

The Murphy spider collection at the Manchester Museum: a valuable research resource for arachnologists

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Abstract

Manchester Museum has the third largest spider (Arachnida, Araneae) collection in the UK with c. 175,000 specimens. Following a brief account of the principal spider collections acquired by the Museum between 1910 and 2017, this paper gives an overview of a major collection donated by the British arachnologist John A. Murphy in 2015. The collection contains 45,415 specimens in 25,141 vials, associated archives, and an electronic catalogue analysed in this paper. The collection constitutes an important taxonomic resource, composed of 95 families (80% of the globally known spider families), 1,133 genera (30% of the world genera) and 3,063 species, including type specimens from 14 species of Dysderidae, Zodariidae, and Uloboridae. The collection is global in scope, with species from 72 countries within six of the world's eight biogeographic regions. The Palaearctic region has the highest number of specimens (21,077), representing 1,515 species from 29 countries. The Murphy spider collection also contains c. 90% (579 species) of the known British spider species from 34 families. Currently, this collection is under recuration and documentation, with some 11,000 records already entered in the Museum database. This collection has been used as a reference for several papers and books, with 911 specimens currently on loan, and five articles published since the collection was acquired by the Manchester Museum in 2015. More than 16,000 specimens have yet to be identified, opening up the possibility for future taxonomic research and publications.

Keywords: Arachnida, Araneae, British arachnology, John A. Murphy, Frances M. Murphy, natural history collections, spiders

Introduction

Since the official opening of the Manchester Museum in 1888, entomology collections have always been an important component. The Museum's Entomology Department currently holds more than 2.5 million specimens of insects and other arthropods (Logunov and Merriman, 2012). Within the arthropods, the worldwide spider collection (class Arachnida, order

Araneae) has benefited from nine major acquisitions, of which the Murphy collection is the largest to have been donated, forming the subject of this paper. With this donation, the spider collection at the Manchester Museum has become the third largest spider depository in the UK, with over 175,000 specimens belonging to more than 3,500 species. The collection currently contains 173 type specimens, with 25



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species being represented by the holotypes and 32 by the paratypes.

This paper, following a brief history of the acquisition of several spider collections by the Manchester Museum, aims to (1) provide an overview of the Murphy spider collection with regard to its taxonomic diversity and geographical scope (countries and biogeographical regions); (2) describe the ongoing reuration of the collection; (3) provide brief details of the collectors, Frances and John Murphy; and (4) summarise the collection's use since its acquisition by the Museum in order to encourage its future use. As such, this paper does not attempt to provide an exhaustive review of the Murphy's complete bibliography.

Major spider collection acquisitions at the Manchester Museum

More than 80% of the spider specimens at the Manchester Museum come from nine personal collections, acquired between 1910 and 2017 (Figure 1). The first collection was donated by Henry Wybrow Freston (1867-1936) in 1910, with a total of 2,925 specimens representing 273 species. It was received by John Ray Hardy (1844-1921), the first to organise the Entomology Department as Senior Assistant Keeper and Curator of Entomology. He worked at the Museum until his retirement in 1918 (Logunov, 2012). In 1925, the L. A. Carr spider collection was purchased by the Museum, with a total of 7,188 specimens, adding 263 species to the museum. The reference collection belonging to David Mackie (1902-1984),

composed of 4,535 specimens (436 species), was then bequeathed to the Museum in 1984. D. Mackie was one of the founders of the British Arachnological Society (BAS) in 1964. Later, in 1991, two collections were received: from Alexander La Touche (1896-1981), containing 15,799 specimens (570 species), and from George Hazelwood Locket (1900-1991), containing 8,684 specimens (543 species). The second largest collection received to date was from John Crocker (?-2006), who donated 40,000 specimens in 2004, representing 498 species. In 2011, Eric Duffey donated 12,581 specimens (560 species) (Logunov, 2011; Breitling, 2018).

