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# Redescription of *Acanthorhodeus asmussii* (DYBOWSKI) 1872 and Description of *Acanthorhodeus asmussii amurensis* ssp. n. from the Amur River, USSR.

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*(Dedicated to Dr. Shigeho TANAKA)*

Studying the systematic status of the "species" *Acanthorhodeus chankaensis* (DYBOWSKI) 1872 I ascertained, that in the rank of this hybrid also the specimens of *Acanthorhodeus asmussii** were comprised and on the other hand, in the rank of *Acanthorhodeus asmussii* also the specimens of the mentioned hybrid were refered. This situation was caused by the fact, that the strict distinctive criteria were not known (HOLČÍK, 1962). The description of *A. asmussii* from DYBOWSKI (1872) and the latter one from BERG (1907, 1916, 1923, 1949) and NIKOLSKY (1952) was unsuffcient and unsuitable for the *A. asmussii* and of the hybrid. For ex. DYBOWSKI (1. c.) only in description of the genus *Devario* (=*Acanthorhodeus*) mentions the barbs (p. 212 "....entweder mit zwei Eckbarteln oder ohne Barteln."), but this important feature he did not introduce neither in the description of *A. asmussii* nor in that of *A. chankaensis*. BERG (1907) has written that *A. asmussii* is without the barbs. However, in the latter paper BERG (1949) stated, that in the large specimens the barbs are sometimes present. Similarly NIKOLSKY (1952) found some populations of *A. asmussii* in which prevail the specimens with the barbs, but in the other ones the majority of fishes did not have the barbs. Therefore I searched the type specimens of this species. According to Prof. Dr. A.N. SVETOVIDOV, Academy of Sciences USSR, Leningrad (in litt. 13. XII. 1961) the collection of DYBOWSKI containing the type specimens is not preserved. But Dr. O. OLIVA, Charles University, Prague, Czechoslovakia told me that the part of DYBOWSKI's collection is deposited in the museum of Zoological Institute of Polish Academy of Sciences in Warszawa, Poland. In accordance with my desire, Mrs. Dr. M. GASOWSKA sent me two specimens of amurian bitterlings (No. 6112) collected by Benedikt DYBOWSKI in the Lake Hanka probably in 1869

* I retain the termination "*asmussii*" instead "*asmussi*," which is used permanently in the recent papers. However, the first term "*asmussii*" was used in the original description of *Devario* (=*Acanthorhodeus*) *asmussii* made by DYBOWSKI in 1872, therefore it is the Valid Original Spelling and is not subject to change (Int. Code of Zool. Nomencl. adopted by the XV. Int. Congress of Zoology, London 1961, article 32).

(the strict date and locality absent). These fishes were determined as *Acanthorhodeus asmussii*. This determination was confirmed also by me. Unfortunately, both fishes are in a very poor condition and partially damaged, therefore they are not suitable for the redescription (lateral line of both fishes is interrupted, the caudal fins are not complete; the fishes are partially dried up and they lost the original colouration, which by the influence of the unkown fixation changed itself on the green one). Therefore the redescription of this species was made on the material originated from the collection of Zoological Institute of Academy of Sciences USSR, Leningrad (No. coll. ANSSSR 28193—3 males and 3 females from the Lake Hanka near Troick, ANSSSR 28195—4 juv. specimens caught in Malyj Usach river, the tributary of the Lake Hanka). The description of *A. asmussii amurensis* ssp. n. is made on the base of fishes originate from the collection of the Zoological Museum of Moscow State University, Moscow, USSR, now deposited in Slovak National Museum in Bratislava, Czechoslovakia (No. coll. 376-384, Amur River near Yelabuga, 60 km from Khabarowsk—5 males and 9 females).

## Synonymy

*Devario Asmussii* (ex parte) DYBOWSKI, Verh. zool. bot. Gess. in Wien, XXII: 212, 1872, Lake Hanka.

*Devario chankaensis* (ex parte) DYBOWSKI, Verh. zool. bot. Gess. in Wien, XXII: 212, 1872, Lake Hanka.

*Acanthorhodeus asmussi* (ex parte) BERG, Ann. Mag. Nat. Hist. London, 7 ser. 19: 163, 1907, lower Amur, Ussuri; BERG, Ryby basseina Amura, 99, 1909, Amur basin; BERG, Ryby presnych vod Rossijskoj imperii, 328, fig. 257, 1916, Ussuri, lower Amur, Hanka lake, Sungari basin; FOWLER and BEAN, Proc. U.S. Nat. Hist. Mus., 58: 307, 321, 1920, Soochow, China (?), BERG, Ryby presnych vod Rossii, 303, 1923, Amur basin, Ussuri Hanka lake, lower Amur, Sungari basin; BERG, Ryby presnych vod SSSR i sopredelnych stran, II: 817, 819, fig. 561, 1949, Hanka lake, middle and lower Amur; NIKOLSKY, Ryby basseina Amura, 323-329, 1956, lake Buir-Nur, Hanka lake, Sungari, Ussuri, lower Amur; MORI, Mem. of the Hyogo Univ. of Agricult., vol. 1, 3: 1-228, 1952, rivers and pools of western and southern Korea.

