

琉球大学学術リポジトリ

日本より得られたゴカクゼブラガニの形態的特徴と 宿主の記録

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Morphological characteristics and host species of *Gonatonotus nasutus* Chia & Ng, 2000 (Crustacea: Decapoda: Brachyura: Pilumnidae: Eumedoninae) from Japan

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Abstract. Eumedonine crabs are known as obligate symbionts of echinoderms and rarely cnidarians. The present study collected host species records of *Gonatonotus nasutus* Chia & Ng, 2000 based on authors' observation, literature survey and photographs taken by local divers. As a result, 10 or 11 echinoderm species (1 asterioid, 8 or 9 echinoid and 1 holothuroid species) have been directly observed as host species, whereas previous studies recorded *Stylophora pistillata* (Cnidaria: Scleractinia) as a host species. The present study also compared morphological characteristics of *G. nasutus* with allied species. Although *G. nasutus* and *Eumedonus niger* H. Milne Edwards, 1834, have sometimes been confused in Japan, the former can be distinguished from the latter by the shape of the anterior margins of ambulatory meri (not lamellar vs. distinctly cristate) and relative depth of the fissure on the anterior margin of the rostrum (shallow vs. deep). *Gonatonotus nasutus* in Japan has been identified as *Eumedonus granulatus* MacGilchrist, 1905 (currently placed in the genus *Gonatonotus*) until Chia & Ng (2000) described the former species. Our observation has revealed that the best character to distinguish *Gonatonotus nasutus* and *G. granulatus* is the relative length of the rostrum. The distributions of the two species also differs significantly; *G. nasutus* is known from southern and western Pacific waters, whereas *G. granulatus* is recorded from the western Indian Ocean.

Introduction

Crabs of pilumnid subfamily Eumedoninae comprise a relatively small group, currently known by 33 species in 12 genera (Ng et al. 2008; Castro 2015). The subfamily ranking of Eumedoninae remains unresolved, although its placement in the superfamily Pilumnoidea is well accepted (Davie et al. 2015: 951). Eumedonine crabs are known as obligate symbionts of echinoderms and rarely of cnidarians (Serène et al. 1958; Števc̆ić et al. 1988: 1306, table 1; Castro 2015: 549, table 1). Števc̆ić et al. (1988) noted that the early records in the literature

provide little information on the host species, probably because most of specimens were collected by dredging and possibly dislodged from potential hosts when the dredge hauled back. Deep-water eumedonines are also usually collected by dredging, and their hosts are therefore not well known (Castro 2015).

Gonatonotus nasutus was described by Chia & Ng (2000), designating a male from the Coral Sea as the holotype. Based on a literature survey, Chia & Ng (2000) considered the Japanese specimens that had been referred to as *Eumedonus granulatus* MacGilchrist, 1905 (currently placed in the genus *Gonatonotus*), are closer to *G. nasutus* than *E. granulatus*. The present study examined the morphology of two specimens of *G. nasutus* from Japan and assessed their identity. A small female specimen of *G. nasutus* was found clinging on an ambulacral groove of the asterioid *Choriaster granulatus* (Lütken, 1869) at a depth of 25 m, off Cape Maeda, Okinawa Island, Japan (Fig. 1). Since the available host data of *G. nasutus* was *Stylophora pistillata* Esper, 1797 (Cnidaria: Scleractinia) by Sakai (1976) and *Toxopneustes pileolus* (Lamarck, 1816) (Echinodermata: Echinoidea) by Minemizu (2000), we decided to consolidate observation data collected by recreational divers to clarify the range of the host species of *G. nasutus*.

Japanese names of *G. nasutus*, allied species and their upper taxa from Japan require rearrangement. The present study proposes to use a set of Japanese names for them.

Material and methods.

Observational records of *Gonatonotus nasutus* have been posted to the internet by diving operators as well as recreational divers. We have contacted observers and summarized the data from the authors, who allowed us to cite their observations. Additional information, such as surrounding environment, depth, and date, etc., were also included.

The scientific names and the orders of the host species listed in Table 1 basically follows that of



Fig. 1. *Gonatonotus nasutus* Chia & Ng, 2000 (RUMF-ZC-4311) found on an ambulacral groove of *Choriaster granulatus* (Lütken, 1869).

図1 カワテブクロの歩帯溝にて発見されたゴカクゼブラガニ (RUMF-ZC-4311).

Fujita et al. (2015). Specimens examined are deposited in the Ryukyu University Museum, Fujukan (RUMF), University of the Ryukyus; National Museum of Nature and Science, Tsukuba (NSMT); and Zoological Reference Collection (ZRC), Lee Kong Chian Natural History Museum (previously Raffles Museum of Biodiversity Research), National University of Singapore. Measurements provided are of the carapace length (CL, distance between levels of distal ends of rostrum and posterior margin of carapace) and maximum carapace width (CW) in millimetres. Rostrum length (distance between levels of distal ends of rostrum and mesial ends of supraorbital angles) and rostrum width (distance between mesial ends of supraorbital angles) are also measured. Photographs and drawings of *G. granulatus* provided by Chia & Ng (2000: figs. 20A, 21M, 21N) were also used to compare the relative length and width of the carapace and the rostrum.

