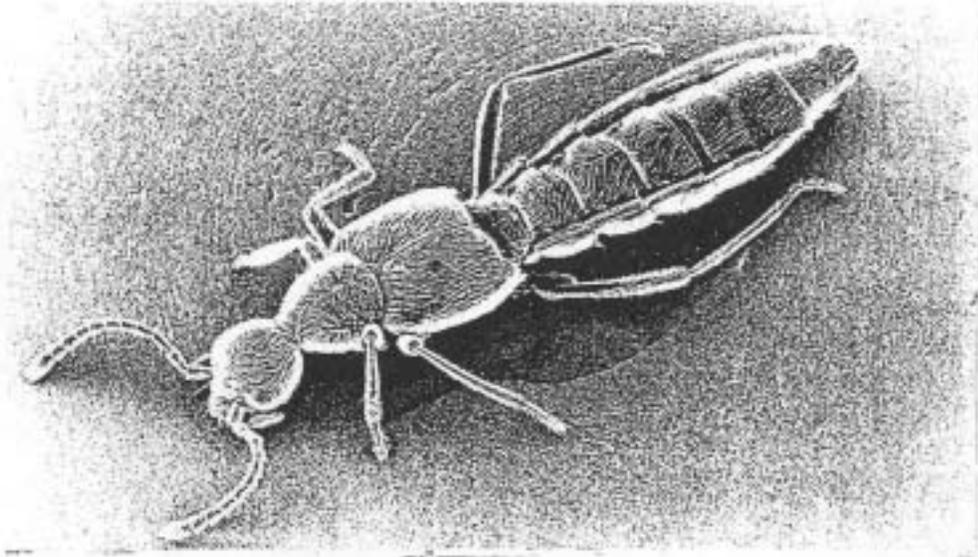


***Conservation Assessment
for
Southeastern Cave Rove Beetle (Aleochara Lucifuga)***



Klimaszewski and Peck, (1986)

USDA Forest Service, Eastern Region
October 2002

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This Conservation Assessment was prepared to compile the published and unpublished information on Aleochara lucifuga. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject community and associated taxa, please contact the Eastern Region of the Forest Service Threatened and Endangered Species Program at 310 Wisconsin Avenue, Milwaukee, Wisconsin 53203.

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EXECUTIVE SUMMARY

The Southeastern cave rove beetle is designated as a Regional Forester Sensitive Species on the Hoosier National Forest in the Eastern Region of the Forest Service. The purpose of this document is to provide the background information necessary to prepare a Conservation Strategy, which will include management actions to conserve the species.

Aleochara lucifuga is a troglophilic rove beetle known primarily from caves in the east-central United States. In Indiana it has been reported from over 20 caves.

NOMENCLATURE AND TAXONOMY

- Classification:** Class Insecta
Order Coleoptera
Family Staphylinidae
- Scientific name:** Aleochara lucifuga
- Common name:** Southeastern cave rove beetle
- Synonyms:** Rheochara lucifuga
Calodera cavicola

A detailed redescription of the species was presented by Klimaszewski (1984).

