A NEW SPECIES OF THE HERMIT CRAB GENUS *TURLEANIA* 
MCLAUGHLIN, 1997 (DECAPODA, ANOMURA, PAGURIDAE) 
FROM THE EAST CHINA SEA

BY

YUAN-YUAN HAN¹,², ZHONG-LI SHA²,³ and JIAN-MEI AN¹

¹) School of Life Science, Shanxi Normal University, Linfen 041004, P. R. China
²) Institute of Oceanology, Chinese Academy of Sciences, Qingdao 266071, P. R. China

ABSTRACT

A new species of the genus *Turleania* McLaughlin, 1997, *T. sinensis* sp. nov., is described and illustrated. This new species is morphologically similar to *T. senticosa*, but differs from that species in having nine pairs of quadriserial gills, and in having the ventromesial margin of the ischium of both chelipeds armed with large, prominent spines. This is the tenth species in this genus, and the first record of the genus from the China Sea. An identification key to species of *Turleania* is provided.

Key words. — Crustacea, Decapoda, Paguridae, *Turleania*, new species, China Sea

INTRODUCTION

The genus name *Turleania* was proposed by McLaughlin (1997) to replace *Laurentia* McLaughlin & Haig, 1996. Five species were originally included in this genus by McLaughlin (1997): the type species *T. albatrossae* (McLaughlin & Haig, 1996), *T. balli* (McLaughlin & Haig, 1996), *T. sibogae* (McLaughlin & Haig, 1996), *T. senticosa* (McLaughlin & Haig, 1996) and *T. multispina* McLaughlin,

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1997. Komai (1999) extended the ranges of these five species to the Philippine Islands and described two new species *T. similis* and *T. spinimanus* from the Japanese Oceanic Islands. McLaughlin (2007) described another new species, *T. boucheti*, extending the ranges of *T. multispina* and *T. senticosa* to the New Caledonia Exclusive Economic Zone. Moreover, McLaughlin placed *T. similis* as a junior synonym of *T. senticosa*. Subsequently, Osawa & Fujita (2008) described two new species, *T. saliens* and *T. tenebrosa*, redescribed *T. balli*, and emended the genus in order to accommodate three species found to have nine pairs of quadriserial gills instead of eleven pairs described in McLaughlin’s (1997) original diagnosis.


MATERIAL AND METHODS

The type specimens of the new species are deposited in the Marine Biological Museum, Chinese Academy of Sciences, QingDao, P. R. China (MBMCAS). The drawings were made with the aid of a drawing tube mounted on a Zeiss compound microscope. Shield length (SL), measured from the tip of the rostrum to the midpoint of the posterior margin of the shield, indicates specimen size. All measurements are in millimeters (mm). The terminology according to Komai (1999) is used.

TAXONOMY

Family PAGURIDAE Fabricius, 1775
Genus *Turleania* McLaughlin, 1997

*Turleania sinensis* sp. nov.
(figs. 1-5)

Type material.— East China Sea: Holotype: male (SL 1.85 mm), MBM151549, station V-5 (27°30′N 123°00′E), 90 m, silver sandy bottom, coll. Zhi-Chan Tang, Agassiz trawl, 11 October
1975. Paratype: female (SL 1.65 mm), MBM151549, station V-5 (27°30′N 123°00′E), 90 m, silver sandy bottom, coll. Zhi-Chan Tang, Agassiz trawl, 11 October 1975; 2 male (SL 1.85, 1.95 mm), 1 ovigerous female (SL 1.80 mm), MBM151456, station V-11 (27°30′N 126°00′E), 162 m, silver sandy bottom, coll. Zhi-Chan Tang, Agassiz trawl, 10 October 1975; 1 male (SL 2.05 mm), MBM153058, station V-2 (32°30′N 127°00′E), 120 m, silver sandy bottom, coll. Zhi-Chan Tang, Agassiz trawl, 29 May 1978.

Description.— Nine pairs of quadriserial gills.

Shield (fig. 1a) slightly longer than broad; anterior margin between rostrum and lateral projections concave; anterolateral margins sloping; posterior margin roundly truncate. Rostrum triangular, well developed, distinctly overreaching lateral projections, terminating bluntly. Lateral projections also developed, each with small marginal spine.

Ocular peduncles (fig. 1a) 0.7 length of shield; dorsal surface with row of few short setae mesially; corneas noticeably dilated. Ocular acicles subtriangular, terminating subacutely, with small submarginal spine.

Antennular peduncles (fig. 1a) overreaching ocular peduncles by about 0.6 length of ultimate segment. Ultimate segment elongate, 2.3 times longer than penultimate segment, with tufts of setae on dorsodistal margin. Penultimate segment glabrous. Basal segment with statocyst region strongly inflated laterally, dorsoventrally flattened, dorsolateral margin with small spine.

Antennal peduncles (fig. 1a) overreaching ocular peduncles by about 0.4 length of fifth segment. Fifth and fourth segments with few long setae. Third segment with small spinule on ventrodistal margin. Second segment with dorsolateral distal angle produced, terminating in acute spine and sometimes with prominent slender spine. First segment with small spine on ventrolateral margin distally. Antennal acicles reaching to base of cornea or slightly beyond, terminating in acute spine and with long setae on mesial margin.