In November 2015, an important spider collection assembled by the notable British arachnologists John A. Murphy (b. 192?) and Frances M. Murphy (1926-1995) was received. The collection (42 drawers with 25,141 vials and 45,415 specimens) was donated with a corresponding archive consisting of 388 items (letters and various species lists) and an electronic catalogue (a large Microsoft Excel spreadsheet) containing detailed data labels for all collected species. This collection was the Museum's most important acquisition in terms of the number of spider specimens and species, representing an addition of nearly 50% of the specimens housed in the museum at the time (c. 90,000). Finally, in 2017, a collection of approximately 10,000 spider specimens was donated by Richard David Curtis Jones (1943-2017), a friend of John Murphy. The short historic account given above (Figure 1) does not include smaller spider collections from Russia, Central Asia, the Caucasus, the Mediterranean, Africa, etc. donated

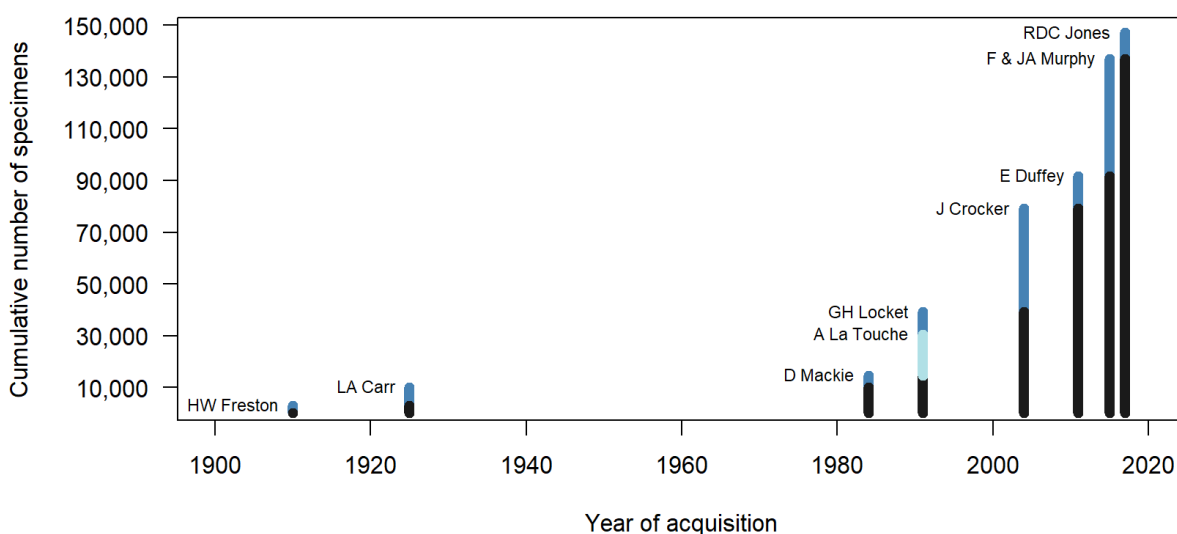


Figure 1. Cumulative numbers of specimens received over time by the Entomology Department of the Manchester Museum, from major donations (coloured/lighter portions of bars show size of each individual collection).

to the Manchester Museum by many other arachnologists or collected by the museum curator (Dmitri V. Logunov) during fieldwork; a full account of the history of Museum's arachnological collections will be provided elsewhere by the curator.

John A. Murphy (b. 192?) and Frances M. Murphy (1926–1995)

Transforming from keen naturalists to spider experts, the British arachnologists John and Frances Murphy (Figure 2) spent many years assembling a large spider collection, participating as active members of the British Arachnology Society, and contributing to the Spider Recording Scheme since its creation in 1954 (O'Neill, 1995).

Frances Mary Murphy, enthusiast naturalist, was one of the founder members of the British Arachnological Society as well as a member of 12 other arachnological groups and natural history societies. Part of her work included encouraging young arachnologists through field study courses and surveys, mainly in the south of England. The Murphy house in Hampton, UK, was described as 'a world full of spiders' in one of the BAS member handbooks; they kept in their living room not only literature (two walls of bookcases) but also specimens in tubes, in cabinets and boxes, cages with live spiders and, of course, flies to feed them (O'Neill, 1995). Frances published two books on keeping spiders and land invertebrates in captivity, with an identification guide included in one of them. These books are still invaluable resources for naturalists. Frances also contributed five papers to the *Bulletin of the British Arachnology Society*, over a dozen reports in the BAS

newsletter, two papers for other journals, and many other notes, comments, trip reports, survey descriptions, and literature reviews.

