

2026 Florida Southern Pine Beetle Forecast

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Background: *Dendroctonus frontalis*, commonly known as the southern pine beetle (SPB), is among the most destructive native forest pests in the southeastern United States. When its population is very high, outbreaks can occur in which SPB spreads aggressively to kill large areas of pine forest, overwhelming the natural defenses of trees through its “mass attack” behavior. Early detection of SPB activity is essential to reduce timber losses and manage such outbreaks. However, long periods of time can occur when the SPB population is low, and infestations are uncommon.

Since 1995, the Florida Forest Service (FFS) has participated in a coordinated, multi-state spring trapping survey in collaboration with other state forest agencies throughout the South and Northeast. This annual survey monitors the number of SPB and of one of its main predators, the wavering checkered beetle (*Thanasimus dubius*), captured in pheromone-baited flight traps during the SPB primary spring dispersal period. The results are used with a predictive model to provide an early-season, county-level forecast of SPB population trends and activity levels. This allows forest managers to identify areas that should be prioritized for SPB detection flights and ground survey activities that begin in late spring and early summer. The trapping survey also provides a long-term regional dataset that can be used to further develop and refine prediction models.

2026 Results Summary: The results of the 2026 survey indicate that the probability of SPB activity is **low** for most of North Florida, with a minimal likelihood of any SPB infestations (areas where SPB is actively killing trees) occurring in most counties (Figure 1). An elevated risk of one or more SPB infestations occurring is predicted for Gadsden (74.1%), Wakulla (31.4%), Leon (23.8%), Liberty (22.6%), Alachua (17.8%), and Okaloosa (11.6%) Counties. The probability of an outbreak (defined here as a county having >50 infestations) is below 1% for most of the counties in Florida where trapping was conducted (Appendix Table 1). The highest forecasted probability for a significant outbreak is in Gadsden County, at 33.2%.