Species account

***Gonatonotus nasutus* Chia & Ng, 2000**
[Japanese name: Gokaku-zebra-gani]
 (Figs. 1–4)

Restricted synonym list.

Eumedonus granulatus — Sakai 1932: 55, pl. 2, fig. 3; Sakai 1935a: 67 (list only); Sakai 1935b: 111, fig. 52; Sakai 1938: 348; Sakai 1956: 25 (list only); Ooishi 1970: pl. 13, fig. 7; Sakai 1976: 296, pl. 99, fig. 4, 178; Takeda & Marumura 1997: 15; Muraoka 1998: 31 (list only); Marumura & Kosaka 2003: 56 (list only). [Not *Gonatonotus granulatus* (MacGilchrist, 1905)]

Gonatonotus nasutus Chia & Ng, 2000: 48, figs. 22, 23 (type locality: Coral Sea, 66 m); Ng et al. 2008: 139. See Chia & Ng (2000) for other synonymies.

Eumedonus crassimanus — Minemizu 2000: 223. [Not *Eumedonus niger* H. Milne Edwards, 1834]



Fig. 2. *Gonatonotus nasutus* Chia & Ng, 2000. RUMF-ZC-4311, young female, CL 4.6 mm, Okinawa Island.

図2. ゴカクゼブラガニ. RUMF-ZC-4311, 若雌個体, CL 4.6 mm, 沖縄島.

(senior synonym of *Gonatonotus crassimanus* Haswell, 1880)]

Material examined. RUMF-ZC-4311, 1 female (CL 4.6 mm, CW 4.1 mm), Cape Maeda, Okinawa Island, Japan, 25 m, from *Choriaster granulatus* (Lütken, 1869), coll. Y. Endo, 8 Jun. 2015; NSMT-Cr 14224, 1 ovigerous female (CL 11.9 mm, CW 10.4 mm), Ogasawara Islands, Japan, no host record, coll. Y. Kurata; NSMT-Cr 12422, 1 male (CL 5.9 mm, CW 5.3 mm), Kakeroma Island, Japan, 5 m, no host record, coll. I. Soyama, 25 Aug. 1998.

Comparative material. *Gonatonotus granulatus* (MacGilchrist, 1905): NSMT-Cr 4370, 1 ovigerous female (CL 12.0 mm, CW 11.6 mm), Seychelles, 4°56.3' S 55°9.0' E. 61 m, no host record, coll. *Koyō maru*, 1968.

Eumedonus niger H. Milne Edwards, 1834: NSMT-Cr 15959, 1 male (CL 10.9 mm, CW 11.4 mm), 1 female (CL 10.9 mm, CW 12.1 mm), off Shirahama, Wakayama Prefecture, Japan, 50–60 m, from *Prionocidaris baculosa* (Lamarck, 1816), coll. M. Marumura, 6 Jan. 1996.

Diagnosis. Carapace longitudinally elongated-pentagonal, CL 1.12–1.14 ($n = 2$) times CW. Rostrum strongly protruding anteriorly, RL 1.16–1.34 ($n = 2$) times RW, strongly tapering, with median small fissure on anterior end. Ventral surface of rostrum gently raised medially. Anterior part of interantennular septum groove-like. Lateral margin of carapace with large, sharp lateral tooth slightly posterior to midlength of carapace; anterior and posterior margins of lateral tooth similarly arched (Figs. 2, 4), or anterior margin slightly more concave

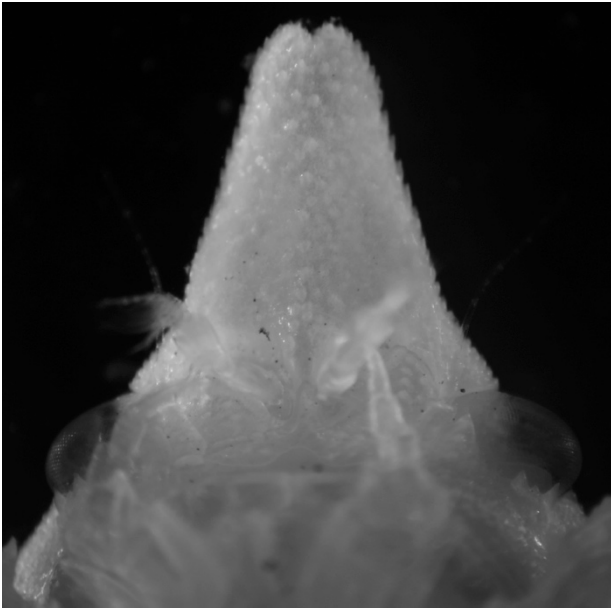


Fig. 3. *Gonatonotus nasutus* Chia & Ng, 2000. RUMF-ZC-4311, young female, CL 4.6 mm, Okinawa Island. Rostrum and interantennular septum, ventral view.

