

CHECKLIST

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Checklist of springtails (Class, Collembola) from Iraq

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Abstract

The revision provides an updating checklist of Collembola that showed 48 species and 3 subspecies belonging to 28 genera under 10 families and 4 orders from Iraq are presented.

This study is a contribution to the data concerning the biodiversity of springtails group; also the synonyms and valid names were given in the current investigations; however, the information about this group is still poorly known, and it is expected that there will be more species that are still undiscovered.

Keywords: Collembola, Checklist, Iraq, Museum, Springtail.

Introduction

Collembola are amongst the most prevalent and abundant soil arthropods (Petersen and Luxton, 1982; Hopkin, 1997). It communally known as "springtails"; they small and permanently wingless arthropods; in the year 1870, Sir John Lubbock gave the name Collembola to this guild of insects and belong to the subclass Apterygota; they small to minute forms with a range length from 0.25 mm to 6 mm. Springtails are minor pests in agriculture, but its importance as a biological agent in the soil; many species are now

Checklist of springtails

known as bio-indicator of soil pollution as well as its fertility. The species of collembola have a very wide distribution around the entire world (Hazra and Mandal, 2007; Mandal and Hazra, 2009).

Mouthparts entognathous, principally adapted for biting; antennae usually 4-segmented; compound eyes absent. A tracheal system is usually absent and there are no Malpighian tubules. Springtails have three thoracical segments and with six or fewer abdominal segments, including a telson consisting of a dorsal and two ventral valves surrounding the anus; there are typically four antennal segments, lack malpighian tubules and most have paired labial nephridia that empty into the ventral groove at the base of the labium; with unique feature is the ventral tube or colophore (paired projection from the first abdominal segment), metamorphosis slight (Richards and Davies, 1977; Christiansen *et al.*, 2009).

Collembola composed of two suborders; Arthropleona (consist of five families including, Entomobryidae, Hypogastruridae, Isotomidae, Onychiuridae and Poduridae) and Symphypleona (with two families: Neelidae and Sminthuridae) (Hazra and Mandal, 2007). Recently, Bellinger *et al.* (1996-2021), classified the Collembola into four orders: Poduromorpha Börner, 1913; Entomobryomorpha Börner, 1913; Symphypleona Börner, 1901 and Neelipleona Massoud, 1971.

Globally, there are 9, 000 species within this guild have been described (Bellinger *et al.*, 1996–2021). In adjacent regions of Iraq, Shayanmehr *et al.* (2013) listed 120 species for Iran in them updating checklist; followed by Shayanmehr *et al.* (2020), they update the database of Collembola and reported 232 species belonging to 95 genera, then Yahyapour *et al.* (2021) added 3 species for the first time. Sevgili and Özata (2014), they listed in their study 53 species and 39genera belonging to 13 families in Turkey, after that Özata *et al.* (2017) renewed the list, and they mentioned the presence of 83 species

in Turkey; whereas in other regions, the studies that dealing with a checklist of Collembola remain poor, unclear and not updated.

In Iraq, there are a few and scattered studies on this group, such as: Brown (1926) listed 15 species and 3 subspecies during his investigations for this group of Mesopotamia; Rusek (1981) recorded 17 species, after that Al-Gailani (1990) studied this group in the middle of Iraq. Jordana and Baquero (2010) described *Entomobrya iraqensis* as a new species belong to Entomobryidae from Mosul city; Baquero *et al.* (2014) listed the species *Entomobrya obscurella* Brown, 1926 from Iraq.

Revised synonyms and corrected the scientific names according to the references that including: Jordana *et al.* (1997), Janssens (2021), and updating information on the website of the Global Biodiversity Information Facility (GBIF Secretariat, 2021); on the other hand, the systematics of the higher taxa that is given here is in line with some of the more recent opinions, such as: Bretfeld (1999), D'Haese (2002), Deharveng (2004) and Bellinger *et al.* (1996-2021). Collembola are not considered as being class Insecta, but as a taxonomic group with the same rank to it.

The present study gives an update list of the Collembola that recorded in Iraq, and treating the scientific names according to recent catalogs and publications.

