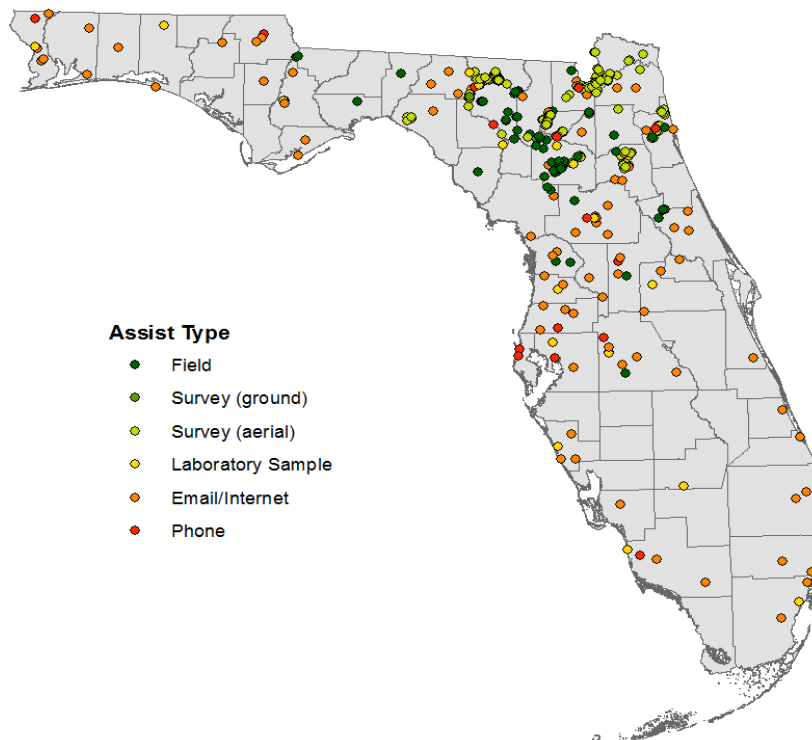




Florida Forest Health Highlights 2016

Florida's forests are expansive and diverse and include subtropical systems, baldcypress wetlands, pine flatwoods, pine-oak scrubs, gum-cypress swamps, coastal mangroves, isolated hardwood hammocks, and more extensive upland hardwoods. The state's mild climate, tourism industry, and many ports of entry also make it particularly vulnerable to the introduction and spread of non-native invasive species. Challenges to forest health in the Sunshine State are therefore myriad and complex. What follows are only a small sample of notable examples of Florida's forest pest and disease scenarios from 2016.

With substantial support from the USDA Forest Service's Cooperative Forest Health Protection Program, the Florida Forest Service's Forest Health Section staff is constantly involved in countless technical assistance requests from a wide variety of recipients. This recipient list includes (but is not limited to) The International Society of Arboriculture, The University of Florida and the Cooperative Extension Service, The Division of Plant Industry, FFS personnel, Forest Industries, the Society of American Foresters, The Florida Forestry Association, Florida A&M University, Private Landowners, and others. The FFS Forest Health Section staff provided over identifications, diagnoses, and management recommendations regarding over 450 forest health-related incidents statewide.



