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An illustrated checklist of Nepomorpha and Gerromorpha (Hemiptera) of Colorado

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An illustrated checklist of Nepomorpha and Gerromorpha (Hemiptera) of Colorado

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Abstract

Background

This paper provides a comprehensive checklist of Nepomorpha and Gerromorpha aquatic hemipterans distributed in Colorado, including species recorded in the literature, specimen records in the C.P. Gillette Museum of Arthropod Diversity and the Denver Museum of Nature and Science, and GBIF and SCAN online databases. Illustrations of all genera occurring in Colorado are provided to facilitate future researchers in identifying these species. This study registered 77 species and subspecies of Nepomorpha and Gerromorpha in Colorado, including 13 families and 30 genera.

New information

Here we report 11 new species and subspecies state records (*Belostoma bakeri* Montandon, 1913; *Corisella edulis* Champion, 1901; *Neocorixa snowi* Hungerford, 1925; *Sigara bicoloripennis* (Walley, 1936); Sigara lineata (Forster, 1771); *Sigara trilineata* (Provancher, 1972); *Trichocorixa verticalis verticalis* (Fieber, 1851); *Hebrus comatus* Drake & Harris, 1943; *Hydrometra martini* Kirkaldy, 1900; Mesovelia mulsanti White, 1879), including one species of the genus *Callicorixa* that has not been formally named or published. These new records can help future researchers identify aquatic hemipterans in Colorado, thereby furthering the knowledge of the relationship between aquatic hemipterans and water quality and ecology.

Keywords

Checklist, Nepomorpha, Gerromorpha, aquatic insects, Hemiptera, Colorado, identification

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Introduction

The current information on aquatic Hemiptera in Colorado remains incomplete, with no updated regional checklists available and many species records dating back over a decade. Identification can also be challenging, since several taxa require examination of hidden structures such as wings or abdominal traits (Menke 1979). Compared with other aquatic insect groups, these taxa have received little research attention, (Bakonyi et al. 2022), leaving both biodiversity assessments and ecological studies with significant gaps. These limitations are particularly important in a state such as Colorado, where environmental heterogeneity suggests aquatic Hemiptera diversity may be underestimated. Updating the distributional data for Nepomorpha and Gerromorpha in Colorado is therefore essential to provide a modern baseline for ecological monitoring and future taxonomic work.

Although they are not usually used as water quality indicators, this may be because research on their ecological environment is minimal. Currently, there is not enough evidence that aquatic hemipterans cannot be indicators, (Taybi et al. 2021). Some Belostomatids, such as Lethocerus sp., have been shown to have significant responses to contaminants in water, (Sorour 2001). Halobates that live on the sea surface can be used as bioindicators for monitoring ocean water quality due to their sensitivity to mercury and other metal elements, (Cheng et al. 1979). These aquatic insects can be useful indicators to monitor water biologically (Arimoro and Ikomi 2009). Aquatic Hemiptera occur in both running and still water and are a vibrant group consisting of three suborders, many of genera are carnivorous and some are herbivorous.

Colorado encompasses a broad elevational gradient, from lowland prairie to alpine ecosystems, creating diverse aquatic habitats that are not uniformly represented in neighboring states. This environmental heterogeneity is expected to shape distinct assemblages of Nepomorpha and Gerromorpha, with some taxa restricted to high-elevation streams and others more typical of plains wetlands. Because of these contrasts, Colorado provides an important case for documenting aquatic Hemiptera diversity, as outdated records risk overlooking both range-restricted montane species and potential distributional shifts across habitats.

Thus, aquatic Hemiptera may actually have potential in this regard. An updated, illustrated checklist will enable both researchers and naturalists to identify Colorado's aquatic hemipterans more reliably, providing a foundation for ecological research and potential water-quality assessments.

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Materials and methods

The study focuses on the state of Colorado, USA. Species records span various freshwater habitats, including rivers, lakes, ponds, and wetlands at different elevations. Locality data is compiled from both museum records and literature sources.

