

Memo to: SCFC Employees
Registered Foresters in South Carolina

Through: D. Jones

From: F. Chisolm Beckham, David Jenkins and Kevin Douglas

Date: May 22, 2016

Subject: Results of 2016 SPB Pheromone Trapping

We have completed the 2016 Southern Pine Beetle (SPB) pheromone trapping. The results and counties of this survey are attached.

A total of 32 SC counties were trapped for SPB in 2016 using protocol devised by Billings, et al. This protocol includes monitoring three (3) pheromone traps in each county for a 28-day period during early spring. Insects captured in each trap are returned to the laboratory for analysis. The total number of trap days and SPB and clerid beetles (SPB's main insect predator) caught are summed for each trap. The average number of SPB caught per trap per day and percent SPB are used for a population prediction trend for each county and for the whole state. In the past, such surveys have had a success rate of over 80% in predicting the degree of SPB infestation during the following summer. Last year we predicted little to no losses in all trapped counties.

Based on these trapping results, we predict no counties will experience significant SPB activity. The statewide and regional average predictions are still considered declining-low. The statewide SPB caught per trap per day was 0.14 and only made up 12% of the total catch. Keeping in mind that we are experiencing unprecedented low populations of SPB, the total number of SPB trapped this year quadrupled from last year's total, and the number of clerid beetles decreased by 60%. Since our trapping program began in 1986, the population of SPB was the lowest on record last year, and the population of clerids is the lowest on record for this year. Extended temperatures above 100 degrees Fahrenheit constrain SPB development, but mild temperatures during the winter enhance SPB activity. During the summer of 2015 we had several days in which the temperature exceeded 100 degrees Fahrenheit and quite a few weeks without any rainfall, and this past winter's temperatures were mild. Thus, tree stress, current clerid populations, and mild winter temperatures possibly had more of an effect on SPB populations than the summer temperature alone. The rains of 2015, as devastating as they were, possibly had a net positive effect on pine health across the state since most are located on upland soils, exceptions would be pine stands located on hydric soils. Most hydric soils are located within the coastal plain, and we will have to wait and see what effect it has on its SPB population because of the lag time between tree stress and possible SPB attack. Tree stress can be further exacerbated this summer and fall if it suddenly becomes hot and dry.

These trapping data results are for entire counties, and there is always the possibility of sporadic and localized beetle activity in counties with overall predictions of low population levels. Activity is most likely in susceptible pine stands that are overstocked, over-mature or stagnant, **have poor drainage** or have littleleaf, annosus, or other root diseases present and causing stress. However, the likely culprits for beetle activity in 2016 are Black Turpentine Beetles, *Ips*, or a combination of both. From 2008-11, *Ips* activity was relatively high during some years, but BTB activity has been higher since 2012. Up until this past trapping season, these populations were not measured, and both assessments are based on personal observations during site visits. Control tactics employed for SPB, such as "cut and leave" and "salvaging," do not work for *Ips* and BTB since both readily breed in cut pine tops, boles and stumps. For more information on either beetle, please follow this link: <http://www.state.sc.us/forest/idbeetles.pdf>

The long-term SC and southeast regional SPB population decline since the 2000-02 outbreak has puzzled both forest entomologists and forest health specialists. The prevailing theory is that there is a lack of available resources (older pine stands) distributed across the landscape. Older pines are more susceptible to environmental stress and provide greater surface area for SPB development. We feel the population decline is likely to level out and begin to increase as the “wall of wood” (SC pine stands originating from 1985-95) matures. Our long-term SPB pheromone trapping chart reveals that the population decline is beginning to level out, and the time it begins to increase may come sooner because of the 2008 housing crises, as many scheduled final harvests were postponed. This same chart also reveals that the clerid population appears to have been in decline since 1986. This decline possibly indicates that both SPB and clerid populations peaked during the 1970’s and that we are currently in between cycles of outbreaks. We have not had consecutive annual increases in SPB since 1999-2000. If SC’s SPB population increases in 2017, we could be beginning a new cycle that reflects what we saw in the last.

Even though current SPB populations are low, we still encourage foresters and forest landowners to manage for regulated forests by evenly distributing their pine acreage among age classes; thin on a timely basis; and consider harvesting at risk stands sooner. When regenerating pine stands, it is important to plant the correct species and density for the site; control natural pine regeneration or have a plan in place to address it; and consider available wood markets or lack thereof. The SPB Cost Share Program currently has funds available for regenerating pine stands at lower densities and precommercial thinning young, over-dense pine stands. This program is more ideal for areas and acreages outside of healthy pulpwood markets which, consequently, is where we have suffered the most pine loss to SPB. If interested in applying, please contact your county’s SCFC Project Forester.

