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THE FIRST MALE SPECIMEN OF THE POORLY KNOWN AGAMID LIZARD *JAPALURA CHAPAENSIS* BOURRET, 1937 (REPTILIA: SAURIA), FROM NORTHERN VIETNAM, WITH NOTES ON ITS TAXONOMIC STATUS

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ABSTRACT.- The agamid lizard *Japalura chapaensis* Bourret, 1937, has long been known on the basis of a single female specimen collected from northern Vietnam. This paper reports a first male specimen recently obtained from the type locality, and compares its morphological features with those of the holotype, as well as of other congeneric species. The definition of the species is revised accordingly.

INTRODUCTION

Japalura chapaensis, first described by Bourret (1937) as a subspecies of *J. swinhonis* Günther, 1864, has long been known on the basis of a single female specimen collected from Chapa, northern Vietnam. Ota (1989a) recently re-examined the unique type, and accorded specific status to this taxon chiefly on the basis of meristic and morphometric characters. However, such quantitative characters are known to show considerable intraspecific variations in several other species of the genus. Some morphometric characters, for example, are known to differ between the sexes within a species (e.g. see Ota, 1989b, 1991a,b). With the discovery of male specimen of the species from Chapa, we are able to expand the discussion of *J. chapaensis* and compare it to several other congeneric species.

MATERIALS AND METHODS

Catalogue numbers of the Department of Zoology, Kyoto University, are preceded by KUZ. The other institutional acronyms are those proposed by Leviton *et al.* (1985).

The specimen (KUZ 20097) was compared with the holotype of *J. chapaensis* (MNHN 1948.45). Diagnostic characters of the species recognized in previous studies are re-examined by comparing these specimens with adults of other closely resembling species (Bourret, 1937;

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Ota, 1989a, 1991b), viz. 30 specimens of *J. brevipes* Gressit, 1936, 12 *J. makii* Ota, 1989, 148 *J. polygonata xanthostoma* Ota, 1991, 62 *J. swinhonis*, six *J. splendida* Barbour & Dunn, 1919, and eight *J. yunnanensis* Anderson, 1878 (see Ota (1991b) for catalogue numbers and localities of specimens of the first four species/subspecies, and Ota (1989b) for those of the remainder). All specimens were examined after preservation in 70% ethanol. Quantitative characters were counted and measured following definitions by Ota (1991b).

Since distinct sexual differences are known in several species of *Japalura* Gray, 1853 (see Ota, 1989b, 1991a), characters derived from measurements in the male and female *J. chapaensis* are compared separately with corresponding sexes of other species. Meristic characters of each species are combined between the sexes in advance of interspecific comparisons.

RESULTS AND DISCUSSION

Morphological features of the newly collected male. — An adult (Fig. 1), collected at Chapa, northern Vietnam (22°20'N, 103°55'E), on 29 May 1990, by Tomás Weidenhöfer. This specimen agrees with the female holotype (as described in Ota, 1989a) except for the following characteristics.

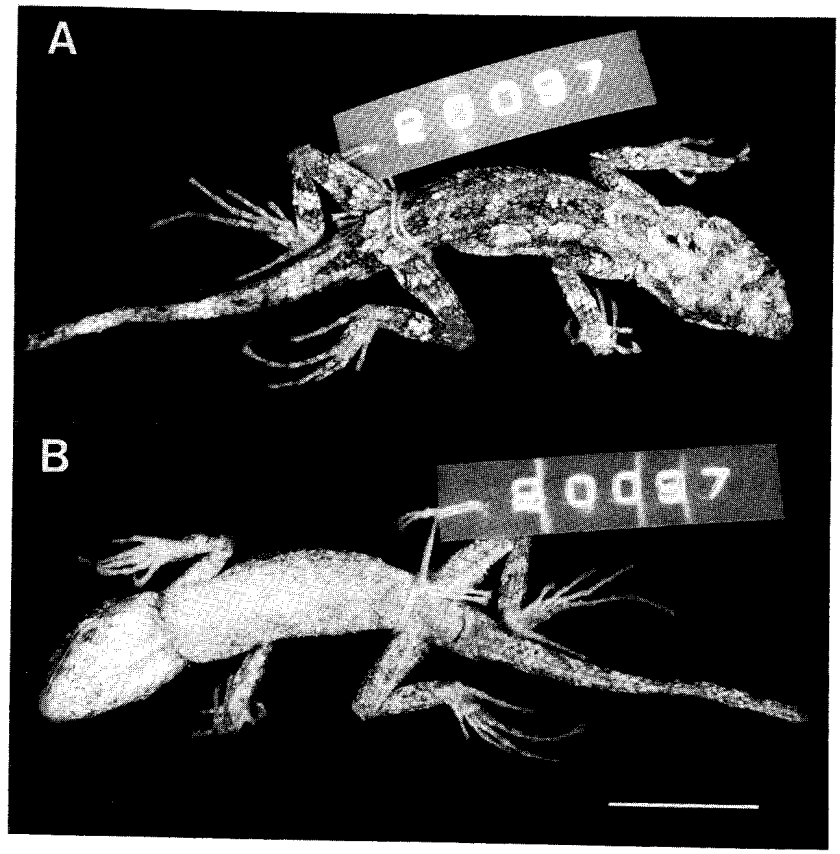

Fig. 1. Dorsal (A) and ventral views (B) of the male specimen of *Japalura chapaensis* newly collected from Chapa, Vietnam. Bar equals 20 mm.

