

Study of common mosquitoes species in Tornmal hill station circle of Nandurbar district, Maharashtra (India)

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Abstract: The mosquitoes are one of the common insects belongs to the family Culicidae. They are Dipterans. Near about 3,541 species of mosquitoes are distributed throughout the world, of which near about 410 species can be found in the India. In my study survey field there are three most common mosquitoes species found in Tornmal hill station circle of Nandurbar district are *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles culicifacies*. Are discussing with respect to their systematic position, distributions, habit, and habitat how to identify, body characteristics, life cycles, transmission of disease by mosquitoes, and mosquitoes controlling methods. All these study are investigated first time in Tornmal hill station of Nandurbar district of Maharashtra.

Keywords: Mosquitoes, Tornmal hill stations, Nandurbar, Maharashtra

I. INTRODUCTION

Toranmal is one of the famous second coolest Hill Station present in Maharashtra of Nandurbar district. One can reach through the bus from Shahada. It is one of the best hill station located in the Satpura mountain Range. The lord Gorakhnath (shiva) Temple is one of the best famous spot attracted the tourist during Mahashivratri. It is a last boundary of Maharashtra connected with Madhya Pradesh and Gujarat states. Toranmal is located between latitude With 21.545645° N and 74.467531° E Longitude. The height from above sea level is 1,150 meters (3,770 ft). Toranmal hill station spread about 41.45 sq. km.

The survey is started in the month of June to November (2018) & collected number of samples of mosquitoes from the different region of hill station. When I was started my investigation I notice that there is some common species of mosquitoes found in tornmal village. But somebody does not know about the species like *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles culicifacies*. The study of mosquitoes is most important because, in recent years, the range of both mosquitoes and mosquito borne diseases are spread in large number every place due to rapid urbanization, deforestation, and incorrect life style etc. the total number is about 3541 species mosquitoes found on earth everywhere. The mosquitos' species are blood sucking insect which belongs to phylum arthropods and co-exist with human beings. Most mosquitos' species act as a vector of different pathogens. That causes many serious diseases like, malaria, dengue fever; yellow fever, lymphatic filariasis etc are found in given survey area. The warm climate in tropical areas allows to active this insect. This is an ideal condition for proliferation of mosquitoes. In moist condition with moderate rainfall and hot climate they are able to be more active and the rainfall give them aquatic sites for growth of larval and pupal stages. Mosquitoes affected on the health of local people from many years. Every year many people die due to mosquito bite. Biting female mosquitoes transmit many infectious agents that cause many diseases such as encephalitis, malaria, dengue, chikungunya, and yellow fever. According to world health organization (WHO), the mosquito born disease kills more than one million deaths every year. In given survey area author notice many cases of mosquitoes born disease. The study can provide useful information leads to know about mosquito species, life cycle, mosquitoes born disease etc. Tornmal is the region under investigation is very rich in biodiversity constitute the districts Nandurbar. The study of mosquito's types was practically neglected from this region due to low literacy rate, lack of communication, inaccessible place.

II. MATERIAL AND METHOD

The study of mosquitoes types specially survey, collection of data. The study is based on the data collection on Tornmal circle, district-Nandurbar, Maharashtra, India. The survey was conducted in selected region which is nearest me and the study was carried out with a local tribes. In tornmal circle and their surrounding area is belongs to tribal. The house consists of a living room and a kitchen both are combined together. About 95% houses made up from tiled roofs and mud walls. While remaining 5% have a thatched roof and mud's walls. Tribal people spend most of time outside the home and at a night they sleep on the floor or outdoors, due to literacy they could not have sufficient cloths. The doors are made up from bamboos. Often domestic animals are also sheltered with them in the house. In every family average of 6 members is found. In the given survey areas men and women work as laborers in forest, nurseries, roads construction, and other casual jobs such as collecting the forest products away from their homes. Also take sample of mosquitoes for detailed information with the help of interviews, entomology specialist in the rural areas. At the time of survey rural tribal people shared valuable information regarding the mosquitoes born disease and some characteristic of mosquitoes. Detail information collected on the basis of identification of mosquitoes' species, identification, and life cycle including eggs stage, larvae stage, pupa stage, and adult stages. In this survey mosquitoes collected from rural area of tornmal circle. Out of the collection of mosquitoes the some species' are most frequently occur comes namely, *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles culicifacies* etc is observed in given area. When surveys of whole circle numbers of mosquito's species are noticed which are belongs to *Aedes*, *Culex*, and *Anopheles* genera. Species in different locality of the circle which come under wild and local area of forest are taken for the study. The name of the following species is *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles culicifacies* etc. are noticed. First of all it is important thing is identification of mosquitoes