In summary, most of SC can expect a year of low to minimal loss to SPB and related bark beetles. However, we may see some degree of activity, especially if we have additional stress factors. If you suspect bark beetle activity, please contact the SCFC for identification and the best course of action. Employing the “cut and leave” and “salvaging” techniques could lead to more pine loss if SPB is not the culprit.

It is difficult to predict the degree of loss to SPB since environmental factors affect tree loss due to SPB. However, our best guess for S.C. for 2016 is for a loss between fifty and one hundred thousand dollars.

Please contact us if you have any questions or if we can provide additional information.

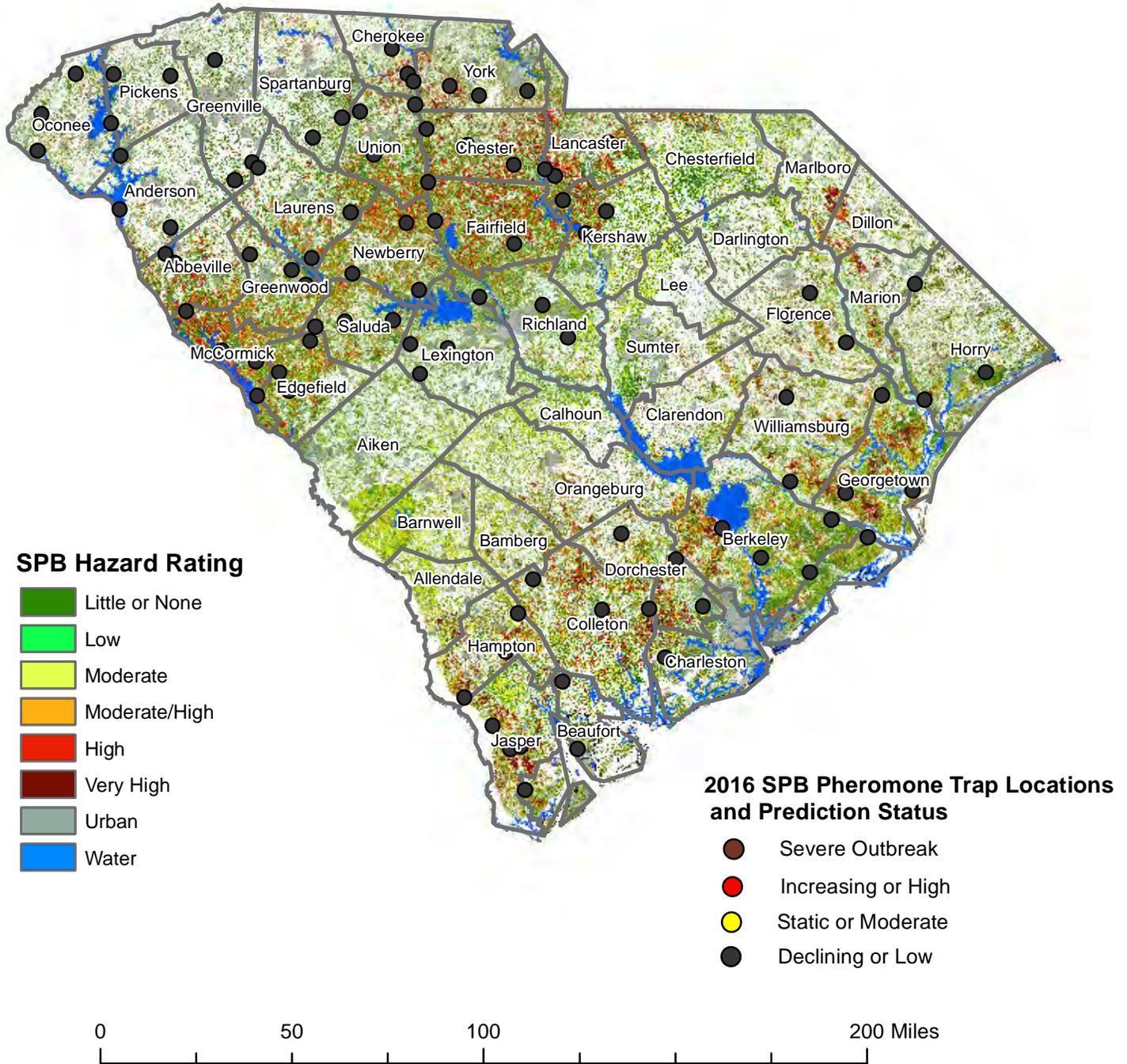
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Attachments: Pheromone results: tabular and graphical; long-term pheromone results; and SPB Trap Locations.

