



Diversity and distribution of Collembola (Arthropoda: Hexapoda) of Brazil

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Abstract. Objectives of this study are to summarize the current state of knowledge of the diversity and distribution of Collembola in Brazil; to identify areas of most importance, interest, and need of additional research; and to enable development of experimental hypotheses for future research on Collembola in this region. The total number of collembolan species currently known from Brazil is 199, distributed among 19 families and 80 genera. The greatest numbers of species have been recorded from the states of Rio de Janeiro and Amazonas (with 69 and 56 species, respectively). Few or no species are known from most Brazilian states. Most of the species for which specific Brazilian environmental habitat information is available (93, 66%) are known only from forest environments. Most of the species (127, 64%) are known only from Brazil (most likely being endemic); 33 species (17%) are known only from Brazil and other neotropical areas; and 39 species (20%) have a distribution beyond the neotropical region. Results of this study indicate that much remains to be learned about the Brazilian collembolan fauna. This is especially true for areas of the northeastern, central-western, and southern regions. Studies to determine the species composition of collembolan communities in specific environments in Brazil are needed. The great diversity of Collembola species in Brazil is largely unknown and there are many opportunities for additional research on these environmentally important organisms in this area. Such additional research on the Collembola in Brazil is also essential for a better understanding of the neotropical (and world) collembolan fauna.

Introduction

Collembola are small, easily unnoticed organisms but they are widespread and abundant, commonly reaching densities of tens to hundreds of thousands per square meter in the top few centimeters of soils throughout the world (Wallwork 1976; Hopkin 1997). By feeding on dead organic matter and soil microorganisms, Collembola have significant influences on soil microbial ecology and fertility and thus, through their influence on microorganisms, decomposition and nutrient cycling, Collembola are important inhabitants of soils worldwide (Hopkin 1997; Larink 1997). The potential value of Collembola as biological indicators of soil quality and ecosystem health is also increasingly being recognized (Stork and Eggleton 1992; Van Straalen 1997) and thus knowledge of Collembola may be

useful in development of conservation strategies and monitoring of natural and human-impacted areas. However, despite their environmental importance, basic information on the occurrence and ecology of Collembola is lacking (Andre et al. 1994), especially in neotropical environments (Mari Mutt and Bellinger 1990).

The Brazilian collembolan fauna is likely to be one of the most diverse in the world (Mari Mutt and Bellinger 1990), but the lack of taxonomists working with this group and the immense size and diversity of environments in the country has limited knowledge of these organisms in this area. In working with Brazilian Collembola one also faces problems including the lack of a synthesis of past research and lack of identification keys for the local fauna. Most identifications are made using keys to foreign fauna (mainly North America and Europe) and species level identifications must be made by comparing specimens with original descriptions, which are often widely dispersed and difficult to obtain. Currently, a large number of undescribed species are being accumulated in collections, most of them remaining unknown to science as there are few or no specialists to describe the material. An effort to attract new students and researchers to tackle these problems (and opportunities) is needed, and one way to contribute to this effort is to make previously published information more readily known and available to new researchers who are interested in working on Collembola.

With the publication of *A Catalog of the Neotropical Collembola* in 1990, Mari Mutt and Bellinger noted the lack of knowledge about neotropical Collembola, likely due in part to the difficulty of locating all relevant references. In the present publication we provide a complete list of all Collembola species recorded from Brazil as of May 2002, with associated bibliographic references and biogeographic and ecological information for each species. Thus, as the publications of Mari Mutt and Bellinger (1990, 1996), Mari Mutt et al. (1996–2001) and Palácios-Vargas (1997) have facilitated research on neotropical Collembola, it is hoped that this publication will promote research on Collembola in Brazil and stimulate comparative studies in other areas. Specific objectives of this study are to summarize the current state of knowledge of the diversity and distribution of Collembola in Brazil; to identify areas of most importance, interest, and need of additional research; and to better enable the development of testable experimental hypotheses to be investigated in future research on Collembola in Brazil and the neotropics.

Methods

The list of species of Collembola recorded from Brazil (Tables 1 and 2) is based on bibliographic references compiled primarily from the publications of Mari Mutt and Bellinger (1990, 1996) and Mari Mutt et al. (1996–2001). Additional references found during the authors' review of the literature, completed in May 2002, are also included. In general only primary, original records of Collembola species identified in Brazil are included and publications that cite previously published records or that do not provide identifications to species are not included.

Table 1. Species of Collembola recorded from Brazil as of May 2002.

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
Hypogastruridae				
<i>Hypogastrura manubrialis</i> (Tullberg)	Denis (1923)	RJ	un	Cos
<i>H. rehi</i> Börner	Börner (1906)	no (SP)	un	NCB
* <i>Ceratophysella armata</i> (Nicolet)	Moniez (1894)	no (see Denis 1923)	un	Bor, Cos?, Neo
	Denis (1923)	RJ		
	Stach (1949)	no		
<i>C. bengtsoni</i> (Agren)	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	Bor, NCB
<i>Schoettella celtiae</i> Fernandes and Mendonça	Fernandes and de Mendonça (1998)	SP	Forest entrance	NCB
<i>Astrogastrura travassosi</i> (Arlé)	Arlé (1939d, 1970)	MS	River bank	Neo
	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	
<i>Mesogastrura cf. ojcoviensis</i> (Stach)	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	-
<i>Xenylla brasiliensis</i> (Arlé)	da Gama (1978)	MG	Forest humus	NCB
<i>X. nirae</i> Gama and Oliveira	da Gama and de Oliveira (1994)	AM	Forest soil	Amz
* <i>X. subcavernarum</i> Gama	da Gama (1969)	*Specific collection site reported is located in Argentina (M.M. da Gama, personal communication)		
<i>Acheronides eleonorae</i> Palacios-Vargas and Gnaspini-Netto	Palacios-Vargas and Gnaspini-Netto (1992)	PR, SP	Caves	NCB
	Palacios-Vargas and Gómez-Anaya (1996)	PR, SP		
<i>Willemia brevispina</i> Hüther	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	Ant, Neo, Pal
<i>Willemgastura coeca</i> Oliveira and Thibaud	de Oliveira and Thibaud (1988)	AM, RO	Forest soil	Amz, NCB
	Oliveira and Thibaud (1992)	AM		
Odontellidae				
<i>Stachionella folsomi</i> (Arlé) (as <i>Pseudostachia</i>)	Arlé (1968)	PA	Forest soil	Amz

