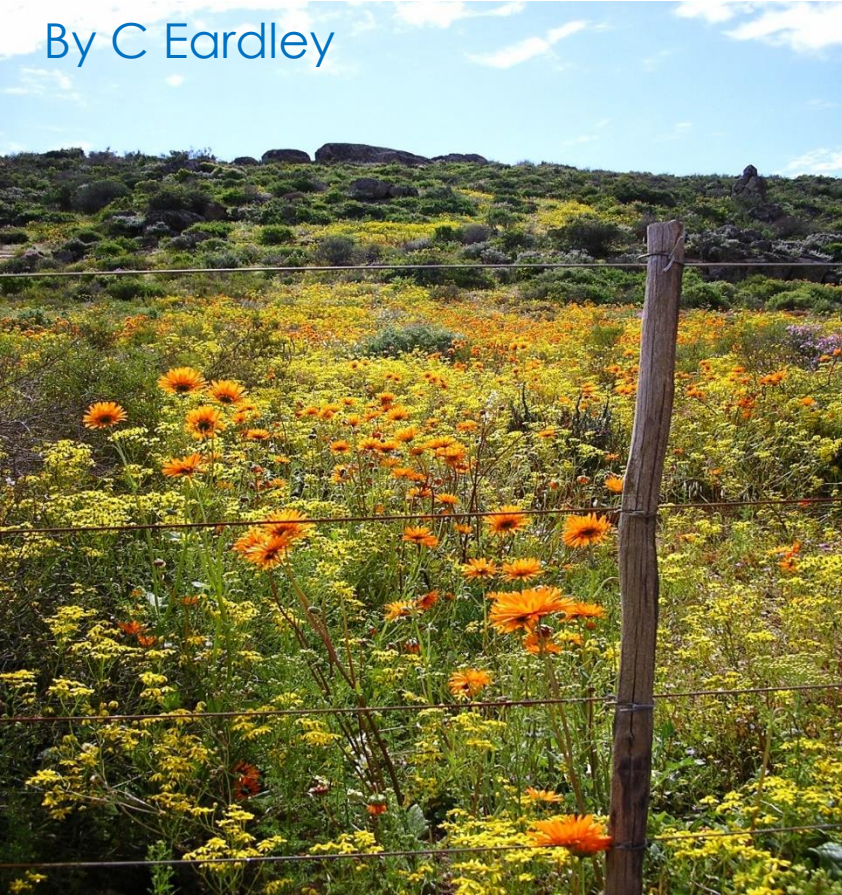


# Start to get to know your bee

This is not a fool proof guide for all bee genera because some bee are difficult to identify. It is a start, and mostly pretty accurate.

By C Eardley



# The Identification of Afrotropical Bee Genera

Why do we need to identify bees?

Order knowledge

Document biodiversity

Understand bee biology

Understand bee / plant relations

Conserve biodiversity

Improve crop production

Monitor climate change

Monitor land use change

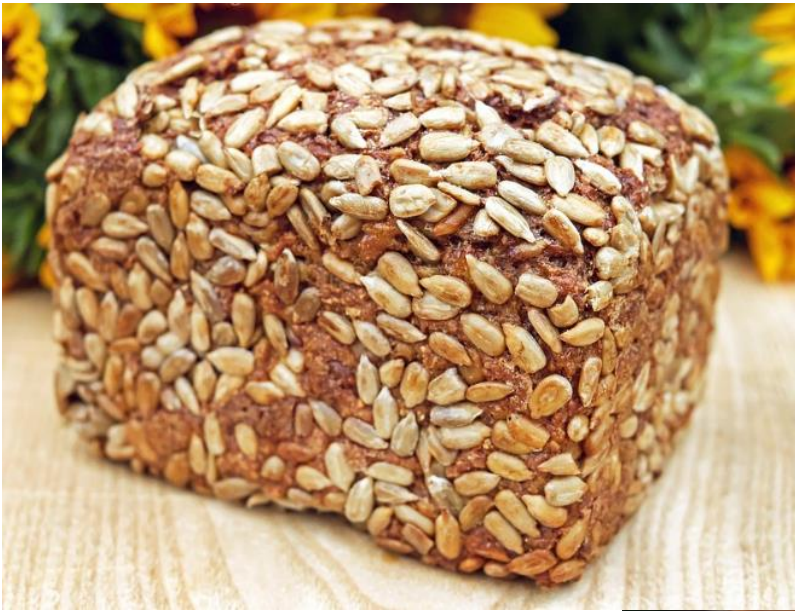
Promote citizen science

# The approach

How will we get to know bees.

The same way as you eat a loaf of bread

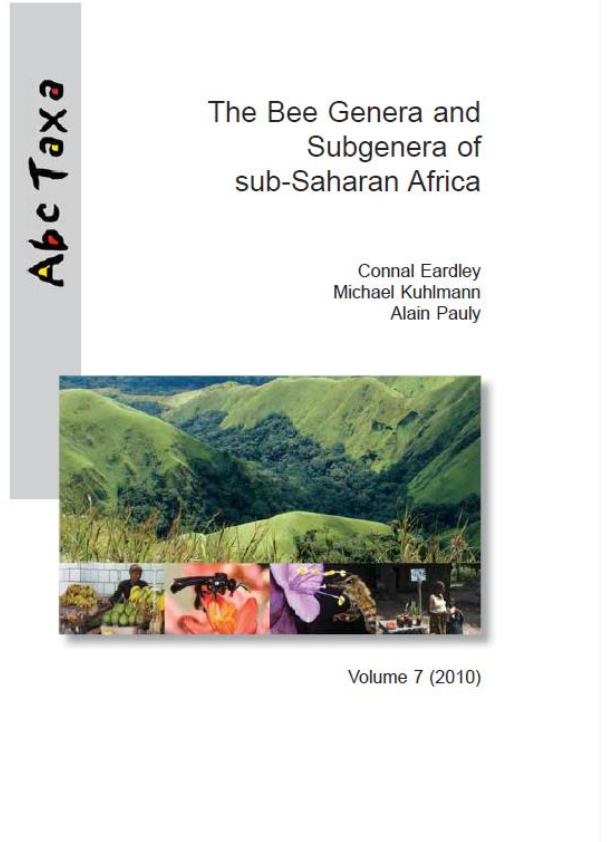
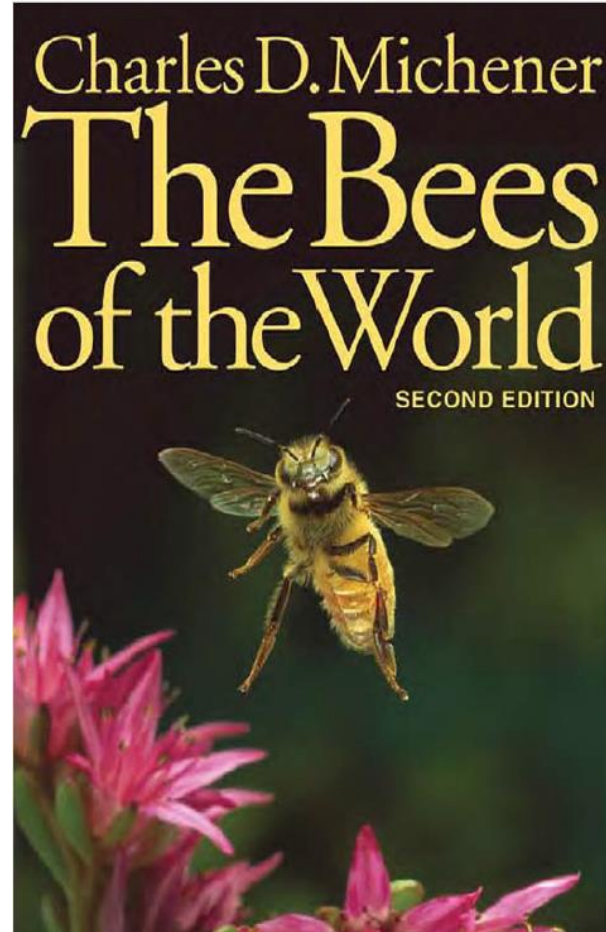
One bite at a time



