

SPB Working Group Meeting 2010

Wilmington, North Carolina

Our gratitude to Valli Peacher for transcribing these notes, and our sympathy for having to listen to all this a second time.

Stephen Clarke: State of the SPB Union Address.

Five years ago in Austin, TX, I declared that we were doing lousy. There was some disagreement with that assessment, but fortunately a few others shared my view and wanted to change things. The problems I listed were:

1. lack of the necessary data collection – a lot of data on SPB outbreaks and infestations wasn't being collected.
2. lack of consistency – everyone was collecting data their own way.
3. lack of credible annual reporting. We reported acreages and a lot of information was grabbed out of the air.
4. lack of internal communication and cooperation (not much going on at that time).
5. lack of accountability.

We needed to determine what data should be collected, utilize a common database if possible, create an annual Accomplishment Report that meant something, update the SPB bible, utilize a common website, and turn the SPBWG into a real working group instead of a place to get together before the actual work conference started.

Where are we now?

The data portal is operational (common database). The new SPBIS is ready and only needs documentation, though the User's Guide is finished. The SPB Prevention Program is going strong. The SPB II is written or should be available soon. SPB populations are at extremely low levels except in Virginia. We have SPB preparedness plans in place and the hazard rating system in development.

What is the Current state of union?

It is still lousy? I would probably say the SPBWG is now like a honey bee colony. We are working together and producing sweet products. However, there still are problems. Like honey bees we have a *might* problem: we *might* enter the data, we *might* make detection flights, etc. As Kier mentioned, we have “ccd” – which I think stands for **colony complacency disorder**. Because populations are at such low numbers, we tend to forget about SPB. We must be prepared when populations return.

What are some of the current concerns we should be addressing?

1. Loss of expertise. Not only from this group, but from in the field as well. In Texas, a lot of people that have been through outbreaks in the past have retired, and most of the new people have never experienced a SPB outbreak. They don't realize the time, effort, and funding required to manage an outbreak.
2. Prevention and suppression funding are tied together. It would be nice if prevention funding was stand alone so we didn't have to worry about pulling funds away from prevention and putting it in suppression during outbreaks.
3. The Forest Service ability to implement cut-and-remove is still lacking. The timber sale is still the instrument utilized to implement C&R. We are lacking sawyers available to do the work. Most outfits have moved from chainsaws to mechanized equipment for tree felling, so it may be difficult to get that equipment to the infestations.
4. Detection methods are limited. Due to the recent aerial survey plane crash it will be even more difficult to have the aerial survey detection we need. Do we use satellites or just wait for spots to get big enough to see from the ground?

Overall I think we are in much better shape than we were five years ago. Everything seems to be going well. We must wait until the next big south-wide outbreak before we know for certain that the situation has improved.

Tony Courter – SPB Data Portal

The data portal is a region wide internet data management tool that allows everyone to put their SPB infestation data into a common database. It has real time data validation to address consistency problems. We have developed an automated upload facility so that you can manage on your own data in Excel, save to a comma delimited file, and then upload those files. The

portal has consistent reporting functionality and you can view your data onscreen before downloading into a comma delimited file. It has a GIS mapping interface which allows the user to view the actual distribution of SPB infestations.

The portal came online on Christmas Eve of 2008 and in 2009 people could actually enter live data into the program. There are state-based access roles so that every state can see the other states core values but cannot see the other states proprietary fields. The core fields are latitude and longitude, spot number, detection date, state, county, acres, volumes in cu. ft. and value in dollars. We calculate value from quarterly Timber Mart South data. Other important fields are owner type, (ex. non industrial private forest – NIPF, State, USFS, other Fed). We added sections for inputs from aerial detection surveys, ground checks, management actions, and harvest data. We calculate volume two different ways: ideally by average basal area times 1/3 avg. height. per acre. If those data are not available, the program will calculate volume with rough calculations of 3000 cu. ft/ acre for market size sawtimber; 2000 cu. ft/acre for chip-n-saw; and 1000 cu. ft/acre for pulpwood. If market size class is not specified, the default is chip-n-saw. Calculated values have orange labels so the user has a visual clue of the real data vs. calculated values. The program also calculates number of trees.