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
Brachystomellidae				
<i>Brachystomella agrosa</i> Wray	Cassagnan and Rapoport (1962) de Mendonça and Arlé (1992)	PE BA, PE, RJ, SP no (São Francisco)	River Beach	Neo
<i>B. aspera</i> (Börner) (as <i>Pseudachorutes</i>)	Börner (1906)	Neotropical	un	NCB? ^g
<i>B. contorta</i> Denis	Arlé (1962)	Cosmopolitan	un	Bor., Neo, Pal
<i>B. parvula</i> Shäffler	Arlé (1962)		un	Cos
<i>B. villalobosi</i> Cassagnan and Rapoport	Cassagnan and Rapoport (1962)	PE	River	Neo
<i>Folsomiella albida</i> (Arlé)	Arlé (1959a)	RJ	Plant litter	Neo
<i>F. caeca</i> (Folsom)	Arlé (1962)	Serras do Mar and Mantiqueira	un	Neo
<i>F. intermedia</i> (Arlé)	Stach (1949) Arlé (1939b)	no RJ	un	Neo NCB
	Arlé (1959a)	RJ, Itatiaia	Forest soil	
<i>Setanodosa occidentalis</i> (Arlé)	Arlé (1962) Arlé (1959a)	RJ	Swamp	NCB
<i>Micromella porcus</i> (Denis)	Arlé (1959a)	Serras do Mar and Mantiqueira	Soil	Neo
<i>Maricaella diana</i> Mendonça and Fernandes	Arlé (1962) de Mendonça and Fernandes (1997)	RJ Itatiaia, Mantiqueira Itatiaia	Dune, litter	NCB
<i>Rapportella pitomboi</i> Mendonça and Fernandes	de Mendonça and Fernandes (1995)	MG	Forest	NCB
<i>Brachystomellides compositus</i> Arlé	Arlé (1959a) Oliveira and Deharveng (1995)	RJ AM	Forest, humus	Neo
Neauridae				
<i>Friesea arlei</i> Massoud and Bellingier	Arlé (1966a)	MT	un	Neo
<i>F. cubensis</i> Potapov and Banasko	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	Neo
<i>F. josei</i> Palacios-Vargas	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	Neo
<i>Pseudachorutes bifasciatus</i> Oliveira and Deharveng	Oliveira and Deharveng (1994)	AM	Forest, soil	Amz
<i>P. gibbus</i> Oliveira and Deharveng	Oliveira and Deharveng (1994)	AM	Forest, soil	Amz
<i>P. herberti</i> Arlé and Rufino	Arlé and Rufino (1976), Arlé (1981)	AM	Forest humus	Amz
<i>P. massouadi</i> Arlé	Arlé (1966a, 1981)	AM	Forest, litter	Amz

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>Halachorutes schusteri</i> Arlé	Arlé (1966b, 1981)	PA, RJ	Littoral	Amz, NCB
<i>Pseudanurida sawayana</i> Schuster	Schuster (1965) Murphy (1971)	PE, SP no		Bor., Neo, Pal
<i>Aethiopella delamarei</i> Arlé	Arlé (1981)	PE	Littoral	Neo
<i>Arlesiella amazonica</i> Arlé	Arlé (1959a)	MG	Plant litter	
<i>Neotropiella arlei</i> Naji, Thibaud and Weiner	Arlé (1981)	RJ	Forest, litter	Amz
<i>N. carli</i> (Denis)	Arlé (1966a, 1981)	AM	Forest	Neo
	Oliveira and Deharveng (1995)	AM		
	Arlé (1960b)	AP		Neo
	Arlé (1962)	Amazônica region		
	Arlé (1966a, 1981)	AM, AP, PA	Forest, litter	NCB
<i>N. denisi</i> (Arlé)	Arlé (1939c)	RJ		
	Arlé (1962)	SE Brazil		
	Arlé (1981)	MT	Forest	Neo
<i>N. digitomacronata</i> Thibaud and Massoud	Oliveira and Deharveng (1995)	AM	Forest	
<i>N. meridionalis</i> (Arlé)	Arlé (1939c)	RJ		Neo
	Arlé (1962)	SE Brazil		
	Cassagnau and Rapoport (1962)	RJ		
	Arlé (1966a)	MG, PA, RJ		
	Arlé (1968)	PA		
<i>N. quinqueoculata</i> (Denis)	Oliveira and Deharveng (1995)	AM	Forest	Bor., Neo
	Arlé (1962)	Neotropical	un	
	Cassagnau and Rapoport (1962)	RJ		
	Arlé (1966a)	AM, AP, MT, PA, RJ		
<i>N. vanderdrifti</i> Massoud	Oliveira and Deharveng (1995)	AM	Forest	Neo
<i>Brasilmeria anura</i> (Arlé)	Arlé (1939c)	RJ		NCB
	Arlé (1959a)	RJ	Forest	
	Cassagnau and Rapoport (1962)	RJ		
	Arlé and Rufino (1976)	RJ		

