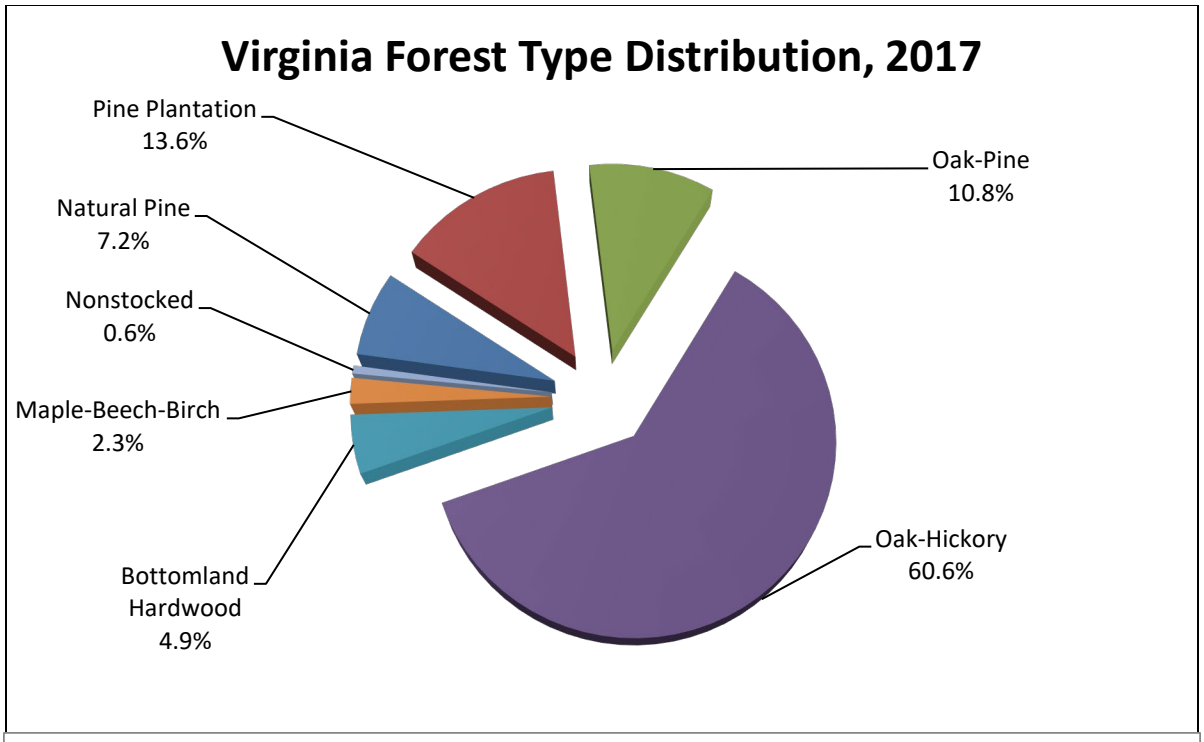
Virginia

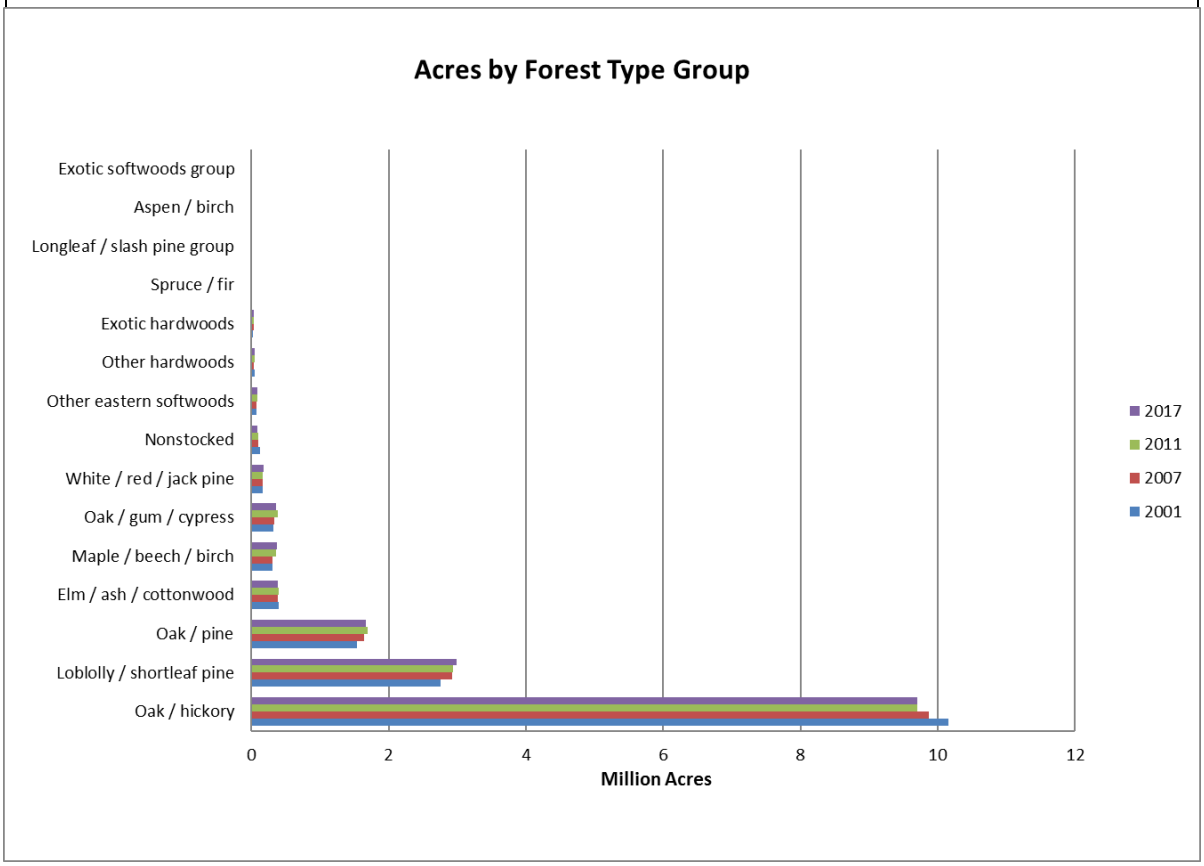
