

Social parasitism
A 737

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**A New Parasitic Ant of the Genus *Monomorium*
from Alabama, with a Consideration of the
Status of Genus *Epixenus* Emery**

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The specimen described below was found in a nest of *Monomorium minimum* (Buckley) at Tuscaloosa, Alabama. Although we have only a single example, the characters are so distinct that it is evident that we have here another aberrant inquiline species of the kind now becoming almost a commonplace discovery among the Myrmicinae. It has become the custom to consider parasitic forms of this degree of differentiation from the host species as "new" genera in almost every case found, but we shall give reasons below to show that the designation of new generic names for myrmicine parasites has been a greatly overworked practice, due for critical review.

***Monomorium metoecus* sp. nov.**

Holotype ergatogyne: TL 3.0, HL 0.67, HW 0.54, pronotal W 0.41, WL (alitrunk L.) 0.88, petiolar W 0.35, postpetiolar

W 0.36, W first gastric tergite, somewhat collapsed and widened 0.93 mm. Cephalic index 81, scape index 93. W pronotum 0.41, W petiole 0.35 mm.

Head quadrate, without clypeus just about as long as broad; sides nearly parallel (very slightly narrowed behind eyes), feebly convex; occipital margin transverse, straight in full-face view; occipital angles gently rounded. Clypeus convex behind, the median lobe bicarinate, the carinae continued as two acute teeth, each tooth longer than broad at base and inclined very slightly mesad. Space between teeth semicircularly excised, impressed. Compound eyes intermediate in size between those of the worker and female of *M. minimum*, greatest diameter 0.12–0.13 mm. Antennal scapes slender, curved gently flexad, gently incrassate toward tips; exposed length 0.50 mm.; when laid straight back, apices surpassing the occipital border by less than the apical scape width. Funiculus like that of *M. minimum*, but a little more slender. Segment I long and slender, II–VIII small, as broad as long, or broader; IX, X, and XI forming a distinct club, IX and X subequal, both longer than broad; XI (apical segment) longer than IX and X taken together. Mandibles with 4 teeth, increasing in size apicad. Minute vestiges of ocelli present, but exceedingly indistinct, the anterior one connected to clypeus by a feeble sulcus. The head in all respects is intermediate between that of the worker and the female of *Monomorium minimum*, except for the longer clypeal teeth (reminiscent of those of *M. viridum* Brown) and the slender antennae.

Form of alitrunk, petiole, postpetiole and base of gaster as shown in fig. 1. Points of greatest interest are the higher and more convex promesonotum and propodeum (as compared to the *M. minimum* worker), the deep metanotal groove, and particularly the curiously hypertrophied nodes of petiole and postpetiole. The postpetiole is produced on each side below as a subacute conule, each conule bearing at its summit a spiracle. Gaster broad and somewhat collapsed.

Integument smooth and shining, with scattered inconspicuous piligerous punctures. Frontal lobes and extreme anterior corners of head longitudinally striate. Striate areas of alitrunk indicated in the figures, as well as the reticulostriate parts of the postpetiole. Center of mesonotum with a small, transversely oval pit or puncture, the detailed structure of which cannot be made out.

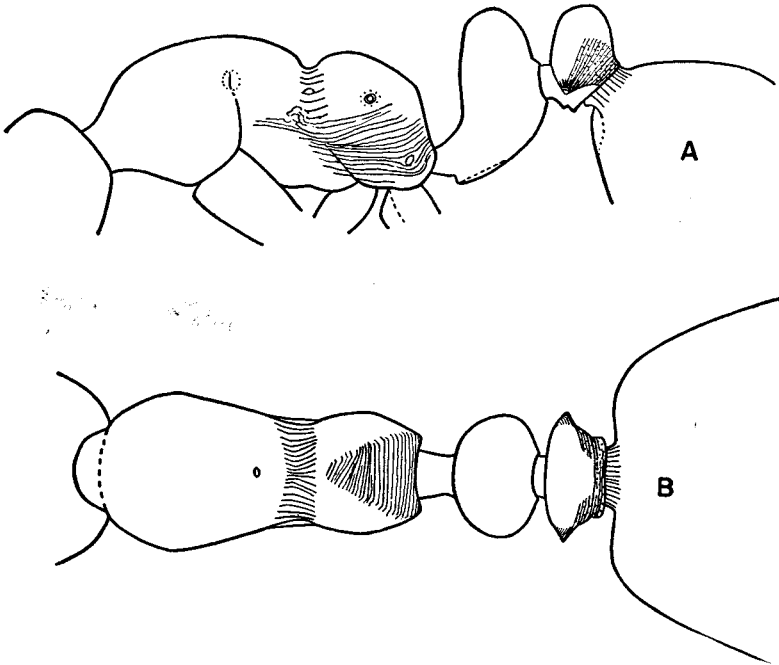


FIG. 1. *Monomorium metoecus* sp. nov., ergatogyne, holotype. A. Side view, and B. dorsal view of alitrunk, petiole, postpetiole and base of gaster. Drawing by Nancy Buffler.