図 3. ゴカクゼブラガニ. RUMF-ZC-4311, 若雌個体, CL 4.6 mm, 沖縄島. 額角腹面.



Fig. 4. *Gonatonotus nasutus* Chia & Ng, 2000. NSMT-Cr 14224, ovigerous female, CL 11.9 mm, Ogasawara Islands.

図 4. ゴカクゼブラガニ. NSMT-Cr 14224, 抱卵個体, CL 11.9 mm, 小笠原諸島.

than posterior margin (Chia & Ng 2000: fig. 22), lateral tooth resulted in directed laterally or slightly anterolaterally. Cheliped carpus with long, sharp, lamellar tooth on inner angle. Ambulatory legs relatively long, anterior margin of merus simple, not lamellar.

Colouration. Carapace pale pink in ground colour, with longitudinal claret-coloured stripes. Cheliped basis to proximal half of chela claret; other parts of chela paler colored, except for median orange band of movable finger. Bases of ambulatory meri and propodi dark claret, other parts of

ambulatory legs paler (Figs. 2, 5).

Remarks. Chia & Ng (2000) distinguished *Gonatonotus nasutus* from *G. granulosis* by a consistently longer and more slender rostrum, medially raised ventral surface of the rostrum, anteriorly depressed interantennular septum, and longer, more slender, and more strongly lamelliformed distoinner angle of cheliped carpus. The specimens examined in this study agree with the original description of *G. nasutus*, although the degrees of the raise on the ventral surface of the rostrum and the anterior depression of the interantennular septum are comparatively weak (Fig. 3). It is also observed that *G. granulosis* has very slightly raised ventral surface of the rostrum and a similar groove-like depression on the anterior part of interantennular septum (Fig. 6B). The relative length of the rostrum is, however, still effective to distinguish *G. nasutus* and *G. granulosis*. The ratio of the rostrum length to the carapace length of *G. nasutus* is smaller in small specimens (ca. 0.39 in CL 4.6 mm, RUMF-ZC-4311, Fig. 2), whereas it is larger in large specimens (ca. 0.43 in CL 11.9 mm, NSMT-Cr 14224, Fig. 4). In contrast, the ratio in *G. granulosis* is larger in small specimens (ca. 0.40 in CL 7.5 mm, Chia & Ng 2000: fig. 21M) and smaller in large specimens (ca. 0.35 in CL 9.5 mm, Chia & Ng 2000: fig. 21N).

Previously recorded “*G. granulosis*” from Japan also show a long and slender rostrum (Sakai 1932: pl. 2, fig. 3; Ooishi 1970: pl. 13, fig. 7; Sakai 1976: pl. 99, fig. 4), which agrees well with that of recently photographed individuals (see Table 1) as well as with the specimen examined in this study. As Chia & Ng (2000) noted, we agreed that these *Gonatonotus* specimens from Japan are indeed *G. nasutus*. Interestingly, the distribution of *G. granulosis* is limited to the western Indian Ocean, whereas that of *G. nasutus* is from the southern to western Pacific (Chia & Ng, 2000).

Gonatonotus nasutus have been often referred to as “Kabuka-zebura-gani”, which is a Japanese name given to *Gonatonotus crassimanus* Haswell, 1880 (see Takeda & Marumura, 1997), a junior synonym of *Eumedonus niger* H. Milne Edwards, 1834 (see Chia & Ng 2000) (Fig. 7). *Gonatonotus nasutus* can be easily distinguished from *E. niger* by a simple oblong cross-section of the ambulatory meri (versus anterior margin of ambulatory meri that are distinctly cristate in *E. niger*) and only slightly fissured anterior end of the rostrum (versus the fissure of the rostrum being very deep in *E. niger*) (Figs. 2, 4, 7; Takeda & Marumura 1997: fig. 1A; Chia & Ng 2000: fig. 1).



Fig. 5. *Gonatonotus nasutus* Chia & Ng, 2000 found on *Eucidaris metularia* (Lamarck, 1816). Photographed by R. Minemizu.

