to get state involved in keeping track of it, but APHIS involved.

R-10 Roger Burnside – In white spruce mostly - last year SB 110,000 acres, *Ips perturbatus* -northern spruce engraver down this year, 2011 – 6000 Acres Ips 48,000 Acres of SB this year S. of Alaska Range, Lots of concern of invasive BB none in EDRR since 2002. ALB could establish in urban area. Lot of concern on regulation on firewood/biomass from Canada, etc. Federal harvest is shut down so state and private only so wood coming in. SE Alaska State Forests being established. Many small community wood operations shutting down with the economy – tourist traffic down so demand for products down. OR passed a firewood import bill – treatment required – being put through legislature. In Alaska, Dept of Ag and Forestry in DNR so if needed can be handled more efficiently than other states.

Canada – less MPB 28 HA total – wiped out the host material, Don Fowler (Contech) – declining rapidly and slowing as it goes into central Alberta. Jack pine interface; diff. fungal components.

Bark Beetle R&D Projects—completed and/or planned.

Mountain pine beetle

Ann Lynch- (with Barb Bentz) Pinaleño Mts. - AZ (most of previous work was in northern AZ) SW White Pine (*P. strobiformis*) cone seed needed for endangered red squirrel. MPB was rare there before; appears that MPB-caused tree mortality started in 1998 or earlier; a minor amount of activity over several years – 3 study sites were installed to determine tree and plot characteristics in the infested areas. Trees adjacent to attacked trees had a very high probability of attack; numerous green infested trees. Lower diameter limit – 13 cm and over 90 cm on upper (sampled) for attack. MPB reproductive incompatibility is not continuous but there is a threshold between OR and ID; MPB has become a significant disturbance agent in the Pinaleño Mtns. MPB is genetically and reproductively isolated from the CA populations. Stands have between 50 – 350 TPA in the Pinaleños. Infestations are very spotty as is the southwestern white pine distribution.

John Anhold - Trying to do Pinaleño restoration project – 5 yrs of NEPA; hope to start next year. May try verbenone down there. David said it will help to add GLV's. Discussion about treatments and consequences over the long term if it is truly a climate change scenario.

Darren Blackford –

- Verbenone(+) study – Fettig study in Mont Pelier RD - ¼ pouches were missing – no results reported.
- SPLAT study with Fettig in Wyoming – verbenone splats – CO² gun-verb. application – like paintballing the trees linearly through the beetle flight period– easy to apply; preliminary results – 83% of controls died; 0% of treated trees died. ISCA technologies. Trees were baited; discussion about costs and efficacy? Preliminary data right now; 32-39 g of verb/tree used on 10 ft. splats. (= 5-6 pouches). How should verb. be applied linearly, pouches, flakes, etc? David W. - verbenone is a close in signal. Mean height of attack on LP and PP is 16 ft or so. David W. – does how verb. is dispersed on the tree matter? What is the minimum effective dose? Need gram quantification of verbenone. Pat Shea's work: attacks occurred in between on the tree boles where there was no verb (verb. was placed every 3 ft. up to 40 ft. on tree bole).

Carl Jorgensen –

- Hoffman white pine blister rust plots; MPB killed a lot of trees; there are numerous seedlings; objective for using verb. is to maintain live trees on the site to serve as a seed production area.
- Progar - verbenone study – ongoing 7 years; no MPB activity in area this year.
- Verbenone/sanitation westwide project – paired plots verb. and removal of infested trees. – LP. 40/ac/yr and all infested removed each year. Into 3-4 years now; funded by STDP. So far looks better than straight verb.
- Short and long impacts of forest fire fuels – accumulation rates, etc – WYO, MT, CO EM Project.
- Matt Hansen - post MPB outbreak – nitrogen cycling; EM project
- Carl – spray projects – PP & LP spring and fall in ID carbaryl study will be baited next year. FS-PIAP funded. In-house application. Accessibility and wildlife issues.
- R-1 – Bob Keane – RMRS Fire lab; fuels behavior modeling at the landscape scale – cooperative project with Joel Egan; post outbreak fuel changes in LP. Coming in the future – EM project. Anne said that the literature shows that in big fire years – it seems irrelevant if there were beetle-killed trees or not. Jensen is mixed message, others say weather driven. Discussion about fire in pinyon pine and insect outbreaks after fire. Perhaps look at comparing ADS and Fire GIS Maps across the west.

