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COLUMNISTS

Before the butterfly, comes the caterpillar

Marianne Marugg Special to the Reporter-News

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One of the best-loved sights outside is a brightly colored butterfly. Surprisingly, the life of the showy butterfly depends on the humble, inconspicuous caterpillar that precedes it.

Fritillaries, monarchs and swallowtails easily catch our attention during warm days, while moths are mostly visible at night. Both butterflies and moths are classified as Lepidoptera and have a complex life cycle called metamorphosis. The four stages of life are egg, larva (caterpillar), pupa and adult. Although their early stages of development get less attention, the life of the eye-catching butterfly depends on the success of these early stages.

Hatching from a pin-head sized egg laid by the adult female, the tiny caterpillar often begins its life by eating the remaining egg shell. The job of the caterpillar is to eat. During its lifetime it must take in all the protein necessary to grow to full size, morph from the caterpillar body to a pupa and become the adult butterfly.

Caterpillar size varies with species; the first instar, or phase, is very small but it may grow as much as 1,000 times its initial size! This growth is complicated by the fact that the caterpillar possesses a tough outer layer of tissue which doesn't stretch. This means that each instar must shed its skin to allow growth to continue.

Some caterpillars are food generalists, feeding on different types of plants. Black swallowtail caterpillars feed on plants in the carrot family such as parsley, fennel, dill and Queen Anne's lace. However, some are specialists which eat only specific plants; monarch caterpillars feed only on milkweed.

Feeding patterns also vary in different caterpillars. Some butterflies, such as the bordered patch, lay many eggs on a single large leaf. If I look at the bottom of sunflower leaves at my house, I am very likely to find a mass of tiny black caterpillars in the process of skeletonizing the leaf. This means that they eat the outer tissues of the leaf, leaving the skeleton or veins of

the leaf intact. Other caterpillars feed from the edges of the leaf toward the center, leaving a ragged edge visible.

It's a dangerous world out there for caterpillars because they are a valuable part of the food chain for many different animals. Baby birds require huge numbers of insects to grow to adulthood. The soft, chubby caterpillar is a perfect bite for hungry babies.

Spiders, wasps, frogs, lizards, mice and other mammals all eat caterpillars. Some parasitoid wasps lay eggs in or on a caterpillar, which is eaten by the larvae as they hatch.

Caterpillars have developed many ways to deter predators. Their appearance often mimics their surroundings or a larger animal such as a snake. The ingestion of toxins from plants helps to ward off predators such as birds. Some have developed the ability to exude material that has a bad smell. Others use behaviors such as dropping suddenly from a leaf to avoid predation. Some hairy or spikey caterpillars can even be poisonous or cause skin irritations in people.

One of the biggest dangers to the growing caterpillar is exposure to pesticides. Gardeners often apply pesticide to kill a targeted "bad" insect. Pesticides may have unintended consequences when a future crop of butterflies is destroyed by killing the leaf munching caterpillars. When possible, hand picking damaging insects is a safer practice for the food web and beneficial insects.

The successful caterpillar reaches its final instar, shrugs off its skin, and becomes a butterfly pupa (chrysalis) or a moth pupa (cocoon). The humble caterpillar has done its job and will soon emerge as a beautiful butterfly or moth.

Texas has over 400 kinds of butterflies and moths, so their caterpillars can be challenging to identify. This website can help you identify the most common: http://texashighplainsinsects.net/common-caterpillars.

Marianne Marugg is a Texas Master Naturalist, Big Country Chapter. Are you interested in insects? Fish? Birds? Native plants? Geology? Texas Archaeology? A new Master Naturalist class will be starting Aug. 26. Read for more details next month! All of these topics and more are part of the Texas Master Naturalist program sponsored by Texas Parks and Wildlife and the Texas AgriLife Extension.