SYSTEMATICS, MORPHOLOGY, AND PHYSIOLOGY

The Taxonomic Status of *Xyonysius major* (Berg) (Hemiptera: Lygaeidae), an Occasional Pest of Sunflower in Brazil

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A Situação Taxonômica de *Xyonysius major* (Berg) (Hemiptera: Lygaeidae), uma Praga Ocasional no Brasil

RESUMO - Exemplares de uma espécie de Orsillinae do gênero *Xyonysius* foram coletados em girassol (*Helianthus annuus*) em Londrina, Paraná. Os exemplares parecem ser da espécie *X. major* (Berg), mas essa espécie foi colocada como sinônimo de *X. californicus* (Stål). Demonstra-se aqui que as duas espécies devem ser consideradas distintas, ao menos até que o conceito "*Xyonysius californicus*" seja esclarecido. Desta forma, o ligeídeo do girassol deve ser considerado *X. major*.

PALAVRAS-CHAVE: Insecta, Lygaeidae, Orsillinae, girassol.

ABSTRACT - Specimens of a species of the orsilline genus *Xyonysius* have been collected on sunflower (*Helianthus annuus*) in Londrina, Paraná. The specimens appeared to be *X. major* (Berg), but this species has been synonymized with *X. californicus* (Stål). Here I show the two species should be considered distinct, at least until the concept "*Xyonysius californicus*" has been clarified. The sunflower lygaeid is *X. major*.

KEY WORDS: Insecta, Lygaeidae, Orsillinae, sunflower.

Sunflower, *Helianthus annuus*, is grown commercially in the Brazilian states of Paraná, São Paulo, Mato Grosso, and Goiás. About 25,000 hectares are planted to the crop each year, yielding some 40,000 tons of seed (Regina V. C. Leite, personal communication).

In February, 1997, several specimens of a species of *Xyonysius* (Orsillinae: Metrargini), were collected on sunflower grown in the greenhouse, in Londrina, Paraná State, Brazil. Because of the commercial importance of sunflower in Brazil, these specimens should be identified. Accurate identification is especially important because what is probably this species has already been reported as a minor sunflower pest: by Boiça et al. (1984) (as "*Nizius*" sp.), in Mato Grosso State; and by Zucchi *et al*. (1993) (as *Nysius* sp.), more generally.

Of the *Xyonysius* species recorded from Brazil (Ashlock 1967), the Londrina specimens are too large (5.6-6.8 mm long) to be *X. ellipticus* Berg—spelled "*elypticus*" in Ashlock (1967),— described by Berg (1892)

as 3.7-4.3 mm long. The sunflower *Xyonysius* closely resembles *X. volxemi* (Distant), but the rostrum reaches between the hind coxae, whereas in *X. volxemi* it "almost reachy [sic] the intermediate coxae" [Distant 1888]); the antennae are less infuscated in the sunflower specimens than in *X. volxemi*; and the latter insects are somewhat smaller (5 mm long) (Distant 1888). The Londrina specimens most closely resemble *X. californicus* (Stål). And herein lies a problem.

Xyonysius californicus was described by Stål in 1859 (as *Nysius*), and *X. major* was described by Berg in 1879 (again, as *Nysius*). In 1947, Barber synonymized *major* with *californicus*. Ashlock and Lattin (1963) separated from *Nysius* those species with both costal and abdominal stridulitra into a new genus, *Xyonysius*. Ashlock and Lattin listed both *X. californicus* and *X. major*, and wrote further, "For the present state of synonymy of these names, see Barber (1947)" (p. 702). In his 1967 revision of orsilline genera, Ashlock again listed both species. Thus it is unclear whether Ashlock - the authority on the lygaeid subfamily Orsillinae - meant to remove *X. major* from synonymy or not; he did not do so explicitly either in 1963 or in 1967, and the catalogs of the Lygaeidae (Slater 1964, Slater and O'Donnell 1995) quite properly list only the synonymy of Barber (1947). Nevertheless, by referring the reader to Barber (1947), Ashlock and Lattin (1963) seemed to be accepting Barber's synonymy. Yet, by not mentioning that synonymy, and listing *major* as a species of *Xyonysius* like the others, Ashlock (1967) implicitly rejected Barber's synonymy.

