New State Records For Some Predatory And Parasitic True Bugs (Heteroptera: Cimicomorpha) of the United States

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New State Records For Some Predatory And Parasitic True Bugs (Heteroptera: Cimicomorpha) of the United States

Cover Page Footnote
The bulk of the work that went into this study was carried out during my time in the UMMZ, and I am grateful to Mark O’Brien (UMMZ) and Gary Parsons (MSUC) for the privilege of studying the material under their care. I also owe thanks to Tamera Lewis (USDA-ARS, Yakima Agricultural Research Laboratory, Wapato, Washington) and Paul Masonick (University of California, Riverside) for correspondence regarding identified material and state records of some “anthocoroid” and phymatine taxa, respectively. I also greatly appreciate the efforts of two anonymous reviewers, who made me aware of several obscure references and/or overlooked records, thereby significantly improving the utility of this study.
The importance of reporting distributional records for organisms is not always immediately apparent and such information is frequently overlooked. However, at the basic level, having a more complete understanding of the distribution of a given species can help biologists better understand its natural history; this, in turn, can inform targeted conservation efforts (e.g., Vogt and Cashatt 2007 and references therein). Additionally, when ranges of several members of a genus are known, distributional information might allow insights into the evolutionary history of the group or provide opportunities or directions for testing hypotheses (e.g., Funk and Wagner 1995). Records carelessly dismissed and shoved into the dusty bin of “knowledge for knowledge’s sake”, such as those from an “expected” state, might corroborate single accounts from other states or even provide a breakthrough in understanding the microhabitat of a species where previously unknown (e.g., Skvarla et al. 2014). Similarly, records of species repeatedly taken over time can expose temporal changes, which might subsequently be correlated or explained by external biotic or abiotic forces or changes (e.g., Albrecht 1967). Furthermore, a better understanding of where and where not a species might occur could contain implications for their use and efficacy as biological control agents (e.g., Martin et al. 2018). Of particular significance are distributional records for predators because they compose a significantly smaller biodiversity and therefore are typically encountered with less frequency than herbivorous species, affording less opportunity to observe and study them.

Thus, herein are reported new state records for some predatory true bugs. Paralleling my prior treatment involving new pentatomomorphan records (i.e., Swanson 2018), during the course of my survey of the Nabidae of Michigan (i.e., Swanson 2012), the Phymatinae of Michigan (i.e., Swanson 2013), and the Cimicoidea of Michigan (i.e., Swanson 2016), new extra-Michiganian state records for various cimicomorphan species were discovered among material housed in two major university collections in southern Michigan, as well as my personal collection. Those records form the basis of this treatment.

Materials and Methods

After examining the determined “anthocoroid”, nabid, and phymatine holdings and identifying much of the undetermined U.S. material in two Michigan university collections, the locality data of these specimens was compared with the most recent catalog for Heteroptera found north of Mexico (Henry and Froeschner 1988). Further records were culled after comparing with various post-1988 regional faunistic studies, as well as some pre-1988 references overlooked by the authors of the catalog (see annotations, plus Swanson 2011, 2018). The remaining specimen data are the subject of this treatment.

The identification of all specimens included in this study was rendered or confirmed by me, using Harris (1928) for the nabids, Kormilev (1962) for the phymatines, and my own keys (Swanson, unpublished).
to the United States taxa synthesized from various sources (e.g., Herring 1976, Kelton 1978) for the “anthocoroids”. I have confirmed identifications rendered by H. G. Barber, R. F. Hussey, and D. Punzalan, whereas those “anthocoroid” identifications rendered by T. Lewis and a single phymatine identification rendered by N. Kormilov have been accepted. All new records pertain to specimens vouchered in one of the collections listed below.

Label data were not copied verbatim, although complete locality information is included. Any additions, changes, or interpretive elements I provide are shown in brackets. Multiple localities are included, where possible, to fortify new records. Distributional or taxonomic notes are offered where deemed necessary or useful.

