

Seeing the Sourlands

Butterflies Part 1

By Jim Amon



Common Buckeye

Several years ago I was in a butterfly house in the Smithsonian Museum of Natural History and a beautiful tropical butterfly landed on the hand of a six year old girl. "Look Momma," she said with a joyful smile, "I think it loves me!" *Oh momma*, would I ever be joyful if butterflies loved me and landed on my hand. They are so beautiful and so improbable that it would be a thrill to have them on my hand for close examination.

I chose the word "improbable" to describe them because the more I have learned about butterflies the more I have been amazed by them. None of the butterflies of central New Jersey live for as much as one year, and many don't even live for half a year, yet they go through four completely different stages in that brief span. They spend a week or so as eggs, then for up to a couple of months as caterpillars. Next, they construct chrysalises around themselves and spend a week or two entombed. While entombed they make another major change; they go into the chrysalis stage as caterpillars and they emerge as mature butterflies. As butterflies they may live for a couple of weeks or a couple of months before they die. They also improbably defy the rules of camouflage by having wings that are colorful and eye-catching. Look at the photo of a Buckeye above; lepidopterists assert that those round spots look like eyes and therefore ward off predators. Really? What about those bright orange bars on the forewings? Or the bands of color on the hindwings? Those wings don't look to me like the coloration of a defense system. A further improbability is the stiff-winged loopy flight of butterflies. Is that the best that millions of years of evolutionary change can produce? Improbable or not, these creatures have succeeded. Meadows are full

of them. On a July afternoon every meadow in the Sourlands is brought to life by colorful butterflies flying from flower to flower.

If a butterfly were to land on your hand you would not feel its weight. The very largest tropical butterfly weighs about a tenth of an ounce while the smallest a mere one ten-thousandth of an ounce. This light weight is probably one of the reasons that they have such an erratic flight pattern; the slightest breeze can blow them around. (The flight pattern may also be a means of defense, making them hard to catch on the wing.)

Let's look closely at butterflies, as if one had landed on our hand. They have four wings (two large ones in front and two smaller ones behind) and six legs, which also contain the butterfly's scent and taste organs. The main features of the tubular body are their amazing eyes and two antennae that have sensory organs to help the butterfly with smell, balance and motion. Butterflies have compound eyes that give them wonderful peripheral vision. They can look at the flower from which they are taking nectar while they also see another butterfly approaching from the side and you approaching from the rear. Their eyes are not good at giving detail, however, so while they see you coming they cannot determine if you are a human or a deer, but if you are large and coming toward it, a butterfly is pretty likely to take off.

The wings are attached to the thorax of the butterfly, which is located next to the head. Muscles in the thorax power the wing beats. The wings are made up of two layers of a material called chitin, the same material that makes up human hair and nails. Covering the chitin are thousands of scales, which give the butterfly its colors and also help this cold-blooded insect absorb heat from the sun. Water runs right off of the wings and often a light rain will clean the wings and remove particles that might impede flying. The wings have tubular veins, which transport nourishment to the wings and give it structural support.

The difference between butterflies and moths is a bit arbitrary. They are both from the order *Lepidoptera*. Visually, the difference is that butterflies have little clubs on the ends of their antennae and moths do not. Generally, if you see a *Lepidoptera* during the day you can assume it is a butterfly, at night the safe assumption is that it is a moth.

The best time to see butterflies is in the morning after the sun has warmed the air. If you want to see them you should bring binoculars and walk very slowly.