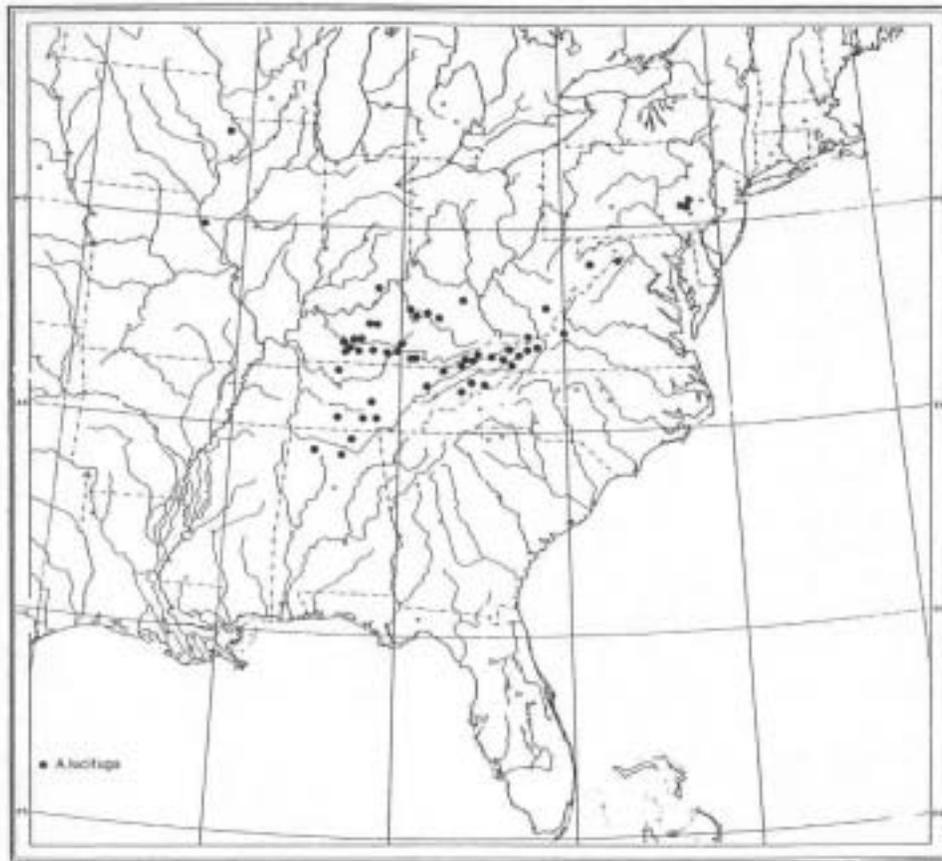
DESCRIPTION OF SPECIES

Aleochara lucifuga was characterized by Klimaszewski and Peck (1986) as ranging in length from 4.0 – 7.0 millimeters, being yellowish brown to brown, but often with a rust-colored tint, and with eyes of moderate size.

LIFE HISTORY

Klimaszewski and Peck (1986) reported that the larvae of all of the rove beetles of the genus Aleochara, almost certainly including Aleochara lucifuga, are ectoparasitic on the pupae of cyclorrhaphous flies. Thus, this rove beetle has a symbiotic relationship within cave communities, probably with either the phorid fly Megaselia cavernicola or the sphaerocerid fly Spelobia tenebrarum. Both flies are ubiquitous in Indiana cave communities.

Figure 1. The distribution of *Aleochara lucifuga* in caves of the eastern U.S. (from Klimaszewski and Peck, 1986).



HABITAT

This species apparently comes as close to being troglotic as any rove beetle found in the United States. All records for *Aleochara lucifuga* are for caves, except one from an animal burrow (Klimaszewski and Peck, 1986). They reported that the specimens for their study were collected throughout the year from raccoon dung, bat guano, human feces, carrion, liver and banana. As noted above, this rove beetle is associated with the larvae or pupae of flies, frequently living on carrion or decaying organic material. Conn and DeMoss (1984) reported that the population of *Aleochara lucifuga* in Bat Cave, Kentucky, were associated with guano.

DISTRIBUTION AND ABUNDANCE

Klimaszewski and Peck (1986) reported Aleochara lucifuga to occur in the southeastern United States in an area from Iowa east to Pennsylvania and south to Alabama, although the majority of specimens examined were from Kentucky, Tennessee or Virginia (Figure 1).

RANGEWIDE STATUS

Global Rank: G3 vulnerable; The global rank of G3 is assigned to species that have been collected from between 21 and 100 sites. Klimaszewski and Peck (1986) listed 50+ localities across the range of the species, while Lewis (1998) cited 22 for Indiana.

Indiana State Rank: S3 vulnerable; The state rank of S3 is assigned to species that have been collected from between 21 and 100 sites in Indiana. Lewis (1998) reported Aleochara lucifuga from 22 caves in Indiana.

