

## A NEW SPECIES OF *TAKYDROMUS* (SAURIA: LACERTIDAE) FROM TAIWAN

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**Jun-Yi Lin and Hsien-Yu Cheng (1981)** A new species of *Takydromus* (Sauria: Lacertidae) from Taiwan. *Bull. Inst. Zool., Academia Sinica* 20(1): 43-47. Five specimens of *Takydromus hsuehshanensis* sp. nov. were collected at the elevation between 2500 and 2950 m near the summit of Mt. Hsiao-hsueh. The likely distribution of this species may extend from 1800 to 3000 m elevation in a mixed vegetation of *Miscanthus transmorrisonensis*, *Pteridium equilinum*, *Indocalamus nitakayamensis* and coniferous species along the Hsueh-shan Range. This species differs mainly from the other *Takydromus* in Taiwan in having smooth ventrals, and from *T. tachydromoides*, a closely related species in Japan, in having three pairs of chin-shields.

Grass lizards (Genus *Takydromus*) are known to occur in grassland and woody areas below the elevation of 1200 m in Taiwan<sup>(4,5)</sup>. However, we found five specimens of an undescribed species of the Genus *Takydromus* at the elevation between 2500 m and 2950 m, close to the summit of Mt. Hsiao-hsueh (小雪山). They form the basis for the following description.

All measurements were determined to the nearest 0.1 mm and were shown as the percentage of snout-vent length (SVL). Scale counts and measurements are standardized as follows: (1) labials include the most posterior one distinctly larger than the adjacent scales; (2) ventrals include the outmost longitudinal series which are as long as other ventrals; (3) head length was measured from snout-tip to posterior edge of ear opening; (4) head breadth was measured at the widest point near the angle of the jaw; (5) snout breadth was measured between the outer edges of supraoculars at the center of the eyes; (6) length of foreleg or hindleg was measured from axilla or groin to the tip of the longest digit of foreleg or hindleg.

### *Takydromus hsuehshanensis* sp. nov.

(Fig. 1)

**Holotype:** TURL L-002, 62.4 mm SVL, male, Mt. Hsiao-hsueh (24°17'N, 121°1'E), Taiwan, elev. 2500-2950 m, collected by Mei-li Liu and Hsien-yu Cheng, June 12, 1980, deposited at Biology Department, Tunghai University, Taichung, Taiwan.

**Paratypes:** (five specimens, same data as the holotype). TURL L-001, 37.7 mm SVL, male; TURL L-003, 62.0 mm SVL, female; TURL L-004, 57.5 mm SVL, female; TURL L-005, 61.3 mm SVL, female; TURL L-006, 25.0 mm SVL (hatched in the laboratory).

**Type locality:** Mt. Hsiao-hsueh, Taiwan, the Republic of China.

**Diagnosis:** Body more or less broad; chin-shields in three pairs; two femoral pores on each side; large and smooth ventrals in six longitudinal series; enlarged keeled lateral scales above ventrals; supraoculars in contact with superciliaries, no or few granules between them.

**Description of Holotype and Paratypes (Fig. 2):** Rostral, pentagonal, separated from fronto-nasal by anterior nasals; nostril between anterior and

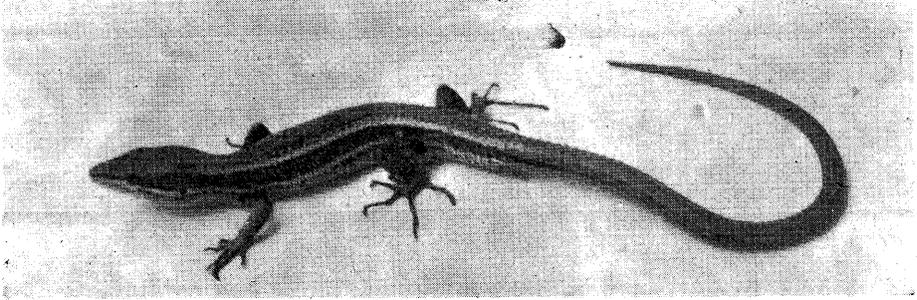


Fig. 1. *Takydromus hsuehshanensis* sp. nov.

