

**Bark Beetle Technical Working Group
Tucson, AZ
October 27-29, 2009**

Tuesday, Oct 27

- 8:00 – 8:20 Welcome, housekeeping items, local information, etc.
- 8:20 – 10:00 Bark Beetle R&D Projects—completed and/or planned.
- | | | |
|-------|-------|------------|
| * MPB | * DFB | * ESB |
| * JPB | * WPB | * Ips spp. |
| * SPB | * FE | * WBBB |
- * Others: Invasives, pheromones, pesticides...
- 10:00 – 10:30 Break
- 10:30 – 11:30 continue Bark Beetle projects
- 11:30 – 12:30 Lunch (on your own)
- 12:30 – 2:30 continue Bark Beetle projects
- 2:30 – 3:00 Break
- 3:00 – 4:45 Status of bark beetles by Region (conditions reports)

* 15 min max per Region *

Suggestions from last year's meeting:

- *Standardize the Regional Reports – single chart/table illustrating trends for specific beetles or a standard form to be filled out by Regional representatives. Completed forms could be sent out prior to (or at) the meeting which could generate questions providing some lead time for answers*
- *A format for figures, standard units (acres, # trees or ha)*
- *Regional reports should address conditions, not other topics*
- *Discourage visuals, i.e. slides of tree mortality*

- 4:45 – 5:00 Discourse by Ken Gibson

Wednesday, Oct 28

- 8:00 – 9:00 Region and State bark beetle prevention, suppression & restoration projects
- 9:00 – 9:30 Stan Helin (District Ranger, Santa Catalina RD, Coronado NF) FireScope planning & implementation efforts
- 9:30 – 9:45 Break
- 9:45 – 10:45 FHP/State discussion of research needs
- 10:45 – 11:30 Updates on specific areas of interest:
- News from WO FHP: *Bob Rabaglia*
 - EDRR update: *Bob Rabaglia*
 - Western Bark Beetle Research Group: *Chris F.*
 - FIDL updates: *Iral*
 - Update of “Western Forest Insects”: *Iral*
 - Common Names: *Brytten? Update*
 - FHTET funding for special projects: possibility for funds in 2010
Harold
 - BBTWG priorities (review from last yr):?
 - Other items to discuss (please contact Joel if you want to be added to the agenda)
 - SAF update?
 - EM or STDP projects
 - 2010 risk map update
 - WFIWC update
- 11:30 – 12:30 Lunch (on your own)
- 12:30 – 2:30 Continue general discussions as needed...
- 2:30 – 3:00 Break
- 3:00 – 4:30 Continue general discussions as needed...
- 4:30 – 5:00 Meeting location and chair for 2009

Thursday, Oct 29

- 8:00 – 10:00 Breakout sessions for informal small group discussions
- 10:30 – 5:00 Field trip to Santa Catalina Mountains

Tuesday – Thursday Poster display

Field trip agenda – Santa Catalina Mountains – October 29

The Coronado National Forest covers 1,780,000 acres of southeastern Arizona and southwestern New Mexico. Elevations range from 3000 feet to 10,720 feet in twelve widely scattered mountain ranges or "sky islands" that rise dramatically from the desert floor, supporting plant communities as biologically diverse as those encountered on a trip from Mexico to Canada.

Views are spectacular from these mountains, and visitors may experience all four seasons during a single day's journey, wandering through the desert among giant saguaro cactus and colorful wildflowers in the morning, enjoying lunch beside a mountain stream, and playing in the snow later in the afternoon.

1. Inspiration Point & Aspen Fire – Randall Smith (Forest Restoration Program Leader, Coronado NF Supervisor's Office) will discuss BAER/Summerhaven vegetation management
2. Middle Bear Picnic – Infested ponderosa pine, Chihuahua pine, dead oak (GSOB), walnut (walnut twig beetle, thousand cankers disease)
3. Mile Post 1 – Rick Gerhart (Wildlife, Fish and Rare Plants Program Manager, Coronado NF Supervisor's Office) will discuss invasive plant issues (buffelgrass)

Potential Breakout Sessions

1. State forest health issues
2. Bark beetle life cycle development
3. Fire-bark beetle relationships
4. Bark beetles & climate
5. Bark beetles & pheromones
6. Bark beetles & silviculture
7. Invasives
8. Other?

MINUTES 10-27 through 29-2009

Ken Gibson – History of BBWTG Meeting Handout – 1988 to present at the end of the day (see Appendix I).

Announcement: Contech (former Phero Tech) acquired Tanglefoot so will be renaming pesticide free lures as Tanglefoot products.

