浙江鼍属一新种及其亚化石记述

张明华

（浙江省博物馆自然部）

笔者曾经在《罗家角遗址的动物群》（1981）一文报道过浙江省桐乡县这个新石器时代遗址中发现的鼍的遗迹材料，认为其"特征与我馆所藏的现生种骨骼标本基本一致"，因而将它归入鼍属的唯一一种Pelechelys bibroni(Owen)中。这里需要说明的是，在最初鉴定时是根据当时认为鼍属仅此一现生种的骨骼而定名的。现在经过进一步研究之后，认为上述遗址标本和现生种骨骼标本在特征上虽仍基本一致，但它们和前人所定的现生种却存在着较为明显的差异。因此将它们改订为鼍属的一个新种。特作如下记述。

太湖鼍新种Pelechelys taihuensis sp. nov.

全模标本 保存较完整的头骨一件和相当完整的左第四肋板一件（原始编号分别为TN09.5，TN09.9），产地浙江，桐乡县，罗家角遗址，亚化石。

鉴定特征：头骨宽阔而低平，面部宽短，吻端钝圆；颊颥区两侧向后平行延伸；眼眶大，眶间部和眶后弓均狭窄，眶间宽小于眶径而大于眶后弓前径。背甲板亚圆形，微穹隆，表面遍布不规则的四斑纹饰且侧缘处的蠕状状纹不明显，而在边缘处骨板变薄并具明显的平滑环带；颈板宽大，侧端不具明显的羽状翼；几不盖住第一肋板的肋突，肋板8对且第八对明显退化；椎板7或8块，剑腹甲呈斜位的长条形。

标本描述：完整的骨骼标本：头骨宽阔而低平，宽而短的面部向吻端圆弧缓倾，吻端钝圆，眶后缘至上枕骨前端为眶后缘至吻端长的三倍；顶顶部平坦，顶骨向后延伸成细长的嵴并与扁薄的上枕骨顶片自然相接；眶间部和眶后弓均较窄，眶间宽仅及眶径的一半而大于眶后弓前径；眼眶大，亚圆形；颞颥区开口宽阔，两侧向后平行延伸，该处为头骨最大宽处；鳞骨翼略短内并亦向后平行延伸，仅在末端才略向内弯曲；后耳骨扁薄而宽带状地向后延伸，至弯曲的鳞骨翼末端才收缩；上颚骨表面较平斜，左上颚骨在吻端略有弯曲，故左、右上颚骨在吻端没有接触，在右上颚骨吻端可见一小很小的前上颚骨；上颚骨齿槽面平坦并由前向后逐渐扩展，而颚缘由后向向前逐渐高处齿槽面约3—5毫米并由薄锐状渐向吻端明显增厚，前颚骨在中部微凹，前端越口盖孔前缘，口盖孔大小与内鼻孔相若，内鼻孔大，位于眼眶下方并由狭窄的瞬状骨脊骨相隔，额骨短而不向后特别扩展（见图1,1及图3,2）。

背甲板亚圆形，微穹隆，长略大于宽（若以中线长比较则长，宽几相等）。背甲表

* 本文承我部蔡春梅、康熙民、钟祖宏等同志提供资料和标本，前任馆长钟国仪先生介绍有关情况并审阅文稿，张书敏同志摄影，谨此一并致谢。

本文于1984年3月9日收到。
宽，甚至超过了眶后弓前后径（见本文图1, 4）。他所说眶间宽度的这种差异是由于分布地域的不同还是个体间年龄的不同所引起的，当时尚无法确定。次年，Pope（1935），在他的《中国爬行动物》巨著中，认为华南和南亚各地所产物竞且都同属一种，即P. bibroni, P. cantorii和P. cunningii均为同种异名，并依Schmidt的头骨素描为其模式。

1934年，张孟闻教授在《浙江爬行动物简报》一文中首次报道浙江产鲀，但详细的研究报告后来未见发表。根据，当时曾有过杭州的龂与前人所定的龂似有所区别的议论，只是没有专门进行讨论。

