

## CLASSIFICATION AND IDENTIFICATION OF MOSQUITOES OF NEW MEXICO

Mosquitoes are insects belonging to the order Diptera, the true flies. Like all true flies, they have two wings, but unlike other flies, their wings have scales, they have long many-segmented antennae, and their mouthparts (in female mosquitoes) form a long piercing-sucking proboscis. Males differ from females by having feathery antennae and mouthparts not suitable for piercing skin. Nectar is their principal food source.

There are over 2500 different species of mosquitoes throughout the world, of which 150 species occur in the United States and 57 species occur in New Mexico. Each of the species has a Latin scientific name, such as *Culex tarsalis*. *Culex* is the "genera" name (generic epithet) of a group of closely related mosquitoes and *tarsalis* is the "species" name (specific epithet) that represents a group of individuals that are similar in structure and physiology and capable of interbreeding. These names are used in a descriptive manner so that the name tells something about this particular mosquito. Some species have what are called "common names" as well as scientific names, such as *Aedes sollicitans*, the "Black salt marsh mosquito."

Three subfamilies are recognized within the Family Culicidae (mosquitoes): Toxorhynchitinae, Anophelinae and Culicinae. The Toxorhynchitinae includes only one genus, *Toxorhynchites*, which occurs mainly in the tropics. *Toxorhynchites* are very large mosquitoes with a curved proboscis adapted to feeding on nectar rather than blood. Their larvae are predaceous on other mosquito larvae; therefore they are used as mosquito control agents in some Gulf Coast states. As they are not found in New Mexico, they will not be discussed any further.

In the subfamily Anophelinae, the genus *Anopheles* is the most important mosquito and the only one found in New Mexico. There are nearly 400 species of *Anopheles* in the world, of which six are found in New Mexico. *Anopheles* mosquitoes are important because they are the vectors of malaria.

Most mosquitoes belong to the subfamily Culicinae. This subfamily contains the remaining genera of mosquitoes that are found in New Mexico:

- *Aedes*
- *Coquillettidia*
- *Culex*
- *Culiseta*
- *Orthopodomyia*
- *Psorophora*
- *Uranotaenia*

*Coquillettidia*, *Orthopodomyia* and *Uranotaenia* are rare in New Mexico. Therefore, the following keys to identification will differentiate among the most common genera in New Mexico: *Aedes*, *Culex*, *Culiseta*, and *Psorophora*.

## MOSQUITO IDENTIFICATION

Mosquitoes undergo a complete metamorphosis during their life cycle: egg-larva-pupa-adult. The larval and adult stages are most frequently used in identification. However, the eggs can also be differentiated.

Typical anopheline eggs are shown in Figs. 1 and 2. These are laid singly on the water surface.

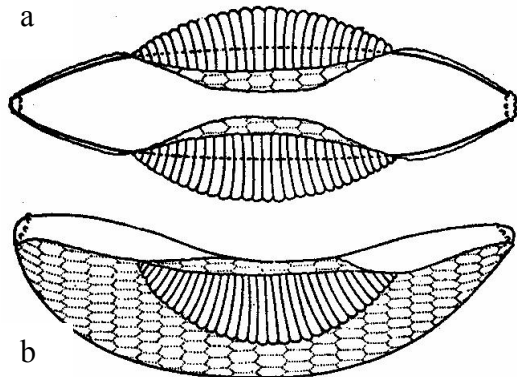


Fig. 1. Single eggs of *Anopheles*:  
a) dorsal view, b) side view



Fig. 2. Cluster of *Anopheles* eggs floating on the surface of the water in typical stellate and geometric patterns.

*Culex* and *Culiseta* also oviposit on the water, but glue their eggs into a raft (Fig. 3). Eggs of *Psorophora*, and *Aedes* are laid singly above the water line or in depressions subject to flooding (Fig. 4).