Universal upload utility demonstration. The user must specify the name of file and then map their fields to the database fields. The user hits the submit button and the data will upload. A downloadable log file is created to document all data validation and calculations. All calculated values and those records that do not upload due to failing the data validation process are written to an exception report. This is a comma delimited file that the user can easily fix on the fly. For example, if all your records fail, it might be easier to download the exception report, fix the data in Excel, save back to CSV format, and then upload. If only a few records fail, it probably would be easier to fix them interactively while you are still in the interface.

Reporting interface. There are no current data in the portal for 2010. The report from January 1, 2009 to December 31, 2009 returned 101 SPB spots totaling 192.6 acres, with a volume of 388,000 cu. ft. and an estimated value of \$252,000. Users can query the data by state and by county.

Mapping interface. Mapping will be updated when ArcGis 10 is released. It will look better and perform faster.

What is next? The Mapping utility will be redesigned. We will modify the standardized reporting, pivot tables, and summation of values to make more sense and look nicer. I'm working on a shapefile upload utility program. It will project your information from the projection you used into geographic NAD83. Users will need a projection (PRJ) file. The user still has to map their fields from the shapefiles DBF file. As a minimum you will need the SHP, SHX, DBF files which contains the actual information and the PRJ. If you specify a file that doesn't have the right extension or the main file name is different, the program will let you know. You have the 'Oops' button so you can go back to previous stage. I have designed it in such a way that brings the Shapefile data over into the correct projection. I write that information to a comma delimited file so it works exactly like a comma delimited upload. If it fails for any reason it will create the exception report with the new coordinates.

Questions and Discussion

Close out of spots. The general consensus of discussions in Pineville was to not automatically close spots out at end of year. That decision rests with the management unit. A list of spots still active at the end of the calendar year would be generated and the person responsible for that state or management unit would decide which spots are still active or which need to be closed out. Harvested spots are considered closed out.

The default is that a spot remains active until somebody actually closes the spot out. Spots not closed out are carried over to the next year.

Question: You are still collecting data from ground surveys? Yes. Aerial detection is an added feature. If aerial detection survey information is only information entered it will calculate and fill in core values. It will be tagged as aerial detection survey (ADS). There are buttons that will update and populate the core values.

Question: When we started this project, this was clearly within the confines of the detection database. Now we seem to be deferring some of the detection to more of a management database. This is not initially what we set up to do.

Meeker –When we started this, we wanted to capture what the states were doing under one roof. We wanted someplace to put all the information they had on southern pine beetle and allow them the option to do more if they chose.

Some states have their own systems and this is double entry.

Steve - All they are required to enter is the core values. If they want to enter all the other information they are welcome to do it; the core values are the only things required. Then we can come out with an end of the year report that shows all the activity south wide. They don't have to use it as their management tool if they already have their own. We had 13 individual management systems and we needed a way to integrate them. It also was designed to accommodate what the states were collecting. The upload utilities are designed to allow users to quickly enter their data from their databases.

I think we ought to talk in terms of detection, monitoring and subsequent management. We have all agreed on detection and probably evaluation. There are duplications. How to accommodate both extremes? I think that is why we have a separate interface for every single state so they could customize and add as little or as much as they wanted.

John Nowak – SPB Prevention and Restoration Program

We have had massive losses from SPB in the southern Appalachian Mountains. There hasn't been a lot of activity lately, but this insect caused a lot of damage in the past and probably will again soon. The SPB prevention program was designed to take a pro-active approach to management instead of reacting to outbreaks once they occur. We hope to mitigate impacts and not have suppression as the only tool to deal with the insect. We emphasize thinning as a treatment to prevent losses from this insect. Good forest management equals a healthy forest, and the basic tenets of the program are: thin at the appropriate time, plant the appropriate tree species for the site, and plant at appropriate density.

The program provides an opportunity to educate landowners of the impacts of SPB and tell them about healthy forest management. The states have done a great job of distributing educational materials: brochures, newspaper articles, TV ads, stickers, coloring books, and more.

This program is administered by Region 8, FHP, but implemented by our 12 National Forests and 13 state partners. Funding for this program has been significant, as have the accomplishments. Since 2003, more than 900,000 acres have been treated under this program. There has been more than 500,000 acres of first thinning and pre-commercial thinning work. Prescribed burning has also been conducted. I know in the past there has been discussion about whether prescribed burning should be part of prevention program. I think burning should be included because I think stand structure is important. The amount of competing vegetation plays a role in pheromone plume dispersal. The work by Harold Thistle and others demonstrates that pheromone plumes disperse up and out of stands that have clear understory. Also, I would encourage our state cooperators to stress selective thinning instead of row thinning, as it creates more open stand structure. Fire is an important part of pine ecosystems, so I think prescribed burning is an essential tool, plus we can get a lot of acres treated cheap.