目前，在我省浙南地区（瓯江流域）还有龂的分布，当地俗称蓝扁鱼。本馆曾于1972年在平阳县、1983年在永嘉县共采得3只，现已制成剥制标本。早在1943年，原西湖博物馆馆长金叔同先生也曾于云和县采得1件龂的完整背甲（图3，6）。有关这些标本的测量见表2。

<table>
<thead>
<tr>
<th>表2</th>
<th>Pelocheiys bibroni (Owen) 背甲测量</th>
<th>单位：毫米</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>永嘉♂</td>
<td>云和♂</td>
</tr>
<tr>
<td>背甲最大长（中线长）</td>
<td>400(390)</td>
<td>370(350)</td>
</tr>
<tr>
<td>背甲最大宽（未计肋突）</td>
<td>390</td>
<td>345</td>
</tr>
<tr>
<td>背体时重（公斤）</td>
<td>32</td>
<td>26</td>
</tr>
</tbody>
</table>

浙南标本的特征有必简述如下。无论雌、雄性的头骨眶间部均较宽，大于眶径而小于眶后弓前后径；颞颥区两侧向后延伸的鳞骨翼不平行。背甲版亚圆形，较低平，满布凹斑纹饰且侧缘的螺纹状相当清晰，但在边缘处背板仍为较厚且不具备滑环带，宽大的背甲版端具大而明显的羽状并盖住第二肋板的肋突；椎板8块，前面4块呈短侧边朝后的六角形，第五椎板椭圆形或亚长方

形，后面的3块短侧边朝前，唯第八椎板呈小的五角形；肋板8对，第8肋板无明显的退化现象，除第一、二肋板外其余的外缘均大干内缘，尤以第二、七肋板最为显著。剑

腹甲宽阔并相关联成盾牌状，使其与下腹甲之间的开窝很小。

最近，笔者于浙江淡水水产研究所又观察到产自浙南丽水县的二件начен的标本：一件是完整的背甲板，长425毫米（中线长400毫米），宽410毫米，另一件是浸制标本，背甲板中线长仅180毫米，宽190毫米，个体显然尚小。二件标本的特征与我们手头的浙南标本甚为一致。特别是浸制标本的剑腹甲呈宽大的盾牌状，背甲凹斑螺纹纹很清晰且边缘较厚而不具平滑带，给人的印象很深。

总的说来，浙南标本的特征与前人所定的P. bibroni是一致的，应归于同种。

至于福州标本的眶间宽大于眶后弓前后径的情形，可能属于例外，因为其背甲的凹斑螺纹纹和剑腹甲的形态以及眶间宽大于眶径等特征都与浙南标本的性质相同。另外，间接的依据还有福建闽侯县石山新石器时代遗址中发现的𝐁Montserrat片（祁瑞琴，1977）。从原文献版上观察，似应为龂的右第七肋板。

根据其侧缘凹斑螺纹纹相当清楚，边缘亦不具平滑带，表明福建和浙南的龂似应同属一种。不过，据方炳文所示的头骨素描和剥制标本背视素描（见原文献图14）观察，眼眶上部和额骨间尚有一块骨头，这在龟鳍类当中一般是不存在的；在颈板后部中央和第一对肋板之间似乎也多了一块锥板。笔者认为有必要对该标本再作重新观察。

通过比较，无论在头骨眶间宽度、鳞骨翼和后耳骨向后延伸的状态上，或是在背甲

1) 最近杨学家教授函告，所记之龂即杭州原藻署馆库（在布政司署）前池酌所蓄。
的凹斑纹饰、边缘骨板厚度和平滑环带的有无、颈板与肋板以及椎板的构造上，还是在剑腹甲的形态上，都显示出杭州和罗家角遗址的鼋与浙南等地的鼋明显有别（表 3）。同 Gray 所示的头骨素描比较亦有所不同，后者的眶间宽明显小于眶后弓前后径，鳞骨翼和后耳骨向后延伸也不平行。这些区别若是用个体间的差异来解释显然是难以自圆其说的。因此，笔者认为杭州和罗家角遗址的标本代表了鼋属的一个新种特征，特命名为太湖鼋 Pelochelys taihuensis sp. nov.，以示该新种鼋至少在全新世中期就存在于太湖流域。