Tom Coleman - EM Project – with Barb Bentz and Jim Vandygriff; monitoring phloem temperatures and MPB lifecycle timing on individual trees at multiple elevations, latitudes, and host tree species to provide a benchmark for understanding and forecasting the influence of climate on MPB population dynamics. Study sites include several elevations and host tree species. Field-collected data is also being used to evaluate a mechanistic model that describes MPB developmental timing and can be used to predict susceptibility of California pine forests to future MPB outbreaks. Model predictions appear to be accurate for many locations; field-collected data supports where the model predicts 2 years to complete development.

Jeffrey pine beetle

Sheri Smith

- Tahoe Plot Data Study (from Wenz) – Joel Egan –STDP funded. Looking at tree density contributing to JPB-caused tree mortality during protracted drought period.
- Brian Strom and Sheri – anti-aggregate trials shuts down trap catch completely. Trying on the Lassen Volcanic NP (w Danny Cluck) GLV, verb., frontalín combinations. Frontalín replaced every 30 days. SAF poster for JPB work. Darren - treated trees with carbaryl on the Hope Valley Campground area to prevent JPB attacks.

Southern Pine Beetle

Anne - how do you tell *D. mexicanus* from *D. frontalis*? Have to dissect – are we sure it has been SPB or was it Mexican pine beetle in Chiracowas – maybe it is expansion north from its range in Mexico.

Brian

- looking at Astro and Onyx for treatments in New Jersey for private landowners. Travel caps affecting technical assistance delivery.
- Small bolt screening methods (cedar oil, etc.)
- Working with systemics and *Ips avulsus* (using as a surrogate for SPB); looking at multiple systemic; several hundred trees treated.

David and Tom talked about concerns about carbaryl, bifenthrin, and pyrethroids losing their labels due to EPA registration costs/ recerts. Fee for a registered pesticide is ~\$60,000; \$8-\$10k for a small entity.

Steve Clarke. SPB Data Portal became operational in 2011. The portal provides consistency in reporting numbers and impacts of SPB infestations vs. each state doing it their own way. The site was developed in cooperation with the states and FHTET. The site serves as a common database and can be used to manage infestation data, upload files including shapefiles, create maps and reports, and enter prevention and trapping data. A demonstration of the portal was given, though the expertise of the provider was dubious (put the demon in demonstration). The site can be accessed at http://svinetfc12.fs.fed.us/SPB_DataPortal

Douglas-Fir Beetle

Andy Graves - NM, CA, AZ – with Jose Negron trapping for basic biology, flight periodicity. Andy trapped all summer at 7,500 feet. Laura did some trapping and starting catching after 65 degrees F. Similar to SB temps. for flights.

Iral Ragenovich

- discussed previous work in Mexico using MCH bubble caps and 2011 work with laminated flakes (put out where restricted usage trap monitoring application, flake rate and placement were problematic). No data yet but had trouble with aerial application; couldn't control delivery amount. Connie working with them (info. on the IAT website) (Chihuahua). Douglas - fir is a protected species there.
- R6 - using MCH in campground and blowdown areas.
- Harold Thistle/Iral/Darrel Ross – MCH bubble cap plume model PP, LP, SP stands plume models; different concentrations/spacing/w MCH. Paper in for review (also see 2010 BBTWG meeting notes).
- Ross and Daterman; 1995. DFB and MCH dispersion.

Western Pine Beetle

Andy – reported on Ryan’s (Diana Six lab.) work with beetles and fungal components

Engelmann Spruce Beetle

Anne – genetics work on spruce hybridization with University of Wyoming. Collection of twigs from multiple native spruce species; contact Anne if interested in making collections – will give FedEx account to use. Looking at susceptibility to spruce aphid.

***Ips* sp.**

John Anhold

- presented Joel’s slides – STDP- R-2 work with Kurt Allen – RMRS- Fire modeling following bark beetle outbreaks; PP & DF treated as fuel reduction projects.
- Impacts of pinyon *Ips* outbreaks on fuel and fire potentials in AZ P-J – EM project Joel/Sieg/Linn/C. Hoffman is doing - changes in fuel complex as a result of the outbreak, ID relationships in model. 6 simulations run - lower wind speeds the fire runs out in live PJ stand 4m/s but not 7 m/s. Biggest spread when dead needles remain on the trees. There is a wind speed threshold that occurs and dead needles on the tree carries the fire; if large dead trees in canopy then can carry the fire through stand. Level of mortality, fuels composition and arrangement and time since outbreak of interest – not just what burns but how it burns.
- Sheri, Darren and Gail discussed how *I. pini* is reacting in LP and PP and how *I. confusus* is really down.

