

NEW FORMS OF APHÆNOGASTER AND NOVOMESSOR

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The ants of the tribe *Aphænogastrini* are easily recognized by the shape of their thorax, which in profile resembles the back of a "swayback" horse; the mesothorax is usually deeply sunken between the elevated prothorax and epinotum.

The various genera belonging to the tribe however differ greatly in their general structure; the genus *Novomessor* possesses more or less well developed gular hairs, a character which is generally assumed to be an adaptation to desert life. The subgenus *Deromyrma* of the genus *Aphænogaster* is distinguished by having its head drawn out behind in a long neck, usually ending in an upturned collar (this character is also found in some species of *Pheidole* as well as in certain South American species of the unrelated genus *Camponotus*). The species of the genus *Stenamma* are relatively small insects, closely resembling *Aphænogaster* except for the sculpture of the clypeus and other features.

The most common species of *Aphænogaster* subgenus *Atto-myrrma* along the eastern seaboard of the United States is *A. fulva* which occurs here in numerous varieties. This ant is easily kept in artificial nests; most of my work on the rebuilding of social organization in ants (published elsewhere) has been done on *A. fulva*.

The systematic position of the various varieties of *A. fulva* needs clarification. The original description of this species by Roger, 1863, is a collective one and includes practically all the later described forms. The subspecies *A. fulva aquia* Bly. should be reduced to a variety.

***Aphænogaster fulva* var. *rubida* var. nov.**

(Plate VIII, bottom)

WORKER.—Length 3.5 mm. Color variable, most of the species being light reddish yellow; rare specimens are dark reddish brown; in all cases

the body is uniformly colored though in the darkest individuals the trochanters may be lighter yellow.

Head longer than broad, with convex sides and posterior edge. Mandibles with three large apical and six to seven smaller and blunter basal teeth; with sinusoid outer border; strongly longitudinally rugose. Anterior edge of the clypeus triangularly excised in the middle; cheeks strongly longitudinally rugose punctate; front rugose; vertex and area behind the eyes reticulate punctate; antennal fossæ only punctate. Antennal scapes slender, surpassing the head by $\frac{1}{3}$ their length; funiculus slender, 11-jointed, with an indistinctly 4-jointed club; all antennal joints longer than broad.

Thorax slender, deeply and broadly impressed between the meso- and epinotum, the mesonotum forming an elevated hump with sharp rectangular anterior corners which are connected by a strong transverse carina. The lateral margins of the mesonotal hump are outlined by several irregular longitudinal rugæ. Epinotal spines slender, divergent, semi-erect, and as long as the epinotal declivity. Prothorax, epinotal base and upper part of the epinotal declivity transversely rugulose punctate. Sides of the prothorax and epinotum with a few prominent longitudinal rugæ, the rest only punctate.

Both nodes very elevated; first node from above $1\frac{1}{2}$ times as long as broad, second node as long as broad; both nodes punctate from above, on the sides with a few longitudinal rugæ; gaster finely punctate at the base, shiny, but less so than in the typical *A. fulva*. Rest of the body opaque.

The long hairs are numerous and of golden yellow color.

Described from a number of specimens taken in the Arnold Arboretum, Boston, Massachusetts.

The nest was under a flat stone in a shady open forest. Holotype No. 12 in my collection.

The new variety can be placed by means of the appended key.

Novomessor cockerelli var. **minor** var. nov.

(Plate VIII, top)

WORKER.—Length 6.7 mm. Color; head, thorax, pedicel, base of gaster and antennæ deep reddish brown to the unaided eye; gaster, femora and tibiæ blackish brown. Head longer than broad. Mandibles with 5 blunt teeth; coarsely longitudinally rugose. Clypeus sinuate in front, the middle portion with very coarse longitudinal rugæ. Frontal triangle sunken. Frontal carinæ elevated, partly hiding the antennal insertions. Antennal foveæ punctate. Rest of the head above coarsely longitudinally rugose, the interspaces punctate. The antennal scapes surpass the head by $\frac{1}{3}$ their length. Funiculi filiform, 11-jointed, the joints becoming shorter toward the apex. Eyes in the middle of the sides of the head, very bulging. Psammophore spread out, consisting of scattered long hairs with hooked ends.

Thorax long and slender, deeply impressed at the region of the mesonotum, without distinct sutures. The sunken mesothorax is faintly transversely punctate and striate. The rest of the thorax only punctate. Epinotal spines close together, very long, slender, sharp, diverging feebly. Pedicel slender; petiole with a rounded node above, peduncle not armed below. Postpetiole triangular, broadest behind. The entire pedicel is feebly punctate and shiny above. Gaster oval, microscopically punctate and highly polished; the base of the gaster on each side with a sharply outlined oval golden spot.

The pilosity consists of white erect hairs which are more abundant on the head and gaster, sparse on the thorax.

Described from a number of workers collected at Corpus Christi, Texas.

Holotype No. 11 in my collection.

