



## Article

# Actual State of Knowledge of the Limno-Terrestrial Tardigrade Fauna of the Republic of Argentina and New Genus Assignment for *Viridiscus rufoviridis* (du Bois-Reymond Marcus, 1944)

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**Abstract:** Limno-terrestrial tardigrades of Argentina had been studied starting in 1908 and for a long time by European researchers, most frequently in the Patagonian region (incl. the Land of Fire). Starting during the 1980s, Claps, Rossi and collaborators published many surveys, studying other regions also, but with taxonomic criteria at that time. Since the 2000s, methodical and continuous studies using more modern criteria, have been carried out at the National University of La Pampa, contributing to the faunistic, taxonomic and ecological knowledge (including new species descriptions). This paper provides a comprehensive list of the limno-terrestrial tardigrade fauna reported from Argentina, with pertinent evaluations, owing to a careful study of every pertinent piece of literature since 1908, also solving some problems of discordance between the main past checklists. Summarizing, 39 genera and 119 species are present; of these, 72 represent records accepted by the literature, while 47 are records questioned in the literature but which represent distinct taxa surely present in Argentina; 14 additional taxa, instead, are clearly dubious. The authors also report the correct genus assignment to *Viridiscus rufoviridis* (du Bois-Reymond Marcus, 1944), which now becomes *Barbaria rufoviridis* comb. nov.

**Keywords:** Neotropics; South America; faunistics; taxonomy; checklists; *Barbaria*; *Viridiscus*; *Barbaria rufoviridis* comb. nov.



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## 1. Introduction

The phylum Tardigrada consists of over 1400 species [1] that inhabit terrestrial, freshwater and marine environments throughout the world. In terrestrial habitats they live primarily in mosses, lichens, leaf litter and soil, whereas in freshwater and marine environments tardigrades are found mainly in sediments and on aquatic plants [2].

The present paper is focused on limno-terrestrial tardigrades, and it is possible to suggest how much taxonomic investigations have increased during the last decade by comparing the “Actual checklist of Tardigrada species” published in 2013 [3] with the most updated one of 2022 [1]: the number of valid limno-terrestrial species has increased from 876 to 1067 units (+191 units, i.e., +21.8%); additionally, this corresponds to increased activity of new species descriptions: taking the data from the ultimate checklist [1], in 2011, 22 new limno-terrestrial species were described, while in 2021, 39 new limno-terrestrial species were described, which results in an increase of 77.3%.

Taxonomists use species checklists as tools to communicate information on species diversity and distribution. These checklists are often a starting point for biodiversity-related

analyses, from ecological studies to conservation plans. The protection of biodiversity is one of the relevant issues in global conservation. However, coherent conservation cannot take place if the species involved are unknown [4].

The Argentine limno-terrestrial tardigrade fauna was studied in the beginnings (starting in 1908) and for a long time by European researchers [5–27], with the only exception of Schuster [28] (an author from California, USA). Those studies regarded most frequently the Patagonian region (incl. the Land of Fire). In the 1980s and 1990s, Argentine researchers Claps, Rossi and collaborators [29–36] began to study and report findings of different species in provinces of the country such as Río Negro, Neuquén, Chubut, Tierra del Fuego, Tucumán, Salta and Corrientes. However, those studies were affected by what is now considered out-of-date taxonomy and zoogeography for tardigrades. Since the 2000s and until currently, methodical, continuous studies have been carried out in the framework of various scientific projects at the National University of La Pampa (UNLPam), with major focus on the Provinces of Salta, La Pampa, Buenos Aires, Santa Fé and Río Negro [37–43]. Since then, we have tried to contribute to the knowledge of the limno-terrestrial tardigrade fauna (including new species descriptions) and provide information about ecology (distribution, preference, population dynamics), using modern taxonomic and biogeographic criteria, owing to all the recent taxonomic novelties.

To date, the previous checklists of tardigrade species of Argentina are due to Rossi and Claps [34], McInnes [44], Claps et al. [35], Meyer [45] and Kaczmarek et al. [46].

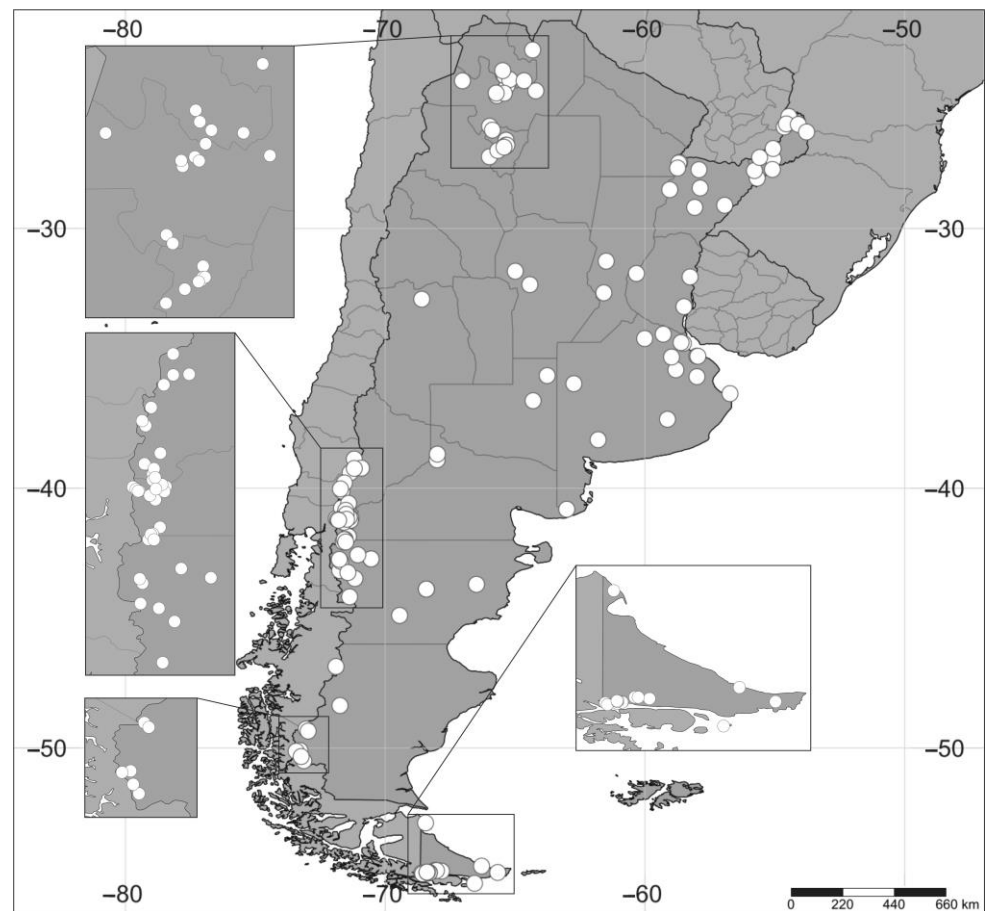
This paper provides an updated comprehensive list of limno-terrestrial tardigrade fauna reported from Argentina, their distribution in the country and the references for the records. Species with *locus typicus* in Argentina, specifying if endemic, are also indicated separately.