全新世以来，长江下游平原湖泊沼泽星罗棋布，气候适宜，有利于鼋的生存。不仅

<table>
<thead>
<tr>
<th>太湖鼋和鼋的主要特征对比</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P. taihuensis</strong></td>
</tr>
<tr>
<td>头骨</td>
</tr>
<tr>
<td>眶间部和眶后弓均较窄，眶间宽小于眶径而大于眶后弓前后径；鳞骨翼和后耳骨向后平行延伸。</td>
</tr>
<tr>
<td>背甲</td>
</tr>
<tr>
<td>背甲极微穹隆，螺虫状凹斑纹饰不明显，边缘骨板变薄而具平滑环带；颈板侧端不具羽状翼而几不盖住第一肋板肋突；椎板 7 或 8 块且第 8 块常退化；肋板 8 对且第 8 对肋板明显退化。</td>
</tr>
<tr>
<td>腹甲</td>
</tr>
<tr>
<td>剑腹甲呈斜位的长条形，使其与下腹甲之间的开窗较大。</td>
</tr>
</tbody>
</table>
在古籍文献上有所记载，如宋人晁补之在议论杭州的《七述》中所列数十种动物里就提到有鼋；又如元人赵孟頫写的《吴兴赋》，说吴兴（即湖州）南边“陂泽相属，……鼋、鼍、龟，鳖”。而且在这一地区的考古遗址中多时有出土，通常称之为“蛇龟”或“蛇鳖”。南京北阴阳营遗址出土的鳖甲残片中，经周开亚（1964）鉴定，其中有6件归于鼋。笔者曾于南京博物馆陈列室见到其中部分标本，其上的凹底纹（或）也是不甚明显。又据陈义（1962）报道，在镇江以东长江支流中曾捕到过一雌性活体，重仅5公斤，个体较小。据悉苏州动物园里还储养有鼋，最近笔者曾前往了解，目前尚有二只。另

外还观察到一件剥制标本（雄性），经测量宽度13毫米，腹前后宽9毫米，腹长28毫米，背甲板长390毫米（中线长380毫米），宽380毫米。标本大小和特征与新种骨架标本十分相近。这样看来，这些鼋很可能和新种太湖鼋同属一种。

关于饲养的二只活体，笔者仅见到一只，特大，据介绍至少有65公斤以上。时而露出水面，背部为光滑的深橄榄色，头部颜色稍浅，并具明显的淡绿色斑点，这大概即是当地群众称之为“鳖头鼋”之故矣。遗憾的

1）据介绍，在西园池塘中还有一只。
A NEW SPECIES OF PELOCHELYS FROM ZHEJIANG,
WITH SUBFOSSIL DESCRIPTION

Zhang Minghua

(Department of Natural History, Zhejiang Provincial Museum)

Abstract

Pelochelys taihuensis sp. nov.

Syntypes: A complete skeleton and a stuffed specimen prepared with living freshwater turtles obtained from Zhejiang, a skull and a left 4th costal plate of subfossil specimens collected from Luoqiajiao Relics, Tongxiang County, Zhejiang.

Diagnosis: This species is closely related to P. bibroni but differs by the possession of, 1) interorbital space shorter than orbital diameter but longer than antero-posterior diameter of posterobital arch; 2) wings of the os squamosum, and os opisthoticum, extending posteriorly and parellelly; 3) carapace very slightly domed, pitted and vermiculate ornamentations indistinct, and marginal plates thinned and having smooth rings; 4) lateral end of nuchal plate having no feathery wings and almost not covering over costal process of 1st pair of costal plates; 5) neural plates 7 or 8, with the eighth usually absent; 6) costal plates eight pairs, with the eighth prominently reduced; 7) xiphiplastron obliquely strip-shaped.
The New Kind of Turtle Found Zhejiang Province
and Its Records of Fossils

by Ming-Wah Cheung,
Dept. of Nature Studies,
Museum of Zhejiang.