The new form belongs to the subgenus *Novomessor* s. str. The other species of *Novomessor* are separated in the appended key. It is closest to the species *cockerelli* André from which it differs by the following characters; it is considerably smaller than the typical form, the color on the whole is lighter, the typical *cockerelli* has the base of the gaster reddish (with two golden spots in the new form). The pedicel of the typical form is more shiny and less sculptured than in the variety *minor*. Meso- and epinotum on the other hand are much stronger sculptured in the typical form. The eyes are surrounded in the type by a number of circular rugæ (absent in *minor*). The new form probably deserves species rank; there was not enough material on hand to ascertain this point by a study of its variability.

***Aphænogaster (Deromyrma) araneoides* var. *canalis* var. nov.**

(Plate VIII, center)

WORKER.—Length 7 mm. Color uniformly bronze. Head elongate with the characteristic goose neck of the subgenus *Deromyrma*. Mandibles triangular with 8–9 teeth, decreasing in size toward the base, longitudinally striated punctate. Clypeus longitudinally striated and coarsely punctate. Frontal area deeply recessed, striate punctate. Rest of the head coarsely punctate and feebly rugulose, sharper on the cheeks. Eyes large and bulging. Antennal scapes very long, surpassing the upturned collar of the goose neck by nearly half their length. Funiculi filiform, 11-jointed, thin, the joints increasing in length toward the tips.

Thorax of the usual shape of a "swayback" horse. The sutures are feebly indicated by depressions. The mesonotum has an anterior hump as in *Aphænogaster fulva*, and a second posterior hump in front of the

mesepinotal impression. The prothorax and the anterior hump are coarsely punctate. The second hump and the epinotum are feebly striated, the hump obliquely, the epinotum transversely. The epinotum is unarmed.

The pedicel is long and slender. The petiole has a rounded node above, the postpetiole is elongate and oval and a little broader behind than in front. The gaster is long and slender, pointed at the junction with the postpetiole. The pedicel is finely, regularly, and very densely punctate. The punctation on the legs is even finer.

The insect is covered with beautiful golden erect hairs, which are longer and more abundant on the vertex and gaster, shorter and sparser on the thorax and legs.

Described from a number of workers collected at Chiriqui, Panama, and sent to me for identification.

Holotype No. 13 in my collection.

The new ant is very close to *Deromyrma araneoides* Emery, 1890, and especially to the variety *inermis* Forel, 1899, both from Costa Rica. The typical *araneoides* differs from the new form by having small epinotal tubercles. The variety *inermis* lacks these tubercles as does the new form. The new variety differs from *inermis* by lighter color, more scanty pilosity, and especially by the sculpture of the epinotum which is irregularly rugulose in *inermis*, sharply and more regularly in *canalis*.

KEY TO THE WORKERS OF APHÆNOGASTER FULVA ROGER

1. Frontal carinæ broadened to lamellæ which partly hide the insertion of the antennal scapes; large forms, length about 5.5 mm.; often bicolored, light reddish brown with the gaster darker; intermediate to lamellidens, according to Emery. Northern United States.
var. *rudis* Emery, 1895
- Frontal carinæ not broadened 2
2. Forms with short epinotal spines, shorter than the epinotal declivity... 3
Forms with long epinotal spines 4
3. Small form, length 3.25–3.75 mm.; differs from *rudis* by having the head only punctate; the epinotal spines are short and nearly horizontal; color reddish brown with lighter appendages; (Emery suggests that this may be immature workers of another variety, but later authors have retained the name). Washington, D. C.
var. *pusilla* Emery, 1895
Larger and darker form; head behind feebly rugose and punctate; epinotal spines distinctly erect; color piceous. Atlantic seaboard, from Washington, D. C., to Canada var. *picea* Emery, 1895
4. Epinotal spines nearly horizontal; sculpture very rough and color very dark, nearly black with reddish appendages. Mexico.
var. *azteca* Emery, 1895

