Zoological Studies **34**(4): 241-247 (1995)

Zoological Studies

New Records of *Calcinus* Hermit Crabs (Decapoda: Anomura: Diogenidae) from Taiwan

Hsi-Te Shih[1,*] and Hsiang-Ping Yu[2]

[1]*Institute of Marine Biology, National Sun Yat-sen University, Kaohsiung, Taiwan 804, R.O.C.*
[2]*Graduate School of Fisheries, National Taiwan Ocean University, Keelung, Taiwan 202, R.O.C.*

(Accepted July 20, 1995)

Hsi-Te Shih and Hsiang-Ping Yu (1995) New records of *Calcinus* hermit crabs (Decapoda: Anomura: Diogenidae) from Taiwan. *Zoological Studies* **34**(4): 241-247. Three hermit crab species belonging to the genus *Calcinus* were newly recorded from the subtidal coral reefs of Taiwan. *Calcinus guamensis* Wooster, 1984 was collected on the branches of corals at 0 to 2 m depth; *C. lineapropodus* Morgan and Forest, 1991 and *C. pulcher* Forest, 1958 were found on the surfaces of large rocks at 5 to 10 m depth. These species are easily recognized by their characteristic coloration. Color plates of the three species and a key to *Calcinus* species found in Taiwan are presented.

Key words: Crustacean, Anomuran, *Calcinus guamensis, Calcinus lineapropodus, Calcinus pulcher*.

Hermit crabs of the genus *Calcinus* are distributed extensively in the intertidal and subtidal zones of tropical and subtropical regions, and most *Calcinus* species can be found in coral reefs and on rock platforms. They are the dominant species in numbers at most seashores. Some species are only found in the intertidal zone (e.g., *C. laevimanus*), some species frequent the shallow subtidal zone (e.g., *C. gaimardii, C. guamensis* and *C. minutus*), and some species can live in either zone (e.g., *C. latens*). Below the shallow subtidal zone, there are also some rare species known (e.g., *C. lineapropodus* and *C. pulcher*) (Wooster 1984, Morgan 1991). In general, all the species of *Calcinus* resemble each other morphologically (Wooster 1984, Haig and McLaughlin 1984). Therefore the discrimination of *Calcinus* species is largely based on their distinct coloration in living or preserved specimens (Haig and McLaughlin 1984, Morgan 1991).

So far, six species of hermit crabs of the genus *Calcinus* have been reported in Taiwan: *C. laevimanus, C. elegans, C. gaimardii, C. latens, C. minutus* and *C. seurati* (Terao 1913, Lee 1969, Yu 1987, Foo 1989). Recently the first author collected two *Calcinus* species from Kenting, *C. guamensis* and *C. pulcher*. Dr. P.-H. Ho provided *C. lineapropodus* collected from Lanyu Island. These three species are new to the hermit crab fauna of Taiwan. Therefore there are now nine species of hermit crabs of the genus *Calcinus* in Taiwan. The three newly recorded species are easily distinguished from other *Calcinus* species by their obvious coloration. *C. guamensis* is sometimes seen at the shallow subtidal zone of coral reefs. *C. lineapropodus* and *C. pulcher* are rare species found on large rocks by scuba diving to a depth of 5 to 10 m.

In this paper, the three species are discussed in comparison with other similar *Calcinus* species. In addition, the color plates of the three species and a key to the nine species of *Calcinus* found in Taiwan are also presented. Some parts of the key are based on coloration because of their otherwise indistinguishable morphology, and these characteristics will help the identification of the species in the field. For the same reason, the coloration of live specimens of the three newly recorded species is described in detail. Carapace length (CL) is measured from the tip of the rostrum,

*To whom all correspondence and reprint requests should be addressed.

along the midline, to the posterior end of the carapace. Specimens are catalogued and deposited at the Institute of Marine Biology, National Sun Yat-sen University (NSYSU).

