

GENUS AEDES FROM PAKISTAN

Muhammad Mukhtar

Senior Scientific Officer (SSO)

Directorate of Malaria Control (DoMC)

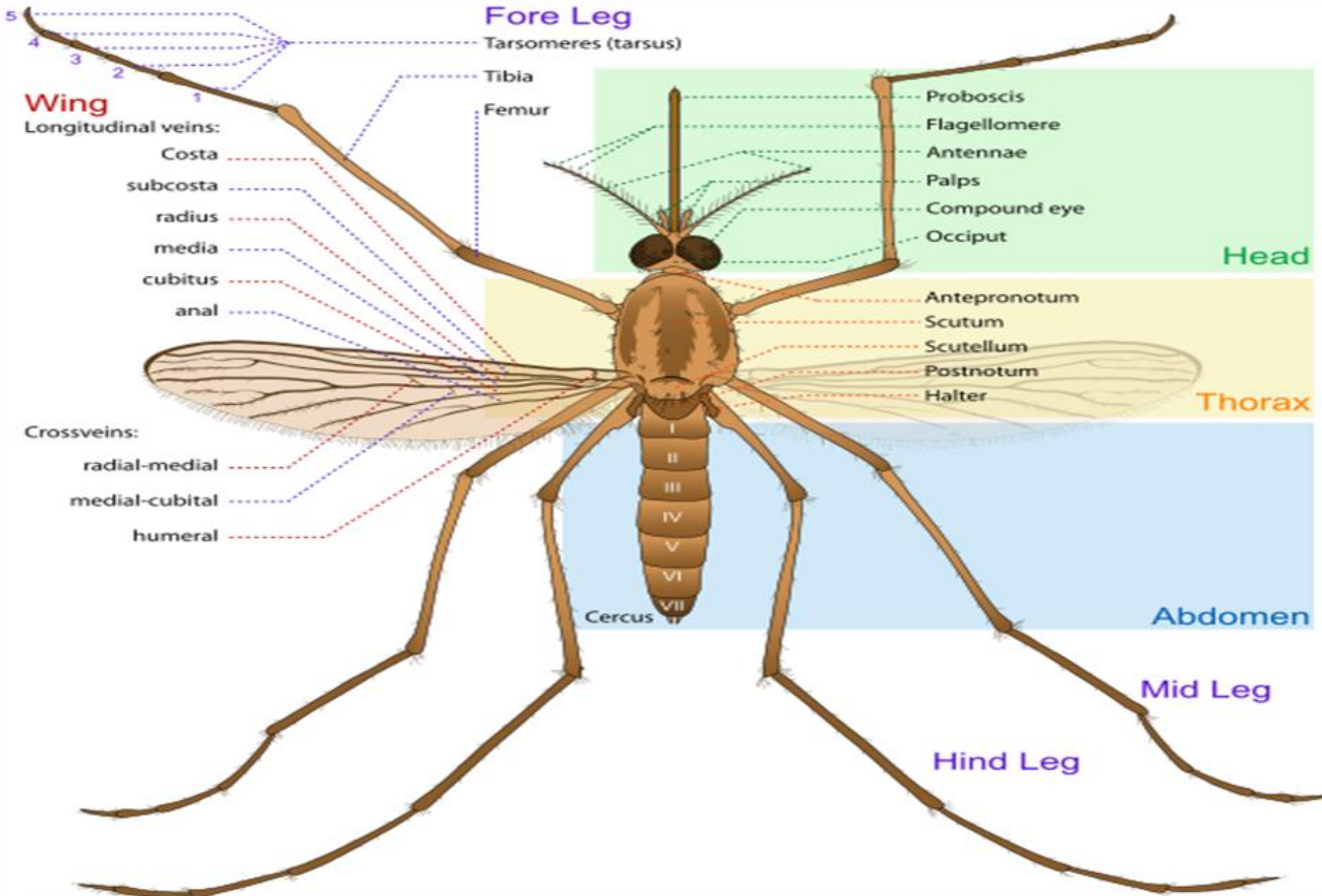
Mosquito classification

Kingdom:	Animalia
Phylum:	Arthropod
Class:	Insecta
Order :	Diptera
Family:	Culicidae
Common Genus :	Anopheles, Aedes, Culex

AEDES SPECIES IN PAKISTAN

1. *Aedes aegypti*
2. *Aedes albopictus*
3. *Aedes unilineatus*
4. *Aedes vittatus*
5. *Aedes caspius*
6. *Aedes pseudotaeniatus*
7. *Aedes lineatopennis*
8. *Aedes w-albus*
9. *Aedes africanus.*
10. *Aedes opok*
11. *Aedes stokesi*
12. *Aedes metallicus*
13. *Aedes soleatus*
14. *Aedes ealensis*
15. *Aedes angustus*
16. *Aedes usambara*
17. *Aedes ledgeri*
18. *Aedes chaussieri*
19. *Aedes Josiahae*
20. *Aedes kivuensis*
21. *Aedes simpsoni*

MORPHOLOGICAL FEATURES USED IN THE ADULT IDENTIFICATION



TAXONOMIC KEY FOR THE SPECIES OF GENUS AEDES FROM PAKISTAN

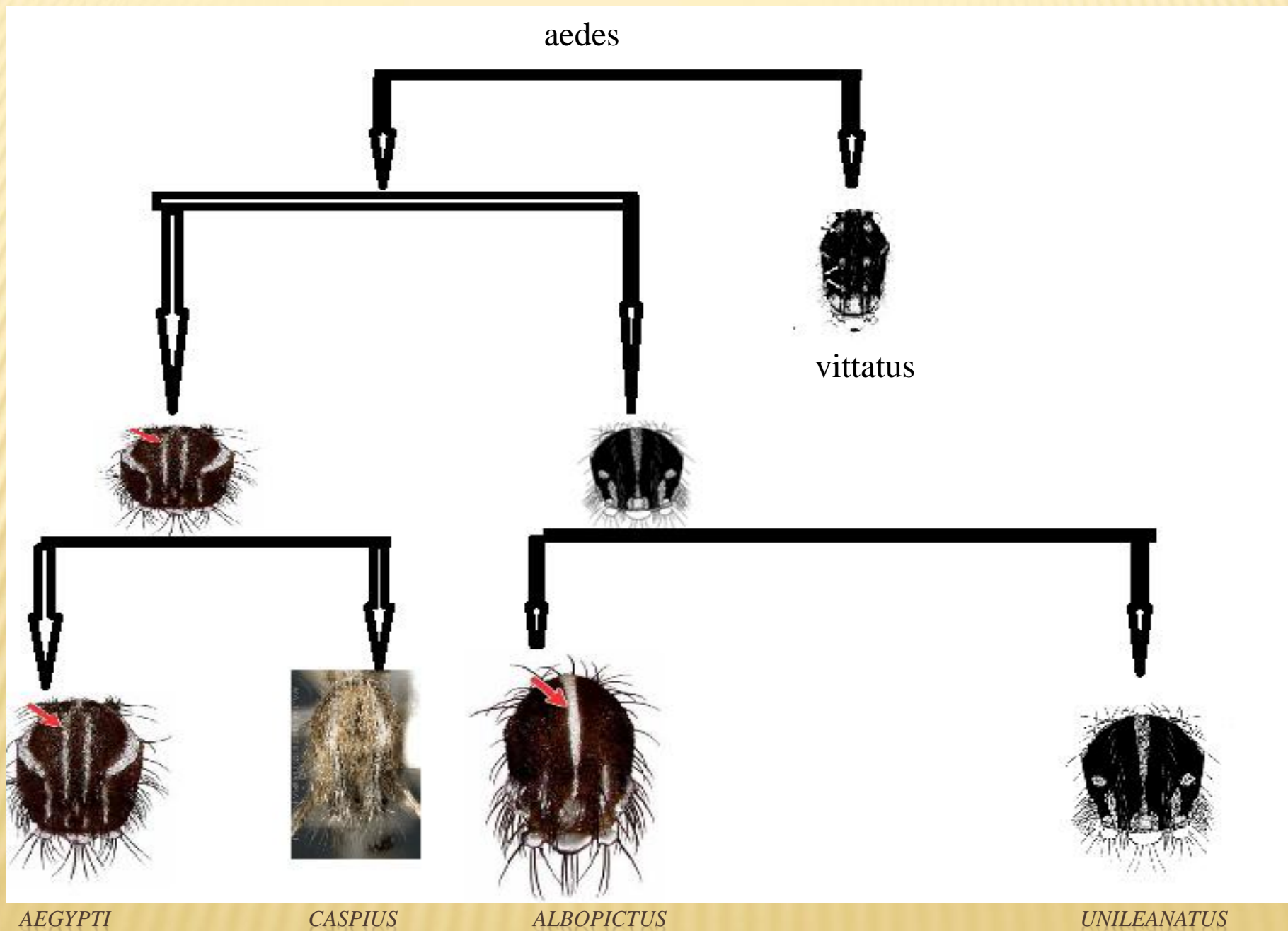
- 1 . Thorax (Scutum) with longitudinal white or brown strips.....2
 - _ Thorax (Scutum) without longitudinal white or brown strips.....*vittatus*

- 2 . Thorax (Scutum) with single longitudinal white or brown strip.....4
 - _ Thorax (Scutum) with double longitudinal white or brown strips.....3

- 3 . Longitudinal band with lyre shaped structure.....*aegypti*
 - _ Longitudinal band with lyre shaped structure.....*caspius*

- 4 . Single Longitudinal band with white spots.....*unileanatus*
 - _ Single Longitudinal band without white spots.....*albopictus*