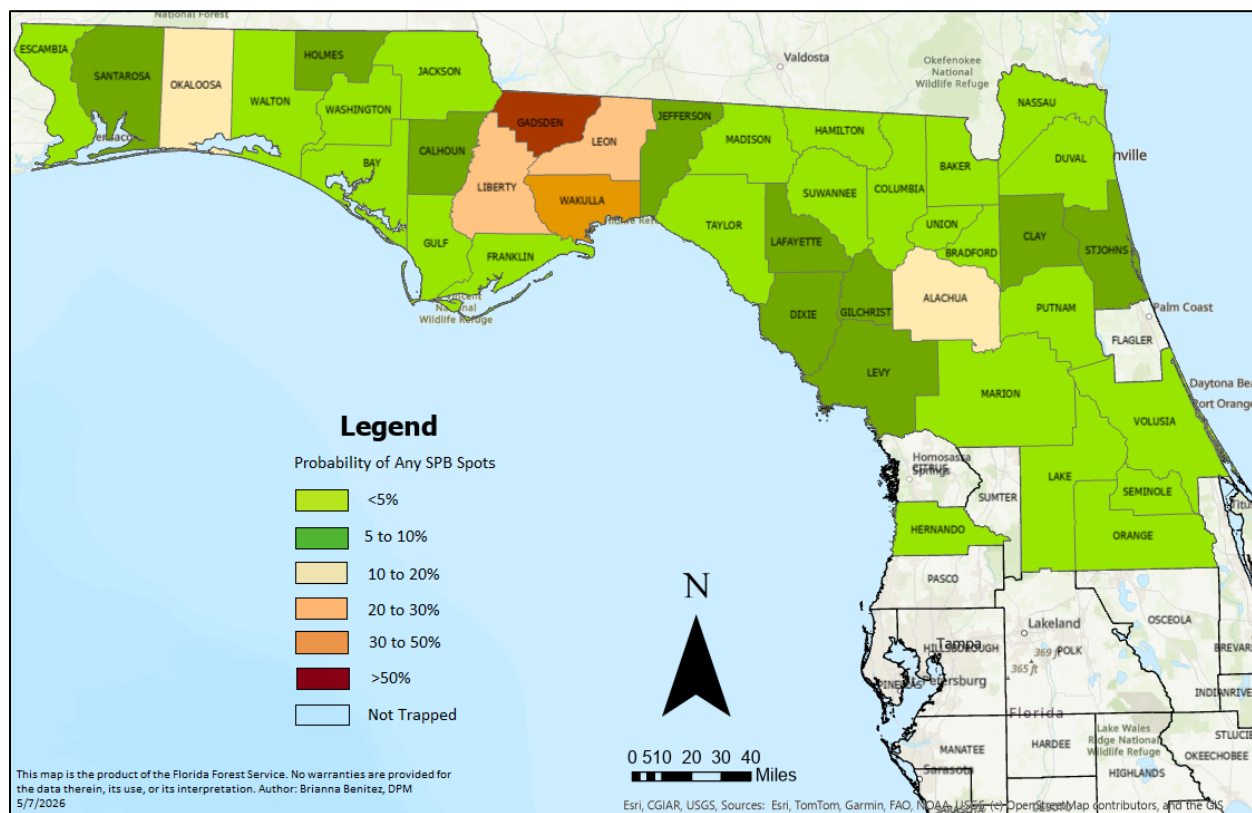


Figure 1: Forecasted probability of any southern pine beetle activity occurring during the 2026 season in the Florida counties surveyed. These results are based on the predictive model developed by the Dartmouth Applied Learning and Innovation (DALI) Lab at Dartmouth College.

Results and Discussion

The forecast model predicts low levels of SPB activity throughout most of Florida. The overall low numbers of SPB collected from most trap locations (Figure 2) indicate that a continuation of the minimal SPB activity experienced in most of the state in recent years will likely continue in 2026. Traps in many counties captured some SPB but usually averaged <10 beetles/trap/day over the course of the survey (Appendix Table 1). Additionally, the number of wavering checkered beetles trapped per day was greater than or equal to the number of SPB trapped per day in most locations. Wavering checkered beetles eat SPB and are attracted to SPB pheromones, and a robust population of these predators can help to keep SPB populations at low levels.

The high predicted probability of SPB activity in Gadsden County results from very high numbers of SPB collected in that county's trap locations, combined with the fact that several active SPB infestations were detected in Gadsden County in 2025. This prediction is further supported by the early detection of several small SPB infestations in Gadsden County starting in April 2026. Along with the more moderately elevated trap collections in neighboring counties, this indicates that aerial and ground surveys for further SPB activity should be prioritized in the Tallahassee area. Alachua and Okaloosa Counties should also be surveyed early and monitored carefully.