Key to the Taiwanese *Calcinus* species

1. Left chela much larger than right, surface smooth. Right chela with smooth dorsal margin 2
   Left chela slightly larger than right. Right chela with spinous or tuberculate dorsal margin 3
2. Dactyls of 2nd and 3rd pereiopods shorter than propodi. Second and 3rd pereiopods brown with longitudinal dark stripes; dactyls white. Left cheliped with fingers and distal palm white, other parts dark brown ..... *C. laevimanus* (Randall)
   Dactyls of 2nd and 3rd pereiopods subequal to propodi. Second and 3rd pereiopods white with dark gray longitudinal stripes. Chelipeds white, darker on proximal segments ... *C. seurati* Forest
3. Dactyl and propodus of 3rd pereiopods with setae forming obvious brush 4
   Dactyl and propodus of 3rd pereiopods with setae not forming brush 5
4. Fingers and distal palm of chelipeds with large tubercles. Second and 3rd pereiopods with alternate bands of bright dark blue (or dark orange) and black ..... *C. elegans* (H. Milne Edwards)
   Fingers and palm of chelipeds without large tubercles. Second and 3rd pereiopods uniformly brown, light reddish-brown, or dark brown ..... *C. gaimardii* (H. Milne Edwards)
5. Telson with several marginal spines on left posterior lobe and 1 on right. Dactyls of 2nd and 3rd pereiopods dark reddish-brown proximally, white distally; carpi and meri of first 3 pereiopods with dark olive-green and white spots ..... *C. latens* (Randall)
   Telson with several marginal spines on both posterior lobes 6
6. Palm of cheliped with a dark spot on both surfaces. Propodi, carpi and meri of 2nd and 3rd pereiopods with colorful longitudinal flecks or stripes 7
   Palm of cheliped without a dark spot. Propodi, carpi and meri of 2nd and 3rd pereiopods with uniform coloration 8
7. Carpi of 2nd and 3rd pereiopods with similar coloration. Shield with 2 large dark spots anteriorly. Dactyls and carpi of 2nd and 3rd pereiopods rosy pink; propodi cream with longitudinal dark bands proximally ..... *C. lineapropodus* Morgan and Forest
   Carpi of 2nd and 3rd pereiopods with different colors. Shield with 1 large dark spot anteriorly. Each segment of 2nd and 3rd pereiopods with a black ring, except red-carmine carpus of 2nd pereiopod ..... *C. pulcher* Forest
8. Eyestalks with black band on proximal 1/2. First 3 pereiopods uniformly light olive-green; carpus and merus of chelipeds, and dactyls of 2nd and 3rd pereiopods black ... *C. guamensis* Wooster
   Eyestalks uniform light pink. First 3 pereiopods white with tiny orange spots; dactyls and distal propodi of 2nd and 3rd pereiopods orange ..... *C. minutus* Buitendijk

Calcinus guamensis Wooster, 1984

(Fig. 1)

Calcinus latens — Miyake, 1956: 331, Figs. 20, 21 [not *C. latens* (Randall), misidentification].

Calcinus vachoni Forest, 1958: 286 [not *C. vachoni* Forest, misidentification in part].

Calcinus guamensis Wooster, 1984: 141, Fig. 4. — Haig and Ball, 1988: 159; Morgan, 1990: 9; Morgan, 1991: 879, Figs. 14-16; Asakura, 1992: 37, Fig. 1.

Material examined: Nanwan, Houwan, and Shihniupi, Pingtung County, 3♂♂ (CL 5.0-6.3 mm), 3♀♀ (CL 4.0-7.0 mm), Oct. 2, 1992, depth 0-2 m, NSYSU 921002.

Diagnosis: Ocular acicles with 2 to 3 spines on distal margin. Antennal flagella short and not exceeding 2nd pereiopod. Left cheliped slightly larger than right; palm and fingers minutely tuberculate; carpus tuberculate, with 1 large submedian tubercle on lateral surface. Right cheliped more spinous and hirsute; palm with 1 row of spines on dorsal margin; carpus with 1 spine at distodorsal margin. Second and 3rd pereiopods smooth, with scarce fine hair; dactyls shorter than propodi, with 5 small spines along ventral margin; carpi with 1 small prominent spine and 1 small spinule on distodorsal margin; meri with 1 small spine at lateral distoventral angle, a few very small spines along mesial distoventral margin. Telson with short spines and long hairs on terminal margin of both lobes.