species, classification, habit and habitat, life cycle, mosquitoes causing disease, and their controlling measures. Because every year many people die due to mosquitoes bite in given survey area there are many cases was noticed.

1. *Aedes aegypti*

Scientific names: *Aedes aegypti*

Common names: Yellow fever mosquito

Systematic position-

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Family: Culicidae

Genus: *Aedes*

Species: *Aedes aegypti*



Fig; *Aedes aegypti*

Habits and habitat:

Aedes aegypti is the main vector which transmits the different viruses that causes dengue and other mosquito born disease. The virus is passed from infected humans to healthy human bites of an infective female *Aedes* mosquito, human acquired virus while feeding on the blood of an infected mosquito. Within the infected mosquito, the virus infects to mosquito mid-gut and subsequently spreads to the salivary glands over a period of 7-13 days. After this incubation period, the virus can be transmitted to humans during feeding. The immature stages are found in water-filled, like pond, river, well, lake habitats, mostly in artificial containers closely associated with human dwellings place. Flight range of female *Aedes aegypti* is noticed survey is approximately 400 meters. It means that people, rather than mosquitoes, rapidly move the virus within the infected places. *Aedes aegypti* are capable of biting anyone throughout the day.

Special behaviors:

The poor flight range is near about 100-400 meters. Breeding place is artificial collection of old tier of water like water in broken pots. Mostly *Aedes aegypti* abundant during rainy season from month June to October .Biting time is daytime.

Geographical distribution:

Mostly *Aedes aegypti* distributed in all over world basically it found in tropical or sub-tropical areas of Asia, the Americas, Africa, and the Pacific countries. Mostly it spread in coastal line of India such as Western Ghats, in Maharashtra rural as well as urban area also present in forest of Satpura mountain ranges mostly in survey field.

How to identify:

The mosquito *Aedes aegypti* is small, dark mosquito measuring about approximately 3.5 to 8 mm with typically white markings present on the legs and string like structure present on the thorax. In *Aedes aegypti* females are larger while males' are smaller mosquitoes. *Aedes aegypti* can bite day night. Mosquito is active during daylight, for near about three hours after sunrise and few hours before sunset. The male *Aedes aegypti* mosquitoes do not bite human beings and other animals they feed on fruit. While female of *Aedes aegypti* feed on fruit as well as on human and animal blood as a meal. The resting position of *Aedes aegypti* is, the abdomen is projecting downwards.

Life cycle:

a) Eggs stage:

When mosquito female take blood meal from infected person and they laid eggs near about 100 to 190 per batch near water bodies. They produce near about 4-5 batches throughout in his life. Female mosquito do not lay eggs at single site they can lays their eggs at various site. The eggs are smooth, oval, near about 1 mm in length. After laying eggs are initially white in colors but then they can turns into shiny black in color darken to brown or black as after they mature. Eggs of *Aedes aegypti* female mosquitoes are elongate-oval in shape at anterior end rounded and at the posterior end bluntly pointed. Their eggs are laid singly or in group or clusters and this can vary depending on the genus. *Aedes aegypti* species lay their eggs as single units and deposit them on moist places such as rock surfaces, moist soil and the inside the tree holes or containers above the receding water level. They also lay their eggs under crevices in soil and dry mud, where they will be subsequently floated. These eggs are able to withstand until they are

submerged into water, where they begin to hatch. In hot climate eggs may develop into two days, whereas in cold temperate climates, development can take up to a week. The given survey area is belonging to cold temperate zone of Satpura mountain ranges. Laid eggs can survive for very long periods in a dry condition; they may survive more than one year. However, they hatch immediately submerged into water.

