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7. On the present status of *Lepisosteus sinensis* Bleeker.

By George Wagner.

(With 1 figure.)

eingeg. 3. Mai 1912.

Jordan and Evermann in their great work on the Fishes of North America (Bulletin U.S. N. M., No. 47) make the statement (Vol. I, p. 109) that a single species of *Lepisosteus* (*L. sinensis*) is found in China, all other forms of this group being North American. The other large treatises on fishes, so far as I have access to them, do not seem to recognize such a Chinese species. (Standard Natural History; Lankester, Treatise on Zoology, Pt. 9; Cambridge Natural History, Vol. 7; Gunther, Introduction to the Study of Fishes; Dean, Fishes, Living and Fossil; Forbes, The Fishes of Illinois). Even in Jordan's later work (Guide to the Study of Fishes) no mention is made whatever of an Asiatic *Lepisosteus*.

As the occurrence or non-occurrence of a *Lepisosteus* in eastern Asia involves a point in zoogeography of considerable importance and interest, it seemed well worth while to make an attempt to determine, if possible, the real status of *Lepisosteus sinensis*. Furthermore, the fish fauna of China is at present so imperfectly understood, that any contribution whatsoever toward its elucidation ought to be welcome. For what I have to say here I am indebted very largely to Mr. G. A. Boulenger, the renowned ichthyologist of the British Museum, and most especially to Dr. J. F. van Bemmelen, Professor of Zoology at the University of Groningen, in Holland. The latter scientist has been

much more than ordinarily kind and painstaking in my behalf, and in many ways this article represents more of his work than it does of mine.

M. J. Senn van Basel, who was Consul-general in China for the Netherlands about the year 1832, brought together a collection of Chinese paintings, four hundred and sixty in number, of which four hundred and forty represented fishes. These pictures were subsequently presented to the University of Groningen, and about 1870 they were placed into the hands of the noted ichthyologist Pieter van Bleeker, until recently almost the only authority on the fishes of the farther East. Bleeker, with these pictures as a sole basis, wrote a paper, "Memoire sur la Faune Ichthyologique de Chine" (Nederlandsch Tijdschrift f. Dierkunde, IV, 1873, p. 113—154). He therein established five new species, most of which have up to the present not been corroborated by actual specimens. In consequence ichthyologists have not generally seen fit to give recognition to the species so established. One of the species so described, and not since found, is *Lepisosteus sinensis*¹.

The pictures, after Bleeker finished with them, seemingly remained undisturbed in the Library of the University of Groningen until at my request Professor van Bemmelen was so good as to look them up. He took the trouble to have the picture here in question photographed for me, and to have one print colored to correspond with the original painting. This picture is here reproduced. It is seen



448 *Isouk shin*

膳雀

¹ Bleeker of course wrote *Lepisosteus*. I use throughout this article the earlier, and among present-day ichthyologists generally accepted, spelling.

to bear two Chinese inscriptions, one in ink and one in pencil. The leadpencil inscriptions, except those of Chinese characters, are in the handwriting of Bleeker. The transliteration in ink is by J. J. Hoffman, the eminent Sinologist of Leiden, a letter from whom is now on file with the collection. He states that the name of the fish illustrated is "Tseuk shin". Professor J. J. de Groot, at present Sinologist at Leiden, translates it as meaning "sparrow eel". I am much indebted to Professor de Groot for his kindness in examining these inscriptions.

Now to examine the picture itself. At first sight it appears decidedly grotesque, but a close comparison with specimens of our garpikes immediately discloses points indicating great accuracy in the reproduction of garpike characters. The head, to be sure, shows distinctly the Chinese predilection toward picturing hideous dragons, but even here the large eye, the plainly marked opercular elements, the fine sharp teeth, are garpike characters not to be mistaken. On the body the rhomboid arrangement of the scales is very clear; the general form of the body is much like that of *Lepisosteus tristoechus*; the fins occupy precisely the places they occupy in garpikes, and especially is this apparent in the dorsal fin set far back on the body. And finally the color (of course not indicated in the reproduction) is not so very unlike what we have in our gars; the color of the fins quite vividly recalls that of the fins of *Amia*. Taking the picture as a whole, and barring a hardly believable accidental resemblance, it seems to me at least, that it is based on an actual and recently captured specimen of a *Lepisosteid*.

