Two Additional Specimens of *Achalinus formosanus chigirai* (Colubridae: Ophidia) from the Yaeyama Group, Ryukyu Archipelago

HIDETOSHI OTA AND MASANAO TOYAMA

Abstract: A male and a female of *Achalinus formosanus chigirai* were collected from Ishigakijima and Iriomotejima Islands of the Yaeyama Group, respectively. This snake is known from three males from the latter island, and the present collection includes the first female specimen for this subspecies. Also, the occurrence of *A. f. chigirai* is ascertained from Ishigakijima I. for the first time. Morphological features of the present animals are compared with those of the other specimens of *A. f. chigirai*, as well as of the nominal subspecies. Characteristics of the female specimen are discussed.

Key words: Colubridae; *Achalinus formosanus chigirai*; Ishigakijima; Iriomotejima; Ryukyu Archipelago.

Ota and Toyama (1989) described *Achalinus formosanus chigirai* on the basis of three males from Iriomotejima Island of the Yaeyama Group, in the southernmost part of the Ryukyu Archipelago. However, since the number of specimens used for the original description was so few, it is still desirable to revise the diagnosis of the subspecies on the basis of additional, especially female, specimens. This is because some characters used for the definition of this subspecies are known to show variation, especially between sexes, in other species and subspecies of the genus *Achalinus* (see Table 1 of Ota and Toyama (1989) for example).

In the present paper, we report the morphological features of two recently collected specimens of *A. f. chigirai*, a female from Iriomotejima Island and a male from Ishigakijima Island, and compare them with the other specimens of this subspecies as well as with the nominal subspecies.

**Materials and Methods**

The female (KUZ 13006: Fig. 1) was collected from Yutsun, Iriomotejima Island, on 30 December 1988 by M. Toda. The animal was found moving in the low grass along a path in the evening. The junior author collected the male (OPM H955) from the forest floor at the foot of Mt. Omotodake, Ishigakijima Island, at night on 11 March 1988. Both specimens were examined after fixation in 10% formalin.

For comparisons, we investigated the following characters: midbody scale rows (SR, counted at the mid-point between neck and cloaca); ventral shields (VT, counted following Dowling’s (1951a) system); subcaudal shields (SC, counted only for specimens with undamaged tail-tips); snout to vent length (SVL, measured only for adults, in mm); prefrontal-loreal suture (PLS, investigated on both sides); keels on dorsal scales (DK, investigated at points of 10, 40, 60, and 90% of the distance between neck and cloaca). States of the last two characters were coded as present (+) or absent (−). The scale row alteration pattern of each specimen was formulated after Dowling (1951b).

The catalogue number of a specimen belonging to the herpetological collection of National Taiwan Normal University is preceded by TNU. The other institutional acronyms are those suggested by Leviton et al. (1985).

**Results**

Comparison.—Most characteristics of the two animals are shared with the other specimens of *A. f. chigirai*: head only slightly broader than neck; rostral triangular, one and a half to two times as broad as high, not visible from above; internasal small, rectangular, one and a third to one and a half times as long as broad; loreal fused to prefrontal; frontal pentagonal, as broad as or slightly broader than long; parietal more than twice as long as broad, contacted postero-laterally by an enlarged paraparietal; supraocular small, nearly twice as long as broad; temporal 2+2 on both sides, upper one of anterior row in contact with prefrontal; frontal pentagonal, as broad as or slightly broader than long; parietal more than twice as long as broad, contacted postero-laterally by an enlarged paraparietal; supraocular small, nearly twice as long as broad; temporal 2+2 on both sides, upper one of anterior row small, lower one of anterior row in contact with parietal behind upper one; supralabials six on both sides, fourth and fifth in contact with eye, sixth largest; infralabials six on both sides, first ones in contact with each other, separating anterior postmentals from mental; postmentals

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paired, in two rows; anal and subcaudals entire; dorsal scales, 27 rows at midbody, moderately to strongly keeled on both body and tail; scales of outermost rows almost as large as or only slightly larger than adjacent scales.

