A Field Key to The Ants (Hymenoptera, Formicidae) found at Brackenridge Field Laboratories, Austin, Travis County, Texas.

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Illustrations by Nicola Plowes using FreeHand 5.5

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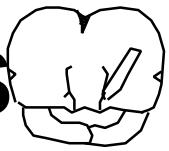
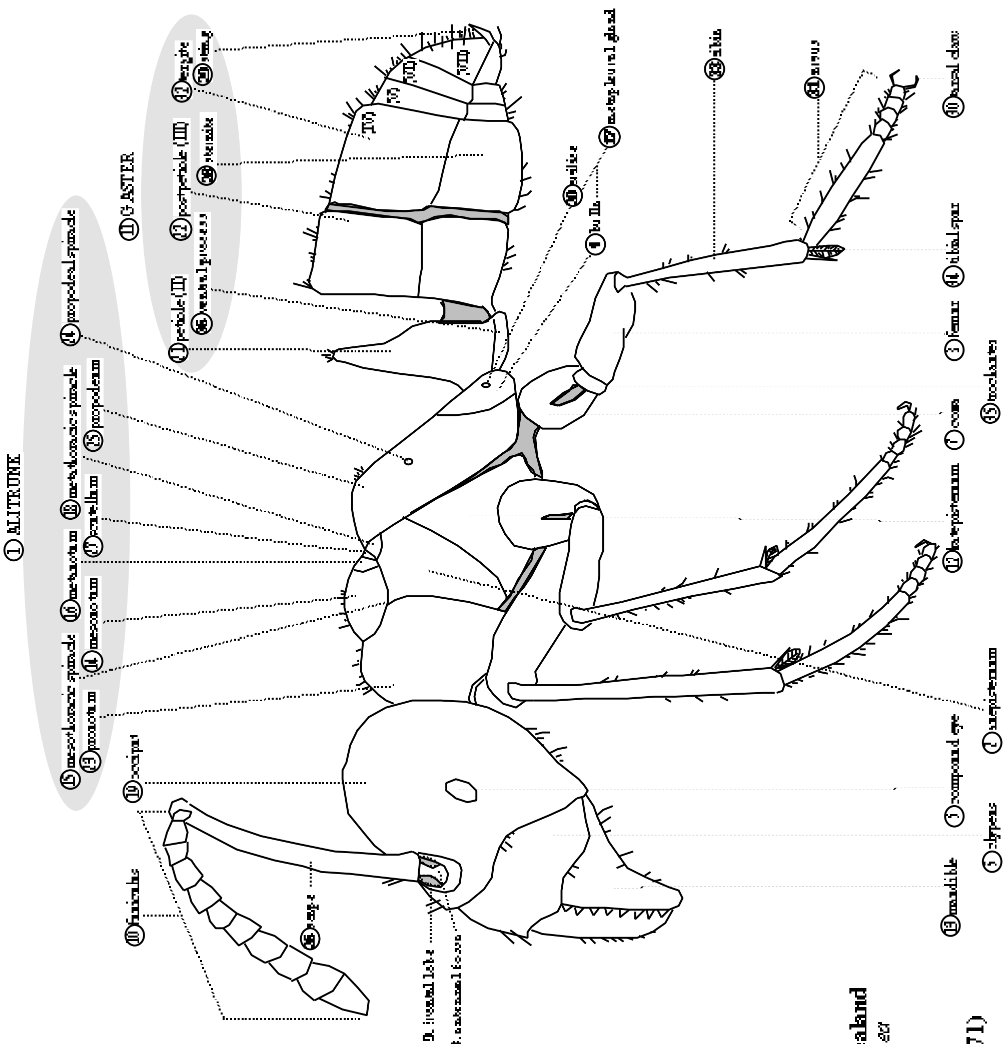


Solenopsis invicta *Solenopsis geminata*

ANATOMY

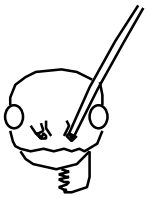


1. ALITRUNK
2. anepisternum
3. antennal fossa
4. bulla
5. clypeus
6. compound eye
7. coxa
8. femur
9. frontal lobe
10. funiculus
11. GASTER
12. katepisternum
13. mandible
14. mesonotum
15. mesothoracic spiracle
16. metanotum
17. metapleural gland
18. metathoracic spiracle
19. occiput
20. orifice
21. petiole
22. post-petiole
23. pronotum
24. propdeal spiracle
25. propodeum
26. scape
27. scutellum
28. sternite
29. sting
30. tarsal claw
31. tarsus
32. tergite
33. tibia
34. tibial spur
35. trochanter
36. ventral process

Intersegmental membrane

Figure 1. Worker of the New Zealand ponerine ant *Mesoponera castenea* showing some of the principle morphological features used in taxonomy.
(Modelled after E.O.Wilson, 1971)

