



2018 Florida Southern Pine Beetle Forecast

Florida Forest Service, Forest Health Section

A pheromone trap survey was conducted in March 2018 as part of an ongoing program to monitor the populations of Southern Pine Beetle (SPB) and its associated predators. The purpose is to provide an early-season prediction of the potential level of SPB activity in select Florida counties, and identify areas which may be at increased risk for an outbreak. The results of the 2018 survey indicate that SPB populations levels are moderate throughout the State as a whole, but elevated for many counties in the Northeastern part of the State (Region 2), which may see high levels of SPB activity.



Fig. 1: Southern Pine Beetle (*Dendroctonus frontalis*)
Length = 2-4 mm

Background

The Southern Pine Beetle is one of the most destructive forest pests in the southern United States. Since 1995, the Florida Forest Service (FFS) has participated in an annual statewide Southern Pine Beetle (*Dendroctonus frontalis*, or SPB) spring trapping survey. This survey monitors numbers of adult SPBs and their clerid predators captured in pheromone-baited flight traps during the SPB primary spring dispersal phase. The results are used as an early-season prediction of SPB population trends and activity levels, allowing forest managers to identify areas of potential SPB activity in advance of aerial detection flights. The survey also provides data for monitoring SPB population levels from year to year.

Methods

The 2018 Florida survey was conducted using from one to three traps (Lindgren funnel traps baited with alpha- and beta-pinene and the SPB aggregation pheromones frontalin and *endo-brevicommin*) in each of the 35 counties. Each trap was located in a different stand of susceptible forest type. *Endo-brevicommin* lures were added to all traps for the second time this year to boost attractiveness to SPB adults, thereby increasing trap catches and prediction accuracy (based on previous research). The 35 counties surveyed included those that are most likely to experience SPB problems based on historical outbreaks and/or their relative abundance of loblolly pines.

As in previous years, effort was made to place traps in or near stands containing sawtimber size loblolly pine or areas where loblolly pine is most abundant. Traps were distanced at least 40 feet from any pine tree and checked weekly by FFS foresters in March. Numbers of SPBs and their clerid beetle predators (*Thanasimus dubius*) were counted for each of the four weekly collections per trap.

Numbers of SPB/trap/day and the %SPB were then applied to the Modified SPB Prediction Chart model (Ron Billings, Texas Forest Service) to provide a forecasted level of SPB activity for the remainder of the year. Forecasted activity was based on a relative scale of Low, Moderate, High, or Outbreak.

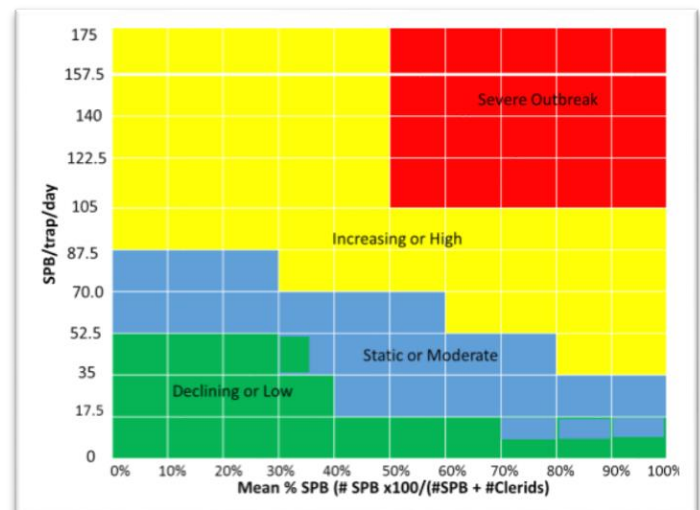


Fig. 2: The SPB Prediction Chart model provides a forecasted level of SPB severity based on the number of SPB captured per trap per day, and the % SPB (vs. their major predator, the checkered clerid beetle) per trap per day.

Results and Discussion

The 2018 SPB Pheromone survey results predict elevated levels of SPB activity throughout much of Region 2. District 6 had the highest SPB trap counts on average resulting in High and Outbreak levels of forecasted SPB activity in 5 out of 7 counties (Table 1 on next page). Average trap counts for Hamilton County predict an “Outbreak” status of SPB activity and should be closely monitored. Much of the SPB activity in 2017 was in District 6 and there is a high probability that continued activity will be similar if not greater for 2018. Early aerial surveillance has already taken place in District 6 as well as many other Districts in the State.

Other counties outside of District 6 that had “High” forecasted levels of SPB activity include Baker, Calhoun, Columbia, Lafayette, Levy, Marion, and Union. Marion County had one trap in which SPB counts reached an “Outbreak” prediction status, however trap counts averaged throughout all three traps put the county as a whole in the “High” forecast for SPB activity. Surveillance has already taken place for the area surrounding the trap in Marion County area which totaled an “Outbreak” prediction status and that area continue to be monitored throughout the season.