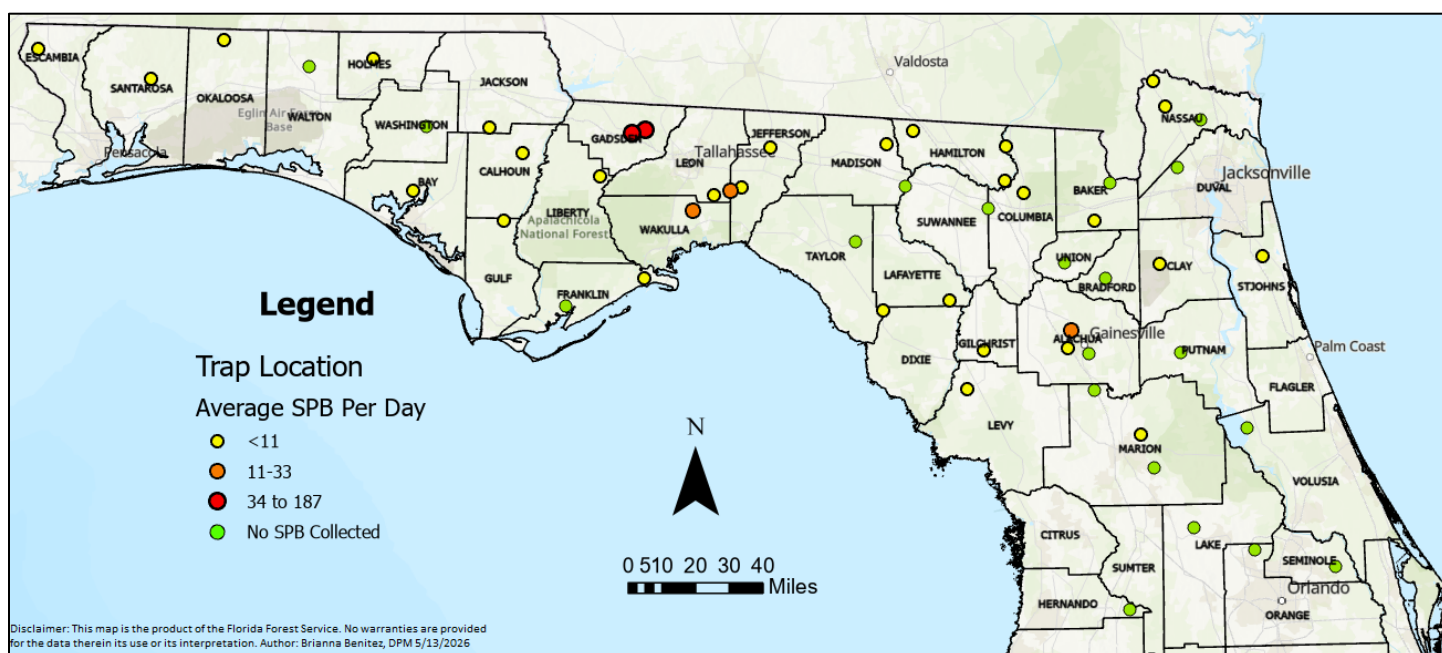


Figure 2: Southern pine beetle trap locations and the average number of SPB caught per day for each trap during the 2026 Pheromone Trapping Season.

Interaction with Drought: This year's survey results should also be considered in the context of the severe and prolonged drought conditions affecting most of Florida this spring, causing water stress that has led to above-average levels of tree mortality. Statewide, nearly all pine bark beetle activity associated with this extreme weather has involved the common "stress-responding" species: pine engraver beetles (*Ips* spp.) and black turpentine beetle (*Dendroctonus terebrans*, or BTB). These are beetles that attack pines which are already severely stressed, declining, or recently dead from other causes, and they don't spread aggressively to attack nearby healthy trees. In most cases, there is little need for action to control or manage these insects. Thus, correct identification of the bark beetles at work is essential for determining the appropriate response to an infestation.

Drought conditions typically do not lead to SPB outbreaks. However, in areas where the SPB population is already elevated, it will often infest the same compromised trees as *Ips* and BTB. These trees can sometimes provide starting points from which SPB may build in numbers and continue to spread into adjacent trees and forests. Conversely, severely water-stressed trees may provide lower-quality habitat for SPB survival and reproduction, and extreme summer heat tends to suppress SPB development. Thus, while drought and other stressors may worsen SPB activity where it is already occurring, these interactions are complex and difficult to predict.

Methods

Survey Range and Site Selection: Florida's SPB survey program is conducted in the northern region of the state where southern pine beetle activity in Florida has historically occurred, corresponding to the natural range of loblolly pine (*Pinus taeda*), a preferred host species of SPB. FFS foresters and other local field staff set up one to three traps in each county. An effort is made to place traps in or near stands containing sawtimber-sized loblolly pine, or in areas of each county where loblolly pine is most abundant. Traps are distanced at least 50 feet from any pine tree. Florida's 2026 survey was conducted at 54 locations across 40 counties (Figure 2).

Survey Traps: This survey utilized Lindgren funnel traps baited with lures containing alpha- and beta-pinene (volatile pine odors) and the SPB aggregation pheromone frontalin (Figure 4). *Endo*-brevicomin lures were placed near each trap to boost attractiveness to SPB adults, thereby increasing trap catches and prediction accuracy (based on previous research). Traps were checked weekly over a six-week period beginning in February and ending in April, with more southern counties starting a week earlier.