PICTORIAL KEY OF AEDES GENUS FROM PAKISTAN

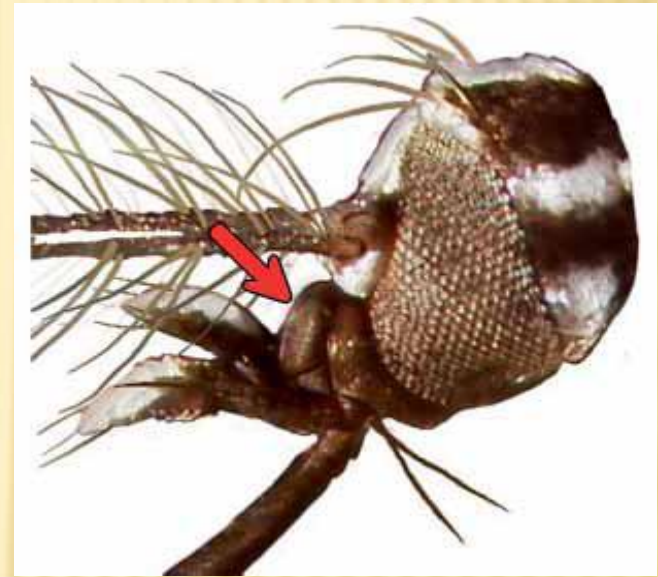


MORPHOLOGICAL DIFFERENCE BETWEEN *AEDES AEGYPTI* AND *AEDES ALBOPICTUS*

Head. white scale patches on Clypeus

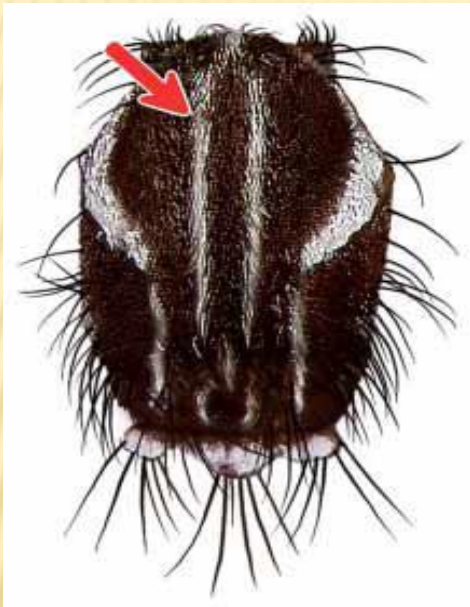


Two white scale patches are present on Clypeus in *Aedes aegypti*



Two white scale patches are absent on Clypeus in *Aedes albopictus*

THORAX. SCUTUM WITH LYRE-SHAPED MARKINGS AND LONGITUDINAL WHITE STRIPES

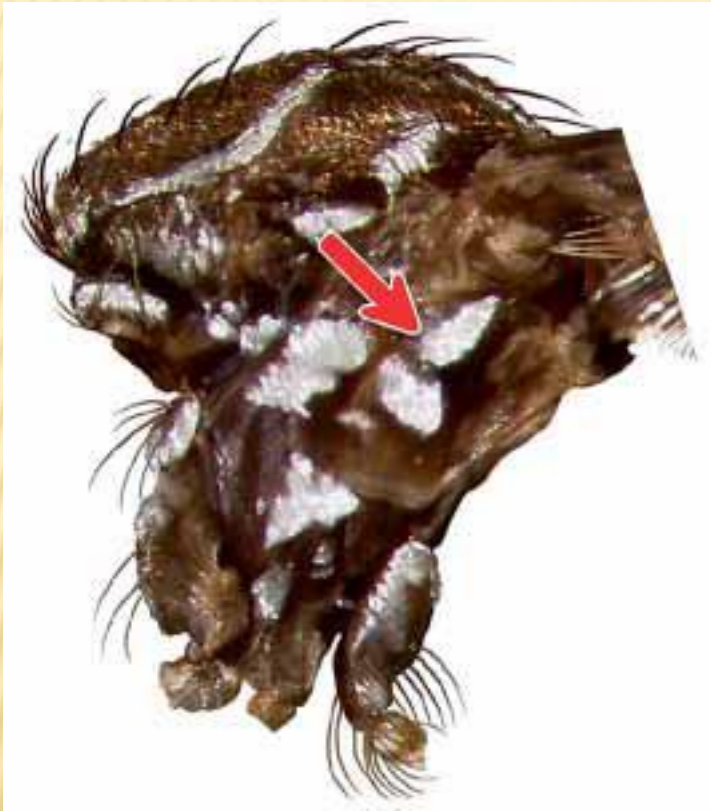


Scutum with lyre-shaped structure present in *Aedes aegypti*



Scutum with out lyre-shaped structure present in *Aedes albopictus*

MESEPIMERON WITH TWO WHITE SCALE PATCHES

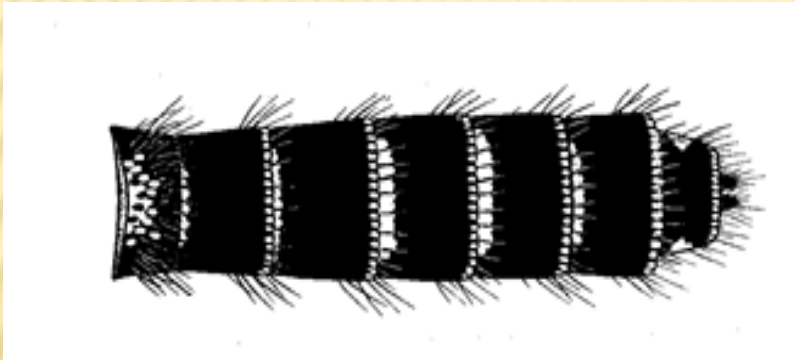


Meseplimeron with two isolated white scale patches
in *Aedes aegypti*

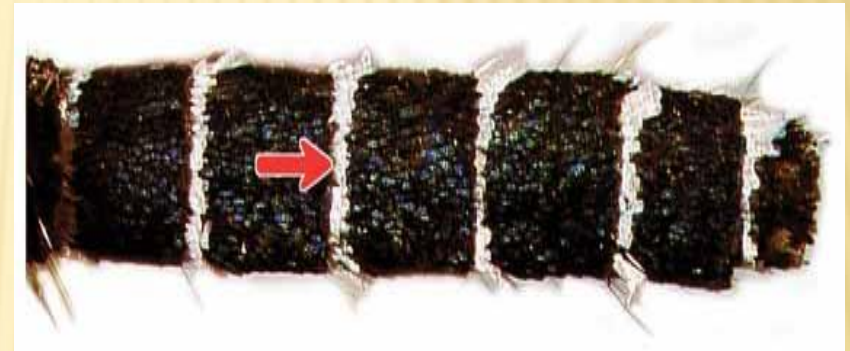


Meseplimeron with two fused white
scale patches in *Aedes albopictus*

ABDOMEN. ABDOMINAL TERGA WITH COMPLETE BASAL WHITE BANDS

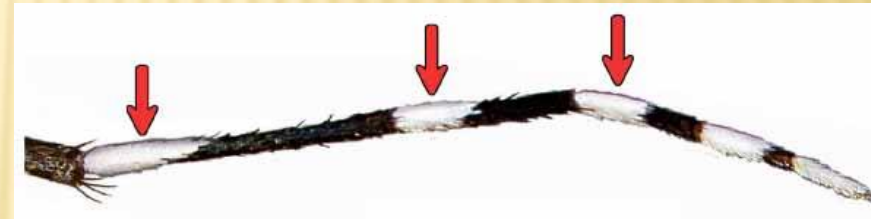


Abdominal terga with complete basal white bands broader form middle in *Aedes aegypti*



Abdominal terga with complete basal white bands narrow form middle in *Aedes albopictus*

LEG. PORTION OF LEG WITH WHITE PATTERN



Aedes Aegypti

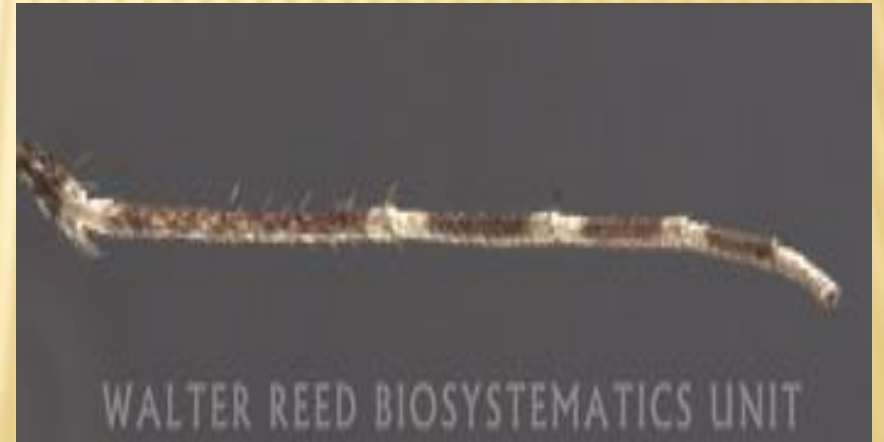
Aedes albopictus



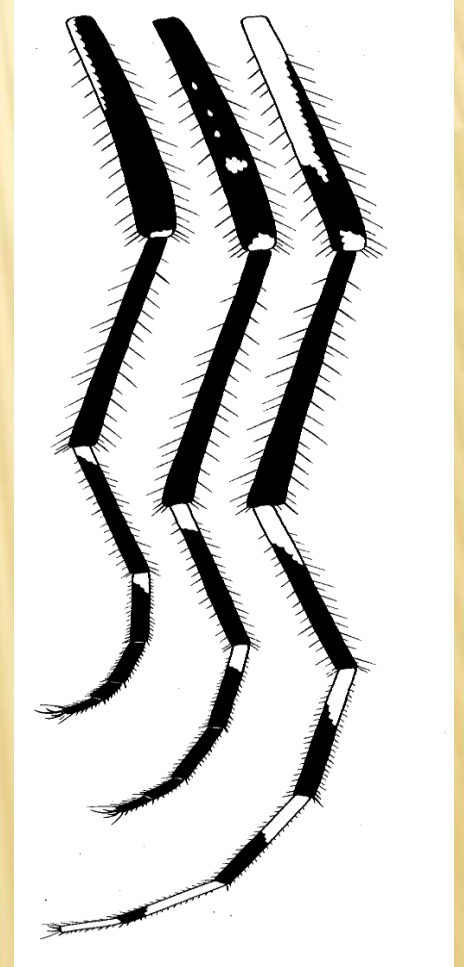
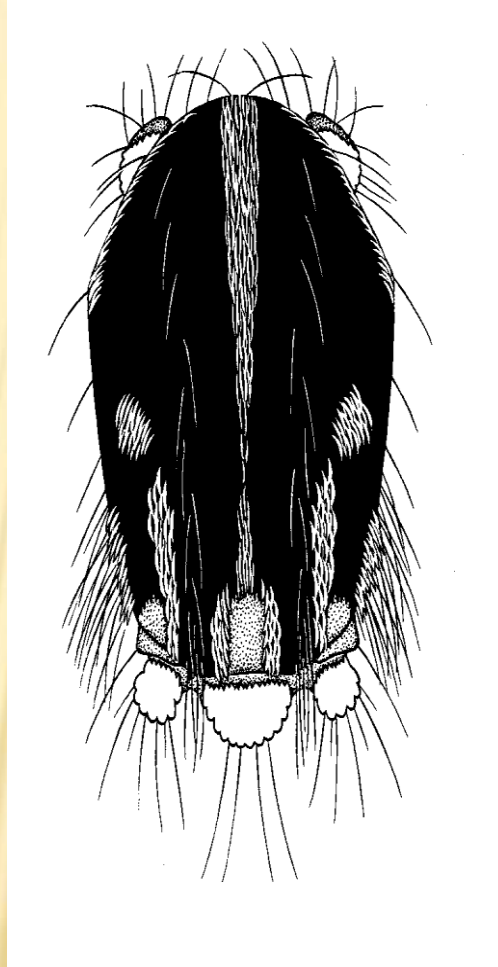
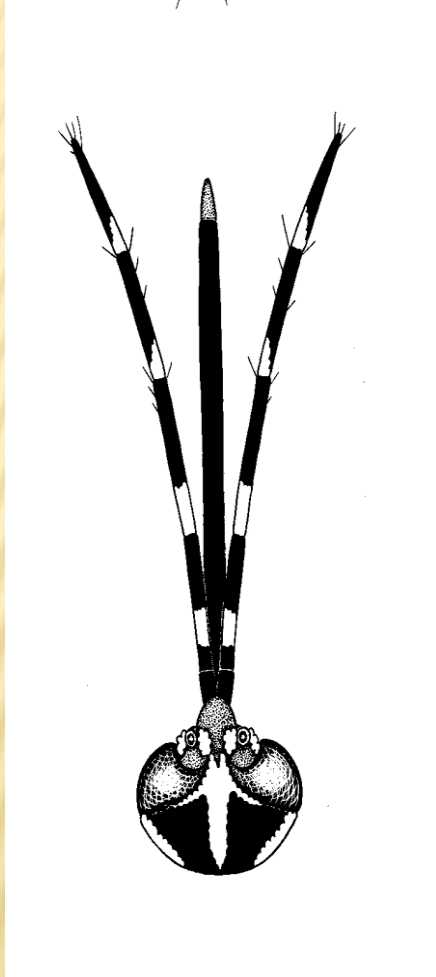
AEDES CASPIUS



