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Notes on some shrimp species (Decapoda: Caridea) from the Persian Gulf

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Abstract

A report is presented on a small collection of caridean shrimp (Crustacea: Decapoda) from coastal waters of the United Arab Emirates in the Persian Gulf. Eight species are new records for the area, raising the total number of carideans known from the Persian Gulf to 46. A review is presented of all previous records, which highlights the relative paucity of records.

Key words: Decapoda, Caridea, Persian Gulf, new records

Zusammenfassung

Diese Arbeit behandelt eine kleine Sammlung von Garnelen aus den Küstengewässern der Vereinigten Arabischen Emirate im Persischen Golf. Acht Arten werden zum ersten Mal aus diesem Gebiet gemeldet, das erhöht die Gesamtzahl der aus dem Golf bekannten Caridea auf 46. Eine Übersicht aller bisherigen Funde zeigt auf wie wenig aus diesem Gebiet vorliegt.

Introduction

Nobili (1905a, b) described four species of caridean shrimp from the Persian Gulf: *Alpheus bucephaloides* Nobili, 1905; *Alpheus persicus* Nobili, 1905 [now considered a junior synonym of *Alpheus malleodigitus* (Bate, 1888)]; *Periclimenes borradailei* Nobili, 1905; and *Harpilius gerlachei* Nobili, 1905 (now *Philarius gerlachei*). In 1906, Nobili in a major review of the material collected by J. Bonnier and Ch. Pérez (Nobili 1906) added the following 14 taxa: *Arete indicus* Coutière, 1903; *Synalpheus neomeris* (de Man, 1897); *Synalpheus triunguiculatus* (Paul'son, 1875); *Synalpheus paulsoni* Nobili, 1906 (renamed by Coutière 1908 as *S. paulsoni liminaris* Coutière, 1908); *Synalpheus tunidomanus* (Paul'son, 1875); *Synalpheus biunguiculatus* (Stimpson, 1860) (now *Synalpheus coutierei* Banner, 1953); *Alpheus audouini* Coutière, 1905) [considered to be a synonym of *Alpheus edwardsii* (Audouin, 1826), see Banner & Banner (1972, 1982)]; *Alpheus alcyone* de Man, 1902; *Periclimenella pettithouarsi* (Audouin, 1826); *Ancylocaris aberrans* Nobili, 1906 [now *Periclimenes brevicarpalis* (Schenkel, 1902)]; *Anchistus miersi* (de Man, 1888); *Pontonia pinnae* Ortmann, 1894 [now *Anchistus custos* (Forskål, 1775)] *Periclimenaeus rhodope* (Nobili, 1904); and the larval form *Retrocaris serrata* Nobili, 1906. In addition, he introduced the replacement name *Periclimenes brevinaris* Nobili, 1906 for *Periclimenes borradailei* Nobili, 1905. According to Bruce (1974), the single specimen of *Periclimenaeus rhodope*,

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should be referred to *Periclimenaeus arabicus* (CALMAN, 1939). Shortly after NOBILI, COUTIÈRE (1908) added *Alpheus perezi* COUTIÈRE, 1908.