Illustrations are based mainly on specimens in the C.P. Gillette Museum of Arthropod Diversity at Colorado State Univeristy (CSUC). The body characteristics are better displayed by re-expanding the legs and wings. Digital camera photos are taken to ensure the correct structural proportions and complete the species illustration of each genus.

For certain structures with significance in identification, we refer to the illustrations in relevant resources and dichotomous keys, Usinger 1956.

Data resources

This checklist includes all available records of aquatic Hemiptera (Nepomorpha and Gerromorpha) from Colorado, combining museum specimens, literature records, and recent collections.

Most specimen data come from the C.P. Gillette Museum of Arthropod Diversity (CSUC) located at the Colorado State University campus in Fort Collins, Colorado, USA. Most specimens, including all Corixidae, were identified primarily by Antti Jansson and John T. Polhemus.

Part of the other specimen data comes from the Denver Museum of Nature and Science (DMNS). The information on each specimen was recorded to confirm which species identified in the museum were distributed in Colorado.

The literature data mainly come from the *Catalog of Heteroptera or True Bugs, of Canada and the Continental United States* by Henry (1988), and an unpublished preliminary checklist of the aquatic and semiaquatic Heteroptera of Colorado by John T. Polhemus. In addition, several other references were consulted: Durfee and Kondratieff 1999; Chordas et al. 2002, Durfee et al. 2008, Kondratieff and Durfee 2010.

The checklist of Nepomorpha and Gerromorpha insects distributed in Colorado

Lethocerus americanus (Leidy, 1847)

Diagnosis: Fig. 1

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Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Specimens from the Denver Museum of Nature and Science (DMNS)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988, Kondratieff and Durfee 2010

Belostoma bakeri Montandon, 1913

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Pueblo Co., Boggs Creek 0.5 mi S Pueblo Reservoir. 38.24183N, 104.74623W,12 Nov. 1995, M. Sanchez, 1 specimen (CSUC).

Recorded from the unpublished Checklist by John T. Polhemus

Belostoma flumineum Say, 1832

Diagnosis: Fig. 2

Notes: Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Specimens from the Denver Museum of Nature and Science (DMNS)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988, Kondratieff and Durfee 2010

Arctocorisa lawsoni Hungerford, 1948

Diagnosis: Fig. 3

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Arctocorisa sutilis (Uhler, 1876)

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Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Callicorixa audeni Hungerford, 1926

Diagnosis: Fig. 3

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Callicorixa New Species Jansson M.S

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Park Co., High Cr. Fen Preserve 9 mi. S of Fairplay, 39.07895N, 105.94944W, 7-10 Aug. 1994, R. Durfee. 5 specimens (CSUC).

Saguache Co., Russell Lakes S.W.A., 37.94413N, 106.12696W, 8 July 1994, R. Durfee, 2 specimens (CSUC)

Boulder Co., Wetlands west of Red Rock Lake, 40.08183N, 105.54141W, 9 October 1999, R. Durfee. 1 specimen (CSUC)

Cenocorixa bifida (Hungerford, 1926)

Diagnosis: Fig. 3

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988 Henry 1988

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Cenocorixa expleta (Uhler, 1895)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Cenocorixa utahensis (Hungerford, 1925)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Cenocorixa wileyae (Hungerford, 1926)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Corisella decolor (Uhler, 1871)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Corisella edulis (Champion, 1901)

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Cameron Co., 7-9 Aug. 1960, 2 specimens (CSUC)

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Larimer Co., Fort Collins, 8 Oct. 1970, L. Schroeder, 1 specimen (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Corisella inscripta (Uhler, 1895)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Kondratieff and Durfee 2010

Corisella tarsalis (Fieber, 1851)

Diagnosis: Fig. 3

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Kondratieff and Durfee 2010

Graptocorixa abdominalis (Say, 1832)

Diagnosis: Fig. 3

Notes:

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Durfee and Kondratieff 1999

Hesperocorixa atopodonta (Hungerford, 1927)

Notes:

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Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Hesperocorixa laevigata (Uhler, 1893)

Diagnosis: Fig. 4

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Hesperocorixa obliqua (Hungerford, 1925)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Hesperocorixa vulgaris (Hungerford, 1925)

Notes: Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Durfee and Kondratieff 1999

Neocorixa snowi Hungerford, 1925

Diagnosis: Fig. 3

Notes: New Record

Las Animas Co., coll. John T. Polhemus. No further specimen or locality data. Recorded from the unpublished Checklist by John T. Polhemus.

