A georeferenced dataset of Italian occurrence records of the phylum Rotifera

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ABSTRACT

We report a dataset of known and published occurrence records of Italian taxa from species (and subspecies) to family rank of the phylum Rotifera; we considered only Bdelloidea, Monogononta, and Seisonacea, and did not include Acanthocephala. The dataset includes 15,525 records (12,015 of which with georeferenced coordinates) of 584 valid species and subspecies names and other taxa at family level, gathered from 332 published papers. The published literature spans the period from 1838 to 2022, with the lowest number of papers published during the first half of the twentieth century, followed by an increasing number of papers, from 20 to more than 60 in each decade. The Italian regions with the highest number of records and species are Emilia-Romagna, Lombardy, and Piedmont, whereas no records are known for Molise. The number of species known from each region mostly mirrors sampling efforts, measured as the number of publications per region. The dataset is available through the Open Science Framework (OSF), and all the georeferenced occurrence data have been uploaded to the Global Biodiversity Information Facility (GBIF).

INTRODUCTION

Thanks to the project 'Checklist delle Specie della Fauna d'Italia' (Minelli *et al.*, 1993-1995), Italy was one of the first countries in the world to have a list of all the species of animals known from its territory. The project to catalogue all known animals in Italy was updated after three decades, increasing the number of known taxa, with a project that is still underway (Bologna *et al.*, 2022). However, to speed up the collection process the project did not include detailed georeferenced records and used large geographical units within the country instead. The aim of the current paper is to provide a detailed list of all georeferenced records of the phylum Rotifera in Italy.

The phylum Rotifera is composed of about 2,000 species of microscopic animals living in any type of water, including freshwater, brackish, and marine environments, but also limno-terrestrial habitats such as the thin water layers surrounding mosses, lichens, and soil particles (Fontaneto and De Smet, 2015). As suggested by Fontaneto and Plewka (2021), rotifers are here considered in their traditional meaning, without the inclusion of Acanthocephala, a group of obligate parasites, which is known to be phylogenetically included within Rotifera, but characterised by different morphology, body size, and ecology. The number of taxa at species and subspecies rank known from Italian rotifers was 245 for the first checklist in 1995 (Braioni and Ricci, 1995) and 483 for the updated checklist in 2022 (Fontaneto *et al.*, 2022). Here, we report a higher number of species, 584, and make the dataset freely available online through the Open Science Framework (OSF) for all the data and the Global Biodiversity Information Facility (GBIF) for georeferenced data.

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Key words: Darwin Core, GBIF; Italy; occurrence dataset; rotifers.

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Summary statistics

The dataset of known rotifer records in Italy was built based on 332 published papers, spanning the period from 1838 to 2022. In detail, the number of articles summed by decade was lowest during the first half of the twentieth century, with a minimum concurrently with the Second World War. Subsequently, the number of publications increased, from 20 papers per decade until the end of the last century to more than 60 in the first decade of the current century (Fig. 1).

The dataset includes 15,525 occurrence records, 12,015 of which (77.4%) with georeferenced coordinates. A total of 12,673 records belong to 584 taxa at valid species and subspecies level, 697 records belong to 18 species groups (e.g., *Synchaeta* gr. *tremula-oblonga*, *Trichocerca* gr. *similis-birostris*), 1,759 records belong to 54 taxa at genus level, and 74 records belong to 7 taxa at family level. In addition, 322 records refer to taxa that are nowadays considered either as *species inquirendae*, *nomina nuda, or genera inquirenda* (Segers *et al*., 2012). Of the 15,525 occurrences, we counted as valid names 1,055 (6.8%) Bdelloidea, 112 (0.7%) Collothecacea, 1,283 (8.2%) Flosculariaceae, 12,021 (77.4%) Ploima, and 35 (0.2%) Seisonacea. This detailed literature search increased to 584 the number of known rotifer taxa at species and subspecies rank reported in previous reviews, which were 245 in 1995 (Braioni and Ricci, 1995) and 483 in 2022 (Fontaneto *et al.*, 2022).

The regions with the highest species richness and the highest number of records are Emilia-Romagna, Lombardy, and Piedmont, whereas no records are known for Molise and only two records are known for Marche (Fig. 2, Tab. 1). The number of species known for each region correlates with the number of papers published for the same region (Fig. 3), confirming the strong effect of sampling bias on the current knowledge on rotifer biodiversity and biogeography (Dumont, 1983; Fontaneto *et al*., 2012) and demonstrating a clear example of the Wallacean shortfall in biodiversity (Hortal *et al.*, 2015).

