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2012 FOREST HEALTH CONDITIONS REPORT STATE AND PRIVATE LANDS

A number of defoliating insects in forests and woodlands were easily the most visible in the state in 2012. And not until late August was there a detection of significant mortality to pinyon pines, caused by bark beetles in the Eagar area. The warm and dry 2011-2012 winter may have been a partial reason for the irruption of these insects in the state.

Tiger moth tents containing the caterpillars which produce the white webbing were even more visible in 2012, mainly on ponderosa pine. Populations of this insect were reported from Flagstaff all the way over to the White Mountains. They are one of the few forest insects active during winter, and may have been more active due to the warm winter temperatures. More unusual was a new Tiger moth tent found on Douglas-fir in the Washington Park area above Payson, in late September 2012. It's uncommon to find this insect below the Mogollon Rim and on this host. Finally in early December, scattered populations of Tiger moth were detected in Eagar and Nutrioso on pinyon pine. The identification of this insect on this host has been rare in the past. However, defoliation caused by these caterpillars is usually more unsightly than damaging to the hosts.

Tiger Moth



Also due to the warm winter temperatures, female pinyon needle scales emerged early in March from their over-wintering stage on the needles, and laid their eggs in the Payson and Prescott areas. Unconfirmed reports were received of female pinyon needle scales emerging from their overwintering stage on the needles, as early as late February in the Prescott area.

The community of Round Valley in Gila County south of Payson and the southeast side of Payson has experienced large scale discoloration and defoliation of their pinyon pines by this native insect. A dramatic increase in their numbers was first observed in 2007, and a steady increase in their distribution has been observed in both areas in subsequent years.

This insect has been well established in the Prescott area for decades, and can be found spread over thousands of acres, from Prescott Country Club to the Prescott Basin and to Williamson Valley all the way north to Hootenanny Holler. Their complex life cycle is largely regulated by temperatures, and egg hatch was observed by the end of the March, producing enormous numbers of tiny “crawlers”.

Pinyon Needle Scale



And tent caterpillars were very active on the Catalina Mountains in late May, mainly on aspen, chokecherry and willow for the fourth consecutive year. In fact, caterpillars were pupating into the cocoon stage while at the same time adult moths were emerging from cocoons, collected from infested chokecherries on the Catalina Mtns at about 7000' in elevation--indicating multiple generations--and were probably related to the warm winter temperatures.

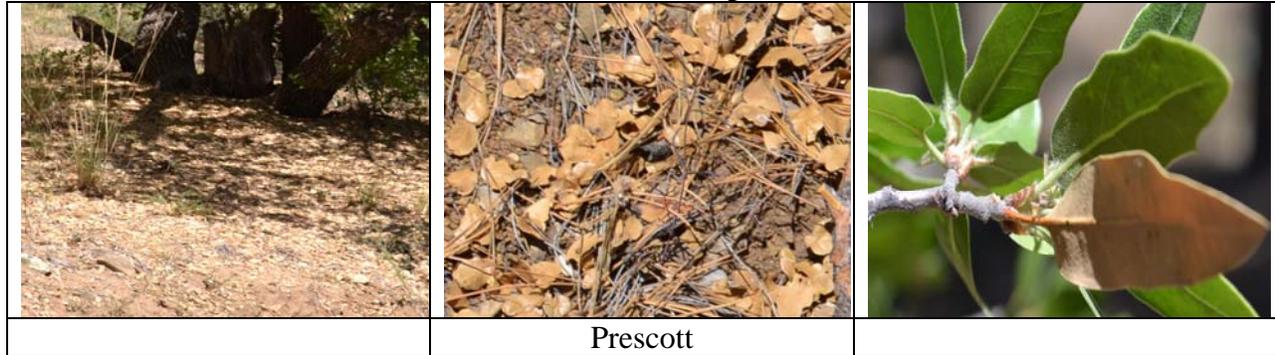
Tent Caterpillars



Tent caterpillars were also scattered in spring in the Payson and Prescott areas. They were found infesting a number of Emory and White oaks along Highway 87 just southeast of Strawberry. Chokecherry is the most common host for this insect in this area. And a definite increase in their numbers was detected in the Highland Pines Community near Prescott mainly on Gambel oak. But they were also found on Emory and scrub oak in the area.

A heavier than normal leaf drop of evergreen oaks was also noted in late spring in the Prescott area. These oaks naturally lose their leaves in spring to make way for emerging new leaves. The heavier leaf drop may also have been a response to the warm winter temperatures.

Oak Leaf Drop



Above normal temperatures quickly came to a halt with the cold, dry and windy storm that blew through the state over the Memorial Day weekend. Widespread damage to the new growth of both conifers and hardwood trees was noted throughout the eastern half of the state. Extensive frost damage was detected in the community of Star Valley east of Payson mainly on Arizona walnut in early June. Other tree species damaged by the cold temperatures in the community included catalpa, cottonwood, mulberry, redbud and Arizona sycamore.