The present paper also reports the correct genus assignment to *Viridiscus rufoviridis* (du Bois-Reymond Marcus, 1944), owing to the discovery of this species, or an extremely similar one, in Argentina [37,38,47]; the Argentine species (reported with “cf.” for caution) proved to belong not to the genus *Viridiscus* Gąsiorek & Michalczyk, 2019, in Gąsiorek et al. [48] but instead to *Barbaria* Michalczyk, Gąsiorek, Morek & Stec, 2019, in Gąsiorek et al. [48], thus becoming *Barbaria* cf. *rufoviridis* comb. nov.; as a consequence, the former *V. rufoviridis* is transferred to the genus *Barbaria*.

## 2. Materials and Methods

To build our checklist, we consulted all 42 papers (see Table 1) reporting species records (with or without a checklist) from Argentina, plus the past checklists by McInnes [44], Meyer [45] and Kaczmarek et al. [46]; the taxonomic nomenclature was obtained from Degma and Guidetti [1], together with the taxonomic status of currently valid species (excluding those in the situation of *species dubia* or *inquirenda*, and *nomen dubium* or *inquirendum*).

The map that provides the distribution of tardigrade species in Argentina (Figure 1) was generated through SimpleMappR [49] using the layers of “country” and “state/province”. Whenever possible, locations were extracted from the literature, which resulted in 143 records; when the original coordinates of the location were not provided, they were estimated using Google Earth Pro (ver. 7.3.4.8642 (64-bit)).



**Figure 1.** Map of Argentina showing the until now investigated sites.

**Table 1.** List of valid species reported in Argentina from the literature. Status (record reliability): + = species reported with certainty; + \* = species that need a diagnosis confirmation but each one representing a separate taxon from any other in Argentina; N = dubious record that cannot be taken into consideration because it may coincide with other species in the list. Province abbreviations: BA = Buenos Aires; CB = Córdoba; CH = Chaco; CR = Corrientes; CT = Chubut; ER = Entre Ríos; JY = Jujuy; LP = La Pampa; MI = Misiones; NQN = Neuquén; RN = Río Negro; SA = Salta; SC = Santa Cruz; SF = Santa Fé; SJ = San Juan; TF(IAS) = Isla de Atlántico Sur; TF(SS) = Tierra del Fuego; TU = Tucumán.

Order, Family	Species/Subspecies	Status (Record Reliability)	Province	Report for Argentina
Echiscoidea, Echiniscidae	<i>Antechiniscus jermani</i> Rossi & Claps, 1989	+	RN	[33]
Echiscoidea, Echiniscidae	<i>Antechiniscus lateromamillatus</i> (Ramazzotti, 1964)	+	NQN	[36]
Echiscoidea, Echiniscidae	<i>Barbaria bigranulata</i> (Richters, 1907)	+	BA; ER; CR; MI; TU; SA; NQN; RN; CT; SC; TF(SS)	[8,9,13,15,29–33,36]
Echiscoidea, Echiniscidae	<i>Barbaria charrua</i> (Claps & Rossi, 1997)	+	MI; TU	[8]
Echiscoidea, Echiniscidae	<i>Barbaria jenningsi</i> (Dastych, 1984)	+	TF(IAS)	[35]
Echiscoidea, Echiniscidae	<i>Barbaria madonnae</i> (Michalczuk & Kaczmarek, 2006)	+	CT	[8]
Echiscoidea, Echiniscidae	<i>Barbaria ollantaytamboensis</i> (Nickel, Miller & Marley, 2001)	+	SA	[8]
Echiscoidea, Echiniscidae	<i>Barbaria paucigranulata</i> Wilamowski, Vončina, Gašiorek & Michalczuk, 2022	+	SA	[8]
Echiscoidea, Echiniscidae	<i>Barbaria</i> cf. <i>rufoviridis</i> comb. nov. (du Bois-Reymond Marcus, 1944)	+ *	BA; LP; SF	[37,38,47]

Table 1. Cont.

