

# Indicator 1.01:

## Area and percent of forest by forest ecosystem type, successional stage, age class, and forest ownership or tenure

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### What is this indicator and why is it important?

Indicator 1.01 reports on the extent, composition, and structure of forests in the United States, using age-class and size-class distribution by broad forest type as a coarse measure of the landscape-scale structure of the Nation's forests. A relatively stable total land area in forest is an important measure of forest sustainability. Within forest types, age- and size-class distribution serves as a surrogate for stand development or successional stage. A diverse distribution of forest lands across forest types and age classes provides an indicator of tree-size diversity and is important for determining timber growth and yield, the occurrence of specific wildlife and plant communities, the presence of other nontimber forest products, and the forest's aesthetic and recreational values.

### What does the indicator show?

Forest area in the United States stands at 765 million acres, or about one-third of the Nation's land area. (All estimates for this indicator are from Oswald et al. 2019). At the time of European settlement in 1630, estimates hold that forest area exceeded one billion acres. Of the 265 million acres of total forest land loss since then, the majority occurred in the East (divided into North and South regions in the accompanying charts) between 1850 and 1900, when broadleaf forests were cleared for agriculture (fig. 1-1). For the past 100 years, while the U.S. human population has nearly tripled, the total forest area has remained relatively stable.

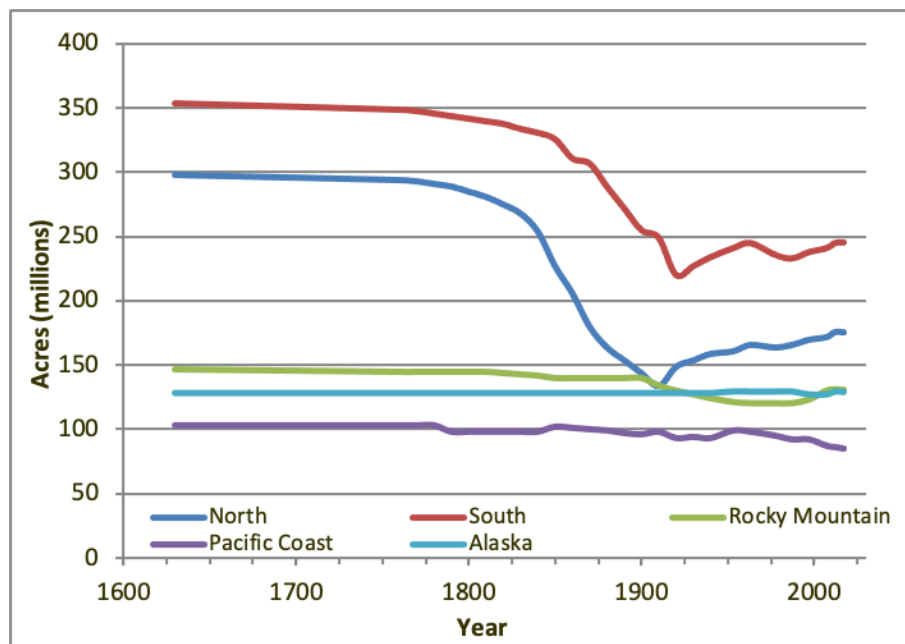


Figure 1-1—Historical forest area in the United States by geographic region, 1630–2017. Source: All estimates for this indicator are from Oswald et al. 2019.

Today, regional forest cover ranges from a low of 18 percent of the land area in the Rocky Mountain Region to 35 percent in Alaska, 41 percent in the Pacific Coast Region, 43 percent in the North, and 46 percent in the South. Natural forests comprise a large majority of forest area; planted forest area ranges from lows of 0.01 and 0.5 percent in Alaska and the Rocky Mountain Regions, respectively, to highs of 15.3 and 19.6 percent in the Pacific Coast (excluding Alaska) and South, respectively, with an intermediate rate of 3.5 in the North (fig. 1-2).

**Broadleaf forests.** Broadleaf forests cover nearly 300 million acres nationwide, predominantly in the North and South (255 million acres) (fig. 1-3). Oak-hickory represents the largest single forest cover type with 141 million acres and constitutes almost 33 percent of all Eastern forest land and half of all Eastern broadleaf forests. Maple-beech-birch forests, also dominant in the Eastern United States, cover 54 million acres. Broadleaf types have a fairly normal age distribution, showing a peak in the 40- to 79-year age-class, as second- and third-growth forests in the East continue to mature (fig. 1-4).