The fact that these pictures were made in China and brought together there by van Basel as early as 1832 or thereabouts is well authenticated. Remembering this fact, there seem to be only three possibilities as to the origin of this picture of *Lepisosteus*:

1) A Chinese artist may have made it, while on the Atlantic side of the Rocky Mountains, or in Central America or Mexico; the chance of this being the case is so remote as hardly to need any consideration, to say nothing of the meager chance such an artist, granting the above contingency, would have of seeing this particular form.

2) The picture may have been made from accounts and sketches given to the Chinese artist by some European, acquainted with living *Lepisosteis* in America, and interested enough in them to carry with him in memory the details of scaling, fin position, and coloration. Considering our relations to the Orient in those early days, this possibility seems to be at least as remote as the first.

3) There remains only the possibility that the picture was made from a living or recently dead specimen taken in Chinese waters. I see every reasons therefore for accepting it as a fact that a *Lepisosteus* oc-

curs in Chinese waters, in spite of the fact that no actual specimen has ever found its way into the hands of any European naturalist; and that the name *Lepisosteus sinensis* Bleeker, is not to be considered as a nomen nudum.

University of Wisconsin, April 10, 1912.

8. Teuthologische Notizen.

Von Dr. Ad. Naef, Neapel.

(Mit 1 Figur.)

eingeg. 4. Mai 1912.

4. Die Gattungen der Loliginidae.

Die Familie der Loliginiden ist außerordentlich einheitlich zusammengesetzt und durch eine große Zahl von Merkmalen der äußeren Gestaltung, Anatomie und Entwicklung scharf charakterisiert. Wie bei den übrigen Myopsidenfamilien sind darunter sowohl ursprüngliche als auch sekundäre Züge festzustellen. Im ersteren Sinn dürfte vor allem die Bildung des Buccaltrichters zu deuten sein, der bei *Loligo vulgaris*, *forbesii* und andern Formen auf das deutlichste seinen Charakter als den eines rudimentären inneren Armkranzes bekundet (vgl. meinen Artikel: Cephalopoden, im Handwörterbuch der Naturwissenschaften, Jena 1912). Derselbe wird von 7 Pfeilern gestützt, und ist meist in sieben mehr oder weniger armartige Zipfel ausgezogen, welche zwölf und mehr Saugnäpfe tragen können. Letztere sind ebenso wie die der Arme gebildet und zweireihig angeordnet. Bei vielen Formen tragen die kurzen Buccalzipfel nur wenige (4—1) Saugnäpfe, und bei andern fehlen dieselben teilweise oder vollständig, ein Verhalten, das eine vorsichtige Verwendung für die Systematik der Gattungen wohl erlaubt.

Die Flossen zeigen wenigstens in der Jugend (Larven) ein sehr ursprüngliches Verhalten; sie stellen dann rundliche, seitlich ausgezogene Lappchen dar, welche dem stumpfen Hinterende dorsal aufsitzen und mit ihrer Fläche nicht der Schwimmrichtung entsprechen, sondern schräg zu derselben gestellt sind. Indem das Hinterende sich auswächst, verändert sich dann die Flossenform im Sinne der Fig. 3e, welches typische Stadium den Ausgangspunkt für die verschiedenen Flossenformen der erwachsenen Loliginiden abgibt. Dieselben müssen immer im Hinblick auf diese typische Genese betrachtet werden. Die auffallenden Unterschiede in der definitiven Bildung der Flosse beruhen darauf, daß dieselbe in verschiedenem Grade seitlich am Mantel nach vorn wächst, wobei ihr Rand eine wechselnde Gestaltung erfährt. Dieses Verhalten, im Zusammenhang mit der größeren oder geringeren Schlankheit der Loliginiden bedingt den Habitusunterschied der

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