*Acanthorhodeus asmussi sungariensis* (ex parte) BERG, Ježegodnik Zool. muzeja ANSSSR, t. 32, 2: 293-294, 1931, Sungari near Kharbin.

*Acanthorhodeus asmussi bergi* MORI, Studies on the geogr. distrib. of fishes in Eastern Asia, 18, 1935, Yalu river.

*Acanthorhodeus macropterus* (non Bleeker) TSHANG, Bull. Fan Mem. Inst. Biol., III, 8: 113, 1922, lake Chin-bo, Sungari basin.

*Acanthorhodeus chankaensis* (ex parte) BERG, Ryby presnych vod SSSR, II, 819-820, 1949, Hanka lake, Sungari, middle Amur.

*Acheilognathus* (*Achilognathus*) *chankaensis* (ex parte) BERG, Ann. Mag. Nat. Hist. London, 7 ser. 19:161, 1907, Amur basin, Lake Hanka; BERG, Ryby bassejna Amura, 103, 1909, Amur river, BERG, Ryby presnych vod Rossijskoj imperii, 329-330, 1916, Hanka lake; BERG, Ryby presnych vod Rossii, 303, 1923, Hanka lake, BERG, Ryby presnych vod SSSR i sopredelnych stran, I, 528, 1932, Hanka lake, NIKOLSKY, Ryby bassejna Amura, 329-330, 1956, Sungari, Amur, Ussuri, Hanka lake.

**Diagnosis**

D. III, 15-18, A. III, 12-14, lin. lat. 32-38. Non ramified rays in dorsal and anal fins transformed in hard spines. Maxillary reaches eye, always with two small barbs at each angle of mouth. Pharyngeal teeth 5-5, compressed, inner edge of each tooth strongly serrated (plicated). Gill-rakers 7-9.

Description of the neotype

*Neotype* (Fig. 1, 2, Table 1): ANSSSR 28193/4, adult male 88.5 mm of standard length, caught in the lake Hanka near the village Troick in 8. VII. 1914 by L. I. TSHERSKY (Čerskij). D III 17, A III 12, lin. lat $38\frac{6}{5}$, num. spin. branch. 8, dent. phar. 5-5, deeply serrated in their inner surface. Measurements from the Table 1 are visible. Non ramified rays in D and A transformed in hard spines, the third one is the most strong. Body moderately high, rhomboidal, compressed. Head relatively small, vertex direct continuously transitive into the back. The back behind the head moderately convex. The mouth semi-inferior. In the angle of mouth the small barb is present, measuring 0.9% of standard length. The eye relatively large, in front of it the nostrils, situated on the level of the upper edge of the pupilla. The anterior nostril moderately protracted, its posterior part formed the cover. On the top of the nose the remnants of the pearl organs. Pectoral fins situated on the level of suborbital bones, below the vertical of posterior edge of operculum. The longest ray of pectorals reaches the base of ventral fins. The ventrals situated in front of the basis of dorsal fin, the longest ray reaches the second spine of the anal fin. The beginning of anal fin basis situated below the 4 th ramified ray of D. Anal fin moderately concave, dorsal fin convex. Caudal fin deeply carves out. Below the eyes, behind them and on the vertex of head, the pores of sensoric canals, which change into the lateral line. Lateral line moderately bented in the body-centre. Scales large, ellipsoidal. Radii (grooves) only in the posterior part of scale are present. Circuli only in anterior and centrolateral part of scale. Colouration in alcohole: Back and the sides of the body below the side-line yellow-brownish, centre of body gold-yellow; behind the head, above the opercle the little black spot is present. The second one is larger, situated behind the first one in the centre of indeterminate gold spot. Beginning of the opercle to the 4 th ramified ray the brown strip which

transgress into one wide blue. Opercle and orbitals silvery, the fins yellowish. In the centre of D and A small dark stripes. The tips of rays with small black spots, similar ones, but larger on the rays of A are present.

*Paratopotypes*: As the paratopotypes I designate 5 other specimens (2 males and 3 females) caught in the same date and locality as the neotype. The counts and measurements of them may be seen from the Table 1.

*Sexual dimorphism*: Similarly as the other species belonging into the subfamily *Acheilognathinae* both sexes strongly differ one from the other. The males have developed nuptial tubercles on the top of the snout and above the eyes and two black spots behind the head. The edge of D of males is always convex. In the spawning

