

## PRAYING MANTIS

The Praying Mantis (or Mantodea) is in the Mantidae family with its closest relatives believed to be cockroaches and termites. Although their evolutionary path has been a subject for dispute, recent belief is that mantises evolved from proto-cockroaches during the Cretaceous period, possibly from species like *Raphidiomimula burmittica*, a predatory cockroach with mantis-like forelegs. About 20 species of mantids are native to the United States with two foreign species having been introduced for agriculture pest control. The two introduced species are the Chinese Mantis and the European Mantis. The European Mantis has been designated as the state insect of Connecticut even though it is a non-native insect. The colloquial name, Preying Mantis, originated because of its prominent front legs that are bent and held together at an angle that suggests a prayer-like stance.

The life cycle of the Praying Mantis consists of three distinct stages, the egg stage, the nymph stage and the adult stage.

Egg Stage: The egg stage normally takes place during the winter. The female Mantis lays from 100 to 300 eggs and secures them to a stem or sturdy leaf with a frothy liquid that hardens and forms a protective casing for the eggs. These egg sacs are called ootheca and provide protection for the eggs during the winter. Despite the durability of the hardened egg sac, the eggs are often preyed upon by parasitic wasps. Another threat to the egg sacs is humans who collect them for sale in garden stores as a form of biological pest control. Each egg is contained in a compartment-like space that contains a small one-way valve-like structure. When the egg hatches in late spring, the newborn nymph exits the egg case.



Preying Mantis Egg Sac (Ootheca)  
Photo by T. Johnson

Nymph Stage: When the nymph exits the ootheca (egg sac), it closely resembles the adult mantis except for its size and the fact that it has no wings or functional genitalia. The nymphs are sometimes colored differently from the adults and in the early stages of transitioning to the adult stage, their appearance often mimics the appearance of an ant. Upon exiting the ootheca, the nymph usually stays around the ootheca for a short time and satisfies its hunger by eating other nymphs. It then starts hunting for small insects like fruit flies. The nymphs are particularly vulnerable to



Mantis Nymph Mimicking  
an Ant  
Wikipedia Photo

larger predators and need to learn to be selective when preying or they will become prey themselves. The nymphs will eat anything that won't eat them first. The nymph increases in size by replacing its outer body covering with a sturdy, flexible exoskeleton and periodically molting. The nymph can molt up to 10 times depending on the species and will reach full size by the end of the summer. After the final molt, most species have wings.

Adult Stage: Adult mantises may be anywhere from 2/5 of an inch to 12 inches long depending on the species. The largest mantis in the United States is about 6 inches long. Their color can vary ranging from light greens to pinks with most being either pea green or brown. The color generally varies with the habitat since camouflage is very important to survival. Being able to blend into their environment not only helps them to avoid predators but also better able them to catch their prey. They have evolved too not only blend in with the foliage but to mimic it, appearing as living or withered leaves, sticks, tree bark, blades of grass, etc. Generally, mantises are ambush predators and wait for prey to stray too near. The mantis then lashes out with remarkable speed.



Religiosa or European Mantis  
National Geographic Photo

Mantises have two grasping, spiked forelegs (equipped with rows of sharp spines) in which prey are caught and held securely. They are carnivorous and their prey consists primarily of other invertebrates such as flies, beetles, butterflies, moths, spiders, crickets, grasshoppers and even other mantises. The mantis bites the neck of its prey to paralyze it and then begins to eat it. They always start eating the prey while it is still alive and almost always start eating from the insect's neck.

The breeding season for the mantis is usually late summer or early fall. After mating, the female deposits the eggs in the frothy mass produced by glands in the abdomen. The froth hardens forming the egg case (ootheca) and the life story of the Praying Mantis begins once again. The female usually dies within a few weeks after mating. The male sometimes does not survive the mating because the female has a tendency to bite off his head.

Summary prepared by T. Johnson in April 2011 from material in the following web sites: Wikipedia; National Geographic; The Praying Mantis.org; Insecta Inspecta World and Galveston County Master Gardeners.

**Additional Material:** GVHC Library File 6