Mandible (fig. 2a) with acute calcareous tooth at lower angle of cutting edge. Inner lobe of endopod of maxillule (fig. 2b) moderately produced, with 1 terminal bristle; outer lobe broadly triangular, with 1 apical setae. Maxilla (fig. 2c) with endopod exceeding anterior margin of scaphognathite. First maxilliped (fig. 2d) with endopod 0.4 length of exopod. Second maxilliped (fig. 2e) with basis-ischium fusion incomplete; exopod elongate. Third maxilliped (fig. 2f) slender, with dactyli 0.5 times of propodus; propodus slightly shorter than carpus; carpus unarmed; merus unarmed; ischium somewhat flattened, mesial margin generally convex, with crista dentata composed of row of corneous-tipped teeth, no accessory tooth; basis with 4 small spines on mesial margin; coxa with slender spine at distomesial angle; exopod reaching at the base of propodus.

Right cheliped (fig. 3a-d) moderately long and stout; with narrow hiatus between dactyl and fixed fingers when closed. Chela ovate in dorsal view, 2 times...
Fig. 1. *Turleania sinensis* sp. nov. Holotype male (SL 1.85 mm), MBM151549. a, Shield and cephalic appendages, dorsal view; b, propodus and dactyl of right fourth pereopod, lateral view; c, sixth thoracic sternite, ventral view; d, coxae of fifth pereopods and eight thoracic sternite, ventral view; e, telson, dorsal view.

longer than broad. Dactyl 0.6 times as long as palm, weekly curved ventrally; dorsal surface convex, with scattered small spines, extending onto mesial face, dorsomesial margin not clearly delimited; mesial and ventral surfaces with scattered short to long setae; cutting edge with 2 widely spaced, strong calcareous, terminat-
Fig. 2. *Turleania sinensis* sp. nov. Holotype male (SL 1.85 mm), MBM151549. a, Right mandible, internal view; b, left maxillule, ventral view; c, left maxilla, ventral view; d, left first maxilliped, ventral view; e, left second maxilliped, ventral view; f, left third maxilliped, lateral view.

Palm nearly same length of carpus; dorsal surface convex, armed with scattered small spines and tufts of long setae; dorsomesial margin with 2 or 3 rows of spines; dorsolateral margin bearing small but distinct spines; dorsal surface of fixed finger with scattered numerous small spines and scattered setae; lateral, mesial and ventral surfaces with longitudinal rows of tufts of short and long setae. Cutting edge of fixed finger with 2 broad calcareous teeth, terminating in small corneous claw. Carpus slightly longer than merus; dorsomesial margin with row of moderately strong spines and long setae, dorsal surface with scattered spines and setae laterally, dorsodistal margin unarmed; dorsolateral margin not delimited; mesial face with tufts of long setae, lateral and ventral surfaces with few setae. Merus with transverse rows of setae on dorsal surface, dorsodistal margin unarmed; lateral surface with few setae, ventrolateral margin with 2 prominent spines; mesial surface with few tufts of setae ventrally, ventromesial margin with 4 prominent spines; ventral surface with few tufts of long setae. Ischium armed with several large spines, sometimes forming a row.
Left cheliped (fig. 4a-c) slender, somewhat shorter than right. Chela 2.9 times longer than broad. Dactyl 1.3 times longer than palm; cutting edge with row of small corneous teeth and calcareous teeth, terminating in small corneous claw; dorsal surface convex, armed with row of very small spines and long setae in midline; mesial surface and ventral surface with tufts of long setae. Palm about 0.8 times as long as carpus; dorsal surface convex, with few scattered very small spines and tufts of long setae, dorsolateral and dorsomesial margins not delimited; lateral face (including fixed finger) with row of tufts of long setae ventrally; mesial and ventral faces with scattered long setae. Dorsal surface of fixed finger with scattered small spines proximolaterally; cutting edge with row of widely spaced
corneous teeth, terminating in small corneous claw. Carpus as long as merus; dorsomesial and dorsolateral margin with row of spines, both partially obscured by long setae; dorsal surface unarmed, dorsodistal margin with 2 strong spines (mesial spine strongest); lateral face with few setae, ventrolateral margin with small spine distally; mesial surface and ventral surface with scattered tufts of long setae. Merus with transverse rows of setae on dorsal surface, dorsodistal margin unarmed; lateral surface with few tufts of setae ventrally, ventrolateral margin with 4 spines; mesial surface with tufts of long setae near ventromesial margin, ventromesial margin with 2 spines; ventral surface unarmed, with few tufts of long setae. Ischium armed with several large spines forming a row.

