REVISION OF THE *ONYCHOSTOMA*—SUBGENUS *SCAPHESTES* (PISCES, CYPRINIDAE)

BY

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Scaphestes is considered a subgenus of *Onychostoma*, including the five species in which the last simple dorsal ray is always slender : *macrolepis*, *roulei* (both closely related and representative), *tamusuiensis*, *shansiensis* (both closely related and representative) and *barbata*. A biometrical analysis of large series of specimens (Table 1 and Figs. 1 and 2) demonstrated that the so-called species *robustus* is a synonym of *tamusuiensis*. The genus *Onychostoma* (with two subgenera and 16 species) has a typical East Asian range ; it reaches the Hwang-ho and centers in the Hsikiang and Song-Koi drainages.

As shown in a recent paper [1], the species of the East Asian genus *Onychostoma* having the last simple dorsal ray always slender can be ascribed to a distinct subgenus : *Scaphestes* Oshima, 1919. The present paper is the continuation of a previous one, dealing with the subgenus *Onychostoma* s.str. [1].

The specimens referred to belong to the following collections : American Museum of Natural History, New York (A.M.N.H.), Academy of Natural Sciences in Philadelphia (A.N.S.P.), Institutul de Biologie "Tr. Săvulescu", Bucharest (I.B.T.S.), Field Museum of Natural History Chicago (F.M.N.H.), Muséum National d'Histoire Naturelle, Paris (M.N.H.N.), United States National Museum, Washington (U.S.N.M.)

SYSTEMATIC ACCOUNT

Onychostoma (Scaphestes) macrolepis (Bleeker, 1871)

Specimen examined : Holotype of *Barbus macrolepis*, M.N.H.N. 5064, Yangtzekiang, 151.0 mm.

D 3/8 ; L. lat. 51 $\frac{9}{5}$ 52 ; Sp. br. 25 ; D. phar. 4.3.2—2.3.4.

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Body depth 19.8% of standard length; least depth 9.3%; caudal peduncle length 17.9%. No barbels.

Yangtze; apparently no more recorded since its original description by Bleecker [2].

Having no barbels, this species does not fit in the definition of *Scaphestes* by Oshima [6]; yet I think the slender last simple dorsal ray is a more important character than the presence or absence of barbels (in *O. sima* this character is subject even to individual variation) and that *O. macrolepis* actually is closer to *O. tamusuiensis* and *O. shansiensis* than to the *Onychostoma* s. str. species lacking barbels.

Onychostoma (Scaphestes) roulei (Wu, 1931)

No specimen available.

D 3/8; L. lat. $47\frac{7\,1/2}{4}$; D. phar. 4.3.1—1.4.5.

Body depth 26.3% of st. length; least depth 7.7%; caudal peduncle length about 22.6% (according to the illustration).

Foochow, lower Minkiang river.

Nichols [5] synonymizes *Barbus roulei* Wu with *Varicorhinus robustus*; yet in the original description of *roulei*, Wu [11] does not mention barbels and points out the similarity of this species with *macrolepis*, another species without dorsal spine and lacking barbels. I too consider *roulei* a species of *Onychostoma* closer to *macrolepis*, which may eventually prove to be a subspecies of the latter.

Onychostoma (Scaphestes) tamusuiensis (Oshima, 1919)

Synonyms: *Scaphestes tamusuiensis* Oshima, 1919; *Varicorhinus robustus* Nichols, 1925; *Varicorhinus tamusuiensis* auct.

Specimens examined:

From Taiwan (= Formosa) island: Holotype of *Sc. tamusuiensis*, F.M.N.H. 59091, Tamusui r., 186.0 mm st. length; A.N.S.P. 76423, Mokin r., 1 spec., 135.5 mm; U.S.N.M. 161710, Taiko r., 1 spec., 55.0 mm; I.B.T.S. 1344, I-lan, North Taiwan, 1 spec., 123.2 mm (received from Prof. J. Chen).