Recorded from the unpublished Checklist by John T. Polhemu

Palmacorixa gillettei subsp. *gillettei* Abbott, 1912

Diagnosis: Fig. 3

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Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Palmacorixa nana Walley, 1930

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Durfee et al. 2008, Durfee et al. 2008

Palmacorixa buenoi Abbott, 1912

Notes: Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Durfee et al. 2008

Ramphocorixa acuminata (Uhler,1897)

Diagnosis: Fig. 3

Notes: Henry 1988

Sigara alternata (Say, 1825)

Diagnosis: Fig. 3

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Sigara bicoloripennis (Walley, 1936)

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Routt Co., Ponds, Yampa R.SWA, 40.48399N, 107.32048W., 1 April 2006, coll. B. Kondratieff & R. Younghanz, 1 specimen (CSUC)

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Recorded from the unpublished Checklist by John T. Polhemus

Sigara grossolineata Hungerford, 1928

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Sigara lineata (Forster, 1771)

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Moffat Co., Yampa River at Echo Park Dinosaur National Monument, 40.52240N, 108.96233W.,3 Aug. 1994, A. Polonsky, 3 specimens (CSUC)

Moffat Co., Yampa River at Echo Park Dinosaur National Monument, 40.52240N, 108.96233W., 3 Sep. 1994, B. Kondratieff & M. Kippenhan, 4 specimens (CSUC)

Moffat Co., Yampa River at Deerlodge, 40.44816N,108.51161W., 3 Sep. 2000, B. Kondratieff & R. Durfee 1 specimens (CSUC)

Moffat Co., Yampa River at Echo Park Dinosaur National Monument, 40.52240N, 108.96233W.,16 Sep. 1994, R. Durfee, 1 specimen (CSUC)

Sigara modesta (Abbott, 1916)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Sigara trilineata (Provancher, 1972)

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Jackson Co., North Platte River North Gate, 40.67757N, 106.44751W, 22 April 1993, R. Durfee, 1 specimen (CSUC)

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Larimer Co., Red Feather Lakes Hiawatha Lake, 40.80215N, 105.59632W, 21 Aug. 1996, A. Polonsky, 5 Specimen (CSUC)

Larimer Co., Phantom Canyon, 1 Oct. 1992, 40.80854N, 105.25108W, S. Fitzgerald. 1 specimen (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Sigara washingtonensis Hungerford, 1928

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Trichocorixa borealis Sailer, 1948

Diagnosis: Fig. 3

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Trichocorixa calva (Say, 1832)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Trichocorixa sexcincta (Champion, 1901)

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

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Henry 1988

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Trichocorixa uhleri Sailer, 1948

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Trichocorixa verticalis subsp. *interiores* Sailer, 1948

Notes: Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus.

Henry 1988

Trichocorixa verticalis subsp. *verticalis* (Fieber, 1851)

Notes: New Record

Recorded from the unpublished Checklist by John T. Polhemus: No specimen data and locality.Henry 1988

Gelastocoris oculatus (Fabricius), 1798

Diagnosis: Fig. 5

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Specimens from the Denver Museum of Nature and Science (DMNS)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Ambrysus mormon Montandon, 1909

Diagnosis: Fig. 6

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

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Henry 1988

Ambrysus thermarum LaRivers, 1953

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Ranatra fusca Palisot, 1820

Diagnosis: Fig. 7

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Buenoa margaritacea Bueno, 1908

Diagnosis: Fig. 8

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Kondratieff and Durfee 2010

Notonecta borealis Hussey, 1919

Notes: Durfee and Kondratieff 1999, Kondratieff and Durfee 2010

Notonecta kirbyi Hungerford, 1925

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

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Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Notonecta undulata Say, 1832

Diagnosis: Fig. 9

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Chordas et al. 2002

Neoplea striola Fieber, 1844

Diagnosis: Fig. 10

Notes: Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Durfee and Kondratieff 1999

