

## The Occurrence of a Rare Pagurid Hermit Crab, *Pagurus townsendi* (BENEDICT, 1892) (Decapoda, Anomura, Paguridae), in the Northwestern Pacific

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**ABSTRACT** A bathyal pagurid hermit crab, *Pagurus townsendi* (BENEDICT, 1892), is described based on 28 specimens collected from the Pacific coast of northern Japan at the depths of 325 to 740 m. *P. townsendi* resembles apparently *P. trigonocheirus* (STIMPSON, 1858) but it is distinguished readily by having more acute rostrum, dilated corneae, more elongate right cheliped, and longer dactyl of the left chela, as well as the coloration. The present material represents the first record of this rare species from the Western Pacific.

While identifying specimens of decapod crustaceans collected mainly by the author from the Pacific coast of northern Japan, ranging from eastern Hokkaido to Kinkasan, Miyagi Prefecture, many specimens of a deep-sea hermit crab belonging to the genus *Pagurus* were found. There is little doubt that these belong to *Pagurus townsendi* (BENEDICT, 1892), a species heretofore reported only from some Alaskan specimens. Thus the present material represents the first record of this rare species from the Western Pacific Ocean. The description given below is abbreviated because McLAUGHLIN (1974) gave a detailed description of this species based on the Alaskan material including type series.

The specimens are deposited at the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University (HUMZ).

### *Pagurus townsendi* (BENEDICT, 1892)

(Fig. 1)

*Eupagurus (Trigonocheirus) townsendi* BENEDICT, 1892: 13.

*Pagurus townsendi*: RATHBUN, 1904: 158, pl. 4, fig. 5; 1910: 158, fig. 5.—WILLIAMSON, 1915: 481.  
—GORDAN, 1956: 336.—McLAUGHLIN, 1974: 289, figs. 75–77.

*Eupagurus townsendi*: ALCOCK, 1905: 179.

*Eupagurus (Trigonocheirus) townsendi* (sic): SIVERTSEN, 1932: 9.

? *Eupagurus trigonocheirus*: YOKOYA, 1933: 83 (in part).

? *Pagurus pubescens*: MAKAROV, 1938: 208 (in part, not pl. 4, fig. 1) [= *P. trigonocheirus* (STIMPSON, 1858)]. Not *Pagurus pubescense* KRØYER, 1838].

**Material.** HUMZ-C 45, 3 males (11.0–14.0 mm SL, 19.5–24.7 mm mCL), off Miyako, Iwate Pref., exact position not recorded, 400–500 m, trawl, 4 April 1987, coll. T. KOMAI; HUMZ-C 412, 10 males (12.5–17.0 mm SL, 22.0–30.5 mm CL), off Shizunai, Hidaka, Hokkaido, 42°14.9'N, 142°04.4'E, 550–640 m, muddy bottom, otter trawl (T/S Oshoro-Mar), 5 Sept. 1988, coll. T. KOMAI; HUMZ-C 1046, 11 males (12.1–22.6 mm SL, 20.1–41.4 mm CL), east of Cape Erimo, eastern Hokkaido, 42°29.8'N, 144°56.0'E, 740 m, muddy bottom, otter trawl (T/S Oshoro-Mar), 5

