

# THE WAY TO USE SPIDER'S THREAD FROM THE JUMPING SPIDER FAMILIES

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## 1. Background

Previous studies say all spiders use their threads to catch their prey. However, different from others, spiders of the *jumping spider family* don't weave reticulated spider webs, but they weave bursiform spider webs. Especially, *Myrmarachne*, one of the spider families, pitch skin that is made of thread on the trees to protect their body at night and they spend the night. In addition, they take their thread as a signpost when they walk. And they use it as a lifeline when they fall.

## 2. Purpose

The purpose of this study was to clarify how to use the threads spiders from *jumping spider families* especially during the winter. In this study, we made a hypothesis that they use thread to protect themselves from the cold. We did collection, observation and measurement, and we verified the effect of the thread.

## 3. Summary

We collected spiders and masses of spiders' thread on outdoor trees in the winter. And we watched them with stereoscopic microscopes. What is more, we measured temperature with a digital thermometer. At last we considered the effect in winter.

## 4. Study 1: Collection

**Method** : We collected samples outside from October to January. The observation was of spiders from *jumping spider families*. The place of collection was 4 spots in Kobe.

**Result** : As the following pictures, there are things like mass of spiders' thread on the trees. And there are two "*Hasarius adansoni*" and two "*Myrmarachne kuwagata Yaginuma*" in the mass. They are kinds of *jumping spider*. In addition, there is a "*Bassaniana decorata*".



Fig.1 *Hasarius adansoni*

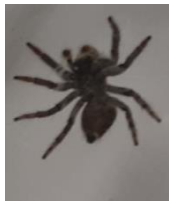


Fig.2 *Hasarius adansoni*(belly)

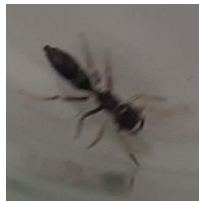


Fig.3 *Myrmarachne kuwagata Yaginuma*



Fig.4 *Myrmarachne kuwagata Yaginuma*(belly)

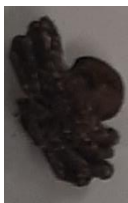


Fig.5 *Bassaniana decorata*

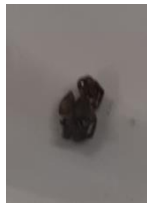


Fig.6 *Bassaniana decorata*(belly)



Fig.7 mass of spiders' thread

## 5. Study 2: Observation

**Method** : We examined *Hasarius adansoni*, *Myrmarachne kuwagata Yaginuma*, *Bassaniana decorata* and the mass of spiders' thread that we collected with stereoscopic microscopes. Moreover, we took pictures with microscopic cameras.



**Result** : We could take the following pictures.



Fig.8 *Hasarius adansoni*



Fig.9 *Myrmarachne kuwagata Yaginuma*



Fig.10 *Bassaniana decorata*



Fig.11 mass of spiders' thread

## 6. Study 3: Measurement

**Method** : We inspected the masses of spiders' thread by measuring the temperature of the inside and outside of three of them with a digital thermometer. And we analyzed the results of the measurement.



**Result** : The result is the following table.

Table.1 the result of measurement

temperature(°C)	outside	inside	difference
specimen1	8.4	9.7	1.3
specimen2	8.3	9.1	0.8
specimen3	8.6	9.1	0.5
average	8.4	9.3	0.9



Fig.12 temperature measurement

The result shows the inside of the masses' temperature is about 0.9°C higher than the outside.

## 7. Overview

The results of this study show that spiders from the *jumping spider families* make masses of spiders' thread under bark to spend the winter. (The masses' real name is a *cocoon*.) In addition, the temperature inside of it is about 0.9°C higher than the outside. Moreover, the kind of spiders which use the masses are not only from the jumping spider families, but also *Bassaniana decorata*, one of the *thomisidae*.

## 8. Consideration

It is conceivable that the spiders make *cocoons* to ease the cold. They have the effect of keeping the temperature warm, that makes the temperature inside it higher than the outside. In addition, in this study, we measured them away from trees but originally, they are under the bark. That's why, it is conceivable the webs have more effect. We think the reasons why they have this effect are the structure of or the character of the threads. So we want to study them and contribute to the production of outfits for cold weather in the future.

## 9. Bibliography

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