Color in life: Shield light olive-green with 2 small black spots along cervical groove, roughly located below lateral projections; posterior carapace reddish-purple with white mottling. Ocular peduncles with distal 1/2 and base light olive-green, roughly proximal 1/2 with wide black band. Antennal acicles and proximal segment of peduncle light olive-green, distal segment of peduncle and flagellum orange. Antennular peduncles and flagellum dark olive-green, hairs on flagellum white. Chelipeds with palm olive-green fading to whitish-yellow at finger tip, fine tubercles light olive-green on palm and fingers; carpus and approximately distal 1/3 of merus black with white tubercles; proximal 2/3 of merus light olive-green. Second and 3rd pereiopods uniformly light olive-green, except for dactyls black with white spots on proximal 1/2 (not including black claws), distal 1/2 white. Fourth and 5th pereiopods light olive-green, 1 black spot at base of dactyl of 4th.

Habitat: Individuals of *C. guamensis* always assemble on the branches of coral (*Acropora* spp.). This is a shallow subtidal species, distributed below the reef slope down to 3 m depth. Several specimens have been found in shells of *Morula* spp., *Conus* spp. and *Drupa* spp.

Distribution: Northwestern Australia, Cocos (Keeling) Islands, Christmas Island, Indonesia, Mariana Islands, Hawaii, Taiwan, and Bonin (Ogasawara) Islands.

Remarks: The coloration of *C. guamensis* makes it easily distinguishable from most other *Calcinus* species especially in the field. When it partially retracts into its shell, the black bands of the eyestalks and the first three pereiopods align into a continuous black band. *C. guamensis* is similar to *C. latens* (Fig. 2) in coloration and external characters, so they are easy to confuse (e.g., Miyake 1956: Fig. 20, Tzeng and Chen 1992: 64). It seems likely that *C. guamensis* has also been confused with *C. vachoni* Forest (Morgan 1990 1991). The differences between *C. guamensis* and *C. latens* are shown in Table 1. *C. latens* occurs in the intertidal and shallow subtidal zones, and is the most abundant species of hermit crab in the Kenting area, southern Taiwan (Shih 1990). In subtidal areas, these two species can sometimes be found in the same coral branch with other *Calcinus*, e.g., *C. gaimardii* and *C. minutus*, and their shell resources are always much overlapped.

***Calcinus lineapropodus* Morgan and Forest, 1991**
(Fig. 3)

Calcinus sp. 1 — Wooster, 1984: 138.
Calcinus undescribed sp. — Haig and Ball, 1988: 161.
Calcinus sp. — Kamezaki et al., 1988: 114.
Calcinus lineapropodus Morgan and Forest, 1991: 650, Figs. 1-2. — Morgan, 1991: 893, Figs. 37-39.

Material examined: Lanyu Island, Taitung County, 1♂ (CL 6.4 mm), Jun. 23, 1993, depth 5 m, NSYSU 930623.

Diagnosis: Ocular peduncles longer than shield. Ocular acicles with 3 to 4 spines on distal margin. Left cheliped much larger than right; palm long, dorsal margin with rows of low spinules and tubercles, lateral surface with numerous minute tubercles; carpus with 4 low spines on dorsal margin, 1 larger submedian tubercle on lateral surface. Right cheliped more spinous and hirsute, palm with 4 large corneous-tipped spines on dorsal margin; carpus with 2 large spines on distodorsal margin. Second pereiopods smooth, with sparse clumps of setae; dactyl shorter than propodus, with 7-8 small spines along ventral margin; carpus with 1 large spine and 1-2 smaller spinules on distodorsal margin; merus with 1 small spine at lateral distoventral angle, ventral margin with 1 row of tubercles. Third pereiopod similar to 2nd in armature and proportions, except for merus with ventral tubercles less well developed. Telson with short spines and long hairs on terminal margin of both lobes.

Color in life: Shield gray-olive anteriorly fading to cream posteriorly, 2 large dark spots on anterior 1/4 of shield, each lateral margin of carapace with distinct spot. Ocular peduncles rosy pink, paler near corneas. Antennal flagella pale orange. Antennular peduncles with distal 1/3 of 3rd segment blue; other segments brown. Chelipeds gray-olive fading to white in fingers; palm with 2 large dark spots each on lateral and mesial surfaces. Second and 3rd pereiopods with dactyls and carpi rosy pink, white distally; propodi cream with several longitudinal deep brown bands on proximal 3/4; meri with a deep brown patch mid-

Table 1. Comparison of external characters and coloration between *Calcinus guamensis* and *Calcinus latens*