Bark Beetle R&D Projects

Mountain Pine Beetle

- Liz Hebertson - STPD Project- Bark beetle (three species) Fire Research – bark beetle affects on altering fire regime. SB and DFB in review right now. Photo guide website is almost complete now. PP & LPP also in photo guide for fuel guide.
- Liz Hebertson - EM Project–Website using BEHAVE+/FARSITE & ARCGIS to Model Fire Simulations in BB affected stands – Model Fire Spread Intensity across Bark Beetle Affected Landscapes.
- Joel McMillin with Carolyn Sieg (RMRS) and Kurt Allen (FHP Rapid City) – EM funded project looking at MPB-Fuel loading/fire behavior interactions in ponderosa pine in Black Hills. Interested in how post-outbreak silvicultural treatments affect fuels - aggressive thinning, sanitation and salvage. Will model using NEXUS. Next year will do similar plots in DF type in Wyoming.
- John Popp – Lodgepole pine moisture content after MPB attacks. Fraser Experimental Forest 2007 – trees lose moisture even as early as May year after attack – and then immediate drop thereafter. Needle moisture is a flammability issue. Due to mortality had to switch locations and usage of young tree needles to have control samples over time. Discussion of flammability and ignition.
- Steve Munson & Jesse Logan – MPB outbreaks in whitebark pine forest of the Greater Yellowstone Ecosystem – LAS Approach – Extent and Severity of Outbreak – landscape category assigned 0-6 and determine the coalesced outbreak areas and its persistence in spot outbreaks and map the areas. To be published in the Spring 2010. Discussion about whitebark pine- MPB problems and treatments.
- Ken Gibson – MPB Verbenone Flake Test on Individual lodgepole pine in Montana 2009 – Hercon sticker product – using spray gun. Assessed the flake treatment compared to pouch treatments and GLV+ verbenone pouch treatments. GLV+ verbenone has best results in repelling MPB attacks. Flakes did as well as verbenone pouch treatments, but had to have special spray gun to apply it.

- Chris Fettig – Wrapped up studies – Fire Science to publish – Fire/Fire surrogate study in mixed conifer stands and bark beetle-caused mortality afterwards. Burn and treatment studies examining beetle build up in fire damage trees. Borer build up in fire stressed trees.
- Chris Fettig - Individual Tree Protection Study MPB in lodgepole pine in Utah – comparing Verbenone and Verbenone+ effectiveness.
- Chris Fettig – Lab evaluation of four insecticides for MPB control (2008-2010). Carbaryl used as the standard. Used live fresh beetles to do trials.
- Steve Munson – Barbara Bentz – Darren Blackford – ponderosa pine & lodgepole pine MPB Salvage Sale of scorched trees so measuring population densities before fire and after of MPB in the Uinitas. Developing guidelines for fire assessment post fire.
- Steve Munson and Chris Fettig – Fipronil trial using two new formulations – MPB in lodgepole and ponderosa pine. Did not work well at either formulation. Many of the attacked trees still green though.
- Chris Fettig- WBB Initiative Grant- 2005 emamectin benzoate (EMB) and Fipronil, none in spruce, lodgepole pine, EMB provided 3 seasons of protection in ponderosa pine with WPB. This original work will be in Western Journal. EMB licensed to Arborjet now called, “Tree age” for the EMB formulation. PIPA grant injecting EMB and Alamo (Propoconozol) trials in spring and fall. Will be looking at how much concentration is in the trees in the fall and spring as well.
- Robert Progar - Two projects – Efforts to reduce MPB attack in lodgepole pine using Verbenone -2005-2009 – About 50% mortality in untreated with a 10-20% less mortality in treated stands. STPD study with Verbenone – MPB in lodgepole pine in ID and UT. Multi-year Evaluation of Verbenone+ Sanitation to Reduce MPB attacks of lodgepole pine in CA, CO, ID and WY. Verbenone in combination with sanitation trial.
- Barbara Bentz – EMB Project- MPB from San Bernardino north through the Sierras - MPB model development.
- Joel McMillin- MPB trap catches in Pinaleño Mountains during 2009 – highest numbers in late July and early August. 20+/day with only three clerids captured during MPB flight season.

Douglas-fir Beetle:

- Iral Ragenovich – Connie Mehmel and Nancy Gillette Study – Aerial application of MCH to prevent attacks by Douglas-fir beetle – Extensive DFB outbreaks from fires and blowdown - Limitation of bubble caps is labor intensive and access so looked at aerial application of flakes. In W. Washington – very low with 150 g/acre application but E. Washington no attack at 12 or 75g/acre but increased at 150g/A. Need more work in W. Washington. Look at National FHP IAT website for study in Mexico with MCH bubble caps.
- David Wakarchuk working on DFB inhibitor – MCH analog

Spruce Beetle

- Steve Munson – Hansen et al. silviculture treatment study - Treated and Untreated sites – Western Journal of Applied forestry article coming. Treatments before an outbreak make a difference – especially when age class diversity left. Mixed understory makes a difference vs. even aged stand. Retrospective study. Liz did a study on the Fishlake – BA reduction at the beginning of the outbreak, but as the population pressure builds, it eventually takes out thinned stand as well.
- Ann Lynch – Spruce aphid and *Nepytia* study – defoliation increases susceptibility to spruce beetle. Liz and Ann discussed SBW on DF, ES, BS and how it affects SB success in defoliated stands. Concern about loss of seed source.
- Steve Munson- Deep coring lakes on SB and subsequent fire activity. Wasatch Plateau – short core 800 yr extent and deep core analysis 10,000 years being done by students from Central and South UT. Minor disturbance about 600-650 yrs ago and about 150 yrs ago spruce removal by settlers detected in short core analysis. No landscape altering fire found so far.
- Ann Lynch – Forest replacing events that were fire events but uncertain whether or not they were spruce beetle events or not. Discussion about lake core vs. dendrochronology research accuracy and advantages.

