Government of **Western Australia**
Department of **Health**

Adult Female Mosquito Identification Key:

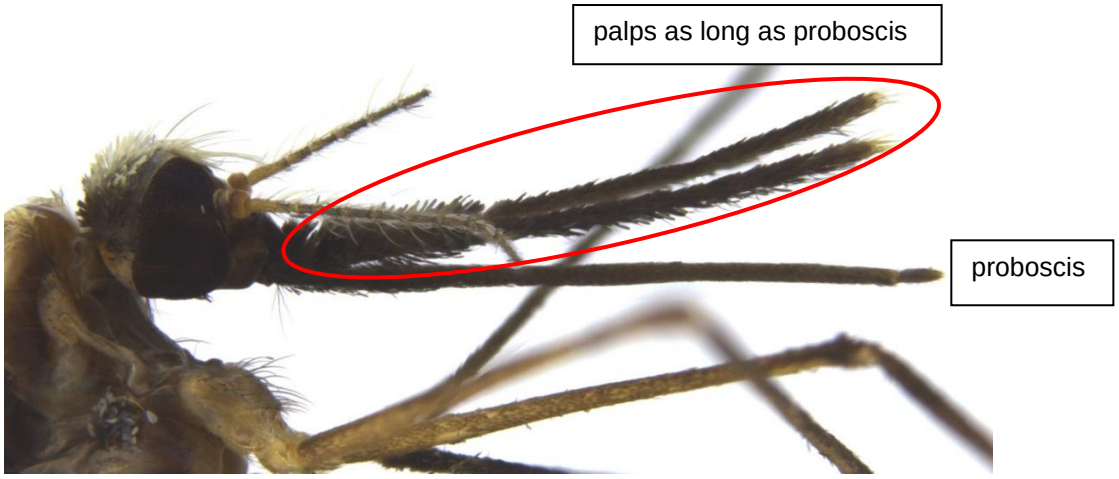
KIMBERLEY REGION

health.wa.gov.au

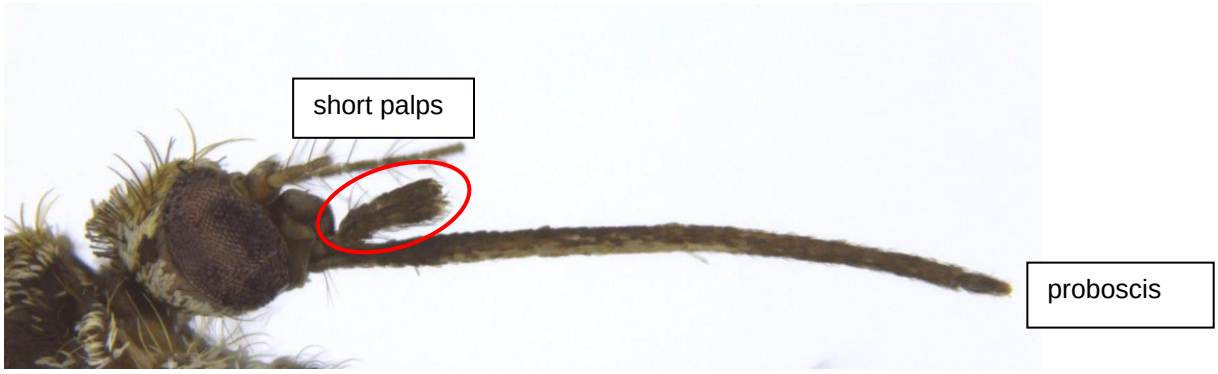
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

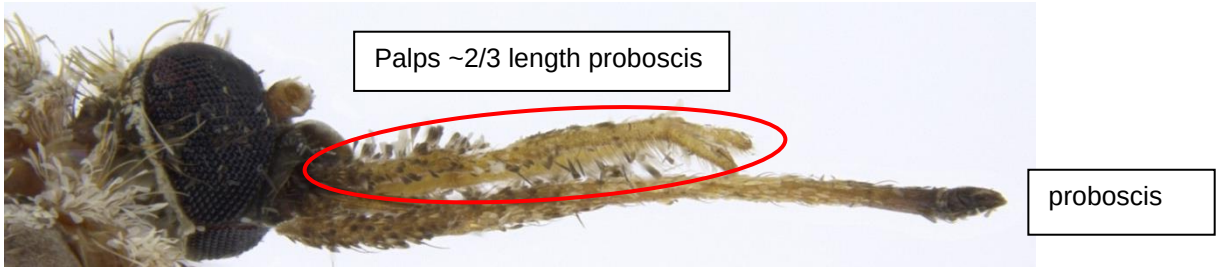
1

1A Palps (sensory organs either side of the proboscis) as long as proboscis (elongated mouthpart used to penetrate skin and take a blood meal) (*Anopheles* species) ……..... **2**



1B Palps short or not more than 2/3 the length of proboscis .....……..... **7**

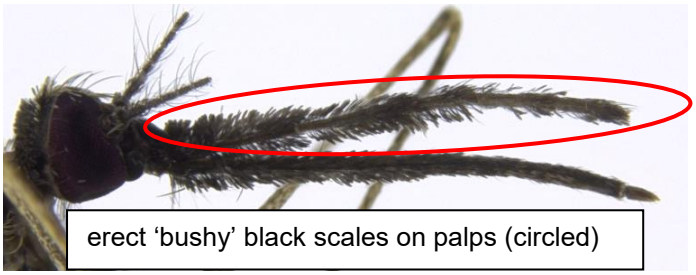




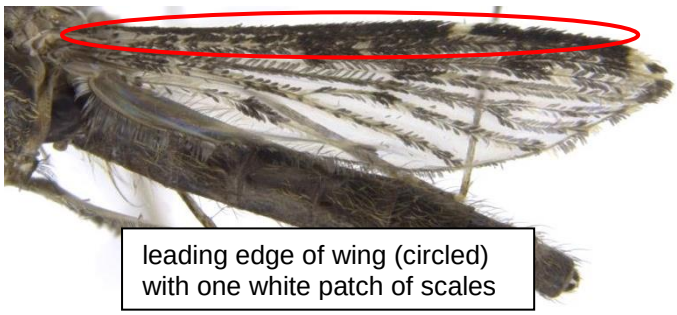
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

2

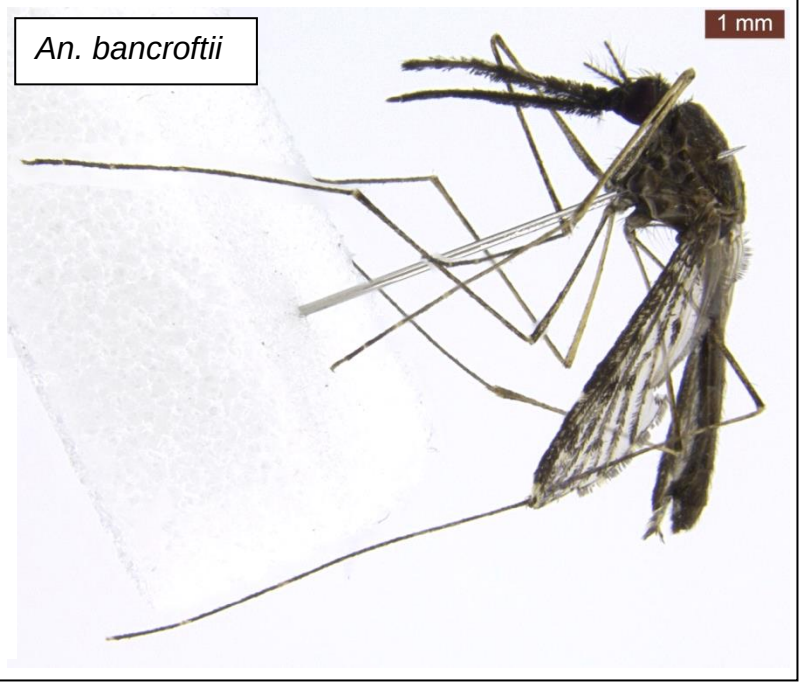
2A Palps and wings almost entirely black scaled on leading edge (circled) ..... ***Anopheles bancroftii***



erect 'bushy' black scales on palps (circled)



leading edge of wing (circled) with one white patch of scales



2B Palps and leading edge of wing (circled) with several patches of pale scales ……..... **3**

Palps with patches of white scales

leading edge of wing (circled) with at least four white patches of scales

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

3

3A Back of abdomen (tergites) with dense flat yellowish scales (proboscis dark scaled) ..…… **4**

bright yellow scales on tergites

creamy yellow scales on tergites

3B Tergites with hairs and largely bare of scales …….....……..…….... **6**

hairs (not scales) on tergites

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

4

4A Distinctive paired patches of white scales on under-side (ventral) front of abdomen (sternites). Palp scaled dark basally and pale apically with narrow pale bands on all segments
…… Anopheles meraukensis (usually inland species)

An. meraukensis

Paired white spots on sternites

basal palp mostly black

apical palp mostly white

dense bright yellow scales on tergites

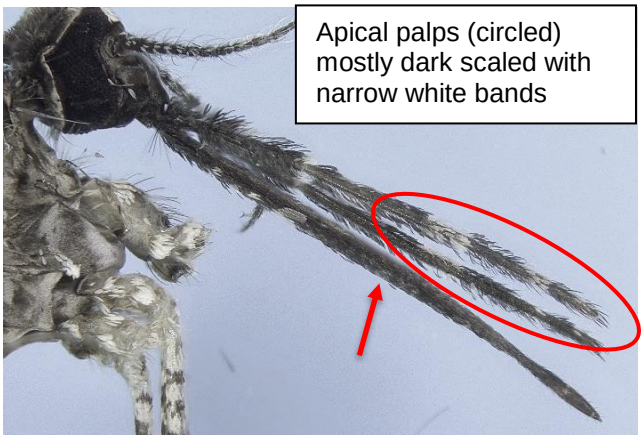
4B Sternites with pale scaling but without distinct pale paired patches **5**

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

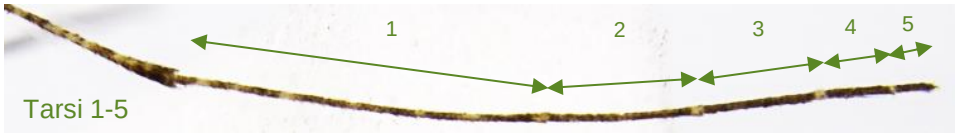
5

5A Apical (away from body) section of the palp mostly dark scaled, proboscis all dark, hind tarsi 2-4 dark with apical white scales only ……..…… ***Anopheles amictus*** (usually freshwater species)

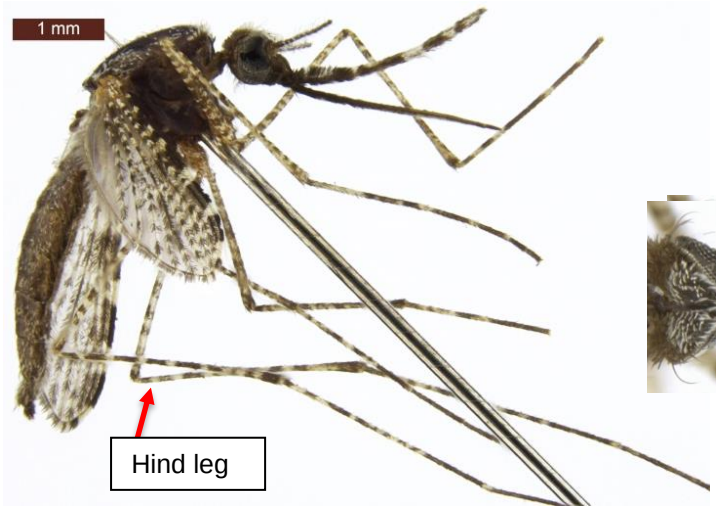
An. amictus



Hind tarsi 2-4 dark scaled with apical white scales - at end of segments only



5B Apical palp mostly pale scaled, proboscis all dark ……..... ***Anopheles hilli*** (usually coastal)



An. hilli

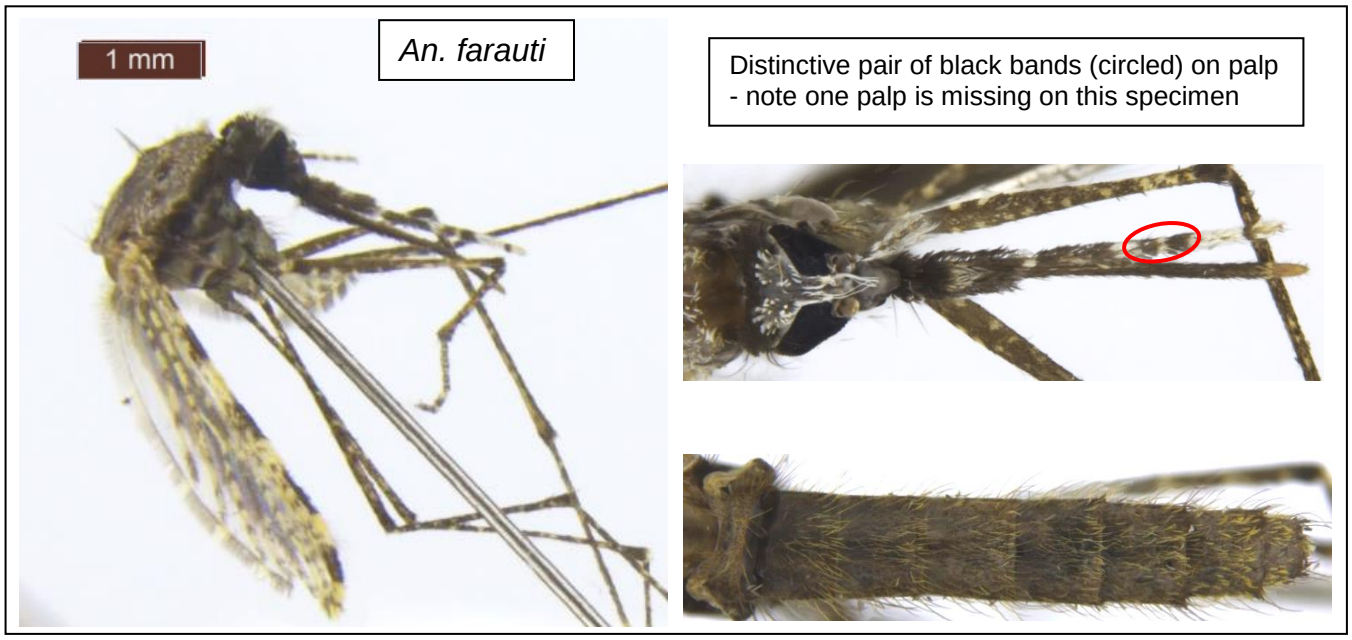
Apical palps (circled) mostly pale

Hind tarsi 2-4 dark scaled with white scales either side of joint (circled)

