



International Journal of Fisheries and Aquatic Studies

E-ISSN: 2347-5129
P-ISSN: 2394-0506
(ICV-Poland) Impact Value: 5.62
(GIF) Impact Factor: 0.549
IJFAS 2019; 7(6): 114-117
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www.fisheriesjournal.com
Received: 19-09-2019
Accepted: 21-10-2019

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First record of a rare deepwater Japanese blunthorn lobster *Palinustus waguensis* Kubo, 1963 (Decapoda: Palinuridea) from the coast of Sea of Oman, Sultanate of Oman

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Abstract

The Ministry of Agriculture and Fisheries research laboratory registered for the first time new lobster known as Japanese blunt-thorn *Palinustus waguensis*. On October 2018, eight specimens of rare deep water Japanese blunt-horn lobster *Palinustus waguensis* was recorded for the first time in Omani waters in Sea Of Oman. The specimens were caught by a traditional fisherman in Wilayat As Sib, Muscat. It was caught by wired trap at 70-85 meters depth. The total length and carapace length of all eight specimens ranged from 11.5 to 14.0 cm, 5.9 to 4.6 cm, respectively. While the weight ranged from 48-109gms. All specimens were male. The coloration was reddish and distinct. Japanese blunt-horn lobster *Palinustus waguensis* Kubo, 1963 from Sea of Oman was confirmed based on morphological characters.

Keywords: Wilayat as Sib, *Palinustus waguensis*, Japanese blunt-horn lobster, Sea of Oman

1. Introduction

Sultanate of Oman is situated in the southeast corner of the Arabian Peninsula, bordering by Arabian Sea, Sea of Oman, and the Arabian Gulf. The coastline is approximately 3165 km-long. Blessed with extremely rich flora and fauna [1-7]. The coastline is geologically diverse compared to adjacent countries [8]. One of most important economic fisheries in the Sultanate of Oman is lobster fishery, with annual production of 549 (ton) and total value of more than 2 million Omani Rial (O.R.), making it the valuable and highly priced among other marine crustaceans in Oman [9]. At present four species of lobster are documented in the Omani waters [10-13], two of which are most common. The Scalloped spiny lobster *Panulirus homarus* is the highly abundant and exploited commercially, distributed mostly in the Arabian Sea. And other small fishery of Painted spiny lobster *Panulirus versicolor*, where it mainly found in Muscat and Musandam Governorate in Sea of Oman. In the present paper, the occurrence of the rare deepsea Japanese blunthorn lobster *Palinustus waguensis* is recorded for the first time in the waters of Oman. This species belong to the genus *Palinustus* which is represented by five species namely; *P. truncatus* A. Milne Edwards, 1880 [14], restricted to the western Atlantic, *P. mossambicus* Barnard, 1926 [15], known with certainty from the eastern coast of Africa, while both *P. waguensis* Kubo, 1963 [16], and *P. unicornutus* Berry, 1979 [17], are widely distributed in the Indo-West-Pacific and *P. holthuisi*, is found in Taiwan and Japan [18].

2. Materials and methods

2.1 Sampling area

Wilayat of as Sib is one of coastal fishing city of Muscat Governorate. It is located in northeastern part of Oman, typically about several kilometers northwest away from Muscat (Figure 1). Daymaniyat Islands Nature Reserve in the Sea of Oman is located in this city. It has a traditional fish market.

2.2 Sampling methods

On 14th of October 2018, fisherman from Wilayat of As Sib of Muscat region caught eight (8) small lobsters in the wired trap. At depth of 70-85 meter about few nautical miles off coast of Muscat in Sea of Oman at (N 23. 50. 484, E 058. 20. 379).

