

# 湖南临澧鲈形类一新属

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在本文記述的魚化石，一部分是中南矿冶学院地质系钟文华等同志在湖南临澧歇架山一带的紅色岩系中采集的，另一部分是 1948<sup>1</sup>年譔义睿同志在同一地区和层位中收集的。魚化石保存于該套岩系的油頁岩及黑灰色頁岩中，在同一层位中还有属于鯉科的骨唇魚(*Osteochilus*)化石。有关临澧一带含魚层位的情况，已由唐鑫作了报导(1959)，此处不再重述。

这批魚化石共計 30 余个体，經著者观察，均隶属于鱸形目(Perciformes)，代表一化石新属。有关鱸形目的化石，在我国发现的不多，仅在山西榆社盆地上新世地层中找到过中华鱸(*Siniperca*)化石，保存的不够完好。临澧的标本保存的相当完好，在系統上和地层对比上頗具意义。

在研究过程中，承伍献文、张春霖教授提供宝贵意見；譔义睿、钟文华同志采集标本，并送交我們研究；周明鎮先生校閱文稿，以及王哲夫先生摄制图影，著者在此表示衷心謝意。

## 标 本 記 述

### 鲈形目 Perciformes

#### 洞庭鱸属(新属) *Tungtingichthys*, gen. nov.

#### 秀丽洞庭鱸(新属新种) *Tungtingichthys gracilis*, gen. et sp. nov.

(图版 I, 1—3)

**正型标本：**一完整个体及其印模，中国科学院古脊椎动物与古人类研究所标本登記号 V. 1043。

**副型标本：**三条完整的个体，中南矿冶学院标本登記号 58D 1.8, 1.9 and 2.2。

**产地及层位：**湖南临澧歇架山孙家桥，石門三板桥。歇架山紅色岩系孙家桥层。

**属的特征：**見种的特征記述。

**种的特征：**体小，梭形，体側扁头較长大，口端位。前鳃盖骨上枝后緣有锯齿。于上下枝交角处有二至三个較大的锯齿。在鳃盖骨靠近其后緣处有一短棘突。背鳍的棘刺部分与分节鳍条部分連續，鳍式为 VIII, 9—10。尾鳍浅叉形。

**标本描述：**全长約 50 毫米的小魚，体側扁，呈梭形。最大体高位于腹鳍起点处。体长为体高的 3 倍，头长略大于体高，头长为眼径的 3 倍。

在正型标本，头部保存較好，头长大于头高，口端位，略向上傾斜，口裂中等大小，未达到眼窝中部。前上顎骨狹长，上顎骨略寬大，前端稍窄于后端。輔上顎骨在几块标本上均

辨别不清。下颚较突伸,齿骨为一长形骨片,前后匀称,齿骨的前端略向下弯垂。在前上颚骨及齿骨的口缘可见到少许尖锥形齿,但保存不佳,牙齿排列稀疏,齿尖略向内倾斜。眼大,位靠上,位于头的中前部,眶骨保存完好,以后下眶骨最为清楚。副蝶骨硕壮,在标本上可见其贯穿眼窝下部。

鳃盖完全,前鳃盖骨的上枝狭长,下枝稍宽大,但并不显著,上下枝相交成直角。在上枝的后缘有细的锯齿,在交角处的锯齿略大,前鳃盖骨与眼窝后缘距离近。鳃盖骨略呈三角形,后缘突伸,前缘平直而厚。在鳃盖骨表面靠近后缘处有一短棘突,棘突的尖端已残缺,但由相应的印模,可见棘突的全貌(图版 I, 2)。下鳃盖骨颇小于鳃盖骨,呈长条形骨片,近吻的一端稍宽,其前上角略向上伸展,它与鳃盖骨接合成一半圆形。间鳃盖骨轮廓不清。鳃条可见到 5 条(V. 1043)。

脊柱保存完好,几乎全部外露,由 24 个脊椎骨组成,其中胸椎 9 个,尾椎 15 个,椎体长略大于其高。最后一尾椎的末端收缩成一尖锥体,锥尖上扬。神经棘与血管棘大小相近似。尾下骨不十分扩展,大小相等。肋骨细长,但未伸达腹缘,约 7—8 对。