Restoration activities are an important component of the program, particularly longleaf pine restoration. There has been an increased emphasis on longleaf restoration in the south, so the more we can accomplish under SPB Prevention to promote longleaf regeneration is going to earn kudos for the program. Anything the states or National Forests can do to promote longleaf pine management is certainly encouraged.

The treatments also have more benefits than just SPB prevention: reduced fire risk, protection of watersheds, and improved wildlife habitat. I believe this program continues to maintain good funding because of the number of acres treated and the multiple benefits that occur from prevention treatments.

This program has had significant funding. Since 2004 we have distributed almost \$22 million to our National Forest partners, resulting in about 124,000 acres of prevention work. The 13 states have received almost \$61 million, and roughly 800,000 acres worth of work has been accomplished. SPB populations have been low since 2002. This has given us an opportunity to focus our efforts and finances on prevention without worrying about suppression. The Forest Health Technology Enterprise Team produced southern pine beetle health hazard maps, which allow us to focus our efforts. They are not perfect, but this is the first iteration and I invite the state forest health specialists to be involved in developing the next iteration.

I know our state cooperators are interested in what the future holds for this program. I am cautiously optimistic funding will continue in the near future. We recently had a Washington Office review of Region 8 FHP, and there were a lot of positive comments from our Washington Office staff about the SPB prevention program. I think they were very impressed with our accomplishments and outreach.

We asked FHTET to produce a SPB data portal similar for prevention treatments. The goal is to keep the site very simple with not many data fields. It will be a one-stop shop to store all uploaded data. Users can access current and historical data. Tony Courter says it may be functioning by January or February.

Questions.

Billings. Did we decide if we should enter the cost share or total cost of the treatments?

John. I don't think we made a final decision. I was thinking treatment cost would be what was paid to landowner. Other people have different opinions. We could have fields for both cost share paid and total treatment cost. I like the idea of just entering cost share paid to landowner.

Question. Some states don't have the capacity to manage their own data. Perhaps the feds could build a form with a couple windows that you could manage cost share programs for prevention and restoration and that would have all multiple fields necessary.

John. States that don't have their own database could use the portal and upload their data. Some states that are already sending me Excel spreadsheets or shape files, and I could upload the data for them. Perhaps I should keep the data all together and keep it consistent.

Question. In that regard, you will want to have more fields than you have present; at least a couple of windows.

John. I know you collect a lot of data. I just really want to know where the treatment occurred, when completed, how many acres, what it was, and how much it cost. That is the data that I need and that people request from us. All those other things are great, but not all states collect them. What will happen with South Carolina is that you will send me a spreadsheet. I will delete columns and upload the data into the portal. It was designed to be unobtrusive.

Question. Do you plan to have other upload entry points beside what is on the screen.

John. Yes. That is not a problem. Certainly this is in development stages so if there are comments know that if you want to do this I will send it to all state cooperators and they can make more comments. I am trying to keep it simple and usable.

Tony. If you had the landowner name, address, etc., you could always do semi-colon separated and uploaded so the information could be jammed in the comments box. It would not be subject to query but it would be there.

Judy. No that information will be deleted. That is personal identification information and we will not be storing it. We will delete those columns.

John. One last thing I wanted to show you the kind of products we can produce. This map was produced by Ed Yockey. Each one of the green dots represents either restoration or treatment projects. You can see there have been a lot of projects, almost 12,000 projects across the southern U.S. This is just one of the products that are easily produced using the portal.

Kier Klepzig: SPB II, Southern Pine Beetle Bible

SPB II, the sequel to SPB bible, is almost done. This project has been under the able direction of Bob Coulson. Final corrections are underway. The science delivery group at the SRS went through the book and did a good job of editing. The document will be high quality product. The only thing left is the bid process for the printing. SPB II will be a Southern Research Station government publication. The plan is to print copies with hard covers and then another batch with soft covers; basically paperbacks and CDs. The publication will be free. I am really pleased with this quality of work everyone put into it.

John J. Riggins: Comparison of Funnel Trap Catches in Talladega National Forest: Standard Lures vs. Addition of endo-Brevicomin.

