LIFE HISTORY OF *THANATUS ALBINI* (AUDOUIN) (ARACHNIDA: ARANEIDA: PHILODROMIDAE) IN EGYPT

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Abstract

This study was conducted to rear the spider *Thanatus albini* (Audouin) (Philodromidae) when fed on different prey under laboratory conditions. The study proved that the spider had six spiderlings for female (90.7 days) and five spiderlings for male (83.45 days) before reaching adult. Obtained data also showed that the first spiderling consumed the largest number of prey (larvae and nymphs of *Emboasca* sp.), while from the second to fifth spiderlings; the individuals fed on the larvae of *Acheroia grisella* F. for both females and males. On the other hand, the spider females only fed on the larvae of *Galleria galleria* during the sixth spiderling. However, the life cycle and longevity periods of the spider lasted 90.07, 83. 45 and 196.85 and 39.71 days for female and male, respectively.

Keywords: Life history, Spiders, Philodromidae, *Thanatus albini.*

INTRODUCTION

All spiders are carnivores and feed almost exclusively upon prey which they have caught for themselves. They prey upon other arthropods, mainly insects, although woodlice and centipedes may also be taken. It is important to study the different ecological aspects of the spiders to maximize their important role as biological control agents, Ghabbour *et al.*, 1999 and Hussein *et al.* 1998. Family Philodromidae are represented by 30 genera, eight of which occurs in the Afrotropical region. They are free living agile spiders commonly found on plants or on the soil surface, Dippenaar-Schoeman and Jocque, 1997. In Egypt, Mohafez 2000 mentioned that members of the family Philodromidae were found allover the year on vegetables, field crops and fruit trees in different locations at Sohag Governorate. Genus *Thanatus* is the second - presented in number; which includes 21 species from Africa, Asia, southern Europe and Brazil Platnick, 2004. *Thanatus albini* is the most common philodromid species recorded form Egyptian' desert, Hussein *et al.* 1998. The present work is carried out to focus on some biological aspects of this species which collected from different orchards in Giza Governorate.

MATERIALS AND METHODS

Adult individuals of *Thanatus albini* were collected by using plant shaking method of different orchard trees (grapes, apple and apricot) in Giza Governorate. After plant shaking (lower branches), the specimens were individually picked up in a plastic vial (3/6 cm). All specimens (adult graved females, which characterized by enlarged opisthosoma with well developed epigynum.) were transferred to the laboratory for identification and rearing. All females fed and kept individually until eggs laying when fed on greater wax moth, *Galleria* sp. After hatching, the spiderlings (35 individuals /egg sac) were reared individually until adult stage. The first spiderling was fed on the different stages of Jassid insects (*Emboasca* sp.) and from the second spiderling to the adult were fed on the larvae of the greater wax moth insect. The tested prey were already taken from Plant Protection Dept., Al-Azhar University. The two tested prey were introduced to the predator two days interval. All spiders were reared under laboratory conditions (26 - 28°C and 60 - 70 % R.H.).

RESULTS AND DISCUSSION

EGG SAC, EGGS AND INCUBATION PERIOD

The laid egg sacs of *T. albini* were circular in shape, slightly enlarged (5 - 6 mm in diameter), and light yellow in color which changed to pale yellow just before hatching. The eggs were creamy in color after egg sac laying, changed to dark before hatching. All offspring (35 individuals) hatched and emerged from the egg sac through a tiny pore of the egg sac. The obtained results indicated that incubation period for both sexes averaged (14 -18 days).

Life cycle

During rearing, 8 individuals of *T. albini* died through different instars before reaching maturity. The remaining once (27 individuals) reached to adult, 12 males and 15 females (the sex ratio ♂♂: ♀♀ = 0.8). All females reached maturity after 6 moults (90.07±23.99 days) while, males reached maturity after 5 moults (83.45±0.51 days) during their development (Table1). The obtained results are disagree with those obtained by El-Erksousy and Fawzy (2001), where they reared *Thanatus albini* on wheat aphid *Schizaphis graminum* (Rondani). The life cycle lasted 169.87 and 148.73 days for female and male, respectively. Also, *T. albini* had seven spiderlings before reaching maturity for both sexes. On the other hand, El-Erksousy *et al.* (2006) reared the same species on both the pink ball worm *Pectinophora gossypiella* (Saund.) (newly hatched larvae) and different stages (nymph and adult) of the cotton aphid *Aphis gossypii* (Glover) as two prey under laboratory conditions. They noticed that spider

