



## Contemporary Arachnofauna of Stavropol Urban Agglomeration

Pushkin S.V., Kharchenko L.N.

*North Caucasus Federal University, Institute of Living Systems, Department of General Biology and Biodiversity*

### ABSTRACT

*A complex study of arachnids of the Stavropol urban agglomeration. For the first time the list of species identified during the study is presented.*

**Keywords:** Spiders, residential area, Stavropol city, arachnids

**HOW TO CITE THIS ARTICLE:** Pushkin S.V., Kharchenko L.N. , Contemporary Arachnofauna of Stavropol Urban Agglomeration, Entomol Appl Sci Lett, 2017, 4 (3): , pp:23-26.

**Corresponding author:** Pushkin S.V

**e-mail** ✉

**Received:** 14/04/2017

**Accepted:** 26/08/2017

### INTRODUCTION

Until the sixties of the twentieth century, the city of Stavropol was considered one of the most environmentally friendly cities in Russia. Situated on a hill and away from the main traffic arteries, surrounded by magnificent woodlands, Stavropol was distinguished by clean air, an abundance of green plantations, fairly stable natural conditions.

In subsequent years, the situation changed dramatically. The development of industry in the city, the solicit zone, highways especially in recent decades, occurred without taking into account the environmental consequences.

At present, the city's natural conditions are characterized by a complex complex of actively occurring diverse processes, which significantly reduces the stability of the territory to anthropogenic load.

The city, as part of the man-made landscape, is a relatively new habitat for animals, whose life in the city depends on many circumstances - this is the impact of increased pollution of the environment and intensive recreational load, the attitude of man to animals (the level of ecological culture), etc. However, animals penetrate into the urban landscapes and form urban complexes.

The city represents in the historical plan an unstable final stage of development of a settlement, therefore it cannot be considered as a single ecosystem; in most cases it is a mosaic of various biotypes (quasi-homogeneous elementary systems).

The presence of new, hardly existing in the nature ecological niches (especially in terms of

nutrition and structure of occupied space), together with climatic features led to unusual combinations of factors and the formation of a special fauna (specialists, ubiquitous, many adventive species), as well as specific communities of animals, connected with new relationships. This applies both to the city as a whole, and perhaps even to a greater extent to its individual habitats.

Therefore, the practice of using the nature of the city requires genetic, biochemical, embryological, morphological and physiological information about the city's animals, their species composition, behavior, role in the functioning of urban biocenoses.

From this point of view, great interest is provided by information on the current state of the arachnid fauna of the urban agglomeration for further monitoring studies, as well as studies related to the study of the sanitary-hygienic and sanitary-epidemiological state of the city. In addition, given that the vast majority of arachnids react very sensitively to changes in habitat conditions, there is a real possibility of using this group of animals for bioindication of environmental contamination.

The basis of the published material on the species composition of the arachnofauna of the city of Stavropol was the research carried out in 1992-1994. in the framework of contractual research on the preparation of an environmental passport of the city of Stavropol and 1995-1998. in the framework of research work at the Department of Zoology of the Stavropol State University on the fundamental problem: "Natural resources of the Stavropol

Territory and their change under the influence of anthropogenic impact." The study of the arachnid fauna was carried out in 11 stations in different parts of the city and in the suburbs: Mamayska forest dacha, Taman forest dacha, Russian forest, Chlin forest, Biberto dacha, Biofactory area, former municipal garbage dump, Central Park, Victory Park, Pavlova dacha, a селетбной (urbanized) zone.

The analysis of the collected materials and observations show that, in general, the entire land fauna of the city is represented by four ecological groups of animals associated with a certain type of landscapes:

- 1) Animals of natural forests (characterized by the greatest diversity and abundance of species);
- 2) Animal parks and squares (it is possible to form zoocenoses according to the type of forest massifs, but the fauna is much poorer);
- 3) Animals of open spaces (differ in the richness of flying and the absence of large forms);
- 4) synanthropic animals (all animal population settling in, inside the dwelling or in the economic buildings of a person, as well as in production, commercial, warehouse, administrative, public buildings).

The fauna of arachnids was formed from steppe, forest-steppe and forest species - representatives of the European, Mediterranean and Ponto-Caspian genetic and geographical groups. In total for the whole period of research more than 120 species, related to three orders (Pseudoscorpiones, Phalangioides, Aranei) of arachnids were collected and determined [1.2.3.4].

All the aforementioned species of arachnids were divided into two groups: the first includes those species that live outside the human dwelling and the second groups are typical species inhabiting the human dwelling.

Spider-shaped, inhabiting outside living quarters

(The sign\* means that this species can penetrate into the living quarters)

1. Chernes species ( Pseudoscorpiones)
2. Phalangium opilio (Phalangioides)\*

Aranei:

3. Pholcus phalangoides\*
4. Ph. Opilionoides\*
5. Marpissa radiata
6. Myrmarachne joblotii
7. Aelurillus v-insignitus
8. Philaeus chrysops
9. Misumena vatia\*
10. Xisticus lustuosus
11. X. bifasciatus