BANNER & BANNER (1966) erected *Alpheus nobili* BANNER & BANNER, 1966, for an unnamed species in NOBILI (1906, as *Alpheus* sp.). Four species (*Alpheus distinguendus* DE MAN, 1909; *Athanas rhothionastes* BANNER & BANNER, 1960; *Alpheus* sp.; *Latreutes anoplonyx* KEMP, 1914) were recorded by MOTOH (1975) from Kuwait. As HAYASHI & NAGATA (2002) consider *A. distinguendus* to be a junior synonym of the Japanese *Alpheus digitalis* DE HAAN, 1844; the record of this species from the Persian Gulf is probably an error. BASSON & al. (1977) listed five additional species from the Gulf coast of Saudi Arabia (*Stegopontonia commensalis* NOBILI, 1906; *Arete dorsalis* STIMPSON, 1860; *Leptochela robusta* STIMPSON, 1860; *Alpheus dentipes* GUÉRIN-MÉNEVILLE, 1832; *Periclimenes brevicarpalis*), as well as numerous partially identified taxa, down to family-genus level only. The true identity of some of this material is in doubt. For instance, *A. dentipes* is restricted to the eastern Atlantic (CROSNIER & FOREST 1966), whilst CHACE (1976) considers records of *L. robusta* west of the Philippines doubtful. BANNER & BANNER (1981) listed eight additional species of the Alpheidae without exact locality details (*Alpheus bisincisus* DE HAAN, 1849; *Alpheus euphrosyne* DE MAN, 1897; *Alpheus lobidens* DE HAAN, 1849; *Alpheus lottini* GUÉRIN-MÉNEVILLE, 1829; *Alpheus rapax* FABRICIUS, 1798; *Alpheus parvirostris* DANA, 1852; *Synalpheus quinquedens* TATTERSALL, 1921; *Synalpheus streptodactylus* COUTIÈRE, 1905), whilst CHACE (1976) recorded *Leptochela irrobusta* CHACE, 1976 from off Juraid Island [Al Jurayd], Saudi Arabia. The true identity of many specimens previously identified as *A. euphrosyne* remains unsolved (A. Anker, pers. comm.). *Exopalaemon styliferus* (H. MILNE EDWARDS, 1840) was recorded from Iraqi coastal waters by SALMAN & BISHOP (1990). Most recently, *Palaemon khori* DE GRAVE & AL-MASLAMANI, 2006, from Qatar was described. Finally, an additional 4 species were listed in a field guide to intertidal animals of Kuwait (JONES 1986): *Athanas dimorphus* ORTMANN, 1894; *Alpheus djeddensis* COUTIÈRE, 1897; *Hippolyte ventricosa* H. MILNE EDWARDS, 1837; and *Periclimenes obscurus* KEMP, 1922.

To the authors' knowledge no further published records of carideans have been reported from the Persian Gulf, with the total count [excluding Nobili's larval form *Retrocaris serrata* and the doubtful records in BASSON & al. (1977)] standing at 38, dominated by the Alpheidae (25 taxa). An unpublished thesis (TITGEN 1982) on the decapod fauna of Dubai does contain several more records, which given their unpublished status are not further taken into account.

Although the present collection is small in its constituent number of taxa, it contains several new records for the Persian Gulf, which are noteworthy, in view of their biogeographical interest.

Material and methods

The material discussed here was obtained by a team led by Drs R. Kikinger and M. Stachowitsch (University of Vienna, Austria) between the 12th and the 29th of April 1999 in various coastal locations of the United Arab Emirates. All samples were collected by means of a 10 litre diver-operated scoop. For a complete listing of sampling

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localities and a map of the area, see SENZ (2000). As the station numbers in SENZ (2000) differed from those on the labels herein studied, they are given here in parentheses following the field numbers. The material is deposited in the Naturhistorisches Museum in Wien, Austria (NHMW) and in the Zoology Collection, Oxford University Museum of Natural History, UK (OUMNH-ZC). Measurements are given as post-orbital carapace length (pocl) in mm.

Systematic account

Family Alpheidae

Arete indicus COUTIÈRE, 1903

Material: 1 ovigerous ♀ (pocl 3.0), 1 ♀ (pocl 4.0), Zakum Oil Field, 24°54.245'N 53°44.183'E, 19.0 m depth, cap rock with sand covering, field number ZK17(ZA02), NHMW 20946; 1 ♂ (pocl 3.0), Zakum Oil Field, 24°55.229'N 53°43.197'E, 16.9 m depth, sandy bottom, field number ZK16(ZA01), OUMNH ZC.2006-15-001.

The material corresponds closely to previous descriptions. *Arete indicus* has been reported previously from north-east of Arzana Island (United Arab Emirates) by NOBILI (1906); otherwise the species has been reported from numerous Indo-West Pacific locations, including the Red Sea (BANNER & BANNER 1981).

