

SOUTHERN PINE BEETLE

PHEROMONE TRAPPING REPORT, 2018



The SCFC insect and disease staff discovered this southern pine beetle spot in Oconee County in September.

EXECUTIVE SUMMARY

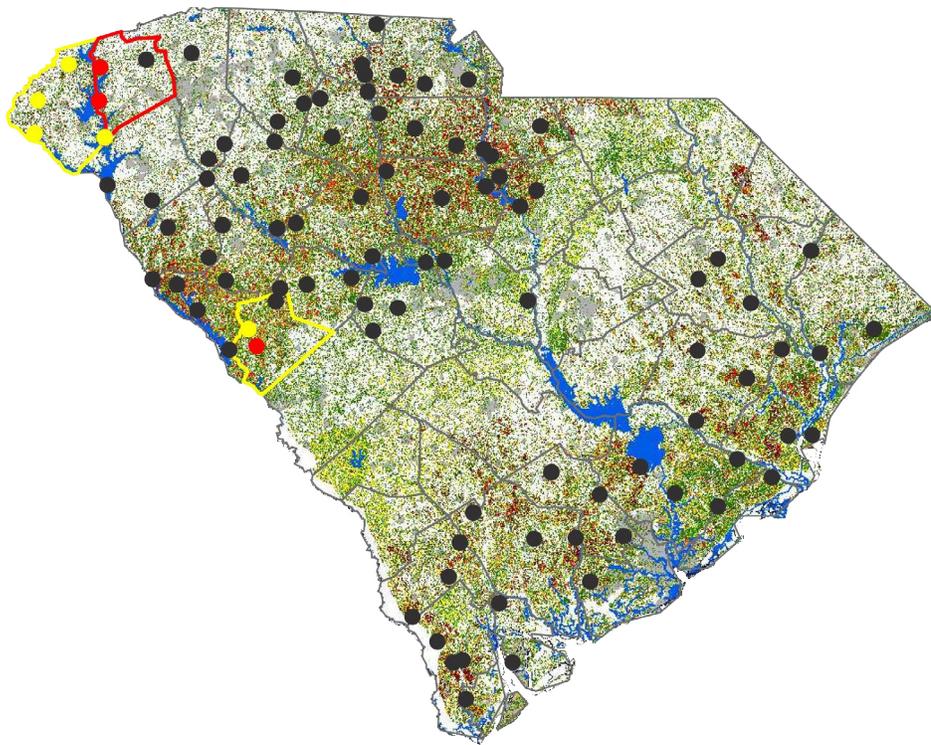
Southern pine beetle (SPB) is one of the most destructive insects to southern yellow pine. The South Carolina Forestry Commission has conducted annual spring pheromone trapping since 1986 to monitor SPB populations and predict the damage they may cause in the upcoming season. Traps were deployed in 32 counties in 2018. Based on the data from these traps we predict increased SPB activity in Pickens County and potentially in Edgefield and Oconee Counties. The remainder of the state is predicted to have little significant SPB activity.

INTRODUCTION AND METHODOLOGY

A total of 32 SC counties were trapped for SPB in 2018 using revised protocol devised by Billings, et al, 2017.

The previous protocol called for two attractants per trap: frontalin and alpha pinene (Sirex lure), and the revised protocol called for an additional third attractant, *endo*-brevicomin, to be placed 10-12' away. In prior studies, the addition of the third attractant has been found on average to be 6.54X more attractive to SPB and .97X less attractive to clerid (SPB's main insect predator) when compared to using frontalin and Sirex lures alone. The SPB Prediction Chart was revised to account for the increased attractiveness to SPB. The protocol includes monitoring three 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 caught are summed for each trap. The average number of SPB caught per trap per day and percent SPB are used to predict the population trend for each county and region and for the whole state. In the past, such surveys have had a success rate

SCFC's 2018 SPB Pheromone Trap Locations and Prediction Status in Relation to SC's SPB Risk Map



SPB Hazard Rating

■ Little or none	■ High
■ Low	■ Very High
■ Moderate	■ Urban
■ Moderate/High	■ Water

Trap Locations and Prediction Status

● Severe Outbreak	● Static/Moderate
● Increasing/High	● Declining/Low

SPB is a major pest of Southern Yellow Pine (SYP). The last outbreak of 2000-02 caused over \$350 million 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.