Rob Flowers - *Ips paraconfusus* — trapping in the valley northwest OR, distribution, flight period data – 2008-2010, extending traps from Portland to Mt. Hood and up into WA, and in the Gorge, in eastside side pine – small amount of *I. pini* in westside forests but mostly occurring on the eastside. Currently going through data.

Steve – Conducted spring trapping for *Ips* (looking at multiple *Ips* lures) near the SPB spring survey traps. Trapping conducted as part of a project by John Reeve of SIU. He is also looking at natural enemies.

Western Balsam Bark Beetle – mortality still occurring in southern AZ. No work being done.

Fir Engraver Beetle – no project work reported.

Walnut Twig Beetle

Andy, T. Coleman, others – surveying 300 trees; crown ratings; trapping next year – EM project – native walnut trees.

Bob Rabaglia – Activity in TN, VA and PA. PA infestation from walnut moved from Chico, CA. Not seen yet in forested area of the eastern US. NV now infested.

Seybold, Munson, Darren, Carl - STDP project – checking trapping protocols – different baits, placements, expand next year. 18 of 20 sites have it so far. In CA most native walnuts trees in So Cal are affected.

Goldspotted Oak Borer

Tom Coleman

- EM project – health rating scale development - drought stress – 3 yrs of measurements – now several good years of water – how will that affect tree survival – some do produce callus tissue around wounds. Project is continuing.
- Risk Assessment with Rob Venette– dispersals and host range study – testing 9 oak species – Andy started this project and Laurel Haavik has continued it. Mark-recapture work – didn't get anything back in traps. Also, checking cold tolerance of the beetle in the lab. Appears to be limited only by range of oaks.
- STDP with Seybold and Crook — EADs with GSOB and trap types and colors. Purple better closer to the ground; green better in upper canopy; panel trap better.
- Natural enemies of GSOB - looked in Mexico for natural enemies and looking at genetics of native GSOB populations; comparing US populations to MX and Guatemala. Got a lot of genetic material but no natural enemies; mite (generalist predator) found there and in U.S. IAT website write-up on this.
- Firewood sanitization study – debarking does not kill population – grinding works well at all levels of grind. Sheri - oak firewood is high value so is probably moving – no regulation on movement right now.

***Monochamus* sp. wood borers**

David Wakarchuk – *Monochamus* sp. experiment this year – LP area; 24 traps, 15 days; 3 collections – Monochamol + ethanol and alpha pinene; monochamol + ethanol+ alpha pinene +Ips+ Ipsdienol caught the most *Monochamus* sp. Main species caught were *M. clamator* and *M. obtusus*. Monochamol will be available in a bubble cap; should be inexpensive. Release rates are low – but works well. Less than 1 mg/day release rates.

Wednesday, Oct. 5

Field trip to Torrey Pines State Preserve.- Discussed the trap catches for *Ips paraconfusus* outbreak in the late 80's through to present as well as Torrey Pine sanitation treatments past and present. Pat Shea talked about the 3 cluster trap set up as being more effective than equally spaced single traps. Unique island ecosystem with relic Torrey Pine population and unique flora in this area discussed. (see agenda for other topics covered.)

Bark Beetle R&D Projects continued from Tuesday

Tamarisk Leaf Beetle

John Anhold – released in 2004 and 2005 (where?) and now in northern AZ (Lees Ferry area; stripped every tree in area in 2009); Grand Canyon NP just down from Glen Canyon Nat. Rec Area; submitted FY10 EM project (not funded). Moab, UT population started to strip trees there and now has stripped trees in Grand Canyon; takes 3-5 years to kill trees. Dick Reardon provided some funding for work on impacts of tamarisk leaf beetle Southwest willow fly catcher. Net sweep monitoring per Tamarisk Coalition protocol for monitoring. Uncertain about restoration following host tree mortality, however, beetle does not cause local extension of tamarisk.

Pesticide Treatments, Etc.