females were deposited their eggs in sacs nearly contained about 55 eggs / sac, the incubation period was 17.2 – 17.3 days at 26±1°C and 60-78%. The total spiderlings duration was 122.2±9.5 and 117.2±10.16 days for females and males, respectively when fed on the newly hatched larvae of the pink boll worm increased to 165.9±5.9 and 145.6±2.9 days when feeding on the cotton aphid.

Table 1. Duration of different developmental stages of *Thanatus Albini* when fed on different types of preys.

Development duration	Duration (days)			
	Male		Female	
	Mean	S.D.	Mean	S.D.
1st instar	15.36	1.20	16.07	0.99
2nd instar	20.54	1.80	20.07	1.38
3rd instar	11.81	2.08	11.28	1.06
4th instar	7.72	1.62	9.57	1.01
5th instar	12	1.10	12.42	1.01
6th instar	-	-	11.07	0.53
Life cycle (total duration)	83.45	0.51	90.07	23.99
Adult longevity	39.71	2.86	196.85	19.90
Life span	123.42	2.87	293.85	18.48

Adult longevity and Life span

Adult female of *T. albini* lived longer than male when both sexes fed on *Galleria galleria*. As shown in (Table 1) this period averaged 196.85 and 39.71 days for female and male, respectively.

Female life span was longer than of males (averaged 293.85 and 123.42 days, respectively). Putman (1967) studied the life cycle of *Philodromus praetustris* (Family: Philodromidae). He found that females of *P. praetustris* produced up to 12 egg sacs containing a total of over 200 eggs in an insectary but the later eggs did not hatch. Fecundity in the orchards appeared to be considerably lower. Two species of ants were introduced as prey.

Food consumption

During the study of food consumption of *T. albini*, different spiderling instars and adults were fed on various instars of jassid and wax moth. The first instar individuals were fed on the different instars (nymph-adult) of jassid insect *Emboasca* sp. The total mean of consumed prey as shown in (Table 2) was averaged 4.45 individuals and 4.5 individuals for male and female, respectively. From second to fifth

spiderlings, the spiders fed on the different stages of small wax moth *Acheroia griselle* larvae prey, the total mean of food consumption was averaged (3.6 prey), (2.54 prey), (2.4 prey), and (1.6 prey) for male and (4.48 prey), (3.0 prey), (3.5 prey), and (2.57 prey) for female, respectively during 2nd , 3rd , 4th, 5th and 6th spiderling. The sixth instar of spiderling fed on the big wax moth *Galleria galleria* larvae. The total mean of food consumption was 2.07 prey for females, Table 2.

Abdel-Rahman *et al.* (2001) declared that the female consumption during the all spiderlings was 29.3±4.19, 31.3±8.37, 51.3±6.22, 56.6± 4.35, 56.6±4.53, 0.47±5.36, 177.9±15.36 and 155.2±40.82 prey individuals, respectively. While male consumed 23.33±2.07, 35.0± 5.33, 44.17±3.6, 51.17±1.6, 57.67±9.05, 96.67±24.5, 168.67±24.5 and 277.5±64.89 prey individuals, respectively when fed on 1st instar larvae of *Spodoptera littoralis*.