Pilosity abundant, fine, whitish, erect, uneven in length and widely distributed over head, scapes and body. Legs with dilute pubescence of fine appressed hairs. Pilosity intermediate in abundance and conspicuousness between that of the host species workers and queens. Color dark reddish-brown, to the

naked eye appearing blackish; legs, antennae and mandibles tan, shading to yellowish on tarsi.

The holotype, a unique, was taken in a colony of *Monomorium minimum* (Buckley) (*sensu* Creighton) nesting under the loose bark of a living pine tree, just above the ground level, in disturbed open pine woods called "Smith Woods," on the University of Alabama campus at Tuscaloosa, Alabama (E. O. Wilson leg., No. M-178). In the bark of the same tree was found a nest of *Leptothorax bradleyi* Wheeler. The host *Monomorium* nest contained numerous workers, brood, and at least two normal dealate females of the *minimum*, the host species; both females are preserved with workers under the number M-178 in the Museum of Comparative Zoology, which is also the depository for the *M. metoecus* type.

With the exception of the very aberrant petiole and postpetiolar structure, plus other minor details of sculpture, etc., *M. metoecus* is exactly intermediate in every detail between the worker and female castes of *M. minimum*. In fact, if it were not for the form of the nodes, the new species might well have been taken for an ergatoid or pseudogyne of *minimum*; worker-female intermediates are very commonly met with among the species of *Monomorium*, with or without dealate queens, and in quite a few species the ergatogyne is the only functional queen. From these facts, it is clear that the ergatoid condition is in itself no generic character.

This raises the question of the relationship of *Monomorium* to *Epixenus* Emery. *Epixenus* was originally based on an ergatogyne found in the nest of *Monomorium venustum* André in Palestine, and on a doubtful male from Crete, taken separately (Emery, 1908). Forel (1910) added *E. biroi*, based on an ergatogyne found with *M. creticum* Emery, a member of the *salomonis* complex (referred to *salomonis* as a subspecies by Emery in 1922) from Crete. These ergatogynes differ from *Monomorium* ergatogynes only in the form of the petiolar and postpetiolar nodes, which are more than usually anteroposteriorly compressed, and therefore tend to be somewhat scale-like. However, this characteristic shape of the nodes is more a matter

of degree than of absolute qualitative difference, and other *Monomorium* females can be found that more or less approach the condition of the *Epixenus* so far as the nodes are concerned. *M. metoecus*, in fact, has the postpetiolar node more aberrant in form than in any of the *Epixenus* species. From these facts alone, it would seem that *Epixenus* is at best very doubtfully distinct from *Monomorium* at genus, or even at subgenus, level.

Against this background, we can consider the recent contributions by Bernard (1952, 1955) to the taxonomy of *Epixenus*. Bernard first described *E. guineensis* from workers taken in West Africa, and then, in his 1955 review of *Epixenus*, he described *E. algiricus* from workers and females from each of a series of colonies taken in Algeria. The figure of the female does not show clearly whether wing stumps are present or absent, though the alitrunk is very narrow and like those of some ergatogynes of other species; Bernard says only that the females are "reines désailées" taken in the nests, and the situation seems to make it fairly certain that these females are not just parasites in the nest of a host species represented by the *E. algiricus* workers (though the parasite hypothesis is not yet entirely to be discarded until a larger number of nests can be examined). Although Bernard emphasizes in his description and figures (especially fig. 1d) the scale-like structure of both nodes, our comparison of two workers from the *algiricus* type series with other workers of the genus *Monomorium* indicates that *algiricus* is only very slightly more extreme in this character than are workers of some other species of *Monomorium*, among which are *M. hesperium* Emery and *M. creticum* Emery. It seems to us that on the basis of worker characters alone, *algiricus*, *creticum* and *hesperium* could scarcely be put into different species-groups, let alone genera! And it must be remembered that *E. biroï* Forel was described from the nest of *M. creticum*, which suggests that the relationship of these two forms needs to be reexamined, keeping in mind the possibility that *biroï* may be just an ergatoid form of *creticum*.

