

# PRAYING MANTIDS: DEFENDERS OF THE HOME LANDSCAPE?



## Introduction

Extension personnel and Master Gardener volunteers have identified adult mantids brought in by Washington residents to county and state diagnostic clinics. This diagnosis is rather easy as the mature insect is green or brown, measures 2 to nearly 3.5 inches long, and has raptorial forelegs armed with spines and held in the manner of hands folded in prayer. Often residents are relieved to hear that this large and distinctive insect is not a plant pest. This carnivorous insect preys on insects, spiders, and other arthropods in the home landscape. One frequent observation by Washington residents is, “Why haven’t I noticed all these mantids in my home landscape before?” The probable answer is that the most common species of mantid now found in Washington State is not native to North America but is a European species intentionally introduced to control garden pests (Figure 1).

The objective of this publication is to increase public awareness of the life and activities of praying mantids and their role as insect predators in home gardens and landscapes. Our information targets Washington residents, homeowners, Master Gardeners, as well as future students of the life sciences and entomology.

## What Is a Praying Mantid?

Praying mantids belong to the insect order Mantodea. Some people use the interchangeable term “mantis” instead of “mantid,” though mantis specifically refers only to mantids in the genus *Mantis*. Praying mantids are sometimes mistakenly referred to as “preying mantids” because of their predatory behavior. In fact, praying mantids were so named because of their prayerful appearance, as reflected in one species’ name: *religiosa*.

Most adults in this order tend to have the following characteristics in common (Triplehorn and Johnson 2005; Figures 2 and 3):

- Two pairs of well-developed wings.
- First pair of wings folded back over body.
- Chewing or biting mouthparts.
- Prothorax much longer than mesothorax.
- Raptorial forelegs modified for grasping.



Figure 1. Male adult European mantid hitching a ride on a car. This male is nearly 2.5 inches long and pale brown in color. Photo by Michael Bush.



Mantids are among the best-known insect predators and are frequently sold to homeowners as beneficial control agents for landscapes and gardens. They are amazing predators as they spring to life and snare unsuspecting insect prey with their raptorial forelegs. Mantids are sedentary predators that ambush their prey, so many species use camouflage to blend their body color with their background. In other parts of the world, species camouflage themselves by mimicking leaves or even flowers (Figure 4).

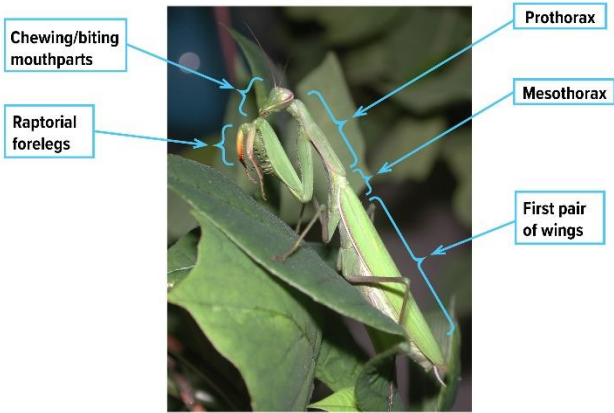


Figure 2. Adult female praying mantid showing chewing/biting mouthparts, raptorial forelegs, first pair of wings, and prothorax:mesothorax length comparison. Photo by Michael Bush.

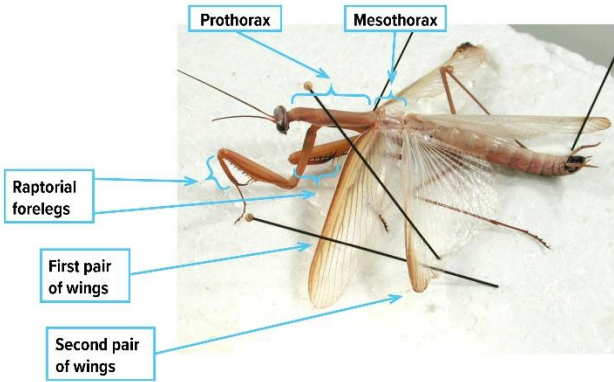


Figure 3. Adult male praying mantid showing raptorial forelegs, first and second pairs of wings, and prothorax:mesothorax length comparison. Photo by Michael Bush.



Figure 4. A flower mimic mantid in threat pose. Photo courtesy of Flickr.