The dataset is freely available from the OSF (https://osf.io/vt7gq/) and it includes 25 columns reporting metadata and additional information on taxonomy, habitat, and environmental variables (Tab. 2). The 11,278 georeferenced records at subspecies, species, and genus level have also been uploaded to the GBIF website (https://www.gbif.org/dataset/8680014a-95df-462c-ad28-6c3ef15b42b6).

Dataset description

The dataset was structured based on the Darwin Core Standard (Wieczorek *et al.*, 2012), with each row containing a record of a rotifer taxon from a sample from Italy, as cited in the literature. The columns report the original and updated taxon name, additional taxonomic information together with origin of the data, habitat, and environmental variables (Tab. 2).

Object name: Italian rotifer records

Data set citation:

- OSF: CNR-IRSA. 2022. "Italian_rotifer_records." OSF. November 22. doi:10.17605/OSF.IO/VT7GQ;
- GBIF: Ferrari V, Gualdi A, Bertani I, Fontaneto D, Kamburska L, Karimullah K, Marrone F, Obertegger U, Rossetti G, Tiberti R, Cancellario T (2022). Italian rotifer records. Version 1.11. Consiglio Nazionale delle Ricerche - Istituto di Ricerca sulle Acque. Occurrence dataset https://doi.org/10.15468/g55n4z

Character encoding: UTF-8

Format name: csv

Format version: 1.11

Distribution (permanent link):

- OSF, https://osf.io/vt7gq/ (DOI: doi.org/10.17605/OSF.IO/VT7GQ);
- GBIF, https://www.gbif.org/dataset/8680014a-95df-462c-ad28-6c3ef15b42b6 (DOI: doi.org/10.15468/g55n4z)

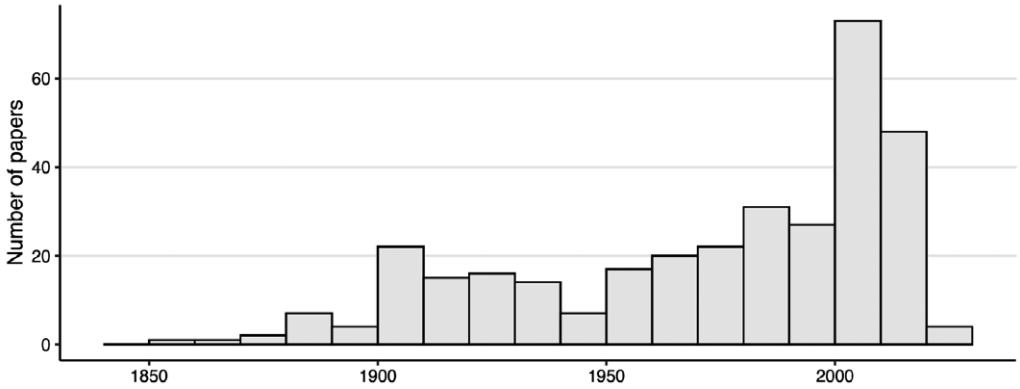

Fig. 1. Number of publications mentioning rotifer occurrence records in Italy from 1838 to 2022, with bins representing 10 years. The decades before 1850 and after 2020 do not span 10 years but are reported only to report all data.

Date of creation: 15 October 2022
Date of last revision: 22 November 2022
Date of publication: 22 November 2022
Update policy: The dataset at OSF cannot be updated while any new record uploaded to GBIF by anyone will contribute to updating the data on georeferenced records of Italian rotifers.
Language: English
Licence of use: Both access and use are free to any user (CC-BY 4.0). The authors would appreciate users providing a link to the original dataset (OSF: https://osf.io/vt7gq/; GBIF: https://www.gbif.org/dataset/8680014a-95df-462c-ad28-6c3ef15b42b6) or citing the present paper when using the data in research projects. Stakeholders interested in additional information can contact authors *via* the contact information provided in the metadata.
Metadata language: English
Metadata managers: Diego Fontaneto (diego.fontaneto@cnr.it), Lyudmila Kamburska (lyudmila.kamburska@irsa.cnr.it), Tommaso Cancellario (tommaso.cancellario@gmail.com).