**Conifer forests.** Conifer forests cover 389 million acres in the United States and are found predominantly in the West (284 million acres) and South (77 million acres). Pines are the single-most dominant group of conifer forests. Loblolly-shortleaf pine and longleaf-slash pine types in the South and ponderosa and lodgepole pine types in the West combine to cover 117 million acres, or nearly one-third of all conifer forest types. Conifer forests are somewhat bimodal in age structure with more acreage in younger age-classes because of more intensive management for wood production in the South and a preponderance of older stands in the West, where most of the United States' remaining old-growth forests occur and where recent policy changes have reduced harvesting of mature stands on public lands.

**Mixed forests.** A large majority of all U.S. mixed forests are found in the South (88 percent); the two mixed forest types are oak-pine (28 million acres) and oak-gum-cypress (25 million acres). Although oak-gum-cypress is found in the wet lowlands, oak-pine usually occurs on the drier uplands of the South. Ages for this class are more evenly distributed for these forests but are slightly larger for 40- to 59-year-old age class (fig. 1-4).

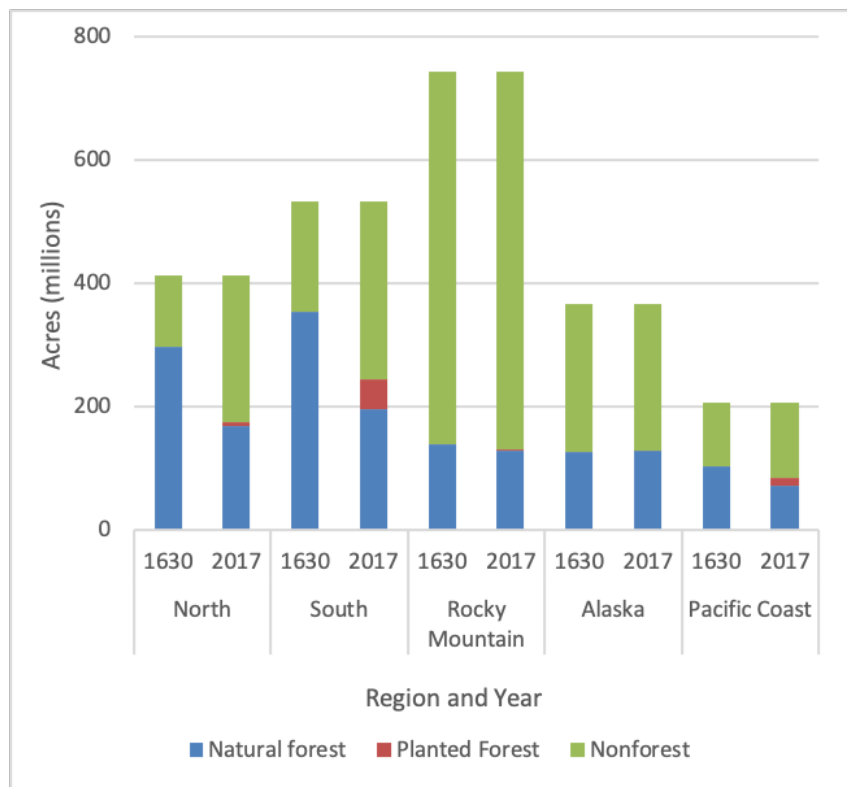


Figure 1-2—Area of natural forest, planted forest, and nonforest land by geographic region, 1630 and 2017. Source: All estimates for this indicator are from Oswald et al. 2019.