Material and Methods

In order to determine whether the Londrina specimens are *Xyonysius californicus*, it becomes necessary to determine if this species and *X. major* are the same. To do this, I have compared specimens of *X. major* determined by P. D. Ashlock (in J. A. Slater Collection), with specimens of *X. californicus* determined by H. G. Barber, P. D. Ashlock, and M. H. Sweet (J. A. Slater Collection, and mine); P. D. Ashlock was the authority on orsilline lygaeids, and M. H. Sweet is a leading authority on Lygaeidae. The *X. major* specimens were collected "nr. Campo Grande," Mato Grosso State, Brazil, and in Carmen and Independencia, Paraguay; the *X. californicus* are from Illinois (U.S.A.) south through central Mexico and the Dominican Republic. I compared these specimens also with those from sunflower in Londrina.

Results and Discussion

In general, *X. major* specimens are uniformly darker than are *X. californicus*, whether from Mexico and the United States southwest or from the less dry midwestern United States. The Brazilian specimens from sunflower are also dark. The thoracic and abdominal venters of *X. major* and the sunflower specimens are mostly black; those of *X. californicus* are pale, although occasionally dark.

In males, the ventral rims of the genital capsules of *X. major* and the Brazilian sunflower specimens are more broadly rounded than are those of the capsules of *X. californicus*. The blade of the latter's parameres is slightly longer than those of the parameres of *X. major* and the Brazilian specimens (Table 1). These differences are slight, however.

At its base, the corium is contracted, that is, it curves medially (Table 1). The sunflower specimens and *X. major* have a sharper contraction than does *X. californicus*, although Barber (1947) says this sharper contraction occurs in *X. californicus* (with which he synonymizes *X. major*). The costal (outer) margin of the corium is straight in *X. major*, but that of *X. californicus* and of the sunflower specimens is slightly curved (Table 1); Ashlock (1967), however, says this margin is straight in both *X. major* and *X. californicus* (which - significantly - he lists as apparently of equal rank).

Ashlock (1967) suggests that the relative lengths of antennal segments may help separate species of *Xyonysius*; the relative lengths

Table 1. Characteristics of *Xyonysius californicus*, *X. major*, and Londrina specimens from sunflower.

	Xyonysius californicus	*Xyonysius major*	Londrina specimens
Total length (mm)	3.8[a], 4.6[b], 5.0[c]	4.8[d], 5.6[e]	5.6-5.8
Color	pale	dark	dark
Corium's basal constriction	less sharp	sharp	sharp
Corium's costal margin	slightly curved	straight	slightly curved
Rostrum	onto metasternum	onto metasternum	onto metasternum
Antennal lengths	2>3=4>1	2>3=4>1	2>3=4>1
Genital capsule ventral rim	less broadly rounded	broadly rounded	broadly rounded
Paramere blade	slightly longer	slightly shorter	slightly shorter

[a]México and Dominican Republic (n=5); [b]eastern United States (n=9); [c]Arizona and Texas (U.S.A.) (n=6); [d]Brazil (MT) (n=2); [e]Paraguay (n=3).

of the three groups here are the same (Table 1). However, from the measurements Barber (1947) gives, the relative lengths of *X. californicus* should be 2=4>3>1; and, of his subspecies *X. californicus alabamensis* Barber, the relative lengths should be 4>2>3>1, 2 being only slightly greater than 3. I have measured three U.S.A. specimens in the J. A. Slater Collection, all identified by Barber, as follows (in millimeters): specimen from Illinois: 0.36, 0.99, 0.82, 0.82; specimen from North Carolina: 0.36, 0.73, 0.63, 0.66; specimen from Arizona: 0.36, 0.82, 0.66, 0.63. Thus the relative lengths of antennal segments of specimens identified by Barber as *X. californicus* are the same as I give in Table 1. The North Carolina specimen is *X. californicus alabamensis*, an eastern North American subspecies which is smaller than the typical subspecies. But the similar specimen from Arizona is presumably the typical subspecies, as is also the Illinois specimen. The concept "*Xyonysius californicus*" is clearly a confused one.

In general, the differences between *X. major* and *X. californicus* are ones of degree, not of kind. *X. major* is darker and larger than *X. californicus*, except specimens of the latter from Arizona and Texas (U.S.A.). With respect to structural characteristics, the two species either differ slightly or not at all (Table 1). In addition, the ambiguities mentioned above suggest that it is not clear just what "*Xyonysius californicus*" is.

Until the concept "*Xyonysius californicus*" is clarified, via a thorough analysis of variation within both species, I believe the two should be treated as separate. Therefore I explicitly remove *X. major* (Berg) from synonymy with *X. californicus* (Stål), just as, it appears, Ashlock had already implicitly done.

The Brazilian specimens, collected in Londrina on sunflower, are *X. major*.

Very little is known about the biology and ecology of *Xyonysius*. Therefore, and because this species may become a pest on sunflower in southern Brazil, its biology and life history should be studied.

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