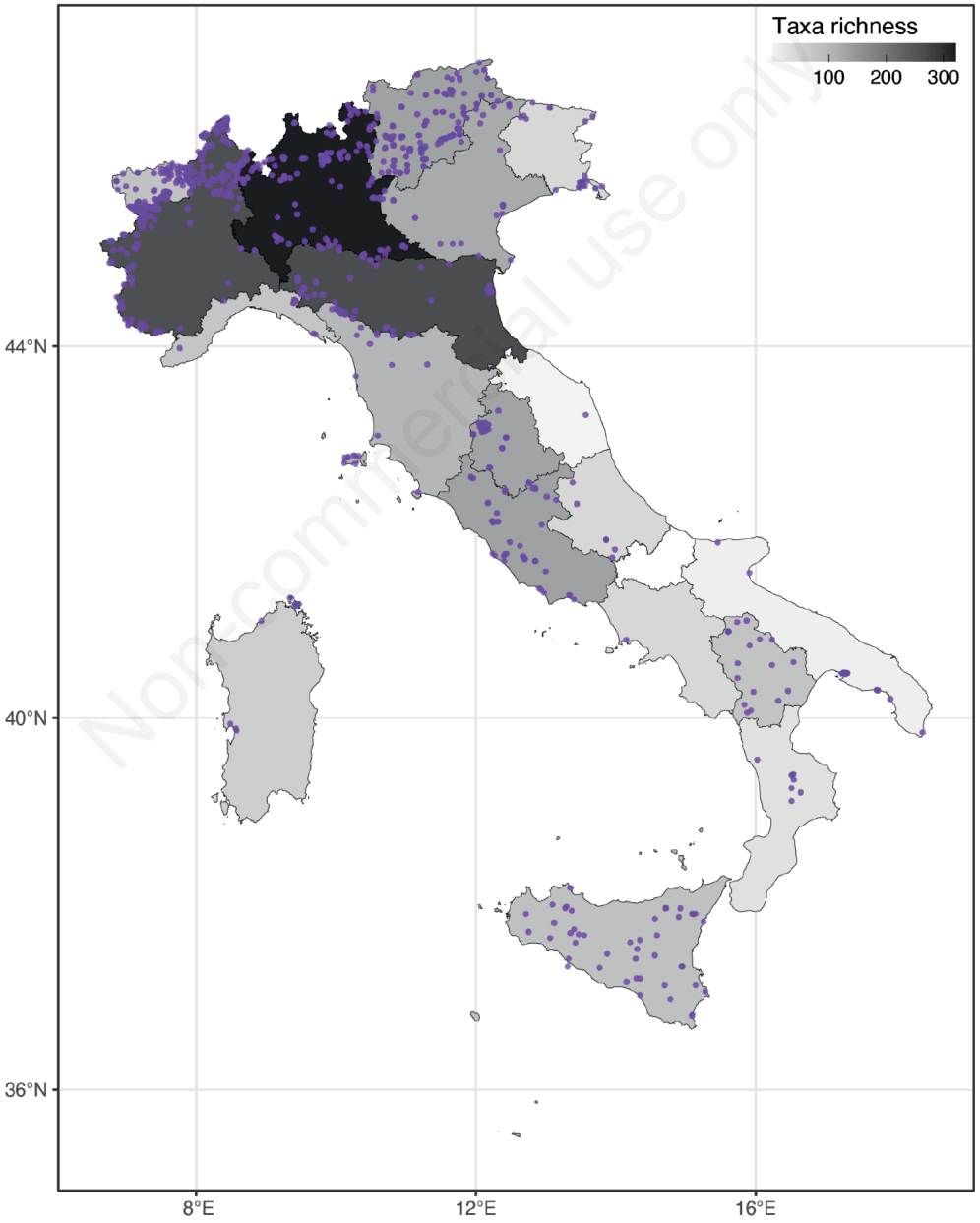

Fig. 2. Sampling sites distributed along the Italian peninsula. Shades of grey are proportional to taxa richness for each region. Coloured circles represent georeferenced sampling sites.

Tab. 1. List of references reporting records of rotifers, divided by Italian region.

