NOTES ON FISHES IN THE INDIAN MUSEUM.

XX. Loaches of the genus *Nemachilus* from Baluchistan.

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(Plate V.)

Griffith[1] in his " remarks on the fishes he met with in Afghanistan and adjoining provinces " records the occurrence of a species of loach at Quetta, which he stated to be " fairly within Afghanistan, and the waters of which no longer run into the Indus, but are either lost in detail, or make their way to the tributaries of the Helmand." No specimen of this loach appears to have been examined by McClelland[2] who reported on the collection made by Griffith. Day[3] in his account of the fishes of Afghanistan records a species of *Nemachilus* from the hills near Kelat and Quetta, and in doing so remarks that, " Dr. Duke has sent several young examples of a species of this genus ; but they are too small and in too bad a state of preservation to render it safe to describe them, though they appear to me to be of a species not as yet described, so far as I am aware. It is probably identical with the form obtained by Griffith from the same locality. It is banded with transverse bars of yellow rather wider than the ground-colour, these bars taking on a somewhat angular form near the tail. Col. Miles sent me several small ones of the same species from the river near Gwadur." It was, however, left for Günther[4] to describe this loach as new—*N kessleri*—in 1889, when writing an account of fishes collected by Dr. J. E. T. Aitchison, a member of the Afghan Delimitation Commission. His description was based on eight specimens collected at Nushki, not very far from Quetta, of which the largest was " only twenty-eight lines long." Zugmayer[5] in his travels along the Mekran Coast and in the interior of Baluchistan discovered two new species of *Nemachilus*, one at Kalat and the other at Panjgur. The late Dr. N. Annandale and Dr. S. W Kemp found a species of *Nemachilus* most abundant in the small streams of the Quetta and Pishin districts of northern Baluchistan at altitudes between 5,000 and 6,000 feet. Annandale and I[6] considered it to be *N montanus* (McClelland), but a further examination of this and the allied material has shown that it is *N kessleri* Günther, which is quite distinct from *N montanus* of the Simla Hills. Annandale and Kemp also collected specimens of *N brahui* Zugmayer at Quetta.