Tom Coleman - GSOB – FS-PIAP funded with Sheri and Brian - imidacloprid, EB, Onyx, Astro and Warrior; cover sprays/feeding assays. Feeding assays – treatments reduced feeding but did not kill adults. Re-applying next year on private lands – systemic treatments – used pressurized injection gun. Sprayed lower bole and branches in cover sprays. Making progress and have recommended IPM treatment strategies.

Darren – discussed Fettig’s tree injection work with EB (TREE-age) and propiconazole (Alamo); Darren said Fettig’s study had better results in fall applications in LP with EB for MPB – in 2010, used Alamo but not good results. Discussion of usage of injections for MPB may be futile. All trees were killed in outbreak areas, and where beetle populations crashed there wasn’t enough pressure to test.

Brian Strom

- Carbaryl – may be able to do concentration assays for FHP projects. ELISA kit out of Japan – 7 different plant matrices – at 5 different concentrations. Brian has the samples to run the ELISA tests (FY11 STDP funded). Sensitivity is much better than other methods. Discussion of protocol to storage and handling of tank mixes that are sent in for testing (from Darren). Now the recommendation is to put buffers in everything to keep it neutral.
- Foliage samples from stem injected trees typically have lower residues for EB compared to imidacloprid. Another part of this project on GSOB – black oak injection on smaller trees, good residues in foliage indicating the chemical is moving. Harder working with GSOB due to lack of pheromone aggregants to bring them in to challenge trees. With the systemic insecticides the goal is to kill larvae. Takes a long time for trees to die so it is a log process with multiple re-treatments to test efficacy. EB and imidacloprid injections seem to have multiple year effects.
- Mountain pine beetle and western white pine – high number of trees killed. In the injected (EB) trees, strips near injection sites are free of beetles, but everywhere else on the boles, it is occupied. In 2009 treated trees at 4 inch-spaced injection sites with QuikJet (now use an air gun), baited in 2010 and will evaluate later this month (Oct. 2011).
- Also doing trials in Pineville, LA – injections with EB for SPB - looking at small bolt assay – number of attacks are higher on EB-treated bolts, but shorter gallery lengths. Perhaps use injected trees as trap trees.

Rob asked if anyone has used pentrabark Safari treatments. Discussion of little efficacious results to date.

Discussion about carbaryl treatments in campgrounds, etc. Sheri (R5) said that they require a long term veg. mgmt. plan in campgrounds prior to funding insecticide treatments. John Anhold – the battle of getting districts to develop veg. mgmt plans – need funding. Darren discussion of problems with spraying Engelmann spruce.

David Wakarchuk – An oxidized monoterpene library used to probe bark beetle/host chemoreception. Terpenes serve as the primary olfactory signal that attracts beetles to their host species – toxic at varying levels and they detoxify by auto oxidation process when exposed to oxygen. David went through the chemistry of the pheromone components and what is in tree compositions and how they oxidized these monoterpenes; this is what the library of these 300-500 oxidized compounds are. Auto oxidation products (for example some alpha pinene auto ox products are verbenone. Discussion of the commonality of compounds that are recognized by both MPB and DFB.

Discussion FHP/State research needs –

Gail – virus on pinyon scale questions. Maybe EM project for Steve Munson's group?

Carl – question on fir engraver beetle hazard rating? Sheri discussed some past work on it – NIDRM – white and red fir – basal area and precipitation area correlations. Looking at stand ratings. Carl is expecting a good bit of mortality in grand fir after the SBW.

Anne discussed FEB in fire areas. Anne discussed the high elevation SBW defoliation on ES and DF? Most of the further northern areas defoliation is at lower elevations, but may be a function of latitude.

Bob Rabaglia – EDRR suite of target BB will start including cerambycids and buprestids – team developed to look at this. Current EDRR program targets a set of 10 species – potential lure work to expand EDRR. Submit ideas for lures/traps for other non-native taxa.

Darren – asked if any treatments on spruce stumps for spruce beetle in campgrounds? John Anhold discussed doing a pile burn over the stump to kill them. Maybe use funnel traps to pull them out of the stumps? Sheri suggested bark systemics.

