



**CAN WE THINK ABOUT MOSQUITO BEYOND THE SOBRIQUET
“MAN’S DEADLIEST FOE” AND REALLY LOOK OVER THE
PARAPET?
PART I. ADVOCATING CONSERVATION OF ENDANGERED TAXA
OF MOSQUITOES**

B.K. Tyagi

SpoRIC, VIT University, Vellore - 632014, TN, India

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The insect world has always spawned mixed reactions among humankind throughout history – some love them and some abhor them; few are indifferent to them. Many insects are beautiful and economically or

medicinally useful, on one hand, while some others are a nuisance and a menace, on the other. In man’s viewpoint, mosquitoes are not exactly the favourite insects of humankind. Customarily, the mosquito is seen as a sort of an evil thing, notwithstanding the fact that there are lots of positive things that they do in the

***Corresponding Author:**

Dr B.K. Tyagi; Email: abktyagi@gmail.com

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ecosystem. Yet, the first thought about mosquitoes is not appreciative at all as they are paralleled with a blood-sucker! In fact, mosquitoes are both bad and good; even ugly and beautiful. Many are bold, too, in their behaviour. The reaction of an average human to a visiting mosquito is to squash it as soon as possible or use a bewildering array of killing techniques, ranging from insecticides to electrical currents, to dispose of it, or, at the very least, drive it away (temporarily, of course) with repellents. Most never see the beauty of these beasts, their wonderful adaptation to what is essentially a piratical life style, their subtle (sometimes brilliant) colouring and scalation that are only fully revealed under a microscope. And, not all mosquitoes are harmful – indeed, relatively few of the vast array of mosquito species buzzing around our ears are the deadly disease carriers that we imagine them to be. Most do not even feed on humans, preferring animal blood instead. While their buzzing and whining irritate, and their painful bites infuriate with possibilities of mediation of deadly infections to humans, they leave behind imprints of a large number of thought processes dazzled with innumerable beneficial physiological attributes which are a subject of continuous investigation. Man is seemingly on a war with the mosquito and there is no visible end in the near future.

Mosquitoes' is a complex world. With close to 4000 known species, the two-winged flies – mosquitoes (Family Culicidae) are one of the largest dipterous families and ambiguously the most important animals to man, being in direct conflict with man as his deadliest predator on the planet.^{1,2} Organized under three subfamilies, viz., Anophelinae, Toxorhynchitinae and Culicinae, mosquitoes are both haematophagous and plant-sap feeders. Those belonging to Anophelinae and Culicinae, barring a few examples, are particularly suited to feed on the blood of animals, both warm-blooded (e.g., mammals and birds) and cold-blooded (e.g., reptiles, amphibians, fishes, earthworms and even other insects such as dragonflies),^{3,4} while members of Toxorhynchitinae are characteristically vegetarian and survive only on various kinds of plant-exudation. Between the two sexes in the subfamilies Anophelinae and Culicinae, only the female mosquito bites and seeks blood for the protein which is required to develop her own eggs. Males, on the other hand, like their giant siblings, the *Toxorhynchites* spp., subsist on plant sap etc.

The mosquito, in man's eye view, is notoriously branded as a nuisance, a vicious pest and, above all, an angel of death all over the globe through vectorization

of deadly parasites. It is but reluctantly valued as a useful biocontrol tool for vector mosquitoes, a pollinator of plants and an unfathomable source of molecules such as, for example, anaesthetics of immense biomedical significance from saliva.

Only few creatures on earth can match the uncanny wisdom of a mosquito. They are vital components of a complex ecosystem, just like every other living organism, including man himself. Most of the mosquitoes are harmless. For instance, the sylvatic species belonging to genera *Malaya* and *Toxorhynchites* are not only entirely harmless they are highly beneficial; while the former help conserve a group of ant species, the other is deployed as a potential biocontrol agent to mitigate vector population.⁵ No data is currently available on the populational fluctuation of these forest breeding genera. Likewise hardly any information is assembled on the preponderance of natural populations of several species endemic to India. These taxa are invariably indispensable to the ecosystem, and their unwarranted disappearance could be a serious loss of knowledge.

So, the mosquito is an animal which must not be always abhorred; losses and damages are severe and so are the benefits of varied nature if scanned under the mosquito's eye view! It is kind of a mixed bag. Many mosquitoes serve an important biological purpose. They can help pollinate plants as they feed on nectar (their usual food source, outside of that crucial blood meal period) and provide a vital source of food for larger animals. The point is that just because humans hate mosquitoes does not mean that mosquitoes can be wiped out without consequences.

Consequently we are growing *au fait* with the global information about this critter, the mosquito. Mosquito is an important part of our global ecosystem, and they deserve to be seen from a conservationist's point of view that their genome – a seasoned treasure since the Mesozoic period. Conserving the threatened mosquito fauna is warranting an urgent attention all over the globe! Already, one species, *Culiseta atlantica*, has been brought up to the IUCN Red List of Endangered Species, and more species suggest to be considered for safety of their genome.⁶ Last but not least, it is incorrect to say that mosquitoes are not endangered or their annihilation would not make any impact on our global ecosystem. The right message is that mosquito species can be endangered particularly under the ongoing control programmes, coupled with Climate Change, for decades!

The time has come when *Homo sapiens* need to see their deadliest foe – the mosquito – from their mind’s eyes, and judge well to make a balance between control and conservation.

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