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## A Further Note on *Formica Exsectiodes* Forel

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A Further Note on *Formica Exsectiodes* ForelK. M. QUICK<sup>1</sup> and C. L. CHRISTENSEN<sup>2</sup>

K. M. QUICK and C. L. CHRISTENSEN. A further note on *Formica Exsectiodes* Forel. *Proc. Iowa Acad. Sci.*, 78(3-4):43, 1972.

SYNOPSIS. Consideration of the subsoil form and its effect on ant mound distribution within the forest is presented. Active ant mounds are found only where the subsoil is mainly composed of

sand and gravel. A report on the discovery of another large complex of ant mounds six miles northwest of New Hartford, Iowa, is made.

INDEX DESCRIPTORS: *Formica Exsectiodes*; ants, Iowa; ants, mound building; ecological parameters.

The discovery of the eastern mound-building ant colonies in Iowa has been reported by Buren (1944) and the authors (1969). This aggregate of colonies consisting of numerous undisturbed mounds in open forest clearings is located in Hamilton County, Iowa.

The dry period from mid-June (1970) into the late part of the summer appeared to produce optimum conditions for these ants. There was an increase in ant activity, as well as mound development during this time. It was also during this period that the ants started a number of new mounds.

During the study periods of 1968 and 1969 several active ant mounds were observed to the west, on the far side of the Boone River. Land development procedures in the summer of 1970 destroyed these mounds. Because the land is actively being used, the authors expect no further ant development in that area.

It was during mound cataloging in the original study area that the authors noted that some clearings contained many active ant mounds, while others were seemingly devoid of any ant activity. A cursory study of the ecological differences brought out the following information. The only real observed difference between clearings was to be found in the soil formations.

The soil is a glacial till that, in this location, contains sand and gravel in pockets of various sizes. In fact, there is a worked-out gravel pit in the immediate area. The top soil is of the thin (4"-6") veneer type commonly developed under forest conditions.

It was observed that the largest, healthiest, most active ant mound present is located on the edge of a worked out gravel pit (see Fig. 1). This clue and the information obtained by excavating a mound to a depth of just over five feet (Christensen & Quick, 1969) led the authors to believe that there was a close correlation between subsoil and ant mound development.

The results of the use of a four-foot soil probe seemed to confirm the authors' suspicions. Those forest clearings with no ant activity had a heavy clay subsoil, while those openings in the forest with many ant mounds had a more or less gravelly subsoil.

No real facts for this development could be established, but some speculations can be made. Perhaps the ants find this soil type easier to work or perhaps it allows for better colony drainage. It could be that this soil type affects temper-



Fig. 1. An exceptionally large, active ant (*Formica Exsectiodes* Forel) mound located on the edge of a worked out gravel pit.

ature and moisture (humidity) within the colony. It is evident that a far more complex and detailed study is needed before any positive explanation can be given.

The authors have received from Dr. V. E. Dowell, Department of Biology, University of Northern Iowa, a report of another large complex of active ant mounds. The senior author of this paper traveled to the area in late fall and observed 150 to 200 mounds. They appeared similar in form to those in Hamilton County but seemed taller and narrower in most cases. Due to the lateness of the season and cold weather, no ants could be collected for identification.

This group of ant mounds is located about 3¼ miles west and 3 miles north of the town of New Hartford on the Karl and Ruth Becker farm. They are located in and close to an oak-hickory woodland near a small stream. The legal location of this area is the northeast part of section 14, T-90-N, R-16-W, Albion Township, Butler County, Iowa.

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