

**Assessment of the Conservation Value of Spiders in Armenia**

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In addition, I want to thank my family and friends for their support during the project and for helping with fieldwork and collecting materials.

# CONTENT

## Contents

Introduction.....	4
Education and social activities.....	5
Research activities.....	6
References.....	11
Illustration.....	12

## INTRODUCTION

Spiders are one of the most diverse group of animals on the planet. Spiders are an important part of ecosystems. The study of spiders plays an important role in the assessment of biodiversity. Ecological sustainability in other areas of wildlife research in Armenia and the Caucasus. However, spiders have not been studied in Armenia. There is no national list of spiders and no list of endangered species. I am a post-graduate student at Yerevan State University and my dissertation topic is "Spider diversity and conservation in Armenia. In the framework of the project, I have the following goals:

1. Database and collection of spiders in Armenia
2. National checklist of spiders, which is absent now
3. List and description of rare species of spiders according to IUCN criteria
4. Threat analysis for some rare species and conservation measures for them
5. Including rare species of spiders in a new edition of the Red Book of Armenia
6. Guidebook of spiders for kids
7. Arachnological societies in social networks and among the target group of students
8. Widespread dissemination of news about Armenian spiders

During the project, the following objectives were fully or partially achieved:

ACTIVITY	STATUS
Getting new information about spiders in Armenia	Established, ongoing
The database of spiders of Armenia (species, regions, location, date, habitat, vegetation type, collector) for the collection of spiders from of all Armenia	Established, ongoing
Create a collection of spiders in Armenia	Established, ongoing
Barcoding of spiders	Established, ongoing
The raising of public awareness concerning the importance of protection of spiders and publication of color brochures for children.	Finished
Create a social science blog (Armenian Society of Arachnology)	Finished
Enhancement of spiders studies (arachnology) in Armenia	Ongoing
Scientific publication and Ph.D., master's, and bachelor's thesis of participants.	Ongoing

## EDUCATION AND SOCIAL ACTIVATES

We have created and continue to support a group of students who learn how to work with spiders and develop this direction at the YSU Department of Zoology. Our goal is to prepare and educate high school students and students in order to create a good team of archaeologists who can continue their research and start their projects. It should be noted that there is little data on spiders in Armenia, due to the lack of specialists trained to work with this group of animals. Our goal is to make spider research popular with students. As a result of our work and the involvement of students, the number of students at the Department of Zoology of YSU who are interested in the study of spiders in Armenia is currently growing.

In addition to YSU students, we also organized workshops for 2<sup>nd</sup>-year students of the Faculty of Agroecology of the Anton Kochinyan College of the National Agrarian University of Armenia to raise their awareness of the potential of spiders for ecosystems. When conducting fieldwork, we also involved students from YSU and the Armenian National Agrarian University. However, in our opinion, working with the awareness of the population and raising their level of education in the field of biodiversity should start at an early age. Therefore, we have prepared a spider guide for preschoolers in their native language. In my opinion, it is very important when children know them from childhood and are not afraid of them. The children were very interested in spiders and are learning to tell if they are spiders or insects, how they move, where they live, what they eat, and how some spiders take care of their babies.

We have created a sociological blog on Facebook and Instagram "Spiders of Armenia". This social media group gives us the opportunity to communicate with people in different parts of Armenia and the world. In this way, it is possible to receive information faster, transmit and share scientific news related to arachnology, and make people more informed. This work is ongoing.

[https://www.instagram.com/accounts/manage\\_access/](https://www.instagram.com/accounts/manage_access/)

<https://www.facebook.com/profile.php?id=100086745438538>

<https://www.facebook.com/groups/443369343542234>

<https://www.facebook.com/profile.php?id=100086966361718>

## RESEARCH ACTIVITIES

The fieldwork focused on collecting and documenting the distribution of spiders throughout Armenia between April and October 2021 and April and May 2022. 3-4 people, including students, made field trips in Armenia. The main periods of fieldwork fell on the period from early spring to autumn, since spiders are active mainly during these periods. In general, we collected about 2000 spiders from different regions of Armenia, and about 500 of them were identified at the species level.



MAP 1. Sampling points

All specimens were collected from 2021-to 2022 from different parts of Armenia by beating shrubs, pitfall traps, sifter, or hand collecting and were preserved in 96% ethanol. The protocol will be recorded in the field by the GPS, weather conditions, habitat, and vegetation type. The specimens are kept in the Yerevan State University Faculty of Biology, Department of Zoology (YSU). During the laboratory work, spider species are determined, and classified, a database is created and genetic research is started. We have segregated some species of spiders for genetic

testing of DNA. For species identification, we use the guidelines World Spider Catalog (2020), Araneae Spiders of Europe, Caucasian spider (2020), and The Biologist Apprentice 2019. The specimens were examined with a Nikon 11-2486 stereomicroscope. Photographs of the copulatory organs and habitat were taken with a Canon EOS 90 D camera mounted on a Nikon 11- 2486 compound microscope. Compound focus images were generated using Macro Photo Lens MP- E65mm f/2.8 1-5x.