図 5. マツカサウニ上に発見されたゴカクゼブラガニ。峯水亮氏提供。

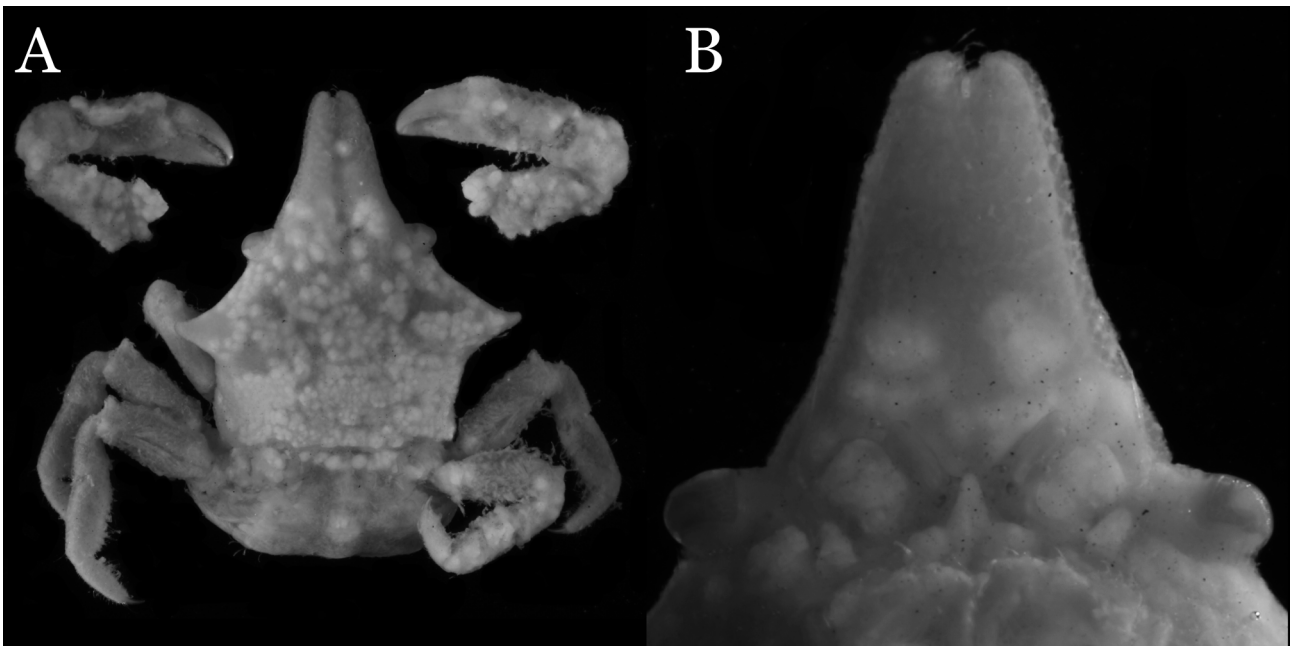


Fig. 6. *Gonatonotus granulosis* (MacGilchrist, 1905). NSMT-Cr 4370, ovigerous female, CL 12.0 mm, Seychelles. A, habitus, dorsal view; B, rostrum and interantennular septum, ventral view.

図 6. *Gonatonotus granulosis* (MacGilchrist, 1905). NSMT-Cr 4370, 抱卵雌, CL 12.0 mm, セイシェル.
A, 全体背面; B, 額角腹面。