Frances and John Murphy travelled regularly to attend national and international conferences, events and courses, and also on holiday, where they were able to collect many of their specimens. Indeed, they did not miss any opportunity to collect spiders, and more than 3,600 specimens mention 'garden' in their notes on habitat and 10 of them were reported as imported to the UK. They described some of their remarkable journeys in the BAS Newsletters. For example, two journeys to the United States: to attend the American Arachnology Conference in New Mexico in 1973, and the International Meeting of the American Arachnological Society in Missouri in 1975. After the meetings, they spent time collecting spiders in the Arizona desert, at the South West Research Station of the American Museum of Natural History, and in Missouri and California (Murphy and Murphy, 1976). The review of a 'social' expedition with fellow arachnologists around Brittany in 1992 was published in the BAS Newsletters, detailing (among the personal experiences) a list of the new species for Brittany and other possible new species to France (Murphy, 1994). Another remarkable trip was to Malaysia and Borneo, where they collected in many different places, including spending nights hunting and watching spiders in the rainforests of the pristine Kinabalu National Park and in the garden around the cabin in which they stayed (Murphy and Murphy, 1980). After their second visit to South East Asia, Frances agreed to write about the spiders of this region. Tragically, she only prepared the outline of her text before



Figure 2. a) John A. Murphy; photo: Torbjörn Kronestedt, 2004. b) Frances M. Murphy; photo: Rowley Snazell, 1988.

succumbing to illness in the winter of 1995. Her husband John completed and published the book in 2000 (Murphy and Murphy, 2000).

John A. Murphy's contributions to arachnology are focused on taxonomy, especially revisionary works, and various changes in spider classification. He is also keen to add new spiders to country checklists. He was a co-author of a complete revision of the list of British spiders (Merrett and Murphy, 2000), in which 24 species were added since the previous checklist and a new taxonomic sequence of families was proposed. He has published three books and many articles, mostly for the *Bulletin of the British Arachnological Society*, but also in other scientific journals, such as *American Museum Novitates* and *Zootaxa* (WSC, 2018; BAS, 2018). J. Murphy donated his extensive library to the British Arachnological Society, including 19th and early 20th century reprints (Stanney, 2016).

John Murphy is a current honorary member of the International Society of Arachnology, in recognition of his important contributions to arachnology. In 2013, J. Murphy received the Brignoli Award in recognition of his exceptional taxonomic revision of Gnaphosidae genera, published in a two-volume book in 2007 (Murphy, 2007), including an identification atlas (Dunlop, 2013).

Overview of the collection

The following analysis is based on the electronic catalogue received with the Murphy spider collection. The catalogue is kept in the electronic archive of the Manchester Museum and is accessible through requests to the Museum's Curator of Arthropods, Dr Dmitri Logunov

(dmitri.v.logunov@manchester.ac.uk). This catalogue contains the following information: collector's number, number of individuals per vial, sex (male, female, and juvenile), taxonomy (family, genus, and species), collecting date, country and location of origin, habitat (in some cases), name of the person who identified the species and an ID date. In this report, nomenclature was checked with and updated following the World Spider Catalog (WSC, 2018). Country names were standardised using Geographic Administrative Division Map (GADM, 2018) and assigned to exclusive biogeographic regions, following Olson et al. (2001).

The Murphy spider collection contains 25,141 vials housed in 42 drawers with a total of 45,415 specimens (24,936 females, 16,360 males, and 4,119 juveniles). The specimens belong to 95 families representing more than 80% of the world's known spider families (WSC, 2018; Table 1). Nearly 30% of globally known spider genera are represented (1,133 genera) in 3,063 identified species. Approximately 64% of the collected specimens have been identified to species. A further 16,478 specimens have not been identified yet; of them, 78% have been identified to genus (Table 1). It should be noted that there are often multiple specimens of the same species per vial (range 1 – 62).

Families with the highest numbers of identified species are the Linyphiidae (494 species, 6,191 specimens), the Salticidae (432 species, 7,103 specimens), the Theridiidae (281 species, 5,844 specimens), the Gnaphosidae (271 species, 3,774 specimens), and the Araneidae (231 species, 2,677 specimens). The above five families have an average

Table 1. Identification status of specimens and vials at family, genus, and species ranks in the Murphy spider collection, and taxonomic representation of world spider fauna

Taxonomic level	Identification status	Specimens (% of total in Murphy collection)	Vials (% of total in Murphy collection)	Number of taxa (% of world spider fauna)
Family	Identified	44,831 (98.7%)	24,955 (99.3%)	95 (81.9%)
	Not identified	584 (1.3%)	186 (0.7%)	-
Genus	Identified	41,827 (92.1%)	23,329 (92.8%)	1,133 (27.8%)
	Not identified	3,588 (7.9%)	1,812 (7.2%)	-
Species	Identified	28,937 (63.7%)	16,069 (63.9%)	3,063 (6.5%)
	Not identified	16,478 (36.3%)	9,072 (36.1%)	-
Total (for each taxonomic level)		45,415	25,141	

Table 2. Species represented by type specimens in the Murphy collection as of October 2018, by family (nomenclature follows WSC, 2018)

M = Male, F = Female.

