



2019 Georgia Southern Pine Beetle Prediction Survey Report

Georgia Forestry Commission
Forest Health Staff

The Georgia Forestry Commission (GFC) participates annually in the southern pine beetle (SPB) prediction trapping program. Southern pine beetles are the most destructive forest pests in the southeastern states. Survey results are documented in the report so that activity and damage levels can be anticipated and mitigated.

The Georgia Forestry Commission follows the SPB Prediction Trapping protocol set up by Texas A&M. A 12-funnel Lindgren trap is baited with a three lure system: Frontalin, Sirex and the endo-brevicommin flexlure (Figure 1). Traps are placed in the field to coincide with redbud bloom (around the first of March in the southern part of the state and mid- March in the northern part of the state). The Georgia Forestry Commission placed 45 traps across the state in 38 counties and six weekly samples were collected from each trap. The number of SPB and clerid beetles (a natural predator of SPB) were counted each week.

Figure 2 shows the results from the trapping survey, classified as overall SPB per day during the six-week trapping period. Six of the 38 counties with traps had moderate numbers of SPB caught during the trapping period. These include Clarke, Dawson, Greene, Haralson, Quitman and Randolph Counties. No counties had high numbers of beetles per day.

In 2018, the USDA Forest Service (USFS) and all southeastern state cooperators collaborated with Dartmouth College and Bates College, through the Science and Technology Development Program, (STDP) to develop a new prediction model. They found the two greatest factors in predicting the probability of the area having SPB spots are the number of SPB collected per two-week period in the current year, and the number of SPB spots in that county last year. This year is the first year GFC is using this model. The results from the 2019 survey predict that overall SPB activity will be low across the state, with two areas of high probability of any spots (Figure 3). Figure 3 shows the probability of a county that had a trap having any SPB spots this year. Across the state, the probability of having any spots ranges from a 0-80%. Rabun County has this highest probability of having any spots, at 80%. Habersham, Jasper, Jones and Putnam Counties have the next highest probability of having any SPB spots, between 60-80%. Bartow, Chattooga, Clarke, Dawson, Greene, Haralson, Lumpkin, Quitman and Randolph Counties have a 20-40% chance of having SPB spots. The remaining 24 counties have less than 20% chance of having any SPB spots.

Another way to present the data are shown in Figure 4, as the probability of a county having greater than 20 SPB spots. These results show Rabun County as having an 80% chance and Habersham



Figure 1: GFC Forester collecting samples from a SPB trap.

County having a 60% chance of having more than 20 spots. Perhaps a more informative prediction, because it accounts for more variability within the historical data, is the probability of greater than 50 spots in a county (Figure 5). Again, Rabun County have the highest probability of having greater than 50 spots, with a 60% chance. Jasper, Jones, Habersham and Putnam Counties have a 40% chance of having greater than 50 spots. The remaining 33 counties that were trapped in 2019 have less than 10% chance of having greater than 50 spots. To put this in perspective, over the last decade, we have only seen the total number of spots statewide rise above 50 three out of ten years.

These prediction models help guide landowners in management decisions. They do not guarantee that outbreaks will or will not occur on their property. The best advice is for landowners to manage for healthy forests with techniques such as thinning, prescribed burning and invasive species control. In the past decade, SPB outbreaks have been limited to infestations in stands that are either over-stocked or over-mature. Southern pine beetle favors pine stands that are over-crowded and stressed. The GFC will begin aerial surveys for southern pine beetle in June 2019 and additional aerial surveys will be performed throughout the year.

