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Author: Bonet, Arturo

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NEW HOSTS, HOST PLANTS, AND DISTRIBUTION RECORDS FOR *HORISMENUS* (HYMENOPTERA: EULOPHIDAE) SPECIES IN A BRUCHID BEETLE PARASITOID GUILD ATTACKING WILD TYPE *PHASEOLUS COCCINEUS* AND *P. VULGARIS* IN CENTRAL MEXICO

ARTURO BONET
Instituto de Ecología A. C. km 2.5 antigua carretera a Coatepec No. 351,
Apdo. postal 63, 91000 Xalapa, Veracruz, México
e-mail: arturo.bonet@inecol.edu.mx

The 62 described species of parasitoids and hyperparasitoids of the genus *Horismenus* Walker (Hymenoptera: Eulophidae) attack Lepidoptera, Coleoptera, and Hymenoptera larvae; which are either primary or secondary hosts. The host plants in which they can be found correspond to some 10 angiosperm families distributed along 14 countries of the Neotropical region (Noyes 2003).

While examining material from the entomology collection of the Instituto de Ecología A. C. in Xalapa, Veracruz, Mexico (IEXA), we found that specimens of *Horismenus* species had labels with information on hosts, host plants, and distribution records which are definitely new for the genus. Those insects are the result of 25 years of collecting wild type and cultivated bean pods of *Phaseolus coccineus* L. and *P. vulgaris* L. (Leguminosae: Papilionoideae), throughout the state of Mexico (Estado de México), Morelos, and Puebla to study the infesting rates of *Acanthoscelides obtectus* (Say) and *A. obvelatus* Bridwell (Chrysomelidae: Bruchinae), and its naturally associated parasitoids.

The specimens described herein were obtained from isolated seeds in which a bruchid host and *Horismenus* parasitoids emerged in the same seed. Although, Hansson et al. (2004) identified 4 species of *Horismenus* in the bruchid beetle parasitoid guild on wild type beans, they did not record specific hosts and host plants. Both *Acanthoscelides* spp. and *Phaseolus* spp. can be found at the same time in some localities. It is possible that the analyzed specimens emerged from grouped samples of seeds; thus, it was difficult to certify the specific record. The aim of this note is to record these new specific hosts, host plants, and distribution records from the material deposited in IEXA. We followed Hansson et al. (2004) and identified 131 specimens of 4 *Horismenus* species. Records of *P. coccineus* are from the grouped seed samples where both bruchids and other parasitoids could emerge.

The 4 *Horismenus* species (*H. butcheri* Hansson, Aebi & Benrey, *H. depressus* Gahan, *H. missouriensis* (Ashmead), *H. productus* (Ashmead)) attacked indiscriminately *A. obtectus* and *A. obvelatus* Bridwell on *P. coccineus* subsp. *coccineus* and *P. vulgaris* var. *mexicanus* Delgado. Wild type beans of *P. vulgaris* and *P. coccineus* in Hansson et al. (2004) are equivalents to *P. coccineus* subsp. *coccineus* var. *coccineus* and *P. vulgaris* var. *mexicanus* (Delgado 1985; Delgado et al. 1988; Freytag & Debouck 2002). Known distribution records of this guild are extended to the states of Morelos and Puebla (Table 1).

Material Examined (all from Mexico)

Horismenus butcheri Hansson, Aebi & Benrey

MORELOS: Tepoztlán, San Andrés de la Cal (18°54'47.20"N, 99°7'44.52"W), 1430 m, 13-I-1997, A. Bonet, 1 (m) from *Acanthoscelides obtectus*, reared from seeds of *P. vulgaris* var. *mexicanus*. Tepoztlán (18°59'53.45"N, 99°7'32.4"W), 1900 m, 25-XII-1993, A. Bonet, 1 (f) from *A. obtectus*; 14-I-1995, A. Bonet, 1 (f) from *A. obvelatus*; 25-XI-XII-1995, 3 (m) 5 (f) from *A. obvelatus*; 25-XII-1995, 1 (m) 1 (f) from *A. obtectus*; all reared from *P. vulgaris* var. *mexicanus*; 27-I-1997, A. Bonet, 1(f); 09-10-I-1980, 4 (f); 19-I-1982, 1 (m); 08-XII-1991, 1 (f); all on *Acanthoscelides* sp., all reared from *P. coccineus* subsp. *coccineus* var. *coccineus*.