Forest Health Highlights 2019

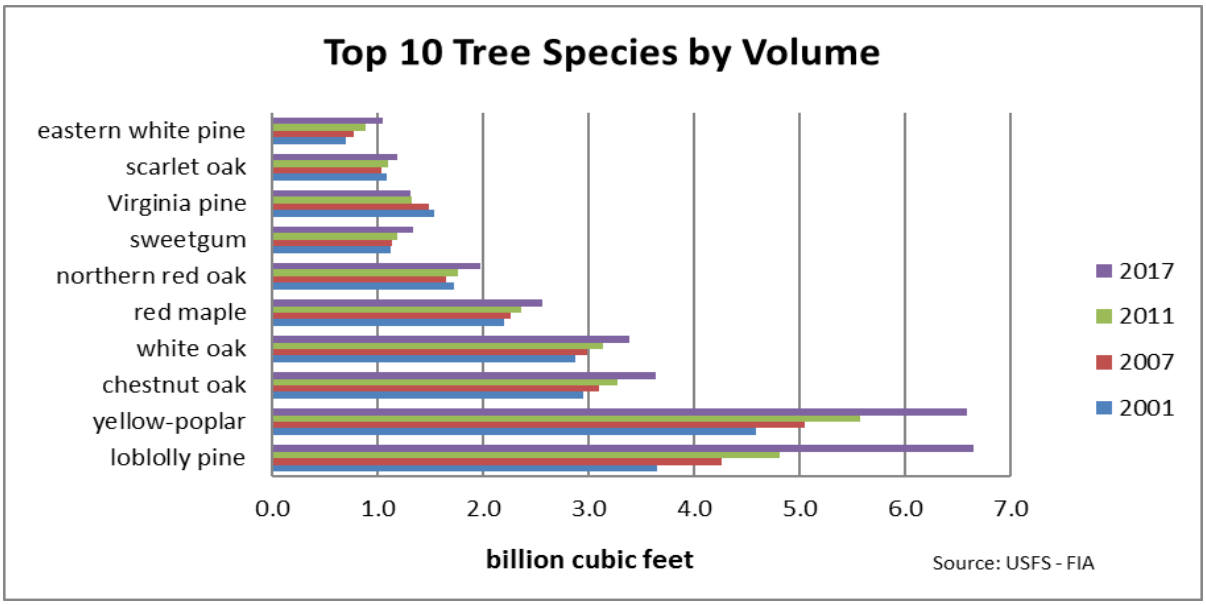
The Resource:

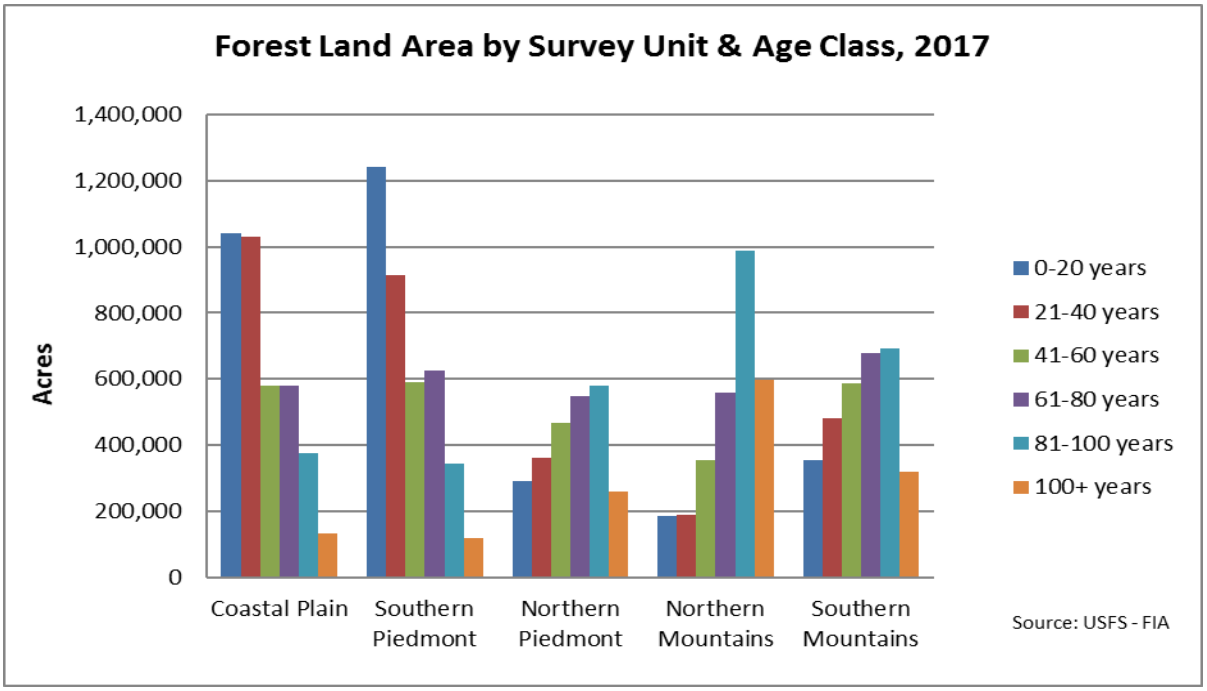
More than 62% of Virginia's land qualifies as forestland, an impressive number considering that the majority of forest acres is privately owned. These lands are used for recreation, wildlife habitat, timber products, and water quality protection; this diversity of uses reflects the diversity of species and ecosystems within the Commonwealth's forests. Mixed hardwoods, planted pine, and conifers can all be found within Virginia. Over 100 species of live trees have been documented and FIA (Forest Inventory Analysis) plots estimate over 11 billion trees with diameters greater than or equal to an inch. Loblolly pine has surpassed yellow poplar as the most abundant species in terms of number of stems. Species such as chestnut oak and white oak are also recorded in high number of stems. The diversity found within Virginia's forests contributes to the challenges and rewards of managing this valuable resource. Virginia's forests continue to be impacted by a number of threats such as insect pests, both native and invasive, diseases, and a slew of invasive plants. Some of the most pervasive of these forest health threats are detailed below. The Virginia Department of Forestry continues to protect and develop healthy, sustainable forest resources for Virginians.

Source: Brandeis, T.J.; Hartsell, A.J.; Randolph, K.C.; Oswalt, C.M. 2018. Virginia's Forests, 2016. Resour. Bull. SRS-223. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 99 p.