Aquarius remigis (Say, 1832)

Diagnosis: Fig. 11

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Specimens from the Denver Museum of Nature and Science (DMNS)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Aquarius nyctalis Drake & Hottes, 1925

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. PolhemusHenry 1988

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Gerris buenoi Kirkaldy, 1911

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Gerris comatus subsp. *comatus* Drake & Hottes, 1925

Notes: Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Kondratieff and Durfee 2010

Gerris comatus subsp. *mickeli* Drake & Hottes, 1925

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Gerris gillettei Lethierry & Severin, 1896

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Gerris incognitus Drake & Hottes, 1925

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Gerris insperatus Drake & Hottes, 1925

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Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Gerris marginatus Say, 1832

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Kondratieff and Durfee 2010

Gerris pingreensis Drake & Hottes, 1925

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Limnoporus notablilis (Drake & Hottes, 1925)

Diagnosis: Fig. 12

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Metrobates trux subsp. *trux* Torre Bueno, 1921

Diagnosis: Fig. 13

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

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Henry 1988

Hebrus buenoi subsp. *buenoi* Drake & Harris, 1943

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Hebrus comatus Drake & Harris, 1943

Notes: New Record

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from unpublished Checklist by John T. Polhemus: Yuma County, no specimen data.

Hebrus concinnus Uhler, 1894

Diagnosis: Fig. 14

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Hebrus hubbardi Porter, 1952

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Hebrus sobrinus Uhler, 1877

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Merragata hebroides White, 1877

Diagnosis: Fig. 15

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Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Hydrometra martini Kirkaldy, 1900

Diagnosis: Fig. 16

Notes: New Record

Specimen from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Yuma County, 29 Aug 1993, M. Castell, 1 specimen (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Macrovelia hornii Uhler, 1872

Diagnosis: Fig. 17

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Mesovelia mulsanti White, 1879

Diagnosis: Fig. 18

Notes: New Record

Specimen from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Larimer County, Fort Collins, 16, April 1987, B. Kondratieff 1 specimen (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Microvelia beameri McKinstry, 1937

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

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Henry 1988

Microvelia cerifera McKinstry, 1937

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Microvelia gerhardi Hussey, 1924

Diagnosis: Fig. 19

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Microvelia hinei Drake, 1920

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Microvelia paludicola Champion, 1898

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Microvelia signata Uhler, 1894

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

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Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Microvelia torquata Champion, 1898

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Rhagovelia distincta Champion, 1898

Diagnosis: Fig. 20

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Rhagovelia rivale Torre Bueno, 1924

Notes:

Specimens from the C.P. Gillette Museum of Arthropod Diversity (CSUC)

Recorded from the unpublished Checklist by John T. Polhemus

Henry 1988

Analysis

Through the museum's specimen data, this study added 11 new species records. 3 new genera records, and specific distribution status for these species are provided for facilitating subsequent research, in the list the new recorded species are marked in bold. Among them, there is a *Callicorixa* manuscript named by Antti Jansson. The name was proposed, but it has not been published.

***Additional potential species record**

***Ochterus aenifrons* Champion, 1900 (Ochteridae)**

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Recorded from the unpublished Checklist by John T. Polhemus, based on a specimen attributed to Kondratieff in Eagle County, CO., but no voucher specimen exists in the collection, and the presence of a question mark suggests uncertainty regarding the identification or provenance.

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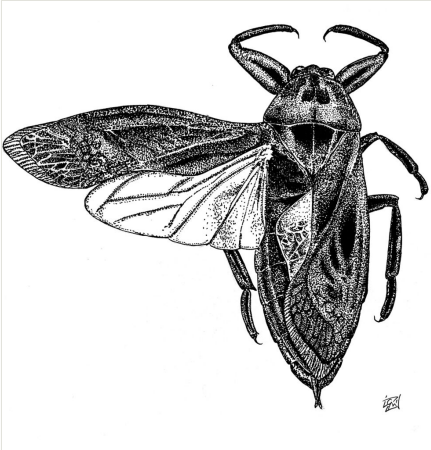

Figure 1.

