

## An Annotated List of the Ants of Indiana

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During the past few years, the writer has been interested in a study of the ants of Indiana and has been able to collect records of some 92 species, subspecies and varieties known to have been taken in the state. Insomuch as the only list of Indiana ants, published as such, to have appeared previous to this date contained only 42 known species and appeared over 25 years ago, it is felt that perhaps a more up to date list would be of interest to those engaged in the study of this family.

Dr. Wm. Morton Wheeler (1916)<sup>1</sup> published the first list of Indiana ants, mentioned above, together with notes on their habits and habitat, based on material collected by Dr. W. S. Blatchley, whose collection is now a part of the Purdue University collection. The writer's work includes Dr. Wheeler's list, and many of his notes on habits of the various species are used. To Wheeler's species has been supplemented new records from the writer's collections and from material taken by numerous other collectors<sup>2</sup> as well as specimens present at Purdue University.

Of the species taken by the writer, 19 were found which were not included in Wheeler's paper. Records of 14 additional species taken in the state were furnished by Dr. Mary Talbot (1934), who made a study of the ants of the Chicago region and Turkey Run State Park, Parke County, in 1934. Dr. M. R. Smith submitted to Prof. J. J. Davis a list of ants known to be in Indiana in 1937, which included 12 species not mentioned by Wheeler nor included in Dr. Talbot's or the writer's collections. Two additional species were later reported by Dr. Smith; two species described by Kennedy and Dennis (1937) from Ohio County in 1937; and a mound-building ant taken by P. T. Ulman and A. W. Trippel in 1942 complete the list of 92 ants having been found in the state.

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<sup>1</sup> Dates refer to literature cited.

<sup>2</sup> The writer wishes to express his appreciation to the following persons who have assisted him in the preparation of this paper: To Dr. C. H. Kennedy of the Dept. of Zoology and Entomology, Ohio State University, who kindly assisted in the selection of reference material and furnished specimens of Indiana species; to Dr. M. R. Smith, Associate Entomologist of the Bureau of Entomology and Plant Quarantine, who checked many of the writer's identifications and supplied him with a list of Indiana ants; to Dr. Neal A. Weber of the University of North Dakota, who generously checked the writer's identification of species in the Genus *Myrmica*; to Dr. Mary Talbot of Lindenwood College, St. Charles, Missouri, who assisted materially in increasing the list of known Indiana ants by furnishing records and specimens of 14 new species and varieties; to Dr. Wm. Creighton of Harvard University, who offered much helpful information concerning the species described by Say in 1836; and to many friends who collected specimens in various parts of the state.

Special appreciation is gratefully extended to Dr. H. O. Deay of Purdue University, under whose guidance this paper was written, for his helpful advice and assistance.

The county has been chosen as the recording unit, records having been made from 56 counties.

A list of 56 species, subspecies and varieties, not as yet recorded from Indiana but which are undoubtedly present in the state is appended. Since many species are known to occur which would hardly be expected to be found here, this list is undoubtedly too abbreviated and it is likely that only a relatively small percentage of ants actually occurring in Indiana has thus far been recorded.

## FAMILY FORMICIDAE

### Subfamily Ponerinae

This is the only subfamily of Formicidae which comprises unmistakably primitive and generalized forms. Its members form a connective link from the rest of the Hymenoptera to the members of the higher subfamilies of Formicidae and exhibit the oldest existing expression of social life among the ants. Members of this subfamily are, for the most part, rare and live in situations where high moisture content is a constant factor.

Genus *Stigmatomma* Roger, 1859

*Stigmatomma* Roger, Berlin Ent. Zeitschr., 3:225, 1859.

1. *Stigmatomma pallipes* (Haldeman, 1844).

*Typholopone pallipes* Haldeman, Proc. Acad. Nat. Sci. Phila., 2:54, 1844.

A medium sized brown ant which nests in small colonies in rich, damp woods, under stones, leaf mold, and sometimes under logs. The species is rather rare.

Genus *Proceratium* Roger, 1863

*Proceratium* Roger, Berlin Ent. Zeitschr., 7:171, 1863.

2. *Proceratium silaceum* Roger, 1863.

*Proceratium silaceum* Roger, Berlin Zeitschr., 7:131-214, 1863.

A small brown or reddish ant rarely taken abundantly. *P. silaceum* and its varieties are very primitive and possess little tolerance for variations in habitat. It is reported to nest only in well decayed logs which are large enough to retain moisture and when situated where moisture is plentiful and constantly maintained.

A species not listed by Wheeler (1916), a single worker was collected by Blatchley in Crawford County and determined by Dr. Mary Talbot.

Collection Locality: Crawford County.

References: Dennis (1938); Kennedy and Talbot (1939).

3. *Proceratium silaceum rugulosum* Wheeler, 1915.

*Proceratium silaceum rugulosum* Wheeler, Bull. Amer. Mus. Nat. Hist., 34:390, 1915.

This subspecies has the same habits as the typical variety.

Collection Locality: Crawford County.

References: Dennis (1938); Kennedy and Talbot (1939); Wheeler (1916).

Genus *Ponera* Latreille, 1805

*Ponera* Latreille, Hist. Nat., 13:257, 1805.

4. *Ponera coarctata* Latr. *pennsylvanica* Buckley, 1866.

*Ponera pennsylvanica* Buckley, Proc. Ent. Soc. Phila., 6:171, (1866) worker; Emery Zool. Jahrb. Syst., 8:267 (1894) all castes; Wheeler, Biol. Bull., 2:44, (1900) all castes.

A small black or dark brown slender species with vestigial eyes. The writer found this species most common on dead leaves of the forest floor and under the bark of decaying trees.

Collection Localities: Clinton, Jefferson, Lake, Posey and Washington counties.

Reference: Wheeler (1916).

### Subfamily Dorylinae

The subfamily Dorylinae is composed of tropical and subtropical species, known as "driver" or "visiting" ants. The former inhabit tropical Africa and Asia, the latter, the warmer climates of America. Only one species of this subfamily is known to occur in Indiana.

Genus *Eciton* Latreille, 1804

*Eciton* Latreille, Nouv. Dict. H. N., 24:179, 1804.

5. *Eciton (Acamatas) schmitti* Emery, 1894.

*Eciton schmitti* Emery, Zool. Jahrb. f. Syst., 8:258-259, 1894.