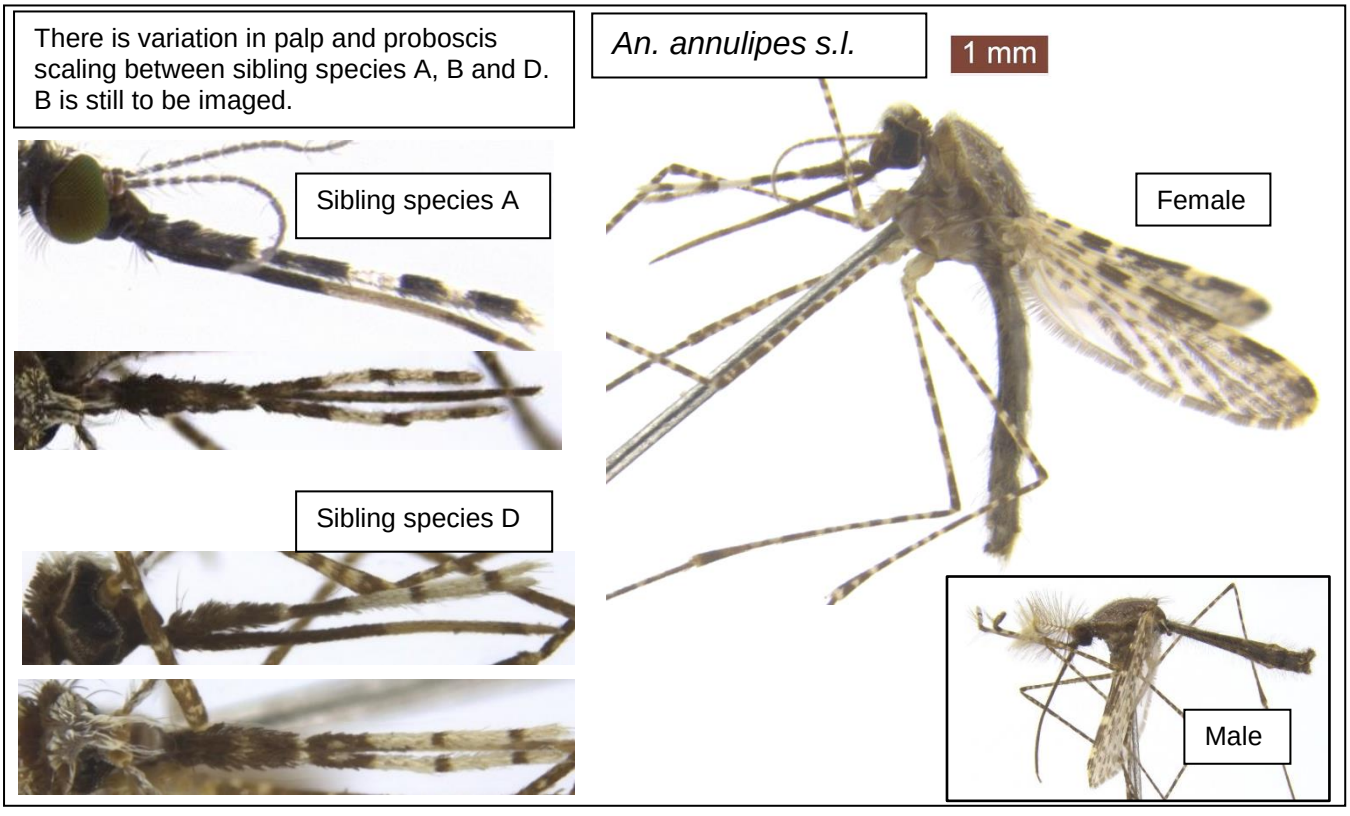
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

6

6A Palps with a distinctive close pair of dark bands near tip, proboscis dark …... ***Anopheles farauti*** ***1**



6B Palps variable without 'paired' bands, proboscis variable ……..…….. ***Anopheles annulipes s.l.***

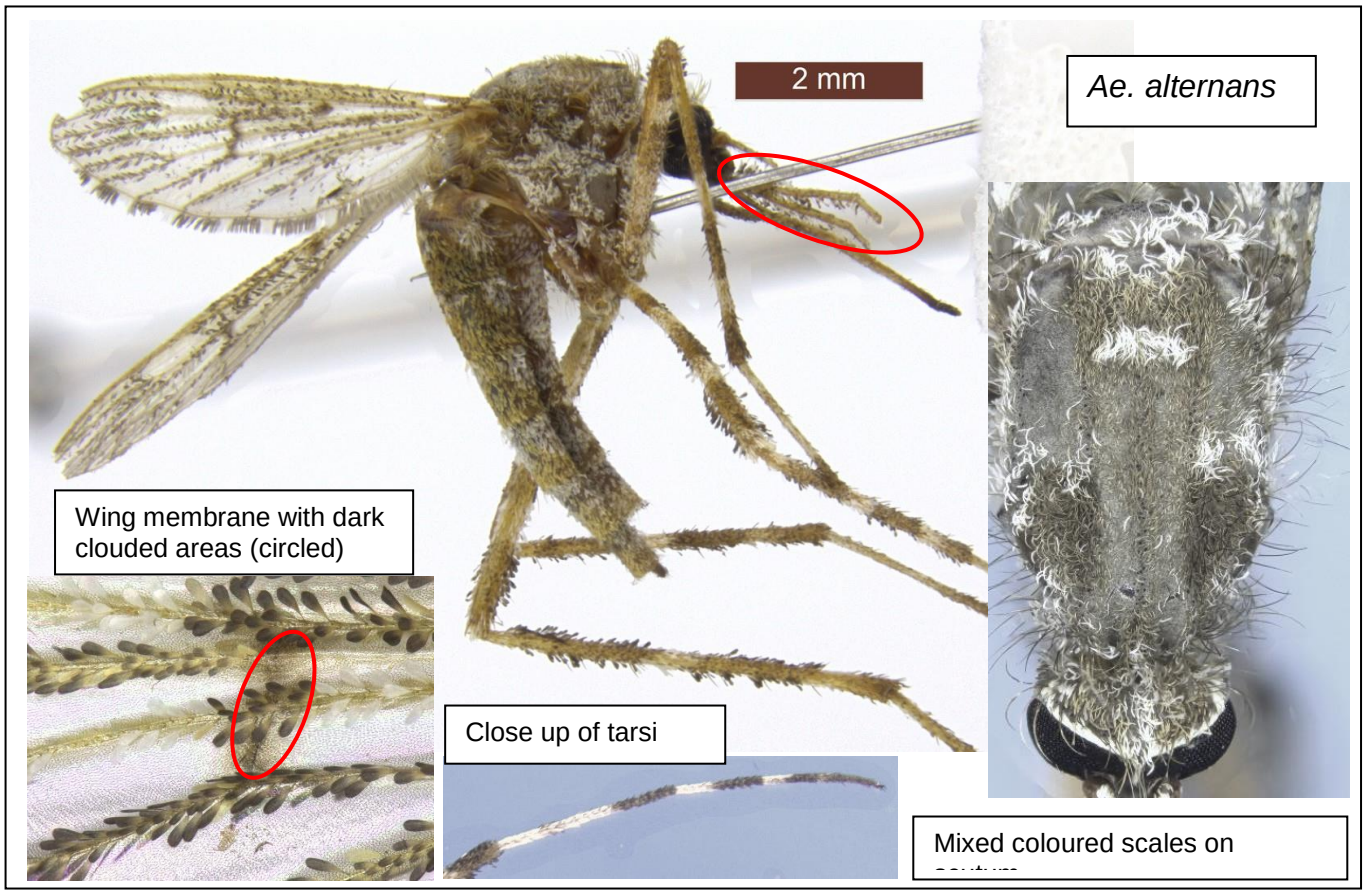


*1 *An. farauti* is a known vector of malaria outside Australia. If identified please send to Medical Entomology for confirmation.

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

7

7A Palps (circled) 1/2 – 3/5 length of proboscis, large mottled species 10-12mm long, shaggy appearance ……..…… ***Aedes alternans***



7B Palps (circled) less than ¼ length of proboscis **8**

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

8

8A Top of thorax (scutum) with creamy white scales and four strikingly contrasted longitudinal black stripes, large species ..... ***Aedes vittiger***

Ae. vittiger

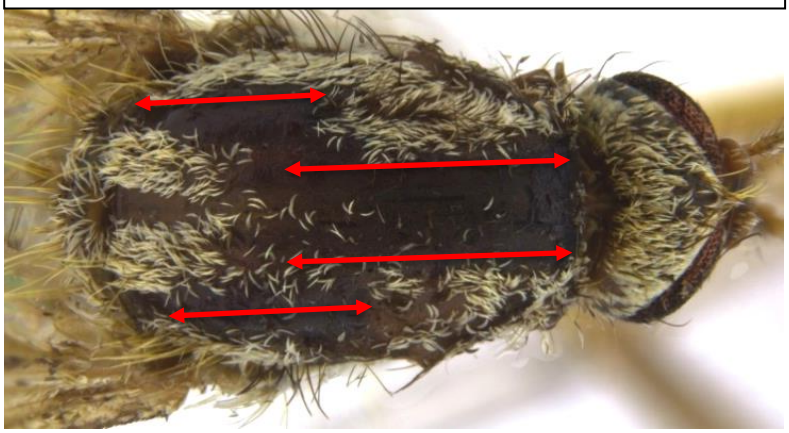
Tarsi of mid leg

Abdomen

Back - tergites

Front - sternites

Creamy white scales on scutum with longitudinal dark stripes (as indicated by arrows)

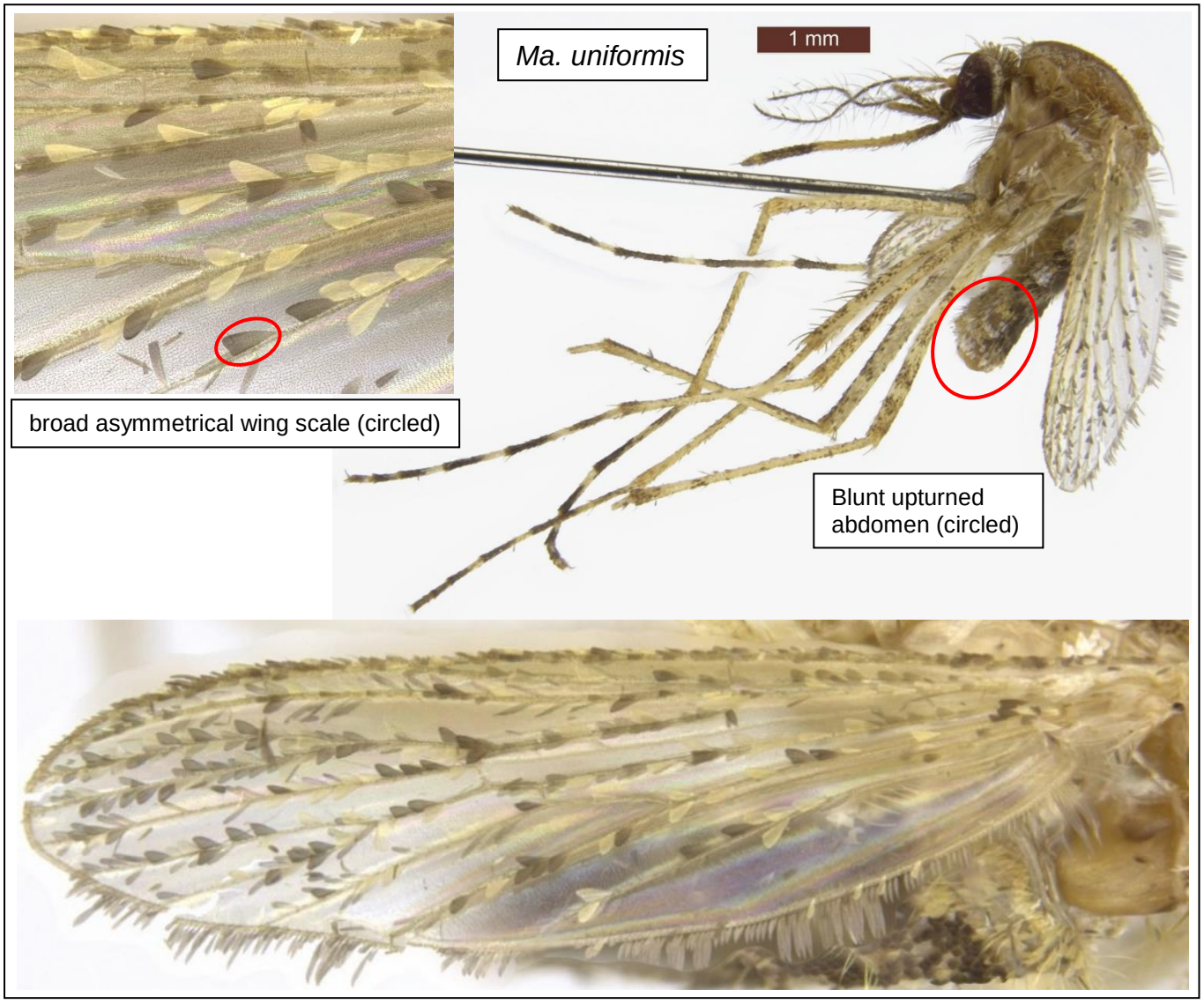


8B Scutum otherwise **9**

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

9

9A Pale mottled species, distinctive blunt upturned abdomen (circled), wing scales broad and asymmetrical …… ***Mansonia uniformis***

