2022 Arizona Forest Health Highlights

Forest Resource Summary

Arizona has an incredibly diverse landscape, from the lower Sonoran desert scrub and pinyon-juniper woodland to the high elevation spruce-fir forests. Forests cover approximately 27% of the state, which is over 19 million acres. These forests are comprised of 37 species of coniferous and hardwood trees. Urban areas include forests that are typically composed of a mix of native and introduced tree species that require various management techniques. With such a broad diversity of forests comes a diverse group of insects and diseases.

Weather

It is important to understand the climatic conditions occurring throughout our state, as precipitation and temperature are two of the biggest environmental factors influencing forest health. Between January and March, 2022 long term drought conditions appeared to improve in portions of central and southern Arizona. Exceptional (D4) and Extreme (D3) drought conditions continued in parts of La Paz, Mohave, Coconino, Navajo and Apache counties from April to June, 2022. Severe (D2) drought conditions were persisting in Yuma and Maricopa counties. August and September were productive months for precipitation throughout Arizona; most of the state received average or above-average precipitation (100-400%). Because of this moisture, short-term drought significantly improved in August 2022. Arizona was cooler than normal in the fall, and by the end of November, into December La Niña conditions looked like they would continue into early 2023. Overall Arizona received much needed precipitation during our Monsoon season; the timing of when our forests

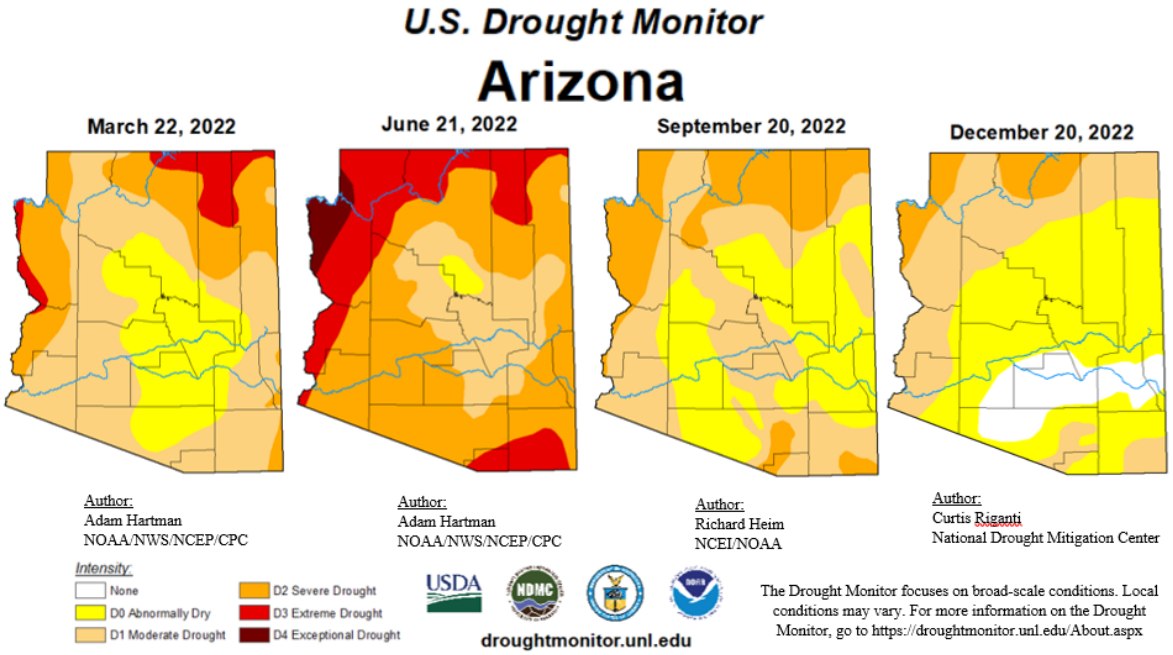

Figure 1 – U.S. Drought monitor maps of Arizona in March, June, September, and December, 2022; obtained from droughtmonitor.unl.edu

receive their moisture, and the form they receive that precipitation in, all impacts the health and vigor of Arizona's forests.

Aerial Surveys

Annually, the Department of Forestry and Fire Management (DFFM) partners with the USDA Forest Service, Forest Health Protection (FHP) team, to survey millions of acres with forest and woodland resources from the air; this is called an Aerial Detection Survey (ADS). In the summer of 2022, during the ADS season, over 15,000,000 acres were flown to identify dead, dying, and declining trees. The aerial surveys cover National Forest lands (54% of the area surveyed), tribal lands (29% of the area surveyed), private lands (9% of the area surveyed), state lands (6% of the area surveyed), and county lands (less than 1% of the area surveyed) (Table 1).

Forest Damage

The Arizona Department of Forestry and Fire Management divides the state into five (5) distinct Districts (Appendix I). Each District shares similar forest and woodland health issues while experiencing a varying degree of tree damage from insects and disease. Each District will be reviewed individually to more accurately show which insects and diseases are impacting the state, and where their damage can be found throughout the state.