This medium sized, reddish brown ant, although a southern species, was reported to be present in Indiana by Dr. M. R. Smith, who included it in his list of Indiana ants submitted to Professor J. J. Davis of Purdue University. No collection locality nor data are known to the author.

Members of this genus are "visiting ants", traveling in huge armies, attacking many insects and even large snakes.

Reference: Wheeler (1910).

### Subfamily Myrmicinae

The subfamily Myrmicinae includes among its members the harvest-ing ants, which depend to a large extent on seeds of grasses and other vegetation for their livelihood.

Genus *Myrmecina* Curtis, 1829

*Myrmecina* Curtis, Brit. Ent., 6:265, 1829.

6. *Myrmecina graminicola americana* Emery, 1894.

*Myrmecina latreilli* subsp. *americana* var. *brevispinosa* Emery, Zool. Jahrb. Abth. f. Syst., 8:271, 1894.

A small dark, closely sculptured ant with habits resembling those of the genus *Proceratium*. Wheeler reports this a rare species with colonies consisting of fewer than 25 workers. Both Dennis (1938) and Miss

Talbot (1934) state that nests found in logs were generally in the center of well decayed wood. It has the habit of feigning death when disturbed.

Collection Locality: Crawford County.

References: Dennis (1938); Talbot (1934); Wheeler (1916).

Genus *Monomorium* Mayr, 1885

*Monomorium* Mayr, Verh. Zool.-bot. Ges. Wien, 35:452, 1885.

7. *Monomorium pharaonis* (Linnaeus, 1768).

*Formica pharaonis* Linnaeus, Syst. Nat., 12:963, 1768.

This tiny pale yellow ant is easily distinguished from the other species of the genus found in Indiana by its color and slightly smaller size but it is often confused with *Solenopsis molesta* (Say) or "thief ant" as both invade kitchens and often become serious pests.

Although this "tiny red ant" or Pharaoh's ant is reported as extremely common and general in its distribution, Wheeler failed to list it as an Indiana species in 1916, and no specimens from Indiana were present in the Purdue University collection in 1939. Furthermore, ants taken from homes in several localities during the summer of 1938 all proved to be the *Solenopsis* species. Since that time, however, the writer has taken the species several times in Marion County but is inclined to believe that *Solenopsis molesta* deserves the credit for much annoyance charged to *M. pharaonis*.

Collection Locality: Marion County.

8. *Monomorium minimum* (Buckley, 1867).

*Myrmica (Monomorium) minima* Buckley, Proc. Ent. Soc. Phila., 7:335-350, 1867.

This tiny, slender, black ant nests in the ground, trees, rotten logs, and houses.

Workers are fond of sweets and are quite often found in houses. Those on the outside feed on the excreta of plant lice, the secretions of extra-floral nectaries and dead insects.

Collection Localities: Harrison, Martin, Posey, Tippecanoe and Washington counties.

References: Dennis (1938); Talbot (1934); Wheeler (1916).

Genus *Solenopsis* Westwood, 1841

*Solenopsis* Westwood, Ann. Mag. Nat. Hist., 6:86, 1841.

9. *Solenopsis molesta* (Say, 1836).

*Myrmica molesta* Say, Boston Jour. Nat. Hist., 1:293, 1836.

This minute yellow species nests either in wood or in the ground. The writer found it very common in corn fields. Although *S. molesta* lives in independent formicaries, it is very commonly found living in the walls separating the galleries in the nests of larger ants. In those situations it steals food and devours larvae or pupae of the other ants and rightly deserves its reputation as a "thief ant".

As a pest in households, it is probably more destructive than the Pharaoh's ant, *Monomorium pharaonis*, although it does not commonly

nest in houses and thus is more readily controlled than *M. pharaonis* which takes up living quarters in the house itself.

Collection Localities: Clark, Crawford, Fountain, St. Joseph, Tippecanoe and Washington counties.

References: Dennis (1938); Wheeler (1916).

Genus *Pheidole* Westwood, 1841

*Pheidole* Westwood, Ann. Mag. Nat. Hist., 6:87, 1841.

10. *Pheidole pilifera* Roger, 1863.

*Pheidole pilifera* Roger, Berlin Ent. Zeitschr., 7, 1863.

A reddish-brown dimorphic ant, the major workers possessing extraordinarily large heads. The writer took this species several times, always (with one exception) from gravelly situations, namely, from gravelly hillsides, gravel pits, sandy banks and gravel roads. In one instance, it was taken from a decayed stump. *P. pilifera* is a true harvesting ant, storing its nest with seeds of grasses and other plants. Wheeler believed that the large-headed workers function as seed crushers.

Collection Localities: Martin, Tippecanoe and Washington counties.

Reference: Dennis (1938).

11. *Pheidole bicarinata* Mayr, 1870.

*Pheidole bicarinata* Mayr, Verh. Zool.-bot. Ges. Wien, 20:989, 1870.

This small reddish-brown species was taken by Dr. Mary Talbot during her work on the ecological distribution of ants in the Chicago region. It was taken in open craters in the sand dunes and she reported the workers foraging in open files.

The species is much more rare than *P. pilifera*.

Collection Localities: Lake and Porter counties.

Reference: Talbot (1934).

Genus *Crematogaster* Lund, 1831

*Crematogaster* Lund, Ann. Sci. Nat., 27, 1831.

12. *Crematogaster (Acrocoelia) lineolata* (Say, 1836).

*Myrmica lineolata* Say, Bost. Jour. Nat. Hist., 1:290, 1836.

One of the most common of our Indiana ants, the writer found this species on practically every collecting trip. It usually nests in wood but may sometimes be found under stones. It is fond of sweets and can often be found attending aphids and similar insects. The workers construct characteristic carton partitions or cells in their nest or over aphids and coccids on plants. They have a disagreeable odor and carry their triangular gaster over their thorax with the tip directed forward. Because of this habit they have been called "acrobat" ants.

Collection Localities: Clark, Knox, Lake, Lawrence, Monroe, Montgomery, Pike, Posey, Pulaski, Putnam and Tippecanoe counties.

References: Talbot (1934); Wheeler (1916).

13. *Crematogaster (Acrocoelia) lineolata cerasi* (Fitch, 1854).  
*Myrmica cerasi* Fitch, Trans. N.Y. State Agr. Soc., 14:835, 1854.

