

NOTES FOR A REVISION OF THE ANT GENUS *FORMICA*.  
1. NEW IDENTIFICATIONS AND SYNONYMIES FOR SOME  
NEARCTIC SPECIMENS FROM EMERY, FOREL AND  
MAYR COLLECTIONS.<sup>1</sup>

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ABSTRACT: Specimens of the ant genus *Formica* belonging to Emery, Forel and Mayr Collections have been examined and reidentified according to the actual taxonomic knowledge. These new identifications and synonymies influence the known geographic distribution of the species involved. The status of a number of types is precised.

DESCRIPTORS: Ants, *Formica* species, taxonomy, reidentification, type status, distribution.

During the course of a revision of the nearctic species belonging to *Formica fusca* group, it has been possible to examine a number of specimens mentioned by Mayr and Emery in papers published respectively in 1886 and 1893. Most of them were named under the description of new taxa. Confrontations between texts and specimens reveal that in many cases there were included under a new name series of specimens belonging to more than one taxon. Therefore new identifications and synonymies are needed to give a full account of the facts. Most of those pertaining to nearctic species of the *Formica fusca* group are already published (Francoeur, 1973). The remaining ones and those concerning other species groups are presented here. New revised identifications are also listed for nearctic specimens from the Forel Collection. Status and labelling of types are discussed for a number of species.

This kind of analysis has been almost completely neglected for the nearctic species of the genus *Formica*. Based on the examination of old collections and not just on old papers that contained most often inaccurate descriptions according to the present morphological standards in myrmecology, it will allow us to understand more precisely the nature of past authors' new taxa, to sort out misinterpretations, particularly those continuing in recent years, and to neutralise aberrant publications on the systematics and geographic distribution of ants (see Brown's comments on

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<sup>1</sup> Accepted for publication: June 12, 1974

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that matter, 1950 and 1951). This beginning paper will present among other data the results of the study of ant collections containing *Formica* specimens.

### FORMICA NEOGAGATES GROUP

#### Neogagates complex

#### *Formica lasioides* Emery

*Formica lasioides* Emery, 1893, p. 664.

*Formica fusca* r. *subpolita* var. *neogagates*: Forel (in part), 1904, p. 153.

#### Emery Collection:

– under *lasioides*: 2 ♀ with a typus label from Hill City, S. Dakota (no. 151, 21-IX-1890, T. Pergande), one ♀ is labelled by me lectotype and the other paratype; the third specimen of the type series is in the W.M. Wheeler Collection in the Museum of Comparative Zoology, Harvard University; 6 ♀ from Boulder, Colorado (W.M. Wheeler);  
– under *neogagates*:: 1 ♀ from Kittery Point, Maine (VIII-1891, probably T. Pergande).

#### Forel Collection:

– under *neogagates lasioides*: 1 ♀ with a cotypus label from S. Dakota (T. Pergande); this specimen cannot be a paratype of *lasioides*, at most it is a topotype; 3 ♀ from Colorado;  
– under *neogagates lasioides vetula*: 1 ♀ with a cotypus label from Lawrence, U.S.; this specimen cannot be a type of *vetula*; 5 ♀ and 1 ♂ from Colorado; 14 ♀ from New Hampshire;  
– under *fusca subpolita neogagates* (Forel, 1904): 2 ♀ from Vermillion Pass, Alberta (E. Whymper); the ♀ mentioned with them belongs to *F. hewitti*;  
– under *neogagates*: 1 ♀ (Denny) and 5 ♀ from Connecticut; 3 ♀ from MacLean, Boston (A. Forel); 2 ♀ from Nebraska (Wilby); 3 ♀ (A. Forel) and 1 ♀ from New Hampshire; 3 ♀ from New Jersey (Treat); 19 ♀ from Toronto, Ontario (A. Forel); 2 ♀ from U.S.A. (G. B. King);  
– under *fusca subpolita* (first labelled *F. gagates* var. *americana*): 4 ♀ from New Hampshire (Treat); also 1 ♀ from North America.

#### *Formica neogagates* Emery

*Formica fusca* subsp. *subpolita* var. *neogagates* Emery, 1893, p. 661-663.