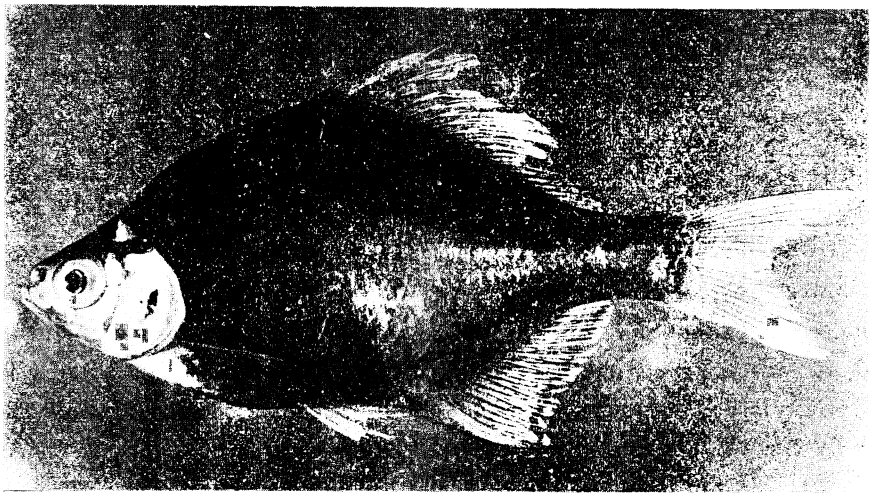

**Fig. 1.** The neotype of *Acanthorhodeus asmussii*. No. coll. ANSSSR 28193/4, adult male 88.5 mm of standard length.

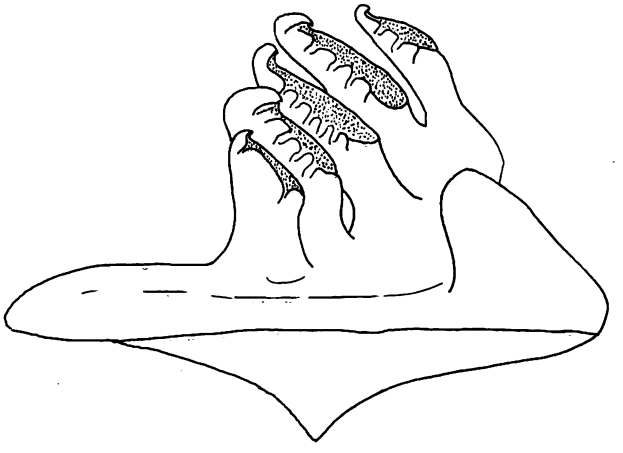

**Fig. 2.** Pharyngeal arch of *Acanthorhodeus asmussii* showing the pharyngeal teeth.

Table 1. Counts and measurements of *Acanthorhodeus asmussii f. typica* from the Hanka Lake. No. 4 is the neotype.

