

WHAT IS THE FUNCTION OF THE DORSAL HOOKS AND LATERAL SPINES IN LARVAL DRAGONFLIES (ANISOPTERA)?

J.G. NEEDHAM & M.J. WESTFALL (1975, *A manual of the dragonflies of North America*, Univ. California Press, Berkeley-Los Angeles-London) classified the larvae of Anisoptera into three groups according to their haunts and habitats: climbers, sprawlers and burrowers. Among the climbers we can count the Aeshnidae and the Libellulidae. Their larvae can live swimming in open spaces, moving about and hunting among the waterweeds and underwater roots. Their legs are their main help in this kind of locomotion.

The abdomen of the Aeshnidae is long, dorsally convex and flat-bottomed. In captivity lateral waving and vertical movements of the

abdomen can easily be observed. These movements can also be seen when we hold and compress the larva of e.g. *Anax imperator*. The insect is even capable of setting itself free by movements of its abdomen.

Each abdominal segment of a larva presents tiny spiny swellings: one on the middle of the back and two on the sides. The first are called dorsal hooks, the latter lateral spines. The presence or absence of these spines on the segments, the differences in their morphology, their size and the depth of the interval between them are very important elements for the correct systematic classification of larvae.

All spines are fixed in a forward position; their ends are loose and sharp, pointing backwards. Their inner side may be close to or away from the abdominal wall. It is very easy for us to pass our fingers along these spines in the di-

rection from the insect's head to its tail. In this way the spines are smoothed against the insect's body. If, however, we move our fingers in the opposite direction, the spines become sharper and the body's surface is rougher.

I think that these spines are very helpful to larvae moving about among the waterweeds. The insect crawls with a side-way movement. Its progression is made easier by the spines that support its body, preventing it from slipping backwards.

The situation reminds one of a snake crawling over the ground, but also of a wheat ear slipping between our clothes and skin: the more we try to get rid of the ear, the more it moves along the skin, owing to the movements we make. The snake's movement differs from that of the ear: its crawls actively, using its muscles, whereas the ear is transported passively by our own movements. The existence of spines on a dragonfly larva is comparable to the wheat ear example. They help the larva to move, and their existence should be considered an advantage lending selective power and contributing to survival.

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