Region	Reference
Abruzzo	Brunelli and Cannicci (1950); Braioni and Gelmini (1983); Cannicci (1952); Gianotti and Di Giovanni (1971)
Aosta Valley	Azzoni *et al.* (2015); Bellati *et al.* (2014); Braioni and Gelmini (1983); De Leone (1913); Fontaneto and Ricci (2006); Fontaneto *et al.* (2007a); Giussani *et al.* (1986); Manfredi (1930); Mola (1931); Pavesi (1904); Tiberti (2011); Tiberti (2021); Tiberti and Barbieri (2011); Tiberti and Iacobuzio (2013); Tiberti *et al.* (2013); Tiberti *et al.* (2014); Tiberti *et al.* (2019a); Tiberti *et al.* (2019b); Tiberti *et al.* (2020); Tonolli and Tonolli (1951); Zschokke (1895)
Apulia	Cannicci (1939); De Smet *et al.* (2015); Denitto *et al.* (2006); Ferraro *et al.* (2017); Fontaneto *et al.* (2022); Moscatello and Belmonte (2004); Moscatello and Belmonte (2007); Moscatello and Belmonte (2009); Moscatello *et al.* (2004); Parenzan (1956); Pati and Belmonte (2003); Rubino *et al.* (2002); Rubino *et al.* (2009b)
Basilicata	Alfonso (2007); Alfonso *et al.* (2010); Braioni and Gelmini (1983); Cannicci (1952); Forti and Trotter (1908); Leoni and Garibaldi (2009); Manfredi (1930); Mola (1931); Spicciarelli and Marchetto (2019)
Calabria	Boggero *et al.* (2016); Alfonso (2007); Alfonso *et al.* (2010); Braioni and Gelmini (1983); Ferrari *et al.* (1996); Fontaneto *et al.* (2022); Provini *et al.* (1998)
Campania	Costa (1838); von Daday (1889); De Smet *et al.* (2015); Ehrenberg (1858); Fontaneto *et al.* (2022); Illgen (1916); Iroso (1910a); Iroso (1910b); Manfredi (1930); Mola (1930); Mola (1931); Plate (1887); Plate (1888); Rousselet (1902)
Emilia-Romagna	Antonietti *et al.* (1988); Bertani *et al.* (2009); Bertani *et al.* (2011); Bertani *et al.* (2016); Bodini *et al.* (2018); Boggero *et al.* (2016); Bonacina *et al.* (1991); Bondavalli *et al.* (2006); Braioni and Gelmini (1983); Cannicci (1952); Ceccherelli and Ferrari (1982); De Smet *et al.* (2015); Ferrari (1976); Ferrari and Ascolini (1975); Ferrari and Mazzoni (1989); Ferrari *et al.* (1973); Ferrari *et al.* (1984a); Ferrari *et al.* (1984b); Ferrari *et al.* (1988); Fontaneto *et al.* (2022); Issel (1904); Madoni (1989); Manfredi (1930); Mola (1930); Mola (1931); Moroni (1954); Moroni (1955); Moroni (1967); Padovani (1911); Paris *et al.* (1993); Pasquini (1923b); Pati *et al.* (1999); Ricci and Zullini (1978); Rossetti *et al.* (2006); Sorokin and Zakuskina (2010); Tavernini (2008); Tavernini and Rossetti (2001); Tavernini *et al.* (2005); Tavernini *et al.* (2009a); Tavernini *et al.* (2009b); Teodoro (1926b); Tonolli and Tonolli (1951); Toschi (1937); Viaroli *et al.* (1994a); Viaroli *et al.* (1994b); Zullini and Ricci (1980)
Friuli-Venezia Giulia	Braioni and Gelmini (1983); Claus (1876); De Smet *et al.* (2015); Fontaneto *et al.* (2007b); Fontaneto *et al.* (2008b); Fontaneto *et al.* (2022); Giussani *et al.* (1986); Grube (1861); Illgen (1916); Marcuzzi and Lorenzoni (1970); Specchi and Stoch (1983); Tonolli and Tonolli (1951); Zelinka (1888)
Latium	Alfinito *et al.* (1976); Apolloni (1934); Ardizzone *et al.* (1991); Bazzanti and Stella (1977); Bazzanti *et al.* (1987); Bazzanti *et al.* (1989); Boggero *et al.* (2016); Braioni and Gelmini (1983); Cannicci (1952); Cianficconi *et al.* (1985); Ciuffa (2009); D'Ancona (1941); De Leone (1913); De Smet *et al.* (2015); Di Giovanni *et al.* (1979); Ferrara and Margaritora (1977); Ferrara *et al.* (2002); Ferrari (1972); Fontaneto *et al.* (2022); Guancini *et al.* (1997); Hutchinson (1964); Issel (1910); Margaritora *et al.* (1981); Margaritora *et al.* (1988); Margaritora *et al.* (2001); Margaritora *et al.* (2003); Mola (1930); Moretti *et al.* (1979); Latella *et al.* (1999); Parise (1961); Seminara *et al.* (2008); Stella (1947); Stella (1951a); Stella (1951b); Stella (1956); Stella (1963); Stella and Angelini (1952); Stella and Argenti (1954); Stella and Margaritora (1966a); Stella and Margaritora (1966b); Stella and Margaritora (1970); Stella and Margaritora (1972); Stella and Socciarelli (1950); Stella *et al.* (1972); Stella *et al.* (1978); Vagaggini *et al.* (2002); Volterra-D'Ancona (1936); Zacharias (1905b)