Data Credits: Trap Locations, SC Forestry Commission; and SC SPB Risk Map, USFS' Forest Health Technology Enterprise Team (FHTET).

of over 80% in predicting the degree of SPB infestation for the following summer.

RESULTS

Based on these results, we predict Pickens County to have a significant increase in SPB activity, rating in the increasing or high category on the prediction chart, and Oconee and Edgefield counties within the Piedmont to experience some SPB activity, but their predictions are still considered static and moderate on the prediction chart. No counties within the coastal plain are predicted to experience significant SPB activity. The statewide and regional average predictions remain declining or low. The statewide SPB caught per trap per day was 3.03 and made up 47% of the total catch. This is an increase compared to last year's 1.14 and 30%. The remaining Piedmont counties caught 5.9% of the SPB and 86.0% of the clerid beetles. The coastal plain only caught 0.5% of the SPB and 8.3% of the clerid beetles. These 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.

REVIEW OF 2017

The summer of 2017 was not as hot and dry as the summer of 2016, and we saw *Ips* infestations that had

been a problem decrease. However, SPB activity picked up in Oconee County, primarily on Federal Land that was over-stocked, making it more susceptible to SPB attacks. The US Forest Service identified infestations that were likely to move on to adjoining private land and began salvaging wood to interrupt infestations.

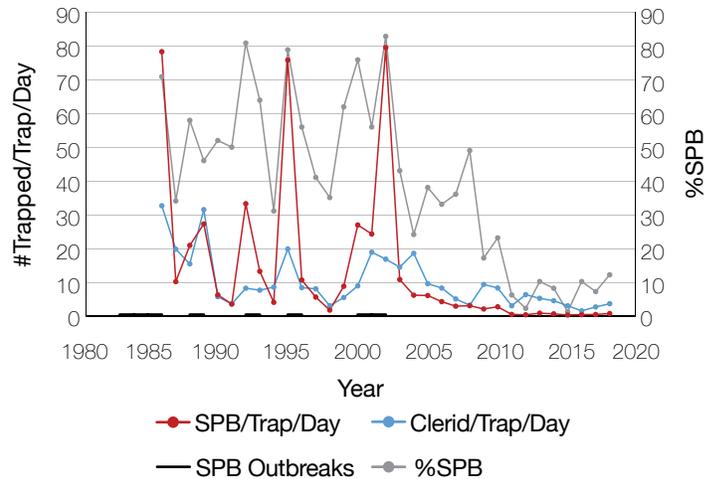


SPB traps were placed in 32 counties in South Carolina in 2018.