List of the species of Collembola in Iraq

Taxa	References
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Order: Entomobryomorpha

Family: Entomobryidae

= Catastylidae

=Palpigeridae

Checklist of springtails

Genus: *Drepanura* H.Schött, 1891

= *Entomobrya* Denis & J-R, 1924

= *Falciformes* Schött, 1917

Drepanura pallens Rusek, 1981

(Rusek,1981)

= *Drepanura pallensis* Barra J-A & van Harten, A 2009

Genus: *Entomobrya* Rondani, 1861

=*Bidenticulati* Schött, 1917

=*Botryanura* Tshelnokov, 1987

=*Calistella* Schött, 1893

=*Calx* R.W.Poole, 1997

=*Choreutes* Burmeister, 1838

=*Coxendix* Gistel, 1848

=*Degeeria* C.Bourlet, 1845

= *Degeeria* H.Nicolet, 1841

=*Degeerina* Houlbert, 1924

=*Drepanura* R.W.Poole, 1997

=*Etmobrya* H. Petersen, 2011

=*Entombrya* W.E.Collinge, 1909

=*Entomobrya* P.Shaw, 2013

=*Entomobryia* H.Kopeszki &E.Meyer,1996

=*Entomobryn* H.Schött, 1893

=*Entomobryoides* R.W. Poole, 1997

=*Homidia* R.W.Poole, 1997

=*Isotobryoides* Maynard, 1951

=*Mesentotoma* R.W.Poole, 1997

=*Mydonius* Gistel, 1848

=*Parentomobrya* Dahl, 1912

=*Pegeeria* Lioy, 1864

=*Pseudentomobrya* J.T. Salmon, 1941

=*Rubra* Scott, 1963

Entomobrya iraqensis Jordana &

(Jordana and Baquero, 2010)

Baquero, 2010

Entomobrya lanuginose Nicolet, 1841

(Brown, 1926)

= *Degeeria lanuginosa* Nicolet, 1842

M. S. Abdul-Rassoul

- =*Entomobrya bauciana* Moniez, 1894
- =*Entomobrya flava* Lie-Pettersen, 1897
- =*Entomobrya lanuginosa subsp. Olivacea* Rapoport, 1962
- =*Entomobrya lanuginosa-maritima* Denis, 1948
- =*Entomobrya lanuginosus* M.T.Fountain & S.P.Hopkin, 2004
- =*Entomobrya maritima* H.Schött, 1893
- =*Entomobrya nivalis f. immaculate* Schäffer, 1924

Entomobrya mesopotamica Rusek, 1981 (Rusek, 1981)

Entomobrya obscurella Brown, 1926 (Brown, 1926)

- =*Entomobrya lanuginosa* E. Handschin, 1942
- =*Entomobrya obscurella f. extrema* E. Handschin, 1942
- =*Entomobrya obscurella f. intermedia* E. Handschin, 1942
- =*Entomobrya obscurella f. pallida* E. Handschin, 1942
- =*Entomobrya obscurella f. principalis* E. Handschin, 1942

Genus: *Lepidocyrtus* Bourlet, 1839

- =*Paidium* Koch, 1840

Lepidocyrtus fimetarius Gisin, 1964 (Rusek, 1981)

Lepidocyrtus simularis Brown, 1926 (Brown, 1926)

Genus: *Pseudolepidorsia* Al- Gailani, 1990 (Al- Gailani, 1990)

Pseudolepidorsia sylvatica Al- Gailani, 1990 (Al- Gailani, 1990)

Genus: *Pseudosinella* Schäffer, 1897

- =*Pettersenia* Scherbakow, 1898
- =*Peudosinella* Schulz & H-J, 2015
- =*Psudosinella* Palacios-Vargas & Castaño-Meneses, 2003
- =*Troglosinella* Delamare Deboutteville, 1949
- =*Tullbergia* Lie-Pettersen, 1897

Pseudosinella baghdadica Rusek, 1981 (Rusek, 1981)

Checklist of springtails

Pseudosinella staryi Rusek, 1981 (Rusek, 1981)

Genus: *Sinella* Brook, 1882

= *Cavernobrya* R.Yosii, 1977

= *Parasinella* Bonet, 1934

Sinella humicola J. M. Brown, 1926 (Brown, 1926)

Order: Neelipleona

Family: Neelidae

=Megalothoracini

Genus: *Megalothorax* Willem, 1900

= *Amerus* Collinge & Shoebbotham, 1909

=*Megalothorax* C.Schneider, Zon, SD & C.A.D'Haese, 2018

=*Megolothorax* L.Q.Cutz-Pool &M.Vázquez-González, 2012

=*Neelus* Womersley, 1932

Megalothorax incertus C. Börner, 1903 (Rusek, 1981)