SECTION II

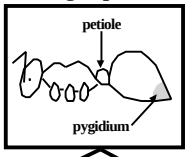


Amblyopone pallipes

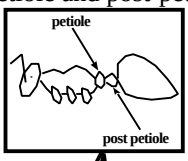
SUBFAMILIES OF FORMICIDAE

FORMICIDAE

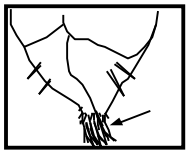
single petiole



petiole and post-petiole



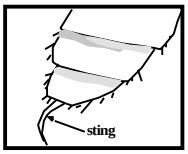
acidopore present
FORMICINAE



GO TO SECTION II

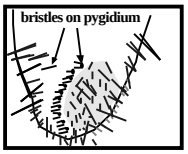
no acidopore

sting
PONERINAE



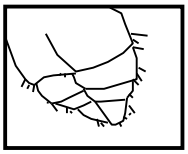
GO TO SECTION IV

pygidium armed with apical row of short, peg-like bristles. No sting
Cerapachyinae



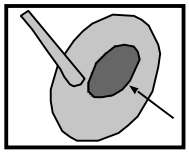
Cerapachysaugustae

pygidium unarmed no sting
DOLICHODERINAE



GO TO SECTION V

large eyes
long thin body
PSEUDOMYRMICINAE



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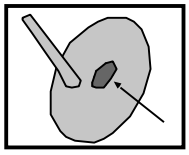
small eyes
MYRMICINAE



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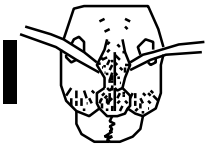
"blister" eyes
and sting
ECITONINAE

GO TO SECTION VIII

SECTION III



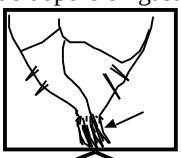
Paratrechina terricola

Camponontus sayi

GENERA IN FORMICINAE

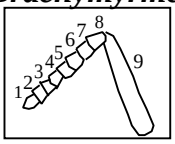
FORMICINAE

single petiole
acidopore on gaster



9-segmented antenna

Brachymyrmex

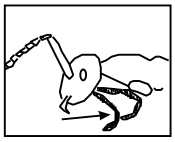


Brachymyrmex depilis

12-segmented antenna

Maxillary palp segments 3 and 4 are longer than the length of the ant's head

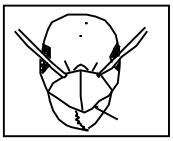
Myrmecocystus



Myrmecocystus melliger

Triangular mandible armed with 7 or more teeth. Antenna close to clypeus. "Step" on thorax

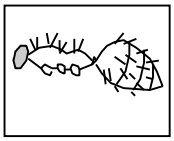
Formica



Formica pallidefulva

Dorsal surfaces with coarse paired setae

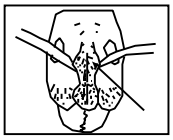
Paratrechina



GO TO SPECIES IDENTIFICATION

Antennae are further from the clypeus than Formica. Frontal lobes extended. No thoracic "step"

Camponotus



GO TO SPECIES IDENTIFICATION

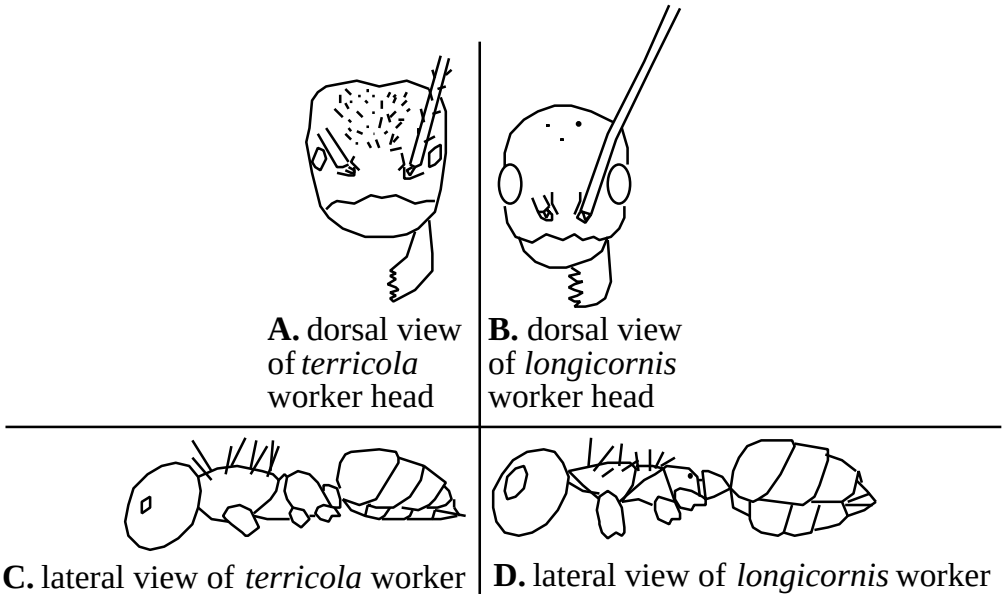
Paratrechina species identification

Brief Identification

Paratrechina are small dark ants which move very quickly. Their 12-segmented antennae appear almost the length of their bodies. They have paired setae on their dorsal surfaces.