As mentioned, the authority on which a state having a published record is based belongs to Henry (1988) for the Anthocoridae, although this is supplemented with several other recent distributional accounts (i.e., Lewis et al. 2005). For Cimicidae, the authority belongs to Froeschner (1988a). For the Nabidae, the authority belongs to Henry and Lattin (1988) and Kerzhner and Henry (2008). Reduviid records are based on Froeschner (1988b, c) and Swanson (2011). An updated distribution within the United States and Canada is included for each species treated herein. Records overlooked or reported subsequently are annotated in the distribution north of Mexico given at the end of each species account, whereas new records herein reported are presented in bold type; thus, this treatment also may be used as a partial compilation of references overlooked in Henry and Froeschner’s (1988) catalog. The abbreviations used for each U.S. state in Henry and Froeschner’s (1988b, c) and Swanson (2011).

Collections are designated as follows: Daniel R. Swanson, personal collection (DRS); Albert J. Cook Arthropod Research Collection, Michigan State University, East Lansing, Michigan (MSUC); and University of Michigan Museum of Zoology Insect Collection, Ann Arbor, Michigan (UMMZ).

Results

As a result of this investigation, 40 new state records for 25 species in 12 genera in 6 families have been compiled. The following 24 states have new records: CA, CT, GA, IL, KY, LA, ME, MN, MT, NC, NE, NH, NM, NV, OH, PA, RI, SC, VA, VT, WA, WI, WV, WY.

Family ANTHOCORIDAE

Nine new state records are reported for 6 species in 4 genera.


Distribution: USA: CT, FL, IL, MI (Lattin 1999), MO, NC (McPherson and Weber 1981), NY, SC (Ulyshen et al. 2012), TX, WI; Canada: NB, NS, ON, PE, QC, SK (Kelton 1978).


Notes: Carpintero (2002) revived the genus Dasypterus Reuter, 1872a and transferred this species to it, without any justification. In addition to the lack of explanation, Carpintero (2002) overlooked the fact that the anthocoroid genus was preoccupied by Dasypterus Peters, 1871 in Mammalia: Chiroptera: Vespertilionidae; Swanson (2019) summarized the situation and supplied a replacement name for Dasypterus Reuter, 1872a.

Distribution: AR (Chordas et al. 2011), FL, GA, LA, SC, TX, VA.


Notes: This species was previously confounded with Orius tristicolor (White, 1879) in the east, but Lewis and Horton (2010) clarified its status; the distribution given below is based on that treatment.

Distribution: USA: AK, CT, CO, IA, ID, KS, MA, ME, MI, MN, MT, ND, NE, NH, NY, OR, PA, SD, UT, VT, WA, WI, WV; Canada: AB, BC, NB, NS, ON, QC, YT.

Distribution: USA: AL, AR (Tugwell et al. 1973), CA, CO, CT, FL, GA (Kelton 1963), IA, IL, IN, KS, KY (Isenhour and Yeargan 1981), LA, MA, MD, ME (Parshley 1917), MI, MN, MO, MS (Lago and Testa 2000), NC, NE, NH, NJ, NM (Townsend 1892), NY, OH, PA, RI (Parshley 1917), SC, SD (Harris 1937), TN, TX, UT, VA, VT (Parshley 1917), WA (Newcomer 1958), WI, WV (Brown et al. 1988); Canada: AB (Knight 1925, Strickland 1953), BC(?), MB, ON, QC.


Notes: As mentioned above, this species was previously confounded with O. diespeter in the east, but Lewis and Horton (2010) clarified its status; the distribution given below is based on conclusions drawn in that treatment, viz. previous records of O. tristicolor in the east actually referred to O. diespeter and the former species has not been collected east of Nebraska. Maw et al.’s (2000) listing of the Northwest Territories remains unplaced.

Distribution: USA: AK, AZ, CA, CO, ID, NE, NM, NV, OR, TX, UT, WA, WY; Canada: AB, BC, MB, SK, YT.


Notes: Lattin (2007) discussed the distribution of this and several other species of Xylocoris in the United States.