=*Megalothorax incertoïdes* H.B.Mills, 1934

=*Megalothorax incertoïdes* C.Schneider&C.A.D'Haese, 2013

=*Megalothorax minimus* Womersley, 1939

=*Megalothorax remyi* Denis, 1933

=*Megalothorax swani* Womersley, 1932

=*Neelus swani* H.Womersley, 1932

Order: Poduromorpha

Family: Hypogastruridae

= Achorutini

= Hypogatruridae

Genus: *Ceratophysella* Börner, 1932

= *Achurotes* H.N.Baijal, 1958

= *Caratophysella* R.Yosii, 1965

= *Ceratophysella* Börner, 1932

M. S. Abdul-Rassoul

- = *Cryptopygus* A. Falahati Hossein Abad, M. S. Mehr & A. Khyroodin, 2013
- = *Cyclograna* Yosii, 1961
- = *Cystioceras* Börner, 1912
- = *Mitchellania* Wray, 1953
- = *Spinachorutes* Scott, 1962
- = *Spinifacies* H.G.Scott, 1963

Ceratophysella armata (H.Nicolet, 1842) (Brown, 1926)

- = *Achoreutes armatum* Weiss, 1916
- = *Achorutes buxtoni* J.M.Brown, 1926
- = *Achorutes filiformis* Wahlgren, 1906
- = *Achorutes longispinis* J.T.Salmon, 1964
- = *Achorutes longispinus* Schäffer, 1897
- = *Achorutes marmoratus* A.S.Packard, 1873
- = *Achorutes sigillatus* Liniger, 1919
- = *Ceratophysella acanthospina* Steiner, 1958
- = *Ceratophysella armata* f. *brunea* A. Bourgeois & P. Cassagnau, 1973
- = *Ceratophysella armata* var. *triaena* Rapoport, 1959
- = *Ceratophysella armatissima* Gisin, 1958
- = *Ceratophysella armatus* R.Yosii, 1965
- = *Ceratophysella attenuata* P.Cassagnau, 1959
- = *Ceratophysella crassispina* P.Cassagnau, 1952
- = *Ceratophysella luteospina* Stach, 1919
- = *Ceratophysella macronycha* Steiner, 1958
- = *Hypogastrura acanthospina* Steiner, 1958
- = *Hypogastrura aniiala* Bhagat, 2013
- = *Hypogastrura armata* Poole, 1959
- = *Hypogastrura armata* var. *decolor* Bonet, 1933
- = *Hypogastrura armata* var. *unicolor* Bonet, 1934
- = *Hypogastrura armatisima* Gisin, Bougeois & Cassagnau, 1972
- = *Hypogastrura armatus* J.M.Glime, 2015
- = *Hypogastrura crasispina* R.Jordana, 1980
- = *Hypogastrura fusco-viridis* Bourlet, 1843
- = *Hypogastrura luteospina* Stach, 1920
- = *Hypogastrura sinetertiaseta* Lee, 1974
- = *Podura armata* Nicolet, 1842
- = *Podura armatus* Lucas, 1844
- = *Proxenyllodes folsomi* Denis, 1926

Checklist of springtails

Genus: *Acherontiella* Absolon, 1913

- = *Acherontiellina* Delamare Deboutteville, 1948
- = *Acherontiellina* Salmon, 1964
- = *Xenyllina* Delamare Deboutteville, 1948

Acherontiella bougisi P.Cassagnau & C.Delamare (Hussain, 1974)
Deboutteville, 1955

- = *Acherontiella bougisi* subsp. *rhodia* W. N.Ellis, 1974
- = *Acherontiella rhodia* Ellis, 1974
- = *Acherontiellina bougisi* A.Fjellberg, 1992
- = *Willemia bougisi* Cassagnau and Delamare-Deboutteville, 1960

Genus: *Hypogastrura* Bourlet, 1839

- = *Hypogastrurus* Walckenaer & Gervais, 1844

Hypogastrura abugraibensis Al- Gailani, 1990 (Al- Gailani, 1990)

Hypogastrura tigridis (Brown, 1926) (Brown, 1926)

Genus: *Mesogastrura* Bonet, 1930

Mesogastrura ojcoviensis (Stach, 1919) (Hussain, 1974)