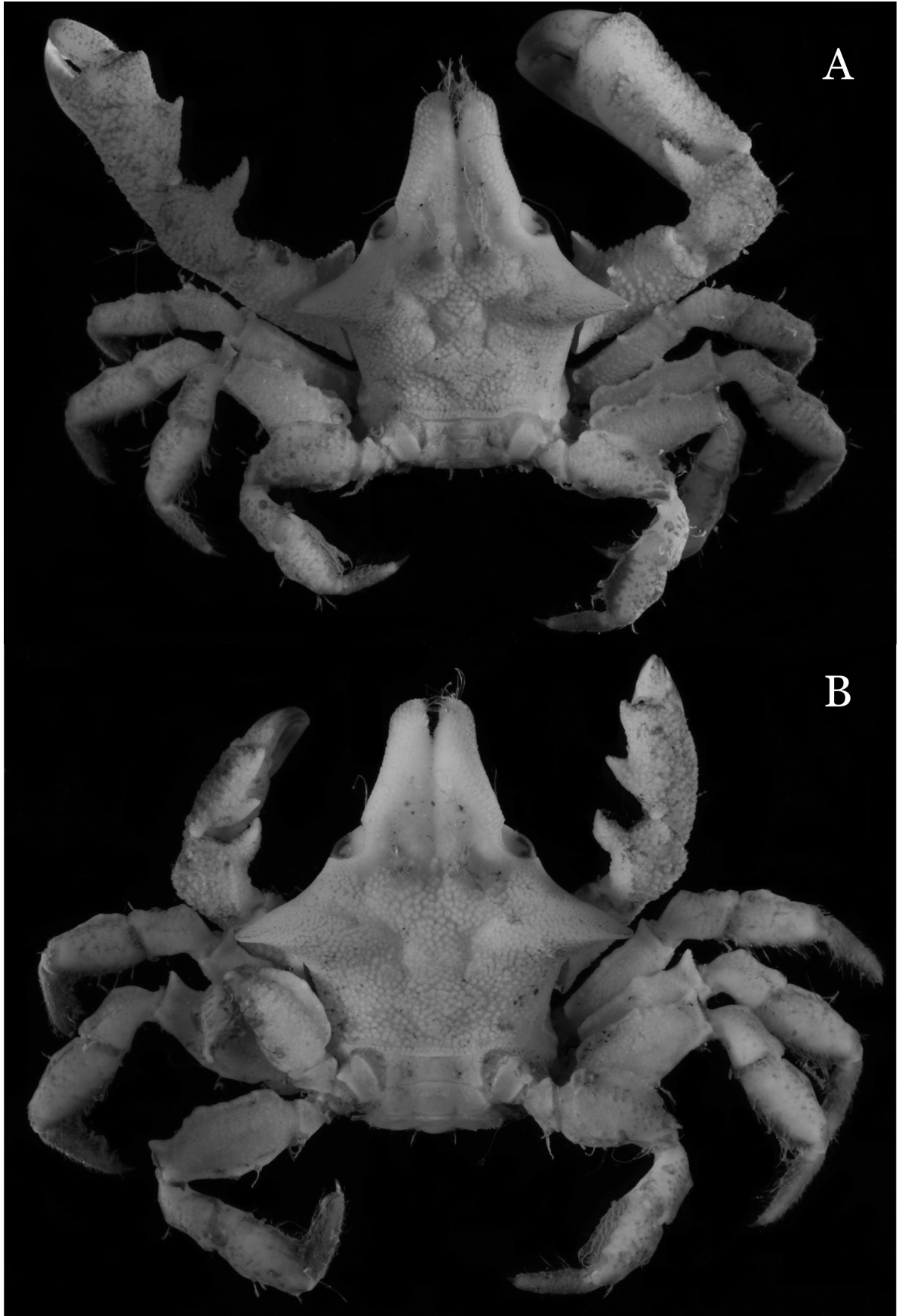


Fig. 7. *Eumedonus niger* H. Milne Edwards, 1834. NSMT-Cr 15959, Wakayama. A, male, CL 10.9 mm; B, female, CL 10.9 mm.

図 7. ケブカゼブラガニ. NSMT-Cr 15959, 和歌山. A, 雄, CL 10.9 mm; B, 雌, CL 10.9 mm.

Table 1. Records of host species of *Gonatonotus nasutus* Chia & Ng, 2000. Internet data sources were last checked on 26 November 2016.表 1.ゴカクゼブラガニ *Gonatonotus nasutus* Chia & Ng, 2000 の宿種の記録. インターネット上の情報の最終確認日は 2016 年 11 月 26 日である.