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution
<i>B. wygodzinskiyi</i> (Arlé)	Arlé (1943) Arlé (1959a, 1962) Arlé and Rufino (1976)	RJ Serra da Mantiqueira MG	Forest	NCB
<i>Arlésia albipes</i> (Folsom)	Arlé (1962) Arlé (1966a)	Neotropical PA, PE, RJ, MG?	Forest	Neo
<i>A. arleana</i> Mendonça and Fernandes	Arlé and Rufino (1976) Arlé and Rufino (1976) de Mendonça and Fernandes (1999)	PA PE PE	Forest litter	NCB
<i>A. fluminensis</i> (Arlé)	Arlé (1939c) Arlé (1962)	RJ SE Brazil	Forest	NCB
<i>A. proxima</i> (Arlé)	Arlé and Rufino (1976) Arlé (1962)	RJ SE Brazil	Forest	NCB
<i>Kenyura delicata</i> Arlé	Arlé and Rufino (1976) de Mendonça and Fernandes (1999)	RJ SP	Forest	
<i>K. porculus</i> (Arlé)	Arlé (1966a, 1981)	AM	Forest, litter	Amz
<i>K. xinguensis</i> Arlé	Arlé (1959a, 1981)	RJ	Forest, litter	NCB
<i>Furcutanurida belemensis</i> Arlé and Rufino	Arlé (1966a, 1981) Arlé and Rufino (1976)	MT PA	Forest litter Forest soil	NCB Amz
<i>F. goeldiana</i> Arlé and Rufino	Arlé and Rufino (1976)	PA	Litter	Amz
<i>Anurida maritima</i> (Guerin)	Arlé (1959b) Schuster (1962) Schuster (1965) Arlé (1966b)	Brazilian coast no PE, SP RJ		Cos
<i>Hylaenura infima</i> (Arlé)	Arlé (1981) Arlé (1959a, 1962) Arlé (1966a) Arlé (1968)	ES, RJ, SP MT AM, MT, PA PA	Littoral Scrubland, soil Forest litter	Neo
<i>Pronura amazonica</i> Cassagnau and Oliveira	Oliveira and Deharveng (1995) Cassagnau and de Oliveira (1990)	AM AM	Forest, litter	Amz
<i>Paleonura brasiliensis</i> (Arlé)	Arlé (1959a)	MG	Scrubland	NCB

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>P. nuda</i> Cassagnau and Oliveira	Cassagnau and de Oliveira (1990)	AM	Forest	Amz
Onychiuridae				
<i>Onychiurus cunhai</i> Arlé	Arlé (1970)	PA	Forest	Neo
<i>O. fernandae</i> Oliveira and Thibaud	Rufino and Schubart (1974)	AM	Soil	
<i>Protaphorura cryptopyga</i> (Denis)	Oliveira and Thibaud (1992)	PA	Forest litter	Amz
Tullbergiidae				
<i>Tullbergia minensis</i> Arlé	Cassagnau and Rapoport (1962)	RJ	un	Neo, Pal
<i>Mesaphorura amazonica</i> Oliveira and Thibaud	Arlé (1959a)	MG	Forest litter	NCB
<i>M. iowensis</i> Mills (= <i>M. kraushaueri</i> Börner)	Oliveira and Thibaud (1992)	AM	Forest litter	Amz
<i>M. yosii</i> (Rusek)	Palacios-Vargas and Diaz (1996)	SP	Cave	Cos
(as <i>M. yosii</i> (sic) (Rusek))	Palacios-Vargas and Diaz (1996)	SP	Cave	Cos
<i>Mesaphorura</i> sp. gr. <i>atlantica</i>	Oliveira and Thibaud (1992)	AM	Forest	
<i>Fissuraphorura cubanica</i> Rusek	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	
Isotomidae				
<i>Isotomodes carioca</i> Thibaud and Palacios-Vargas	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	NCB
<i>I. trisetosus</i> Denis	Oliveira and Deharveng (1995)	AM	Forest	Bor, Neo, Pal
<i>Folsomides centralis</i> (Denis)	Arlé (1939a)	ES	Forest	Cos
<i>F. parvulus</i> Stach (as <i>F. americanus</i> Denis)	Oliveira and Deharveng (1995)	AM	Forest	Cos
	Mendonça (1984)	PA, RJ	Forest	
<i>Cryptopygus pentatomus</i> (Börner)	Oliveira and Deharveng (1995)	AM		
* <i>Archisotoma</i> cf. <i>besselsii</i> (Packard)	Börner (1906)	no (São Francisco)	un	Brazil
(as <i>Archisotoma</i> sp. of <i>besselsii</i> group)	Srenzke (1958)	RJ	Littoral	
<i>Archisotoma gourbaudae</i> Thibaud	Arlé (1959b)	RJ	Littoral	Bor, Neo
<i>Yosiella mira</i> Hüther	Thibaud and Palacios-Vargas (2001)	RJ	Littoral	Amz
	Hüther (1967)	no		
	Oliveira and Deharveng (1995)	AM	Forest	

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>Folomia candida</i> Willem	Massoud and Rapoport (1968)	no	un	Cos
<i>F. wellingdae</i> Potapov and Culik	Potapov and Culik (2002)	ES	Agricultural	NCB
<i>Folomia onychurina</i> Denis	Arlé (1939a) Oliveira and Deharveng (1995)	ES AM	Forest	Cos
<i>Proisotoma minuta</i> (Tullberg)	Thibaud and Palacios-Vargas (1999) Moniez (1894) Denis (1923)	ES, RJ no (see Denis 1923) RJ	Littoral	Cos
<i>P. oliveirae</i> Deharveng	Deharveng (1984)	AM	un	Amz
<i>P. ramosi</i> Arlé	Thibaud and de Oliveira (1988) Arlé (1959a)	AM MG-SP border	Plant litter	Neo
<i>P. subminuta</i> Denis	Arlé (1960a) de Mendonça and dos Reis (1990)	RJ un (S. Brazilian)	Forest	Bor, Neo
<i>P. tenella</i> (Reuter)	Arlé (1970) de Mendonça and dos Reis (1990)	PR, RJ ES, PE	un	Aus, Bor, Neo
<i>Isotomurus palustris</i> (Müller) (as var. <i>balteatus</i>)	Arlé (1939a)	ES, PE	un	Cos
(as <i>Isotomus palustris</i> (sic))	da Costa (1961)	BA	Seedbed	
<i>I. pseudosensillatus</i> Mendonça	de Mendonça (1990)	CE	Scrubland, litter	NCB
<i>I. riparius</i> Mendonça	de Mendonça (1990)	RJ	Duneland	NCB
<i>Clavisotoma filifera</i> (Denis) (as <i>Proisotoma</i>)	de Mendonça and dos Reis (1991)	un	un	Aus, Bor, Neo
<i>C. fitchi</i> (Denis) (as <i>Proisotoma</i>)	Arlé (1939a)	ES	Lichen, Moss	Bor, Neo, Pal
<i>Isotomiella amazonica</i> Oliveira and Deharveng	de Mendonça and dos Reis (1990) Oliveira and Deharveng (1990)	RJ AM	Forest, litter	Amz
<i>I. arlei</i> Oliveira and Deharveng	Oliveira and Deharveng (1990)	AM	Forest	Amz
<i>I. barrai</i> Deharveng and Oliveira	Deharveng and Oliveira (1990)	AM	Forest	Amz
<i>I. digitata</i> Deharveng and Oliveira	Deharveng and Oliveira (1990)	RO	Forest	NCB
<i>I. duplisseta</i> Deharveng and Oliveira	Deharveng and Oliveira (1990)	AM	Forest, soil	Amz
<i>I. granulata</i> Oliveira and Deharveng	Oliveira and Deharveng (1990)	AM, RO	Forest	Amz, NCB