In preservative, dorsal ground color dark grayish brown, with slightly darker longitudinal line on middorsal row of scales on body, more indistinct middorsal line on tail; venter light yellowish gray, slightly darker on posterior part of body and tail than on remaining part of body.

The present specimens differ from the previous ones as follows: suture between prefrontals as long as or slightly longer than that between internasals, distinctly longer than suture between prefrontal and internasal; suture between parietals much longer than frontal; distance between eyes distinctly shorter (in the female) or longer (in the male) than interparietal suture. Numbers of ventrals and subcaudals in the male from Ishigakijima Island are almost as great as those in the males from Iriomotejima Island. However, these counts considerably differ between the female from Iriomotejima and the males: the former has more ventrals and much fewer subcaudals. The SVL of the female is greater than those of the males (Table 1). Alteration patterns of dorsal scales on body are:

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<th>Table 1. Comparisons in meristic (x±SE, followed by ranges) and other characters of the two subspecies of Achalinus formosanus. See text for abbreviations.</th>
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\(^a\) Data listed in Steindachner (1914) for Achalinopsis sauerti, a junior synonym of Achalinus f. formosanus (see Ota and Toyama, 1989), are included.

\(^b\) Data taken from two specimens.

\(^c\) Data taken from one specimen for each sex.

\(^d\) In Table 1 of Ota and Toyama (1989), the state of this character is mistakenly presented as "—."
Natural History.—Both of the present animals, like all the other specimens of the subspecies, were collected from low altitude areas (less than 200 m above sea level). The female had sixteen yolked follicles, 4.7 × 2.9 to 8.0 × 3.9 mm in diameter.

DISCUSSION

In the original description of A. f. chigirai, we diagnosed this subspecies as having the loreal fused to the prefrontal, strongly keeled dorsal scales (including the outermost rows) in 25 or 27 rows at mid body, and a large number of subcaudals (Ota and Toyama, 1989). Of these, the last character is the only one to separate chigirai from the nominal subspecies. The male in the present study provided additional data to confirm those characteristics, and, especially with the large subcaudal count, support the separation of the Yaeyama population from that of Taiwan at the subspecific level. However, the female, although having most features identical with those of males, had much fewer subcaudals. The number is even fewer than those in some males of A. f. formosanus. Still, it is slightly greater than subcaudal counts in females of the nominal subspecies (Ota and Toyama, 1989) for examples.

A. f. chigirai inhabits low altitudes with subtropical climates, in contrast to the nominal subspecies, which is known exclusively from high altitudes in Taiwan (higher than 1000 m and reaching 2500 m above sea level: Horikawa, 1941; Lue, 1989; Ota unpubl.) where the climate is similar to that in the temperate zone (e.g., Kano, 1940). Further studies may reveal ecological and physiological differences between the two subspecies.

The male in this study represents the first record of A. f. chigirai from Ishigakijima Island. This discovery makes the ophidian faunas of Iriomotejima and Ishigakijima Islands identical with each other (Toyama, 1985).

COMPARATIVE MATERIAL EXAMINED.—Achalinus formosanus formosanus—Punkho, Taiwan: BMNH 19461. 7–78 (holotype); Alishan, Taiwan: NSMT H02566; Tienchi, Taiwan: TNU B0435. A. f. chigirai—Iriomotejima Island, Japan: OMNH R2673 (holotype), OPM H0488 (paratype), NSMT H04011.

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要旨 ヤエヤマタカチホヘビ（新称）

Achalinus formosanus chigirai (Colubridae: Ophidia) の八重山諸島からの
追加標本

太田英利**・当山昌直**

ヤエヤマタカチホヘビは、これまで八重山諸
島の西表島産の三標本のみが知られていた。今
回、初めての雌が西表島で採集された。また本
亜種の分布が、一雄の標本に基づいて、同諸島
内の石垣島で新たに確認された。今回得られた
標本の形態的特徴について、これまでに得られ
た本亜種の標本および基亜種の特徴と比較し、
特に新標本について検討を加えた。

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