Although not as common as the typical species, this ant was taken by the writer on several occasions. It is a yellowish form of the above species.

Collection Localities: Crawford, Fountain, Kosciusko, Knox, Lake, Marshall, Martin, Rush, Starke, Tippecanoe and Washington counties.

Reference: Wheeler (1916).

14. *Crematogaster laeviuscula clara* Mayr, 1870.  
*Crematogaster laeviuscula* var. *clara*, Verh. Zool.-bot. Ges. Wien, 20:993, 1870.

This southern species was reported to be present in Indiana by Dr. M. R. Smith. No collection data are known by the writer.

15. *Crematogaster kennedyi* Wheeler, 1930.  
*Crematogaster kennedyi* Wheeler, Psyche, 37:55-60, 1930.

This is a parasitic species, having no worker caste. It was described from specimens collected by Dr. C. H. Kennedy, September 22, 1929, in Robinson Park, Ft. Wayne, Indiana. The males and females were present in a large colony of *Crematogaster lineolata*.

Genus *Stenamamma* Westwood, 1840

*Stenamamma* Westwood, Intr. Class. Ins., 1840.

16. *Stenamamma brevicorne* Mayr.

This small brown species is the only one of a typically northern genus known to occur in Indiana. Dr. Mary Talbot, who collected this ant, reports the species subterranean, nesting under wood or stones in rich black soil. They are relatively rare.

Collection Localities: Lake, Parke and Porter counties.

Reference: Talbot (1934).

Genus *Aphaenogaster* Mayr, 1853

*Aphaenogaster* Mayr, Verh. Zool.-bot. Ges. Wien, 3:695, 1853.

17. *Aphaenogaster treatae* Forel, 1886.  
*Aphaenogaster treatae* Forel, Comptes-rendus de la Soc. Entom. de Belgique, Seance du six fevrier, 1886.

This beautiful large, dark red ant was collected by Dr. Talbot who reports it comparatively rare and usually confined to sand.

Collection Localities: Lake and Porter counties.

Reference: Talbot (1934).

18. *Aphaenogaster fulva* Roger, 1863.  
*Aphaenogaster fulva* Roger, Berlin Entom. Zeitschr., 7:190, 1863.

This is a slender, reddish species taken by the writer in the southern part of the state. It nests in the ground and in rotten wood of dense

woods. Although it has a wide distribution, it is common only in localized areas.

Collection Localities: Scott, Tippecanoe and Washington counties.

19. *Aphaenogaster fulva* subsp. *aquia* (Buckley, 1886).

*Myrmica* (*Monomorium*) *aquia* Buckley, Proc. Ent. Soc. Phila., 26:341, 1886.

A very common ant nesting in rotten wood and under stones.

Collection Localities: Adams, Boone, Clark, Crawford, Delaware, Knox, Lake, Posey, Scott, Tippecanoe and Washington counties.

References: Dennis (1938); Wheeler (1916).

20. *Aphaenogaster fulva aquia picea* Emery, 1894.

*Aphaenogaster fulva aquia* var. *picea* Emery, Zool. Jahrb. f. Syst., 8:304, 1894.

Merely a color variation of the preceding subspecies. Dr. Talbot found it very common in the Chicago region, usually nesting in well decayed logs.

Collection Localities: Lake, Parke and Porter counties.

Reference: Talbot (1934).

21. *Aphaenogaster texana carolinensis* Wheeler, 1915.

*Aphaenogaster texana* var. *carolinensis* Wheeler, Bull. Amer. Mus. Nat. Hist., 34:414, 1915.

This is apparently a northern form of a southern species. Blatchley collected the specimens reported from Indiana in 1903 and 1904. It nests both in wood and in the ground.

Collection Localities: Crawford and Lake counties.

22. *Aphaenogaster tennesseensis* Mayr, 1862.

*Aphaenogaster tennesseensis* Mayr, Verh. Zool.-bot. Ges. Wien, 12:743, 1862.

Another large, beautiful red ant, common in Indiana. The writer found it to nest only in decayed wood, usually at the base of a stump or hollow tree. Wheeler reports, also, that it is a temporary social parasite on *A. fulva*.

Collection Localities: Crawford, Knox, Martin, Scott, Tippecanoe and Washington counties.

Reference: Wheeler (1916).

Genus *Myrmica* Latreille, 1805

*Myrmica* Latreille, Hist. Nat., 8:258, 1805.

23. *Myrmica scabrinodis brevinodis brevinodis* Emery, 1894.

*Myrmica scabrinodis brevinodis* Emery, Zool. Jahrb. Syst., 8:312, 1894.

One colony of this species was collected in a corn field in July, 1938. The nest was marked only by a hole in the cultivated surface of the ground.

Collection Locality: Washington County.

24. *Myrmica scabrinodis brevinodis sulcinodoides* Emery, 1894.  
*Myrmica scabrinodis brevinodis* var. *sulcinodoides* Emery, Zool.  
 Jahrb. f. Syst., 8:313, 1894.

This species was collected by Dr. Talbot at Warren's Dunes and Valparaiso in oak-maple woods. She found it only twice, the only records known of this species in the state.

Collection Locality: Porter County.

25. *Myrmica scabrinodis sabuleti* Meinert, 1860.  
*Myrmica sabuleti* Meinert, Naturi. Afg. Dansk. Vid. Selsk.,  
 5:55, 1860.

Reported by Wheeler as a very common ant, nesting in dry open fields and along roads.

Collection Locality: Porter County.

Reference: Wheeler (1916).

26. *Myrmica scabrinodis sabuleti americana* Weber, 1939.  
*Myrmica sabuleti americana* Weber, Lloydia, 2:144-152, 1939.

This variety was taken by Blatchley and the writer also found small colonies in low-ground meadows.

Collection Localities: Lake, Tippecanoe and Washington counties.

27. *Myrmica scabrinodis lobicornis fracticornis* Emery, 1894.  
*Myrmica rubra scabrinodis fracticornis* Emery, Zool. Jahrb.  
 Abth. f. Syst., 8:313, 1894.

Dr. Talbot collected this variety a number of times in Illinois in oak, pasture, roadside and sand flats, but only once in Indiana. The writer collected it singly on a walk in Lake County and found a small colony in a corn field in Washington County.

Collection Localities: Lake, Porter and Washington counties.

Reference: Talbot (1934).

28. *Myrmica scabrinodis schencki emeryana* Forel.

