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2016 FOREST HEALTH CONDITIONS REPORT STATE AND PRIVATE LANDS







The forecast of a strong El Niño for the winter of 2015-2016, began with the reporting of widely scattered storm damage to trees, in early January and February 2016. Greatest storm damage was identified in the Prescott and Payson areas, and pines and oaks were the most common trees affected. However, predictions of continuing heavy precipitation through spring, did not play out as anticipated in the southwest, but shifted to the northwest. No additional storm damage was noted or reported later in 2016.

Winter Storm Damage

		
Prescott	Payson	Williamson Valley




The detection of heavy spruce aphid defoliation in the White Mountains in 2015, was just the beginning of the latest eruption by this insect in Arizona. In April 2016, heavy defoliation was noted in several other areas of the White Mountains. A carpet of dead needles was found underneath heavily infested spruce trees, with green needles found mainly on the new growth in late spring. The aphid was also identified for the first time, defoliating spruce trees in the Greer area in April. The life cycle for the insect is unusual, because it's mainly active during the winter to avoid predation. However, the cold winter temperatures experienced at 8000-9000 feet, killed the overwintering aphids identified in April 2016. Nevertheless, the aphid produces eggs which can survive cold temperatures. New defoliation of spruce trees is expected in the fall and winter of 2016-17, with additional areas infested by the insect.

Spruce Aphid

		
	Defoliation	
		
New Growth	Greer Detection	Dead Aphids

Sycamore anthracnose, a foliage disease was reported again in May 2016 in Oak Creek Canyon. Infected trees were identified primarily in lower Oak Creek Canyon, with very noticeable discoloration and defoliation in the Indian Gardens area. Some growth loss and twig mortality may occur from repeated infections by this disease. However, most of the infected trees are large and can weather the disease. It was also identified for the first time in late May, infecting sycamores in the Bear Canyon area, on the Catalina Mountains. But the disease was not as widespread as in 2015, when it was also identified throughout northern Gila County.

Sycamore Anthracnose

		
Oak Creek Canyon	Indian Gardens	Bear Canyon

White Pine Blister rust was first identified in Arizona in 2009, along the road north of Hawley Lake, on White Mountain Apache Tribal land. The non-native disease was mainly infecting and killing seedling and sapling southwestern white pines along a drainage. Subsequently, additional infection sites were found along cool and wet drainages in other parts of the White Mountains. By June of 2016, large overstory white pines along the drainages north of Hawley Lake, were detected with flagging or dieback of branches scattered throughout the crown. In addition, larger pines growing in the road cut were also infected, and may be indicative of the adaptability of the disease to infect pines on drier sites. Although the disease has not been identified on pines on drier sites in the White Mountains, time will tell whether it can adapt.

White Pine Blister Rust

		
Infected Overstory Pine	Blisters	Dead Top

While pine engraver beetle populations in the forests and woodlands in Arizona continue at very low levels, in 2016 they began to stir at a couple of locations. A group of infested ponderosa pines were detected in southeast Payson in early March. Pockets of pinyon Ips beetle mortality were identified in July, mainly in northeast Payson, but also on scattered trees on the northwest side of town. The pinyon mortality in northeast Payson appears to have been exacerbated by new home construction in the area.

