AN ILLUSTRATED KEY FOR THE RECOGNITION OF THE IMPORTED FIRE ANT AND CLOSELY RELATED SPECIES

Prepared by Insect Identification and Parasite Introduction Laboratories, Entomology Research Division

The accompanying pictorial key is expected to help in the separation of major workers of the three kinds of fire ants known to occur in the area from North Carolina and Florida to Arkansas and Texas. The species involved are the native fire ants Solenopsis geminata (F.) and S. xyloni McCook, and the imported fire ant S. saevissima richteri Forel.

Within the area under consideration ants of the genus Solenopsis may be distinguished from those of other genera that build similar mounds by the extreme variation in the size of the individuals comprising a colony. They commonly range from 1/15 to 1/4 inch in length. Individual specimens of Solenopsis are characterized by a shiny body, a ten-segmented antenna having a prominent two-segmented apical club, two nodes (petiole and postpetiole) between the thorax and abdomen, and by the absence of paired spines on the posterior part of the thorax. An additional difference of no mean consequence is their ability to inflict painful stings.

The largest (or major) workers offer the best taxonomic characters for the recognition of these species, and the key has been based on specimens of this caste. It must be noted that most characters vary from specimen to specimen and reliable use of this key requires study of a combination of characters. The key is not intended for use with a hand lens in the field.

An accurate mental picture of the species can be established most readily by comparison of correctly identified specimens. Such specimens may be obtained by submitting samples to State or Federal agencies concerned with the imported fire ant program with a request that identified specimens be returned. Additional information concerning biology and general characteristics of the imported fire ant may be found in the publication entitled "Observations on the Biology of the Imported Fire Ant" prepared by the Insects Affecting Man and Animals Research Branch, Entomology Research Division, ARS-33-49, issued in August 1958.

Collections of ants for which identifications are desired should be large enough to include about 10 or 12 major workers. Often it may be necessary to dig to considerable depth in the nest to secure workers. The specimens should be clean and undamaged. A good method of collecting is to let an ant run up a straw or small twig and then force it into a vial of 70 percent ethyl alcohol (formaldehyde is not a satisfactory preservative). If winged specimens or the large pupae are found in a colony, samples of them should be preserved in order to obtain important data on the biology of the species.

A label bearing complete information on locality, date, name of collector, and a notation regarding the habitat, i. e., cultivated field, pasture, woodland, marsh, etc., should be included in each vial of preserved specimens. Such labels should be legibly written on good quality paper with a moderately hard lead pencil. It is good practice to use code numbers corresponding to numbered field notes prepared in sufficient detail so that the collector can return to, or direct another person to the site of the nest from which the sample was collected.

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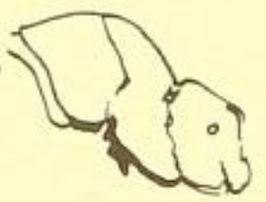
SOLENOPSIS GEMINATA (F.)

Carina on anterior margin of mesopleuron variously interrupted, the interruptions forming one or more tooth-shaped projections.



Petiolar node narrow in profile, the posterior face forming a nearly straight line.

Head extraordinarily large, obviously more than twice as broad as pronotum. — See Fig. 1

Mandible sharply curved inward, the stronger curvature near middle of outer margin. — See Fig. 1

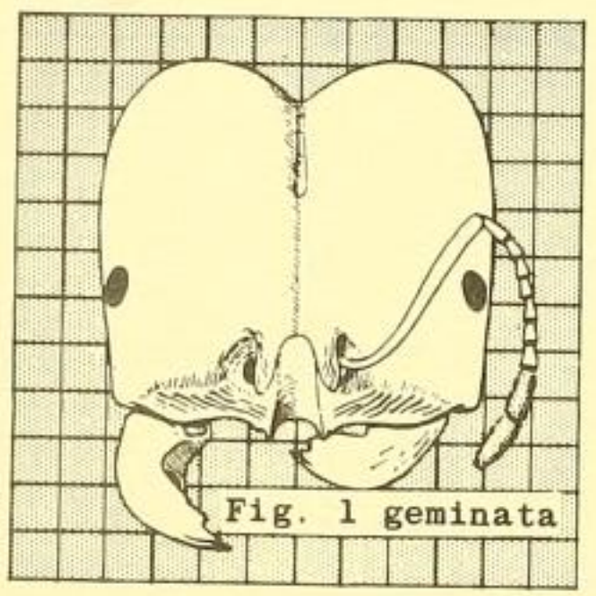
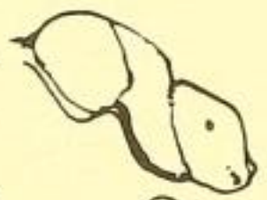