SC Forestry Commission's 2016 Southern Pine Beetle (SPB) Pheromone Trap Locations and Prediction Status in Relation to SC's SPB Risk Map



SPB is a major pest of Southern Yellow Pine (SYP). The last outbreak of 2000-02 caused over 350 million dollars worth of SYP loss in SC. In order to predict the annual severity of SYP loss to SPB, each spring 3 SPB pheromone traps are placed within counties having historical loss to SPB. The total number of Trap Days and SPB and Clerids (their main insect predator) caught are summed for each trap and county. Percent SPB caught and average number of SPB caught per Trap Day are used for the prediction status of trap locations and counties.

2016 SOUTHERN PINE BEETLE PHEROMONE TRAPPING RESULTS
South Carolina Forestry Commission
May 22, 2016

Severe Outbreak Prediction Trend (1)

<u>County</u>	<u>Trapping Days</u>	<u>#SPB</u>	<u>#Clerids</u>	<u>% SPB</u>	<u>SPB/Day</u>
No counties in South Carolina are predicted to have a severe outbreak in 2016.					

Increasing - High Prediction Trend (2)

<u>County</u>	<u>Trapping Days</u>	<u>#SPB</u>	<u>#Clerids</u>	<u>% SPB</u>	<u>SPB/Day</u>
No counties in South Carolina are predicted to have an increasing-high outbreak in 2016.					

Static - Moderate Prediction Trend (3)

<u>County</u>	<u>Trapping Days</u>	<u>#SPB</u>	<u>#Clerids</u>	<u>% SPB</u>	<u>SPB/Day</u>
No counties in South Carolina are predicted to have a static-moderate outbreak in 2016.					

Declining - Low Prediction Trend (4)

<u>County</u>	<u>Trapping Days</u>	<u>#SPB</u>	<u>#Clerids</u>	<u>% SPB</u>	<u>SPB/Day</u>
Abbeville	91	0	90	0.00%	0.00
Anderson	84	12	103	10.43%	0.14
Beaufort	84	2	1	66.67%	0.02
Berkeley	84	1	59	1.67%	0.01
Charleston	84	10	40	20.00%	0.12
Cherokee	87	0	47	0.00%	0.00
Chester	81	0	108	0.00%	0.00
Colleton	84	0	17	0.00%	0.00
Dorchester	84	1	30	3.23%	0.01
Edgefield	84	114	152	42.86%	1.36
Fairfield	81	0	328	0.00%	0.00
Florence	85	0	15	0.00%	0.00
Georgetown	81	0	14	0.00%	0.00
Greenville	84	0	417	0.00%	0.00
Greenwood	89	2	75	2.60%	0.02
Hampton	81	0	59	0.00%	0.00
Horry	81	0	10	0.00%	0.00
Jasper	81	0	6	0.00%	0.00
Kershaw	84	0	127	0.00%	0.00

2016 SOUTHERN PINE BEETLE PHEROMONE TRAPPING RESULTS

South Carolina Forestry Commission

May 22, 2016

Declining - Low Prediction Trend (4) (continued)

<u>County</u>	<u>Trapping Days</u>	<u>#SPB</u>	<u>#Clerids</u>	<u>% SPB</u>	<u>SPB/Day</u>
Lancaster	84	0	96	0%	0.00
Laurens	90	0	86	0%	0.00
Lexington	78	0	41	0%	0.00
McCormick	87	21	104	17%	0.24
Newberry	75	2	112	2%	0.03
Pickens	84	53	110	33%	0.63
Oconee	84	148	82	64%	1.76
Richland	81	0	29	0%	0.00
Saluda	84	0	144	0%	0.00
Spartanburg	78	1	75	1%	0.01
Union	78	1	352	0%	0.01
Williamsburg	83	0	23	0%	0.00
York	84	1	70	1%	0.01
State Totals	2,664	369	3,022	12%	0.14
Coastal Totals	912	14	274	5%	0.02
Piedmont Totals	1,752	355	2,748	13%	0.20

