

## A STUDY ON THE LIFE HISTORY OF HYALOMMA IMPELTATUM SCHALZE AND SCOTKE 1930

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Ecological and biological observations of some species of the genus *Hyalomma* were carried out by Snow and Arthur (1966), Das and Subranian (1972), Petrelli et al (1973) and Kumar and Rubran (1974). However, apparently similar information on *Hyalomma impeltatum* seems to be very scanty.

*Hyalomma impeltatum* is a species of common occurrence on various domestic animals in the Sudan, so the need to illustrate its lifecycle is realized.

This paper records observations on the lifecycle of this species under laboratory conditions.

### Material and Methods

Ticks for the study were collected from dairy cattle at Soba, (20 km South of Khartoum). Each pair of ticks consisting of an engorged female and its associated male was collected in a tube. They were identified according to keys by Hoogstraal (1956). The males were removed and each of 10 engorged females were kept in a separate tube at room temperature and humidity (27–30 C and 50–65 % RH) in order to oviposit. Eggs from each female were removed daily, counted and put in a separate tube then plugged with cotton wool. The preoviposition period, oviposition period and number of egg batches were recorded. Eggs were allowed to hatch at 27–32 and 50–65 % RH. The length of incubation and hatching periods, percentage hatchability and the viability of larvae were recorded.

50 and 80 larvae were fixed to the back of each of two rabbits using a back collar after shaving the back area. The feeding and moulting periods were observed.

Ticks that dropped from the rabbits were allowed to moult under 27–32 and 85–90 % RH. Four days after the last moult, adults were applied to the back of calves which were tick free and kept in a tick proof room. The feeding behaviour and the feeding periods were observed.

### Results

*The Pre-oviposition period and the course of oviposition.*

The pre-oviposition period varied from 6–16 days. The oviposition period varied from 3–10 days. The maximum egg number produced in 24 hours by one female was 1870 during the first day of oviposition. The course of oviposition is shown in Table I.

Two ticks failed to oviposit during the observation period.

### Larval emergence

Larval emergence started to occur between the 22nd and 26th day. The percentage hatchability was above 80 %. Hatching took place during four days.

### Larval feeding and moulting

Table II shows the periods of larval feeding and development. Non engorged larvae that detached died during moulting to nymphs. However most of the larvae fed moulted then fed again and dropped as fed nymphs. Engorged nymphs were obtained on rabbits during 11, 18 and 19 days of initial contact.

### Adult emergence and feeding :

At 85–95 % RH there was a successful moulting of 50 incubated nymphs over a period of 15 days. The mean duration was 13 days. Those 50 nymphs differentiated into 21 females and 29 males.

Nine males and 11 females were put on the back of a calf 4–7 days after moulting. On the second day 6 females and 4 males were found attached in the perineal area. The six females engorged and dropped during 24–31 days. While the males remained attached for 30–60 days.







Table III: *Hyalomma impeltatum* larval feeding and moulting on rabbits.

	Initial contacts	First attachment	First detachment	Subsequent detachment	dates and stage of detached tick				
	24/8/77	25/8/77	3/9/77	4/9/77	5/9/77	6/9/77			
Rabbit A.	80L	4N	3N	7N	16N	7N			
	24/8/77	25/8/77	28/8/77	29/8/77	31/8/77	1/9/77	10/9/77	11/9/77	16/9/77
Rabbit B.	50L	—	5L	2L	1L	2L	6N	6N	1N

Table IV: *Hyalomma impeltatum* adult moulting under 85–90% RH and 27–32°C.

Detachment	Number	date (1977)							Average moulting
Date	Detached	17/9	18/9	19/9	20/9	21/9	23/9	24/9	25/9 PERIOD Days
3/9	4N	1M	3F						14.5
4/9	3N	1M	2M						13.5
5/9	7N		5M	2F					15
6/9	16N		3M	6F	2M	2M	2F	2M	14
7/9	8N		1F		1F	2M	2M	1F	14.5
10/9	6N				1M		3M	2F	12
11/9	6N						1M	3M2F1	11.5
16/9	2N							1M1F	8
Mean									13

### Summary

The life-history of *Hyalomma impeltatum* was studied under 27–32 C, 50–68% RH for egg laying and larval development and 27–32 C and 85–90% RH for development of further stages. The pre-oviposition and oviposition periods, number and batches of eggs were observed.

*Hyalomma impeltatum* using rabbits as a host behaved as a two-host tick and completed its lifecycle during 92 days.

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Summary  
The development of *Hyalomma anatolicum anatolicum* (Koch 1844) was studied under laboratory conditions. The pre-oviposition and oviposition periods, number and pattern of eggs were observed.  
*Hyalomma anatolicum* using larvae as a host fed on a two-host tick and completed otherwise during 23 days.