Liguria	De Smet *et al.* (2015); Ferrari (2014); Fontaneto and Melone (2003b); Fontaneto *et al.* (2022); Giussani *et al.* (1986); Issel (1904); Mola (1931); Ricci and Melone (1998); Tavernini and Rossetti (2001); Tavernini *et al.* (2009a)
Lombardy	Barbato (1980); Barbato (1987); Barbato (1988); Bertani *et al.* (2011); Bertani *et al.* (2012); Bertani *et al.* (2013); Bertani *et al.* (2016); Boggero *et al.* (2016); Braioni and Gelmini (1983); Burckhardt (1914); Callerio (1920); Cantonati and Sconfietti (1996); Corti (1919); Corti (1920); Cotta-Ramusino and Leoni (2001); D'Ancona *et al.* (1961); De Leo and Ferrari (1993); De Marchi (1910); De Smet and Segers (2017); Fehlmann (1912); Ferrari and Mazzoni (1989); Ferrari *et al.* (1986); Ferrari *et al.* (1989); Ferrari *et al.* (2006); Fontaneto and Melone (2003b); Fontaneto and Melone (2005); Fontaneto and Ricci (2006); Fontaneto *et al.* (2004a); Fontaneto *et al.* (2007a); Fontaneto *et al.* (2007b); Fontaneto *et al.* (2022); Garbini (1894); Garbini (1895); Garbini (1900); Garibaldi *et al.* (2003); Gelmini (1929); Giussani *et al.* (1986); Imhof (1885); Imhof (1887); Kerrison *et al.* (1988); Leasi and Ricci (2010); Leoni *et al.* (2007); Maggi (1878); Manfredi (1925); Manfredi (1927); Manfredi (1929); Manfredi (1930); Manfredi (1932); Margaritora *et al.* (2006); Marotta *et al.* (2012); Melone and Ricci (1995); Mola (1930); Mola (1931); Moroni (1967); Paganelli and Sconfietti (2013); Paganelli *et al.* (2014); Pagani *et al.* (1993); Ravera (1969); Ricci (1991); Ricci and Fascio (1995); Ricci *et al.* (1989); Rossetti *et al.* (2003b); Rossetti *et al.* (2009); Sommer *et al.* (2019); Steiner (1912); Tonolli (1962); Tonolli and Tonolli (1951); Vialli (1924); Zacharias (1905a); Zacharias (1905b)
Marche	Moretti (1950)
Piedmont	Ambrosetti *et al.* (2011); Azzoni *et al.* (2015); Badino and Robotti (1975); Baldi (1943); Baldi (1951); Bellati *et al.* (2014); Bertoni *et al.* (2002); Boggero *et al.* (2016); Bonacina and Pasteris (2001); Bonacina *et al.* (1988); Braioni and Gelmini (1983); Burckhardt (1914); Cammarano and Manca (1997); Catalan *et al.* (2009); De Bernardi (1981); De Bernardi *et al.* (1988); De Bernardi *et al.* (1990); De Marchi (1910); Eckert *et al.* (2021); Edmondson (1960); Eyres *et al.* (2012); Ferrari (1971); Fontanella *et al.* (2009); Fontaneto and Ambrosini (2010); Fontaneto and Melone (2003a); Fontaneto and Melone (2003b); Fontaneto and Melone (2003c); Fontaneto and Ricci (2006); Fontaneto *et al.* (2003a); Fontaneto *et al.* (2003b); Fontaneto *et al.* (2004a); Fontaneto *et al.* (2005); Fontaneto *et al.* (2006b); Fontaneto *et al.* (2007a); Fontaneto *et al.* (2007b); Fontaneto *et al.* (2008a); Fontaneto *et al.* (2022); Garbini (1900); Giussani *et al.* (1986); Goldman *et al.* (1968); Herzig (1987); Imhof (1885); Issel (1901); Manca and Comoli (1999); Manca *et al.* (2008); Mola (1930); Mola (1931); Moroni (1967); Nowell *et al.* (2018); Obertegger and Manca (2011); Obertegger *et al.* (2014); Pirocchi (1933); Piscia and Manca (2014); Piscia *et al.* (2016a); Piscia *et al.* (2016b); Piscia *et al.* (2020); Ricci and Fascio (1995); Robotti (1975a); Robotti (1975b); Rossetti *et al.* (2003a); Ruggiu (1969); Bonacina *et al.* (1988); Santo *et al.* (2005); Sommer *et al.* (2016); Tiberti (2011); Tiberti (2021); Tiberti and Iacobuzio (2013); Tiberti *et al.* (2014); Tiberti *et al.* (2019a); Tiberti *et al.* (2019b); Tiberti *et al.* (2020); Tonolli (1962); Tonolli and Tonolli (1951); Zweerus *et al.* (2017)

