

BIOLOGY OF TRIATOMINAE (REDUVIIDAE, HEMIPTERA) FROM NORTH OF FORMOSA COUNTY (GOIÁS – BRAZIL) II. LENGTH OF LIFE CYCLE OF RHODNIUS NEGLECTUS LENT, 1954.

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In the present paper the life cycle of Rhodnius neglectus was studied. The mean length from egg to adult was 119 days. The mean length in day from each stage was: 17.4 (± 1.15) for first, 18.2 (± 1.28) for second, 17.7 (± 1.16) for third, 20.3 (± 1.24) for fourth and 29.8 (± 1.46) for fifth.

INTRODUCTION

Rhodnius neglectus, described by Lent in 1954, is a triatomid found in the Brazilian states of Bahia, Minas Gerais, Goiás and São Paulo.

Freitas et al³, studying triatomids in North-eastern São Paulo refer to *R. neglectus* found principally in palm trees (macaúbas). It is rarely found in human dwellings. Barreto et al¹, in 1966, studying a population of *T. cruzi* found in a wild environment in Ribeirão Preto County (São Paulo State) also mention finding *R. neglectus* in macaúba palm trees; once it was found in an opossum nest. Lent and Juberg⁶ also mention that this triatomid is mainly found in wild habitats. For the most part, they are restricted to the crowns of palm trees and a few were found in bird nests of the Furnariidae family or hollow trees.

The role of *R. neglectus* in the transmission of *T. cruzi* is not very clear yet. Pessoa¹⁰ believes that this species may contribute, directly or indirectly, to the appearance of *T. cruzi* in human beings or domestic animals. Barreto et al¹ found 4.4% of captured specimens to be infected with *T. cruzi*. This level may be considered high, since the types of habitats are mainly visited by birds.

The biology of *R. neglectus* was briefly studied for the first time by Dias² in 1955. In

1967, Freitas et al⁴ carried out a detailed study of several aspects of the biology of this triatomid.

Perlowagora-Szumlewicz et al⁸ and Perlowagora-Szumlewicz⁹ analysed some aspects of the feeding behavior and biology of *R. neglectus*, comparing it to other species of triatomids.

In order to add more information on the biology of *R. neglectus* to the existing literature, the present paper aims at studying, under laboratory conditions, the life cycle of a strain of this triatomid from North of Formosa County, Goiás State.

MATERIALS AND METHODS

1. Origin of the population studied

As in the study of *T. sordida*⁷, the population of *R. neglectus* studied in this paper was originated from a female insect caught in the field, already laying eggs. This female came from a site about 156 km Northeast of Brasília, D.F., on the BR-020 highway. This female was found in a wild environment, in a palm crown habitat.

The number of first instar nymphs used for the study of the life cycle corresponded to 82.17% of the total eggs laid by this female in the laboratory.

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2. Maintenance of the population

The population of *R. neglectus* was maintained under the same laboratory conditions as described by Mello⁷ for *T. sordida*. The temperature and humidity conditions were also the same used by that author, as well as the statistical analyses applied to the results.

RESULTS

The egg incubation period is shown in table 1. The mean was 16.0 (± 1.51) (table 1) with 98.5% viable eggs (467 observed and 460 hatched).

The days of occurrence of ecdyses for the five developmental stages of *R. neglectus* are grouped in a class interval as shown in table 2.

The complete cycle length from egg to adult lasted an average of 119 days.

The female/male ratio was 179/159, a sex ratio of 1.13.

TABLE 1

Period of incubation of eggs of *R. neglectus* under laboratory conditions

Incubation days class interval	Eggs
5 - 7	1
8 - 10	42
11 - 13	63
14 - 16	174
17 - 19	68
20 - 22	89
23 - 25	23
Nº of viable eggs	460
Viable eggs (%)	98.5
Total	467

COMMENTS

In his study of the biology of some triatomid species, Dias², in 1955, found that the length of the life cycle of *R. neglectus*, from first instar nymph to adult varied between 90 and 116 days. Total length for all nymph stages varied from 62 to 76 days while the egg

incubation period lasted from 20 to 23 days. They were fed on chicken blood.