Jeffrey Pine Beetle

- Tom Coleman – Andy Graves & Steve Seybold research on effects on drought and resin chemistry – Sierras to San Bernardino. Lab work to be done. JPB bait evaluations.

Western Pine Beetle

- Chris Fettig – Verbenone-PP- WPB study – 5 gram pouch over a 3 year period. 60 day treatment interval. Verbenone is not effective on WPB in ponderosa pine. Efficacy area of pouch is limited. 7 different treatments. Individual tree protection with Verbenone+ (4 blend) on WPB on PP- significant reduction in WPB attacks with Verbenone+. Study with fipronil on PP on WPB.
- Rich Hofstetter – PhD student work at NAU – Host tree chemistry in PP chemo types in SW US. Resin composition differs by PP population and check and sees if beetles attack different populations by chemotype. Using logs vs. live trees to do study. Beetles preferred to go into the 3-carene log versus the alpha pinene log, but do better in the alpha pinene log. May be related to the performance of the symbiotic associated fungi.

This fungus does best in average tree. Lots of yeast on the mycangia of WPB grow fine in pine resins and the yeast volatiles stimulate the growth of the mycangial fungi, but reduce the growth of *Beauveria* and blue stain and reduce impact of resin volatiles on myc. fungi, and may protect myc. fungi from antagonistic fungal species. Another project – acoustic communication in BB – what structure/organ? What frequencies are beetles hearing? Publication coming out.

IPS

- Roger Burnside – *Ips perturbatus* (Northern spruce engraver) in white spruce slash – verbenone and conophthorin tested for protecting white spruce slash from successful *Ips* colonization. Preliminary data shows reduced attacks and exit holes on semiochemical-treated slash. Slash Treatment Study: Dispersed or firewood decks /scored or un-scored bolts (4 treatments plus untreated control plots); fall treatments created August 2009; spring treatments to be completed in May 2010 (not attractant-baited). *Ips* attacks, *Ips* exiting slash (exit holes) and residual stand attacks to be evaluated. Project long needed in AK due to paucity of statistics-based *Ips* slash treatment data and to develop slash management recommendations for landowners during harvest, thinning operations, fire fuels reduction treatments, etc. Two year STDP project.
- Pinyon ips with needle dryness change over killed by ips vs. dead from other agents, & branch and bole properties and how they burn.

Southern Pine Beetle

- Stephen Clarke– TX – update of the SPB Bible: SPB II is almost complete. Bob Coulson and Kier Klepzig are the editors.
- SPB web portal designed in cooperation with FHTET is operational–each state uploads data on SPB infestations into the database. Tracks volume and value lost. New SPB National Forest System database up and running as well: SPBIS.
- SPB populations in latent phase in LA and TX for several years. Several projects underway, including trapping studies to see if beetles are present in low numbers or are locally extinct.
- New sp. of *Dendroctonus* in Mexico and Central America: will be named *D. woodii*. Steve collected *D. frontalis* and the new species in Guatemala and Belize.
- Spring survey for SPB done each year – instituting fall trapping now – every bit as accurate as spring trapping.

- Injection work by Don Grossman – Emamectin benzoate (EMB) injections successful for 3 yrs, while fipronil was not successful. Tested EMB plus a fungicide this year, but SPB pressure was too low to have a valid trial.
- FHTET hazard rating model is being validated.
- Brian Strom has started a website to post results of elution rate trials. Brian also is working on a SPB loblolly pine– management scenario model: SPBLOB. Brian Sullivan continues working on endo-brevicomin. He has demonstrated it is a potent attractant when used with frontalinal and host volatiles.
- It has been about 11 years since our last infestation in Louisiana or TX.
- Websites for SPB:

SPB hazard maps: http://www.fs.fed.us/foresthealth/technology/nidrm_spb.shtml

Elution rate data: www.fs.fed.us/foresthealth/technology/elution_rate/

SPB data portal: http://svinetfc12.fs.fed.us/SPB_DataPortal/DataEntry.aspx

SPBLOB: www.srs.fs.usda.gov/pubs/qtr/qtr_srs114.pdf

Fir Engraver Beetle

Nothing

WBBB – *Dryocoetes confusus*

- Joel McMillin, Jose Negron & Rich Hofstetter- Felled corkbark fir and spruce are being used to determine WBBB and spruce ips (*I. pilifrons*) life cycle development in Arizona. Brood sampling being conducted on both tree species. Ambient temperature data being collected from north side of standing trees, top aspect of felled spruce trees, and north aspect of felled corkbark fire trees. Hobo temp probes being used to measure cambium temperatures. Ambient and cambium temps reached 40° C on top aspect of spruce logs, while ambient and cambium temps north side of fir logs were generally less than 30° C. Spruce ips attacks last week of June, egg hatch on July 9th, callow adults by September and all adults with some limited emergence by Oct 15. WBBB attacked in early July and still in mid- to late-instars in October. Emergence cages and temperature probes in addition to the above work and may be used to model climate effects on life cycle development.