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>I. minor</i> (Schäffer)	Arlé (1939a)	ES	un	Cos
<i>I. nummifer</i> Deharveng and Oliveira	Deharveng and Oliveira (1990)	AM	Forest, soil	Amz, Pal
<i>I. quadriseta</i> Deharveng and Oliveira	Deharveng and Oliveira (1990)	AM	Forest, litter	Amz
<i>I. sensillata</i> Oliveira and Deharveng	Oliveira and Deharveng (1990)	AM, RO	Forest, litter	Amz, NCB
<i>I. similis</i> Oliveira and Deharveng	Oliveira and Deharveng (1990)	AM	Forest, litter	Amz
<i>I. spinifer</i> Deharveng and Oliveira	Deharveng and Oliveira (1990)	AM	Forest soil	Amz
<i>I. symmetriconata</i> Najt and Thibaud (as <i>I. prussiana</i>)	Oliveira and Deharveng (1990)	AM	Forest, litter	Neo, Pal
* <i>Axelsohia littoralis</i> (Montez)	Arlé (1959b)	Brazilian coast	Littoral	Aus, Bor, Neo
<i>A. tubifera</i> Stenzke	Stenzke (1958)	SP	Littoral	Neo
	Schuster (1965)	un		
	Arlé (1939b)	RJ	Forest	NCB
<i>Arlea lucifuga</i> (Arlé)	Arlé (1960a)	RJ		
	de Mendonça and Arlé (1987)	MG, RJ		
<i>A. spinisetis</i> Mendonça and Arlé	de Mendonça and Arlé (1987)	CE	Scrubland	NCB
<i>Najtia vicaria</i> (Arlé)	Arlé (1959a)	RJ	Forest debris	NCB
	Arlé and Mendonça (1986)	RJ		
<i>Paracerra itaitaiensis</i> (Arlé)	Arlé (1959a)	RJ	un	NCB
<i>P. virgata</i> Deharveng and Oliveira	Deharveng and de Oliveira (1994)	AM	Forest	Amz
<i>Desoria trispinata</i> (MacGillivray)	Mendonça (1980)	no (RJ, Cabral 1994)	un	Bor, Neo, Pal
<i>Isotoma (Pseudosorensta) Izarra</i> sp. Entomobryidae	Thibaud and Palacios-Vargas (1999)	RJ	Littoral	-
* <i>Dicranocentrus bicolor</i> Handschin	Handschin (1924)	no	un	Pam
<i>D. heloisae</i> Arlé and Mendonça	Arlé and Mendonça (1982)	RJ	Forest litter	NCB
* <i>D. silvestrii</i> Absolon	Cassagnau (1963)	RJ		Neo
	Arlé and Mendonça (1982)	RJ	Forest	
(as var. <i>annulata</i>)	Börner (1906)	no (São Francisco)		
* <i>D. termitophilus</i> Handschin	Handschin (1924)	no	un	NCB
<i>Mastigoceras camponoti</i> Handschin	Handschin (1924)	no (see Stach 1935)		NCB
	Stach (1935)	MG	Ant nest	Amz, NCB
	Cassagnau (1963)	RJ		
	Mari Mutt (1978)	SP		
	Cassagnau and de Oliveira (1992)	AM	Forest	

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>Entomobrya aipatse</i> Arlé	Arlé (1959a)	MT	Scrubland, litter	NCB
<i>E. ataquensis</i> Arlé	Arlé (1959a)	MG-SP border	On plants	NCB
<i>E. decora</i> (Nicolet)	Christiansen (1963)	RJ	Duneland	Neo
<i>E. eglei</i> Arlé and Guimarães	Arlé and Guimarães (1978)	PA	Forest	Amz
<i>E. inaequalis</i> Denis	Oliveira and Deharveng (1995)	AM		
<i>E. parvora</i> Arlé and Guimarães	Denis (1924)	no	un	NCB
<i>E. spectabilis</i> Reuter	Arlé and Guimarães (1978)	PA	Littoral	Amz
	Reuter (1892)	Reuter (1892) cited in Mari Mutt and Bellingier (1990) possibly refers to Reuter (1891) (F.N. Soto-Adames, personal communication)		
	Reuter (1895)	un		
<i>E. tupiana</i> Arlé	Kraepelin (1901)	San Francisco	On plant	Bor, NCB?
<i>E. uambae</i> Arlé	Arlé (1939b)	RJ	Forest	NCB
	Arlé (1959a)	MT	Forest	Amz, NCB
<i>E. wasmanni</i> Handschin	Oliveira and Deharveng (1995)	AM		
<i>Nothobrya schubarri</i> Arlé	Handschin (1924)	no	un	Neo
<i>Setra annulata</i> (Handschin)	Arlé (1961)	PE, PI	Lagoon	NCB
<i>S. atrolutea</i> (Arlé)	Christiansen and Bellingier (2000)	SP	un	Neo
	Arlé (1939d)	MS, SP	un	NCB
<i>S. brasilitana</i> (Arlé)	Christiansen and Bellingier (2000)	Species 'unplaceable'		
<i>S. eidmanni</i> (Stach)	Arlé (1939d)	MS, RJ, SP	un	Bor, Neo
	Stach (1935)	RJ	Ant nest	NCB
	Arlé (1939a)	RJ	Tree bark	
	Christiansen and Bellingier (2000)	SP		