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For assessment of morphological characters and identification, Specimens were brought fresh in good condition to the Marine Science and Fisheries Centre, Muscat, Sultanate of Oman, laboratory of crustacean and molluscs section, where the necessary biological parameters like morphological measurements (Total and carapace length to the nearest centimeters with weight in grams) were also recorded for all eight specimens. The illustrations of important taxonomic parts were made with the aid of Nikon

D300 (DSLR Camera). The specimens were lodged in the collection of the laboratory of crustacean and molluscs section, Marine Science and Fisheries Centre. All lobsters were identified based on the morphological characteristics using the taxonomic keys from Holthuis (1991)^[19], Chan & Yu (1995)^[18], Carpenter & Niem (1998)^[20], Radhakrishnan (2013)^[21] and Chakraborty (2017)^[22], and the characters are presented.

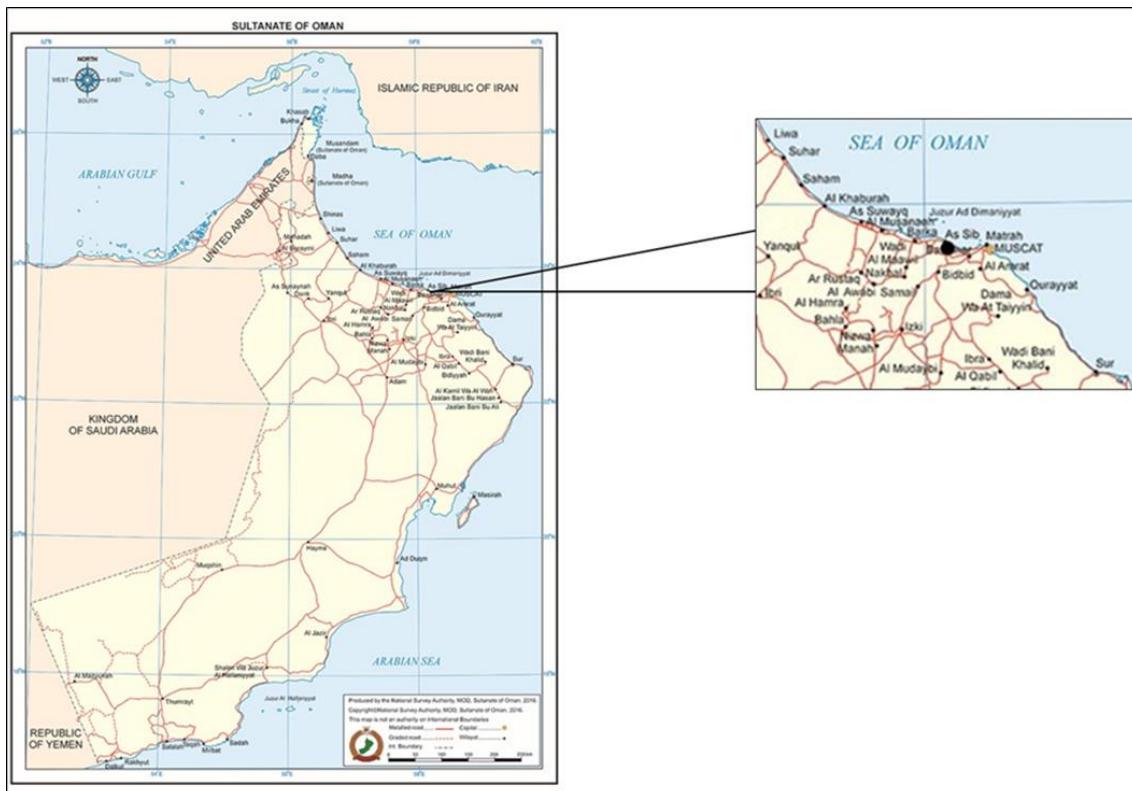


Fig 1: Map of Sultanate of Oman, Wilayat of As Sib (Enlarged).

3. Results

The collected specimens was unequivocally identified as *Palinustus waguensis* based on its distinguishing characters, and identification was confirmed by two experts, first Johan Groeneveld Senior Scientist South Africa and second Tin-Yam Chan from Taiwan.