# The approach ctd.

To be used with a key

These character are reminders only



# Terminology

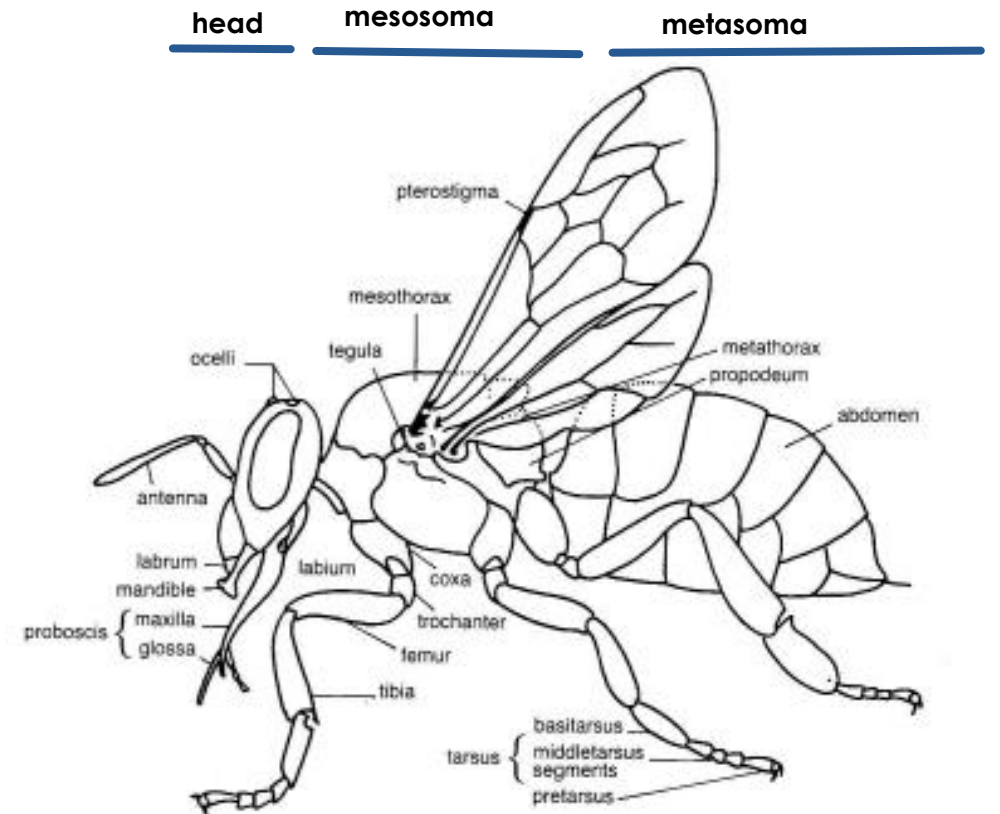
Bee identification is based on morphology

Integument – outer ‘skin’

Head

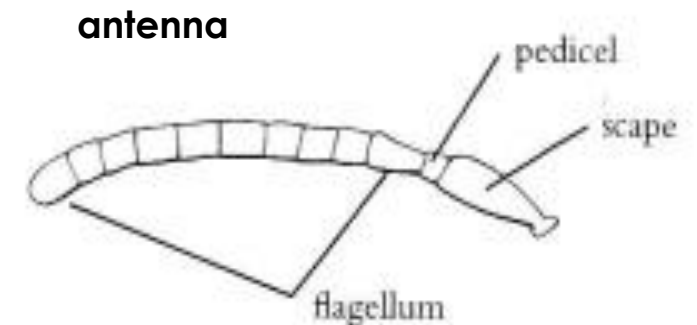
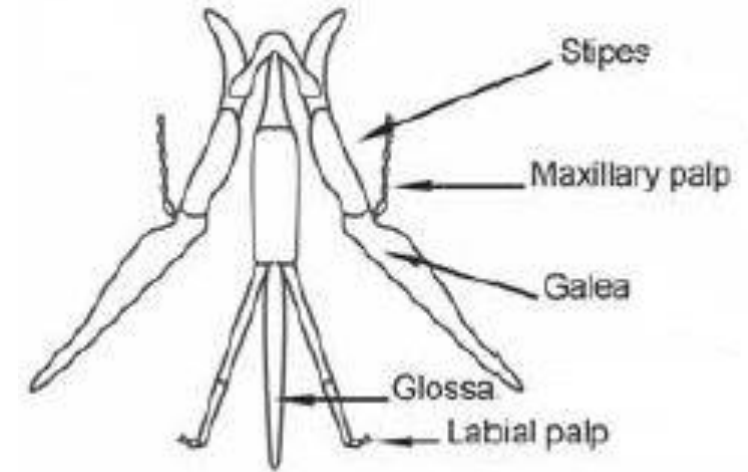
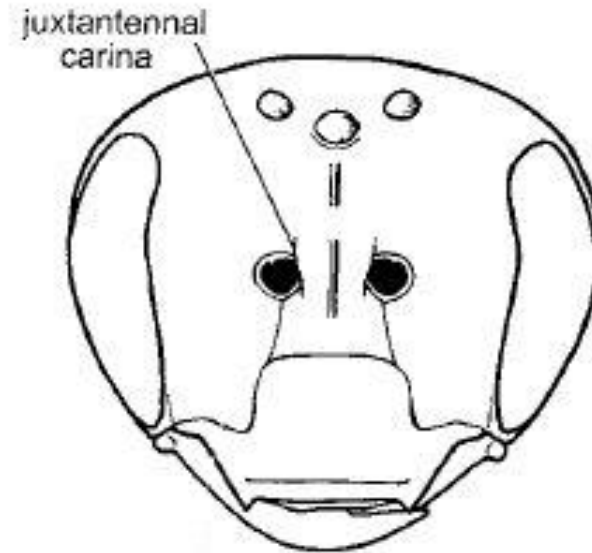
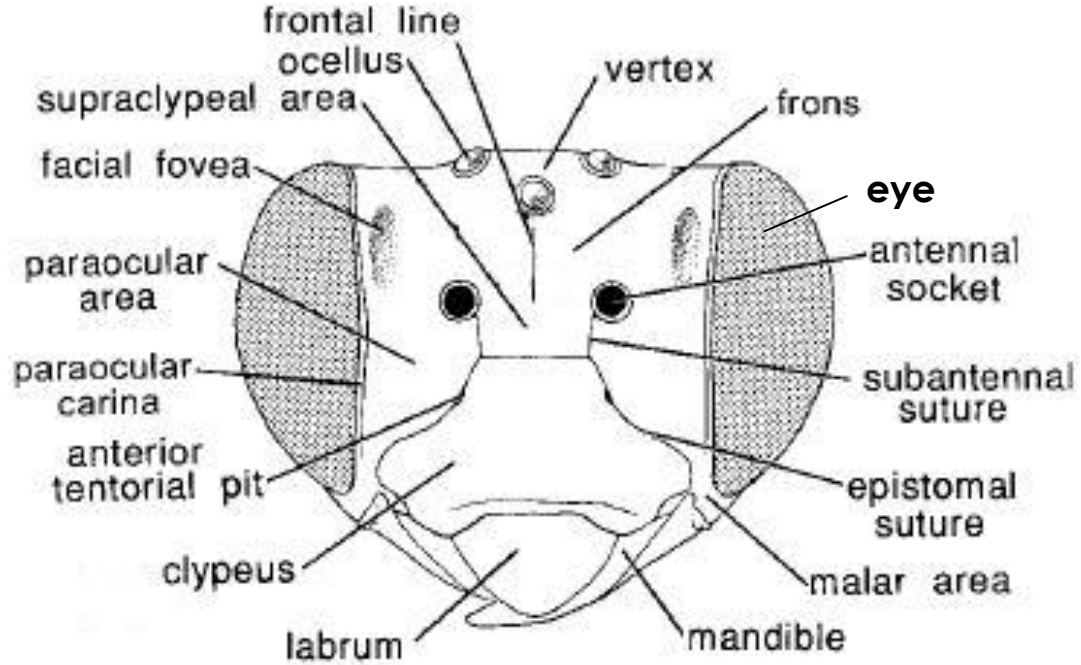
Mesosoma (thorax + 1st abdominal segment)