Traps were placed in same areas where standard spring and fall south-wide SPB monitoring (i.e. not baited with endo-brevicomin). Our traps were placed in hardwood bottoms immediately adjacent to pine forests (standard SPB monitoring traps are placed in pine stands), and monitored

weekly. Additionally, our traps had the same lures except for the addition of endo-brevicomin lures, which were placed about 3 meters away from actual trap.

During 2009, standard SPB monitoring traps caught zero SPB. Our traps with endo-brevicomin were still catching 10-43 beetles/trap/day (Fig. 1).

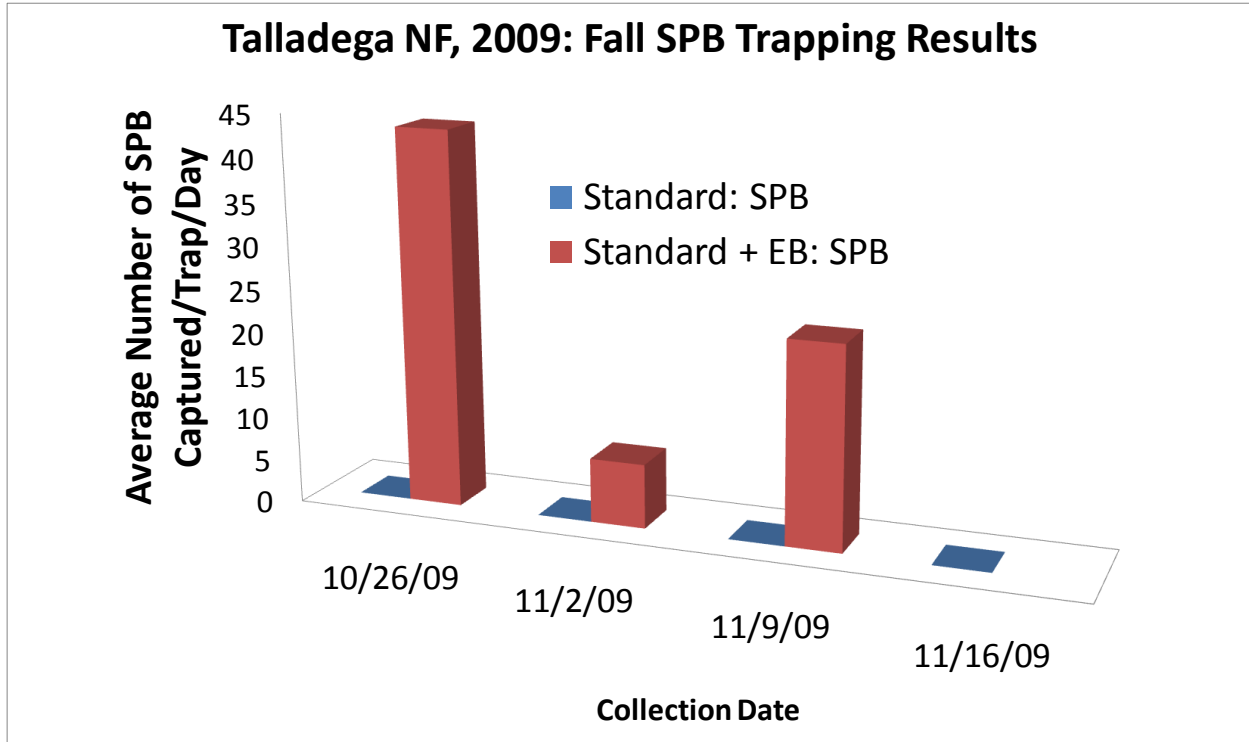
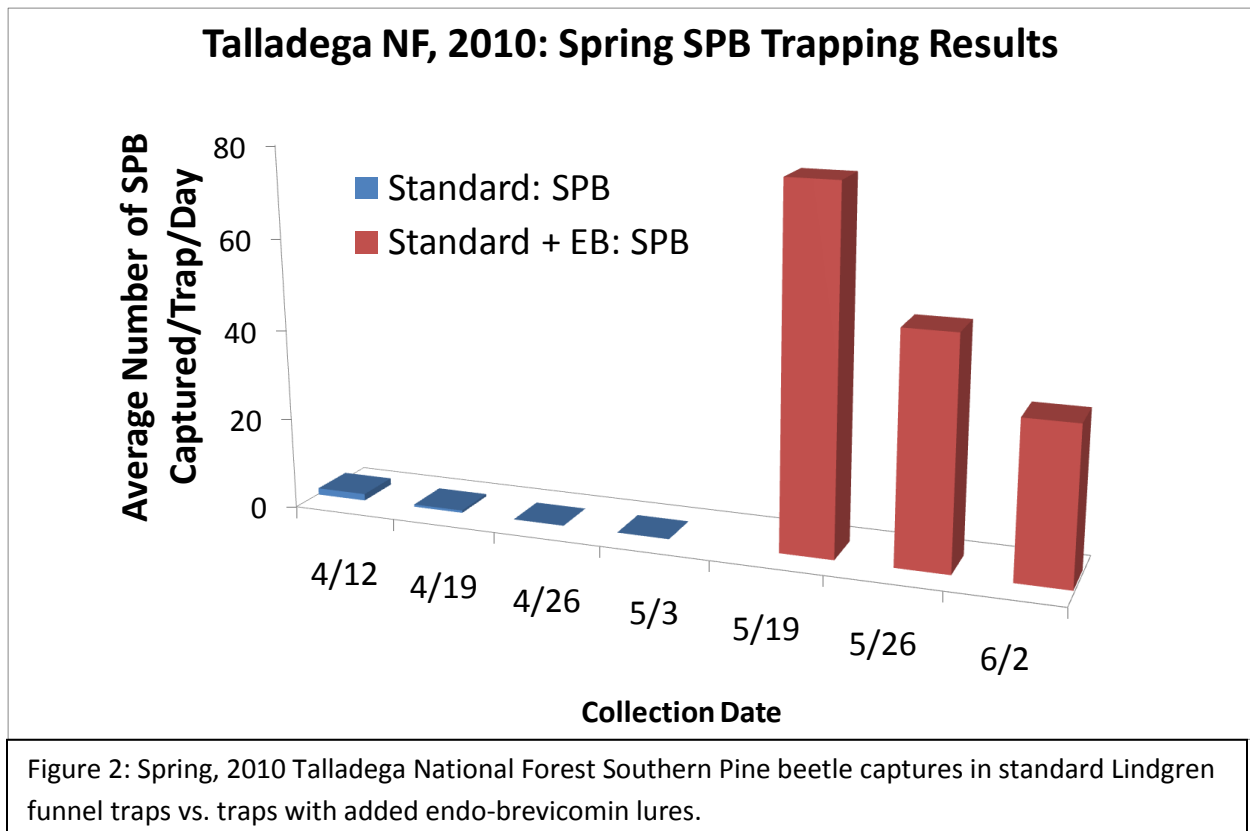