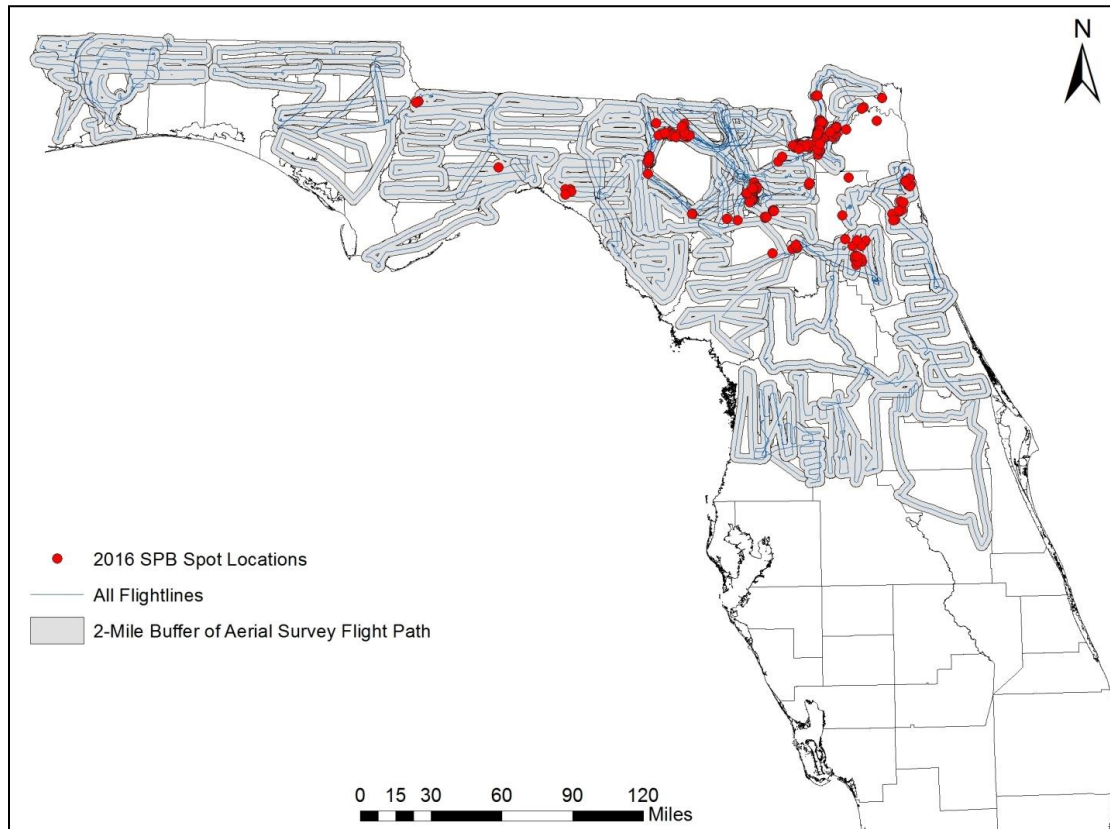
Locations of forest-health-related incidents for which the FFS Forest Health Section provided assistance.

Southern Pine Beetle Aerial Survey

The Southern Pine Beetle Aerial Surveys were conducted from May through September in northern and central Florida. Due to the destructive potential of this forest pest, at least one annual precautionary survey for SPB activity is warranted in each of the 36 counties typically affected by this aggressive bark beetle per year. Counties which were chosen for surveillance were based on historical occurrences of SPB in Florida.

Early and rapid detection (and subsequent control) of SPB spots is critical to preventing the development of outbreaks and for minimizing damage when outbreaks do occur. SPB infestations have a remarkable potential to grow rapidly and cause extensive pine mortality under certain conditions. Florida Forest Service aerial surveyors are trained to detect and locate SPB infestations from the air so they can notify landowners/managers via ground checks.

