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Notes on the Growth in the Japanese Lacertid *Takydromus tachydromoides* (Sauria, Lacertidae)

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Abstract Growth of *Takydromus tachydromoides* was studied at Fukuoka in southwestern Japan. From the data of growth in SVL, the lizards were classified into three age classes. The growth rate of SVL did not differ between sexes. The mean body weight of adult lizards differed significantly between sexes, but SVL did not.

Takydromus tachydromoides is a diurnal lizard and very common at lowlands in Japan. Life history of this species has been studied in relation to reproduction (TELFORD, 1969; HASEGAWA, 1979; TAKENAKA, 1981), food habits (JACKSON and TELFORD, 1975), population ecology (ISHIHARA, 1971; TAKEISHI, 1986), growth (HASEGAWA, 1979; TAKENAKA, 1980), and social structure (TAKEISHI, 1986). Life history strategies of lizards vary in response to sets of evironmental circumstances within same species (e.g. TINKLE *et al.*, 1970; TINKLE and BALLINGER, 1972). Therefore, it is necessary to collect informations on life history from many areas. I describe the growth pattern of *Takydromus tachydromoides* in southwestern Japan.

Study area and methods

The study was carried out at the experimental field of the Faculty of Science, Kyushu University on Fukuoka in southwestern Japan (33.6°N latitude, 130.4°E longitude). This field consisted of grassland (5400 m^2) and bare area (2200 m^2). The grassland was an old field, and *Imperata cylindrica* and *Achyranthes japonica* were dominant. *Artemisia princeps, Solidago altissima, Pennisetum alopecuroides, Setaria glauca* and *Vicia sativa* also present. Lizards were hunted from April to December 1977 and from March to November 1978. Snout-vent length(SVL) and body weight were recorded. The sex was determined by applying pressure behind the vent. If the lizard was a male, hemipenes appeared at the vent in both adults and juveniles. The lizard was marked by toe clipping for permanent identification. The lizard was released at the point of first sighting after processing.

