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PHORESY BY PSEUDOSCORPIONS

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Phoretic behavior involving a non-parasitic association of a larger animal by a smaller animal resulting in transportation is well documented in some pseudoscorpions. Muchmore (1971) summarized the records of pseudoscorpion phoresy in Central and North America as presented by Beier and as published since 1948. Both Beier and Muchmore categorized six different relationships of pseudoscorpions with larger animals, as follows: 1) species found attached to the appendages of other arthropods, 2) species found settled on the bodies of larger insects, 3) species found in the nests of social insects, 4) species found in birds' nests, 5) species found in the nests of small mammals or on such mammals, and 6) species found in human habitations. While the first two categories represent direct evidence of phoresy, the last four represent indirect evidence at best. Such evidence may point to phoresy even though the pseudoscorpion is not collected attached to a carrier. Included herein are further records of such direct and indirect evidence. The indirect evidence presented is confined to those situations where phoresy is the most reasonable explanation for the presence of pseudoscorpions. All records, except one from Pennsylvania, are from Michigan.

Fenstermacher (1959) in an unpublished thesis reported "a group" of *Lamprochernes oblongus* (Say) under the elytra of elaterid beetles, *Alaus oculatus* (Linnaeus), from Ingham County. The beetles were collected on 15 April, 1948, by R. L. Fisher who, through personal communication, indicated the beetles were actually collected in Washtenaw County. The above possibly represents the fourth separate record of *L. oblongus* on *A. oculatus*. Muchmore (1971) summarized the other records.

A male *Dinocheirus pallidus* (Banks) was found attached to the thoracic region of the noctuid moth *Caenurgia crassiuscula* Haworth. The moth was collected by J. Donahue on 9 August, 1965 in Somerset County Pennsylvania. Treat (1956) also reported the occurrence of two pseudoscorpions on noctuid moths. The pseudoscorpions represented undescribed male species of *Apocheiridium* according to C. C. Hoff. Muchmore (1971) reported four individuals of *Apocheiridium*, obtained from A. E. Treat on two different species of noctuid moths, *Acronycta morula* G. and R., and *Catocala neogama* A. and S.

Female *Hesperochernes ewingi* (Hoff), *H. lymphatus* (Hoff) and *Dinocheirus pallidus* were collected in Saginaw County in aerial net traps erected to capture flying insects. The collections were made by J. Truchan on three separate dates during 1968. When collected, the pseudoscorpions were not attached to insects.

A male *Dactylochelifer copiosus* Hoff was collected by J. Donahue in Ingham County, atop an automobile hood, at a black light on 28 April, 1970. The black light was used to attract flying insects. Similarly, Muchmore (1971) discussed the occurrence of pseudoscorpions in light traps and concluded the pseudoscorpions entered the light traps attached to some unknown flying insects.

Two female *Hesperochernes tamiae* Beier were collected in Ingham County by G. Klee on 11 October, 1967 in a pittrap set in an oak-hickory forest floor. The pseudoscorpions may have entered phoretically.

A female *Apocheiridium stannardi* Hoff and five nymphs of *Lamprochernes oblongus* were collected by S. Nelson, Jr. in Shiawassee County in nest boxes of the wood duck *Aix sponsa* (Linnaeus). The boxes, attached to dead trees in a flooded area, were completely surrounded by ice when collected on 18 February, 1970, but during more seasonal periods would have been surrounded by water. However, man may have introduced nesting materials containing pseudoscorpions, therefore, discounting phoresy. If phoresy occurred, the nymphs of *L. oblongus* likely did not enter the nest boxes phoretically but were the progeny of a pregnant female which more logically did.

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