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Tab. 1. Continued from previous page.

Region	Reference
Sardinia	Benassi (1983); Braioni and Gelmini (1983); Cannicci (1939); Curini-Galletti *et al.* (2012); De Smet *et al.* (2015); Fontaneto *et al.* (2022); Mola (1913a); Mola (1913b); Mola (1928); Mola (1930); Mola (1931); Moroni (1967)
Sicily	Alfonso *et al.* (2010); Berzins (1954); Calvo *et al.* (1993); De Smet *et al.* (2015); Fontaneto *et al.* (2022); Guglielmo *et al.* (2013); Manfredi (1930); Massi *et al.* (2021); Mola (1931); Moniez (1889); Moscatello and Belmonte (2009); Naselli-Flores and Barone (2002); Naselli-Flores *et al.* (1998); Naselli-Flores (1999); Naselli-Flores and Barone (1991); Rodríguez *et al.* (2013); Rubino *et al.* (2009a)
Trentino-South Tyrol	Angeli and Tavernini (2006); Angeli *et al.* (2002); Barbato (1977); Boggero *et al.* (2016); Braioni (1981); Braioni and Gelmini (1983); Brehm and Zederbauer (1904); Buffa (1902); Cieplinski *et al.* (2017); Cieplinski *et al.* (2018); Colangeli *et al.* (2016); Flaim and Obertegger (2016); Fontaneto and Ricci (2006); Fontaneto *et al.* (2022); Giussani *et al.* (1986); Kimpel *et al.* (2015); Largaiolli (1906a); Largaiolli (1906b); Largaiolli (1906c); Largaiolli (1907); Largaiolli (1908); Largaiolli (1910); Largaiolli (1931); Manfredi (1930); Mola (1931); Monti and Stella (1934); Obertegger and Flaim (2018); Obertegger *et al.* (2006a); Obertegger *et al.* (2006b); Obertegger *et al.* (2008a); Obertegger *et al.* (2008b); Obertegger *et al.* (2010a); Obertegger *et al.* (2010b); Obertegger *et al.* (2012); Obertegger *et al.* (2014); Obertegger *et al.* (2018); Parenzan (1931); Pirocchi (1933); Stella (1931); Stella (1934); Stella (1936); Tolotti *et al.* (2006); Tonolli and Tonolli (1951)
Tuscany	Braioni and Gelmini (1983); Cannicci (1952); De Smet (2007); De Smet (2009); De Smet (2015); De Smet *et al.* (2015); Di Milia (1962); Fontaneto *et al.* (2004b); Fontaneto *et al.* (2022); Issel (1901); Mola (1931); Moroni (1967); Parise (1966); Pasquini (1924b); Stella and Bascheri Salvatori (1953); Tavernini (2008); Tavernini *et al.* (2005); Tavernini *et al.* (2009a); Tosi and Torricelli (1988)
Umbria	Boggero *et al.* (2016); Braioni and Gelmini (1983); Cannicci (1952); Di Giovanni (1959); Di Giovanni (1964); Edmondson (1965); Fontaneto *et al.* (2022); Gianotti (1962); Moretti (1959); Moretti *et al.* (1979); Pasquini (1923a); Pasquini (1924a); Pasquini (1924b); Stella (1949); Taticchi (1968)
Veneto	Braioni (1981); Braioni and Gelmini (1983); Braioni and Gottardi (1979); Braioni *et al.* (2001); Comello and Teodoro (1913); De Smet *et al.* (2015); Ferraguti and Melone (1999); Ferrari *et al.* (1985); Fontaneto *et al.* (2022); Mamcarz *et al.* (2002); Garbini (1894); Garbini (1895); Garbini (1903); Giussani *et al.* (1986); Imhof (1885); Manfredi (1930); Merlo (1959); Moccia *et al.* (2000); Mola (1930); Mola (1931); O'Riordan Migliardi (1914); Padovani (1911); Parise (1966); Pasquali (1940); Ricci *et al.* (1993); Salmaso and Naselli-Flores (1999); Stella (1931); Teodoro (1912); Teodoro (1914); Teodoro (1925); Teodoro (1926a); Tonolli and Tonolli (1951); Zacharias (1905b)