Emery Collection, under *neogagates*: 3 ♀ and 1 ♀ from Beatty, Pennsylvania (no. 334, T. Pergande); this is the type locality selected by Wheeler, 1913; one ♀ is labelled by me lectotype, and other specimens paratypes; 4 ♀ from New York (Schmilken); 3 ♀ and 1 ♂ from Salt Lake, Utah; 1 ♀ and 1 ♀ from Louisiana; all these specimens are mentioned by Emery (1893), no ant has been seen from S. Dakota nor Maryland, but 3 ♀ have no locality label; also 4 ♀ from Rockford, Illinois (W.M. Wheeler).

Forel Collection, under *neogagates*: 4 ♀ with cotypus labels from Beatty, Pennsylvania (no. 334, T. Pergande), labelled by me paratypes; 2 ♀ from New York (C. Emery); 10 ♀ from Worcester (A. Forel) and 24 ♀ from Franklin Park, Boston (A. Forel), Massachusetts; 6 ♀ from Berkeley, California; 1 ♀ from Mt. Mitchell, N. Carolina.

**Obtusopilosa complex***Formica perpilosa* Wheeler

*Formica fusca* subsp. *subpolita* var.? *montana* Emery (in part), 1893, p. 663.

Emery Collection:

- under *montana*: 1 ♀ from West Point, Nebraska; this specimen was in the type series of *montana*;
- under *subpolita*: 3 ♀ from Globe, Arizona (no. 172, 2-VI-1884, probably T. Pergande).

Forel Collection, under *montana*: 4 ♀ and 1 ♀ from San Jacinto, California (no. 323, 14-XI-1891, T. Pergande).

Mayr Collection, under *subpolita*: 1 ♀ and 1 ♀ from Nebraska (T. Pergande) and 1 ♀ from Colorado (E. Norton).

**FORMICA FUSCA GROUP****Cinerea complex***Formica cinerea* Mayr

*Formica cinerea* Mayr, 1853, p. 281-282.

This palearctic species is listed here to illustrate the messy situation of the *fusca* group in Eurasia. I have examined 21 specimens, all identified as *cinerea* in the Mayr Collection:

- 7 ♀ (including one type worker) and 3 ♂ belong to *F. cinerea*;
- 1 ♀, 1 ♀ and 1 ♂ are species X of the *cinerea* complex;
- 4 ♀ are species Y of the *cinerea* complex;
- 1 ♂ is species Z of the *rufa* group;
- 1 ♀ is probably *F. fusca*.

*Formica canadensis* Santschi

Emery Collection, under *fusca subsericea*: 3 ♀ from Breckenridge, Colorado.

*Formica montana* Emery

Forel Collection:

- under *cinerea*: 3 ♀ from Rockford, Illinois, labelled by me topotypes of *montana*;
- under *cinerea neocinerea*: 1 ♀ with a cotypus label from Rockford, Illinois (25-VIII-1902, W.M. Wheeler), labelled by me paratype of *neocinerea*; 3 ♀ from Iowa City, Iowa (nest no. 3, 15-IV-1894, H.F. Wickham);
- under *cinerea rutilans*: 2 ♀ from Illinois.

Mayr Collection. Identified to *cinerea* by G. Mayr, I have seen 6 ♀ from Illinois; this state was not listed in Mayr's paper of 1886.

*Formica pilicornis* Emery

*Formica fusca* var. *cinerea* Mayr (in part), 1886, p. 427.

Forel Collection, under *cinerea pilicornis*: 4 ♀ from San Jacinto (T. Pergande?) and 2 ♀ from San Francisco (Turner), with cotypus labels; 3 ♀ from California (illegible locality).

Mayr Collection. The specimens reported from California by Mayr (1886) under the name *cinerea* were identified as a new species by Emery (1893). I have seen 4 ♀ from Tres Pinos (T. Pergande) and labelled them paratypes; also 1 ♂ from Milde, mentioned in

Emery's paper (1893, p. 664). Mayr listed *cinerea* from New Mexico; according to the actually known geographic distribution of the nearctic species of the *cinerea* complex (Francoeur, 1973), there could not be specimens of *pilicornis*, but were probably *canadensis*. This point will be solved only if the specimens are ever found.

#### Neoclara complex

##### *Formica neoclara* Emery

*Formica fusca* var. *neorufibarbis*: Forel (in part), 1904, p. 153.

