

Keys to the Ants of Brackenridge Field Laboratory

Compiled by John C. Abbott

Family Formicidae (ants)

Subfamily Ponerinae

The subfamily Ponerinae is regarded as a very primitive group of ants, both in structure and habit. Ponerine ants are typically arthropod predators. Workers collect other insects or arthropods and cut them into pieces which are subsequently fed to the larvae. Most colonies are small (less than 100 individuals). Three species are reasonably common at BFL: *Leptogenys elongata*, *Pachycondyla harpax* and *Odontomachus clarus*. Representatives in the U.S. are inoffensive or even timid.

Subfamily Ecitoninae

Ants belonging to this subfamily often differ substantially from other ants, such that it was not recognized as an ant for a long period of time. Ecitonine ants are commonly called army ants. At certain seasons these insects become nomadic and the entire colony sets out on an expedition which becomes a series of raids against any animal that may happen to be in the vicinity. Colonies can become large, containing thousands of workers. These ants are usually encountered by chance since they shun direct sunlight. *Neivamyrmex nigrescens* is the most commonly encountered species in this subfamily.

Subfamily Pseudomyrmicinae

There are four genera in this subfamily. A single genus, *Pseudomyrmex*, occurs in the New World and two species have been found at BFL. The nests of this subfamily are generally found in preformed plant cavities. This group is described as omnivorous, feeding on honeydew, the softer tissues of plants and the tissues of other insects.

Subfamily Myrmicinae

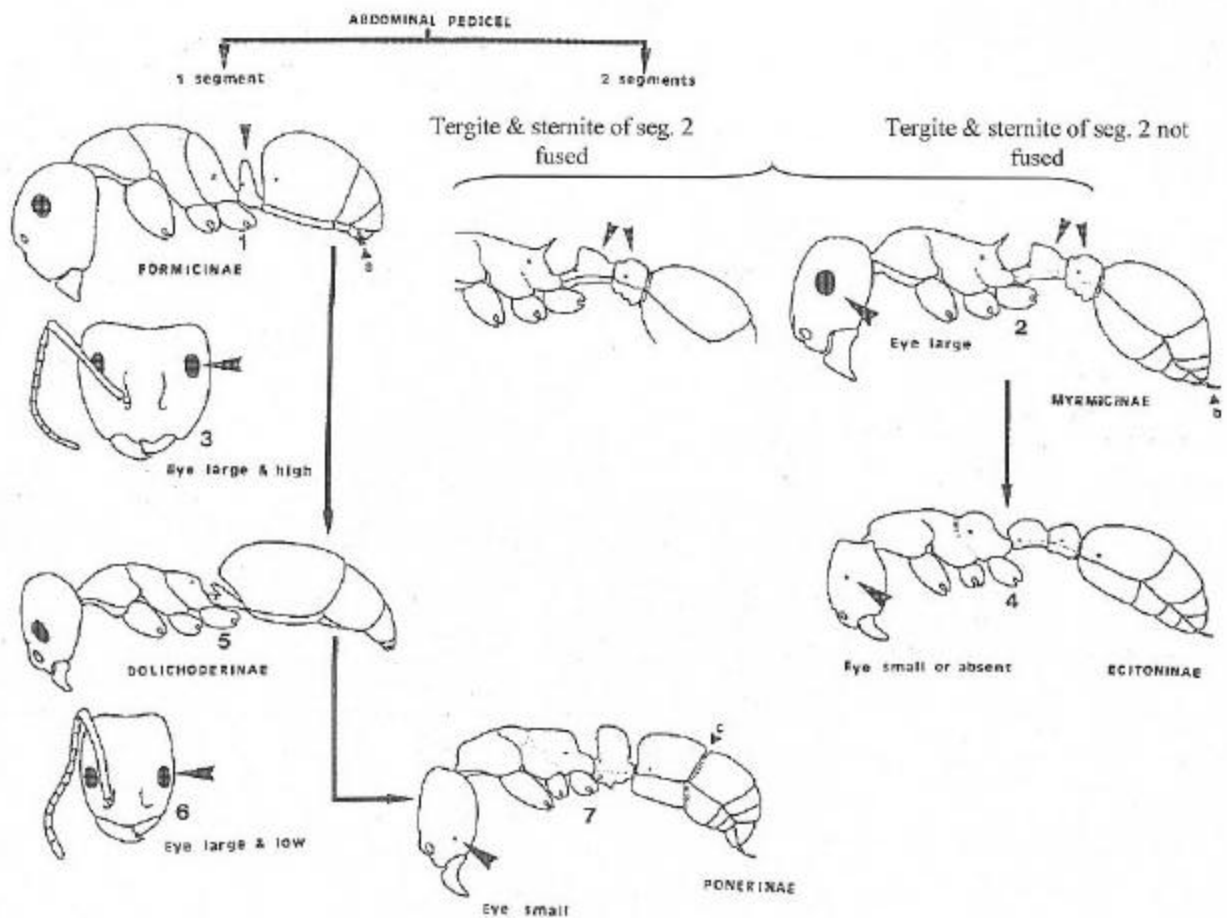
Myrmicine ants are the most commonly encountered at BFL. They have a diverse variety of habitats and morphology making them difficult to characterize. This group includes the leaf-cutter ants, *Atta*, and harvester ants, *Pogonomyrmex*.

Subfamily Dolichoderinae

Most Dolichoderine ants are scavengers. Colonies are usually moderate in size (several hundred to several thousand individuals). These ants are often locally abundant and may be the only species encountered in "harsher environments."

Subfamily Formicinae

Formicinae ants are the second largest group of ants at BFL. Many species feed on the sweet excretions of other insects (such as aphids and scale insects). Colonies can contain several thousand individuals. Members of the genus *Formica* often build conspicuous mounds. Species within the genera *Camponotus* and *Formica* are the most common at BFL.



- Figure 1. *Camponotus pennsylvanicus*, Butler Co. (336 colonies of *Camponotus* collected). a = Circlet of microsetae always present in Formicinae.
- Figure 2. *Pogonomyrmex occidentalis*, Hodgeman Co. (288 colonies of *Pogonomyrmex* collected). b = Sting usually visible in Myrmicinae and Ecitoninae.
- Figure 3. *Camponotus pennsylvanicus*, Butler Co., head, full face view.
- Figure 4. *Neivamyrmex nigrescens*, Marshall Co., (30 colonies of *Neivamyrmex* collected).
- Figures 5 and 6. *Forelius prinosus analis*, Hamilton Co. (212 colonies of *Forelius* collected). Figure 6 head, full face view.
- Figure 7. *Ponera pennsylvanica*, Douglas Co. (69 colonies of *Ponera* collected). c = Construction always visible in Ponerinae.

Key to Genera and Species of Workers for Subfamilies Occurring at BFL.

PONERINAE

- 1a. Mandibles long and linear with an apical armament of 2 or 3 teeth (Fig. 459)*Odontomachus clarus*
- 1b. Mandibles linear to triangular without apical armament of teeth2
- 2a. Pretarsal claws with inner curvatures usually pectinate (Fig. 516)*Leptogenys elongata*
- 2b. Pretarsal claws with inner curvatures smooth and unarmed*Pachycondyla harpax*

ECITONINAE

Neivamyrmex nigrescens is the only confirmed species for this subfamily at BFL.

PSEUDOMYRMEX

- 1a. Mesoepinotal suture strongly impressed; head and thorax yellowish brown, the entire gaster blackish brown*Pseudomyrmex brunneus*
- 1b. Mesoepinotal suture feebly impressed; color clear yellow, the gaster with two brownish spots at the base*Pseudomyrmex pallidus*

MYRMICINAE

- 1a. Gaster in dorsal view roughly heart-shaped*Crematogaster*2
- 1b. Gaster in dorsal view not heart-shaped4
- 2a. Postpetiole suboval and entire, without a trace of a median sulcus.....*C. minutissima missouriensis*
- 2b. Postpetiole divided by a distinct median sulcus3
- 3a. Thoracic dorsum without erect hairs or with not more than eight erect hairs which are confined to the humeral angles of the pronotum*C. laeviuscula*
- 3b. Thoracic dorsum with at least fifteen erect hairs which are scattered over the entire promesonotum*C. punctulata*
- 4a. Antenna and preapical antennal segments forming a strong and conspicuously differentiated club of 2 segments5
- 4b. Antenna never terminating in a conspicuously differentiated, 2-segmented club6
- 5a. Antenna with 6 segments (Fig. 234)*Strumigenys* spp.
- 5b. Antenna with 10 segments (Fig. 376)*Solenopsis*...27
- 6a. Antenna with 11 segments7
- 6b. Antenna with 12 segments10
- 7a. Lateral portions of clypeus forming a raised, sharp-edged rim or wall in front of the antennal insertions (Fig. 416)*Tetramorium caespitum*
- 7b. Lateral portions of clypeus not forming a raised, sharp-edged rim or wall in front of the antennal insertions (Fig. 250)8