Data Collection: Weekly trap collections were strained and stored in a freezer. After the final week, collections were sent to specialists in the FFS Forest Health Section, who identified and counted the numbers of SPB and wavering checkered beetles in each of the six weekly collections per trap. A total of 17,924 SPB and 3,314 checkered beetles were identified and counted from the 313 weekly collections that were submitted in the 2026 survey. As in other states, Florida's SPB trap results are entered into a standardized format using the ESRI application Survey123 for ArcGIS. This standardization enables data to be directly accessible and shared in real-time with all participating state and federal forestry agencies and other stakeholders. Once trapping results are submitted, a variety of predictions can be generated which forecast the likelihood of SPB activity on a county-by-county basis.

Prediction Modeling: The current forecast model was developed by researchers at Dartmouth College in cooperation with partners in the USDA Forest Service and state forestry agencies. This next-generation model is based on several variables that have been found to be highly predictive of SPB activity based on trapping and activity data collected since 1988. More information about the prediction model is available at <https://www.spbpredict.com/>.



Figure 4. Left: Southern Pine Beetle (*Dendroctonus frontalis*) Length 2-4 mm. Image by Jeff Eickwort, Florida Forest Service. Center: Lindgren funnel trap used to monitor southern pine beetle populations. Image by Brianna Benitez, Florida Forest Service. Right: A Wavering checkered beetle (*Thanasimus dubius*), predator of the southern pine beetle. Image by Jeff Eickwort, Florida Forest Service.

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 SPB activity 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 whole county.

Given the limitations of the forecast, local weather extremes and variations, 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. The SPB Assistance and Prevention Program has been very successful in reducing available habitat for the beetle by encouraging private landowners to thin overcrowded and stressed pine stands that favor SPB infestations. Foresters are urged to be on the lookout for localized and sporadic infestations in stands that are over-stocked, over-mature, or have poor soil drainage.

As in previous years, FFS County Foresters and field staff will be asked to conduct at least one aerial SPB detection survey flight over all counties in Districts 1-12, with additional flights needed if any SPB activity is detected.

Sincere thanks to all FFS personnel who were involved in installing traps, making weekly collections, and submitting samples for processing. We would also like to acknowledge the continuing support from the USDA Forest Service, as well as Matthew Ayers and Carissa Aoki for their work on the next-generation SPB prediction model. Please forward this report to anyone who may be interested.

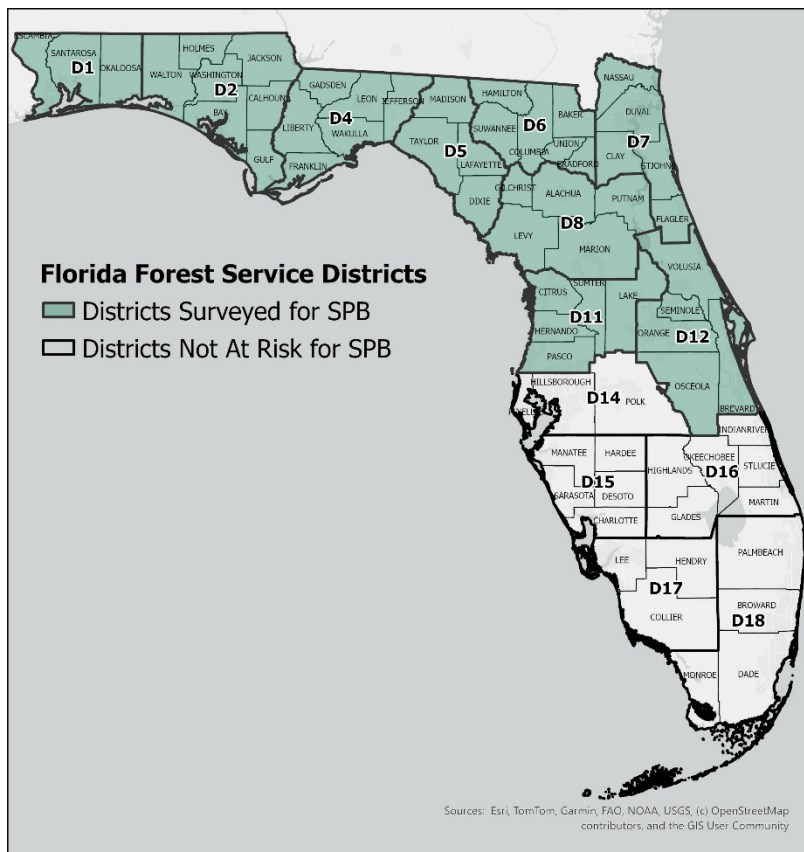
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Appendix



Table 1: County-level survey trapping data and variables used to generate SPB activity and outbreak probabilities from the SPB prediction model. For the purposes of this survey, the “Probability of greater than 50 SPB spots” is the probability of an outbreak-level event occurring.