b) Larvae stage:

After hatching out the eggs larvae feed on organic matter present which is present in the water like algae, protozoan, zooplanktons, and other microscopic organisms. Mostly larval stage is spent at the water's surface or they will swim to the bottom of the pond or water bodies, if when they feeding, Larvae are often found around at the home in splash, tires, any object holding water. Larval development is depends on temperature of areas. The larvae of *Aedes aegypti* is carry four instars stages, taking a short amount of time in the first three stages, and up to three days in the fourth instar stage is completed. Fourth instar larval stage are approximately 8 mm in length. In *Aedes aegypti* male develop faster than female, so males generally converted in pupa. In survey area temperatures is so cool, *Aedes aegypti* can remain in the larval stage for a month or may take more days. It is depends on water supply.

c) Pupa stage:

After fourth instar stage completed, the larvae enters the pupal stage. Mosquito pupae are motile they can move one place to another place and respond to surrounding stimulus. Pupae do not feed any food and take approximately two or two half days for develop. Adults can visible by entering the air to expand the abdomen thus splitting open the pupal case and look head first of adult.

d) Adult stage:

Aedes aegypti complete their life cycle by metamorphosis means life cycle is completed in eggs, larvae, pupa and adult stage hence it called as holometabolous insects. The life span of adult is ranging from two weeks to one month depends on environmental conditions (Maricopa, 2006). *Aedes aegypti* are found in urban habitat, often around or inside the house. They also found more rural area, in tree holes, generally in survey area of forests. In *Aedes aegypti* adult mosquitoes male feed on nectar of flowers and female mosquitoes feed on humans and animals blood as a meal for produce eggs. After feeding the female *Aedes aegypti* mosquitoes will looking for water sources for lay out her eggs. Then female *Aedes aegypti* mosquitoes search humans and animals for bite and transmitted different mosquitoes born disease. *Aedes aegypti* is one of the species of mosquitoes which is more in number in given survey areas. The area of tornamal hill station is badly affected by *Aedes aegypti* and several people in given area of study. According to local tribe people they say in this area per year 12 to 15 last four years people die due to mosquito bite, so the study of mosquitoes is more valuable for saving local peoples.

*Transmission of disease by mosquito:

The common diseases are noticed in tornmal circle and their surrounding area such as severe headache, chills, pain in eyes, and lower back pain, low heart beat rate (Bradycardia), low blood pressure. In some people some noticeable symptoms are seen like lower limbs and chest is often swollen. In some patients belongs to survey areas, it spreads throughout the body. There also be notice some common symptoms such as nausea, vomiting, or diarrhea. In some cases muscle pain, itching, rashes, joints pains are seen. Some of the major diseases transmitted by *Aedes aegypti* as follow.

i) Yellow fever: Yellow fever is transmitted by mosquitoes of *Aedes* genera. *Aedes aegypti* is the vector involved in urban as well as rural areas. Yellow fever transmission where only by human is the amplifying host. Yellow fever transmission has been reported from survey areas of toranmal circle. The symptoms of yellow fever are internal bleeding, jaundice; illness may occur from yellow fever.

ii) Chikungunya: *Aedes aegypti* is a main vector of chikungunya virus. Chikungunya epidemics from Africa, India and mostly found in survey areas. The Chikungunya (CHIK) virus is transmitted by *Aedes aegypti* mosquitoes. In human being CHIK virus causes severe fever and show many symptoms like joint pain. Clinically chikungunya symptoms will cure in 8 to 15 days, but the pain is longer for years in the case of chikungunya mortality is very rare seen in my investigation. In given survey area chikungunya is reported in July 2006 many people are affected by CHIK virus.

iii) Dengue: *Aedes aegypti* is the main vectors of dengue disease. *Aedes aegypti* consider as a vector of dengue, they causing major dengue fever in tornmal circle and surrounding area. *Aedes aegypti* contain DENV-1, 2, 3, 4 viruses. Dengue disease is also called as dengue hemorrhagic fever or dengue shock syndrome. It is transmitted from infected humans to healthy humans by mosquitoes. In tornmal circle and surrounding area near about five to six peoples dies every year. Symptoms of dengue including high fever, back pain, joint pains, sever head pain and rashes appear after third or fourth day of illness. *Aedes aegypti* mosquito primarily responsible for transmitting dengue to peoples, mosquitoes obtain dengue virus from the blood of infected humans during the period of feeding. The virus then multiplies inside the mosquito and invading the mosquitoes' salivary glands, now this mosquito is ready for infection to humans from 7 to 15 days after taking infected blood meal from infected people.