Family	No. of species			No. of specimens
	Holotypes only	Paratype(s) only	Total	
DYSDERIDAE		5	5	14
ULOBORIDAE	2		2	2
ZODARIIDAE	2	5	7	16
Total	4	10	14	32
List of species	Holotypes	Paratypes	Type locality	References
DYSDERIDAE				
<i>Dysdera corfuensis</i> Deeleman-Reinhold, 1988		2 M, 2 F	Greece, Corfu	Deeleman-Reinhold and Deeleman (1988)
<i>Dysdera dubrovninnii</i> Deeleman-Reinhold, 1988		1 M, 2 F	Yugoslavia	Deeleman-Reinhold and Deeleman (1988)
<i>Dysdera halkidikii</i> Deeleman-Reinhold, 1988		1 M, 1 F	Greece, Halkidiki	
<i>Dysdera murphyorum</i> Deeleman-Reinhold, 1988		2 M, 2 F	Greece, Corfu	Deeleman-Reinhold and Deeleman (1988)
<i>Dysdera punctoretica</i> Deeleman-Reinhold, 1988		1 M	Greece, Corfu	Deeleman-Reinhold and Deeleman (1988)
ULOBORIDAE				
<i>Miagrammopes kinabalu</i> Logunov, 2018	1 M		Malaysia, Sabah	Logunov (2018)
<i>Miagrammopes uludusun</i> Logunov, 2018	1 M		Malaysia, Sabah	Logunov (2018)
ZODARIIDAE				
<i>Mallinella denticulata</i> Dankittipakul, Jocqué et Singtripop, 2012		2 F	Malaysia	Dankittipakul, Jocqué and Singtripop (2012)
<i>Mallinella leptoclada</i> Dankittipakul, Jocqué et Singtripop, 2012		1 M, 3 F	Malaysia	Dankittipakul, Jocqué and Singtripop (2012)
<i>Mallinella microtheca</i> Dankittipakul, Jocqué et Singtripop, 2012	1 F		Malaysia, Genting	Dankittipakul, Jocqué and Singtripop (2012)
<i>Mallinella murphyorum</i> Dankittipakul, Jocqué et Singtripop, 2012	1 M		Malaysia, Johor	Dankittipakul, Jocqué and Singtripop (2012)
<i>Mallinella robusta</i> Dankittipakul, Jocqué et Singtripop, 2012		1 M	Malaysia, Johor	Dankittipakul, Jocqué and Singtripop (2012)
<i>Mallinella tricuspida</i> Dankittipakul, Jocqué et Singtripop, 2012		3 M, 3 F	Malaysia, Genting	Dankittipakul, Jocqué and Singtripop (2012)
<i>Workmania botuliformis</i> Dankittipakul, Jocqué et Singtripop, 2012		1 F	Singapore, Bukit Timah	Dankittipakul, Jocqué and Singtripop (2012)

40% of the known genera of the world spider fauna represented in the collection, and 10% of the known species (Figure 3).

The median number of specimens per species is four, with only 25% of the species being represented by 10 or more specimens. Species with the highest number of specimens are *Tenuiphantes tenuis* Blackwall, 1852 (213 specimens from 10 countries), *Locketidium couloni* Jocqué, 1981 (159 specimens; endemic to Kenya), *Drassodes lapidosus* Walckenaer, 1802 (139 specimens; 7 countries), *Pardosa proxima* C. L. Koch, 1847 (138 specimens; 5 countries), and *Haplodrassus dalmatensis* L. Koch, 1866 (134 specimens; 11 countries).