Metasoma (abdomen - 1st abdominal segment)



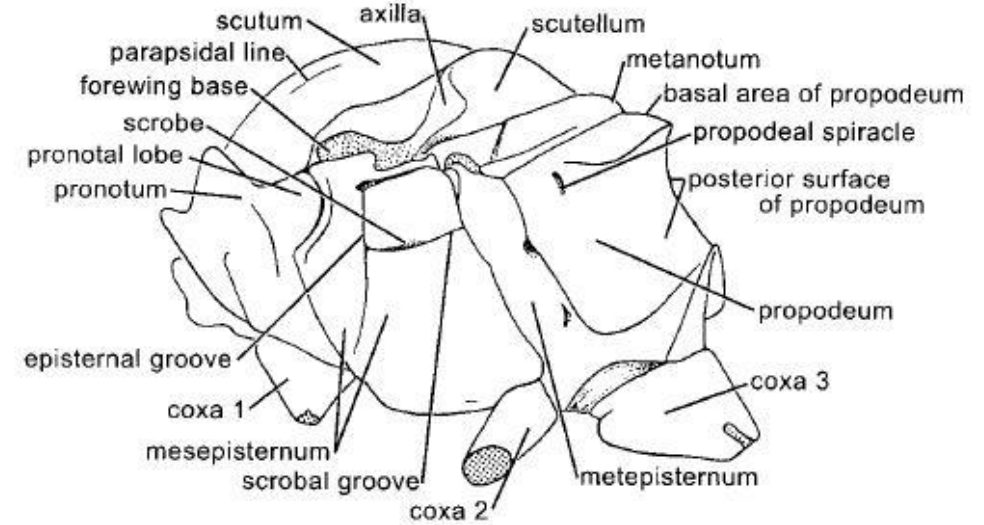
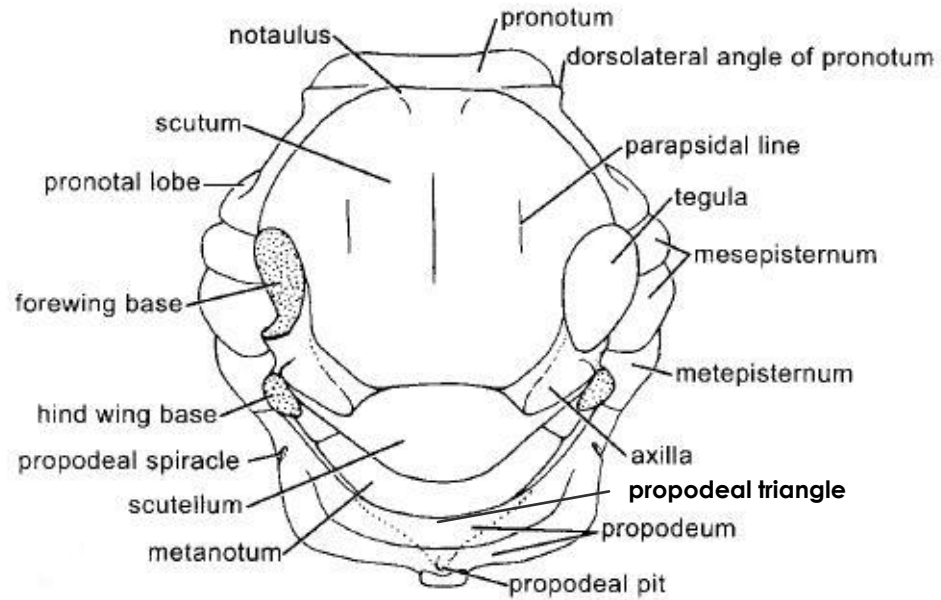
# Terminology ctd.

## Head



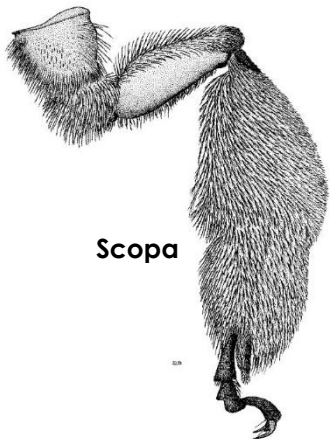
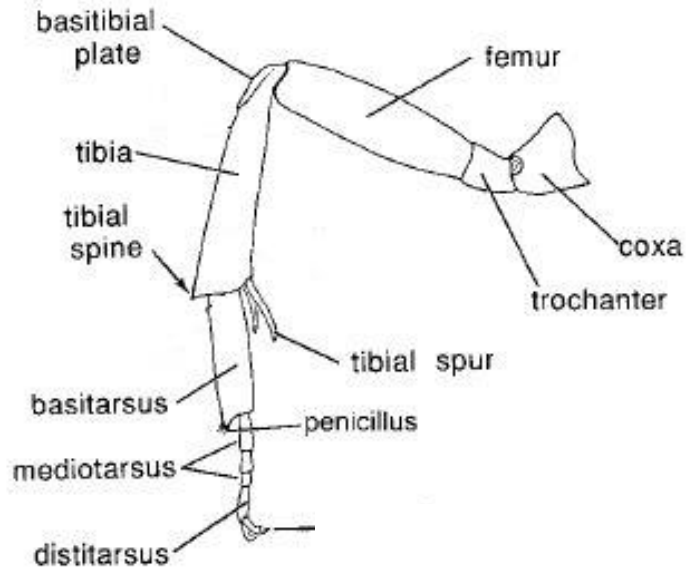
# Terminology ctd.