It is difficult to make a definitive statement on SPB population trends due to the numerous environmental factors that influence the insect’s population dynamics. It is noteworthy to mention that the recent uptick in SPB activity experienced over the past few years has not come close to rivaling the amount of SPB activity that occurred during the “outbreak” years of 2000-2002. Since then, the SPB Prevention Program has been successful in reducing available habitat for the beetle by encouraging private landowners to thin overcrowded and stressed pine stands that favor SPB infestations. However, due to the elevated numbers of SPB and low “predator to prey” ratios collected from the traps in this year’s survey, foresters are urged to be on the lookout for localized and sporadic infestations on stands that are overstocked, over-mature, or have poor soil drainage.

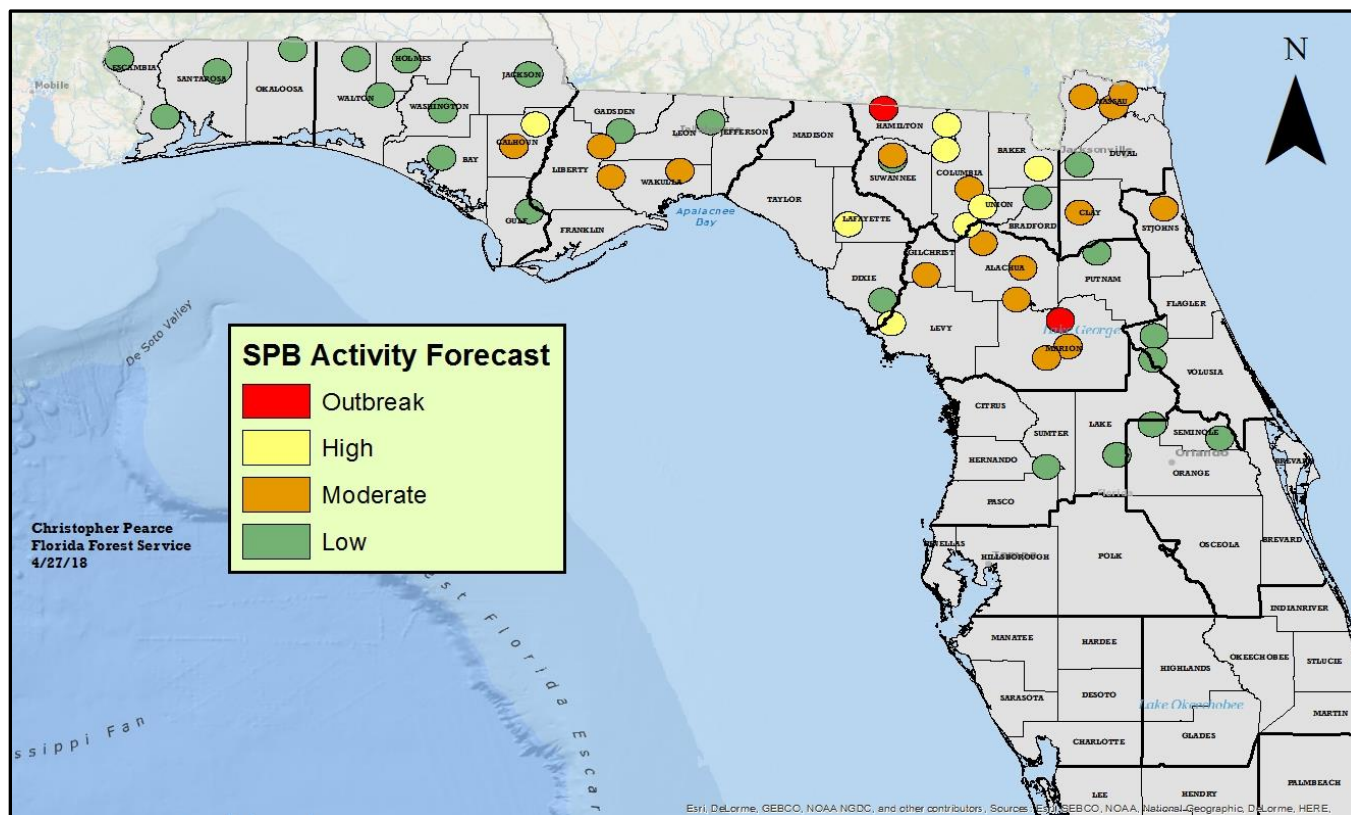


Fig. 3: 2018 Southern Pine Beetle Forecast Levels at Five Mile Trap Radii. Prediction values range from “Low” to “Outbreak” for each trap location. Elevated SPB activity is predicted for many counties in the Northeast portion of the state. Online version of the map is available at [SPB Trapping and Forecast Map](#)