SC'S 2018 BARK BEETLE PREDICTION

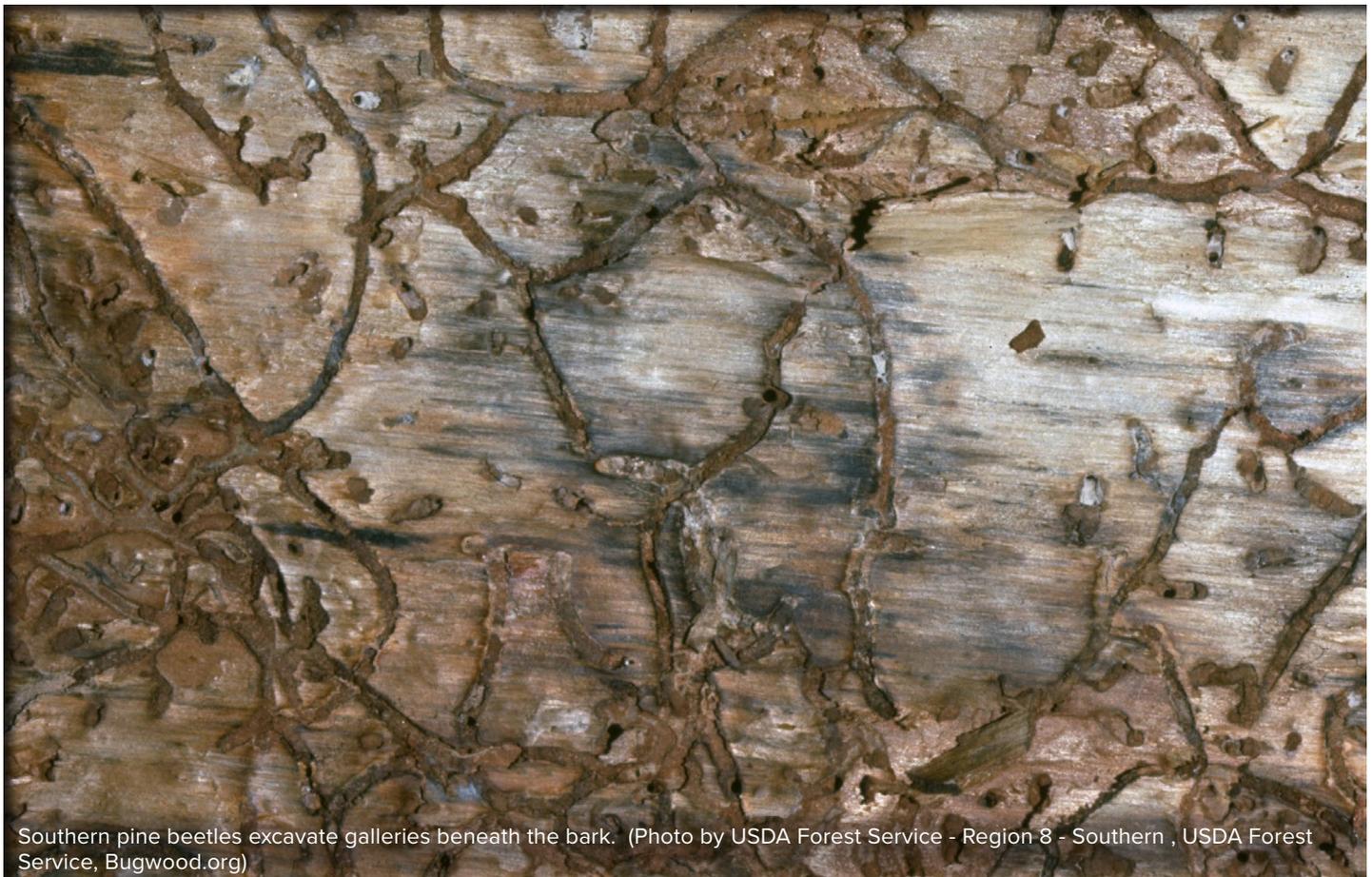
Predicting SC bark beetle activity for the summer of 2018 is largely based on current and predicted weather, current drought status per region, activity in preceding years, and SC's 2018 pheromone trapping data. For the 2018 summer of the southeastern U.S., the National Weather Service is predicting above average temperatures and average rainfall. Most beetle activity throughout the state of SC are likely to be attributable to *Ips* and Black Turpentine Beetles (BTB) in susceptible pine stands that are overstocked, over-mature or stagnant, have poor or excessive drainage, or have littleleaf, annosus or other root diseases causing stress. *Ips* thrive in stressed trees and high temperatures, completing their life cycle in as little as 21 days. Often, by the time you realize you have an *Ips* spot, they have completed their life cycle and dispersed. 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. During a summer thinning, we recommend all pine tops to be

SCFC's Southern Pine Beetle Trapping Results 1986-2018



* Beginning in 2017 and still in continuation, *endo*-Brevicomin was added to the previous used attractants of Frontalin and Sirex. A study found this new attractant combination on average was 6.54X more attractive to SPB and .97X less attractive to Clerid. To better compare previous years to 2017 and after, the number of SPB Trapped/Trap/Day was divided by 6.54, but the number of Clerid was left the same.

chipped and removed from the site or at least kept at the logging deck. For more information on either beetle, please follow this link: <http://www.state.sc.us/forest/idbeetles.pdf>



Southern pine beetles excavate galleries beneath the bark. (Photo by USDA Forest Service - Region 8 - Southern , USDA Forest Service, Bugwood.org)

SC'S SPB POPULATION TREND

SPB activity has picked up regionally, with increased SPB spots in Mississippi, Alabama, Georgia and Florida. Although the vast majority of these spots are on unmanaged land with overstocked and stressed stands, we expect SC's SPB populations to increase in coming years as the wall of wood (SC pine stands originating from 1985-1995) matures. In 2015 we recorded the lowest number of SPB trapped and in 2016 we recorded the lowest number of clerid beetles trapped. Since then, both populations have been increasing steadily.