Order, Family	Species/Subspecies	Status (Record Reliability)	Province	Report for Argentina
Echiniscoidea, Echiniscidae	<i>Barbaria weglarskae</i> Gąsiorek, Wilamowski, Vončina & Michalczuk, 2022	+	SC	[8]
Echiniscoidea, Echiniscidae	<i>Bryodelphax parvulus</i> Thulin, 1928	+ *	RN	[16,17]
Echiniscoidea, Echiniscidae	<i>Claxtonia capillata</i> (Ramazzotti, 1956)	+ *	TU; RN; CT	[29,30,33]
Echiniscoidea, Echiniscidae	<i>Claxtonia corrugicaudata</i> (McInnes, 2010)	+	RN	[27]
Echiniscoidea, Echiniscidae	<i>Claxtonia marginopora</i> (Grigarick, Schuster & Nelson, 1983)	+	SC	[13]
Echiniscoidea, Echiniscidae	<i>Claxtonia wendti</i> (Dastych, 1984)	N	RN; CT; SC; TF(SS)	[10,13,29]
Echiniscoidea, Echiniscidae	<i>Cornechiniscus lobatus</i> (Ramazzotti, 1943)	+	SA	[50]
Echiniscoidea, Echiniscidae	<i>Echiniscus aonikenk</i> Gąsiorek, Bochnak, Vončina & Michalczuk, 2021	+	CT	[51]
Echiniscoidea, Echiniscidae	<i>Echiniscus arctomys</i> Ehrenberg, 1853	N	RN	[9]
Echiniscoidea, Echiniscidae	<i>Echiniscus blumi</i> Richters, 1903	+ *	RN; CT; SC	[9,13,16,17,29,33]
Echiniscoidea, Echiniscidae	<i>Echiniscus canadensis</i> Murray, 1910	+ *	RN	[16]
Echiniscoidea, Echiniscidae	<i>Echiniscus columinis</i> Murray, 1911	+	SC	[33]
Echiniscoidea, Echiniscidae	<i>Echiniscus crassispinosus</i> Murray, 1907	+ *	MI	[31]
Echiniscoidea, Echiniscidae	<i>Echiniscus dreyfusi</i> de Barros, 1942	+	MI	[31]
Echiniscoidea, Echiniscidae	<i>Echiniscus evelinae</i> de Barros, 1942	+	TU	[51]
Echiniscoidea, Echiniscidae	<i>Echiniscus manuelae</i> da Cunha & do Nascimento Ribeiro, 1962	+	CR; MI; SA	[31,51]
Echiniscoidea, Echiniscidae	<i>Echiniscus merokensis merokensis</i> Richters, 1904	+ *	NQN; RN; SC; TF(SS)	[6,13,36]
Echiniscoidea, Echiniscidae	<i>Echiniscus pellucidus</i> Gąsiorek, Bochnak, Vončina & Michalczuk, 2021	+	CT	[51]
Echiniscoidea, Echiniscidae	<i>Echiniscus testudo</i> (Doyère, 1840)	+	RN; CT; SC	[33,51]
Echiniscoidea, Echiniscidae	<i>Echiniscus trisetosus</i> Cuénot, 1932	+ *	CT	[29]
Echiniscoidea, Echiniscidae	<i>Mopsechiniscus granulatus</i> Mihelčič, 1967	+	NQN; RN; CT	[5,7,16,17,29,33,36]
Echiniscoidea, Echiniscidae	<i>Mopsechiniscus imberbis</i> (Richters, 1907)	N	TF(IAS)	[35]
Echiniscoidea, Echiniscidae	<i>Pseudechiniscus (Meridioniscus) bartkei</i> Węglarska, 1962	+ *	SA; RN TF(SS)	[30,33]
Echiniscoidea, Echiniscidae	<i>Pseudechiniscus (Meridioniscus) saltensis</i> Rocha, Doma, González-Reyes & Lisi, 2020	+	SA	[42]
Echiniscoidea, Echiniscidae	<i>Pseudechiniscus (Pseudechiniscus) marinae</i> Bartoš, 1934	+ *	RN	[9]
Echiniscoidea, Echiniscidae	<i>Pseudechiniscus (Pseudechiniscus) suillus</i> (Ehrenberg, 1853)	+ *	MI; RN; SC	[13,16,17,31]
Echiniscoidea, Echiniscidae	<i>Testechiniscus spitsbergensis spitsbergensis</i> (Scourfield, 1897)	+ *	CT; SC	[29,33]
Echiniscoidea, Echiniscidae	<i>Viridiscus viridis</i> (Murray, 1910)	N	NQN	[29]
Echiniscoidea, Oreellidae	<i>Oreella mollis</i> (Murray, 1910)	+	CT	[5]
Apochela, Milnesiidae	<i>Milnesium argentinum</i> Roszkowska, Ostrowska & Kaczmarek, 2015	+	RN	[26,27]
Apochela, Milnesiidae	<i>Milnesium beatae</i> Roszkowska, Ostrowska & Kaczmarek, 2015	+	RN	[26,27]
Apochela, Milnesiidae	<i>Milnesium brachyungue</i> Binda & Pilato, 1990	+	RN	[26,27]
Apochela, Milnesiidae	<i>Milnesium eurytostomum</i> Maucci, 1991	+ *	SC	[14]
Apochela, Milnesiidae	<i>Milnesium granulatum</i> Ramazzotti, 1962	+	RN	[26,27]
Apochela, Milnesiidae	<i>Milnesium irenae</i> Rocha, González-Reyes, Ostertag & Lisi, 2022	+	LP	[43,52]
Apochela, Milnesiidae	<i>Milnesium kogui</i> Londoño, Daza, Caicedo, Quiroga & Kaczmarek, 2015	+	SA	[41]
Apochela, Milnesiidae	<i>Milnesium pelufforum</i> Rocha, González-Reyes, Ostertag & Lisi, 2022	+	SA	[43,52]

Table 1. Cont.

Order, Family	Species/Subspecies	Status (Record Reliability)	Province	Report for Argentina
Apochela, Milnesiidae	<i>Milnesium quiranae</i> Rocha, González-Reyes, Ostertag & Lisi, 2022	+	SA	[43,52]
Apochela, Milnesiidae	<i>Milnesium tardigradum</i> Doyère, 1840	N	BA; ER; CR; CH; TU; SA; JY; LP; NQN; RN; CT; SC; TF(SS); TF(IAS)	[9,16,29–33,36]
Parachela, Calohypsibiidae	<i>Calohypsibius ornatus</i> (Richters, 1900)	+ *	RN	[16,17]
Parachela, Doryphoribiidae	<i>Doryphoribius cephalogibbosus</i> Rocha, Doma, González-Reyes & Lisi, 2020	+	SA	[42]
Parachela, Doryphoribiidae	<i>Doryphoribius evelinae</i> (Marcus, 1928)	+ *	CR	[31]
Parachela, Doryphoribiidae	<i>Doryphoribius zappalai</i> Pilato, 1971	+ *	SA; SC	[30,33,34]
Parachela, Doryphoribiidae	<i>Grevenius asper</i> (Murray, 1906)	+ *	MI; TU; JY	[30,31,34]
Parachela, Doryphoribiidae	<i>Grevenius deflexus</i> (Mihelčič, 1960)	+	BA	[34]
Parachela, Doryphoribiidae	<i>Pseudobiotus megalonyx</i> (Thulin, 1928)	+ *	BA; CR; CB	[35]
Parachela, Doryphoribiidae	<i>Thulinium augusti</i> (Murray, 1907)	+	BA; CR; CB	[30,31,34]
Parachela, Doryphoribiidae	<i>Thulinium stephaniae</i> (Pilato, 1974)	+ *	BA	[34]
Parachela, Hexapodibiidae	<i>Parhexapodibius castrii</i> (Ramazzotti, 1964)	+	RN	[34]
Parachela, Hypsibiidae	<i>Notahypsibius arcticus</i> (Murray, 1907)	+	TF(IAS)	[35]
Parachela, Hypsibiidae	<i>Acutuncus antarcticus</i> (Richters, 1904)	+ *	NQN	[35,36]
Parachela, Hypsibiidae	<i>Adropion greveni</i> (Dastych, 1984)	+	TF(SS)	[6]
Parachela, Hypsibiidae	<i>Adropion scoticum</i> (Murray, 1905)	+ *	RN; CT; SC; TF(SS)	[9,13,16,17,25,33]
Parachela, Hypsibiidae	<i>Diphascon alpinum</i> Murray, 1906	N	RN	[29,33]
Parachela, Hypsibiidae	<i>Diphascon chilense</i> Plate, 1888	+	RN	[17,29,33]
Parachela, Hypsibiidae	<i>Diphascon mitrense</i> Pilato, Binda & Qualtieri, 1999	+	RN	[22]
Parachela, Hypsibiidae	<i>Diphascon ongulense</i> Morikawa, 1962	+	TF(SS)	[33]
Parachela, Hypsibiidae	<i>Diphascon pingue pingue</i> (Marcus 1936)	N	TU; JY; RN	[9,30,33]
Parachela, Hypsibiidae	<i>Diphascon stappersi</i> Richters, 1911	N	RN	[9]
Parachela, Hypsibiidae	<i>Diphascon tenue</i> Thulin, 1928	N	NQN; RN	[33,36]
Parachela, Hypsibiidae	<i>Hypsibius allisoni</i> Horning, Schuster & Grigarick, 1978	+	SC; TF(SS)	[6,13]
Parachela, Hypsibiidae	<i>Hypsibius convergens</i> (Urbanowicz, 1925)	+	TU; NQN; RN; SC	[10,13,17,29,30,33,36]
Parachela, Hypsibiidae	<i>Hypsibius dujardini</i> (Doyère, 1840)	+ *	TU; NQN; RN; CT; SC; TF(SS)	[9,30,33]
Parachela, Hypsibiidae	<i>Hypsibius marcelli</i> Pilato, 1990	+	BA; TF(SS)	[19]
Parachela, Hypsibiidae	<i>Hypsibius microps</i> Thulin, 1928	N	BA; ER; NQN; RN; SC	[9,13,32,33,36]
Parachela, Hypsibiidae	<i>Hypsibius montanus</i> Iharos, 1940	+ *	CT	[29]
Parachela, Hypsibiidae	<i>Hypsibius pallidus</i> Thulin, 1911	N	NQN	[36]
Parachela, Hypsibiidae	<i>Itaquascon umbellinae</i> de Barros, 1939	+	SC	[13]
Parachela, Hypsibiidae	<i>Mixibius fueginus</i> Pilato & Binda, 1996	+	TF(SS)	[6,20]
Parachela, Hypsibiidae	<i>Mixibius saracenus</i> (Pilato, 1973)	+	TF(SS)	[6]
Parachela, Hypsibiidae	<i>Pilatobius brevipes</i> (Marcus, 1936)	+ *	RN; TF(SS)	[10,29]
Parachela, Hypsibiidae	<i>Pilatobius bullatus</i> (Murray, 1905)	+ *	RN; CT	[9,17]
Parachela, Hypsibiidae	<i>Pilatobius recamieri</i> (Richters, 1911)	+ *	RN	[9,29,34]
Parachela, Hypsibiidae	<i>Platicrista angustata</i> (Murray, 1905)	+ *	RN; SC	[13,34]
Parachela, Isohypsibiidae	<i>Dianea papillifera</i> (Murray, 1905)	+	TF(IAS)	[35]
Parachela, Isohypsibiidae	<i>Dianea sattleri</i> (Richters, 1902)	+ *	RN	[9,17]
Parachela, Isohypsibiidae	<i>Isohypsibius prosostomus</i> Thulin 1928	+ *	CB	[17]
Parachela, Isohypsibiidae	<i>Isohypsibius sculptus</i> (Ramazzotti, 1962)	+	NQN; RN	[9]
Parachela, Isohypsibiidae	<i>Ursulinius nodosus</i> (Murray, 1907)	N	RN; CT	[9]
Parachela, Isohypsibiidae	<i>Ursulinius tucumanensis</i> (Claps & Rossi, 1984)	+	TU	[30,35]
Parachela, Macrobiotidae	<i>Macrobiotus anderssoni</i> Richters, 1908	+	RN; TF(SS)	[25]