For additional information contact:

Chip Bates
Forest Health Coordinator
Georgia Forestry Commission
cbates@gfc.state.ga.us

Lynne Womack
Forest Health Specialist
Georgia Forestry Commission
lwomack@gfc.state.ga.us

Southern Pine Beetle Trap Locations

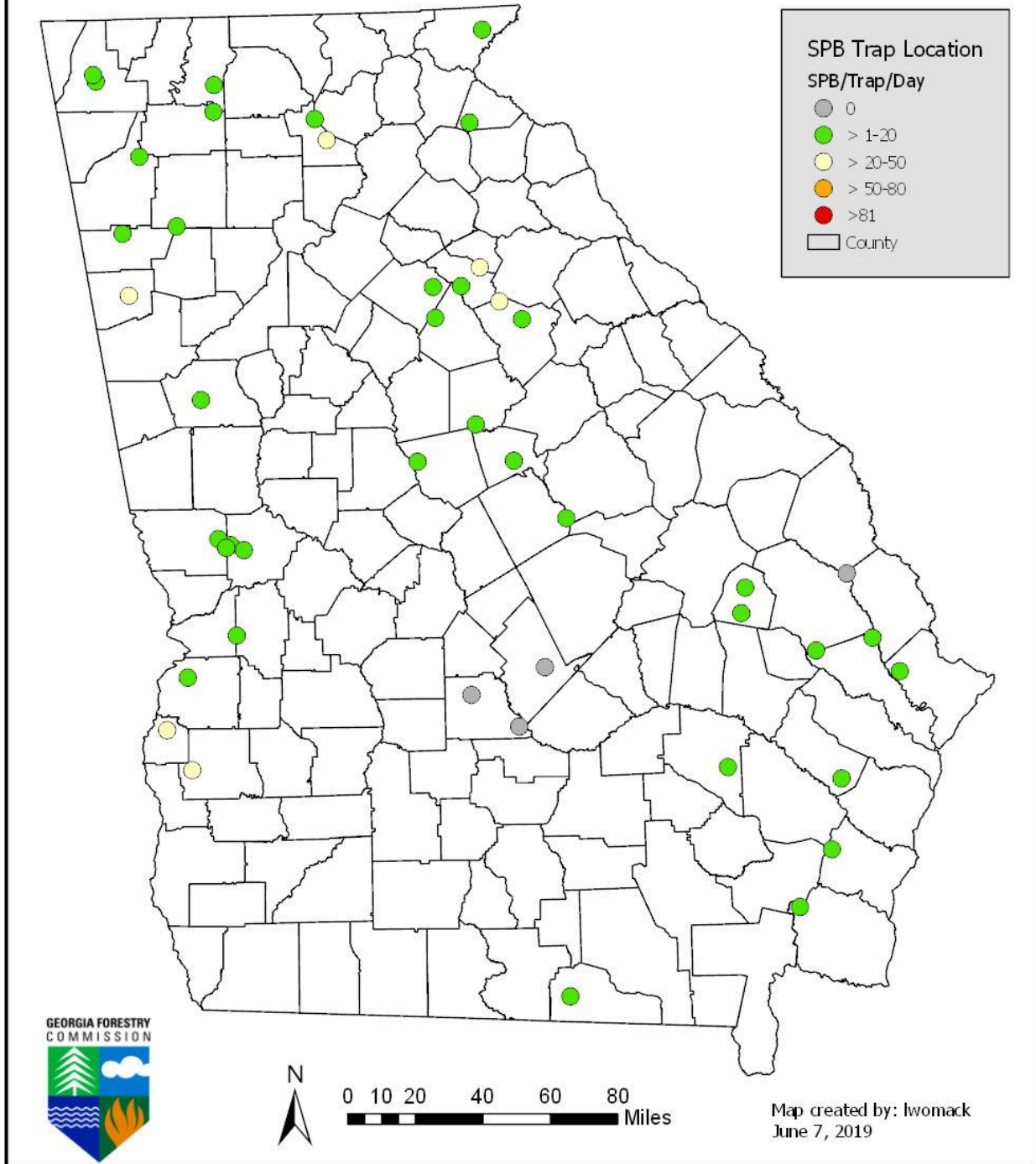
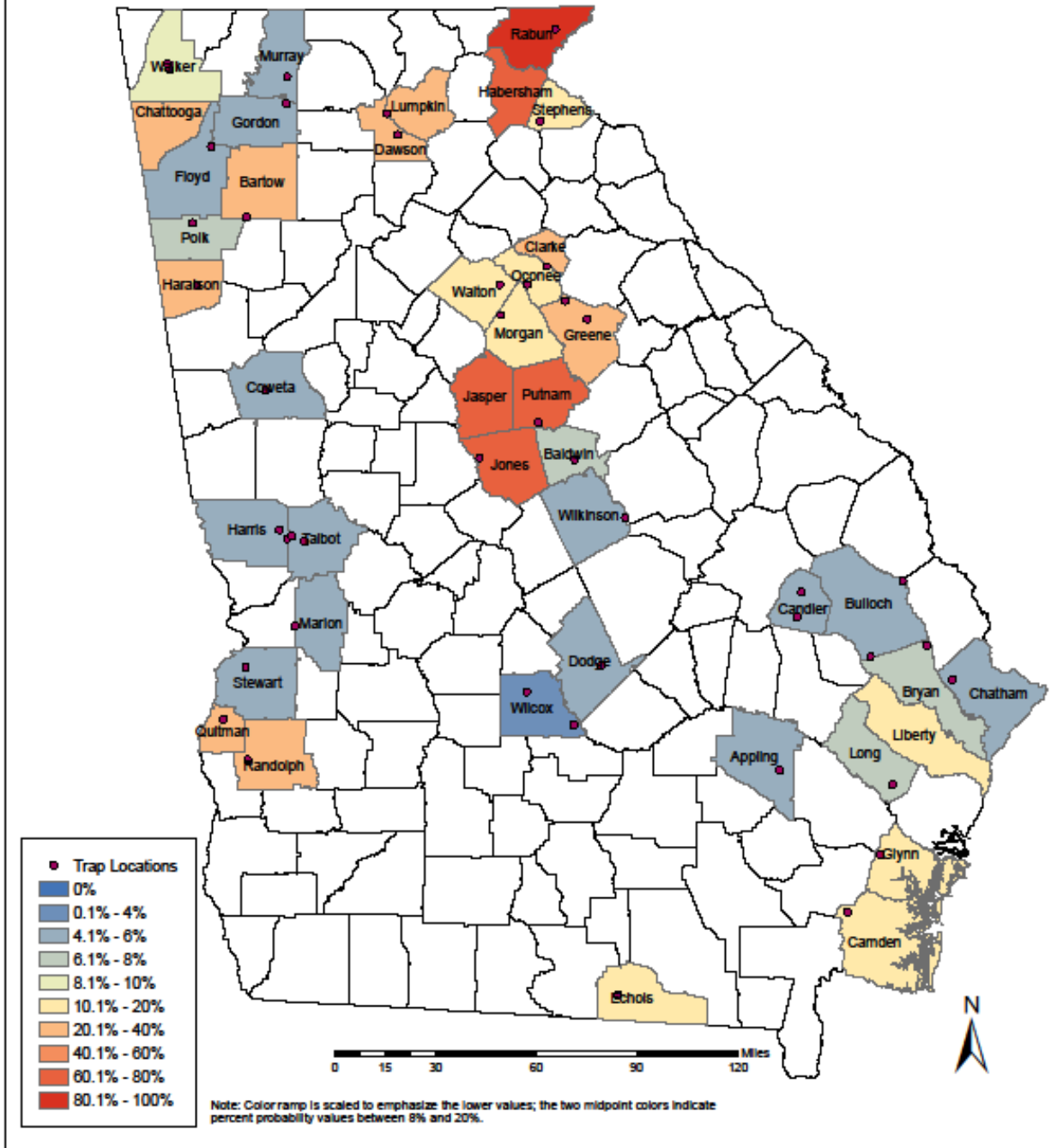