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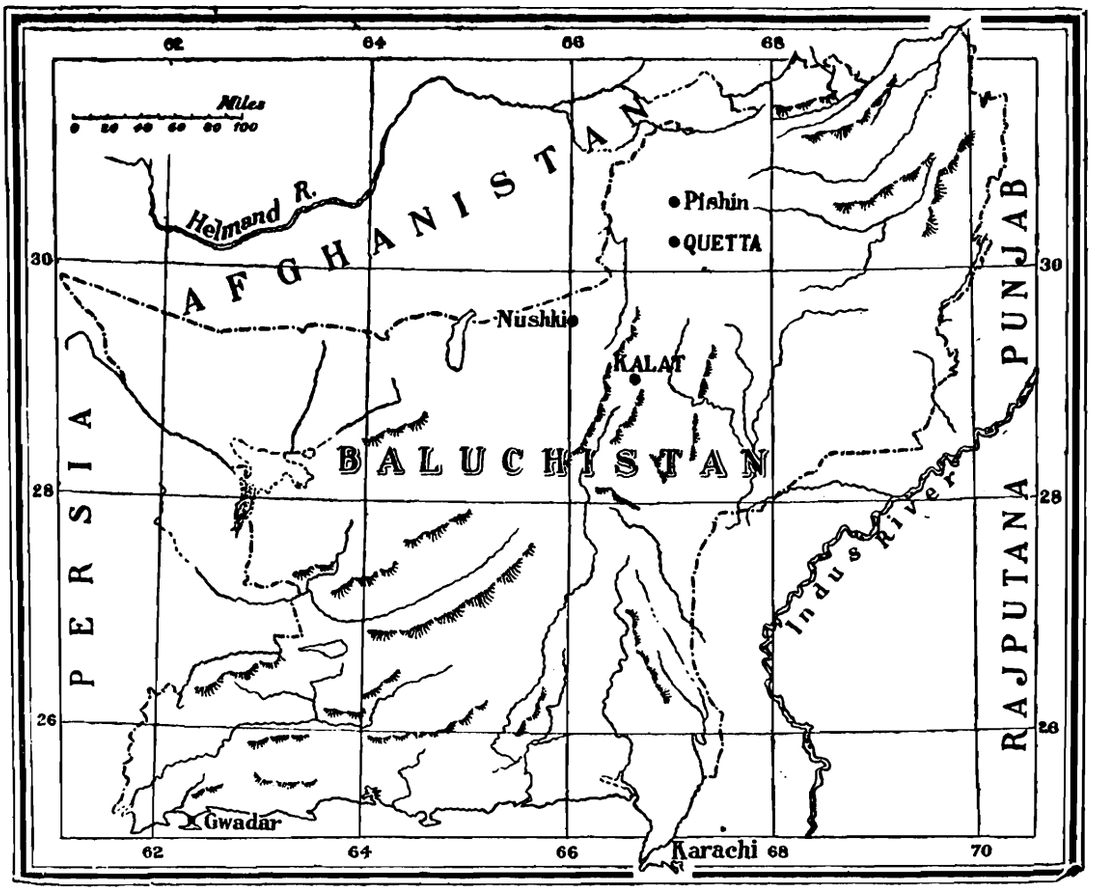
[1] Griffith, *Calcutta Journ. Nat. Hist. Soc.* II, p. 563 (1842).
[2] McClelland, *ibid.*, pp. 575-586 (1842).
[3] Day, *Proc. Zool. Soc. London*, p. 229 (1880).
[4] Günther, *Trans. Linn. Soc. London* (Zoology) Ser. 2, V, p. 109 (1889).
[5] Zugmayer, *Ann. Mag. Nat. Hist.* (8) X, pp. 598, 599 (1912) ; *Abk. K. Bayerischen Ak. Wiss. (Math.-phys. Klasse)* XXVI, pp. 31, 32 (1913).
[6] Annandale and Hora, *Rec. Ind. Mus.* XVIII, p. 167 (1920).

It is thus seen that only three species of *Nemachilus* are known from Baluchistan. Of these two—*N kessleri* and *N brahui*—are found in the north-eastern portion of the country in the districts of Nushki, Kalat, Quetta and Pishin. The remaining species, *N baluchiorum* Zugmayer, is found on the west side almost in the middle of the country. The loach obtained by Col. Miles "from a river about twenty miles inland from Gwadur, on the Mekran Coast," and considered by Day as identical with the Quetta form remains still to be determined. Very little is known about the ichthyology of Baluchistan, and, consequently, the



TEXT-FIG. 1.—A sketch-map of Baluchistan showing the localities in which *Nemachilus* have been collected.

distribution of the various species cannot be assigned properly. The affinities of these species are of special interest. *N kessleri* is closely allied to the Indian species of the genus in general facies, though it has developed certain special features. *N brahui* is allied to the Central Asiatic forms and closely resembles *N griffithii* Günther and certain specimens recently collected at Paghman in Afghanistan. *N baluchiorum* has its affinities with Persian forms[1] such as *N sargadensis* Nikolski and *N bampurensis* Nikolski. The three species from Baluchistan, indicate in a way the affinities of the entire fish-fauna of the country.

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[1] Nikolsky, *Ann. Mus. Zool. Acad. Imp. Sci. St. Peters.* IV, pp. 414-417 (1899).

Mr. L. Bogdanov has helped me with the Russian text of Nikolsky's paper and for this my sincerest thanks are due to him.

In the collection of the Zoological Survey of India the three species are well represented and they may be distinguished from one another by the following key :—

A. Body covered with small, but very conspicuous scales . *N. baluchiorum.*
B. Body naked
  a. Anal fin extending considerably beyond anal opening *N. brahui.*
  b. Anal fin not extending as far as or just reaching anal-opening *N. kessleri.*

Nemachilus baluchiorum Zugmayer.

(Plate V, figs. 6 and 7.)