The Murphy collection at Manchester Museum currently holds type specimens for 14 species (Table 2). Two of these species (*Dysdera murphyorum* and *Mallinella murphyorum*) were dedicated to both Frances and John Murphy for "their pioneer work in the field of arachnology of Southeast Asia" (Dankittipakul, Joque and Singtripop, 2012: p. 217). However, the majority of type specimens of species described before the collection arrived at Manchester Museum are held in other collections; for instance, in the American Museum of Natural History in New York (e.g., Logunov, 2000; Platnick, Ovtsharenko and Murphy, 2001; etc.), and the Natural History Museum in London (e.g., Deeleman-Reinhold and Deeleman, 1988; Wanless, 1980; etc.). The collection also

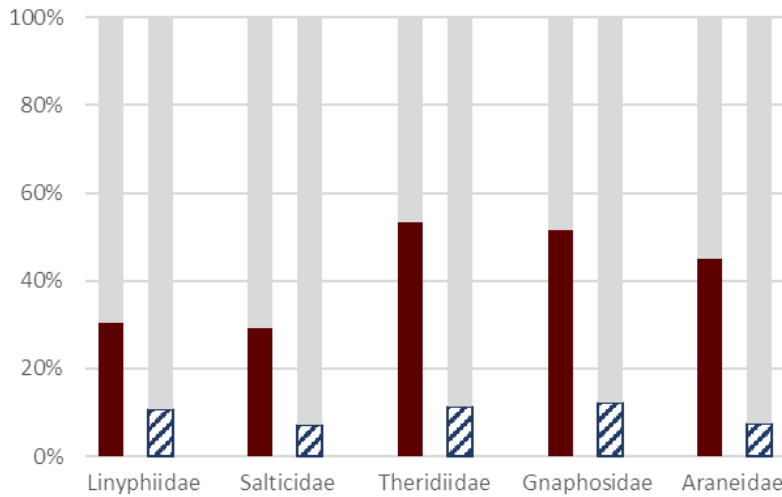


Figure 3. Proportion of world spider genera (solid bar of each family) and species (hatched bar) represented in the top five families of the Murphy collection.

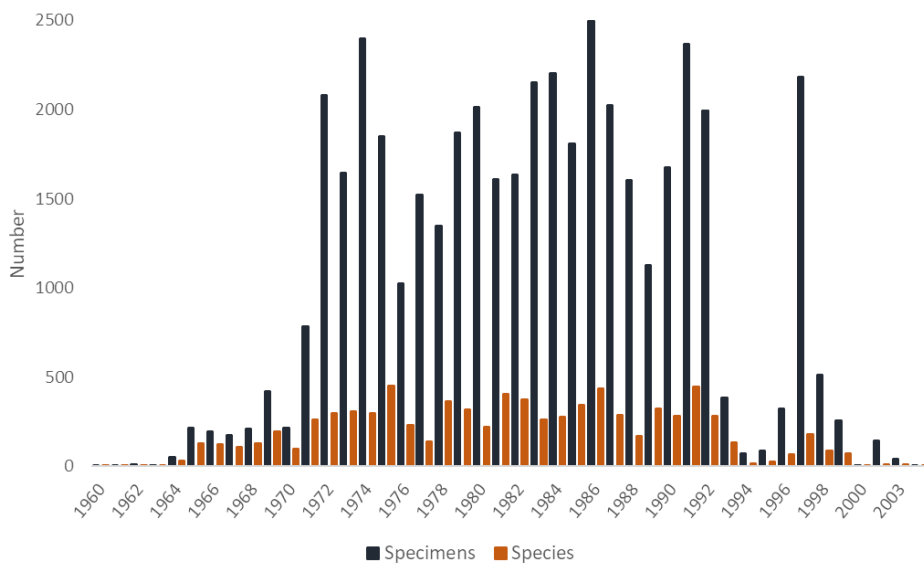


Figure 4. Number of specimens and species in the Murphy spider collection acquired per year (94 specimens were acquired before 1960, not shown here).

contains some specimens with 'museum names', i.e. prepared for descriptions of new species and even provided with new names and corresponding type labels, but not actually published, for instance, *Mallinella planotibialis* Jocque, 1990 (paratype male; family Zodariidae) from Kenya.

The Murphy spider collection comprises specimens collected from 1925 to 2004 (Figure 4), with a sustained period of active collection between 1971 and 1992. Over this 20-year period, 39,246 specimens (86% of the total collection) from 67 countries were acquired. Only 1.2% - i.e. 560 specimens and 85 species – do not have a collection date. More than a

third of specimens were collected in two months of the year – April (6,980) and August (9,690), which seems to correspond to the most common holiday months in the UK. Months with the fewest number of specimens correspond to October and December, with less than 1000 specimens collected per month.