Characters	*C. guamensis*	*C. latens*
Ocular acicles	multispinose	simple
Chelipeds	left cheliped slight larger than right	left cheliped much larger than right
Hirsuteness and setae	less hirsute	more hirsute and longer setae, especially on right cheliped and 2nd and 3rd pereiopods
Coloration	carapace light green, without apparent spot; eyestalks with proximal 1/2 black, distal 1/2 and base white; antennal flagella dark orange; antennular peduncles and flagellum dark olive-green; first 3 pereiopods light olive-green, black with white spots on carpus and merus of chelipeds, and dactyls of 2nd and 3rd pereiopods	carapace always dark green, with many white spots; eyestalks light pinkish-brown; antennal flagella orange; antennular peduncles with distal 2 segments blue distally, black proximally, flagellum orange; carpi and meri of first 3 pereiopods dark olive-green with white spots, dactyls of 2nd and 3rd pereiopods dark reddish-brown

dorsally and a large pink patch mid-ventrally.

Habitat: According to Morgan (1991), *Calcinus lineapropodus* is associated with live coral, dead coral rubble and rocks in the shallow subtidal zone to 25 m depth.

Distribution: Cartier Islands, Cocos (Keeling), Christmas Island, New Guinea, Indonesia, Mariana Islands, Taiwan and Ryukyu Islands.

Remarks: The rosy pink of the 2nd and 3rd pereiopods and the large dark spot each on both surfaces of the palms of chelipeds of *C. lineapropodus* are unique to the Indo-Pacific *Calcinus*. *C. lineapropodus* resembles *C. pulcher*, especially the coloration of the ocular peduncles and chelipeds. The differences between them are shown in Table 2.

***Calcinus pulcher* Forest, 1958**

(Fig. 4)

Fig. 1. *Calcinus guamensis* Wooster, 1984.

Fig. 2. *Calcinus latens* (Randall, 1839) carries its shell.

Fig. 3. *Calcinus lineapropodus* Morgan and Forest, 1991 (♂).

Fig. 4. *Calcinus pulcher* Forest, 1958 (♂).

Table 2. Comparison of coloration between *Calcinus lineapropodus* and *Calcinus pulcher*

Coloration	*C. lineapropodus*	*C. pulcher*
Carpus of 2nd pereiopods	rosy pink	red-carmine
Carpus of 3rd pereiopods	rosy pink	pale yellow with many short brown lines, a black ring medianlly
Anterior part of shield	with 2 dark spots	with 1 dark spot

Calcinus pulcher Forest, 1958: 287, Figs. 4, 12, 13, 16. — Baba, 1982: 65; Haig and Ball, 1988: 161; Morgan, 1991: 896, Figs. 43-45.

Material examined: Nanwan, Pingtung County, 1♂ (CL 6.4 mm), Oct. 2, 1992, depth 10 m, NSYSU 921002; 1♀ (CL 5.9 mm), Nov. 21, 1992, depth 10 m, NSYSU 921121.

Diagnosis: Ocular peduncles slightly longer than shield. Ocular acicles with 2 to 4 spines on distal margin. Left cheliped larger than right; palm long, somewhat granulous but smoother than carpus, dorsal surface in male slightly tuberculate, in female more tuberculate with 1 row of low spines; carpus granulous, in male with 1 prominent tubercle and 1 weak tubercle submedianly, in female only 1 prominent tubercle submedianly and distolateral margin with 2 spines. Right cheliped more granulous; palm with 1 row of spines of irregular size on dorsal margin; carpus with 1 row of spines on dorsal margin, distalmost spine much enlarged. Second pereiopods with scarce long setae; dactyl shorter than propodus, smooth with 7-9 small spines along ventral margin; carpus with 1 small prominent spine at distodorsal margin and 1 small spinule more distally; merus with 1 small spine at lateral distoventral angle, ventral margin with row of weak tubercles. Third pereiopods similar to 2nd in armature and proportions, except for carpus with 1 prominent spine and 1 small spinule more proximally. Telson with short spines and long hairs on terminal margin of both lobes.

Color in life: Shield gray-olive anteriorly fading to nearly white posteriorly, a large median dark spot on anterior 1/4 of shield, each lateral margin of carapace with an irregular-shaped dark red spot. Ocular peduncles red-carmine proximally fading to white on distal 1/2. Antennal acicles and proximal peduncle gray-olive, distal peduncle and flagellum orange. Antennular peduncles with ultimate segment blue distally; other segments and flagellum orange. Chelipeds gray-olive fading to white in fingers; palm with 2 large dark spots each on lateral and mesial surfaces. Second pereiopods pale yellow with many longitudinal short brown lines; a black ring submedianly on dactyl, subdistally on propodus and submedianly on merus; carpus almost red-carmine. Third pereiopods similar to 2nd, but carpus similar to other segments of 3rd, not red. Abdomen lighter red-carmine.