We recorded 25 families, 108 genera, and 156 spider species

**Table 1. List of spider families, and genus that were recorded during our research**

1	<i>Araneidae Aculepeira</i>	55	<i>Lycosidae Alopecosa</i>
2	<i>Araneidae Araneus</i>	56	<i>Lycosidae Pardosa</i>
3	<i>Araneidae Argiope</i>	57	<i>Lycosidae Arctosa</i>
4	<i>Araneidae Araniella</i>	58	<i>Lycosidae Aulonia</i>
5	<i>Agelenidae Eratigena</i>	59	<i>Lycosidae Hogna</i>
6	<i>Agelenidae Tegenaria</i>	60	<i>Lycosidae Piratula</i>
7	<i>Agelenidae Allagelena</i>	61	<i>Miturgidae Zora</i>
8	<i>Agelenidae Coelotes</i>	62	<i>Oxyopidae Oxyopes</i>
9	<i>Dysderidae Dysdera</i>	63	<i>Palpimanidae Palpimanus</i>
10	<i>Gnaphosidae Civizelotes</i>	64	<i>Philodromidae Tibellus</i>
11	<i>Linyphiidae Agyneta</i>	65	<i>Philodromidae Rhysodromus</i>
12	<i>Lycosidae Trochosa</i>	66	<i>Philodromidae Thanatus</i>
13	<i>Lycosidae Piratula</i>	67	<i>Pholcidae Pholcus</i>
14	<i>Lycosidae Arctosa</i>	68	<i>Pholcidae Holcnemus</i>
15	<i>Philodromidae Thanatus</i>	69	<i>Salticidae Chalcoscirtus</i>
16	<i>Pholcidae ?</i>	70	<i>Salticidae Heliophanus</i>
17	<i>Pisauridae Pisaura</i>	71	<i>Salticidae Cyrba</i>
18	<i>Salticidae Philaeus</i>	72	<i>Salticidae Phlegra</i>
19	<i>Segestriidae Segestria</i>	73	<i>Salticidae Heliophanus</i>
20	<i>Sparassidae Olios</i>	74	<i>Salticidae Euophrys</i>
21	<i>Tetragnathidae Tetragnatha</i>	75	<i>Salticidae Aelurillus</i>
22	<i>Thomisidae Coriarachne</i>	76	<i>Salticidae Aelurillus</i>
23	<i>Thomisidae Xysticus</i>	77	<i>Salticidae Evarcha</i>
24	<i>Thomisidae Misumena</i>	78	<i>Salticidae Salticus</i>
25	<i>Thomisidae Thomisus</i>	79	<i>Salticidae Pellenes</i>
26	<i>Thomisidae Ozyptila</i>	80	<i>Salticidae Pseudeuophrys</i>
27	<i>Anyphaenidae Anyphaena</i>	81	<i>Salticidae Evarcha</i>
28	<i>Araneidae Agalenatea</i>	82	<i>Salticidae Attulus</i>
29	<i>Araneidae Singa</i>	83	<i>Salticidae Carrhotus</i>
30	<i>Araneidae Hypsosinga</i>	84	<i>Scytodidae Scytodes</i>
31	<i>Araneidae Zilla</i>	85	<i>Sparassidae Micrommata</i>
32	<i>Araneidae Mangora</i>	86	<i>Tetragnathidae Pachygnatha</i>
33	<i>Araneidae Cyclosa</i>	87	<i>Tetragnathidae Metellina</i>
34	<i>Araneidae Gibbaranea</i>	88	<i>Tetragnathidae Metellina</i>
35	<i>Cheiracanthiidae Cheiracanthium</i>	89	<i>Theridiidae Steatoda</i>
36	<i>Dictynidae Dictyna</i>	90	<i>Theridiidae Platnickina</i>
37	<i>Dictynidae Archaeodictyna</i>	91	<i>Theridiidae Crustulina</i>