In "a certain essay" (1981) I reported that the remains discovered in a village of the New Stone Age in Zhejiang Province, are classified as belonging to a kind of turtle, Pelochelys bibroni (Owen), after having found that these remains have the same basic skeletal characteristics as the living turtles found in our museum. What needs to be explained here is studies made then were based on skeletal comparison. However, further studies show that even though the fossils and the specimen have similar skeletal structures, the fossils differ quite significantly from the living specimens. Thus, the remains are now classified as belonging to another new species of turtle and is reported as follows:-

Pelochelys taihuensis

Specimen as a Whole - A fairly well-preserved skull and a very well-preserved left fourth coastal plate. Found in (a certain village), Zhejiang Province as fossils.

Results of Examinations: Skull is flat, low and wide. Face is wide and short. Lips are blunt and round. Big eye-sockets. Narrow interorbital space and antero-posterior diameter of post-orbital arch. Wings of the Os squamosum and Os opisthoticum extended backward and parallely. Carapace very slightly domed, pitted and vermiculate ornamentations indistinct. Thin marginal plates with smooth rings. Wide neck bone. Lateral end of nuchal plate have no feathered wings and hardly covers coastal process of first pair of coastal plates. There are also 7 or 8 neural plates with the 8th one usually reduced. There are also eight pairs of coastal plates with the eighth pair reduced as well. Obliquely stripped xiphplastron.

Description of the Specimen - Complete skeletal framework. Skull is wide, flat and low. The wide and short face tend to point towards the round lips. Lips are round and blunt. The distance between the sockets and the --- is three times as the distance between the sockets and the lips. Top of the skull is flat. Narrow interorbital space and antero-posterior diameter of postorbital arch. Neckbone extends towards the back. Interorbital distance is half as large as the orbital diameter. Large and round eye-sockets. Hind ear-bone is thin and wide and extends backward until it reaches the wings where it is reduced. Flat and slanted cheekbones and are not connected around the lip area. Upper cheekbone extends toward the back while the cheekbone edge turn from sharp and tall (3.5 mm) to thick and low as it goes toward the front. Forehead bone curves inward. Large
The carapace is slightly domed (with length larger than width), pitted and vermiculate ornamentations indistinct. Marginal plates are thin (around 15mm) with smooth rings. Lateral end of nuchal plates have no feathery wings have hardly covers the first pair of coastal plate. In the front, the fourth neural plate is missing. The fifth neural plate is either oval or elongated in shape. In the back most of them are fused together. It is guessed that only the second neural plate is missing while the eighth one is already reduced. Besides the 7th and 8th coastal plates, all others have outer edge longer than the inner edge. This is exceptionally more prominent in the second and sixth pair of coastal plates (see fig. 3.1).

The structure of the xiphiplastron is similar to any other kind in the same family. The only special thing is that it is elongated (see fig. 3.3). There are also some pitted patterns

**Specimen of the adult female:** The size is quite different from the size of the bone framework. Due to tight wrapping of the skin, it is difficult to distinguish the structures of the skull. However, study of the quality between, behind and of the eye-sockets matches the bone framework of the specimen. The joints of the carapace are not very clear, but the joints between the coastal plates are very clear. According to the arrangement of the plates and the fact that the 8th plate is reduced to very small, it is guessed that there are only 7 pairs of coastal plates, even though we cannot exclude the possibility that there may also exist the eighth pair. Patterns on the lateral side of the plates are fairly vague and on the edge there are smooth rings. The xiphiplastron on the abdomen look exactly alike as the skeletal specimen. Both of them are slanted and elongated and have a fairly big window (?).

**The specimen of the skull at LeeKakok:** The skull is found to be 1/5 larger in size than the living ones. They have similar structural characteristics. The only difference is that the distance between the sockets is 2/3 of the diameter of the sockets, which is still larger than the antero-posterior diameter of postorbital arch. Both left and right cheekbones are connected below the nostrils. Underneath the mouth is connected by an already reduced fore-cheekbone (figure 3.2 and 3.4).