Table 1. Cont.

Order, Family	Species/Subspecies	Status (Record Reliability)	Province	Report for Argentina
Parachela, Macrobiotidae	<i>Macrobiotus andinus</i> Maucci, 1988	+	RN; SC	[13]
Parachela, Macrobiotidae	<i>Macrobiotus echinogenitus</i> Richters, 1903	+ *	SA; CT; TF(SS)	[17,18,23,24,29,30]
Parachela, Macrobiotidae	<i>Macrobiotus hufelandi</i> C.A.S. Schultze, 1833	N	BA; ER; CR; MI; CB; TU; SA; JY; NQN; RN; CT; SC; TF(SS)	[9,13,16,17,25,29–33]
Parachela, Macrobiotidae	<i>Macrobiotus kazmierskii</i> Kaczmarek & Michalczyk, 2009	+	RN	[12]
Parachela, Macrobiotidae	<i>Macrobiotus kristenseni</i> Guidetti, Peluffo, Rocha, Cesari & Moly de Peluffo, 2013	+	LP	[40]
Parachela, Macrobiotidae	<i>Macrobiotus occidentalis</i> Murray, 1910	+ *	RN	[9]
Parachela, Macrobiotidae	<i>Macrobiotus papillosus</i> Iharos, 1963	+	RN	[9]
Parachela, Macrobiotidae	<i>Macrobiotus patagonicus</i> Maucci, 1988	+	NQN; RN; SC	[13,36]
Parachela, Macrobiotidae	<i>Macrobiotus porteri</i> Rahm, 1931	+	?	[17]
Parachela, Macrobiotidae	<i>Mesobiotus coronatus</i> de Barros, 1942	+	BA	[32]
Parachela, Macrobiotidae	<i>Mesobiotus erminiae</i> Binda & Pilato, 1999	+ *	TF(SS)	[6]
Parachela, Macrobiotidae	<i>Mesobiotus furciger</i> (Murray, 1906)	+ *	RN; CT; TF(SS)	[17,25,29]
Parachela, Macrobiotidae	<i>Mesobiotus harmsworthii</i> (Murray, 1907)	N	CR; RN; SC	[9,13,17,31]
Parachela, Macrobiotidae	<i>Mesobiotus montanus</i> Murray, 1910	+ *	RN	[10]
Parachela, Macrobiotidae	<i>Mesobiotus neuquensis</i> Rossi, Claps & Ardohain, 2009	+	NQN	[36]
Parachela, Macrobiotidae	<i>Mesobiotus nuragicus</i> (Pilato & Sperlinga, 1975)	+ *	RN	[34]
Parachela, Macrobiotidae	<i>Mesobiotus orcadensis</i> (Murray, 1907)	+	CR; TF(SS)	[31,33]
Parachela, Macrobiotidae	<i>Mesobiotus ovostriatus</i> (Pilato & Patanè, 1998)	+	TF(SS)	[21]
Parachela, Macrobiotidae	<i>Mesobiotus pseudoblocki</i> Roszkowska, Stec, Ciobanu & Kaczmarek, 2016	+	RN	[27]
Parachela, Macrobiotidae	<i>Mesobiotus szeptyckii</i> (Kaczmarek & Michalczyk, 2009)	+	RN	[12]
Parachela, Macrobiotidae	<i>Mesobiotus tehuelchensis</i> (Rossi, Claps & Ardohain, 2009)	+	NQN	[36]
Parachela, Macrobiotidae	<i>Minibiotus acontistus</i> (de Barros, 1942)	+	CR; MI	[17,31]
Parachela, Macrobiotidae	<i>Minibiotus claxtonae</i> Rossi, Claps & Ardohain, 2009	+	NQN	[36]
Parachela, Macrobiotidae	<i>Minibiotus furcatus</i> (Ehrenberg, 1859)	+	BA; TF(SS)	[35]
Parachela, Macrobiotidae	<i>Minibiotus intermedius</i> (Plate, 1888)	+ *	ER; CR; RN; TF(SS)	[9,10,16,17,31]
Parachela, Macrobiotidae	<i>Minibiotus pseudostellaris</i> Roszkowska, Stec, Ciobanu & Kaczmarek, 2016	+	RN	[27]
Parachela, Macrobiotidae	<i>Minibiotus subintermedius</i> (Ramazzotti, 1962)	+	NQN; CB	[29,36]
Parachela, Macrobiotidae	<i>Paramacrobiotus areolatus</i> (Murray, 1907)	+ *	BA; CR; SA; LP; RN; SC	[13,30–33,38,39]
Parachela, Macrobiotidae	<i>Paramacrobiotus richtersi</i> (Murray, 1911)	+ *	BA; CR; MI; TU; SA; JY; NQN; RN; CT; TF(SS)	[9,10,29–33]
Parachela, Macrobiotidae	<i>Schusterius tridigitus</i> (Schuster, 1983)	+	TF(SS)	[11,28]
Parachela, Macrobiotidae	<i>Sisubiotus spectabilis</i> (Thulin, 1928)	+ *	SA	[30]
Parachela, Murrayidae	<i>Dactylobiotus ambiguus</i> (Murray, 1907)	+ *	BA; RN; TF(IAS)	[34]
Parachela, Murrayidae	<i>Dactylobiotus dispar</i> (Murray, 1907)	+ *	BA; CR; JY; RN	[30,33,34]
Parachela, Murrayidae	<i>Dactylobiotus grandipes</i> (Schuster, Toftner & Grigarick, 1978)	+	LP	[35]
Parachela, Murrayidae	<i>Dactylobiotus lombardoi</i> Binda & Pilato, 1999	+	TF(IAS)	[35]
Parachela, Murrayidae	<i>Dactylobiotus parthenogeneticus</i> Bertolani, 1981	+ *	BA; SJ; NQN	[34]
Parachela, Murrayidae	<i>Murrayon pullari</i> (Murray, 1907)	+ *	TF(SS)	[33]
Parachela, Ramazzottiidae	<i>Hebesuncus conjungens</i> (Thulin, 1911)	+ *	NQN; RN; SC	[13,16,17,29,33]