8a.	Diagonal superocular carina present in lateral view of head (Figs. 181, 185)	9
8b.	Diagonal superocular carina absent (Fig. 251)	<i>Leptothorax</i> ...18
9a.	Promesonotum with blunt tubercles (Fig. 185)	<i>Cyphomyrmex rimosus</i>
9b.	Promesonotum with elongate, sharp spines (Fig. 181)	<i>Atta texana</i>
10a.	Propodaeum bispinose; Ventrolateral margin of head delineated by a sharp longitudinal carina on each side (Fig. 304)	<i>Myrmecina americana</i>
10b.	Propodaeum with large ventral process or unarmed or both; Ventrolateral margin of head without a sharp longitudinal carina on each side (Fig. 416)	11
11a.	Lateral portions of clypeus raised into a sharp-edged ridge or shield wall on each side, in front of the antennal insertions (Fig. 416); Spurs of middle and hind tibiae simple or absent	<i>Tetramorium spinosus insons</i>
11b.	Lateral portions of clypeus usually not raised into a sharp-edged ridge in front of the antennal insertions, but if so then the spurs of the middle and hind legs are pectinate	12
12a.	Metatibial spurs finely pectinate	<i>Pogonomyrmex barbatus</i>
12b.	Metatibial spurs simple or absent	13
13a.	Median portion of clypeus abruptly raised and relatively narrow, the raised portion with a pair of fine longitudinal carinae which diverge anteriorly (Fig. 378)	<i>Monomorium</i> ...14
13b.	Median portion of clypeus broad, not abruptly raised, flat to transversely convex, and without a pair of fine longitudinal carinae medially (Fig. 250)	15
14a.	Head and thorax densely punctate, opaque or very feebly shining; color clear, reddish yellow	<i>M. pharaonis</i>
14b.	Head and thorax in large part or entirely smooth, strongly shining with only scattered, piligerous punctures; color not as above	<i>M. minimum</i>
15a.	Apical margin of mandible with 0-6 teeth or denticles in total (Fig. 250)	16
15b.	Apical margin of mandible with 7 or more teeth or denticles in total (Fig. 338)	17
16a.	Mandible massively constructed (Fig.), edentate or with rounded vestiges of teeth, or with 2 teeth apically followed by a diastema and 1 or 2 basal teeth; Dorsal surface of propodaeum depressed far below the level of the promesonotum	<i>Pheidole</i> (part)...20
16b.	Mandible delicately constructed, with 5 or 6 regular teeth which decrease in size from apex to base (Fig. 250); Dorsal surface of propodaeum on same level as promesonotum at least anteriorly, or only slightly lower	<i>Leptothorax</i> (part)...18
17a.	Apical margin of mandible with the third tooth (counting from apex) smaller than the fourth, or the reduced third tooth followed by a minute denticle before the larger fourth tooth (Fig. 334)	<i>Pheidole</i> (part)...20
17b.	Apical margin of mandible with the third tooth (counting from apex) larger than the fourth (Fig. 338)	<i>Aphaenogaster texana</i>

- 18a. Thoracic dorsum distinctly convex in profile; anterior peduncle of the petiole long, usually thin and always sharply set off from the node; epinotal spines long*L. subditiva*
- 18b. Thoracic dorsum flat or feebly convex in profile; anterior peduncle of the petiole short, thick and not sharply set off from the node; epinotal spines short19
- 19a. Head densely and evenly punctate, the punctures not interspersed with striae or rugae, the surface completely opaque; color pale yellow*L. terrigena*
- 19b. Head with striae or rugae as well as punctures, the surface usually feebly shining; color brownish yellow to dark brown*L. obtruator*
- 20a. Head cylindrical in cross-section and obliquely truncated in front*P. lamia*
- 20b. Head not cylindrical in cross-section and not obliquely truncated in front21
- 21a. Antennal scape laterally bent at the base so that the scape turns toward the midline of the head in passing to the antennal socket, the flattened basal portion as wide as the distal part of the scape ..22
- 21b. Antennal scape not laterally bent at the base or, if slightly bent and flattened, the flat part is not as wide as the distal portion of the scape23
- 22a. The entire upper surface of the head covered with reticulo-rugose sculpture, the interrugal spaces granulose*P. texana*
- 22b. The reticulo-rugose sculpture largely confined to the anterior half of the head, the occipital lobes punctate or feebly granulose, the surface moderately to strongly shining at least in the posterior half of the head*P. hyatti*
- 23a. The tops of the occipital lobes, and usually the front of the face, covered with sculpture, the surface opaque or feebly shining*P. tepicana*
- 23b. The tops of the occipital lobes, and usually the front of the face, free from sculpture except for piligerous punctures, the surface in most cases strongly shining24
- 24a. Entire thorax densely covered with granulose sculpture and completely opaque25
- 24b. At least the top of the pronotum shining or, if the entire thorax is opaque, the promesonotum is longitudinally striate and not densely granulose26
- 25a. Antennal scapes of the minor just reaching the occipital border or surpassing it by an amount much less than the length of the first funicular joint*P. constipata*
- 25b. Antennal scapes of the minor surpassing the occipital border by an amount equal to the length of the first funicular joint*P. floridana*
- 26a. Mesonotum depressed below the adjacent portion of the pronotum so that in profile it forms a distinct step or angular projection between the pronotum and the epinotum*P. dentate*
- 26b. Mesonotum not depressed below the adjacent portion of the pronotum, in profile the two forming an evenly curved outline which usually descends abruptly at the mesoepinotal suture*P. bicarinata*
- 27a. Head of major worker wider than abdomen in dorsal view*S. geminata*
- 27b. Head of major worker, at most as wide as abdomen in dorsal view*S. invicta*

DOLICHODERINAE

- 1a. With propodaeum in profile the angle between dorsum and declivity extended into a single raised tooth or spine (Fig. 31)*Dorymyrmex insane*
- 1b. With propodaeum in profile the angle between dorsum and declivity rounded to angulate, but never extended into a raised tooth or spine (Fig. 33)*Forelius foetida*

FORMICINAE

- 1a. Antenna with 9 segments*Brachymyrmex depilis*
- 1b. Antenna with 12 segments2

- 2a. Antennal sockets situated close to posterior margin of clypeus (Figs. 104, 122)8
- 2b. Antennal sockets situated well behind the posterior margin of the clypeus (Fig. 84)
.....*Camponotus*...4

- 4a. Head circular in cross section and abruptly truncated in front5
- 4b. Head not circular in cross section and not abruptly truncated in front6

- 5a. The angle where the side of the head meets the truncated anterior face surmounted by a distinct, narrow flange or rim; sculpture of the anterior face consisting of small shallow punctures and fine reticulation *C. (Colobopsis) etiolates*
- 5b. The angle where the side of the head meets the truncated anterior face serrate or blunt but not surmounted by a distinct flange; sculpture of the anterior face coarsely punctate and heavily reticulate*C. (Colobopsis) impressus*

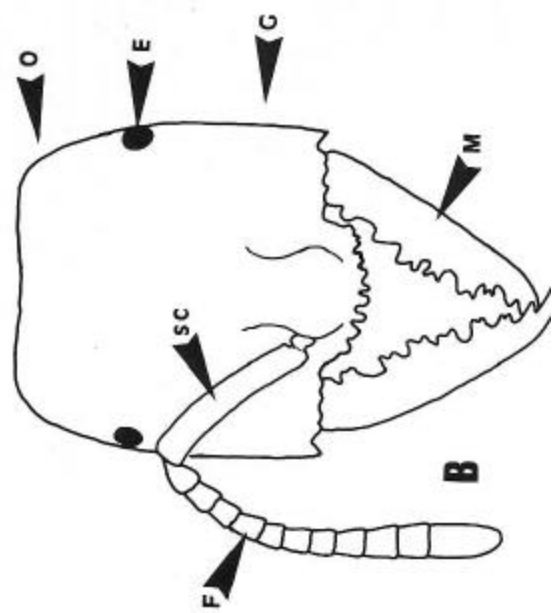
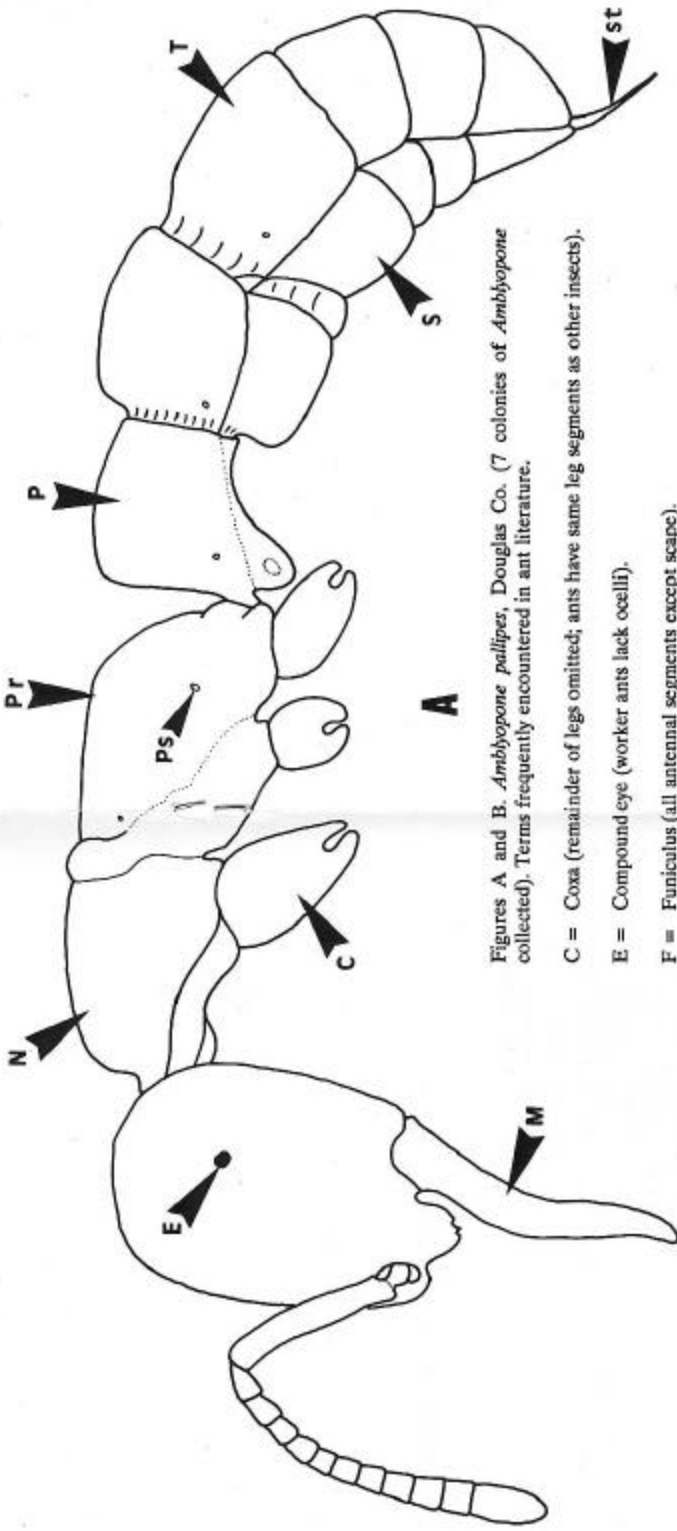
- 6a. Anterior border of the clypeus feebly projecting, depressed in the middle and with a narrow, median notch, behind which is a short, triangular impression*C. (Myrmentoma) sayi*
- 6b. Anterior border of the clypeus not as above, usually without a median notch but when one is present there is not impression behind it7