**The fourth left coastal plate of the Specimen at LeeKakok:** very complete. 171 mm in width. The outer edge is 67 mm long while inner edge 50. Compared with a width of 200mm, outer edge 84mm and inner edge 52mm, it seems that the the fossils are of a different kind. On the edge of the plate there are some vague patterns below the surface. It gets thinner on the edge and has a pattern of 12 mm long (see figure 5.5)

The result of the observation is that I believe that the 4 specimen ah the same structure and is belonging to the same kind. Even though there is
some difference between the distances in the socket area, the overall characteristic (i.e. small distance between the sockets but is still larger than the antero-posterior diameter of the postorbital arch) is the same. It means that within the same kind of living organism that exists some kind of internal variations.
Table 1: Measurement of Pelochelys taihuensis

<table>
<thead>
<tr>
<th></th>
<th>Living Kind</th>
<th>Fossil Kind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longest length in skull</td>
<td>148</td>
<td>around 185 (152 preserved)</td>
</tr>
<tr>
<td>Widest width in skull</td>
<td>90</td>
<td>112</td>
</tr>
<tr>
<td>Diameter of eye sockets (vertical, horizontal)</td>
<td>23.22</td>
<td>29.25</td>
</tr>
<tr>
<td>Width between sockets</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Space behind sockets from edge of sockets to the end of skull</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>From edge of sockets to mouth</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Longest back scale (along the middle line)</td>
<td>35</td>
<td>46</td>
</tr>
<tr>
<td>Widest back scale (not including costal plates)</td>
<td>410 (390)</td>
<td>390</td>
</tr>
</tbody>
</table>

Discussion of comparison: Since the establishment of the Pelochelys specis by Gray in 1864, my country (People's Republic of China) and Southern Asia have a lot of reports on the discovery of turtles. Since Schmidt (1927) believes that there are some short-comings in the description of skulls first proposed by Gray (see fig. 2), he published another description of the skull in the periodical «Reptiles Found in Hainan» (fig. 1.3). The difference between the two is basically that the former has a narrower distance between eye-sockets while the latter has wider distance. Both of them have their distances less than the distance behind sockets. Later on, while Ping-Man Fong (1934) was recording turtles found in FooChow, he pointed out that this female specimen has a wider socket than described by the previous two scholars. The distance is even greater than the distance behind sockets (see fig. 1.4). Fong says that it cannot be made sure if the difference of distance between sockets is because of different geographic areas or because of different age of the individual turtle. Next year, Pope (1935), in his «China's Reptiles», proved that turtles found in Southern China and Southern Asia are actually of the same kind. That is, P. bibroni, P. cantorii, P. cuminii are actually the same. Their skulls are then described by the Schmidt's method.

In 1934, Professor Marng-Man Cheung, in his «Report on Reptiles in TzeKong», first reported that there are turtles found in Zhejiang, even though he did not publish any detail on the report. It is believed that there were some turtles found in HangChow are different from the turtles described before. However, this topic was not discussed any further.

Presently, there are still some distribution of turtles in the southern part of Zhejiang and people call them the Blue Fish. Our museum has found in PingYang (1972) and in WingKa (1983) three of them which are all being made into specimen now. Earlier in 1943, Mr. Suk-Man Kum, the director of YuenZee Lake Museum, has found a complete set of turtle back scales in WanWoh. The measurement of these specimeen are as follows:-
It is necessary to describe the characteristics of the specimen in southern Zhejiang as follows:-

For both males and females, they have wider distances between sockets. This distance is larger than the diameter of sockets but smaller than antero-posterior diameter of the postorbital arch. The wing of the os squamosum and os opisthoticum do not extend parallelly. Carapace are doomed shape with clear pitted pattern on the surface. Lateral plates are thick and do not have smooth rings. Wide neckbones with feathery wings covering the first pair of coastal plates. The eighth neural plate is missing. In the front the fourth one is missing. The fifth one is either oval or elongated in shape. The third one is short and is extended forward. The eighth neural plate is reduced into a small pentagonal shape. There are 8 pairs of coastal plate. Besides the first and eighth pairs, all pairs have longer outer edge than inner edge. This becomes the most obvious in the second and the seventh pair. Xiphiplastrom is wide and is inter-connected as shapes of shields. There is a small opening in the lower part of it.