Habitat: Two specimens were found on large rocks at 5-10 m depth. According to Morgan (1991), this species is usually associated with coral and dead coral rubble in the shallow subtidal zones to about 30 m depth. A male specimen was found in a shell of *Drupa ricinus*.

Distribution: Northwestern Australia, Cocos (Keeling) Islands, Indonesia, Palau Islands, Vietnam and Taiwan.

Remarks: The morphology and coloration of this species have been described by Forest (1958), Haig and Ball (1988) and Morgan (1991). It appears that *C. pulcher* has been confused with other species by some workers. *C. pulcher* has been recorded from Japan (Miyake and Imafuku 1980, Miyake 1982). According to the color description of "*C. pulcher*" by Miyake and Imafuku (1980): whole body brown, chelipeds with finger tips white, 2nd and 3rd pereiopods with bluish longitudinal stripes. The description of morphology of "*C. pulcher*" by Miyake (1982) agrees with the descriptions by Forest (1958) and Morgan (1991), but the body coloration is not mentioned. The picture (Miyake 1982, plate 38: fig. 5) was apparently of a preserved specimen, and the remaining color pattern of the 2nd and 3rd pereiopods — dactyls and propodi dark with many pale elongate spots, carpi and meri dark with several pale longitudinal stripes — is quite different from Fig. 16 of Forest (1958) and Fig. 45 of Morgan (1991). From the color pattern of the specimen of Miyake (1982) and the brief description of coloration by Miyake and Imafuku (1980), those specimens found from Japan are more similar to *Calcinus pascuensis* (Haig, 1974), although the hirsuteness of Miyake's specimen seems not as dense as at in Haig's figure

(1974). *C. pascuensis* is found from Easter Island and the left cheliped and left 3rd pereiopod of the holotype is lost. Its morphology is similar to *C. pulcher* Forest and *C. spicatus* Forest and distinguished from the above species by its coloration. The color in alcohol of the 2nd and 3rd pereiopods is pink and decorated with dark orange-red stripes and elongate spots (Haig 1974).

Acknowledgements: We wish to express our thanks to Dr. Janet Haig of the Allan Hancock Foundation, University of Southern California, for identifying these hermit crab species. We are also grateful to Drs. Hin-Kiu Mok and Keryea Soong of the Institute of Marine Biology, National Sun Yat-sen University, for reading the manuscript, to Dr. Ping-Ho Ho of the Graduate School of Fisheries, National Taiwan Ocean University, for collecting the specimen and taking the photograph of *C. lineapropodus*, and to Dr. Gary J. Morgan of the Museum of New Zealand, for providing important papers. This work was partially supported by a research grant from the Kenting Marine Station, College of Marine Science, National Sun Yat-sen University.

REFERENCES

Asakura A. 1992. New record of the intertidal hermit crab, *Calcinus guamensis* Wooster, 1982 from Japan, with comments on Japanese *Calcinus*. J. Nat. Hist. Mus. Inst., Chiba **2**(1): 37-40.

Baba K. 1982. Galatheids and pagurids of the Palau Islands (Crustacea: Anomura). Proc. Jap. Soc. Sys. Zool. **23:** 56-70.

Foo KY. 1989. Studies on the hermit crabs (Crustacea: Decapoda: Anomura) of Taiwan. Master's thesis, National Taiwan College of Marine Science and Technology, Taiwan. (in Chinese).

Forest J. 1958. Les Pagures du Viet-Nam. II. Sur quelques especes du genre *Calcinus* Dana. Bull. Mus. natn. Hist. nat., Paris (2) **30**(2): 184-190, 285-290. (in French).

Haig J. 1974. *Calcinus pascuensis*, a new hermit crab from Easter Island (Decapoda, Anomura, Diogenidae). Crustaceana **27**(1): 27-30.

Haig J, EE Ball. 1988. Hermit crabs from north Australian and eastern Indonesian waters (Crustacea Decapoda: Anomura: Paguroidea) collected during the 1975 *Alpha Helix* Expedition. Rec. Aust. Mus. **40:** 151-196.

