

SHORT NOTE

OCCURRENCE OF THE GIANT SPIDER CRAB, *MACROCHEIRA KAEMPFERI* (TEMMINCK, 1836) (CRUSTACEA : DECAPODA : MAJIDAE) IN TAIWAN

JUNG-FU HUANG¹, HSIANG-PING YU¹ and
MASATSUNE TAKEDA²

Graduate School of Fisheries,
National Taiwan Ocean University,
Keelung, Taiwan 20224, Republic of China¹

and
Department of Zoology,
National Science Museum,
Tokyo 169, Japan²

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Jung-Fu Huang, Hsiang-Ping Yu and Masatsune Takeda (1990) Occurrence of the giant spider crab, *Macrocheira kaempferi* (Temminck, 1836) (Crustacea : Decapoda : Majidae) in Taiwan. Bull. Inst. Zool., Academia Sinica 29(3): 207-212. *Macrocheira kaempferi* (Temminck, 1836), a species supposedly endemic to Japan, is recorded for the first time in Taiwanese waters. The distinctive morphological characteristics of this crab are described, together with color illustrations.

Key words: Taiwan, Majidae, *Macrocheira*.

Up to the present, the genus *Macrocheira* de Haan, 1839 (Family Majidae) is represented by one living and three extinct species: *M. kaempferi* (Temminck, 1836), *M. telglandi* Rathbun, 1926, *M. yabei* (Imaizumi, 1957) and *M. ginzanensis* Imaizumi, 1965. Of these species, *M. kaempferi* is well-established for the genus and most widely known for its enormous size, ca. 3.5 m between the tips of a fully matured male's stretched chelipeds. This is the largest size ever recorded not only of the crustaceans, but also of the living arthropods.

Macrocheira kaempferi is called the

Japanese giant crab, because its distributional range has been restricted to the water off of Japan's Pacific coastline from Iwate Prefecture in the northeastern Honshu to the west of Kyushu.

Recently, however, a female specimen of *M. kaempferi* was collected by a commercial trawler off Suao in northeastern Taiwan at a depth of 100-150 m. An explanation for this may be the fact that the fishing grounds off of Taiwan have gradually moved to deeper waters due to improvements made in deep-sea fishing gear as a result of the coastal fishing resources' depletion. The occurrence of this crab in the waters surrounding

Taiwan is reasonable because of the oceanographic and topographic conditions, yet, even if this is so, it is still surprising that a crab as large as this has not been found in the waters outside of Japanese territory for more than 150 years after its original description.

This paper describes the main morphological characteristics of this species and provides measurements of the female specimen. Color illustrations of the dorsal and ventral views are also provided.

MATERIAL AND MEASUREMENTS

This female specimen was collected by a commercial trawler off Suauo Town, I-lan County, Taiwan, from a sandy mud bottom at a depth of 100–150 m on May 3, 1989. It is deposited at the Fishery Department of National Taiwan Ocean University and given code number NTOU 1989 05 03-1.

The terms used in describing the various parts of the carapace, chelipeds and ambulatory legs mainly follow Sakai (1976). The measurement standards follow Crane (1975) (Table 1.).

SYSTEMATIC ACCOUNT

Family Majidae

Genus *Macrocheira* de Haan, 1839

Macrocheira kaempferi (Temminck 1836) (Plate 1)

Maja kaempferi Temminck, 1836, Coup-d'Oeil sur la Faune des Iles de la Sonde et de l'Empire du Japon. Discours Préliminaire Destiné à Servir d'Introduction à la Faune du Japon, p. xxvi.

Inachus (Macrocheira) kampferi de Haan 1839: 100.

Macrocheira kaempferi, Adams & White, 1848: 5. — Miers, 1886: 33. — Ortmann, 1893: 40. — Caruccio, 1906: 86. — Balss, 1924: 25. — Urita, 1926: 32. — Yokoya, 1933: 147. — Sakai, 1938: 229. — 1969: 69. — 1976: 171, 105. — Holthuis & Sakai, 1970: 120, 313.

Kaempferia kaempferi, Miers, 1886: 33. — Doflein, 1902: 655. — Parisi, 1915: 284.