Athanas parvus DE MAN, 1910

Material: 1 ♀ (pocl 1.3), Zakum Oil Field, 24°49.829'N 53°30.592'E, 19.5 m depth, cap rock with sand covering, field number ZK23(ZA06), OUMNH ZC.2006-15-002; 3 ♀♀ (pocl 1.6-1.8), Zakum Oil Field, 24°55.229'N 53°43.197'E, 16.9 m depth, sandy bottom, field number ZK16(ZA01), NHMW 20947; 3 ovigerous ♀♀ (pocl 1.6-1.7), 2 ♀♀ (pocl 2.0-2.1), 2 ♂♂ (pocl 1.5-1.7), Zakum Oil Field, 24°52.197'N 53°36.250'E, 14.5 m depth, cap rock with sand covering, field number ZK25(ZA08), NHMW 20948.

Although many specimens have lost their chelipeds, the absence of a supracorneal tooth, the presence of an infracorneal tooth and biunguiculate dactylus on the third to fifth pereiopods are diagnostic for this species. *Athanas parvus* is known from numerous locations throughout the Indo-Pacific, including the Red Sea (TATTERSALL 1921), but has not previously been reported from the Persian Gulf.

Family Hippolytidae

Latreutes mucronatus (STIMPSON, 1861)

Material: 1 ♀ (pocl 1.2), Zakum Oil Field, 24°49.450'N 53°43.625'E, 6.0 m depth, cap rock with sand covering, field number ZK37(ZA18), NHMW 20949.

The single specimen agrees closely with previous descriptions, except for the presence of three post-orbital teeth on the carapacal sinus. Although KEMP (1914) considers the

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number of post-orbital teeth variable in this species, subsequent records of *L. mucronatus* either mentioned only specimens with 3-4 post-orbital teeth (e.g. LEDOYER 1969, MONOD 1973, GHANI & TIRMIZI 1991), or specimens with a single tooth (e.g. HAYASHI & MIYAKE 1968). An in-depth study of more material is required to solve this question.

Latreutes mucronatus has been recorded from scattered locations in the Indo-West Pacific, including the northern Arabian Sea (GHANI & TIRMIZI 1991) and the Gulf of Aden (NOBILI 1906), with the present record being the first for the Persian Gulf.

Thor amboinensis (DE MAN, 1888)

Material: 1 ovigerous ♀ (pocl 1.6), Zakum Oil Field, 24°49.455'N 53°39.155'E, 9.4 m depth, cap rock with sand covering, field number ZK29(ZA12), NHMW 20950.

The single specimen has a rostral dentition of 4/0, with a bifid tip and agrees closely with previous descriptions, but bears only three pairs of terminal spiniform setae on the telson and a distinct medio-lateral tooth on the first antennular peduncle.

This is the first record of this apparently circum-tropical species (CHACE 1997) for the Persian Gulf.

Family Palaemonidae

Palaemonella rotumana (BORRADAILE, 1898)

Material: 1 ♀ (pocl 1.6), 24°36.513'N 54°08.986'E, Umm Al Dalkh Oil Field, 24°37.585'N 54°10.731'E, 21 m depth, sandy substrate, field number UA08, NHMW 20951.

The single specimen is typical and presents no special features worth of mentioning. The present record constitutes the first record of this widespread Indo-Pacific species for the Persian Gulf.

Periclimenaeus arabicus (CALMAN, 1939)

Material: 1 ovigerous ♀ (pocl 2.9), Zakum Oil Field, 24°49.450'N 53°43.625'E, 6.0 m depth, cap rock with sand covering, field number ZK37(ZA18), NHMW 20952.

The single specimen agrees closely with the description given by BRUCE (1974), with a rostral dentition of 5/1 and the crenulated propodus and carpus of the major second pereiopod being diagnostic.

Previously known from scattered locations in the Indo-West Pacific, including the Persian Gulf (close to Dubai) (NOBILI 1906, BRUCE 1974).