District	County	Number of traps	SPB per day	Checkered beetles per day	# SPB spots last year	# SPB spots two years ago	Probability of any SPB spots occurring	Probability of greater than 50 SPB spots
Blackwater D-1	Escambia	1	.12	1.64	0	0	5.3%	0.3%
D-1	Okaloosa	1	2.95	3.38	0	0	11.6%	1.2%
D-1	Santa Rosa	1	0.14	1.88	0	0	5.8%	0.4%
Chipola D-2	Bay	1	0.02	0.07	0	0	3.4%	0.2%
D-2	Calhoun	1	0.50	0.10	0	0	7.9%	0.6%
D-2	Gulf	1	0.02	0.24	0	0	3.4%	0.2%
D-2	Holmes	1	0.21	2.83	0	0	6.0%	0.4%
D-2	Jackson	1	0.07	0.64	0	0	3.4%	0.2%
D-2	Walton	1	0	1.02	0	0	3.4%	0.2%
D-2	Washington	1	0	0.38	0	0	3.4%	0.2%
Tallahassee D-4	Wakulla	1	32.74	3.14	0	0	31.4%	6.5%
D-4	Gadsden	2	334.6	51.67	5	0	74.1%	33.2%
D-4	Franklin	2	0.02	.59	0	0	3.4%	0.2%
D-4	Liberty	1	10.45	.74	0	0	22.6%	3.7%
D-4	Leon	2	26.45	1.45	0	0	23.8%	4.0%
D-4	Jefferson	2	1.26	0.52	0	0	8.6%	0.7%
Perry D-5	Lafayette	1	1.10	0.10	0	0	10.5%	1.0%
D-5	Madison	1	0.02	4.88	0	0	3.4%	0.2%
D-5	Dixie	1	0.07	0.07	0	0	7.5%	0.6%
D-5	Taylor	1	0	0.07	0	0	3.4%	0.2%
Suwannee D-6	Baker	2	0.02	0.07	0	0	3.4%	0.2%
D-6	Bradford	1	0	0	0	0	3.4%	0.2%
D-6	Columbia	2	0.05	0.12	0	0	3.4%	0.2%
D-6	Hamilton	2	0.07	1.71	0	0	3.4%	0.2%
D-6	Suwannee	2	0	.71	0	0	3.4%	0.2%
D-6	Union	1	0	0.25	0	0	3.4%	0.2%
Jacksonville D-7	Clay	1	0	0.19	0	0	6.5%	0.5%
D-7	Duval	1	0	0.05	0	0	3.4%	0.2%
D-7	Nassau	3	0.19	0.83	0	0	3.4%	0.2%
D-7	St. Johns	1	0.14	0	0	0	5.3%	0.3%
Waccasassa D-8	Alachua	3	15.60	0.40	0	0	17.8%	2.4%
D-8	Gilchrist	1	0.24	0.02	0	0	6.0%	0.4%
D-8	Levy	1	0.36	0.07	0	0	7.0%	0.5%
D-8	Marion	3	0.14	0.14	0	0	4.5%	0.3%
D-8	Putnam	1	0	0	0	0	3.4%	0.2%
Withlacoochee D-11	Hernando	1	0	0	0	0	3.4%	0.2%
D-11	Lake	1	0	0	0	0	3.4%	0.2%
Orlando D-12	Volusia	1	0	0	0	0	3.4%	0.2%
D-12	Orange	1	0	0	0	0	3.4%	0.2%
D-12	Seminole	1	0	0	0	0	3.4%	0.2%