1912. *Nemachilus baluchiorum*, Zugmayer, *Ann. Mag. Nat. Hist.* (8) X, p. 599.
1913. *Nemachilus baluchiorum*, Zugmayer, *Abh. K. Bayerischen Ak. Wiss.* (*Math.-phys. Klasse*) XXVI, p. 31.

Nemachilus baluchiorum is a small, cylindrical and elongated species in which the body is scaly and marked with a large number of bands. The species is represented by two specimens in the collection of the Zoological Survey ; these were obtained in exchange from the Quetta Museum and are stated to have been collected in the type-locality. Of these specimens, one is a mature male with the secondary sexual characters well developed, while the other is a female full of eggs. The male is infected with trematode parasites, which are noticeable as black cysts on the hinder part of the body and the fins. The lips are thick and plicated ; the lower lip is interrupted in the middle.

According to Zugmayer *N baluchiorum* is similar to *N kessleri* in colouration " but the presence of scales and the size of the orbit make it quite distinct ; from the similarly coloured species *N bampurensis*, Nik., and *N sargadensis*, Nik., it is easily distinguished by its much greater depth of body." From *N brahui* " it differs in colour, as well as in the presence of scales, the proportions of the caudal peduncle, and the length of the ventral fin."

Locality :—Panjgur, whence thirteen specimens of the species were collected by Zugmayer.

Measurements in millimetres.

Total length including caudal	67·0
Length of caudal	12·0
Length of head	12·5
Depth of body	9·5
Length of snout	6·6
Interorbital distance	2·5
Length of caudal peduncle	7·2
Least height of caudal peduncle	7·3
Longest ray of dorsal	10·5
Length of pectoral	10·8
Length of ventral	9·2
Longest ray of anal	7·0
Distance between tip of snout and commencement of dorsal	28·6
Distance between commencement of pectoral and that of ventral	18·2
Distance between tip of snout and anal-opening . . .	42·2

Nemachilus brahui Zugmayer.

(Plate V, figs. 4 and 5.)

1912. *Nemachilus brahui*, Zugmayer, *Ann. Mag. Nat. Hist.* (8) X, p. 598, 599
1913. *Nemachilus brahui*, Zugmayer, *Abh. K. Bayerischen Ak. Wiss.* (*Math.-phys. Klasse*) XXVI, p. 32.

Nemachilus brahui is represented by seven specimens in the collection of the Zoological Survey of India. Of these, five were collected by Dr. N. Annandale and Dr. S. W. Kemp at Quetta, while the remaining two were received from Major G. E. F. Stammers from the same locality.

The secondary sexual characters are not well defined. In the male there is a shallow groove running forwards and downwards from the middle of the eye, the pectoral fins are provided with cutaneous flaps on their dorsal surface, and the general colouration is much lighter. The females appear to be more conspicuously coloured.

The alimentary canal possesses three loops in its entire course. A mature egg is slightly greater than a millimetre in diameter.

According to Zugmayer the colouration is "Greyish green, with irregular transverse bars and blotches; fins dirty orange, D. and C. speckled with black." The specimens before me indicate that the colouration varies both with age and locality. In the young specimens there is a distinct moniliform band along the lateral line and there are indications of short, saddle-shaped bands along the dorsal surface. The dorsal surface of the head and body are speckled with minute dots. A male specimen about 77 mm. in length without the caudal and collected in the Residency Garden at Quetta is pale olivaceous except for a few inconspicuous marking on the dorsal surface of the head and body. The dorsal and the caudal fins are spotted with rows of dots.

Zugmayer compared this species with *N. rhadinaeus* Regan[1] and *N macmahoni* Chaudhuri.[2] Both of these Seistan species were referred to the genus *Adiposia* by Annandale and myself.[3] *N brahui* does not possess an adipose fin. In general facies and colouration it bears a close resemblance to *N. griffithii* Günther,[4] but can be distinguished from it by the possession of a much longer head (five in total length) and a deeper caudal peduncle (half as high as long). Moreover, in *N. brahui* the ventrals extend considerably beyond the anal-opening.