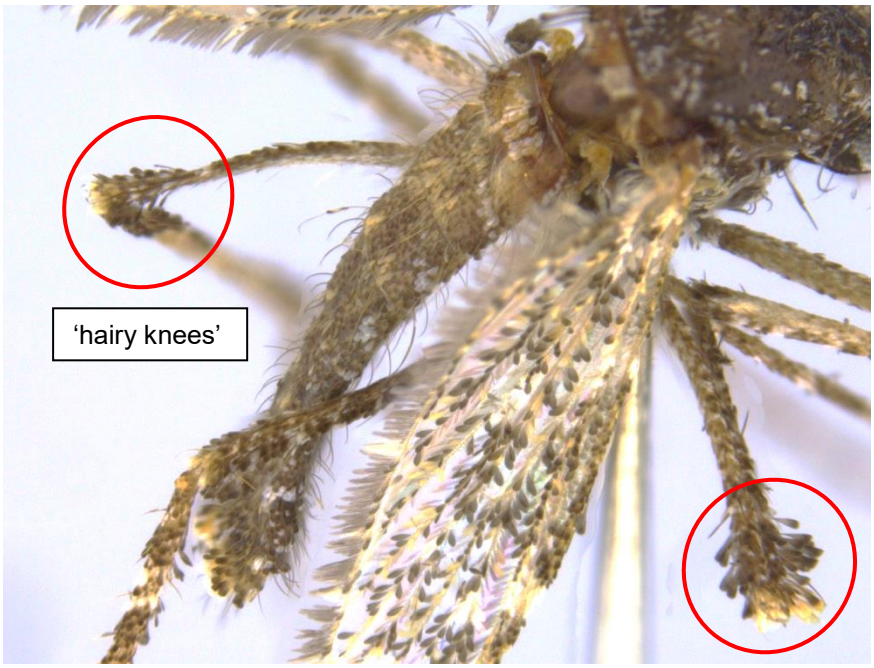


9B Colouring and abdomen otherwise, wing scales symmetrical (may be broad or narrow) **10**

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

10

10A Large sub-erect scales at end of femur (first leg segment) 'hairy knees' ……..…… **11**

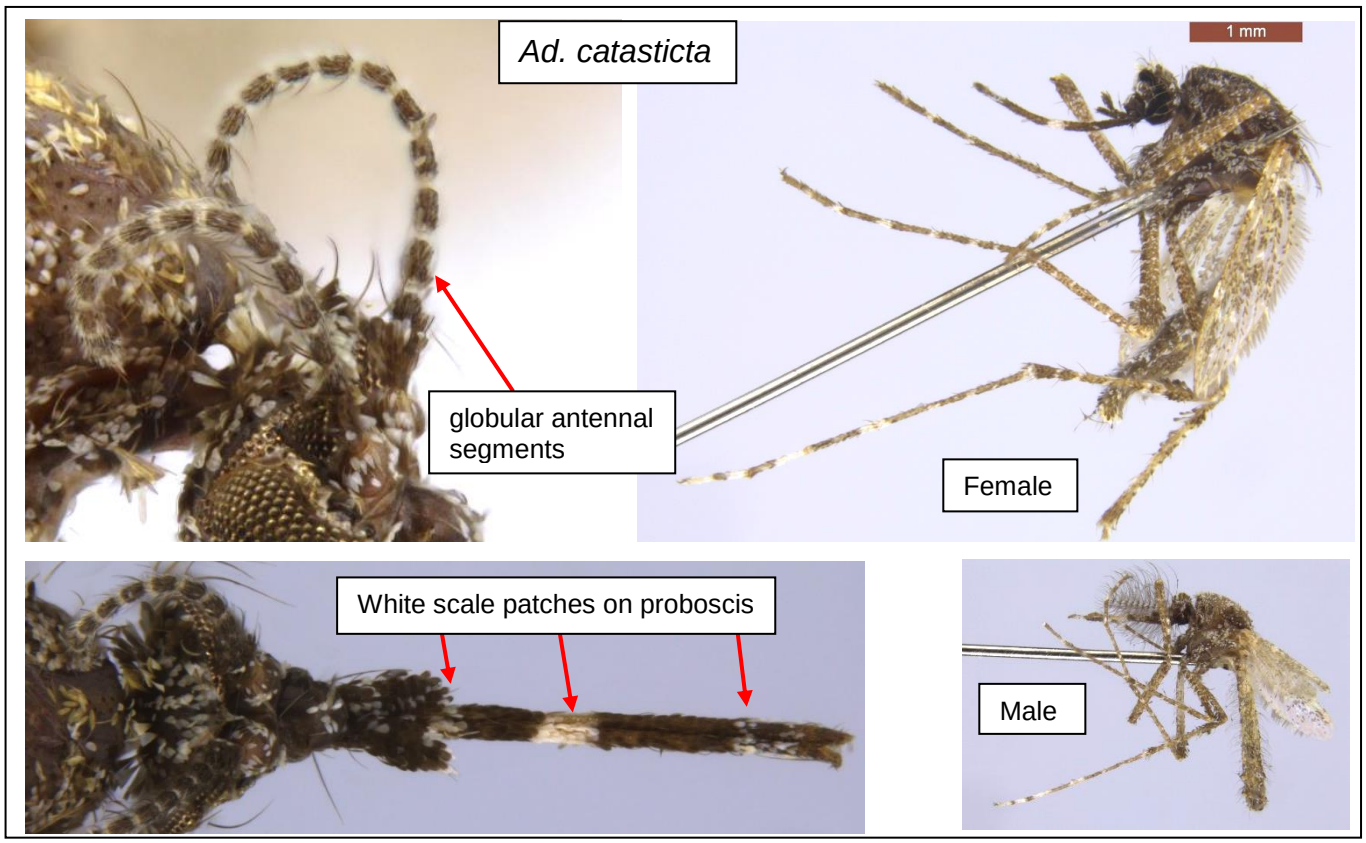


10B Scales at end of femur not upright ….....…...……....……...…….. **12**

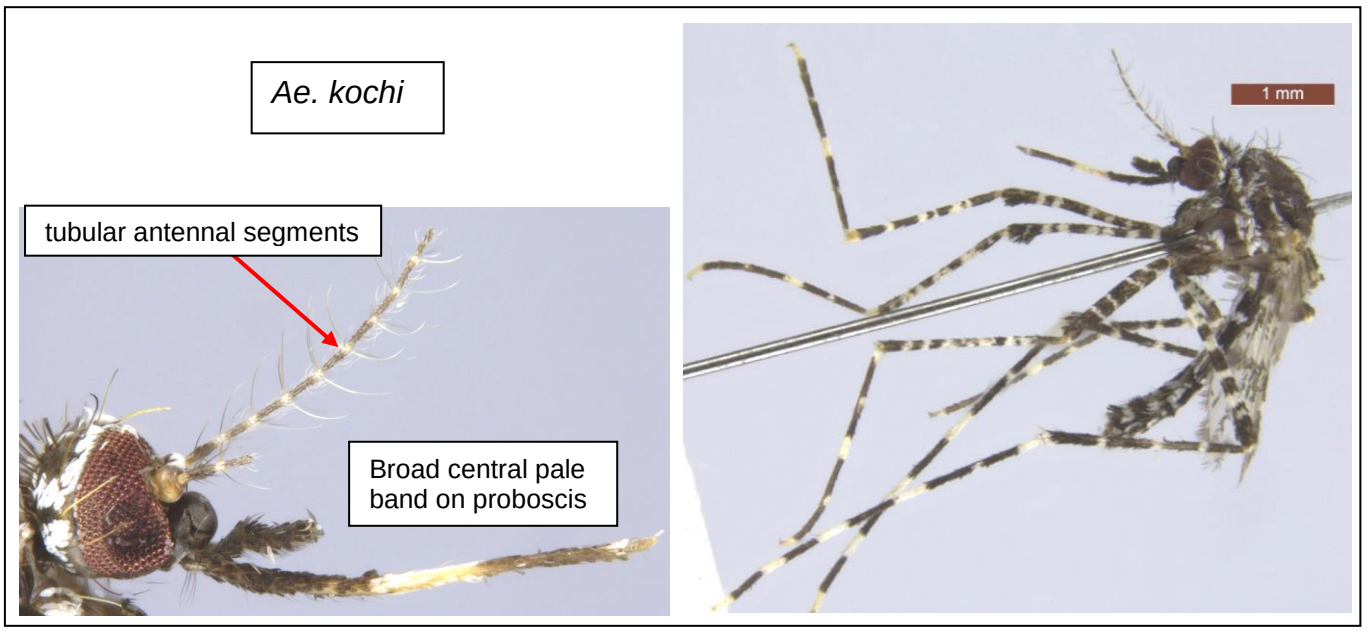
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

11

11A Antennae with short globular segments, proboscis with three small pale bands ..... ***Aedeomyia catasticta***



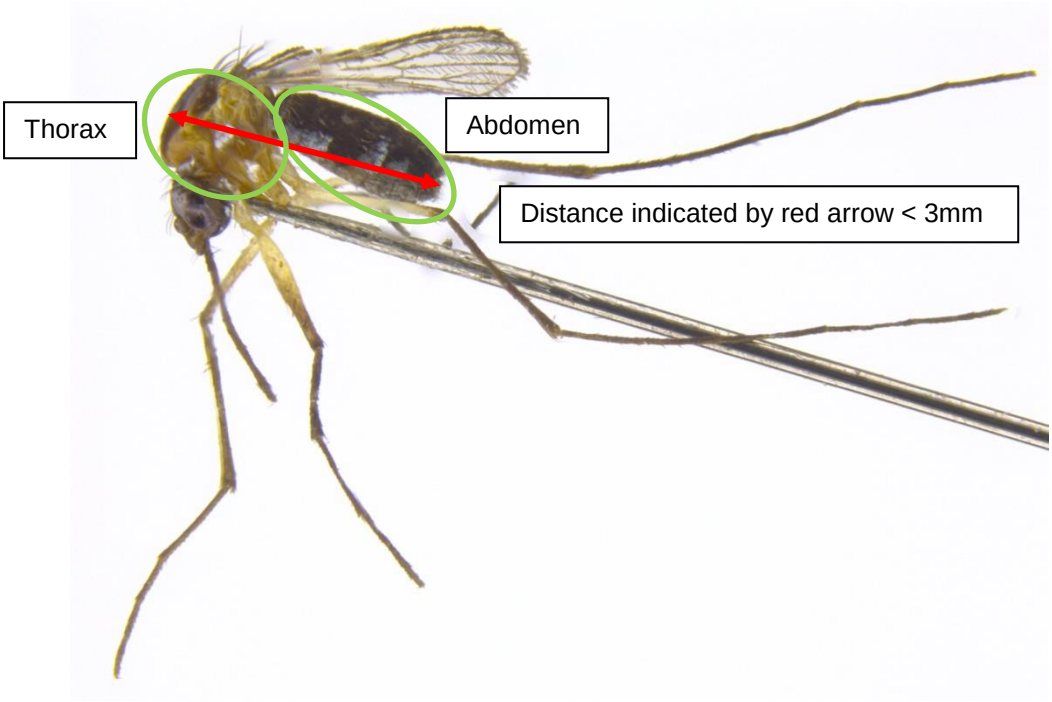
11B Antennae with tubular segments, broad central pale band on proboscis and some pale scales at tip ..... ***Aedes kochi***



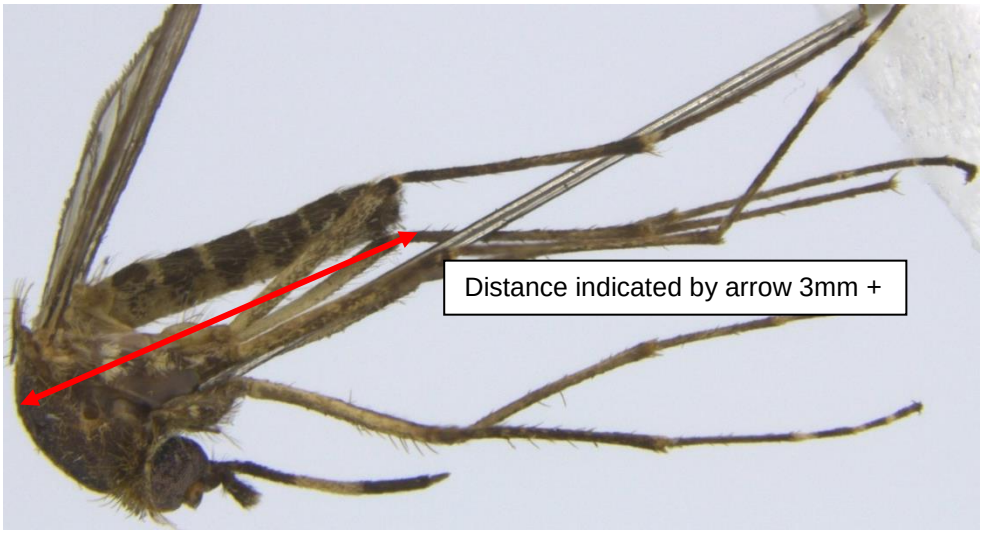
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

12

12A Very small to small species, top of thorax to tip of abdomen less than 3 mm **13**



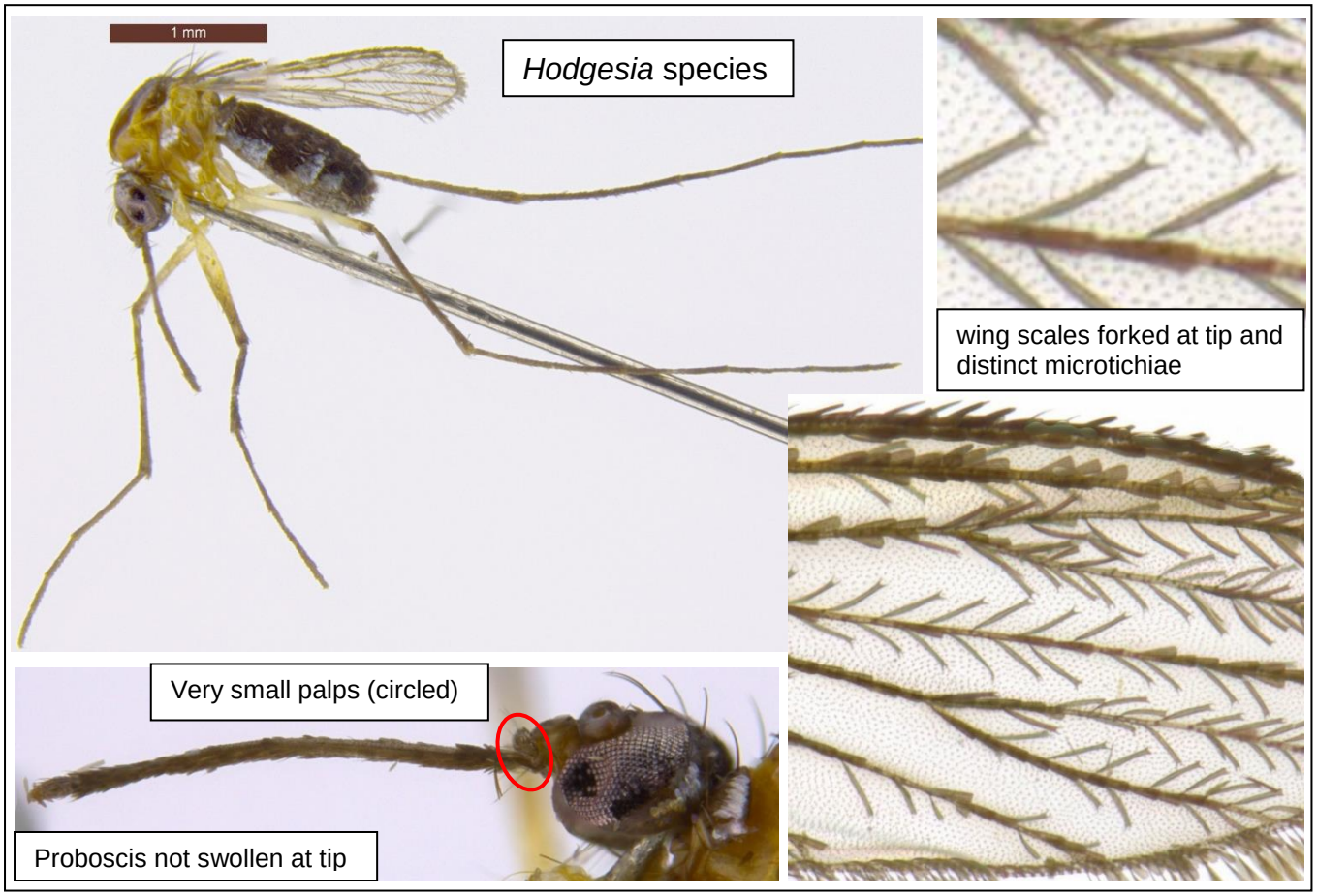
12B Variable size but not small, top of thorax to tip of abdomen more than 3 mm **15**



PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

13

13A Proboscis not swollen at tip, very small palps, wing scales with distinctive forked tip and distinct microtrichiae present on wing ..... ***Hodgesia*** **species**

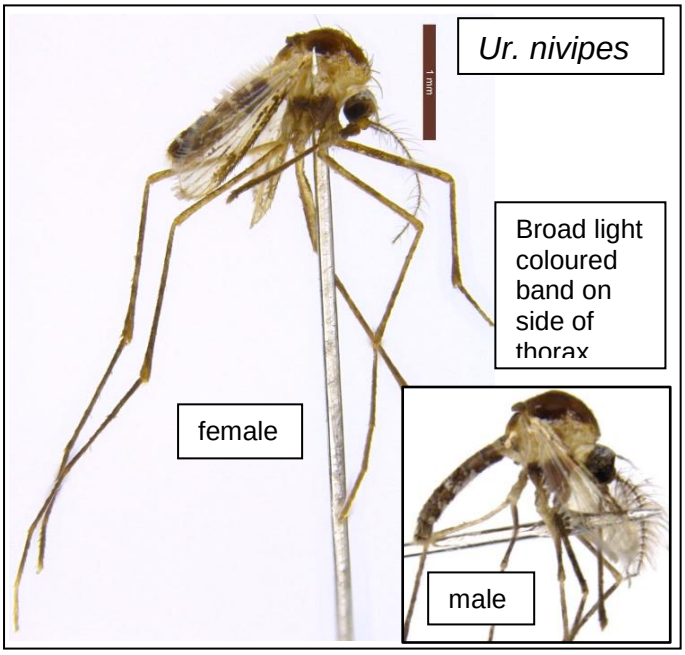


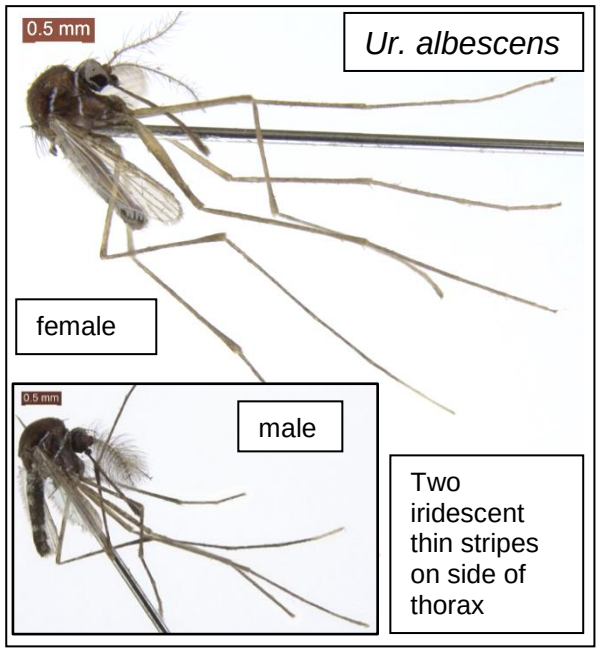
13B Proboscis usually swollen at tip, scales on wings not forked ……..... **14**

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

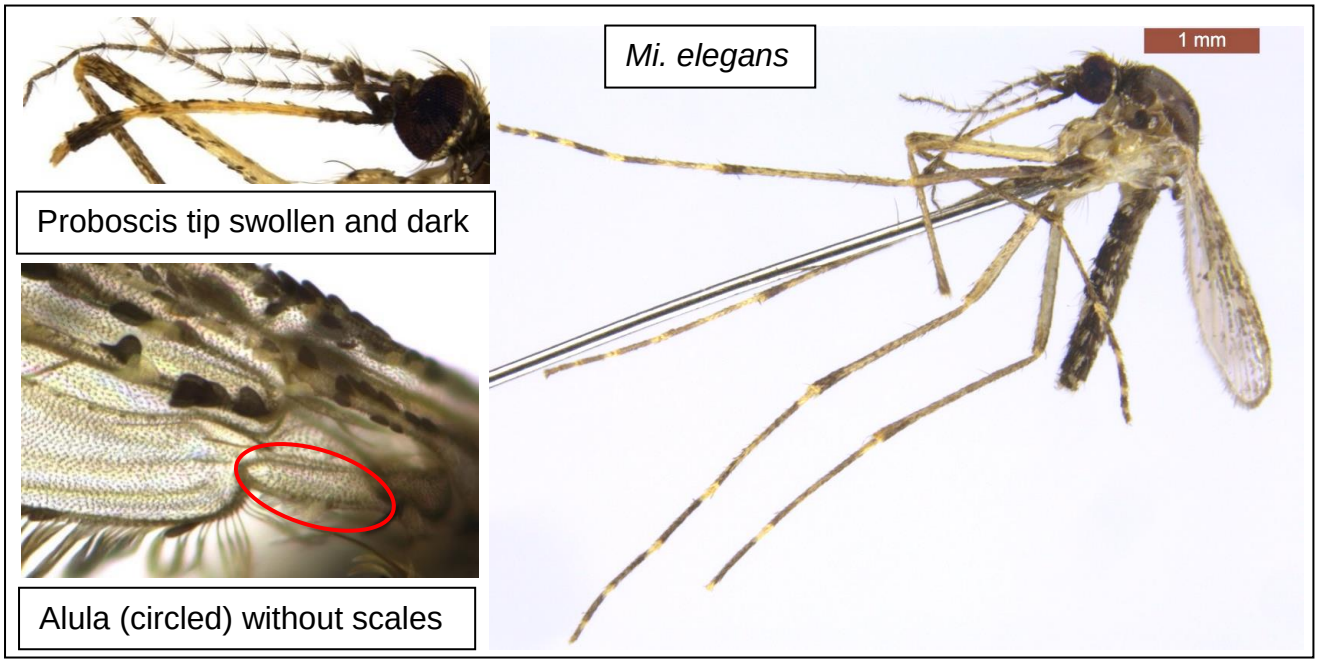
14

14A Very small species, side of thorax with distinct stripe(s), proboscis all dark ..... ***Uranotaenia* species**





14B Small species, top of thorax (scutum) covered in dark and golden scales, proboscis pale with swollen dark tip ..... ***Mimomyia elegans***



PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

15

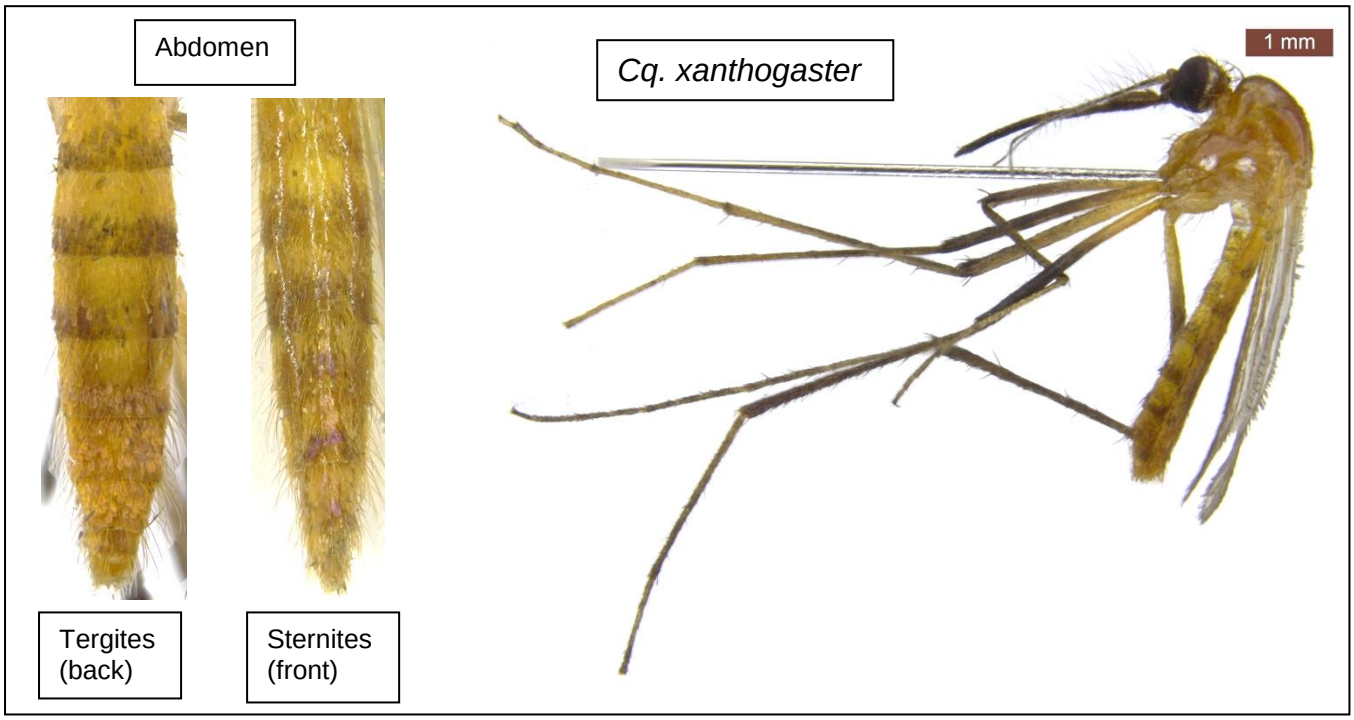
15A Thorax orange ……..……..…… **16**

15B Thorax not orange ……..……..…… **17**

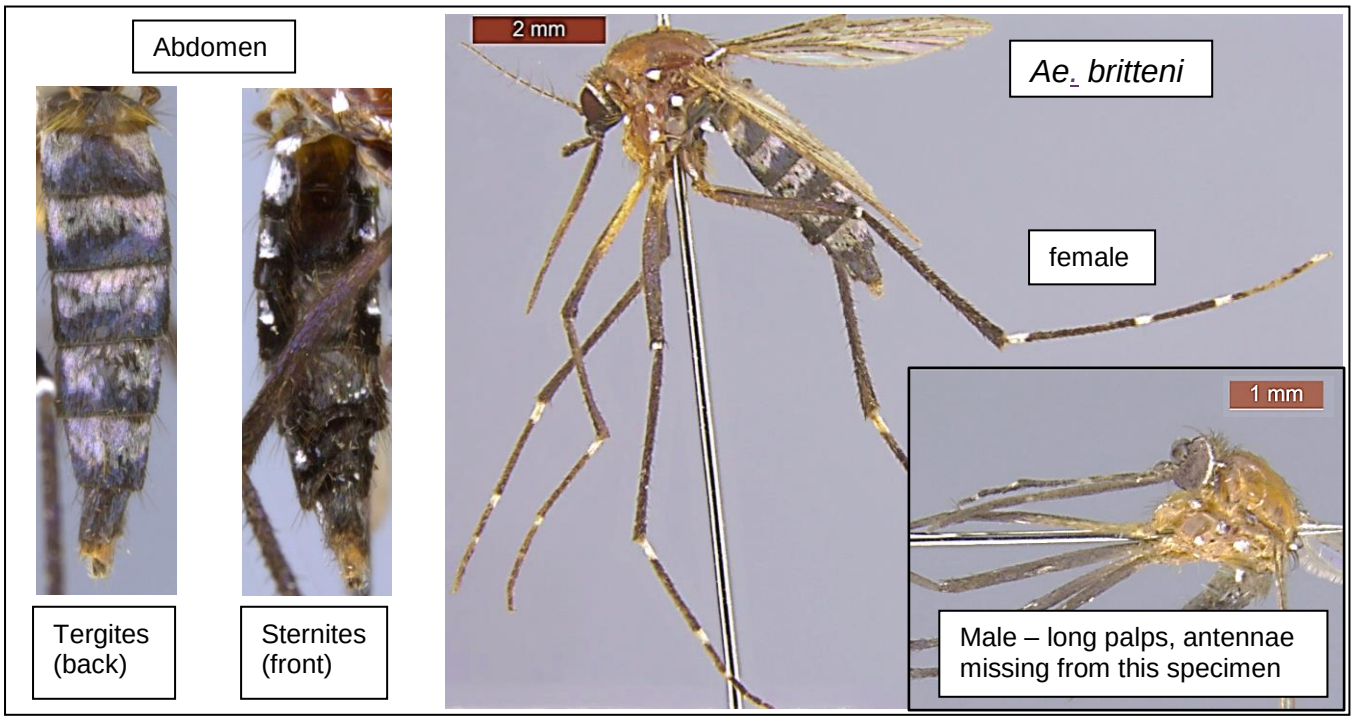
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

16

16A Abdomen orange with pale yellowish and purple scales ..... ***Coquillettidia xanthogaster***