OTHERS

- Tom Coleman - Gold spotted Oak borer- 70 sites study – only in San Diego County so far. Drought is not a major player. Native to AZ (& Mexico) and 2 parasitoids were reared from infested material collected on the Coronado NF in southeast AZ. Risk assessment work and systemic

- insecticide work. Firewood management – tarp or bake – did not work so trying chipping study. 15% mortality in one area of San Diego County. Trying to tease out the biology –where it is and how to control?
- Steve Clarke - Soapberry Borer from MX has come in and little knowledge about it known. Poor success trapping them. Think it has one generation/year. *Agrilus* species.
 - Steve Munson- Mediterranean pine engraver – How fast is it dispersing – last year release study away from any hosts to see how they dispersed – used baits. Most caught 100 to 500 m from release site with a few at 600-800 m. No *Othrotomicus erosus* found in UT or ID this year.
 - Thousand Canker Disease –*Geosmithia* fungi -with walnut twig beetle in Arizona walnut – ID, OR, CO found. No lures developed for this insect yet.
 - Chris Fettig – Drift resulting from ground based sprays of carbaryl to protect individual trees from bark beetle attack in W. US.

Regional Reports

R-1 - Ken Gibson

MPB in MT Helena south mostly in lodgepole pine and some whitebark pines (W. MT), still growing rapidly. Data from ID – over 540,000 acres in 2008. 2.3 million acres Region wide in 2008.

DFB – 33,700 acres in 2008 region wide

WBBB - SAF 66,000 acres in 2008.

FE in ID most important BB affecting S&P lands in N. ID 218,000 acres region-wide in 2008

Ips pini common problem for IDL

R-2 – Tom Eager

Previous 5 yr data – slides – MPB 1.6 M Acres in one year last year- dead tree problem now. Political Issue now – property values and fire.

Decrease crown fires but increase in total fuel loading.

SB- next big story

DFB- decrease on charts but is higher than numbers shown in surveys.

WBBB- decreased over time since 2005.

FE- 18,000 acres in 2007 but now died down.

Aspen Mortality – peaked in 2007 still high in 2008

Pityophthorus in pinyon –twig beetle.

Thousand Canker Disease interest – Sky Stephens

R-3 – Ryan Hanavan

AZ –see Handout Sheet – mild activity this year only 2081 acres affected in 2009. Mostly *Ips pini* and DFB and true fir beetles. Annual precipitation for 2009 is less than 50% for many areas of Arizona and expecting increase in beetle activity in 2010. MPB showing up in places in new places on southwestern white pine.

NM – 37,750 acres total mostly spruce-fir type (20,000 acres) then DFB and FE as well PP with WPB and Ips.

R-4 - Dwight Scarborough

S ID – MPB 2002-2008 slides. Increased significantly in 2008 – wilderness is really loaded up. LP and WBP affected. In 2009 still in same acreages. Now in PP as well.

DFB – trending down over the last 4 years.

SBW in all areas.

WPB way down over the last 4 years

Ips pini – up and down every other year – better snowpack last two years.

SAF – continued to decline.

- Liz Hebertson

MPB- extensive throughout R-4 decreasing except on B-T and Uintas all high elevation WPs losing host trees so decrease in acres but tree numbers increased.

DFB - increasing but acreage decreasing especially with WSBW increase

Pine and Pinyon Engraver Beetles – has decreased to 2008

SB- UT – running out of host type so decreased over last 4 years – issue with ski areas

FEB – dropped off over the last 4 years

SAF – up and down over the last few years

JPB – on the upswing still

Gail Durham- pinyon scale and sawfly in NV in 2009 over 700,000 acres total with increase in pinyon ips in W. NV. JPB/*Ips pini* also on the increase in W. NV.

R-5 - Tom Coleman

Increased mortality from BB – 3 yrs of drought FEB, RT, JPB increases.

MPB LP and WBP mortality increase and on singleleaf pinyon in S. CA

Ips on PP increase

Gold spotted Oak Borer continuing to be significant

R6- Iral Ragenovich (2008 report)

MPB down slightly 880,000 acres in 2008 – LP mostly and some

WPB – OR- 24,000 acres

Ips up a bit

DFB up 101,000 acres mostly WA due to blow down

SB heavy in NC WA – spiked in 2008 due to fire

R-8 –Steve Clarke

SPB populations declined in TX and LA since 1992 when Steve started – Good Job!

SPB populations at very low levels across the south.

Ips activity up in many areas due to drought.

Soapberry Borer from Mexico has invaded Texas and is killing soapberry trees. Little knowledge about the life cycle, but probably one generation/year. Poor success trapping them. *Agrilus* species.

R-10 - John Lundquist

SB- down from peak in 1990's and now stable around 70-60,000 in 2008. Moving into the Alaska Peninsula, especially northward. Still major mortality factor.

Ips is slightly down based on ADS – 32,000 acres now staying pretty constant.

Discussion of Prevention/Suppression projects

R-8 SPB Prevention & Restoration Program- Wes Nettleton

The Southern Pine Beetle Prevention and Restoration Program is a proactive strategy to minimize the impact of the South's most devastating native pest. Forest Health Protection and the Southern Group of State Foresters have cooperated to reduce the risk of SPB on more than 800,000 acres since 2003 and help more than 8,000 forest landowners through cost-share payments. In 2008, R8 began using 30 meter resolution SPB hazard maps to prioritize projects to fund in order to maximize our fund allocation to achieve the greatest landscape level impact.