Virginia Forest Type Distribution, 2017
Pine Plantation
13.6%
Oak-Pine
10.8%
Natural Pine
7.2%
Nonstocked
0.6%
Maple-Beech-Birch
2.3%
Bottomland
Hardwood
4.9%
Oak-Hickory
60.6%


Acres by Forest Type Group
Exotic softwoods group
Aspen / birch
Longleaf / slash pine group
Spruce / fir
Exotic hardwoods
Other hardwoods
Other eastern softwoods
Nonstocked
White / red / jack pine
Oak / gum / cypress
Maple / beech / birch
Elm / ash / cottonwood
Oak / pine
Loblolly / shortleaf pine
Oak / hickory
0
2
4
6
8
10
12
Million Acres
2017
2011
2007
2001





Forest Health Influences and Programs:

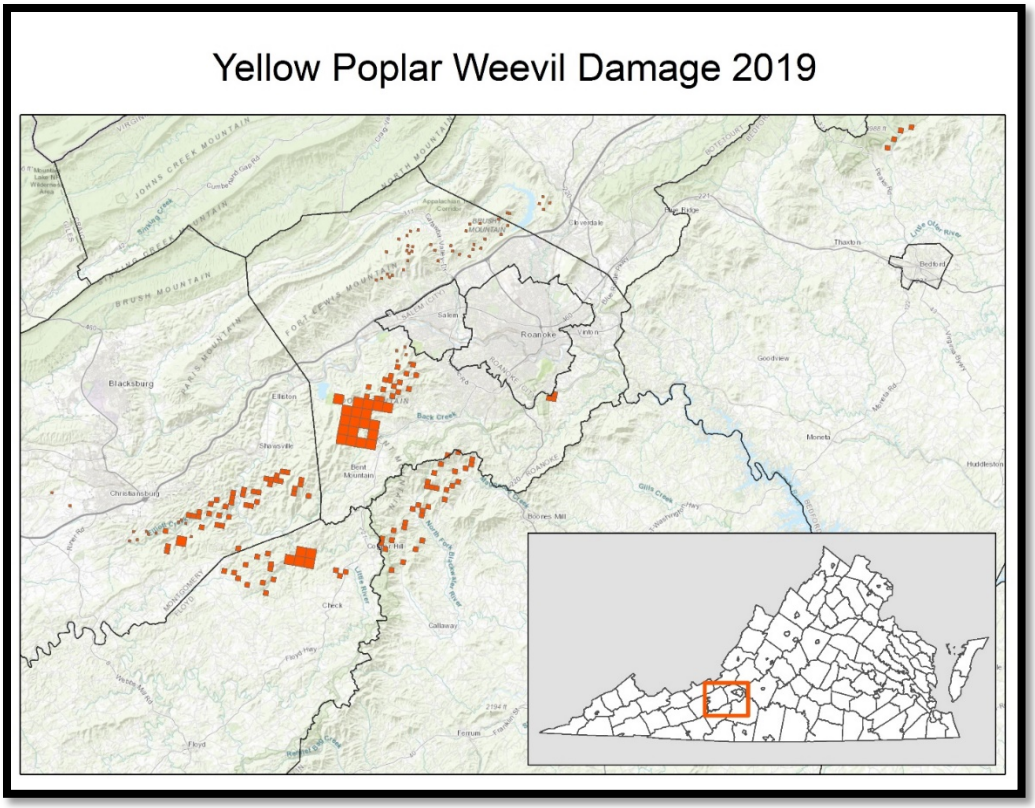
Pine Bark Beetles- There continues to be minimal southern pine beetle (SPB) in Virginia's pine forests. Although the last peak in SPB activity was the early 2000's, the Virginia Department of Forestry (VDOF) continues to survey for SPB annually. In April of 2019, twenty-five pheromone baited funnel traps were deployed across twelve counties to monitor SPB populations. Very few southern pine beetles were caught and the results of this year's survey

indicate that SPB populations in Virginia continue at low, static levels. SPB were caught in traps from Chesterfield county and a single beetle was found in the Gloucester county trap. Though SPB activity was minimal, there was a slight increase in *Ips* beetle activity during the end of summer and early fall. Damage was primarily in mature, dense stands that were weakened by drought conditions present throughout much of the Commonwealth during this time.