- = *Beckerella quadriocellata* Ionesco, 1922
- = *Hypogastrura carpetana* Bonet, 1930
- = *Hypogastrura inermis* R.Dallai & E.Malatesta, 1983
- = *Hypogastrura intermedia* Denis, 1931
- = *Hypogastrura levantina* Bonet, 1930
- = *Hypogastrura quadripunctata* Gisin, 1944
- = *Mesachorutes intermedia* Delamare Deboutteville & Gisin, 1951
- = *Mesachorutes ionescoi* Delamare Deboutteville, 1947
- = *Mesachorutes levantinus* Jordana & Beruete, 1983
- = *Mesachorutes ojcoviensis* Stach, 1919
- = *Mesachorutes tiliophilus* I.Loksa & I.Rubio, 1966
- = *Mesogastrura anthrohungaria* Loksa, 1959
- = *Mesogastrura anthrohungarica* Loksa, 1959
- = *Mesogastrura anthrohungarica* J.Nosek, 1962

M. S. Abdul-Rassoul

- = *Mesogastrura carpetana* Bonet, 1930
- = *Mesogastrura intermedia* Denis, 1931
- = *Mesogastrura levantina* Bonet, 1930
- = *Mesogastrura ojcovensis* A.Fjellberg, 1984
- = *Mesogastrura ojcowiensis* J.T.Salmon, 1964
- = *Mesogastrura quadripunctata* Gisin, 1944
- = *Mesogastrura quadripunctata* subsp. *tirolensis* Törne, 1955
- = *Mesogastrura quadripunctatus* H.Gisin, 1960
- = *Mesogastrura tiliophila* (Loksa & Rubio, 1966)
- = *Xenylla spelaea* Ionesco, 1922

Genus: *Seira* Lubbock, 1870

- = *Drepanocyrtus* Handschin, 1924
- = *Mesira* Stscherbakow, 1898
- = *Pseudosira* Schott, 1893
- = *Sira* Tullberg, 1872

Seira evansi (Brown, 1926) (Brown, 1926)

- = *Pseudosira evansii* Brown, 1926

Seira pallida Börner, 1907 (Brown, 1926)

- = *Seira pallida* (Brown, 1926)

Seira tigridica Rusek, 1981 (Rusek, 1981)

Genus: *Paraxenylla* Murphy, 1965

- = *Haloxenylla* M. M. da Gama & L. Deharveng, 1984
- = *Paraxenyla* D. Skarzynski, 2007

Paraxenylla affiniformis (Stach, 1930) (Hussain, 1974)

- = *Haloxenylla affiniformis* M.M.da Gama, 1988
- = *Paraxenylla mangle* A. B. Babenko, N. M. Chernova,
M. B. Potapov & S.K.Stebaeva, 1994
- = *Xenylla affiniformis* Stach, 1929

Family: Isotomidae

Genus: *Cryptopygus* Willem, 1901

Checklist of springtails

- = *Australomia* Bagnall, 1949
- = *Cryptopigus* A. E. Salazar Martínez, M .J. Narváez Beinhorn & V. Bernava Laborde, 2017
- = *Cryptpygos* Christiansen, 1951
- = *Cryptopygus* P.Shaw, 2017
- = *Gressittacantha* Wise, 1967
- = *Neocryptopygus* Salmon, 1965
- = *Neocryptus* P. Greenslade, 1995

Cryptopygus thermophilus (Axelson, 1900) (Rusek, 1981)

Genus: *Folsomia* Willem, 1902

- = *Folsoma* N. Poinso, 1972
- = *Holotoma* Bagnall, 1949
- = *Litsteria* Bagnall, 1949
- = *Litsterodes* Bagnall, 1949
- = *Stachomia* Bagnall, 1949

Folsomia brevifurca (Bagnall, 1949) (Hussain, 1974)
= *Folsomia brevifurca* Shaw. Faria & Emerson, 2013

Folsomia sp. (Derwesh, 1965)

Genus: *Folsomides* Stach, 1922

- = *Varisotoma* Salmon, 1964

Folsomides parvulus Stach, 1922 (Rusek, 1981)

- = *Folsomides americana* Loranger, Ponge, E.Blanchart & Lavelle, 1999
- = *Folsomides americanus* Denis, 1931
- = *Folsomides anophthalmis* Hepburn & Woodring, 1964
- = *Folsomides anophthalmis* Yayuk, 1989
- = *Folsomides exiguus* Folsom, 1932
- = *Folsomides exiguus* subsp. eburneus Delamare Debutteville, 1948
- = *Folsomides pseudoparvulus* Martynova, 1978
- = *Folsomides purvulus* Bano, 2016
- = *Folsomides purvus* Bano, 2016