Horismenus depressus Gahan

MORELOS: Tepoztlán, San Andrés de la Cal (18°54'47.20"N, 99°7'44.52"W), 1430 m, 13-I-1997, A. Bonet, 2 (f) from *A. obtectus*; 18-I-1998, 2 (m) 1 (f) from *A. obtectus*. Tepoztlán (18°59'53.45"N, 99°7'32.4"W), 1900 m, 28-XII-1993, A. Bonet, 1 (f) from *A. obtectus*; 25-XI-1995, A. Bonet, 1 (f) from *A. obvelatus*; 25-XII-1995, 2 (m) 1 (f) from *A. obvelatus*; 25-XII-1995, 1 (f) from *A. obtectus*; 17-I-2001, 1(f) from *A. obtectus*, all reared from seeds from *P. vulgaris* var. *mexicanus*. 06-I-1980, Arturo Bonet, 1 (f) from *Acanthoscelides* sp., reared from seeds from *P. coccineus* subsp. *coccineus* var. *coccineus*. Tlayacapan, Pantitlán (18°55'0.17"N, 98°59'37.22"W), 1300 m, 14-I-1997, A. Bonet, 1 (f) from *A. obtectus*; 21-I-2000, 1 (f) from *A. obtectus*; 17-I-2001, 2 (f) from *A. obvelatus*. PUEBLA: Tilapa, San Félix Rijo, Río Ahuehueyo (18°37'0.36"N, 98°33'55.18"W), 1250 m, 20-XII-1991, A. Bonet, 2 (m) 2 (f) from *A. obtectus*; 20-I-1996, A. Bonet, 7 (m) 6 (f) from *A. obtectus*, all reared from seeds of *P. vulgaris var. mexicanus*.

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TABLE 1. BRUCHIDAE HOSTS, HOST PLANTS AND DISTRIBUTION OF *HORISMENUS* SPECIES.

Horismenus species	Bruchidae hosts	Host plants	Location	References
Horismenus butcheri Hansson, Aedi & Benrey	*Mimosestes amicus* (Horn)		U.S.A (New Mexico)	Ashmead 1894
	Acanthoscelides sp.	*Phaseolus vulgaris* (wild type)	Mexico (Mexico)	Hansson et al. 2004
	Acanthoscelides sp.	*Phaseolus coccineus* subsp. *coccineus* var. *coccineus*[2]	Mexico (Morelos[3])	this paper
	Acanthoscelides obtectus (Say)[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado	Mexico (Morelos[3])	this paper
	Acanthoscelides obvelatus Bridwell[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado	Mexico (Morelos[3])	this paper
Horismenus depressus Gahan	*Stator pruininus* (Horn)	*Acacia*, *Olneya*	U.S.A. (California)	Gahan 1930
	Bruchus sp.	*Acacia* seeds	U.S.A. (Texas)	Burks 1971
	Acanthoscelides obtectus (Say)		Mexico	Steffan 1981
(*H*. sp. near *depressus* Gahan)	*Acanthoscelides obtectus* (Say)	*Phaseolus coccineus* (wild type) and *Phaseolus vulgaris* (wild type)	Mexico (Morelos)	Pérez & Bonet 1984
	Acanthoscelides obtectus (Say)		Mexico	De Santis 1989
	Acanthoscelides sp.	*Phaseolus* spp.	Mexico	Hansson et al. 2004
	Acanthoscelides sp.	*Phaseolus vulgaris* (wild type)	Mexico (Michoacan, Mexico, Morelos)	Hansson et al. 2004
	Acanthoscelides sp.	*Phaseolus coccineus* subsp. *coccineus* var. *coccineus*	Mexico (Morelos)	this paper
	Acanthoscelides obtectus (Say)	*Phaseolus vulgaris* var. *mexicanus* Delgado	Mexico (Morelos, Puebla[3])	this paper
	Acanthoscelides obvelatus Bridwell[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado	Mexico (Morelos, Puebla[3])	this paper
Horismenus missouriensis (Ashmead)	*Acanthoscelides floridae* Horn		U.S.A. (Oklahoma)	Brett 1946
	Acanthoscelides submuticus (Sharp)		U.S.A. (New York, South Dakota, Oklahoma)	Peck 1963
	Amblycerus robiniae (Fabricius)		U.S.A. (North Carolina, Georgia, Missouri)	Peck 1951
	Gibbobruchus sp.		U.S.A. (from New York southwards)	Burks 1971, 1979
	Gibbobruchus sp.		Brazil	De Santis 1980
	Ctenocolum crotonae (Fåhraeus)	*Lonchocarpus muehlbergianus* Hassler	Brazil (Parana)	Sari et al. 2002
	Acanthoscelides sp.	*Phaseolus* spp.	Mexico	Hansson et al. 2004
	Acanthoscelides sp./ *Zabrotes* sp.	*Phaseolus vulgaris* (wild type) and *Phaseolus coccineus* (wild type)	Mexico (Michoacan, Mexico, Distrito Federal, Morelos)	Hansson et al. 2004
	Acanthoscelides sp.	*Phaseolus coccineus* subsp. *coccineus* var. *coccineus*	Mexico (Morelos)	this paper
	Acanthoscelides obtectus (Say)[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado	Mexico (Morelos)	this paper
	Acanthoscelides obvelatus Bridwell[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado	Mexico (Morelos)	this paper

[1]New bruchid host records for *Horismenus* species.
[2]New host plants records for *Horismenus* species.
[3]New distribution records for *Horismenus* species.