- 7a. Major workers with the anterior margin of the median lobe of the clypeus straight or evenly concave, the angles which the median portion makes with the lateral portions sharp and tooth-like*C. (Camponotus) texanus*
- 7b. Major worker with the anterior margin of the clypeus not as described above, the anterior edge of the median lobe usually scalloped and meeting the lateral portions in blunt angles
.....*C. (Camponotus) americanus*

- 8a. Propodael spiracle elliptical to broadly oval (Fig. 105)*Formica pallidefulva*
- 8b. Propodael spiracle circular to subcircular (Fig. 125)*Paratrechina terricola*

Ant Genera found at BFL

	woods	under stones & logs	cedar Breaks (sand or gravel)	open Areas	in branches	in soil	in buildings
PONERINAE							
<i>Pachycondyla</i>	*	*					
<i>Leptogenys</i>	*	*					
<i>Odontomachus</i>			*				
ECITONINAE							
<i>Neivamyrmex</i>	*			*			
PSEUDOMYRMICINAE							
<i>Psuedomymex</i>	*			*	*		
MYRMICINAE							
<i>Pogonomyrmex</i>				*			
<i>Aphaenogaster</i>	*	*					
<i>Pheidole</i>	*	*		*		*	
<i>Crematogaster</i>	*	*		*	*		
<i>Monomorium</i>	*					*	*
<i>Solenopsis</i>	*			*		*	
<i>Myrmecina</i>	*						
<i>Leptothorax</i>	*				*	*	
<i>Tetramorium</i>	*						*
<i>Strumigenys</i>	*						
<i>Cyphomyrmex</i>	*	*				*	
<i>Atta</i>				*		*	
DOLICHODERINAE							
<i>Forelius</i>				*		*	
<i>Dorymyrmex</i>				*		*	
FORMICINAE							
<i>Brachymyrmex</i>	*						
<i>Camponotus</i>	*	*			*		*
<i>Paratrechina</i>	*	*					
<i>Formica</i>		*		*		*	



Figures A and B. *Amblyopone pallipes*, Douglas Co. (7 colonies of *Amblyopone* collected). Terms frequently encountered in ant literature.

- C = Coxa (remainder of legs omitted; ants have same leg segments as other insects).
- E = Compound eye (worker ants lack ocelli).
- F = Funiculus (all antennal segments except scape).
- G = Gena (cheek).
- M = Mandible.
- N = Pronotum.
- O = Occiput (area near top of head, more properly called occipital vertex).
- P = Petiole (if followed by a similar segment, subsequent segment is called postpetiole).
- Pr = Propodeum (the first segment of the abdomen, but appears to be part of the "thorax" called alitrunk in ants).
- Ps = Propodeal spiracle.
- S = Sternite (the abdomen is called gaster in ants, see propodeum above).
- Sc = Scape (first segment of antenna, always elongated in ants).
- St = Sting (found only in Ponerinae, Ecitoninae, and Myrmicinae).
- T = Tergite (upper plate vs lower plate or sternite).

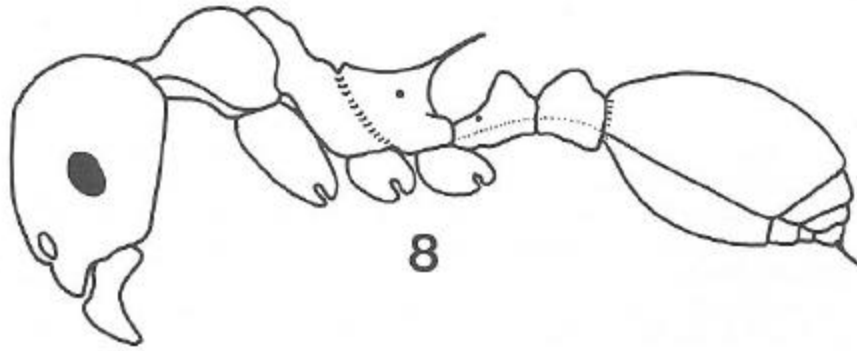


Figure 8. *Aphaenogaster tennesseensis*, Douglas Co. (191 colonies of *Aphaenogaster* collected).

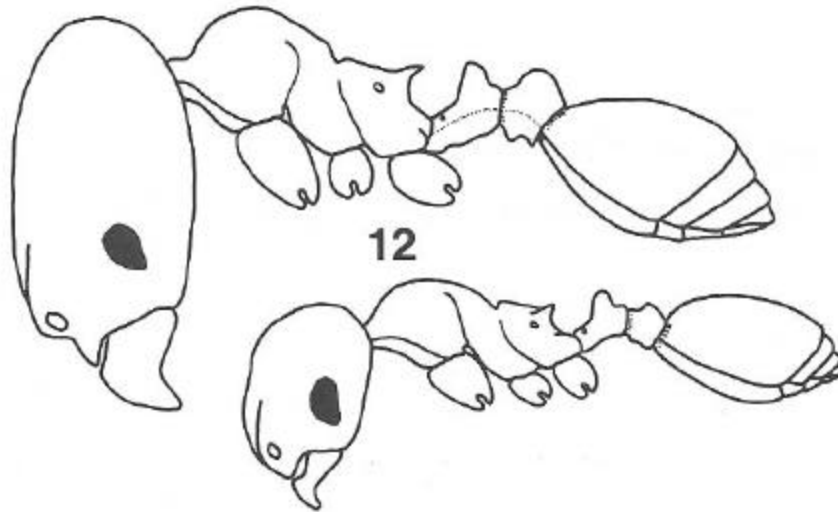


Figure 12. *Pheidole bicarinata*, Douglas Co. (219 colonies of *Pheidole* collected). Note differences between major and minor workers which usually occur in the same nest.

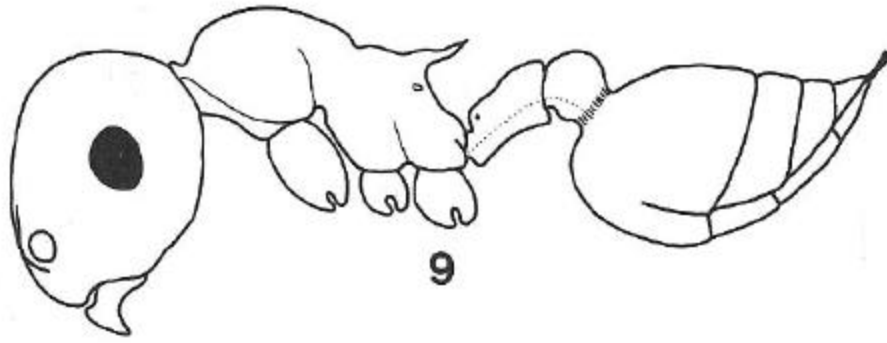


Figure 9. *Crematogaster punctulata*, Douglas Co. (619 colonies of *Crematogaster* collected).

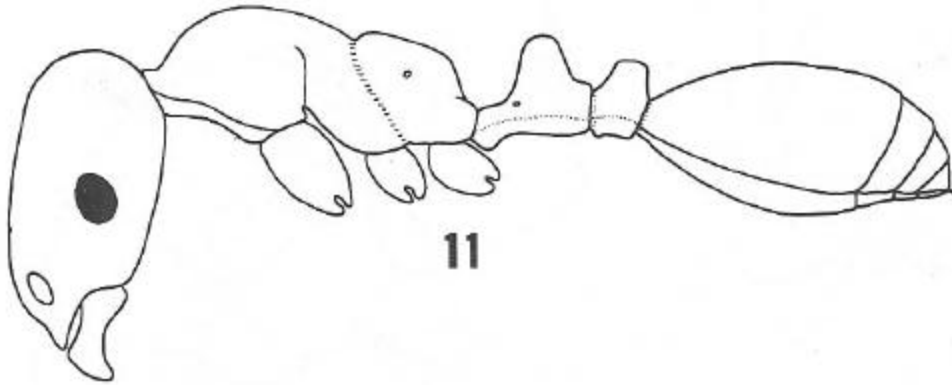


Figure 11. *Monomorium minimum*, Douglas Co. (265 colonies of *Monomorium* collected).

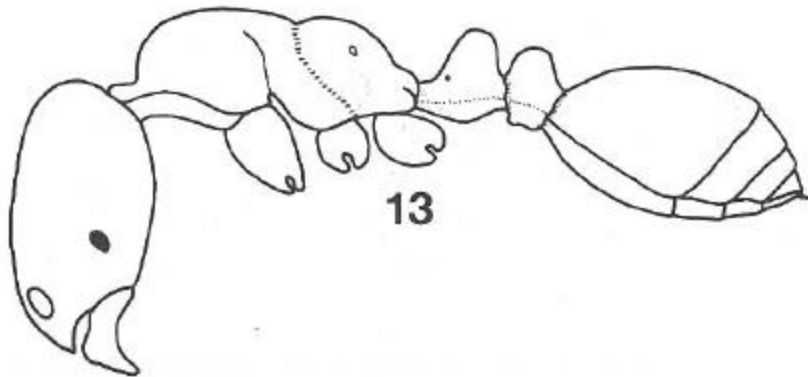


Figure 13. *Solenopsis molesta*, Douglas Co. (126 colonies of *Solenopsis* collected).

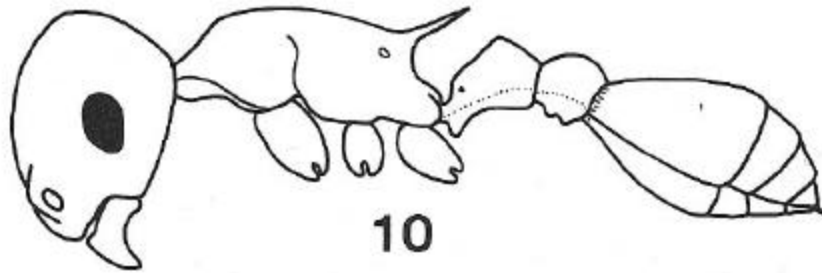


Figure 10. *Leptothorax curvispinosus*, Douglas Co. (153 colonies of *Leptothorax* collected).