Above: *Ips* beetle damage in Chesterfield County, October 2019

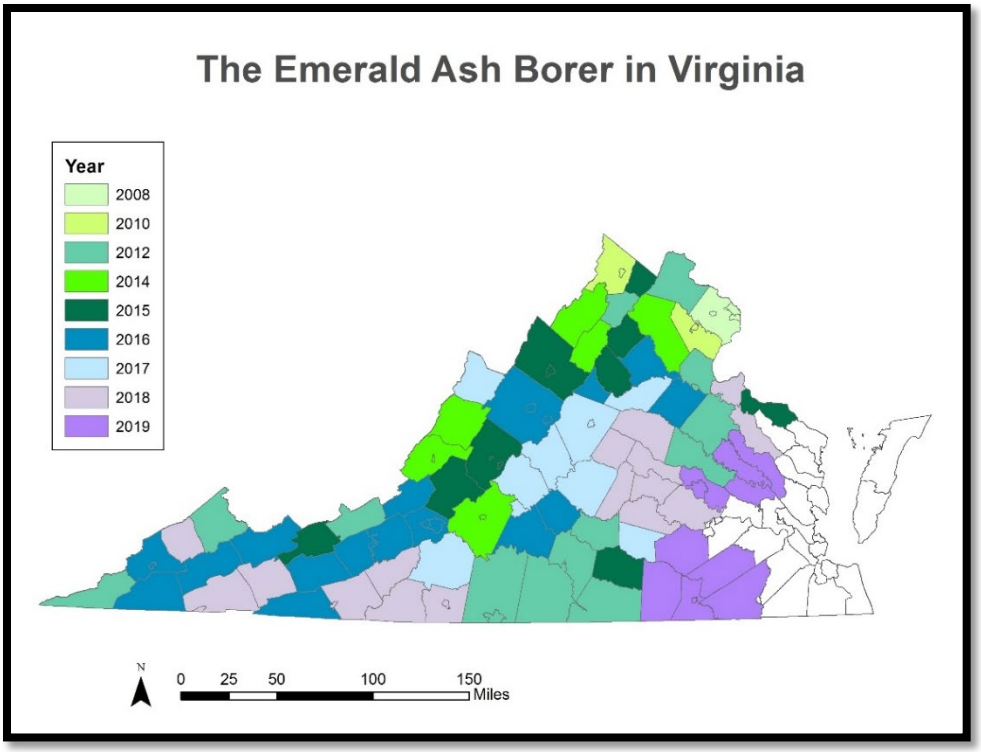
Southern Pine Beetle Prevention Program- Good forest management practices continue to be an effective preventative tool against SPB. To incentivize landowners and minimize risk of beetle activity, the Virginia Department of Forestry offers three cost share programs: pre-commercial pine thinning for landowners, first commercial pine thinning for loggers, and longleaf restoration for landowners. The Virginia Pine Bark Beetle Prevention Program continues to be supported by USFS Forest Health Protection Southern Pine Beetle Program funds. At the time of this report, Virginia has thinned over 60,000 acres of pine (mostly pre-commercial) through such cost share programs since 2004. Thinning improves the overall health of a forest and has been identified as a way to reduce a stand's susceptibility to SPB.

Yellow Poplar Weevil- This native pest caused damage to yellow poplar trees in southwest Virginia mid-June through early July of 2019. Damage was so severe in some areas that it was noticeable from interstate 81. An aerial survey confirmed a total of 13,350 acres *with* defoliation (4,515 acres *of* defoliation). Damage was patchy throughout the affected area where yellow poplar exists throughout the forest. Since the yellow poplar weevil is a native defoliator in the eastern United States, control is usually not warranted. Natural predators of the weevil normally regulate the population and keep it below damaging levels. Outbreaks tend to occur every few years when weevil populations surpass natural predator populations. There have been 6 VDOF documented outbreaks in the last 25 years, all primarily in southwest Virginia. The outbreak in 2015 was a particularly large one with 38 reports totaling thousands of acres impacted. Fortunately, trees are simply weakened by feeding and mortality does not typically occur unless there are multiple years of defoliation.