Characteristic	***terricola***	***longicornis***
Antennal scapes	Scapes with at least 4 standing machrochaetae	Scapes lack erect hairs. Scapes and legs are longer than *terricola*'s
Color	Uniformly dark or bicolored	Weakly shining blakc with bluish reflections

From Trager (1984)



A. dorsal view of *terricola* worker head

B. dorsal view of *longicornis* worker head

C. lateral view of *terricola* worker

D. lateral view of *longicornis* worker

Features of *P. terricola* and *P. longicornis*

Camponotus species identification

Brief identification:

Species of *Camponotus* are characterized by having triangular mandibles and extended frontal lobes. The antennal sockets are located further from the clypeus than in *Formica*.

Key

1.(a) Head of **major** is circular in cross section, and abruptly truncated……..2
(b) Head of **major** is not circular in cross section, and not abruptly truncated …….3

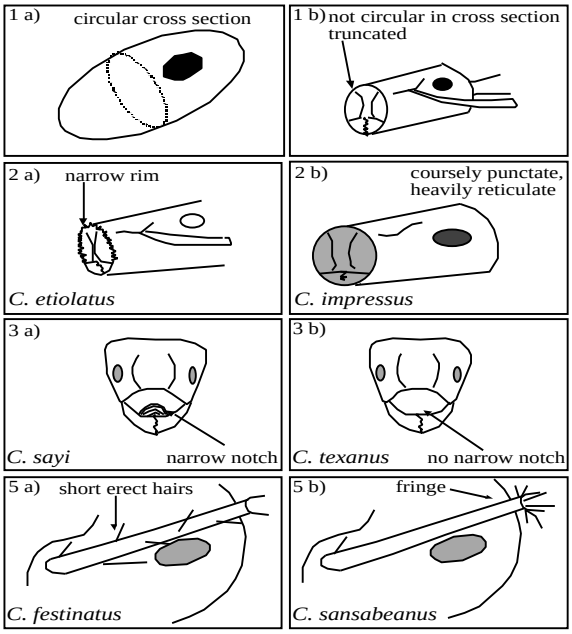
2.(a) Angle where the side of the head meets the truncated anterior face is surmounted by a distinct, narrow rim. The sculpture of the anterior face is with small shallow puncutes and fine reticulation……...…***etiolatus***
(b) The angle where the side of the head meets the truncated anterior face is serrate and blunt. The sculpture of the anterior face is coursely punctured and heavily reticulate…….……***impressus***

3.(a) Anterior border of clypeus projecting, depressed in the middle, with a narrow notch…….***sayi***
(b) Clypeus not as above…….4

4.(a) Clypeus ecarinate, major worker with anterior margin of median lobe of clypeus straight, the angle which the median portion makes with lateral portions are sharp and toothlike……..……..……..……***texanus***
(b) Clypeus carinate……..…….5

5.(a) Antennal scapes with numerous short erect hairs……***festinatus***
(b) Antennal scapes without erect hairs except for a small fringe at the tip..***sansabenus***

From Smith (1947)



SECTION IV

Odontomachus clarus

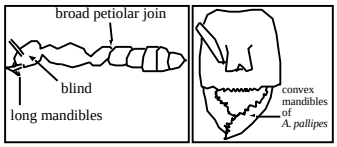
Amblyopone pallipes

GENERA IN PONERINAE

PONERINAE

petiole broadly attached
long mandibles

Amblyopone

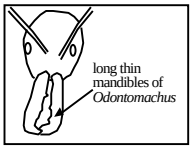


Amblyopone pallipes

petiole narrowly attached

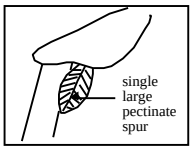
long thin mandibles
spiked petiole

Odontomachus



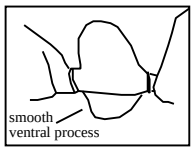
Odontomachus clarus

ventral apex of
hind tibia has
single, large
pectinate spur



simple, smooth
ventral process
1-segmented
maxillary palp

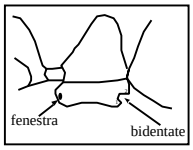
Hypoponera



GO TO SPECIES IDENTIFICATION

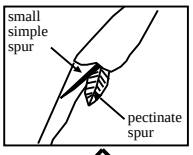
ventral process with
fenestra and bidentate
posterior
2-segmented
maxillary palp

