

# OBSERVATIONS ON THE SEXUAL BEHAVIOR OF THE TARANTULAS FROM THE SPECIES *A. GENICULATA*

Corneliu GAȘPAR, Iulian Cătălin GRĂMADĂ, Luminița Iuliana AILINCĂI  
USAMV Iași - Faculty of Veterinary Medicine Iași  
Mihail Sadoveanu Alley, Nr.8, Iași, Romania, 700490  
cgaspar@uaiasi.ro

## **Abstract**

*The sexual behavior of tarantulas is very differently from that of higher vertebrates due to their ecomorphological and physiological features. The male, who has a pair of sex bulbs, in the presence of a receptive female will perform a "dance" that produces vibrations, to which the female respond depending on the willingness to mating.*

**Keywords:** sex bulbs; tarantula; copulative vibration

## **Introduction**

The tarantula's sexual behavior is certainly one of the most spectacular and exciting moments that nature has created.

The sexual behavior are conducted very differently from that of higher vertebrates because of anatomical and physiological particularities posed. Once reaching maturity tarantulas shows sexual dimorphism, the males presenting tibialapophyses and sexual bulbs and they are smaller.

This study aims to present how is conducted the sexual behavior native and the possibility of adapting those observations/information in order to protected/perpetuate certain species of tarantulas that are currently endangered.

## **Materials and methods**

To carry out this study we used 4 males and 2 females belonging to the species *A. geniculata*, by observing constantly the sexual process in its various stages.

## **Results and discussion**

### **1. Anatomical particularities**

The female reproductive system consists of:

#### *A) Seminal receptacles (spermathecae)*

They are present only in the female and actually represents the sacs in which the male sperm is deposited. *A. geniculata* has a pair of seminal receptacles which branch off from the external uterus. These seminal receptacles are changing on every moulting, in the same time with the *exuvium*. For this reason sperm stored in them will be lost after a moult, practically virgin female is restored.

#### *B) External uterus*

It is only in females and is a tube of transparent skin that connects the internal uterus at one end and a "gonoslit" on the other. As the seminal receptacles, the external uterus is changed on every moult, being the only part of the uterus that is changed. It is the first place where the contact occurs between eggs and sperm and is the most important structure in determining the sex of a tarantula based on *exuvium*.

#### *C) Copulatrix bursa.*

It is the first recess that is formed under the seminal receptacles and external uterus. Also, it is a structure found only in females and is supposed that is the place where eggs and sperm is mix before submitting the egg sac.



Fig. 1. Seminal receptacles (1), external uterus (2), gonoslit (3)

The male reproductive system consists of:

*A) Gonopore*

It is the opening (hole) in the center of the male epigastric area, which lead to the testicles. The testicles are two long helical tubes which produce sperm and act as conduits for it.

*B) Organ accessories*

They are known as the accessory glands, organs or glands epigastric. The exact function of these organs is not known, but it is assumed that is used in the production of an adhesive liquid that helps at the bonding sperm of the web at the time the male charge his sexual bulbs. Can be extremely prominent in some species (*Brachypelmavagans*) and are often confused with the seminal receptacles united. The accessory glands are wider at the top than at the base and usually they look like a tree or mushroom, unlike the seminal receptaculi which are wider at the base than at the top.



Fig. 2. Gonoslit

*C) Sexual bulbs*

They are situated at the internal face of the pedipalps and is a sexually dimorphic character. They appear after the maturity shedding and represents the structure where the sperm is stored. It has a spiral shape and its tip is provided with an orifice.



Fig. 3. Sexual bulbs

*D) Tibialapophysis.*

They appear at the same time with the sexual bulbs (at the maturity moult) and serve to lift and support the female in ventral position in order to achieve the sexual intercourse.



Fig.4. Tibialapophysis

**2. The male sexual behavior**

The tarantula sexual act is different than mammals or birds. Thus, the sperm deposit in sexual bulbs takes the form of successive stages that the male repeats several times since its last moulting.

Initially, it will make a web, one part being inserted on one side of the terrarium and the other will be attached to the substrate so as to produce a space where it will enter. Once inside under web, this will be in dorsal decubitus and by repetitive motion of the abdomen, gonoporea will take contact with the web and thus it will submit semen on the web. This process takes between 20-40 minutes. Meanwhile, the male will sanitize the sexual bulbs entering into the oral cavity. Then, the male will get out from under the web and will sit above it, introducing the sexual bulbs

in the place where sperm is glued to the web. Through numerous movements coming and going of the sexual bulbs, the sperm will be collected in them, to be introduced in the copulatrix bursa of a receptive female.