Figure 2: Southern Pine Beetle trap locations established by the Georgia Forestry Commission and the number of SPB caught per day over the six-week period.

Figure 3: Probability of (Any) Spots



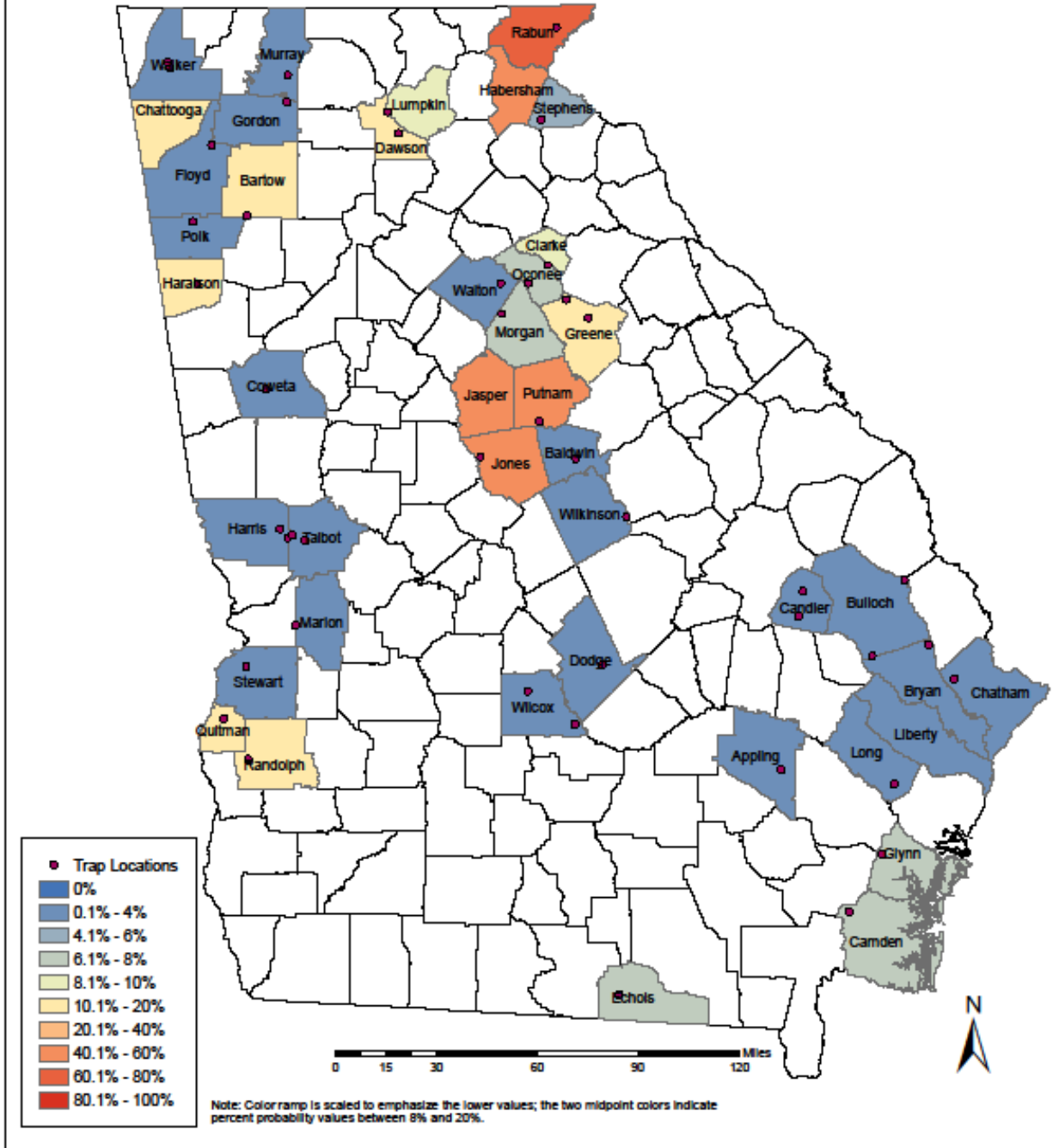
Southern Pine Beetle Outbreak Prediction Maps: Georgia 2019

The outbreak prediction model is based on a number of predictor variables that were determined to provide the best fit to the data. Most prominent among the driving variables were number of SPB/two week time period, and number of spots last year.

