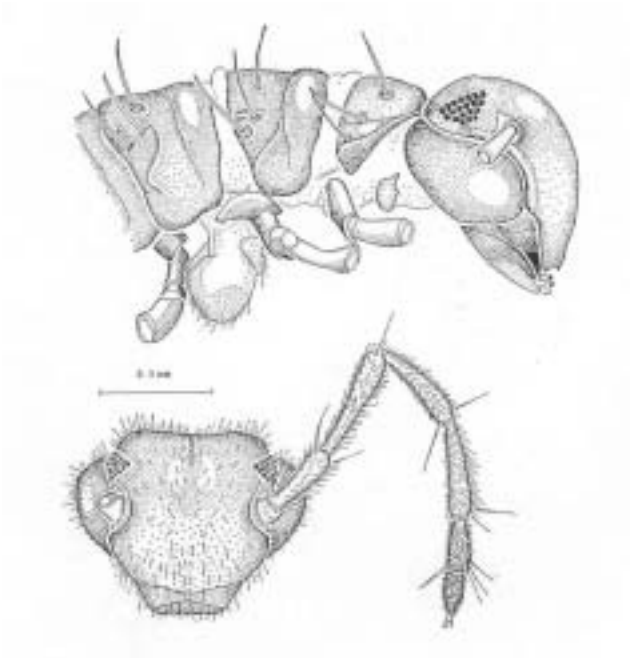
Conservation Assessment
for
Bollman's Cave Milliped (Conotyla bollmani)



Conotyla (from Shear, 1971)

USDA Forest Service, Eastern Region

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This Conservation Assessment was prepared to compile the published and unpublished information on Conotyla bollmani (Bollman's cave milliped). 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

Conotyla bollmani (Bollman's cave milliped) 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.

NOMENCLATURE AND TAXONOMY

Classification: Class Diplopoda
Order Chordeumatida
Family Conotylidae

Scientific name: Conotyla bollmani (McNeill)

Common name: Bollman's cave milliped

Synonyms: Trichopetalum bollmani
Scotherpes wyandotte
Conotyla wyandotte

The taxonomy of Conotyla bollmani has gone through a number of nomenclatural convolutions since first being described by McNeill (1887). Bollman (1889) described Scotherpes wyandotte, a misspelling of Scoterpes wyandotte (Shear, 1971), followed by Cook and Collins (1895) as Conotyla wyandotte. Shear (1971) redescribed Conotyla bollmani and presented illustrations allowing positive identification of the species.

DESCRIPTION OF SPECIES

Bollman's cave milliped was described by Shear (1971) as reaching a length around 14 millimeters. The milliped is typically unpigmented lending a straw-colored appearance, with triangular eyes of 20-22 ocelli. Although a milliped meeting this description from a cave within the range can be surmised as Conotyla bollmani, identification requires laboratory examination of the copulatory apparatus (gonopods) under a microscope by a specialist versed in milliped taxonomy.

LIFE HISTORY

Little is known of the life history of Conotyla bollmani. Shear (1971) reported observing the mating of a related epigean species, Conotyla blakei, which occurs in New England at elevations above 3000 feet in dense fir forests. The female held onto the wood of a rotted tree trunk with the last 10-12 segments, while the male coiled about her, grasping with the crassate first seven pairs of legs.

Feeding in Conotyla blakei was presumed to consist of picking up or scraping material from the substrate with the mouthparts then grinding it with the mandibles. The foreguts examined of C. blakei were filled with wood particles and fungal hyphae (Shear, 1971).

HABITAT

All known records of Conotyla bollmani are from caves, although Shear (1971) reported having examined specimens from two surface habitats. The only collection cited that might have come from the surface was the type-specimen of Conotyla wyandotte (=bollmani). I have examined this depauperate, fragmented specimen in the collection of the Smithsonian Institution as well as labels present in the vial with it. It is impossible to ascertain where (surface vs. cave) this specimen was collected, and how "near" Wyandotte it was found. A surface collection was shown in the northern part of the range of C. bollmani on a map (Shear, 1971), but the locality was not given so it is impossible to ascertain the habitat situation (i.e., whether this was truly a collection from an epigean habitat, or was perhaps from a sinkhole or cave entrance).