Diagnosis: Carapace pyriform, concaved at epibranchial regions but markedly convexed at metabranchial margin just behind hepatic margin. Surface of carapace coarse, covered with spiny tubercles. Branchial, cardiac and intestinal regions convexed, but metagastric region concaved, with X-shaped cervical groove at middle of carapace. Frontal region narrow, with a pair of rostral spines directed obliquely outward. A pair of shorter spines present below

Table 1
Measurements of a female *Macrocheira kaempferi* collected
in waters off of Taiwan

Carapace length: 242 mm			Carapace width: 183 mm		
Length of rostral spine: 32 mm			Distance between the rostral spines: 48 mm		
Length of lower rostral spine: 9 mm			Length of postorbital spine: 12 mm		
Eyestalk length: 12 mm					
	Dactylus	Palm (Propodus)	Carpus	Merus	Total length
Cheliped	46 mm	68 mm	46 mm	84 mm	253 mm
Ambulatory leg I	83 mm	156 mm	91 mm	193 mm	530 mm
Ambulatory leg II	78 mm	140 mm	89 mm	186 mm	515 mm
Ambulatory leg III	67 mm	117 mm	74 mm	158 mm	437 mm
Ambulatory leg IV	65 mm	104 mm	63 mm	127 mm	381 mm

rostral spines. Eyestalk short, broad. Orbit with long post-orbital spine. Upper orbital margin with an anterorbital spine at median part. A triangular intercalated spine present, with distance shorter between antero- and post-orbital spines. Basis of antenna well developed. First antenna with two flagellae, but second antenna only with one long flagellum. Upper margin of epistome W-shaped; lower margin protruded medially, but concaved laterally. Maxillipeds well developed. Ischium of 3rd maxilliped produced anteriorly at inner distal angle, longer than merus, with exognath narrower than ischium. Thoracic sternites triangular from 1st to 3rd, those of 1st and 2nd deeply incised and reached base of 3rd maxilliped. Last abdominal somite bluntly rounded distally. Middle of abdomen with markedly convexed crest. Thoracic legs tubular. Palm of cheliped longer than dactylus. Outer and inner surfaces of dactylus of cheliped each with a median long groove extending two-thirds of length. Edge of gape of dactylus with bluntly rounded teeth. First ambulatory leg the longest among thoracic legs in female. Ambulatory legs tubular throughout whole length. Dactyli slightly bent.

Coloration: The dorsal surface of carapace is bright orange and ornamented with many milky-white spots. The color of the thoracic legs are reverse to that of the carapace; *i.e.* mainly milky-white and provided with many orange spots.

Distribution: This species has been recorded as endemic to Japan being only distributed from Kamaishi to Kyushu in the western Pacific. This report extends its distribution to Suao, north-east of Taiwan.

Remarks: The female examined in the present study is fully matured and in good agreement with the descriptions of Sakai (1976) and Miyake (1983). The

specimen is associated with the epizoans, *Poecilasma kaempferi* and *Lepas anserifera*, attached to the carapace and some ambulatory legs.

DISCUSSION

Macrocheira kaempferi is not uncommon in Japanese waters, and is fished with trawl-nets and net-cages in Suruga Bay. As summarized by Yasuhara *et al.* (1985), the Japanese have conducted on this species for many years; morphology (Sakai, 1938, 1976; Miyake, 1983), larval development (Aikawa, 1941; Tanase, 1967, 1968; Kurata, 1969; Muraoka, 1982), ecology (Arakawa, 1963; Mukai and Haseyama, 1976) and aquarium rearing (Hirayama *et al.*, 1960; Araga, 1963; Tanase, 1977). Yet, despite this large species having received considerable attention from many Japanese fishery scientists interested for commercial fishing purposes also from carcinologists for ecological and phylogenical studies, data from field studies remain sparse and fragmentary.

According to Sakai (1976), *Macrocheira kaempferi* is endemic in the waters off the Pacific coast of Honshu and Kyushu, Japan, inhabiting the sandy mud bottom at a depth of 50 to 300 m. Araga (1963) mentioned that from January to March the ovigerous females are sometimes captured with lobsters gill-nets at a depth of 20-40 m along the southern coast of the Kii Peninsula. It is also said that, reputedly in the spring the leisure divers encounter the ovigerous females in shallow waters at a depth of 20-30 m in Sagami Bay. The bathymetrical range in Suruga Bay was recorded as 30-500 m by Yasuhara *et al.* (1985). As for the geographical distribution, it was noted that Yamaguchi *et al.* (1987) reported this species off of the Amakusa Islands, west of Kyushu facing the East China Sea.

The fishing method used in Suauo, Taiwan is mainly bottom trawl. The fishing grounds can be divided into three main areas:

1. Vessels based at Nan-Fan-Auo harbor. Those above 50 tons mostly operate north of Taiwan and those less than 50 tons generally fish near Suauo at depths of 7 to 30 m.

2. Vessels based at Lan-Yan stream. They operate north of Lan-Yan stream and mainly catch shrimp.

3. Vessels based in Suauo harbor. North of Suauo they usually fish at depths less than 200 m but they may fish as deep as 250-300 m east and south-east of Nan-Fan-Auo in the summer. Some vessels also operate south of Nan-Fan-Auo to Wu-Yan-Chou. The species described in this report was collected from this area, so the southern limit of this species has been extended further south to waters off of the coast of Taiwan.