Distribution: USA: CT, ID, IL (McPherson and Weber 1990), IN, MA (Parshley 1917), MI, NH (Parshley 1917), NJ, NY, OH, OR, PA, VA, WA (Lattin and Stanton 1992); Canada: AB, BC, NS, ON, QC.

Family CIMICIDAE

One new state record is reported for 1 species in 1 genus.


Distribution: USA: AK (Scudder and Sikes 2014), CA, CO, CT (Parshley 1917), FL (Loy and Regan 1991), IA, IL, MA (Parshley 1917), ME, MI (Swanson 2016), NC, ND (Brown et al. 2009), NE, NH, NY, OR, TX (Sikes and Arnold 1984, Kopachena et al. 2000), UT; Canada: AB, BC, MB (Maw et al. 2000), NS, ON, QC (Maw et al. 2000).

Family LASIOCHILIDAE

One new state record is reported for 1 species in 1 genus.


Distribution: USA: FL, GA (Carpintero 2014), IA, IL, IN, LA (Carpintero 2014), MA (Carpintero 2014), MD (Brown and Bahr 2008, Carpintero 2014), MI (Carpintero 2014, Swanson 2016), MS, NC (McPherson and Weber 1981), NJ, NY, OH (Carpintero 2014), SC, TX, VA (Carpintero 2014), WI; Canada: ON, QC.

Family LYCTOCORIDAE

One new state record is reported for 1 species in 1 genus.


Note: Kelton (1967) questioned the validity of Van Duzee’s (1917a) record from British Columbia.

Distribution: USA: AL, AR (Chordas et al. 2005), CA, FL, GA, IA (Kelton 1967), IL (Blatchley 1926, Kelton 1967), IN, LA (Kelton 1967), MI (Swanson 2016), MO, MS (Kelton 1967), NC, ND (Kelton 1967), NY, OH (Kelton 1967), SC, TX, WI; Canada: BC(?), MB (Kelton 1967, Maw et al. 2000).

Family NABIDAE

Fourteen new state records are reported for 9 species in 3 genera.


Notes: The presence of this introduced Palearctic endemic in various parts of North America has been noted by Barber (1932), Scudder (1961), Lattin (1966), and Wheeler (1976).

Distribution: USA: AL, AR (Chordas et al. 2005), CA, FL, GA, IA (Kelton 1967), IL (Blatchley 1926, Kelton 1967), IN, LA (Kelton 1967), MI (Swanson 2016), MO, MS (Kelton 1967), NC, ND (Kelton 1967), NY, OH (Kelton 1967), SC, TX, WI; Canada: BC(?), MB (Kelton 1967, Maw et al. 2000).

Distribution: USA: AR (Chordas et al. 2005), CT, IA, IL, IN, MA, MD (Brown and Bahr 2008), MI (Hussey 1922, Swanson 2012), MN, MO, MS, NC, NJ, NY, OH, OK (Drew and Schaefer 1963), PA, RI (Parshley 1917), SD, TN (Lambdin et al. 2003), TX, VA, VT (Parshley 1917), WA (Torre-Bueno 1934), WI, WY; Canada: AB, BC, MB (Larivière 1994), NB, NS, ON, PE, QC, SK.


Distribution: DC, FL, MD, NC, VA.


Distribution: USA: AK, CO, ID, NY, WY; Canada: AB, BC, MB, NB, NF, NS (Larivière 1994), NT, ON, PE, QC, SK, YT.


Notes: Although Harris (1928) questioned the Texas record reported by Van Duzee (1917a), the Louisiana record here reported strengthens the likelihood of a southern population.


Distribution: USA: AL, AR (Tugwell et al. 1973), CO, CT, DC, DE, FL, IA, ID, IL, IN, KS, KY, MA, MD (Brown and Bahr 2008), ME, MI, MN, MO, MS, NC, NE, NH, NE (Parshley 1917), NJ, NY, OH, OK (Drew and Schaefer 1963), OR (Van Duzee 1917b), PA, RI (Parshley 1917), SC, SD, TN, UT (Knowlton 1935), VA, VT, WI, WV; Canada: AB, BC, MB, NB, NS (Parshley 1923, Maw et al. 2000), ON, PE (Scudder 2008), QC, SK.