Lethocerus americanus (Leidy, 1847). Dorsal view of the body.

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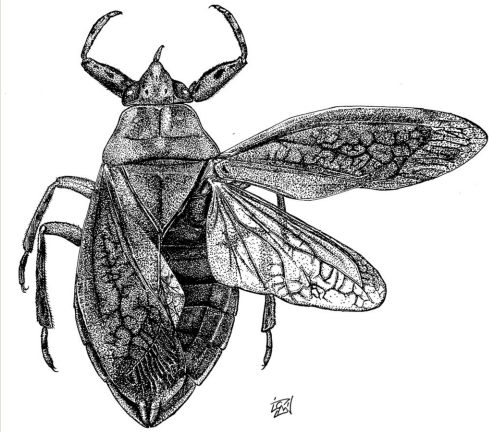

Figure 2.

Belostoma flumineum Say, 1832. Dorsal view of the body.

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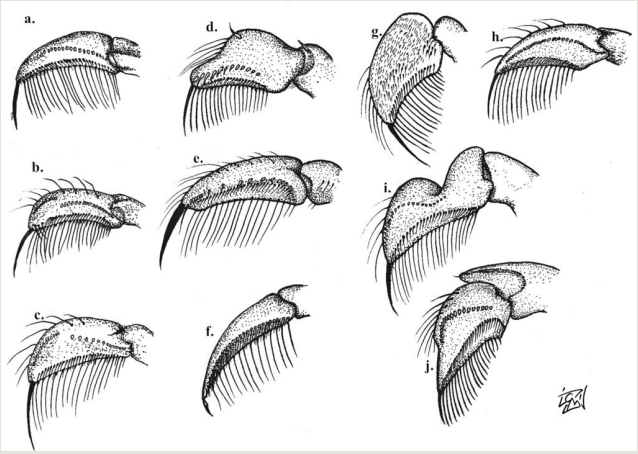

Figure 3.

Male palae (modified foreleg tarsus) of genera of Corixidae: a, *Arctocorisa lawsoni* Hungerford, 1948; b, *Callicorixa audeni* Hungerford, 1926; c, *Cenocorixa bifida* (Hungerford, 1926); d, *Corisella tarsalis* (Fieber, 1851); e, *Graptocorixa abdominalis* (Say, 1832); f, *Neocorixa snowi* Hungerford, 1925; g, *Palmacorixa gillettei* Abbott, 1912; h, *Sigara alternata* (Say, 1825); i, *Ramphocorixa acuminata* (Uhler,1897); j, *Trichocorixa borealis* Sailer, 1948.

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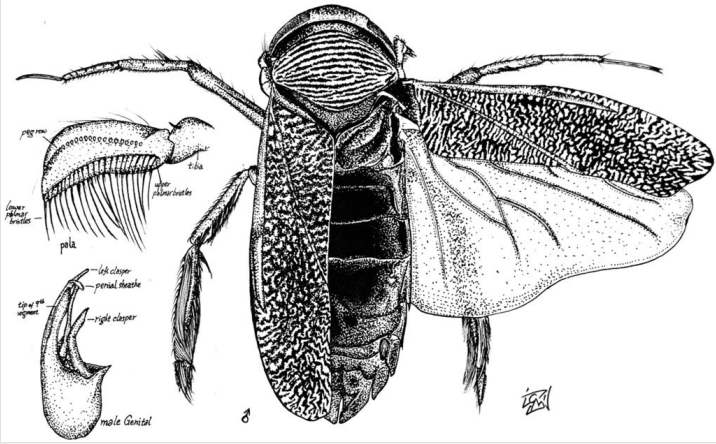

Figure 4.

Male *Hesperocorixa laevigata* (Uhler, 1893) Dorsal view of body with pala and genitalia capsule.