12. X. ulmi
13. Synaema arnatum
14. S. globosum\*
15. Pistius truncatus
16. Heriaeus ablongus
17. Clubiona lutescens
18. Micaria rossica
19. M. Pulcaria
20. Athypus affinis
21. Ero aphans
22. Segestria senoculata
23. Dysdera crocata
24. Micrommeta roceum
25. Steatoda bipunctata
26. Asagena phalcrata
27. Teutana grossa
28. T. costanea
29. Theridium ovatum
30. Th. bimaculatum
31. Th. lunatum
32. Th. denticulatum
33. Agelena labirintica
34. Tegenaria domestica\*
35. Alopecosa schmidti
36. Al. trabilis
37. Al. accentuata
38. Al. aculeata
39. Alopecosa cuneata
40. Lycosa singoriensis
41. Pardosa protivaga
42. P. amentata
43. P. agricola
44. P. agrestis
45. Xerolycosa miniata
46. Pirata piraticus
47. Argiopa bruennichi
48. Mangora acalypha
49. C. conica
50. Mangora acalypha
51. Araneus grossus\*
52. A. ceropegius
53. A. acellatus
54. A. diadematus\*
55. A. marmoreus
56. A. quadratus
57. Pachygnatha segestria
58. Tetragnata extensa
59. T. obtusa\*
60. Linyphia triangularis\*
61. L. montana
62. L. chathrota\*
63. L. peltata\*

Spider-shaped typical inhabitants of living quarters

1. Chelifer concroides (отр. Pseudoscorpiones)

## Aranei:

2. Scytodes thoracica
3. Steatoda castanea
4. S. grossa
5. S. triangulosa
6. S. bipunctata
7. Sosticus loricatus
8. Amaurobius ferox
9. Physocyclus simoni
10. Tegenaria ferruginea
11. Meta menardi
12. M. merianae
13. Lepthyphantes leprosus and L. nebulosus
14. Neriene montana
15. Nesticus cellulanus
16. Liocranum rupicola
17. Oonops domesticus

Naturally, the above lists of arachnids of the Stavropol city agglomeration are not final and will be specified. But at one point I would like to focus attention. In this article, we talked about representatives of only three orders of arachnids: spiders, scorpions, and mites, but due to the constantly growing number of urban residents suffering from allergic diseases, a prompt study of the biology of a huge group of mites, especially mites of house dust, is required [1.2.3.4].

Today it is considered proven that various species of ticks, especially pyroglyphids (the Pyroglyphidae family), are an integral part of household dust inhalation allergens. Among them, species are the cosmopolites Euroglyphus maynei, Dermatophagoides pteronyssinus, Dermatophagoides farinae. In the study of dust samples in various European cities, pyroglyphs accounted for up to 85% of charges. Ticks accumulate mainly in beds, in soft furniture, where they eat fragments of skin and hair, which every adult loses about 5 grams per week. The number of some species can be very high - up to 10-15 or more thousands of individuals of different stages of development on 1 gram of dust.

The mites of this family are closely connected with bird nests and indoor birds. They spread, actively moving or passively using primarily slabs and air streams, as well as by the person himself (for example, they are systematically found on cut hair in hairdressing salons). Strong dependence of ticks on relatively high humidity of air causes their maximum occurrence in late summer and early autumn (5-10 times more than in winter and spring). Their

number decreases with the beginning of the heating season, when the air becomes drier.

It seems that in connection with the data given above, studies of arachnofauna (and, in general, zoocomplexes) of urban landscapes should be, to a greater extent, applied nature.

It is also necessary to point out the fact that arachnids (especially spiders), being predators, perform regulatory functions in nature. Significant their role in the regulation of other invertebrate animals (in particular insects) in the city, so it is necessary to create conditions for the successful settlement of spiders in the city.

The following measures for the protection of spiders in the city are recommended: as much structure of the space as possible, partial preservation of leaf litter, planting of greenery that gives not only an aesthetic effect, but also significantly improves the balance of radiation and energy, refraining from mowing certain areas of lawns, ponds with flat banks and natural plant communities. Pay special attention to the greening of buildings in the areas of new buildings. And, perhaps most important, it is necessary to exert maximum efforts to weaken the island effect. To achieve this goal, it is necessary to prevent further fragmentation and fragmentation of island habitats, preserve near the city the central zones of natural habitats (green belt), create networks from separate "islands" and connect them to central zones of large areas by means of continuous "ecological corridors" (for example, alleys, hedges) and "transshipment points", which will ensure the gradual distribution of animals from large biosystems into small ones.

Achieving harmony in the relations of a city dweller with his "zoological environment" is a complex process. This requires the daily concrete work of the environmental service of each city, a scientifically based system of biotechnical measures, but most importantly, it is necessary for everyone to understand that urban fauna is a very important component of the human's sanitary and emotional environment, that is why elements of spontaneity in its formation should be minimized

#### ACKNOWLEDGEMENT

The work was carried out by the authors jointly in 1993-2016 due to money resources of Kharchenko L.N. The authors are grateful to all those who contributed to this study.

#### Authors contribution

The paper was carried out by the author on the basis of data collected during the identification of spiders. Contributed to the theoretical

substantiation of faunistic research. The work was carried out at the expense of Kharchenko L.N.

**Conflict of interest**

In the article, there is no information capable of provoking conflicts of interest, with the exception of information contained in previously published articles by the Pushkin S.V., Kharchenko L.N.

**REFERENCES**

- [1] Klausnitzer B. Ecology of urban fauna: Per. with him. - M., 1990.
- [2] Mikhailov K.G. Catalog of spiders (Arachnida, Aranei) of the territories of the former Soviet Union. - M., 1997.
- [3] Kharchenko L.N. Arachnids of the Stavropol Urban Complex / Fauna of Stavropol: Interuniversity collection of scientific papers. - Вып. 6. - Stavropol, 1995. p. 3 - 8.
- [4] Kharchenko L.N. Ecological passport of the city of Stavropol. Landscape. Section 9: Animal Kingdom. - Stavropol, SKF PNIIS, 1995. p. 49 - 58.