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OBSERVATIONS REGARDING THE GROWTH IN CAPTIVITY OF WOLF-SPIDER SPECIE *LYCOSA SINGORIENSIS* (LAXMANN, 1770)

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***Key words*:** *Lycosa singoriensis, growth in captivity, conservation, decline prevention*

INTRODUCTION

Lycosa singoriensis is the biggest spider species from our country. It is earth specie that loves the humidity. It is an important trophic link, but also a good hunter and swimmer, being able to swim 7 days without stopping, even with the cocoon attached in fillers. It is well known that he is able to cross large surfaces of water.

In the last years, the researches were focused on the study of their venom, due to its importance in biochemistry and pharmacy. The growth in captivity of this specie can bring important information regarding the feeding regime, behaviour, reproduction, habitat, being considered endangered specie.

BIOLOGIC MATERIAL

The biologic material is represented through 3 ♀♀ and 2 ♂♂ of *Lycosa singoriensis* collected around the Boghicea area, in autumn 2007.

WORKING METHODS

a) collection of material The adult female (fig. 1) was fetched from the gallery and captured with the transportation recipient.
The males (fig. 2) were captured also in the transportation recipient at soil level.

b) observations

We realised observations in vivo regarding the behaviour of wolf-spiders individuals from specie *singoriensis*. These observations were focused on the following issues: cocoon overlay, cub apparition, cub growth, hair shed and the normal development of external morphology.

Growth in captivity

For the collected material we prepared terrariums with big dimensions for females (fig. 3 and 4).

For the terrariums we utilised aquariums of 10 l capacity, in which we overlay a 10 cm batch with soil mixture (ground/peat, 1/1).

In terrariums we introduced imitations of galleries represented through a coconut bark for each terrarium, imitations necessary for the behaviour in the natural environment.

RESULTS AND DISCUSSIONS

Copulations. When the male meets the female, the male motion modifies (the spider swaggers); the leg hair lifts and descends alternatively, vibrating strongly.

This entire spectacle happens at the entrance in the gallery, where also the copulation happens. All this time, when the male "dances", the female remains still. The nuptial dance has a variable period of time and it is the way in which the male approaches the female. If the female accepts the copulation, the male take the position that is characteristic for all the lycosides, with the cephalothoraxes oriented toward the female posterior grabbing her with the 2 and 3 legs by the cephalothoraxes. After that, the real copulation begins and last quite long, between 1-2 hours.

Cocoon overlay. After copulation, the female enters in the gallery excavated near the aquarium wall (fig. 5 and 6).

The forming of sac with eggs (cocoon). Immediately after the operculum is weaved at the entrance in the gallery, the female build a cocoon inside it. First the cocoon has a blue colour that gradually changes its colour in white. After the cocoon is finished, the female fasten it with the fillers. Then, during one month the female doesn't feed anymore and she takes care of the cocoon by bringing it at the entrance in the gallery in order to offer it as much light as possible (fig. 8).

Cub apparition. After the cubs appeared from the cocoon they climb on their mother stumps around the abdomen and even on the

cephalothoraxes. The cubs remain on their mother corps until they consume all the viteline reserves and they shed their hair for the first time (fig. 9 and 10). Thus, the female protect her cubs by many dangers. After they left their mother, they get out of the gallery spreading. All this time, almost 4 days, the female restrain her instincts of killing, although she is weakened.

Growing, regeneration and feeding regime. One week after the cubs descended from their mother, we collected almost 100 exemplars that measured between 2 and 4 mm. Five larger cubs (3-4 mm) were placed in individual jars (fig. 11), one of them having one leg broken. The rest of them were released in their natural environment. Due to the fact that their regime is carnivore, we fed the cubs with dipters from *Drosophila melanogaster* specie, and later as the cubs grew, with larger prides.

After the first hair shed, at the exemplar with the broken leg we observed its half recuperation, and after the second hair shed the leg fully recovered (fig. 12).

The biological cycle. After the first cocoon, the female being weakened, was fed with night butterflies (moths), once a day, during one week. During this time, she regains her normal size. Then she accepted to be fed only once at two weeks. After almost one month she builds the second cocoon. The second generation of spiders appeared quicker than the first one, the embryos development unfolding more rapidly (in only 2 weeks). After the second series of cubs, the female died. After the death of the female we collected from the aquarium almost 60 spiders, 5 being placed in individual jars, while the rest of them were released in nature.

The cubs from the second series were fed the same as the first ones, with *Drosophila* at the beginning, and then with larger prides (diptere worms). We observed a more accelerate growth at the second generation comparing with the first one. At the beginning of winter all spider were big enough (aprox.1 cm).

During the winters all spiders were fed once at three days with worms and dipteres (fig. 13). Due to the fact that it was warm, we sow that there was no need for hibernation, as it happens in the natural environment, all of them growing and developing normally.

Hair shed. Hair shed is a growing process, in which the spider develops a new exoskeleton (fig. 14 and 15). Usually it takes one or two days (fig. 16 and 17). The new exoskeleton is at the beginning soft, and it need some time to harden. Before and after the hair shed the spider doesn't feed and needs a relatively high humidity, almost 20% (fig. 20).

After the hair shed. After each hair shed the spider is very vulnerable, the exoskeleton hardening in almost 30 minute, maximum one hour. During this time the spider remains motionless. Before and after the hair shed the spider refuses to be fed almost 2 days.

CONCLUSIONS

In lab conditions we can easily observe the reproduction, cocoon overlay, cubs apparition, hair shed, cub growing and development, hair shed, feeding and behaviour of wolf-spider (*Lycosa singoriensis*).

The growing in captivity of this spider has a high importance due to the fact that on create the possibility to produce harvest and conserve the venin that is so much utilised in the pharmacy and biochemical industry.

The venin of this spider decrease the action of neurotoxins at mousse, but it can induce the haemolyse of human erythrocytes. More than that, the venin has antimicrobial activity against eukaryote and prokaryote cells.

The growth in captivity can substantially contribute to the knowledge and conservation of this specie endangered by the reduction of its natural habitat and can also be used for the prevention of its decline.

ABSTRACT

The following observations were accomplished, regarding the growth in captivity of *Lycosa singoriensis* specie (Laxmann, 1770) – wolf-spider: reproduction, cocoon overlay, cub apparition, hair shed, development of cubs after hair shed, biological cycle, feeding, behaviour. We obtained several generations of cubs, most of them were set free in nature and we also established the optimal growth conditions in terrariums. The study can contribute to the knowledge and conservation of this endangered specie.

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Fig. 1. *Lycosa singoriensis* ♀

Fig. 2. *Lycosa singoriensis* ♂

Fig. 3. Terrarium for males

Fig. 4. Terrarium for females

Fig. 5. Female of *Lycosa singoriensis* in gallery

Fig. 6. Cover of gallery with a cobweb opercula

Fig. 7. Female of *Lycosa singoriensi*s with cocoon

Fig. 8. Female empty cocoon - *Lycosa singoriensis*

Fig. 9. ♀ with cubs

Fig. 10. ♀ with cubs

Fig. 11. Individual jar for cub maintenance at *Lycosa singoriensis*

Fig. 12. Foot regeneration at one cub of *Lycosa singoriensis*

Fig. 13. Aspect of feeding at *Lycosa singoriensis*

Fig. 14. ♂ before hair shed

Fig. 15. Youngster of *Lycosa singoriensis* after the fourth hair shed

Fig. 16. *Lycosa singoriensis* the fifth hair shed

Fig. 17. Ale at the end of the fifth hair shed

Fig. 18. Male of *Lycosa singoriensis* 30 minutes after hair shed