Freitas et al.⁴, working at 26°C temperature and 75% relative humidity, observed that the egg incubation period for *R. neglectus* was constant, lasting 15 days. The cycle length from egg to adult lasted 85.9 and 96.7 days, when the insects were fed every 7 and every 14 days, respectively. Mean length for ecdyses in different stages was perceptibly lower when insects were fed every 14 days.

Comparing the data of the above mentioned authors to those obtained in the present study, it was observed that the mean cycle length from egg to adult was closer to those found by Dias² than to those found by Freitas et al.⁴. The length of all developmental stages (Table 2) was longer than that reported by Freitas et al.⁴ in spite of similar temperature, relative humidity and feeding (every 7 days) conditions.

Mortality of *R. neglectus* studied by Freitas et al.⁴ was higher in the third stage, reaching percentages of 22.22% to 29.17%, respectively, for triatomids fed every 7 and every 14 days. Throughout the entire life cycle, mortality rates were 46.66% and 36.66% (insects were fed every 7 and every 14 days on blood).

Although Perlowagora-Szumlewicz⁹ does not present details about the methodology of his work, she refers to a low survival in all nymph stages of *R. neglectus* (46%). Many adults were incapable of shedding their nymphal cuticle dying with incomplete ecdyses. She also mentioned that of 3,658 eggs observed 84.5% were viable.

Contrary to the findings of the above mentioned authors, the population of *R. neglectus* studied in the present paper showed low mortality rates (Table 2 and 3) and high egg viability, i. e., 98.5% (Table 1).

Mortality in nymph stages declined (Table 2 and 3), that is, higher in the first stages and decreasing successively. No adult was incapable of freeing itself from the 5th stage cuticle.

Disparities between the results of this study and others may be attributed to striking differences at the population level in the *R. neglectus* species. The population studied has been maintained in the laboratory, up to the present, at a very high numerical level.

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TABLE 2

Duration in days of the different evolutive stages of *R. neglectus*

Ecydises days (class int.)	Evolutive Stage	NI	NII	NIII	NIV	NV
5 - 7		2	0	0	0	0
8 - 10		10	9	10	1	0
11 - 13		38	50	31	17	4
14 - 16		122	101	86	59	5
17 - 19		64	83	138	65	5
20 - 22		48	54	33	92	18
23 - 25		48	55	26	81	24
26 - 28		11	5	6	10	64
29 - 31		8	3	7	7	117
32 - 34		1	0	3	0	43
35 - 37		8	0	1	6	21
38 - 40		0	0	0	1	18
41 - 43		0	0	0	0	12
+ 44		0	0	0	0	7
Subtotal		360	349	341	339	338
Dead		18	11	8	2	1
Total		378	360	349	341	339

TABLE 3

Mortality and mean duration of different evolutive stage of *R. neglectus*

Evolutive Stages	Mean Duration (days)	Mortality %	Survival %
Eggs	16.0 (\pm 1.51)	—	—
N I	17.4 (\pm 1.15)	4.76	95.2
N II	18.2 (\pm 1.28)	3.05	96.9
N III	17.7 (\pm 1.16)	2.29	97.7
N IV	20.3 (\pm 1.24)	0.58	99.4
N V	29.8 (\pm 1.46)	0.29	99.7

RESUMO

Foi estudado no presente trabalho o ciclo biológico de *Rhodnius neglectus* encontrado no norte do município de Formosa, Goiás. A média de duração do ciclo de ovo a adulto foi 119 dias. A média de duração em dias para cada estágio foi: 17.4 (± 1.15) para o primeiro, 18.2 (± 1.28) para o segundo, 17.7 (± 1.16) para o terceiro, 20.3 (± 1.24) para o quarto e 29.8 (± 1.46) para o quinto.

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