Prevention/Suppression/Restoration Projects

R1&4 - Darren and Carl - \$2 million in projects this year – campgrounds, etc.; 123 projects on 15,000 acres. In UT – doing a lot of tree removal projects to keep up with beetles. Hope to do restoration projects. Boise Field Office special and WBB Projects – Laura's MCH flight project – Bald Mt. Ski area and fire edge; MCH pouches and flakes; over 1,550 acres treated with flakes and 150 acres with pouches, DFB outbreak has finished in this area, but SBW is high in close area so may have higher DFB in some areas next year. Traps on 8 sites in ski runs caught 1,000's of DFBs. About \$190,000 for materials and flight time for the flakes. FHP gave Idaho Department of Lands \$30,000 to cost share with treatment at ski area and to private landowners with MCH. Probably won't do any MCH flake treatments this coming year. Lots of WBP suppression restoration projects. Having a lot of seed and cone insects on Douglas-fir. Acecaps maybe tried next year. Maybe use EB – 5 year protection against some cone feeding insects in the south. Gail discussed NV state projects; \$30-50k/yr in WUI treatments; combined with fuels work. Tom Eckberg - R-1 IDL report. Discussion about how each state is awarded FHP funding per intended projects. WBB and competitive grants for thinning, site prep., planting, restoration; pruning white pine blister rust infections in western white pine. Looking at landscape level, multi-partner treatments and other USDA funding opportunities. Thinned ~4,000 acres of lodgepole in eastern ID since 2004.

R2 – prepared handout on funded projects

R3 - John Anhold – projects in R3 are similar to those in other regions – urban areas, watersheds, fuel reduction work funds, aspen restoration projects; project selections based on submittals by each forests, some do more than others. Aspen projects are small – especially with the fencing. Elk is the big issue with aspen regen. Tribal government work ~ \$2-400,000/year. Grand Canyon PJ spraying for transplants. Four Forest Restoration Initiative – multi-forest thinning project over 10 yr. period – high-level recognition; large collaboration project. Large fires burned spotted owl PAC sites; restoring these sites; southern AZ doing similar work for goshawk habitat. Aerial application of MCH flakes. October 2010 tornado impacts in northern AZ – doing monitoring activities – trapping for broad spectrum of beetle species (3 traps at each of 13 sites). ADS, *Ips* hazard ratings, brood samplings, photo mission, Landsat. – results = 6 *Ips* species and 5 *Dendroctonus* species detected in down material, WPB and roundheaded pine beetle in uprooted trees and *Ips* sp. in sunny portions. *Ips* sp. most abundant. Stobs have RTB. No activity in green trees as of mid

August, 2011. Forest, DOD, and the State are trying to remove the infested material. Andy Graves—looking at a wind damage event in NM in the Pecos about 3 years ago at 11,000 ft.

R5 - Sheri - WBB \$ 2.32 million dollars in FY11 for NFS – mostly thinning dense stands; ~3,600 acres treated; 184 acres were treated on private lands with \$60,000; in addition some carbaryl spraying in high value trees in campgrounds was accomplished on NFS lands. Trying to assist forests with funding veg. mgmt plan development and for NEPA and demo. thinning projects in whitebark pine on the Modoc NF. R5 FHP website has WBB success stories – each entomologist completes one success story per year.

R6 – Iral – NFS projects are mostly thinning – fuels and wildlife funding combinations so most projects are thinning in WUIs, mostly for MPB prevention. A few projects with MCH in blow down areas, and verb. in whitebark pine in seed collection area. This year also completed thinning around old growth sugar and ponderosa pine – 800 1000\$/ac. Other areas – \$300-\$400/acre for other lands.

Give Oregon Dept. of Forestry – western bark beetle funding - Rob Flowers – thinning in MPB stands sub-grants to private landowners in individual grants. They have a network of Stewardship Foresters that work to get grants to private landowners. ARRA grants (100% vs. 50:50 cost share completion issues).

R8 - Steve Clarke. Handout from John Nowak on SPB prevention projects. The millionth acre treated since 2003 was reached in 2011. Over 94 million dollars has been spent for SPB prevention in 13 states and 12 NF's since the program initiation. Prevention data now available through the SPB data portal.

R10 - Roger Burnside - chronically impacted stands - restoration/prevention thinning/ pruning of Sitka spruce and *Ips perturbatus*.