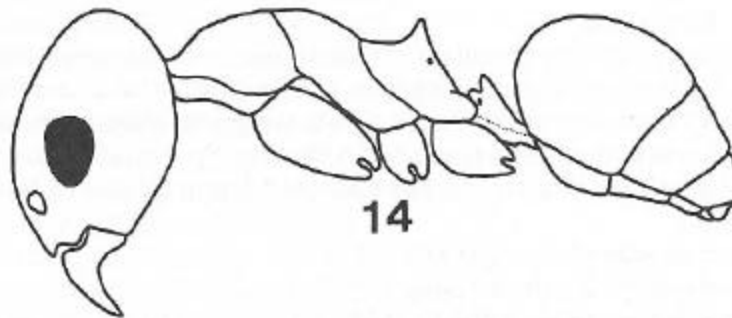


Figure 14. *Dorymyrmex flavus*, Hamilton Co. (145 colonies of *Dorymyrmex* collected).

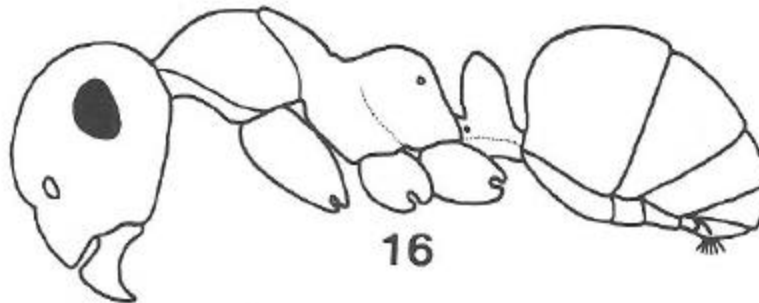
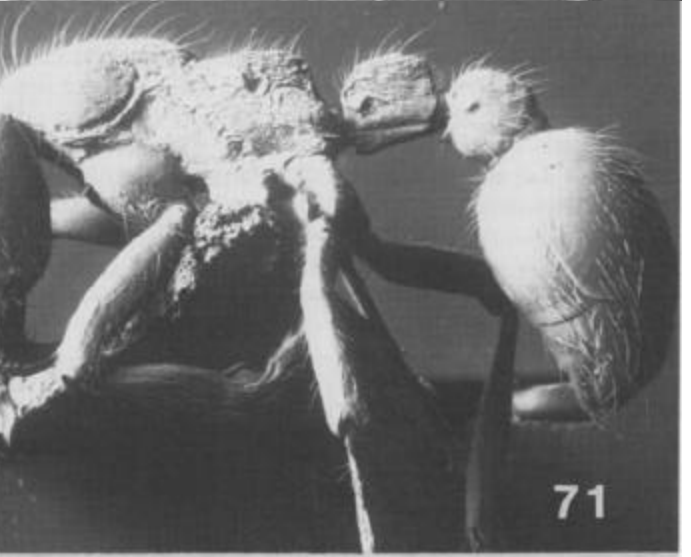
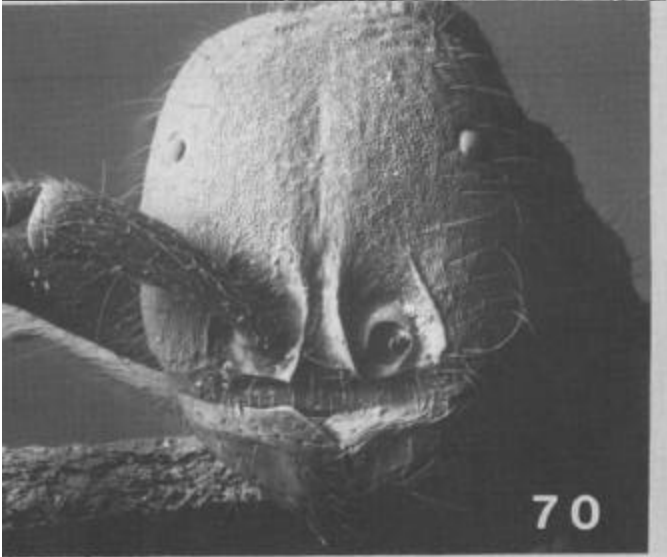
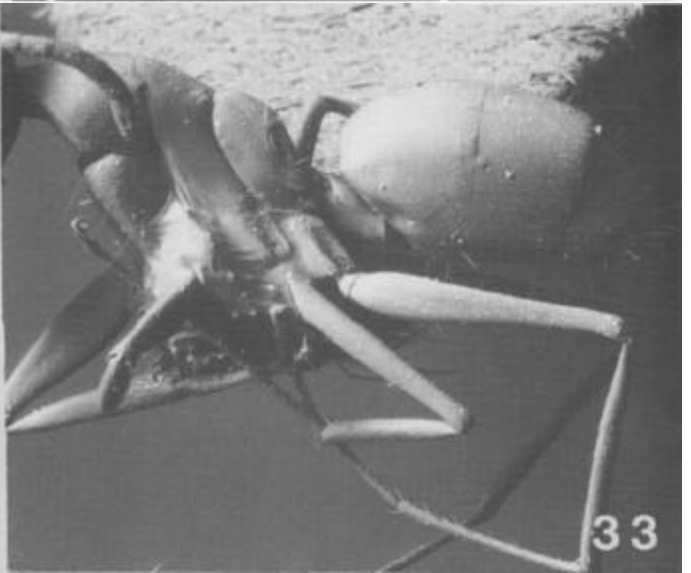
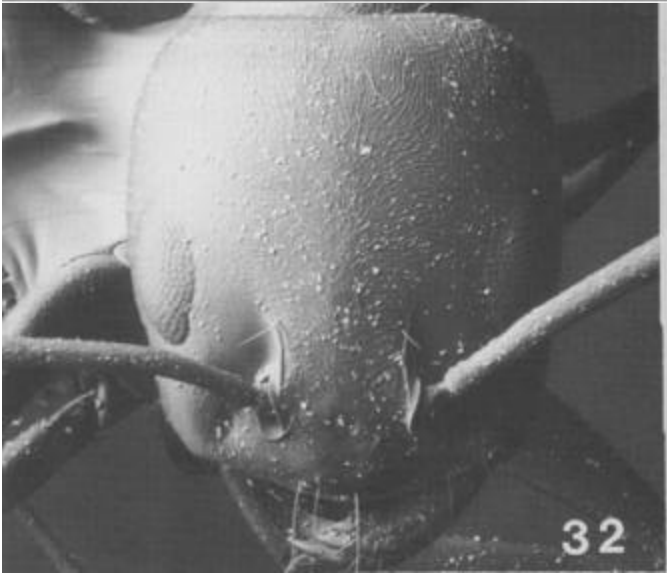
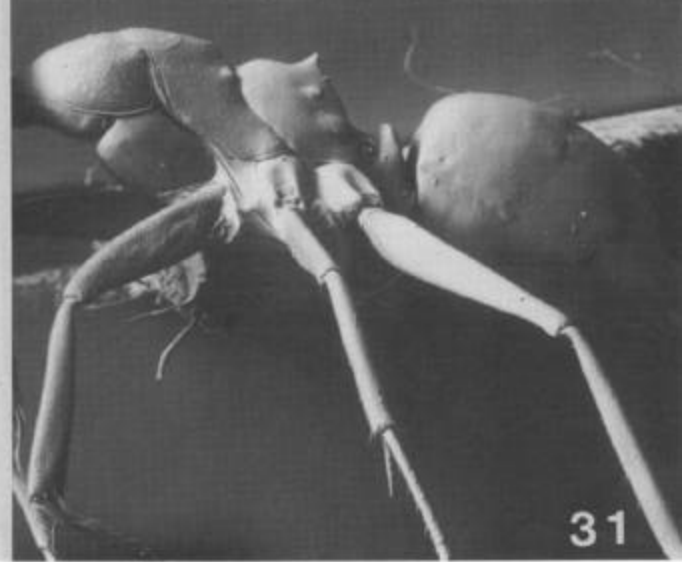
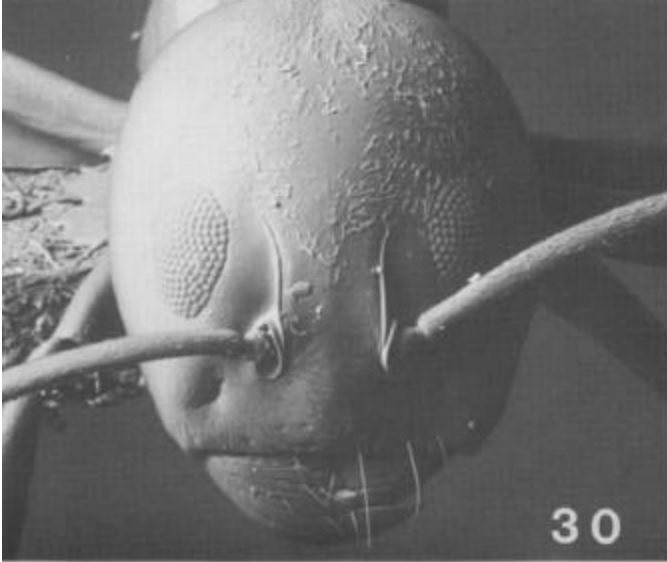
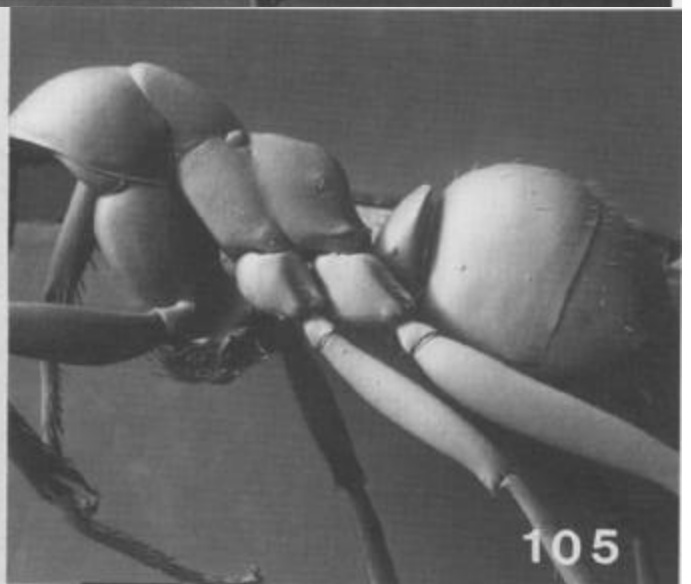