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臺灣新記錄之甘氏巨螯蟹

黃榮富 游祥平 武田正倫

甘氏巨螯蟹 *Macrocheira kaempferi* (Temminck, 1836) 屬於蜘蛛蟹科 (Majidae)，是世界最大的甲殼類，以往被認為是日本海域的特有種。然而 1989 年在臺灣東北海域亦有漁獲，且為首次記錄，因而本種的分佈已不再限於日本。本文除描述外部形態特徵外，並附有彩色圖片，以供作為學術研究之參考資料。

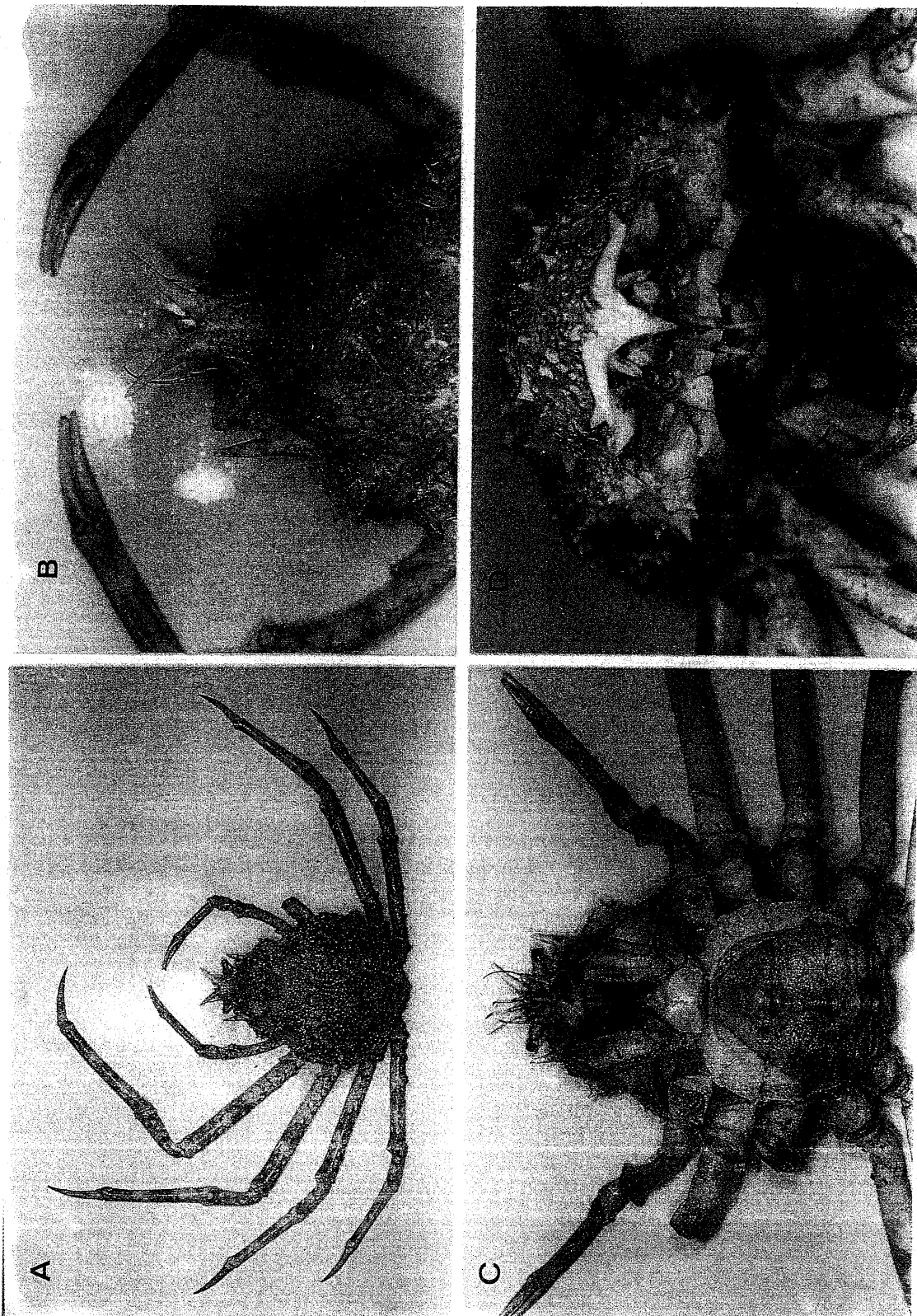


Plate 1. *Macrocheira kaempferi* (Temminck, 1836). ♀ cl. 242 mm cw. 183 mm
A. Dorsal view.
B. Dorsal view of frontal region.
C. Ventral view.
D. Anterior view.