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Research note

Studies on ixodid fauna in the northern part of Honshu, Japan
3. Preliminary notes on *Ixodes nipponensis* (Ixodoidea ; Ixodidae) found on the small reptile, *Takydromus tachydromoides*

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Ixodes nipponensis is a typical 3-host development type and has a wide host range. According to Kitaoka and Saito (1967), hosts for adult stage are cattle, horse, dog, badger, wild hare, weasel, and man, and, for immature stages are small rodents and birds. Hosts of this species in Japan were described in detail by Yamaguti *et al.* (1977). Reptiles, however, have so far not been known as hosts. In the present survey, the immature stages of this species were found on a common small reptile, *Takydromus tachydromoides* (Japanese name: Kanahebi) in the northern part of Honshu. According to the personal communication from Dr. Kitaoka, three nymphs found on the same host in Nagasaki during April to May, 1977 (collected by Dr. H. Suzuki).

There is no doubt that ticks parasitic on reptiles live under direct influence of environmental temperature in contrast to parasitism on warm-blooded animals. In the case of the related species, *Ixodes ricinus* feeding on reptiles, the close relationship between the feeding duration and environmental temperature was confirmed by Balashov (1968). Therefore, it would be very interesting to observe host-tick relationship of this species on the cold-blooded host, *T. tachydromoides*, in Japan.

1. *Localities of survey and methods*

Localities: Localities are shown in Table 1. Most of *T. tachydromoides* were captured in sunny paths and grassy sites of mountains and forests, and exceptional ones in pine plantations along the sandy seaside.

Collecting method: *T. tachydromoides* captured by hand were released as soon as ticks were removed from them and markings were made on their heads to avoid any possible repeated recording. *T. tachydromoides* were divided into two groups, adult and young on the basis of body length and color. Ticks removed were preserved in 70% alcohol or mounted with Hoyer's medium.

Rearing method of ticks: Some of the reptiles infested with ticks were kept individually in vinyl cups or Petri dishes at 20–23°C until the engorged ticks dropped off. Each of the engorged ticks was reared separately in a test-tube maintained at about 100% RH, 20–25°C, and darkness.

2. *I. nipponensis found on T. tachydromoides*

As shown in Table 1, a total of 136 ticks was collected from 55 reptiles, and all of the ticks were identified as 33 nymphs and 103 larvae of *I. nipponensis*. No other species except *I. nipponensis*, were found on the reptiles. According to the authors' unpublished data on wild rodents and collection by flagging, *I. nipponensis* was not abundant in numbers, whereas a great number of other ticks, such as *I. acutitarsus*, *I. ovatus*, *I. persulcatus*, *Haemaphysalis flava*, were collected in the same localities. Moreover, 114 specimens of ticks were removed from 33 adult reptiles, and 22 specimens from 22 youngs, whereas the number of this species per rodent was found to be rather small according to Takada and Yamaguchi (1974). Thus, it seems that *T. tachydromoides* is a favorite host for immature stages of *I. nipponensis*. In addition, two cases of the heavy infestation (5 nymphs and 4 larvae,

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Table 1 *Ixodes nipponensis* found on *T. tachydromoides* in Aomori and Akita Prefectures

	Date	Localities	No. hosts	No. ticks		
				Stages		Total
1	Aug. 1976	Wakinosawa, Aomori Pref.	3A	7N	27L	34
2	Apr. 1977	Hirosaki, 〃	7A	8N	4L	12
3	May 1977	Hirosaki, 〃	9A	7N	15L	22
			4Y	3N	5L	8
4	May 1977	Tsurube-otoshi Pass, Akita Pref.	3A	—	22L	22
5	June 1977	Hirosaki, Aomori Pref.	2A	2N	16L	18
6	June 1977	Hirosaki, 〃	2A	—	—	—
			2Y	3N	—	3
7	Aug. 1977	Wakinosawa, 〃	1A	1N	—	1
8	Aug. 1977	Wakinosawa, 〃	1A	—	—	—
9	Sept. 1977	Ohma, 〃	1Y	—	—	—
10	Oct. 1977	Hirosaki, 〃	5A	1N	4L	5
			13Y	1N	4L	5
11	Oct. 1977	Shichiri-nagahama Coast, Aomori Pref.	2Y	—	6L	6
		Total	33A	26N (0.8)	88L (2.7)	114 (3.5)
			22Y	7N (0.3)	15L (0.7)	22 (1.0)

A: Adult, Y: Young, N: Nymph, L: Larva; ( ): the number of tick per host

and 16 larvae per adult) suggest the relatively high capacity of the host reptiles for the ticks in spite of its tiny body size (10–15 cm in length of adult).

The immature ticks usually attacked the anterior sites of the flank, especially the axillae of forelegs, and infrequently the eardrums. The ticks stung their hypostome among the scales covering the whole of the mature *T. tachydromoides*.

This species were found on the reptiles which were active through the periods from early April to late October, though the seasonal fluctuation of the ticks was not fully explained. Tick infestation on the hibernating host should have been examined for clarification of overwintering of the tick, but, unfortunately, the reptiles were hardly available in winter.

3. Rearing of I. nipponensis from T. tachydromoides

Twelve larvae and two nymphs feeding on the reptiles which were captured in October, 1977, were reared and observed in detail as follows:

Six larvae engorged themselves for 5–11 (8 in average) days after rearing at 20–23°C. The average body weight of 12 engorged larvae was 0.5 mg with a range from 0.3 to 0.7 mg. All of them, however, did not molt into the nymphal stage within 4 months after detachment.

The feeding period of nymphs was not studied. An engorged nymph weighed 4.5 mg molted into an adult female 57 days after detachment, and another nymph, not weighed, molted into a male after 69 days.

According to Yamaguti *et al.* (1971), larval parasitic, larval post-parasitic, nymphal parasitic, and nymphal post-parasitic periods were reported to be 5, 30, 4, and 33 days on rabbits at room temperature not exceeding 25°C. These were shorter periods than those observed in the present study. It seems that the extended period of larval feeding on the reptiles is caused by the comparatively low ambient and host's body temperature kept at 20–23°C throughout rearing experiments. Although the delay of larval molting cannot be explained fully, it may be caused by the winter diapause following collection in October.

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摘　要

東北地方におけるマダニ類の研究
3. 小型爬虫類のカナヘビに見いだされるタネガタマダニについて（予報）

東北地方北部で捕獲した，わが国にもっとも普通の小型爬虫類カナヘビ55頭から，*Ixodes nipponensis* の幼ダニ103個体と若ダニ33個体を見いだした．本土産陸棲小型爬虫類からのマダニ採集の報告はこれが初めてと思われ，*I. nipponensis* ただ1種のみの寄生であったことはきわめて興味深い．また，カナヘビ体上で飽血した若ダニ2個体は成ダニまで脱皮したので，これらの結果について予報的に報告した．