Fig. 1 geminata

SOLENOPSIS XYLONI MCCOOK

Carina on anterior margin of mesopleuron continuous, not forming tooth-shaped projections.



Petiolar node broader at top, the posterior face forming a line that curves forward near apex.

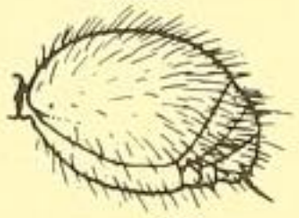
Head not remarkably large, distinctly less than twice as broad as pronotum. — See Fig. 2

Mandible less sharply curved inward, the curvature not stronger near middle of outer margin. — See Fig. 2

Antennal scape shorter, about as long as the distance from its base to a point half-way between the upper margin of the eye and the top of the head. — See Fig. 2

Biting edge of mandible with three teeth.

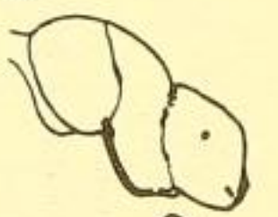
Body generally more hairy, this condition especially apparent on disc of gaster.



Petiole with antero-ventral tooth or keel.

SOLENOPSIS SAEVISSIMA RICHTERI FOREL

Carina on anterior margin of mesopleuron continuous, not forming tooth-shaped projections.



Petiolar node broader at top, the posterior face forming a line that curves forward near apex.

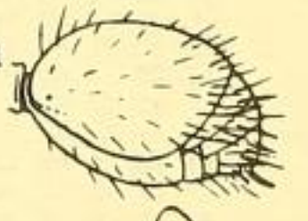
Head not remarkably large, distinctly less than twice as broad as pronotum. — See Fig. 3

Mandible less sharply curved inward, the curvature not stronger near middle of outer margin. — See Fig. 3

Antennal scape longer, obviously longer than the distance from its base to a point half-way between the upper margin of the eye and the top of the head. — See Fig. 3

Biting edge of mandible with four teeth.

Body with fewer and more scattered hairs, this condition especially noticeable on disc of gaster.



Petiole without antero-ventral tooth or keel.