Figure 1: Autumn, 2009 Talladega National Forest Southern Pine beetle captures in standard Lindgren funnel traps vs. traps with added endo-brevicomin lures.

Figure 2 shows SPB captures during spring of 2010. Our trapping dates did not coincide with the standard monitoring traps (ours were later). I expect the standard traps were deployed during peak flight activity, while ours were on the tail end. You can observe a tapering trend in our endo-brevicomin trap catches in spring of 2010 (Fig. 2). Despite this difference in deployment times, standard SPB traps caught nearly zero SPB during prime flight periods in April while our enhanced SPB traps still captured many beetles toward the end of the flight period.



It is also worth noting that we saw similar trends with clerids, in that we caught higher numbers in traps containing endo-brevicomin during both 2009 and 2010.

We found similar results in Mississippi, but the catches were much lower. We also had endo-brevicomin baited funnel traps deployed in Louisiana and Texas during fall of 2009 and spring of 2010, but no SPB were captured in either state.

These results aren't necessarily groundbreaking, as many others have reported similar results. However, I believe that it is important that traps with endo-brevicomin are capable of attracting and capturing SPB in areas where standard traps are apparently yielding false zeros. In areas like TX and LA, where both standard and endo-brevicomin enhanced traps are returning zero SPB captures, it indicates a much greater likelihood that there are no or extremely few SPB in the area.

The mechanisms behind this apparent preference for traps with endo-brevicomin are likely at least partially explained in research reported by Brian Sullivan, indicating that SPB exhibit

increased antennal sensitivity one order of magnitude greater for endo-brevicomin than for frontalin. Another possibility is that there is some undescribed physio-behavioral response of extremely low level populations of SPB to various SPB pheromones.