16B Abdomen dark scaled with basal broad silver patches on tergites , sternites with silvery reflections ……..……. ***Aedes britteni***



PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

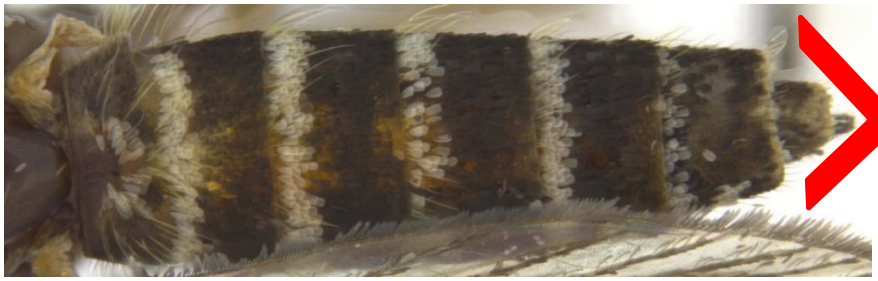
17

17A Tip of abdomen rounded (*Culex* species) ……..……..……..……..……..…… **18**

Rounded

17B Tip of abdomen pointed or blunt (*Aedes* and *Tripteroides* species) .....…..….. **23**

Blunt



Pointed

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

18 (rounded abdomen)

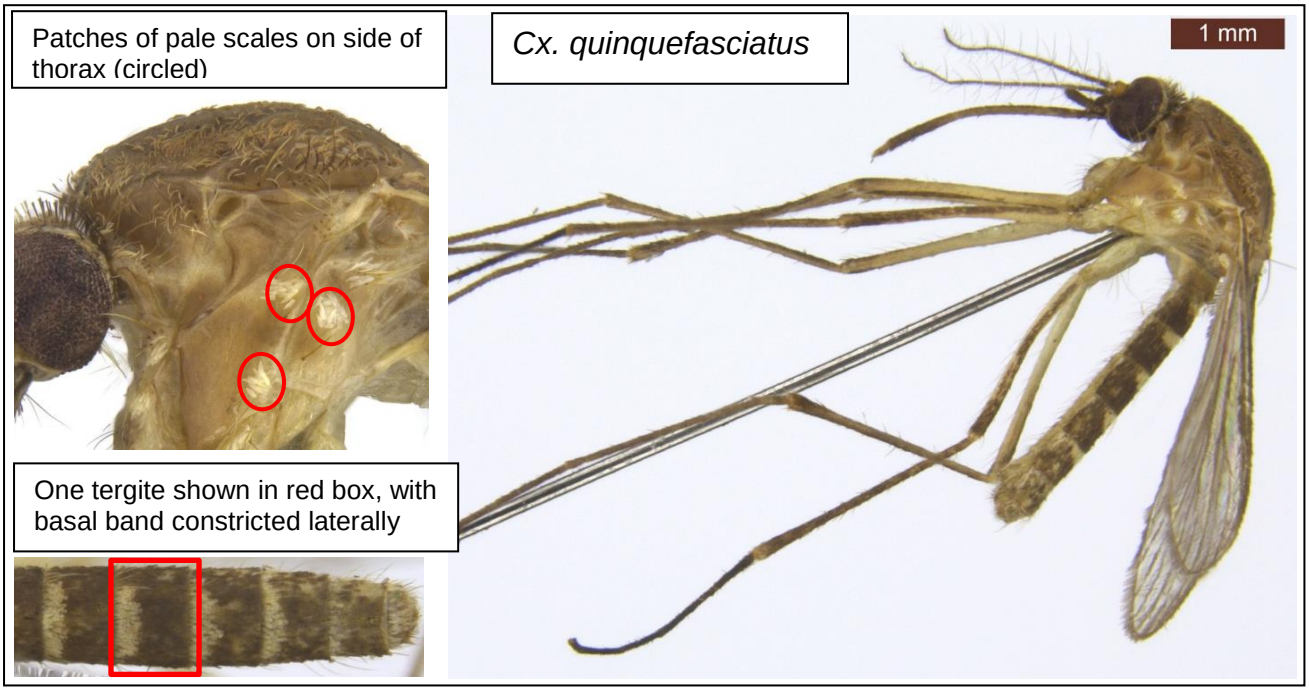
18A Proboscis without pale band ……..…… **19**

18B Proboscis with pale band ……..……..... **20**

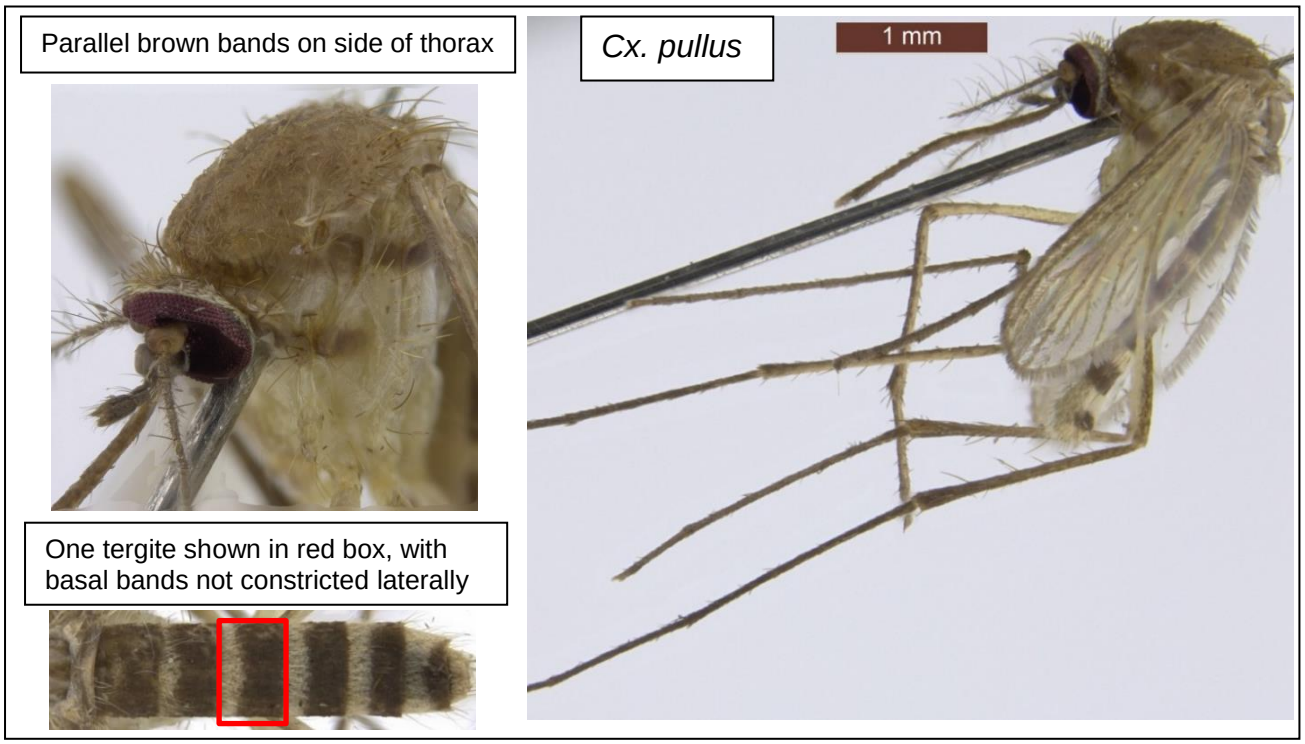
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

19 (unbanded proboscis)

19A Patches of pale scales on side of thorax, basal bands on tergites with lateral constrictions (not extending to side of abdomen) …..…….. ***Culex quinquefasciatus*** (usually found in urban areas) ***2**



19B Side of thorax bare of scales but with two distinct parallel brown bands (not scales) … ***Culex pullus***



*2 Many other *Culex* species may key out here. Please refer to Species Description Sheets or more complex keys to differentiate species that do not fit *Cx. quinquefasciatus* description.

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

20 (banded proboscis)

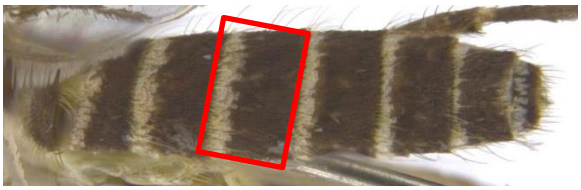
20A Tergites have apical (away from body) orange/cream bands, large dark species ……..…… ***Culex bitaeniorhynchus***

Back of abdomen

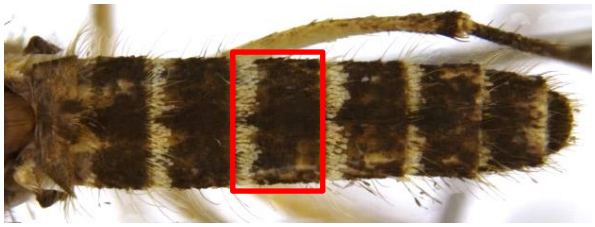
One tergite shown in red box, with apical orange/cream bands

20B Tergites have straight or indented basal (towards body) pale bands …….. **21**

Straight basal bands

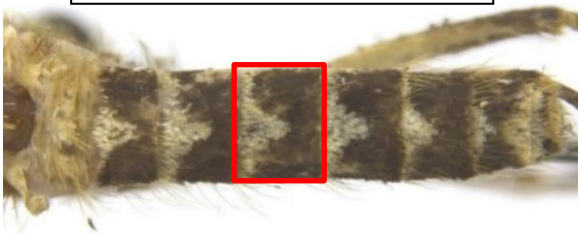


Indented basal bands



20C Tergites have basal pale bands with median points ……..…….. **22**

Basal bands with median points

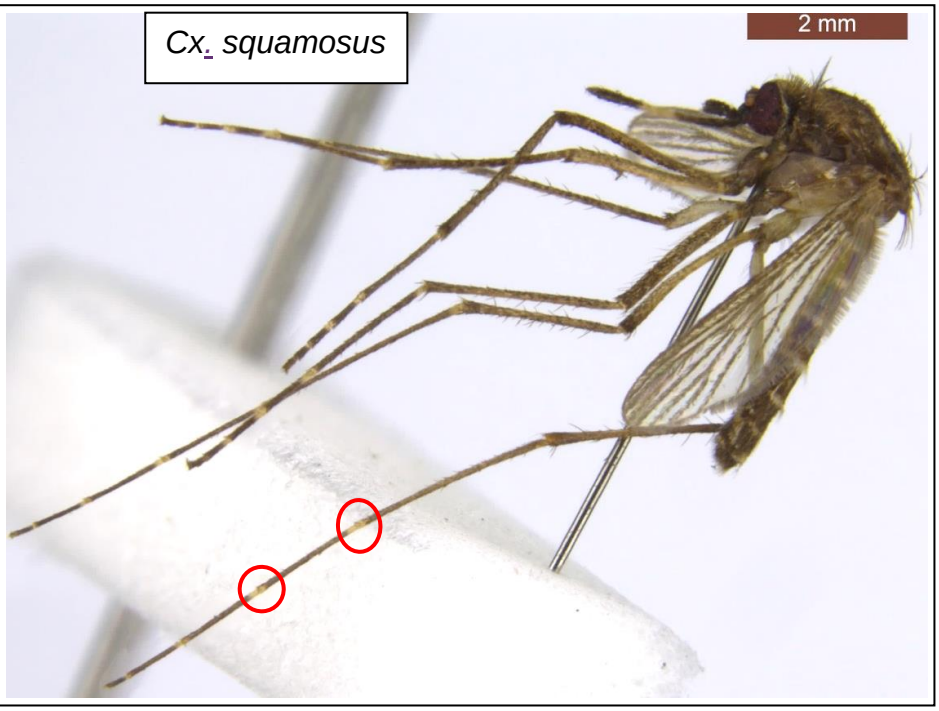


PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

21 (straight or indented basal bands)

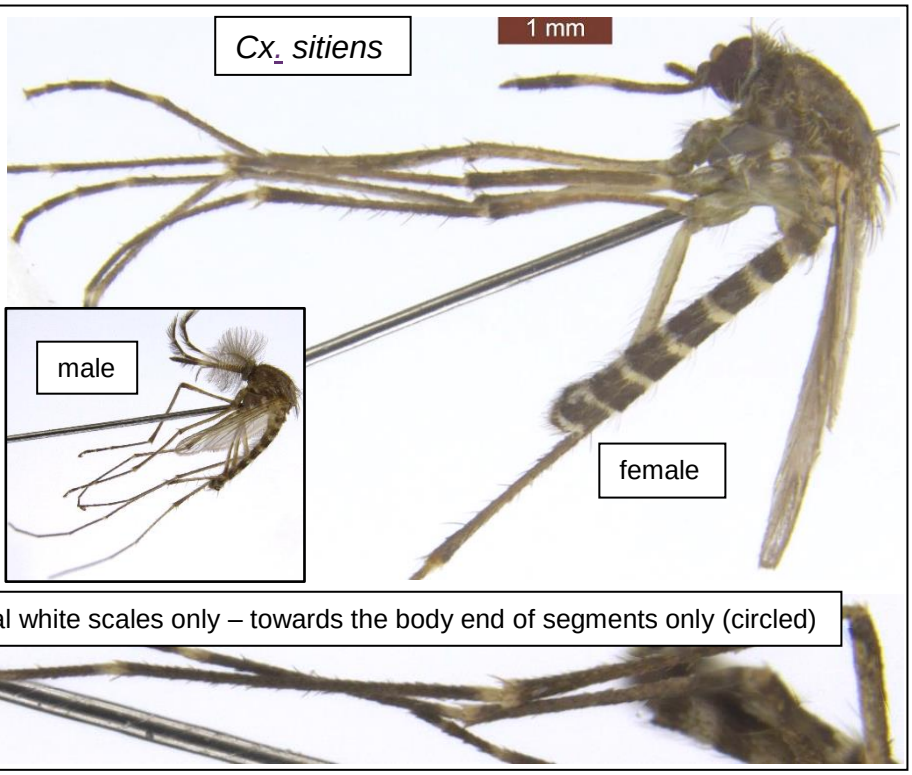
21A Tergal basal bands are indented at midline (indicated by arrow), large dark species …… ***Culex squamosus***

One tergite shown in red box, with indented basal



21B Straight tergal basal bands, pale band on proboscis ~1/5 length of proboscis ……. ***Culex sitiens***