Thursday, Oct 6

Updates on specific areas of interest:

News from WO FHP: *Bob Rabaglia*

- **July 11, 2011 WBB Strategy** – \$90 million dollar program, safety, recovery and resilience. Each region input acre targets into strategy. Not new money but integrating other programs. Sheri provided target WBB reporting handout. Safety is addressing dead trees, recovery is reforesting affected areas, and resilience is to thin and create more diverse stand structures. This will go from 2011-2016.
- **2012 Budget** – Initial program direction but no \$ yet. Continuing resolution through 11/18 and then likely another one. 2011 WBB funding was about \$11.6 million. Discussion about the formula to divide it up among the 7 western regions. Dollars are based on mortality yet the money is for prevention – a bit of disconnect there. It was agreed by the FHP directors based on ADS and other factors a while back. R8 in 2011 funding for SPB was \$10 million. If we get cut 10 -15 % all last year numbers will be cut respectively. In 2011 – STDP -\$1.057 million; EM - \$1.4 million and FSPIAP was \$212,000.
- **EDDR Update**–2010 - 13 states; \$700,000; 130 natives species detected; 3 known to be present exotics and 1 new exotic; 2011 - 14 state; \$589,000; 30 native species; 140 exotics; 4 new non-native Scolytids identified in 2011. Three were ambrosia beetles and *Araptus schwarzi* (found in CA CAPS traps) attacks avocado seeds in Mexico). Two found in Florida, *Xyleborinus artestriatus* *Euwallacea interjectus*) *Ambrosiodmus minor* (GA) Concentrating on the high risk states – CA, FL, GA, NY, TX based on the # of interceptions and establishments Will expand the target species and change out the lures as needed by state needs.
- **Pest Event Reporter FHTET** – Pest Condition Reports will be going into this as well as ADS. To get the national Forest Pest Conditions Report timelier, new deadlines are being developed:

November 30th will be end of forest pest-reporting year. December 15th deadline for entry of forest pest data. ADS deadline will be Jan 15th to FHTET.

- **Verbenone Database** – last year treatment database discussion – FHTET put together a database for all treatments. Started in 2010. Easy database entry and simple data to collect. R-4, Darren has about a dozen sites ready to enter. R-1 has entered some but there is a lot of verb. use there so not sure if it will all get in. Database not accessible to States. Would have to go to FHP regional rep for entry. Website:
<https://mail.state.nv.us/owa/redir.aspx?C=c1adc5bae2dd4357a9ee25c1eeb3a74f&URL=http%3a%2f%2fwww.formstack.com%2fforms%2f%3f1036956-scpaOZwieQ>
- **WBB Research Group** *Rob Progar* comments (reported by Sheri) – PSW, PNW, RMRS combo. Funding from WETAC and other entities to complete an assessment, webinar, etc. Jose Negron and Chris Fettig, PSW reorganization, Seybold, Fettig and Gillette in Invasive Beetle Group Unit now.
- www.sherylcostello.com to share your thoughts and condolences for Sheryl Costello
- **FIDL update – Iral** – Kathy Sheehan is National FIDLs Coordinator – handout on update on status of FIDLs. 2 in press, 6 new ones (GSOB, Pinyon Ips, Swiss Needle Cast, Walnut Twig Beetle, WBBB, Winter Moth. New Website link: www.fs.usda.gov/goto/fhp/fidls Discussion about how many hard copies are needed and used by folks. Thanks to Kathy for all the work she has done on this! Carbaryl brochure was revised in March 2011 with more pesticide info and is on R-4 website:
- **Western Forest Insect Update** – Iral – Handout on edits accomplished, schedule, etc. Will be cutting down intro. section due to outdated info. and increase the insect sections. Will leave it up to FHTET on how they want to distribute the updated book (i.e. CD, Online, etc). It is really expensive to print – but have enough \$ for a few thousand copies. Have some funding to pay retirees to edit. Dave Miller will do Lepidoptera at OSU; will be completed by spring.
- **Harold's funding for special projects:** possibility for funds in 2011 - Iral –has funding for FY12 – Pheromone control studies with met. data and trap design projects – solicitations for this year – will try to fund 2 to 3 \$15,000 projects. Fettig & Munson, and Eager projects last year travel restrictions precluded getting them done. Eager - Pheromones at different distances measured for plume modeling. Fettig - Verb+ trials collecting met. data in cooperation UT, WYO and CA. Process for funding - Regional/State Rep Group reviews and ranks via a conference call and send to Harold Thistle for final decision. Harold has purchased a lot of met. gathering stations to use on projects. Only 4-5 proposals last year. Last year the money did not get out until June, so maybe we could see if this could be expedited for this year. Decision made by Harold by February.