Table 1. Cont.

Order, Family	Species/Subspecies	Status (Record Reliability)	Province	Report for Argentina
Parachela, Ramazzottiidae	<i>Hebesuncus mollispinus</i> Pilato, McInnes & Lisi, 2012	+	RN	[27]
Parachela, Ramazzottiidae	<i>Ramazzottius anomalus</i> (Ramazzotti, 1962)	+ *	ER; SA; SJ	[30,31]
Parachela, Ramazzottiidae	<i>Ramazzottius baumanni</i> (Ramazzotti, 1962)	+ *	ER; SA; JY; NQN; RN; CT; SC	[9,13,29–31,33,36]
Parachela, Ramazzottiidae	<i>Ramazzottius oberhaeuseri</i> (Doyère, 1840)	+ *	MI; SA; LP; RN; CT; TF(SS)	[16,17,25,30,31,33,38]
Parachela, Ramazzottiidae	<i>Ramazzottius saltensis</i> Claps & Rossi, 1984	+	SA	[30]

Some methodological issues strictly correlated to the assessment of the checklist (e.g., regarding the literature or taxonomy) are, for readers' convenience, discussed directly in the "Results" section together with the checklist presentation.

We checked the following slides of Peluffo and Moly de Peluffo, identified as *Milnesium* cf. *tardigradum* Doyère, 1840, in Peluffo et al. [38] and Moly de Peluffo et al. [39], to update the diagnosis; these slides, deposited in the Rocha–Doma collection (National University of La Pampa, Argentina), are UNLPam SR1: 2, 3, 5, 7, 8, 12, 15, 17, 28, 31, 34, 35, 45, 50, 52, 60.

For the study of the genus assignment of *Viridiscus rufoviridis*, we reviewed the following slides of Argentine material (36 specimens identified as *Viridiscus* cf. *rufoviridis*) from the Rocha–Doma collection (National University of La Pampa, Argentina); UNLPam SR3: 1439 (4), 1440 (4), 1441 (1), 1443 (4), 1444 (4), 1843 (3), 1845 (2), 1846 (4), 1848 (2), 1942 (4), 1947 (4).

### 3. Results

#### 3.1. Actual Checklist of Limno-Terrestrial Tardigrades of Argentina

Both classes Eutardigrada Richters, 1926, and Heterotardigrada Marcus, 1927, are present. Within the class Eutardigrada, the families present are: Calohypsibiidae Pilato, 1969; Doryphoribiidae Gąsiorek, Stec, Morek & Michalczyk, 2019; Hexapodibiidae Cesari, Vecchi, Palmer, Bertolani, Pilato, Rebecchi & Guidetti, 2016; Hypsibiidae Pilato, 1969; Isohypsibiidae Sands, McInnes, Marley, Goodall-Copestake, Convey & Linse, 2008; Macrobiotidae Thulin, 1928; Murrayidae Guidetti, Rebecchi & Bertolani, 2000; Milnesiidae Ramazzotti, 1962; and Ramazzottiidae Sands, McInnes, Marley, Goodall-Copestake, Convey & Linse, 2008. Heterotardigrada are represented by the family Echiniscidae Thulin, 1928, and Oreellidae Ramazzotti, 1962. Therefore, in the country, 11 families in total are present.

At lower taxonomic level, at least 39 genera and 119 species are present. Of these 119 currently valid species, 72 represent reliable (unquestioned by the literature) records ("+" in Table 1), while 47 are records questioned in the literature but represent taxa surely present in Argentina because they cannot be confused with any others in the list ("+\*" in Table 1; e.g., single representatives of their genus or species group, see further for more details).

Concerning the reliability of the species records from the literature, we basically followed Kaczmarek et al. [46], with some adjustments/updates. In Table 2 of that paper, only two categories were present: "+" (confirmed record) and "(+)" (dubious record). We (in Table 1) kept the "+" category but split the "(+)" one of Kaczmarek et al. [46] into two categories: "+\*" (dubious record, but cannot be confused with the other species in the list) and "N" (dubious record that may correspond to other species in the list).

**Table 2.** Species with *locus typicus* in Argentina, indicating if the species is currently endemic for the country (Y = yes; N = no).