The specimen of this ant collected by the writer was a stray taken on a gravelly river bank. Dr. Talbot reported this variety as numerous in Lake and Porter counties.

Collection Localities: Lake, Porter and Tippecanoe counties.

Reference: Talbot (1934).

Genus *Leptothorax* Mayr, 1855

*Leptothorax* Mayr, Verh. Zool.-bot. Ges. Wien, 5:431-433, 1855.

29. *Leptothorax fortinodis* Mayr, 1866.  
*Leptothorax fortinodis* Mayr, Verh. Zool.-bot. Ges. Wien, 16:451-  
 452, 1866.

The writer has not taken this species, but one specimen collected by Blatchley in Crawford County, is present in the Purdue University collection.

Collection Locality: Crawford County.



30. *Leptothorax fortinodis melanoticus* Wheeler, 1903.  
*Leptothorax fortinodis melanoticus* Wheeler, Proc. Acad. Nat. Sci. Phila., 55:215-260, 1903.

The writer has never seen this subspecies but it was reported as an Indiana ant by Wheeler.

Collection Localities: Crawford and Marion counties.

Reference: Wheeler (1916).

31. *Leptothorax longispinosus* Roger, 1863.  
*Leptothorax longispinosus* Roger, Berlin Ent. Zeitschr., 7:180, 1863.

Dr. Talbot collected this species nesting under the bark of standing trees. She reports it as rather rare.

Collection Locality: Porter County.

Reference: Talbot (1934).

32. *Leptothorax curvispinosus* Mayr, 1866.  
*Leptothorax curvispinosus* Mayr, Sitz. E. K. Akad. Wiss. Wien, 53:508, 1866.

One of the most common of the *Leptothorax*, this species may be found generally over the state. Wheeler reports it to nest in hollow twigs, galls, nuts and similar places in rather damp, shady woods.

Collection Localities: Fountain, Kosciusko, LaPorte and Rush counties.

Reference: Wheeler (1916).

33. *Leptothorax curvispinosus ambiguus* Emery, 1894.  
*Leptothorax curvispinosus ambiguus* Emery, Zool. Jahrb. f. Syst., 8:320, 1894.

The writer has never taken this variety but it is included in Dr. M. R. Smith's list of Indiana ants submitted to Professor J. J. Davis.

34. *Leptothorax (Dichothorax) pergandei* Emery, 1894.  
*Leptothorax (D.) pergandei* Emery, Zool. Jahrb. Abth. f. Syst., 8:318-324, 1894.

This species was reported by Wheeler from the state in 1916. Distinctly a southern species, he stated that it was not before known to extend as far north as Indiana.

Collection Locality: Crawford County.

Reference: Wheeler (1916).

Genus *Tetramorium* Mayr, 1855

*Tetramorium* Mayr, Verh. Zool-bot. Ges. Wien, 5:423, 1855.

35. *Tetramorium caespitum* (Linnaeus), 1768.  
*Formica caespitum*, Linnaeus, Syst. Nat., 12:936, 1768.

Specimens of this robust, dark reddish-brown ant are present in the Purdue University collection from Wayne County. Because of its habit

of nesting under pavements, this ant is sometimes known as the "pave-ment ant". It has become a serious pest in greenhouses in some localities.  
Collection Locality: Wayne County.

Genus *Atta* Fabricius, 1804

*Atta* Fabricius, Syst. Piezat., p. 421, 1804.

36. *Atta (Trachymyrmex) septentrionalis obscurior seminole* Wheeler, 1911.

*Atta (Trachymyrmex) septentrionalis obscurior seminole* Wheeler, Jr. N.Y. Ent. Soc., 19:247, 1911.

This medium sized light brown ant is distinctive because of its rough spine and tubercle-bearing integument.

This species was reported as occurring in Indiana by M. R. Smith. No collection locality or data are given. Dennis (1938) reports this ant to be very common in Tennessee in moist, densely shady localities of some regions. It is a southern ant which requires a high temperature and plenty of moisture for the raising of fungus which is its only food. It is slow moving and timid, hiding under leaves and particles of dirt when disturbed.

#### Subfamily Dolichoderinae

The members of the Dolichoderinae often possess anal glands which produce a secretion having a peculiar rancid butter-like odor.

Genus *Dolichoderus* Lund, 1831

*Dolichoderus* Lund, Ann. Sci. Nat., 25:130, 1831.

37. *Dolichoderus mariae* Forel, 1884.

*Dolichoderus mariae* Forel, Bull. Soc. Vaud. Sci. Nat., 20:349, 1884.

Three specimens of this ant with a bright yellowish-red head and thorax were collected by W. S. Blatchley and are present in the Purdue University collection. This is probably the most beautiful of all our ants. It forms large colonies, nesting in sandy places about the roots of plants, the workers ascending trees in files to attend aphids and coccids.

Collection Locality: Lake County.

Reference: Wheeler (1905).

38. *Dolichoderus mariae blatchleyi* Wheeler, 1916.

*Dolichoderus mariae* var. *blatchleyi* Wheeler, Proc. Ind. Acad. Sci., 26:462, 1916.

This variety was described from Indiana specimens.

Collection Localities: Lake and Starke counties.

Reference: Wheeler (1916).

39. *Dolichoderus plagiatus pustulatus beutenmulleri* Wheeler, 1904.

*Dolichoderus plagiatus* Mayr var. *beutenmulleri* Wheeler, Bull. Amer. Mus., 20:304, 1904.

An ant listed by Wheeler in 1916. He reports it to nest in the ground, forming rather small colonies.

Collection Locality: Lake County.

Reference: Wheeler (1916).

Genus *Dorymyrmex* Mayr, 1866

*Dorymyrmex* Mayr, Sitz. Akad. Wiss. Wien, 53:494, 1866.

40. *Dorymyrmex pyramicus* Roger, 1863.

*Dorymyrmex pyramicus* Roger, Berlin Ent. Zeitschr., 7:160, 1863.

*D. pyramicus* was reported as an Indiana ant by M. R. Smith in 1937. No collection or other data are known to the writer. This species, commonly called the "Lion ant", nests in sunny places and builds a small crater about the opening of its nest.

Reference: Dennis (1938).

Genus *Tapinoma* Forster, 1850

*Tapinoma* Forster, Hym. Stud., 1:43, 1850.

41. *Tapinoma sessile* (Say, 1836).