## Mesosoma

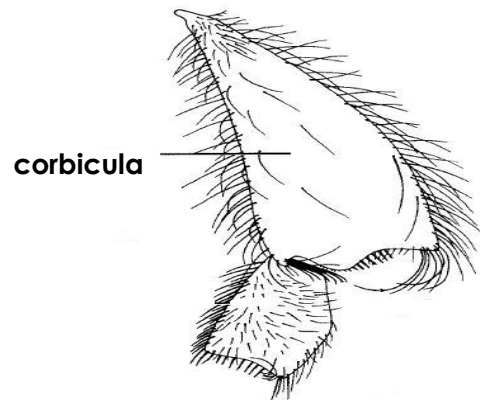


# Terminology ctd.

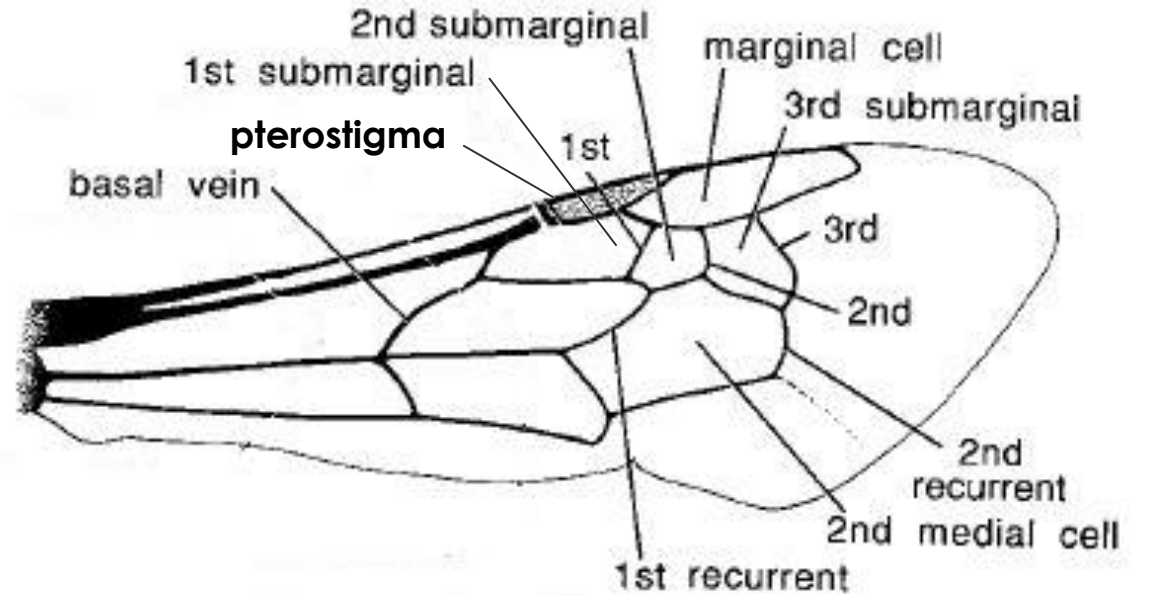
## Mesosoma



Scopa



corbicula

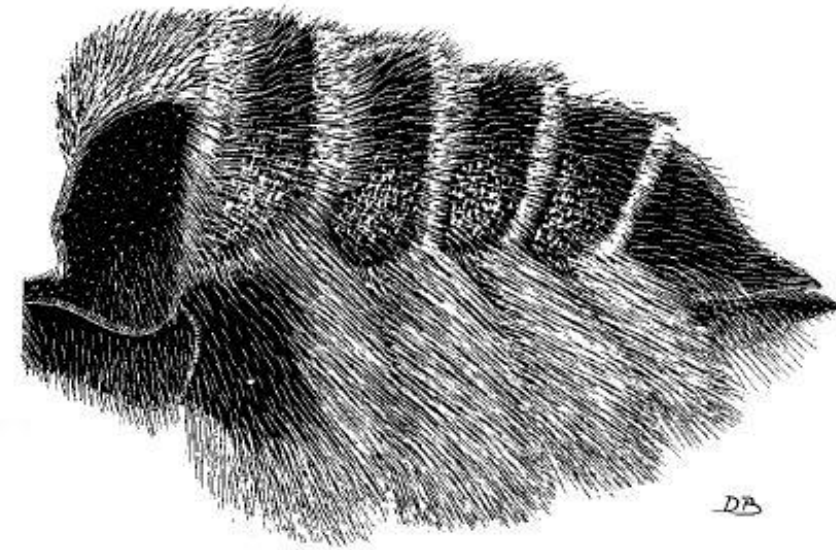
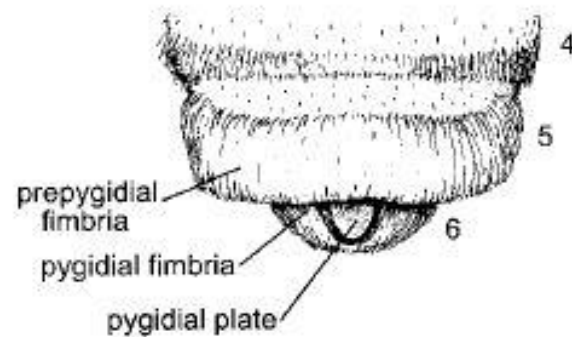
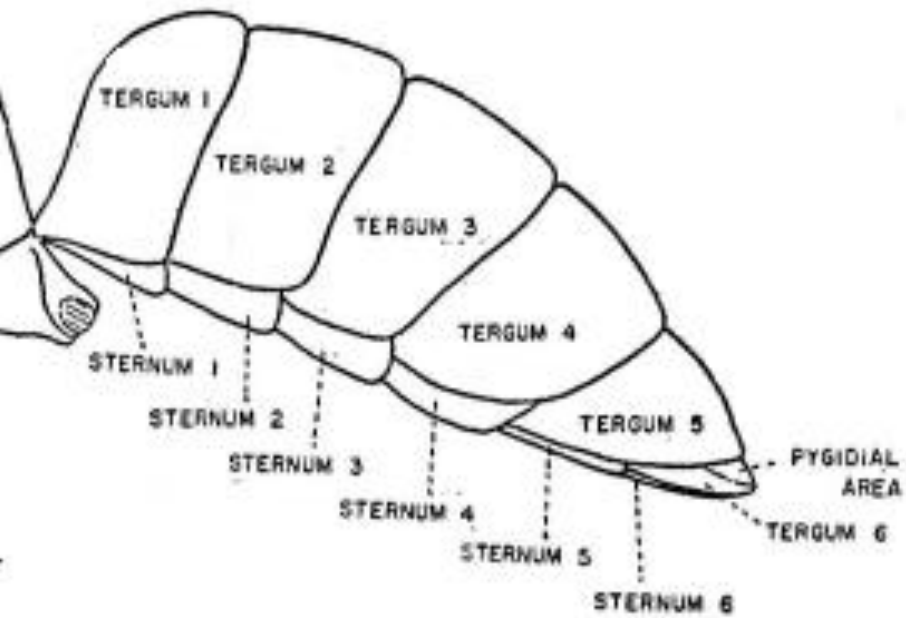


1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> = transverse cubital veins