Folsomides sp. (Derwesh, 1965)

Genus: *Hemisotoma* Bagnall, 1949

= *Cyrtopygus* M. Kahrarian & J.Arbea, 2013

= *Isotomia* I. Loksa, 1978

Hemisotoma pontica (Stach, 1947) (Rusek, 1981)

= *Cyrtopygus ponticus* (Stach, 1947)

= *Isotomina pontica* Stach, 1947

Genus: *Isotoma* Bourlet, 1839

= *Acanthisotoma* Bonet, 1932

= *Australotoma* Bagnall, 1949

= *Euisotoma* Borner, 1931

= *Isootoma* Richards, 1968

= *Isotama* Nicolet, 1847

= *Panurotoma* Poole, 1997

= *Pathisotoma* Poole, 1997

= *Tetracanthura* Martynova, 1971

Isotoma tigridis Al- Gailani, 1990

Isotoma viridis Bourlet, 1839 (Brown, 1926)

= *Desoria annulata* Nicolet, 1842

= *Desoria cylindrica* Nicolet, 1842

= *Desoria ebriosa* Nicolet, 1842

= *Desoria fusca* Nicolet, 1842

= *Desoria pallida* Nicolet, 1842

= *Desoria riparia* Christiansen & Bellinger, 1998

= *Desoria virescens* H.Nicolet, 1842

= *Heterotoma chlorata* Gervais, 1844

= *Isotoma arborea* C.Bourlet, 1839

= *Isotomaa spera* Bacon, 1914

= *Isotoma belfragei* Packard, 1873

= *Isotoma capitola* MacGillivray, 1896

= *Isotoma catena* J. E. Guthrie, 1903

= *Isotoma cincta* Tullberg, 1876

Checklist of springtails

- = *Isotoma ciridis* J. T. Salmon, 1964
- = *Isotoma delta* Mac Gillivray, 1896
- = *Isotoma glauca* MacGillivray, 1896
- = *Isotoma hibernica* Carpenter, 1906
- = *Isotoma lineata* Schött, 1893
- = *Isotoma montana* MacGillivray, 1896
- = *Isotoma palustris* Tullberg, 1871
- = *Isotoma palustris* var. *unicolor* Tullberg, 1871
- = *Isotoma paradoxa* J. Carl, 1899
- = *Isotoma plumbea* Packard, 1873
- = *Isotoma pomona* Folsom, 1937
- = *Isotoma purpurascens* A. S. Packard, 1873
- = *Isotoma riparia* A. Lameere, 1895
- = *Isotoma spinicauda* Bonet, 1930
- = *Isotoma tricolor* K. Christiansen & P. Bellinger, 1998
- = *Isotoma tridentata* MacGillivray, 1896
- = *Isotoma turkestanica* Stach, 1947
- = *Isotoma viridis* f. *genuina* C. Börner, 1901
- = *Isotoma viridis* f. *micans* Ågren, 1903
- = *Isotoma viridis* f. *principalis* H. Schött, 1893
- = *Isotoma viridis* f. *typica* R. Heymons & H. Heymons, 1909
- = *Isotoma viridis* var. *arctica* H. Schött, 1893
- = *Isotoma viridis* var. *pomona* J.W. Folsom, 1937
- = *Isotoma viridis* var. *violacea* Lie-Pettersen, 1898
- = *Isotomurus bemakus* Wray, 1952
- = *Orchesella rubra* Scott, 1963
- = *Podura aquatilis* O.F. Müller, 1776
- = *Podura fuliginosa* R. Templeton, 1836
- = *Podura plumbea* Müller, 1776
- = *Podura viatica* Linnæus, 1746
- = *Rhodanella plumosa* Salmon, 1969
- = *Tetracanthura mirabilis* Martynova, 1971

Isotoma viridis decorate Brown, 1925 (Brown, 1926)

Isotoma viridis principalis Brown, 1925 (Brown, 1926)

Isotoma viridis riparia (Nicolet, 1842) (Brown, 1926)

Genus: *Isotomiella* Bagnall, 1939

- = *Denisia* J.W. Folsom, 1932
- = *Isotoma* N. Leleup, 1948
- = *Isotomellia* P. Greenslade, 1994
- = *Isotomiela* L. Q. Cutz-Pool & M.Vázquez-González, 2012
- = *Isotominella* R. J. Snider, 1967
- = *Minor* Greenslade P & Greenslade Pjm, 1987