Fig.5. The deposit of the web



Fig.6. The entrance of the male under the web



Fig.7. Adoption of dorsal decubitus



Fig.8. The deposit of the sperm on web



Fig.9. Sperm

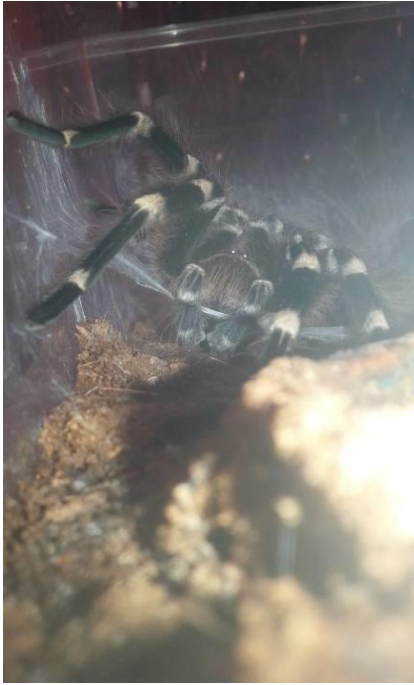


Fig. 10, 11. The collection of the sperm in the sexual bulbs

### ***3. Mating ritual***

In the natural environment, the male is the one who goes in search of the female. So in captivity, he will be the one that is introduced into the female's terrarium. Conversely, the female will stress and may become aggressive. Male sits at one end of the terrarium and allow to forward slightly to female. Pairing is recommended to be done at night, as happens in nature.

To attract female male performs so-called "courtship dance" which consist in the immersion with the abdomen in the substrate and beats with his legs into the ground. Basically, the male sends the female some vibration to see if is receptive or not. The female, at its turn, can perform this dance. When they met, the male using tibialapophyses will tackle the fangs of the female and will raise her to expose the underside of the body. The effort is massive as some females may be even greater (twice than partners) and thus will be unsuccessful insemination.

Once raised in angle of  $90^\circ$ , the male will direct the sexual bulbs by the orifice on the anterior-ventral abdomen part and penetrating in the seminal receptacles will deposit his sperm. Thus the female stores the sperm until the laying.

The whole process is in addition one particularly spectacular and dangerous in the same time, because the male it may be eaten by the female before and after insemination. To reduce this risk it is recommended that the female to be fed well before the introduction of the male and not be stressed in any way. Mating can last from a few seconds to several hours, during which the two will be monitored closely. In the case of aggressive behavior from female it is recommended to have in hand an object with which to separate.



Fig. 12. The courtship dance

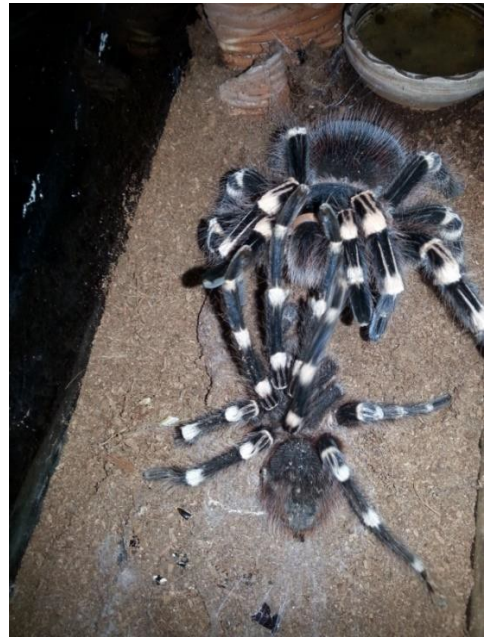


Fig. 13. The female insemination

### Conclusions

1. The sexual behavior is a laborious process, ritualized, taking place in stages and not initially involves the presence of both partners.
2. Although it seems relatively easy, fast, simple, the whole process takes place under a high-risk and dangerous, especially for males.
3. The study of this behavior is still unknown and it may constitute the premise of artificial insemination methods in order to perpetuate captive species that are endangered.

### References

1. Gregory A. Lewbart (2012), *Invertebrate Medicine*, Blackwell Publishing
2. Ronald N. Baxter, *Keeping and Breeding Tarantulas* (1993), Chudleigh Publishing
3. Jon Coote, *Tarantulas, Their Captive Husbandry and Reproduction* (1993), Practical Python Publications.
4. Stanley A. Schultz and Marguerite J. Schultz, *The Tarantula Keeper's Guide* (2009), Barron's Educational Series
5. <http://www.teraristica.ro/index.php?/nevertebrate/tarantule/index.php>
6. <http://brettmacquarrie.tripod.com/tarantulaanatomy>