Host species 宿種	Locality 観察場所	Date 観察日	Observer 観察者	Data source 情報源
<i>Choriaster granulatus</i> (Lütken, 1869) カワテブクロ	Cape Maeda, Okinawa Island 沖縄島真栄田岬	8-vi-2015	Yuuki Endo 遠藤祐紀	Present study (Fig. 1) 本研究 (図 1)
<i>Choriaster granulatus</i> (Lütken, 1869) カワテブクロ	Kerama Islands, Okinawa 沖縄慶良間諸島	—	Takeru Banda 番田武六	Personal communication 私信
<i>Eucidaris metularia</i> (Lamarck, 1816) マツカサウニ	Cape Maeda, Okinawa Island 沖縄島真栄田岬		Ryo Minemizu 峯水亮	Personal communication (Fig. 5) 私信 (図 5)
<i>Phyllacanthus imperialis</i> (Lamarck, 1816) バクダンウニ	Sunabe, Okinawa Island 沖縄島砂辺	15-vii-2014	Naoki Shirakawa 白川直樹	http://dolphinkick.ti-da.net/e6535247.html
<i>Phyllacanthus imperialis</i> (Lamarck, 1816) バクダンウニ	Cape Maeda, Okinawa Island 沖縄島真栄田岬	5-viii-2010	Naoki Shirakawa 白川直樹	http://s.webry.info/sp/dolphinkick.at/webry.info/201008/article_5.html
<i>Phyllacanthus imperialis</i> (Lamarck, 1816) バクダンウニ	Cape Maeda, Okinawa Island 沖縄島真栄田岬	4-iii-2012	Naoki Shirakawa 白川直樹	http://m.webry.info/at/dolphinkick/201203/article_4.htm?i=&p=&c=s&guid=on
<i>Phyllacanthus imperialis</i> (Lamarck, 1816) バクダンウニ	Kashiwa Island, Kochi 高知柏島	8-viii-2010	Hiroyuki Tokuya 徳家寛之	http://kiss2sea.web.fc2.com/diving/class/ma026-006.htm
<i>Phyllacanthus imperialis</i> (Lamarck, 1816) バクダンウニ	Kashiwa Island, Kochi 高知柏島	13-iv-2011	Naoki Nishimura 西村直樹	http://polepoledive.blog50.fc2.com/blog-entry-284.html
<i>Plococidaris verticillata</i> (Lamarck, 1816) フジザオウニ	Okinawa Island 沖縄島	19-iii-2010	Naoki Shirakawa 白川直樹	http://s.webry.info/sp/dolphinkick.at/webry.info/201003/article_19.html
<i>Plococidaris verticillata</i> (Lamarck, 1816) フジザオウニ	Okinawa Island 沖縄島	19-iii-2010	Yusuke Yamada 山田祐介	Personal communication 私信
<i>Prionocidaris baculosa</i> (Lamarck, 1816) ノコギリウニ	Kogane-saki, Izu 伊豆黄金崎	25-i-2015	Tomoyuki Wakasa 若狭朋幸	http://www.arari.co.jp/deta/deta15-1.html
<i>Echinothrix calamaris</i> (Pallas, 1774) トックリガンガゼモドキ	Kerama Islands, Okinawa 沖縄慶良間諸島	1-xi-2009	Takeru Banda 番田武六	http://vibgyor-kerama.cocolog-nifty.com/blog/2009/11/post-8f76.html
<i>Echinometra</i> sp.A ツマジロナガウニ	Okinawa Island 沖縄島	1-vi-2015	Yusuke Yamada 山田祐介	http://urumacalappa.blog.fc2.com/blog-entry-1337.html
<i>Echinometra</i> sp.A ツマジロナガウニ	Cape Maeda, Okinawa Island 沖縄島真栄田岬	22-vii-2015	Naoki Shirakawa 白川直樹	http://dolphinkick.ti-da.net/e7789670.html
<i>Echinometra mathaei</i> (Blainville, 1825) or <i>Echinometra</i> sp. C ホンナガウニまたは リュウキュウナガウニ	Palpunte, Okinawa Island 沖縄パルプンテ	12-iii-2011	Naoki Shirakawa 白川直樹	http://dolphinkick78.blog47.fc2.com/blog-entry-548.html
<i>Echinometra</i> sp. C リュウキュウナガウニ	Cape Maeda, Okinawa Island 沖縄島真栄田岬	12-vi-2012	Naoki Shirakawa 白川直樹	http://s.webry.info/sp/dolphinkick.at/webry.info/201206/article_12.html
<i>Toxopneustes pileolus</i> (Lamarck, 1816) ラッパウニ	Futami Bay, Chichijima 父島二見湾		Yasuhiro Morita 森田康弘	Minemizu (2000: 223); Pers. comm. 峯水 (2000: 223); 私信
<i>Holothuria (Halodeima) atra</i> (Jaeger, 1833) クロナマコ	Kerama Islands, Okinawa 沖縄慶良間諸島	—	Takeru Banda 番田武六	Personal communication 私信

附録 1. (続く)

Appendix 1 (Continued)

Host species 宿種	Locality 観察場所	Date 観察日	Observer 観察者	Data source 情報源
<i>Thelenota anax</i> (H.L. Clark, 1921) アデヤカバイカナマコ	Kerama Islands, Okinawa 沖縄慶良間諸島	25-ix-2015	Atsushi Ono 小野篤司	http://ononini.exblog.jp/24507318/
<i>Thelenota anax</i> (H.L. Clark, 1921) アデヤカバイカナマコ	Kerama Islands, Okinawa 沖縄慶良間諸島	—	Takeru Banda 番田武六	Personal communication 私信
<i>Stylophora pistillata</i> Esper, 1797 ショウガサンゴ	—	—	—	Sakai (1976: 296, pl. 99, fig. 4, 178)

Host records. Observational records and data from previous studies on the host of *Gonatonotus nasutus* are summarized in Appendix 1. The occurrence of *G. nasutus* is confirmed from Okinawa to Izu Peninsula and Bonin Islands in Japan. Ten or 11 host species of echinoderms are confirmed by direct observation or photograph records (e.g. Fig. 5), including Asteroidea (1 species), Echinoidea (8 or 9 species), and Holothuroidea (1 species). In addition, a common cucumber species in the Ryukyus, *Holothuria (Halodeima) atra* (Jaeger, 1833), was also observed hosting *G. nasutus* (T. Banda, pers. comm.). Another host record was *Stylophora pistillata* (Cnidaria: Scleractinia) by Sakai (1976: pl. 99, fig. 4). These results indicate that *G. nasutus* tends to select several species of Echinodermata, especially Echinoidea, as its host. Castro (2015) indicated the possibility that the eumedonine crabs recorded from non-echinoderm hosts [an alcyonacean, a pennatulacean, and a *Stylophora* coral (not stylasterid coral, P. Castro, per. comm., also see Štević et al., 1988)] may be dislodged from the original hosts and were accidentally attached to the cnidarians when they were collected. In any case, even if *G. nasutus* chose cnidarians as host species these appear at least to be very rare cases.