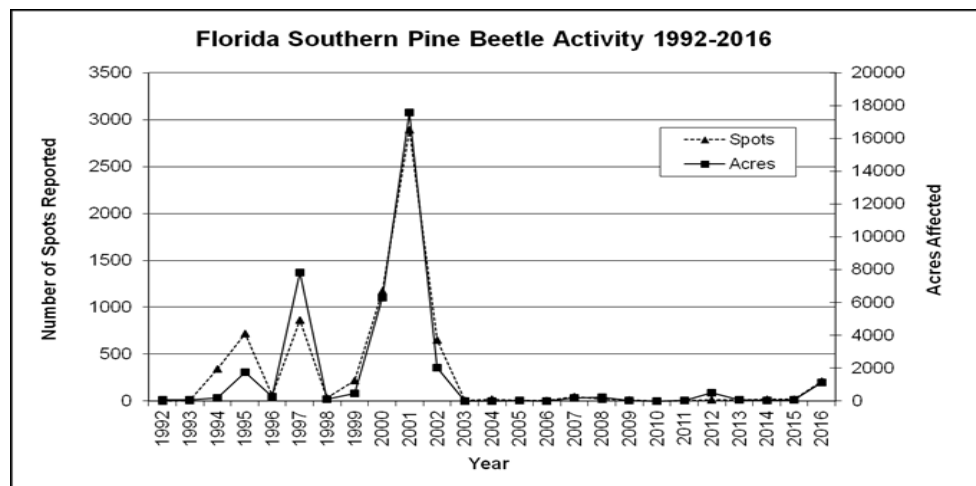
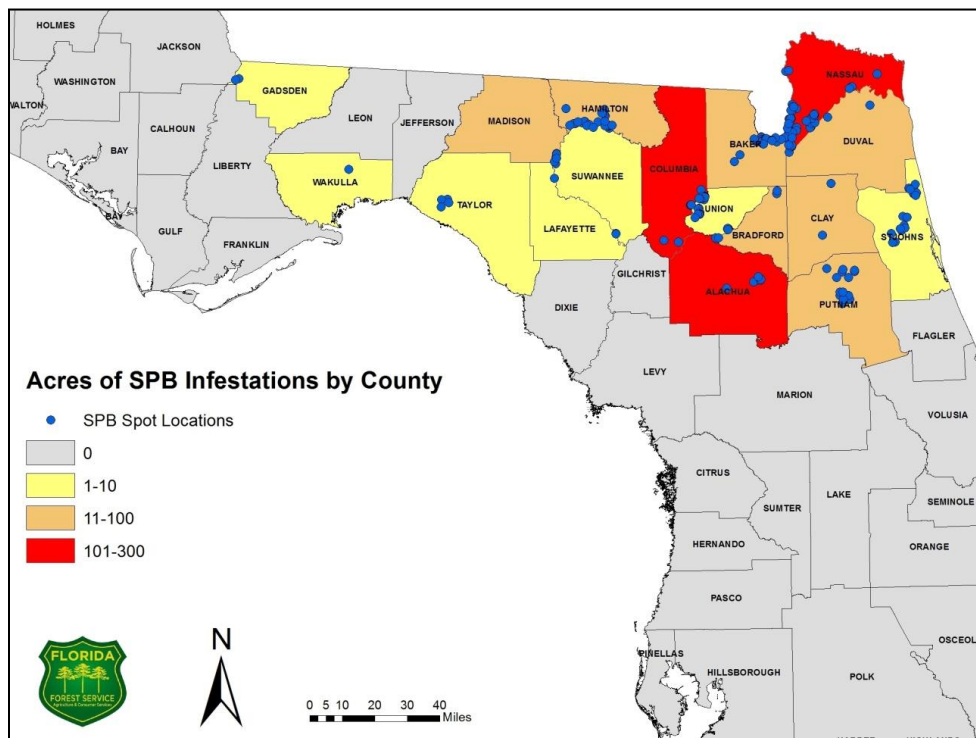
The 2016 annual aerial survey to detect southern pine beetle infestations was conducted over 45 flights totaling 10,800 linear miles (to observe an estimated twenty million acres).



2016 Southern Pine Beetle Activity:

Southern pine beetle activity was moderate in 2016, with 210 confirmed infestations (spots), in 15 counties totaling an estimated 1,145 acres. A majority of SPB spots were located in the Northeastern part of the state. Alachua County had the most damage with 272 acres of infested timberland. Columbia county had the second greatest amount of damage with 165 acres and Nassau county had the highest amount of spots (51) totaling 139 acres of SPB damage. Southern pine beetle activity in 2016 was

notably higher in comparison to the low activity that Florida has experienced since 2003. Southern pine beetle infestations occurred within both natural and plantations stands of mostly loblolly and slash pines, and were located on private, state, and federal lands.