From Minkiang drainage (Fukien province, SE continental China):

U.S.N.M. 87981 & 130561, Foochow, mouth of Minkiang r., 11 spec. in all, 77.0—167.0 mm;

A.M.N.H. 11061, 10689 & 11124, Chungan Hsien, 36 spec. in all, 39.0—183.5 mm;

A.M.N.H. 12181, no locality, 12 spec., 51.2—166.0 mm;

A.M.N.H. 10691, Fukien (no locality), 6 spec., 61.2—110.0 mm (all three series determined *tamusuiensis* by Nichols).

Holotype of *Varicorhinus robustus*, A.M.N.H. 8424, near Nanping (= Yenping), middle Minkiang r., 105.0 mm;

Paratypes of the same, A.M.N.H. 10686, same locality, 11 spec., 69.2—88.2 mm;

A.M.N.H. 11634 & 10693, same locality, 12 spec., 52.0—78.0 mm (determined *robustus* by Nichols);

A.M.N.H. 10684 & 11637, same locality, 14 spec., 46.8—124.0 mm (determined *tamusuiensis* by Nichols);

A.M.N.H. 10696, Fukien (no locality), 8 spec., 52.0—69.3 mm;

A.M.N.H. 10690, Fuching, Fukien, 10 spec., 47.5—117.5 mm;

A.M.N.H. 12170, no locality, 8 spec., 44.0—141.0 mm (all three last-mentioned series were determined *robustus* by Nichols).

D 3/8; L. lat. (44) $45\,\frac{6-7\ (8)}{3-4}\,48\ (49)$.

Two pairs of minute, yet quite distinct barbels.

Nichols [4] describes a new species, *Varicorhinus robustus*, from Yenping, Fukien, recording from the same locality also the very close *Scaphestes tamusuiensis*, a species previously known only from Taiwan island. According to him [4], [5], *robustus* differs from *tamusuiensis* only in its deeper body: depth about 27.0% of st. length, as against about 23.2%. Rendahl [7] and Lin [3] consider *robustus* a synonym of *tamusuiensis*.

In order to clarify this problem, I made measurements of most of the available specimens mentioned above. The most variable characters are the body depth, the least depth and the caudal peduncle length. The results are presented in table 1 (the values of body depth being given in % of both standard length and caudal peduncle length). One remarks that in most series determined *robustus* by Nichols (and especially in the Yenping specimens, including the holotype and paratypes), the values of body depth and even of least depth are slightly higher than in "typical" *tamusuiensis*, including the Taiwan specimens and the Yenping specimens (A.M.N.H. 10684 & 11637) determined *tamusuiensis* by Nichols. Yet the overlap of extreme values is too wide to suggest two distinct species. The variation of many body proportions, including depth, being to a certain degree allometric, I represented graphically (Figs 1 and 2) the variation of body depth in % of st. length and caudal peduncle length, each individual value being represented by a point. Regression lines would have been more suggestive, but the number of specimens in each series was too small to allow the calculation of these lines.

Both graphs suggest that, in spite of the rather wide intrapopulation variability, a trend of the values to group around a central line (regression line) is noticeable in each population. The values of body depth are somewhat higher in the population from Yenping than in that from Foochow, lower in that from Chuang-Hsien and in the series A.M.N.H. 10696. It seems that in all populations the body depth shows a positive allometry till the specimens reach 100—120 mm st. length, then a negative one. The changing of the allometry trend can be recognized in the Chuang-Hsien population and in the series A.M.N.H. 12170; the allometry is apparently positive in the series A.M.N.H. 10696, from which only smaller specimens were available, and apparently negative in Foochow population, from which large-sized specimens were available. Important

Table 1

Body proportions (body greatest depth, least depth, caudal peduncle length) in *Onychostoma (Scaphestes) tamusuiensis*