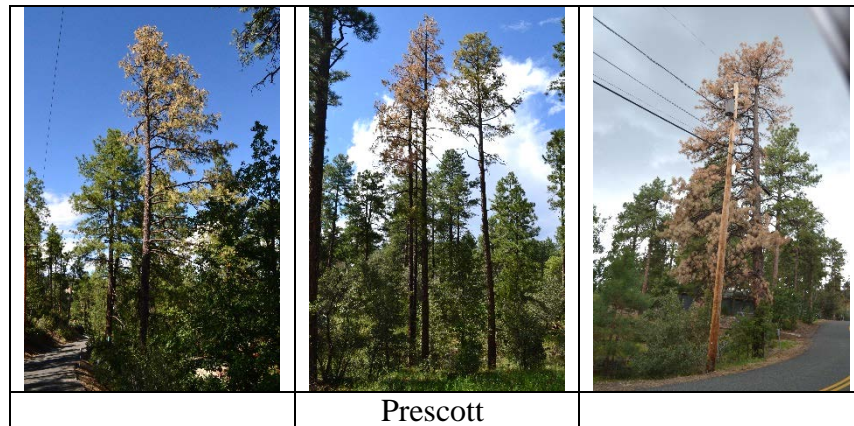
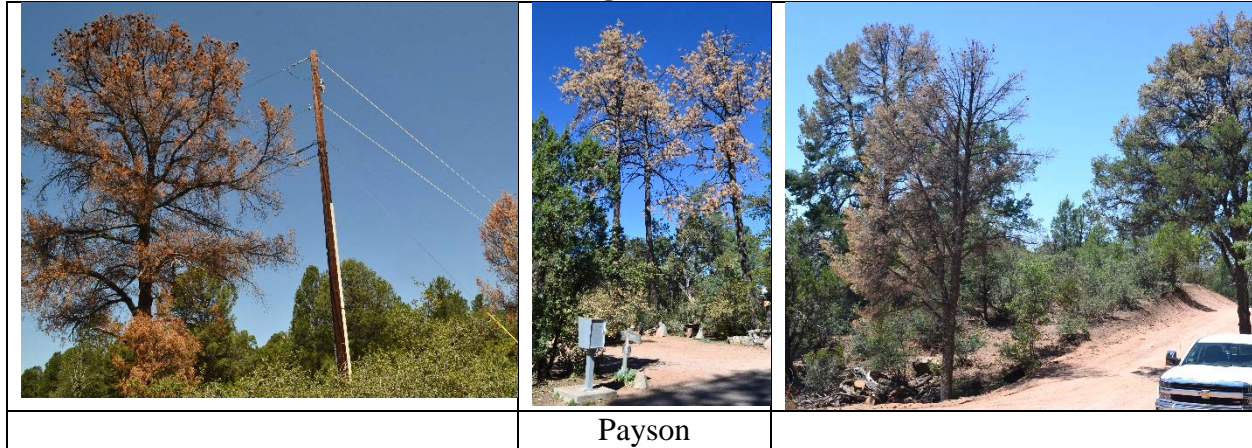
Due to the latest housing boom--damage to native pine trees is showing up again statewide, with bark beetles taking advantage of damaged and weakened trees. Infesting and killing stressed and damaged trees is their role, in a natural forest and woodland environment.

Damaged ponderosa pines were identified at two commercial construction sites in Flagstaff, and pinyons and junipers at two sites in Sedona in August.

Information is readily available that addressing proper construction practices in forested or wooded areas, to avoid unnecessary tree losses, before, during and after the construction process.

In September bark beetles were found on ponderosa pines in the Prescott area. A single large ponderosa pine was heavily infested in the Copper Basin area on the southwest side of town. Also, a small pocket of about five ponderosa pines was infested in the same area. A single large, dying ponderosa pine, along the powerline in Highland Pines northwest of Prescott, had noticeable red sawdust present on the trunk, indicative of bark beetle activity.

Pine Engraver Beetles



In late August 2016, the Box Elder Tussock moth caterpillar identified in 2015 in Oak Creek Canyon along 89A, was again found causing scattered heavy defoliation. The first pocket of defoliation was found just above the Junipine Resort, and the last pocket about three miles down past Slide Rock State Park at MP 379. Surprisingly, no defoliation at Indian Gardens next to the Forest Service Visitor Center was noted. In 2015, the box elder trees in the area were heavily defoliated by the caterpillar. Populations of the insect appear to be down from 2015 in the Canyon. They were first detected causing noticeable defoliation of box elders below Midgely Bridge, back in 2012.

Box Elder Tussock Moth Caterpillar



An increase in fall webworm activity mainly on walnuts was detected in Oak Creek Canyon in August, from the Pine Flats Campground at the north end, down to the Trout Farm below Indian Gardens. Some webbing was also noted on box elders being defoliated by the tussock moth caterpillar.

Fall webworm continues to be found scattered mainly on Arizona alder and walnuts growing along the upper Catalina Mountains highway, from Incinerator Ridge road/Palisades visitor center up to Summerhaven. In late August, no serious defoliation was noted in the area by the caterpillars producing the webbing.

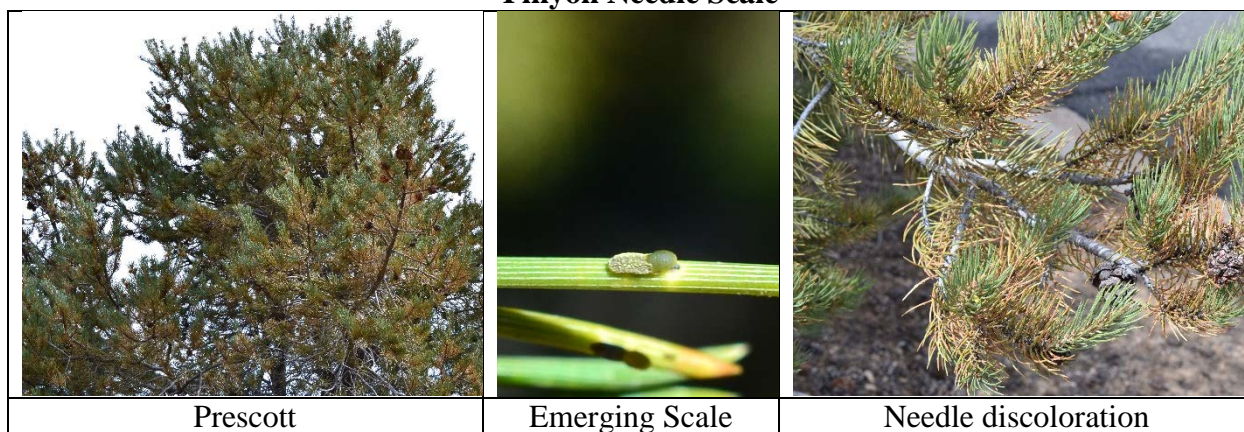
Historically, fall webworm feeding activity has been noted on a yearly basis, mainly on Arizona walnut in northern Gila County. The noticeable webbing produced by the caterpillars, was again identified on several hosts on the southeast side of Payson in August. Heavily infested walnuts were very visible along Highway 87, and the East Verde River bridge crossing north of Payson. They were also detected in Pine and Strawberry feeding on poplars, chokecherries and one ornamental redbud tree in Pine, for the second year in a row. Because the defoliation occurs late in summer, and new growth has been largely completed by the host species, little branch dieback or mortality has been observed.