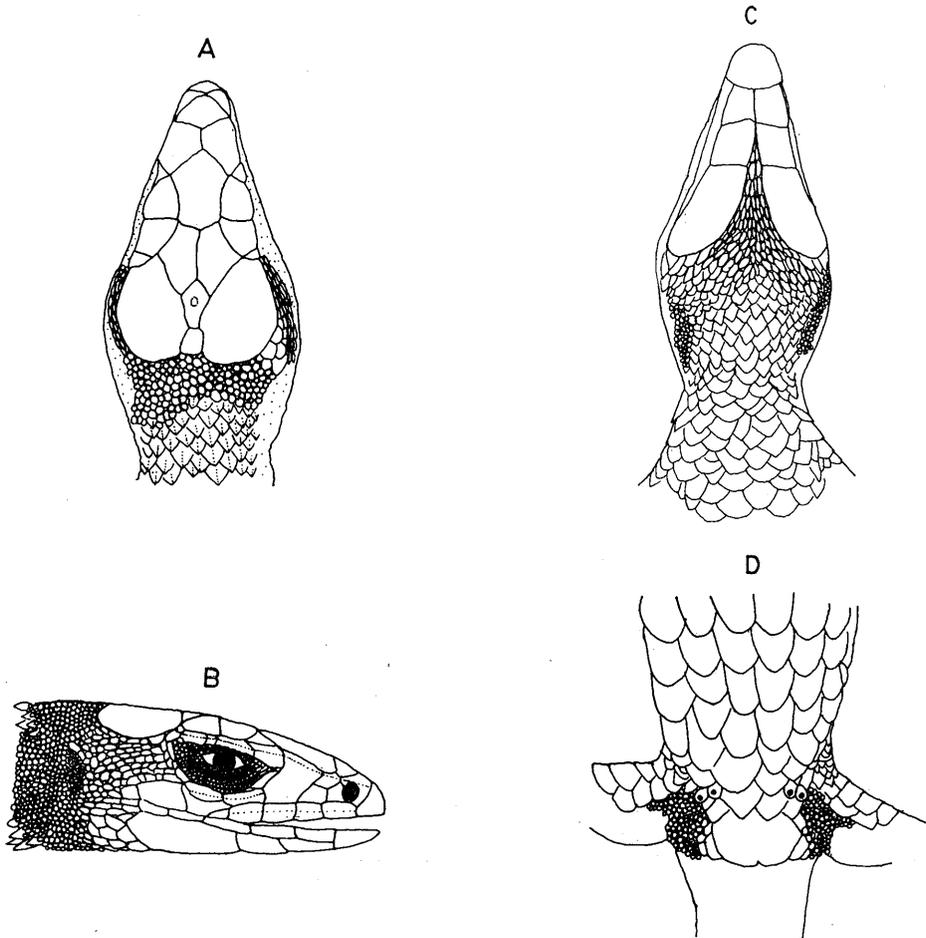


Fig. 2. *Takydromus hsuehshanensis* sp. nov.

A. Head, dorsal view; B. Head, lateral view;  
C. Head, ventral view; D. Femoral region.

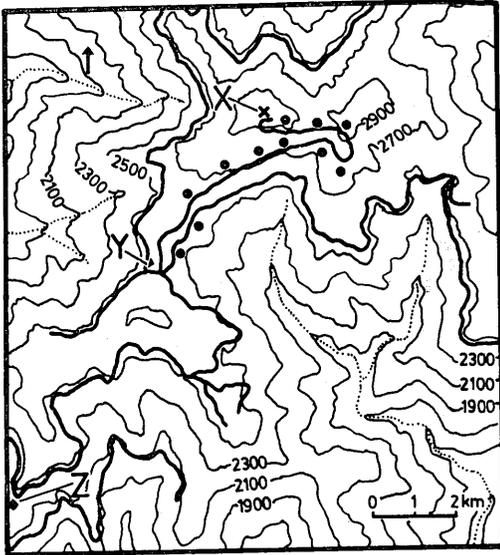


Fig. 3. Topographic map of Mt. Hsiao-hsueh. Broad solid lines indicate the rocky road, and dotted lines show the stream. X is the apex of Mt. Hsiao-hsueh, elev. 2996 m, 24°17'N, 121°1'E. Y and Z are both forestry stations at Mt. Hsiao-hsueh and Mt. An-ma, respectively. Black dots show where *T. hsuehshanensis* were sighted.

posterior nasals; 4 supraoculars, anterior and posterior, much smaller; supraoculars in contact with superciliaries, 1-3 or no granules between them; 4-6 superciliaries; posterior larger in contact with the anterior smaller supraocular; anterior loreal smaller, usually in two plates, lower larger, mostly fused with posterior nasal; two prefrontal; one frontal, smooth or very feebly keeled; interparietals in two or more plates, anterior larger (or largest) with parietal eye on it; temporals, in small and smooth or feebly keeled plates; 8-9 upper labials; 6 lower labials; three pairs of chin-shields, only first pair in contact throughout, second pair posteriorly separated by a wedge of elongated granules.