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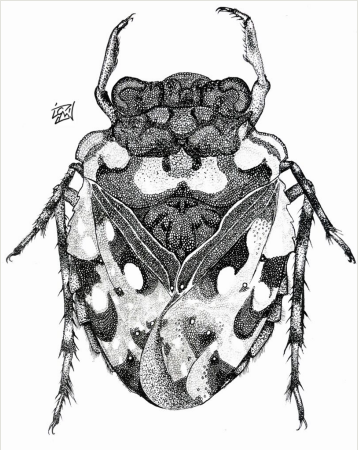

Figure 5.

Gelastocoris oculatus (Fabricius,1798). Dorsal view of the body.

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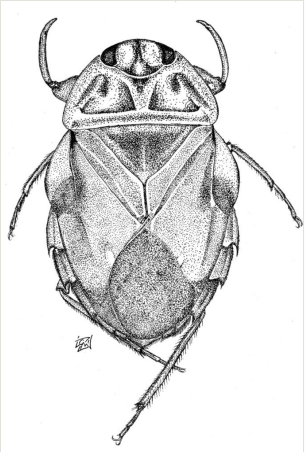

Figure 6.

Ambrysus mormon mormon (Montandon, 1909). Dorsal view of the body.

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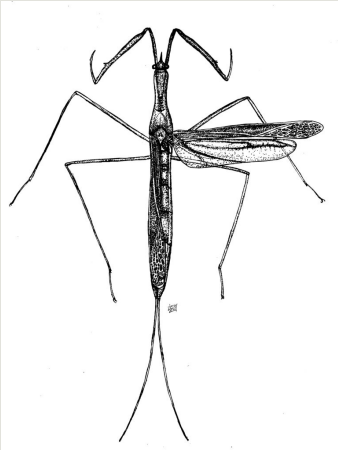

Figure 7.

Renatra fusca Palisot, 1820. Dorsal view of body.

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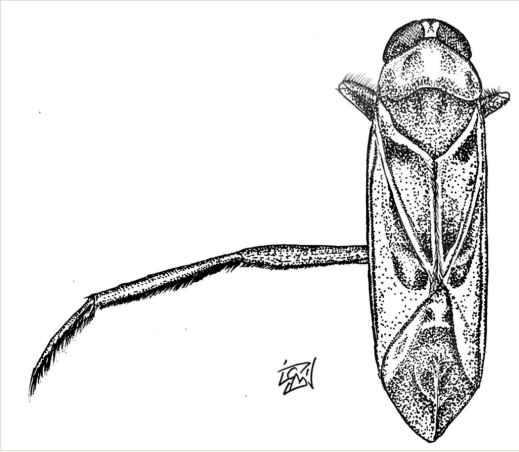

Figure 8.

Buenoa margaritacea Bueno, 1908. Dorsal view of the body.

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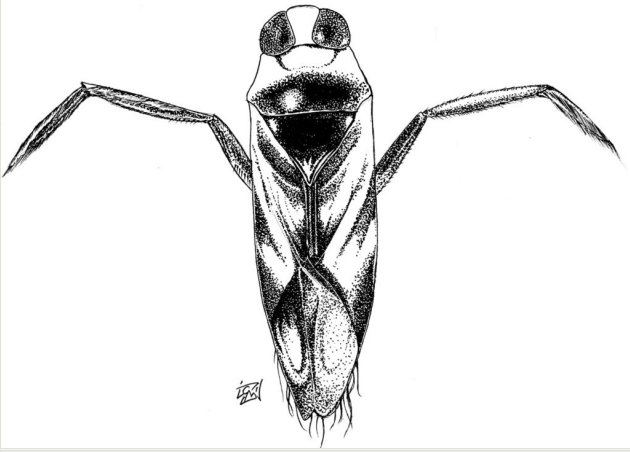

Figure 9.

Notonecta undulata Say, 1832. Dorsal view of the body.