On 10 Aug 2009, the IRS has ruled that cost-share payments to landowners under Forest Health Protection (e.g. SPB Prevention Program cost-share payments) are eligible for exclusion from gross income under section 126 of the Internal Revenue Code, like other forestry programs that previously received exclusion (FLEP, SIP, FIP, EQIP, and WRP). The ruling and a briefing paper are attached.

R-5 - Cyndi Snyder - CA

Handout on prevention thinning accomplishments for 2009- WBBI funds of \$2.99 million on 8,238 acres of NFS lands and \$53,000 on 100 treated WUI Acres. Western Pine Shoot Borer on the Lassen -\$15,000 on 100 acres
Chips to co-gen plants to CA and OR. Anderson CA is a main one.

R-4 Dwight Scarbrough

Lowman Ranger District on the Boise NF – 120 acres at campground complex at lakes and Stanley Lake worked last 3 years on 4 treatments – Felling and peeling, Carbaryl treatment with 50 foot buffer, TSI sale for hazard trees, etc.

Steve Munson – Carbaryl brochure out with Fettig. Problems with applicators rates or applications – using ½ the recommended rate or not good coverage. Take tank samples and have someone on site during entire treatment. Samples are \$100/sample cost

IDL – Tom Eckberg

CS admin process in Stanley Basin Private landowner treatments – 2004 – Jim Reinholt and SNRA partially salaried to do outbreak work – 5 yrs administered treated 1275 acres of infested tree removal, and 1,400 acres of 40,000 trees treated with Carbaryl and 367 acres additionally treated. Had one contractor that did not perform as well as expected so they did not re-contract with him. MPB on LP and some DFB on DF. Used some MCH and Verbenone (near the water). Munson – Problems early on this project with top kill so they district held a workshop for the contractors and landowners to go over what procedures were needed to do successful spraying. Also, Steve discussed problems with Verbenone if sanitation of infested treated not done. If done, fairly successful – 5 % mass attack where treated. Mass attacked trees were not showing egg laying and very small galleries. Blue stain was in the trees. May be re-emergent females that don't lay eggs because they don't mate again. Discussion about problems with *Ips* killing trees not just *Dendroctonus* species.

Discussion regarding State folks trying to juggle huge workloads that includes Stimulus, Emergency funding and redesign projects as well as PSR projects and ADS, etc and not being able to handle the increasing outbreaks on S&P lands. Also issues with states not having enough funding to match federal prevention/suppression dollars.

Iral Ragenovich – MCH DFB Lake Chelan Project – Fire in 2007 – spotted owl habitat and recreation area. Helicopter applied the MCH flakes with pods on side of helicopter. 1lb/ac = 58 grams AI/ac. - 423 acres treated in 20 minutes. No attacks in treated area but attacks in untreated plots with traps.

David Wakarchuk – Summary from a three year treatment study in a mixed MPB/WPB infestation of ponderosa pine on a ranch in southern BC. Beetle Block (verbenone) and GLV's were used in conjunction with trapping and sanitation logging with good results. Two treated areas were approximately 10 ha each. One 10 ha area contained the highest value trees which were next to heritage buildings. These trees were treated with verbenone and GLV for three years and remained free of beetle attacks. In the 10 ha area adjacent to the high value trees a grid of 32 funnel traps baited with MPB or WPB lures were deployed in the second year to help reduce the beetle population. The trap grid removed +20,000 beetles in a ratio of approximately 3:1 MPB:WPB. Infested and dead

trees were removed from the site as well as areas outside the treatment zones at the start of year three. At the end of the third year approximately one half of the trees in the 10 ha trapping zone remain healthy. The prognosis for the trees remaining at the ranch is very good and the ranch remains a green while surrounding areas have few live pines. The ranch management was pleased with the results.

Joel McMillin – Managing slash to minimize colonization of residual trees by *Ips* and other bark beetle species following thinning in southwestern ponderosa pine. Observed high levels of RTB attacking ponderosa pine in a stand that had been thinned and green slash chipped in May 2009. It may take a couple of years for these trees to die. Previous work with chipping has shown that timing is important – chipping during fall through winter (February) will not have problems, i.e., chip after beetle flight. See slash paper: <http://cals.arizona.edu/pubs/natresources/az1449.pdf>

Ken Gibson discussed the website that was collaboratively developed with lots of BB information for landowners on it. <http://www.beetles.mt.gov/> Check it out.

Firescape: Santa Catalina and Rincon Mountains – Preserving our mountains by thinking big. Stan Helin Santa Catalina District Ranger, Coronado National Forest

Restoring balance and sustainable landscapes. Managing fires across LARGE landscapes. 263,000 acre NEPA to be done. Collaborating with NAU and expertise sharing. Partners = media and other agencies and public, and other involved land management agencies: NPS, FS, State Lands, Tribes, etc. Want to paint with fire for resilient and fire adapted ecosystems built into the landscape. Have spent a year working with the public and other agencies to get here. Will be at least another year to get there. Our group suggested that the Forest looks at “resiliency” for Forest Health not just fuels and fire.

FHP/State discussion of research needs

1. Steve Munson – Spring vs. fall treatments of Carbaryl or any of the Pyrethroids that are registered – MPB in spring problem around water sites so looking for fall applications if possible and non-target issue of bees in the fall, but don't know how efficacious it is in the fall? LP and PP treatments. Would the Pyrethroids be efficacious through the winter?
2. Steve Munson - Also, need an anti-aggregant for spruce beetle. Blue spruce seems to be more resistant so maybe there is something to look at there. Trap bioassays or other trials with MCH, etc, or look at the beetles themselves.