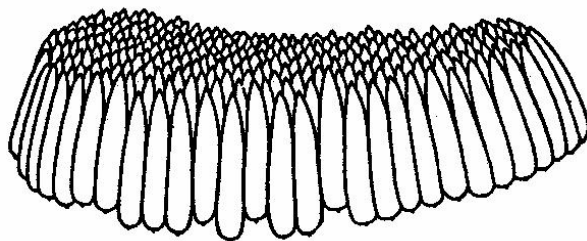


Fig. 3. Collection of eggs of *Culex* forming a composite floating raft of many eggs, with its head end downwards. The whole egg-raft is typically convex below and concave above with upturned ends.

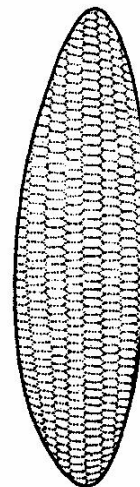


Fig. 4. Single egg of an *Aedes* mosquito.

Anopheline and culicine larvae can be distinguished in the field by their different resting positions in the water as shown in Fig. 5.

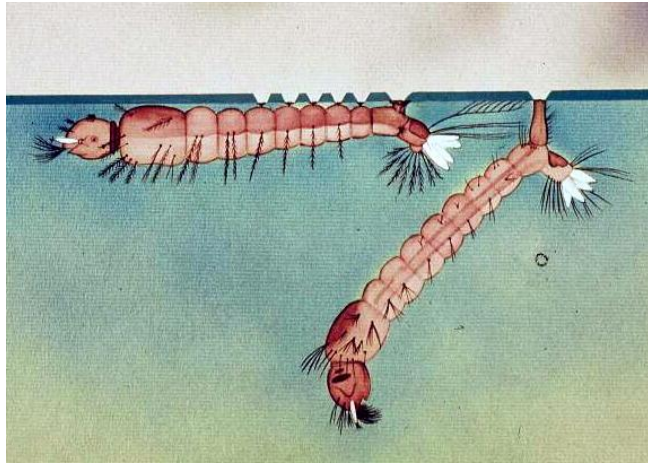


Fig. 5. *Anopheles* larva on left, culicine larva on right. Note absence of siphon (air tube) in *Anopheles* and position parallel to water surface. Culicine larvae have siphons through which they obtain air from the surface, enabling it to feed below the surface.

### KEY TO COMMON GENERA OF MOSQUITO LARVAE IN NEW MEXICO

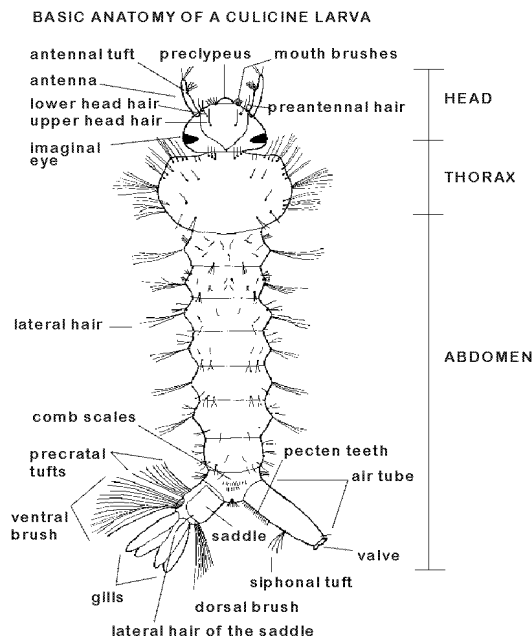
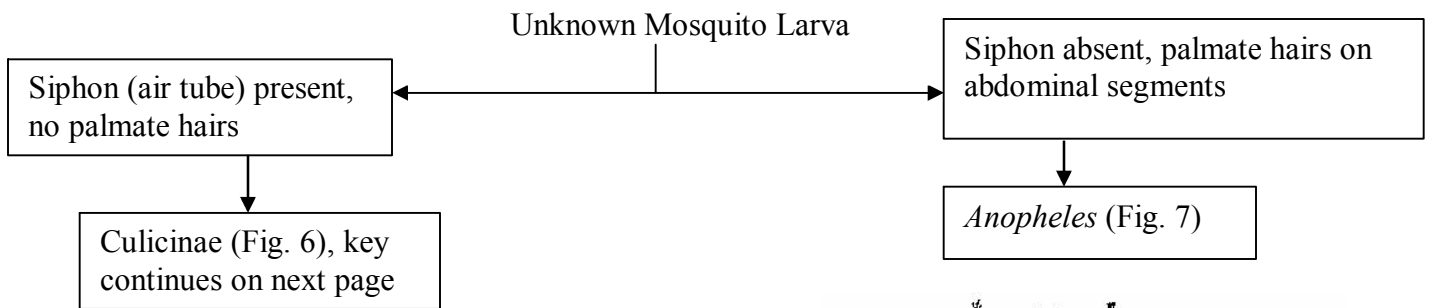