	Locality, Series	St. length mm	n	in % of standard length			Body depth in % of caud. ped.
				b. depth	least d.	caud. ped.	
	Taiwan island	55–186	4	22.9–25.1	9.9–11.2	22.5–23.2	100–107
Minkiang drainage (Fukien province)	Foochow (U.S.N.M. 87981 & 130561)	121–167	7	23.1–25.4	8.8–9.6	21.4–24.0	100–118
	Chungan Hsien (A.M.N.H., 3 series)	39–183	23	20.0–25.1	8.7–10.8	21.1–25.1	81–119
	No local. (A.M.N.H. 12181)	51–166	12	21.2–25.9	9.1–11.4	20.8–25.0	86–114
	"Fukien" (A.M.N.H. 10691)	61–110	6	21.8–24.5	9.2–11.4	20.1–24.4	96–108
	Yenping (*robustus* including holo- a. paratypes)	52–105	24	23.4–28.2	–	–	–
		88–105	7	–	9.7–10.7	21.7–23.6	110–125
	Yenping (*tamusuiensis* according to Nichols)	47–124	14	21.4–27.8	9.1–10.4	21.2–26.2	100–127
	"Fukien" (A.M.N.H. 10696)	52–69	8	19.0–23.6	8.6–10.1	20.2–24.7	84–104
	Fuching (A.M.N.H. 10690)	47–117	10	21.4–25.4	–	–	–
		98–117	4	–	10.0–10.4	21.6–23.0	98.7–117
	No local. (A.M.N.H. 12170)	44–141	8	23.4–27.0	9.0–9.8	20.4–25.0	91–126

is the fact that the values of all Yenping specimens, considered by Nichols some as *tamusuiensis* (A.M.N.H. 10684 & 10693), the others as *robustus* (holotype, paratypes and A.M.N.H. 11634 & 10693) are evidently grouped around a single regression line, representing a single population. Nichols selected the elongate specimens as *tamusuiensis*, the deeper-bodied ones as *robustus*; yet the graph demonstrates that they all belong to a single species and population.

These data demonstrate that *Varicorhinus robustus* is a synonym of *Onychostoma tamusuiensis*.

The range of *O. tamusuiensis* includes Taiwan island, Minkiang drainage in Fukien and Tientai in Chekiang [10].

Fig. 1. Values of body depth (in % of standard length) in different populations of *Onychostoma (Scaphestes) tamusuiensis*, in correlation to standard length.

1. Taiwan Isl.; 2. Foochow, mouth of Minkiang r.; 3. Chuang Hsien; 4. no locality (A, M, N, H, 12181); 5 "Fukien" (A. M. N. H. 10691); 6. Yenping, middle Minkiang r. (*robustus*); 7, Yenping, middle Minkiang r. (*tamusuiensis* as restricted by Nichols); 8. "Fukien" (A. M. N. H. 10696); 9. Fuching, Minkiang drainage; 10. no locality (A, M, N. H. 12170).