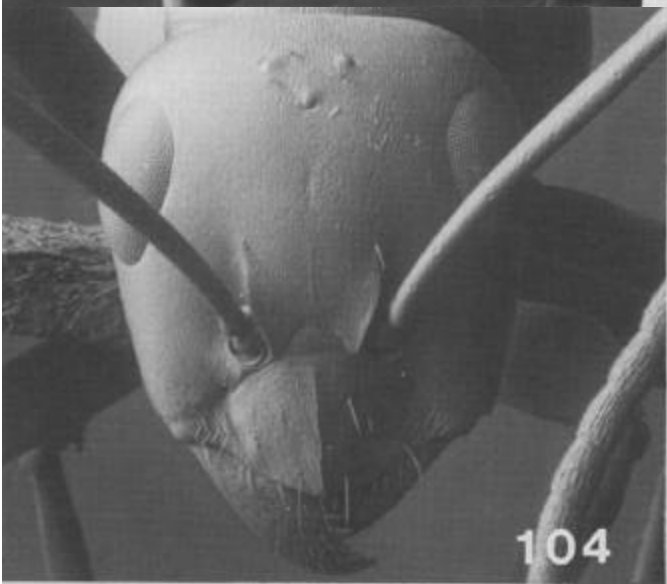
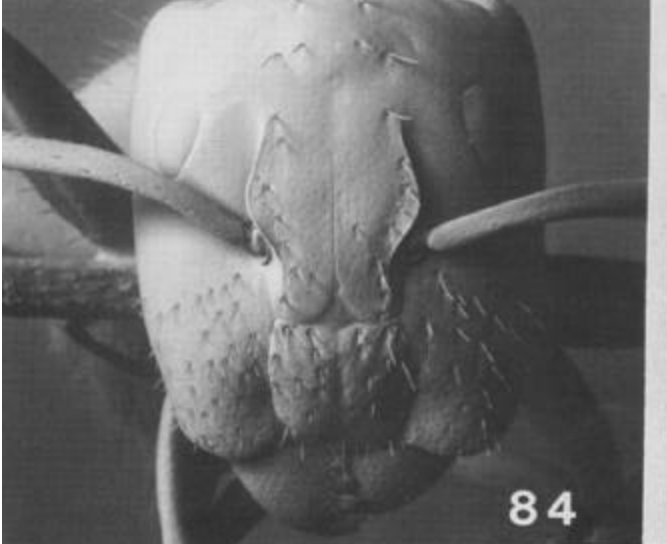
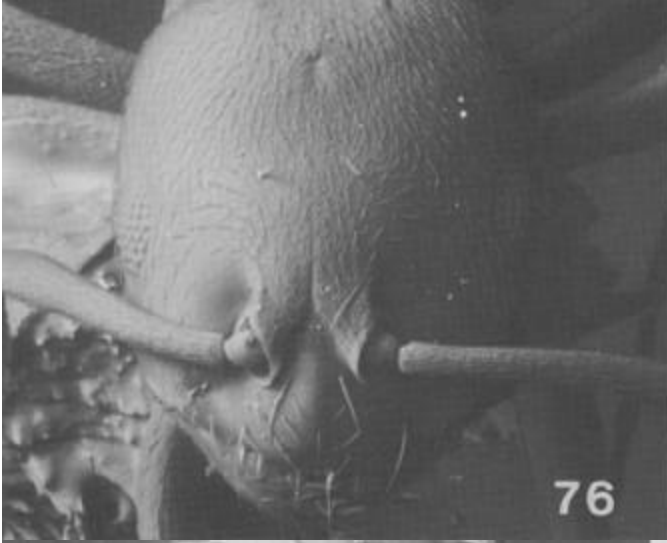
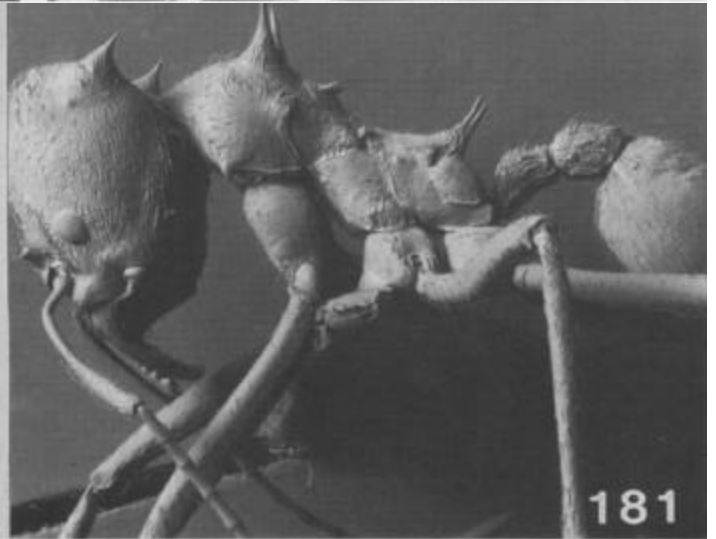
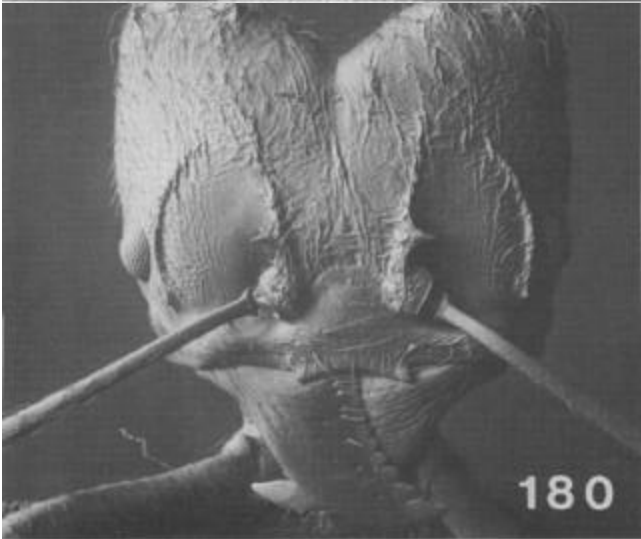
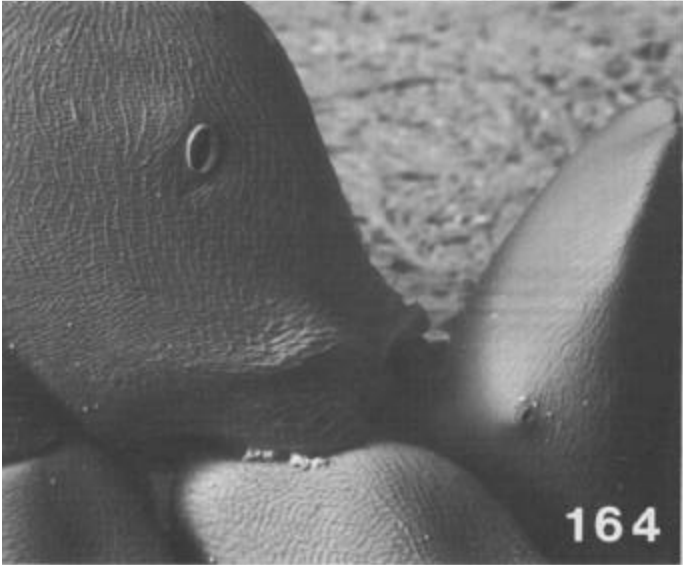
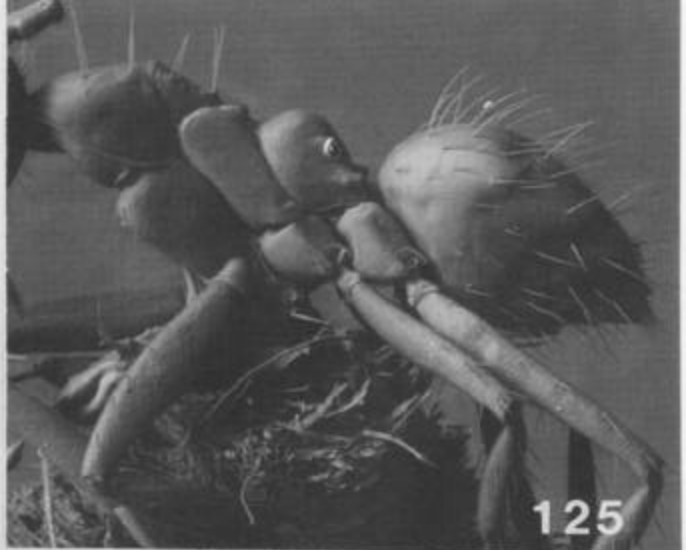
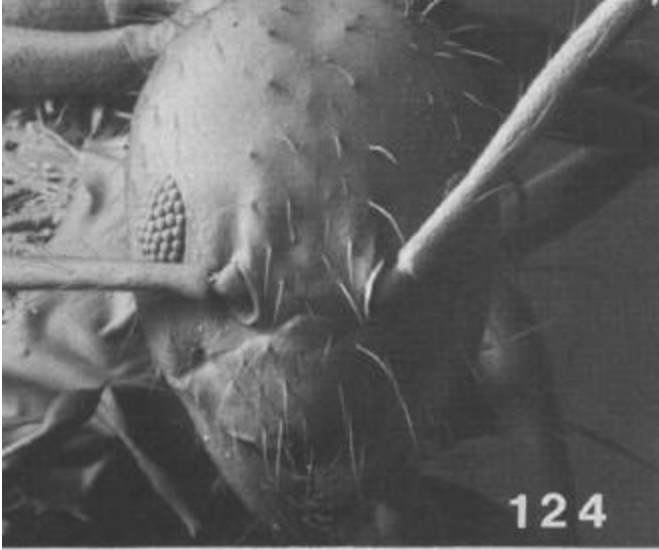
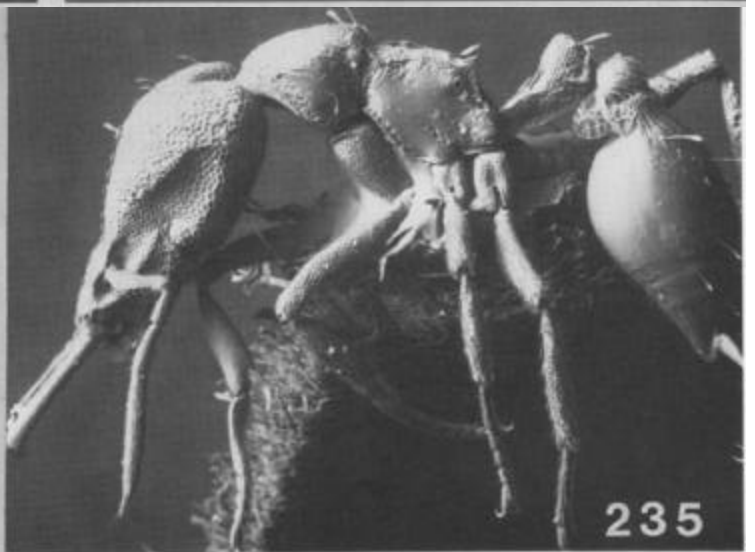
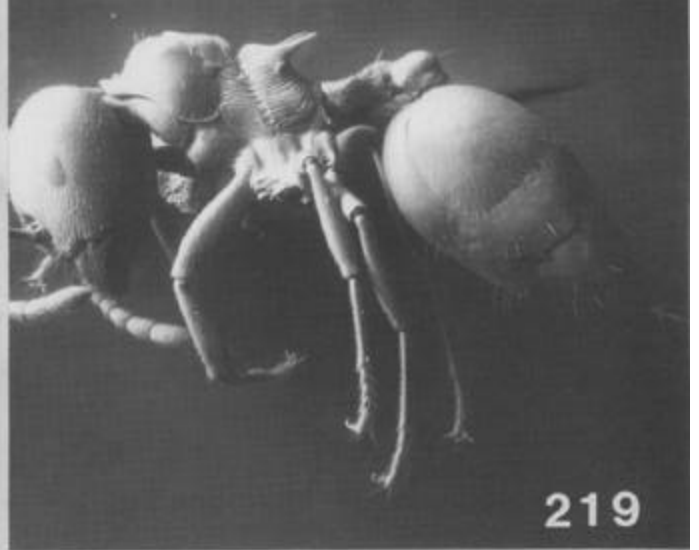
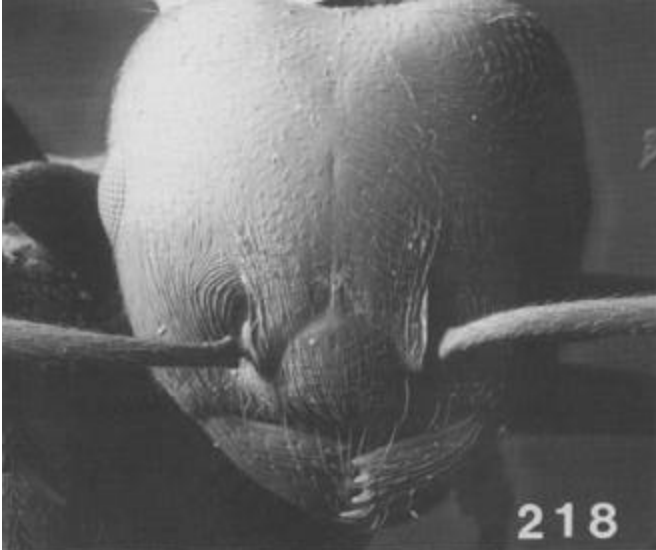
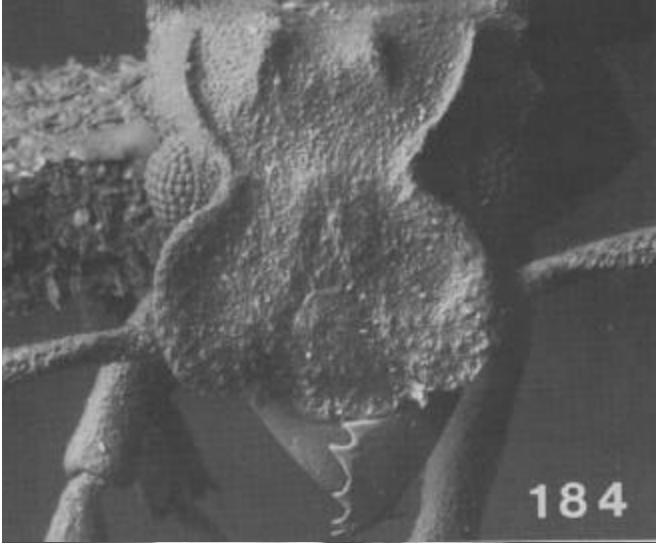