Fig. 6

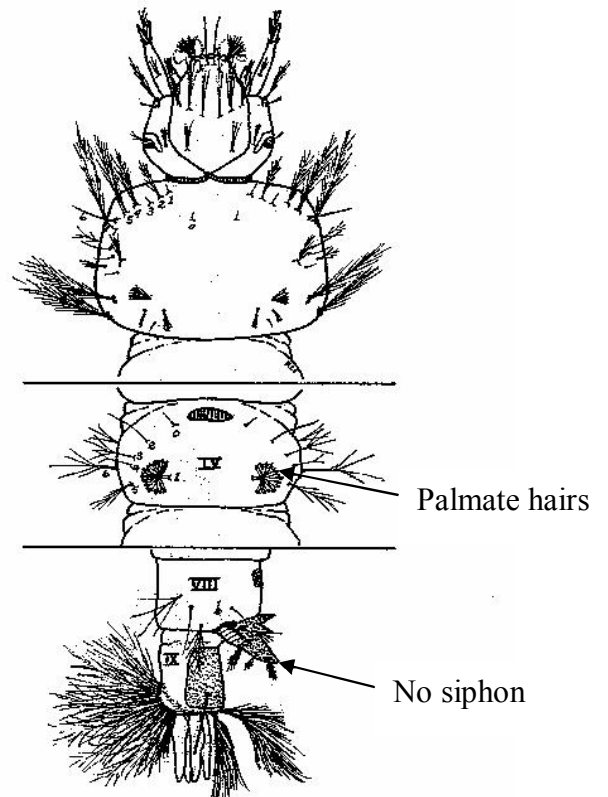


Fig. 7

Basal tuft present on siphon  
– *Culiseta*, Fig. 8

No basal tuft on siphon

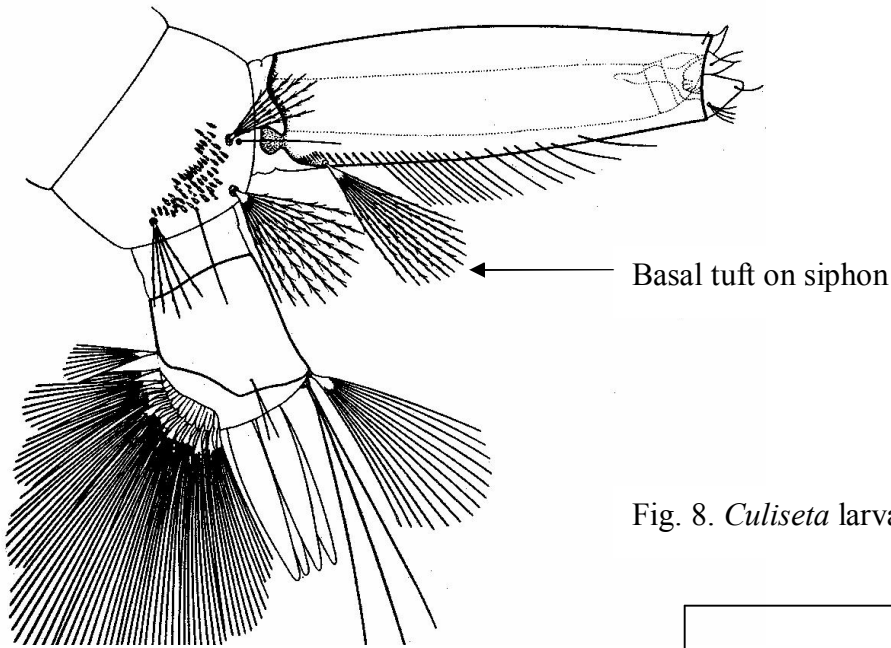


Fig. 8. *Culiseta* larva

