

# Praying Mantids

Praying mantids, also referred to as praying mantis, are insects found in landscapes and gardens. Praying mantids do not discriminate between insect pests and beneficial insects, feeding on an assortment of prey including: butterflies, caterpillars, crickets, flies, grasshoppers, moths, and wasps. Praying mantids also feed on honey bee, *Apis mellifera*, adults entering and leaving hives during the day. In addition, some large praying mantids feed on small animals such as hummingbirds, lizards, and frogs. This publication provides information on biology, mating behavior, and the egg cases of praying mantids.

## Biology

Praying mantid adults are 3 to 4 inches (76 to 102 mm) long, brown or green, and elongated (Figure 1) with large, green compound eyes (Figure 2). An interesting feature

of praying mantids is the neck can rotate 180 degrees. In addition, the front legs are held close to the body folded as if in prayer. Praying mantids blend in with their surroundings while resting on twigs and stems waiting for prey. Praying mantids capture prey with their front legs, which have long sharp spines on the upper inside that are adapted for catching and holding prey. The front legs of a praying mantid are used to capture and hold prey while the prey is being consumed (Figure 3).

Praying mantid females lay 200 to 300 eggs that are covered by a frothy material, which hardens into a foam-like egg case (ootheca). Egg cases can be found on branches, plant stems, walls, fences, posts, sides of houses (Figure 4), and eaves. Egg cases may be present from November through April. Praying mantids overwinter as eggs inside the egg cases.



Figure 1. Adult praying mantid. (Photo: Raymond Cloyd)



Figure 2. Praying mantid head with large green compound eyes. (Photo: Raymond Cloyd)



Figure 3. Praying mantid eating a moth. (Photo: Raymond Cloyd)



Figure 4. Praying mantid egg cases on branch (A); on post (B); and attached to side of house (C). (Photos: Raymond Cloyd)

In spring, nymphs emerge (eclose) from eggs in three to 10 weeks, depending on temperature. Nymphs that emerge resemble miniature adults but do not have wings. Not all nymphs will become adults because they may be eaten by birds, toads, lizards, or insect predators. Nymphs that survive, mature into adults. Praying mantids are susceptible to broad-spectrum insecticides, which should not be applied when praying mantids are present in the garden. Praying mantids have one generation per year in Kansas.

## Mating Behavior

The mating behavior of praying mantids begins with the male jumping on the back of a female. During mating, the female may turn around and eat the head of the male. Nonetheless, the headless male will continue mating with the female. After mating, the female usually consumes the rest of the male body, which serves as a protein source useful for egg production.

## Praying Mantid Egg Cases

The egg cases of praying mantids vary in size and shape depending on species. The Carolina mantid, *Stagmomantis carolina*, egg case is tan to light brown, ½ to ¾ of an inch (12.7 to 19.0 mm) long, rectangular or elongated, and rounded at the top and bottom. The egg case has a distinct white to gray band extending down the center of the egg case (see Figure 4b). The egg case of the Chinese mantid, *Tenodera sinensis*, is light brown, 1.0 to 1¼ inches (25.4 to 31.7 mm) long, half-domed shaped, with one end tapered (Figure 5).



Figure 5. Egg case of Chinese mantid on branch. (Photo: Raymond Cloyd)

Praying mantid egg cases can be purchased from garden centers, nurseries, and mail order or online sources. Most egg cases for sale are associated with the Chinese mantid (Figure 6), which is not native to North America but is naturalized in most regions. Purchasing praying mantid egg cases for pest management is not recommended because praying mantid nymphs and adults do not kill enough insect pests to prevent plant damage. Nonetheless, the presence of praying mantids in the garden is an opportunity for people to see nature in action.

Praying mantid egg cases found outdoors may be collected and preserved by removing the egg cases, bringing into the home, and placing into a glass jar with a lid that has at least 10 small air holes. Exposure to warm temperatures ( $\geq 70$  degrees Fahrenheit or 21 degrees Celsius) inside the home results in nymphs emerging from the egg cases in four to six weeks. However, nymphal emergence can be delayed by storing egg cases in glass jars in the refrigerator. Egg cases can be placed in the garden when the temperature is above 50 degrees Fahrenheit (10 degrees Celsius) so the nymphs are not exposed to cold temperatures.

Fifty to 200 nymphs can emerge from a single egg case. If temperatures are above freezing after nymphs emerge, immediately release them into the garden. If not released promptly or provided with food, nymphs will eat each other, a behavior known as cannibalism. Once nymphs are released into the garden, they will consume insects such as flies and crickets.



Figure 6. Commercially available product containing egg cases of the Chinese mantid. (Photo: Raymond Cloyd)

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