# Praying Mantid Life Cycle

Praying mantids go through a simple change in form (metamorphosis) as they mature from egg to nymph to adult. In the Pacific Northwest, overwintering occurs as an egg in a mass protected by a one-inch-long hardened, papier-mâché-like covering called an ootheca (Figure 5). In response to warming spring temperatures, dozens of quarter-inch nymphs will hatch and emerge from the oothecum (Figure 6). These nymphs tend to be cannibalistic, but survivors disperse within minutes of hatching. Mantid nymphs resemble adults except the nymphs are smaller and lack functional wings. Throughout the spring, nymphs feed on smaller insects such as flies, moths, grasshoppers, crickets, and spiders, but will feed on larger flying and jumping prey as the nymphs get larger. By late summer, each praying mantid will mature into a 2- to 3.5-inch adult with two pairs of fully functional wings. Most species of mantids in North America go through this life cycle only once per year.



Figure 5. An egg mass of the European mantid found in September attached to arborvitae branch next to fence. Photo by Michael Bush.



Figure 6. Praying mantids hatching from an oothecum in early spring. Photo by Purna Rankin, WSU Master Gardener volunteer (Yakima County).



Figure 7. Adult European mantid with the diagnostic bull's-eye on the inside of the foreleg. This female is nearly 3.5 inches long. Photo by Michael Bush.

## Praying Mantids Native to North America

The most common praying mantid, the European mantid (*Mantis religiosa*), most often brought to Extension clinics, is not native to Washington. To recognize the European mantid, look for a characteristic “bull’s-eye” under the inside surface of its foreleg of both female and male mantids (Figure 7). Male mantids tend to be smaller than females, while both adults range between 2 and 3.5 inches long. Extension experts suspect that the practice of gardeners purchasing and releasing egg cases of European mantid over the years has introduced and increased the presence of this species in Washington State. There is one rare, small (<1-inch long), and grey native ground mantid associated with the sagebrush areas in eastern Washington (Antonelli and Glass 2004). This species is rarely encountered.

## Value of the European Mantid in Controlling Landscape and Garden Pests

Even though these insects are sold to homeowners for pest control in gardens, the value of mantids as beneficial agents for home gardens is questionable. They do feed on flies, moths, grasshoppers (Figures 8 and 9), crickets, and spiders, but they also feed on insects attracted to flowers—particularly honey bees. Biological supply companies often sell mantid egg cases to homeowners, and the emerging young mantids will feed on smaller prey. Nevertheless, mantids are not effective at controlling the caterpillars, aphids, or spider mites that are often the most pestiferous insects in home gardens. Mantids are also highly cannibalistic, eating their siblings as well as their mates.



Figure 8. Adult female mantid feeding on a dragonfly that landed too close. Photo by Michael Bush.



Figure 9. Adult mantid, hidden within an arborvitae hedge, has successfully captured a grasshopper. Photo by Diana Pieti, WSU Master Gardener (Yakima County).

## Mantids Feeding on Birds

There has been considerable discussion (supported by visual postings) on the internet about the possibility that these larger mantid species can capture and feed on hummingbirds. In 2017, a study looked at these reports and found 147 cases of mantids preying on small birds (Neffeler et al. 2017). Over 75% of these reports came from North America and were attributed to the larger mantid species including the European mantid. In contrast, these large mantids are themselves eaten by larger bird species. Nevertheless, the authors conclude by recommending “caution in the release of mantids into North American gardens.”

## Conclusion

Gardeners should learn to recognize all life stages of praying mantids and appreciate them as an increasingly common inhabitant of their home landscape. As arthropod predators, mantids are considered beneficial organisms, particularly in their native range. In North America, introduced species like the European mantid may not contribute to the control of our more common insect garden pests, and there is concern that these introduced species may displace native mantid species.

## Further Reading

Battiston, R., and P. Fontana. 2010. Colour Change and Habitat Preferences in *Mantis religiosa*. *Bulletin of Insectology* 63(1):85–89.

Cannings, R.A. 2007. Recent Range Expansion of the Praying Mantis, *Mantis religiosa* Linnaeus (Mantodea: Mantidae), in British Columbia. *Journal of the Entomological Society of British Columbia* 104:73–80.

## References

Antonelli, A.A., and J.R. Glass. 2004. [Mantids in Washington](#). *Washington State University Extension PLS-9*. Washington State University.

Neffeler, M., M.R. Maxwell, and J.V. Remsen. 2017. Bird Predation by Praying Mantises: A Global Perspective. *The Wilson Journal of Ornithology* 129(2):331–344.

Triplehorn, C.A., and N.F. Johnson. 2005. *Borror and DeLong's Introduction to the Study of Insects, 7th edition*. Brooks/Cole, Cengage Learning.

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