The importance of the Murphy spider collection lies not only in its extended period of collection, but also in its geographical range, with species collected from six of the world's eight biogeographic regions (cf. Olson et al., 2001) and from 72 countries (Table 3, Figure 5). The Palaearctic Region shows the highest number of specimens (21,077) and species (1,515),

Table 3. Number of specimens and taxa by biogeographic regions (only determined species)

Biogeographic region	Number of specimens	Number of families	Number of genera	Number of species	Countries represented
Australasia	4876	58	267	262	3 (Australia, New Zealand, Papua New Guinea)
Afrotropics	8493	63	351	394	16 (Botswana, Burkina Faso, Cameroon, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Saint Helena, Senegal, Seychelles, South Africa, Tanzania, Uganda, Zimbabwe)
IndoMalay	5342	59	358	291	10 (Bhutan, Brunei, India, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, Vietnam)
Nearctic	4211	58	296	685	3 (Canada, Mexico, United States)
Neotropics	1369	48	140	119	11 (Chile, Colombia, Costa Rica, Dominica, Falkland Islands, Guyana, Jamaica, Panama, Peru, Puerto Rico, Trinidad and Tobago)
Palaearctic	21077	60	508	1515	29 (Algeria, Austria, Belgium, China, Croatia, Cyprus, Egypt, Finland, France, Greece, Guernsey, Ireland, Israel, Italy, Libya, Mongolia, Montenegro, Morocco, Netherlands, Norway, Oman, Portugal, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, Yemen)
No country data	47	14	24	15	
Total	45415				72

collected from 29 countries. Spain (including Tenerife and the Canary Islands), France, UK, Portugal, and Greece are the countries with the highest numbers of collected species (Figure 5). The Neotropics is the least represented region in the collection, with the lowest number of specimens (1,369) and species (119). Neotropical specimens were mainly collected from Costa Rica and Panama. Only a small percentage of the specimens from the Murphy spider collection does not have associated country information (47 specimens, Table 3).

British spiders

The Murphy spider collection contains almost 90% (579 species) of the recorded British spider species in 34 families, following the checklist by Merrett, Russell-Smith and Harvey (2014). This does not include the Channel Island, vagrants, or those from synanthropic habitats (Table 4). The collection is missing just 70 species from 14 families; of these, nine families have between 80–99% of species represented, and four families have between 60–79%. Eresidae, with a single species recorded from the UK, is the only unrepresented family. Linyphiidae has the highest number of missing species: 41.

Recuration of the collection

Curatorial practices to date at the Manchester Museum’s Entomology Collection (MMUE) include adding a unique accession number (starting with G7572) to each vial; topping up with 70% alcohol, when necessary (all specimens are spirit preserved; Notton, 2010; Simmons and Muñoz-Saba, 2005); comparing vial contents and data label to the information in the electronic catalogue (every vial is marked with the collector’s personal number and in some cases more than one label is included); and removing vials containing only juveniles (for the time being, these vials will be kept as unaccessioned material, as the specimens they contain are likely to be of little or no taxonomic value). Also, empty vials with specimens on loan (from before the collection was received by the Manchester Museum) are removed, with the intention that the Curator of Arthropods will claim them back in the future, and then they will be properly accessioned. Records are being digitised in the Museum’s electronic catalogue (KE-Emu). Currently 30%, equivalent to c. 11,000 records, can be searched online (<http://harbour.man.ac.uk/mmcustom/narratives/>). The process of documenting and cataloguing the spider collection has been possible with the help of volunteers working alongside the Curator of Arthropods.