Japanese names. Due to repeated changes of the systematic positions of *G. nasutus* and allied species from Japan, it is often the case that more than two Japanese names have been applied for the species as well as their upper taxa (Table 2). We propose to apply the names listed in Table 3 to stabilize future use of their Japanese names.

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Nishimura (Pole Pole Dive, Kashiwa Island, Kochi), Atsushi Ono (Zamami Island, Okinawa), Naoki Shirakawa (Dolphin Kick, Okinawa), Hiroyuki Tokuya (Kochi), Tomoyuki Wakasa (Shizuoka), Yusuke “Calappa” Yamada (Okinawa) (in alphabetical order, titles omitted). Ryo Minemizu kindly allowed to use his photograph. We also thank Hironori Komatsu, Masatsune Takeda (National Museum of Nature and Science, Tsukuba) and Peter K. L. Ng (Lee Kong Chian Natural History Museum, National University of Singapore) for allowing access to the specimens under their charge, Peter Castro (California State Polytechnic University) for his valuable comments, two reviewers, Junji Okuno (Coastal Branch of Natural History Museum and Institute, Chiba) and Masayuki Osawa (Shimane University) for their constructive comments on the manuscript, and Yoshihisa Fujita (Okinawa Prefectural University of Arts) and James Davis Reimer (University of the Ryukyus) for editing this paper.

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Table 2. Transition of scientific and Japanese names and higher taxa of *Gonatonotus nasutus* Chia & Ng, 2000.
 表 2. 日本産ゴカクゼブラガニ及びその上位分類群と学名・和名の変遷

References 文献 Family 科	Subfamily 亜科	Genus 属	<i>G. nasutus</i> from Japan 日本産ゴカクゼブラガニ
Sakai (1935b)			
Parthenopidae ヒシガニ科	Eumedoninae ゴカクヒシガニ亜科	<i>Eumedonus</i> —	<i>E. granulosis</i> ゴカクヒシガニ
Sakai (1956)			
Parthenopidae ヒシガニ科	— —	— —	<i>E. granulosis</i> ゴカクヒシガニ
Sakai (1976)			
Parthenopidae ヒシガニ科	Eumedoninae ムラサキゴカクガニ亜科	<i>Eumedonus</i> ゴカクゼブラガニ属	<i>E. granulosis</i> ゴカクゼブラガニ
Takeda & Marumura (1997)			
Eumedonidae ムラサキゴカクガニ科			<i>E. granulosis</i> ゴカクゼブラガニ
Minemizu (2000)			
Eumedonidae ゴカクガニ科	— —	<i>Eumedonus</i> ゴカクゼブラガニ属	<i>E. crassimanus</i> ケブカゼブラガニ
Chia & Ng (2000)			
Eumedonidae	— —	<i>Gonatonotus</i> —	<i>G. nasutus</i> —
Ng et al. (2008)			
Pilumnidae	Eumedoninae —	<i>Gonatonotus</i> —	<i>G. nasutus</i> —
Present study 本研究			
Pilumnidae ケブカガニ科	Eumedoninae ゴカクガニ亜科	<i>Gonatonotus</i> ゴカクゼブラガニ属	<i>G. nasutus</i> ゴカクゼブラガニ

Table 3. Japanese names proposed for Japanese taxa of three Eumedonine genera.
 表 3. ゴカクガニ亜科 3 属及びそれらの日本産種に提唱する和名.

Subfamily Eumedoninae Dana, 1852 (type genus <i>Eumedonus</i> H. Milne Edwards, 1834) ゴカクガニ亜科
Genus <i>Eumedonus</i> H. Milne Edwards, 1834 (type species <i>Eumedonus niger</i> H. Milne Edwards, 1834) ゴカクガニ属
<i>Eumedonus niger</i> H. Milne Edwards, 1834 ケブカゼブラガニ = <i>Gonatonotus crassimanus</i> Haswell, 1880 = <i>Eumedonus villosus</i> Rathbun, 1918
<i>Eumedonus vicinus</i> Rathbun, 1918 ハバヒロゴカクガニ
<i>Eumedonus zebra</i> Alcock, 1895 シマゼブラガニ
Genus <i>Echinoecus</i> Rathbun, 1894 (type species <i>Echinoecus pentagonus</i> Rathbun, 1894) ムラサキゴカクガニ属
<i>Echinoecus nipponicus</i> Miyake, 1939 ナデガタムラサキゴカクガニ
<i>Echinoecus pentagonus</i> (A. Milne-Edwards, 1879) ムラサキゴカクガニ = <i>Eumedon pentagonus</i> A. Milne-Edwards, 1879 = <i>Eumedon convictor</i> Bouvier & Seurat, 1906 = <i>Liomedon pentagonus</i> Klunzinger, 1906 = <i>Eumedonus petiti</i> Gravier, 1922 = <i>Echinoecus rathbunae</i> Miyake, 1939 = <i>Echinoecus klunzingeri</i> Miyake, 1939
Genus <i>Gonatonotus</i> White, 1847 (type species <i>Gonatonotus pentagonus</i> White, 1847) ゴカクゼブラガニ属
<i>Gonatonotus nasutus</i> Chia & Ng, 2000 ゴカクゼブラガニ