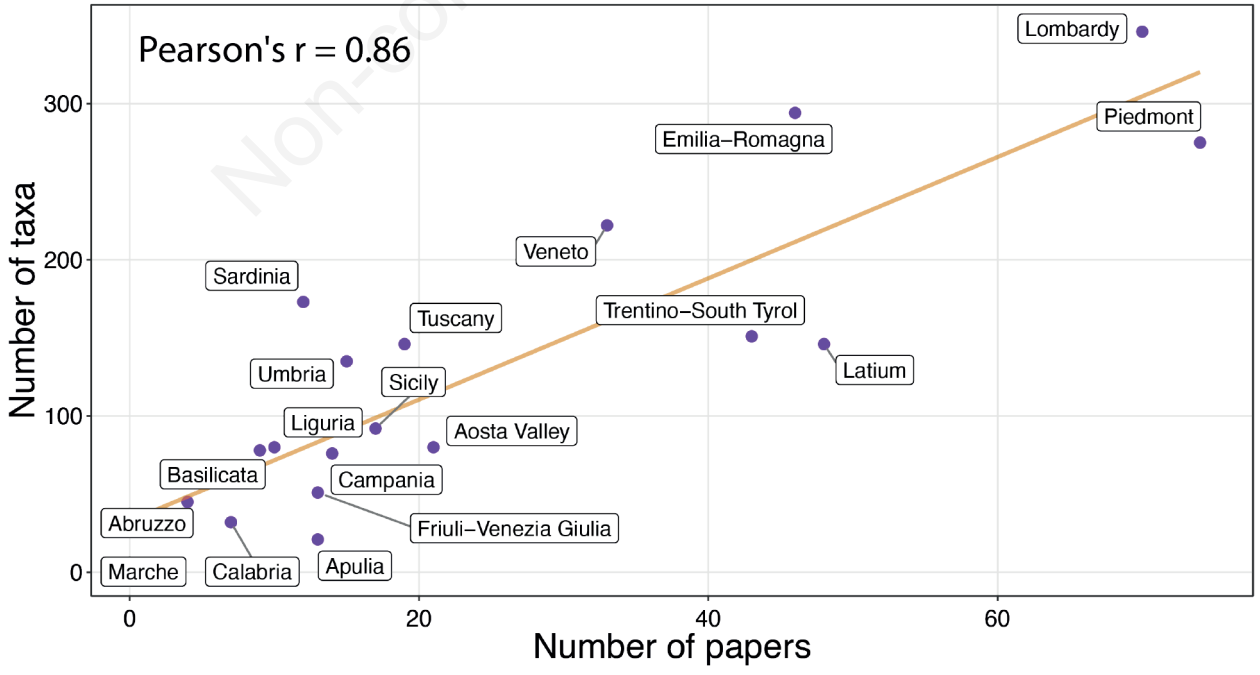

Fig. 3. Correlation between number of published papers and taxa richness for each Italian region. The name of each region is reported close to each dot. The Pearson's r correlation value is reported in the top left corner.

Management details

Project title: A georeferenced dataset of known Italian rotifer records. GBIF Freshwater.
Database managers: Lyudmila Kamburska, Tommaso Cancellario.
Temporal coverage: The present dataset includes all the records of rotifers published in the literature between 1838 and October 2022.
Record basis: Literature records
IT specialists: Lyudmila Kamburska, Tommaso Cancellario.
Funding grants: Data were gathered within the framework of the National Biodiversity Future Center of Italy and The New Checklist of the Italian Fauna (Bologna *et al*., 2022).

Geographic coverage

Study area: Sites are distributed along the Italian political territory (Fig. 2). Data are georeferenced according to WGS 84 datum. Whenever possible, georeferenced information was gathered directly from the published information. Alternatively, if precise geographic information was not reported in the literature, the georeferenced data was inferred with the highest possible precision. In several cases, no georeferenced information was available.
Bounding box: min Longitude: 6.62 – min Latitude 35.49 – max Longitude: 18.52 – max Latitude: 47.09.
Geographical subdivisions: Records were attributed to the Italian administrative regions.

Tab. 2. Description of the dataset available in OSF with specific information relative to column names, description, units, and attribute type.

Attribute	Column_name	Description	Units	Attribute Type
ID	ID	Unique number corresponding to specific occurrence		Integer
Kingdom	kingdom	Taxonomic rank below Domain		Text
Phylum	phylum	Taxonomic rank below Kingdom		Text
Class	class	Taxonomic rank below Phylum		Text
Order	order	Taxonomic rank below Class		Text
Class	family	Taxonomic rank below Order		Text
Genus	genus	Taxonomic rank below Family and first element in the Latin binomial name		Text
Specific epithet	specificEpithet	Second element in the Latin binomial name		Text
Infraspecific epithet	infraspecificEpithet	Third element in the Latin trinomial name		Text
Original species name	speciesOriginal	Species name retrieved in the original work		Text
Accepted name	Accepted Name	Reviewed species name		Text
Accepted author name	Accepted author	Accepted author associated with "Accepted Name"		Text
Reference accepted name	Ref. accepted name	Source to establish the Accepted name		Text
Taxonomic rank	taxonRank	Taxonomic rank information (*e.g.*, genus, species)		Text
Latitude	Latitude	Coordinate that specifies the N–S position of a point on the Earth surface	Decimal degrees, WGS84	Numeric
Longitude	Longitude	Coordinate that specifies the E–W position of a point on the Earth surface	Decimal degrees, WGS84	Numeric
Administrative region	Region	Administrative division of the Italian Republic		Text
Habitat	Habitat	Habitat where the taxon was found		Text
Locality	Locality	Particular area where the taxon was found		Text
Elevation	Elevation (30s_res)	Vertical distance above sea level	m	Integer
Annual Mean Temperature	Bio1 (30s_res)	Annual mean temperature (https://worldclim.org/data/bioclim.html)	°C	Numeric
Max Temperature of Warmest Month	Bio5 (30s_res)	Maximum temperature of warmest month (https://worldclim.org/data/bioclim.html)	°C	Numeric
Min Temperature of Coldest Month	Bio6 (30s_res)	Min temperature of coldest month (https://worldclim.org/data/bioclim.html)	°C	Numeric
Annual Precipitation	Bio12 (30s_res)	Annual precipitation (https://worldclim.org/data/bioclim.html)	mm	Integer
References	Reference	Short reference. Detailed reference information is reported in Tab. 1		Text

