

Anatomy

Insect anatomy differs a great deal from the anatomy of vertebrate animals, including humans, but the head is probably the only part of the insect's body that bears some resemblance, in function at least, to the heads of higher animals.

The beetle head contains and protects the main nervous control centre. This is not quite a brain, but it is pretty close to it. Here we can find brain-like nerve centres called ganglia and a number of other important organs. Information gathered by the eyes and other sensory organs such as the antennae is quickly transferred and processed here and appropriate reactions are triggered. Undoubtedly the ganglia are more primitive organs than the brains of higher animals but their function is still incredibly complex and effective. The survival of insects through the millions of years greatly depended on their behaviour and adaptability to ever-changing environments and conditions. If you

consider that all this is governed by impulses and reactions coming from the insect's head, which can be as tiny as a minuscule fraction of a pin's head, you can't help but admire these animals.

The positioning of a beetle's head is an important morphological feature. A forward pointing head, with mouthparts at the front is known as prognathous, but if it is bent downward at right angles to the body, it is called hypognathous. When it is bent down even more, as trying to curl under the body, with mouthparts pointing towards the rear, it is an opisthognathous head.

Eyes

A typical beetle has two large compound eyes. These are made up of lots of individual, six-sided eyes, called ommatidia. The complexity of a beetle eye depends on its use. Species that depend a lot on their sight have large compound eyes, consisting of many ommatidia, while



The positioning of a beetle's head is an important feature. Depending on which direction its mouthparts point, it is called opisthognathous (left), hypognathous (middle) or prognathous (right). Drawing: G Hangay