AEDES CASPIUS

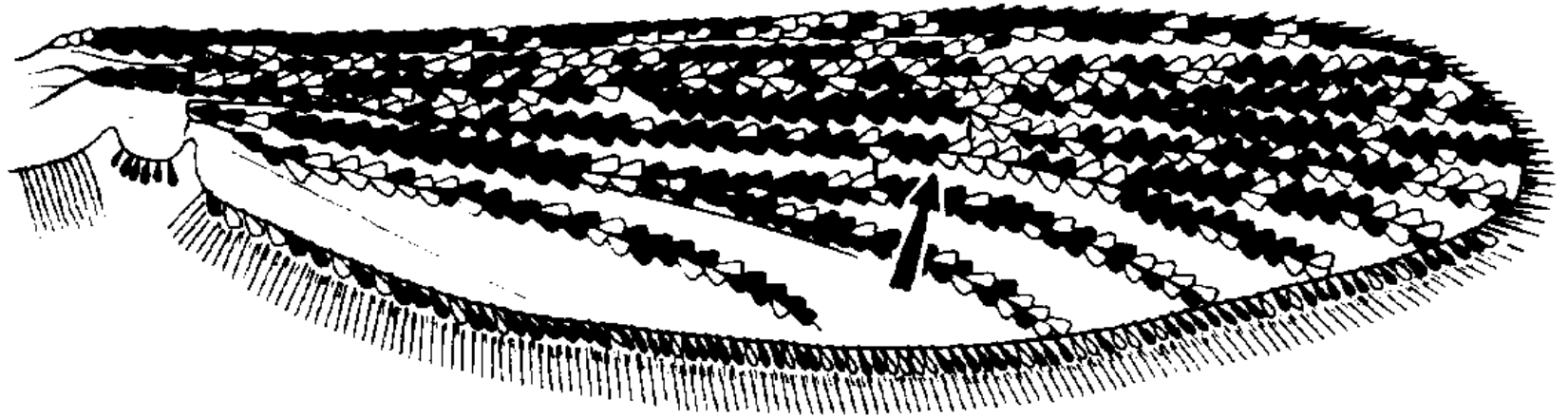


AEDES UNILINEATUS

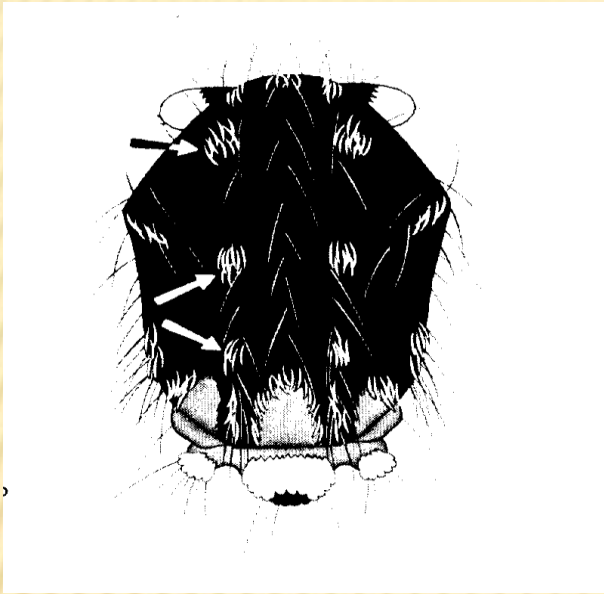


WING OF *AEDES UNILINEATUS*

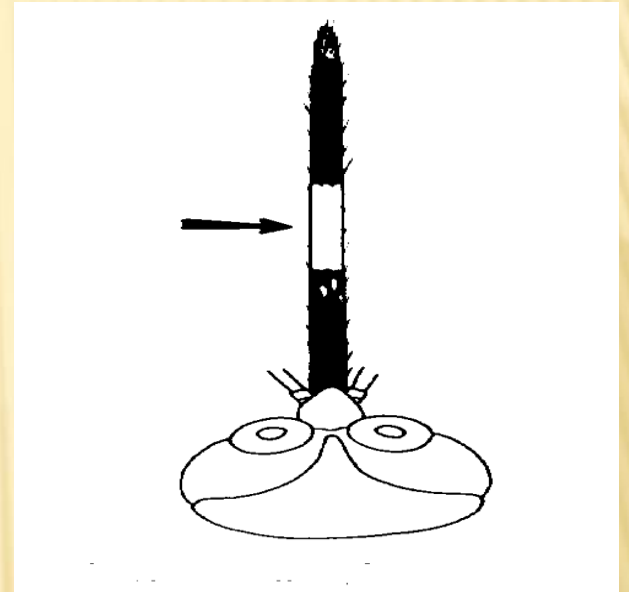
WINGS WITH BROAD SCALES ON ALL VEINS



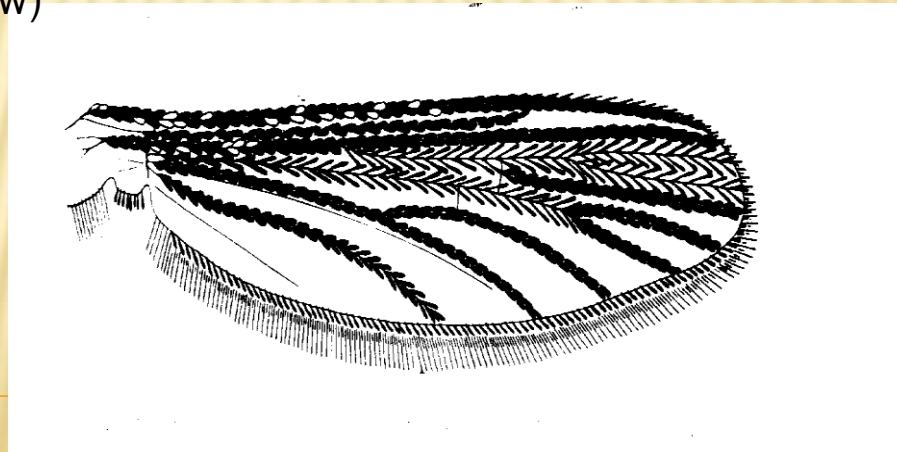
AEDES VITTATUS



thorax (dorsal view)



