

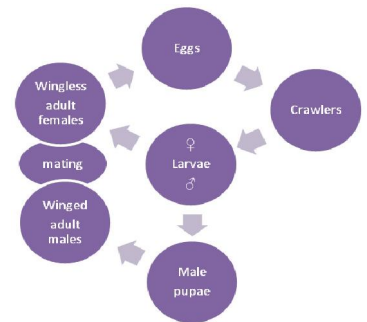


## William T. Kemper Center for Home Gardening

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### *Insect Order ID: Hemiptera (Scale, Mealybugs)*

**Life Cycle**—Usually gradual metamorphosis (incomplete or simple). Eggs are laid in clusters and hidden under the scale-like covering of the adult female. First instar larvae (crawlers) are active. Later instars of some species lose their legs and their ability to move and look more and more like adults as they grow and molt. Males go through a pre-adult resting stage (a kind of pupal stage), during which they develop wings. Wingless adult females mate with winged males, then lay eggs. In some species, metamorphosis is more complex as some are hermaphroditic, others are parthenogenetic and others give birth to live young (certain species of mealybugs).



**Adults & Larvae**—It can be hard to tell adults from larvae. Most are covered in wax. On soft scale this can wear off. On armored scale the wax combines with molted skin to form a hard protective covering. Adult males, like gnats, are tiny and have only two wings; however, unlike gnats and other Dipterans (true flies), they lack halteres. Females are wingless. Many lose their legs and antennae soon after the crawler stage, and never move again; mealybugs (a kind of soft scale) retain their legs. Males die after mating. Females usually die soon after laying eggs. Some mealybugs give birth to live young, so multiple stages may be present at the same time. *(Click images to enlarge or orange text for more information.)*



Small insects, hard to tell adults from larvae



Soft scale coated with wax that wears thin with age



Soft scale with wax worn off



Armored scale combines hardened wax & cast skins



Mealybugs like to congregate, especially in leaf axils



Mealybugs remain mobile



Most species are legless

**Eggs**—Most lay eggs under their waxy, scaly covering and then die. The scaly covering remains as a shelter full of eggs, sometimes including as many as 1,000 eggs. Some species of mealybugs give birth to live young. *(Click images to enlarge or orange text for more information.)*



Some species of mealybugs give birth to live young



Some scale lay up to 1,000 eggs



Full of eggs



Eggs hatching inside scale covering

**Crawlers**—The first instars, called crawlers, have antennae and legs and are extremely active until they find a place to settle down. After the first molt, many species lose their legs, and some their eyes, and produce a scale-like protective covering. Some coverings are made of hardened wax, while others are made of a combination of hardened wax and cast skins (armored scale). Certain primitive species (e.g., mealybugs) retain their legs but cover themselves in a white mealy wax. After each molt, the larvae are usually larger and look more adultlike than the previous instar (the stages between molts). *(Click images to enlarge or orange text for more information.)*



1<sup>st</sup> instar called crawler stage



Crawlers have legs & antennae



Crawlers looking for a spot to spend the rest of their lives



Mealybugs can crawl around throughout their lives

**Pupae**—In most species, the pre-adult instar of males is a resting state, during which they develop wings. It is not considered a "true" pupa. Females never develop wings and never go through a pupal stage.

**Beneficial/Benign Aspects**—A certain species is harvested to make shellac. Other species provide pigments for dyes, especially red dye. All attract natural predators and parasites. *(Click images to enlarge or orange text for more information.)*



Attract predators



Eaten



**Damage**—Both adults and nymphs have piercing-sucking mouthparts. They pierce plant tissues and suck out juices. They do NOT make holes. Many cause yellowing and dropping leaves. Some species inject a toxic substance into the leaves that produces deformed leaves, early leaf or fruit drop, stunting or loss of vigor. They are phloem feeders and so produce honeydew. Ants, wasps, and other creatures attracted to sugar may be present collecting the honeydew and in some cases protecting the scale. Sooty mold may also be present growing on the honeydew. Mealybugs and certain other species of scale are primarily indoor pests as they do not overwinter in the St. Louis area. It can be difficult to distinguish live scale from dead, especially with armored scale as the scaley covering remains even when the insect is dead; however, it can be lifted off or flicked off with the point of a knife. *(Click images to enlarge or orange text for more information.)*



Yellow spots on leaves



Heavy infestations  
can cause loss of vigor



Pine needle scale resembles  
flocking on a Christmas tree



Scale on houseplants  
can create a  
sticky, honeydew mess



Ants after honeydew  
often protect their scale



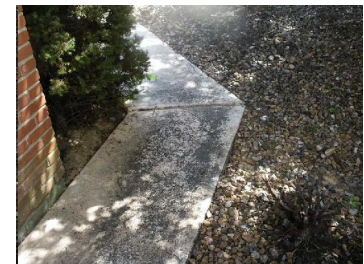
Honeydew can attract wasps  
and other sweet eaters



Dead scale are hard to tell  
from live scale



Black sooty mold  
grows on honeydew



Honeydew dropping from  
above with sooty mold  
growing on it can produce  
blackened sidewalks & plants

**Comments**—Scale and mealybugs were formerly classified in the order Homoptera. They are now classified in the order Hemiptera, Suborder Sternorrhyncha, Superfamily Coccoidea.