Table 2. Food consumption of the spider *T. albini* when fed on different types of prey

Developmental stages	Prey	Male		Female	
		Mean (individuals)	±S.D.	Mean (individuals)	±S.D.
1st instar	*Emboasca* sp.	4.45	0.68	4.50	0.55
2nd instar	*Acheroia griselle*	3.60	0.67	4.48	0.69
3rd instar		2.54	0.68	3.00	0.54
4th instar		2.40	0.51	3.50	0.50
5th instar		1.60	0.50	2.57	0.50
6th instar	*Galleria galleria*	-	-	2.07	0.48

REFERENCES

1. Abdel-Rahman, S. I., A.A. Ibrahim, S. A. Mohamed and H. A. Salem. 2001. Biological studies on the true spider *Thanatus albini* (Audouin) (Philodromidae) predated on two different prey species. Egypt. J. Appl. Sci., 16(9):267-276.
2. Dippenaar-Schoeman A. S. and R. Jocque. 1997. African spiders: An identification manual. Ultra Litho, Heriotdale, Johannsburg 392 pp.
3. El-Erksousy, M. H. and M. M. Fawzy. 2001. Biological studies on the true spider *Thanatus albini* (Audouin) (Family Philodromidae) on wheat aphid *Schizaphis graminum* (Rondani). Ann. Agric. Sci., Moshtohor, 39 (1): 645 – 649.
4. El-Erksousy, M. H., R.A. Amer, A. A. Ibrahim and S. A. Ibrahim. 2006. Laboratory studies on some biological aspects of the true spider predaceous *Thanatus albini* (Audouin) (Order Acarina - Family: Philodromidae) fed on the pink boll worm and cotton aphid. Egypt. J. of Appl. Sci., 21 (11): 230 - 240

5. Ghabbour S. I., A.M. Hussein and H.K. El-Hennawy. 1999. Spider population associated with different crops in Menoufya Governorate. Nile Delta, Egypt. J. of Agric. Res., 77 (3) : 1163 – 1179.
6. Hussein, A. M., H. K. El-Hennawy and A. A. Sayed. 1998. Biodiversity of spiders (Araneae) in the western desert of Egypt in relation to agriculture and land reclamation. Bull. Fac. of Agric., Cairo Univ., 49: 597 – 610.
7. Mohafez, M. A. 2000. Studies on true spiders in Sohag Governorate. M. Sc. Thesis, Fac. of Agric., Al-Azhar Univ., 155 pp.
8. Mohafez, M. A. 2003. Life history of *Stegodyphus dufouri* (Audouin, 1825) (Arachnida: Araneida: Eresidae) in Egypt, A step on the way from asocial to social. Serket, 8(3):113-124.
9. Platnick, N. I. 2004. The world spider Catalogue. Edited by Peter Merrett and H. Don Cameron. Internet Catalog Version 5 prepared by David Reddy, American Museum of Natural History. Online at http://research.amnh.org/entomology/spiders/catalog index.html.
10. Putman, W. L. 1967. Life histories and habits of two species of *Philidromus* (Araneida: Philodromidae) in Ontario. Can. Entomol., 99 : 622-63

دراسات بيولوجيه على العنكبوت الحقيقى *Thanatus albini*

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أجريت دراسة معملية لتربية العنكبوت *Thanatus albini* المنتمى لفصيلة Philodromidae بتغذيته على فرائس مختلفة تحت الظروف المعملية (٢٦ ± ٢ م) و ٦٠ – ٧٠ % رطوبة نسبية . واتضح من الدراسة أن المفترس يمر بستة أطوار عنكبوتية قبل الوصول الى الطور البالغ (الأنثـــى) والتى استغرقتس ٩٠,٧ يوما وخمسة اطوار فقط فى حالة (الذكر) والتى استغرقت ٨٣,٤٥ يوما . كما لوحظ ان العنكبوت فى الطور العنكبوتى الاول قد تغذى على يرقـــات وحوريـــات حشـــرة الجاســـيد *Emboasca* sp. (اكثر الفرائس عددا) اما من بداية الطور الثانى حتى نهاية الخـــامس فقـــد تغـــذت الأفراد على يرقات حشرة *Acheroia grisella* وذلك للذكور والاناث اما الاناث فقط فقد تغذت فـــى الطور السادس على يرقات حشرة *Gallèria galleria* . كما لوحظ ان دورة حياة العنكبوت استغرقت ٩٠,٠٧ و ٨٣ .٤٥ يوما لكل من الاناث والذكور على التوالى ولقد استغرقت فترة حياة الفرد البـــالغ حوالى ١٩٦,٨٥و ٣٩,٧١ يوما على التوالى .