Forel Collection:

- under *fusca neoclara*: 6 ♀ with a cotypus label from (no locality) Colorado (no. 165, T. Pergande), labelled by me paratypes; 3 ♀ with cotypus labels and 2 ♀ from Canon City, Colorado (P.J. Schmitt);
- under *fusca neorufibarbis*: 1 ♀ from Field, British Columbia (VIII-IX-1901, E. Whymper); 3 ♀ and 1 ♀ from Rockies, U.S.A. (G. Rothney).

##### *Formica occulta* Francoeur

Forel Collection, under *fusca subaenescens*: 7 ♀ from Lakin, Kansas (1887, S.H. Scudder).

#### Subpolita complex

##### *Formica subpolita* Mayr

*Formica fusca* var. *subpolita* Mayr (in part), 1886, p. 426-427.

Forel Collection, under *subpolita*: 2 ♀ with a cotypus label from San Francisco, California (L.W. Schaufuss), labelled by me paratypes; 1 ♂ with cotypus label from San Gregorio, California.

Mayr Collection. I have received and examined 25 workers and 4 females which were actually classified under the name *Formica gagates* ssp. *subpolita*:

- 14 ♀ and 2 ♀ from San Francisco, California (L.W. Schaufuss). Since Wheeler (1913) selected this city as the type locality, only these specimens were considered to constitute the type series. One worker was labelled lectotype and the others paratypes;
- 1 ♀ from Sacramento, California (L.W. Schaufuss) and 1 ♀ from Connecticut (E. Norton) are also *F. subpolita*. The locality label of the last worker is erroneous without doubt, for this species is restricted to the Pacific side of North America (Francoeur, 1973);
- All the remaining specimens are not *subpolita*; they represent *F. neogagates*, *F. perpilosa* and *F. fusca (marcida)* form).

Why did Mayr gather all these specimens under his *subpolita*? Because they all share the three main characters used by him to establish his new variety: shining tegument, dilute pubescence and long flexuous erect hairs on the dorsum of body. In the case of *F. fusca (marcida)* form, only the female shows such features. It is noteworthy that those characters are also found in *F. gagates* Latreille. This situation explains why some authors have associated *subpolita* with Latreille's species. After the description Mayr (1886) cited the geographic origin "aus Connecticut, Colorado und Californien". The first two states are wrongly cited according to the material examined.

**Lepida complex***Formica aerata* Francoeur

Forel Collection, under *cinerea neocinerea*: 3 ♀ with a cotypus label from San Jose, California (H. Heath); these specimens are not types of *neocinerea*.

**Subsericea complex***Formica argentea* Wheeler

Forel Collection:

- under *fusca subsericea argentata*: 5 ♀ with a cotypus label from Rockford, Illinois, labelled by me paratypes; 26 ♀ from Nebraska (Wilby), first named *F. fusca*;
- under *fusca subsericea*: 1 ♀ and 1 ♂ from Virginia (4-VII-1880, T. Pergande);
- under *fusca subaenescens*: 1 ♀ from Lake Tahoe, Nevada.

*Formica glacialis* Wheeler

*Formica fusca* r. *subsericea*: Forel (in part), 1899.

*Formica subsericea*: Forel (in part), 1900.

Emery Collection, under *fusca subsericea subaenescens*: 1 ♀ from Utica, New York (no. 147, probably T. Pergande).

Forel Collection:

- under *fusca subsericea*: 6 ♀ from U.S.A. (G.B. King); 1 ♀ from Toronto, Ontario (A. Forel);
- under *fusca subaenescens*: 51 ♀, and 1 ♀ and 21 ♂ from Niagara, 2 ♀ from High Park, Toronto, and 2 ♀ from illegible locality, Ontario (A. Forel); 3 ♀ from Ottawa, Ontario (F. Santschi).

*Formica podzolica* Francoeur

*Formica fusca* var. *subaenescens*: Forel, 1902, p. 699.

Forel Collection:

- under *fusca subsericea*: 2 ♀ from Hill City, S. Dakota (VI-1890, T. Pergande);
- under *fusca subaenescens*: 6 ♀ from Ottawa, Ontario (F. Santschi); 1 ♀ from Mount Goodsir, British Columbia.

