Pest Control Newsletter

Published by the
Pest Control Advisory Section

Issue No.50 JUL 2020

INSIDE THIS ISSUE

Evania appendigaster

Some of you may have encountered an awesome looking flying insect at home before (Photo). Some people may kill it instantly because they consider this insect harmful or will sting them. In fact, you do not have to panic with this insect.

Figure 1. Evania appendigaster

This insect is *Evania appendigaster* (commonly known as ensign wasp), a species of wasp in the family Evaniidae. It has a weird appearance that resembles a small cricket or a black spider with wings. It is easy to distinguish them from other wasps. Adults are about 9 to 11 mm long. Their bodies are entirely black and have a pair of blue compound eyes on a broad head. They have three pairs of relatively long legs and two pairs of wings attached to a stout thorax. The most interesting feature of this wasp is the unique, stalked abdomen. The abdomen, laterally compressed and shaped like a signal flag, is attached high on the thorax by a slender petiole. Their abdomens often move up and down, earning them the common name of ensign wasp.

Ensign wasps are occasionally seen in buildings and at homes. The female wasps are experts at locating the egg cases of several home-infesting cockroaches, such as *Periplaneta americana* and *Periplaneta australasiae*. A female wasp lays a single egg in each cockroach egg case. The hatched larva eventually consumes all the eggs in the egg case. Pupation then takes place within the egg case. Finally, the adult emerges by cutting open the cockroach egg case. An ensign wasp can destroy a cockroach egg case and the eggs inside with a single oviposited egg.

Ensign wasps are beneficial insects and cause no harm to us. They do not sting or bite humans or their pets. Therefore, their presence should not be a concern and we do not have to kill them. We can simply ignore them and avoid disturbing them. Open the windows to let them fly away if we find them indoors. Fundamental control of cockroaches such as elimination of hiding places as well as food and water sources can reduce the presence of the host and in turn ensign wasps at home.

Modern Application of Entomology – Forensic Entomology

The word "Entomology" denotes the scientific study of insects. There are different branches of entomology which further differentiate the subject into smaller scope of study with regard to their application and discipline. Medical entomology and forensic entomology are eminent realms commonly encountered in our contemporary society. In this article, the discipline of forensic entomology will be discussed.

Forensic entomology is the use of insects and other arthropods in legal investigations, with reference to the invasion of different species of insects or arthropods found on the decomposing body, particularly human, in different developmental stages. China has been reckoned as the first country using insects as evidence in criminal investigation. It can be dated back to the Song dynasty, with the book *Washing Away of Wrongs* (洗冤集錄, 1247) presenting more than 15 cases where insect evidence was used in criminal investigation. The most famous of which was the cracking of the case by identifying the culprit by the presence of flies (Order Diptera) aggregated on the blade of his sickle, which was used to harvest rice, but this time, for murder.

Figure 2. Adult blow fly (Chrysomya megacephala)

Usually, insects, particularly flies, found on a cadaver are used to estimate the time of the death. Different files of organisms are attracted to the decomposing cadaver at different intervals in succession. By identifying the species of flies and developmental stage of organisms present on the cadaver, one can suggest the time of invasion and extrapolate the time of death. The most commonly examined organisms are Diptera flies. The substrate and environment where the cadaver lies invite different species of flies or even beetles to invade the cadaver. For example, the species of flies or beetles which invade a carcass in water, on surface of soil or buried under soil differ in a great extent. The invasion affinities are also influenced by the presence of sunlight and other parameters such as regional prevalence of species. The rate of development of various necrophagous insects varies depending on external parameters such as temperature, relative humidity, geographic condition, etc.

Forensic entomology is a complex discipline and it interlocks various fields of study with insect biology and ecology as underpinnings. Modern forensic entomology may involve DNA analysis. Failure to precisely identify collected species during examination of cadaver may result in questionable or erroneous subsequent forensic conclusion.

Figure 3. Larva of blow fly (Chrysomya spp.)