

A BIBLIOGRAPHY OF COURTSHIP AND AGONISTIC DISPLAY IN SALTICID SPIDERS.

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I present here the results of a search through the literature on salticids over the last 10 years for any reference to courtship or agonistic behavior. These include passing references and detailed descriptions. The species are listed alphabetically, along with proper citations, and following this is as nearly complete a bibliography as I have been able to obtain. Changes in taxonomy are noted in the list. It is my hope that this list will be of help to all investigators interested in courtship and agonistic behavior.

It will be noted that although I had stated (Richman 1977, 1982) that I thought that *Sassacus papenhoei* Peckham & Peckham and *Metaphidippus vitis* (Cockerell) were congeneric, I have still retained them in their old genera. I have since examined specimens of both species from Arizona and have decided that they are too morphologically distinct to be included in the same genus. The general body shape, the structure of the embolus of the males, the epigynal structure, the ventral spination on the first pair of legs, and the different proportions of the male palpi are all characteristics which separate the two taxa. Their courtships are very similar, but this may not be as significant as I thought. Both genera are, however, in the Dendryphantinae.

In the following list most references contain data on courtship. If both courtship and agonistic displays have been described, both a "C" and an "A" appear in the third column. When there are more than two references, I have tried to indicate which has the agonistic display data (unless this became complex).

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Species	Source(s)	Courtship (C) Agonistic (A)
<i>Aelurillus v-insignitus</i> (Clerck)	Bristowe 1929,1941,1958	C
<i>Ashtabula furcillata</i> Crane	Crane 1949a,b	C ¹
<i>Attulus saltator</i> (Simon)	Bristowe 1958	C
<i>Ballus depressus</i> (Walckenaer)	Bristowe 1931, 1941, 1958; Crane 1949b	C
<i>Bianor aenescens</i> (Simon)	Bristowe 1958	C
<i>Corythalia canosa</i> (Walckenaer) [= <i>C. aurata</i> (Hentz)]	Richman 1977, 1982	C&A
<i>C. chalcea</i> Crane	Crane 1948, 1949b	C&A
<i>C. tropica</i> Mello-Leitao [= <i>C. fulgipedia</i> Crane]	Crane 1948, 1949b	C&A
<i>C. xanthopa</i> Crane	Crane 1948, 1949b	C&A
<i>Cyrba algerina</i> (Lucas)	Legendre & Linares 1970	C
<i>Eris marginata</i> (Walckenaer) [= <i>Philaeus militaris</i> (Hentz)]	Peckham & Peckham 1889; Hill 1978; Richman 1977, 1982	C&A
<i>Euophrys erratica</i> (Walckenaer)	Bristowe 1941	C
<i>E. frontalis</i> (Walckenaer)	Bristowe 1929, 1941, 1958	C
<i>E. monadnock</i> Emerton	Peckham & Peckham 1909	C

