

COMMENTARY

Life as a water bug

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THIS week we celebrate Inter-American Water Day so let's take this opportunity to look at the fauna of aquatic ecosystems and what makes them unique.

When a person comes across the word "insect", they instantly think of such animals like flies, bees or mosquitoes and they are correct. Since these are all members of a class of invertebrates called Insecta. This in turn belongs to the Phylum Arthropoda which

classifies animals as invertebrates which have jointed legs. However, insects differ from the other classes or arthropods found in this phylum like the classes Crustacea (which includes crabs), Myriapoda (millipedes and centipedes) and Arachnida (spiders, scorpions and its relatives), in that they have three pairs of legs and usually two pairs of wings in the thoracic region of the body. Due to the latter feature, the capability of flight for insects has made them able to distribute themselves in almost all possible environments. However, few insects are found in a marine environment, with

more occupying a terrestrial environment. Therefore, there must be a reason for this apparent lack invasion of the marine environment by insects, and that is what we shall be exploring in the following paragraphs.

The first main observation is that marine insects would have to give up their powers of flight, necessary for their distribution to some extent. This is because most of their food will be found in the water so they will have to be adapted to swim rather than fly. Because of this water bugs and mainly beetles have paddle-shaped appendages for swimming.

However, the insect could



use flight as a quick means of transport to search for food or to get away from predators. But flying as the main means of transport in this environment is impractical since, if its wings get wet its powers of flight are diminished until they dry out again, during which the insect is quite vulnerable to attack by predators, if it could not swim. Therefore, to overcome this problem, water insects have developed a moveable tough covering for their wings, made of chitin. Since it is composed of chitin as its cuticle it is waterproof and protects the wings when not in use.

Another disadvantage of being a marine insect is that they also have to give up their ability of great visual perception to some degree. Therefore, they may not have compound eyes as found in Diptera (true flies), because tactile perception is much more useful to marine insects for sensing water currents which could bring food or carry them, thus making locomotion relatively easy in the water. Therefore, marine insects would possess such sensory appendages as antennae like their terrestrial counterparts. They will also possess sense cells on their legs so they can tell if any potential prey may have fell into the water or communicate with other marine insects by tapping the surface of the water to produce waves.

It has been found that different species of marine insects can be distinguished from each other by the type of waves they produce. These waves are received by the other insect as they stand on the water's surface.

This closely resembles the behaviour of their relatives in the class Arachnida who by standing on their web can sense the vibrations of the web of a

potential prey who may have gotten caught in the web thus, it can be seen how important the detection of tactile stimuli is to marine insects rather than audio or visual perception in their terrestrial counterparts when it comes to catching food, escaping predators and communicating with each other.

However, there are advantages to being a marine insect, one of them being that there is less competition for food. This is because, as mentioned before there are very few species of insects that have ventured into the aquatic environment.

Also, a characteristic of arthropods is that there is less competition for food among members of a species since the larval or juvenile stages of the species differ greatly from the adult in appearance and as well as in feeding habits. This means that the larval stage of that insect will feed on food particles different from those of the parent.

Another advantage of being a marine insect is that there are many potential niches which can be occupied, provided that the insect can adapt to them. This can be done by either gaining or losing appendages and sensitivity to different types of stimuli or a modifying of existing appendages and sensitivity to different types of stimuli. The latter can be achieved through again the loss of or gain of sense organs or a decrease or increase of organs or cells already in existence.

But whichever way you view the change of lifestyle in the insect form, either terrestrial or marine as an advantage or disadvantage, the fact still remains that this change of lifestyle for some insects has proved arthropods to be the most diverse phylum by the invasion of its members into most environments.



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PROTECTING YOUR ROOF DURING THE HURRICANE SEASON:

Roofs are perhaps one of the most important parts of a building, thus it make sense to ensure they are properly fastened to the structure. Roofs should be checked on yearly basis, preferably before the start of the rainy/hurricane season.

The following are some of the basic areas one should look at when checking:

- Fastening of roof** – such as nails/screws, these can reverse over time from heat. If nails/screws has to be replaced, they should be two and half (2 1/2) times the corrugated depth of the sheeting material.
- Rafters** – check storm cleats/hurricane straps – they should securely attach rafter unto the wall plate.
- Sheeting Material** – these should be properly attached to the rafters.
- Rain Guttering** – they should be clean regularly to prevent over flow. Gutters needs to be adequately supported by brackets to prevent breaking under the weight of the water. Down pipes should be of suitable size to take the volume of water from the gutters.

The most important thing one can do to protect one self and love ones is to be informed and prepared, therefore in this the rainy season, consumers must be proactive in getting information in the relevant areas.

This information comes to you from the Consumer Affairs Unit, Tobago House of Assembly.