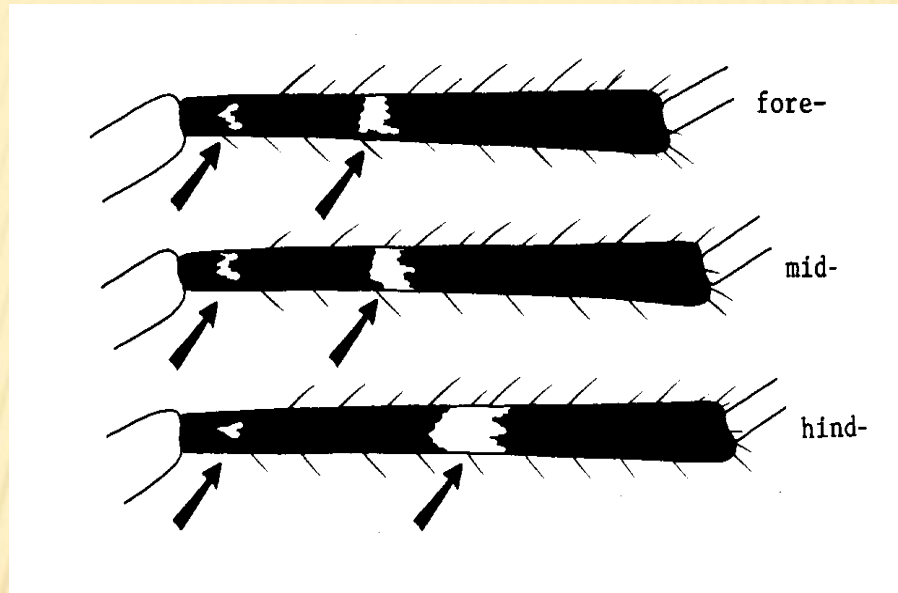
Probosis with white scales



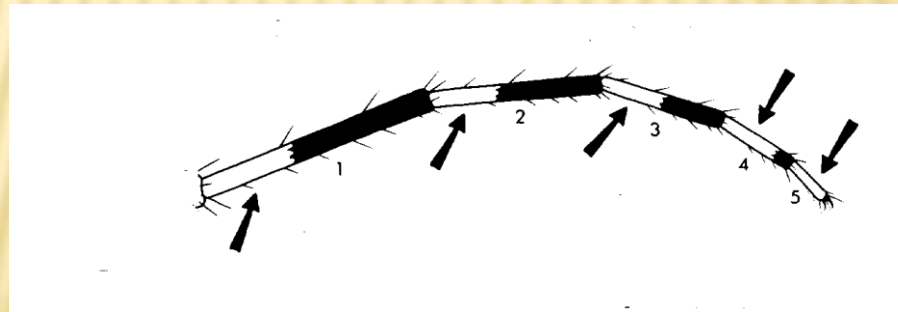
Wing with small white and black scales

AEDES VITTATUS

TIBIA



TARSOMERES



AEDES AFRICANUS



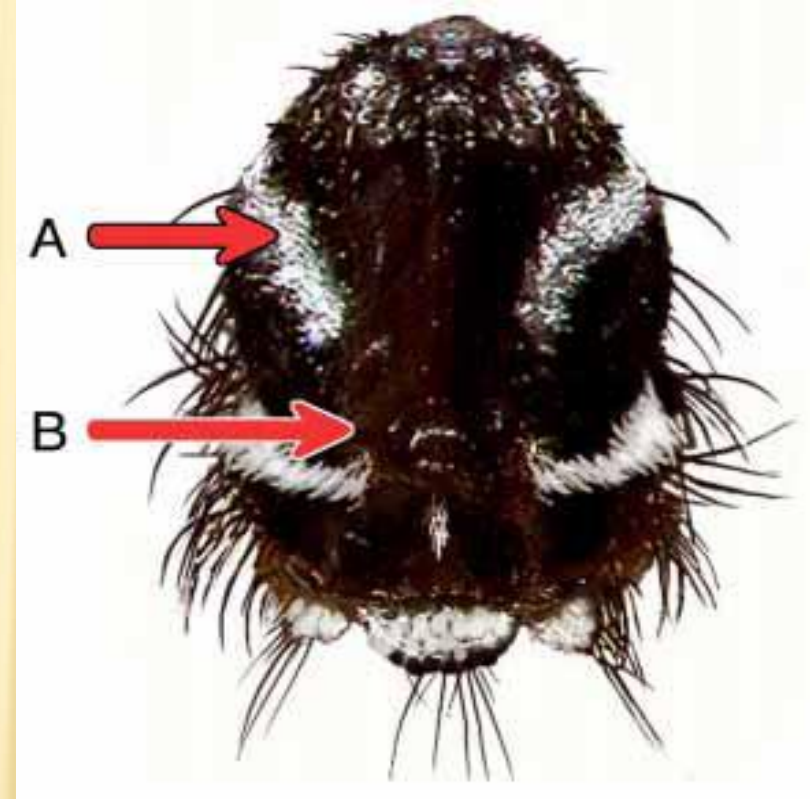
Hindfemur have 3 white patches on the anterior surface



Basal part of tibia is white

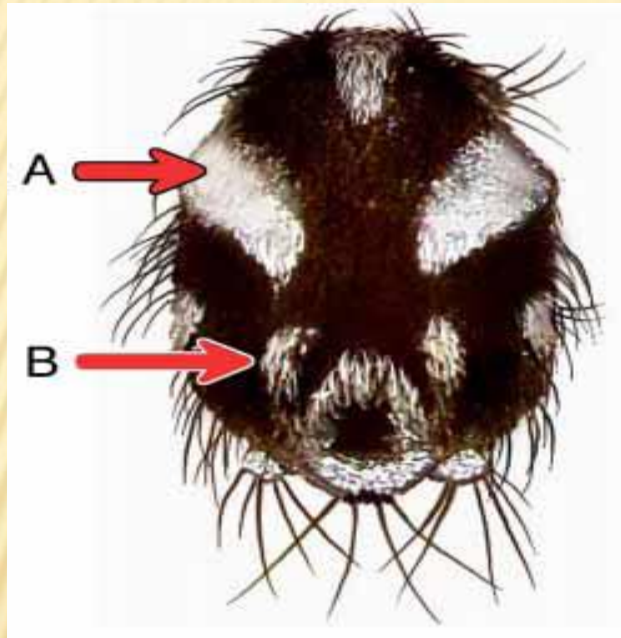


First 3 tarsomeres are with basal white spot, 4 and 5 are totally black.



Thorax. white patch narrow at base along scutal margin

AEDES OPOK



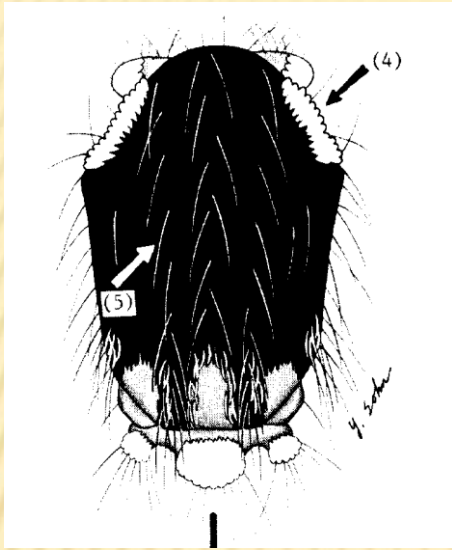
Thorax white patch broad at base along scutal margin



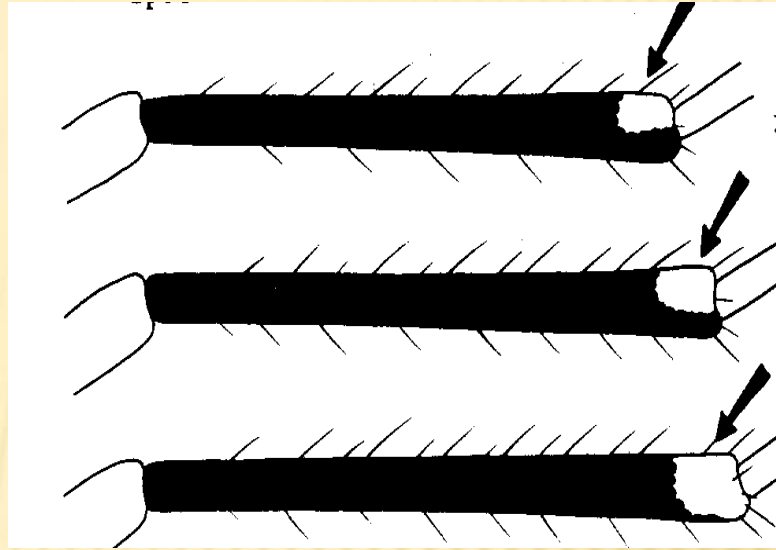
Hind tibia black with a white spot near femur



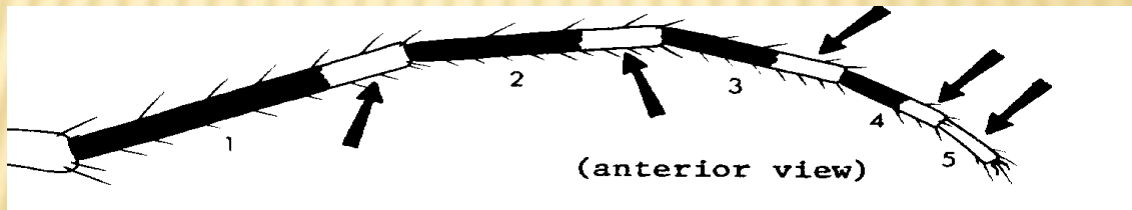
AEDES STOKESI



Scutum with broad white scales on dorso-lateral side

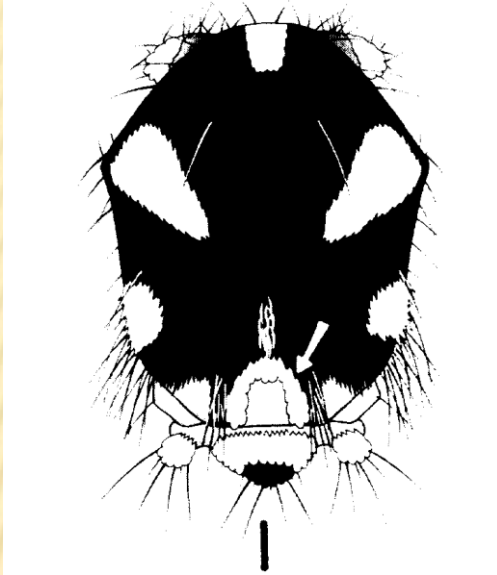


Tibia dark each with a white apical spot

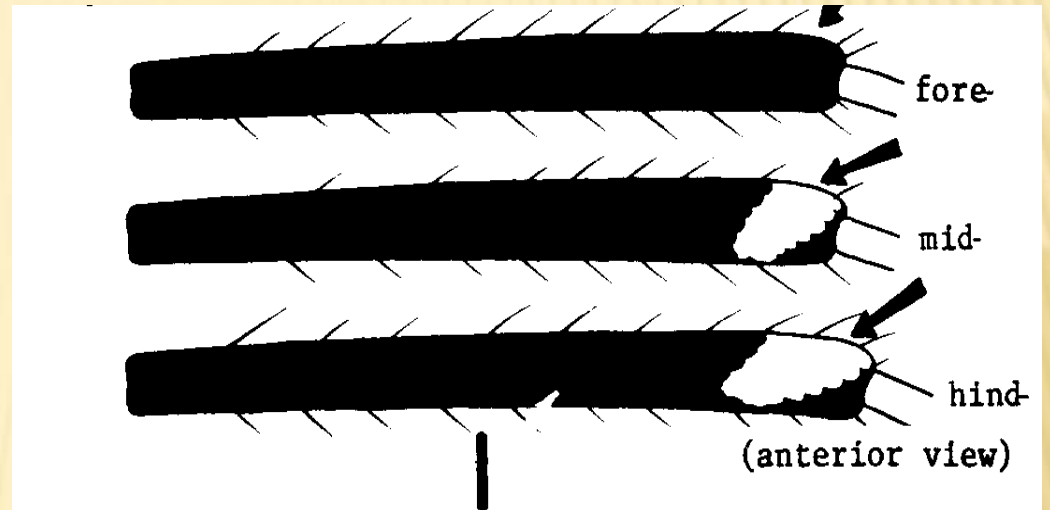


Tarsomere with a basal dark band 1-4 and 5 all white

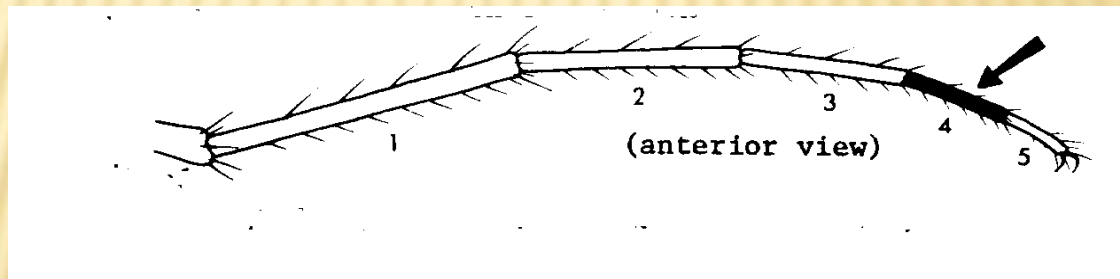
AEDES METALLICUS



Central lobe of scutellum with white and black scales



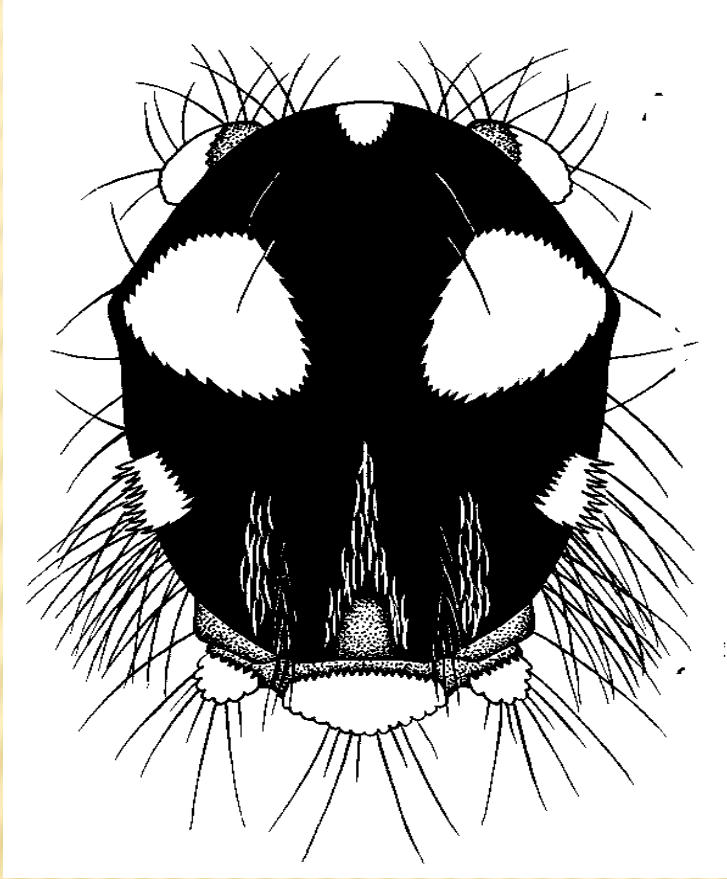
White knee spot absent on fore femur but present on mid and hind femur