胸鳍位高,略呈团扇状,鳍条纤细。腹鳍胸位,其起点居于胸鳍起点之后,约在胸鳍全长的 1/2 处,具一长棘,鳍式为 I-5,腰带骨长大,不愈合。背鳍大,前后连续,具有棘刺 8 根,分节鳍条 9—10 根,最前的一棘刺短小,以第 4 个棘刺最为长大,自此向后依次变短,但不显著,第 8 个棘刺稍短于第一分节鳍条。棘鳍鳍基较软鳍鳍基略长,约成 4 与 3 之比。背鳍支持骨细长,在背鳍前下方有 3 根,在背鳍基下方有 15—16 根,均分别插于神经棘之间,以前边的较硕壮。臀鳍小于背鳍,其起点约与背鳍分节鳍条鳍基的中点相对,鳍式为 III-7,第一棘刺甚短小,第二根最长大,第三根几与第二根相等(图版 I, 2)。支持骨 9 根,最前方的一根特别长大。尾鳍叉裂浅,上下叶对称,具有 19 根长鳍条。鳞片未保存,形状不明。

标本 (V. 1043)	测量(单位:毫米)
全长	55
体长	43
体高	14
头长	15
头高	12
眼径	5
背鳍基长(棘刺部分)	8
背鳍基长(软鳍部分)	6.5
背鳍起点距吻端	17
臀鳍起点距吻端	28.5

**比较与讨论:** 湖南临澧标本的一些特征,如背鳍的鳍式,腹鳍具有 1 根棘刺, 5 根分节鳍条,臀鳍具有 3 根棘刺,以及脊椎数目等可与东南亚的 *Toxotes*, 欧洲的 *Acanus* 比较。*Toxotes beauforti* 发见于印度尼西亚苏门答腊中部的“泥灰质页岩”(Mergelschiefer)。湖南的标本在梭状体形、长大的头部、浅叉形尾鳍等方面相似于 *T. beauforti*, 尤以口的形状和位置、鳃盖系统以及臀鳍和脊椎数目(24)方面颇与 *T. beauforti* 近似。但不同的是:湖

南标本的背鳍鳍式为 VIII-9-10, 而在 *T. beauforti* 的鳍式为 VI-12; 背鳍的位置也较后者的位置靠前, 后者的背鳍位于体长中点以后; 湖南标本的背鳍棘刺部分与软鳍部分连续, 且后部小于前部, 但在 *Toxotes*, 其前部短于后部相当显明。虽然在臀鳍上均具有 3 根棘刺, 但在长短关系上有所不同, *T. beauforti* 以第 3 根最强大, 而湖南的则以第 2 根最为强大, 第 3 根与第 2 根相近似, 只略有逊色。

*Acanus* 这一属发见于瑞士葛拉路斯 (Glarus) 渐新世地层中。湖南标本的前后背鳍连续, 且后部小于前部; 臀鳍具有 3 根棘刺, 浅叉形尾鳍, 以及脊椎数目等与 *Acanus spinosus* (Blainville) 相似。但两者之间也存在有显明的差别, 如 *A. spinosus* 的体形为高纺锤形, 且相当侧扁; 从阿加锡兹 (Agassiz) 氏所作的图版看, 后者的头部较高而短, 具有较为上斜的口裂; 湖南标本具有长而低平的头, 略倾斜的口裂, 有所不同。

由湖南标本所显示的特征, 它应代表具有一定原始性的种类, 今以化石产地临近的我国著名大湖之一洞庭湖命名为秀丽洞庭鳊 (*Tungtingichthys gracilis*, gen. et sp. nov.), 为一化石新属, 种名表示该种鱼的外形很秀丽。

洞庭鳊的系统位置, 目前尚不够清楚, 因与其相近的两个属, 被分别列属于两个科中, 它归属于鲈科 (Serranidae), 射水鳊科 (Toxotidae) 或单独成为一科, 尚有待更多资料来证实。

值得注意的是, 洞庭鳊与射水鳊 (*Toxotes*) 在很大程度上相似, 后者发现于印度尼西亚苏门答腊中部的始新世地层中 (Sanders, 1934), 目前仍有现生种分布于东南亚的缅甸、越南、泰国一带。在我国湖南发见与之相近的化石种, 此点说明当早第三世时, 湖南一带的气温较目前温暖, 可能与今日亚热带的气候近似。与洞庭鳊共生的还有骨唇鱼, 该种鱼也见于射水鳊层位中, 这更说明了上述两地点有很大的共同点, 可能当早第三世时它们彼此有着联系。这样一来, 在我国湖南一带很有可能发见与之相近似的化石鱼群。