*Formica sessilis* Say, Boston Jour. Nat. Hist., 1:287, 1836.

A very common household pest, *T. sessile* nests under stones and boards in dry, sunny places. Because of the unpleasant, nauseating, tapinoma-like odor it produces it is known as the "tapinoma" ant.

Collection Localities: Fulton, Lake, Marion, Starke and Tippecanoe counties.

References: Dennis (1938); Wheeler (1916).

Genus *Iridomyrmex* Mayr, 1862

*Iridomyrmex* Mayr, Verh. Zool.-bot. Ges. Wien, 12:702, 1862.

42. *Iridomyrmex pruinosus* Roger, 1863.

*Iridomyrmex pruinosus* Roger, Berlin Ent. Zeitschr., 7:165, 1863.

This small, light brown, slender species was taken once from a ground nest in an open unplowed field near Salem. The ant is listed from a few southern states, but as far as the writer can ascertain, it is not recorded north of Indiana.

Collection Locality: Washington County.

43. *Iridomyrmex pruinosus analis* Andre, 1893.

*Iridomyrmex pruinosus* var. *analis* Andre, Rev. Ent., p. 148, 1893.

Dennis (1938) reports this ant to be the most abundant ant of the sandy region of western Tennessee. It was taken only once in Indiana.

Collection Locality: Daviess County.

Reference: Dennis (1938).

#### Subfamily Camponotinae

This subfamily includes more than half of the species, subspecies and varieties of ants known to occur in Indiana. They, of course, are more highly developed than the preceding subfamilies and include the

true slave-making species which "sally forth on predatory expeditions for the purpose of procuring slaves they employ in their domestic business".<sup>3</sup>

Genus *Brachymyrmex* Mayr, 1868

*Brachymyrmex* Mayr, Ann. Soc. Nat. Mod., 3:163, 1868.

44. *Brachymyrmex heeri depilis* Emery, 1893.

*Brachymyrmex heeri* subsp. *depilis* Emery, Zool. Jahrb. f. Syst., 7:635, 1893.

This is the tiniest of our Indiana ants, measuring only 1.25 to 1.75 mm. in length. The writer took this species only once, nesting under moss in dense woods.

Collection Localities: Knox and Washington counties.

Reference: Wheeler (1916).

Genus *Prenolepis* Mayr, 1861

*Prenolepis* Mayr, Eur. Form., 52, 1861.

45. *Prenolepis imparis* (Say, 1836).

*Pormica imparis* Say, Boston Jour. Nat. Hist., 1:287, 1836.

Dr. Wheeler listed this species in 1916 as one not previously recorded in the state but one undoubtedly occurring in Indiana. The writer found it to be very common in clay soil. It is known as the "honey ant."

Collection Localities: Crawford, Kosciusko, Tippecanoe and Washington counties.

Reference: Wheeler (1916).

46. *Prenolepis imparis minuta* Emery, 1893.

*Prenolepis imparis* var. *minuta* Emery, Zool. Jahrb. Abth. Syst., 7:636, 1893.

Closely resembling the typical species but decidedly smaller. The author found it to be less common than *P. imparis*.

Collection Localities: Crawford, Lake, Tippecanoe and Washington counties.

Reference: Wheeler (1916), (1930).

47. *Prenolepis imparis pumila* Wheeler, 1930.

*Prenolepis imparis* var. *pumila* Wheeler, Ann. Ent. Soc. Amer., 23:21, 1930.

This tiny ant bears the same relation to the variety *testacea* as the variety *minuta* bears to the typical *P. imparis*. It was first taken in Indiana by Dr. B. E. Montgomery from black locust in 1937.

Collection Locality: Clark County.

Reference: Wheeler (1930).

Genus *Paratrechina* Mots., 1863

*Paratrechina* Motschoulsky, Bull. Mosc. Soc. Nat., 2:11, 1863.

<sup>3</sup> Kirby and Spence, Entomology 6th ed., 1846.

48. *Paratrechina (Nylanderia) parvula* (Mayr, 1870).

*Prenolepis parvula* Mayr, Verh. Zool.-bot. Ges. Wien, 20:948, 1870.

This ant was taken only twice by the writer, each time from a ground nest in a gravelly hillside. Dennis (1938) states that next to *Lasius niger americana*, this species is the most common ant in Tennessee.

Collection Localities: Lake (Wheeler 1916), Tippecanoe and Washington counties.

References: Dennis (1938); Wheeler (1916).

49. *Paratrechina (Nylanderia) longicornis* (Latreille, 1802).

*Formica longicornis* Latreille, Hist. Nat., 113, 1802.

*P. longicornis* is easily identified by its extraordinarily long antennae and legs. Dr. M. R. Smith informs the writer that he has examined specimens taken in Indianapolis by Harry F. Dietz.

Collection Locality: Marion County.

Genus *Lasius* Fabricius, 1804

*Lasius* Fabricius, Syst. Piez., 415, 1804.

50. *Lasius niger neoniger* Emery, 1893.

*Lasius niger* var. *neoniger* Emery, Zool. Jahrb. f. Syst., 7:639, 1893.

This common ant was always found nesting in the ground.

Collection Localities: Benton, Lake, Martin, Rush, Tippecanoe and Washington counties.

Reference: Wheeler (1916).

51. *Lasius niger americanus* (Linnaeus, 1758).

*Formica nigra* Linn., Syst. Nat., Ed. 10a, 1:580, 1758.

This ant is more common than any other found in the state and is probably our most important economic pest found among ants. It has been proven responsible for the spread of the corn root louse, *Aphis maidi-radiois*.

Collection Localities: Crawford, Daviess, Fountain, Jackson, Jennings, Knox, Kosciusko, Lake, Parke, Posey, Tippecanoe and Washington counties.

References: Dennis (1938); Talbot (1934); Wheeler (1916).

52. *Lasius umbratus minutus* Emery, 1893.

*Lasius umbratus* var. *minutus* Emery, Zool. Jahrb. f. Syst., 7:637, 1893.

Messrs. P. T. Ulman and A. W. Trippel collected this ant from a sphagnum bog in Steuben County in June, 1942. The colony had formed a flat-topped mound of some three feet in diameter and about 18 inches in height. It was well shaded, largely by ash, tamarack and sumac. Dr. Smith informs me that apparently *minutus* nests largely, if not exclusively, in bog-like areas where the soil is acid.