Extensive frost damage to NM locust was detected in the community of Strawberry just south of Highway 87. Also widespread throughout the community were Arizona white oaks, catalpas, Gambel oaks, Arizona sycamores and walnuts damaged by the cold temperatures

Frost Damage



Above the Mogollon Rim, damage to the new growth was most commonly observed on Gambel oak, white fir and ornamental spruce. Damage was reported from Flagstaff all the way over to the Show Low area. Burning of needle tips on the new growth of seedling ponderosa pines was also observed in these areas.

Frost Damage



Defoliating insects quickly recovered from the cold snap, with a fall webworm female moth found laying eggs on an Arizona walnut just west of Vernon in late June. Heavy populations of these insects were detected later in summer throughout Eagar and Show Low infesting a number of hosts, and scattered in Lakeside-Pinetop. The insect was also found feeding on a new host-- lilac bush in Eagar and Star Valley. The insect is very common throughout northern Gila County.

Fall Webworm



Even more dramatic was the detection of this insect in August on the Catalina Mtns for the first time--and at 8000' in elevation and on a new host--NM locust! A larger population was found later in the area on Arizona walnuts. This insect may have been spread up the mountain by the strong spring winds that occur from the southwest.

Catalina Mountains



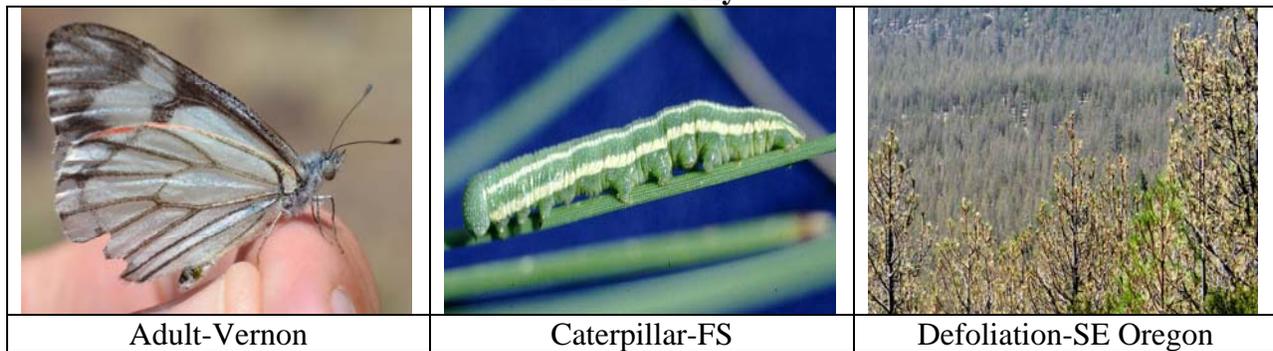
Strong spring winds may have also been responsible for the rapid spread of this insect on Arizona walnuts from upper Oak Creek Canyon in 2011, and up the switchbacks to the Oak Creek Canyon overlook in 2012. They were also found for the first time west of the Blue Ridge area and around Mormon Lake in southeast Coconino County. They are likely to be detected in the Flagstaff area in the near future.

Coconino County



Another defoliating insect was detected in late June south of Vernon with a potential for very widespread damage. A large population of pine butterflies was seen in the area around its principal host—ponderosa pine. The butterflies were so numerous that they were easily caught with the bare hand. This insect has historically not caused any significant defoliation of ponderosa pines in the state. But the potential is there based on the dramatic eruption of this insect currently in southeastern Oregon. And they tend to persist for several years.

Pine Butterfly



Pine sawfly caterpillars, another defoliating insect, were identified feeding on ponderosa pines by the homeowners in the Summerhaven area of the Catalina Mountains in late July. This is the first time this insect has been detected on the mountain feeding on ponderosa pine. Heavy defoliation of understory pines has been detected on about eighteen (18) acres and lightly on overstory pines on a hundred and fifty (150) acres in the area. However, sawflies tend to persist and spread in an area for several years. And even though these insects can cause partial or complete defoliation of pines mortality is uncommon.