3. Liz Hebertson discussed the need to have a consolidated guide for various bark beetles to determine what level of trunk attack is required to kill host.
4. Liz Hebertson– FINDIT model needs for more western bark beetles such as pinyon ips. FVS – risk model feedback?
5. Tom Eager – MCON forests – DFB hit- incorporate MCH with fires to prevent scorched tree mortality study.

UPDATES OF INTEREST

News from WO – Bob Rabaglia

– 2009 WBB Funded Projects

P	21,591 acres	8.156 M\$
S	22,008	3.673
Other	1,470	1.139

Prevention Projects only

Coop	1,636 Acres	0.754M\$
NFS	19,955	8.165 M\$

Suppression

Coop	425	0.046 M\$
NFS	21,390	3,371M\$
DOI	193	0.256

Proposed 2010 Funding

Based on initial program direction from 2009. President budget in 09 127 million dollars President's now =122 million, today closer and more than this or 2009 funding for FHP so WBBI proposed

R-1 = 1.350 M\$,
 R-2 = 1.664 M\$,
 R-3 = 0.788 M\$,
 R-4 = 1.431 M\$,
 R-5 = 1,221 M\$,
 R-6 = 0.933 M\$,
 R-10 = 0.307 M\$,
 Total = 7.68 M\$

with R- 8 at 7.9 M\$.

STDP \$800,000 (FHP dollars only)

EM \$899,000

EDRR:

Pilot Project 2001-2006:

Develop protocols

5 new N> Amer. Spp

National Implementation 2007

1/3 of states each year

Only one new exotic found in 2008. *Xyleborinus occidentatus* in AL and LA

Pityophthorus junglandis in CA and NM

2009 *Xylosandrus mutilatus* in AR, *Scolytus fagi* in PA, *Xyleborus seriatus* in ME and NY, began project to ID fungal associates of new finds. (i.e. red bay ambrosia associates are real killers)

EDRR Beyond 2009

- Review of project
- Summarize findings
- Adjust protocols?
- Prescreen? Fewer States?
- Add taxa?

Chris Fettig;

WBB Research Group update – October Symposium Proceedings now available – contact Jane Hayes to get a copy of PNW GTR 784 search website - http://www.usu.edu/beetle/publications_bark_beetle.htm

Or

http://www.fs.fed.us/pnw/pubs/pnw_gtr784.pdf

Chris discussed the structure changes to the group and individual accomplishments. Increase coordination and communication with researchers.

FIDL updates: Iral Ragenovich

Handout:

7 revised and published in 2008. -2,11,93,116,119,139, 149 = MPB, JPB, rusty Red Stringy Rot, AZ 5 Spine Ips, Western Tent Cat, Large Aspen Tortrix, Decay and Discoloration of Aspen.

Planned Revisions: 36, 49, 52, 55, 60, 62, 73, 86, 87, 90, 123, 147, 150

Planned New FIDLs: Northern Spruce Engraver, Pinyon Ips, Schweinitzii Root and Butt Rot of Western Conifers, Swiss Needle Cast, WBBB, Winter Moth

Website: www.fs.fed.us/r6/nr/fig/wo-fidls/

Update of “Western Forest Insects”: Iral

Handout of completed and In Process revisions of Insect portion of the book. Iral contracted with Bill Ciesla to do a number of the revisions. Promised revisions list as well. Would like to have this book updated by the time she retires. Still has a lot of editing work, etc. New issue hopefully will be in color. As the new revisions are being completed they are being posted on the website. The whole book is scanned on Region 6 FHP website (<http://www.fs.fed.us/r6/nr/fid/wfi/index.shtml>) so that you can download the portion you need.

Common Names: Nothing new to report

SAF meeting was in Orlando, next year is Albuquerque – New trends in S. Insects & Disease was this year’s theme.... Speakers were picked based on S. US Insects and Disease.

This coming year – Ecosystem and Fire may be our track we fit in. Will have to look at the tract we fit in. John Lundquist suggested that we with WBBRG come up with our own track and agenda. We would probably work with Pathology group as well. So we have a full day with ½ day for each discipline. October 2010 at <http://www.safnet.org/natcon10/index.cfm>

BBTWG Priority Revisit declined.

EM or STDP projects

Rob Cruz discussed our IW Base and Fire Projects. Liz Hebertson discussed the 5 needle MPB research project submitted. Various proposals by the group were discussed.- Chris Fettig, Tom Eager, Steve Clarke, etc.

Jane Hayes (PNW) with University of Arizona and Mexico collaborators - Habitat suitability model for *Dendroctonus rhizophagus*. Has been expanding its range in Mexico and now near the Mexico-US border. Habitat suitability models to improve detection of *Dendroctonus rhizophagus*, a novel pine bark beetle, in the Mexico-U.S. transborder region.

Ken – Sandy Kegley – Verbenone flakes in WBP application aerially again.
Rich- Test Sound System with other BB and wood borers. – Acoustics
Rob – RMRS in Bozeman – Native release of biocontrols Toadflax and Leafy Spurge after fire.