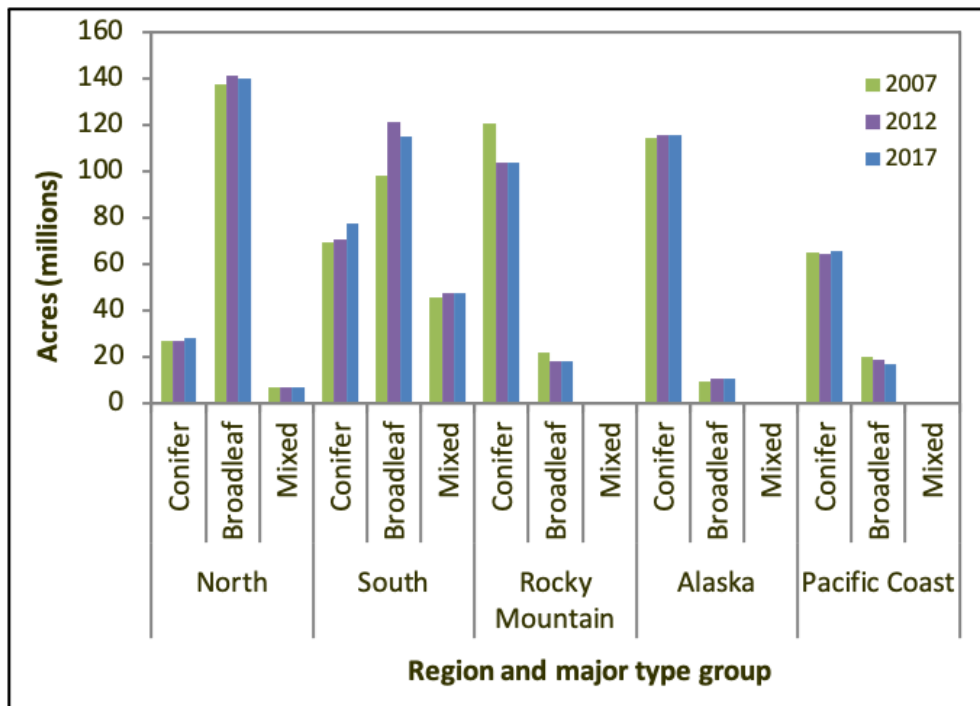


Figure 1-3—Area of forest land in the United States by major cover group, 2007, 2012, and 2017. Source: All estimates for this indicator are from Oswald et al. 2019.

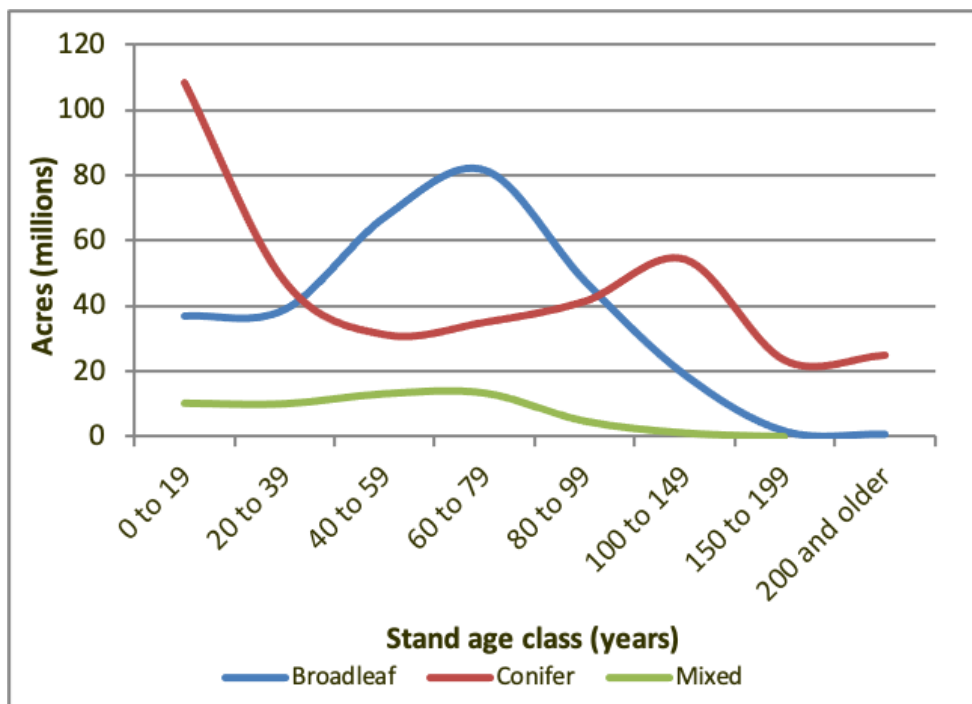


Figure 1-4—Forest area by stand-age class for conifer, broadleaf, and mixed forests, 2017. Source: All estimates for this indicator are from Oswald et al. 2019.

