Early Cretaceous Freshwater Fishes from Northern Kyushu, Japan

II. Restoration of Two Species of the Clupeoid Fish genus Diplomystus

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In the previous report (Uyeno, 1979), two primitive species of the genus Diplomystus, D. primotinus and D. kokuraensis, were described on the basis of a number of fossil remains found from a freshwater bed of Neocomian age, in Kitakyushu city in the northern part of Kyushu Island, Japan.

Here we tried to reconstruct their osteological structure from fragmental informations obtained from fossil specimens, and osteological observations on Recent specimens of Hyperlophus vittatus from Australia, which has been considered as the closest relative of Diplomystus, among Recent double armoured herring (Schaeffer, 1974).

Material and method

All of the fossil material were collected at the locality 130°51′46″E, 33°51′11″N, Kumagaya 4-chome, Kokura-kita-ku, Kitakyushu City, Fukuoka Prefecture, Japan.

The horizon is Neocomian, Early Cretaceous. The upper layer (fourth layer) of the Wakino-subgroup, Kannon-group. Information in detail are presented elsewhere (Ota and others, 1978; 1979; Uyeno, 1979).

In order to draw figures of the restoration, important parts were drawn first from many fragments, using Wild dissecting microscope with a drawing device. Then drawings of the holotypes were made for each species. Finally composite figures were constructed on the basis of information gathered from all material.
Figure 1. The caudal skeleton of Diplomystus kokuraensis, KMNH VP 100,071.

CSC, caudal scute; EP, epural; H, hypural; HP, parhypural; PU, preural centrum; U, ural centrum; and UN, uroneural bone.

Recent specimens of Hyperlophus vittatus was cleared and stained with 2% KOH and arizarine red S.

Remarks

We have obtained only few specimens of an entire body of these two species. The preservation of the fossils are not necessarily good, but certain individual bones are clearly observable in fragments which are shown in photographs (Pls. 3–4).

In addition to the characters in the original description (Uyeno, 1979), we looked for the parasphenoid teeth in these two species. Though specimens are so small to observe fine structures, we think we found impression of very small tooth-like structure in front of the posterior end of the parasphenoid, in the type specimens of both species. It is unfortunate that we are not able to state that the presence of the parasphenoid teeth with confidence. We did not find the parasphenoid teeth in specimens of Recent Hyperlophus vittatus.

Concerning the number of the dorsal scutes of D. kokuraensis, 8 was the maximum observable number previously, but we found a fragment with 12 scutes, which was recently collected by Mr. Matano.

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Kitakyushu Museum of Natural History for his kind arrangements to study the material. Mr. Takashi Sotsuka of Kokura Senior Highschool and Mr. Fumiaki Matano who collected fossil specimens at the locality provided us fragments with many important features of two species of Diplomystus.

**Literature Cited**


Figure 2. Diplomycterus primotinus, holotype, KMNH Vb 100,001. Scale indicates 10 mm.
Restoration of Diplomystus

Figure 5. Reconstruction of Diplomystus kohanensis.
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Plates 3-4
Explanation of Plate 3

*Diplomystus primotinus*

1. preopercle, KMNH VP 100, 005. (× 8.5)
2. shoulder girdle, KMNH VP 100, 005. (× 8.5)
3. quadrate, KMNH VP 100, 005. (× 8.5)
4. dentary, KMNH VP 100, 072. (× 7.9)
5. predorsal scutes, KMNH VP 100, 010. (× 4.2)
6. dorsal fin, KMNH VP 100, 010. (× 4.2)
7. anal fin, KMNH VP 100, 004. (× 4.1)
8. caudal region, KMNH VP 100, 073. (× 11.7)
Plate 4
Explanation of Plate 4

*Diplomystus kokuraensis*

Fig. 1. head region, KMNH VP 100, 034. (×3.4)
2. caudal region, KMNH VP 100, 035. (×9.7)
3. predorsal scutes, KMNH VP 100, 040. (×7.4)
4. dorsal fin, KMNH VP 100, 031. (×5.2)
5. predorsal scutes, KMNH VP 100, 039. (×7.5)
6. anal fin, KMNH VP 100, 039. (×5.5)