One tergite shown in red box, with straight basal band



PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

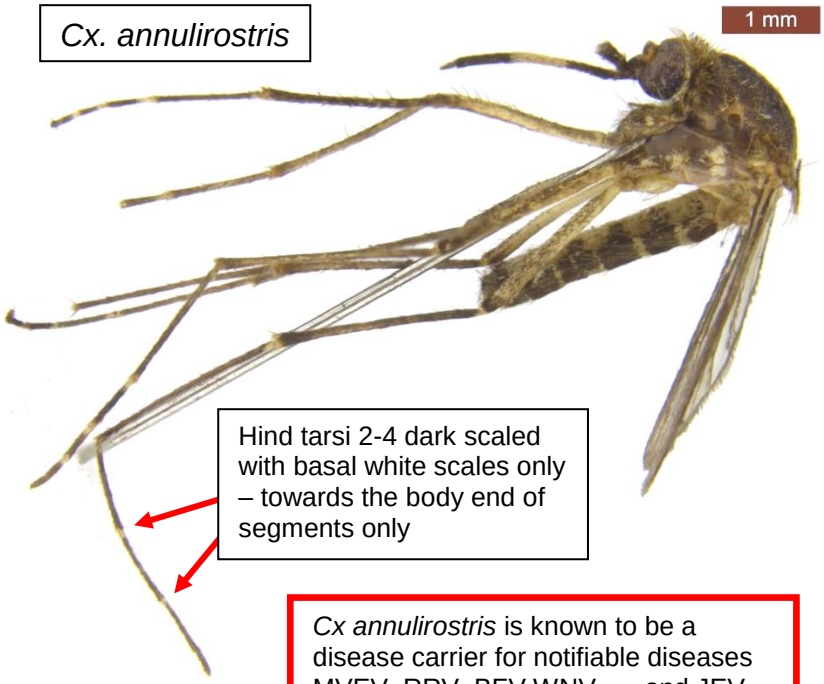
22 (basal bands with median point)

22A Pale band on proboscis ~1/3 length of proboscis ..... ***Culex annulirostris* *3**

Scutum without white scales

Tergites

Cx. annulirostris



Hind tarsi 2-4 dark scaled with basal white scales only – towards the body end of segments only

Cx annulirostris is known to be a disease carrier for notifiable diseases MVEV, RRV, BFV WNV_{KUN}, and JEV

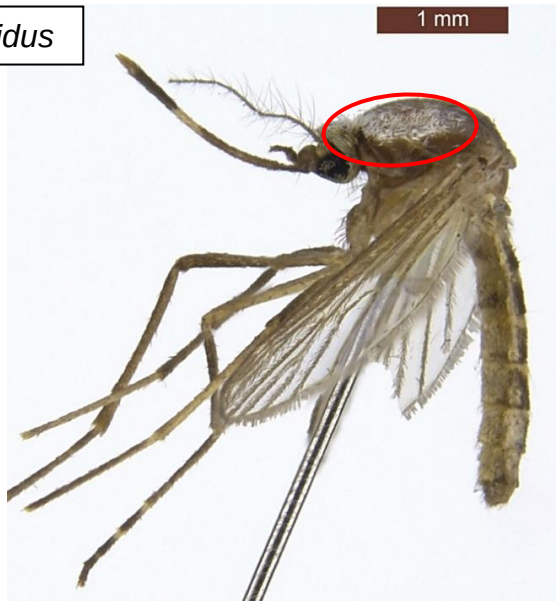
22B White scales on top of thorax (scutum - circled) ……..... ***Culex gelidus* *4**

White scales on scutum - note some scales are missing from this specimen

Tergites

Sternites

Cx. gelidus



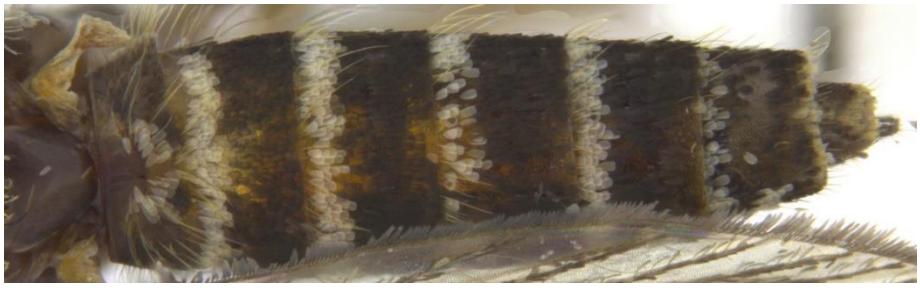
*3 *Cx palpalis* and *Cx. crinicauda* are difficult to separate from *Cx. annulirostris* and may also key out here. *Cx. palpalis* has less distinct median point on tergal bands. It is usually found breeding in permanent or semi-permanent water holes. *Cx crinicauda* has distinct scutal scaling pattern of mostly white anterior half with small dark patches at the side (fossa).
*4 *Cx. gelidus* is a known vector of Japanese encephalitis virus. It may be confused with *Cx. starckeae* and *Cx. vicinus* that also have pale scaling but only on the front 2/3 of scutum. If identified, please send to Medical Entomology for confirmation.

PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

23

23A Tip of abdomen blunt ……..……..……..……..…..…. **24**

23B Tip of abdomen pointed ……..……..……..…..…. **26**



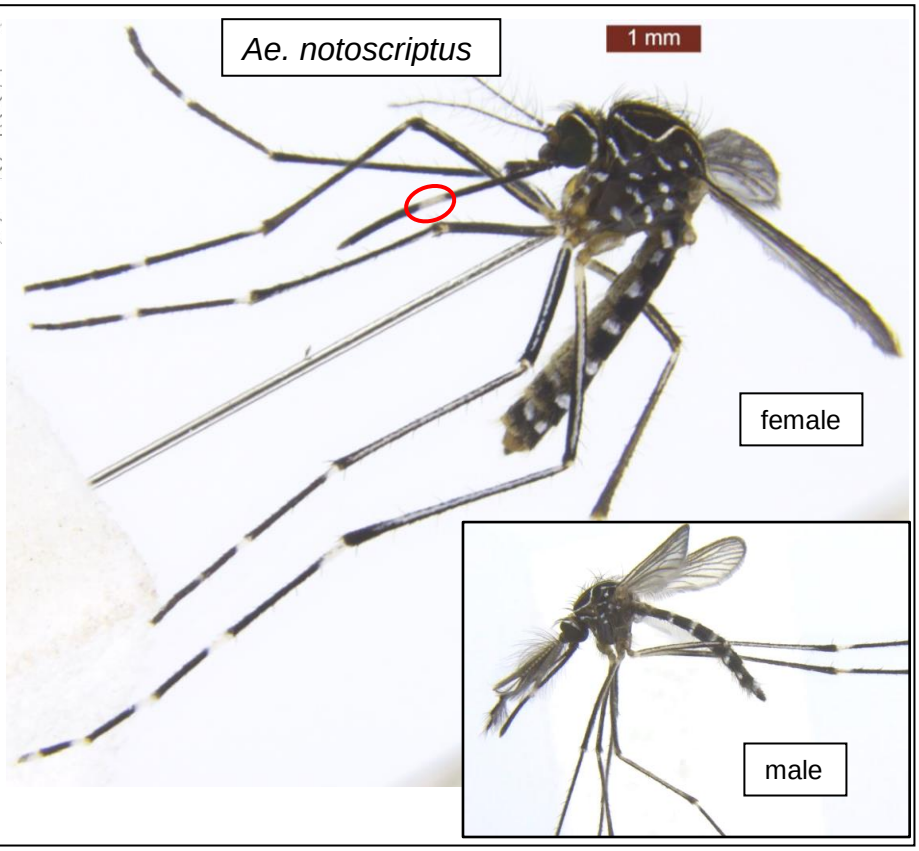
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

24

24A Proboscis with narrow but distinct central pale band (circled), top of thorax (scutum) with distinct silver/gold lyre shaped pattern ……..……..... ***Aedes notoscriptus* *5**

'lyre' pattern on scutum

Abdomen - Back and front



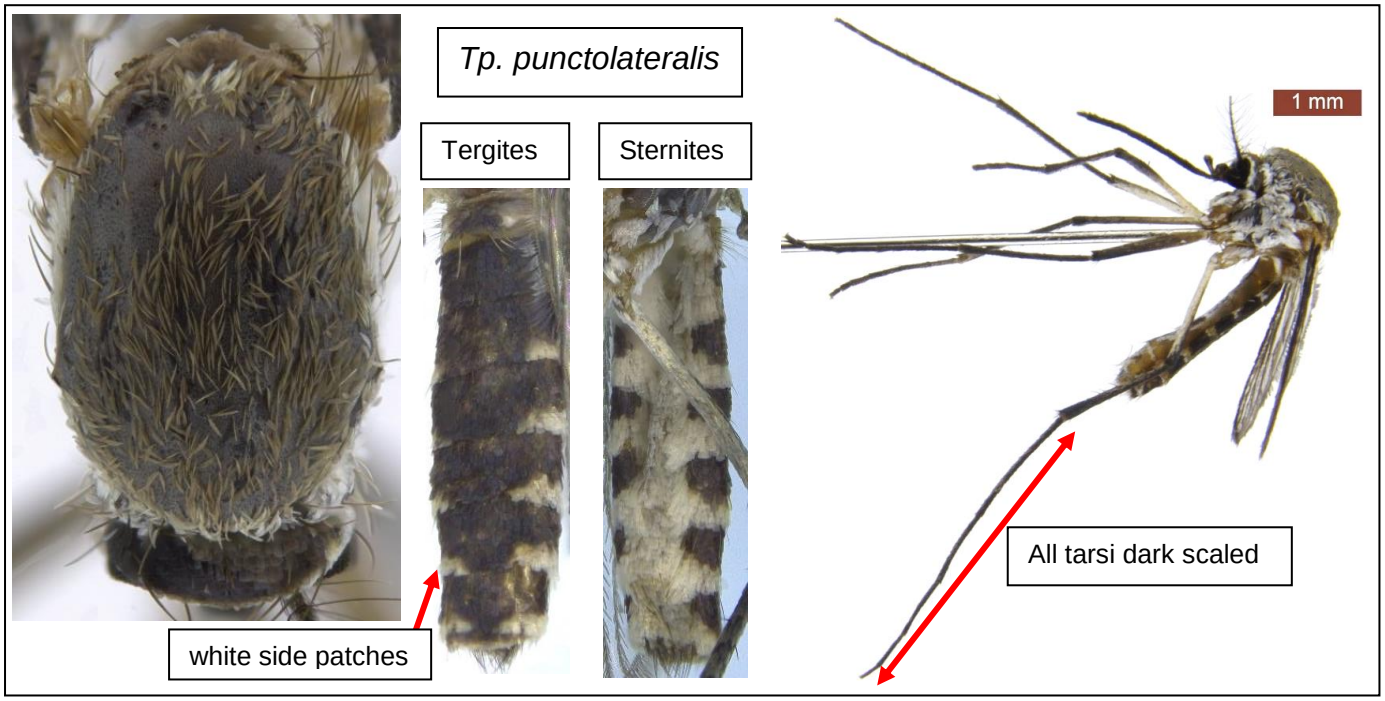
24B Proboscis all dark, or with some pale scales but no band ..……..…….....……..... **25**

**5 Ae. aegypti* and *Ae. albopictus* appear similar to *Ae. notoscriptus*. Although *Ae. aegypti* has a similar lyre pattern to *Ae. notoscriptus* it does not have a white band on the proboscis. *Ae. albopictus* has a dark proboscis and a distinct white median stripe on the scutum similar in appearance to *Ae. katherinensis*. These are exotic species of major concern as they are known vectors of many viruses including Dengue, Zika and Yellow Fever viruses. If these species are suspected the sample must be forwarded to Medical Entomology for confirmation.

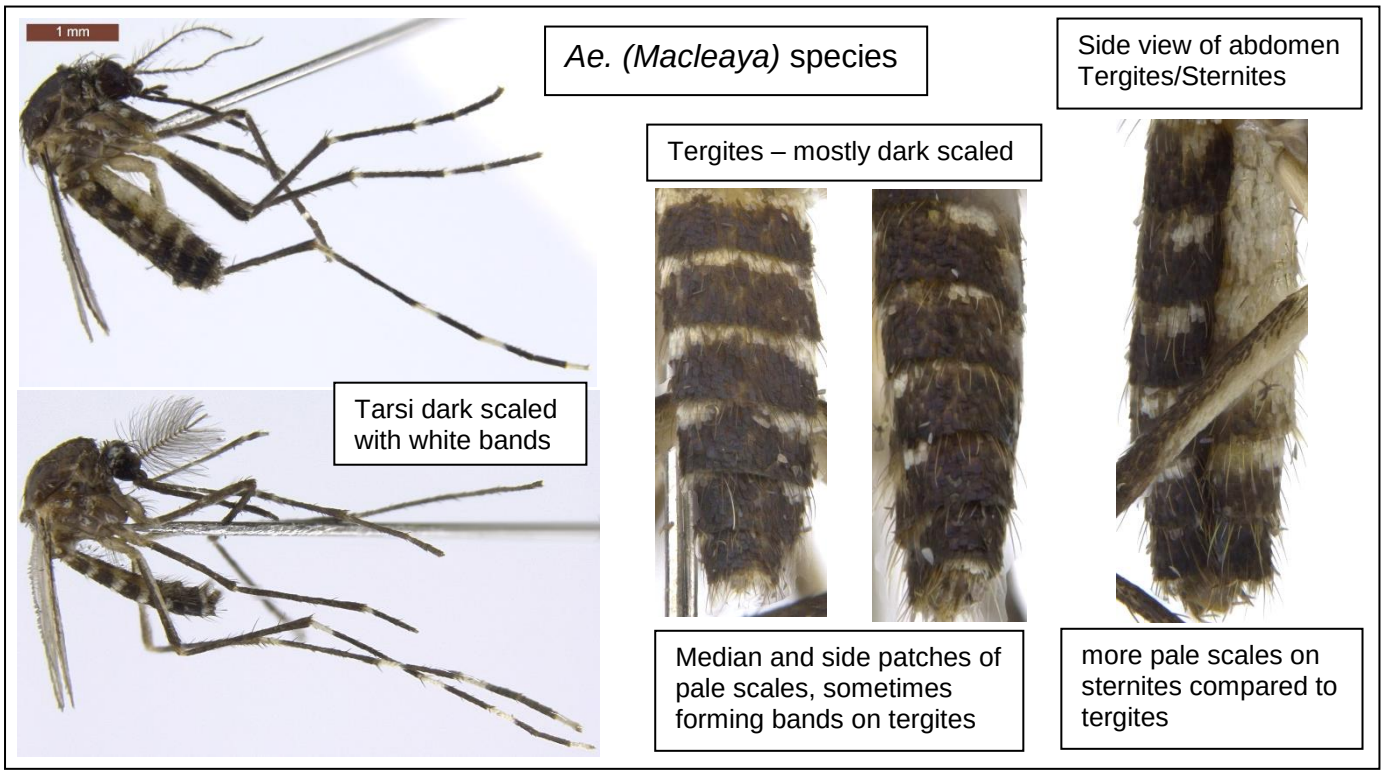
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