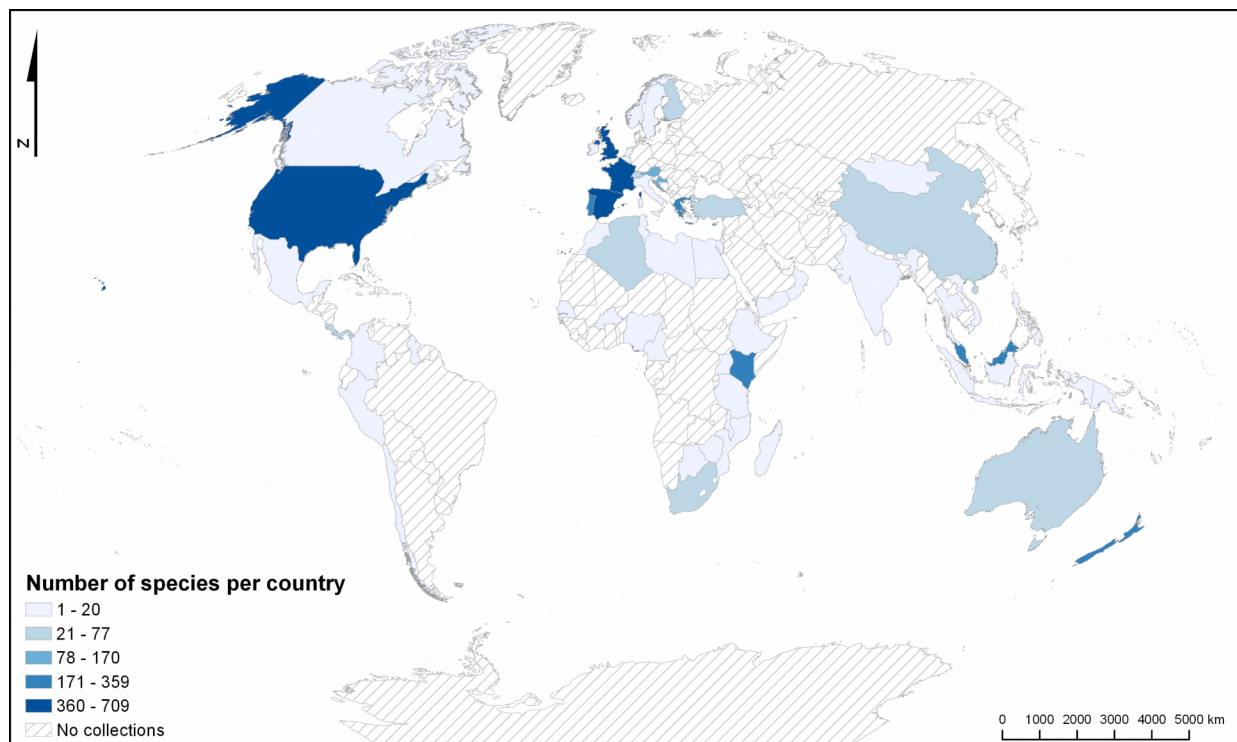


Figure 5. Global distribution and number of species per country in the Murphy spider collection.

Table 4. British spider represented in the Murphy spider collection by family. Taxonomy according to Merrett, Russell-Smith and Harvey (2014)

Family	Number of species		Total	Percentage present
	Absent	Present		
Agelenidae		13	13	100.0
Amaurobiidae		3	3	100.0
Anyphaenidae		1	1	100.0
Araneidae	1	31	32	96.9
Atypidae		1	1	100.0
Clubionidae	5	17	22	77.3
Cybaeidae		2	2	100.0
Dictynidae		14	14	100.0
Dysderidae	1	3	4	75.0
Eresidae	1		1	0.0
Eutichuridae		3	3	100.0
Gnaphosidae	4	29	33	87.9
Hahniidae	2	8	10	80.0
Linyphiidae	41	238	279	85.3
Liocranidae	1	11	12	91.7
Lycosidae	4	34	38	89.5
Mimetidae		4	4	100.0
Miturgidae		4	4	100.0
Nesticidae		1	1	100.0
Oonopidae		2	2	100.0
Oxyopidae		1	1	100.0
Philodromidae		15	15	100.0
Pholcidae		2	2	100.0
Phrurolithidae		2	2	100.0
Pisauridae	1	2	3	66.7
Salticidae	4	34	38	89.5
Scytodidae		1	1	100.0
Segestriidae		3	3	100.0
Sparassidae		1	1	100.0
Tetragnathidae		14	14	100.0
Theridiidae	2	55	57	96.5
Theridiosomatidae		1	1	100.0
Thomisidae	2	24	26	92.3
Uloboridae		2	2	100.0
Zodariidae	1	3	4	75.0
Grand Total	70	579	649	89.2

Next steps in the re-curation will include rehousing the collection from the original drawers (Figure 6) by transferring specimens from plastic vials into glass tubes, arranging tubes by family and genus, and storing them in glass jars (Levi, 1966). In the future, the collection will be amalgamated with the main spider collection arranged in taxonomic order and will be easily accessible once all records have been entered in the Museum's electronic catalogue.