Haig J, PA McLaughlin. 1984. New *Calcinus* species (Decapoda: Anomura: Diogenidae) from Hawaii, with a key to the local species. Micronesica **19**(1-2): 107-121 (dated 1983).

Kamezaki N, T Hamano, K Nomura, H Misaki. 1988. Marine animals of Okinawa, No. 8 (Crustacea). Okinawa, Japan: Shinsei Tosho Publication. (in Japanese).

Lee SC. 1969. Anomuran crustaceans of Taiwan. Part I. Diogenidae. Bull. Inst. Zool., Acad. Sinica **8**(2): 39-57.

Miyake S. 1956. Invertebrate fauna of the intertidal zone of the Tokara Islands. XIII. Anomura. Publ. Seto Mar. Biol. Lab. **5**(3): 303-337.

Miyake S. 1982. Japanese crustacean decapods and stomatopods in color. Vol. I. Osaka, Japan: Hoikusha Publishing Co. Ltd. Press. (in Japanese).

Miyake S, M Imafuku. 1980. Hermit crabs from Kii Peninsula I. Nankiseibutsu **22**(1): 1-7. (in Japanese).

Morgan GJ. 1990. A collection of Thalassinidea, Anomura and Brachyura (Crustacea: Decapoda) from the Kimberley Region of northwestern Australia. Zool. Verh. Leiden **265:** 1-90.

Morgan GJ. 1991. A review of the hermit crab genus *Calcinus* Dana (Crustacea: Decapoda: Diogenidae) from Australia, with description of two new species. Invertebr. Taxon **5:** 869-913.

Morgan GJ, J Forest. 1991. Seven new species of hermit crabs from Northern and Western Australia (Decapoda, Anomura, Diogenidae). Bull. Mus. natn. Hist. nat., Paris (4) **12**(3-4): 649-689.

Shih HT. 1990. Utilization of shell resource by hermit crabs in Kenting, Taiwan. Master's thesis, National Sun Yat-sen University, Taiwan. (in Chinese).

Terao A. 1913. A catalogue of hermit-crabs found in Japan (Paguridea excluding Lithodidae), with descriptions of four new species. Annot. Zool. Japon. **8**(2): 355-391. (in Japanese).

Tzeng CS, YS Chen. 1992. Guide to the seashore life in the East Coast National Scenic Area of Taiwan. Taitung, Taiwan: East Coast National Scenic Area Administration Tourism Bureau, Ministry of Transportation and Communications. (in Chinese).

Wooster DS. 1984. The genus *Calcinus* (Paguridea, Diogenidae) from the Mariana Islands including three new species. Micronesica **18**(2): 121-162 (dated 1982).

Yu HP. 1987. On the hermit crabs of the genus *Calcinus* (Crustacea, Decapoda, Diogenidae) from Taiwan. J. Taiwan Mus. **40**(1): 9-14.

三種臺灣新記錄之硬殼寄居蟹類
（十足目：異尾下目：活額寄居蟹科）

施 習 德[1] 游 祥 平[2]

本報告報導三種臺灣海域新記錄的硬殼寄居蟹，分別是關島硬殼寄居蟹 *Calcinus guamensis* Wooster, 1984、線足硬殼寄居蟹 *C. lineapropodus* Morgan and Forest, 1991 和優美硬殼寄居蟹 *C. pulcher* Forest, 1958。這三種寄居蟹都棲息在珊瑚礁海域的亞潮帶區域，具有顯著的體色，很容易和其他種寄居蟹區分。關島硬殼寄居蟹採自水深約 0 到 2 公尺的珊瑚枝上，半縮入殼中時，眼柄、螯足和步足的黑環帶會形成一條連續的黑帶。線足硬殼寄居蟹和優美硬殼寄居蟹，是在水深約 5 到10公尺的大礁石表面發現，兩者的外部形態特徵和體色非常類似，但是前者的第二、三胸足指節和腕節呈玫瑰紅色，而後者只有第二胸足腕節呈胭脂紅色。本報告除敍述這三種寄居蟹的外部形態特徵、體色和棲息場所之外，並附彩色圖片和臺灣產硬殼寄居蟹屬的檢索表。

關鍵詞：甲殼類，異尾類，關島硬殼寄居蟹，線足硬殼寄居蟹，優美硬殼寄居蟹。

[1] 國立中山大學海洋生物研究所

[2] 國立海洋大學漁業研究所