

## Nine Species of Ants (Formicidae) Recently Recorded from Indiana

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### Abstract

As many as 92 species of ants have been previously reported from Indiana. It has been possible, however, to synonymize some of these forms. A list of 56 additional species had been proposed to include species that probably could be found in the state but which had not been recorded. During a recent study six of the species of the added list have been taken from a strip-mine area. They are: *Aphaenogaster mariae* Forel, *Dolichoderus plagiatus* (Mayr), *Leptothorax muscorum* Nylander, *Myrmica punctiventris punctiventris* Roger, *Ponera trigona opacior* Forel, and *Stenamma diecki* Emery. Also, three species not previously reported or indicated as probably being found in Indiana have been taken from the same area in Vermillion County. These species are: *Proceratum pergandei* Emery, *Smithistruma filitalpa* Brown, and *Stenamma meridionale* Smith. These nine species of ants are mostly forms and occurred infrequently in pitfall trap collections. This paper attempts to update the original list of 92 species of ants.

In his annotated list of the ants found in Indiana, Morris (9) lists "some 92 species, subspecies and varieties known to have been taken in the state." This is twice as many as indicated by Wheeler (15) who described some specimens sent to him from Indiana by W. S. Blatchley. Blatchley's ants came from "various parts of the state" which suggests that the specimens studied by Wheeler represented a small sample of the state's ant population. It is not surprising, therefore, that Morris' list based on county collections is more extensive than Wheeler's. In his annotated list, Morris appends the names of 56 species of ants "which have not been recorded from Indiana but which are probably present."

Since Morris published his list, the studies of several investigators have resulted in significant revisions of the taxonomy of ants. Among the important recent works are those of Creighton (3), Gregg (5) and the Wheelers (13). The contributions that are pertinent to this study that they as well as a number of other myrmecologists have made to the problems of ant classification are brought together in Muesebeck *et al.* (10), and in the supplements to their work by Krombein (7), and Krombein and Burks (8).

One reason for preparing this paper is to bring the taxonomy of Morris' (9) list of the ants of Indiana up to date inasmuch as possible. This was done by checking the names of the ants as given by Morris against the names of corresponding species given in the catalog of the Hymenoptera of America North of Mexico (10), as well as by checking in the first and in the second supplements to the catalog (7, 8). It may be expected that since 1943 significant changes have been made in the names of the ants listed by Morris. Many of the original species names are not changed; however, changes in rank involving the genus through and including the varietal forms are common. Fourteen of the original 92 species are lost in synonymy; one is not listed in the catalog; and one is relegated to "unrecognized forms." Of the 76

recognized forms, the names of 52 are changed. Similarly, Morris' (9) list of 56 ants which he believed were present in the state but had not been collected is reduced to 45 species. Of the original 56, six are sunk in synonymy; four are not listed in the catalog; and one species is considered as an unrecognized form.

One other reason for this paper is to present the names of nine ant species recently recorded from Indiana for the first time and to relate the findings to pertinent work of other investigators. Six of the nine species discussed here are to be found in Morris' appended list. These species are: *Aphaenogaster mariae* Forel, *Dolichoderus plagiatus* (Mayr), *Leptothorax muscorum* (Nylander), *Myrmica punctiventris punctiventris* Roger, *Ponera trigona opacior* Forel, and *Stenamma diecki* Emery. These six species may be added to the revised list of 76 ants. Three species of ants not given in Morris' appended list of probable forms found in the state are: *Proceratium pergandei* Emery, *Smithistruma filitalpa* Brown, and *Stenamma meridionale* Smith. Adding these three species brings Morris' list of the ants of Indiana to 85 species.<sup>1</sup>

All nine species of ants were taken from a limited area in Vermillion County. This area embraced the spoil banks of a strip-mine as well as undisturbed adjacent sites. One worker of *Aphaenogaster mariae* was collected on a spoil bank using a pitfall trap. The bank sloped to the west and was well covered with vegetation. Wheeler (16) considered this species to be rare and confined to the Atlantic states. However, the Wessons (12) collected *A. mariae* from southcentral Ohio. They stated that the species is a member of the tree crown fauna often nesting high above the ground in oaks. The nests were made in small "stobs" or in rotten cavities under the bark. The vegetation on the spoil bank, however, consisted chiefly of forbs, vines and a few scattered trees, none of which were oaks.

Apparently, *Dolichoderus plagiatus* is a woodland ant, since several investigators including Wheeler (14) have taken this species from wooded areas. The Wheelers (13) report the findings of other investigators, viz., Talbot, Gregg, Cole, and the Wessons, all of whom collected *D. plagiatus* in woodland situations. Similarly, the only specimen taken by pitfall trap in the present study came from an undisturbed stand of oak. The Wheelers (13) report this species as rare in North Dakota. Apparently, it is an uncommon ant in Indiana, also.