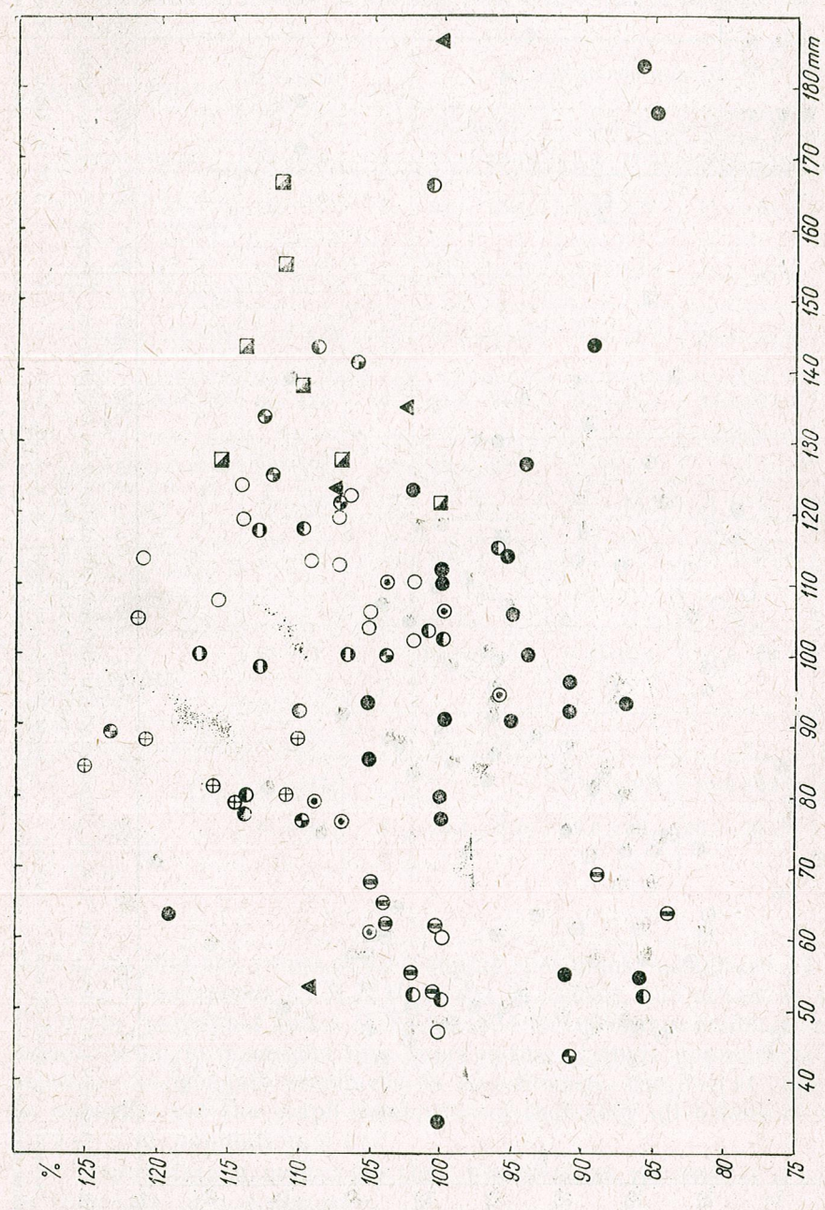

Fig. 2. Values of body depth (in % of caudal peduncle length) in different populations of *Onychostoma* (*Scaphestes*) *tamusuiensis*, in correlation to standard length.
1—10: see Fig. 1.

Onychostoma (Scaphestes) shansiensis (Nichols, 1925)

Specimens examined: Holotype of *V. shansiensis*, A.M.N.H. 8425, Niang-tze-kwan, Shansi, middle Hwang-ho drainage, China, 174.0 mm; A.M.N.H. 10680, same locality, 5 spec., 91.0—194.0 mm.

D 3/8; L. lat. 49—53.

Depth 19.2—25.4% of st. length; least depth 9.6—10.4%; caudal peduncle length 18.2—20.8%. Both pairs of barbels present, minute.

Restricted to the Hwang-ho drainage.

This species is very close to *O. tamusuiensis*, differing from it only in having more scales. H. Rendahl [7] considers *shansiensis* to be a subspecies of *tamusuiensis*; I prefer to consider it specifically distinct because the differences between it and *tamusuiensis* are about as great as those between sympatric species of *Onychostoma* s.str. and because of the wide geographical distance between Chekiang and the Hwang-ho drainage (no representative form of *tamusuiensis* is known to occur in the Yangtze drainage).

Onychostoma (Scaphestes) barbata (Lin, 1931)

No specimen available.

D 3/8; L. lat. 48—50; D. phar. 5.3.2—2.3.5 or 5.3.2—2.4.5.

Body depth 21.2—22.2% of st. length; least depth 7.6—8.6%; length of caudal peduncle about 13.6—15.4%. Both pairs of barbels present, maxillar one much longer than in *tamusuiensis*, sometimes as long as eye diameter.

Hsikiang drainage in Kwangsi and southern Hunan, China.