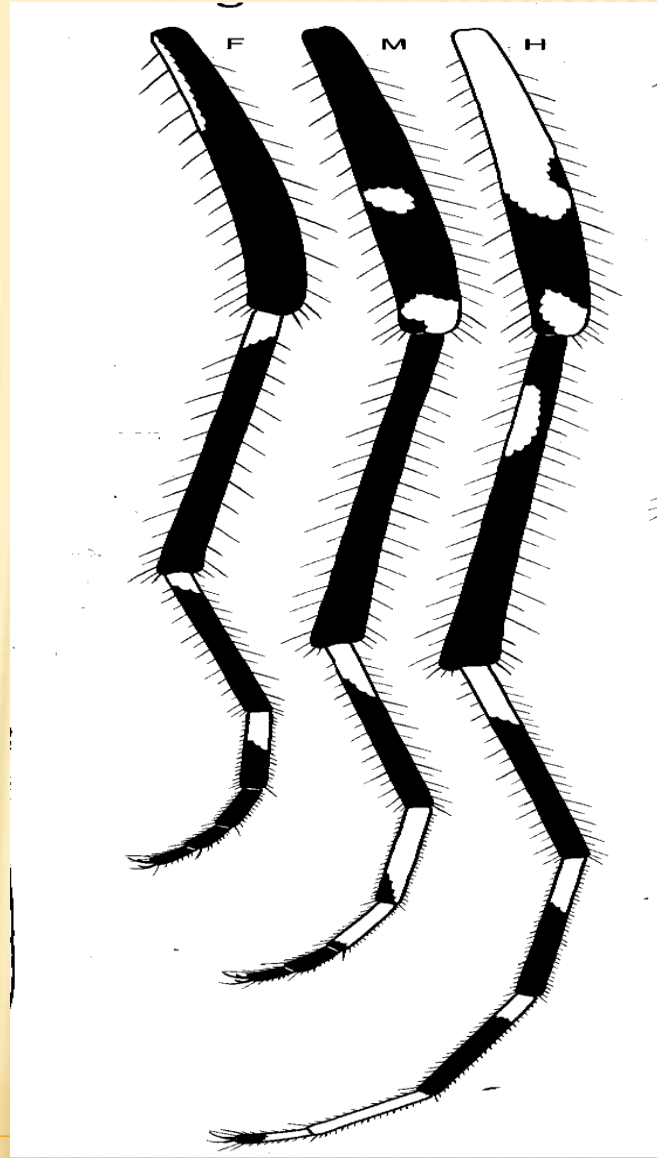
Tarsomere 4 black



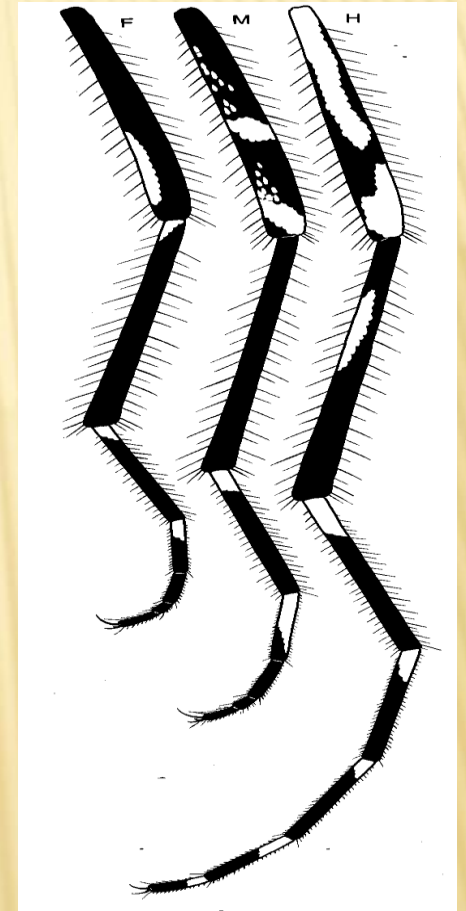
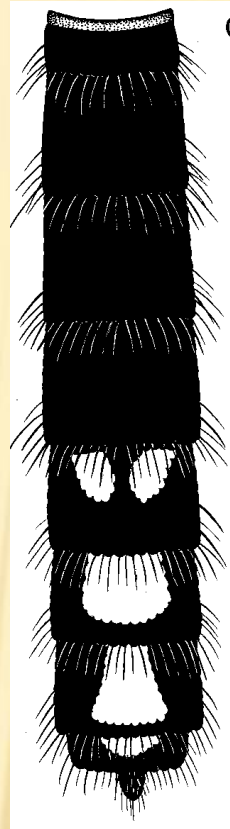
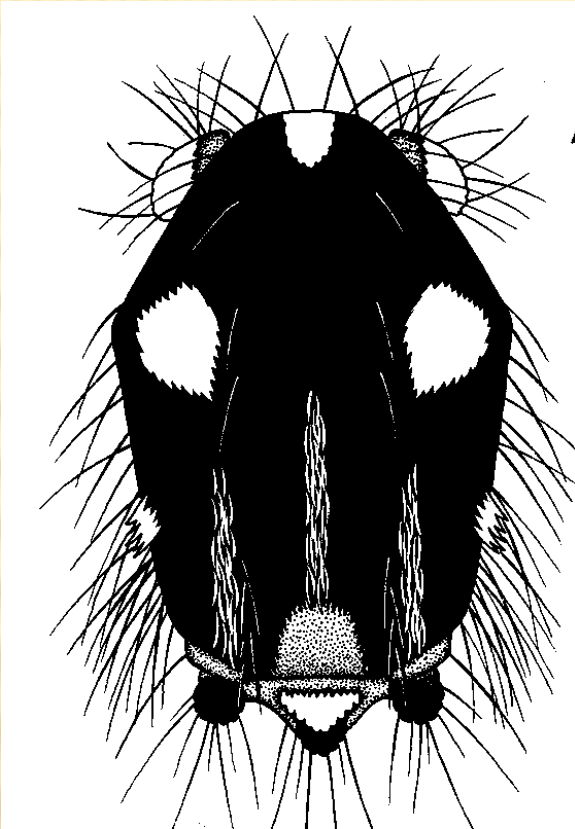
Aedes soleatus



Scutum with anterior median white spot of narrow scales;



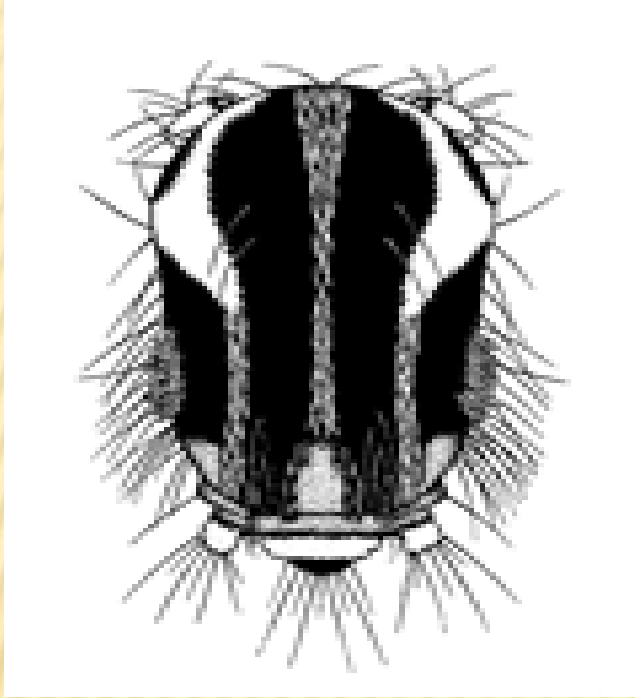
AEDES EALENSIS



scutellum with broad white scales on midlobe and with broad dark scales on lateral lobe



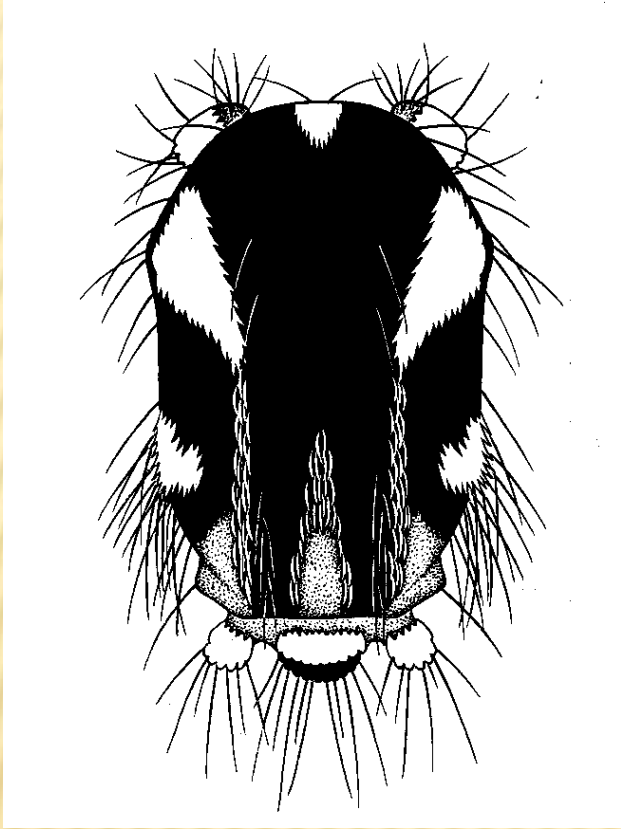
AEDES ANGSTUS



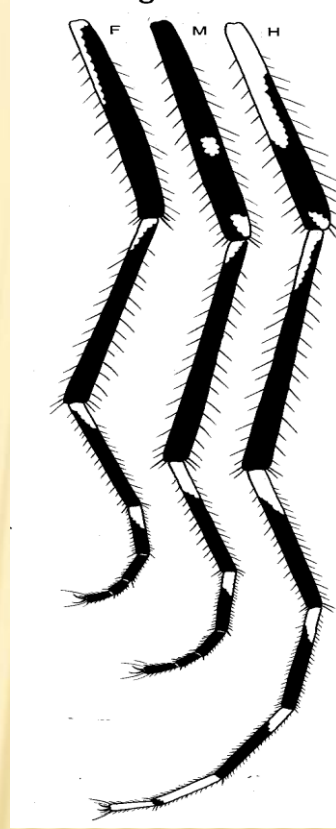
Lyre shaped broad structure
extending dorso-laterally