Measurements (in mm): Snout-vent length (SVL) 58.1; head length (HL) 19.4; snout-eye length (SEL) 8.7; interorbital distance (IOD) 10.0; forelimb length (FLL) 31.8; axilla-groin length (AGL) 28.2; hindlimb length (HLL) 47.3; tibia length (TBL) 13.9; toe IV length (TIVL) 15.1; left testis 4.0 x 2.0.

Rostral twice as wide as high; nasal bordered by eight scales; each supraciliary scale overlapping more than one fifth, but still less than one third of successor; supralabial eight, third and fourth in left side slightly keeled, the others not keeled; a few infralabials slightly keeled, the others smooth; interparietals surrounded by eight scales; some gular scales distinctly keeled; gular pouch present but only as a slight longitudinal fold. Ventral scales of shank strongly keeled, but the other parts of limbs only slightly keeled; slender, hair-like organs (Inger, 1960) on only a few scales in lateral surfaces of head; middorsal scales 37, anterior eight scales more strongly enlarged than those in the holotype, making nuchal crest more prominent; subdigital lamella 10-11, 16-17, 24-23, 24-22, 15-14, 9-10, 16-15, 22-23, 30-30, and 21-21 on left-right fingers I, II, III, IV, V, and toes I, II, III, IV, V, respectively.

Ground colour of body and tail pale bluish grey; dorsum of head greyish tan; infraorbital region paler than adjacent regions; chin and gular regions bluish but distinctly lighter than that in venter of body; five indistinct transverse bands, greyish tan in colour, on dorsum of body; lateroventral region of flank also greyish tan without any distinct marking.

The differences between the present specimen and the holotype seem to suggest the presence of sexual differences in some characters. It is especially likely, from observations on other species (Ota, 1989b, 1991a,b, unpublished data), that the nuchal crest is more developed, and the ground colour more bluish in males than in females.

Comparisons with other species.- Recently, Ota (1989a) made detailed comparisons of the holotypes of *J. chapaensis* with *J. swinhonis*, *J. splendida*, and *J. yunnanensis*, as well as those of *J. brevipes* and *J. mitsukurii* which had been considered to be conspecific with *J. swinhonis* during Bourret's (1937) time, and pointed out the absence of characters to distinguish *chapaensis* and *swinhonis* collectively from the others. Ota (1989a) provided a full species status to *chapaensis* with the following diagnosis: snout blunt; each supraciliary scale overlapping less than one fifth of successor; dorsal crest scales few (35 for holotype); large number of fourth toe subdigital lamellae (28 for holotype); head length, interorbital distance, and toe IV length in relation to SVL large (32.4%, 19.5%, and 23.7% in holotype, respectively).

Both of the specimens of *Japalura chapaensis* have fewer infralabials and more toe IV subdigital lamellae when compared with specimens of *J. splendida*. The former also differs from *J. makii*, *J. p. xanthostoma*, *J. swinhonis*, and *J. splendida* in having fewer dorsal crest scales (Table 1).

In both sexes, the relative length of toe IV in *J. chapaensis* is greater than those in any other species. The species also shows adult SVL smaller than those of *J. makii* and *J. splendida*, whereas IOD and FLL in relation to SVL are greater in *J. chapaensis* than in the last two species. HLL is relatively large in *J. chapaensis* when compared with *J. makii*. On the other hand, HL and SEL in relation to SVL are greater in *J. chapaensis* than in *J. p. xanthostoma* and *J. splendida*, and *J. swinhonis* and *J. yunnanensis*, respectively (Table 2).

In quantitative characters, *J. chapaensis* most closely resembles *J. brevipes*, from which, however, it differs in having blunter snout; the snout of the latter being more acute. Moreover,

the degree of overlapping between neighbouring supraciliary scales appear to be less in *J. chapaensis* than in *J. brevipes* or any other species compared.

CONCLUSION

Results of the above comparisons suggest that *J. chapaensis* differs from any other congeneric species in several characteristics and supports the previous decision by Ota (1989a) who accorded the full species status to this form. We recognize the species as valid on the basis of the following diagnosis: small-sized species, available adult specimens 58.1-59.6 mm in SVL; snout blunt; each supraciliary scale overlapping less than one third of successor; middorsal scales few, 35-37 in available specimens; number of toe IV subdigital lamellae relatively great, 28-30 in available specimens; toe IV relatively long, 23.7-26.0% of SVL in available specimens.

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Table 1. Meristic characters (mean, followed by ranges in parentheses) of *Japalura chapaensis*, and its relatives. Abbreviations are as follows: SL: supralabials; IL: infralabials; DC: dorsal crest scales; T4S: toe IV subdigital scales. * Holotype.