<i>Eustiromastix</i> sp.	Crane 1949b	C&A
<i>Evarcha arcuata</i> (Clerck) [= <i>E. marcgravi</i> (Scopoli)]	Sytshevskaja 1928, 1935; Heil 1936; Bristowe 1958	C
<i>E. falcata</i> (Clerck) [= <i>E. blancardi</i> (Scopoli)]	Homann 1928; Bristowe 1929, 1941; Heil 1936; Crane 1949b	C
<i>E. hoyi</i> (Peckham & Peckham) [= <i>Hasarius hoyi</i> (P. & P.)]	Peckham & Peckham 1889	C
<i>E. spp.</i> prob. <i>E. arcuata</i> & <i>E. falcata</i>	Bristowe 1941, 1958	C
<i>Habrocestum bufoides</i> Chamberlin & Ivie	Richman 1977, 1982	C&A (1977)
<i>H. pulex</i> (Hentz) [= <i>Saitis pulex</i> (Hentz)]	Peckham & Peckham 1889, 1890; Richman 1977, 1982	C&A
<i>H. xerophilum</i> Richman	Richman 1977, 1982	C ¹
<i>Hasarius adansoni</i> (Audouin)	Cloudsley-Thompson 1949; Bristowe 1958	C
<i>Heliophanus cupreus</i> (Walckenaer)	Bristowe 1931	C
<i>H. flavipes</i> (Hahn)	Bristowe 1929	C
<i>H. spp.</i> prob. both of above	Bristowe 1941, 1958	C
<i>Helpis respersa</i> (L. Koch)	McKeown 1952	C
<i>Hentzia grenada</i> (Peckham & Peckham)	Richman 1977, 1982	C&A
<i>H. mitrata</i> (Hentz) [= <i>Icius mitratus</i> (Hentz)]	Peckham & Peckham 1889, 1890; Crane 1949b; Richman 1977, 1982	C&A (Peckhams)
<i>H. palmarum</i> (Hentz)	Richman 1977, 1982	C&A
<i>Hycitia nivoyi</i> (Lucas)	Berland 1927; Bristowe 1929, 1941, 1958; Crane 1949b	C
<i>Lyssomanes bradyspilis</i> Crane	Crane 1949a, b	C&A
<i>L. viridis</i> (Walckenaer)	Richman 1977, 1982	C
<i>Maevia inclemens</i> (Walckenaer) [= <i>Astia vittata</i> (Hentz)]	Peckham & Peckham 1889, 1890; Painter 1913; Crane 1949b; Richman 1977, 1982	C&A (Peckhams)
<i>Mago denticelis</i> Crane	Crane 1949a, b	C&A
<i>Marpissa bina</i> (Hentz)	Richman 1977, 1982	C&A (1977)
<i>M. lineata</i> (C. L. Koch) [= <i>M. sulcosa</i> Barnes]	Richman 1977, 1982	C
<i>M. muscosa</i> (Clerck) [= <i>M. rumpfi</i> (Scopoli)]	Bristowe 1929, 1941, 1958; Crane 1949b	C&A
<i>M. pikei</i> (Peckham & Peckham) [= <i>Hycitia pikei</i> P. & P.]	Emerton 1909; Kaston 1948; Crane 1949b; Richman 1977, 1982	C
<i>M. pomatia</i> (Walckenaer)	Bristowe 1958	C
<i>Menemerus bivittatus</i> (DuFour) [= <i>Marpissa melanognatha</i> (Lucas)]	Bhattacharya 1936; Crane 1949b; Richman 1977, 1982	C&A (not Crane)
<i>Metacyrba californica</i> (Peckham & Peckham)	Richman 1977, 1982	C
<i>M. undata</i> (DeGeer) [= <i>Marpissa familiaris</i> (Hentz)]	Peckham & Peckham 1889, Crane 1949b; Richman 1977, 1982	C
<i>Metaphidippus galathea</i> (Walckenaer) [= <i>Dendryphantes capitatus</i> (Hentz) in part]	Peckham & Peckham 1889, 1890?; Crane 1949b; Horner & Starks 1972; Richman 1977, 1982	C&A (Peckhams)
<i>M. manni</i> (Peckham & Peckham)	Richman 1977, 1982	C
<i>M. protervus</i> (Walckenaer) [= <i>Dendryphantes capitatus</i> (Hentz) in part]	Peckham & Peckham 1889, 1890?; Crane 1949b	C&A (Peckhams)