Long-term trend data on forest age-class are sparse, but historical data are more readily available for average tree size in forest stands; this data quantifies structural stage—an indicator of successional stage (fig. 1-5). For example, when larger-diameter (older) stands are harvested and regenerated, they are replaced by stands with trees averaging 0 to 5 inches in diameter (younger stands). Timberland area (a significant subset of total forest area) in small-diameter class (seedling/sapling) increased in area from the 1950s through the 1970s, but has since declined to levels like those seen in the 1950s. Intermediate stands (poletimber) have been declining steadily, while large-diameter stands (sawtimber) have been rising steadily

over the past 60 years. These trends indicate shifts in management that have decreased harvesting on public forests in the West and increased harvesting in the South. Trends for the North are similar to national trends.

Ownership patterns have a profound effect on forest management policies and activities; less than half of U.S. forest land (42 percent) is publicly owned. Although 70 percent of forests of the West (Alaska, Rocky Mountain, Pacific Coast) are publicly owned, only 19 percent of forests in the East (North and South) are in public ownership (fig. 1-6). Thus, public land policies have a more significant effect on western forests and their uses.

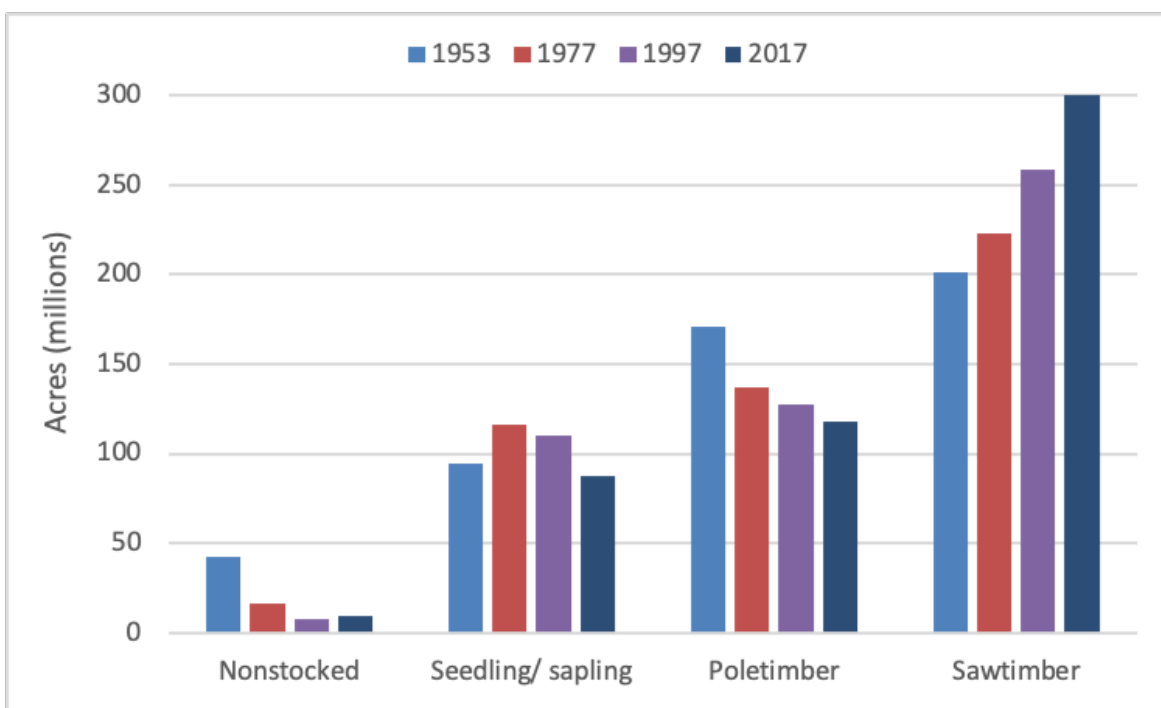


Figure 1-5—Trends in timberland area by average stand-diameter class, 1953–2017. Source: All estimates for this indicator are from Oswald et al. 2019.

