

Longleaf Pine Cone Prospects for 2016 and 2017

Regional cone crop forecast: failed for 2016, fair for 2017

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Dale Brockway, research ecologist for the U.S. Forest Service Southern Research Station (SRS), recently published his annual summary of projected longleaf pine cone production for 2016 and 2017. The report shows an overall failure of the crop for 2016, and a fair outlook for 2017.

“Our estimates show the 2016 crop averaging only 3.4 cones per tree,” says Brockway, who is stationed at the SRS Restoring and Managing Longleaf Pine Ecosystems unit in Auburn, Alabama. “The natural variation that we usually see throughout the longleaf pine range is less evident this year, with all sites being fairly low in production.”

Only one site in Bladen County, North Carolina, produced more than 10 cones per tree. All other sites were below that level of output.

“Longleaf pine cone production was very high in 2014, and it’s not unusual for a year of high cone yield to be followed by a couple of years with much smaller crops,” says Brockway. “More productive years will follow, as trees recover their internal resources.”

To calculate the cone crop for the current year, data collectors use binoculars to count the number of green cones present in the crowns of mature longleaf pine trees growing on monitoring sites established in low-density longleaf pine stands across the region. Monitors also count the number of small unfertilized conelets (previously referred to as flowers) in the crowns of the same trees, to estimate the cone crop outlook for the following year.

“Based on counts of unfertilized conelets, we estimate the regional cone crop in October 2017 as fair, at 47.8 cones per tree,” says Brockway. “The cone crop forecast for 2017 varies from a bumper crop at one site to a failed crop at another, reflecting a good deal of natural variability. Keep in mind that estimates based on counts of unfertilized conelets are less reliable than those based on counts of green cones, because unfertilized conelets often do not survive into the second year to become green cones.”

Under even-aged forest management, the minimum cone crop needed for successful natural regeneration is 750 green cones per

acre, or 30 cones per tree assuming 25 seed-bearing trees per acre. Reports of cone crops classified as “fair or better” signal land managers to take advantage of the regeneration opportunity by applying prescribed fire to prepare receptive seedbeds before seed fall in October.

Managers using uneven-aged management methods, such as single-tree selection and group selection, are not as dependent on good cone crops, since even a small amount of seed falling each year is adequate to regenerate forests with a continuous canopy through time. But, they should still be aware of cone crop quality from year to year when making decisions. Either way, landowners and managers can access the full report to find more detailed information about sites near their own locations, since natural variation does cause cone production to differ from site to site. Visit <http://srs.fs.usda.gov/longleaf/subunit/longleaf-pine-2016-report.pdf>

Longleaf pine cone production has been monitored now for 51 years, with yearly production averaging 28 green cones per tree during that period. The single best crop, averaging 115 cones per tree, occurred during 1996. Fair or better cone crops have occurred during 49 percent of all years since 1966, with an increased frequency since the mid-1980s. Reasons for this increasing frequency may be related to genetic, environmental or management factors, or a combination of these.

Brockway and fellow SRS researchers Qinfeng Guo and Stan Zarnoch, along with Xiongwen Chen of Alabama A&M University, recently published findings based on analysis of long-term cone crop data that provide new insights into the reproductive pattern of longleaf pine in an environment with increasingly variable climatic conditions. An article published in the *Journal of Sustainable Forestry* explores the complexity of cone production in longleaf pine (visit <http://www.srs.fs.usda.gov/compass/2016/04/19/the-complexities-of-longleaf-pine-cone-production/>), while a more recently published article in the journal *Ecosystem Health and Sustainability* analyzes the life cycle and masting of longleaf pine under climate fluctuation (visit <http://www.srs.fs.fed.us/pubs/52078>).



Photo by Wood Johnson, USDA Forest Service, Bugwood.org

*Longleaf pine seedling with
seed wing still attached*