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Life History of Jumping Spiders, *Plexippus paykulli*

Madee T. and S. Bumroongsook*

Department of Plant Production Technology, Faculty of Agricultural Technology King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand.

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The jumping spider [*Plexippus paykulli* (Audouin)] is ranked in the Araneae, family Salticidae. It isone of the common spider in asiaticpennywort growing areas and its surrounding areas. It is a small spider that can eat various types of insect pests. A female lays egg in a silken sac around 30-65 eggs. Egg incubation period is 11-12 days. It undergoes 7 spideringbofore being adults. The immature stages take 112.38 days and adults live for 19-30 days. Hairs are found cover its entire body and legs. The females are nearly the same size as males. Color of carapace and abdomen of adult spider can be used for identification of males and females including palpi.

Key words :Asiaticpennywort, *Plexippus paykulli*

Introduction

Spiders are classified in the Arachnida class in the phylum Arthhropoda. *Plexippus paykulli*is. Its common name is a jumping spider, ranked in the Araneae family. Salticidae are small spider. Tanhiret *et al.* (2014) stated that the male spider is black color and has a white striped pattern alternately, and the front of the legs are completely black. The females are brown and have a light brown band in the middle of the thorax to the ventral part of the abdomen (Nyffeler and Benz, 1987). The spiders that occur in Florida have two genera: *Plexippu spaykulli* and *Menemerusbivittatus.* In nature, jumping spiders will eat food by victim catch. Their preys are aphids, thrips, white flies, caterpillars, flies, and so on. It can be a very useful predatory organisms to control insect pests (Nyffeler *et al.* 2017).

There are more than 15,700 spiders in the world or 113 species in 500 families.Spiders are known as important predators of many plant insects In addition, they are also the most common predator in the terrestrial ecosystem. These spiders will eat all kind of insects as food. There are more than 15,700 spiders in the world or 113 species in the world. Ability of Salticid spiders, they are hunting for prey, easily growing in number, cosmopolitan distribution and

* **Corresponding author:** Bumroongsook S.; **Email:** suvarin.bu@kmitl.ac.th

spreading. They are suitable for insect pest control especially caterpillars, fruit flies, and aphids whitefly, thrips, cicada and ants. The spider species was found on the plant structure they are live in (Peng *et al.*, 2002)

Objective: This study focuses on the life cycle of *Plexippuspaykulli* collected from Asiatic pennywort plantation in Bangkok areas.

Materials and methods

Sample Collection

Adults and immature stage of *Plexippuspaykulli* were collected by using vacuum aspirator from the Asiatic pennywort plantation of the Faculty of Agricultural Technology, King Mongkut's Institute of Technology Ladkrabang. They were transferred individually to a plastic cup (250 ml) for rearing. Mealworn larvae were provided as food.

Life Cycle

Newly hatched male and female spiders were placed together in a plastic cup (250 ml). After mating, they were isolated in different containers. The female was observed daily till it laid egg sacs. The egg incubation period was recorded. Hatched spiderling was isolated to individual container. The first and second instar larvaeof mealworms were provided as food. The developmental growth was recorded from egg to adults. Some morphological characteristics of both male and female was measured and observed.

Results and Discussions

Based on the study of the spider's biology, the stalking spider, *Plexippuspaykulli*wasfound in the Asiatic pennywort plantations and the surrounding grass areas.Itis a small spider. Male and female can be separated Egg sacmade of spider silkare found attached onto the glassor pennywort plants.

Measurement of carapace, abdomen and body sizes of the first to seventh immature stage of *Plexippus paykulli*, the results showed that the length and width of carapace, abdominal length and body length in mm increase as the immature stage turn into older instar (Table 1). Males and females are rather similar sizes.

Under the laboratory condition (30^{o} C, 68 % RH), the male inserts its right palpi to female genital opening, and the copulation process continue for a few minites. The egg incubation period was averaged 11.43days (range 11-12

days). There are 7 spiderling stage and the first spiderling stage is the shortage in duration time (12.43±1.50days) and the longest one for the 7thspiderlingstage(21.97±4.02 days) (Table 2). The immature stage lasts for 112 days before adult emergence. Adult logivity was 24.37±3.97 days.

It has been found that Salticid spiders play a role in the eradication of economic insect pests such as aphids, thrips, butterflies and flies, and so on. It reduced the number of pests in different ecological habitats (Peng *et al.*, 2002). In addition, spiders in this group were found and distributed most in terrestrial ecosystems also consume other animals as food and it can control the amount of insect pests as well. Dense silky webbing could facilitate prey trapping (Jackson and Macnab, 1989). Due to the hunting and consumption behaviour of spider, it may be slowly movement. There will slightly induce insect resistance. These are factors that makes the spider more useful as a predators. According to the study of Peng *et al.*, (2002), this spider species feed on other animal groups, could reduce insect pests of economic plants, thus reducing yield loss.

Fig. 1 Egg laid in a cluster covered with silk webbing

Table 1 Sizes in mm of *P.paykulli*

stages of spiders	**length of** carapace	**width of** carapace	**abdominal length**	**body length**
Immature 1	0.93±0.11	0.74±0.06	0.96±0.07	1.94±0.09
2	1.22±0.19	0.89±0.11	1.20±0.22	2.39±0.38
3	1.56±0.22	1.11±0.14	1.68±0.29	3.28±0.47
4	1.90±0.21	1.31±0.15	2.04±0.31	3.92±0.53
5	2.28±0.80	1.54±0.17	2.45±0.32	4.79±0.62
6	2.66±0.27	1.77±0.20	2.83±0.32	5.62±0.61
7	3.08±0.36	2.03±0.25	3.20±0.37	6.14±0.70
Adults	3.45±0.41	2.53±0.38	3.86±0.49	6.90±0.69
female	3.41±0.40	2.52±0.39	3.91±0.50	6.92±0.77
male	3.54±0.44	2.56±0.37	3.76±0.46	6.85±0.58

Fig. 2 A male adult

Fig. 3 A female adult

Table 2. Developmental growth of *P.paykulli*

stages of spiders	developmental time(days)	Mean ± SD
eggs	11-12	11.43±0.50
1	8-19	12.43±1.50
2	8-21	13.41±3.68
3	10-20	14.37±3.40
4	10-20	14.43±3.17
5	7-21	16.60±4.64
6	13-25	19.17±3.84
7	13-31	21.97±4.02
adults	19-30	24.37±3.97

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References

Jackson, R. R. and Macnab, A. M. (1989). Display, mating, and predatory behaviour of the jumping spider *Plexippus paykulli* (Araneae: Salticidae). New Zealand Journal of Zoology 16(2):151-168.

Nyffeler, M., Edwards, G. B. and Krysko, K. L. (2017). A vertebrate-eating jumping spider (Araneae: Salticidae) from Florida, USA. Journal of Arachnology 45:238–241.

Nyffeler, M. and Benz, G. (1987). Spiders in natural pest control: A review. Journal of Applied Entomology 103: 321- 339.

Peng, X.J., Tso, I. M. and Qiang, L. U. (2002). Five new and four newly recorded species of jumping spider from Taiwan (Araneae: Salticidae). Journal of Zoological Studies 41(1):1-12.

Tanhir, H.M., Tahira, M.B., Noor**,** M.I, Nawaz, S., Khan S.Y.and Mukhtar, M.K.. (2014). Effect of thiodan on survival, behaviour and predatory performance of a spider, *Plexippus paykulli* (Savigny et Audouin, 1827). Pakistan Journal of Zoology 46(3):593-600.

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