Periclimenaeus bidentatus BRUCE, 1970

Material: 1 ovigerous ♀ (pocl 2.3), Zakum Oil Field, 24°50.910'N 53°34.635'E, 15.0 m depth, cap rock with sand covering, field number ZK35(ZA16), NHMW 20953.

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The single specimen agrees well with the description of BRUCE (1970), especially in the armature of the third pereiopod, although the detached major second cheliped does not have bidentate tips.

Known from scattered locations in the Indo-Pacific, but not previously recorded in the Persian Gulf.

Family Pasiphaeidae

Leptochela aculeocaudata PAUL'SON, 1875

Material: 2 ♀♀ (pocl 2.1-3.1), Zakum Oil Field, 24°52.197'N 53°36.250'E, 14.5 m depth, cap rock with sand covering, field number ZK25(ZA08), NHMW 20954; 1 ♀ (pocl 2.2), Zakum Oil Field, 24°50.870'N 53°31.686'E, 16.0 m depth, cap rock with sand covering, field number ZK22(ZA05), OUMNH ZC.2006-15-003; 1 ♀ (pocl 2.4), Zakum Oil Field, 24°49.883'N 53°35.737'E, 13.0 m depth, cap rock with sand covering, field number ZK34(ZA15), NHMW 20955; 1 ♀ (pocl 2.3), Umm Al Dalkh Oil Field, 24°37.585'N 54°10.731'E, 20.3 m depth, sandy bottom, field number UA12(UA10), OUMNH ZC.2006-15-004; 2 ♀♀ (pocl 2.5-4.1), Satah Oil Field, 24°54.660'N 53°32.442'E, 11.5 m depth, cap rock with sand covering, field number ST46(SA01), NHMW 20956; 2 ovigerous ♀♀ (pocl 2.1-2.2), 1 ♂ (pocl 2.2), Zakum Oil Field, 24°50.611'N 53°29.492'E, 22.0 m depth, cap rock with sand covering, field number ZK20(ZA03), OUMNH ZC.2006-15-004; 3 ovigerous ♀♀ (pocl 2.3-3.4), 2 ♀♀ (pocl 2.0-3.4), Zakum oil field, 24°51.930'N 53°30.621'E, 21.0 m depth, cap rock with sand covering, field number ZK21(ZA04), NHMW 20957; 1 ovigerous ♀ (pocl 2.5), Umm Al Dalkh Oil Field, 24°33.951'N 54°06.680'E, 21.0 m depth, sandy bottom, field number UA05, NHMW 20958.

The present specimens agree closely with the description of CHACE (1976). Previously known only from the Red Sea and several Australian locations (CHACE 1976, HANAMURA 1987).

Family Processidae

Processa australiensis BAKER, 1907

Material: 1 ovigerous ♀ (pocl 2.6), 1 ♂ (pocl 2.2), Zirku Island, 25°00.645'N 52°59.094'E, 29.0 m depth, sandy bottom, field number ZR53(ZI02), OUMNH ZC.2006-15-005; 1 ovigerous ♀ (pocl 3.5), Arzanah Island, 24°42.525'N 52°34.653'E, 15.0 m depth, sandy bottom with seagrass, field number AR43(AR03), NHMW 20959.

The material corresponds closely to the description of HAYASHI (1975). Known from scattered locations throughout the Indo-West Pacific, but not previously recorded from the Persian Gulf.

Processa sulcata HAYASHI, 1975

Material: 1 ovigerous ♀ (pocl 3.1), 1 ♂ (pocl 2.0), Zirku Island, 25°00.645'N 52°59.094'E, 29.0 m depth, sandy bottom, field number ZR53(ZI02), NHMW 20960.

The specimens correspond to the description of HAYASHI (1975) and can be separated from the closely related *P. australiensis* by the presence of an antennal spine, a well-

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defined post-orbital groove and the higher number of carpal and meral articulations on the second pereiopod. Not previously known from the Persian Gulf, but recorded off the South Arabian coast (GURNEY, 1937, as *P. australiensis*).