Order, Family	Species	Type Locality	Endemic (Y/N)
Echiscoidea, Echiniscidae	<i>Antechiniscus jermani</i> Rossi & Claps, 1989	41°11' S, 71°49' W, 1800 m asl: Río Negro Province, Nahuel Huapi National Park, Monte Tronador.	Y
Echiscoidea, Echiniscidae	<i>Barbaria bigranulata</i> (Richters, 1907)	54°48' S, 68°18' W, 50 m asl: Tierra del Fuego Province, Isla Grande de Tierra del Fuego, Ushuaia.	N
Echiscoidea, Echiniscidae	<i>Barbaria paucigranulata</i> Wilamowski, Vončina, Gasiorek & Michalczyk, 2022	24°47'14" S 65°43'30" W, 2150 m asl: Salta Province, Rosario de Lerma Department.	Y
Echiscoidea, Echiniscidae	<i>Barbaria weglarskae</i> Gasiorek, Wilamowski, Vončina & Michalczyk, 2022	48°25'42" S 71°44'48" W, 803 m asl: Santa Cruz Province, vicinity of la Florida.	Y
Echiscoidea, Echiniscidae	<i>Echiniscus aonikenk</i> Gasiorek, Bochnak, Vončina & Michalczyk, 2021	44°10'26" S 71°33'58" W, 716 m asl: Patagonia, Chubut Province, vicinity of Río Pico.	Y
Echiscoidea, Echiniscidae	<i>Echiniscus pellucidus</i> Gasiorek, Bochnak, Vončina & Michalczyk, 2021	44°10'26" S 71°33'58" W, 716 m asl: Patagonia, Chubut Province, vicinity of Río Pico.	Y
Echiscoidea, Echiniscidae	<i>Mopsechiniscus granulatus</i> Mihelčič, 1967	41°14' S, 71°46' W; 800 m asl: Río Negro Province, Pampalinda, near Cainquenes stream. 41°58' S, 71°31' W, 390 m asl: Río Negro Province, Bolson.	N
Echiscoidea, Echiniscidae	<i>Pseudechiniscus (Meridioniscus) saltensis</i> Rocha, Doma, González-Reyes & Lisi, 2020	24°27'–25°47' S, 64°55'–65°40' W, 1150 m asl: Salta Province, Salta City.	Y
Apochela, Milnesiidae	<i>Milnesium argentinum</i> Roszkowska, Ostrowska & Kaczmarek, 2015	41°13' S, 71°27' W, ca. 1200 m asl: Río Negro Province, Nahuel Huapi National Park.	Y
Apochela, Milnesiidae	<i>Milnesium beatae</i> Roszkowska, Ostrowska & Kaczmarek, 2015	41°12' S, 71°50' W, ca. 1000 m asl: Río Negro Province, Nahuel Huapi National Park.	Y
Apochela, Milnesiidae	<i>Milnesium irenae</i> Rocha, González-Reyes, Ostertag & Lisi, 2022	36°37'13" S, 64°17'26" W, ca 177 m asl: La Pampa Province, Santa Rosa City.	Y
Apochela, Milnesiidae	<i>Milnesium pelufforum</i> Rocha, González-Reyes, Ostertag & Lisi, 2022	24°47'18" S, 65°24'38" W, 1150 m asl: Salta Province, Salta City.	Y
Apochela, Milnesiidae	<i>Milnesium quiranae</i> Rocha, González-Reyes, Ostertag & Lisi, 2022	24°47'18" S, 65°24'38" W, 1150 m asl: Salta Province, Salta City.	Y
Parachela, Doryphoribiidae	<i>Doryphoribius cephalogibbosus</i> (Rocha, Doma, González-Reyes & Lisi, 2020)	24°27'–25°47' S, 64°55'–65°40' W, 1150 m asl: Salta Province, Salta City.	Y
Parachela, Hypsibiidae	<i>Diphascion mitrense</i> Pilato, Binda & Quattieri, 1999	54°47' S, 68°16' W; 100 m asl: Tierra del Fuego Province, Península Mitre, Estancia Río Pipo.	Y
Parachela, Hypsibiidae	<i>Hypsibius marcelli</i> Pilato, 1990	52°54' S, 68°27' W, 0 m asl: Tierra del Fuego Province, Isla Grande de Tierra del Fuego, near Estancia Cullen.	Y
Parachela, Hypsibiidae	<i>Mixibius fueginus</i> Pilato & Binda, 1996	54°47' S, 68°24' W, 650 m asl: Tierra del Fuego Province, San Martial Glacier.	Y
Parachela, Isohypsibiidae	<i>Ursulinius tucumanensis</i> (Claps & Rossi, 1984)	26°47' S, 65°20' W, 750 m asl: Tucumán Province, Horco Molle.	Y
Parachela, Macrobiotidae	<i>Macrobiotus anderssoni</i> Richters, 1908	54°48' S, 68°18' W, 50 m asl: Tierra del Fuego Province, Isla Grande de Tierra del Fuego, Ushuaia, valley. 54°46' S, 68°12' W, 150 m asl: Tierra del Fuego Province, Isla Grande de Tierra del Fuego, Río Olivia. 54°47' S, 68°23' W, 800 m asl: Tierra del Fuego Province, Isla Grande de Tierra del Fuego, mountain region of Ushuaia. 54°50' S, 68°34' W, 0 m asl: Tierra del Fuego Province, Tierra Mayor (Isla Grande de Tierra del Fuego), near Roca Lake.	Y
Parachela, Macrobiotidae	<i>Macrobiotus andinus</i> Maucci, 1988	50°06' S, 73°18' W, 200 m asl: Santa Cruz Province, Los Glaciares National Park, shores of Argentino Lake, near Onelli Glacier.	N
Parachela, Macrobiotidae	<i>Macrobiotus kazmierskii</i> Kaczmarek & Michalczyk, 2009	41°11.551' S, 71°49.908' W / 41°12'N, 71°50' W, 1100 m asl: Río Negro Province, Nahuel Huapi National Park, Ventisquero Negro.	Y
Parachela, Macrobiotidae	<i>Macrobiotus kristenseni</i> Guidetti, Peluffo, Rocha, Cesari & Moly de Peluffo, 2013	35°40' S, 63°44' W; 143 m asl: La Pampa Province, General Pico (125 km northeast of Santa Rosa). 36°39' S, 64°17' W; 177 m asl: La Pampa Province, Santa Rosa City. 36°55' S, 64°16' W; 150 m asl: La Pampa Province, Reserve Provincial Parque Luro (35 km south of Santa Rosa).	Y



Table 2. Cont.

Order, Family	Species	Type Locality	Endemic (Y/N)
Parachela, Macrobiotidae	<i>Macrobiotus papillosus</i> Iharos, 1963	41°59' S, 71°31' W, 360 m asl: Río Negro Province, El Bolsón, Mt. Piltriquitron.	Y
Parachela, Macrobiotidae	<i>Macrobiotus patagonicus</i> Maucci, 1988	50°06' S, 73°18' W, 200 m asl: Santa Cruz Province, Los Glaciares National Park, shores of Argentino Lake, near Onelli Glacier.	N
Parachela, Macrobiotidae	<i>Mesobiotus neuquensis</i> Rossi, Claps & Ardohain, 2009	40°07' S, 71°39' W, 700 m asl: Neuquén Province, Hua Hum, Junín de los Andes.	Y
Parachela, Macrobiotidae	<i>Mesobiotus ovostratus</i> (Pilato & Patané, 1998)	54°17' S, 66°42' W, 50 m asl: Tierra del Fuego Province, Isla Grande de Tierra del Fuego, Península Mitre, Cabo San Pablo. 54°47' S, 68°16' W, 100 m asl: Tierra del Fuego Province, Península Mitre, Río Pipo.	N
Parachela, Macrobiotidae	<i>Mesobiotus pseudoblocki</i> Roszkowska, Stec, Ciobanu & Kaczmarek, 2016	41°12' S, 71°50' W, ca. 1000 m asl: Río Negro, Nahuel Huapi National Park, Ventisquero Negro.	Y
Parachela, Macrobiotidae	<i>Mesobiotus szeptyckii</i> (Kaczmarek & Michalczyk, 2009)	41°31' S, 71°30' W, 950 m asl: Río Negro Province, Nahuel Huapi National Park, 70 km south of San Carlos de Bariloche.	Y
Parachela, Macrobiotidae	<i>Mesobiotus tehuelchensis</i> (Rossi, Claps & Ardohain, 2009)	39°08' S, 71°17' W, 1000 m asl: Neuquén Province, Aluminé Ñorquinco Lake.	Y
Parachela, Macrobiotidae	<i>Minibiotus claxtonae</i> Rossi, Claps & Ardohain, 2009	39°25' S, 71°17' W, 1000 m asl: Neuquén Province, Aluminé, Quillén Lake.	Y
Parachela, Macrobiotidae	<i>Minibiotus pseudostellarus</i> Roszkowska, Stec, Ciobanu & Kaczmarek, 2016	41°12' S, 71°51' W, ca. 1200 m asl: Río Negro Province, Nahuel Huapi National Park, Bariloche, at the foot of the Tronador volcano, Garganta del Diablo waterfall.	Y
Parachela, Macrobiotidae	<i>Schusterius tridigitus</i> (Schuster, 1983)	54°47' S, 68°24' W, 600–750 m asl: Tierra del Fuego Province, Sierra Martial.	Y
Parachela, Ramazzottiidae	<i>Ramazzottius saltensis</i> Claps & Rossi, 1984	24°55' S, 64°09' W, 400 m asl: Salta Province, road from Las Lajitas to J.V. González.	Y