38	<i>Dysderidae Dysdera</i>	92	<i>Theridiidae Kochiura</i>
39	<i>Dysderidae Harpactea</i>	93	<i>Theridiidae Asagena</i>
40	<i>Gnaphosidae Drassodes</i>	94	<i>Theridiidae Theridion</i>
41	<i>Gnaphosidae Talanites</i>	95	<i>Theridiidae Enoplognatha</i>
42	<i>Gnaphosidae Nomisia</i>	96	<i>Titanoecidae Titanoeca</i>
43	<i>Gnaphosidae Berlandina</i>	97	<i>Titanoecidae Nurscia</i>
44	<i>Gnaphosidae Haplodrassus</i>	98	<i>Trachelidae Orthobula</i>
45	<i>Gnaphosidae Zelotes</i>	99	<i>Zodariidae Zodarion</i>
46	<i>Gnaphosidae Gnaphosa</i>	100	<i>Thomisidae Tmarus</i>
47	<i>Gnaphosidae Callilepis</i>	101	<i>Thomisidae Heriaeus</i>
48	<i>Linyphiidae Trichoncus</i>	102	<i>Thomisidae Synema</i>
49	<i>Linyphiidae Gnathonarium</i>	103	<i>Thomisidae Bassanioides</i>
50	<i>Linyphiidae Heliophanus</i>	104	<i>Thomisidae Ozyptila</i>
51	<i>Linyphiidae Diplostyla</i>	105	<i>Thomisidae Monaeses</i>
52	<i>Linyphiidae Linyphia</i>	106	<i>Thomisidae Thomisus</i>
53	<i>Linyphiidae Dismodicus</i>	107	<i>Thomisidae Diaea</i>
54	<i>Liocranidae Agroeca</i>	108	<i>Thomisidae Runcinia</i>

We recorded 156 spider species in the different parts of Armenia in 2021-2022.

**Table 2. List of spiders species that collected during our surveys**

1	<i>Aculepeira ceropegia</i>	79	<i>Pardosa aenigmatica</i>
2	<i>Araneus diadematus</i>	80	<i>Alopecosa farinosa</i>
3	<i>Argiope bruennichi</i>	81	<i>Aulonia kratochvili</i>
4	<i>Araniella displicata</i>	82	<i>Alopecosa sulzeri</i>
5	<i>Argiope lobata</i>	83	<i>Alopecosa cuneata</i>
6	<i>Eratigena picta</i>	84	<i>Lycosa praegrands</i>
7	<i>Tegenaria domestica</i>	85	<i>Pardosa hortensis</i>
8	<i>Allagelena gracilens</i>	86	<i>Arctosa tbiliensis</i>
9	<i>Coelotes terrestris</i>	87	<i>Hogna radiata</i>
10	<i>Dysdera crocata</i>	88	<i>Piratula latitans</i>
11	<i>Civizelotes caucasius</i>	89	<i>Zora nemoralis</i>
12	<i>Agyneta ramosa</i>	90	<i>Oxyopes heterophthalmus</i>
13	<i>Trochosa robusta</i>	91	<i>Palpimanus sogdianus</i>
14	<i>Trochosa ruricola</i>	92	<i>Tibellus oblongus</i>
15	<i>Trochosa terricola</i>	93	<i>Rhysodromus fallax</i>
16	<i>Piratula uliginosa</i>	94	<i>Thanatus imbecillus</i>
17	<i>Arctosa lutetiana</i>	95	<i>Thanatus atratus</i>
18	<i>Trochosa spinipalpis</i>	96	<i>Thanatus oblongiusculus</i>
19	<i>Arctosa fulvolineata</i>	97	<i>Pholcus phalangioides</i>
20	<i>Thanatus oblongiusculus</i>	98	<i>Holocnemus pluchei</i>
21	<i>Pisaura mirabilis</i>	99	<i>Pisaura novicia</i>
22	<i>Philaeus chrysops</i>	101	<i>Chalcoscirtus parvulus</i>
23	<i>Segestria senoculata</i>	102	<i>Heliophanus auratus</i>
24	<i>Olios argelasius</i>	103	<i>Cyrba algerina</i>
25	<i>Tetragnatha dearmata</i>	104	<i>Phlegra bresnieri</i>