Localities:—Zugmayer collected 24 specimens at Kalat, while the specimens in the Zoological Survey were obtained from Quetta.

Measurements in millimetres.

Total length including caudal	96·8	89·0	91·5
Length of caudal .	15·5	12·0	13·8
Length of head	20·0	19·6	18·2
Depth of body	12·5	12·5	14·8
Length of snout .	8·0	7·9	8·0
Interorbital distance	4·2	4·2	4·0

[1] Regan, *Journ. As. Soc. Bengal* (N. S.) II, p. 8 (1906).
[2] Chaudhuri, *Rec. Ind. Mus.* III, p. 341 (1909).
[3] Annandale and Hora, *Rec. Ind. Mus.* XVIII, p. 182 (1920).
[4] Hora, *Journ. As. Soc. Bengal* (N. S.) XXIV, pp. 482, 483 (1929).

Measurements in millimetres—contd.

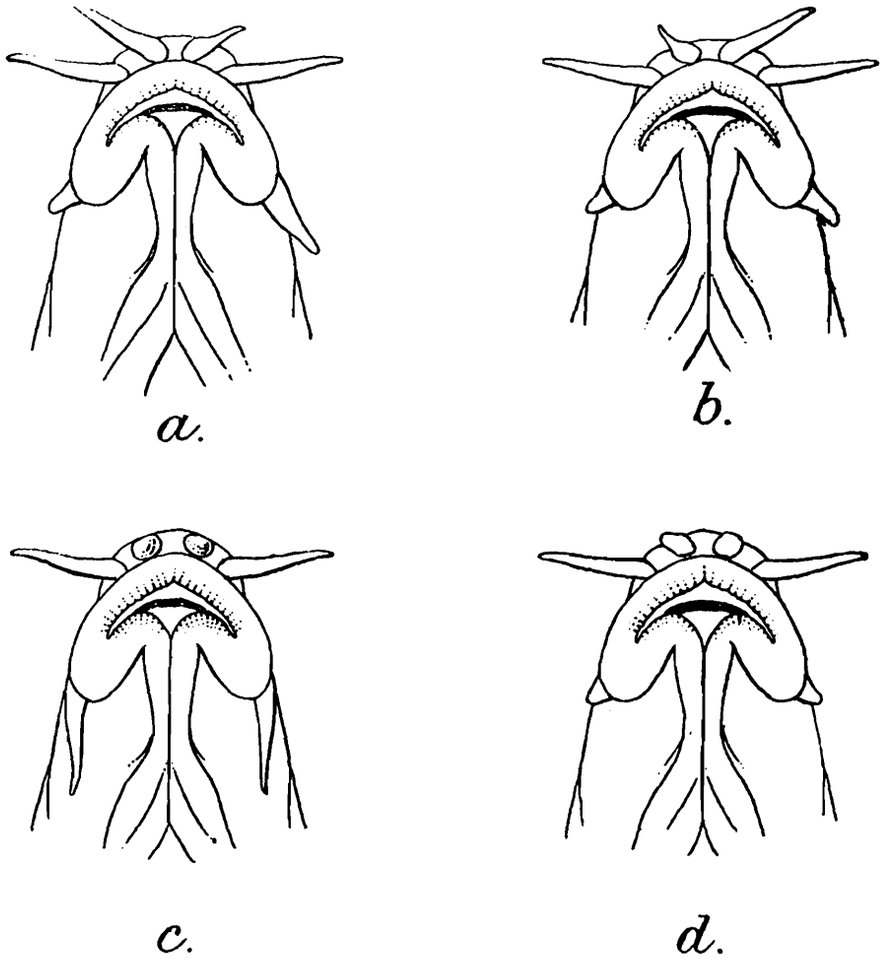
Length of caudal peduncle	15·8	14·5	16·5
Least height of caudal peduncle	7·5	7·2	8·8
Longest ray of dorsal	11·5	12·5	13·7
Length of pectoral .	14·2	13·8	14·0
Length of ventral	10·5	11·5	12·0
Longest ray of anal .	10·7	11·0	11·5
Distance between tip of snout and commencement of dorsal .	43·3	41·8	41·0
Distance between commencement of pectoral and that of ventral	28·5	24·2	24·3
Distance between tip of snout and anal-opening	56·5	54·4	51·3

Nemachilus kessleri Günther.