Sampling design: The general strategy was to obtain all the published literature records of rotifers known from the Italian territory, covering different freshwater, marine, brackish, and limno-terrestrial habitats.
Habitat type: Information on habitat types was gathered from the original literature and reported as such. No attempt to standardise habitat types was performed and the different habitats are reported in the OSF dataset as in the original literature.
Biogeographic region: Within the Palearctic realm, according to the definitions of the European Environmental Agency (2017), the dataset covers three European biogeographical regions: Alpine, Continental, and Mediterranean.
Country: Italy.
Quality control for geographic data: Reliability of coordinates was checked in Google maps to identify the correctness of sites. Geographic coordinate format, coordinates within country/provincial boundaries, and the absence of anomalous ASCII characters in the dataset were also double checked.

Literature search

General description: The information on occurrence records of rotifer species at each site comes from published scientific papers, as well as grey literature such as theses and notes in technical reports from local authorities.
Literature search methods: All relevant literature was obtained first by searching through search engines (Google Scholar, Scopus, Web of Science) with combinations of keywords to identify the target organisms, such as rotifer* or rotatoria or monogonont* or bdelloid* or seison*, and geographic targets, such as ital* or the names of all Italian regions, both in Italian and in English. Additional references were searched through the grey literature with online searches outside of the three academic databases. All the literature found was screened for records, and the additional references cited in them were searched and screened, too. The dynamic nature of the GBIF online portal will allow for the inclusion of any overlooked and/or new records.
Literature list: The 332 references that we found and that contained records of rotifers at least at family level are listed in Tab. 1.
Quality control for literature data: The search for additional literature was considered completed when no new references could be found in the reference list of the screened papers.

Taxonomic coverage

General description: The dataset covers only organisms of the Phylum Rotifera in its traditional meaning, with the exclusion of Acanthocephala (Fontaneto and De Smet, 2015).
Taxonomic ranks: Data from subspecies to species, genus, and family rank were included in the dataset, whereas records mentioning only higher ranks, *e.g.*, Ploima, Bdelloidea, Monogononta, and Rotifera were excluded.
Taxonomic methods: All names reported in the published literature were included and reported in the column 'originalName'. Given the continuous changes in biological nomenclature (Thomson *et al*., 2018), all scientific names published before the year 2000 were updated to the currently accepted nomenclature, following the Rotifer List of Available Names, LAN (Segers *et al.*, 2012). In contrast, no update was performed for all scientific names published after the year 2000, following the nomenclature of the Rotifer World Catalog (Jersabek and Leitner, 2013). All valid names were updated in the column 'acceptedName' for taxa at species, genus, and family level. All invalid names (*i.e*., at the level of *species inquirenda, nomen nudum*, *genus inquirendum*) were reported in OSF but were not included in the records uploaded to GBIF. The rotifer LAN stabilised nomenclature by performing a revision of names with synonyms and delimitation of genera. All names were also checked against the backbone of GBIF. The dataset in GBIF uses only the updated nomenclature, with no mention of the original names reported in the published literature.
Taxon specialists: Isabella Bertani, Diego Fontaneto, Ulrike Obertegger, Giampaolo Rossetti.
Quality control for taxonomic data: Nomenclature validation and cleaning were based on the rotifer LAN for accepted species and genus names, on the Rotifer World Catalogue, and on the taxonomic backbone of GBIF.

ENVIRONMENTAL VARIABLES

Environmental variables (Elevation, Annual Mean Temperature, Max Temperature of Warmest Month, Min Temperature of Coldest Month, Annual Precipitation - spatial resolution 30s) were downloaded from https://worldclim.org (Fick and Hijmans, 2017). To retrieve variable values for each occurrence we overlaid the georeferenced points with the raster layers using the function *Sample raster values* from QGIS v.3.22.

DATA AVAILABILITY

All data are available at OSF DOI: doi.org/10.17605/OSF.IO/VT7GQ.

All georeferenced data are available at GBIF DOI: doi.org/10.15468/g55n4z.

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