Region/District	County	#Traps	# SPB	# Clerids	% SPB	SPB/Trap/Day	Clerids/Day	Prediction
Region 1								
Blackwater D-1	Escambia	2	3	35	8%	0.05	.63	Low
D-1	Okaloosa	1	0	59	0%	0	2.11	Low
D-1	Santa Rosa	1	1	34	3%	0.04	1.21	Low
D-1 Average			2	43	3.67%	0.03	1.32	Low
Chipola D-2	Bay	1	0	18	0%	0.00	0.6	Low
D-2	Gulf	1	36	5	88%	1.13	0.16	Low
D-2	Calhoun	2	3,055	210	94%	42.43	2.92	High
D-2	Holmes	1	29	41	41%	1.16	1.64	Low
D-2	Jackson	1	11	21	34%	0.4	0.81	Low
D-2	Walton	2	26	133	16%	0.49	2.51	Low
D-2 Average			527	72	46%	7.6	2.88	Low
Tallahassee D4	Wakulla	2	545	22	96%	10.9	0.4	Moderate
D-4	Gadsden	1	227	15	94%	8.7	0.6	Low
D-4	Leon	1	2	0	100%	0.1	0	Low
D-4	Liberty	1	731	67	92%	28.12	2.58	Moderate
D-4 Average			377	26	96%	11.96	0.9	Moderate
Region 2								
Perry D-5	Lafayette	1	1,449	12	99%	80.5	.67	High
D-5	Dixie	1	119	0	100%	6.61	0	Low
D-5 Average			784	6	99%	43.55	.34	High
Suwannee D-6	Baker	1	1,815	156	92%	62.6	5.4	High
D-6	Bradford	1	203	35	85%	7	1.21	Low
D-6	Columbia	3	4,328	171	96%	51.5	2	High
D-6	Hamilton	2	8,550	126	99%	101.8	1.5	Outbreak
D-6	Suwannee	2	929	7	99%	16.6	0.1	Moderate
D-6	Union	1	1,111	42	96%	52.9	2	High
D-6 Average			2,823	90	95%	48.73	2.04	High
Jacksonville D7	Clay	1	895	63	93%	31.96	2.25	Moderate
D-7	Duval	1	34	29	54%	1.21	1.04	Low
D-7	Nassau	3	2,111	63	97%	28.1	0.8	Moderate
D-7 Average			1,014	52	81%	20.42	2.04	Moderate
WaFC D-8	Alachua	3	1,282	39	97%	15.1	0.5	Moderate
D-8	Gilchrist	1	367	3	99%	13.11	0.11	Moderate
D-8	Levy	1	1,478	9	99%	35.2	0.21	High
D-8	Marion	3	4,719	45	99%	55.5	0.5	High
D-8	Putnam	1	124	5	96%	4.6	0.2	Low
D-8 Average			1,594	20	98%	24.7	0.3	Moderate
Region 3								
Bunnell D-10	St. Johns	1	354	9	98%	12.64	0.3	Moderate
D-10	Volusia	2	52	0	100%	1	0.00	Low
D-10 Average			203	5	99%	6.82	0.15	Low
WFC D-11	Hernando	1	75	0	100%	3.6	0.00	Low
D-11	Lake	1	8	18	31%	0.3	0.6	Low
D-11 Average			42	9	65.5%	1.95	0.3	Low
D-12	Orange	1	15	0	100%	0.5	0	Low
D-12	Seminole	1	1	0	100%	0.04	0	Low
D-12 Average			8	0	100%	0.27	0	Low
Statewide Average			991	43	77%	19.31	1.07	Moderate
Statewide Total		49	34,686	1,521				

Table 1: Florida Southern Pine Beetle Spring Survey Summary Results for 2018

As in previous years, all counties in FFS Districts/Centers 1-12 have been directed to conduct an initial aerial SPB detection survey. Procedural guidelines for aerial surveys, ground checking, and reporting are available to FFS foresters on the Forest Health website at: <http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Forest-Health/Forest-Insects/Southern-Pine-Beetle/Southern-Pine-Beetle-Aerial-Survey-Procedures>

Because of limited survey inputs, a vast resource of potential habitat, and the limitations of the predictive model, the forecast presented here cannot be expected to be 100% accurate. Low/Static SPB predictions do not guarantee that troublesome infestations will not develop on a local or limited basis in some counties. Activity predictions are likely to be more accurate for the 5-mile radius region around each trap than for the county as a whole. Given the limitations of the forecast, the recent drought and/or flooding experienced by some areas in the state, and the potential for environmental conditions to change after the survey, areas of suspicious pine mortality should be promptly inspected for evidence of SPB in the coming months.

Sincere thanks to all the foresters who were involved in installing traps, making weekly collections, and submitting samples for processing. Please forward any and/or all of this report and the accompanying attachments to anyone who may be interested.

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Fig. 4: Checkered clerid beetle (*Thanasimus dubius*), predator of the southern pine beetle.



Fig. 5: Lindgren funnel trap used to monitor southern pine beetle populations.



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