湖南临澧含鱼层中的鱼化石, 既然可与印度尼西亚“泥灰质页岩系”中的鱼化石对比, 后者的地质时代为始新世; 另外由洞庭鳊的特征看, 体形较长, 脊椎数目较少, 眼的位置不甚靠近吻端, 且与前鳃盖骨间距不大, 头部各骨片不十分特化等, 都表示它应属于鳊形目中较原始的类型。总之各点, 湖南临澧产洞庭鳊的歇架山系, 很可能为始新世晚期或渐新世早期的沉积。

杨钟健教授曾记述在湖南衡阳盆地发见的一哺乳动物化石, 衡阳原古兽 (*Propalaeotherium hengyangensis* Young, 1944), 时代为始新世中期。虽然该化石层与临澧的含鱼层层位关系不明, 但它们皆属于湖南红层, 是肯定的。据唐鑫的野外观察, 临澧含鱼化石层可能相当于广泛分布于湖南的红色岩系的上部 (唐, 1959)。

最近 (1961) 中国科学院古脊椎动物与古人类研究所野外队在湖南衡阳盆地测制新生代地层剖面时, 据湖南地质局及科学院地质古生物研究所的同志报导, 在上述哺乳动物化石层位之上, 也找到一含鱼化石层。经初步观察, 就鱼化石的种属看, 与临澧的种属有所相似, 这一点也证明衡阳盆地含鱼层与临澧的含鱼层可能相当, 也就进一步说明上面所论证的地质时代是合理的。有意思的是, 临澧含鱼化石层如唐鑫所述是与湖南下湾铺组相当, 这样, 由于鱼化石的发现, 下湾铺组的时代不是早第四世, 而是早第三世。

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## A NEW PERCOID FISH FROM SOUTH CHINA

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The fossil fish materials here described were collected from the dark gray shales (Hsiehchiashan Series) intercalated in the upper part of the Red Bed of Linli (Tang, 1959), north-western Hunan. After a preliminary study of the specimen the authors found that these fishes belong to a new form of the percoid fishes and proposed as *Tungtingichthys gracilis* (gen. et sp. nov.). Fossil cyprinoid fish *Osteochilus linliensis* was discovered by Tang in 1959, in association with *Tungtingichthys* in the same locality. Both have characteristics similar to those observed in the forms found in the "Mergelschiefer" in Middle Sumatra, Indonesia which are closely related to the new Chinese form, thus the fish-bearing bed of Linli, Hunan being Eocene in age.

## DESCRIPTION OF SPECIMENS

## Order Perciformes

Genus *Tungtingichthys*, gen. nov.*Tungtingichthys gracilis*, gen. et sp. nov.

(Plate I, 1—3)

**Holotype:** A complete fish and its counterpart, Cat. No. V. 1043 of IVPP.

**Paratypes:** No. 58D 1.8, 1.9 and 2.2 of Centro-southern Mining and Metallurgical Institute.

**Horizon and Locality:** Middle part of Hsiehchiashan Series, Hsiehchiashan, Linli and Sanpanchiao, Shihmen, Hunan.

**Diagnosis:** Body small, compressed. Head rather large. Depth in length, 3. Length of head with opercular apparatus exceeding the maximum depth of the trunk, which equals about one-fourth of the total length. Mouth terminate, moderate in size, articulation of mandible not behind middle of orbit. Teeth small, conical. Preoperculum narrow, serrated at hinder border, with 2 or 3 large spines at the angle. Operculum with one stout spine. Vertebrae about 24 in number of which 15 in caudal region.

Dorsal fin continuous, hinder part comparatively small, with 8 spines and 9—10 articulated rays. Anal short, with 3 spines and 7 articulated rays. Pectorals high. Ventrals thoracic, with a long, strong spine and 5 articulated rays. Caudal fin shallowly forked.

**Description:** A small percoid fish attains a length about 50 mm. Body is laterally compressed and fusiform. Maximum depth of body is behind occiput, just situated at the origin of ventral. Length of head with opercular apparatus is slightly exceeding the maximum depth of the trunk, which is contained nearly three times in the total length. Diameter of eye 3 in length of head.