Ponera



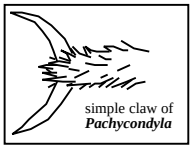
Ponera pennsylvanica

ventral apex of
tibia has 2 spurs:
pectinate large and
small simple



pretarsal claws with
smooth inner
curvatures

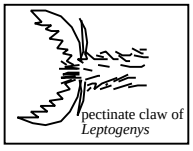
Pachycondyla



Pachycondyla harpax

pretarsal claws with
pectinate inner
curvatures

Leptogenys

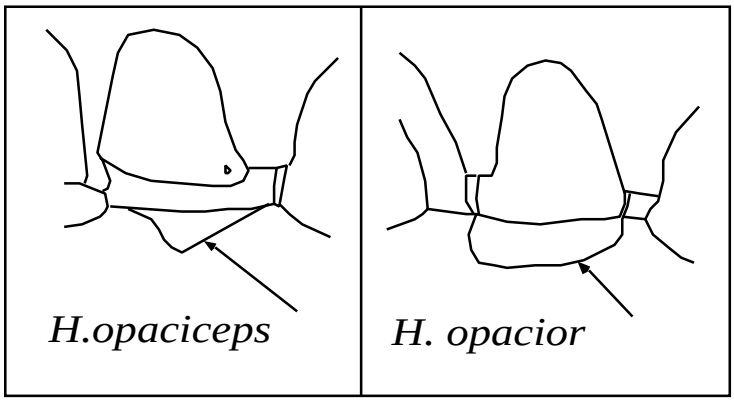


Leptogenys elongata

Hypoponera species identification

Brief Identification
These ants are much smaller than the other ponerines. They are 1 cm or smaller in size, and most easily distinguished by the constriction on the gaster.
The distinction between *Ponera* and *Hypoponera* is as yet unclear. Bernard (1952) distinguished between them on the basis of the presence of a groove or suture between the mesonotum and epinotum in *Ponera*, and an absence in *Hypoponera*. However, Bolteon (1995) has designated *Hypoponera* as a subgenus of *Ponera.*

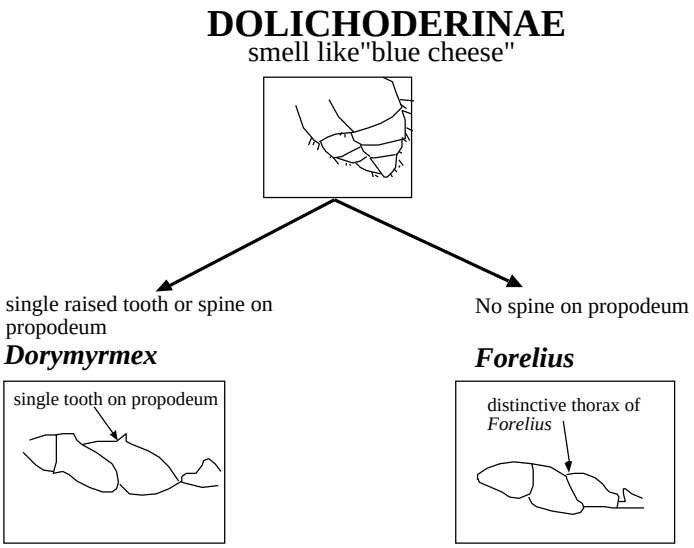
Characteristic	***punctatissima***	***opaciceps***	***opacior***
color	N/a	Black to very dark brown	Concolorous reddish brown
petiole	N/a	Petiole has a subrectangular process	Petiole is narrowed dorsally in profile.



Features of the petiolar processes of*H. opaciceps* and *H. opacior*

SECTION V

GENERA IN DOLICHODERINAE

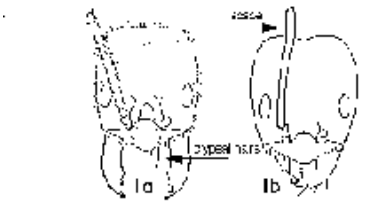


Dorymyrmex species identification

Characteristic	***bicolor***	***flavus***
color	Head and thorax are deep reddish-yellow; entire gaster is black	Color is variable, but never bicolored

Forelius species identification

Characteristic	***mccooki***	***pruinosus***
Erect setae on antennal scape and superior part of head and tibia	numerous	Absent to few

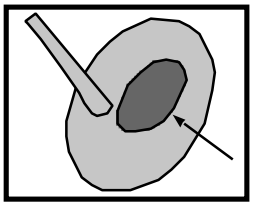


Features of *F. mccooki* (1a) and *F. pruinosus* (1b)

SECTION VI

GENERA IN PSEUDOMYRMICINAE

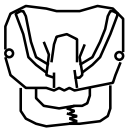
large eyes
long thin body



Features of *Psuedomyrmex*

There are two common species of Pseudomyrmex in B.F.L., including *P. pallides* and *P. brunneus*. These ants are mainly arboreal, have sharp vision, and move rapidly.