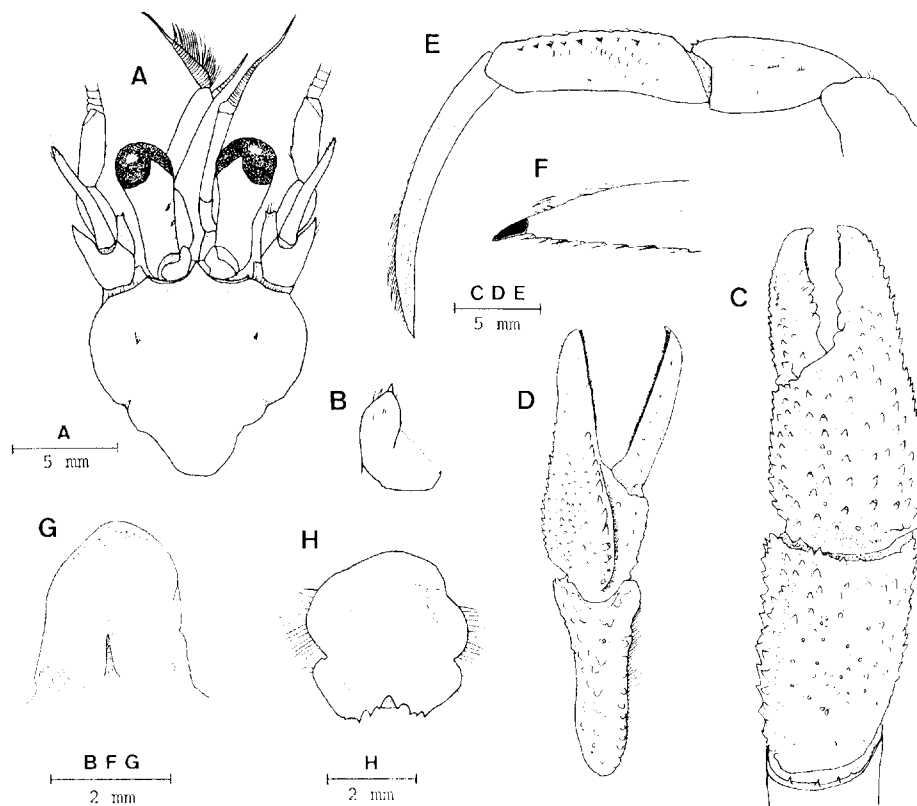


Fig. 1. *Pagurus townsendi* (BENEDICT, 1892). HUMZ-C 45, male. A, shield and cephalic appendages; B, right ocular acicle; C, right cheliped, chela and carpus in dorsal aspect; D, left cheliped, chela and carpus in dorsal aspect; E, left second pereopod, distal three segments; F, same, distal part of dactylus; G, sternite of third pereopods; H, telson in dorsal aspect.

Sept. 1989, coll. T. KOMAI; HUMZ-C 1060, 1 male (11.0 mm SL, 17.2 mm CL), off Hiroo, eastern Hokkaido, 42°44.5'N, 143°41.6'E, 325 m, muddy bottom, otter trawl (R/V Tanshu-Marui), 30 May 1990, coll. T. KOMAI; HUMZ-C 1791, 1 female (7.8 mm SL, 14.0 mm CL), 2 males (6.0, 7.8 mm SL, 10.0, 12.0 mm CL), off Hachinohe, Aomori Pref., otter trawl (T/S Hokusei-Marui), 2 April 1992, coll. F. MUTO.

**Description.** Shield (Fig. 1A) almost naked, as wide as or slightly wider than long; rostrum triangular, acute, distinctly overreaching lateral projections; anterior margin between rostrum and lateral projection concave. Posterior carapace also naked.

Ocular peduncles (Fig. 1A) stout, cornea somewhat dilated; ocular acicles (Fig. 1B) subtriangular, with terminal spine, but without accessory spinules.

Scaphocerite (Fig. 1A) acute, overreaching cornea.

Chelipeds grossly unequal. Right cheliped (Fig. 1C) elongate, about 4 times as long as shield in large specimens; dactyl subequal to palm; palm with dorsomesial and dorsolateral margins armed with small acute spines, dorsal surface scattered

with spines, but with little setae; carpus somewhat longer than palm, dorsal surface scattered with spines, with shallow, wide groove along dorsomesial margin; merus without prominent tubercles on ventral surface. Left cheliped (Fig. 1D) with dactyl nearly twice of palm; palm with dorsolateral surface oblique, concave, dorsal surface elevated medially in moderately strong ridge armed with spines; dorsolateral margin slightly expanded proximally.

Second and third pereopods (Fig. 1E, F) with dactyls distinctly longer than propodi, somewhat twisted, bearing 20–39 corneous spinules becoming dense distally on almost entire length of ventral margins; dorsal margins of propodi and carpi not spinose.

Fourth pereopod subchelate; propodal rasp composed of numerous corneous scales arranged irregularly, not in rows. Fifth pereopods with coxae almost equal, without tuft of setae in male.

Sternite of third pereopods (sixth thoracic somite) (Fig. 1G) generally subcircular, slightly skewed to left.

Abdomen with 3 unpaired pleopods in male. Telson (Fig. 1H) with posterior lobes slightly asymmetrical, separated by V-shaped median cleft, each terminal margin armed with 3 or 4 rather strong corneous spines.

Integument without iridescent.

*Color in living animal.* Shield, antennae, third maxillipeds, chelipeds, and ambulatory pereopods bright red or orange red; posterior carapace pale; ocular peduncle generally red, often purplish distally, cornea black.