Head is long and exceeding its depth. Mouth is terminate in position and slightly oblique, moderate in size, not extending to the middle of the orbit. Premaxillum and maxillum are well preserved, supramaxillum is indistinct. Dentaries slightly extend anterior beyond the upper jaw, with its anterior end bends downward, but is not prominent. Teeth can be observed on the premaxillary and dentary from the specimen 58D 1.9. They are well spaced and sharp conical in shape, slightly oblique inward. Eyes are large, occupied the anterior middle portion of head. The circumorbital bones are displayed and the fairly robust parasphenoid transverses through the lower portion of the orbit.

The opercular apparatus is complete. Preopercular is well displayed (V. 1043). It is strongly bended, with two limbs forming a right angle. The lower limb is somewhat robust than the upper, which is serrated at hinder border, with 2 or 3 large ones at the angle, but without retrose spines. Opercular is nearly triangular in shape, with straight anterior border, with one stout spine near the hinder border. This spine is terminately broken, but can be observed from the counterpart of the type specimen (Plate I, 2). Subopercular is a narrow strip, rather smaller than operculum and bent upward anteriorly. Interopercular is indistinct in outline. The branchiostegal rays are five in number.

The vertebral column is well exhibited which is composed of 24 vertebrae, in which 15 are caudal. The length of vertebral centrum is slightly larger than its height. The rear end of the last vertebra constricts into a sharp tip and extends upward. The neural and haemal spines are same in size. Hypurals not very expand. Ribs are slender, not extend to ventral border, about eight pairs in number.

Pectorals are high and rounded in shape, with some slender rays. Ventrals are thoracic, with one strong spine and five articulated rays. Dorsal fin is larger than the anal, with VIII smooth, strong spines and 9—10 articulated rays. In spines, the fourth is the longest and the strongest, and diminished gradually backward. Anal fin is small, and inserted at a point which is opposite to the midway of the base of articulated rays. It extends one-half of the distance from its origin to the base of the caudal. It consists III strong spines and 7 articulated rays, the second spine is the longest and strongest.

The caudal fin shallowly forked, consists about 19 principal rays. The scales are not preserved in the present specimens.

**Comparison and Discussion:** This small fresh-water fish, with its well developed spinous fins, thoracic position of ventral fins which with one spine and five articulated rays, and five to six branchiostegal rays bearing features can be readily distinguished from Beryformes, and distinctly belongs to the Perciformes.

Since fossil perciformid fishes are very poorly known in eastern Asia continent, except the Pliocene *Siniperca* from Shansi (Liu et Su, 1962). The Hunan specimen above described can be compared with *Toxotes beauforti* discovered from the "Mergel-schiefer" of Middle Sumatra, Indonesia (Sanders, 1934). The Hunan specimen, with its fusiform body, rather large and flatish head, slightly forked caudal fin resembles *Toxotes beauforti* in outline and general structures. The number of the spinous rays of the ventral and anal fins, and the number of the vertebrae (24) of the Hunan specimen also agrees with those in *Toxotes beauforti*.

The opercular series of the Hunan specimen and that of *T. beauforti* are generally alike. The mouth of the Hunan specimen which is terminal, slightly oblique and protractile resembles that in *T. beauforti* also.

However, the dorsal fin of the Hunan specimen which has VIII spinous rays and 9—10 articulated rays differs from *T. beauforti* in number, in which the rays are VI-12 respectively. Therefore difference between the length of the base of the spinous rays and that of the soft rays can be observed. The length of the base of the spinous rays (8 mm.) is longer than that of the articulated rays (6.5 mm.) in the Hunan specimen. While in *Toxotes* the length of the base of the spinous rays is shorter than that of the articulated rays. The position of the dorsal fin of two forms are also different, in the Hunan specimen the dorsal fin situated before the middle of the body, while that of *Toxotes beauforti* situated behind the mid-line.

The spinous rays of the anal fin in both forms are III in number, in *T. beauforti* the third one is the longest and strongest, but in the Hunan specimen, the second one is as long as the third one if not much longer.