<i>M. sexmaculatus</i> (Banks)	Richman 1977, 1982	C
<i>M. vitis</i> (Cockerell)	Richman 1977, 1982	C
<i>Myrmarachne formicaria</i> (DeGeer)	Bristowe 1958	C
<i>Neon nelli</i> Peckham & Peckham	Richman 1977, 1982	C
<i>N. valentulus</i> Falconer	Wild 1969b	C
<i>Neonella vinnula</i> Gertsch	Richman 1977, 1982	C
<i>Opisthonicus necator</i> L. Koch	McKeown 1952	C
<i>Peckhamia picata</i> (Hentz)	Peckham & Peckham 1889, 1890; Crane 1949b	C
<i>Pellenes agilis</i> (Banks)	Emerton 1909; Kaston 1948; Richman 1977, 1982	C ¹
<i>P. americanus</i> (Keyserling)	Griswold 1976	C
<i>P. amicus</i> Peckham & Peckham	Griswold 1976	C
<i>P. arizonensis</i> Banks	Richman 1973, 1977, 1982	C
<i>P. brunneus</i> Peckham & Peckham	Griswold 1976; Richman 1977, 1982	C ²
<i>P. calcaratus</i> Banks	Richman 1977, 1982	C ²
<i>P. carolinensis</i> Peckham & Peckham [= <i>P. tachypodus</i> (Chamberlin & Ivie)]	Richman 1977, 1982	C&A
<i>P. clypeatus</i> (Banks)	Griswold 1976; Richman 1977, 1982	C
<i>P. coecatus</i> (Hentz)	Richman 1977, 1982	C ²
<i>P. cf. coecatus</i> (Hentz) [an undescribed western sp.]	Richman 1973, 1977, 1982	C
<i>P. decorus</i> (Blackwall) [= <i>Habrocestum splendens</i> P. & P.]	Peckham & Peckham 1889	C
<i>P. hallani</i> Richman	Richman 1973, 1977, 1982	C
<i>P. hirsutus</i> (Peckham & Peckham)	Richman 1973, 1977, 1982; Griswold 1976	C
<i>P. mustaciata</i> Chamberlin & Ivie	Griswold 1976	C
<i>P. oregonensis</i> (Peckham & Peckham)	Peckham & Peckham 1909; Griswold 1976	C
<i>P. peckhami</i> Banks	Griswold 1976	C
<i>P. philipi</i> Gertsch & Jellison	Griswold 1976	C
<i>P. schlingeri</i> Griswold	Griswold 1976	C
<i>P. signatus</i> (Banks)	Griswold 1976	C
<i>P. tarsalis</i> Banks	Richman 1973, 1977, 1982; Griswold 1976	C
<i>P. tranquillus</i> Peckham & Peckham	Griswold 1976	C
<i>P. trimaculatus</i> (Bryant)	Richman 1977, 1982	C ²
<i>P. tripunctatus</i> (Walckenaer)	Nielsen 1932	Mating
<i>P. umatillus</i> Peckham & Peckham	Griswold 1976	C
<i>P. ustulatus</i> Griswold [= <i>P. chaparralensis</i> Griswold]	Griswold 1976	C
<i>P. viridipes</i> (Hentz) [= <i>Habrocestum</i> sp.]	Peckham & Peckham 1890, 1909; Emerton 1909; Kaston 1948; Richman 1977, 1982	C ²
<i>P. cf. viridipes</i> (Hentz) [an undescribed southern sp.]	Richman 1977, 1982	C
<i>P. waughii</i> Emerton	Emerton 1926	C
<i>P. n. sp.</i> [Marion Co., FL]	Richman 1977, 1982	C ²
<i>Phiale flammea</i> Crane	Crane 1949a, b	C&A

<i>Phidippus apacheanus</i> Chamberlin & Gertsch	Gardner 1965; Edwards 1980	C
<i>P. audax</i> (Hentz) [= <i>P. morsitans</i> Peckham & Peckham]	Peckham & Peckham 1889; Kaston 1936; Crane 1949b; Snetsinger 1955; Bailey 1968; Taylor & Peck 1975; Edwards 1980	C&A
<i>P. cardinalis</i> (Hentz)	Edwards 1980	C
<i>P. clarus</i> Keyserling	Kaston 1936; Crane 1949b; Snetsinger 1955; Edwards 1980	C&A
<i>P. coccineus</i> Peckham & Peckham	Gardner 1965	C
<i>P. johnsoni</i> Peckham & Peckham	Dewey 1965; Jackson 1976, 1977, 1978	C&A
<i>P. mystaceus</i> (Hentz) [= <i>P. incertus</i> Peckham & Peckham]	Edwards 1980, 1981	C
<i>P. octopunctatus</i> Peckham & Peckham	Dewey 1965; Gardner 1965	C
<i>P. otiosus</i> (Hentz) [= <i>P. pulcher</i> (Walckenaer)]	Edwards 1980	C
<i>P. otiosus</i> (Hentz) X <i>P. regius</i> C. L. Koch [Hybrids]	Edwards 1980	C
<i>P. princeps</i> (Peckham & Peckham)	Hill 1977; Edwards 1980	C
<i>P. pulcherrimus</i> Keyserling	Richman 1977, 1982; Edwards 1980	C
<i>P. purpuratus</i> Keyserling	Edwards 1980	C
<i>P. putnami</i> (Peckham & Peckham)	Edwards 1980	C
<i>P. regius</i> C. L. Koch	Edwards 1975, 1980	C&A
<i>P. whitmani</i> Peckham & Peckham	Peckham & Peckham 1889; Crane 1949b; Edwards 1980	C
<i>P. xerus</i> Edwards	Edwards 1980	
<i>Philaeus chrysops</i> (Poda)	Berland 1914; Thomas 1929; Bonnet 1933; Crane 1949b	C&A
<i>Phlegra fasciata</i> (Hahn)	Peckham & Peckham 1890; Bristowe 1958; Richman 1977, 1982	C
<i>Portia</i> sp.? [= <i>Linus</i> sp.?]	Yates 1968	C
<i>Saitis barbipes</i> (Simon)	Berland 1923, 1927; Crane 1949b	C&A
<i>Salticus cingulatus</i> (Panzer)	Bristowe 1929; Crane 1949b	C
<i>S. scenicus</i> (Clerck) [= <i>Epiblemum scenicum</i> (Clerck)]	Peckham & Peckham 1889; Gerhardt 1921; Monterossa 1924; Bristowe 1929, 1941, 1958; Crane 1949b; Drees 1952; Precht & Freytag 1958; Plett 1962a, b	C&A
<i>S. scenicus</i> (Clerck) X <i>S. cingulatus</i> (Panzer) (crosses- no hybrid crosses)	Locket 1939	C
<i>Sarinda cutleri</i> (Richman)	Richman 1977, 1982	C
<i>S. hentzi</i> (Banks)	Richman 1977, 1982	C&A
<i>Sassacus flavicinctus</i> Crane	Crane 1949a, b	C&A
<i>S. ocellatus</i> Crane	Crane 1949a, b	C&A
<i>S. papenhoei</i> Peckham & Peckham	Richman 1977, 1982	C
<i>Semorina brachychelyne</i> Crane	Crane 1949a, b	C ¹
<i>Sitticus caricis</i> (Westerling)	Bristowe 1929	C&A
<i>S. cursor</i> Barrows	Richman 1977, 1982	C
<i>S. floricola</i> (C. L. Koch)	Nielsen 1932; Sytshevskaja 1935; Wild 1969a	C