3.1 Description

All eight specimens were male and they were small lobsters (Figure 2). Heavily body pubescent with spines well developed (Figure 3). Elevated parts of abdomen clearly prominent. No median spine on anterior margin of carapace. Anterior margin of carapace and inner margin of the frontal horns with several distinct spines (Figure 4). Anterior margin of carapace between frontal horns provided with 6 irregularly arranged spines (0-8 spines in Chan & Yu, 1995); inner margin of supraorbital horn armed with 5 spines. Antennal and branchiostegals pines more or less as long as widest diameter of eye but postorbital spine short and about half as long as antennal spine. Postorbital spine distinctly shorter than antennal spine and branchiostegal spines (Figure 5).

3.2 Coloration

Body reddish brown with pleopods generally orange (Figure 3). The anterior margin of carapace had red bands. Eyes dark brown. Antennular peduncle reddish with some narrow white

bands, flagella reddish. Antennal flagella provided with broad pale bands. Maxilliped III and meri of pereiopods covered with many dense narrow red rings (Figure 6). Hinges between carapace and abdomen, as well as inner bases of endopods of uropods, with pair of large white spots. Thoracic margins serrated. The dorsal side of the abdomen with white spots and margins parts of tail fan reddish (Figure 7).



Fig 2: All eight specimens of *Palinustus waguensis* in the laboratory of crustacean and molluscs section.



Fig 3: Heavily body pubescent with well-developed spines of male *Palinustus waguensis*, TL 14.0 cm and cl 5.9 cm, the coloration is reddish brown with orang pleopods.



Fig 4: Dorsal view of anterior margin of carapace and inner margin of the frontal horns with several distinct spines of *Palinustus waguensis*.

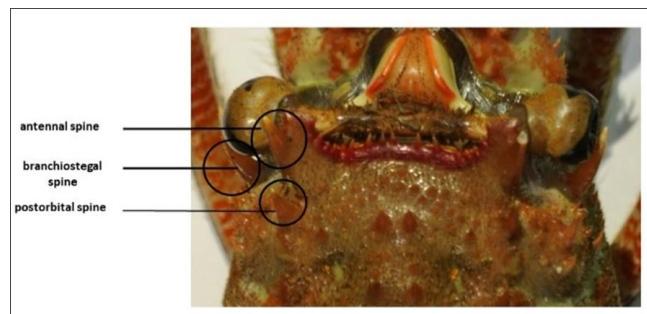


Fig 5: Postorbital spine distinctly shorter than antennal spine and branchiostegal spines of *Palinustus waguensis*.

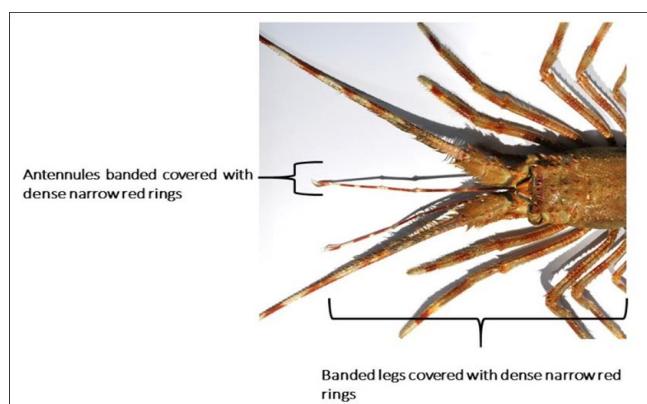


Fig 7: antennules banded and legs covered with dense narrow red rings of *Palinustus waguensis*.