3 or more pairs of siphonal tufts –  
*Culex*, Fig. 9

Only one pair of siphonal tufts –  
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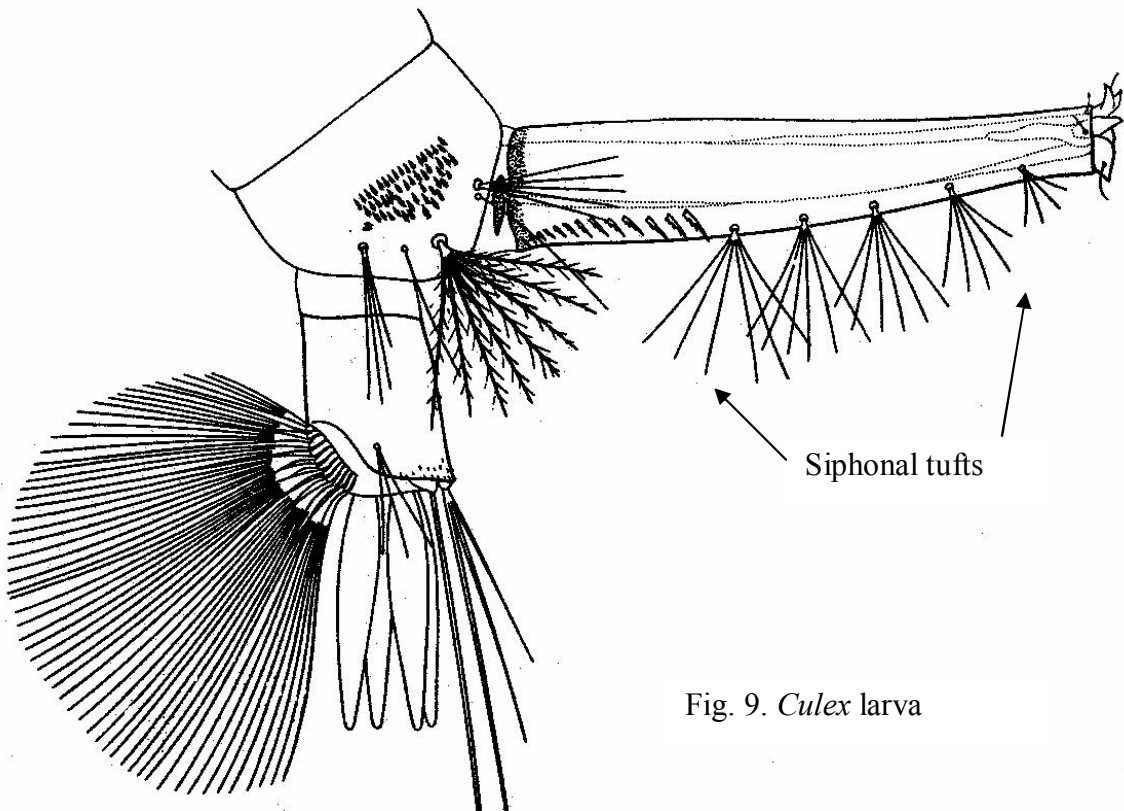