*Biological notes.* The gastropod shells used by *P. townsendi* were as follows: Pacific coast of Hokkaido: Buccinidae: *Buccinum kashimana* OKUTANI, 1964; *B. kushiroensis* HABE et ITO, 1976; *Clinopegma unicum damon* (DALL, 1907); *Parancistrolepis fujitai* KURODA, 1931; Pacific coast of Honshu Mainland: Buccinidae: *Buccinum kashimana*; *B. kushiroensis*; Naticidae: *Lunatia* sp. No association of other invertebrates.

*Pagurus townsendi* has been reported from depths between 519 and 1,143 m (RATHBUN, 1904; 1910), and the present collection came from depths between 350 and 740 m. The substrates where *P. townsendi* was collected were soft gray mud containing little sand in off Hiroo. The decapod material from the surveyed area at depths of more than 1,000 m did not contain this species. No other hermit crab was collected sympatrically throughout the surveyed area, though *P. trigonocheirus* was often encountered at depths of shallower than 350 m.

*Remarks.* The present material agrees well with the redescription of *P. townsendi* given by McLAUGHLIN (1974). Literature records show that the largest known specimen was a male 14.2 mm in shield length (McLAUGHLIN, 1974). The largest specimen in the present collection (27.5 mm SL) is considerably larger than that recorded.

Among Western Pacific congeners, *P. townsendi* appears related to *P. trigonocheirus* (STIMPSON, 1858), especially in having the prominent median crest on the left chela. *Pagurus townsendi* is readily distinguished from the latter species by having more acute rostrum, dilated corneae, more elongate right cheliped, and dactyl of the left chela which is nearly twice as long as the palm rather than about 1.5 times as long. Further, these two species quite differ from each other in the coloration in life; *P. townsendi* is almost uniformly red, while in *P. trigonocheirus*, the carapace and the pereopods are pale reddish brown in general, and the ambulatory pereopods

have deep-red bands, which are obscurely delimited, at each articulation of the merus, carpus, and propodus (unpublished data).

Besides BENEDICT's (1892) original description, the record by RATHBUN (1904; 1910), and the redescription by McLAUGHLIN (1974), references (see synonymy) to *P. townsendi* are merely literature citations. RATHBUN (1904; 1910) and McLAUGHLIN (1974) included another lot also collected from the Bering Sea (*Albatross* station 3502) in 1893 in addition to the type series. The new material suggests that *P. townsendi* is widely distributed in the northern North Pacific Ocean. Concerning the bathymetric distribution, *P. townsendi* seems to be a typical deep-water species inhabiting depths below 350 m as noted above. McLAUGHLIN (1974) suggested that some of deep-water specimens recorded as *P. pubescens* by MAKAROV (1938) from the eastern Chukchi and Bering Seas, southward to Oregon, should have been referable to *P. townsendi*. Further I suggest that at least three specimens recorded as *Eupagurus trigonocheirus* from the Pacific coast of northern Japan (*Soyo-Maru* station 18, 60, 73: depths were 583 m, 477 m, and 390 m respectively) by YOKOYA (1933) are also possibly referable to this species.

In addition, in spite of the indication that *P. townsendi* is widely distributed in northern North Pacific, I could not find *P. townsendi* in the recent deep-sea decapod collections from the Okhotsk coast of Hokkaido and the Sea of Japan, which have been accumulated in our laboratory.

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#### 摘 要

駒井智幸 (千葉県立中央博物館動物研究科) — 西部北太平洋からのヒオドシホンヤドカリ (新称) *Pagurus townsendi* (BENEDICT, 1892) (十脚目・異尾亜目・ホンヤドカリ科) の初記録.

北海道東部から本州東北部にかけての太平洋沿岸の深海から採集された標本に基づき, *Pagurus townsendi* (BENEDICT, 1892) (新称: ヒオドシホンヤドカリ) を報告した. 本種は, これまではアラスカ産の数個体の標本により知られているのみで, 本報告は本種の西部北太平洋からの初記録となる. 日本産の本属既知種の中では, ミツカドホンヤドカリ *P. trigonocheirus* STIMPSON, 1858 に最も類似するが, 額角がより長く明瞭であること, 眼の角膜部が肥大すること, 鉗脚がより伸長すること, 生時は全体的に赤色を呈することなどの点で容易に識別できる. 両種はほぼ同じ海域に分布するが, 本種は 300 m 以深に限られ, ミツカドホンヤドカリはこれより浅所に出現する. また, 本標本は本種が北部太平洋に広く分布することを示すが, オホーツク海と日本海からは現在のところ標本が得られていない.

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