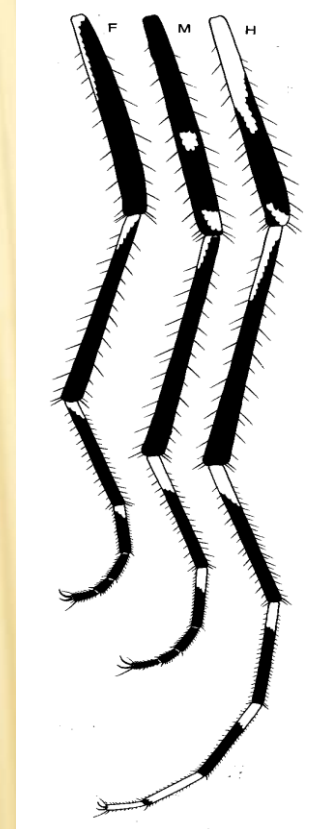
AEDES USAMBARA



Thorax. Lyre structure broken
from prescutal area

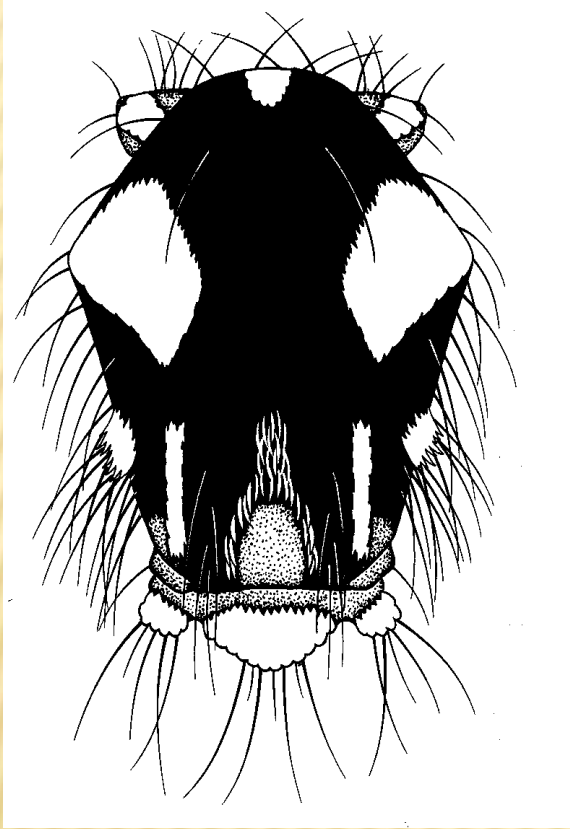


Fore-, mid- and hind legs
(anterior view)

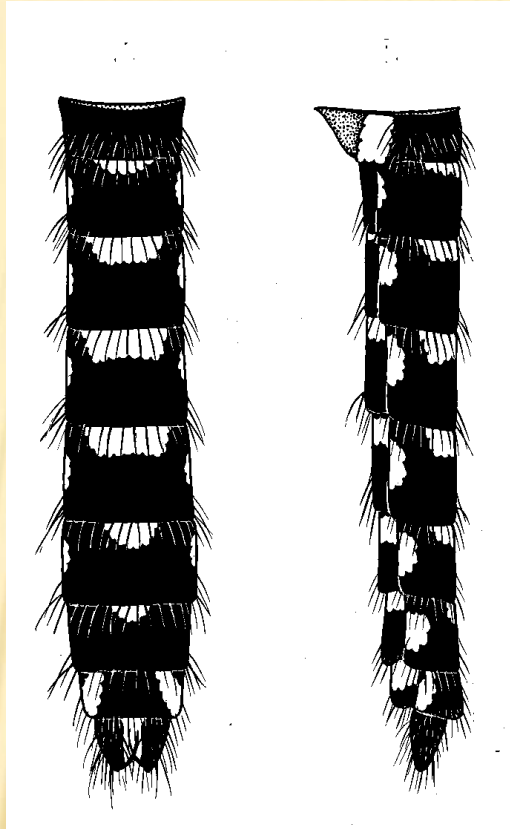


Fore-, mid- and hind legs
(posterior view)

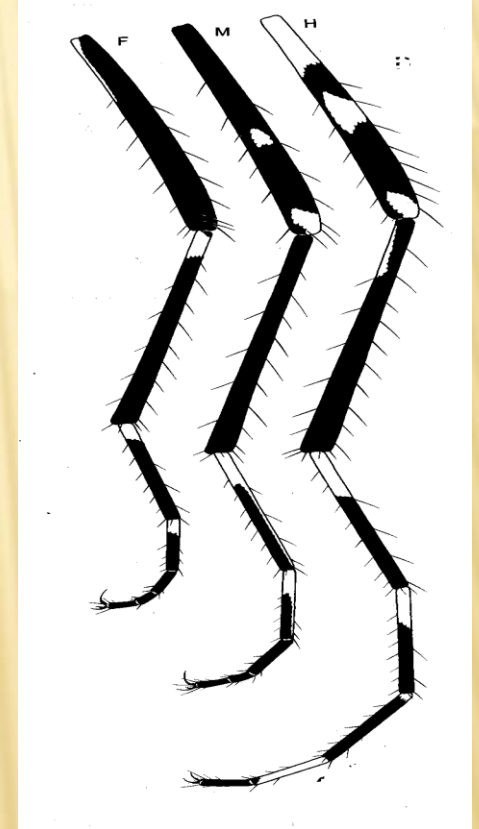
AEDES LEDGERI



thorax (dorsal view)

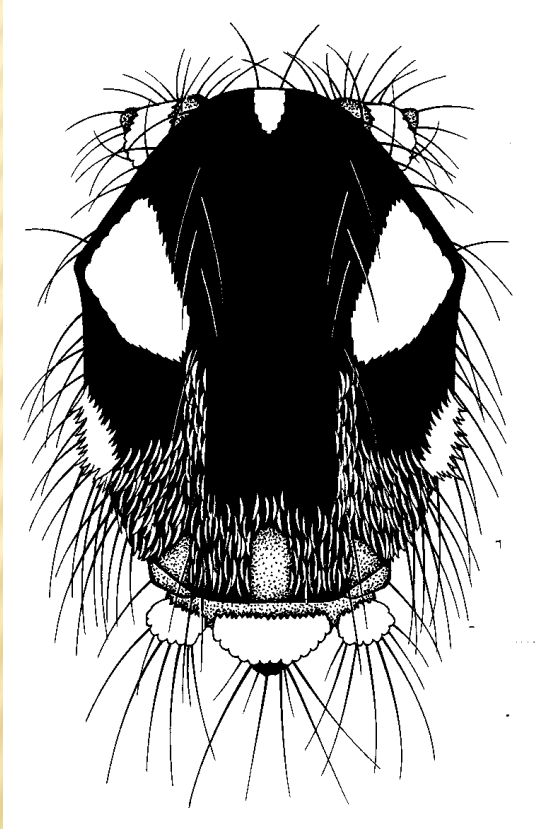


abdomen (dorsal view)

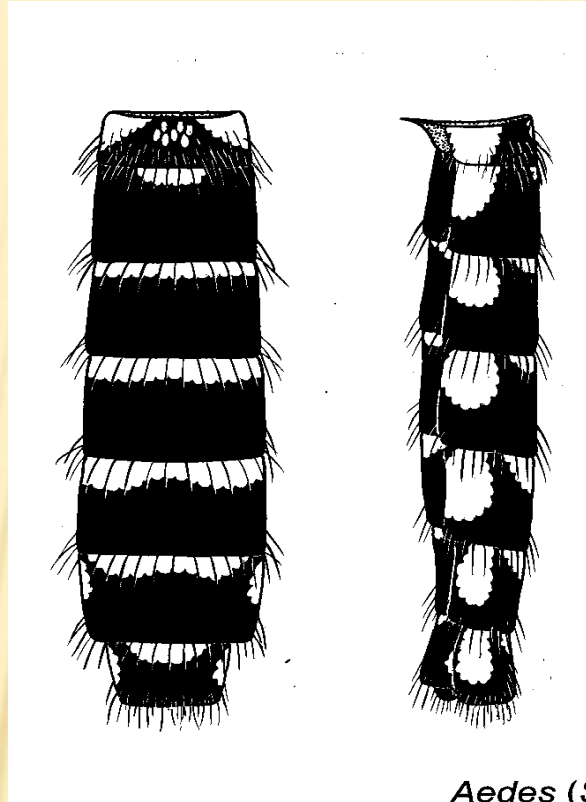


fore-, mid- and hindlegs

AEDES CHAUSSIERI

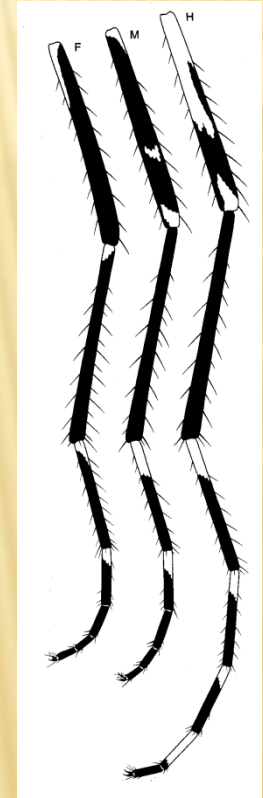


thorax (dorsal view)