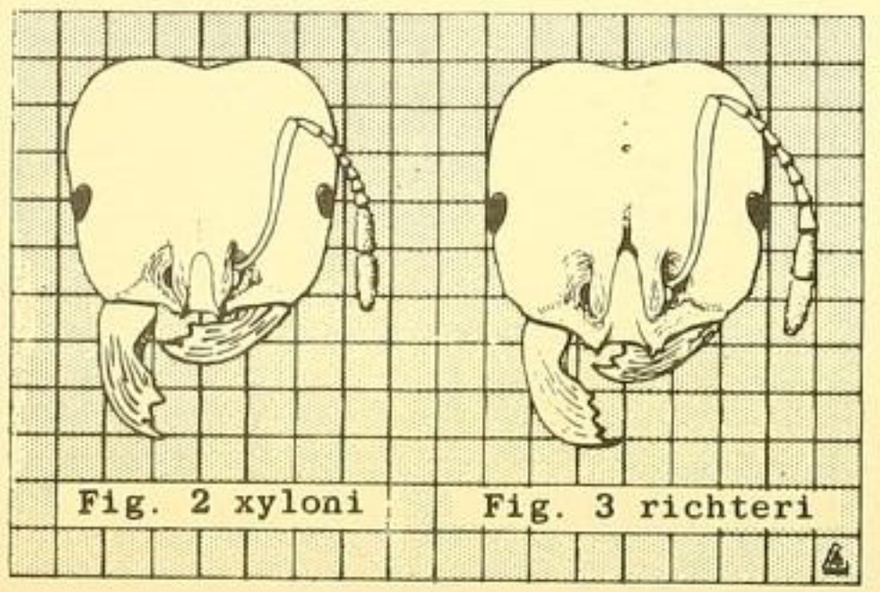


Fig. 2 xyloni | Fig. 3 richteri

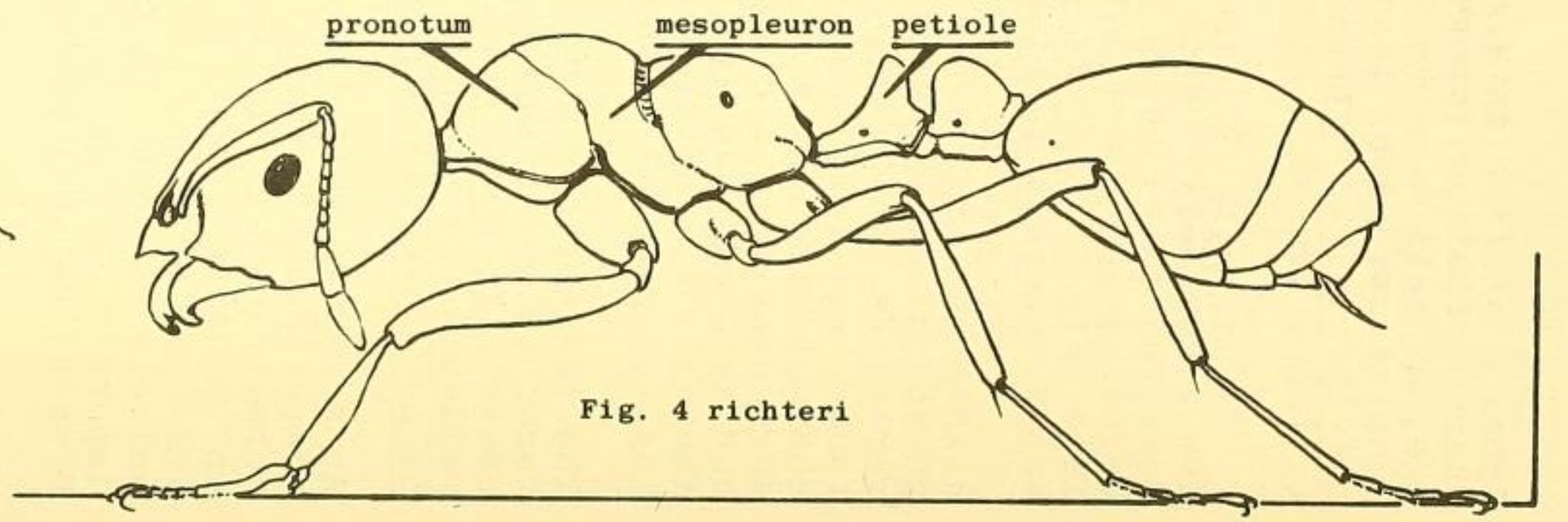


Fig. 4 richteri

Species of fire ants cannot be reliably distinguished by means of mound characteristics, as these depend largely on such factors as colony size and age, as well as upon the nature of the soil, and particularly on ground moisture conditions. Additional characters that are useful for separating xyloni and saevissima richteri, but which were omitted from the key because of space limitations, are as follows:

> S. xyloni: The index number obtained by dividing the length of antennal scape by the distance between the eyes, ranging between 0.68 and 0.83 (these measurements to be made with an ocular micrometer, not judged by eye); sculpture on mesopleuron weak and, as a result, mesopleuron somewhat shiny; top of node of petiole and postpetiole usually without distinct longitudinal, finger-shaped impressions.
>
> S. saevissima richteri: The index number obtained by dividing the length of antennal scape by the distance between the eyes, ranging between 0.85 and 1.0; sculpture on mesopleuron more obvious, the mesopleuron therefore not shiny; top of node of petiole and postpetiole with distinct longitudinal impressions, which are seen best in a posterodorsal view.