<i>S. pubescens</i> (Fabricius)	Gerhardt 1921; Bristowe 1929, 1958	C
<i>S. spp. prob. S. caricis</i> & <i>S. pubescens</i>	Bristowe 1941	C
Synageles noxiosus (Hentz) [= <i>Peckhamia scorpiona</i> (Hentz) = <i>Gertschia noxiosa</i> (Hentz)]	Emerton 1909; Kaston 1948; Crane 1949b	C
<i>S. venator</i> (Lucas)	Bristowe 1941; Crane 1949b	C
Synemosyna formica (Hentz)	Richman 1977, 1982	C&A (1977)
Thiodina puerpera (Hentz)	Richman 1977, 1982	C&A (1977)
<i>T. sylvana</i> (Hentz)	Richman 1977, 1982	C&A (1977)
Trite auricoma (Urquhart)	Forster & Forster 1973; Forster 1977	C&A (1973)
Tutelina elegans (Hentz) [= <i>Icius</i> sp.]	Peckham & Peckham 1889; Crane 1949b; Richman 1977, 1982	C&A (Peckhams)
Zygoballus nervosus (Peckham & Peckham)	Davis 1974	C
<i>Z. rufipes</i> Peckham & Peckham [= <i>Z. bettini</i> P. & P.]	Peckham & Peckham 1889; Davis 1974	C&A (Peckhams)
<i>Z. sexpunctatus</i> (Hentz)	Davis 1974	C

¹ No agonistic display seen between males

² Agonistic display seen, but so much like courtship that it was probably a case of mistaken identity.

NOTE: Richman (1977, 1982) reported crosses of *Hentzia grenada* (P. & P.) X *H. palmarum* (Hentz), and *Thiodina puerpera* (Hentz) X *T. sylvana* (Hentz). However, in the first case none of the progeny survived and in the second case only infertile eggs were laid by the one female involved.

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- Yates, J. H. 1968. Spiders of southern Africa. *Books of Africa*, Cape Town, 200 p.

Notes:

- ¹ Gerhardt published two other papers which have data on salticid courtship behavior. However, I have been unable to obtain a list of the species covered. These papers are:
Gerhardt, U. 1923. Weitere sexualbiologische Untersuchung an Spinnen. *Arch. Naturg.* 89: 1-255.
Gerhardt, U. 1924. Weitere Studien über die Biologie der Spinnen. *Arch. Naturg.* 90: 85-192.
- ² Richman published a short paper in *Peckhamia* in 1977 which contains photographs of the courtship of *Metacyrba undata* and agonistic display of *Hentzia palmarum*. The reference is:
Richman, D. B. 1977. On the relationship of sexual selection to sexual dimorphism in jumping spiders. *Peckhamia* 1(3): 36-39.
It should also be noted that Montgomery (1910) expressed similar arguments in regard to sexual dimorphism as I did in the above paper. Unfortunately, I somehow overlooked his important paper when I did my literature search then.