Collection Locality: Steuben County.

53. *Lasius umbratus mixtus aphidicola* (Walsh, 1862).

*Formica mixta* var. *aphidicola* Walsh, Proc. Ent. Soc. Phila., 2:310, 1862.

This medium-sized yellow ant resembles the "citronella" ants superficially. It nests in logs or stumps, or in the ground in damp, shady woods. Wheeler (1916) included it as a probable Indiana species.

Collection Localities: Clinton and Tippecanoe counties.

Reference: Wheeler (1916).

54. *Lasius (Acanthomyops) interjectus* Mayr, 1886.

*Lasius interjectus* Mayr, Verh. Zool.-bot. Ges. Wien, 16:886, 1886.

A very common ant in Indiana, nesting in the ground or in logs in rather damp situations.

Collection Localities: Fayette, Lake, Rush, Tippecanoe and Washington counties.

55. *Lasius (Acanthomyops) claviger* (Roger, 1862).

*Formica claviger* Roger, Berlin Ent. Zeitschr., 6:241, 1862.

One of our most common species with habits similar to *interjectus*. Both species have a rather pleasant odor, like that of oil of citronella or lemon-verbena, and for this reason are called the "citronella" ants.

Collection Localities: Clinton, Fulton, Hancock, Knox, Miami, Starke, Tippecanoe, Tipton and Washington counties.

Reference: Wheeler (1916).

56. *Lasius (Acanthomyops) latipes* (Walsh, 1864).

*Formica latipes* Walsh, Proc. Ent. Soc. Phila., 4:311, 1864.

Wheeler listed this as an Indiana species from the following county.

Collection Locality: Fulton County.

Reference: Wheeler (1916).

Genus *Formica* Linnaeus, 1767

*Formica* Linnaeus, Syst. Nat., 2:962, 1767.

The largest and one of the most important genera found within the boundaries of the state. More than one-fourth of Indiana's total number of known species belong to this genus.

57. *Formica sanguinea aserva* Forel, 1901.

*Formica sanguinea aserva* Forel, Ann. Soc. Ent. Belg., 45:395, 1901.

Miss Talbot collected this ant at the edge of an oak-maple woods.

Collection Locality: Porter County.

Reference: Talbot (1934).

58. *Formica sanguinea rubricunda* Emery, 1893.

*Formica sanguinea* subsp. *rubricunda* Emery, Zool. Jahrb. f. Syst., 7:647, 1893.

Dr. Smith listed *rubricunda* as an Indiana ant in his list of Indiana ants in 1937. No collection data are known to the writer. Like all *sanguinea*, it is a true slave-maker, establishing colonies by kidnapping and rearing pupae of *F. fusca subsericea*.

Reference: Wheeler (1915).

59. *Formica sanguinea subintegra* Emery, 1893.

*Formica sanguinea rubricunda* var. *subintegra* Emery, Zool. Jahrb. f. Syst., 7:648, 1893.

This ant was also listed from Indiana by Dr. Smith.

60. *Formica sanguinea puberla* Emery, 1893.

*Formica sanguinea puberla* Emery, Zool. Jahrb. f. Syst., 7:648, 1893.

A new subspecies to the list of Indiana ants taken by Dr. H. O. Deay in a corn field in 1937. Distinctly a western ant, Indiana probably marks the limit of its distribution.

Collection Locality: Lake County.

61. *Formica rufa aggerans melanotica* Emery, 1893.

*Formica rufa obscuriventris* var. *melanotica* Emery, Zool. Jahrb. f. Syst., 7:644, 1893.

This ant is also listed by Dr. M. R. Smith as from Indiana.

62. *Formica truncicola integra* Nylander, 1856.

*Formica integra* Nylander, Ann. Sci. Nat. Zool., 5:62, 1856.

A large red and black ant living in huge colonies in rather rich, open woods or hilly regions. The workers are very vicious when aroused. It was reported in Indiana by Wheeler.

Collection Localities: Crawford and Perry counties.

References: Wheeler (1915, 1916).

63. *Formica truncicola obscuriventris* Mayr, 1870.

*Formica truncicola* var. *obscuriventris* Mayr, Verh. Zool.-bot. Ges. Wien, 20:931, 1870.

An eastern species listed by Wheeler in 1916.

Collection Locality: Kosciusko County.

Reference: Wheeler (1916).

64. *Formica dakotensis* Emery, 1893.

*Formica dakotensis* Emery, Zool. Jahrb. f. Syst., 7:652, 1893.

This species is reported as an Indiana ant by M. R. Smith.

Reference: Wheeler (1915).

65. *Formica postoculata* Kennedy and Dennis, 1937.

*Formica postoculata* Kennedy and Dennis, Ann. Ent. Soc. Amer., 30:540, 1937.

This ant was described from specimens collected by the senior author and Arthur C. Cole, Jr., in Ohio County.

Reference: Kennedy and Dennis (1937).

66. *Formica querquetulana* Kennedy and Dennis, 1937.

*Formica querquetulana* Kennedy and Dennis, Ann. Ent. Soc. Amer., 30:536, 1937.

Although described from specimens collected in Ohio, this ant has been taken by Dr. Kennedy and Dr. Talbot in Spencer County.

Reference: Kennedy and Dennis (1937).

67. *Formica exsectoides* Forel, 1886.

*Formica exsectoides* Forel, Ann. Soc. Ent. Belg., 30:38, 1886.

This beautiful red and black "mound-building ant of the Alleghenies," although not abundant in Indiana, is taken occasionally. It is very fierce and attacks furiously any intruder on its preserves and kills other ants by decapitating them.

Collection Localities: Clark, Morgan and Vigo counties.

Reference: Wheeler (1915).

68. *Formica ulkei* Emery, 1893.

*Formica ulkei* Emery, Zool. Jahrb. f. Syst., 7:653, 1893.

A species with habits similar to the preceding species. It was reported as an Indiana ant by Wheeler.

Collection Locality: Kosciusko County.

Reference: Wheeler (1916).

69. *Formica ulkei hebescens* Wheeler, 1913.

*Formica ulkei* var. *hebescens* Wheeler, Bull. Mus. Comp. Zool., 53:487, 1913.

Indiana is the type locality for this variety which was described from specimens collected by W. S. Blatchley at Bass Lake.

Collection Locality: Starke County.