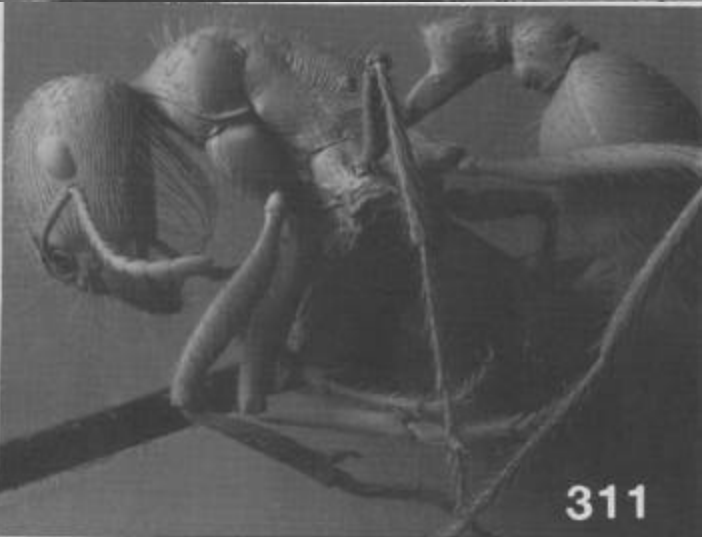
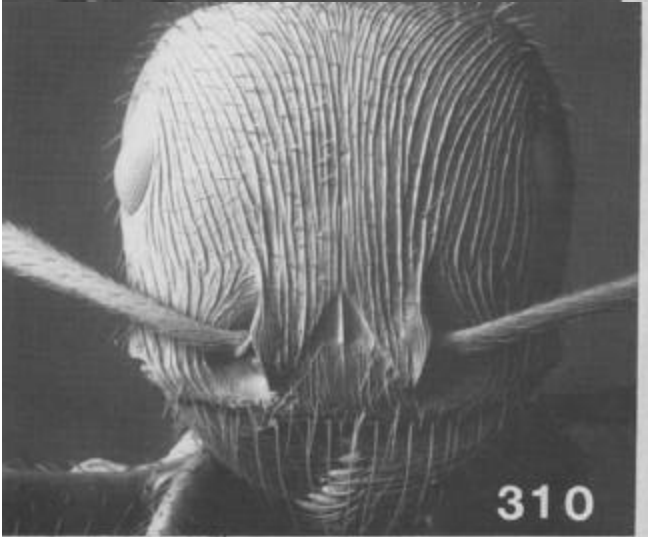
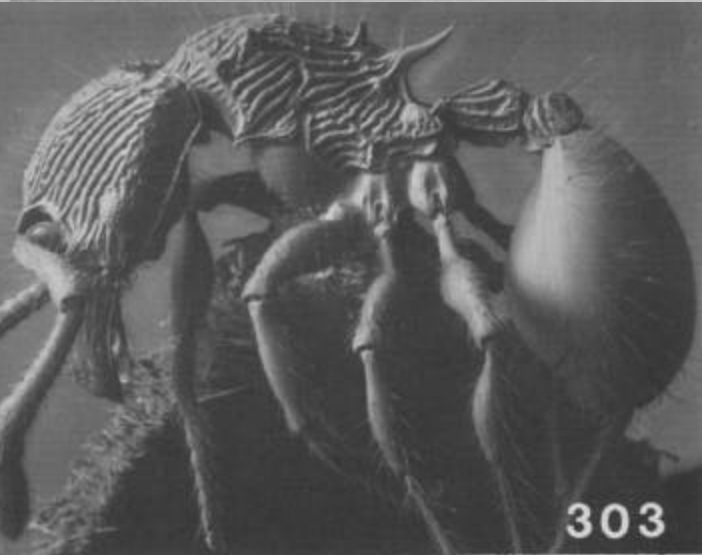
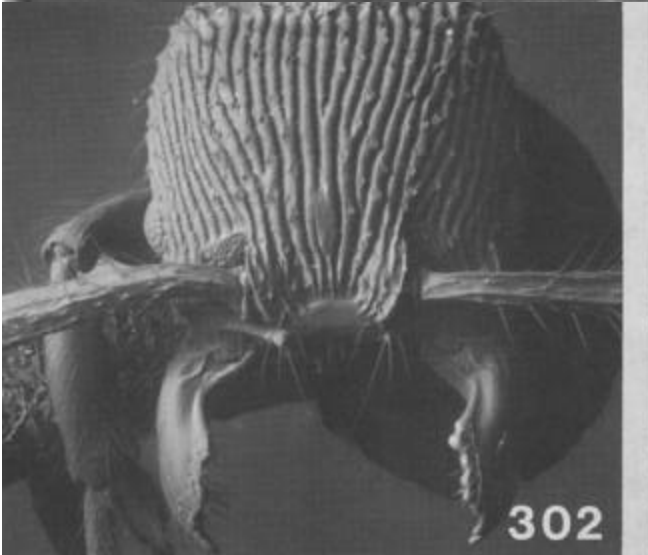
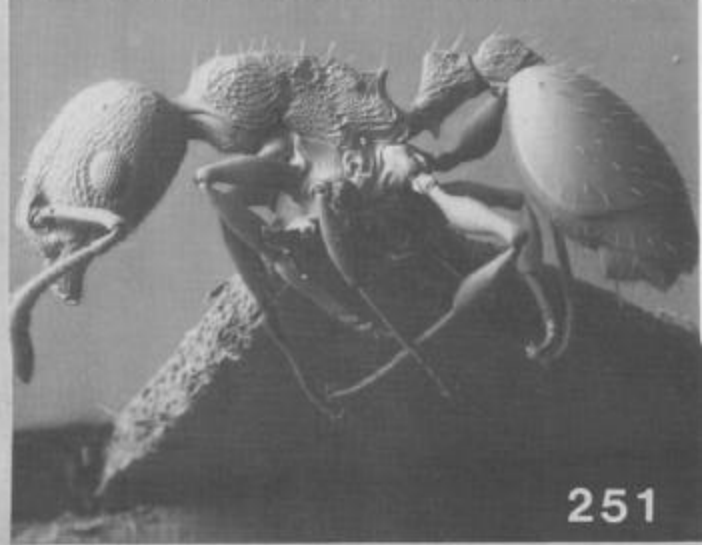
Figure 16. *Formica pallidefulva*, Johnson Co. (371 colonies of *Formica* collected).