Two workers and one female of *Leptothorax muscorum* (Nylander) were collected by pitfall traps. This species is synonymous with *L. acervorum canadensis* Provancher which was given by Morris (9) in his list of ants that are probably present in Indiana. The synonymy is cited in Krombein (7). *Leptothorax muscorum* is considered by Brown (2) as being one of the few truly boreal-alpine species of ants. He states that it has been taken within a few miles of the Arctic Ocean. Gregg (5) has shown that *L. muscorum* is extremely widespread in the mountains of Colorado and that his records show that its center of ecological abundance is in the Canadian or montane zone. In North

<sup>1</sup> Identifications checked by Dr. David R. Smith, U.S. National Museum, Washington, D.C.

Dakota, the Wheelers (13) obtained all collections of this species from woodlands. In the present study, *L. muscorum* was taken from the two most heavily wooded undisturbed sites as well as from one south-facing slope of a spoil bank.

Another of the ants that Morris listed as probably occurring in Indiana and which seems to be indigenous to wooded areas is *Myrmica punctiventris*. This species was taken in 47 collections, only two of which were from disturbed sites. Though never taken in large numbers in a single collection, it may be considered to be a common ant at least in the wooded area of the present study. Wheeler (14) noted that it was a rather uncommon ant of moist, shady woods. Kannowski (6) listed *M. punctiventris* among the bog ants of southeastern Michigan, and noted that the females chose soil chambers as nesting sites.

Certain of the ants discussed here seem to be associated more closely with the spoil banks than with the undisturbed areas. *Ponera trigona opacior* is one of these species. The vegetation of the spoil banks is primarily herbaceous, although trees of varying size are common. Barren patches of spoils result in discontinuous or open areas so that few of the banks are completely under cover of vegetation. *Ponera trigona opacior* was taken exclusively from spoil banks having patchworks of vegetation. Dennis (4) stated that this species is widely distributed in Tennessee and preferred open situations such as clearings or at the borders of woods. He believed that Tennessee was the northernmost limit of the ant; however, it was taken by Gregg (5) in a few places in Colorado. Gregg also reported that its range in the eastern part of the country extended as far north as Ohio.

One other species of ant which appears to be indigenous to the spoil banks is *Smithistruma flitalpa*. This ant is one of the three which had not been reported by Morris (9) in his annotated list nor in his appended list of 56 probable species for the state. It appears that this species was taken by W. L. Brown, from Brown County State Park (8). No collection date is given, and it is possible that Brown's record for the state precedes my record for June, 1964. At least, Krombein and Burks (*op. cit.*) include the Hymenopterous literature of 1963, and in some cases most of the papers from 1964. *Smithistruma flitalpa* was taken by pitfall traps in the present work. One or two specimens were usually taken in 26 collections which included this ant. It is quite probable, as Brown (1) noted, that this species may be considered as being very rare, but the use of Berlese funnels may prove that the ant is more common than suspected, especially, if the ant is looked for in the right places.

*Stenamamma diecki* was cited by Morris (9) as *S. brevicorne diecki* Emery in his list of probable ants for Indiana. The species was taken only from an undisturbed wooded stand in this study, except for a dealate female which was collected from a flat grassy stand in the spoil bank area. One or two specimens were taken in each of five separate pitfall trap collections. The ant is by no means a common species. Gregg (5) stated that species of *Stenamamma* are rare. In Colorado, he collected it only in lower foothill canyons where the ant almost always

chose cool, mesophytic sites on north-facing slopes. The Wheelers (13) consider *Stenamamma diecki* an eastern deciduous forest species and found it in the wooded areas of North Dakota.

*Stenamamma meridionale* is another ant which was taken infrequently from the wooded undisturbed sites adjacent to the spoil banks. Smith (11) reported this species as being an inhabitant of oak-hickory woods. In the present study, this ant was only collected on one day from two adjacent wooded areas by use of pitfall traps. It also appears to be a rare species, and was not included in Morris' lists.

The Genus *Sysphincta* Roger, has been transferred to *Proceratium* Roger (8). Therefore, the species, *S. pergandei* Emery is now recognized as *Proceratium pergandei* (Emery). Only two specimens of this form were collected, and both of these from wooded undisturbed sites adjacent to the spoil banks. This species was not included in Morris' list. The Wessons (12) collected this ant from glacial drift areas of Ohio in wooded sites composed chiefly of pines and oaks. Dennis (4) collected *P. pergandei* at elevations from 2000 to 5000 feet in oak-chestnut stands in Tennessee.