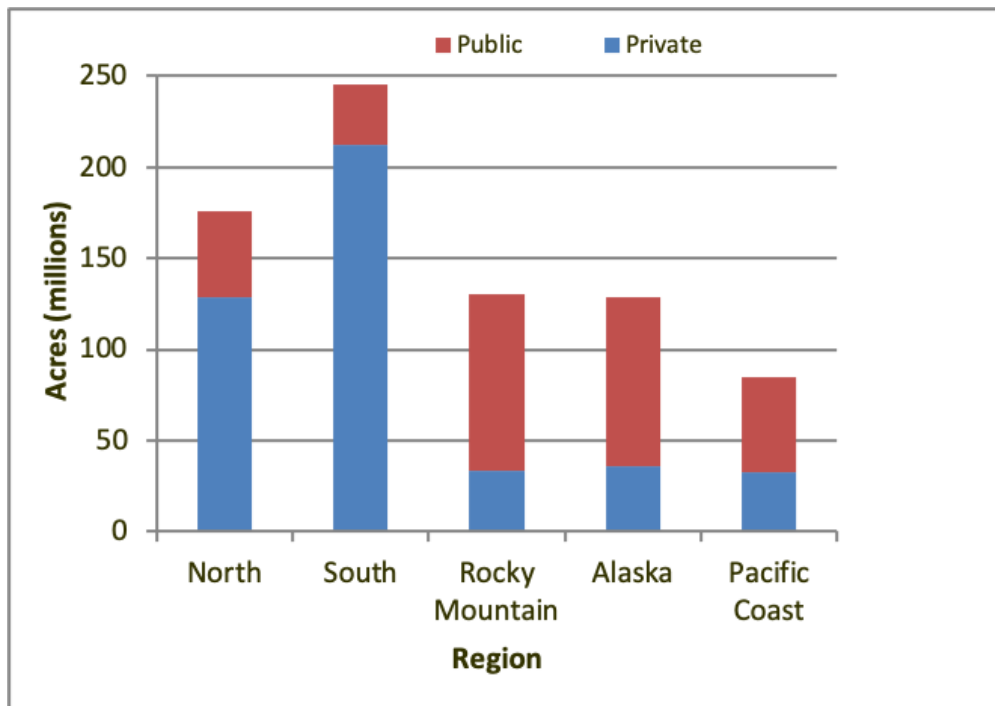


Figure 1-6—Forest land ownership in the United States by geographic region, 2017. Source: All estimates for this indicator are from Oswald et al. 2019.

## What has changed?

Following stable to slightly increasing levels since the 1950s, forest land area has decreased by about 740 thousand acres between 2012 and 2017, which equates to an average annual decrease of 0.02 percent. Gains in the South, North, and Alaska were outweighed by losses in the Pacific Coast and Rocky Mountain Regions. Changing land uses between forest and nonforest classes can be attributed to a variety of factors, including urban sprawl and transitions to or from agricultural uses. More detailed information on changing land use and land cover is available in Nelson et al. 2020. In terms of structure, the area of timberland in larger (sawtimber) size class increased 1.6 percent over the 2012 to 2017 time period, continuing a trend established in the middle of the last century.

## References

- Oswald, S.N.; Smith, W.B.; Miles, P.D.; Pugh, S.A., coords. 2019. Forest Resources of the United States, 2017: a technical document supporting the Forest Service 2020 RPA Assessment. Gen. Tech. Rep. WO-97. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 223 p. <https://doi.org/10.2737/WO-GTR-97>. <https://www.fs.usda.gov/treearch/pubs/57903>
- Nelson, M.D.; Riitters, K.H.; Coulston, J.W.; Domke, G.M.; Greenfield, E.J.; Langner, L.L.; Nowak, D.J.; O’Dea, C.B.; Oswald, S.N.; Reeves, M.C.; Wear, D.N. 2020. Defining the United States land base: a technical document supporting the USDA Forest Service 2020 RPA assessment. Gen. Tech. Rep. NRS-191. Madison, WI: U.S. Department of Agriculture, Forest Service, Northern Research Station. 70 p. <https://doi.org/10.2737/NRS-GTR-191>.