Species	Sex (N)	SL	IL	DC	T4S
J. chapaensis	m (1)	8.00	7.00	37.00	30.00
	*f (1)	7.00	7.00	35.00	28.00
J. brevipes	m+f (30)	7.50 (6-9)	8.13 (6-9)	41.58 (34-50)	24.67 (21-28)
J. makii	m+f (12)	7.67 (7-10)	8.00 (7-9)	39.58 (38-41)	26.50 (24-30)
J. p. xanthostoma	m+f (148)	7.20 (6-9)	7.45 (6-9)	44.39 (38-55)	23.55 (20-29)
J. swinhonis	m+f (62)	8.06 (7-10)	8.34 (7-10)	44.39 (38-53)	23.80 (21-28)
J. splendida	m+f (6)	8.33 (8-9)	8.50 (8-9)	51.67 (45-56)	23.50 (22-26)
J. yunnanensis	m+f (8)	8.00 (6-10)	8.50 (7-10)	41.13 (37-45)	24.75 (22-31)

Table 2. Morphometric characters (mean, followed by ranges in parentheses) of *Japalura chapaensis*, and its relatives. See text for abbreviations. * Holotype

Species	Sex	SVL	Ratios to SVL (%)					
	(N)	(mm)	HL	SEL	IOD	FLL	HLL	T4L
J. chapaensis	m	58.1	33.4	15.0	17.2	54.7	81.4	26.0
	(1)							
	f*	59.6	32.4	14.8	19.5	50.3	80.9	23.7
	(1)							
J. brevipes	m	61.8	31.7	14.2	16.9	50.0	79.0	21.1
	(19)	(54.1-68.9)	(29.9-33.5)	(13.4-15.1)	(15.7-18.1)	(46.6-55.3)	(74.6-87.5)	(19.1-23.8)
	f	61.6	29.6	13.7	15.8	46.9	74.5	19.4
	(11)	(53.9-71.3)	(27.7-31.2)	(12.9-14.6)	(14.9-16.5)	(41.5-49.9)	(65.8-78.6)	(16.7-21.4)
J. makii	m	66.5	32.2	14.7	15.7	50.3	77.5	21.0
	(10)	(63.0-78.7)	(31.1-34.8)	(13.6-15.6)	(13.6-16.5)	(47.0-52.2)	(74.5-80.0)	(20.2-22.1)
	f	66.1	31.3	14.9	15.7	43.6	69.3	18.8
	(2)	(60.6-71.6)	(31.0-31.7)	(—)	(15.7-15.8)	(41.6-45.5)	(68.3-70.3)	(18.2-19.5)
J.p.xanthostoma	m	60.8	30.9	13.6	16.5	50.0	78.6	19.9
	(112)	(50.3-68.0)	(28.6-33.3)	(12.5-15.5)	(14.4-18.6)	(45.0-54.8)	(72.2-85.5)	(17.3-23.4)
	f	59.6	29.5	13.6	16.1	47.1	73.8	19.1
	(37)	(51.7-65.9)	(27.7-31.7)	(11.7-15.3)	(14.1-19.3)	(42.2-53.0)	(65.7-81.7)	(17.3-21.9)

Table 2. (cont'd)

Species	Sex	SVL	Ratios to SVL (%)					
	(N)	(mm)	HL	SEL	IOD	FLL	HLL	T4L
J. swinhonis	m	73.7	32.1	13.4	15.1	52.2	90.0	21.5
	(42)	(58.1-82.7)	(28.7-34.7)	(12.2-14.7)	(13.7-17.5)	(47.8-56.0)	(83.2-96.7)	(19.1-24.5)
	f	67.0	29.8	13.5	14.9	50.3	85.2	20.4
	(20)	(53.8-74.0)	(26.5-32.5)	(11.9-14.7)	(13.8-16.3)	(45.7-54.2)	(78.6-91.9)	(17.6-23.5)
J. splendida	m	73.4	31.4	14.1	16.0	50.9	84.1	22.2
	(4)	(62.9-89.8)	(30.9-32.2)	(13.0-15.2)	(14.4-17.0)	(46.8-54.6)	(78.5-90.7)	(19.8-23.9)
	f	73.9	31.3	14.5	14.8	47.1	79.0	19.5
	(2)	(71.7-76.1)	(30.6-32.1)	(13.9-15.1)	(14.7-14.8)	(46.8-47.4)	(78.9-79.0)	(19.2-19.8)
J. yunnanensis	m	64.6	30.3	14.0	17.3	53.9	78.5	21.6
	(3)	(58.8-73.6)	(28.7-32.5)	(13.2-14.4)	(16.9-18.0)	(51.1-56.5)	(75.0-82.3)	(20.7-22.6)
	f	65.0	30.8	13.6	15.3	49.9	76.5	18.8
	(4)	(61.0-69.7)	(29.7-32.8)	(12.2-14.3)	(13.9-16.5)	(46.7-52.7)	(70.0-80.3)	(17.7-20.8)

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