Scales

Scales are small, highly-specialized insects. Since they often grow exponentially, resulting in heavy infestations in short periods of time, they are some of the **most** destructive tree pests nationwide. In addition, their often inconspicuous nature can make the diagnosis of an infestation difficult.

There are numerous species of scale in WNC, but all of them have two things in common. First, they all feed by sucking tree juices (sap) through a set of highly-modified mouthparts called stylets. During large infestations, excessive sap loss from this feeding robs the tree of the nutrients it needs to grow and compromises its defenses – sometimes with fatal consequences. Second, all *adult* scales produce a waxy/cottony *or* shell-like protective covering. The former are known as **soft** scales, while the latter are known as **armored** scales. Since not all insecticides are able to effectively penetrate this covering, treatment options must be carefully thought out.

Symptoms due to feeding vary widely with the scale species, host, and host tissue attacked. However, commonly observed foliar symptoms include spotting, speckling, chlorosis, and/or distortion. All *soft* scales also produce a sticky, sugary waste product called honeydew that collects wherever the scales are present. Eventually, a fungus called "sooty mold" may begin to develop on the honeydew, turning any affected surfaces an unsightly gray-black color. In addition, other insects, such as ants and wasps, may invade the tree to feed on the honeydew causing additional problems.

Treatment may take several forms depending on target scale species, infestation level, time of year, and/or the client's goals. RTS often uses a one-insecticide protocol applied April-September via basal bark spray. Typically, with this protocol, control begins in **1-2 months**, kill rates are **85%+**, and residual efficacy is **1 year**. An **organic** option in the form of Horticultural Oil (HO) applied via contact spray can also control scale when applied during the appropriate life stage. However, since it must be applied more frequently, HO typically costs 2-3x more on an equal protection basis.

Finally, it is also important to note that **other stressors** commonly contribute to a scale infestation by compromising the tree's underlying health and defenses. Often, these stressors take the form of an ongoing water deficit, soil compaction, grade changes, a buried root flare, and/or nutrient deficiencies. After initial chemical control, addressing these stressors is **fundamental** to prevent future scale infestations and/or other stress-exacerbated diseases.

Euonymus Scale (*Unaspis euonymi*), pictured above, is a very common and serious pest of Japanese Euonymus (*Euonymus japonica*).