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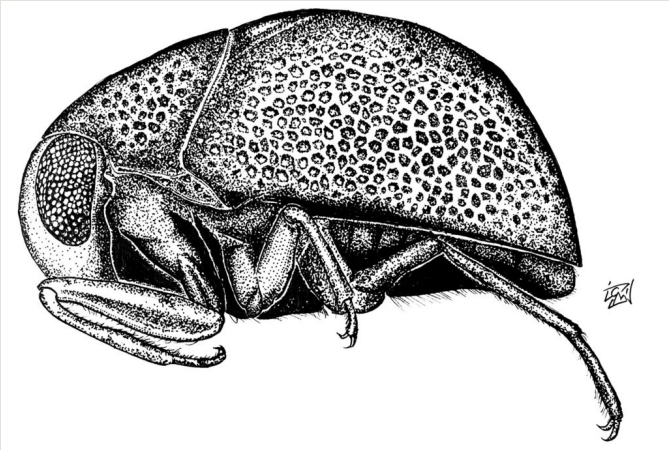

Figure 10.

Neoplea striola Fieber, 1844. Side view of the body.

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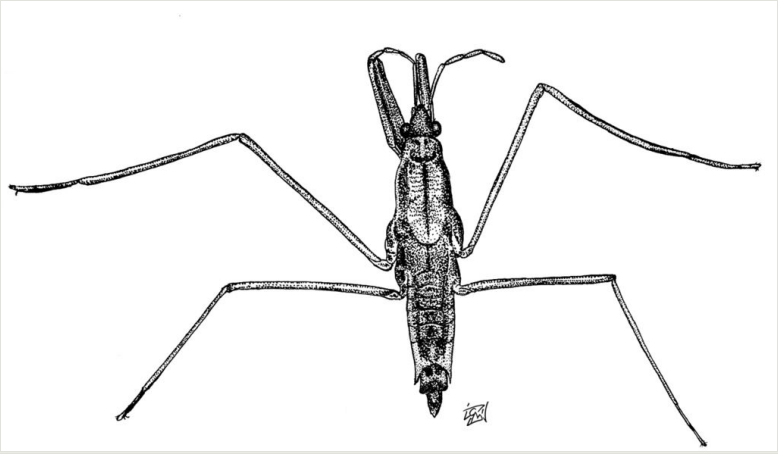

Figure 11.

Aquarius remiges (Say, 1832). Dorsal view of the body.

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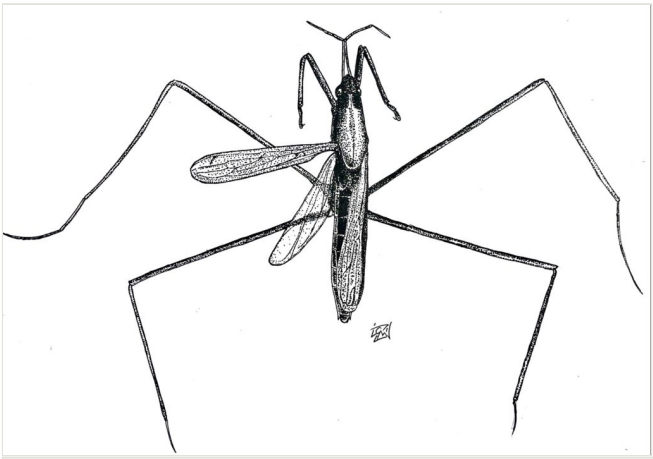

Figure 12.

Limnoporus notablilis (Drake & Hottes, 1925). Dorsal view of the body.

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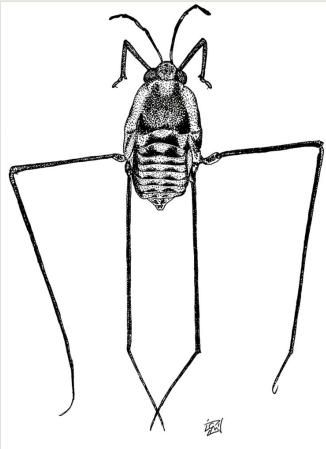

Figure 13.

Metrobates trux trux Torre Bueno, 1921. Dorsal view of the body.

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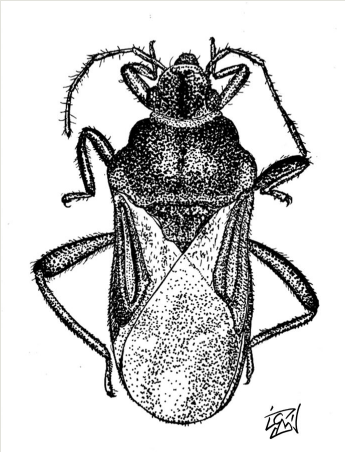

Figure 14.