# Terminology ctd.

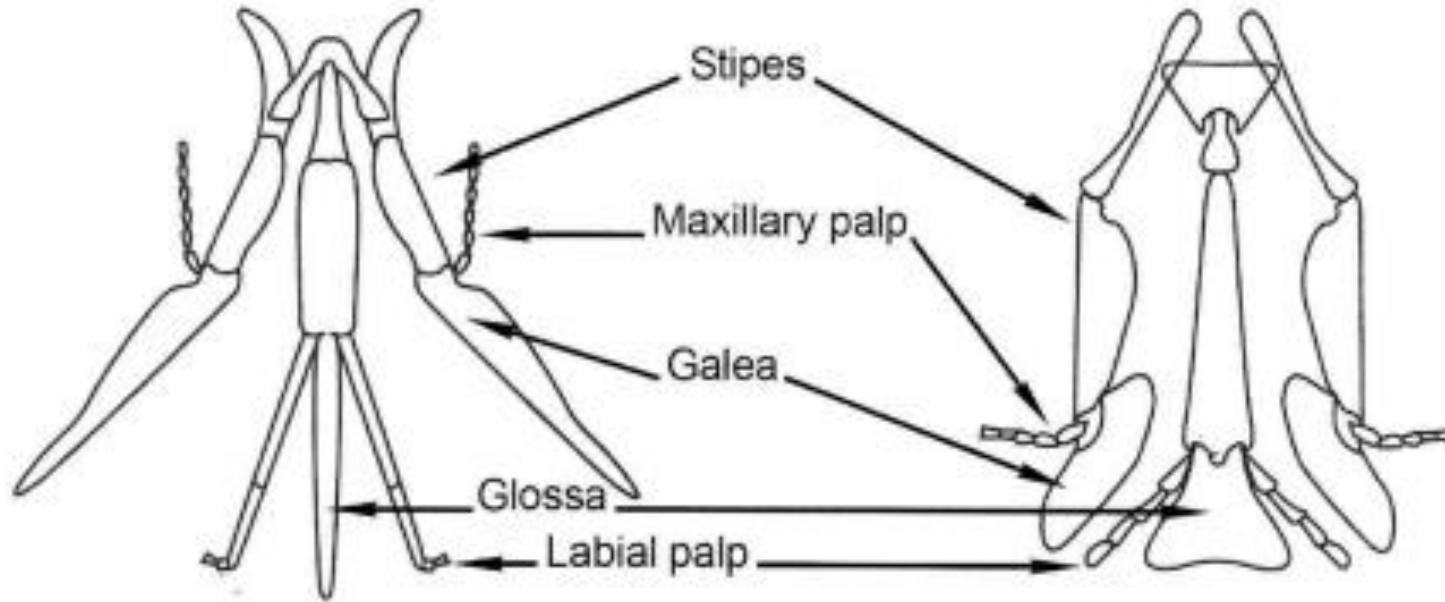
## Metasoma



# All Bees

Long-tongued

Short-tongued



# Females and males

## Females

Six metasoma segments (terga and sterna)

Antenna always twelve segments

Carry pollen, except cuckoo bees



## Males

Seven metasoma segments (terga and sterna)

Antenna mostly thirteen segments

Never carry pollen



# Afrotropical Bee Families

## Short-tongued (all males & females)

Colletidae

Andrenidae

Halictidae

Melittidae

Forked-tongue (females)

Two Subantennal sutures

Curved basal vein

None of the above

Colletidae



Andrenidae



Melittidae



Halictidae



# Colletidae genera

*Colletes*

Three submarginal cells; hairy [eyes converge below]

*Hylaeus*

Two submarginal cells; naked, no scopa, not metallic

*Calloprosopis*

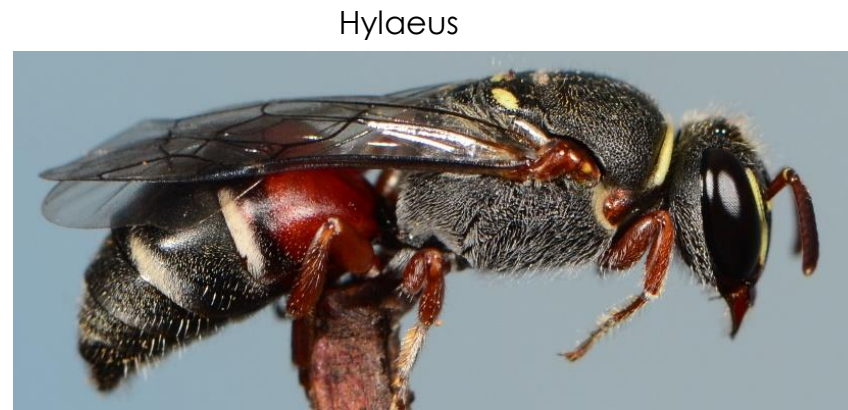
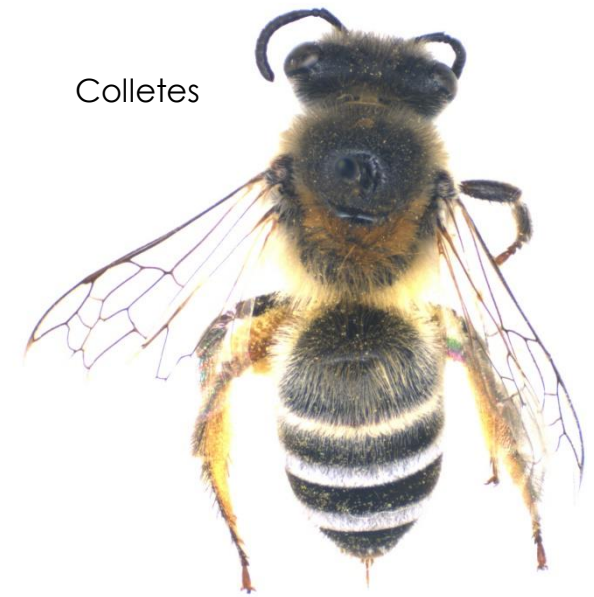
Two submarginal cells; naked, no scopa, metallic

(E. Africa)

*Scapter*

Two submarginal cells; females with scopa mostly hairy

(S. Africa)



# Andrenidae genera

*Mermiglossa*

Two submarginal cells

Mermiglossa



*Andrena*

Three submarginal cells; hairy,  
long erect hairs



Andrena



*Melitturga*

Three submarginal cells, 1<sup>st</sup> & 3<sup>rd</sup> subequal  
length; hairy, short erect hairs; male eyes large;  
large bees



Melitturga



*Meliturgula*

Three submarginal cells, 1<sup>st</sup> twice length 2<sup>nd</sup>;  
little hairy, short erect hairs; male eyes not large; small bees

*Borgatomelissa*:

Three submarginal cells, 1<sup>st</sup> twice length 2<sup>nd</sup>; very hairy,  
appressed hairs; male eyes not large; small bees; uncommon

Meliturgula

# Mellitidae genera

*Capicola*

Two submarginal cells; vertex convex, above eyes, female terga hirsute

Capicola



*Afrodasyroda*

Two submarginal cells; vertex straight, level with eyes; male clypeus yellow; female terga hirsute (S Africa)

Afrodasyroda



*Samba*

Two submarginal cells; vertex straight, level with eyes; male clypeus black; female terga naked, shiny

Samba



*Melitta*

Three submarginal cells; integument black; propodeal triangle dull

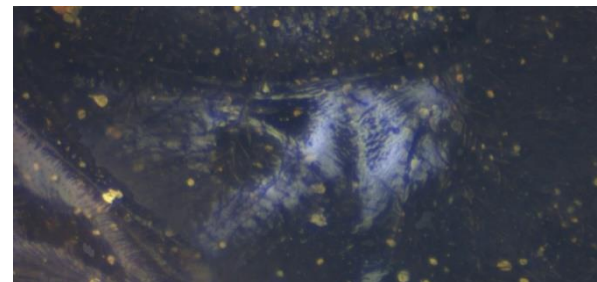
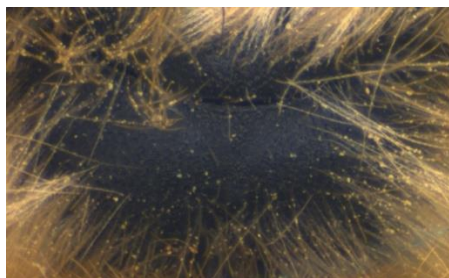
*Rediviva*

Three submarginal cells; integument black; propodeal triangle shiny (S. Africa)

Rediviva



Melitta



# Mellitidae genera ctd.

*Meganomia*

Three submarginal cells; integument with much yellow; aerolium absent

*Uromonia*

Three submarginal cells; integument with much yellow; aerolium present; ocelli near vertex; basitibial plate not defined (E. Africa)

*Ceratonomia*

Three submarginal cells; integument with little yellow; aerolium present; ocelli near vertex, female clear basitibial plate; male flagellum apically expanded (E. Africa)

*Pseudophilanthus*

Three submarginal cells; metasoma partly yellow; aerolium present; ocelli well below vertex; male flagellum apically expanded (mostly E Africa)