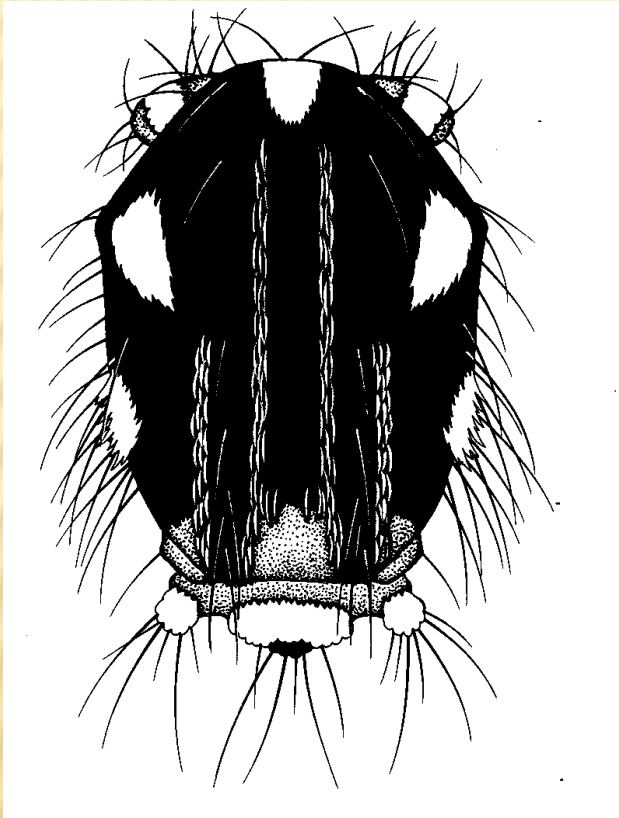
Aedes (S)

abdomen (dorsal view)

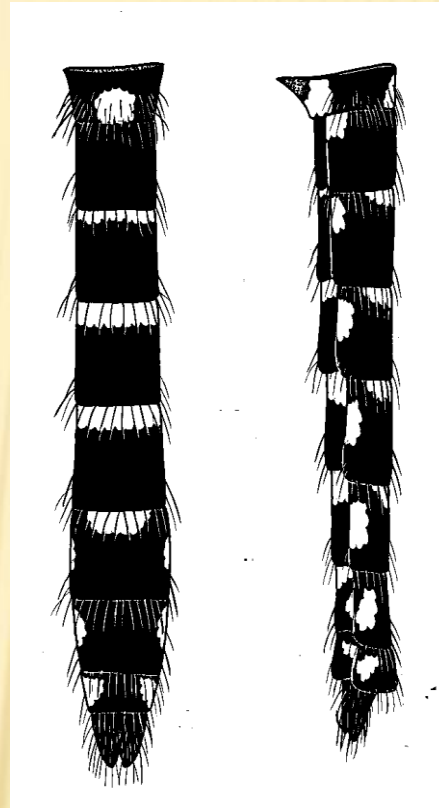


fore-, mid- and hindlegs

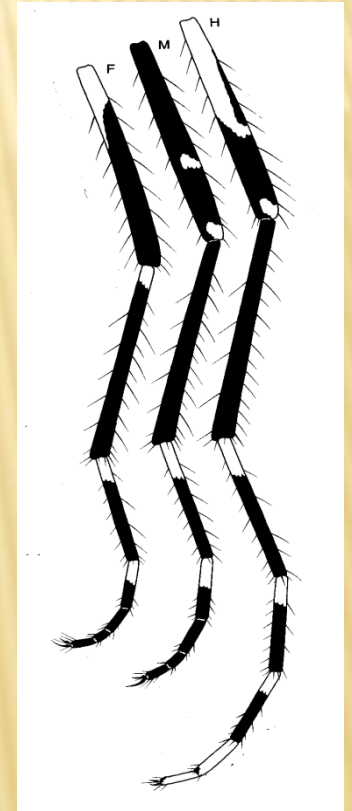
AEDES JOSIAHAE



thorax (dorsal view)

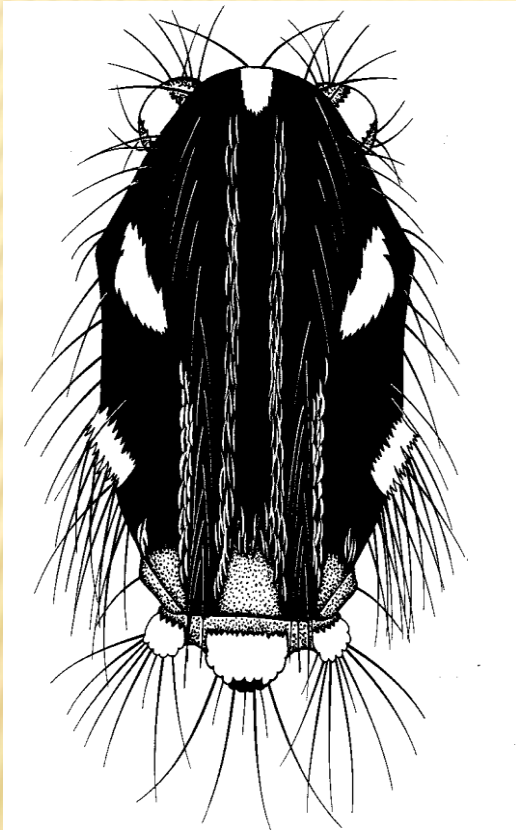


abdomen (dorsal view)

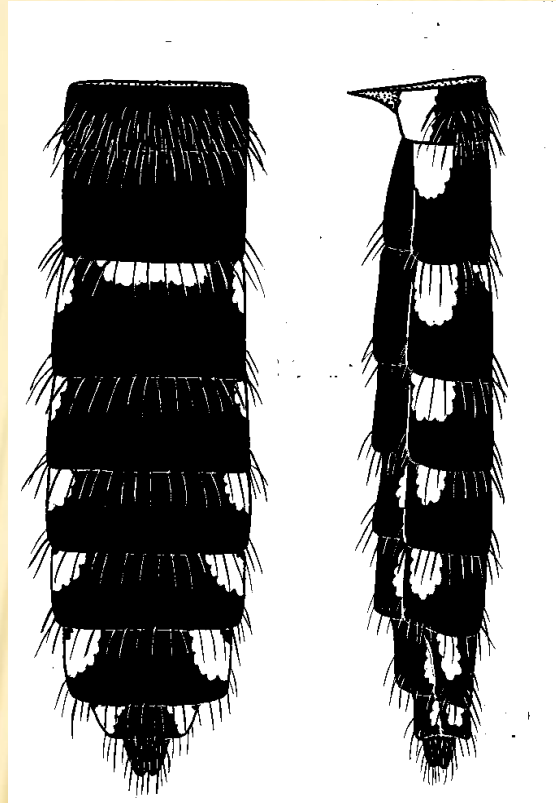


Fore mid- and hindlegs

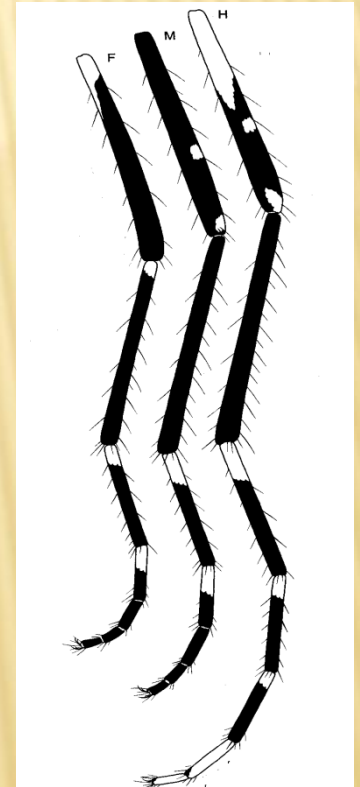
AEDES KIVUENSIS



thorax (dorsal view)

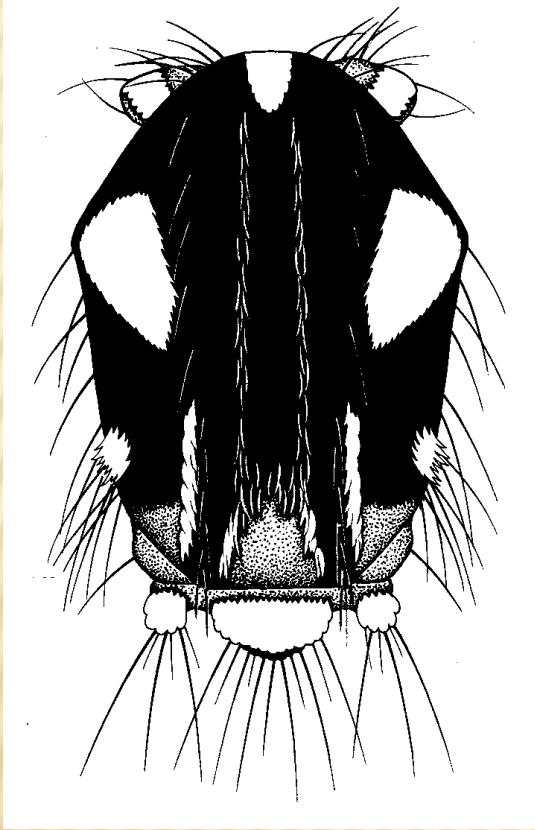


abdomen (dorsal view)

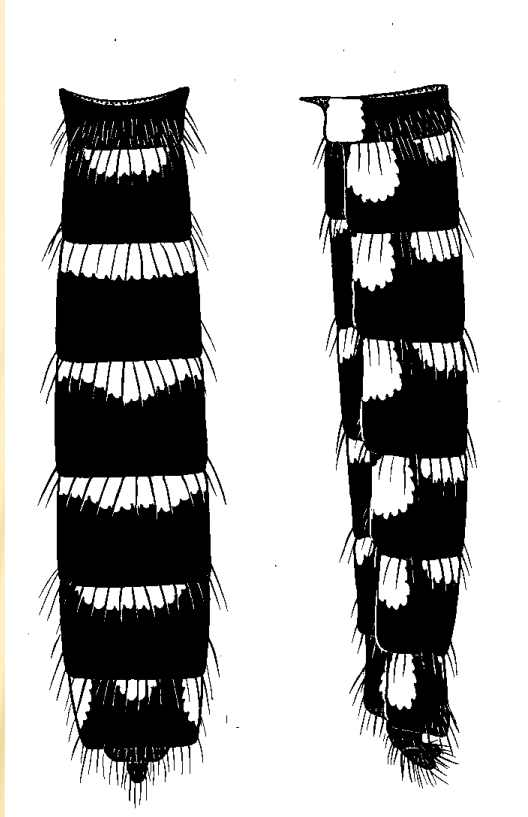


abdomen (dorsal view)

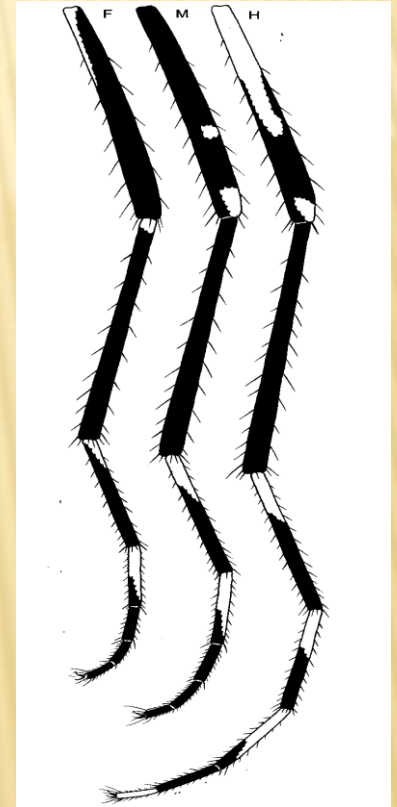
AEDES SIMPSONI



thorax (dorsal view)