It is important to note that the acreages for each District may look inflated due to the fact that some acres are counted twice because more than one damage causal agent was found on those acres

Northern District (A1S)

- 254,255 acres with bark beetle caused tree mortality
- 6,510 acres with defoliator damage
- 863 acres with sap feeder damage
- 434 acres with woodborer damage
- 152,133 acres with drought damage
- 414 acres with road salt damage

Northeast District (A2S)

- 113,406 acres with bark beetle caused tree mortality
- 3,072 acres with defoliator damage
- 6,739 acres with sap feeder damage
- Less than an acre with woodborer damage
- 115 acres with Sycamore anthracnose damage
- Less than an acre with White Pine blister rust
- 11,348 acres with drought damage
- 46 acres with road salt damage

Southeast District (A3S)

- 3,668 acres with bark beetle caused tree mortality
- 5,603 acres with defoliator damage
- 323 acres with woodborer damage
- 70 acres with *Biscogniauxia mediterranea* (canker) damage
- 6,026 acres with drought damage

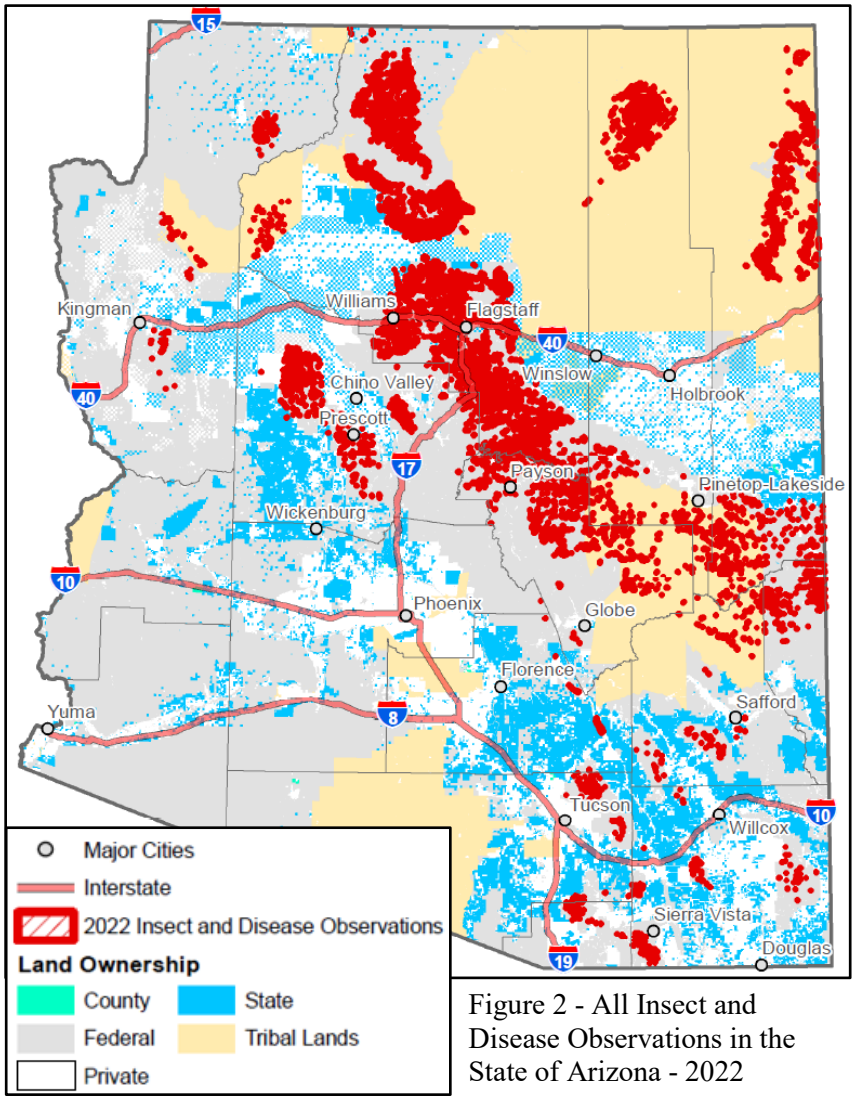

Figure 2 - All Insect and Disease Observations in the State of Arizona - 2022

Central District (A4S)

- 20,410 acres with bark beetle caused tree mortality
- 688 acres with defoliator damage
- 8,804 acres with sap feeder damage
- 16,257 acres with drought damage
- 24 acres with road salt damage

Northwest District (A5S)

- 10,973 acres with bark beetle caused tree mortality
- 134 acres with defoliator damage
- 7,927 acres with sap feeder damage
- 10,138 acres with drought damage

Status of Urban Forests

The Mediterranean pine engraver (*Orthotomicus erosus*), or MPE, was first discovered in the Central Valley of California in 2004. Since its introduction, this non-native bark beetle has steadily spread to Nevada and Arizona. In 2018, the DFFM began monitoring for the presence of MPE, to determine if it had become established in the Phoenix Metro area. This monitoring program ended in 2022; the data collected from these four years of trapping will help the DFFM determine if the beetles' lifecycle is different in Arizona than its native habitat (i.e. if the beetles are actively flying and reproducing during the relatively mild fall and winter). Since monitoring began in 2018, over 355,000 MPE beetles have been collected from the Phoenix Metropolitan area. At this point, MPE has only been found in urban forests. But due to its large host range, this invasive insect poses the risk of infesting wildland forests, underscoring the importance of continued monitoring and research regarding management options.

Contact Information

The DFFM Forest Health Program is a statewide program that is based in Phoenix, AZ.

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