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>S. melloi</i> (Arlé)	Arlé (1939a)	ES, RJ	Lichen, moss	NCB
<i>S. mirianae</i> Arlé and Guimarães	Arlé and Guimarães (1981a)	RJ	Duneland	NCB
* <i>S. musarum</i> Ridley	Ridley (1890)	F. de Noronha II.	On plant	NCB
<i>S. nigrans</i> (Arlé) (as <i>Ctenocyrtinus</i>)	Arlé (1959a)	MT	Scrubland	NCB
<i>S. nunezae</i> Christiansen and Belling	Christiansen and Belling (2000)	Possible variant of <i>S. prodiga</i>		
<i>S. paranensis</i> (Stach)	Christiansen and Belling (2000) Stach (1935)	MS, SP PR	Litter, soil un	NCB NCB
<i>S. prodiga</i> (Arlé) (as <i>Ctenocyrtinus</i>)	Christiansen and Belling (2000) Arlé (1959a)	Species 'unplaceable' MT, PE, RJ	Forest	NCB
<i>S. pulcher</i> (Handschin)	Handschin (1924)	no (SC, Christiansen)	un	Bor., Pam
<i>S. reichenspergeri</i> (Handschin)	Christiansen and Belling (2000)	= 'Drepanosira (Desertia) pulchra'		
* <i>S. subannulata</i> (Denis)	Handschin (1924)	no (SC, Christiansen and Belling 2000)	un	Pam
<i>Lepidosira tapuia</i> Arlé and Guimarães	Arlé (1939a)	ES, RJ	Lichen, moss	Neo
<i>L. villasboasi</i> Arlé and Guimarães	*Christiansen and Belling (2000) Arlé and Guimarães (1980)	Considered 'a questionable species'		
<i>Lepidocryus pallidus</i> Reuter	Arlé and Guimarães (1981b) Kraepelin (1901)	RJ	Forest	NCB
<i>Pseudosinella brevicornis</i> Handschin	Börner (1907)	RS	Forest	NCB
Paronellidae	Handschin (1924)	no (S. Brazilian)	un	NCB
* <i>Salina celbensis</i> (Schäffler)	Cassagnau (1963)	RJ	Forest	Bor., Neo, Pal
<i>Paronellides aticoctus</i> (Arlé)	Arlé (1939b)	RJ	Forest, leaf litter	NCB
<i>Campylothorax cassagnau</i> Mitra and Dallai	Arlé (1960a) Cassagnau (1963)	un RJ	un	Neo
<i>C. schaefferi</i> Börner	Börner (1906)	no (see Mitra and Dallai 1980)		
<i>Trogolophysa aelleni</i> Yoshii	Mitra and Dallai (1980)	São Francisco	Forest	Amz., Pam?
<i>T. hauseri</i> Yoshii	Oliveira and Deharverg (1995)	AM	Cave	NCB
<i>T. hirtipes</i> (Handschin)	Yoshii (1988) Yoshii (1988)	SP SP	Cave	NCB
	Handschin (1924)	no		Neo
	Cassagnau (1963)	RJ	Forest	

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>T. millsi</i> (Arlé)	Arlé (1939b)	RJ	Forest	NCB
* <i>T. tijucana</i> (Arlé and Guimarães)	Arlé and Guimarães (1979) Thibaud and Nijt (1988)	RJ	Forest	NCB
<i>Troglobius brasiliensis</i> Palacios-Vargas and Zeppelini	Palacios-Vargas and Zeppelini (1995a)	Species of uncertain status PA, SP	Cave	Amz, NCB
Cyphodoridae				
<i>Cyphoderus agnotus</i> Börner	Cassagnau (1963)	PE	Forest	Bor?, Neo
<i>C. arlei</i> Cassagnau	Cassagnau (1963)	RJ	un	NCB
<i>C. inominatus</i> Mills	Cassagnau (1963)	PE, RJ	Duneland	Neo
<i>Cyphoderodes xenopus</i> Börner	Börner (1913)	RS	Myrmecophil	NCB
Oncopoduridae				
<i>Oncopodura hyleana</i> Arlé	Arlé (1960a)	AP	Forest, litter	Amz
<i>O. itaitensis</i> Arlé	Arlé (1960a)	RJ	Forest, litter	NCB
Neelidae				
<i>Megalothorax minimus</i> Willem	Arlé (1959b)	PA	un	Cos
Smithurididae				
<i>Smithurides macroceros</i> Arlé	Arlé (1961)	MT	Lake	NCB
<i>Sphaerida berschi</i> Arlé	Arlé (1984)	RJ	Forest	NCB
<i>S. biniserrata</i> (Salmon)	Arlé (1984)	MG, RJ	un	NCB, Pal
<i>S. boetigeri</i> Brefeld and Gauer	Brefeld and Gauer (1994)	AM	Forest	Amz
<i>S. cardosi</i> Arlé	Arlé (1984)	RJ	Forest	NCB
<i>S. carioica</i> Arlé	Arlé (1984)	RJ	Forest	NCB
<i>S. cerastes</i> Brefeld and Gauer	Brefeld and Gauer (1994)	AM	Forest	Amz
<i>S. clara</i> Brefeld and Gauer	Brefeld and Gauer (1994)	AM	Forest	Amz
<i>S. coronata</i> Brefeld and Gauer	Brefeld and Gauer (1994)	AM	Forest	Amz