Dorsals obtusely pointed or rounded behind, with three series of large keeled scales on each side, separated by smaller keeled scales, which are in two series anteriorly and become one series posteriorly; ventrals, smooth, broad

anteriorly and slightly pointed behind, in six longitudinal and 25-27 transverse series from collar to preanal plate; laterals smaller and keeled or granular, except for 2-3 series of pointed keeled scales and a series of larger feebly keeled scales above ventrals; collar, obscure; preanal only one, smooth, with two smaller smooth plates on each side; two femoral pores on each side; limbs well developed, upper surface of limbs feebly keeled or smooth or granular; tail long, with about 14 longitudinal series of large keeled scales, of which six series are continuous with large dorsals.

**Color in life:** Olive-gray dorsally, lighter when young; a bluish green streak on the dorsolateral side in the holotype (male), a light olive or whitish olive streak, running from the neck region to the tail in adult females and young; usually a dark brown or blackish lateral band from behind the eye to the tail, with a few bluish green spots on this band in the holotype; a distinct white streak, from the nostril through the lower eyelid and the lower ear-opening to the groin; the white streak behind the head to the groin, more or less bluish green in adults. Uniformly white ventrally. Tail brown olive, with a dark lateral streak.

#### Measurements:

##### 1) Holotype

SVL: 62.4 mm

Tail length: 129 mm (207% of SVL)

Head length: 16.1 mm (25.8% of SVL)

Head width: 9.3 mm (14.9% of SVL)

Head width/head length: 0.58/1

Snout breadth: 6.7 mm (10.7% of SVL)

Length of foreleg (FL): 23 mm (37% of SVL)

Length of hindleg (HL): 30 mm (48% of SVL)

FL/HL: 0.77/1

##### 2) Paratypes (n=5, plus and minus one standard deviation)

SVL: 25 mm-62 mm

Tail length: 162-232% of SVL

Head length:  $22.7 \pm 1.4\%$  of SVL

Head width:  $12.9 \pm 1.1\%$  of SVL

Head width/head length:  $0.57 \pm 0.03/1$

Snout breadth:  $9.9 \pm 1.3\%$  of SVL  
 Length of foreleg (FL):  $34 \pm 2\%$  of SVL  
 Length of hindleg (HL):  $46 \pm 2\%$  of SVL  
 FL/HL:  $0.73 \pm 0.06/1$

**Habitat:** The type occurred around Mt. Hsiao-hsueh in central Taiwan. They were collected on the bare rocky shoulders of the road from the altitude of 2500 m to 2950 m (Fig. 3). The rocks are slates, quartzites and shales, belonging to the Eocene of Tertiary<sup>(3,6)</sup>. The soil is mainly podzolized gravel clay.

Mean annual precipitation is 3400 mm. Mean monthly temperature is 10°C, with the maximum of 25°C in the summer and the minimum of -5°C in the winter. Mean annual relative humidity is 80%<sup>(6)</sup>.

The type locality is of mixed vegetation consisting of grassland, shrubs and coniferous trees. The site is believed to be the regenerated vegetation after the original coniferous trees were destroyed by fire<sup>(6)</sup>. The grassland is mainly of *Miscanthus transmorrisonensis*, *Pteridium equilinum* and *Indocalamus nitakayamensis*. The shrubs are *Stranvaesia nitakayamensis*, *Berberis kawakamii*, *Juniperus formosana*, *Gaultheria borneensis*, and *Spiraea morrisonicola*. The coniferous species are mainly *Pinus taiwanensis*, *Pinus armandi*, *Tsuga chinensis* and *Abies kawakamii*. The grassland is the dominant vegetation of the area.

