The Incredible Role of Insects In Our Natural World

Article by **Dick Seaton**

The Praying Mantis is a master at camouflage, and this one is well hidden in the branches of a dogwood.

– Ron Klataske photo

For many of us, the world of insects is easy to ignore. But if you are a bird, insects may be the mainstay of your diet. Ground dwelling birds of the prairie, such as the Upland Sandpiper and a whole variety of native sparrows, survive mainly on grasshopper nymphs during the warm season. Permanent residents, such as Bobwhite Quail and Prairie-chickens do the same. Most songbirds, whether resident in summer or just passing through, feed on the insect world.

Worldwide, insects constitute 75% of all animal species and 90% of the total animals on Earth, excluding those that are microscopic. Unbelievably, there is an average of 400 million insects per acre in the Earth's temperate zones.

Kansas is estimated to have somewhere between 15,000 and 20,000 species of insects, many of them not yet named or described. Consequently, it is one of the most interesting of all states in which to study and collect insects.

They are very susceptible to changes in local weather conditions. Like plants, different insects thrive in different types of weather. Their survival strategy is to reproduce by the millions, so that at least a few will live to maturity. The Buck Moth, for example, hatches 95% of its young, but in most years only about 10% will pupate to become adults.

Some insects migrate, the most prominent example being the Monarch Butterfly. A strong south wind may on occasion bring butterflies from Texas that

are normally not present in Kansas. Likewise, strong winds ahead of a storm front may bring a migration of new insects in just a day or two. Like birds, they know the storm is coming.

Fragmentation, alteration or elimination of habitat also affects insects, just as it does birds and wildflowers. The Regal Fritillary butterfly lays its eggs in the fall and its offspring depend on violets for food. The population of violets is shrinking in the prairie, and consequently the Regal Fritillary is becoming threatened.

If you take a walk on the prairie in summer, you will kick up grasshoppers. But did you realize that there are an estimated 50 species in the prairies and other habitats within Konza Prairie, with a new one discovered by researchers nearly every year in recent years. They feed reptiles, amphibians, fish and mammals as well as birds, and the large ones are caviar for Coyotes.

In feeding themselves, grasshoppers take as much biomass from Konza as the bison herd. They can consume their body weight in plant material in a single day, making nutrients for new plant growth, through fecal material and clipped vegetation.

Grasshoppers divide into three main groups: (1) the slant-faced, who lack any "chin," (2) the band-winged, who show colorful wings in flight, and (3) the spur-throated, who carry a spur in front of and between their front legs.

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Many insects camouflage themselves by resting on plants that are so similar in coloration and pattern as to make them almost invisible to predators. They also have other defensive techniques. For example, the caterpillar of the Eupithecia moth feeds on a deadly poisonous plant, the Death Camas, and incorporates the poison into its own body, making it completely unpalatable to birds and other predators.

What if you want to identify an insect you are unsure about? Maybe it has made its way into your house, or onto your garden plants. Kansas State University employs an insect diagnostician whose job it is to help you identify your mystery bug. Although most requests come to her with only a photo, making identification from a sample is much more reliable, providing the sample is not too damaged. All insects tend to have a look-a-like who can fool all but the experts. For example, the closely followed Khapra Beetle, an invasive and destructive insect in stored grain, from Asia, has a look-a-like which is native to Kansas.

This year's unusual weather pattern has certainly affected the insect population. K-State's diagnostician reports that the previous year's drought, plus cold and snow in the spring and overcast and rainy weather in the summer, impacted her requests. For example, aphids, with a short life cycle appeared in tremendous numbers in June. Chiggers were also very heavy this summer because of the cloudy days and moist weather. July's rains brought many waterborne insects, including some that are seen here infrequently.

Kansas State University is also home to the Insect Zoo, which was established in 2002. It is open Tuesday thru Saturday from noon until 6:00 p.m. and by appointment. Guided tours and group visits are available by prearrangement. The phone number is (785) 532-5891. It is located in the old dairy barn on the campus at 1500 Denison Avenue in Manhattan.

We often view insects as pests. If someone is annoying us, we say, "Don't bug me." But insects are extremely beneficial. They pollinate

Eupethecia Moth Caterpillars feed on Death Camas to incorporate the poison as a defense strategy.

– Valerie Wright photo

A Regal Fritillary butterfly on a Butterfly Milkweed, along with other pollinating insects.

– Valerie Wright photo

Teaching a child not to step on a caterpillar is as valuable to the child as it is to the caterpillar.

– Bradley Millar

our food. They turn the soil for us. They feed many of our birds. The predatory nature of many species helps to maintain balance between healthy plants and outbreaks of pests. They are essential to human life as we know it.

For these reasons, scientists recommend avoiding broad-spectrum insecticides that kill everything. If that bug in your garden looks strange, check to see how many are really there before you spray. Find out what it is, if it is a pest or beneficial if you can. Try for control of pests, rather than extermination. Many times soapy water will take care of the problem. Remember, what you see as a problem may look like dinner to a bird.

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For suggested further reading, see:

- **Insects in Kansas**, published by the Kansas Department of Agriculture
- **Caterpillars of Eastern North America**, Princeton University Press, 2005;
- **A Field Guide to Grasshoppers, Katydids, and Crickets of the United States**, Cornell University Press, 2004;
- **Wings,** a periodical for the layperson, published by the Xerces Society for Invertebrate Conservation, Portland Oregon.