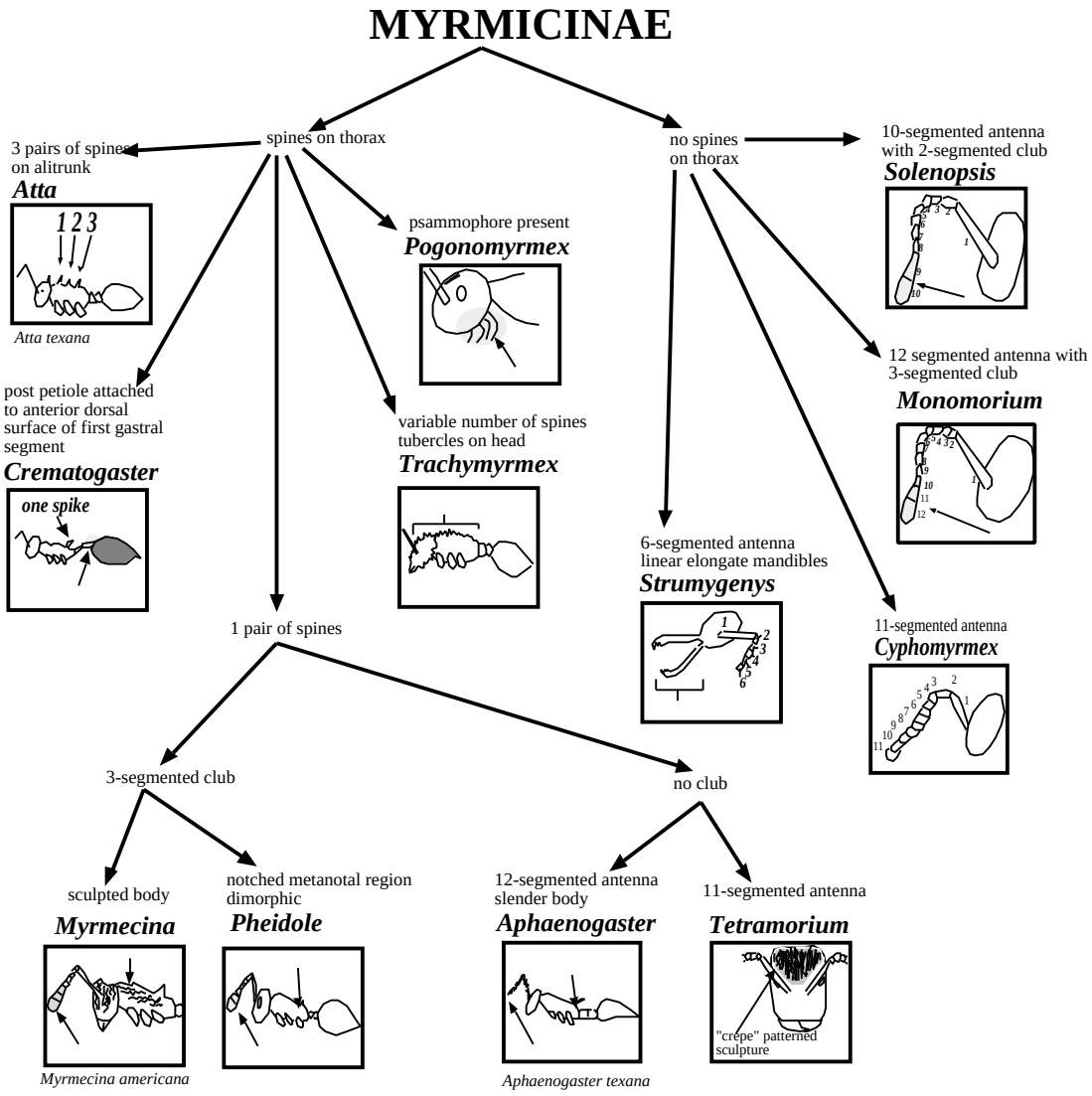
CHARACTERISTIC	***pallides***	***brunneus***
color	Pale yellow	Dark brown



SECTION VII

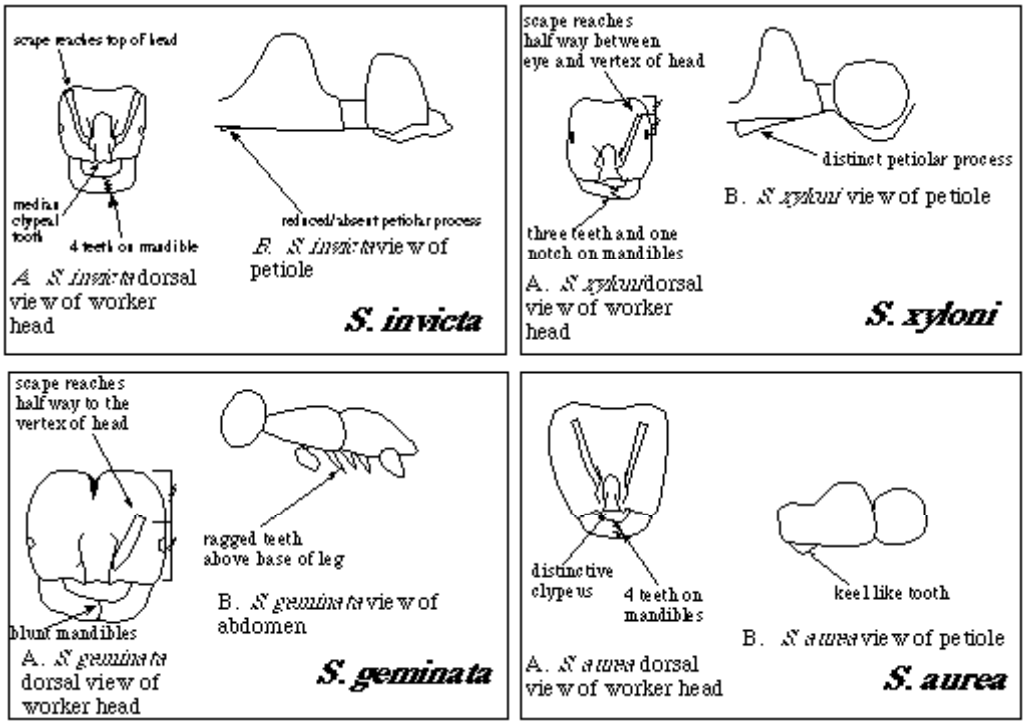
Solenopsis invicta *Solenopsis geminata*

