95. New Discovery of *Colpospira* (*Acutospira*), Gastropoda, from Taiwan and Philippine

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Turritellid gastropod of genus *Colpospira* Donald, 1900, has been reported from Australia, New Zealand, and Sulawesi (Celebes), ranging from Eocene to Recent in Australia and Eocene to Oligocene in New Zealand (Marwick, 1957), and Eocene in Sulawesi (Beets, 1950) and Japan (Kotaka, 1959). T. Kotaka (1959) established a new subgenus *Acutospira* under the genus *Colpospira* which is characterized by having sharp edged whorls. He discriminates three species under the subgenus *Acutospira* among the Japanese turritellids mollusks; namely, *Colpospira* (*Acutospira*) *okadai* (Nagao), 1928, *C. (A.) tashiroi* Kotaka, 1959, and *C. (A.) yabei* Kotaka, 1959. All of them are restricted in the Eocene formations in northwestern Kyushu, Japan.

Excepting abovementioned species, there is no record on the occurrence of the genus in northern hemisphere of Indo-Pacific region up to date.

K. Tan (1936), W. Hashimoto *et al.* (1973), C. C. Lin (1974), S. Kanno, W. Hashimoto, C. S. Lee *et al.* (1976-77), and S. Kanno, W. Hashimoto, H. C. Liu, C. C. Wang, K. S. Shieh and H. C. Chang (1984) were engaged in the geological survey around the Kuanshan-Yakou area along the Southern Cross Highway of Taiwan. Especially, Kanno and Lee (1976-77), and Kanno *et al.* (1984) concentrated on their purpose for the collection of molluscan fossils from the Kuanshan-Yakou area and to make clear the stratigraphic relation of them.

Molluscan fossils distribute between the east side of Kuanshan-Yakou Tunnel and Hsuehfeng Bridge (Fig. 1), where thick irregular alternation of sandstone and slaty black shale or phyllitic slate is developed, though "graphite schist" (near the tunnel) and greenish tuffaceous "phyllite" (near the Hsuehfeng Bridge) are exposed in some places. Molluscan fossils occur from the alternation of rather coarse-grained sandstone (15-50 cm in thickness) and slaty black shale (20-40 cm in thickness), which shows almost NE-SW strike and 25°-45° southeast dips.

Among the fossil localities in Kuanshan-Yakou area, loc. 3 (Fig. 1) yields only turritellid mollusks which make a shell beds of about 5 cm in thickness, and loc. 5 in the same figure yields mostly deformed bivalves and turritellid shells which are concentrated respectively in several beds of coarse-grained sandstone and slate. However, a few individuals of turritellids and bivalves occur sporadically from the other localities.

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Figs. 1-3. Locality maps of *Colpospira* from Taiwan and Philippine. 1: Kuanshan-Yakou area. 2: Suili area, Central Taiwan. 3: Mansalay area, Oriental Mindoro, Philippine.

Fig. 4. *Colpospira* (*Acutospira*) spp. All rubber casts. 1, 4: Float specimens from a tributary of Shih Pa Chung Chi (Fig. 2), $\times 1.5$. 2: Kuanshan-Yakou specimen (Fig. 1), $\times 1.8$. 3, 5: Habang Sapa specimens (Fig. 3), $\times 2.4$.

Turritellid specimens from the Kuanshan-Yakou area are characterized by having very acute spiral whorls which are somewhat similar to that of *Colpospira* (*Acutospira*) *yabei* Kotaka (1959, pp. 104–105, pl. 13, figs. 11–17), reported from Okinoshima Eocene in Nagasaki Prefecture, Kyushu, Japan. However, it is easily distinguished from the present one by having more blunt edged whorls, a fine spiral thread just above and below of the edge of whorl, while a fine spiral thread runs just below the acute edge of the respective whorl in the present specimens. Then, this specimen seems to represent a new species (Fig. 4).

The same specimens were collected as a float from two places near Suili, Nantou Prefecture, Central Taiwan (Fig. 2). S. Kanno, W. Hashimoto, C. S. Lee *et al.* (1976–77) collected turritellid shells from a huge boulder which consists of medium-grained brownish gray siliceous sandstone which lies on the river floor of Chun Keng Chi, about 4.8 km upstream from the junction of the Chen Yu Lan Chi and Chun Keng Chi (Fig. 2).

S. C. Lee (1979) reported the geology of Yushan-Suili area in Central Taiwan, and he found some turritellids-bearing floats from a tributary of Shih Pa Chung Chi (Fig. 2). These floats seem to be derived from the Paileng Formation (Eocene) which distributes around the small tributary. In August of 1984, writers visited this small valley and collected many turritellid-bearing floats at the valley, but could not find any exact exposure of its exact source rocks. However, the drainage area of the valley is not so broad, then, turritellid-bearing strata seem to be exposed within the drainage area of this small valley. These float specimens are also characterized by having very acute whorls just same as Kuanshan-Yakou specimens.

W. Hashimoto and T. Sato (1968) reported the geology of Mindoro, in which they pointed out that the Eocene formations are developed in the drainage area of Habang Sapa Creek and Taoga River, tributaries of Baroc River, near the town of Mansalay, Oriental Mindoro (Fig. 3). Therefrom they collected a float with turritellid which identified as *Colpospira* (*Acutospira*) sp. by Kanno. They recognized turritellid shell beds in several horizons in this area (Fig. 3).

In 1970, N. L. Caagusan also collected turritellid specimens from the head-water of Habang Sapa Creek, a tributary of Baroc River, and it seems to be from the same locality as Hashimoto and Sato's one in 1968. The specimens collected by Caagusan include two species of *Colpospira* (*Acutospira*); namely, *C. (A.) yabei* and *C. (A.)* sp. from Taiwan by the writers (Fig. 4).

It is noteworthy that genus *Colpospira* distributes not only in Australia and New Zealand as well as Sulawesi of the Indo-Pacific region of the southern hemisphere, but it becomes clear that this genus distributes in Philippine and Taiwan as well as northwestern Kyushu of southwestern Japan in northern hemisphere in Eocene age. Accordingly, the genus *Colpospira* possibly invaded into northwestern Kyushu, Japan, from around Sulawesi via Philippine and Taiwan in Eocene age. However, the exact geologic age of the *Colpospira*-bearing strata of Sulawesi has to make clear before going to the conclusion of the trend of migration of the genus.

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