Conotyla bollmani is typically found in riparian cave habitats or other moist areas. It is frequently found on pieces of wood, on detritus or on the undersides of rocks. It also comes readily to cheese bait. The milliped is commonly found deep in the dark zone of caves on the Hoosier National Forest.

DISTRIBUTION AND ABUNDANCE

Conotyla bollmani is endemic to southern Indiana, occurring in Orange, Martin, Lawrence, Monroe and Owen counties (Shear, 1971; Hoffman and Lewis, 1998). The Crawford County record "near Wyandotte Cave" of C. wyandotte is a mystery, as nearly 200 caves were searched in the Blue River drainage (i.e., Wyandotte Cave area) without finding this species (Lewis, 1998). Search of surface habitats in the area has not yet revealed its presence either.

Conotyla bollmani appears to be ubiquitous in many caves of the East Fork of White River drainage (Shear, 1971; Lewis, 1994; 1998; 2002, et al.; and in progress; Hoffman and Lewis,1998). In the Hoosier National Forest Bollman's Cave Milliped is the milliped to be expected in caves of all areas except the Tell City unit.

Concerning abundance, this milliped is usually scarce until detected near a food source, where numerous individuals can frequently be found grazing.

RANGEWIDE STATUS

Global Rank: G3 vulnerable; G3 typically includes species known from between 21-99 sites. This species has been recorded from several dozen cave localities by Shear (1971), Lewis (1994; 1998; 2002 et. al) and Hoffman and Lewis (1998).

Indiana State Rank: S3 vulnerable; S3 typically includes species known from between 21-99 sites within the state. All known localities of Bollman's cave milliped are in Indiana.

POPULATION BIOLOGY AND VIABILITY

Little is known of the population biology of Bollman's cave milliped. It comprises a regular part of the terrestrial community in the caves that it inhabitants. Regardless of its ecological classification (i.e., obligate versus facultative cavernicole), in much of the Hoosier National Forest it fills the niche of the troglobitic millipeds usually found in southcentral Indiana caves. Conotyla bollmani is typically found associated with subterranean flies (Cave dung fly Spelobia tenebrarum, Cave hump-backed fly Megaselia cavernicola), spiders (Subterranean sheet-web spider Phanetta subterranea), and a variety of springtail insects.

POTENTIAL THREATS

Cave ecosystems are unfortunately not immune to the introduction of exotic species. Out-competition of native cavernicoles by exotic facultative cavernicoles is becoming more common, with species such as the exotic milliped Oxidus gracilis affecting both terrestrial and aquatic habitats. The penetration of caves on the Hoosier National Forest presently inhabited by Conotyla bollmani is of concern. At present there is no known control for Oxidus gracilis.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

Within the range of Conotyla bollmani the caves it inhabits are a mosaic of federal, state and privately held lands. Lewis, et al. (2002) listed 22 caves within the Hoosier National Forest in Orange, Martin, Lawrence and Monroe counties. Conotyla bollmani occurs in caves at Springs Valley Recreation Area, Tincher Special Karst Area, Gypsy Bill Allen Cave Special Area, Wesley Chapel Gulf Special Area and the Deam Wilderness (the numerous specific localities can be found in Lewis, et al., 2002). These areas all have restricted management that afford protection of the cave ecosystems (USDA Forest Service, 1991; 2000).

SUMMARY OF MANAGEMENT AND CONSERVATION ACTIVITIES

Although there are no species-specific activities concerning Conotyla bollmani, 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 caves of the Hoosier National Forest ascertained numerous localities in which Bollman's cave milliped occurred (Lewis, et al., 2002; and in progress).

RECOMMENDATIONS

Retain on list of Regional Forester Sensitive Species.

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