I believe it is important to start thinking about including endo-brevicomin traps in the annual south-wide surveys. The enhanced traps could provide a better idea of where SPB populations are truly zero vs. just undetectable.

Discussion.

Discussion centered on whether to add endo-brevicomin to SPB traps. Traps with the added lure could not be located in the same areas as usual spring traps, as they need to be placed in hardwood inclusions rather than in pine stands. There also appears that the affect of the addition of endo is stronger in summer and fall than in the spring. To retain historical consistency, the spring trapping should remain the same. Extra traps with endo could be deployed if so desired. Fall trapping could utilize endo since there is no historical trapping record as yet and the increased attraction by endo may help detect SPB population increases.

Matt Ayres: Adaptive management of forest pests?

How many people in this room refer to the annual results of the south-wide spring monitoring program for SPB? Just about everyone. This program, for which Ron Billings deserves great credit, is an extraordinary tool for forest management. My lab has been collaborating with Ron in terms of understanding southern pine beetle population ecology. Carla Pimentel and myself have begun working with Ron to apply the tools of Bayesian statistics to the SPB prediction system as a model. The objective is to develop better measures of certainty and uncertainty in the projections. This is the strength of Bayesian statistics – to quantify uncertainty in ways that are not natural with traditional null hypothesis testing (frequentist statistics). My objective in this talk is simply to ask you all to think about how could the SPB prediction system can be better for you people who use this. Progress requires the involvement of as many users as possible. We invite your questions, comments, and suggestions here today, throughout the rest of our meeting here, and in the months ahead. Here is a representation of data from the south-

wide monitoring program. You can see the strong relationship between trap captures in spring and subsequent appearance of beetle spots during the summer. The error bars represent plus and minus one standard deviations. If the data were normally distributed, these error bars would represent the uncertainty in predictions of spot based on beetle abundance. In fact these distributions not at all normally distributed. In fact, it tends to bimodal (usually no SPB spots or many spots) so one of our objectives is to come up with a prediction system that we can train over years. With this process, each year's data would give us increasing good estimates of the probability distribution of possible spot development given beetle abundance in the spring. This process is appealing in part because of how easily way it connects science with management, and how readily it lets our management strategies improve with each year of experience that is gained by the community of forest managers.

This process (adaptive resource management) has been best developed in fisheries and some wildlife management. One of our favorite examples comes from duck management. In 1996 or so few hundred people who knew about mallards got together and argued about population dynamics of mallards. The discussion identified four competing models of mallard population dynamics that each had advocates within the community. (There were differences of opinion about the responsiveness of duck survival and duck reproduction to changes in duck abundance.) Each year, regardless of the uncertainty, wildlife managers have to determine what will be the limits on how many ducks people shoot. So they set up system where each year they would do whatever management decided to do and then, while they were at it, calculate how well the four competing models of duck population dynamics did in predicting system responses. After a few years, two of the four models emerged as better predictors than the other two, and by last few years one of the two best models seems to be emerging as the best. It is impressive to me how one can see the progress from this Bayesian system in management success and scientific understanding. So far as I know nothing like this has been set up in any pest management system anywhere in the world, but it seems that the there are numerous situations where this approach would make sense, for example predictions of SPB risk from the southwide trapping program.

This process of adaptive resource management only works if it is a community effort involving managers and scientists working together. In the same way that sawmills have become better and better over decades through the contributions of innumerable individuals with

different goals and skills, pest management programs can become steadily better through this technique of (1) making predictions based on our current knowledge, (2) evaluating how the outcomes compare to our expectations, and (3) updating our knowledge with each step so that subsequent predictions keep getting better with each year. We invite your suggestions, comments, and questions about how the SPB prediction system can become a better tool for yourself and for our community of forest health professionals.

Closing statements.

We have made significant strides in the past five years and we want to keep on that path. This is called a working group so that means you are supposed to be working. We really need your input on the issues we discussed today. If there is something that needs to be changed or could be improved, I urge you to bring it up at this meeting

The last issue I would like to address is the definition of outbreak. In the past we have traditionally described a southern pine beetle spot as one spot per thousand acres of susceptible host type. Unfortunately there is variation of what each state or individual deems a spot; one tree, 10 trees, etc. Plus, what constitutes susceptible host type. We really don't have a consistent definition as to what constitutes a SPB outbreak. Think about it and we will discuss it at the next group meeting.