**Natural history:** The specimens were collected mainly at noon, sunny with air temperature about 23°C. They were active on the shoulders of the rocky road. Two females laid two eggs each in the plastic bag. The mean size of eggs is  $12.2 \times 8.0$  mm. Only one of the four eggs hatched after 31 days. The hatchling is 25.0 mm SVL. When autopsied, two females were found to have two corpora lutea along with two or three yolked follicles, respectively. Third adult female contained two corpora lutea and three yolked follicles. The smallest mature female was 57.5 mm SVL in the samples. The reproductive activity may begin as early as March with the first clutch hatched between May and July.

**Discussion:** Genus *Takydromus* is distributed in eastern and south-western Asia from Hokkaido, Japan to Korea, mainland China, the Ryukyu islands and Taiwan, and down to Malaysia peninsula and Java<sup>(1,2,7,8)</sup>. Among 14 known species of *Takydromus*<sup>(1,2,7)</sup>, *T. hsuehshanensis* is most closely allied to *T. tachydromoides* which is apparently restricted to Japan proper<sup>(1,7)</sup>. They differ mainly in the number of chin-shields: four pairs in *T. tachydromoides* and three pairs in *T. hsuehshanensis*. Other differences are shown in Table 1. Major differences of *T. hsuehshanensis* from other species of *Takydromus* in Taiwan are also included in Table 1.

TABLE 1.  
 Comparative major features in the Japanese species, *T. tachydromoides*, and the Taiwanese species, *T. hsuehshanensis*, *T. stejnegeri*\*, *T. formosensis* and *T. sauteri*

Species	Chin-shields	Femoral pores	Granules between supraoculars and superciliaries	Ventrals	Dorsals
<i>T. tachydromoides</i>	4 pairs	2, very rarely 3 pairs	many, rarely 2 or 3	smooth	4 or 6 longitudinal series with 1 or 2 series of smaller scales on the median line.
<i>T. hsuehshanensis</i>	3 pairs	2 pairs	none, rarely 2 or 3	smooth	6 longitudinal series with 1 or 2 series of smaller scales on the median line.
<i>T. stejnegeri</i> *	3 pairs	1 pair	many	keeled	same as <i>T. hsuehshanensis</i> .
<i>T. formosensis</i>	3, rarely 4 pairs	2 pairs	many	keeled	same as <i>T. hsuehshanensis</i> .
<i>T. sauteri</i>	4 pairs	1 pair	many	keeled	same as <i>T. hsuehshanensis</i> .

\* *T. septentrionalis* in Taiwan is the synonym of *T. stejnegeri*.

Kano (1923) noted that an uncertain species of *Takydromus* lived in the area between 1800 m and 3000 m elevation at Mt. Ta-hsueh (大雪山) which along with Mt. Hsiao-hsueh constitutes the Hsueh-shan Range (雪山山脈). The uncertain species of *Takydromus* is likely to be *T. hsuehshanensis*, whose collection site was about 18 km from Mt. Ta-hsueh area. The likely distribution of this species may extend from 1800 m to 3000 m along the Hsueh-shan Range.

Smooth ventrals are a distinct characteristic of northern species above latitude of 30°N. *T. hsuehshanensis* which occurs at 24°N may have evolved from the remaining population of *T. tachydromoides* or its relatives, after the receding of last glaciation during the middle Pleistocene. Apparently, smooth ventrals make a close contact with heated substratum possible during basking, thus allowing body temperature to rise quickly—an important adaptation to the cold climate.

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## 臺灣蜥蜴新種——雪山草蜥 (蜥蜴科 (Lacertidae))

### • 草蜥屬 (*Takydromus*)

林俊義 鄭先祐

雪山草蜥 (*Takydromus hsuehshanensis* sp. nov.) 的標本採自海拔 2500 至 2950 公尺的小雪山地區。牠大約分佈在海拔 1800 到 3000 公尺的整個雪山山脈地區。牠的棲息環境為高山草原 (包括 *Miscanthus transmorrisonensis*, *Pteridium equilinum* 和 *Indocalamus nitakayamensis* 等) 與針葉林混生的地區。

平滑無稜的腹鱗為雪山草蜥與其他臺灣產的三種草蜥的主要差別。雪山草蜥與日本草蜥 (*Takydromus tachydromoides*) 最為相近；雪山草蜥有三對的頰片 (chin-shields)，但日本草蜥有四對的頰片。