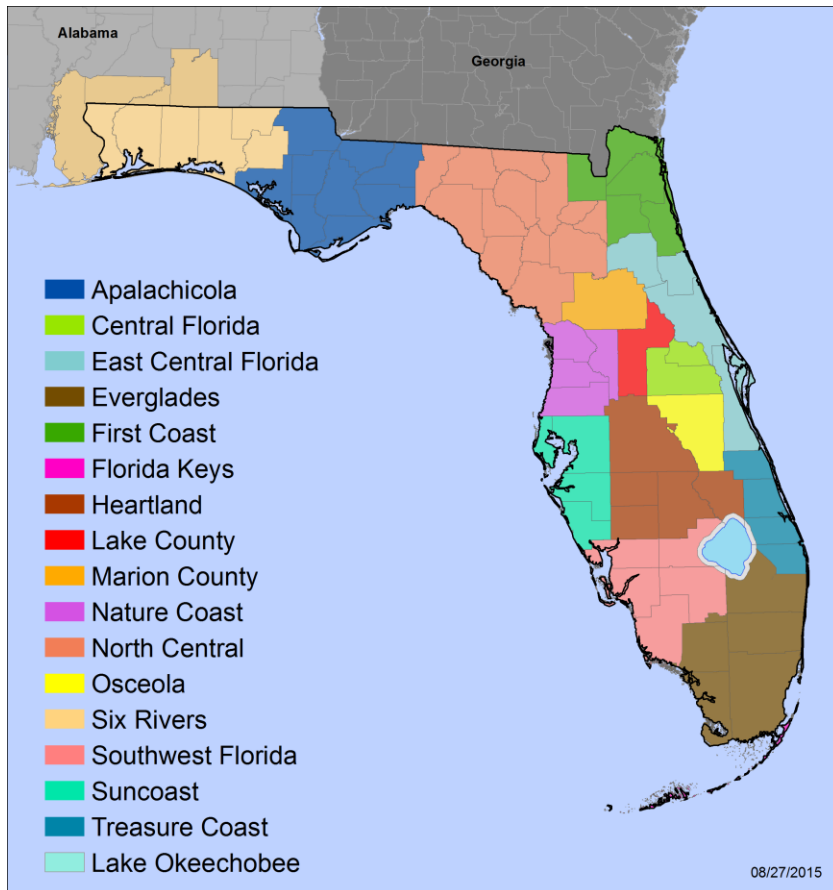


Acres of pine forest killed by SPB in Florida from 1992 to 2016. Although there was an uptick in SPB activity in 2016 it was still relatively small in comparison to the outbreak period from 2000 to 2003. Extra precaution will be taken in 2017 to monitor counties in the northeastern part of the State that may be experiencing an upward trend of SPB activity.

Non-native Invasive Plants

Non-native invasive plant species represent a substantial threat to forests and other lands in Florida; they can reduce forest productivity and diversity, degrade the value of the land for wildlife

habitat and recreation, and increase the risks and effects of wildfires. As invasive plant problems often cross property boundaries, the Florida Forest Service advocates a partnership approach, cooperating with other public agencies and private land managers to address invasive plant problems across the landscape. This is exemplified by Florida's Cooperative Invasive Species Management Areas (CISMAs), representing voluntary regional partnerships between many public and private stakeholders, with the common goal of reducing the distribution and future spread of invasive species. These groups are supported at the state level by the Florida Invasive Species Partnership (www.floridainvasives.org).



Coverage of CISMA groups in Florida. Map provided by the Florida Invasive Species Partnership (FISP).

Cogongrass (*Imperata cylindrica*):

Cogongrass is almost universally regarded as one of the most damaging invasive plants in the Southeast. Its rapid and aggressive growth, ease of propagation from rhizomes, tolerance of drought and poor soils, and fire-adapted traits have allowed it to invade into a wide variety of sites in Florida, greatly complicating land management. Once established on a site, cogongrass often requires multiple years of aggressive treatments to eradicate.



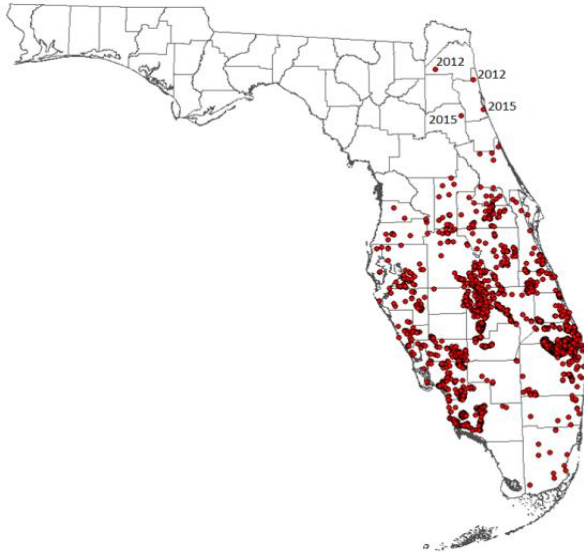
Although public conservation area managers are generally engaged in combating cogongrass, much of Florida's invaded area is on private land. In 2009, The Florida Forest Service began offering a cost-share program to non-industrial private landowners, to assist with the cost of treating cogongrass infestations with herbicide. Funded by a grant from the USDA Forest Service's Landscape Scale Restoration Program, the FFS Cogongrass Treatment Cost-Share Program has continued to accept applications in 2015 and 2016, approving 72 applications to treat over 1,112 acres of cogongrass infestations for two consecutive years.