TABLE 1. (CONTINUED) BRUCHIDAE HOSTS, HOST PLANTS AND DISTRIBUTION OF *HORISMENUS* SPECIES.

Horismenus species	Bruchidae hosts	Host plants	Location	References
Horismenus productus (Ashmead)	*Mimosestes amicus* (Horn)		U.S.A (New Mexico)	Ashmead 1894
	Acanthoscelides submuticus (Sharp)		U.S.A. (Texas, Arizona, California)	Burks 1979
	Algarobius prosopis (LeConte)		"	"
	Bruchidae spp.		Colombia	De Santis 1989
	Acanthoscelides sp.	*Phaseolus coccineus* subsp. *coccineus* var. *coccineus*[2]	Mexico (Morelos[3])	this paper
	Acanthoscelides obtectus (Say)[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado[2]	Mexico (Morelos[3])	this paper
	Acanthoscelides obvelatus Bridwell[1]	*Phaseolus vulgaris* var. *mexicanus* Delgado[2]	Mexico (Morelos[3])	this paper

[1]New bruchid host records for *Horismenus* species.
[2]New host plants records for *Horismenus* species.
[3]New distribution records for *Horismenus* species.

Horismenus missouriensis (Ashmead)

MORELOS: Tepoztlán (18°59'53.45"N, 99°7'32.4"W), 1900 m, 25-XI-1995, A. Bonet, 1(m) 1(f) from *A. obvelatus*, reared from seeds of *P. vulgaris* var. *mexicanus*; 25-XI-1995, A. Bonet, 1 (f) from *A. obtectus*, reared from seeds of *P. vulgaris* var. *mexicanus*; 25-XII-1995, A. Bonet, 2 (m) 1(f) from *A. obtectus*; 09-XII-1996, 2 (m) from *A. obvelatus*. Tlayacapan, Pantitlán (18°55'0.17"N, 98°59'37.22"W), 1300 m, 14-I-1997, A. Bonet, 1 (m) from *A. obtectus*, all reared from seeds of *P. vulgaris* var. *mexicanus*; 22-XI-1979, A. Bonet, 1 (m); 09-10, 12-I-1980, 7 (f) from *Acanthoscelides* sp., all reared from seeds of *P. coccineus* subsp. *coccineus* var. *coccineus*.

Horismenus productus (Ashmead)

MORELOS: Tepoztlán, San Andrés de la Cal (18°54'47.20"N, 99°7'44.52"W), 1430 m, 27-X-1990, A. Bonet, 1 (f) from *A. obtectus*, reared from seeds of *P. vulgaris* var. *mexicanus*. Tepoztlán (18°59'53.45"N, 99°7'32.4"W), 1900 m, 28-XII-1993, A. Bonet, 2 (m) 2 (f) from *A. obtectus*; 14-I-1995, 7 (m) 8 (f) from *A. obvelatus*; 14-I-1995, 1 (f) from *A. obtectus*; 09-XII-1996, 1 (m) from *A. obvelatus*; 13-I-1997, A. Bonet, 1 (m) 1 (f) from *A. obvelatus*; 14-I-1997, 1 (f) from *A. obtectus*; 14-I-1997, 1 (f) from *A. obvelatus*; 25-XI-1995, 2 (m) 3 (f) from *A. obvelatus*; 25-XI-1995, 2 (m) from *A. obtectus*; 25-XII-1995, 3 (m) 2 (f) from *A. obtectus*; 25-XII-1995, 2 (m) 3 (f) from *A. obvelatus*, all reared from seeds of *P. vulgaris* var. *mexicanus*; 27-I-1979, A. Bonet, 2 (f); 22-XI-1979, 1 (m); 9-10, 12-I-1980, 2 (m) 5 (f); 08-XII-1991, 2 (m) from *Acanthoscelides* sp., all reared from seeds of *P. coccineus* subsp. *coccineus* var. *coccineus*. Tlayacapan, Pantitlán (18°55'0.17"N, 98°59'37.22"W), 1300 m, 14-I-1997, A. Bonet, 2 (f) from *A. obtectus*, reared from seeds of *P. vulgaris* var. *mexicanus*; 17-I-2001, 3 (f) from *A. obtectus*.

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SUMMARY

New host, host plant, and distribution records were recorded for 4 *Horismenus* species (*H. butcheri*, *H. depressus*, *H. missouriensis*, *H. productus*) that attack *A. obtectus* and *A. obvelatus* on *P. coccineus* subsp. *coccineus* and *P. vulgaris* var. *mexicanus*. The distribution records of this guild in Mexico are extended to the states of Morelos and Puebla.

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