*Formica subsericea* Say

*Formica fusca* r. *subsericea*: Forel (in part), 1899.

*Formica subsericea*: Forel (in part), 1900.

Emery Collection:

- under *fusca subsericea argentea*: 3 ♀ and 3 ♀ from New York (Schmidt); 2 ♀ from Woodbridge, Connecticut (28-VI-1891); 1 ♀ without locality label;
- under *fusca subsericea*: 3 ♀ and 2 ♂ from Virginia (no. 10, 23-VII-1882, T. Pergande); 1 ♀ without locality label;
- under *fusca subsericea subaenescens*: 1 ♀ from New Haven, Connecticut (1-VI-1897).

Forel Collection:

- under *fusca*: 2 ♀ from New Jersey (Treat); 3 ♀ from Baltimore, Maryland (Ris); 2 ♀ from New York (Holl);
- under *fusca subsericea*: 10 ♀ from Cromwell, Connecticut (A. Forel); 3 ♀ and 1 ♂ from Washington, D.C. (A. Forel); 1 ♀ from Kansas City, Kansas; 30 ♀ from Baltimore,

Maryland; 11 ♀, 8 ♀ and 2 ♂ from Franklin Park, Boston; 20 ♀ from Worcester and 1 ♀ without locality label, Massachusetts (A. Forel); 2 ♀ from Ann Arbor, Michigan; 6 ♀ from illegible locality and 1 ♀ from White Mountains Valleys (S.H. Scudder), New Hampshire; 1 ♀ from New York; 5 ♀ from Mount Mitchell (A. Forel) and 34 ♀ from N. Carolina; 3 ♀ from High Park, Toronto, Ontario (A. Forel); 2 ♀ from U.S.A. (G.B. King); 3 ♀ from Philadelphia, Pennsylvania; 1 ♀ without locality (10-VII-1881, T. Pergande), Virginia; 11 ♀ from Morganton, N. Carolina (A. Forel); 4 ♀ with illegible labels;  
 – under *fusca subaenescens*: 1 ♀ from Worcester, Massachusetts; 3 ♀ from Morganton, N. Carolina (A. Forel); 2 ♀ from Niagara, Ontario (A. Forel).

#### Fusca complex

##### *Formica accreta* Francoeur

Forel Collection, under *fusca subsericea subaenescens*: 1 ♀ from Yale, British Columbia (Dieck).

##### *Formica fusca* Linne

*Formica fusca*: Francoeur, 1973, p. 189-201.

Specimens classified in the *marcida* form:

Emery Collection, under *fusca subsericea subaenescens*: 4 ♀ from Yale, British Columbia.

Forel Collection, under *fusca subaenescens*: 1 ♀ from California.

Mayr Collection, under *gagates subpolita*: 1 ♀ from California (Luckett).

Specimens classified in the *subaenescens* form:

Emery Collection, under *fusca subsericea subaenescens*: 4 ♀ from New Jersey.

Forel Collection:

– under *fusca subsericea*: 2 ♀ from Virginia (T. Pergande);

– under *fusca subaenescens*: 1 ♀ from Hill City, S. Dakota (VII-1890, T. Pergande), labelled by me paratype; 7 ♀ with a cotypus label from Colebrooke, Connecticut; these are not types; 24 ♀ from Toronto, Ontario (A. Forel); 4 ♀ from Ann Arbor, Michigan (no. 14, Gaige).

#### Neorufibarbis complex

##### *Formica hewitti* Wheeler

*Formica fusca* r. *subpolita* var. *neogagates*: Forel (in part), 1904, p. 153.

*Formica fusca* var. *subaenescens*: Forel, 1904, p. 153.

Forel Collection:

– under *neogagates*: 1 ♀ from Vermillion Pass, Alberta (E. Whymper);

– under *fusca subaenescens*: 13 ♀ from Vermillion Pass, British Columbia (E. Whymper).

##### *Formica neorufibarbis* Emery

*Formica fusca* var. *neorufibarbis*: Forel, 1902, p. 699; Forel (in part), 1904, p. 153.

Emery Collection:

– under *fusca subsericea neorufibarbis*: 3 ♀ from Ouray (VIII-1891, T. Pergande), 4 ♀ from Breckenridge (no. 273), 2 ♀ from Ward (W.M. Wheeler), 8 ♀ from Argentine Pass, 1 ♀ from Georgetown and 1 ♀ from Meadow Peak, Colorado (A.C. Burrill).