| No. coll. | PAN 6112 | | | ANSSSR 28193 | | | | | | | | | ANSSSR 28195 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Locality | ?* | | | Troick | | | | | | | | | Malyj Usach | | | | |
| Sex | ♂ | ♀ | ♂+♀ | ♂♂ | | | | ♀♀ | | | | ♂♂+♀♀ | juveniles | | | | |
| No. | 1 | 2 | ave. | 1 | 5 | 4 | ave. | 6 | 2 | 3 | ave. | ave. | 7 | 8 | 9 | 10 | ave. |
| Longitudo corporis (mm) | 85.2 | 59.4 | 72.30 | 86.2 | 86.5 | 88.5 | 87.06 | 81.8 | 83.1 | 90.6 | 85.16 | 86.20 | 29.7 | 39.8 | 40.2 | 49.7 | 39.85 |
| Radii D | 17 | 17 | 17.00 | 16 | 17 | 17 | 16.66 | 17 | 17 | 17 | 17.00 | 16.83 | 17 | 17 | 17 | 17 | 17.00 |
| Radii A | 13 | 13 | 13.00 | 12 | 13 | 12 | 12.33 | 13 | 13 | 13 | 13.00 | 12.66 | 11 | 12 | 13 | 13 | 12.25 |
| Squam. lin. lateralis | 34? | 33? | 33.5? | 36 | 38 | 38 | 37.33 | 37 | 36 | 37 | 36.60 | 37.00 | 36 | 38 | 37 | 37 | 37.00 |
| Num. spin. branchialium | 8 | 8 | 8.00 | 8 | 7 | 8 | 7.66 | 8 | 8 | 8 | 8.00 | 7.83 | 6 | 7 | 7 | 7 | 6.75 |
| In % long. corporis: | | | | | | | | | | | | | | | | | |
| Longitudo capitis | 24.5 | 23.6 | 24.05 | 24.0 | 24.0 | 25.1 | 24.36 | 23.5 | 25.4 | 25.3 | 24.73 | 24.55 | 27.3 | 26.4 | 26.1 | 25.9 | 26.42 |
| Distantia praeorbitalis | 6.6 | 6.1 | 6.35 | 5.9 | 6.2 | 6.2 | 6.10 | 7.0 | 7.0 | 6.7 | 6.90 | 6.50 | 7.1 | 7.5 | 7.7 | 6.6 | 7.22 |
| Longitudo cirri | 1.4 | 0.7 | 1.05 | 0.7 | 1.3 | 0.9 | 0.96 | 1.0 | 1.3 | 1.3 | 1.20 | 1.08 | 0.7 | 0.8 | 1.0 | 0.8 | 0.82 |
| Distatnia inter foramina nasalia | 4.8 | 4.4 | 4.60 | 6.0 | 5.3 | 5.0 | 5.43 | 6.0 | 4.9 | 5.7 | 5.53 | 5.48 | 5.1 | 6.5 | 5.5 | 5.2 | 5.57 |
| Diameter oculi | 8.1 | 8.6 | 8.35 | 7.3 | 7.8 | 7.9 | 7.66 | 8.4 | 7.5 | 7.2 | 7.70 | 7.68 | 10.8 | 9.8 | 9.0 | 8.7 | 9.57 |
| Distantia inter oculos | 9.9 | 8.8 | 9.35 | 9.6 | 9.2 | 9.4 | 9.40 | 11.2 | 9.4 | 9.5 | 10.03 | 9.71 | 9.1 | 10.3 | 9.9 | 9.7 | 9.75 |
| Distantia postorbitalis | 11.5 | 10.8 | 11.20 | 11.5 | 11.3 | 12.2 | 11.66 | 11.6 | 12.6 | 11.0 | 11.73 | 11.70 | 11.4 | 12.1 | 12.0 | 11.7 | 11.80 |
| Altitudo capitis | 22.4 | 21.3 | 21.85 | 20.4 | 20.4 | 22.2 | 21.00 | 23.7 | 21.6 | 19.8 | 21.70 | 21.35 | 21.6 | 23.4 | 22.4 | 21.3 | 22.17 |
| Latitudo capitis | 13.2 | 11.2 | 12.20 | 13.7 | 13.6 | 13.7 | 13.66 | 14.7 | 14.1 | 13.8 | 14.20 | 13.93 | 14.1 | 14.3 | 13.7 | 13.1 | 13.80 |
| Distantia praeodorsalis | 57.3 | 49.8 | 53.55 | 53.4 | 50.7 | 53.3 | 52.46 | 53.7 | 52.2 | 53.4 | 53.10 | 52.78 | 52.2 | 52.1 | 51.7 | 52.4 | 52.10 |