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日本より得られたゴカクゼブラガニの形態的特徴と宿主の記録

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要旨. ゴカクガニ亜科 (ケブカガニ科) の多くの種は棘皮動物と共生関係を持つことが知られており、また稀に刺胞動物を宿主とする記録もある。本研究では、宿主の情報が少ないゴカクゼブラガニ *Gonatonotus nasutus* Chia & Ng, 2000 について、著者らによる観察と文献情報、ならびに海中で観察された本種と宿主の写真をインターネット上に掲載しているダイバーから情報を募り、整理した。その結果、10 ない

し 11 種の棘皮動物 (ヒトデ綱 1 種, ウニ綱 8 または 9 種, ナマコ綱 1 種) が直接観察, あるいは画像から確認され, Sakai (1976) はショウガサンゴを宿主として報告していることが分かった.

本研究ではまた, 日本産ゴカクゼブラガニの形態的特徴を近似種と比較した. 日本ではゴカクゼブラガニ *G. nasutus* とケブカゼブラガニ *Eumedonus niger* H. Milne Edwards, 1834 がしばしば混同されていたが, ゴカクゼブラガニは, 歩脚長節の前縁が薄片状に伸びないために長節の断面が楕円形になり (ケブカゼブラガニでは薄片状), また額の先端の亀裂が浅い (ケブカゼブラガニでは亀裂が深い) ことから, ケブカゼブラガニより容易に区別することができる. また, Chia & Ng (2000) が *G. nasutus* を記載するまで, 日本産のゴカクゼブラガニの標本は *Eumedonus granulosus* (MacGilchrist, 1905) と同定されていた. しかし, 本研究で検討した標本, ならびに文献情報より, 日本産標本は, *G. nasutus* と同定され, 額の長さの違いが両種を区別するのに最も有効であることが分かった. 両種の分布地も, *G. nasutus* は南・西太平洋, *G. granulosus* は西インド洋と, 大きく離れている.

ゴカクガニ類の各分類群は, その分類学的位置の変動の多さもあり, 和名の変更も多くなされてきた. 例えば *G. nasutus* と同定された日本産ゴカクゼブラガニはゴカクヒシガニとされていたり (Sakai 1935b; 1956), Eumedonidae (-nae) はゴカクヒシガニ亜科 (Sakai 1935b) やムラサキゴカクガニ(亜)科 (Sakai 1976; Takeda & Marumura 1997), あるいはゴカクガニ科 (Minemizu 2000) など, 複数の和名が提唱されている (表 1). 本研究では和名に生じうる混乱を防ぐため, Eumedoninae Dana, 1852 とそれに含まれる 3 属 (*Eumedonus* H. Milne Edwards, 1834; *Gonatonotus* White, 1847; *Echinoecus* Rathbun, 1894), 及びそれらの日本産種について, 表 2 に示す和名の使用を提唱する. 日本産 *G. nasutus* の和名は, 発見当初はゴカクヒシガニとされたが, Sakai (1976) 以降はゴカクゼブラガニとされることが多い (表 1) ため, 本報でも「ゴカクゼブラガニ」を踏襲した. Sakai (1976) や Minemizu (2000) はかつてゴカクゼブラガニを含んでいた *Eumedonus* の和名を「ゴカクゼブラガニ属」としていた. 現在, ゴカクゼブラガニは別の *Gonatonotus* に属しているため, 混乱を防ぐ上で *Eumedonus* には別の和名を与えるのが

良く, 本報ではゴカクガニ属とした. *Eumedonus* がタイプ属である Eumedoninae (もしくは Eumedonidae) は, 前述のようにムラサキゴカクガニ亜科などとも呼ばれていたが, ムラサキゴカクガニという呼称は *Echinoecus* にも与えられている. 混乱を防ぐと共に亜科名とそのタイプ属の関係を示す上でも, Eumedoninae はゴカクガニ亜科とするのが理想である. Takeda & Miyake (1972) により報告された *Eumedonus villosus*, 及びそれをジュニアシノニムとして含む Takeda & Marumura (1997) により報告された *E. crassimanus* は, さらに *E. nigra* のジュニアシノニムの関係にあるとされている (Chia & Ng 2000). *Eumedonus nigra* には, Takeda & Marumura (1997) により *E. crassimanus* に与えられた和名「ケブカゼブラガニ」を使用したい.

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