Second and third pereopods (fig. 5a, c) generally similar from left to right. Dactyls 1.2-1.4 times longer than propodia, slender, in lateral view, slightly curved; in dorsal view, slightly twisted; terminating in corneous claws; dorsal margins each with row of elongate bristles and short to long setae; lateral surfaces almost naked; mesial surfaces (fig. 5b, d) with row of sparse setae near dorsal and ventral margins; ventral margins each with 5 or 6 long corneous spines and sparse setae. Propodia with 1 small corneous spines on ventrodistal margin; dorsal surfaces with tufts of moderately long setae; lateral and mesial faces naked; ventral surfaces with widely spaced tufts of long setae. Carpi each with 1 subdistal spine on dorsal surface (third) and 1 additional spine on dorsal surface proximally (second); few tufts of setae on dorsal surfaces. Meri with tufts of moderately long setae on dorsal surfaces; lateral and mesial surfaces naked; ventral surfaces with tufts of setae
Fig. 5. *Turleania sinensis* sp. nov. Holotype male (SL 1.85 mm), MBM151549. a, Left second pereopod, lateral view; b, dactyl of same, mesial view; c, right third pereopod, lateral view; d, dactyl of same, mesial view.

and 1 spine arising from distal 0.2 (second) or unarmed (third). Ischia elongate, unarmed, with setae on dorsal and ventral margins.

Fourth pereopods (fig. 1b) subchelate. Dactyl weakly curved, with row of tiny corneous teeth on ventral margin, apparently no preungual process at base of terminal claw; dorsal surface with few tufts of short setae. Propodus with few setae on dorsal surface; propodal rasp composed of single row of corneous scales, becoming larger distally. Carpus with few long setae on dorsal surface.

Fifth pereopods chelate. Left coxa with elongate, basally stout sexual tube directed exteriorly and curved dorsally, with tufts of long stiff setae terminally. Right coxa with gonopore obscured by tufts of setae, no sexual tube.

Sixth thoracic sternite (fig. 1c) with anterior lobe subovate; anterior margin bearing long setae, and armed with 2 or 4 spines. Eighth thoracic sternite (fig. 1d) composed of single rounded lobe, bearing numerous setae on anterior surface.
Abdomen well developed, coiled, male with 4 left unpaired pleopods; female with 4 left unpaired pleopods. Uropods strongly asymmetrical.

Telson (fig. 1e) without lateral indentations, lateral margins convex; posterior lobes symmetrical, each outer angle acutely developed, each with 1-3 small spines and short setae on oblique terminal margins.

Etymology.—Named after the country embracing the type locality.

Distribution.—Currently only known from the East China Sea; depth: 90-162 m.

Remarks.—Among the nine quadiserial gills species, the new species is prominently distinguished from the other three species by the dorsal surface of right cheliped armed with numerous small spines rather than unarmed; the telson symmetrical rather than asymmetrical.

The new species is morphologically most similar to *T. senticosa*, and it differs from the latter by the following characters: the new species with nine pairs of quadriserial gills rather than eleven pairs of quadriserial gills as in *T. senticosa*; the new species with ventromesial margin of ischium of both cheliped bearing prominent large spines, sometimes forming a row rather than unarmed or only with tiny tubercles as in *T. senticosa*; the new species bearing two or three irregular rows of large spines (distinctly larger than the spines on the dorsal surface of chela) on the dorsomesial margin of the palm of right cheliped rather than several widely-spaced spines as in *T. senticosa*.

This is the first report of this genus from the China Sea.

**Key to all species of the genus Turleania**

1. Nine pairs of quadriserial gills ................................................................. 2
   – Eleven pairs of quadriserial gills ....................................................... 5

2. Right chela unarmed on the dorsolateral surfaces ........................... *T. saliens*
   – Right chela with small but distinct spines on the dorsolateral surfaces ........ 3

3. Dorsodistal margin of the carpus of the right cheliped without median spine ............ *T. balli*
   – Dorsodistal margin of the carpus of the right cheliped with median spine .......... 4

4. Dorsal surface of chela of left cheliped armed with numerous spines ........ *T. sinensis* sp. nov.
   – Dorsal surface of chela of left cheliped armed only with tufts of long setae ....... *T. tenebrosa*

5. Ocular acicles simple ........................................................................... 6
   – Ocular acicles multifid ......................................................................... *T. multispina*

6. Right chela with dorsal surface unarmed or with scattered spinules ....................... 7
   – Right chela with dorsal surface armed with numerous spines or spinules .......... 8

7. Corneas slightly dilated; dorsomesial margin of right chela with few widely-spaced spines; dactyls of ambulatory legs each with 6-8 corneous spines on ventral margin ........ *T. sibogae*
   – Corneas strongly dilated; dorsomesial margin of right chelera unarmed; dactyls of ambulatory legs without corneous spines on ventral margin ............................................ *T. boucheti*

8. Dorsomesial margin of palm of right chelera with row of prominent spines ........ *T. albatrossae*
− Dorsomesial margin of palm of right chela with spinules or irregular rows of small spines . . 9

9. Anterior lobe of sternite of third pereopods subovate to subquadrate, with 0-5 small marginal spines ......................................................... T. senticosa
− Anterior lobe of sternite of third pereopods “hammer-shaped”, unarmed . . . . . . . T. spinimanus

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