Isotomiella gracilimucronata Rusek, 1981 (Rusek, 1981)

Genus: *Isotomurus* Börner, 1903

- = *Chisotoma* H.Gisin, 1960
- = *Eosotoma* H.Gisin, 1960
- = *Isomurys* D.R.Velázquez & N.M. Novoa, 2002
- = *Isotama* J.Stach, 1924
- = *Isotomorus* N. Poinso, 1972
- = *Isotomourus* H. N. Baijal, 1958
- = *Isotomurus* J. M. Glime, 2015
- = *Istoma* G.H.Childs, 1915
- = *Proisotomurus* Womersley, 1934

Isotomurus palustris (Muller, 1776) (Brown, 1926)

Genus: *Tetracanthella* Schött, 1891

Tetracanthella mesopotamica Al- Gailani, 1990 (Al- Gailani, 1990)

Family: Onychiuridae

Genus: *Onychiurus* Gervais, 1841

- = *Adicranus* Bourlet, 1843
- = *Aphorura* A. D. MacGillivray, 1893
- = *Lipura* J. Lubbock, 1862
- = *Neomexicana* Scott, 1961
- = *Onychurus* R. S.Yadav, 2017

Checklist of springtails

Onychiurus albus Al- Gailani, 1990 (Al- Gailani, 1990)
Onychiurus armatus (Tullberg, 1869) (Brown, 1926)
= *Lipura armata* Tullberg, 1869

Onychiurus petloides Rusek, 1981 (Rusek, 1981)

Family: Orchesellidae

Genus: *Heteromurus* Wankel, 1860

= *Heteromurodes* Absolon, 1901

= *Templetonia* Lubbock, 1862

Heteromurus sexoculatus Brown, 1926 (Brown, 1926)
= *Heteromurus hexophthalmus* Denis, 1948

Genus: *Orchesella* R. Templeton, 1836

= *Aetheocerus* Bourlet, 1842

= *Heterotoma* Bourlet, 1839

= *Heterotoma* H. Nicolet, 1847

= *Ochesella* F. Zhang, Pan, Z-X, Wu, J, Ding, Y-H, Yu,
D-Y, Wang & B-X, 2016

= *Orchecella* Tullberg, 1876

= *Orchesilla* Templeton, 1844

= *Orchisella* F.V. Theobald, 1912

= *Orchesella* F. Zhang, Pan, Z-X, Wu, J, Ding, Y-H, Yu,
D-Y, Wang & B-X, 2016

Orchesella lineata Brown, 1926 (Brown, 1926)

Family: Paronellidae

Genus: *Cyphoderus* Nicolet, 1842

= *Cyphodeirus* Nicolet, 1842

= *Cyphodurus* Nicolet, 1841

Cyphoderus amaranus Brown, 1926 (Brown, 1926)

Cyphoderus monopterus Rusek, 1981 (Rusek, 1981)

Family: Tullbergiidae

= Tullbergidae

= Tullberginae

= Tuubergiinae

Genus: *Mesaphorura* Börner, 1901

Mesaphorura italica (J. Rusek, 1971) (Rusek, 1981)

= *Mesaphorura italic* M. Kahrarian, 2019

= *Tullbergia italica* Rusek, 1971

Mesaphorura pacifica Rusek, 1976 (Rusek, 1981)

= *Tullbergia pacifica* (Rusek, 1976)

Mesaphorura sylvatica (J. Rusek, 1971) (Rusek, 1981)

= *Mesaphorura silvatica* I. J. Kaprus, R. J. Pomorski, D. Skarzynski & M. B. Potapov, 2005

= *Mesaphorura sylvatica* H. Kopeszki & E. Meyer, 1996

= *Tullbergia sylvatica* Rusek, 1971

Mesaphorura yosiii (J. Rusek, 1967) (Rusek, 1981)

