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Two forms of Calyptogena (Ectenagena) nautilei recognized in shell morphologies

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Calyptogena (*Ectenagena*) *nautilei* was originally described by Okutani and Métivier (1986) from the cold seep sites in the Tenryu Canyon at the Nankai Trough based on six living specimens. After that, this species has been reported from the continental slope off Kumano, the Daiichi-Minami-Muroto Knoll, Zenisu Ridge, and Shionomisaki Canyon in the Nankai Trough (Fujikura et al., 2000; Okutani et al., 2002; Kojima et al., 2004; Anma et al., 2010). Okutani et al. (2002) examined the species from the Tenryu Canyon, the continental slope off Kumano, and the Daiichi-Minami-Muroto Knoll, and described that the species had a great variety in the shell outline. We observed the shell morphologies and structures of *C*. (*E*.) *nautilei* from some localities above including the type materials, and concluded that this species can be divided into two forms (form 1 and 2) by the shell morphologies and the shell structure.

We examined three type specimens from the Tenryu Canyon (Nautile Dive KD-3 and KD-5: Holotype, MNHN 26983, Paratype, MNHN 26984, Paratype, MNHN 26985), four specimens from the continental slope off Kumano (Shinkai 6500 Dive 615), five specimens from the Shionomisaki Canyon (Shinkai 6500 Dive 889, 890, and 891), and eight specimens from the Daiichi-Minami-Muroto Knoll (KAIKO Dive 189, 192, and 193). All specimens were observed with an optical microscope and bare eyes, and two specimens from the Shionomisaki Canyon were observed with a scanning electron microscope in the shell surfaces and cross sections.

The specimens from the Tenryu Canyon are assigned to form 1, and the other specimens are assigned to form 2. Two forms are most easily distinguished in the shell inner surface characters. That is, form 1 has smooth inner surface whereas from 2 is ornamented nearly overall the surface in hole-like structures that consist of about 61-548 μm in diameter. In addition to the inner surface ornamentation, form 1 is distinguished from the form 2 in having a subumbonal pit in the hinge plate of both valves, anterior ramus of right subumbonal cardinal tooth, and pallial sinus.

Keywords: Vesicomyidae, Calyptogena (Ectenagena) nautilei, Shell morphology, Hole-like structure