Pine Sawfly

		
Defoliation	Sawfly Caterpillars (Larvae)	Sawfly Larva

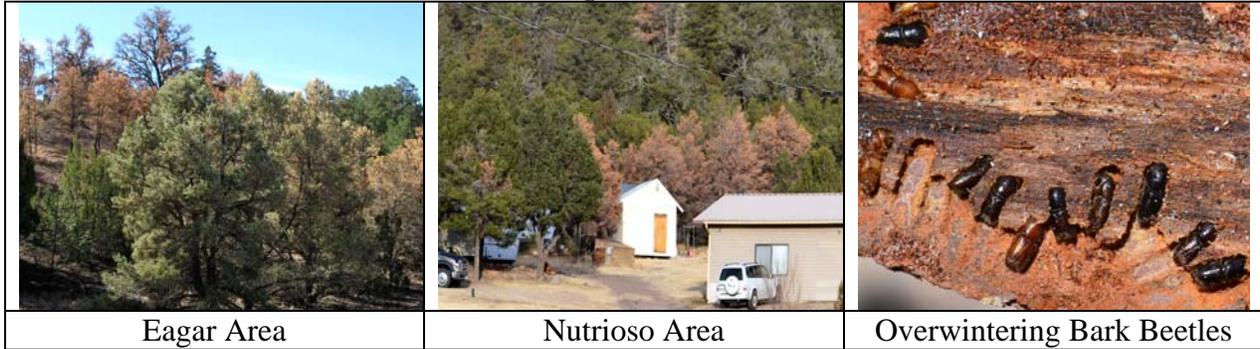
A native leafhopper continued to heavily discolor and defoliate Arizona walnuts in northern Gila County in September and October 2012. It was also detected on walnuts in new areas of the state including the community of Cherry near Prescott, Williamson Valley and scattered throughout the community of Jerome. Up until now the insect has not been considered a major forest health concern, due to the fact that the defoliation occurs late in summer, just before the walnuts normally shed their leaves. However, many of the walnuts have been damaged by the leafhoppers for several consecutive years, and they may start causing mortality of small trees and twigs and branches of larger walnuts in the near future.

Walnut Leafhopper

		
Cherry Road	Leafhoppers & Discoloration	Leafhoppers

Finally in late August, piñon Ips bark beetles broke the streak set by defoliating insects, when they were detected causing extensive mortality of pockets of pinyon pine mainly on the south side of Eagar. The Wallow Fire in 2011 apparently stressed many of the pinyon trees contributing to the current beetle infestation. In fact, pockets of dead pinyons detected in September after the fire were thought to have been caused by the fire suppression tactics. However, the bark beetle quickly infested the fire-damaged pinyons and spread to surrounding unburned trees--this was totally unexpected! Bark beetles typically don't become active in areas burned by a fire until 2-3 years after the burn. These native bark beetles has increased enough in population in 2012, and are now attacking and killing apparently healthy piñon pines away from the fire's edge. It's unknown whether the piñon Ips population in the area will continue to increase, causing more pinyon pine mortality, or naturally collapse in 2013. Pockets of piñon Ips bark beetle mortality were also detected on the northwest side of Nutrioso, and along the east side of Highway 180 south of Nelson Reservoir late in 2012.

Piñon Ips Bark Beetles



Scattered pinyon pine bark beetle mortality has also been detected in the Payson area for the last two years. And endemic bark beetles populations were also noted on ponderosa pines in the Prescott area in 2012, and were mainly localized in and around Ponderosa Park. Scattered fading ponderosa pines were also detected in the Prescott Basin in early September. However, the expected dramatic increase of bark beetle activity in the Flagstaff area on ponderosa pines, damaged by the tornados in October 2010, failed to materialize.

An even more unusual assortment of miscellaneous insects and other pathogens were also encountered in 2012. It began with the dramatic bronzing of Arizona Sycamore leaves detected in the Sedona area in mid-August. The probable main cause was spider mites in spring during the hottest and driest time of the year. However, no long-lasting damage was noted on infested sycamore trees later in summer. And across the street from the discolored sycamores in Sedona, a pinyon pine transplanted from Oregon was detected thoroughly infested with pinyon needle scale. The scale insect has never been found in this area and has the potential to spread throughout the community.

Miscellaneous Detections



Cicadas were even more widespread in spring of 2012 throughout most of the state on a number of forest and woodland species. There were two distinct subspecies producing the characteristic clicking-ticking sounds produced by the males to attract females. Damage caused by the females ovipositing (laying eggs) on a number of hosts was mainly unsightly.

Miscellaneous Detections

		
Scale-Infested Pinyon-Sedona	Cicada	Cicada

A scale insect on oak found originally in the Williamson Valley area, continued to infest mainly Emory oak and efforts are underway to try to identify and control the insect. It has also been found in Prescott. Walnut pouch gall mites were even more common in 2012 and were found at several locations in the state. And finally in early December, “Icing” apparently produced by conifer aphids was detected on ponderosa pines in the Prescott area. This symptom is uncommon for these insects but can be very dramatic. And the aphids can become entangled in the pine resin.

Miscellaneous Detections

		
Oak Scale-Williamson Valley	Walnut Pouch Gall Mites	Conifer Aphid Icing

With the revision of the forecast for a cool and wet El Niño winter in Arizona this year, to warmer than normal conditions with uncertain precipitation, many of the insects and weather-related conditions detected in 2012 may also be noted in 2013.

For further information about any of the detections in this report, contact Bob Celaya, Forest Health Specialist, Arizona State Forestry Division at 602-771-1415. bobcelaya@azsf.gov