## Forel Collection:

- under *neogagates*: 5 ♂ from Argentine Pass, Colorado (S.H. Scudder), first named *fusco-rufibarbis*;
- under *lasioides vetula*: 1 ♀ from Hill City, S. Dakota (no. 151, T. Pergande), labelled by me topotype;
- under *fusca gelida*: 2 ♀ and 1 ♀ from Cripple Creek and 6 ♀ from Georgetown (1877, S.H. Scudder), Colorado, with cotypus labels; they are not types of *gelida*; 13 ♀ from Argentine Pass, Colorado;
- under *fusca neorufibarbis*: 6 ♀ with cotypus label from Hill City, S. Dakota (8-VII-1890, T. Pergande), labelled by me paratypes; 1 ♀ from Vermillion Pass and 2 ♀ from Vermillion Valley, Alberta (E. Whymper); 2 ♀ from Field (VIII-IX-1901, E. Whymper), 1 ♀ from Emerald Summit Lake (VII-1901, E. Whymper), 1 ♀ from Yoho Valley, 3 ♀ from Ice River Valley, British Columbia; 2 ♀ from Argentine Pass, Colorado (1877, S.H. Scudder);
- under *subpolita*: 1 ♀ from Ossipee (?), New Hampshire (1877, Denny).

**Rufibarbis complex***Formica gnava* Buckley

Emery Collection, under *fusca subsericea neorufibarbis*: 7 ♂ from Canon City, Colorado (W.M. Wheeler); 8 ♀ from Austin, Texas (W.M. Wheeler), labelled by me neoparatypes.

Forel Collection, under *rufibarbis gnava*: 10 ♂ and 3 ♀ from Austin, Texas (W.M. Wheeler), labelled by me neoparatypes; 3 ♂ from San Angelo, Texas.

**Subcyanea complex***Formica subcyanea* Wheeler

*Formica fusca* var. *subsericea*: Forel, 1899, p. 128; Wheeler, 1913, p. 565.

## Forel Collection:

- under *fusca subsericea*: 1 ♀ from Moyoapam, Mexico;
- under *fusca subaenescens*: 1 ♀ from Moyoapam, Mexico;
- under *subcyanea*: 3 ♀ with a cotypus label from Guerrero Mill, Mexico, labelled by me paratypes.

**Occidua complex***Formica occidua* Wheeler

## Forel Collection:

- under *moki*: 3 ♀ with a cotypus label from Arizona, labelled by me paratypes of *moki*;
- under *rufibarbis occidua*: 7 ♀ from Oakland, 4 ♀ with a cotypus label from San Jose (H. Heath) and 6 ♀ from Berkeley, California.

**FORMICA RUFIA GROUP***Formica dakotensis* Emery

Emery Collection: 3 ♀ with typus label from Hill City, S. Dakota; 1 ♀ is labelled by me lectotype and the others paratypes.

## MISCELLANEOUS GENERA

*Camponotus noveboracensis* (Fitch)

Forel Collection, under *F. subaenescens*: 1 ♀ from Toronto, Ontario.

*Camponotus pennsylvanicus* (DeGeer)

Forel Collection, under *F. fusca subsericea*: 4 ♀ from Kansas City, Kansas and 1 ♀ from Morganton, N. Carolina (A. Forel).

*Lasius pallitarsis* (Provancher)

Forel Collection, under *F. fusca neorufibarbis*: 1 ♀ from Yoho Valley, British Columbia.

## ACKNOWLEDGEMENTS

I am grateful to the following individuals for providing facilities in the museum or for loan of specimens: Dr. Claude Besuchet, Musee d'Histoire Naturelle, Geneve, Switzerland (Forel Collection), Dr. Enrico Tortonenese and Dr. D. Guiglia, Museo Civico di Storia Naturale, Genoa, Italy (Emery Collection) and Dr. Max Fischer, Naturhistorisches Museum, Wien, Austria (Mayr Collection).

Thanks are due to Dr. W.L. Brown of Cornell University for criticizing and revising the manuscript. This study has been supported by a research grant (A6501) of the National Research Council of Canada.

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