Regarding Table 2 in Kaczmarek et al. [46], we maintained the “+” species with the exception of five species that were moved to the “+\*” category for caution, and also thanks to the reviewers of the present paper, these species are: *Claxtonia capillata* (Ramazzotti, 1956), *Minibiotus intermedius* (Plate, 1888), *Pseudechiniscus (Pseudechiniscus) marinae* Bartoš, 1934, *Ramazzottius anomalus* (Ramazzotti, 1962) and *Ramazzottius baumannii* (Ramazzotti, 1962). Of course, we added to the “+” category the recent and reliable records published after Kaczmarek et al. [46].

Two species belonging to the “(+)” category of Kaczmarek et al. [46] were moved to the “+” category, owing to recent reliable records confirming their real presence in Argentina; these species are *Echiniscus testudo* (Doyère, 1840) and *Hypsibius convergens* (Urbanowicz, 1925).

Our “N” category includes additional 14 species from the literature that have not been counted because they correspond to dubious records and the species might have been misidentified with possible confusion with other species in the list (“N” in Table 1; e.g., old records of *Milnesium tardigradum* that may correspond to other species of the genus, reported/identified more recently, present in the list).

Indeed, we were able to verify (by examining the pertinent material indicated in the Materials and Methods section) that the records of *M. cf. tardigradum* reported by Peluffo et al. [38] and Moly de Peluffo et al. [39] did refer to specimens belonging to three species recently described: *M. pelufforum* Rocha, González-Reyes, Ostertag & Lisi, 2022 (slides UNLPam SR1: 5, 8, 12, 15, 50); *M. irenae* Rocha, González-Reyes, Ostertag & Lisi, 2022 (slides UNLPam SR1: 2, 7, 17, 28, 31); or *M. quiranae* Rocha, González-Reyes, Ostertag & Lisi, 2022 (slides UNLPam SR1: 3, 34, 35, 45, 52, 60); the other old records of *M. tardigradum* [9,16,29–33,36] remain questionable.

Generally, all 14 species with dubious records (status “N” in Table 1) are in need of revision to verify if they can or cannot be definitively included.

Our “+\*” category (47 species) requires a clearer explanation in order to justify our choices.

Eight species in this category (*Acutuncus antarcticus* (Richters, 1904); *Bryodelphax parvulus* (Richters, 1904); *Testechiniscus spitsbergensis* (Scourfield, 1897); *Calohypsibius ornatus* (Richters, 1900); *Pseudobiotus megalonyx* (Thulin, 1928); *Platicrista angustata* (Murray, 1905); *Sisubiotus spectabilis* (Thulin, 1928) and *Murrayon pullari* (Murray, 1907)) are each the only representative of its own genus in the list, although at the time of the record some might be included in another genus with other representatives in the list (e.g., *Macrobiotus*), it is clear that the given species was clearly distinct from the other species actually belonging to the old genus.

In the case of species described in the far past, though often affected by incomplete/unclear descriptions, they have been counted because they are clearly distinguishable (in the past also) from the congeneric species; this criterion means that either the old species was described since the beginning for very obvious/peculiar characters, or the congeneric species of the list were described subsequently as very well differentiated from the old species (in spite of its incomplete description).

Another criterion we used was to consider as reliable the records of congeneric species by the same authors and in close times (i.e., with the same eyes, knowledge and methodologies), and occasionally the records are even in the same paper.

Examples of the application of these criteria are:

- (1) For *Minibiotus intermedius* (Plate, 1888) (indeed, indicated as “+” in Kaczmarek et al. [46], but, to be cautious, we put it into the “+\*” category). The only other *Minibiotus* R.O. Schuster, 1980, species of the list of the *intermedius* group with smooth cuticle is *M. acontistus* (de Barros, 1942), but the questioned records of *M. intermedius* were together with records of *M. acontistus* [17,31], indicating that the pertinent authors were able to distinguish between them.
- (2) For *Ramazottius oberhaeuserii* (Doyère, 1840), two species of the genus reported for Argentina, *R. anomalus* (Ramazzotti, 1962) and *R. baumanni* (Ramazzotti, 1962), were described with notorious characters distinguishing them from *R. oberhaeuseri*. All three species were recorded together in Claps and Rossi [31]; similarly, the fourth Argentine species, *R. saltensis*, was recorded together with *R. oberhaeuseri* in Claps and Rossi [30]. All this clearly indicates no confusion between *R. oberhaeuseri* and the other three congeneric species.
- (3) The three dubious species of the genus *Dactylobiotus* R.O. Schuster, 1980, and the only two species of the genus *Grevenius* Gąsiorek, Stec, Morek & Michalczyk, 2019, were recorded together in Rossi and Claps [34], and the only two species of the genus *Paramacrobilotus* Guidetti, Schill, Bertolani, Dandekar & Wolf, 2009, were recorded together in Claps and Rossi [30,31] and Rossi and Claps [32,33].

The updated checklist is given in Table 1, with the indication, for each species of status (record reliability “+”, “+\*” or “N”, as mentioned above), Argentine province, and literature source for the records.

In Figure 1, a map showing Argentina with all currently known and studied sites in the various provinces is provided.

A total of 33 species were described from samples collected in Argentina (*terra typica*), 28 of which are currently endemic for the country. These data are provided in Table 2, and include geographic coordinates for the *loci typici*.