Meganomia



Uromonia



Ceratonomia



Pseudophilanthus





# Halictidae subfamilies

## Rophitinae

Antennal sockets below middle of face;  
scopa on sides of metasoma

Rophitinae - Systropha



## Nomioidinae

Minute; female tergum 6 pygidial fimbriae  
not divided longitudinally (2<sup>nd</sup> submarginal  
cells sometimes petiolate)

Nomioidinae



## Halictinae

Three submarginal cells, 1<sup>st</sup> longest, 2<sup>nd</sup> &  
3<sup>rd</sup> shorter; female tergum 6 pygidial fimbriae  
divided longitudinally

Halictinae



## Nomiinae

Three (rarely two) submarginal cells, 1<sup>st</sup> & 3<sup>rd</sup>  
subequal length, 2<sup>nd</sup> short 1<sup>st</sup>

Nomiinae



# Halictidae genera

Rophitinae

*Systropha*

As for subfamily

Systropha



Nomioidinae

*Cellariella*

Second submarginal narrow anteriorly,  
sometimes petiolate

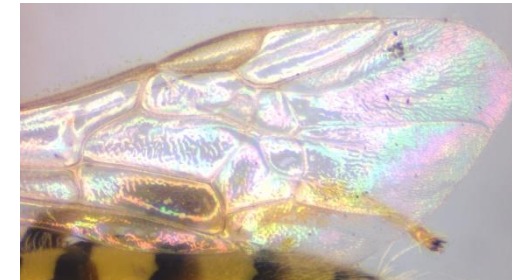
Cellariella



*Ceylalictus*

Pale metasoma bands apical

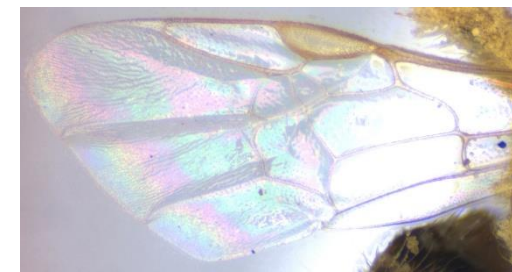
Ceylalictus



*Nomioides*

Pale metasoma bands basal

Nomioides



# Halictidae genera ctd.

Nomiinae

*Nomia*

Metasoma pale integument bands

Nomia



*Steganomus*

Two submarginal cells (some large tegula)

Steganomus



*Pseudapis*

Three submarginal cells; large tegula

Pseudapis

*Spatunomia*

Three submarginal cells; black head & mesosoma, red metasoma; naked; male last antennal segment pedunculated; female mandible simple

Spatunomia

*Lipotriches*

Metasoma mostly with tomentum bands; male antenna normal; female mandible bi- or tri-dentate

Lipotriches



# Halictidae genera ctd.

Halictinae

*Lasioglossum*

Forewing distal veins weak;  
metasoma often basal tomentum

Lasioglossum



*Patellapis*

Forewing distal veins strong;  
metasomal terga naked;  
terga sometimes with pale bands

Patellapis



*Seladonia*

Metallic gold, blue, green; glossa short

Seladonia



*Thrinchostoma*

Long malar area; metasoma  
distal hair bands directed laterally

Thrinchostoma



# Halictidae genera ctd.

Halictinae

*Sphecodes*

Cleptoparasite; body coarsely pitted



Sphecodes

*Eupetersia*

Cleptoparasite; body finely punctured



Eupetersia

*Glossodialictus*

Cleptoparasite; metallic gold, blue, green; glossa long  
(Central Africa)



Glossodialictus

# Afrotropical Bee Families

Long-tongued (female pollen collecting bees)

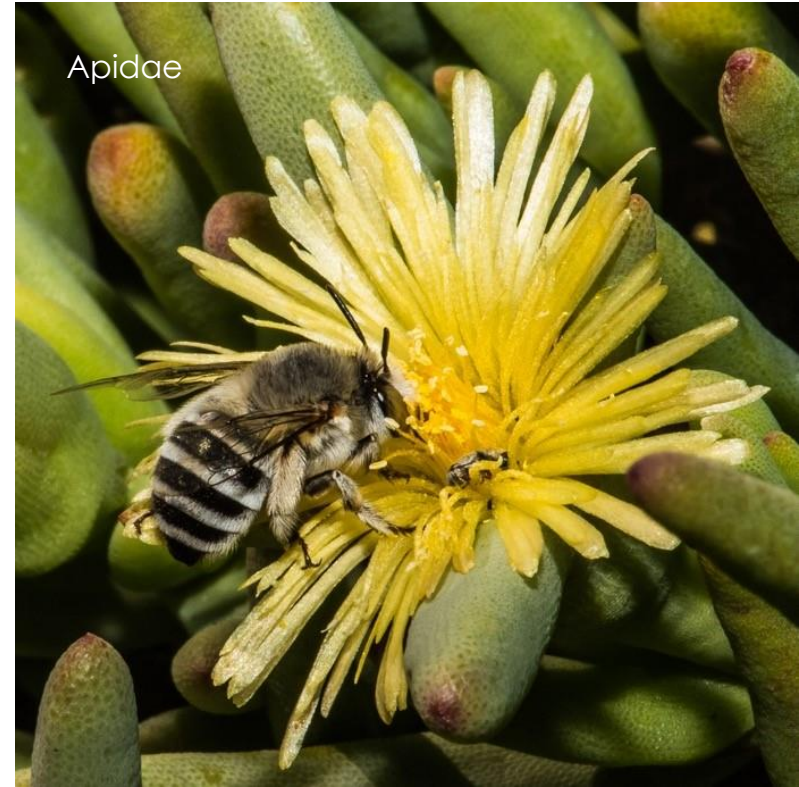
Megachilidae Scopa under metasoma; megachiliform; mostly two submarginal cells

Apidae Scopa on hind legs (female pollen collecting bees);  
two or three submarginal cells; apiform

Megachilidae



Apidae



# Megachilidae subfamilies & tribes

Fideliinae	Scopa under metasoma; <u>three submarginal cells</u>
Megachilinae	Scopa under metasoma; two submarginal cells
Lithurgini	Pygidial plate; two submarginal cells
Dioxyini	Metanotum spinose; two submarginal cells
Megachilini	Pterostigma length less than twice width; no aerolium on hind leg; two submarginal cells
Osmiini	Pterostigma length less than twice width; aerolium; two submarginal cells
Anthidiini	Pterostigma length more than twice width; aerolium; two submarginal cells

Fideliinae



Dioxyini



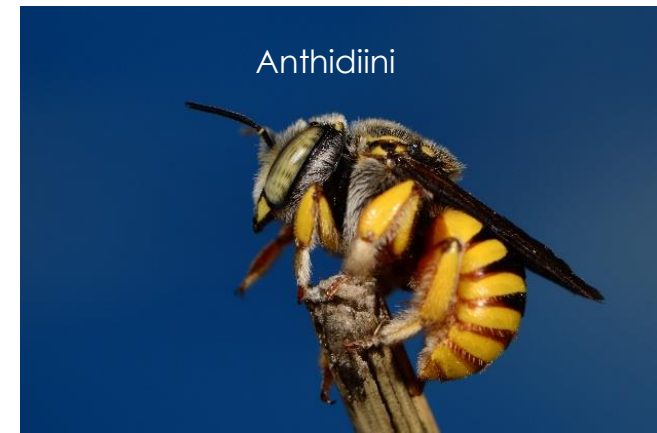
Megachilini



Osmiini



Anthidiini



# Megachilidae genera

Fideliinae

*Fidelia*

Scopa under metasoma; three submarginal cells

As for subfamily (S. Africa)

Fidelia



Megachilinae

Lithurgini

*Lithurgus*

Dioxyini

*Aglaopis*

Scopa under metasoma; two submarginal cells

Pygidial plate

As for subfamily (nest in wood)

Metanotum spinose

As for subfamily (rare)

Lithurgus



Aglaopis





# Megachilidae genera ctd.

Megachilinae

Megachilini

*Megachile*

Metasoma rounded distally

*Coelioxys*

Metasoma pointed distally (cleptoparasite)



# Megachilidae genera ctd.

Osmiini

*Hoplitis*

*Noteriades*

*Afroheriades*

*Pseudoheriades*

*Haetosmia*

Medium size (remainder small)

Female clypeus longitudinal carina;  
male T7 concealed, scutellum carinate

Female scutum no posterolateral ridge  
& hairy; male S7 quadrate & visible;  
S3 no median spike

Metapleuron shelf; female scutum not  
elongate; male S7 quadrate & visible; S3 spike

Female axilla rounded; labrum no tuft or fringe;  
T6 preapical carinal; male T6 preapical carina;

T7 broad, truncate, bulging; S7 visible, not quadrate; N.E.Africa

Noteriades



Hoplitis



Afroheriades



Pseudoheriades



Haetosmia



# Megachilidae genera ctd.

Osmiini ctd.