The Hunan specimen resembles *Acanus spinosus* from Canton Glarus of Switzerland (Agassiz), in that the articulation of the mandible not behind the middle of orbit, preoperculum fine serrated, the dorsal fin continuous, hinder part comparatively small, the anal fin with III strong spinous rays and the caudal fin slightly forked. But the difference between them is also distinct. The body form of *A. spinosus* is rather laterally compressed and deeply fusiform than the Hunan specimen. Judging from the figures given by Agassiz (Agassiz, Plate 16), the head of *Acanus* is rather short and high, with a rather oblique mouth opening, while the Hunan specimen has a long and lower head with a terminal but only slight oblique mouth opening. The Hunan specimen represents a new form of percoid fish closely related to *Toxotes*, but differs from it greatly as stated above. The authors consider it as a new form, *Tungtingichthys gracilis* (gen. et sp. nov.). The genus is named after the famous Tungting Lake in South China, the specific name is designated for its graceful body form.

The systematic position of *Tungtingichthys gracilis* is not yet very clear, it might belong to the Toxotidae or Serranidae (Regan), or even represents a new family of the Perciformes.

Since *Tungtingichthys gracilis* and *Osteochilus linliensis*<sup>1)</sup>, both forms found from Linli, can be compared with those related forms found in the "Mergelschiefer" in Indonesia, which according to Margaretha Sanders is of Eocene age (Sanders, p. 124). Therefore the geological age of the fish-bearing shales, the Hsiehchiashan Series, in Linli, Hunan, is very probably a deposit of younger Eocene age or somewhat younger Oligocene.

From the red-beds of the Hengyang basin, southern Hunan, C. C. Young had described a lower jaw of *Propalaeotherium hengyangensis* (Young, 1944) which is of Middle Eocene age<sup>2)</sup>. The exact stratigraphic position between the *Tungtingichthys* bed of Linli and the *Propalaeotherium* bed of Hengyang is not yet known, however, according to Tang's field observation, the *Tungtingichthys* bearing bed (gray shale and red sandstone intercalated beds) lies immediately above the red sandstone series which can be correlated with that of the Hengyang basin.

Recently in Hengyang basin a detail geological section were studied by the staff of the Institute of Vertebrate Palaeontology and Palaeoanthropology. In the upper part of the section a fish bearing bed contains some broken specimens which were discovered by some geologists of the Hunan Geological Bureau. A preliminary observation of these specimens reveals that the fish-bearing bed in Hengyang can be correlated with the Linli fish-bearing bed. Therefore, the Late Eocene age of the *Tungtingichthys* bed seems to be confirmed.

It is of interest that *Tungtingichthys gracilis* bears some resemblance to *Toxotes* from the "Mergelschiefer" of Middle Sumatra. *Toxotes* is a fresh-water and littoral form still living in tropical and subtropical south east Asia (Burma, Indonesia and Thailand etc.). The discovery of this tropical or subtropical fish in northwest Hunan suggested that during the Old Tertiary time this area might have experienced subtropical or even tropical climate, now at least 10 degrees further south. In *Tungtingichthys*-bearing shales of Hunan, an *Osteochilus* has been reported by Tang (1959), this is also a member in the "Mergelschiefer". According to the presence of some other forms, *Aoria*, *Rasbora* and etc., Sanders had suggested the Mergelschiefer ichthyofauna might have related with the asiatic continent. The discovery of *Tungtingichthys*, *Osteochilus* proves it, and it is very promising that in Hunan and other south-eastern provinces in China the discovery of a rich Eocene fish fauna can be expected.

1) *Osteochilus linliensis* has been suggested by Tang (1959) as Pliocene, should be revised according to the present study.

2) Dr. Min-chen, Chow after studied some new materials from Hengyang has kindly told the authors that *P. hengyangensis* might represent forms even still older, Lower Eocene in age.

## 图 版 說 明

秀丽洞庭鱖 (*Tungtingichthys gracilis*, gen. et sp. nov.)

1. 一較完整个体, 尾鳍略有残缺, 左侧视,  $\times 2$ , 标本登记号 V. 1043.  
A nearly complete fish, left side view,  $\times 2$ , Cat. No. V. 1043.
2. 同上个体 (V. 1043) 的印模, 显示出鱼的体形, 以及浅叉形尾鳍,  $\times 2$ .  
The counterpart of the same individual, indicating the outline of body and its shallowly forked caudal fin.  $\times 2$ .
3. 一完整个体, 左侧视,  $\times 3$ . 标本登记号 V. 1043.1.  
A complete fish, left side view,  $\times 3$ , Cat. No. V. 1043.1.