| Distantia praeventralis | 42.9 | 43.5 | 43.20 | 44.9 | 42.5 | 43.8 | 43.73 | 45.2 | 44.6 | 41.7 | 43.83 | 43.78 | 44.4 | 44.7 | 45.6 | 44.7 | 44.85 |
| Distantia praeanalis | 61.4 | 59.2 | 60.30 | 61.2 | 59.2 | 57.8 | 59.40 | 62.3 | 52.0 | 58.8 | 60.03 | 60.21 | 60.9 | 59.1 | 62.2 | 59.9 | 60.52 |
| Altitudo corporis | 53.0 | 40.7 | 46.85 | 44.7 | 45.4 | 46.0 | 45.36 | 48.6 | 44.9 | 46.3 | 46.60 | 45.98 | 34.7 | 39.7 | 39.1 | 40.3 | 38.45 |
| Latitudo corporis | 11.8 | 9.1 | 10.45 | 13.4 | 13.8 | 14.1 | 13.76 | 16.6 | 13.7 | 15.0 | 15.10 | 14.43 | 12.1 | 13.6 | 12.9 | 13.7 | 13.07 |
| Longitudo pedunculi caudae | 19.5 | 20.0 | 19.75 | 19.7 | 22.3 | 20.7 | 20.90 | 21.0 | 21.1 | 21.7 | 21.26 | 21.08 | 21.5 | 21.4 | 18.4 | 21.7 | 20.75 |
| Altitudo pedunculi caudae | 18.3 | 16.5 | 17.45 | 17.4 | 16.4 | 15.7 | 16.50 | 16.5 | 16.5 | 15.7 | 16.23 | 16.36 | 14.2 | 14.6 | 14.4 | 15.5 | 14.67 |
| Latitudo pedunculi caudae | 4.2 | 4.9 | 4.55 | 6.0 | 6.1 | 5.7 | 5.93 | 7.3 | 7.0 | 5.7 | 6.66 | 6.30 | 5.7 | 6.5 | 8.2 | 6.6 | 6.75 |
| Minima altitudo corporis | 12.8 | 12.5 | 12.65 | 11.5 | 12.5 | 12.1 | 12.03 | 13.6 | 12.6 | 11.9 | 12.70 | 12.36 | 11.4 | 12.1 | 12.4 | 11.7 | 11.90 |
| Distantia P-V | 20.9 | 20.8 | 20.85 | 22.1 | 20.9 | 20.7 | 21.23 | 22.0 | 21.5 | 20.9 | 21.46 | 21.35 | 18.8 | 19.8 | 19.9 | 19.7 | 19.55 |
| Distantia V-A | 17.6 | 15.5 | 16.55 | 17.6 | 17.6 | 15.2 | 16.80 | 17.3 | 18.3 | 18.3 | 17.96 | 17.38 | 16.2 | 16.1 | 16.4 | 17.3 | 16.50 |
| Longitudo D | 41.5 | 34.0 | 37.75 | 35.4 | 37.6 | 37.9 | 36.96 | 38.1 | 37.7 | 39.2 | 38.33 | 37.65 | 29.0 | 21.1 | 32.4 | 29.5 | 28.00 |
| Longitudo A | 26.8 | 21.8 | 24.3 | 23.9 | 24.9 | 26.1 | 24.96 | 26.9 | 26.6 | 26.9 | 26.80 | 25.88 | 20.2 | 19.6 | 22.4 | 23.1 | 21.32 |
| Longitudo $C_1$ | — | — | — | 28.1 | 27.6 | 27.8 | 27.86 | 35.3 | 29.4 | 27.6 | 30.76 | 29.33 | — | — | — | — | — |
| Longitudo $C_2$ | — | — | — | 29.0 | 28.6 | 25.1 | 27.56 | 29.3 | 27.3 | 26.9 | 27.83 | 27.70 | — | — | — | — | — |
| Longitudo P | 19.4 | 17.5 | 18.45 | 18.0 | 20.2 | 19.0 | 19.06 | 21.8 | 20.0 | 19.4 | 20.40 | 19.73 | 17.8 | 19.1 | 18.4 | 19.3 | 18.65 |
| Longitudo V | 20.2 | 17.5 | 18.85 | 17.4 | 19.7 | 17.4 | 18.16 | 18.8 | 18.3 | 18.9 | 18.66 | 18.41 | 16.2 | 16.6 | 16.2 | 18.5 | 16.87 |
| Altitudo D | 21.8 | 21.8 | 21.80 | 18.6 | 25.2 | 20.6 | 21.46 | 22.6 | 21.4 | 20.2 | 21.40 | 21.43 | 19.9 | 21.8 | 23.4 | 22.8 | 21.97 |
| Altitudo A | 18.6 | 15.5 | 17.05 | 15.1 | 18.0 | 18.5 | 17.20 | 18.9 | 17.8 | 17.4 | 18.30 | 17.61 | 17.2 | 19.8 | 18.2 | 19.5 | 18.67 |