25

25A Lower leg segments (tarsi) all dark, back of abdomen (tergites) dark scaled with white patches at the side of each segment (indicated by arrow), side of thorax densely covered in broad white scales (circled) ……..... ***Tripteroides punctolateralis***



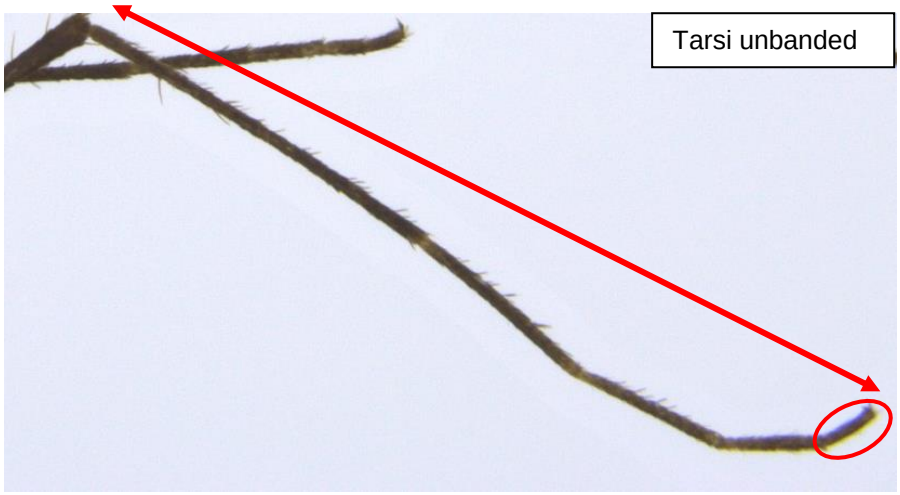
25B Tarsi dark scaled with white bands, tergites dark with variable (between species) patches of pale scales in the middle and at the side of each segment …. ***Aedes (Macleaya)* species** (this sub genus contains several species but it is generally not necessary for vector surveillance to differentiate to species level)

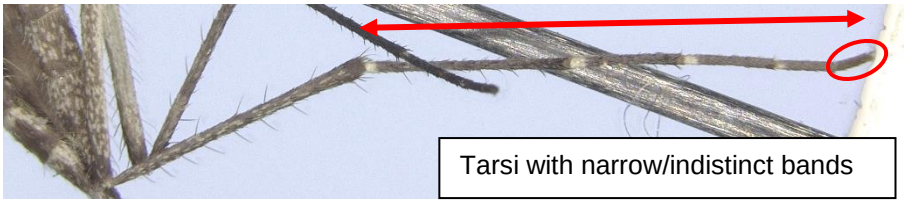


PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

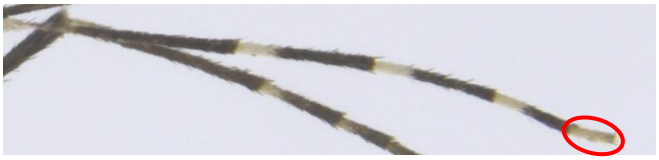
26

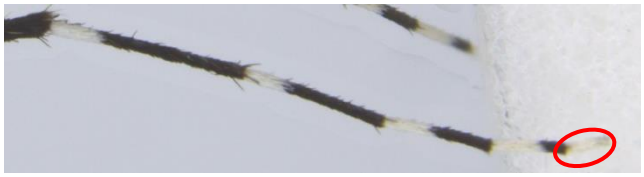
26A Tarsi (indicated by arrow) unbanded or with narrow or indistinct bands (< 1/8 length of segment), tarsal segment 5 all dark (circled) ..…….. **27**





26B Tarsi with broad white bands (at least 1/6th the length of segment), tarsal segment 5 all white or with some white scales (circled) ……..... **28**

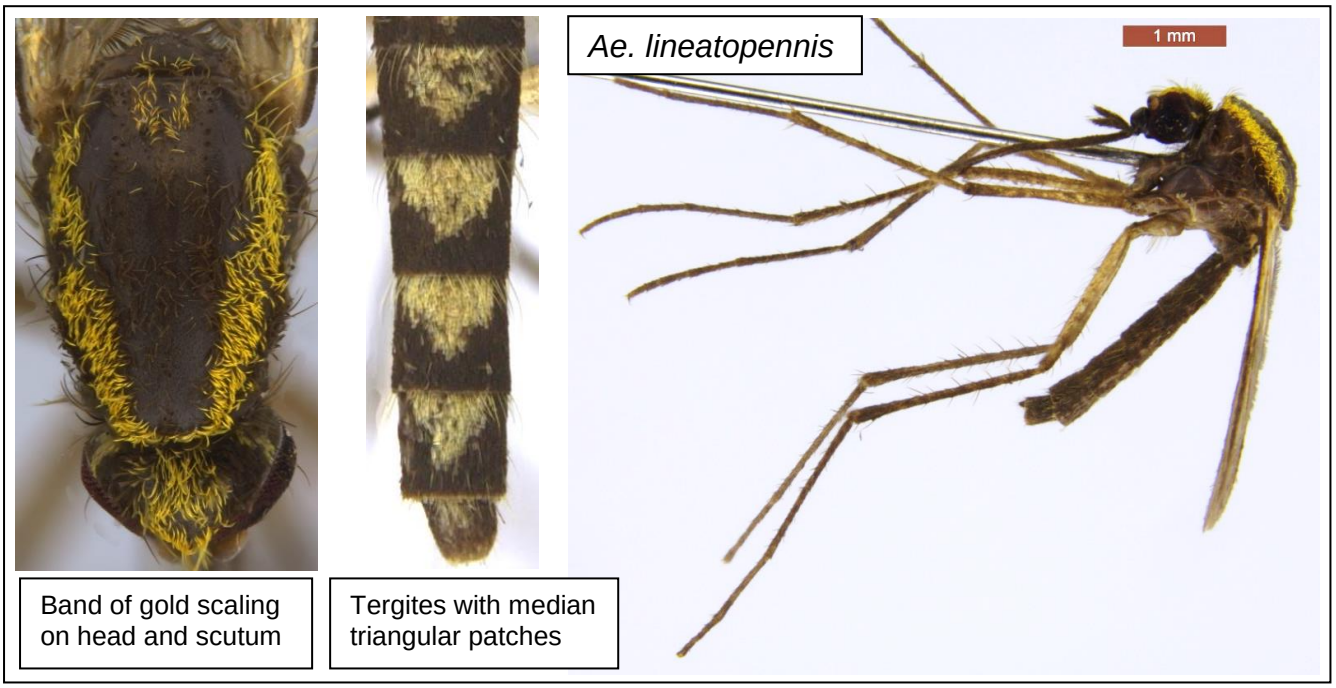




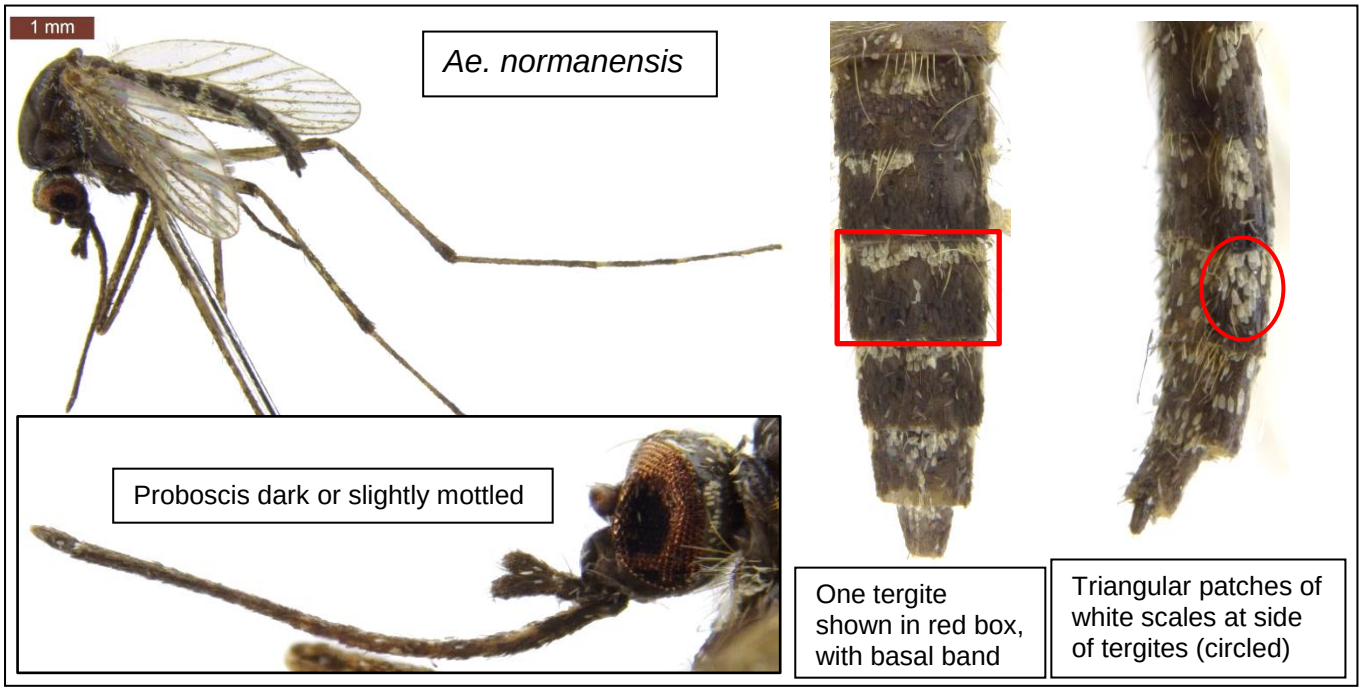
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

27

27A Bright yellow/gold scaling on head continuing as broad band along sides of top of thorax (scutum), tergites (back of abdomen) with median triangular pale patches, tarsi all dark ..... ***Aedes lineatopennis***



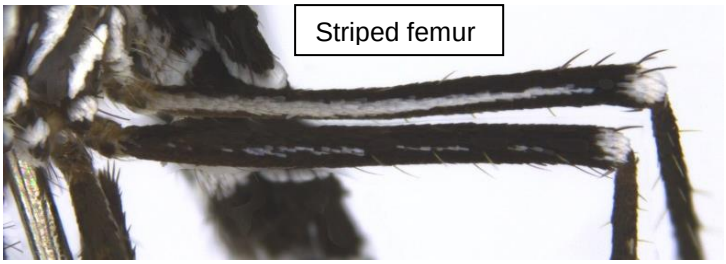
27B Tergites with pale basal (away from body) bands, triangular patches of white scales at side of abdomen, tarsi with narrow sometimes indistinct pale basal bands ……..……. ***Aedes normanensis***

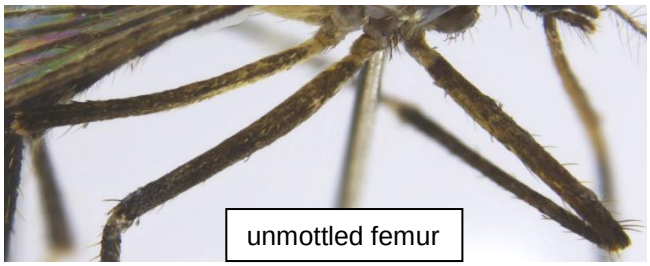


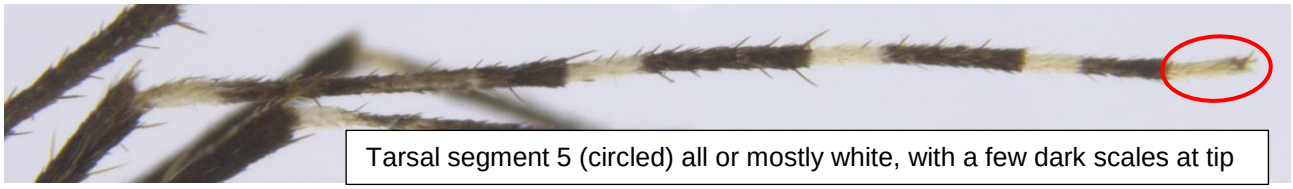
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

28 (broad tarsal bands)

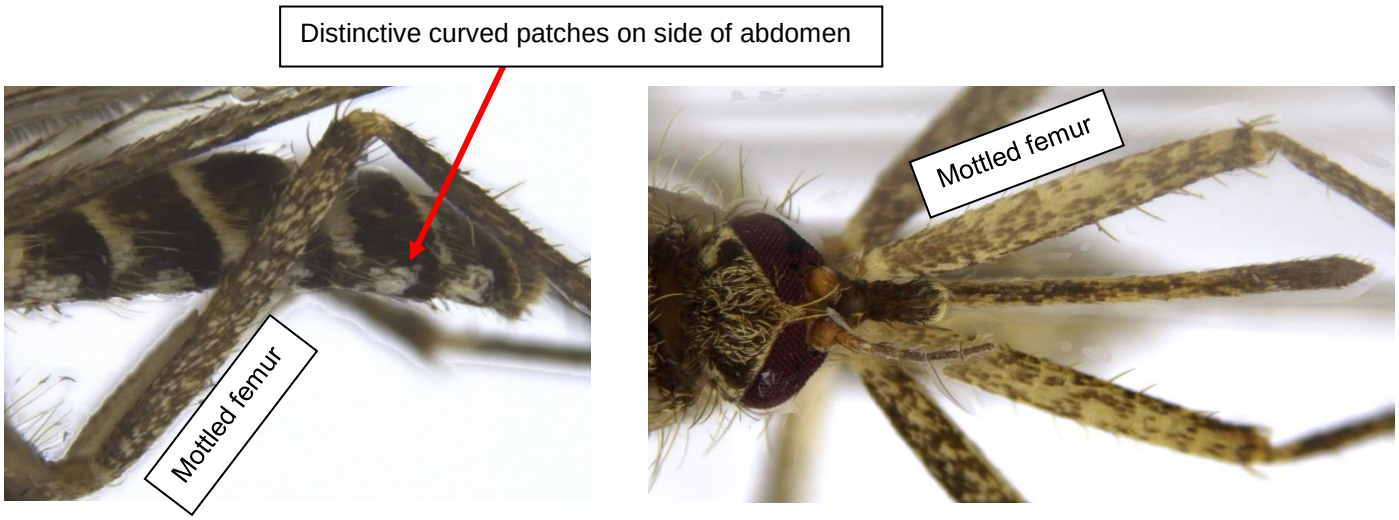
28A Femur (closest segment of leg to body) striped or unmottled, tarsal segment 5 all white or with a few dark scales at the tip at most **29**