Old World Climbing Fern (*Lygodium microphyllum*):



Old World Climbing Fern (OWCF) has been recognized as a pest plant in South Florida since the 1970s. This true fern (which can spread both vegetatively and by spores) is a climbing vine with very rapid growth, capable of climbing into and covering tree canopies. Like cogongrass, OWCF can increase the risk of damaging wildfires and disrupt natural communities. The Central Florida Lygodium Strategy (CFLS) is a program managed by The Nature Conservancy with the cooperation of FFS and other agencies. The goal is to limit the northward spread of OWCF by detecting and controlling infestations

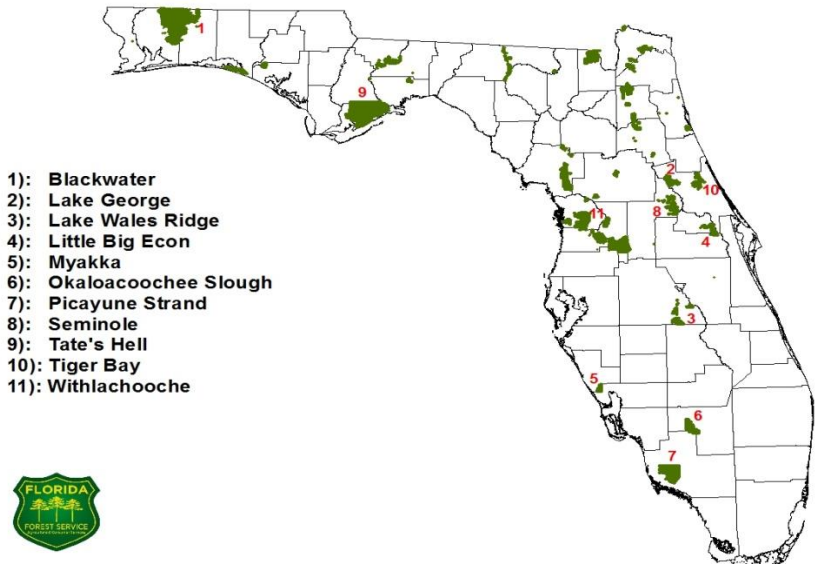
near or beyond the northern edge of the area where the plant is well-established. In 2012 and 2015, multiple OWCF infestations were detected in Northeast FL, well beyond the established range of the species. The CFLS and CISMA cooperators in that area have been aggressively treating these outlier populations in an effort to prevent this plant from gaining a new permanent foothold and spread. Only one new spot was detected and treated in 2016, just south of the northern migration line at Lake Woodruff National Wildlife Refuge.



Old World Climbing Fern recorded locations, showing the detection year of outlier populations in NE Florida. Data provided by the Early Detection and Distribution Mapping System (www.EDDMapS.org).

Invasive Species Treatments

Funding from the Cooperative Forest Health Protection Program is used to support invasive plant survey and control activities in Florida's State Forests. Exotic plant crews treated an estimated 5,980 acres of State lands inhabited by invasive weeds in 2016. Cogongrass (*Imperata cylindrica*) and Japanese Climbing Fern (*Lygodium japonicum*) continue to be the most troublesome weeds in a majority of State Forest land treated.