Results and discussion

During the study, 494 lizards (238 males, 247 females, 9 of unknown sex) were

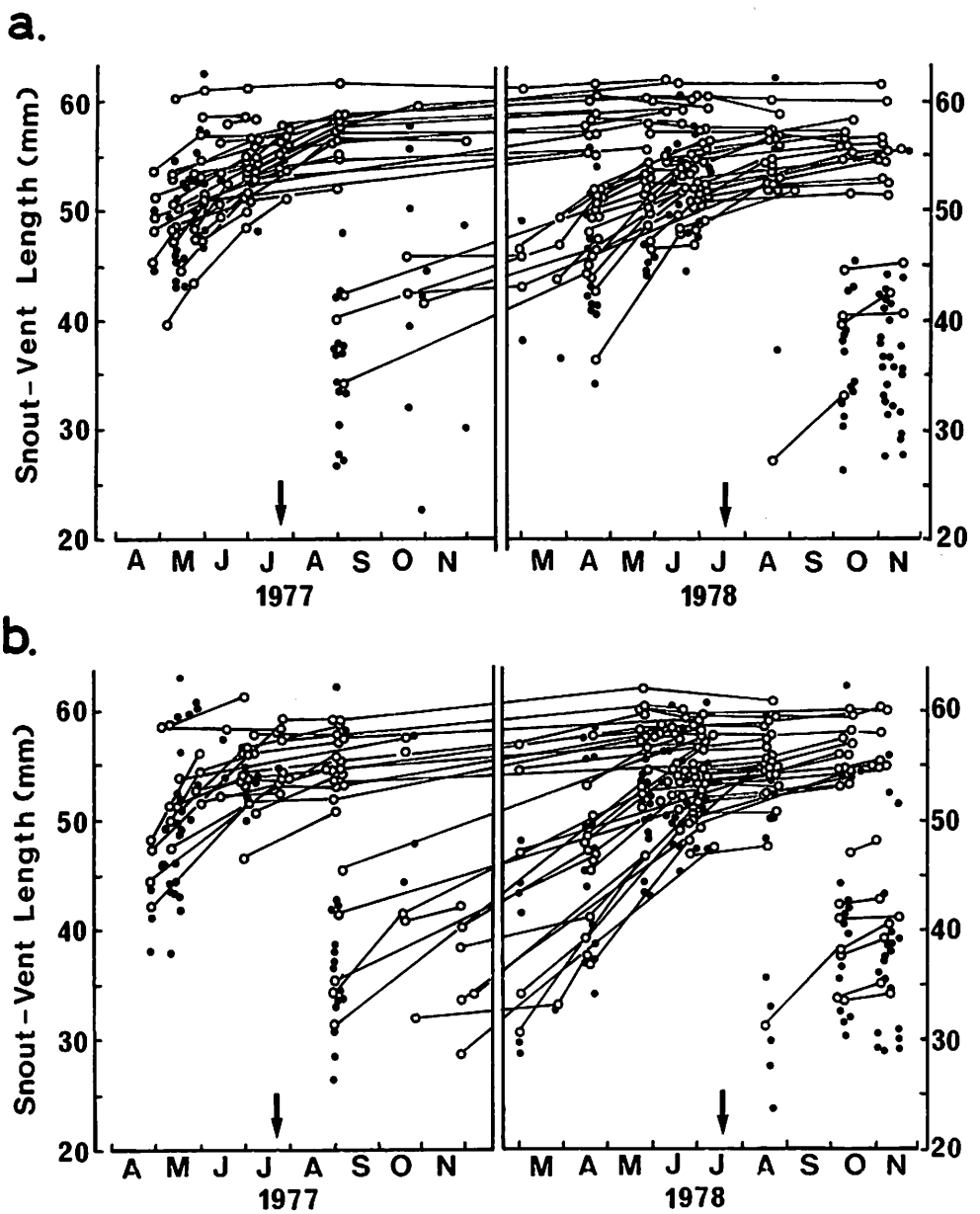

Fig. 1. Growht records of snout-vent length for male (a) and female (b) lizards in 1977–1978. Open and solid circles represent lizards captured repeatedly and ones captured only once, respectively. The plots for successively recaptured lizards are connected by lines. Arrows indicate the day of first appearance of hatchlings.

captured and released, and 191 lizards (95 males and 96 females) were recaptured at least once. In Fig. 1, SVL of each sex is plotted against the time for two years and the plots for successively recaptured lizards are connected by lines. Table 1 shows the growth rate of SVL per 30 days. The growing season ranges from March to November in the year.

Hatchlings were first seen on 23 july and 17 july in 1977 and 1978, respectively (Fig. 1). Minimum SVL and body weight of hatchlings in each year were 23.0 mm and 0.3 g (27 October 1977), and 23.6 mm and 0.3 g (21 August 1978), respectively. Body weights were similar to egg weights, 0.21 ± 0.01 (SE)g (n=7), obtained from laboratory reared lizards. This suggests that the hatching period ranged from July to October at the study area. The growing period of lizards in their first year varied depending on their hatching dates and consequently, their body sizes varied at the end of their first year. In October, SVLs and body weights of hatchlings ranged from 23 to 45 mm and 0.3 to 2.4 g, respectively. After October, lizards grew little and they hibernated in November. After emergences in late March of their second year, lizards (yearlings) grew rapidly (1.1 to 6.1 mm per 30 days) till July, and SVLs of both sexes reached 47 to 58 mm in July. But after July, the rates decreased and were 0.1 to 1.8 mm per 30 days, while SVL ranged from 52 to 59 mm in November. For lizards in their third year, growth almost stopped and range of SVL overlapped with that of yearlings. The maximum SVL and body weight were 62.5 mm, 5.8 g for males and 63.1 mm 5.0 g for females, respectively.

