



Life Beneath the Ice

Dragonflies skimming and hovering over the surface of a lazy pond capture our imagination on hot summer days. But when Delaware's weather turns cold, where do they go?



In December, under the ice of the Whale Wallow, a Delmarva bay in Lums Pond State Park, the larvae of the blue-faced meadowhawk are alive and well. They will emerge in late June and July before the Delmarva bay dries up.

STORY AND PHOTOS
BY HAL WHITE

WHERE DO DRAGONFLIES GO in the winter? That is a question I often hear from schoolchildren. Following an unusually warm autumn, there have been isolated reports of adult dragonfly sightings in December from Maryland and Delaware. There is even an early January record for New Jersey, although such sightings are extremely rare.

Usually, the last adult dragonflies die with the hard freeze that typically occurs well before Thanksgiving. By January, ponds may be ice covered, as air temperatures occasionally drop below 10 degrees. Students find it amazing that the larvae of dragonflies and damselflies are alive and well in the water beneath the ice, which

never drops below 32 degrees.

At the same time, Delmarva bays - vernal ponds common on the coastal plain of the Delmarva Peninsula - represent an interesting challenge for dragonflies emerging in springtime that prefer these fishless habitats. Whether or when these ponds re-form and to what depth after a dry summer makes living there risky for a larva that will be overwintering.

The blue-faced meadowhawk

One Delmarva bay inhabitant is the larva of the blue-faced meadowhawk, which becomes a particularly attractive smallish dragonfly with a china-blue face, brownish thorax and a pink-red abdomen with



A male blue-faced meadowhawk

dark marks down the side. Blue-faced meadowhawks seem to know which depressions will fill with water over the winter after a dry summer. They gather there in late summer and early fall to mate and lay eggs, relying on rains, snow melt and reduced evaporation to refill the ponds. Occasionally, however, as in the winter of 2001–2002, the ponds did not refill, and many of them lacked standing water for more than a year. Following that year and for several years thereafter, blue-faced meadowhawks were hard to find – an example of how physical conditions affect the abundance of a species.

Life cycle

This mating pair of blue-faced meadowhawks were photographed in mid-September at the Whale Wallow. At the time, there had been no standing water in the depression for more than two months.

Larvae of other species with more stable populations live in ponds fed by flowing water where water levels fluctuate little. However, these populations must contend with fish – predators that blue-faced meadowhawk larvae do not encounter in Delmarva bays. Each habitat has its advantages and disadvantages, and natural selection has produced adaptations that permit all species of dragonfly to deal with their preferred habitat.

Blue-faced meadowhawks emerge any time between late June through August, and are most common from September into October. We do not know how they deal with a pond that dries up early. In some other species, larvae are known to burrow in the mud and wait a year before emerging. Others may accelerate their development and emerge before the water is gone. Selective pressures in this type of environment may have favored individuals of a few species in other parts of the world to tolerate moist, terrestrial environments, which the species now use instead of their original aquatic habitats.

We continue to study to learn more about how dragonfly species survive Delaware's weather conditions all year long. **OD**



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HAL WHITE IS A PROFESSOR OF BIOCHEMISTRY AND DIRECTOR OF THE HOWARD HUGHES MEDICAL INSTITUTE'S UNDERGRADUATE SCIENCE EDUCATION PROGRAM AT THE UNIVERSITY OF DELAWARE.

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