Discussion

Although the present collection contains only ten species, eight of them are new records for the Persian Gulf, including the widespread species *Palaemonella rotumana* and *Thor amboinensis*. The present collection raises the total number of carideans known from the Persian Gulf to 46, but also highlights a distinct lack of knowledge of the regional fauna. This is demonstrated by the large amount of unidentified material in BASSON & al. (1977), as well as the present collection containing damaged or incomplete specimens of at least five further species (*Periclimenes* sp., *Synalpheus* sp., *Alpheus* spp., *Hippolyte* sp.). The three partially damaged *Hippolyte* specimens could not be positively assigned to any of the known Indian ocean species (see D'UDEKEM D'ACOZ, 1996) and are likely to represent a new species. However, in view of their incomplete nature and the poorly characterised species in the Indian Ocean [e.g, *Hippolyte proteus* (PAUL'SON, 1875), *Hippolyte kraussiana* (STIMPSON, 1860)] a more formal treatment must await additional material of all *Hippolyte* species present in the Indian Ocean.

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References

BANNER A.H. & BANNER D.M., 1966: Contributions to the knowledge of the alpheid shrimp of the Pacific Ocean. Part X. Collections from Fiji, Tonga and Samoa. – Pacific Science 20: 145-188.

BANNER A.H. & BANNER D.M., 1972: The establishment of a neotype for *Alpheus edwardsi* (AUDOUIN). – Bulletin du Muséum national d'Histoire Naturelle, Paris series 3 (88): 1141-1146.

BANNER D.M. & BANNER A.H., 1981: Annotated checklist of the alpheid shrimp of the Red Sea and Gulf of Aden. – Zoologische Verhandelingen, Leiden 190: 1-99.

BANNER D.M. & BANNER A.H., 1982: The alpheid shrimp of Australia. Part III: The remaining alpheids, principally the genus *Alpheus*, and the family Ogyridae. – Records of the Australian Museum 34: 1-357.

BASSON P.W., BURCHARD, J.E.JR., HARDY, J.T. & PRICE, A.R.G., 1977: Biotopes of the Western Arabian Gulf. – Arabian American Oil Company, Dhahran, 284 pp.

BRUCE A.J., 1970: Further preliminary descriptions of new species of the genus *Periclimenaeus* BORRADAILE, 1915 (Crustacea, Decapoda Natantia, Pontoniinae). – Zoologische Mededelingen, Leiden 44: 305-315.

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BRUCE A.J., 1974: Observations upon some specimens of the genus *Periclimenaeus* BORRADAILE (Decapoda Natantia Pontoniinae) originally described by G. Nobili. – Bulletin du Muséum national d'Histoire Naturelle (Paris) 258: 1157-1583.

CHACE F.A.Jr., 1976: Shrimps of the pasiphaeid genus *Leptochela* with descriptions of three new species (Crustacea: Decapoda: Caridea). – Smithsonian Contributions to Zoology 222: 1-51.

CHACE F.A.Jr., 1997: The caridean shrimps (Crustacea: Decapoda) of the Albatross Philippine Expedition, 1907-1910, Part 7: Families Atyidae, Eugonatonotidae, Rhynchocinetidae, Bathypalaemonellidae, Processidae, and Hippolytidae. – Smithsonian Contributions to Zoology 587: 1-106.

COUTIÈRE H., 1908: Sur quelques nouvelles espèces d'Alpheidae. – Bulletin de la Société Philomatique de Paris 9(10): 191-216.

DE GRAVE S. & AL-MASLAMANI I., 2006: A new species of *Palaemon* (Crustacea, Decapoda, Palaemonidae) from Qatar. – Zootaxa 1187: 37-46.

GHANI N. & TIRMIZI N.M., 1991: Range extension of a hippolytid shrimp (Decapoda, Caridea) *Latreutes mucronatus* (STIMPSON, 1860) in Pakistani waters, northern Arabian Sea. – Crustaceana 61: 320-322.