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
<i>S. fibulifera</i>	Bretfeld and Gauer (1994)	AM	Forest	Amz
<i>S. fluminensis</i> Arlé	Arlé (1984)	RJ	Forest	NCB
<i>S. franklinae</i> Bretfeld and Gauer	Bretfeld and Gauer (1994)	AM	Forest	Amz
<i>S. heloisae</i> Arlé	Arlé (1984)	RJ	Forest	NCB
<i>S. imleri</i> Bretfeld and Gauer	Bretfeld and Gauer (1994)	AM	Forest	Amz
<i>S. marrii</i> Bretfeld and Gauer	Bretfeld and Gauer (1994)	AM	Forest	Amz
<i>S. parvora</i> Arlé	Arlé (1984)	PA	un	Amz
<i>S. pilzeata</i> Bretfeld and Gauer	Bretfeld and Gauer (1994)	AM	Forest	Amz
<i>S. pumilis</i> (Krausbauer)	Arlé (1984)	AM	un	Cos
<i>S. robusta</i> Bretfeld and Gauer	Bretfeld and Gauer (1994)	AM	Forest	Amz
<i>S. squamifera</i> Bretfeld and Gauer	Bretfeld and Gauer (1994)	AM	Forest	Amz
Katamiidae				
<i>Sminthurinus molinae</i> Arlé	Arlé (1940)	RJ	Plant litter	NCB
Sturmiidae				
<i>Sturmus truncativus</i> Bretfeld and Gauer	Bretfeld and Gauer (1999)	AM	Forest	Amz
Arrhopalitidae				
<i>Arrhopalites amorini</i> Palacios-Vargas and Zeppelini	Palacios-Vargas and Zeppelini (1995b)	SP	Cave	NCB
<i>A. gnaspinius</i> Palacios-Vargas and Zeppelini	Palacios-Vargas and Zeppelini (1995b)	SP	Cave	NCB
<i>A. lawrencei</i> Palacios-Vargas and Zeppelini	Palacios-Vargas and Zeppelini (1995b)	SP	Cave	NCB
<i>A. papaveroi</i> Zeppelini and Palacios-Vargas	Zeppelini Filho and Palacios-Vargas (1999)	MS	Cave	NCB
<i>A. wallacei</i> Palacios-Vargas and Zeppelini	Palacios-Vargas and Zeppelini (1995b)	SP	Cave	NCB
Dicyrtomidae				
<i>Ptenothrix brasiliensis</i> Deboutteville and Massoud	Delamare Deboutteville and Massoud (1963)	no (S. Brazilian)	un	NCB
<i>P. utingae</i> Arlé and Guimarães	Arlé and Guimarães (1976)	PA	Forest	Amz

Table 1. (Continued)

Family species ^a	Reference ^b	Brazilian distribution ^c	Habitat example ^d	World distribution ^e
Bourletiellidae				
<i>Deuteromithurus separatus</i> Arlé	Arlé (1943)	RJ	On plant	NCB
<i>Arlesmithurus aucti</i> (Arlé) (as <i>Deuteromithurus</i>)	Palacios-Vargas and González (1995) Arlé (1961)	MT	Lake	Amz, NCB
<i>A. richardsi</i> (Arlé) (as <i>Deuteromithurus</i>)	Arlé (1971)	MT, PA	Plant litter	Amz
<i>A. salinensis</i> (Arlé) (as <i>Deuteromithurus</i>)	Arlé (1971)	PA	Littoral	Amz
<i>Pseudobourletiella spinata</i> (MacGillivray)	Arlé (1971)	PA	Aquatic plants	Amz, Bor
Smithuridae				
<i>Temeritis amazonensis</i> Arlé and Oliveira	Arlé and de Oliveira (1977)	PA	Forest	Amz
<i>T. caatingae</i> Arlé and Oliveira	Arlé and de Oliveira (1977)	BA	Scrubland	NCB
<i>T. ormondiae</i> Arlé and Oliveira	Arlé and de Oliveira (1977)	PA	Forest	Amz
<i>T. surinamensis</i> Deboutteville and Mas-soud	Arlé and de Oliveira (1977)	MA, PA	Forest	Neo
<i>T. tucumanensis</i> Deboutteville and Mas-soud	Arlé and de Oliveira (1977)	MS	On mushrooms	Neo
<i>Smithurus rosati</i> Arlé	Arlé (1939a)	ES	un	NCB

^aIndicates dubious records and species of uncertain status according to Mari Mutt and Bellinger (1990) or as otherwise noted. ^bReferences; abbreviations of authors names for references are listed in Table 2. ^cBrazilian distribution: locality abbreviations refer to Brazilian states as listed in Table 3. 'no' indicates that the reference was not obtained. Probable locality information is indicated in parentheses if obtained from sources other than the original reference cited. '?' following the state abbreviation indicates that the indicated state record for the species is questionable. 'un' indicates that the Brazilian collection locality is unspecified or unknown. ^dHabitat example: for each species, a representative example of the type of habitat in which the species has been found is listed if provided in one of the references cited. 'un' indicates that a habitat was unspecified or is unknown. ^eWorld distribution: the World biogeographic distribution for each species (based on Bellinger et al. (1996–2001) and the original Brazilian records cited) is abbreviated as: Bor = Boreal, species found in at least one of biogeographic regions 1–8; Pal = Palearctic, found in at least one of regions 9–23; Neo = Neotropical, found in Brazil and at least one of the other regions 24–30; SAF = South African, region 31; Aus = Australian, found in at least one of regions 32–34; Ant = Antarctic, found in at least one of regions 35–37; Cos = Cosmopolitan, found in four or more of the major regions (Boreal etc.) above. The distribution of species known only from Brazil is abbreviated as Amz, NCB, or Pam, corresponding to records from biogeographic regions 26 (Amazon), 27 (South Brazil, herein referred to as Northeast and Central Brazil), and 29 (Pampas), respectively (biogeographic regions as designated by Bellinger et al. 1996–2001). A '?' following the distribution abbreviation indicates that the indicated distribution record for the species is questionable.

Table 2. Abbreviations of names of authors cited in Table 1.

Abbreviation	Author
Ar	Arlé, R.
Be	Bellinger, P.F.
Bö	Börner, C.
Br	Bretfeld, G.
Ca	Cabral, R.S.
Cs	Cassagnau, P.
Ch	Christiansen, K.
Co	Costa, J.M. da
Cu	Culik, M.
Da	Dallai, R.
Dh	Deharveng, L.
DD	Delamare Debouteville, C.
Dn	Denis, J.R.
Dí	Díaz, M.
Fe	Fernandes, L.H.
Gm	Gama, M.M. da
Ga	Gauer, U.
GN	Gnaspini-Netto, P.
GA	Gómez-Anaya, J.A.
Go	González, V.
Gu	Guimarães, A.É.
Ha	Handschin, E.
Hü	Hüther, W.
Kr	Kraepelin, K.
La	Lawrence, P.N.
MM	Mari Mutt, J.A.
Ma	Massoud, Z.
Me	Mendonça, C., C. de, M.C. de
Mi	Mitra, S.K.
Mo	Moniez, R.
Mu	Murphy, D.H.
Na	Najt, J.
Ol	Oliveira, E., E. de, E.P., E.P. de
OM	Oliveira, M.M. de
PV	Palacios-Vargas, J.G.
Po	Potapov, M.
Ra	Rapoport, E.H.
Re	Reis, S.F. dos
Rt	Reuter, O.M.
Ri	Ridley, H.N.
Ru	Rufino, E., Rufino, E.O.
Sc	Schubart, H.O.R.
Ss	Schuster, R.
St	Stach, J.
Sz	Strenzke, K.
Th	Thibaud, J.-M.
Yo	Yoshii, R.
Ze	Zeppelini, D., Zeppelini Filho, D.