GENERA IN MYRMICINAE



Solenopsis species identification

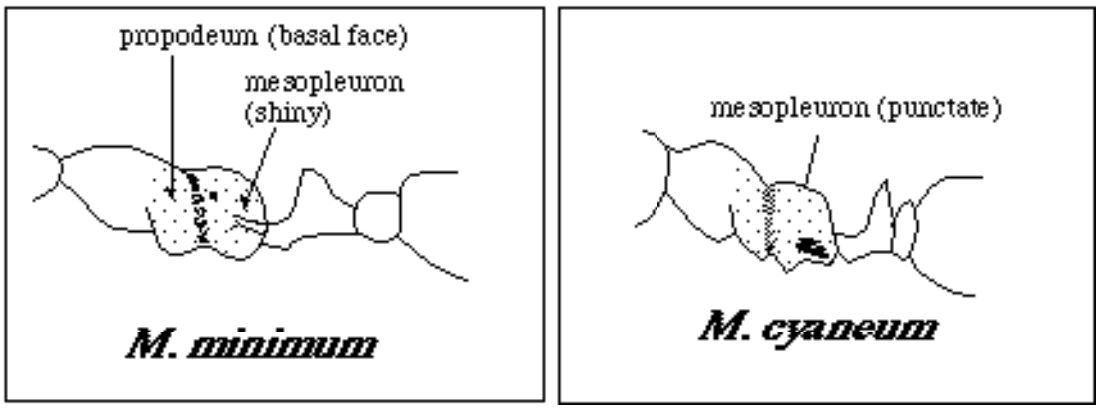
Characteristic	***invicta***	***geminata***	***xyloni***	***aurea***
Head	normal shape and proportions	**disproportionately large and bilobed** in major workers	normal size and proportion	normal size and proportion
Color of gaster	dark	dark	dark	**light yellow red**
Petiolar process	reduced or absent	at most a small notch	**distinct process**	**keel-like tooth**
Mandibles	4 teeth	strongly curved, often without teeth (on major)	3 teeth and small notch	4 teeth
Mesopleuron	**striated**			
Clypeus	**median tooth**	no tooth	no tooth	**two lateral teeth**
other	no teeth	**ragged irregular teeth above base of leg**	no teeth	no teeth



Monomorium species identification

Characteristic	***minimum***	***cyaneum***	***pharaonis***
Color (body)	Balck to reddish black	Black	Reddish-yellow
Punctation	Mesopleuron smooth and shining	Mesopleuron punctate	Head and thorx deeply punctate
Propodeum	basal face=declivitous face	basal face>declivitous face	
Nests	Ground/Arboreal/House wetter habitats	Under stones, drier habitats	in houses

from Dubois (1986), Wheeler and Wheeler (1986)



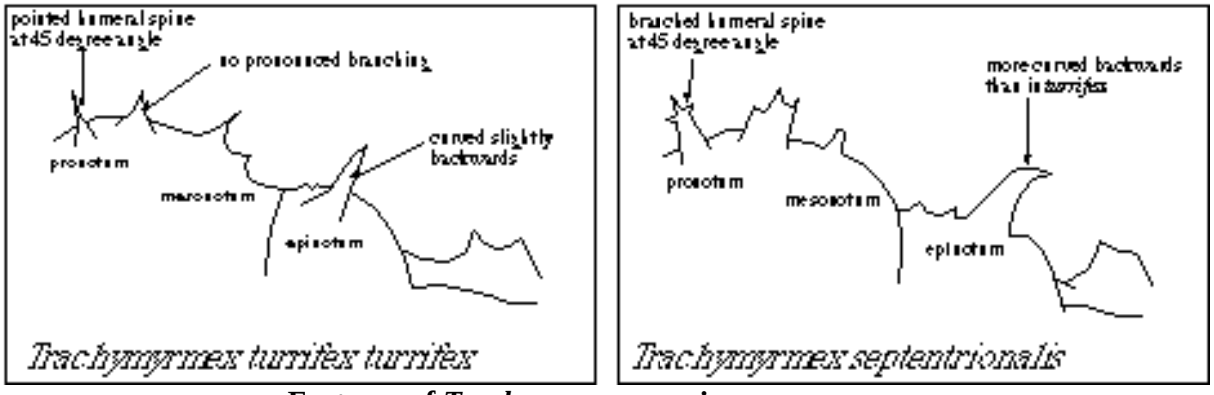
Features of *Monomoirum* species

Strumygenys species identification

Characteristic	***louisianae***	***silvesterii***
Mandibles	long, slender mandibles, 2 large teeth on apex	mandibles shorter with inner border armed with several teeth on the distal half, and a large triangular tooth at the base.

Trachymyrmex species identification

Characteristic	***louisianae***	***silvesterii***
Mandibles	long, slender mandibles, 2 large teeth on apex	mandibles shorter with inner border armed with several teeth on the distal half, and a large triangular tooth at the base.