References: Wheeler (1915, 1916).

70. *Formica fusca* Linn., 1758.

*Formica fusca* Linn., Syst. Nat., 1:580, ed. 10, 1758.

No collection locality is known to the writer but this species is listed as an Indiana ant by M. R. Smith.

In habits, members of this group are extremely timid, which make them ideal hosts for a large number of *Formica* of the *sanguinea*, *rufa*, *microgyna* and *exsecta* group.

Reference: Wheeler (1915).

71. *Formica fusca subsericea* Say, 1836.

*Formica subsericea* Say, Bost. Jour. Nat. Hist., 1:289, 1836.

Probably the most common ant found in Indiana, excepting *Lasius niger americana* Emery. It nests in sunny places under stones or in low flat mounds.

Collection Localities: Clark, Crawford, Fountain, Kosciusko, Lake, Marshall, Martin, Perry, Rush, Starke, St. Joseph, Tippecanoe and Washington counties.

Reference: Wheeler (1913, 1916).



72. *Formica fusca argentata* Wheeler, 1902.

*Formica fusca* var. *argentata* Wheeler, Amer. Nat., 36:952, 1902.

A variety not recorded by Wheeler nor taken by the writer but specimens from Indiana are present in the Purdue University collection.  
Collection Localities: Morgan and Tippecanoe counties.

73. *Formica fusca subaenescens* Emery, 1893.

*Formica fusca* var. *subaenescens* Emery, Zool. Jahrb. f. Syst., 7:659, 1893.

An ant closely related to the preceding variety. *F. subaenescens* was taken by Miss Talbot in 1933.

Collection Locality: Porter County.

Reference: Wheeler (1915).

74. *Formica cinerea neocinerea* Wheeler, 1902.

*Formica cinerea* var. *neocinerea* Wheeler, Amer. Nat., 36:947, 1902.

This ant was listed by Wheeler (1916), who suggested Indiana to be the probable eastern limit of the species' distribution.

Collection Locality: LaPorte County.

Reference: Wheeler (1916).

75. *Formica neogagates* Emery, 1893.

*Formica fusca subpolita* var. *neogagates* Emery, Zool. Jahrb. f. Syst., 7:661, 1893.

This relatively small red and black *Formica* was listed by Wheeler (1916) and also taken by Dr. H. O. Deay in a corn field of Lake County.

It is a highland form, usually nesting in rather small colonies, under stones or in obscure craters.

Collection Localities: Lake and Kosciusko counties.

References: Wheeler (1915, 1916).

76. *Formica pallide-fulva schaufussi* Mayr, 1866.

*Formica schaufussi* Mayr, Sitz. K. Akad. Wiss. Wien, 53:493, 1866.

Referred to as "one of our commonest ants" by Wheeler (1916), the author failed to take any of this species. It is reported to have nesting habits similar to the preceding variety.

Collection Localities: Crawford, Martin, Posey and St. Joseph counties.

References: Wheeler (1915, 1916).

77. *Formica pallide-fulva schaufussi incerta* Emery, 1893.

*Formica pallide-fulva schaufussi* var. *incerta* Emery, Zool. Jahr. f. Syst., 7:655, 1893.

Although not abundant, this variety was taken several times in open situations.

Collection Localities: Clark, Crawford, Martin, Tippecanoe and Washington counties.

Reference: Wheeler (1915).

78. *Formica pallide-fulva nitidiventris* Emery, 1893.  
*Formica pallide-fulva nitidiventris* Emery, Zool. Jahr. f. Syst.,  
 7:656, 1893.

This subspecies was taken by the writer from ground nests located in a dense woods. It was also reported by Wheeler in 1916.

Collection Localities: Kosciusko, Lake, LaPorte, Martin and Washington counties.

References: Wheeler (1915, 1916).

79. *Formica pallide-fulva nitidiventris fuscata* Emery, 1893.  
*Formica pallide-fulva* subsp. *fuscata* Emery, Zool. Jahr. f. Syst.,  
 7:656, 1893.

A variety, deeper in coloration than the typical form. It was collected by Dr. H. O. Deay in Lake County. Wheeler (1915) reports it to be much rarer than any of the other varieties or subspecies of the *pallide-fulva* group.

Collection Locality: Lake County.

Reference: Wheeler (1915).

Genus *Polyergus* Latreille, 1805

*Polyergus* Latreille, Hist. Nat., 8:256, 1805.

80. *Polyergus rufescens breviceps* Emery.

This is a beautiful, large, light red ant with a shining gaster. It was taken by W. S. Blatchley from Crawford County.

81. *Polyergus lucidus* Mayr, 1870.

*Polyergus lucidus* Mayr, Verh. Zool.-bot. Ges. Wien, 20:952, 1870.

This species was reported from Indiana by Wheeler in 1916. This and the preceding species are obligatory slavemakers and are commonly called "amazons." *P. lucidus* is MacCook's "shining slavemaker."

The workers of this group are extremely pugnacious and their mouthparts are so constructed so that they are unable to excavate their own nests or care for their young and thus are entirely dependent on their slaves. On their predatory expeditions, however, they display dazzling courage and a capacity for concerted action perhaps unrivaled in the insect world.

Collection Locality: St. Joseph County.

Reference: Wheeler (1916).

Genus *Camponotus* Mayr, 1861

*Camponotus* Mayr, Eur. Form., 35, 1861.

82. *Camponotus castaneus* Latreille, 1802.

*Camponotus castaneus* Latreille, Hist. Nat., 1802.

A large yellowish or reddish-brown species nesting under stones. It is common in Indiana.

Collection Localities: Crawford, Harrison, Knox, Lake, Lawrence, Perry, Posey, Scott, St. Joseph, Tippecanoe and Warren counties.

Reference: Wheeler (1916).

83. *Camponotus castaneus americanus* Mayr, 1862.

*Camponotus castaneus* subsp. *americana* Mayr, Verh. Zool.-bot. Ges. Wien, 12:661, 1862.

Although reported to have habits similar to the typical variety, the writer found this species more often under loose bark of dead trees than in the ground.

Collection Localities: Clark, Crawford, Lake, Lawrence and Washington counties.

Reference: Wheeler (1916).

84. *Camponotus herculeanus pennsylvanicus* (DeGeer, 1773).

*Formica pennsylvanica* DeGeer, Mem. Serv. Hist. Insects, 3:603, 1773.