Atmospheric Dispersion from a Point Source in Four Southern Pine Thinning Scenarios: Basic Relationships and Case Studies paper done by Thistle, Strom, Strand et.al. illustrates what Harold's group is trying show with linking met data to pheromone dispersion. Paper was published in American Society of Ag and Bio Engineers (ASABE). Potential to serve on the review group if anyone is interested. Iral has agreed to continue to send out call letter.

- **SAF update:** Rob Progar Report (SAF presentations discussed by Sheri) – First week of November in Honolulu. Website: <http://www.safnet.org/natcon11/index.cfm>
- **FY 12 – EM/STDP projects updates** – Due by Nov. 1st to WO; already past due dates to Regional Offices. R-5 several continuing and a few new ones, some GSOB pesticide projects. R1-4 - 20 new EM projects, only 1 fire, so completing some rewrites to compete better. Steve Clarke discussed various projects submitted such as EM- Ips reporting and monitoring project, University of Arkansas – Ips and Monochamus relationships, Hazard rating for Ips. Brian – 2 continuing STDP projects. SVS models with good output. Carl – R-4 discussed a few proposals such as MPB impacts on WBP MT/ID border & MPB on OG PP growth patterns evaluation by Brytten, etc., Iral discussed some project proposals – MCH pouch sizes, etc.

- **2012 risk map update – Sheri Smith-** New veg/host layers were supposed to be completed by FHTET in Sept. and adjustments done by field by end of calendar year. Final Map complete by 2012 FHM Mtg. Carl asked about feedback on the veg layers – new input should get in there by Frank Krist. Important to our budgets for FHP and utilizing models for SDI, etc., will be useful in the future.
- **Gail** talked about the **W. Defoliator meeting for Dec 6-7** in Carson City, NV.
- **Meeting location and chair for 2012** – Darren – Munson suggested every other year with video conference on the non- meeting years. That would address the travel budget. Brian talked about how he hopes we will be able to go every year again if we decide that. Bob R. stated that the bark beetle program should be examined/discussed/shared every year as the program is a substantial part of the national FHP budget. There is a lot of \$ going out through FHP/FHM and this is a meeting to discuss all the findings and what is going on with projects. Timing of the meeting was discussed, may be based on what facilities are available and maybe one week later. Darren & Carl offered R-4, Boise or Salt Lake City. Andy is willing to host and offered Albuquerque, NM. Group would like to continue field trips. Region 4 will host next year working it out between Carl and Darren.

2011 Attendees

John	Anhold	USFS Flagstaff	janhold@fs.fed.us
Darren	Blackford	FHP, Ogden, UT	dblackford@fs.fed.us
Roger	Burnside	Alaska DNR, Div of Forestry	roger.burnside@alaska.gov
Kim	Camilli	Cal Fire/Cal Poly	kim.camilli@fire.ca.gov
Stephen	Clarke	USFS, R8, Lufkin, TX	sclarke@fs.fed.us
Tom	Coleman	FHP R5 So Cal	twcoleman@fs.fed.us
Rob	Cruz	FHM, Ogden UT	rcruz@fs.fed.us
Gail	Durham	NV DNR, Div Forestry	gdurham@forestry.nv.gov
Tom	Eckberg	ID Dept of Lands	teckberg@idl.idaho.gov
Rob	Flowers	OR Dep of Forestry	rflowers@odf.state.or.us
Don	Fowler	Contech	don.fowler@contech-inc.com
Andy	Graves	FHP R3 New Mexico	adgraves@fs.fed.us
Laurel	Haavik	UC Davis	ljhaavik@ucdavis.edu
Michael	Jones	USFS, FHP Region 5	mjones@ucdavis.edu
Carl	Jorgensen	USFS-FHP-R-4	cljorgensen@fs.fed.us
Charles	Kerns	Cal State Parks - Torrey Pines	cttk@sbcglobal.net
Ann	Lynch	RMRS	alynch@fs.fed.us
Bob	Rabaglia	FHP, WO	brabaglia@fs.fed.us
Iral	Ragenovich	FHP, Portland, OR	iragenovich@fs.fed.us
Dave	Schumacher	Hercon Environmental	dschumacher@herconenviron.com
Pat	Shea	Retired PSW	
Sheri	Smith	FHP R5 Regional Office	ssmith@fs.fed.us
Brian	Strom	SRS, Pineville, LA	brianstrom@fs.fed.us
David	Wakarchuk	Synergy Semiochemical	david@semiochemical.com