2. *Culex quinquefasciatus*

Scientific names: *Culex quinquefasciatus*

Common names: Southern house mosquitoes

Systematic position

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta
Family: Culicidae
Genus: Culex
Species: *Culex quinquefasciatus*



Fig; *Culex quinquefasciatus*

Habit and habitat:

Culex quinquefasciatus mosquitoes found in every environment even extreme cold weather condition as earlier discussing that, Tornmal is the second coldest place in Maharashtra hence are mainly found in forests, marshes, tall grasses and small weeds, and wet ground. Because *Culex quinquefasciatus* live near the water. They are mostly found near the Yashwant Lake of Tornmal lakes. They also noticed near the ponds, and vegetation in swamps and marshes places. Some species *Culex quinquefasciatus* found in clean water, while some are found in polluted water. *Culex quinquefasciatus* is the common permanent water mosquitoes because they lay their eggs on water.

Special behaviors:

Culex quinquefasciatus have flight range between 1 to 2 km. breeding places is generally dirty & polluted water. Resting place is indoors on walls, beneath the roof, below the furniture etc. Biting time is midnight in *Culex quinquefasciatus*.

Geographical distribution:

The species *Culex quinquefasciatus* is widely distribution in Europe, Asia, and Africa some part of North America, South Australia, and South America. *Culex quinquefasciatus* show hybrid forms of species which distributed in Australia, Africa, the Middle, and Far East of Asia, Given survey area of Tornmal circle this Culex mosquito are tremendously found during early winter month October.

How to identify:

The mosquito *Culex quinquefasciatus* is small, brown mosquito measuring about approximately 4 to 8 mm with typically adult mosquitoes having scales on the wing and a long proboscis. Male mosquitoes have bushy antennae and the palp with long as the proboscis. *Culex quinquefasciatus* have blunt abdomens. *Culex quinquefasciatus* have black tarsal with pale white bands on its proboscis and tarsal joints. They also show white stripes along with legs and dark abdomen. The Male and female is feed on nectar of plants as well as plants fluids. When female *Culex quinquefasciatus* is ready for lay out the eggs, they feed on the blood of humans, including some mammals and birds. In early rainy season in month June all female mosquitoes take a blood meal from other animal for reproduction. In given area of survey study *Culex quinquefasciatus* is feed on mammalian hosts, such as, cattle and human beings. The resting position in *Culex quinquefasciatus* is, the abdomen is projected towards the bottom.

Life cycle:

a) Eggs stage:

Culex quinquefasciatus Mosquito females oviparous and laid their eggs on or near water. When *Culex quinquefasciatus* take blood from human and other animals, then they laid eggs in form of clusters on the water surface. The egg in *Culex quinquefasciatus* is cigar-shaped, and floats on water. They are transparent when first laid, but gradually darken to brown, black after they mature. Eggs of when *Culex quinquefasciatus* mosquitoes are usually cigar in shape with the anterior end is rounded while posterior end is bluntly pointed. These eggs are able to survive for a long period until they are submerged by water. Egg rafts of *Culex quinquefasciatus* are float on top of the water surface. Egg rafts cannot survive permanently in water bodies. They will hatch after about two to three days on the water.

b) Larvae stage:

The eggs of *Culex quinquefasciatus* hatch out after 2 to 3 days. The larvae's measuring about 1 to 2 mm. the body is dividing into head, thorax, and abdomen. The head bears a pair of compound eyes, a pair of 2 jointed antennae, and the chewing types of mouth parts. The thorax is slightly broad than head. The abdomen have many segment. The larva of *Culex quinquefasciatus* is respiring with the help of siphons. The larvae's of *Culex quinquefasciatus* have 5 instars.

c) Pupa stage:

Culex quinquefasciatus is motile, comma shaped body. Head and thorax are fused together called cephalothorax. The abdomen consists of 8 segments. The anterior four segments are dark while posterior segments are light in color. Pupa is respiring with the help of trumpet. The pupa stage duration is dependent on temperature but in *Culex* species generally it last for 2-3 days. Pupa respire with the help of tubes located on the thorax of the body and they will remain at water surface unless they are disturbed. The non-feeding stage of pupa can be completed into 2-3 days.

d) Adult stage:

The pupa breaks the pupal case and crawls to a protected area. Males have smaller mouth parts which are not adapted for sucking. In male abdomen is smaller while in female *Culex quinquefasciatus* mosquitos are bigger in size than males. Female *Culex quinquefasciatus* mouth parts are blood sucking types. The male's *Culex quinquefasciatus* is feed on nectar of flowers. In thoracic region 3 pairs of legs is present, 1 pair present on each segment, and a pair of wings are present on the mesothorax. The pair of wings present on metathorax. Adult females live long life near a month and adult males for few weeks.

Transmission of disease by mosquito:

i) Filariasis:

It is also known as elephantiasis. This disease caused by parasitic worm called filarial worms. Symptoms like swelling are seen in the arms, leg, breasts, and in some cases genitalia also swelling. Many time skin become thick, Edema etc. The elephantiasis is spread by the bites of infected female *Culex quinquefasciatus* mosquitoes. This disease is caused by worm *Wuchereria bancrofti*. When infected female *Culex quinquefasciatus* bite with normal people the worm is transmitted into the human body. During taking blood from human or animals the worm transfer from female *Culex quinquefasciatus* to human being or animals. In given survey area only three cases are noticed.

ii) Encephalitis

Inflammation of the brain is called as encephalitis. It is caused by viruses which are transmitted by *Culex quinquefasciatus* mosquitoes. in given study cases of encephalitis show many symptoms such as inflammation in brain, permanently damage the central nervous system, in some cause death also. The main symptoms are high fever, and central nervous system problems. This virus cans affect on horse as well as birds. There no one case noticed in tornmal circle.

3. Anopheles culicifacies

Scientific names: *Anopheles culicifacies*

Common names: Common malaria mosquitoes

Systematic position

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Family: Culicidae

Genus: Anopheles

Species: *Anopheles culicifacies*

Fig: Anopheles culicifacies

Habit and habitat:

The species of *Anopheles culicifacies* found in different habitats like forested areas of tornamal circle. The larva is noticed in canals, sandy pools near rice and crop fields, near the Yashwant ponds, some domestic wells etc. *Anopheles culicifacies* B are many times noticed in forested areas of tornmal circle. In India species *Anopheles culicifacies* C was found in deforested areas, while *Anopheles culicifacies* A has been noticed more Tornamal circle villages. Species of the Culicifacies Complex is more in mountainous areas of Satpura.

Geographical distribution: *Anopheles culicifacies* is the five complex species found China, Nepal, Sri Lanka, Thailand, Iran, Japan, Afghanistan, Pakistan, and throughout the India. In the survey area it is found in large number. *Anopheles culicifacies* complex includes five species namely species A, B, C, D and E.

Special behaviors:

The flight ranges of *Anopheles culicifacies* is 3-4 Km. the breeding places of *Anopheles culicifacies* first preferred by clean water. The biting time of *Anopheles culicifacies* is night.

How to identify

The body of *Anopheles culicifacies* is slender. It can be differentiated into head, thorax, and abdomen. The most unique characteristic of *Anopheles culicifacies* mosquito rest in 45 °angle. The head region consist the compound eyes and a pair of long segmented antennae. *Anopheles culicifacies* is mostly activating during night

Life cycle:

a) Eggs stage:

In *Anopheles Culicifacies* Adult females laid near about 40-150 eggs per ovipositor. They laid their eggs singly and horizontally on the surface of water, *Anopheles culicifacies* is only mosquito sp. which laid their eggs on clean water of pond, house tanks river etc. the eggs of *Anopheles culicifacies* are boat shaped. Eggs of *Anopheles culicifacies* hatch out within the 2-3 days, it may take more time up to 1-3 weeks in cold climates so eggs hatch out is depends upon the climatic condition.