Features of *Trachymyrmex* species

Tetramorium species identification

Not yet available

Pheidole species identification

Key to Majors

1.(a) Head is cylindrical in cross-section, obliquely truncate in front……..…..***lamia***

XII. Head is not cylindrical……2

2.(a) Antennal scape of major is bent at the base so that the scape turns towards the midline of the head……..…***hyatti***

(b) Antennal scape of major is not bent at base……3

3.(a) The tops of the occipital lobes of majors, and usually also the front of their faces as well are covered in sculpture…….***tepicana***

(b) The tops of the occipital lobes of majors, and usually also the front of their faces as well are free from sculpture……..…..…4

4.(a) Head, thorax and gaster of minors (and also sometimes majors) have a violaceous or bluish reflection……...…..…..***metallescens***

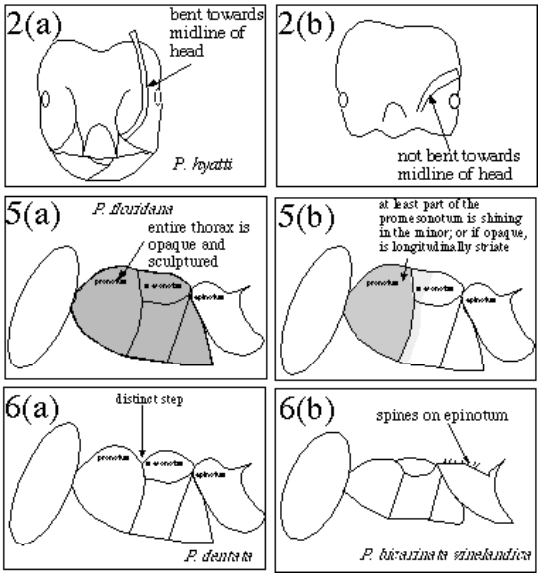
(b) No violaceous or bluish reflections……..……..5

5.(a) Entire thorax opaque and sculptured…….……***floridana***

(b) At least part of the promesonotum is shining in the minor; or if opaque, promesonotum is longitudinally striate…….6

6.(a) Mesonotum of major is depressed below adjacent portion of pronotum, so that in profile it forms a distinct step……..….***dentata***

(b) Mesonotum is not depressed. Epinotum of minor with thick, short spines……...……***bicarinata vinelandica***



SECTION VIII

Neivamyrmex fallax

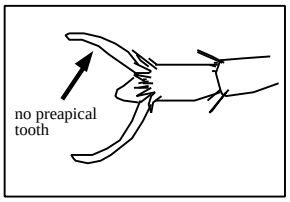
Neivamyrmex nigrescens

GENERA IN ECITONINAE

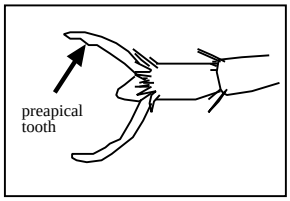
ECITONINAE

pretarsal claws of middle and hind legs lack preapical teeth

Neivamyrmex



Labidus



Labidus coecus

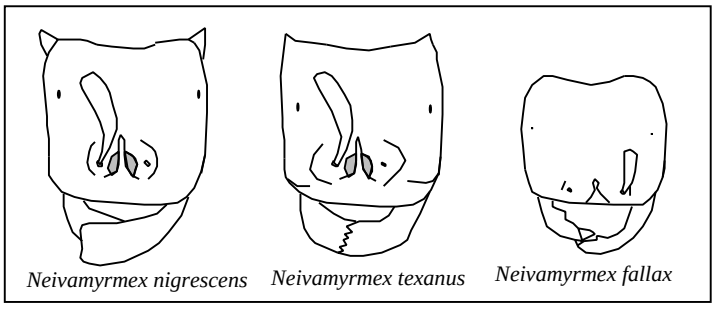
Neivamyrmex species identification

1.(a) Eye reduced to a yellow speck. Anteroventral tooth of petiole is large and triangular. Pronotum it without a transverse carina……***fallax***

(b) Eye is large, with a distinct convex cornea. Anteroventral tooth of petiole is poorly developed or absent……..2

2.(a) Dorsal and declining surface of propodeum forming a slight angle at their juncture; posterolateral border of pronotum separated from mesothorax by a distinct "V-shaped" suture……***texanus***

(c) Dorsal surface of propodeum gradually rounding into the declining surface; posterolateral suture between the pronotum and mesothorax shorter and not distinctly "V-shaped"……...……***nigrescens***



Features of*Neivamyrmex* species

SECTION IX

Formica pallidefulva *Paratrechina terricola*

GLOSSARY

acidopore the pore of the modified last sternal segment through which venomous secretions are squirted. It is a short nozzle with a fringe of setae

alitrunk the true thorax and first abdominal segemtn fused together

antennal fossa the cavity or depression of the head into which the antenna is articulated

anterior front, in front of

bulla a blister-like structure e.g. the thin convex roof of the metapleural cavity

carinate having a "ridge" or "low crest", often found in parallel rows

clypeus a sclerite on the lower part of the face

compound eye an eye composed of many individual elements called ommatidia

coxa the basalmost segment of the leg

declivitous face declivity: downward sloping surfaces (e.g posterior face of the propodeum)

dorsal top/uppermost

ecarinate without a carina

femur the "thigh" or 3rd segment of the leg away from the body

frontal lobes the platelike extension of the frontal carina above the insertion of the antenna