Above: Yellow poplar weevil damage mapped during aerial survey July 2019

Emerald Ash Borer- The emerald ash borer (EAB) has been a threat to all native ash species in Virginia since 2008. In 2019, this invasive insect was discovered in 9 new counties bringing the total number of confirmed counties in Virginia to 80. These newly confirmed counties were in the eastern part of the state (Brunswick, Dinwiddie, Greensville, Sussex, Southampton, Henrico, New Kent, King William, and King & Queen counties). EAB continues to move east with only the southeastern corner of Virginia and the Eastern Shore left unconfirmed. VDOF supports biological control and began releasing parasitoids on State Forest land in 2017. In total, 4,512 parasitoid wasps were released in 2019 across seven different sites throughout the state. VDOF also encourages chemical treatment of high-value specimen ash trees in hopes of maintaining ash on the landscape. Virginia Forest Health staff has treated over 200 ash trees on state land and administers an ash treatment cost-share program that provides financial assistance to landowners and municipalities for the treatment of high-value ash trees.



Above: Range map of emerald ash borer in Virginia, October 2019

Oak Decline- From mid-July to October 2019, VDOF foresters and forest health staff received countless calls and emails regarding dying oak trees. Mature red and white oaks in both forested and urban settings were observed browning and showing symptoms of decline across Virginia. Oak decline has been occurring in Virginia for decades, but seemed particularly pronounced in 2019. Much of this was attributed to extreme weather conditions ranging from very wet in 2018 to abnormally hot and dry in the summer of 2019. Predisposing factors such as poor site quality as well as inciting factors like insect attack and drought conditions caused an alarming amount of oaks to turn brown prematurely statewide. The appearance of these trees concerned many citizens of Virginia and led to numerous site visits by VDOF Forest Health staff and other forestry professionals. In many cases, stressing agents such as old mechanical wounds, secondary pathogens, or wood boring insects were present, indicating that the decline process had been initiated prior to the tree browning. Oak Decline will continue to be a problem in Virginia as our cohort of oaks reach mature ages and environmental conditions perpetuate the spiral of decline.

Hemlock Woolly Adelgid- The invasive sap sucking hemlock woolly adelgid (HWA) has been present in Virginia since the mid-1950s. This pest feeds on the stored nutrient reserves of both eastern and Carolina hemlocks. VDOF worked on protecting Virginia hemlocks in 2019 by assisting with both chemical and biological control efforts. Working with Albemarle County Parks and Recreation staff, the Forest Health Program treated a stand of over 70 hemlocks with imidacloprid trunk injections to protect against attack from HWA. Additionally, Forest Health staff released 510 *Laricobius nigrinus* predatory beetles in Vesuvius, VA as biological control of the HWA present on hemlocks. Both of these sites will be monitored to determine impacts on HWA populations as a result of the control methods.

Above: *Laricobius nigrinus* beetles on HWA infested hemlock foliage

Spotted Lanternfly- Virginia's newest invasive pest continued to spread in 2019. The spotted lanternfly (SLF) was first detected in 2018 in Frederick County and the city of Winchester, and has now spread to Clarke County where populations continue to reproduce and feed. Virginia Department of Agriculture and Consumer Services (VDACS) is the regulatory agency for this insect and established a SLF quarantine in May for Frederick County and the City of Winchester. Since SLF prefers tree of heaven, *Ailanthus altissima,* this tree species has been targeted for chemical control; trees smaller than 6" diameter are killed with herbicide and trees greater than 6" are treated with insecticide. Lanternflies feed with piercing sucking mouthparts and ingest sugars from the plant, then excrete honeydew, a sticky substance on which sooty mold can grow. While SLF is a major pest in urban and agricultural settings, the long-term damage to trees is still mostly unknown. However, SLF remains a large threat to many of Virginia's native, commercially important tree species, so VDOF is increasing efforts to monitor and control the pest. VDOF's Forest Health Program creates outreach material, presents information at trainings and conferences, and assists with a tree-banding program in central Virginia.

Above: Spotted lanternfly adults.

Abiotic Factors- The summer of 2019 was drier than normal, which followed a very wet 2018. These alternating extremes in weather conditions continue to add stress to Virginia's trees. Human induced stressors such as mechanical damage and compaction, seen frequently in urban settings throughout the state, compound the impacts of extreme weather. Severe storms are also forest health disturbances, but only a few incidents of high wind in eastern Virginia were reported this year.

Forest Health Assistance in Virginia:
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