The SPB prediction project is supported by USDA Forest Service: Science and Technology Development Program (STDP)
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Figure 3: Probability of any infestations

Figure 4: Probability of >20 Spots



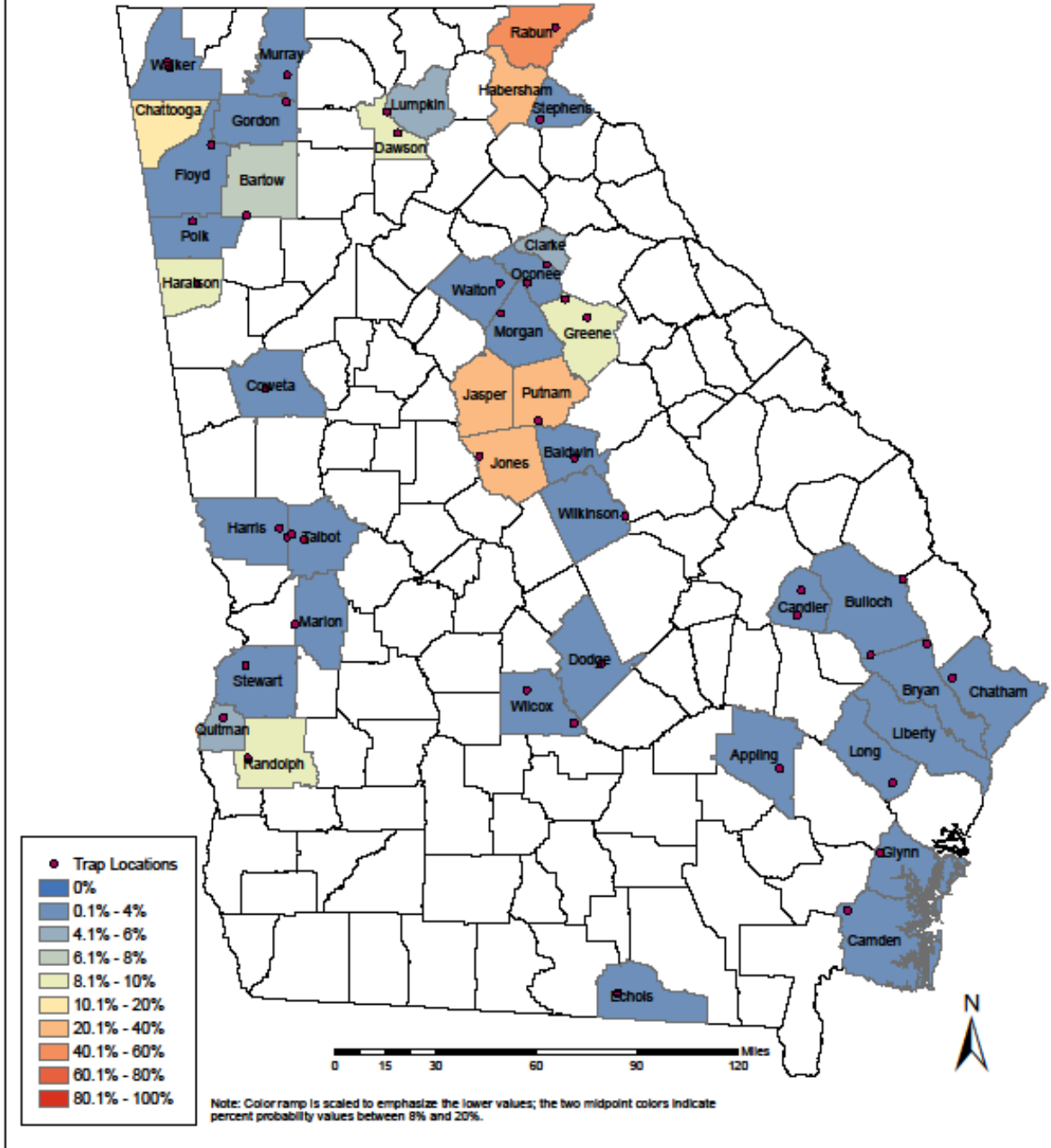
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Figure 4: Probability of 20 or more infestations

Figure 5: Probability of >50 Spots



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Figure 5: Probability of 50 or more infestations