Fall Webworm



Following the short-lived El Niño storms in early January and February, record high temperatures the second and third week in February, quickly triggered early emergence of pinyon needle scale in the Payson, Prescott and Sedona area. In Sedona, female scales were detected emerging from the overwintering scale stage and began laying eggs. While small swarms of the tiny, gnat-like males were noted hovering around infested pinyons off Midgely Bridge, in Oak Creek Canyon. By early March egg laying was seen in Prescott and the Payson area. By mid-April to early May most of the eggs had hatched, with the scale crawlers reinfesting pinyons. Interestingly, populations in the Payson area did not appear to cause any noticeable discoloration of infested pinyons later in spring.

Pinyon Needle Scale



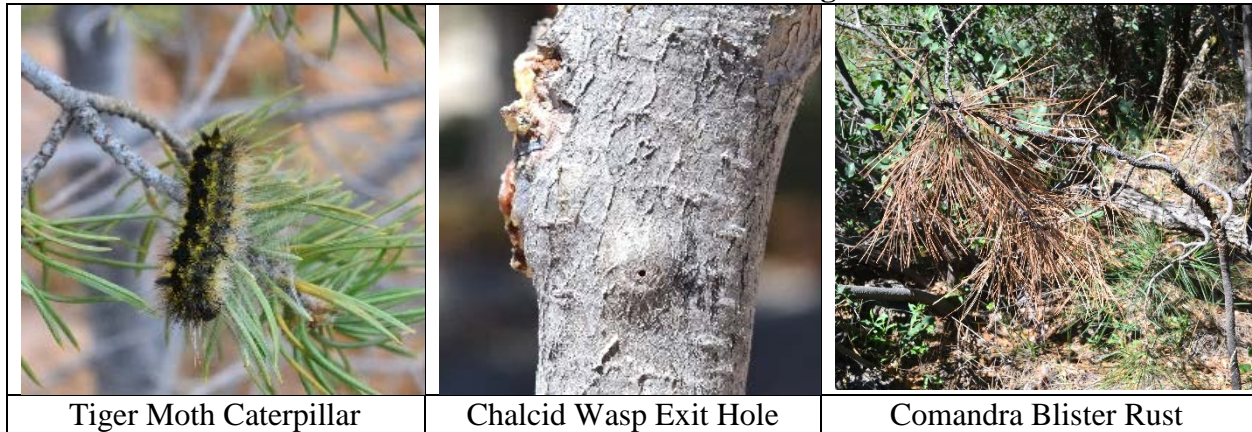
An assortment of miscellaneous insects, diseases, invasive plants and abiotic agents were also encountered in 2016.

A tiger moth caterpillar found on pinyon was noted in the Prescott area in early April. Webbing was observed in the area around the caterpillar for the first time, and may be indicative of an effort to spin a cocoon. The insect is usually solitary and is sometimes found on junipers. It has shown up infrequently in the past in other parts of the state.

A chalcid wasp species was found for the first time on Eldarica pines, in the Globe area in June. Tiny exit holes were noted on the branches, with blister-like swelling of the bark. Wasp larvae were found in pits on the surface of the wood of infested branches. No serious damage to infested pines was noted.

Comandra blister rust was noted in the Prescott area, where it had girdled the top of a ponderosa pine sapling probably in 2015. The disease is native but very difficult to find in the state. It was found again in an area where it was first identified back in 1987.

Miscellaneous Insects and Pathogens



A couple of streets in two communities in Prescott, experienced lightning strikes on ponderosa pines during the monsoon season, for two years in a row. Topography may explain this unusual phenomenon.