Hebrus concinnus Uhler, 1894. Dorsal view of the body.

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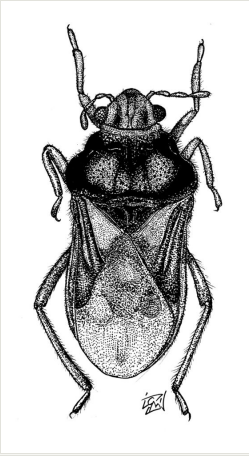

Figure 15.

Merragata hebroides White, 1877. Dorsal view of the body.

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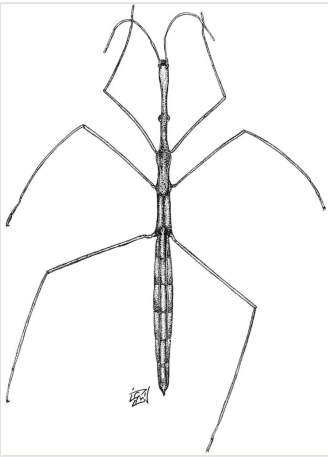

Figure 16.

Hydrometra martini Kirkaldy, 1900. Dorsal view of the body.

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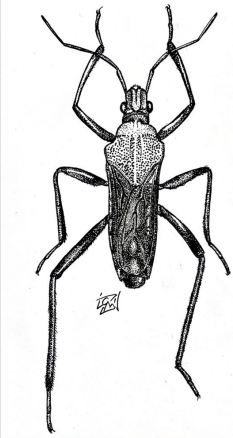

Figure 17.

Macrovelia hornii Uhler, 1872. Dorsal view of the body.

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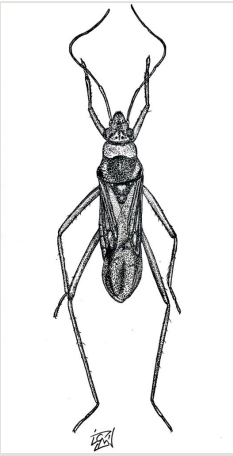

Figure 18.

Mesovelia mulsanti White, 1879. Dorsal view of the body.

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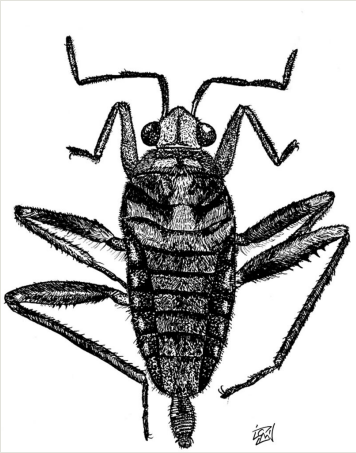

Figure 19.

Microvelia gerhardi Hussey, 1924. Dorsal view of the body.

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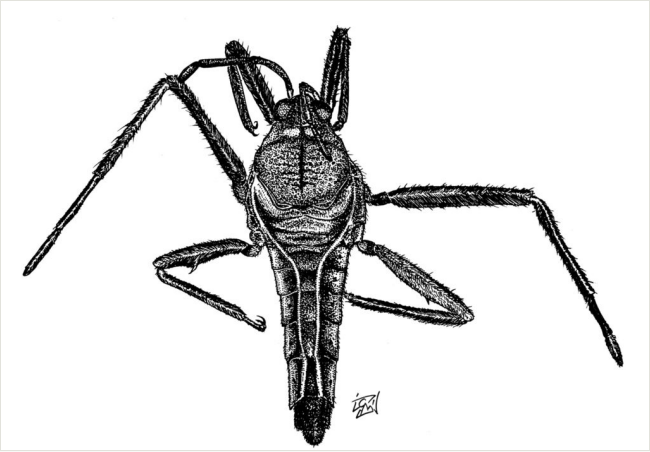

Figure 20.

Rhagovelia distincta Champion, 1898. Dorsal view of the body.