GURNEY R., 1937: Notes on some decapod Crustacea from the Red Sea. I. The genus *Processa*. – Proceedings of the Zoological Society of London 1937: 85-101, Plates 1-6.

HANAMURA Y., 1987: Caridean shrimps obtained by R.V. "Soela" from north-west Australia, with description of a new species of *Leptochela* (Crustacea: Decapoda: Pasiphaeidae). – The Beagle 4:15-33.

HAYASHI K.-I., 1975: The Indo-West Pacific Processidae (Crustacea, Decapoda, Caridea). – Journal of the Shimonoseki University of Fisheries 24: 47-145.

HAYASHI K.-I. & MIYAKE S., 1968: Three caridean shrimps associated with a medusa from Tanabe Bay, Japan. – Publications of the Seto Marine Biological Laboratory 16: 11-19.

HAYASHI K.-I. & NAGATA M., 2002: Identity of *Alpheus digitalis* DE HAAN, 1844 and description of a new closely related species from the northwestern Pacific (Decapoda: Caridea: Alpheidae). – Crustacean Research 31: 73-90.

JONES D.A., 1986: A field guide to the seashores of Kuwait and the Arabian Gulf. – University of Kuwait, 192 pp.

KEMP S., 1914: Notes on Crustacea Decapoda in the Indian Museum. V. Hippolytidae. – Records of the Indian Museum 10: 81-129, Plates 1-7.

LEDOYER M., 1969: Les caridea de la frondaison des herbiers de phanérogames de la region de Tuléar. – Recueil des travaux de la Station marine d'Endoume Suppl 8: 65-89, plates 1-19.

MONOD Th., 1973: Sur quelques crustacés de Nouvelle-Calédonie. – Cahiers du Pacifique 17: 7-24.

MOTOH H., 1975: A report on macruran Decapoda from the north-western Arabian Gulf along the coast of Kuwait. – Kuwait Institute for Scientific Research MAB II.VIII.75, 1-25.

NOBILI G., 1905a: Décapodes nouveaux des côtes d'Arabie et du Golfe Persique (diagnoses préliminaires). – Bulletin du Muséum national d'Histoire Naturelle (Paris) 11: 158-164.

NOBILI G., 1905b: Quatre décapodes nouveaux du Golfe Persique (récoltes de MM. J. Bonnier et Ch. Pérez). – Bulletin du Muséum national d'Histoire Naturelle (Paris) 11: 238-239.

NOBILI G., 1906: Mission J. Bonnier et Ch. Pérez (Golfe Persique, 1901). Crustacés décapodes et stomatopodes. – Bulletin Scientifique de la France et de la Belgique 40, 1-159, plates i-v.

SALMAN S.D. & BISHOP J.M., 1990: *Exopalaemon styliferus* (EDWARDS, H. MILNE, 1840) in the northern Arabian Gulf and the inland waters of Iraq (Decapoda, Caridea, Palaemonidae). – Crustaceana 59: 281-288.

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SENZ W., 2000: Neue Nemertinen aus dem Golf von Arabien. 1. Palaeonemertini. –Annalen des Naturhistorischen Museums in Wien, B, 102: 321-373.

TATTERSALL W.M., 1921: Report on the Stomatopoda and macrurous Decapoda collected by Mr. Cyril Crossland in the Sudanese Red Sea. – Journal of the Linnean Society of London 34: 345-398, plates 27-28.

TITGEN, R.H. 1982: The systematics and ecology of the decapods of Dubai, and their zoogeographic relationships to the Arabian Gulf of the western Indian Ocean. PhD Thesis, Texas A&M University.

UDEKEM D'ACOZ C. D', 1996: The genus *Hippolyte* LEACH, 1814 (Crustacea: Decapoda: Caridea: Hippolytidae) in the East Atlantic Ocean and the Mediterranean Sea, with a checklist of all species in the genus. – Zoologische Verhandelingen, Leiden 303: 1-133.

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