In discussing the biology of *algiricus*, Bernard makes clear that this species usually nests independently of other ants, and

he believes that in the rest of the cases, it is associated only as a kind of thief-ant with other ant species (other species of *Monomorium* are supposed to follow lestoproct habits, e.g., *M. andrei* *fur* Forel). This information eliminates the supposed parasitic habits of *Epixenus* as a group character, even if such habits were ever considered to define a genus in this case at a time when the *Epixenus* workers were still unknown.

Consideration of the above details will, we think, show that what has been considered to constitute a distinct genus, *Epixenus*, is in fact nothing more than a heterogeneous collection of a few species of *Monomorium* that tend to have the nodes more strongly compressed than usual for the genus. Some of these species (e.g., *andrei*) may represent workerless ergatogynous inquilines derived from their host species, while others, such as *algericus*, seem to be rather average species of *Monomorium*. The larval characters described for *algericus* by Bernard may be a little unusual for *Monomorium*, but we must remember that only a trifling fraction of the *Monomorium* species have been described in the larval state, and the other *Epixenus* larvae also remain unknown. We offer below the formal synonymy of *Epixenus* with *Monomorium*, and the new combinations necessary after this change.

MONOMORIUM Mayr

Monomorium Mayr, 1855, Verh. zool.-bot. Ver. Wien, 5: 452.

Type: *Monomorium minutum* Mayr, monobasic.

Epixenus Emery, 1908, Deutsch. ent. Zeitschr., p. 556. Type: *Epixenus andrei* Emery, by designation of Wheeler, 1911.

NEW SYNONYMY.

***Monomorium advena* nom. nov.**

pro *Epixenus andrei* Emery, 1908, Deutsch. ent. Zeitschr., p. 557, fig. 5a-c, female, nec *Monomorium andrei* E. Saunders, 1890, Ent. Mon. Mag., 26: 204, worker.

***Monomorium biroï* (Forel) comb. nov. (nom. praeocc.)**

Epixenus biroï Forel, 1910, Ann. Soc. Ent. Belg., 54: 21, female (ergatogyne), nec *Monomorium biroï* Forel, 1907, Ann. Mus. Nat. Hungar., 5: 19, worker.

We are deliberately entering this name in *Monomorium*, even though it is preoccupied there, because we do not wish to propose a new name where the distinct possibility exists that the *E. biroi* of Forel, 1910, is only the female caste of *Monomorium creticum* Emery, with which it was found. The same applies to the male originally described as *Epixenus creticus* by Emery (see below).

***Monomorium creticum* (Emery) comb. nov. (nom. praeocc.)**
Epixenus creticus Emery, 1908, Deutsch. ent. Zeitschr., p. 558, male, ?*nec Monomorium Abeillei* var. *creticum* Emery, 1895, Mem. Accad. Sci. Bologna, (5) 5: 298, worker. As stated above, it may well turn out that *Epixenus creticus* is the male of *Monomorium creticum* Emery, 1895.

***Monomorium guineense* (Bernard) comb. nov.**
Epixenus guineensis Bernard, 1953 (1952), Mém. Inst. Franc. Afr. Noire, Dakar, 19: 238, fig. 10f-i, worker.

This is an aberrant species, with unusual conformation of propodeum and nodes, and very small in body size. Its relationship to the other species of *Monomorium* requires further study.

***Monomorium algericum* (Bernard) comb. nov.**
Epixenus algericus Bernard, 1955, Insectes Sociaux, 2: 274, worker, female.

We have made no study of the species of *Monomorium* in order to exhaust the possibilities of synonymy between *algericum* and the numerous small forms of the genus occurring in North Africa and southern Europe. However, a cursory check of the Museum of Comparative Zoology collections revealed no exactly similar species. *M. hesperium* and *M. creticum* Emery (I) seem to be closely related.

In checking casually through some of the now rather large number of parasitic myrmicine genera, most of which are "satellites" of large genera such as *Myrmica*, *Solenopsis*, *Monomorium*, *Tetramorium*, *Crematogaster*, and especially *Leptothorax*, one is impressed by the flimsy nature of the characterizations upon which the parasite names rest. In some cases, such as *Teleutomyrmex* or *Anergates*, little doubt about generic

status can be entertained, but in many of the rest, it seems that the known or presumed parasitic habits of the ants have been given undue weight at the generic level. When rigorous taxonomic investigation of these satellite genera is begun in earnest, it seems likely that many of them will go the way of *Epixenus*.

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