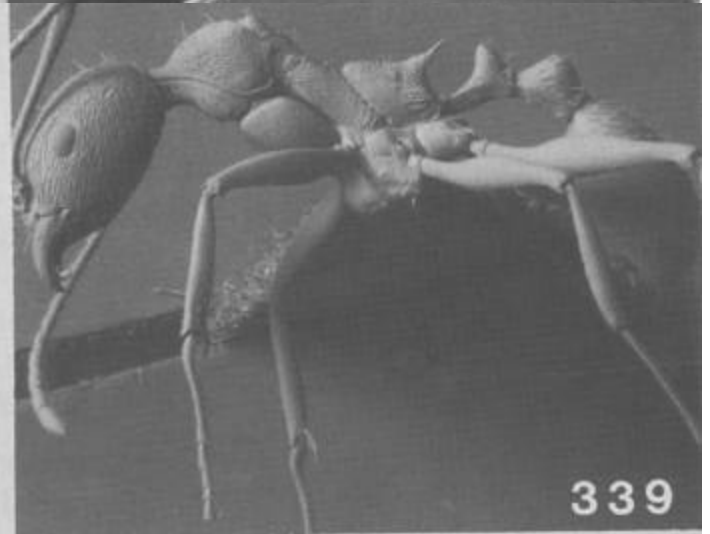
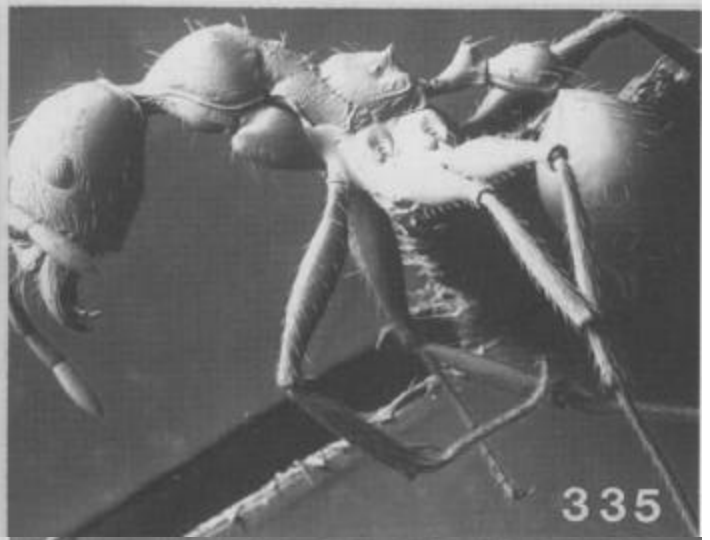
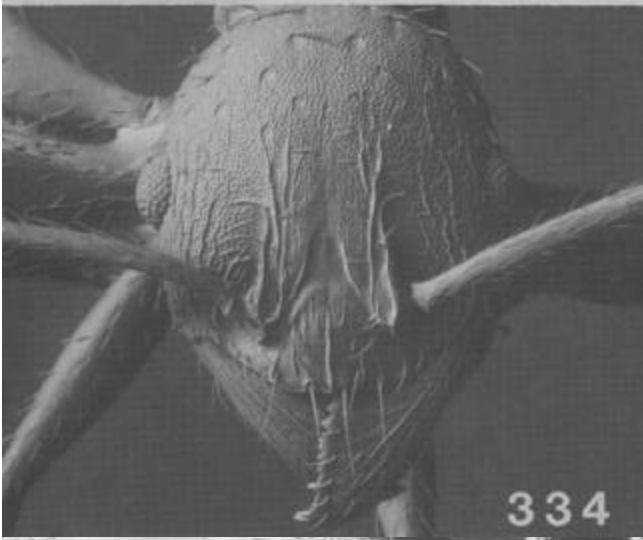
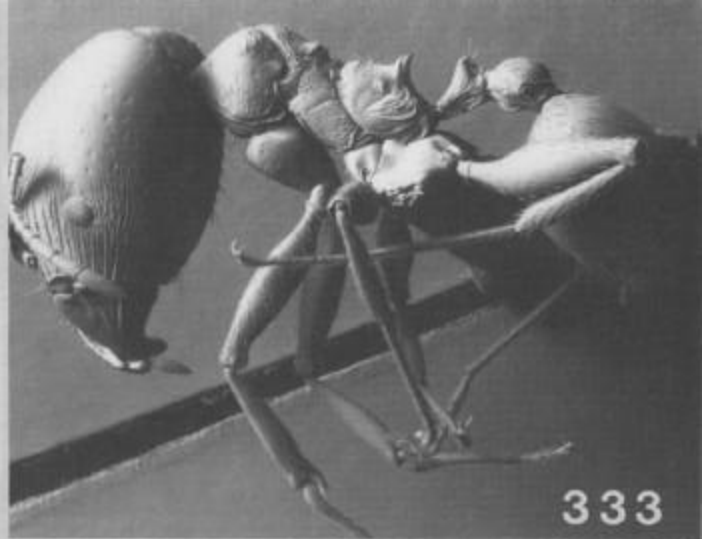
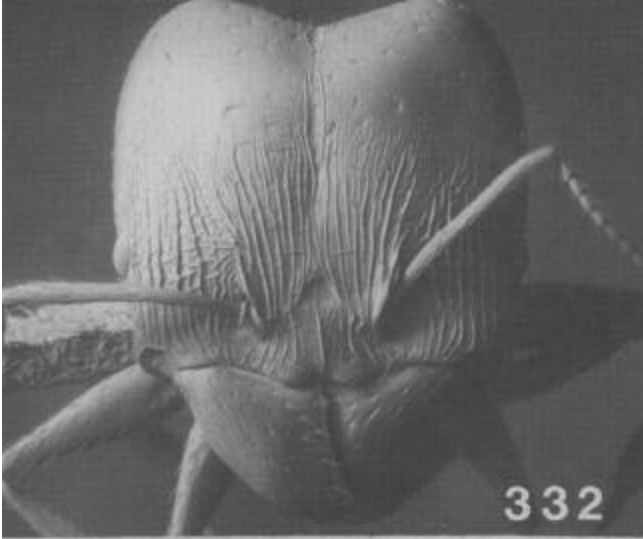


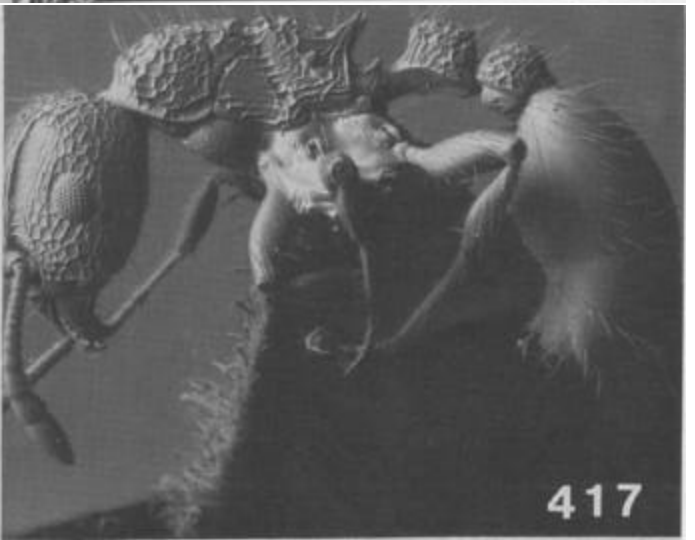
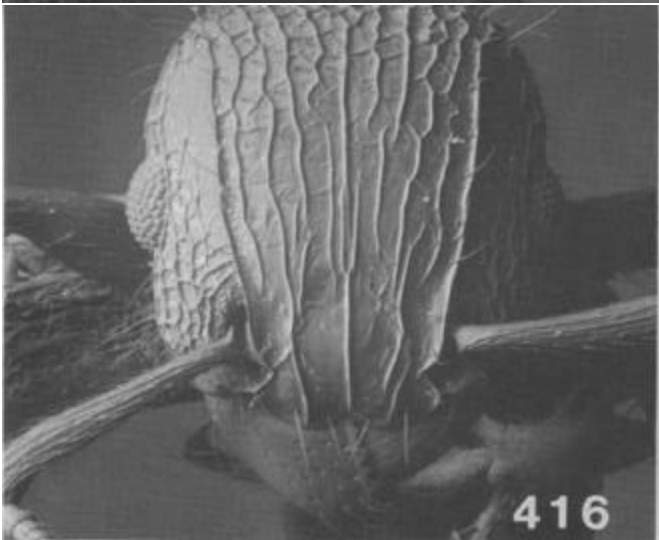
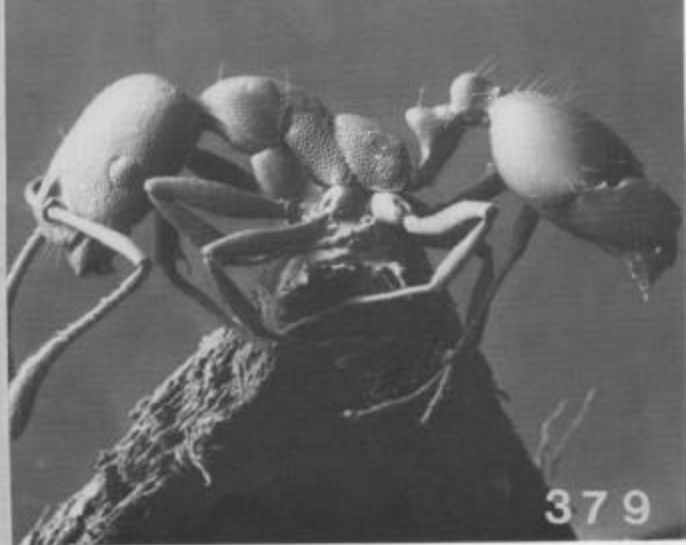