(Plate V, fig. 3.)

1889. *Nemachilus kessleri*, Günther, *Trans. Linn. Soc. London* (Zoology) 2nd Ser., V, p. 109.
1929. *Nemachilus kessleri*, Hora, *Rec. Ind. Mus.* XXXI, p. 313.

Nemachilus kessleri is represented by a large series of specimens in the collection of the Zoological Survey of India. Of these, four examples



Text-fig. 2.—Ventral surface of head of 4 specimens (a—d) of *Nemachilus kessleri* Günther showing defective barbels. (From *Rec. Ind. Mus.* XXXI, p. 313, 1929).

were collected by Dr. J. E. T. Aitchison of the Afghan Delimitation Commission and are probably from the type-series, while the others were obtained by Dr. N. Annandale, Dr. S. W Kemp and Major G. E. F.

Stammers in the Quetta and Pishin districts of Baluchistan. It seems to be a very common species in the neighbourhood of Quetta, and it is likely that the earlier references regarding the occurrence of a loach at Quetta both by Griffith[1] and Day[2] refer to this species.

In young specimens about 12 mm. in length without the caudal, the dorsal and the ventral fin-folds are present in front of the base of the caudal fin. The caudal fin is forked, emarginate or obliquely truncate. "The markings of the body are rather indistinct, and concentrated on the back into twelve somewhat irregular cross bands. A deep black spot on the base of the three anterior dorsal rays, the upper part of the fin ornamented with one or two series of black specks running parallel to the upper margin of the fin. Caudal fin with a narrow blackish cross bands on the root and with two more or less indistinct, oblique, series of black specks."

I have referred elsewhere[3] to the variability and deformities of the barbels in this species. From the study of a large number of abnormal specimens it is seen that the outer rostral barbels are a constant feature of the fish and do not appear to be subject to any variation. The inner rostral barbels vary considerably, and in one specimen they are so small and rudimentary that the fish appears to possess only four barbels. In the accompanying figure four types of abnormalities are represented.

Localities:—Nushki, Quetta and Pishin Districts in Northern Baluchistan.

Remarks.—Nikolsky[4] records this species from "Keljate-Marg in terra Zirekuch" in Persia and points out that his specimens agree with Günther's description of the species in every respect. If further researches show that this observation is correct. then the range of distribution of *N. kessleri* will have to be considerably extended.

Measurements in millimetres.

Total length including caudal	46·3	47·3	50·0	58·6
Length of caudal	9·1	8·8	9·5	9·5
Length of head	8·2	8·5	9·6	10·2
Depth of body	4·6	5·0	6·0	6·1
Length of snout	3·6	3·3	4·2	4·5
Interorbital distance	1·5	1·5	2·2	2·3
Length of caudal peduncle	5·8	7·0	8·0	7·8
Least height of caudal peduncle	3·2	3·5	3·5	4·2
Longest ray of dorsal	6·0	5·8	7·2	7·8
Length of pectoral	7·3	7·7	8·0	8·2
Length of ventral	5·8	6·5	6·6	7·4
Longest ray of anal	5·2	6·7	6·0	6·3
Distance between tip of snout and commencement of dorsal	20·3	20·4	22·2	26·0
Distance between commencement of pectoral and that of ventral	12·0	11·8	12·5	16·0
Distance between tip of snout and anal-opening	28·2	28·0	30·0	35·3

[1] Griffith, *Calcutta Journ. Nat. Hist. Soc.* II, p. 563 (1842).
[2] Day, *Proc. Zool. Soc. London*, p. 229 (1880).
Hora, *Rec. Ind. Mus.* XXXI, p. 313 (1929).
[4] Nikolski, *Ann. Mus. Zool. Acad. Imp. Sci. St. Peters.* IV, p. 414 (1899).