Fig. 9. *Culex* larva

Saddle completely encircles anal segment  
AND pierced by ventral brush –  
*Psorophora*, Fig. 10

Saddle usually not encircling anal segment  
(Figs. 11 & 12), but if so, tufts of ventral  
brush confined posterior to the saddle (Fig.  
13) – *Aedes*

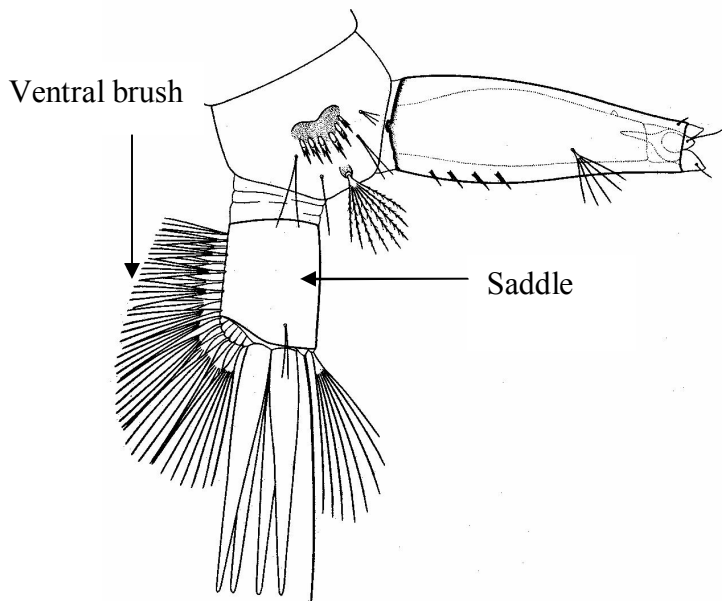


Fig. 10. *Psorophora* larva

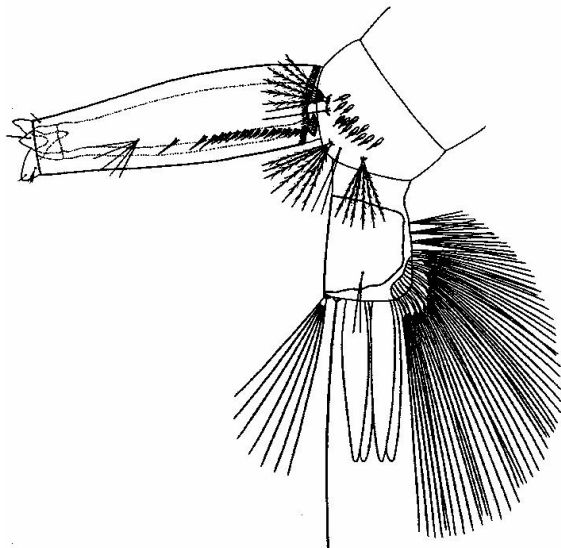


Fig. 11. Incomplete saddle  
(*Aedes vexans*)

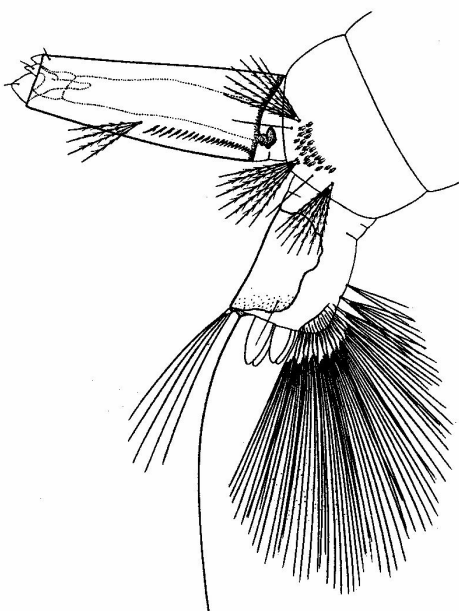


Fig. 12. Incomplete saddle  
(*Aedes dorsalis*)