RECOMMENDATIONS FOR LANDOWNERS AND FORESTERS

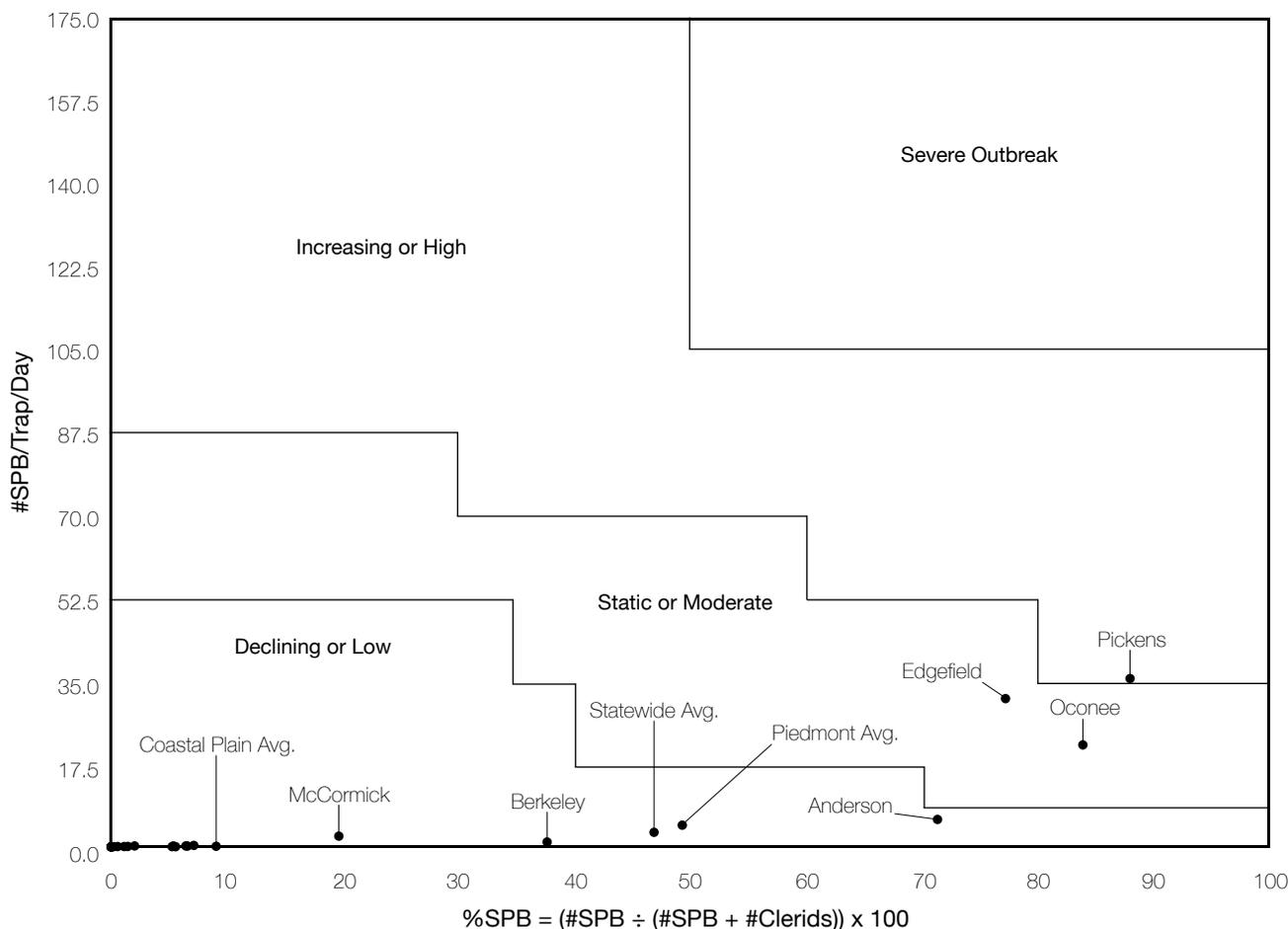
Although current SPB populations are comparatively low, we encourage foresters and forest landowners to manage for regulated forests by evenly distributing their pine acreage among age classes, thin on a timely

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 pre-commercial thinning young, over-dense pine stands. This program is more ideal for areas and acreages outside of healthy pulpwood markets, which is where we have suffered the most loss to SPB. If interested in applying, please contact your county's SCFC project forester.