Distribution: USA: AK (Scudder and Sikes 2014), AR (Tugwell et al. 1973, Chordas et al. 2005), AZ, CA, CO, CT, GA, IA, ID, IL, IN, KS, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH (Parshley 1917), NJ, NM, NY, OH, OK (Smith 1940, Drew and Schaefer 1963), OR, PA, RI (Parshley 1917), SC (Roach 1991), SD, TN, TX, UT, VA, VT.
Phymata americana americana

Phymata americana coloradensis


Distribution: AZ, CO, ID (Harris and Shull 1944), KS, MT, NE, NM, OK, OR, TX, UT, WA.


Notes: The combination of a virtual absence of a lateral notch on the pronotum, a simple rounded connexival outline, simple veins of the hemelytral membrane, and size greater than 6.5 mm will diagnose P. borica among the United States fauna. The elevation of the collection site is probably between 6,500 and 8,000 feet, which corresponds well with previous localities for this species. The specimen reported seems to have been syntopic with Phymata saieri Kormilev (see below).

Distribution: AZ, CO, ID, NM, UT.


Notes: Given the difficulty associated with phymatine identification (see discussion in Swanson 2013), and the early convolution of Phymata erosa Linnaeus, 1758; Phymata wolfii Stål, 1876; and P. fasciata in partic-


Distribution: AZ, CO, ID (Harris and Shull 1944), KS, MT, NE, NM, OK, OR, TX, UT, WA.


Notes: See notes under the preceding subspecies. The baseline for records of this species comes from the original description (Evans 1931: FL, GA), plus a record added by Kormilev (1962: LA). I have examined the following material corroborating the latter: LOUISIANA: [East Baton Rouge Par.], Baton Rouge, 24 May 1934, F. E. Lyman, det. D. R. Swanson 2012 [1 ♂] (UMMZ).

Distribution: FL, GA, LA (Kormilev 1962), SC.


Notes: In the United States, only three species, **Phymata saileri** Kormilev, 1957; **Phymata granulosa texasana** Kormilev, 1957; and **Phymata rossi** Evans, 1931, possess setigerous granules on the body, and the latter species is densely covered with these structures, separating it from the other two more sparsely-covered species. The shallow lateral notch of the pronotum will separate *P. saileri* from *P. g. texasana*. Furthermore, the localities seem to corroborate this identity as this western New Mexico locality is nearer to areas where the species is known in Arizona; *P. g. texasana*, however, is known from extreme southern Texas. The specimens here reported appear to have been syntopic with *P. borica* (see above).


Distribution: USA: AZ, CA, CO, CT, DC, FL, IL, IN, KS, MA, MO (Froeschner 1944), NC (Torre-Bueno 1913), NE, NJ, NY, PA, RI, SD, TN (Lambdin et al. 2003), TX, UT, VA; Canada: AB, BC (Maw et al. 2000), MB (Maw et al. 2000), SK (Maw et al. 2000).

Subfamily STENOPODAINAE


Distribution: AL, AR, AZ, CO, FL, GA (Swanson 2011), IL, KS, LA, MD, MO, MS (Swanson 2011), NC, NE, NJ, NM (Swanson 2011), OK, SC (Payne et al. 1968, Swanson 2011), TN, TX, VA.

Acknowledgments

The bulk of the work that went into this study was carried out during my time in the UMMZ, and I am grateful to Mark O’Brien (UMMZ) and Gary Parsons (MSUC) for the privilege of studying the material under their care. I also owe thanks to Tamera Lewis (USDA-ARS, Yakima Agricultural Research Laboratory, Wapato, Washington) and Paul Masonick (University of California, Riverside) for correspondence regarding identified material and state records of some “anthocoroid” and phymatine taxa, respectively. I also greatly appreciate the efforts of two anonymous reviewers, who made me aware of several obscure references and/or overlooked records, thereby significantly improving the utility of this study.

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