funiculus all of the antenna except the first segment, called the scape

gaster the swollen part of the abdomen behind the "waist"

machrochaetae large bristles

mandibles jaws

maxillary palp a pair of jointed appendages originating in the maxilla

median sulcus a furrow along the midline

mesonotum a dorsal sclerite of the mesonotum

mesothoracic spiracle the spiracle found on the 2nd segment of the thorax

metanotum a dorsal sclerite of the metathorax

metapleural gland a gland found on the metapleuron of ants which secretes antibiotics

metathoracic spiracle the spiracle found on the 3rd segment of the thorax

occiput the prominent posterolateral corner of the head

orifice an opening

pectinate comb-like, or bearing a comb (e.g. tarsal spurs)

petiole a pedicel composed of only one segment, or the 1st segment of a 2-segmented pedicel

postpetiole the 2nd segemtn of the waist- actually composed of the 3rd abdominal segment

pronotum a dorsal sclerite of the prothorax

propodeal spiracle a spiracle found on the propodeum

propodeum the 1st abdominal segement fused with the alitrunk, a.k.a. epinotum

psammophore a group of ammochaetae (hairs) on the underside of the head (e.g. Pogonomyrmex)

punctate surface bearing fine punctures like pinpricks

pygidium the tergum of the last visible segment of the abdomen

reticulate surface covered in a netwrok of carinae, striae or rugae (wrinkles)

rugulae small wrinkles

rugulose minutely wrinkled

scape the first segment of the antenna

sclerite a portion of the body surrounded by sutures

sculpture surface patterns in the chitin (exoskeleton of the ant)

scutellum a sclerite of the thoracic notum

serrate with teeth along the edge, like a saw

setae a bristle

spiracle the external opening of the insect tracheal system, a small hole

sternite ventral sclerite

sting the spinelike organ near the end of the last abdominal segment

striate surface bearing multiple striae or impressed lines

sulcus a furrow or groove

tarsal claw claws found on the last segment of the tarsus

tarsus the "foot", consists of 1-5 segments

tergite dorsal sclerite

tibia the 4th division of the leg between the femur and tarsus

tibial spurs spinelike appendages on the tibia, may have 0, 1 or 2

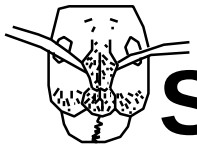
trochanter the short 2nd division of the leg

truncated cut off square on the end

tubercles small thick spines or pimple-like structures

ventral underneath

ventral process a projection on the lower part of the petiole



SECTION X

Camponotus sayi *Neivamyrmex nigrescens*

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SECTION XI

Paratrechina longicornis

Neivamyrmex nigrescens

Checklist of Species

SUBFAMILY	GENUS	SPECIES	Status at BFL + = present in 2000 ? = unknown	Colony Location (for personal use)
Formicinae	Brachymyrmex	depilis	+	
	Myrmecocystus	melliger	?	
	Formica	pallidefulva	+	
	Paratrechina	terricola	+	
	Paratrechina	longicornis	+	
	Camponotus	etiolatus	+	
	Camponotus	festinatus	+	
	Camponotus	impressus	+	
	Camponotus	sayi	+	
	Camponotus	sansabeanus	+	
	Camponotus	texanus	+	
Ponerinae	Amblyopone	pallipes	?	
	Odontomachus	clarus	+	
	Leptogenys	elongata	+	
	Pachycondyla	harpax	+	
	Ponera	pennsylvanica		
	Hypoponera	punctatissima	?	
	Hypoponera	opaciceps	+	
	Hypoponera	opacior	?	
Dolichoderinae	Dorymyrmex	flavus	+	
	Forelius	mccooki	+	
	Forelius	pruinosus	+	
Ecitoninae	Labidus	coecus	?	
	Neivamyrmex	fallax	?	
	Neivamyrmex	nigrescens	+	
	Neivamyrmex	texana	+	
Myrmicinae	Pogonomyrmex	barbatus	+	
	Aphaenogaster	texana	+	
	Pheidole	bicarinata	+	
	Pheidole	constipata	+	
	Pheidole	dentata	+	
	Pheidole	floridana	+	
	Pheidole	hyatti	+	
	Pheidole	lamia	+	
	Pheidole	metallescens	+	
	Pheidole	tepicana	+	
	Crematogaster	laeviuscula	+	
	Crematogaster	minutissima	+	
	Crematogaster	punctulata	+	
	Monomorium	minimum	+	
	Monomorium	cyaneum	+?	

	Monomorium	pharaonis	+	
	Solenopsis	geminata	+	
	Solenopsis	invicta	+	
	Solenopsis	texana	+	
	Solenopsis	aurea	?	
	Myrmecina	americana	+	
	Tetramorium	caespitum	+	
	Tetramorium	spinosus	+	
	Strumigenys	louisianae	+	
	Strumigenys	silvesterii	+	
	Trachymyrmex	septentrionalis	?	
	Trachymyrmex	turrifex	?	
	Atta	texana	+	
Pseudomyrmex	Pseudomyrmex	brunneus	+	
	Pseudomyrmex	pallides	+	