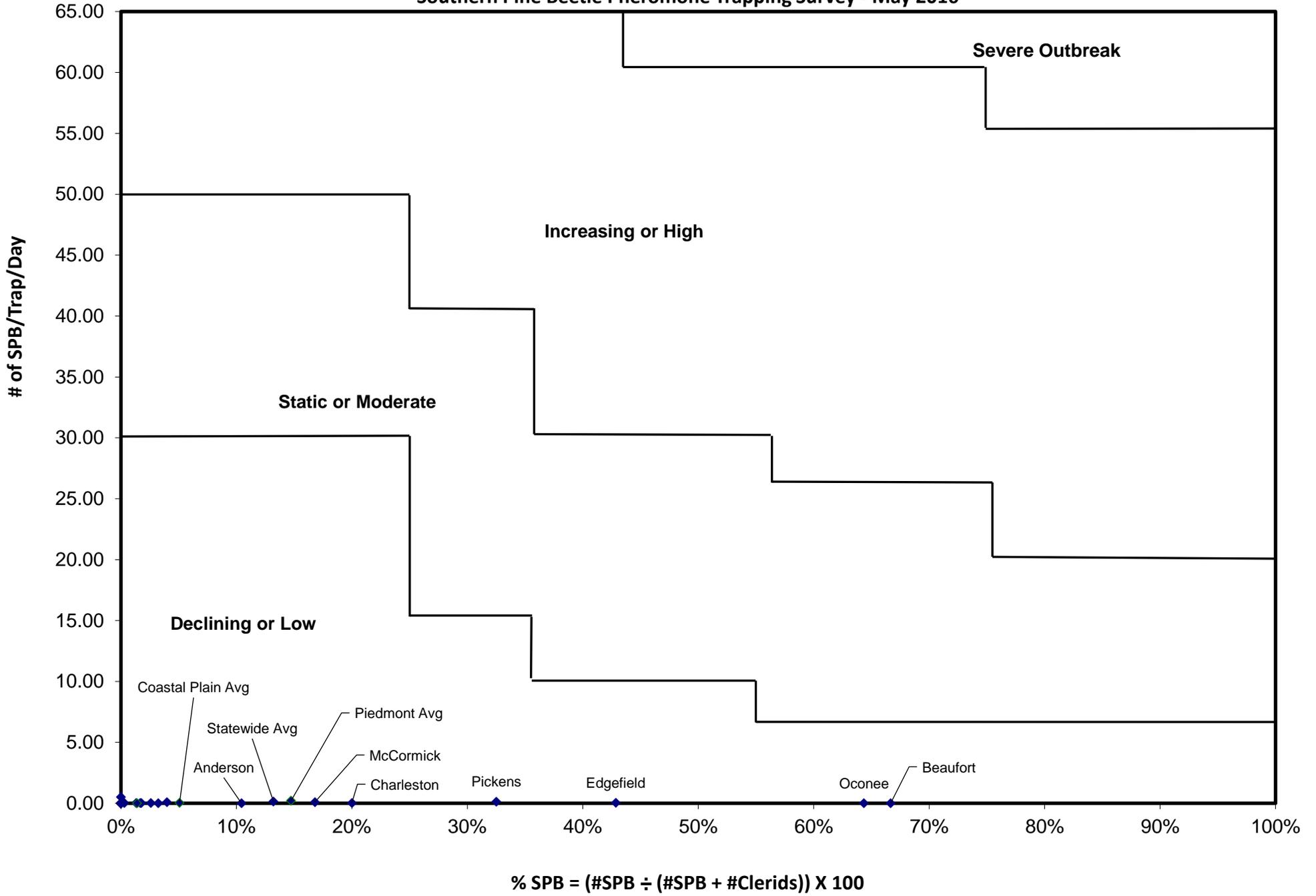
Severe Outbreak: High probability for major losses

Increasing - High: Greater than 100% increase from previous year

Static - Moderate: Less than a 50% decline to less than 100% increase from previous year

Declining - Low: Greater than a 50% decline from previous year

**South Carolina Forestry Commission's
Southern Pine Beetle Pheromone Trapping Survey - May 2016**



South Carolina Forestry Commission's Southern Pine Beetle (SPB) Pheromone Trapping Results: 1986 through 2016