*Wainia*

Female axilla rounded; labrum no tuft or fringe; T6 no preapical carinal; male metanotum below scutum

*Heriades*

Female scutum elongate; male T7 not visible; scutellum without carina

*Ochreriades*

Scutum elongate

*Othinosmia*

Female scutum & mesopleuron short; labrum tuft or axilla angulate; male T7 sclerotized & visible; T6 smooth preapical carina

*Stenoheriades*

Female mouthparts long; male T7 sclerotized & visible; T6 toothed preapical carina

Wainia



Heriades



Ochreriades



Othinosmia female



Othinosmia male



Stenoheriades



# Megachilidae genera ctd.

Anthidiini

*Aspidosmia*

Truncate mandible; basal vein curved,  
female hind legs scopa-like hairs (South Africa)

*Eoanthidium*

Truncate mandible; juxtantennal carina;  
curved subantennal sutures

*Pachyanthidium*

Truncate mandible; preoccipital & omaulus laminate

*Anthidiellum*

Truncate mandible; scutoscutellar suture open

*Plesianthidium*

Truncate mandible; scutoscutellar suture open;  
metasoma mostly black (southern Africa)

*Cyphanthidium*

Truncate mandible; scutoscutellar suture closed;  
metasoma mostly yellow

*Icteranthidium*

Truncate mandible; axilla pointed

Aspidosmia



Eoanthidium



Pachyanthidium



Anthidiellum



Plesianthidium



Cyphanthidium



Icteranthidium



# Megachilidae genera ctd.

Anthidiini

*Serapista*

Oblique mandible; black & white;  
forewing cu-v vein joins second submarginal

*Afranthidium*

Oblique mandible; T5 posterior margin  
depressed; T6 denticulate

*Anthidium*

Oblique mandible; T5 posterior margin  
depressed; T6 not denticulate

*Athidioma*

Oblique mandible; basal propodeum  
naked & black

*Gnathanthidium*

Oblique mandible; female mandible 13-14 teeth

*Pseudoanthidium*

Oblique mandible; scutellum fore & hind  
edges parallel, subantennal sutures curved

*Trachusa*

Oblique mandible; large

Serapista



Afranthidium



Anthidium



Anthidioma



Gnathanthidium



Pseudoanthidium



Trachusa



# Megachilidae genera ctd.

*Anthidiini ctd.*

*Euaspis* Cuckoo; black head & mesosoma,  
orange metasoma; big

*Afrostellis* Cuckoo; tegula large; small

*Lariostellis* Cuckoo; arolium absent; small, Kenya (no pic)

*Stelis* Cuckoo; arolium present; small

*Xenostellis* Cuckoo (Sokogtra)

Euaspis



Afrostellis



Stelis



Xenostellis



# Apidae subfamilies & tribes

Xylocopinae      Two or three submarginal cells, clypeus only restricted near tentorial pits or pterostigma absent

Xylocopini      Pollen collecting bees (two or three submarginal cells)

Ceratinini

Allodapini

Nomadinae      Cuckoo bees (two or three submarginal cells)

Nomadini

Epeolini

Ammobatoidini

Ammobatini

Biastini

# Apidae subfamilies & tribes ctd.

Apinae	Corbicula &/or three submarginal cells
Ancylaini	Labial palp weakly flattened, short, resembling short-tongued bees; no oil collecting hairs
Ctenoplectrini	Labial palp weakly flattened, short, resembling short-tongued bees; oil collecting hairs
Eucerini	Typical long-tongued bee; basal tomentum; some males long antennae
Anthophorini	Typical long-tongued bee; no basal tomentum; normal antennae
Melectini	Typical long-tongued bee; cuckoo bees
Meliponini	Typical long-tongued bee; corbicula; marginal cell not lengthened
Apini	Typical long-tongued bee; corbicula; marginal cell lengthened



# Apidae genera

Xylocopinae

Xylocopini

*Xylocopa*

Ceratinini

*Ceratina*

Allodapini

*Allodape*

*Allodapula*

*Compsomelissa*

Three submarginal cells; large bees

As for tribe

Three submarginal cells; small bees

As for tribe

Two submarginal cells; small bees

Pale stripes besides eyes

T6 flattened

Extensively yellow, if black upper  
clypeal edge strongly concave & wing  
venation dark

Xylocopa



Ceratina



Allodape



Allodapula



Compsomelissa



# Apidae genera

Xylocopinae

Allodapini

*Macrogalea*

Two submarginal cells; small bees

Long tongue



Macrogalea

*Nasutapis*

Tuberculate clypeus, cuckoo bee

Nasutapis



*Braunsapis*

Black, upper clypeus gently concave, sometimes pterostigma pale medially

Braunsapis



*Eucondylops*

Flat clypeus, cuckoo bee

Eucondylops



# Apidae genera ctd.

Nomadinae

Cuckoo bees

Nomadini

Three submarginal cells;

*Nomada*

As for tribe

Epeolini

Three submarginal cells;  
female with prepygidium

*Epeolus*

As for tribe

Ammobatoidini

Two submarginal cells;

*Ammobatoides*

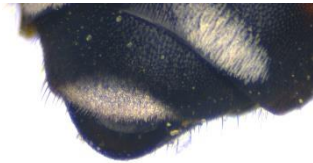
As for tribe

Ammobatoides

Nomada



Epeolus



# Apidae genera ctd.

Nomadinae ctd.

Ammobatini Two submarginal cells;

*Ammobates* Female S5 concave (gutter-like);  
male 13 segmented antenna

*Pasites* Female S5 concave (not-gutter-like);  
male 12 segmented antenna

*Chiasmognathus* Marginal cell truncate apically  
(look like fine *Pasites* – no picture)

*Sphecodopsis* Mandibles cross in repose

Biastini Cuckoo bee; tree submarginal cells; female T5 pseudopygidium  
& circular hole for T6; male omaulus carinate

*Schwarzia* As for tribe

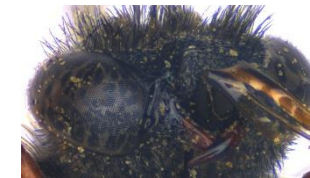
Ammobates



Pasites



Sphecodopsis



Schwarzia



# Apidae genera ctd.

Nomadinae ctd.