The widespread populations of non-native thistles and knapweeds identified in the Flagstaff area in 2015, were still present in 2016. Efforts are underway to treat these invasive and prolific plants in a coordinated manner, on a landscape level in the area.

A single Aleppo pine with multiple branches, was identified in Tucson Country Club Estates, dying from the top down in August. Native bark beetles were first identified in this community on this pine species in 2014, and may indicate continuing activity by the insect.

Miscellaneous Insects and Pathogens

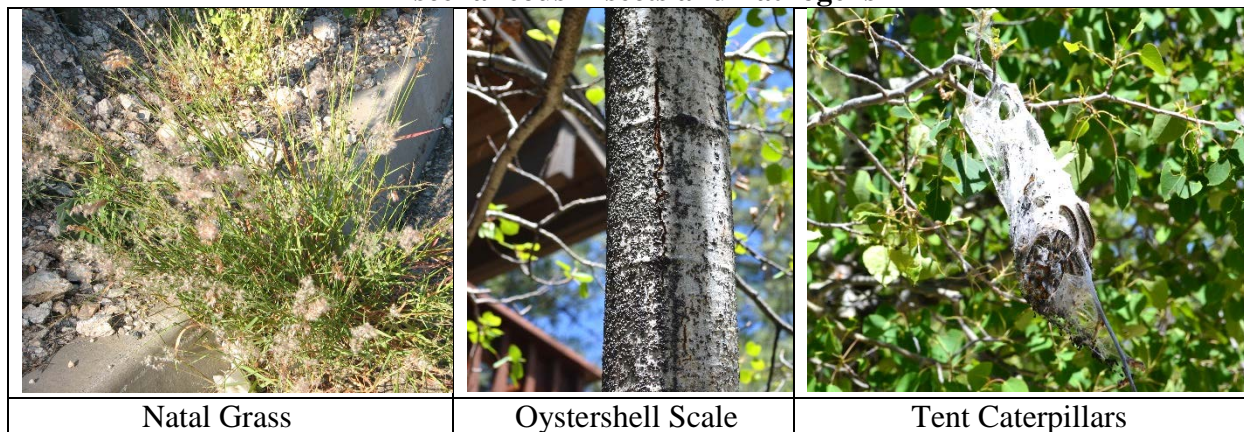


Natal grass another non-native species, was identified for the first time all the way down to the base of the Catalina Highway in August, to about 2900 feet in elevation. It has also been slowly spreading up the mountain in the last few years, and was found at about 5000 feet at Seven Cataracts Vista, in August 2015. The plant is very adaptable and will likely continue spreading in both directions.

Tent caterpillar populations dropped dramatically in 2016 on the Catalina Mountains and eastern Arizona. Only about half a dozen tents with mature caterpillars, were found on aspen at the upper end of the Catalina Mountains in May. In a normal year, they can be found throughout the mountaintop mainly on aspen and chokecherry. Even more surprising in eastern Arizona, was the one tent found on a cherry tree in Greer, and scattered tents on gooseberries growing along highway 260 west of Eagar. No tents were found in the expansive aspen stands examined in the nearby White Mountains.

Oystershell scale on aspen was noted in several locations in 2016, and may be an indication their population is on the increase.

Miscellaneous Insects and Pathogens



Three new insects were identified in the Catalina Mountains in August, on walnuts and willows.

Walnut caterpillars were found in Bear Canyon defoliating just the leaves on the branch tips. The molted skins of the caterpillars were found concentrated and stuck to the ends of defoliated branch tips, and are diagnostic for the species. Molting is necessary in insects to allow them to grow larger. Positive identification of the insect was revealed, when distant images of the defoliation were magnified. The gray and hairy mature walnut caterpillars are very distinctive.

The second new insect detected on the mountain, was a sawfly found lightly defoliating willow branch tips growing at the upper end of Carter Canyon, in Summerhaven. It's similar in appearance to the Lesser Willow Sawfly found in Europe.

The last new insect seen on the mountain, also on willows in Carter Canyon, was a serpentine leaf miner. The characteristic tunneling just underneath the leaf surface is diagnostic for this group. Very tiny and flat caterpillars of a moth, are known to produce the striking leaf-mining symptom.

Miscellaneous Insects and Pathogens



Finally, reports were received in October, of interior needle discoloration of ornamental spruce trees in the Prescott area. The needle discoloration may reflect the effects of several abiotic factors, including above normal temperatures in October, a dry site and inadequate watering.

The early winter storms in January and February, and the very strong monsoon experienced in 2016 in most areas of the state (for the fourth year in a row) influenced the presence and distribution of many of the insects, pathogens and invasive plants seen during this year.

For further information about any of the detections in this report, contact Bob Celaya, Forest Health Specialist, Arizona Department of Forestry and Fire Management at 602-771-1415 or BobCelaya@forestryandfire.az.gov

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