28B Femur mottled, distinctive curved patch on side of abdomen, tarsal segment 5 (circled) with at most 3/5 white scales **30**



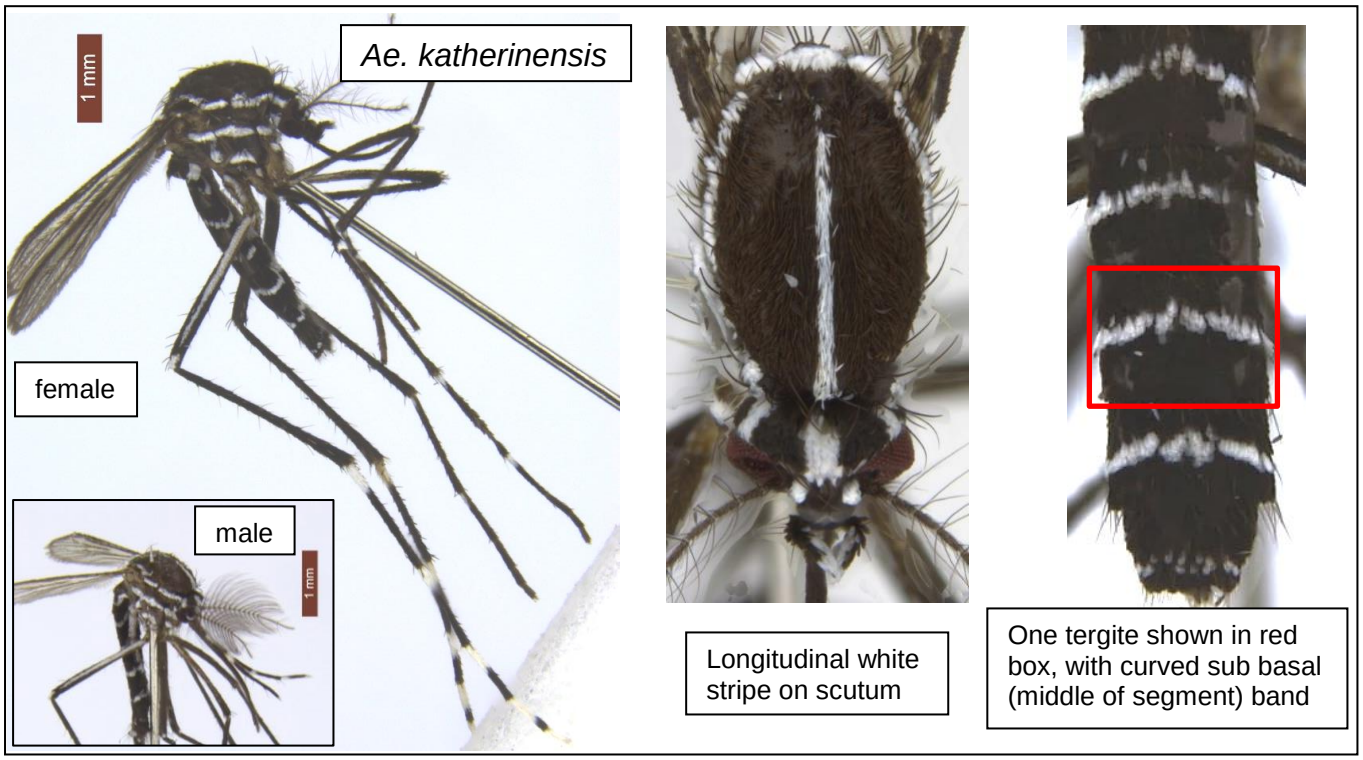
Tarsal segment 5 (circled) with white basal band 1/4 to 1/3 length of segment

Tarsal segment 5 (circled) with white basal band 1/2 to 3/5 length of segment

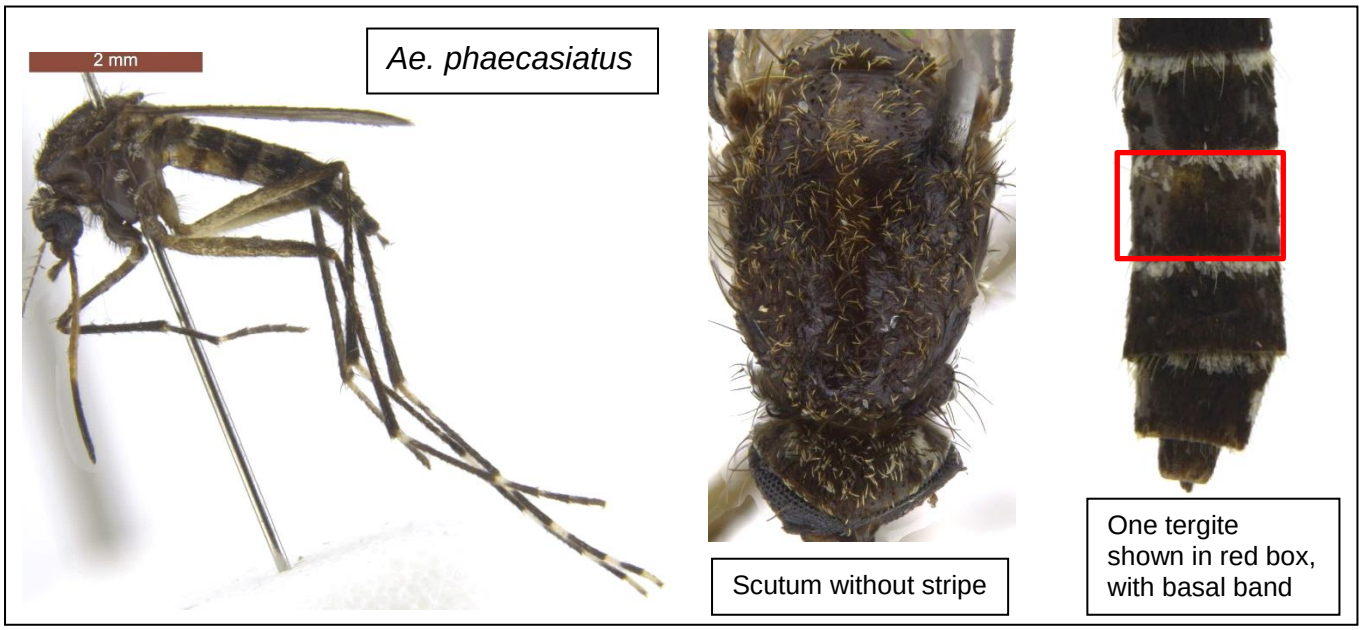
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

29 (tarsi 5 mostly white, unmottled femur)

29A Scutum (top of thorax) has vivid longitudinal white stripe, curved sub basal white bands on tergites ……..…….. ***Aedes katherinensis *6***



29B Scutum without white stripe, tergites with pale basal bands ..... ***Aedes phaecasiatus *7***

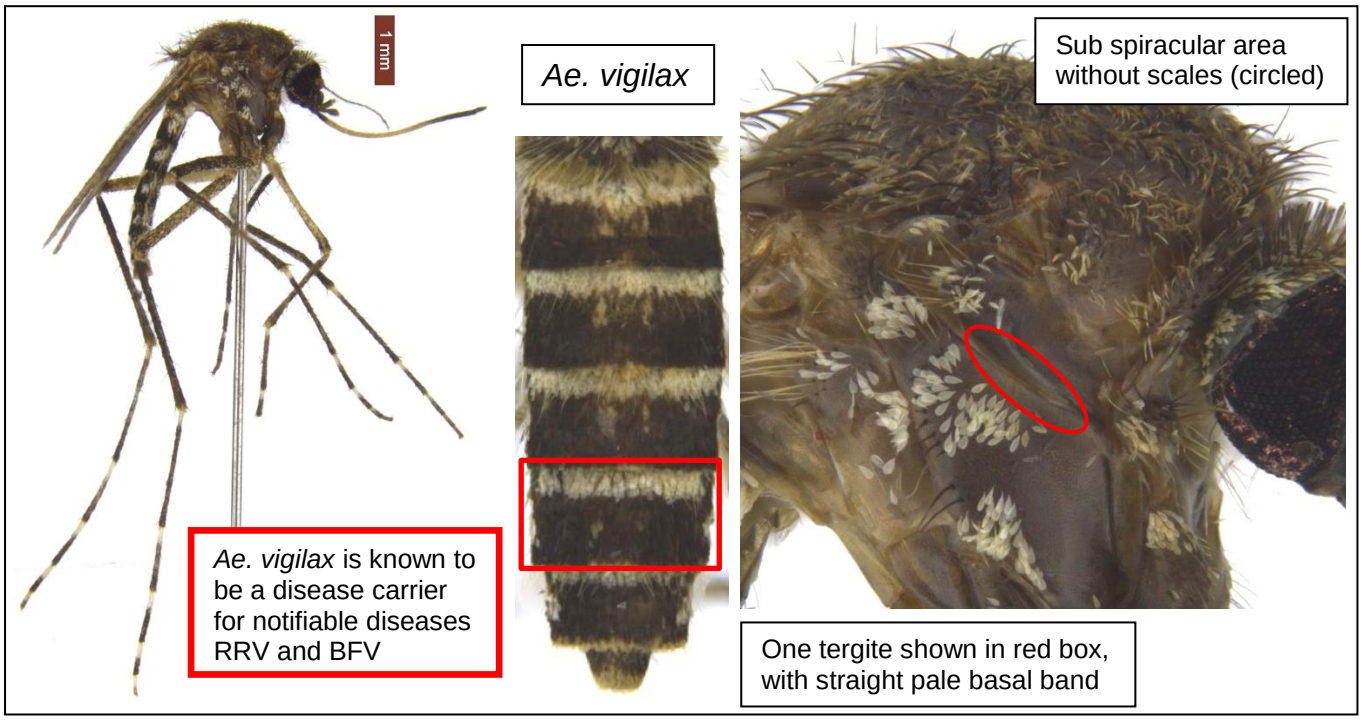


*6 *Ae. katherinensis and Ae. albopictus* both have a dark proboscis and a distinct white median stripe on the scutum. *Ae. katherinensis* has tergal bands sub basal and curved; *Ae albopictus* has tergal bands basal. If these species are suspected the sample must be forwarded to Medical Entomology for confirmation.
*7 *Ae. phaecasiatus* appears similar to *Ae. vigilax* but can be differentiated by unmottled femur and white tarsi 5.

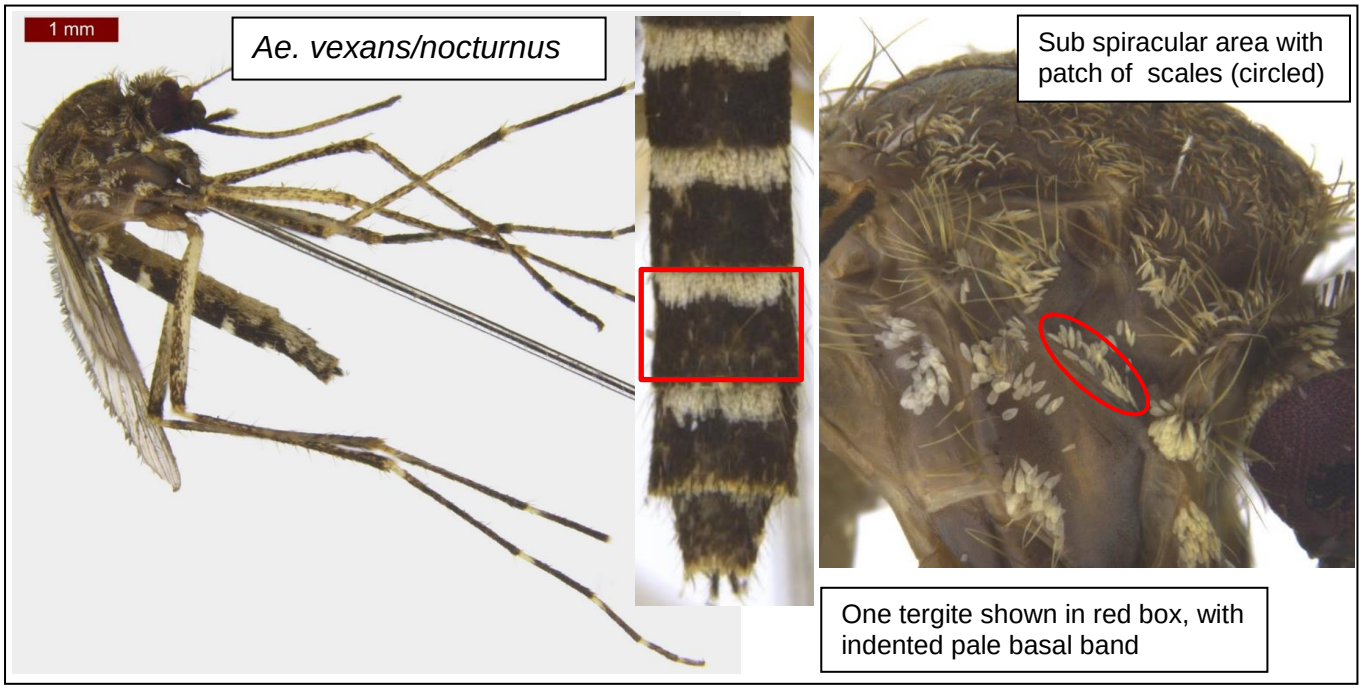
PHOTOGRAPHIC KEY TO THE COMMON ADULT FEMALE MOSQUITOES IN KIMBERLEY REGION OF WESTERN AUSTRALIA

30 (mottled femur, curved lateral patches on abdomen)

30A Straight basal bands on tergites (back of abdomen), sub spiracular area on side of thorax without scales ..... ***Aedes vigilax*** (usually coastal species)



30B Indented basal bands on tergites, patch of pale scales on sub spiracular area ..... ***Aedes vexans*** (syn. ***Aedes nocturnus***) (floodwater species)



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