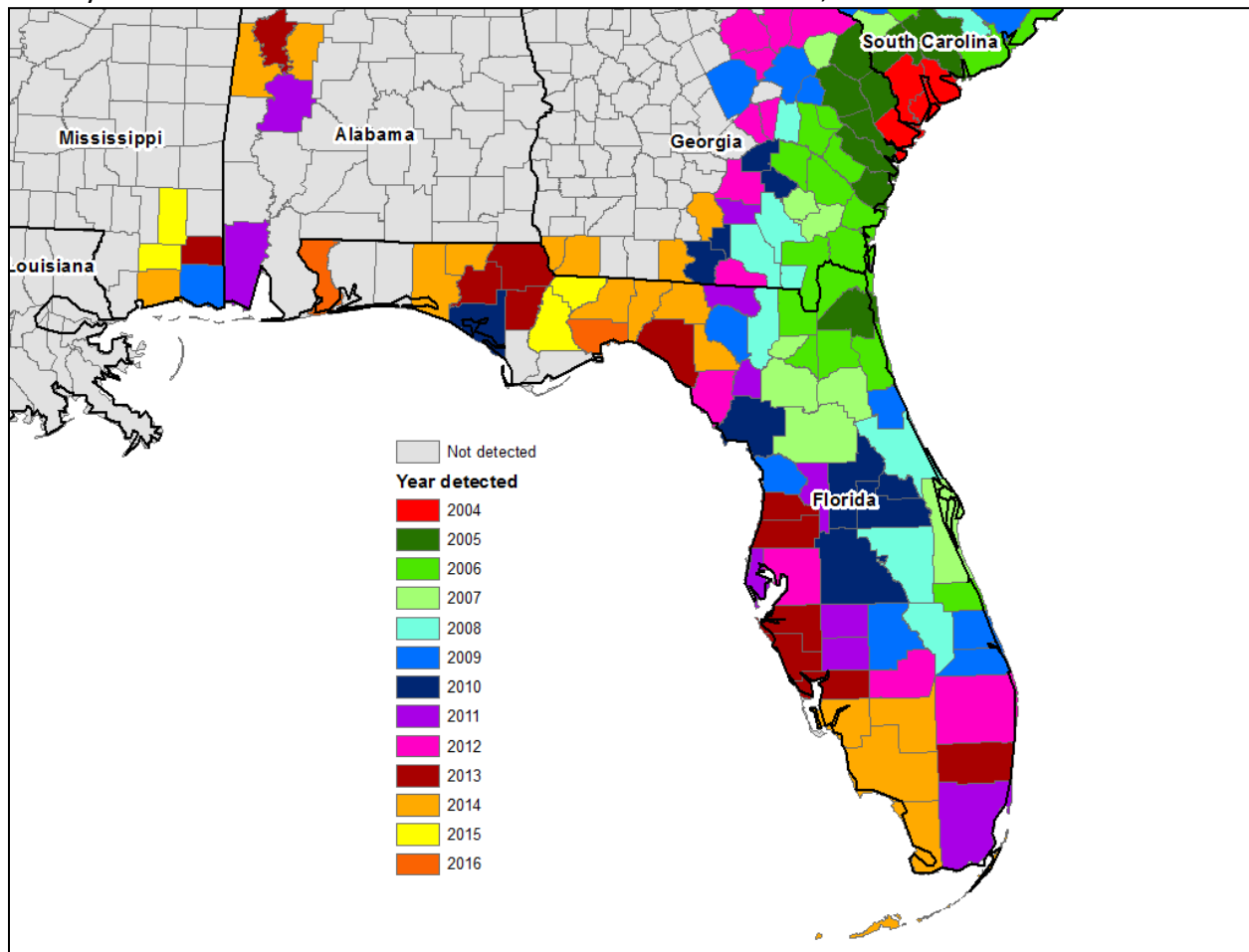


Laurel Wilt Disease (*Xyleborus glabratus* and *Raffaelea lauricola*):

Laurel wilt is a lethal disease of native tree species in the family Lauraceae, including redbay and its close relatives (*Persea* spp.) and sassafras (*Sassafras albidum*). Avocado (*P. americana*) is also susceptible, and laurel wilt has been affecting both dooryard avocado trees and commercial groves in Miami-Dade County. Laurel wilt is caused by an exotic fungus (*Raffaelea lauricola*) that is spread by an exotic insect, the redbay ambrosia beetle (*Xyleborus glabratus*). Since it was first detected in Florida in 2005, it has spread rapidly through the state, resulting in the death of most large host trees within a few years of establishing in a new area.

In 2016, laurel wilt was confirmed in two new counties in Florida (Escambia and Wakulla), increasing its known distribution to 63 of 67 counties in the state. Although fungicide treatments are available to temporarily protect individual trees, currently there is no feasible strategy to eliminate laurel wilt from the environment, or prevent its natural spread. However, halting the human movement of infested wood (for firewood or other purposes) will slow the spread of laurel wilt, and may prevent it from reaching geographically-isolated populations of host trees.

County-level known distribution of laurel wilt disease in Florida, as of December 2016.



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