Nomenclature and systematic organization follow that of Bellinger et al. (1996–2001), with the exception that we place Neelidae in Symphypleona (Bretfeld 1986).

All references cited were reviewed to determine the Brazilian collection location and habitat information for each species recorded from Brazil, except for 11 references that could not be obtained. To provide a general idea of the different types of habitats in which the various species have been found, an example of the habitat in which each species has been collected is listed, if known, in Table 1 in the column ‘Habitat example’. However, the habitat information listed in the table for each species is not all-inclusive and original publications should be consulted for more detailed, specific habitat information.

Information on the world biogeographical distribution of each species is based on Bellinger et al. (1996–2001) and the original Brazilian reference record cited. For purposes of summarizing the data and discussion, the biogeographical regions of Christiansen and Bellinger (1995) are grouped into broader regions similar to those proposed by Good (1947), as cited by Woodward (1997), as follows: Boreal, regions 1–8; Neotropical, regions 24–30; South African, region 31; Paleotropical, regions 9–23; Australian, regions 32–34; and Antarctic, regions 35–37. Species found in four or more of the major regions (Boreal etc.) above are considered cosmopolitan. The distribution of species known only from Brazil is indicated in Table 1 for the biogeographic regions that include Brazil: 26, Amazon; 27, South Brazilian, herein referred to as Northeast and Central Brazil; and 29, Pampas (biogeographic regions as designated by Bellinger et al. 1996–2001).

It is important to note that the term ‘South Brazilian’ used to refer to biogeographic region 27 (Bellinger et al. 1996–2001) is misleading, since the region in fact includes a major part of Brazil from the northeast to central-west and southeast, and the biogeographic region 29 actually includes the southernmost Brazilian states of Santa Catarina and Rio Grande de Sul. Therefore, in the present publication we prefer to refer to the biogeographic region 27 as Northeast and Central Brazil (NCB) to more accurately describe the region.

Results

The total number of Collembola species that we found recorded from Brazil as of May 2002 is 199, distributed among 19 families and 80 genera of Collembola, Tables 1 and 4 (because of uncertainty regarding the records, *Xenylla subcavernarum*, *Mesogastrura* cf. *ojcoviensis*, *Mesophorura* sp. gr. *atlantica*, *Archisotoma* cf. *besselsii* and *Archisotoma* sp. of the *besselsii* group, and *Isotoma* (*Pseudosorensia*) sp. listed in Table 1 are not included in this total of 199 and will not be considered in the further discussion). Of the 199 species, the greatest numbers of species are known from the Brazilian states of Amazonas and Rio de Janeiro (with 56 and 69 species, respectively), with few (< 10) or no species known from most (18) states (Table 3).

Of the species for which the environment of their habitat was indicated, 93 (66%) are known only from forest environments (for 58 of the collembolan species (29%)

Table 3. Abbreviations of names of the Brazilian states and Federal District with the number of Collembola species reported^a in and regional location^b of each state.

Abbreviation, state	No. of species	Region
AC, Acre	nr	N
AL, Alagoas	nr	NE
AP, Amapá	3	N
AM, Amazonas	56	N
BA, Bahia	3	NE
CE, Ceará	2	NE
DF, Distrito Federal	nr	CW
ES, Espírito Santo	11	SE
GO, Goiás	nr	CW
MA, Maranhão	1	NE
MT, Mato Grosso	12	CW
MS, Mato Grosso do Sul	6	CW
MG, Minas Gerais	10	SE
PA, Pará	25	N
PB, Paraíba	nr	NE
PR, Paraná	3	S
PE, Pernambuco	12	NE
PI, Piauí	1	NE
RJ, Rio de Janeiro	69	SE
RN, Rio Grande do Norte	nr	NE
RS, Rio Grande do Sul	2	S
RO, Rondônia	4	N
RR, Roraima	nr	N
SC, Santa Catarina	2	S
SP, São Paulo	23	SE
SE, Sergipe	nr	NE
TO, Tocantins	nr	N

^aThe table does not include two species collected from the border of Minas Gerais and São Paulo, nr = no record found. ^bBrazilian regional designations: N = North, NE = Northeast, CW = Central-west, SE = Southeast, S = South.

the environment of the habitat in which they were collected was not specified, or is unclear from the published record). Besides forests, a few species have also been recorded from each of a diverse variety of other environments, ranging from scrub and dune land to aquatic and littoral (Table 1). Of the 199 species of Collembola in Brazil, 127 species (64%) are known only from Brazil; 33 species (17%) are known only from Brazil and other neotropical areas; and 39 species (20%) have a known distribution beyond the neotropical region (Table 4).

Discussion

Since the initial published record of Collembola from Brazil approximately 100 years ago (Ridley 1890), at least 47 scientists have contributed to a knowledge of almost 200 Collembola species from this country in ~100 publications. These species have been described from 18 of Brazil's 26 states, in environments ranging

Table 4. Number of Collembola species known from Brazil by family and biogeographic distribution.

Family	Species (no.)			
	Total	Known distribution		
		Brazil only	Brazil and neotropical only	Brazil and beyond neotropical
Hypogastruridae	11	6	1	4
Odontellidae	1	1		
Brachystomellidae	13	5	6	2
Neanuridae	34	20	11	3
Onychiuridae	3	1	1	1
Tullbergiidae	5	2	1	2
Isotomidae	41	21	3	17
Entomobryidae	34	25	5	4
Paronellidae	10	7	2	1
Cyphoderidae	4	2	1	1
Oncopoduridae	2	2		
Sminthuridae	20	18		2
Katiannidae	1	1		
Strumiidae	1	1		
Arrhopalitidae	5	5		
Dicyrtomidae	2	2		
Bourletiellidae	5	4		1
Sminthuridae	6	4	2	
Neelidae	1			1
Total	199	127	33	39

from coastal beaches to mountain forests. Although these records provide an excellent base for future research on Collembola in Brazil, together they also demonstrate the extreme lack of and need for information on the Collembola of Brazil, and the great opportunities for research on these environmentally important organisms in this region. The records are commonly found in reports and descriptions of new species and almost none report results in any type of systematic survey of Collembola species for any specific location or environment in Brazil. It is also notable that except for one, none report results of samples from agricultural field sites.

