A Fossil of *Cypraea* aff. *langfordi* (Kuroda, 1938) from the Neogene of Central Japan, and its Paleontological Significance

Susumu Tomida
Chukyo Gakuin University, Nakatsugawa City, Gifu, 509-9195 Japan; tomida@chukyogakuin-u.ac.jp

The Osozawa Sandstone Member of the Akebono Formation distributed in Yamanashi Prefecture, central Japan is known to yield the Zushi Fauna, a Late Miocene to Early Pliocene warm-water molluscan fauna (Ozawa & Tomida, 1992; Tomida, 1996, 2005; Niitsuma, 2006). In May of 1996, an interesting fossil cowry was found in the Osozawa Sandstone Member. This paper describes this fossil cowry, which is now preserved in the Mizunami Fossil Museum (MFM).

**Taxonomy**

Family Cypraeidae Gray, 1824  
Genus *Cypraea* Linnaeus, 1758  
Subgenus *Nesiocypraea* Azuma & Kurohara, 1967  

*Type species*: *Nesiocypraea midwayensis* Azuma & Kurohara, 1967

**Material**: A well-preserved single specimen (adult: MFM 112202) with the highest part of dorsum, the part of posterior extremity and the central part of base all slightly damaged by the secondary deformation.

**Description**: Shell large, solid, tumid and pyriform. Extremities drawn out at both ends, with markedly projecting and sharply marginate anterior end. Margins subangulate with marginal pitting at least toward extremities. Dorsum strongly inflated with highest part situated at 2/5–1/2 of total length from posterior end (damaged by secondary deformation in present material). Base and labrum roundly flattened. Aperture moderately wide and straight, but slightly bent leftward at posterior end; fossula narrow; labral teeth fine and numerous.

**Cypraea (Nesiocypraea) aff. langfordi**  
(Kuroda, 1938)  
(Fig. 1A–F)

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**Fig. 1.** *Cypraea (Nesiocypraea) aff. langfordi* (Kuroda, 1938), MFM 112202, from the Osozawa Sandstone Member at Osozawa, Minobu-cho, Minamikoma-gun, Yamanashi Prefecture.  
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Table 1. Comparison of numerical data of some cypraeid species.

<table>
<thead>
<tr>
<th>Species</th>
<th>Length</th>
<th>Diameter</th>
<th>Height</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>fossil aff. langfordi</td>
<td>51.8</td>
<td>32.5</td>
<td>23.7</td>
<td>slightly depressed, this report</td>
</tr>
<tr>
<td>langfordi</td>
<td>50.3</td>
<td>31.9</td>
<td>26.0</td>
<td>Kuroda (1938)</td>
</tr>
<tr>
<td>hirasei</td>
<td>51</td>
<td>32</td>
<td>26</td>
<td>Roberts (1913)</td>
</tr>
<tr>
<td>teramachii</td>
<td>78.0</td>
<td>47.0</td>
<td>39.5</td>
<td>Kuroda (1938)</td>
</tr>
</tbody>
</table>

(observed about 26–27 in number, maybe 27).

Measurements: Length 51.8 mm; maximum width 32.5 mm; maximum height 23.7 mm.


Comparisons: This specimen resembles Cypraea (Nesiocypraea) langfordi (Kuroda, 1938) in the above-mentioned characters. In this paper I treat Nesiocypraea as a subgeneric rank following the recent study of cypraeid molecular systematics by Meyer (2003). This species has the highest part of the dorsum situated at 1/3 of total length from the posterior end, and 27 labral teeth in the aperture. However the highest part of the dorsum of the present specimen is situated at 2/5-1/2 of total length from the posterior end, and 26–27 labral teeth are present. These differences seem to have been caused by damage from loading pressure. Therefore the present specimen is tentatively identified as Cypraea (Nesiocypraea) aff. langfordi (Kuroda, 1938). The present author (1996) previously referred the present specimen to Hiraseadusta hirasei, because of its hirasei-like color pattern (Fig. 1A). I erroneously concluded this to be the color pattern of a cowry, but later recognized it as the color of minerals in the matrix. This specimen resembles Cypraea (Nesiocypraea) hirasei Roberts, 1913, but it is distinguished by having a shell with less drawn out and less projecting extremities, and by a straight aperture that is less bent leftward at the posterior end (Table 1).

Remarks: According to Hori (2000), the living Cypraea (Nesiocypraea) langfordi (Kuroda) ranges from the Boso Peninsula to Indonesia in 70–200 m of depth. A fossil Cypraea langfordi was reported by Shikama (1964) from the Pleistocene Lower Kikai Group, at Kamikatetsu on Kikai Is., Kagoshima Prefecture.

Discussion

Cypraea (N.) aff. langfordi was found in association with the typical constituents of the warm-water Zushi Fauna including Ethalia maxima (Shuto), Chlorostoma narusei Shibata, Astraea omorii Shibata, Turbo (Lunatica) robustus Tomida & Ozawa, Turbo (Batillus) priscus Ozawa & Tomida, Bolma virgata (Ozaki), Hartungia typica Bronn, Glycymeris osozawaensis Kanno, Pinctada fucata (Gould), Amussiopecten itomiensis (Otuka), Chlamys miurensis (Yokoyama), Megacardita panda (Yokoyama) and Meiocardia tetragona (A. Adams & Reeve). This molluscan fauna suggests that the south of the Kanto region, central Japan (ca. 35.5°N), was under the influence of the warm Kuroshio Current during the deposition of the Osozawa Sandstone Member. The occurrence of C. (N.) aff. langfordi from the Osozawa Sandstone Member represents the oldest known record of the subgenus Cypraea (Nesiocypraea) and suggests that this subgenus may have inhabited the Pacific side of central Japan since the latest Miocene or earliest Pliocene time.

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References


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