### 3.2. Genus Assignment for *Viridiscus rufoviridis* (du Bois-Reymond Marcus, 1944): *Barbaria rufoviridis* comb. nov.

The species currently called *Viridiscus rufoviridis* (du Bois-Reymond Marcus, 1944) was first described as *Echiniscus rufoviridis* in 1944 from São Paulo State (Brazil). The species was also reported in various localities of Argentina by Peluffo et al. [37], Peluffo et al. [38] and Rocha et al. [47], and from Ecuador by Nelson et al. [53].

We have not had the possibility to determine, yet, if the type material of the species still exists, in order to compare it directly with the Argentine material in our possession. Thus, one might put into doubt the exact attribution of the Argentine material to *V. rufoviridis*

sensu stricto; however, we examined the Argentine specimens (slides indicated in the Materials and Methods section) and we compared our observations plus the description and images published in the abovementioned papers, with the original description and drawing of the types from Brazil (the drawing is shown in figure 4, page 21, of du Bois-Reymond Marcus [54]), which were of good quality for that time, and we feel confident to conclude that the Argentine specimens and the Brazilian types are at least two extremely similar species (if not exactly the same species). Thus, they must surely belong to the same genus, modernly intended also. In addition, our morphotype is the same or very similar to that from Ecuador, identified as *V. rufoviridis* by Nelson et al. [53], and Kaczmarek et al. [46] did not put in doubt the records of this species from Argentina, as a confirmation that they can also be reliable zoogeographically. Just to be cautious, we refer to the Argentine morphotype as *V. cf. rufoviridis*.

Falling back to history, before the paper by Gąsiorek et al. [48], *V. rufoviridis* was included in the *viridis* group within the genus *Echiniscus* C.A.S. Schultze, 1840; then, in the abovementioned paper, the genus *Echiniscus* was split in different genera, and the old *viridis* group was transferred into the new genus *Viridiscus* Gąsiorek & Michalczyk, 2019, in Gąsiorek et al. [48], currently including *V. clavispinosus* (Fontoura, Pilato & Lisi, 2011), *V. perviridis* (Ramazzotti, 1959), *V. rufoviridis* (du Bois-Reymond Marcus, 1944), *V. viridianus* (Pilato, Fontoura & Lisi, 2007), *V. viridis* (Murray, 1910) and *V. viridissimus* (Péterfi, 1956).

Gąsiorek et al. [48] put the species under discussion into the genus *Viridiscus* with some perplexities, and those authors did not consider or discuss the papers by Peluffo et al. [37] and Rocha et al. [47], in which important data (including photographs) were present, allowing for realization that *V. rufoviridis* cannot be attributed to the genus *Viridiscus*, but, instead, to the genus *Barbaria* Michalczyk, Gąsiorek, Morek & Stec, 2019, in Gąsiorek et al. [48]. As a matter of fact, in Peluffo et al. [37] the species under discussion was partially redescribed, and, above all, there are images under PCM and SEM, and in Rocha et al. [47] the cuticle ultrastructure was examined under TEM. In both papers, all images and descriptions are not compatible with the genus *Viridiscus*, but they are with *Barbaria* instead. The images of *B. cf. rufoviridis* comb. nov. by Peluffo et al. [37] (cuticular ornamentation: PCM and SEM) and Rocha et al. [47] (cuticle structure: TEM) can be compared with those of Gąsiorek et al. [48] (cuticular ornamentation of *Viridiscus*: PCM and SEM; cuticular ornamentation of *Barbaria*: PCM) and of Michalczyk & Kaczmarek [15] (for *Barbaria*: cuticular ornamentation under PCM and SEM; cuticle structure under SEM and through drawings), clarifying any doubt. In Table 3, all possible image comparisons from the abovementioned literature reports are indicated. It is true that *B. cf. rufoviridis* observed by us and shown, for example, in Nelson et al. [53] (from Ecuador) shares with *Viridiscus* the presence of green pigments that do not dissolve in mounting media, but we do believe that this simple character in common is far less relevant in the genus definition with respect to the complexity of the cuticular structure.

**Table 3.** References for the various images from [15,37,47,48] showing the cuticle characteristics of the genera *Viridiscus* and *Barbaria*, and of *B. cf. rufoviridis* comb. nov.

Characters	Image Type	Figures of the Genus <i>Viridiscus</i>	Figures of <i>B. cf. rufoviridis</i> comb. nov. (Argentine Material)	Figures of the Genus <i>Barbaria</i>
Cuticular ornamentation	PCM	4e, 5e, 6f in Gąsiorek et al. [48]	1–2 in Peluffo et al. [37]	4a, 5a, 6a in Gąsiorek et al. [48] 2, 6, 13, 15, 25 in Michalczyk & Kaczmarek [15]
	SEM	7d in Gąsiorek et al. [48]	3–5 in Peluffo et al. [37]	3–4; 9–10; 14, 16, 23 in Michalczyk & Kaczmarek [15]
Cuticle structure	SEM	-	-	11–12, 53–54 in Michalczyk & Kaczmarek [15]
	TEM	-	1–2 in Rocha et al. [47]	-
	drawings	-	-	72–74 in Michalczyk & Kaczmarek [15]

#### 4. Discussion and Conclusions

The present work allowed us to update the checklist of Argentine limno-terrestrial tardigrade species and subspecies; such checklist has grown from 111 units (reliable plus dubious records from Kaczmarek et al. [46]) to 119 units in spite of the fact that 14 dubious records (included in the old checklist) have been excluded. We also provide evidence that 33 species were described from samples collected in Argentina (*terra typica*); of those, a good 28 are currently endemic for the country.

The Republic of Argentina occupies 2.78 million km<sup>2</sup> and is the second largest country in South America and the eighth largest in the world. Its vast surface comprises a very high diversity of macro- and microenvironments, many still unknown or unexplored; thus, the numbers of species reported to-date are most likely highly underestimated.

This can also be noticed from Figure 1, in which it is evident that previous surveys did not take into account any attempt to have a uniform distribution in order to explore the various part of the country. There are areas with many records and others unexplored. This may be due to at least two factors: one is the vicinity to the place of Argentinean authors' residence or work (as is the case for sampling in the province of La Pampa and Salta); the second factor is related to areas exploited touristically (as occurs for southern Patagonia and northern Argentina), analogously stated by Jørgensen [55] for Africa.

On the contrary, of the 23 provinces in which the country is divided, there are 7 in which there are no records because there have been no studies at all.

Indeed, the most studied provinces also still produce good results through investigations (e.g., Rocha et al. [42]; Rocha et al. [52]), showing that we are far from a satisfactory knowledge from the faunistic and taxonomic (and more) point of view.

These observations clearly indicate that it is necessary to continue studying the limno-terrestrial tardigrades of the regions already under study, and to complete the knowledge for the entire country by adding areas still not investigated.

The present work also provides a taxonomic adjustment (the case of *Barbaria rufoviridis* comb. nov.), and to correct past uncertain diagnoses (the case of the previous *Milnesium* cf. *tardigradum*, which was hiding three different species). These are examples of how working only with lists of species can produce collateral data that are useful in other fields.

Several past species records still remain dubious, and this is another task challenging future studies.

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