Apinae

Ancylaini

Labial palp weakly flattened, short, resembling short-tongued bees; no oil collecting hairs

*Ancyla*

As for tribe

Ctenoplectrini

*Ctenoplectra*

Female oil collecting hairs under metasoma; hind tibial spur greatly expanded

*Ctenoplectrina*

Cuckoo bee

Eucerini

*Tetraonia*

Female scopa sparse; male short antennal

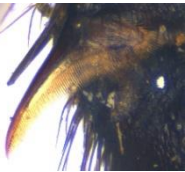
*Tetraloniella*

Female scopa densely pubescent; terga basal tomentum; male antennal usually long

Ancyla



Ctenoplectra



Ctenoplectrina



Tetralonia



Tetraloniella



# Apidae genera ctd.

Apinae ctd.

Anthophorini

*Amegilla*

Aerolium absent; forewing jugal lobe half  
vannal lobe

*Anthophora*

Aerolium present; forewing jugal lobe half  
vannal lobe

*Pachymelus*

Forewing jugal lobe less than half vannal lobe

Melectini

Cuckoo

*Afromelecta*

Scutellum with mediolateral points

*Thyreus*

Scutellum flat; pubescence black with  
pale blue or what

Amegilla



Anthophora



Pachymelus



Afromelecta



Thyreus



# Apidae genera ctd.

Apinae ctd.

Meliponini

submarginal cross veins weakly developed;  
mostly corbiculate; small bees

*Cleptotrigona*

Robber bee (no scopa)

*Dactylurina*

First metasomal segment longer than wide

*Hypotrigona*

Propodeum dorsal surface longer than  
ventral surface; tiny bees

*Liotrigona*

Propodeum dorsal surface shorter than  
ventral surface; tiny bees

*Meliponula*

Corbicula strongly concave

*Plebeina*

Black, ventral edge of clypeus pale

Apini

Corbicula; marginal cell  
lengthened; medium sized

*Apis*

As for tribe



Cleptotrigona



Dactylurina



Hypotrigona



Meliponula



Liotrigona



Plebeina



Apis



Plebeina

# Afrotropical bee genera common names

<i>Colletes</i>	Cellophanebee	•	<i>Nomia</i>	Opalescentgroundbee	•	<i>Patellapis</i>	Combsweatbee
<i>Scapter</i>	Membranebee		<i>Pseudapis</i>	Earwinggroundbee		<i>Sphecodes</i>	Bloodcuckoobee
<i>Calloprosopis</i>	Bluemaskedbee		<i>Spatunomia</i>	Spoongroundbee		<i>Thrinchostoma</i>	Longfacedbee
<i>Hylaeus</i>	Maskedbee		<i>Steganomus</i>	Cappedwinggroundbee		<i>Afrodasympoda</i>	Trouserbee
<i>Andrena</i>	Sandbee		<i>Cellariella</i>	Petiolesteppebee		<i>Capicola</i>	Capetrouserbee
<i>Borgatomelissa</i>	Whiningshaggybee		<i>Ceylaliectus</i>	Opaquesteppebee		<i>Samba</i>	Sicklespurtrouserbee
<i>Melitturga</i>	Bigeyedshaggybee		<i>Nomioides</i>	Clearsteppebee		<i>Ceratonomia</i>	Spatulatebuzzingbee
<i>Meliturgula</i>	Hoveringshaggybee		<i>Eupetersia</i>	Slimcuckoobee		<i>Meganomia</i>	Desertbuzzingbee
<i>Mermiglossa</i>	Wormtonguedshaggybee		<i>Glossodialictus</i>	Congosweatbee		<i>Pseudophilanthus</i>	Bigbuzzingbee
<i>Systropha</i>	Spiralhornedbee		<i>Seladonia</i>	Goldenfurrowedbee		<i>Uromonia</i>	Fatbuzzingbee
<i>Lipotriches</i>	Grassgroundbee	•	<i>Lasioglossum</i>	Weakveinedsweatbee	•	<i>Melitta</i>	Furtailedbee
						<i>Rediviva</i>	Longleggedoilbee



# Afrotropical bee genera common names ctd

<i>Fidelia</i>	Potbee
<i>Lithurgus</i>	Stonebee
<i>Afroheriades</i>	Africanresinbee
<i>Haetosmia</i>	Hookhairresinbee
<i>Heriades</i>	Holeresinbee
<i>Hoplitis</i>	Bigresinbee
<i>Noteriades</i>	Ridgefacedresinbee
<i>Ochriades</i>	Collaredresinbee
<i>Othinosmia</i>	Pebbleresinbee
<i>Pseudoheriades</i>	Shelfresinbee
<i>Stenoheriades</i>	Supertonguedresinbee
<i>Wainia</i>	Snailshellresinbee

<i>Afranthidium</i>	Palecarderbee
<i>Afrostelis</i>	Africancuckoobee
<i>Anthidiellum</i>	Agileresinbee
<i>Anthidioma</i>	Enigmaticcarderbee
<i>Anthidium</i>	Woolbee
<i>Aspidosmia</i>	Uglyfacedcarderbee
<i>Cyphanthidium</i>	Curvedspurcarderbee
<i>Eoanthidium</i>	Dawnresinbee
<i>Euaspis</i>	Redtailedcuckoobee
<i>Gnathanthidium</i>	Bigjawedcarderbee
<i>Icteranthis</i>	Ridgecheekedcarderbee
<i>Larinostelis</i>	Scarcecuckoobee

<i>Pachyanthidium</i>	Sputnikresinbee
<i>Plesianthidium</i>	Darkresinbee
<i>Pseudoanthidium</i>	Combtailedcarderbee
<i>Serapista</i>	Whitespottedcarderbee
<i>Stelis</i>	Duskycuckoobee
<i>Trachusa</i>	Burrowingresinbee
<i>Xenostelis</i>	Desertcuckoobee
<i>Aglaopis</i>	Toothedcuckoobee
<i>Coelioxys</i>	Conecuckoobee
<i>Megachile</i>	Leafcutterbee / masonbee

# Afrotropical bee genera common names

<i>Xylocopa</i>	Largecarpenterbee	<i>Ammobatoides</i>	Stalkercuckoobee	<i>Amegilla</i>	Bandeddiggerbee
<i>Ceratina</i>	Smallcarpenterbee	<i>Ammobates</i>	Sandwalkercuckoobee	<i>Anthophora</i>	Flowerloverdiggerbee
<i>Allodape</i>	Colourfulstembee	<i>Chiasmognathus</i>	Crossjawedcuckoobee	<i>Pachymelus</i>	Bigdiggerbee
<i>Allodapula</i>	Flattailedstembee	<i>Pasites</i>	Cleftcuckoobee	<i>Afromelecta</i>	Patchworkcuckoobee
<i>Braunsapis</i>	Commonstembee	<i>Sphecodopsis</i>	Capecuckoobee	<i>Thyreus</i>	Neoncuckoobee
<i>Compsomelissa</i>	Elegantstembee	<i>Schwarzia</i>	Maxcuckoobee	<i>Cleptotrigona</i>	Parasiticstinglessbee
<i>Eucondylops</i>	Knobheadedcuckoobee	<i>Ancyla</i>	Enigmaticminingbee	<i>Dactylurina</i>	Narrowstinglessbee
<i>Macrogalea</i>	Supertonguedstembee	<i>Ctenoplectra</i>	Squashoilbee	<i>Plebeina</i>	Moccabee
<i>Nasutapis</i>	Pinocchiocuckoobee	<i>Ctenopectrina</i>	Squashcuckoobee	<i>Meliponula</i>	Robuststinglessbee
<i>Nomada</i>	Wasp-cuckoobee	<i>Tetralonia</i>	Sparseminingbee	<i>Hypotrigona</i>	Mopanibee
<i>Epeolus</i>	Woollycuckoobee	<i>Tetraloniella</i>	Longhornedminingbee	<i>Liotrigona</i>	Tinstinglessbee
				<i>Apis</i>	Honeybee