Forest Inventory and Analysis
2012 highlights

Highlights of Wisconsin's seventh Forest Inventory and Analysis, completed in 2012.

Total forested acres

- Wisconsin's forest land area has been steadily increasing in the last 50 years.
- Since 2004, timberland acreage has increased by three percent to **16.8 million acres**.
- Counties in northern Wisconsin continue to have the highest proportion of forest cover, around 70 percent forested.
- Since 2004, eighty-six percent of Wisconsin counties have gained forest land area.

Forest types

- About half of all acreage is in oak/hickory and maple/beech/birch forest types.
- These types have increased steadily since 2004 whereas acreage in aspen/birch, still a major component of our forests, decreased by four percent in this period

Young forests

- Our forests are becoming less middle-aged.
- Timberland acreage in both young and old forests has increased.
- Acreage in forests less than 20 years old has increased by 15 percent since 2004.
- The largest increase was in the oak/hickory and elm/ash/cottonwood and spruce/fir forest types.
- Acreage of seedling and sapling-sized stands has also increased in the same time period.

Old forests

- Timberland acreage in forests over 60 years old has increased 35 percent since 2004.
- The largest increase was in stands over 100 years of age.
- The forest types with the greatest increase in acres of old forest are maple/beech/birch, oak/hickory and white/red/jack pine.

Ownership

- Almost 70 percent of timberland is owned by private entities.
- Since 2004, volume per acre has increased 2 percent on private timberland but over 5 percent on federal, state, county and local lands.
- In this same time period, removals per acre have decreased on federal land but increased on county and local lands as well as private property.

Mortality

- Mortality as a percentage of growth has increased steadily since 1996.
- Whereas net annual growth has increased 16 percent, mortality has increased 25 percent to 236 million cubic feet per year.
- Mortality is especially high for early successional species which require disturbance for germination such as paper birch, aspen and jack pine and for species with prominent pest problems such as elm, black oak, northern pin oak and butternut.

Removals

- Average annual removals for all species have declined 11 percent since 2004, a continuing trend of decreasing removals since 1996.
- Most species with the exception of spruce, red pine, balsam fir and red oaks are showing a decline in harvest levels.
- As a percent of volume, the decrease is even greater. In 2004, 1.8 percent of volume was harvested whereas in 2012, only 1.5 percent of volume was removed.
- The largest decrease in percent volume removed from 2004 to 2012 is for eastern white pine, eastern hemlock, elms, white oaks and ash species.

Growth

- When average annual net growth is viewed relative to the total growing-stock volume on timberland, most major species are adding positive growth in excess of two percent each year.
- Only paper birch has a negative growth rate due to high mortality.
- Growth rates, although high, have decreased since 2004 for several species. This includes red oaks, maples, aspen and white oak but have increased for red pine, jack pine and eastern white pine.

Sawtimber

- Red and eastern white pine, the maples and northern red oak account for over half of all sawtimber volume. This has increased 26 percent since 1996.
- The only declines in sawtimber volume are for aspen, jack pine, beech, white oak and paper birch.
- The amount of grade one sawtimber has increased 74 percent since 2005 with the highest increase in northern white cedar, white spruce and eastern hemlock.

Biomass

- Four major species account for half of all biomass production: red oak, hard maple, soft maple and aspen.
- Red oak and hard maple have some of the highest values for ovendry density, averaging over 40 pounds per cubic foot. In addition, 57 percent of all biomass occurs in the northwest and northeast regions of Wisconsin.
- All live tree biomass on timberland has increased 10 percent since 2004.
- The species with the largest increases in biomass are eastern white pine, ash, red pine, hemlock and balsam fir.

What about aspen?

- The volume of aspen has decreased steadily since 1983.
- Since 1996, the number of sawtimber-sized aspen has declined over 20 percent.
- The number of saplings and poles has also decreased, suggesting that volumes will continue to decrease in the future.
- Both mortality and removals of aspen are very high. Although aspen removals have decreased in the last decade, the ratio of removals to net growth is greater than 100 percent because mortality is so high and is not being replaced by new growth.
- We are harvesting more aspen than is being replaced by growth. Aspen accounts for over one-quarter of all removals, more than any other species group.

Northern red oak

- Northern red oak is maturing and not being replaced by younger age classes.
- The number of northern red oak has decreased by six percent since 2004 and 15 percent since 1996.
- The only size class which increased in number was large sawtimber.
- The percentage of pole-size trees has seen the largest decline.
- Northern red oak accounts for the second highest volume of removals, 15 percent of the total growing stock harvested.

Ash and the emerald ash borer

- The volume of ash has increased steadily as have average growth rates.
- Low mortality is reflected in a below average ratio of mortality to growth.
- Data show that regeneration is certainly adequate. This situation may change, however, as the emerald ash borer (EAB), a major cause of ash mortality, arrived in Wisconsin in 2008 and was present in 21 counties as of summer, 2013.
- Fifty percent of ash volume in southern Wisconsin occurs in counties quarantined for EAB. This drops to twenty percent for the entire state.