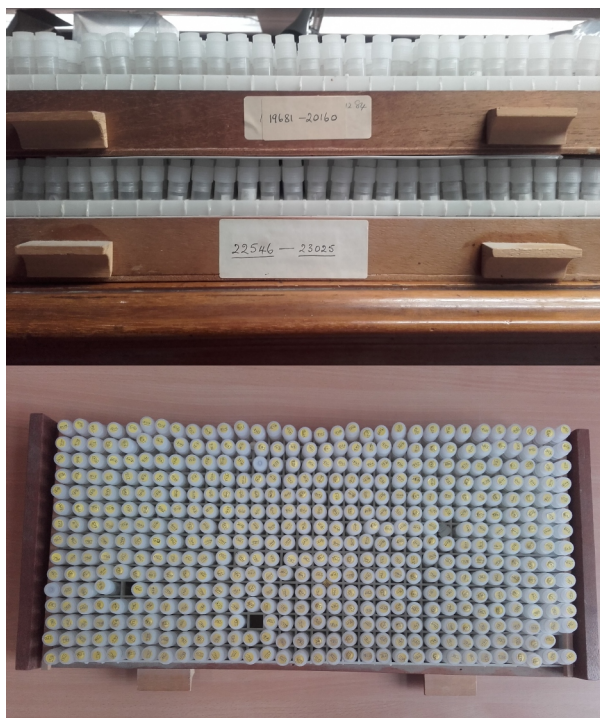


Figure 6. Some of the original drawers in which the Murphy spider collection was housed. Each drawer contains approximately 450 vials.

Making use of the collection

Over the years the collection has been used as reference material for multiple papers and books, including the description of numerous new species. Continuing the work started by Frances Murphy, John Murphy reviewed approximately 4,800 specimens from seven countries (Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) to write the co-authored 'An introduction to the spiders of South East Asia with notes on all the genera' (Murphy and Murphy, 2000). In this book, he also listed the species possibly new to science for the region at hand. The book includes original drawings by Michael Roberts, notes on distribution, characteristics and measurements for spiders recorded up until 1995, and a complete checklist, including some additions for southern China (Murphy and Murphy, 2000).

In a recent book, published in 2015, John Murphy and Michael J. Roberts provided an overview of the spider families of the world, emphasizing the unique structure of their spinnerets. The two-volume text, complete with illustrations and nomenclatural changes, took almost a decade to complete. In the last section, the book includes drawings and descriptions of 36 possible new species to science, encouraging other researchers to provide their formal descriptions.

Since the collection was acquired by Manchester Museum in November 2015, 16 enquiries to study specimens from the Murphy collection have been received from seven countries (including UK). Currently, 911 specimens are on loan to seven countries, including Russia (261 specimens), Israel (172), UK (141) and Germany (139), among others. Furthermore, nearly 1,100 specimens are recorded in the database as loaned (since 1978), before the collection was given to the Manchester Museum. Some examples of publications produced using these loans are 'Portuguese spiders (Araneae): A preliminary checklist' by Cardoso (2000) and the book, 'Forest Spiders of South East Asia: with a Revision of the Sac and Ground Spiders (Araneae: Clubionidae, Corinnidae, Liocranidae, Gnaphosidae, Prodidomidae, and Trochanterriidae)' by Deeleman-Reinhold (2000).

Five papers have been published since November 2015, mainly based on the specimens borrowed from the Murphy spider collection: two papers clarifying the taxonomy of a species using molecular and morphological analyses, including a re-description of type species (Oxford and Bolzern, 2018; Zonstein, Marusik and Magalhães, 2017); two reviews and notes on different genera (Logunov and Azarkina, 2018; Zonstein, 2017); and one on new species records of Gasteracanthinae from Vietnam (Williams, 2017). There are at least two more papers in press and many more in preparation using specimens from the Murphy spider collection. There are more than 16,000 specimens in the Murphy spider collection that have not been fully identified, opening up the possibility for future taxonomic research and publications.

Conclusion

The Murphy spider collection, comprising over 45,400 specimens and associated data, is an invaluable resource for taxonomy, entomology, ecology and many other disciplines. The collection has already provided much material for new species descriptions and taxonomic reviews, underlining the importance

of maintaining biological collection in museums. I hope that rehousing the collection at Manchester Museum will encourage arachnologists, both professional and amateur, to use the collection and associated archives more intensively. The collection is fully accessible for anybody willing to study it. For any enquiries, including requests for the collection catalogue, please contact the Curator of Arthropods, Dr Dmitri V. Logunov (dmitri.v.logunov@manchester.ac.uk).

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