Although the number of species of Collembola known from Brazil is relatively low, the record demonstrates that the Brazilian collembolan fauna is very diverse, containing 199 species belonging to at least 19 families and 80 genera. However, it is likely that the great diversity of Collembola species in Brazil is largely unknown. Mari Mutt and Bellinger (1990, 1996) and Mari Mutt et al. (1996–2001) list a total of approximately 1200 neotropical Collembola species of which, despite the great biological diversity of this country (for example Mori 1989; Mittermeier 1997; Raven 1997; Thomaz and Monteiro 1997), only 199 have been recorded from Brazil. In contrast, at least 812 Collembola species are known from North America (Christiansen and Bellinger 1998). Worldwide, ~7500 Collembola species have been described and the estimated total number of Collembola species is 50000 (Bellinger et al. 1996–2001). Thus, the currently known number of Brazilian

species is comparatively low and it is likely that Brazil contains a much greater number of Collembola species, including a large proportion of the world's undescribed species.

The greatest numbers of Collembola species in Brazil are known from the states of Amazonas in the northern and Rio de Janeiro in the southeastern regions of Brazil, which no doubt reflects the fact that these states are the locations of two of the major centers of studies of Collembola in Brazil, in the cities of Manaus and Rio de Janeiro, respectively. In contrast, almost nothing is known of the collembolan fauna of major Brazilian regions of the northeast, central-west, and south. Thus the fact that state records reflect collection (and identification) efforts rather than real differences in regional diversity is indicated by studies such as Cabral (1994) and Culik et al. (2000), which demonstrated the high number of taxa present in areas in which currently few species have been identified. However, given the importance of knowledge of the fauna of Amazon and Atlantic forest environments located in the north and southeast regions, respectively, additional research in these, as well as the other regions of Brazil is warranted.

Although the records of Collembola in Brazil reflect their occurrence in the diverse variety of habitats in which they are known to occur worldwide, most of the Brazilian species are known only from forest environments and there are few records of Collembola from other types of environments in Brazil (Caatinga, Cerrado, Pampa, Pantanal, etc.). Because of the influence of Collembola on soil fertility (Hopkin 1997; Larink 1997), the lack of information on Collembola species inhabiting agricultural soils is especially notable and is being addressed in current research (Culik et al. 2000; Potapov and Culik 2002).

Of the 33 species of Collembola known only from Brazil and other neotropical areas (designated 'Neo' in Table 1), most of the species (25, 76%) are known to have a true (broad) neotropical distribution ranging from the Caribbean mainland or Antillean and S. Florida biogeographic regions (regions 24a and 24b, respectively; Bellinger et al. 1996–2001) to Brazil (an additional species with a questionable occurrence in region 24a may also be included in this group). The other seven neotropical species (*Austrogastrura travassosi*, *Folsomiella albida*, *Neotropiella arlei*, *Proisotoma ramose*, *Entomobrya wasmanni*, *Temeritas surinamensis*, and *T. tucumanensis*) are known only from Brazil and the neighboring or nearby countries of Argentina, Peru, French Guiana, Suriname, and Chile, and thus may be more specifically regarded as South American. It is notable that of those species found only in Brazil and other neotropical areas, most are truly neotropical and not restricted only to nearby, neighboring countries. And, the number of neotropical species known only from Brazil and other neotropical areas (33) is about equal to the number of species known from Brazil that have a more widespread distribution beyond the neotropics (39).

In the present work we list 127 species of Collembola that have been recorded only from Brazil (64% of the total known) and which are thus apparently endemic to the country. There are several reasons for the high number (and percentage) of apparently endemic Brazilian Collembola species. First, as can be seen from the references listed in this publication, research on Collembola in Brazil has focused on

the description of new species (as in any previously unexplored area, such efforts are required as a basis for any future research) and almost no studies have been done to describe entire communities or all of the specific inhabitants of specific environments or habitats. In most cases where communities have been studied (for example Cabral 1994; Guimaraes et al. 1999) the fauna has not been identified beyond genus. In other words, there has been almost no ecological research in which more widespread species would be recorded and as a consequence few or no records of widespread, 'known' species, if present, have been made. In addition, it is also likely that research on Collembola in neighboring countries, most likely to contain species also found in Brazil, has been lacking (Mari Mutt and Bellinger 1990). Although the above factors may contribute to some of the apparent high endemism of the Brazilian collembolan fauna, it is also likely that the Collembola fauna of Brazil contains a high number of truly endemic species, corresponding to the great biological diversity in this country. Thus, we conclude that many of the collembolan species currently only known from Brazil are truly endemic. Only continued research will determine what percentage of the Brazilian collembolan fauna is endemic (and what percentage is being lost due to current environmental changes in Brazil). In any case, the high number of apparent endemic species is an indication of the importance of Brazilian Collembola in the neotropical area and suggests results likely to be obtained in future research. It also indicates the great need for further collection and taxonomic work in Brazil, which is required and essential to better understand the distribution and diversity of Collembola in general.

In conclusion, results of this study indicate that despite great past efforts, given the immensity of the task, very little is in fact known of the Collembola fauna of Brazil. This is especially true for vast areas of the northeast, central-west, and south regions as well as for areas in the north and southeast. There have been almost no studies reporting the species composition of collembolan communities in any environment in Brazil and there are no studies reporting what Collembola species inhabit agricultural soils in Brazil. Clearly there is a great need and many opportunities for additional research on these environmentally important organisms in Brazil. The great diversity of Collembola species in Brazil is largely unknown and it is only through continued, dedicated, careful research, such as that represented in the research publications listed in the present work, that such biological diversity will be documented and a better understanding of the neotropical and world Collembola fauna obtained.

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