Arizona Forest Health Alert

Oystershell Scale Crawlers Emerging in Northern and Central Arizona

May 2022

Oystershell scale (OSS) (*Lepidosaphes ulmi*) crawlers, which are newly emerged scales, are the only mobile life stage of OSS. Crawlers will begin to hatch in late May to early June in northern and central Arizona. Most crawlers emerge over a 2-3 week period in late May to early June but may continue to emerge throughout the summer and into the fall.

This crawler stage is when OSS are most vulnerable to treatments that can reduce population sizes and impacts. Homeowners should begin monitoring for crawler emergence by Memorial Day weekend, as this is the best time for homeowners with infested trees to most efficiently treat the pest.

Why do we care?

Populations of OSS have increased across northern and central Arizona, leading to greater impacts in both urban and wildland settings. OSS damage host trees by inserting their piercing mouth-parts into the bark to suck fluids from the tree. This can lead to bark cracking, branch mortality or whole tree death if the infestation is severe. OSS damage may also weaken host plants, making them more susceptible to other insects or pathogens. Although aspen appears to be the preferred host of OSS, this insect may also affect poplars, willow, ash, lilac, and other tree and shrub species with thin bark. This is a persistent insect that will continue to infest the same hosts, and potentially nearby hosts, year after year.

Signs of activity

Up close, the scale resembles the shell of an oyster (Fig. 1). From a distance, large groups of scales may appear as dark or gray patches against the white trunk of an aspen (Fig. 2). Newly emerged OSS crawlers can be difficult to identify; they look like tiny yellow-orange specks on the tree trunk and branch surfaces (Fig. 3). As crawlers hatch and emerge from beneath the old mother scale they will crawl up the tree trunk in search of a new feeding spot or can be wind-blown to a nearby host. Once they settle and begin to feed, the armored scale or shell begins to harden. After the outer shell hardens the scale is protected and less susceptible to treatments including the use of pesticides.

What to look for

Photo by Colorado State University Extension

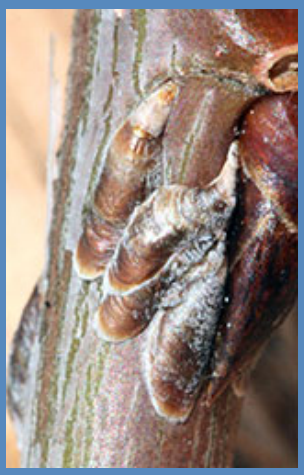

Fig. 1 Adult OSS.

Fig. 2 and Fig. 3 Photos by the USDA Forest Service

Fig. 2 Severely infested aspen (right) next to an unaffected aspen (left).

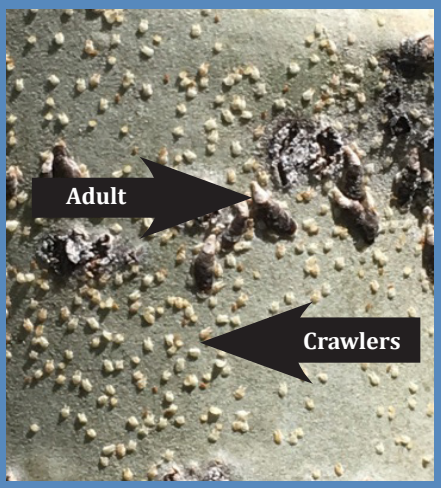

Fig. 3 Close up of adult scales among many tiny yellowish-white crawlers.

What else could it be?

There are other scales that occur on aspen, but none that will look similar to OSS. However, there are non-insect agents that cause damage which can resemble OSS damage, namely cankers. A variety of fungal pathogens cause canker formation on aspen which may result in sunken and/or roughened bark. From a distance, cankers may appear as darkened patches that may be confused with OSS. Two common aspen cankers that might be confused with OSS are Cytospora canker (*Cytospora spp.*) (Figure 4) and hypoxylon (*Entoleuca mammatum*) (Figure 5). It is important to positively identify OSS as the causal agent before implementing any management strategies.

Photos by the USDA Forest Service

Fig. 4 Orange fruiting bodies emerging from pimple-like structures caused by *Cytospora* spp.

Fig. 5 White and black stromata of *E. mammatum*. Note the dark, roughen bark caused by the pathogen.

What can you do?

A variety of treatments are recommended for OSS mitigation. The most benign treatments include **physical removal** of OSS adults and crawlers (Figure 6); even a strong jet of water from a garden hose may be used to displace and kill the fragile crawlers. Summer season **horticultural oils**, when applied to coincide with the egg hatch/crawler period can effectively be used to help control OSS. Winter season, or dormant season horticultural oils can kill many of the overwintering eggs of OSS and can therefore be a useful management option. **Pyriproxifen** is an insect growth regulator that is particularly effective against OSS, but is only sold for use by commercial applicators. **Dinotefuran** is a water soluble, systemic insecticide that is effective against OSS. Dinoterfuran can be applied as a soil drench or as a spray on the tree trunk, where it is absorbed into the plant and subsequently translocated within the tree. Dinotefuran remains active for one to two years.

Old scales will remain on the bark after treatments. Remove scales from an infested area to monitor emergence the following year to determine if additional treatments are needed. For more information on treatment methods see the Colorado State University Extension, Oystershell Scale Fact Sheet No. 5.513 (https://extension.colostate.edu/topic-areas/insects/oystershell-scale-5-513/).

Lastly, proper tree maintenance of your aspen will also help minimize OSS impacts. By using proper pruning techniques, pruning in the dormant season, and adequate watering will help to reduce stress of host trees and minimize impacts of OSS.

Fig. 6 Physical removal of scales. Photo courtesy of Colorado State University Extension.

For further information about this insect or other forest health concerns, contact Aly McAlexander, Forest Health Specialist, at (602) 771-1415 or amcalexander@dffm.az.gov.

Funding provided by the USDA Forest Service.