Cyndi – Dev of HRI mapping in HI forest
GSOB
Invasive Plants for Forest Lands

GSOB

LTB JPB probability model development- Joel Eagan

John Lundquist with CO State – Spatially model Alaska total mortality based on the limited ADS being done annually and trapping data and glacial change data and bio-indicators.

Brian Strom put in one for SPB modeling .

Evaluation panel for STPD meets in 1st week of December with January timeframe for knowing what was selected. Each Forest Service Regional representative is supposed to get input from the regional entos and pathos and provide it to the Directors to drive the Annual Priority list. Form and application changed this year from 5 pages to 2 pages.

2012 Risk Map Update

No Updates other than there will be an update at the annual FHM meeting. AK is still waiting for high resolution mapping to work off of to develop AK risk map

WFIWC update – In Flagstaff April 5-8, 2010– Theme will be “Living on the Edge” (lots of change in the SW US). Clarke suggested that if you go with an Aerosmith song use, “Dude, looks like a lady”. Joel McMillin, Rich Hofstetter, Mike Wagner, Tom DeGomez and John Anhold are on the organizing committee. Field trip still being arranged. Info is on the website at <http://www.fsl.orst.edu/wfiwc/>

Review of WFWIC Potential List for Breakout Sessions.

Rich Hofstetter reminded folks about the August 10-15th 2010 Bark Beetle Training session.

FHM National Meeting - Rob Cruz – National FHM meeting is Jan 25th - 28th with a theme of Climate Change in the Southwest Forests.

Next Year’s BBTWG Meeting – need volunteers. Steve Munson recommended that R-2 look at Rapid City & Black Hills with Kurt Allen being the contact up there. Carl Jorgenson was ok with Boise which may work as well.

Everyone was ok with doing Rapid City next year for the BBTWG Meeting as long as Kurt was ok with it.

FHTET Application and Technology - Harold Thistle – FHTET Application and Technology funding for dispersion and elution of semiochemicals. Criteria for funding will be distributed by Joel. Looking at about \$15,000 to subsidize physical data collection on existing projects. May get more funding later on to allow more funding to be used here. Protocols need to be developed for consistency and volunteers from the group are invited to work with Harold on

these. Process to review proposals will be done as previously. Harold will supply the criteria required for the proposals. Concerns were expressed about getting better communication to states and absentee members on all of these proposals. Discussed having a state representative on the review panel as well as the Fed representative. Harold needs the ranking by end of January. So we will look at a deadline of January 22, 2009 to get proposals in.

Break Out Session for Small Groups

BB and Climate Group:

This group discussed modeling vegetation based on elevation gradients, using Land Sat data to model historic defoliations multiples and how the signatures have change across the different elevational zones. Sky Stephens discussed looking at insect indicators along these elevational gradients. Discussed the definition of climate change. John Lundquist discussed results of his N-S trap line for insects – Eastern Spruce Budworm, which was one of the trap targets – second year saw this insect move 20 miles north. The group discussed the need to set up a structured long term study to show this as a true trend – get climate data, more sample points, etc to make it statistically valid. Would have to model to avoid the long term monitoring over time. Maybe doing the elevational gradient and location monitoring may replace the long term monitoring. Tom DeGomez talked about the upcoming Forest and Climate Change conference they will be sponsoring and the new mother of all extension websites: <http://www.extension.org/> . This website will have a section for Climate Change and forests developed. Steve McKelvey brought out the idea of adding on bark beetle monitoring on FIA plots in at least a subsample of the plots for climate change monitoring based on the insect population monitoring.

BB and fire Group:

Liz Hebertson, Dwight Scarbrough and Joel McMillin discussed data gaps in efforts to model bark beetle-caused changes to fuel loading and fire behavior. Liz talked more about their team's effort to create photo guides of fuels during different phases of bark beetle outbreaks. Also discussed the possibility of arranging a session at WFWIC to figure out where we need to go from here.

BB and Pheromone Group:

No report

Appendix I.

BARK BEETLE TECHNICAL WORKING GROUP
A Brief History by Ken Gibson & Iral Ragenovich
1988-2009

(<http://www.fs.fed.us/r6/nr/fid/pubsweb/bbtwg.shtml>)

1988: Meeting held in January, in Lakewood, CO. Titled “Western Bark Beetle Semiochemical Workshop.” Chaired by Dennis Hamel, WO. Held in response to widespread use of mostly MPB attractants, beginning in 1984. Use and effects not well monitored in 1984 and 1985. In 1986, EPA ruled they required registration, so a moratorium was placed on their use. Some use in 1987, but by then, just about everyone realized we needed to get together to “compare notes!” Thirty-seven attendees comprised of US Forest Service (FHP & Research), BC Ministry of Forests, several western US states, universities, and Phero Tech.

1988: September, Boise, ID. “Bark Beetle Suppression Working Group”—set up by Jim Space, WO. Nine folks (Jed Dewey, Bob Averill, Dave Holland, Gene Amman, Gary Daterman, Tom Hofacker, Ken Knauer, Ralph Thier and Iral Ragenovich) met to develop guidelines for funding bark beetle suppression projects in FY89. “Real” forerunner of our august group?