b) Larvae stage:

The larvae of *Anopheles culicifacies* mosquito is surface feeder. Larvae lack legs. In *Anopheles culicifacies* larvae respiratory siphon are absent or may be short. Larvae respire through spiracles which are located on abdominal segment. The larvae are feed on algae, bacteria, and other microorganism which are present on water surface the larvae dive below the surface if when you disturbed. Larvae develop into four instars, after which they are converted into pupa. At the end of each instar stage larvae molt their body for further growth. *Anopheles culicifacies* larvae are mostly parallel to the water surface. Most *Anopheles culicifacies* species prefer clean water. Larvae of *Anopheles culicifacies* mosquitoes have been found in fresh- or salt-water, rice fields, grassy, canal streams, rivers side, forested area and small, temporary rain pools.

c) Pupa stage:

The pupa *Anopheles culicifacies* have comma-shaped. Green in color when they are converted larva to adult. The pupa does not feed, but metamorphosis is occurs. The head and thorax are fused together called cephalothorax. Respiratory organ trumpets are very short which are located on the cephalothorax. After few days pupa is converted into adult mosquito noticed on the surface of the water.

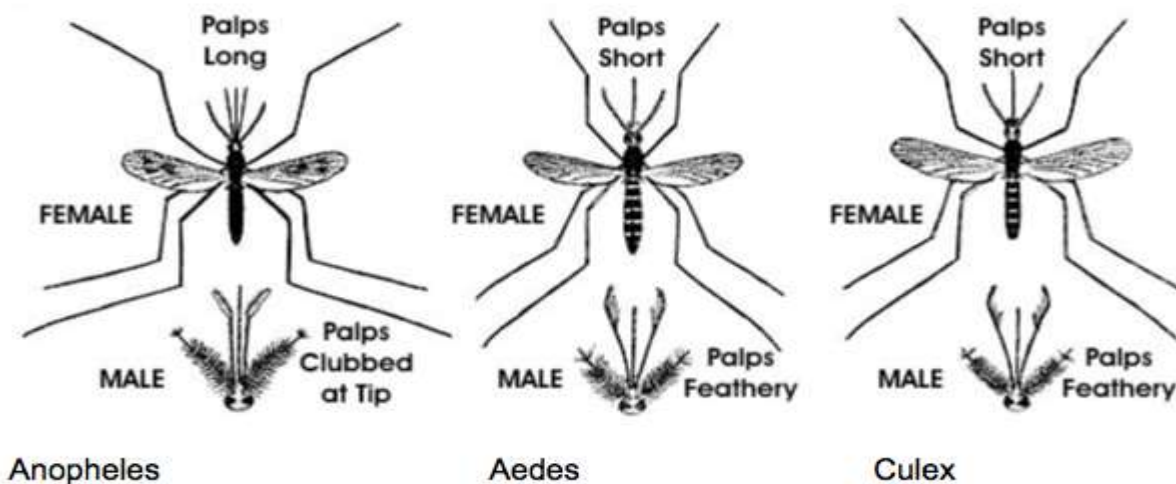
Mosquitoes can develops from egg to adults takes near about seven days but some time it may take 8-12 days in tropical conditions.

d) Adult stage:

Like other mosquito adult *Anopheles culicifacies* have slender body. It is divides into head, thorax, and abdomen. Body resting in 45 ° angle. The head region consists compound eyes and segmented antennae. The head is oval, elongate, forward-projecting proboscis used for feeding, and having two sensory palps. The thorax is modified for locomotion. Legs and wings are attached with the thorax. In *Anopheles culicifacies* mosquito long proboscis, black and white scales present on wings. The Adult *Anopheles culicifacies* identify by their typical resting position. Males and females rest with their abdomens sticking up in the air at 45 ° or may be parallel to surface. The life span of Males is near about a week, they are feed on nectar of flower and other sources of sugar present in flower while females feed on sugar source as well as blood meal for laying the eggs. After obtaining blood meal from human, the female *Anopheles culicifacies* will rest for a few weeks then eggs are developed. This process depends on the temperature but usually takes 2-3 days in given survey area conditions. Once eggs are fully develops, then female laid them singly. The life span of females *Anopheles culicifacies* is up to a month but most do not live longer than 2-3 weeks in natural condition.