= *Mesaphorura krausbaueri* Jordana *et al.*, 1987

= *Mesaphorura yosii* A. Babenko, S. Stebaeva & M. S. Turnbull, 2019

= *Mesaphorura yossii* L.Q. Cutz-Pool & M. Vázquez-González, 2012

= *Mesaphorura yosii* H. Kopeszki & E. Meyer, 1996

= *Tullbergia yosii* H. P. Leinaas, 1988

= *Tullbergia yosii* N. Suetsugu, F. Satoh & T. Koike, 2010

= *Tullbergia yosii* Rusek, 1967

Genus: *Tullbergia* Lubbock, 1876

= *Bachatullbergia* Wray, 1958

= *Börneria* Willem, 1902

= *Chaetophorura* Rusek, 1976

= *Granuliphorura* Rusek, 1976

= *Protullbergia* Bagnall, 1947

= *Tullberia* Greenslade & Rusek, 1996

Checklist of springtails

Tullbergia sp. (Al- Gailani, 1990)

Order: Symphyleona

Family: Katiannidae

Genus: *Sminthurinus* C. Börner, 1901

- = *Inarticulati* C.Börner, 1901
- = *Metakatiana* D.C.de Izarra, 1965
- = *Metakatianna* H.Gisin, 1960
- = *Pilosi* H.Schött, 1891
- = *Simthurinus* M.Chauvat, J.Trap, G.Perez, P.Delporte & M. Aubert, 2011
- = *Sminthurnius* R.Yosii, 1977
- = *Sminthurimus* A.Camousseight, 1999
- = *Smynthurella* C. Houlbert, 1924
- = *Smynthurinus* M. Shayanmehr, Yahyapour E., Kahrarian, M. & Lafooraki E. Y., 2013
- = *Stenognathellus* W. R. Richards, 1968

Sminthurinus violaceus Al- Gailani, 1990 (Al- Gailani, 1990)

Family: Sminthuridae

Genus: *Sminthurus* Latreille, 1802

- = *Eusminthurus* Börner, 1900
- = *Neomexicanus* Scott, 1964
- = *Papyrius* J. T. Salmon, 1964
- = *Plus* Leo, C, A.Carapelli, F. Cicconardi, F.Frati & F. Nardi, 2019
- = *Podura* Linnaeus, 1758
- = *Setosi* O. M. Reuter, 1881
- = *Simthurus* Latreille, 1802
- = *Smithurus* J. I. Cruz-Leal, A. L. Escalante-Jiménez, J. Salgado-Ortiz & J. G. Palacios-Vargas, 2013
- = *Smynthurus* Bourlet, 1843
- = *Smynthurus* J. W. Folsom, 1896
- = *Smynthurus* Latreille, 1802

Sminthurus multipunctatus Schaffer, 1896 (Hussain, 1974)

M. S. Abdul-Rassoul

- = *Eusminthurus variegatus* C. Börner, 1901
- = *Sminthurus ammophilus* Börner, 1903
- = *Sminthurus multipunctatus* var. *viridipunctata* J. Stach, 1965
- = *Sminthurus multipunctatus* f. *albopunctata* E. Handschin, 1929
- = *Sminthurus multipunctatus* f. *viridipunctata* E. Handschin, 1929
- = *Sminthurus multipunctatus* var. *albopunctata* G. Bretfeld, 1999
- = *Sminthurus multipunctatus* var. *tristrigata* G. Bretfeld, 1999
- = *Sminthurus multipunctatus* var. *viridipunctata* G. Bretfeld, 1999

Sminthurus stachi Betsch & J-M, 1977 (Hussain, 1974)

Sminthurus viridis (Linnaeus, 1758) (Brown, 1926)

- = *Arrhopalites adelaidica* Womersley, 1933
- = *Podura viridis* Hill, 1752
- = *Podura viridis* Linnaeus, 1758
- = *Setosi virides* H.Schött, 1891
- = *Sminthuro viridi* S.Keller & T. Steenberg, 1997
- = *Sminthurus multidentata* J.T. Salmon, 1943
- = *Sminthurus nigromaculatus* var. *infuscatus* Reuter, 1892
- = *Sminthurus viridi-flavus* J. Stach, 1924
- = *Sminthurus viridis* Hammer, 1953
- = *Sminthurus viridis* subsp. *cinereo-viridis* J. T. Salmon, 1964
- = *Sminthurus viridis* subsp. *dorso-vittata* Ionesco, 1915
- = *Sminthurus viridis* subsp. *dorsovittata* Grinbergs, 1960
- = *Sminthurus viridis* f. *cinereo-viridis* E. Handschin, 1929
- = *Sminthurus viridis* f. *dorsovittata* E. Handschin, 1929
- = *Sminthurus viridis* f. *irrorata* E.Handschin, 1929
- = *Sminthurus viridis* f. *nigromaculata* E. Handschin, 1929
- = *Sminthurus viridis* f. *speciosa* E. Handschin, 1929
- = *Sminthurus viridis* subsp. *irrorata* Grinbergs, 1960
- = *Sminthurus viridis* subsp. *irroratus* Reuter, 1900
- = *Sminthurus viridis* subsp. *lineata* Ionesco, 1916
- = *Sminthurus viridis* subsp. *nigro-maculatus* J. T. Salmon, 1964
- = *Sminthurus viridis* subsp. *nigromaculata* Grinbergs, 1960
- = *Sminthurus viridis* subsp. *picta* Grinbergs, 1960
- = *Sminthurus viridis* subsp. *sabulosa* Grinbergs, 1960
- = *Sminthurus viridis* subsp. *speciosa* Grinbergs, 1960
- = *Sminthurus viridis* subsp. *tripunctata* Grinbergs, 1960
- = *Sminthurus viridis* var. *cinereo-viridis* J. Stach, 1956