SUMMARY

We predict no counties within the coastal plain will experience any SPB activity, but Pickens, Oconee, and Edgefield counties within the Piedmont to experience significant SPB activity, with predictions ranging from static or moderate for Oconee and Edgefield

SCFC Southern Pine Beetle Pheromone Trapping Survey, 2018
SPB Prediction Chart: Frontalin + Sirex Lure + endo-Brevicommin





SCFC SPB Program Coordinator Chisolm Beckham checks behind the bark of a tree infested with SPB.

Counties and increasing or high for Pickens County. The statewide and regional average SPB predictions are considered declining—low. If drought and mild temperatures occur in the northwestern piedmont, then SPB activity may increase over the summer, but high summer temperatures and a rebounding clerid population should restrict SPB dispersal to the remaining Piedmont counties. Regardless, most beetle activity within SC will mostly be attributable to Ips and BTB. Higher clerid populations and average rainfall may overcome high summer temperatures and reduce Ips and BTB activity within the remaining Piedmont counties. With a low clerid population, the coastal plain may have increased Ips and BTB activity if drought and high summer temperatures occur. 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 and other bark beetles, but our best guess for SC in 2018 is for a loss between one and two hundred thousand dollars.

CONTACT THE SCFC INSECT & DISEASE STAFF

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

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SCFC SOUTHERN PINE BEETLE PHEROMONE TRAPPING RESULTS, 2018

Severe Outbreak Prediction Trend (1)

No counties in South Carolina are predicted to have a severe outbreak in 2018.

Increasing - High Prediction Trend (2)

Pickens	84	2991	146	95%	35.61
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Static - Moderate Prediction Trend (3)

County	Trapping Days	#SPB	#Clerids	% SPB	SPB/Day
Oconee	84	1812	330	84.6%	21.57
Edgefield	84	2634	774	77.29%	31.36

Declining - Low Prediction Trend (4)

County	Trapping Days	#SPB	#Clerids	% SPB	SPB/Day
Abbeville	93	16	861	1.82%	0.17
Anderson	87	502	201	71.41%	5.77
Beaufort	84	1	17	5.56%	0.01
Berkeley	84	84	139	37.67%	1.00
Charleston	84	2	36	5.26%	0.02
Cherokee	90	1	559	0.18%	0.01
Chester	87	0	159	0.00%	0.00
Colleton	84	0	52	0.00%	0.00
Dorchester	84	0	133	0.00%	0.00
Fairfield	84	0	392	0.00%	0.00
Florence	84	0	211	0.00%	0.00
Georgetown	99	0	25	0.00%	0.00
Greenville	87	24	312	7.14%	0.28
Greenwood	93	4	362	1.09%	0.04
Hampton	83	0	115	0.00%	0.00
Horry	87	0	18	0.00%	0.00
Jasper	81	11	156	6.59%	0.14
Kershaw	84	0	271	0.00%	0.00
Lancaster	84	0	321	0.00%	0.00
Laurens	101	4	717	0.55%	0.04
Lexington	87	5	344	1.43%	0.06
McCormick	84	188	768	19.67%	0.00
Newberry	84	0	327	0.00%	0.00
Richland	84	0	73	0.00%	0.00
Saluda	84	14	203	6.45%	0.17
Spartanburg	81	13	229	5.37%	0.16
Union	81	0	358	0.00%	0.00
Williamsburg	81	0	98	0.00%	0.00
York	83	0	590	0.00%	0.00
State Totals	2,745	8,306	9,297	47%	3.03
Coastal Totals	935	98	1,000	9%	0.10
Piedmont Totals	1,810	8,208	8,297	50%	4.53

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



Cover photo by Gerald J. Lenhard, Louisiana State University, Bugwood.org