Transmission of disease by mosquito:

Malaria: The Malaria in humans is of two types acute and chronic noticed. The malaria disease caused by four microscopic parasites which are belongs to the genus *Plasmodium*, The parasites transmitted with the help of *Anopheles* mosquitoes. When such infected mosquito takes blood from humans, the parasites invade into the healthy human then reaches to blood stream and attack on red blood cells, gradually destroying them. The parasites leave these cells and invade new red blood cells. Due to infection of malaria parasite Symptoms are seen like Malaria fever, chills, headaches, muscle aches, fatigue, nausea, vomiting, and sometimes diarrhea may occurs. In given survey area many people are affected by malaria parasite is noticed.



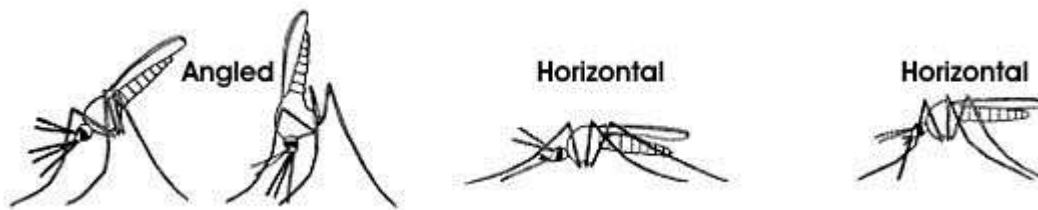


Fig: Summary diagram of the main mosquito genera. Ex: Carpenter & LaCasse (1955). University of California Press, B. 360pp.

***Some mosquito controlling methods used in tornmal circle area:**

Biological control –the local PHC provides guppy fishes which kill the mosquito larvae present in water body. The guppy fishes are used as biolarvicides, neem smoke is traditionally used for controlling mosquito.

Environmental control - filling up of ditches of water bodies, covering of water tanks.

Chemical control – spray Temephos, Diflubenzuron, Neem cakes etc.

Personal protective measures- like Insecticide treated bed nets. Using mosquito repellents and wearing long sleeved dresses.

III. RESULT AND DISCUSSION

In these work three species of mosquitoes has been taken into for the study of mosquito type which gives vast information concern with mosquitoes born disease and their controlling methods. Some of the common mosquitoes species like, *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles culicifacies*. Etc. All this common species of mosquitoes found in rural areas as well as spread in forest of Tornmal circle, the name of places particularly mention in the distribution of study area. All these mosquitoes species are discuss with respect to their systematic position, habit, and habitat how to identify, body characteristics, life cycles, transmission of disease by mosquitoes, and mosquitoes controlling methods etc.

In given circle of tornmal as per investigation regarding the searching patients which are dies by mosquitoes' born disease. According to data collection in given survey area many people death occurs in given regions. The data show many people dies by mosquitoes born disease. In last four year many people death occurs due to mosquito born disease that is way it most important to study of mosquito like *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles culicifacies*. Etc. these mosquitoes species are discuss with respect to their systematic position, habit, and habitat how to identify, body characteristics, life cycles, transmission of disease by mosquitoes, and mosquitoes controlling methods etc.

Mosquitoes genera	Name of village which is affected by mosquitoes	Number of people death last four year
<i>Aedes</i>	Tornmal, lekhada, sinddigar, sablapani, leghapani, phalai. sawarya, kundyabhabri, udadya, kelapani, yaswnt talaav, wild sanctuary	58
<i>Culex</i>	Tornmal, velkhedi, mundalgaon ,jugani, valval, godamba ,japi, kotbadhani, yaswnt talaav, wild sanctuary	59
<i>Anopheles</i>	Tornmal, sita khai point, yaswnt talaav, wild sanctuary of tornmal, new tornmal, khadki, sablapani, leghapani, phalai. sawarya, kundyabhabri, udadya	53

Total=170

Table: Statics data collected from tornmal circle 2015 to 2018.

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