

## BIOLOGICAL CONTROL STRATEGIES

Biological control strategies use living organisms such as predators, parasites, parasitoids or pathogens to suppress pest populations, and to support the survival of these beneficial organisms. Major strategies used in biological controls include conserving existing natural enemies and maintaining landscape ecosystems in ways that support natural enemies and their activities, introducing and/or encouraging native enemies of tree pests if they are not already present, and introducing new natural enemies with the goal of establishing a permanent population if native enemies are not available. When using any of these methods, it is important to not disrupt beneficial enemies of tree pests with insecticides.

Examples of biological controls include:

- Purchasing and releasing beneficial insect predators in order to increase their presence on a tree so they can enhance natural pest suppression
- Adding plants that provide nectar, pollen and nesting sites to support natural enemies of tree-threatening insects
- Releasing large numbers of pest predators to quickly overwhelm a pest population, knowing the released predators may not propagate and provide on-going pest control
- Introducing a fungal pathogen that causes a disease in an insect pest



*Oobius agrili* parasitizing an emerald ash borer egg on an ash tree

Photo credit: Houping Liu, Michigan State University, Bugwood.org



Adult mealybug destroyer feeding on a mealybug

Photo credit: Palex66, Dreamstime.com



Release of 500 adult scale picnic beetles (*Cybocephalus nipponicus*) onto a juniper infested with juniper scale

Photo credit: Joseph LaForest, University of Georgia, Bugwood.org