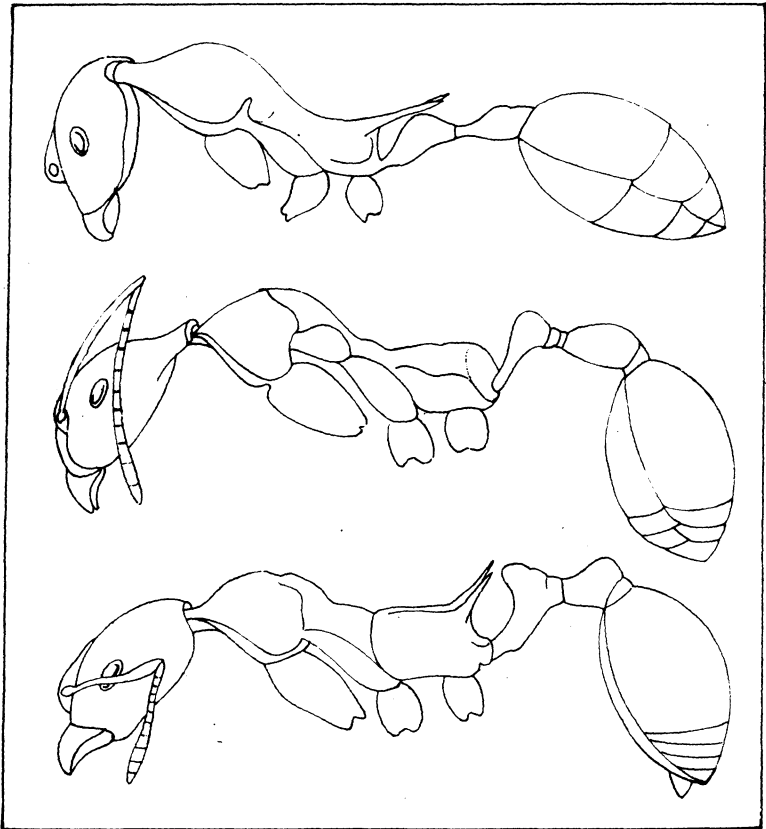
- Epinotal spines not horizontal but oblique or erect 5
5. Without rugæ on the pronotum; length 3-4.6 mm.; size variable; epinotal spines shorter than half the epinotal base; mesonotum with a small hump only; sculpture of the larger specimens as in the typical *fulva*, in the smaller ones the head behind densely punctate with a small shiny area. Eastern United States.
 var. *aquia* Buckley, 1867
- Rugæ present on the pronotum 6
6. Large form, length 7.5-8 mm.; (that is the length given by Emery; Rogers measurements include even the smallest forms, 3-8 mm.); Eastern United States *fulva*, typical, Roger, 1863
 Smaller forms of light color and sharply outlined mesonotal hump. Massachusetts var. *rubida* var. nov.

KEY TO THE WORKERS OF NOVOMESSOR

(The asterisks behind the names indicate that type specimens have been compared.)

1. Workers monomorphic; antennal club not differentiated; psammophore very small or vestigial *Novomessor* s. str. 2
 Workers dimorphic; antennal club differentiated, mandibles thin and strongly curved, with a few or no teeth; soldiers with broad heads; psammophore well developed *Vromessor* 5
2. Head and thorax coarsely reticulate;
 A. *relictus** Wheeler and Mann, 1914—Length 4-5 mm.; head with distinct occipital margin; mandibles with 6-7 teeth; scapes surpassing the head by twice their diameter; mesepinotal constriction deep and narrow; epinotal spines long and sharp; petiole from above twice as long as broad; deep black, two spots on the gaster dark red. Diquini, Petionville, Port au Prince, Haiti.
 B. *relictus* var. *epinotalis** Wheeler and Mann, 1914—Differs from *relictus* by a shorter epinotum which has a median transverse impression, very distinct in profile; epinotal spines shorter; the red on postpetiole and gaster duller. Manneville, Haiti.
 Head and thorax striate and punctate 3
3. Thorax deeply and widely impressed, in profile shaped as in a sway-back horse 4
 Thorax narrowly impressed *sonoræ* and *carbonaria*
4. Color light red; prothorax opaque; petiole punctate and opaque; gaster black; hairs white. New Mexico, Texas, Arizona.
albisetosus Mayr, 1886
 Color darker; pronotum shiny; petiole shiny; head above striate and punctate; head not narrowed behind. Arizona.
cockerelli André, 1893

- And var. *minor* var. nov.—Similar to *cockerelli* but smaller, more slender; gaster with golden spots at the base. Texas.
5. Epinotal spines very long, reaching the node or even surpassing it; very pilose form 6
 Epinotal spines shorter, never reaching the node 7
6. Color lighter, reddish to yellow:
- A. *andrei* subsp. *flava**—Color bright yellow. Jacumba, California.
- B. *andrei* subsp. *castanea**—Color of uniform chestnut brown; larger than *flava*. Jacumba, California.
- C. *andrei* subsp. *chamberlini* Wheeler, 1915—Length 4–4.3 mm.; color bright red, otherwise very similar to *castanea*. Santa Cruz Island, California, Nevada.
- Color darker, reddish black:
- A. *andrei*, typical, Mayr, 1886—Length 6–7.5 mm.; parts of thorax, petiole and gaster brownish black; appendages castaneous; hairs yellowish; mandibles not toothed; head much broader than the thorax and quadratic; thorax irregularly rugose and shiny; epinotum transversely rugose between the epinotal spines. California.
- B. *julianus* Pergande, 1895—A large dark brown form with heavy sculpture; gaster shiny; pronotum with coarse transverse rugæ.
- C. *julianus* var. *clarior*—Head to pedicel red, gaster black; thorax with the sculpture more irregular and stronger than in the type and in *andrei*.
7. Color black; length 6.3–7 mm.; sculpture feeble and body rather shiny; antennal joints $1\frac{1}{2}$ times as long as broad; California, Arizona.
pergandei Mayr, 1886
8. Gaster black; epinotal spines short; pronotum longitudinally striated; Color red 8
 Jacumba, California *stoddardi* Emery, 1895
 Gaster red; epinotal spines long; color of body nearly uniform. Colorado *subgen.* *Lobognathus*



Top. *Novomessor cockerelli* var. *minor*, in profile.

Center. *Aphænogaster* (*Deromyrma*) *araneoides* var. *canalis*, in profile.

Bottom. *Aphænogaster* (*Attomyrma*) *fulva* var. *rubida*, in profile.