The growth rate of SVL did not differ significantly between males and females in each size or each period (Table 1). The rate was larger in small size lizards than in large size lizards for each period throughout the year.

Table 1. Growth rate of snout-vent length (mm per 30 days) of individually marked lizards. Figures represent mean, 95% confidence interval, and sample sizes of males (upper) and females (lower).

INITIAL SNOUT-VENT LENGTH (mm)	PERIODS			
	MAR.–MAY	MAY–JUL.	JUL.–SEP.	SEP.–NOV.
60.0 – 65.0	0.3±0.6 (2)	0.4±0.5 (6) 0.0±0.0 (2)		
55.0 – 60.0	0.4±5.1 (2) 0.1 (1)	0.5±0.5 (6) 0.1±0.2 (7)	0.8±1.5 (6) 0.3±1.0 (4)	0.1±0.6 (2) 0.5±1.1 (3)
50.0 – 55.0	2.1±1.5 (5) 2.4 (1)	1.6±0.5 (21) 1.1±0.7 (19)	1.2±0.6 (8) 0.4±0.6 (5)	 0.7 (1)
45.0 – 50.0	3.1±2.0 (5) 6.1 (1)	2.8±0.8 (15)	1.8 (1)	
40.0 – 45.0	4.5±1.3 (4)	4.2 (1)		0.3±0.0 (2) 0.7±0.8 (3)
35.0 – 40.0				2.9 (1) 1.9±1.5 (2)
30.0 – 35.0	3.4±1.3 (2)			2.0±4.1 (3)
25.0 – 30.0			3.7 (1)	

From the data of growth in SVL, the lizards are classified into 3 age classes; hatchlings, yearlings, and older lizards. The mean SVL and the mean body weight of adult lizards (yearlings and older lizards) after August when the growth almost stopped were 55.8 ± 0.4 (SE) mm and 3.9 ± 0.1 g for males (n=61), and 55.5 ± 0.3 mm and 3.1 ± 0.1 g for females (n=86), respectively. Body weight differed significantly between sexes(t-test, $< P\ 0.001$), but SVL did not ($P > 0.4$).

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References

HASEGAWA, M. 1979. Ecological study of the kanahebi lizard (1) the difference of growth and reproductive traits among some habitats. (in Japanese). *Chiba Seibutsu-Si.* 28(2): 1–12.

ISHIHARA, S. 1971. On the average span of life on the lizard *Takydromus tachydromoides* (Schlegel). *Bull. Kyoto Univ. Educ. Ser.B.* 39: 11–36.

JACKSON, D. R. and S. R. TELFORD. 1975. Food habits and predatory role of the Japanese lacertid *Takydromus tachydromoides*. *Copeia.* 1975: 343–351.

TAKEISHI. M. 1986. Spatial relationship among individuals of the Japanese lacertid *Takydromus tachydromoides* (Sauria, Lacertidae). *Ecol. Res.* 1: 37–46.

TAKENAKA, S. 1980. Growth of the Japanese grass lizard *Takydromus tachydromoides* in relation to reproduction. Herpetologica 36: 305–310.

TAKENAKA, S. 1981. Maturity and other reproductive traits of the kanahebi lizard *Takydromus tachydromoides* (Sauria, Lacertidae) in Mito. *Jap. J. Herp.* 9 (2): 46–53.

TELFORD, S. R. 1969. The ovarian cycle, reproductive potential, and structure in a population of the Japanese lacertid *Takydromus tachydromoides*. *Copeia.* 1969: 548–567.

TINKLE, D. W. and R. E. BALLINGER. 1972. *Sceloporus undulatus*: a study of the intraspecific comparative demography of a lizard. *Ecology.* 53: 570–584.

TINKLE, D. W., H. M. WILBUR, and S. G. TILLEY. 1970. Evolutionary strategies in lizard reproduction. *Evolution* 24: 55–74.