*) leg. B. DYBOWSKI

season these features are strongly intensive. The females differ from the males by the absence of nuptial tubercles, absence of the first black spot behind the head, less colouration, concave or direct edge of D and by the presence of ovipositor.

*Relative growth*: As may be seen from the Table 1, the measurements of juvenile specimens of *A. asmussii* differ from those of the adult ones. Some features increase during the life of fish (body depth, caudal peduncle depth, the smallest body depth, distance between P-V, length of D, A, P and V), the other features decrease (head length, diameter of eye). The majority of features does not change their value.

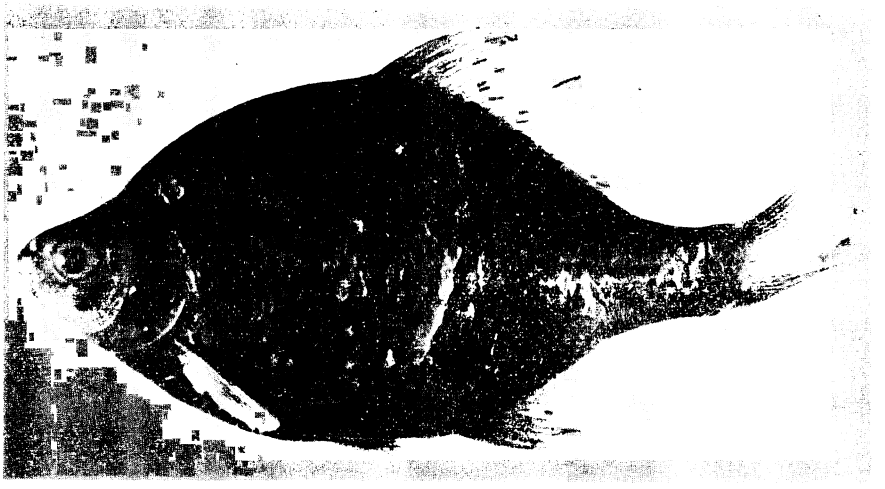

**Fig. 3.** The type specimen of *Acanthorhodeus asmussii amurensis* ssp. n. No. coll. SNM 386/XVII, adult male 97.1 mm of standard length.

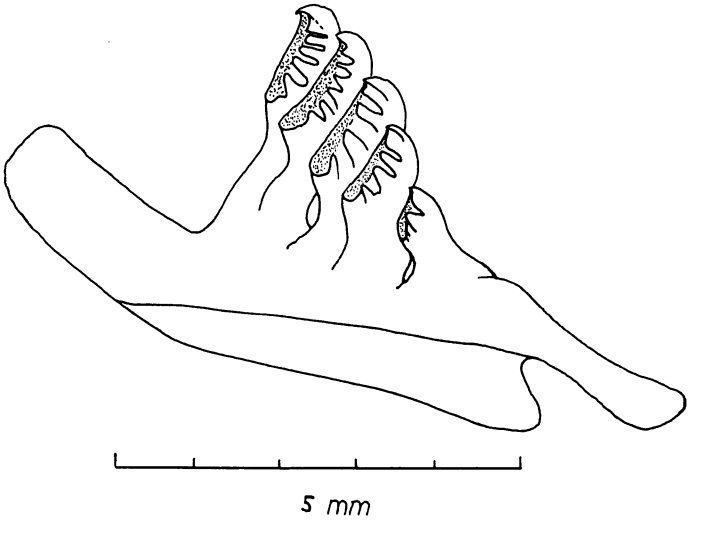


**Fig. 4.** Pharyngeal arch of *Acanthorhodeus asmussii* showing the pharyngeal teeth.

Table 2. Counts and measurements of *Acanthorhodeus asmussii amurensis* ssp. n. from the Amur river. No. 386 is the type, 388 is the allotype.