POPULATION BIOLOGY AND VIABILITY

As noted above, this species is an obligate ectoparasite of flies. The presumptive hosts are very common in Indiana caves. Aleochara lucifuga also appears to be common in some Indiana caves.

POTENTIAL THREATS

Aleochara lucifuga primarily inhabits riparian habitats in caves that are relatively isolated from human and other disturbances. This species is relatively widespread and most of the caves it occurs in through the Hoosier National Forest are environmentally stable. Threats to this species appear to be minimal.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

On the Hoosier National Forest Aleochara lucifuga was reported from 13 caves distributed through five counties. Sites include Mesmore Spring Cave, Hemlock Cliffs Special Area, Crawford Co.; Gory Hole, Tincher Special Area, Lawrence Co.; Frog Pond Ridge Pot and Patton Cave, Deam Wilderness, Monroe Co.; Elrod and Wesley Chapel Gulf Caves, Wesley Chapel Gulf Special Area, Orange Co.; and Diggers Delight, Tucker Dam Quarry, Tucker Lake Spring caves, Springs Valley Recreation Area, Orange Co. Many of these locations have restricted management since they are in special areas that were designated due to their karst resources. Forest service special areas are managed for the preservation of these ecosystems (USDA Forest Service, 1991; 2000).

This species has also been found in caves at Wyandotte Caves State Recreation Area, Crawford Harrison State Forest, Twin Domes Nature Preserve (Lewis, 1998), and caves of the Big Oaks National Wildlife Refuge (Lewis & Rafail, 2002).

SUMMARY OF MANAGEMENT AND CONSERVATION ACTIVITIES

No species specific management or conservation activities are being conducted concerning Aleochara lucifuga, however cave and karst habitat located on the Hoosier National Forest are subject to standards and guidelines for caves and karst protection and management as outlined in the Hoosier National Forest Land and Resource Management Plan (Forest Plan) (USDA Forest Service, 1991). These standards and guidelines include the following:

- *Caves are protected and managed in accordance with the Federal Cave and Karst Resources Protection Act of 1988, Forest Service Manual 2353, Memorandums of Understanding between the forest service and the National Speleological Society, the Indiana Karst Conservancy, Inc., the Forest Cave Management Implementation Plan, and individual specific cave management plans.

- *Except where modified by an existing cave management prescription, vegetation within a 150-200 foot radius of cave entrances and infeeder drainages with slopes greater than 30 percent will generally not be cut. No surface disturbing activities will be conducted on any slopes steeper than 30 percent adjacent to cave entrances. Similar protection areas will be maintained around direct drainage inputs such as sinkholes and swallow holes known to open into a cave's drainage system of any streams flowing into a known cave.

- *Allow no sediment from erosion of access roads and drilling sites to wash into caves or karst features.

- *Seismic surveys requiring explosives shall not be conducted directly over known cave passages or conduits.

- *All caves will be managed as significant.

(USDA Forest Service, 1991)

The forest plan includes a cave and karst management implementation plan. This management plan places an emphasis on cave resource protection and mitigation. Understanding of the caves is established through mapping, bioinventory, cataloging of resources (e.g., archaeological, paleontological, speleothems, etc.), and estimating use levels and trends. Protection zones or other mitigation measures recommended by a management prescription will be established around caves entrances, sinkholes and swallowholes. Specific criteria will include consideration for protection of entrance and cave passage microclimate, animals inhabiting the cave, physical and chemical parameters and aesthetic values associated with the cave.

RESEARCH AND MONITORING

A bioinventory of the caves of the Hoosier National Forest revealed additional populations of this beetle (Lewis, et al., 2002; and in progress).

RECOMMENDATIONS

The presence of this species on the Regional Forester List of Sensitive Species should be re-evaluated after the bioinventory of caves of the Hoosier National Forest has been completed.

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