★

Onychostoma belongs to the subfamily Barbinae which reaches its greatest differentiation in South-East Asia (Indochinese Peninsula and western Indonesian islands); yet *Onychostoma* is confined to East Asia. The fauna of fresh-water fishes, as well as that of fresh-water molluscs [8] of East Asia (Amur drainage and Japan to North and Central Vietnam) is, zoogeographically, rather distinct from the South-East Asian one and represents a distinct subregion of the Sino-Indian region. Several genera of Barbinae are confined to this subregion, not occurring in South-East Asia proper (Mekong drainage, etc.); the most specious among these genera are *Onychostoma* and *Acrossocheilus*. Unlike the autochtonous East Asian subfamilies (Gobioninae, Acheilognathinae) and the East Asian genera of Cultrinae and of Danioninae, these Barbin genera do not reach the Amur drainage, Japan and Korea (*Hemibarbus* occurring in these countries, actually belongs to the Gobioninae) and have the main distribution center in South China, being well represented in the Yangtze drainage too; only two such genera reach northern East Asia, e.g. the Hwang-ho and the Pai-ho drainages (*Onychostoma* and *Acrossocheilus*). One specimen of an *Onychostoma* species, *macracantha*, was recorded from

the Mekong drainage in South Vietnam, but I have doubts whether it actually occurs there; the specimen was taken from the market of Kon-Tun and I think it was probably caught from some river flowing into the Tonkin Bay, the fish fauna of these rivers being close to that of the Song-Koi, while the fish fauna of the Mekong is quite different.

The distribution of the 16 species of *Onychostoma* — 11 of *Onychostoma* s. str. reviewed previously [1] and 5 of *Scaphestes* — is the following:

Hwang-ho drainage: two species, one occurring also in the Yangtze (*sima*), one endemic (*shansiensis*).

Yangtze (except its southern tributaries in Kweichow): three species, two endemic (*angustistomata* and *macrolepis*), one also in the Hwang-ho.

Southern tributaries of the Yangtze in Kweichow province: three species, two of them also in the Hsikiang drainage (*gerlachi* [1] and *rara*) and one endemic (*rhomboides*).

Chekiang province: one species, *tamusuiensis*, occurring also in the Minkiang drainage and Taiwan.

Minkiang drainage: two species, *roulei* endemic, *tamusuiensis* also in Taiwan and Chekiang.

Taiwan island: only *O. tamusuiensis*.

Hsikiang drainage: five species, three endemic (*elongata*, *barbata*, *lini*), two also in the southern part of Yangtze drainage (*gerlachi* and *rara*).

Song-Koi drainage in North Vietnam: four species, two endemic (*ovalis* and *vietnamensis*), one also in the coastwise rivers from Central Vietnam (*macracantha*), one also in Hainan island (*leptura*).

Hainan island: only *O. leptura*, occurring also in the Sonk-Koi drainage.

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[1] Tang [9] records from a southern tributary of the Yangtze near Kweiyang, Kweichow, also *O. laticeps* (=*sima*), but the values he indicates for it — L. lat. 49 — are characteristic of *gerlachi*.

L'APPAREIL GÉNITAL FEMELLE CHEZ QUELQUES ESPÈCES D'ARANEAE «HAPLOGYNAE» (ARACHNIDA)

PAR

ELENA TRACIUC

The paper deals with the microscopic anatomy of the female genital apparatus in six species of spiders lacking epigynum and copulatory duct. The author describes both the types of gonads and the structure of the copulatory organ.

L'anatomie microscopique de l'appareil génital femelle chez les espèces abordées dans le mémoire ci-présent n'a pas été décrite jusqu'ici, exception faite pour l'espèce *Dysdera crocata*, chez laquelle Cooke (1966) a décrit la région vulvaire seulement.

Liste des Araneae étudiées:

Dysdera crocata, *Harpactes rubicundus*	fam. Dysderidae
Scythodes thoracica	fam. Scythodidae
Pholcus opilionoides	fam. Pholcidae
Tetragnatha extensa, *Pachynatha degeeri*	fam. Tetragnathidae

MATÉRIEL ET MÉTHODE

Les espèces ont été capturées dans plusieurs régions: Hotarele (Bucarest), Cozia (Vîlcea) et Pătrăuți (Suceava).

Les Dysderidae ont été capturées dans les pièges au formol 4% dans lesquels a eu lieu aussi la fixation. Pour les autres espèces, le fixateur a été le mélange Hollande. Après la déshydratation le matériel a été inclus en paraffine. Les coupes sériées de 7 μ d'épaisseur ont été colorées à l'hémalun-éosine.

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