One of the largest of our Indiana ants, this "carpenter ant" usually nests in wood. It is a common household pest, taking up its residence in homes and causing damage to wood work and it also visits kitchens in search of sweets.

Collection Localities: Clark, Crawford, Fulton, Greene, Henry, Howard, Knox, Kosciusko, Lake, LaPorte, Lawrence, Marshall, Posey, Rush, Starke, Tippecanoe and Washington counties.

References: Wheeler (1910, 1916).

85. *Camponotus herculeanus pennsylvanicus ferrugineus* (Fabricius, 1798).

*Formica ferruginea* Fabricius, Suppl. Entom. Syst., p. 279, 1798.

A less abundant color variation of the typical form.

Collection Localities: Crawford, Knox, Lake, Lawrence, Posey, Tippecanoe and Washington counties.

Reference: Wheeler (1916).

86. *Camponotus herculeanus ligniperda noveboracensis* Fitch, 1854.

*Formica noveboracensis* Fitch, Trans. N. Y. State Agr. Soc., 14:52, 1854.

This variety differs from the preceding *herculeanus* varieties in color and size. It was reported in Indiana by Wheeler (1916).

Collection Localities: Kosciusko, Lake and St. Joseph counties.

Reference: Wheeler (1916).

87. *Camponotus caryae* (Fitch, 1855).

*Formica caryae* Fitch, Trans. N. Y. State Agr. Soc., 14:855-859, 1855.

This ant is relatively common, nesting in dead branches.

Collection Localities: Clark, Crawford and Washington counties.

Reference: Wheeler (1916).

88. *Camponotus caryae minutus* Emery, 1893.  
*Camponotus marginatus* var. *minutus* Emery, Zool. Jahr. Abth.  
 f. Syst., 7:676, 1893.

Wheeler cited this species in his "List of Indiana Ants" in 1916.

Collection Localities: Posey and Perry counties.

Reference: Wheeler (1916).

89. *Camponotus caryae decipiens* Emery, 1893.  
*Camponotus marginatus* var. *decipiens* Emery, Zool. Jahr. Abth.  
 f. Syst., 7:676, 1893.

Although Indiana is the type locality for this variety, described from specimens received from Mr. Theodore Pergande, Wheeler (1916) does not list the collection locality.

Reference: Wheeler (1916).

90. *Camponotus caryae subbarbatus* Emery, 1893.  
*Camponotus marginatus* subsp. *subbarbatus* Emery, Zool. Jahr.  
 Abth. f. Syst., 7:678, 1893.

A beautiful variety, easily distinguished from the remaining *caryae* found to occur in Indiana by its brownish-yellow head and thorax and broad transverse brown bands on the gaster, interspaced with lighter brown or yellow. This ant was taken by Dr. Talbot in Turkey Run Park. It is reported to be rare.

Collection Locality: Parke County.

Reference: Wheeler (1910).

91. *Camponotus caryae discolor* (Buckley, 1866).  
*Formica discolor* Buckley, Proc. Ent. Soc. Phila., 6:166, 1866.

Dr. Talbot collected stray ants of this variety on two occasions.

Collection Locality: Porter County.

Reference: Talbot (1934).

92. *Camponotus caryae cnemidatus* Emery.

The writer has never seen a specimen of this ant. It is listed as an Indiana ant by Dr. M. R. Smith. No collection data are known to the writer.

Members of the Formicidae which have not been recorded from Indiana but which are probably present in the state are as follows:

1. *Ponera gilva* Roger
2. *Proceratium croceum* Roger
3. *Ponera trigona opacior* Forel
4. *Eciton (Acamatus) opacithorax* Emery
5. *Pheidole dentata* Mayr
6. *Pheidole tysoni* Forel
7. *Pheidole vinelandica* Forel
8. *Pheidole vinelandica laeviuscula* Emery
9. *Pheidole anastasii* Emery

10. *Crematogaster laeviuscula* Mayr
11. *Crematogaster victima missouriensis* Wheeler
12. *Stenammina brevicorne diecki* Emery
13. *Stenammina brevicorne impar* Forel
14. *Stenammina brevicorne schmitti* Wheeler
15. *Aphaenogaster subterranea occidentalis* Emery
16. *Aphaenogaster mariae* Forel
17. *Aphaenogaster lamellidens* Mayr
18. *Aphaenogaster fulva aquia ridis* Emery
19. *Pogonomyrmex occidentalis* Cresson
20. *Mrymica punctiventris* Roger
21. *Mrymica punctiventris pinetorum* Wheeler
22. *Mrymica scabrinodis schencki* Emery
23. *Leptothorax acervorum canadensis* Provancher
24. *Leptothorax schaumi* Roger
25. *Leptothorax texanus* Wheeler
26. *Leptothorax (D.) pergandei floridanus* Emery
27. *Tetramorium guineense* Fabr.
28. *Strumigenys pergandei* Emery
29. *Strumigenys pulchella* Emery
30. *Strumigenys dietrichi* Smith
31. *Strumigenys ohioensis* Kenn. & Schramm
32. *Dolichoderus taschenbergi* Mayr
33. *Dolichoderus plagiatus* Mayr
34. *Dolichoderus plagiatus inornata* Wheeler
35. *Dolichoderus plagiatus pustulatus* Mayr
36. *Dorymyrmex pyramicus flavus* Pergande
37. *Tapinoma pruinosum* Roger
38. *Iridomyrmex humilis* Mayr
39. *Prenolepsis imparis testacea* Emery
40. *Paratrechina vividula quatemalensis* Forel
41. *Lasius brevicornis* Emery
42. *Lasius flavus nearcticus* Wheeler
43. *Lasius unbratus speculiventris* Emery
44. *Lasius murphyi* Forel
45. *Formica pergandei* Emery
46. *Formica sanguinea subnuda* Emery
47. *Formica adamsi* Wheeler
48. *Formica truncicola gymnomma* Wheeler
49. *Formica truncicola melanotica* Emery
50. *Formica difficilis* Emery
51. *Formica neogagates lasioides vetula* Wheeler
52. *Formica perpilosa* Wheeler
53. *Polyergus rufescens bicolor* Wasmann
54. *Polyergus rufescens foreli* Wheeler
55. *Camponotus herculeanus pennsylvanicus rubens* Wheeler
56. *Camponotus caryae tanquaryi* Wheeler

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