| Sex | ♂♂ | | | | | | ♀♀ | | | | | | | | | | ♂♂+♀♀ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. coll. | 379 | 377 | 376 | 386 | 378 | ave. | 380 | 384 | 389 | 382 | 388 | 387 | 383 | 385 | 381 | ave. | ave. |
| Longitudo corporis (mm) | 74.3 | 88.6 | 92.4 | 97.1 | 102.7 | 91.02 | 65.0 | 70.4 | 69.1 | 66.8 | 87.8 | 74.7 | 71.6 | 72.9 | 84.2 | 73.61 | 79.83 |
| Radii D | 18 | 17 | 16 | 18 | 17 | 17.20 | 16 | 18 | 16 | 17 | 17 | 16 | 17 | 18 | 16 | 16.77 | 16.92 |
| Radii A | 14 | 13 | 13 | 14 | 14 | 13.60 | 12 | 13 | 13 | 13 | 14 | 12 | 13 | 13 | 13 | 12.88 | 13.14 |
| Linea lateralis | 37 | 35 | 37 | 35 | 32 | 35.20 | 37 | 37 | — | 35 | 36 | 35 | 35 | 37 | 35 | 35.87 | 35.61 |
| Num. spin. branchialium | 8 | 7 | 9 | 8 | 9 | 8.20 | 8 | 8 | 9 | 9 | 8 | 9 | 8 | 9 | 9 | 8.55 | 8.43 |
| In % long. corporis: | | | | | | | | | | | | | | | | | |
| Longitudo capitis | 25.6 | 26.6 | 25.8 | 25.3 | 26.8 | 26.02 | 26.9 | 27.0 | 26.3 | 27.8 | 26.3 | 25.8 | 27.9 | 26.1 | 26.8 | 26.76 | 26.50 |
| Distantia praeorbitalis | 6.7 | 7.6 | 7.5 | 7.0 | 7.4 | 7.22 | 7.2 | 7.5 | 7.4 | 7.6 | 7.1 | 7.2 | 8.7 | 6.7 | 6.5 | 7.32 | 7.29 |
| Longitudo cirri | 0.9 | 0.7 | 1.3 | 0.8 | 1.0 | 0.94 | 0.3 | 0.4 | 0.6 | 1.3 | 0.2 | 0.8 | 1.1 | 0.8 | 1.2 | 0.74 | 0.81 |
| Distantia inter foramina nasalia | 5.3 | 5.2 | 5.1 | 5.1 | 5.2 | 5.18 | 5.0 | 5.4 | 4.8 | 5.5 | 4.7 | 4.6 | 4.9 | 5.2 | 4.8 | 4.98 | 5.06 |
| Diameter oculi | 7.3 | 7.0 | 6.7 | 6.8 | 7.3 | 7.02 | 7.4 | 7.2 | 7.5 | 7.5 | 7.1 | 7.0 | 7.1 | 7.1 | 7.2 | 7.23 | 7.16 |
| Distantia inter oculos | 9.6 | 9.8 | 9.7 | 10.1 | 9.7 | 9.78 | 10.3 | 9.9 | 9.4 | 10.4 | 9.9 | 9.6 | 9.6 | 10.2 | 9.6 | 9.87 | 9.84 |
| Distantia postorbitalis | 12.9 | 14.4 | 13.2 | 13.3 | 14.1 | 13.58 | 13.8 | 13.3 | 13.0 | 14.0 | 13.2 | 13.0 | 14.4 | 13.4 | 13.5 | 13.51 | 13.54 |
| Altitudo capitis | 22.5 | 22.4 | 23.5 | 21.1 | 21.0 | 22.10 | 22.8 | 22.7 | 23.2 | 23.5 | 22.8 | 22.5 | 23.9 | 25.2 | 22.1 | 23.18 | 22.80 |
| Latitudo capitis | 13.7 | 13.5 | 12.8 | 13.4 | 12.9 | 13.26 | 14.3 | 14.0 | 12.8 | 13.8 | 13.2 | 13.1 | 12.8 | 13.4 | 13.1 | 13.38 | 13.34 |
| Distantia praedorsalis | 52.7 | 53.8 | 54.8 | 54.0 | 53.2 | 53.70 | 56.2 | 53.0 | 51.2 | 53.0 | 52.3 | 51.3 | 55.3 | 53.2 | 53.1 | 53.17 | 53.36 |
| Distantia praeventralis | 49.1 | 48.9 | 49.3 | 46.5 | 49.3 | 48.62 | 49.5 | 47.6 | 50.5 | 48.8 | 49.0 | 48.7 | 51.6 | 49.2 | 47.4 | 49.14 | 48.96 |
| Distantia praeanalis | 65.5 | 66.1 | 65.2 | 63.0 | 65.8 | 65.12 | 65.0 | 64.0 | 66.2 | 64.6 | 65.5 | 63.9 | 66.2 | 65.0 | 64.3 | 65.07 | 65.09 |
| Altitudo corporis | 48.9 | 48.8 | 51.0 | 48.7 | 50.9 | 49.66 | 47.7 | 45.5 | 45.6 | 49.9 | 49.3 | 47.3 | 48.7 | 50.2 | 49.0 | 48.13 | 48.68 |
| Latitudo corporis | 14.7 | 13.3 | 13.4 | 14.9 | 11.9 | 13.64 | 16.3 | 16.0 | 14.5 | 14.1 | 13.9 | 14.2 | 12.6 | 15.6 | 13.7 | 14.54 | 14.22 |
| Longitudo pedunculi caudae | 18.8 | 19.7 | 18.2 | 20.7 | 18.5 | 19.18 | 20.8 | 19.9 | 19.0 | 21.8 | 18.2 | 20.6 | 21.5 | 20.8 | 20.4 | 20.33 | 19.92 |
| Altitudo pedunculi caudae | 15.9 | 16.9 | 16.6 | 16.7 | 16.2 | 16.46 | 16.2 | 16.3 | 16.8 | 16.5 | 15.2 | 16.8 | 16.5 | 16.2 | 16.4 | 16.32 | 16.37 |
| Latitudo pedunculi caudae | 6.7 | 7.7 | 7.0 | 7.2 | 6.2 | 6.96 | 6.6 | 7.7 | 7.7 | 7.3 | 7.6 | 7.3 | 7.5 | 7.7 | 7.4 | 7.42 | 7.26 |
| Minima altitudo corporis | 12.8 | 12.6 | 13.3 | 11.7 | 11.8 | 12.44 | 12.3 | 12.4 | 12.4 | 13.4 | 13.3 | 12.6 | 13.2 | 12.5 | 12.6 | 12.74 | 12.64 |
| Distantia P-V | 24.6 | 21.1 | 23.5 | 23.0 | 23.6 | 23.16 | 25.8 | 22.3 | 25.2 | 22.0 | 24.9 | 24.4 | 23.4 | 23.6 | 22.2 | 23.75 | 23.54 |
| Distantia V-A | 18.2 | 18.1 | 18.6 | 18.4 | 19.0 | 18.46 | 17.7 | 16.8 | 18.8 | 18.0 | 20.0 | 16.7 | 16.9 | 19.0 | 18.4 | 18.03 | 18.19 |
| Longitudo D | 35.2 | 36.1 | 35.5 | 34.4 | 37.6 | 35.76 | 33.5 | 35.0 | 33.0 | 36.7 | 36.1 | 34.8 | 35.0 | 36.3 | 35.0 | 35.04 | 35.30 |
| Longitudo A | 22.8 | 23.5 | 24.1 | 24.0 | 25.2 | 23.92 | 21.8 | 23.0 | 24.6 | 22.5 | 23.9 | 22.3 | 21.3 | 23.0 | 23.2 | 27.18 | 25.41 |
| Longitudo $C_1$ | 25.8 | 27.4 | 17.5 | 24.8 | 17.3 | 22.56 | 29.2 | 26.4 | 26.9 | 25.4 | — | 28.8 | 27.2 | 28.8 | 24.8 | 27.18 | 25.41 |
| Longitudo $C_2$ | — | — | 27.9 | 24.7 | — | 26.30 | 28.3 | 25.6 | 26.9 | — | — | 25.1 | 26.2 | 28.1 | 25.1 | 26.61 | 26.54 |
| Longitudo P | 18.3 | 19.2 | 19.3 | 18.2 | 18.4 | 18.68 | 19.4 | 19.4 | 18.6 | 20.0 | 18.6 | 19.2 | 19.8 | 18.7 | 18.8 | 19.16 | 18.99 |
| Longitudo V | 17.5 | 18.8 | 18.6 | 17.5 | 18.5 | 18.18 | 18.8 | 17.0 | 18.6 | 18.1 | 17.8 | 17.7 | 17.9 | 19.5 | 17.4 | 18.08 | 18.12 |
| Altitudo D | 20.7 | 21.9 | 17.8 | 18.1 | 21.4 | 19.98 | 21.7 | 21.3 | 20.8 | 20.2 | 19.2 | 21.4 | 22.1 | 20.8 | 20.4 | 20.88 | 20.56 |
| Altitudo A | 19.1 | 14.1 | 17.8 | 15.1 | 15.0 | 16.22 | 20.5 | 18.2 | 18.6 | 18.0 | 16.3 | 18.6 | 17.4 | 16.8 | 18.1 | 18.05 | 17.40 |