Recently, I was observing two specimen, found in southern Zhejiang, from Zhejiang Fresh Water Research Centre: The first one is a complete carapace with length 425 mm (400 mm along the middle line), and width 410 mm. The other is a soaked specimen. Carapace (along the middle line) is 180 mm long, 190 mm wide, obviously much smaller than the previous one. They have the same characteristics as the specimen that we have in hand. One thing special is that for the soaked specimen, there exists some very large shield-like xiphiplastrom. There are also some very clear worm like patterns on the carapace with no smooth rings. This impresses me a lot.

In conclusion, the specimen found in southern Zhejiang has the same characteristics as P. bibroni and they should be of the same kind.

It could be just an exceptional case that the specimen found in FooChow has a distance between sockets larger than antero-posterior diameter of the postorbital arch, because all the characteristics like worm-like pattern on carapace, shield like patterns on xiphiplastrom and larger between-socket distance than socket diameters are all the same as the specimen found in southern Zhejiang. Besides there is also some indirect evidence from the remains found in FooTzen from the new stone age era (KwokKum, 1977). Looking at the picture it seems that it should be the 7th right coastal plate. The facts of clear worm-like pattern and uneven edge prove that turtles found in FooTzen and southern Zhejiang should belong to the same kind. However, according to the skull description by Fong (see fig 14), there is a bone above the sockets and below the
forehead, which is not usually found in the same family. There is also an extra scale behind the neck between the first pair of coastal plate. I think we need to study this specimen in more details.

Comparison shows that no matter in between-sockets distance, the way the hind ear bone is slanted upwards, or the patterns found on carapace, edge thickness, structures of neck bone or shapes of xiphiplastron, all show that turtles found in HangChow and LeeKaKok are different from the ones found in southern Zhejiang (table 3). It is also different from the skull description by Gray. The latter has an inter-orbital diameter shorter than the antero-posterior diameter of the postorbital arch. The hind ear bone and the wing are not extended parallelly toward the back.

These differences cannot be accounted for by just individual differences. Thus I think the specimen found in HangChow and LeeKaKok represent a new kind of turtle. It is named Pelochelys taihuensis sp. nov. to show that this turtle exists at least since the \_\_ era.

Since the \_\_ era, there are a lot of creeks and lakes in the lower end of the CheungKong River. Together with the fact of a suitable climate, a lot of turtles lived there as recorded by a lot of ancient writings. A scholar in the Sung Dynasty mentioned turtle as one of the ten animals. Another person also mentioned the existence of turtle. The archaeological sites there often produce some turtle-like specimen. Six of the remains found in Nanjing are proven to be turtle remains by Chow (1964). I have seen some of the remains in Nanjing Museum and they too, have vague patterns. Also according to Chan (1962), a female living turtle was caught in some place east of CheungKong that weighs 5 kg with a smaller size. It is also known that there are some turtles in SooChow Zoo. There are only two left during my recent visit. I have also observed a male specimen that has a between-socket distance of 13 mm. Antero-posterior diameter of postorbital arch is 9 mm. Diameter of socket is 28 mm. Carapace 390 mm (380 mm along middle line), 380 mm wide. The size of the specimen and the characteristics are very similar to the new kind of turtle. It seems that this kind of turtle is of the same kind of the newly discovered ones.

Since there are only 2 living turtles in the zoo, and I saw one of them that was extra large and weighs more than 65 kg. Sometimes it exposes itself on water surface and its back is shiny dark. The head is of slightly lighter colour and have clear pale yellow spot. That is probably why local people call them rash-headed turtle. It is a pity that I did not see the whole turtle. Last but not least to mention is that due to human activities, a lot of turtles are facing extinction and it is suggested that more protection for them should be proposed.