Checklist of springtails

- = *Sminthurus viridis* var. *dorsovittatus* H. Schött, 1893
 - = *Sminthurus viridis* var. *infuscata* J. Stach, 1956
 - = *Sminthurus viridis* var. *irrorata* J. Stach, 1956
 - = *Sminthurus viridis* var. *lineata* J. Stach, 1956
 - = *Sminthurus viridis* var. *marmorata* J. Stach, 1956
 - = *Sminthurus viridis* var. *medicaginis* H. Schött, 1917
 - = *Sminthurus viridis* var. *nigro-maculata* A. M. Buitendijk, 1930
 - = *Sminthurus viridis* var. *nigro-maculatus* T. Tullberg, 1872
 - = *Sminthurus viridis* var. *nigromaculata* J. Stach, 1956
 - = *Sminthurus viridis* var. *picta* J. Stach, 1956
 - = *Sminthurus viridis* var. *speciosa* M. C. Walters, 1967
 - = *Sminthurus viridis* var. *speciosus* H. Schött, 1893
 - = *Sminthurus viridis* var. *trimaculata* Reuter, 1891
 - = *Sminthurus viridis* var. *tripunctata* J. Stach, 1956
 - = *Sminthurus viridis* var. *variegatus* R. Latzel, 1917
 - = *Sminthurus viridis* var. *xerophila* J. Stach, 1956
 - = *Sminthurus viridis* subsp. *xerophila* Skorikov, 1899
 - = *Smynturus fuscus* var. *cinereo-viridis* von Dalla Torre, 1888
 - = *Smynturus viridis* H. Nicolet, 1842
 - = *Smynturus viridis* f. *cinereo-viridis* Tullberg, 1871
 - = *Smynturus viridis* var. *cinereo-viridis* Parona, 1888
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Discussion

In Iraq, previously, some species were listed under the synonym names which included: *Ceratophysella armata* (H. Nicolet, 1842) recorded as *Achorutes buxtoni* J. M. Brown, 1926 by Brown (1926); on the other hand, he recorded *Seira pallida* Börner, 1907 as sp. nov., but in GBIF secretariat (2021) referred to Börner, 1907 according to priority. *Mesogastrura ojcoviensis* (Stach, 1919) was reported by Hussain (1974) under the name of *Hypogastrura inermis* R. Dallai & E. Malatesta, 1983; at last, he listed *Acherontiella bougisi* P. Cassagnau & C. Delamare Deboutteville, 1955 under the synonym *Willemia bougisi* Cassagnau and Delamare-Deboutteville, 1960.

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CHECKLIST

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قائمة مرجعية لصنف قافزات الذنب (Class, Collembola) من العراق

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الخلاصة

يوفر هذا العمل قائمة المراجعة المحدثة للمفصليات التابعة لصنف قافزات الذنب Collembola في العراق ؛ التي أظهرت 48 نوعًا و 3 نويغات تنتمي إلى 28 جنسًا ضمن 10 عائلات و 4 رتب.

هذه الدراسة هي مساهمة في البيانات المتعلقة بالتنوع البيولوجي لمجموعة ذات الذنب القافز. كما تم إعطاء المرادفات والأسماء الصحيحة في التحقيقات الحالية ؛ ومع ذلك ، لا تزال المعلومات حول هذه المجموعة غير معروفة بشكل جيد ، ومن المتوقع أن يكون هناك المزيد من الأنواع التي لا تزال غير مكتشفة.