*Acanthorhodeus asmussii amurensis* ssp. n.

*Type* (Fig. 3, 4, Table 2): SNM 386/XVII, adult male 97.1 mm of standard length, caught in Lake Kabar, Amur river near Yelabuga (ca 60 km from the town Khabarowsk) in 14. VII. 1948 by Amur Ichthyological Expedition (leader prof. G.V. NIKOLSKY). D III 18, A III 14, lin. lat. $35\frac{6}{5}$, num. spin. branchialium 8, dent. phar. 5-5, deeply serrated. Measurements in per cent of standard length are given in the Table 2. In the following only the features different from those of *f. typica* are introduced: pectoral fins do not reach the base of ventrals, similary the ventrals do not reach the base of the anal fin. Body extremely high, discoidal, compressed. Head small. vertex bend suddenly into the strongly convex back.

*Allotype*: SNM 388/VIII, adult female, 87.8 mm of standard length, caught in lake Kabar, Amur river near Yelabuga. D III 17, A III 14, lin. lat. $36\frac{6}{5}$, num. spin. branchialium 8, dent. phar. 5-5, deeply serrated. From the type the allotype differs by the presence of short ovipositor, by absence of the first black spot behind the head, by the less colouration and by the concave dorsal fin.

*Paratypes*: SNM 376-385, 387, 389 (4 males, 8 females) collected in the same date and locality as the holotype and the allotype. Taxonomic data of the paratypes from the Table 2 are visible.

*Derivation of the name*: The name *amurensis* is derived from the Amur river in the basin of which this from occurs.

## Discussion

The taxonomy and the geographical distribution of the present species as well as majority of other *Acheilognathinae*, is not clear, up to the present. Under the name *Acanthorhodeus asmussii* there were described the fishes from the Amur river and its tributaries Ussuri and Sungari, from Hanka lake (BERG, 1949; MORI, 1936; NIKOLSKY, 1952), but also from the west and south Korea, Liaoho river (MORI, 1936, 1952), and even from Soochow, south-east China (FOWLER and BEAN, 1920). The fishes caught in the Sungari river were described by BERG (1931) as the separate subspecies *Acanthorhodeus asmussii sungariensis*. However, BERG (1949) introduced this name in his latter paper in synonymies of *Acanthorhodeus chankaensis*. I think, according to the original description, the type specimen of this subspecies is probably identic with the hybrid *Acanthorhodes asmussii*×*Rhodeus sericeus* (=*Acanthorhodeus chankaensis*) though it has the barbs ("....some teeth nearly generally not serrated." writes BERG in the page 293), the other specimens introduced together with the type specimen are either the hybrids mentioned above, or up to the present undescribed form of *Acanthorhodeus*, because BERG (1. c.) ascertained only two spines in D and A in the majority of examined fishes, though in our specimens have

been counted three spines in all fishes.

MORI (1928) described *Acanthorhodeus bergi* from the Yalu river, Korea. This species is, according to BERG (1931) very close related to *A. asmussii* (D III 17, A II 13, lin. lat. 36). Later MORI, (1936) systemized this form as *A. asmussii* ssp. *bergi*. But in his list of the fresh-water fishes of Korea MORI (1952) introduced only *A. asmussii*. The chief taxonomic features of Korean bitterlings (UCHIDA, 1939, sec. NIKOLSKY, 1952) agree with those of typical *A. asmussii* (D 15-19, A 12-15, lin. lat. 35-39). Because of the possibility of the existence of hybrids among the Korean bitterlings, the systematic position of *A. asmussii* from Korea, similarly as of other fishes belonging to the subfamily *Acheilognathinae* must be reexamined.

With regard to my specimens (as it may be seen from the enclosing tables and figures) and partially with regard to the description of NIKOLSKY (1952) there exist relatively large differences between bitterlings from the lake Hanka and from the Amur river, which seems to me to be sufficient for separating of the bitterlings from the Amur river into the separate subspecies *amurensis*. The geographical distribution of both forms, e. g. *f. typica* (*A. a. asmussii*) and ssp. *amurensis* need a further investigations. It seems to me, ssp. *amurensis* lives mainly in the Amur river and its chief tributaries, whilst *A. a. asmussii* habitats probably only the lake Hanka with tributaries.

The note about *A. asmussii* in Soochow, China, made by FOWLER and BEAN (1920) is evidently a mistake; NICHOLS (1943) does not mention this species from China. Although the description of this species seems to be identic with *A. asmussii* (D II 16, A II 13, lin. lat. 32-34$\frac{6}{5}$, 8 gill-rakers, terminal barbs), it must be noted, that also the features of other species of the genus *Acanthorhodeus* agree with the above mentioned description (see MIAO, 1935; NICHOLS, 1943). It is evident, the validity of all species belonging to the genus *Acanthorhodeus* needs necessary a revision. For example, *A. asmussii* found by REEVES (1927) in Shanghai, is *A. taenianalis* Günther 1873 (NICHOLS, 1. c.). The latter differs from the former only by the absence of barbs, other features seems to be identic with *A. asmussii* (D II 16-17, A II 12-14, lin. lat. 35-36). The situation is complicated by the possibility of the existence of natural hybrids, as was shown recently by HOLČÍK (1962).

Now I introduce the key for determination of *A. a. asmussii* from *A. a. amurensis*:

1 (2) The pectoral and ventral fins reach the basis of V and A
D III 16-17 (16, 8), A 12-13 (12, 7), lin. lat. 36-38 (37, 0), num. spin. branchialium 7-8 (7, 8), dist. praeanalis 57, 8-62, 3 (60, 2), dist. praeventralis 41, 7-45, 2 (43, 7), body depth 44, 7-46, 4 (46, 0).
.....*Acanthorhodeus asmussii asmussii*

2 (1) The pectoral and ventral fins do not reach the base of V and A
D III 15-18 (16, 6), A 12-14 (13, 1), lin. lat. 32-37 (35, 6), num. spin. branchialium 7-9 (8, 4), dist. praeanalis 63, 0-66, 5 (65, 1), dist. praeventralis 46,

5-51, 6 (49, 0), body depth 45, 5-51, 0 (48, 7).
.....*Acanthorhodeus asmussii amurensis*

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