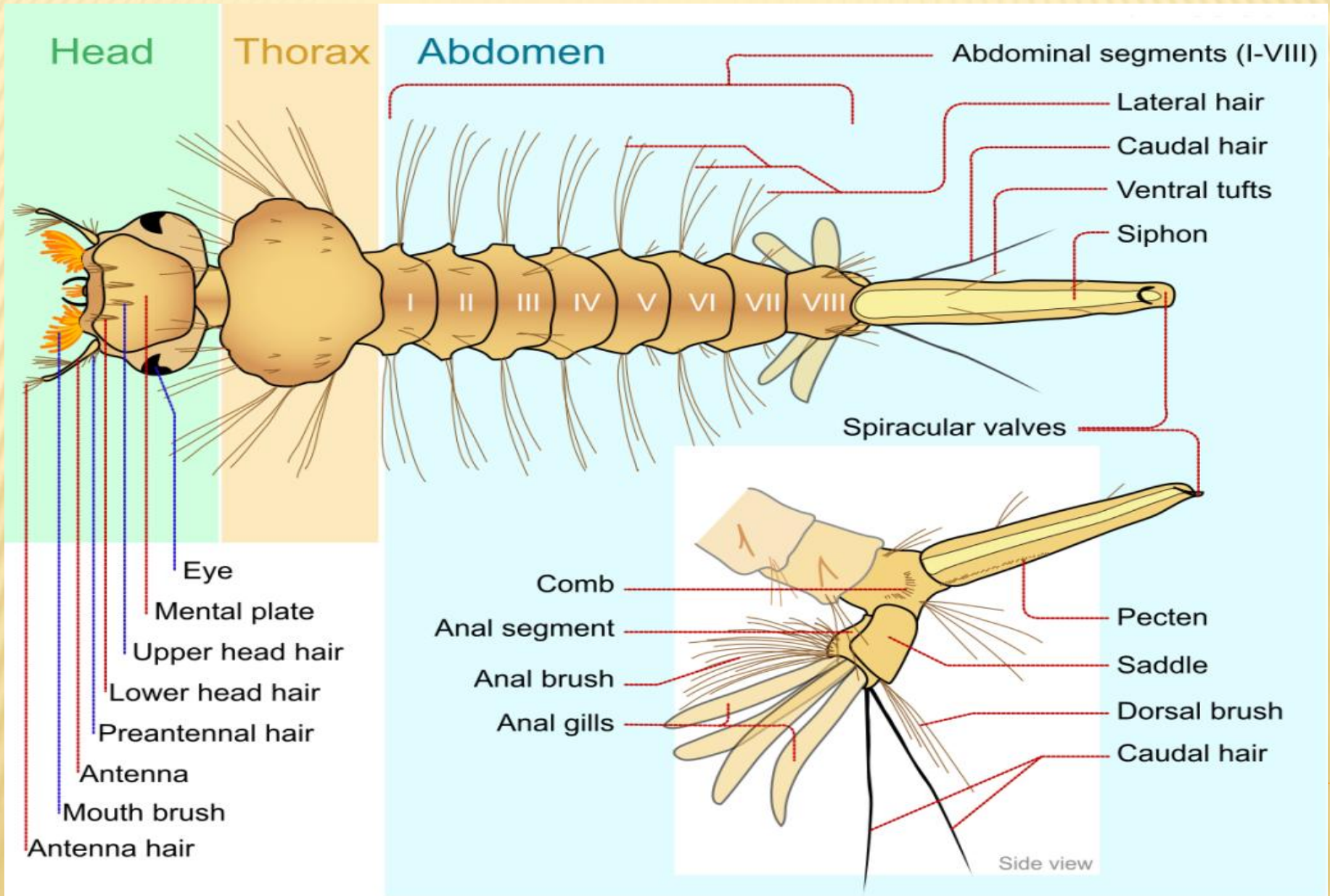


abdomen (dorsal view)



abdomen (dorsal view)

MORPHOLOGICAL FEATURES USED IN THE LARVAL IDENTIFICATION



AEDES LARVA

Larvae hang head down from the surface of the water with their siphon extended above the surface for air.

There is only one pair of sub-ventral tufts of hairs.

There are three pair of setae on the ventral brush.

Larvae have short siphon.

Aedes larvae hang down from the water surface at an straight angle.



CULEX LARVA

It has long, narrow siphon.

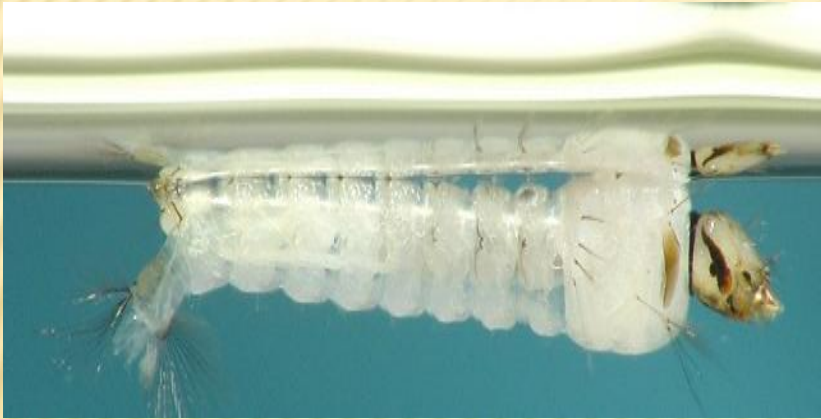
There are more than one pair of sub-ventral tufts of hairs on the siphon, none of them near its base



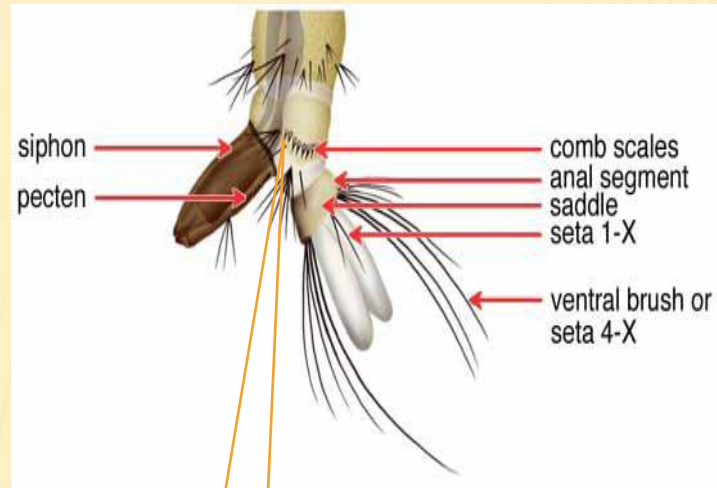
ANOPHELES LARVA

Anopheles larvae do not have a siphon and they lay parallel to the water surface.

The larva feed on micro-organisms and organic matter in the water.



LARVAL IDENTIFICATION AEGYPTI AND ALBOPICTUS



ALBOPICTUS

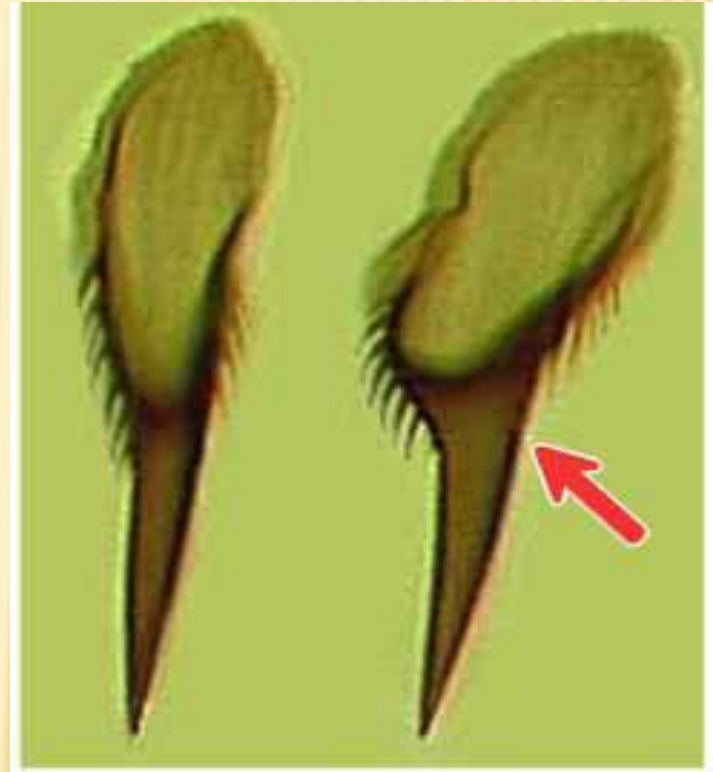
AEDES AEGYPTI



COMB SCALE



AEDES AEGYPTI



AEDES ALBOPICTUS

AEDES EGGS

Freshly laid eggs are white. After few minutes these turn into black col.

The egg shell has a mosaic pattern.

Egg are laid on a damp substrates just beyond the water line.

It can withstand desiccation (they can be dry but viable for many months).



CULEX EGGS

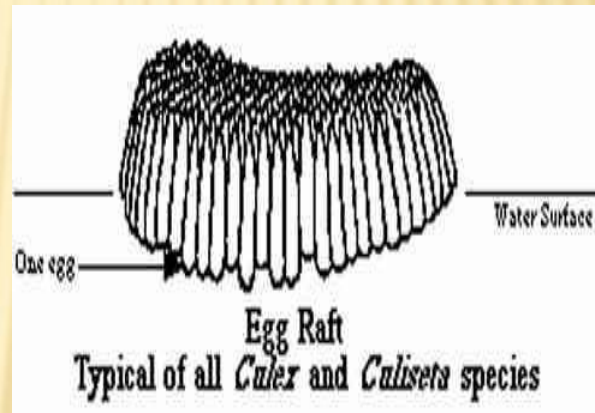
Culex lays their eggs on the surface of fresh or stagnant water.

Mosquitoes prefer water sheltered from the wind by grass and weeds.
Culex egg is brown, long and cylindrical.

It may lay 300 eggs up-right on the water surface.

Culesx eggs are placed together to form an egg raft.

They are adhered to each other due to surface forces.



ANOPHELES EGGS

Eggs are laid singly directly on water and are unique in having floats on both sides

Eggs are not resistant to drying and hatch within 2-3 days, although hatching may take up to 2-3 weeks in colder climates