26	<i>Tetragnatha extensa</i>	105	<i>Heliophanus cupreus</i>
27	<i>Coriarachne depressa</i>	106	<i>Heliophanus dunini</i>
28	<i>Xysticus cristatus</i>	107	<i>Heliophanus flavipes</i>
29	<i>Misumena vatia</i>	108	<i>Euophrys frontalis</i>
30	<i>Thomisus onustus</i>	109	<i>Aelurillus aeruginosus</i>
31	<i>Ozyptila praticola</i>	110	<i>Aelurillus m-nigrum</i>
32	<i>Anyphaena accentuate</i>	111	<i>Evarcha laetabunda</i>
33	<i>Agalenatea redii</i>	112	<i>Salticus tricinctus</i>
34	<i>Singa lucina</i>	113	<i>Pellenes seriatus</i>
35	<i>Hypsosinga albovittata</i>	114	<i>Pseudeuophrys lanigera</i>
36	<i>Hypsosinga sanguinea</i>	115	<i>Pseudeuophrys erratica</i>
37	<i>Mangora acalypha</i>	116	<i>Evarcha insularis</i>
38	<i>Cyclosa algerica</i>	117	<i>Heliophanus mordax</i>
39	<i>Gibbaranea bituberculata</i>	118	<i>Aelurillus concolor</i>
40	<i>Zilla diodia</i>	119	<i>Heliophanus edentulus</i>
41	<i>Cheiracanthium mildei</i>	120	<i>Attulus ammophilus</i>
42	<i>Cheiracanthium pelasgicum</i>	121	<i>Carrhotus xanthogramma</i>
43	<i>Cheiracanthium erraticum</i>	122	<i>Heliophanus cupreus</i>
44	<i>Dictyna arundinacea</i>	123	<i>Scytodes thoracica</i>
45	<i>Dictyna uncinata</i>	124	<i>Segestria bavarica</i>
46	<i>Archaeodictyna anguiniceps</i>	125	<i>Micrommata virescens</i>
47	<i>Dictyna arundinacea</i>	126	<i>Olios sericeus</i>
48	<i>Dysdera azerbaijdzhanica</i>	127	<i>Pachygnatha degeeri</i>
49	<i>Dysdera richteri</i>	128	<i>Metellina kirgisisca</i>
50	<i>Harpactea eskovi</i>	129	<i>Metellina mengei</i>
51	<i>Drassodes villosus</i>	130	<i>Steatoda paykulliana</i>
52	<i>Talanites atscharicus</i>	131	<i>Platnickina tinctoria</i>
53	<i>Nomisio conigera</i>	132	<i>Crustulina scabripes</i>
54	<i>Nomisio exornata</i>	133	<i>Kochiura aulica</i>
55	<i>Drassodes lapidosus</i>	134	<i>Asagena phalerata</i>
56	<i>Berlandina mesopotamica</i>	135	<i>Theridion mystaceum</i>
57	<i>Haplodrassus signifer</i>	136	<i>Steatoda albomaculata</i>
58	<i>Zelotes longipes</i>	137	<i>Steatoda dahli</i>
59	<i>Nomisio ripariensis</i>	138	<i>Titanoeca schineri</i>
60	<i>Gnaphosa ogeri</i>	139	<i>Titanoeca cf. praefica</i>
61	<i>Zelotes subterraneus</i>	140	<i>Nurscia albomaculata</i>
62	<i>Haplodrassus kulczynskii</i>	141	<i>Titanoeca incerta</i>
63	<i>Callilepis nocturna</i>	142	<i>Orthobula charitonovi</i>
64	<i>Trichoncus saxicola</i>	143	<i>Zodarion thoni</i>
65	<i>Gnathonarium dentatum</i>	144	<i>Zodarion danismani</i>
66	<i>Heliophanus cupreus</i>	145	<i>Tmarus punctatissimus</i>
67	<i>Diplostyla concolor</i>	146	<i>Xysticus kochi</i>
68	<i>Linyphia hortensis</i>	147	<i>Heriaeus hirtus</i>
69	<i>Dismodicus bifrons</i>	148	<i>Synema globosum</i>
70	<i>Agroeca cuprea</i>	149	<i>Bassanioides robustus</i>
71	<i>Alopecosa pentheri</i>	150	<i>Ozyptila tuberosa</i>
72	<i>Pardosa italica</i>	151	<i>Monaeses isrealiensis</i>

73	<i>Alopecosa albofasciata</i>	152	<i>Thomisus onustus</i>
74	<i>Arctosa cinerea</i>	153	<i>Ozyptila praticola</i>
75	<i>Pardosa caucasica</i>	154	<i>Diaea livens</i>
76	<i>Pardosa colchica</i>	155	<i>Xysticus kulczynskii</i>
78	<i>Pardosa morosa</i>	156	<i>Runcinia grammica</i>

A scientific article was published in May, where we present two species of the genus *Argiope*, first registered for the fauna of Armenia: *Argiope bruennichi* (Scopoli, 1772) and *Argiope lobata* (Pallas, 1772). The genus *Argiope*, an orb-weaver spider from the Araneidae family view of two females of *Argiope bruennichi* (Scopoli, 1772) were found in the Lori region (north part), and two female specimens of *Argiope lobata* (Pallas, 1772) were recorded in the Tavush region (northeast part) and Armavir region (south-west) of Armenia in 2020.

Now we are working on the second publication together with German scientists.

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## Fieldwork



## Laboratory work



## Collection of spiders



Collection of spiders in Armenia at Yerevan State University, Faculty of Biology, Department of Zoology.



**Spider species**



*Argiope bruennichi*



*Tetragnatha extensa(f)*



*Tetragnatha extensa(m)*



*Araneus diadematus*



*Argiope lobata*



*Aculepeira ceropegia*



*Xysticus cristatus*



*Araniella displicata*



*Segestria senoculata*



Lycosidae (*Wolf spider*)



*Steatoda grossa*



*Philaeus chrysops*

# Education