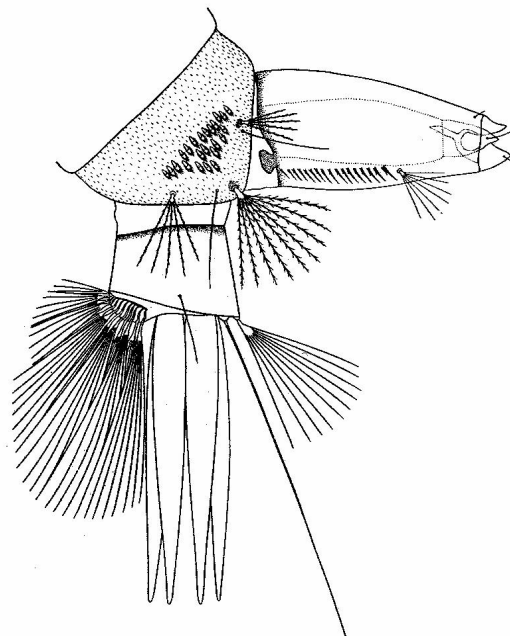
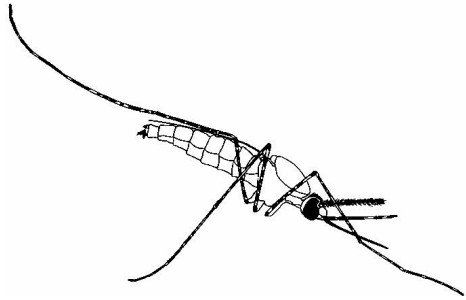


Fig. 13. Complete saddle, and ventral  
brush confined to posterior of saddle  
(*Aedes trivittatus*)

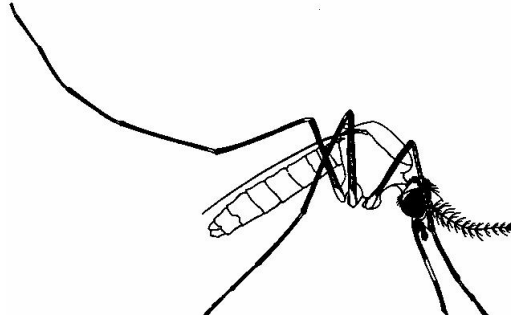
## IDENTIFICATION OF ADULT MOSQUITOES

Adult mosquitoes are distinguished from other flies by having scales on the wing veins, wing margins and most of the body; and a long proboscis.

### Resting Stance:



*Anopheles*



*Culicine*

**Male mosquitoes** have plumose (bushy) antennae and the palpi are as long as the proboscis and clubbed at the end.

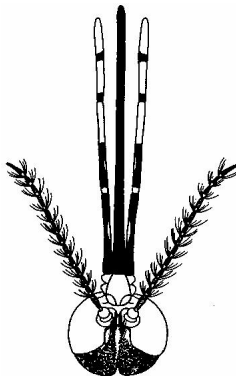


*Male Anopheles*

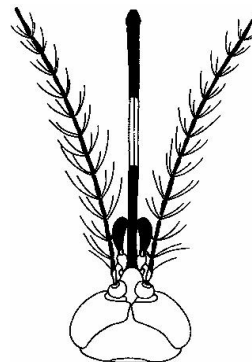


*Male Culicine*

**Female mosquitoes** have antennae with fewer, shorter hairs. In female *Anopheles*, the palpi are as long and straight as the proboscis, while palpi of female *Culicine* are considerably shorter.



*Female Anopheles*



*Female Culicine*

Among the Culicine mosquitoes, *Culex* and *Culiseta* have blunt abdomens (Fig. 14), while *Aedes*, and *Psorophora* have pointed abdomens (Fig. 15).



Fig. 14 Blunt abdomen of *Culex* and *Culiseta*



Fig. 15 Pointed abdomen of *Aedes* and *Psorophora*