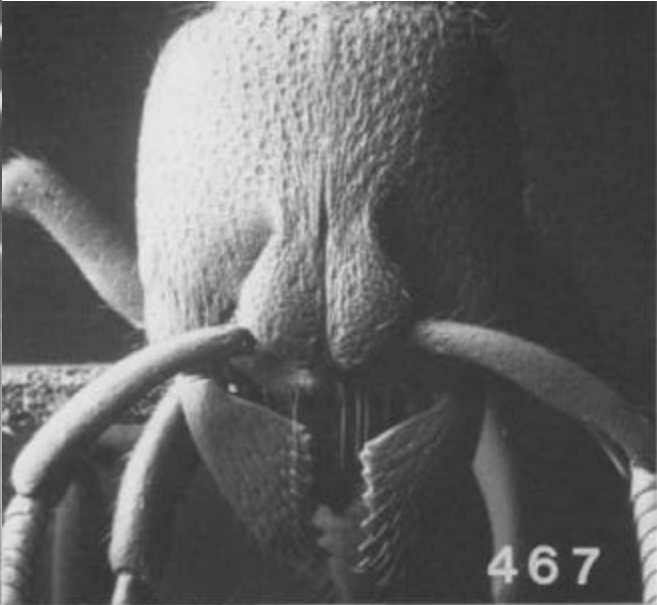


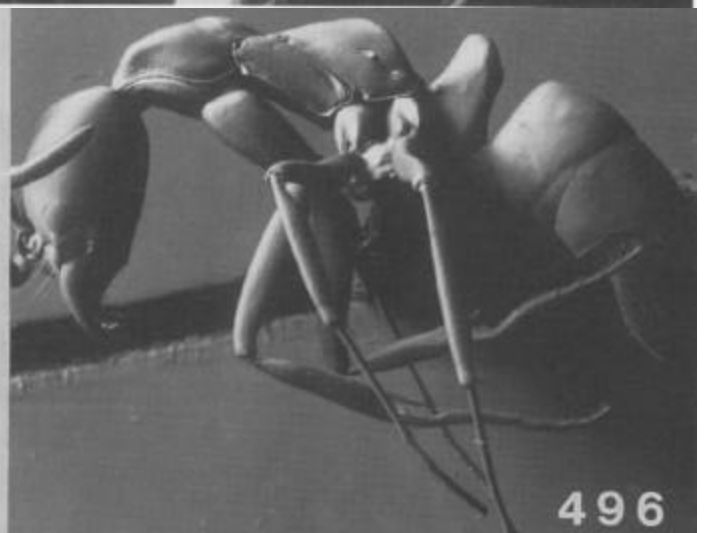
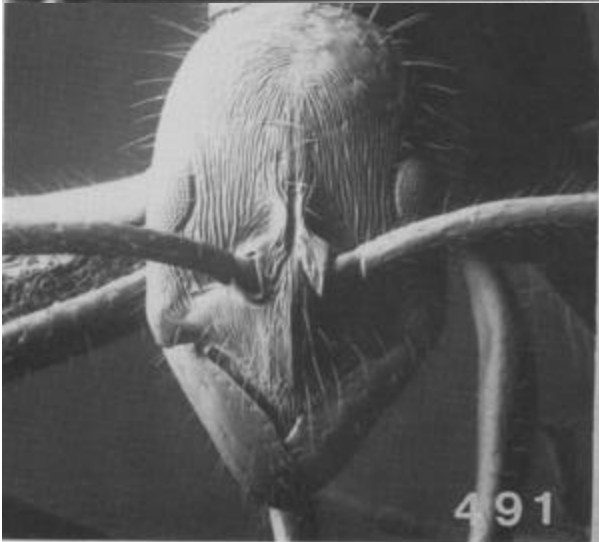
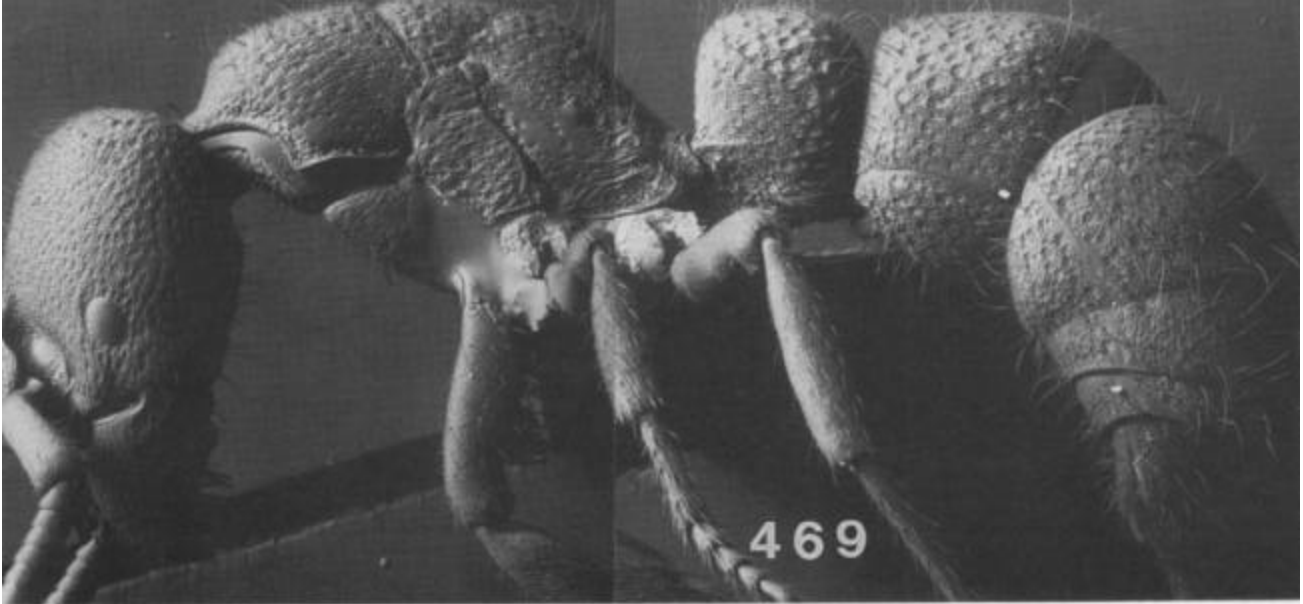


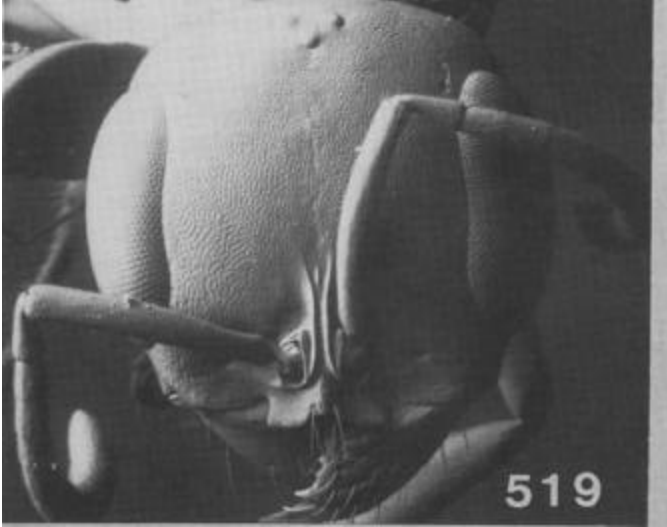
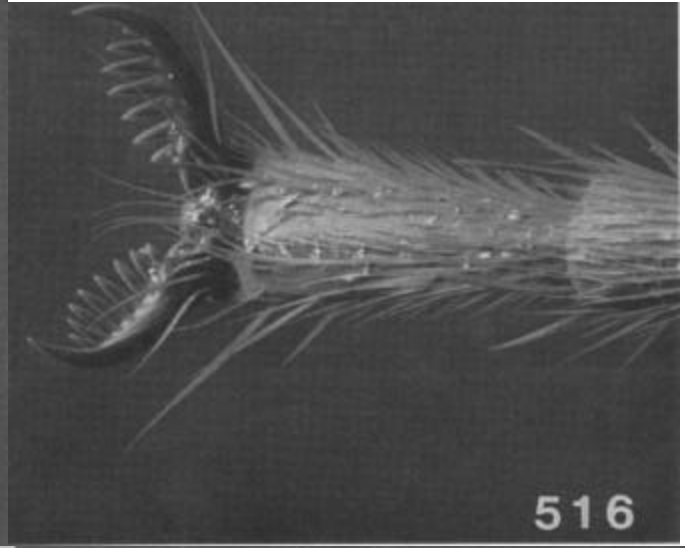
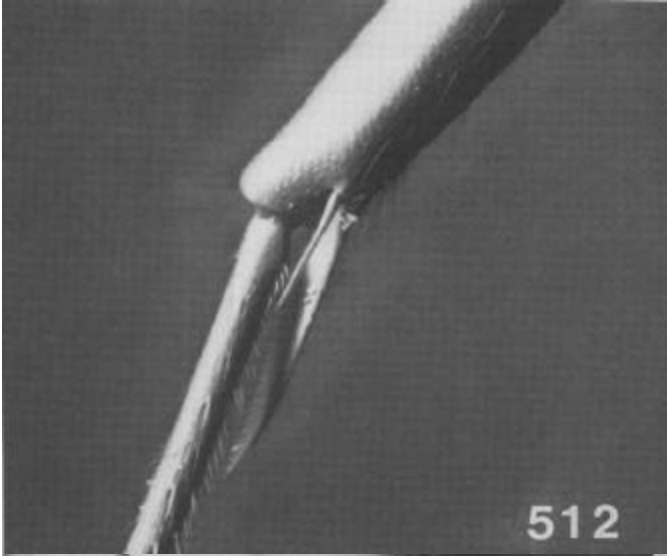












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Dichotomous keys and figures adapted from Bolton (1994), Creighton (1950) and DuBois (1994).
Text adapted from Creighton (1950) and DuBois (1994).

Bolton, B. 1994. Identification guide to the ant genera of the world. Harvard University Press.
Cambridge. 222 pp.

Creighton, W.S. 1950. The ants of North America. Bull. Mus. Comp. Zool. 104:1-585.

DuBois, M.B. 1994. Checklist of Kansas ants. The Kansas School Naturalist. 40(2):1-15.