1988: Meeting held in October, Las Vegas, NV. Called “Bark Beetle Pheromone Working Group.” Chaired by Dave Holland. Nine in attendance (all except Iral and I now retired!) Discussed 1988 pheromone projects—mostly MCH and verbenone, some MPB “bait and cut” work being done.

1989: Held in February, Seattle, WA. Twelve of us survived “blizzard” conditions to make it to the meeting! Chaired by Dave Holland. Verbenone, MCH, lethal trap trees, that sort of thing. Plans for field season, 1989 discussed.

1989: October, Boise/Ketchum, ID. Now the “Bark Beetle Working Group,” chaired by Dave Holland. Discussed work done in ’89 and that proposed for 1990. Nineteen in attendance.

1990: December, Vancouver, B.C; hosted by Phero Tech. Mostly a discussion of PT’s products and services; but also discussed US projects. Thirty-three in attendance.

1991: February, San Bernardino, CA. Now calling ourselves the “Western Bark Beetle Semiochemical Working Group.” Chaired by Tom Hofacker, WO; 21 in attendance. Started taking on present format of reviewing past projects and discussing upcoming ones.

1991: October, Portland, OR. Now called “Bark Beetle Steering Committee” and once again chaired by Dave Holland. Charged with “prioritizing” upcoming bark beetle and pheromone projects—28 of us there.

1991: December, Reno, NV. Another meeting pretty much devoted to bark beetle pheromones. Chaired by Dave Holland, only 12 there. Lot of discussion on MCH registration and verbenone use/testing.

1992: October, Portland, OR. Chaired by Dave Holland. Reviewed past projects, prioritized ones for '93; started talking about a “strategic plan” for bark beetles; 28 of us in attendance.

1993: February, Salt Lake City. Mostly concentrated on Bark Beetle 5-Year Plan. Chaired by Iral in Dave’s absence. Held retirement get-together for Gene Amman. No attendance figures located.

1993: October, Albuquerque, NM. Chaired by Iral. Calling ourselves “National Bark Beetle Task Force and Steering Committee” then. Completed “Five Year Plan” (Issued in May 1994); reviewed past and future projects. Attendance not known—but well represented.

1994: October, Whitefish, MT. Chaired by Iral—28 in attendance. Reviewed past and future projects; set priorities for future ones. Called “Bark Beetle Steering Committee” once again. First meeting with a “field trip.”

1995: October, Stateline (Lake Tahoe), NV. Chaired by Iral. Attendance not known. Prioritized '96 projects after reviewing '95 ones.

1996: September, Kenai, AK. Chaired by Iral and Ed Holsten. Still reviewing projects and setting TDP priorities. About 25 in attendance.

1997: September, Brian Head, UT. Iral/Steve Munson, Chairs. New “TDP” process, now called “STDP” and we lost our status as a “Steering Committee!” No longer reviewed new proposals. Now reviewing past projects and discussing upcoming ones.

1998: September, Vail, CO. Steve Munson/Ed Holsten, Chairs; 27 in attendance. Regional status reports and upcoming projects—opportunities for cooperation and coordination.

1999: October, Reno, NV. Tom Eager, Chair (Started current system of previous-year host becoming current-year chair). Once again a review of bark beetle conditions, past and future projects. Found no attendance figures.

2000: October, Coeur d’Alene, ID. Chaired by Sheri Smith; 27 in attendance. Regional reports (major DFB outbreak at the time in northern ID); project summaries for 2000 and plans for 2001.

2001: October, Taos, NM. Chaired by Carol Randall; 32 folks in attendance. Pretty much the same format. Discussion of need to review the bark beetle “strategic plan,” first issued in 1994.

2002: December, Reno, NV (a last-minute replacement for Homer, AK!). Chaired by Joel McMillin. Thirty-eight disappointed folks in attendance—but we still had a good time! Same format. Developed a “statement of purpose” for “Bark Beetle Technical Working Group.”

2003: November, Durango, CO. Chaired by Joel again (not sure why!). Thirty-six in attendance. In addition to regular format, given the assignment to discuss how we would allocate special “western bark beetle” funds. Set up at committee to review proposals.

2004: October, Homer, AK. Tom Eager/Ed Holsten, Chairs. About 50 in attendance—no wonder! In addition to regular format, reviewed specially funded projects and discussed format for reviewing new ones. Also talked more about renewing the “strategic plan.”

2005: October, Midway, UT. Brytten Steed, Chair; 47 folks there—big crowd (one of which was Rob Mangold!). Normal format—reviewed specially funded projects; discussed the updating of the 2002 Western Bark Beetle Report (seems to have replaced our “strategic plan”). Began working on our “Research Priorities List.”

2006: October, Fairmont Hot Springs, MT. Brytten, Chair. Forty-one in attendance. Same reporting format—conditions by Region and on-going or completed projects. Refined “Research Priorities List.”

2007: November, Portland, OR. Chair, Ken Gibson—42 folks in attendance. Similar format for reporting projects. Completed our “Research Priorities List” (attached to this year’s agenda).

2008: October, South Lake Tahoe, CA. Sheri Smith, Chair. Attendance not known—about 45 or so? Similar agenda; in addition report on FIDL and WFI updates by Iral. Those are coming along—sort of...

2009: October, Tucson, AZ. Joel McMillin/Rich Hofstetter, Chairs.

Appendix II.

ATTENDEES:

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