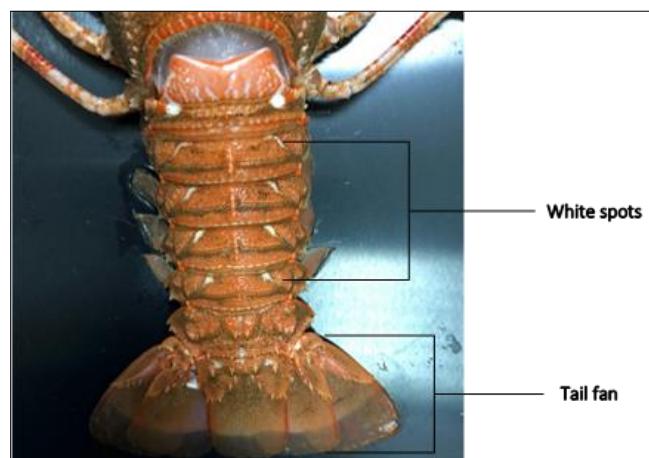


Fig 8: The dorsal side of the abdomen of *Palinustus waguensis* with white spots and margins parts of tail fan reddish.

3.3 Morphometric measurements ♂

Total and carapace length were ranged from 11.5 to 14.0 cm 4.6 to 5.9 cm and respectively. The wet weight was recorded 48-109gms.

3.4 Ecological data

The specimens were caught at depths of 70-85 meters in Sea of Oman by wired traps gear.

4. Discussions

Previously *Palinustus waguensis* Kubo, 1963 species from South-West India and Philippines (Sulu Sea) has been reported under the name *P. mossambicus* it was miss identification [19]. It is widely distributed in the Indo-West-Pacific from Japan to Taiwan, the Philippines, Indonesia, Thailand, India, and Madagascar [18, 19]. These deep sea spiny lobsters seem to be rare and difficult to collect, due to their living environment, in which they inhabit both reef and rocky slopes and settled at considerably deeper depths range of 72-180 m [18, 19]. In Japan and India *P. waguensis* was reported from shallow water. Moreover, the species in India and the Philippines has been caught from depths between 72 and 84 m [19]. Recently the occurrence of *Palinustus waguensis* was recorded in the Arabian Sea off Managalore coast South-West of India after a gap of 45 years since as its first report in 1965 [23]. Their occurrence also has been reported in the deepsea trawl landings at Kasimedu, Chennai with size ranging from 32 mm to 75 mm carapace length [24], and by bottom set gillnets at Cuddalore during with size range 48-70 mm of male carapace length [25]. The morphological characteristics and appearance of the specimens on hand are more in agreement with the description that given by Chan & Yu (1995) for *P. waguensis*, where the body being Heavily pubescent, postorbital spine shorter than antennal spine and branchiostegal spines, the reddish brown ground coloration and the antennules banded and legs with dense narrow rings. The specimens obtained in the present study bear several distinct spines along the anterior margin of the carapace and the inner margin of the frontal horns, which agree with the description given by Holthuis (1991) for *P. waguensis*. The length of the specimens studied were much greater than the maximum lengths given by Holthuis (1991), but less than the lengths reported by Kizhakudan & Thirumilu (2006) and agree with the maximum length given by Carpenter & Niem (1998). Despite this species is considered as the most common species of the genus and geographically wide

distributed, it still referred as rare^[18]. It has very limited value to fisheries. For example, In Thailand, the specimens were dried and sold to tourists as souvenirs^[20] and in Japan as live ones give to the public aquaria for exhibitions^[26-28].

In conclusion, the present study is considered as the first report that records the first occurrence of *P. waguensis* caught by wired traps gear in Omani waters from Sea of Oman on basis of morphological identification. The biology and stock assessment of *P. waguensis* and their potential commercial value off Oman should be further investigated through experimental fishing.

5. Acknowledgment

I would like to thank the fisherman Yousuf Al- Maharmi, and Mohammed Al- Musharfi and Abdullah Al- Harthi from Fishing Gear Technology Section at the Marine Science & Fisheries Centre, for taking the effort to bring the samples to the laboratory. Thanks due to the fishery expert Dr. Shamah Zaki Aldeen to assists in this paper writing.

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