More than likely, the list of ants to be found in the state could be lengthened if more thorough methods of collecting were used, and if the collecting was done at the right time and place. New records for the state aid in determining trends in the geographical distribution of the Formicidae.

There follows a revised list of ant species based on Morris (9). The numbers in the first column correspond to those given in his annotated list. Breaks in the numerical sequence represent species that have been lost in synonymy; not listed in the catalog or supplements; or are considered as unrecognized forms. The nine species discussed in this paper are given at the end of the list.

1. *Stigmatomma pallipes pallipes* (Hald)
2. *Proceratium silaceum* Roger
4. *Ponera coarctata pennsylvanica* Buckl.
5. *Neivamyrmex nigrescens* (Cresson)
6. *Myrmecina americana* Emery
7. *Monomorium pharaonis* (Linnaeus)
8. *Monomorium minimum* (Buckley)
9. *Solenopsis molesta molesta* (Say)
10. *Pheidole pilifera pilifera* (Roger)
11. *Pheidole bicarinata bicarinata* Mayr
12. *Crematogaster lineolata lineolata* (Say)
13. *Crematogaster cerasi* (Fitch)
14. *Crematogaster clara* Mayr
16. *Stenamamma brevicorne* (Mayr)
17. *Aphaenogaster treatae treatae* Forel
18. *Aphaenogaster fulva* Roger
20. *Aphaenogaster rudis picea* Emery
21. *Aphaenogaster texana carolinensis* Wheeler
22. *Aphaenogaster tennesseensis* (Mayr)
23. *Myrmica brevinodis brevinodis* Emery

24. *Myrmica brevinodis sulcinodoides* Emery
26. *Myrmica sabuleti americana* Weber
27. *Myrmica lobicornis fracticornis* Emery
28. *Myrmica schenki emeryana* Forel
29. *Leptothorax schauumi* Roger
31. *Leptothorax longispinosus* Roger
32. *Leptothorax curvispinosus* Mayr
33. *Leptothorax ambiguus ambiguus* Emery
34. *Leptothorax pergandei pergandei* Emery
35. *Tetramorium caespitum* (Linnaeus)
36. *Trachymyrmex septentrionalis* (McCook)
37. *Dolichoderus mariae* Forel
39. *Dolichoderus pustulatus* Mayr
40. *Dorymyrmex pyramicus pyramicus* (Roger)
41. *Tapinoma sessile* (Say)
42. *Iridomyrmex pruinosus pruinosus* (Roger)
43. *Iridomyrmex pruinosus analis* (André)
44. *Brachymyrmex depilis* Emery
45. *Prenolepis imparis imparis* (Say)
48. *Paratrechina parvulla* (Mayr)
49. *Paratrechina longicornis* (Latreille)
50. *Lasius neoniger* Emery
51. *Lasius niger* (Linnaeus)
52. *Lasius minutus* Emery
53. *Lasius umbratus* (Nylander)
54. *Acanthomyops interjectus interjectus* (Mayr)
55. *Acanthomyops claviger claviger* (Roger)
56. *Acanthomyops latipes* (Walsh)
57. *Formica subnuda* Emery
58. *Formica rubicunda* Emery
59. *Formica subintegra* Emery
60. *Formica puberula* Emery
61. *Formica obscuripes obscuripes* Forel
62. *Formica integra integra* Nylander
63. *Formica obscuriventris obscuriventris* Mayr
64. *Formica dakotensis* Emery
65. *Formica postoculata* Kennedy and Dennis
66. *Formica querquetulana* Kennedy and Dennis
67. *Formica exsectoides* Forel
68. *Formica ulkei* Emery
70. *Formica fusca* Linnaeus
74. *Formica cinerea montana* Emery
75. *Formica neogagates* Emery
76. *Formica schaufussi schaufussi* Mayr
78. *Formica pallidefulva nitidiventris* Emery
80. *Polygerus rufescens breviceps* Emery
81. *Polygerus lucidus lucidus* Mayr
82. *Camponotus castaneus* Latreille
83. *Camponotus americanus* Mayr
84. *Camponotus pennsylvanicus* (DeGeer)

85. *Camponotus ferrugineus* (Fabricius)
86. *Camponotus noveboracensis* (Fitch)
87. *Camponotus caryae caryae* (Fitch)
88. *Camponotus nearcticus* Emery
90. *Camponotus subbarbatus* Emery
91. *Camponotus caryae discolor* (Buckley)
- Aphaenogaster mariae* Forel
- Dolichoderus plagiatus* (Mayr)
- Leptothorax muscorum* (Nylander)
- Myrmica punctiventris punctiventris* Roger
- Ponera trigona opacior* Forel
- Proceratium pergandei* Emery
- Smithistruma flitalpa* Brown
- Stenamamma diecki* Emery
- Stenamamma meridionale* Smith

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