New Record of *Scaptognathides* (Acari, Halacaridae) from Japan with notes on geographic distribution

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**ABSTRACT**

The genus *Scaptognathides* is newly recorded from Japan. *Scaptognathides ornatus* Bartsch, 1988 is found from a sandy beach in the Okinawa Islands, southern Japan. The taxonomic characters of this species are re-described on the basis of the Japanese specimens. In addition, the geographical distribution of the genus is summarized.

**Key words:** new record, *Scaptognathides*, Halacaridae, marine mites, Japan.

**INTRODUCTION**

*Scaptognathides* is one of the five genera in the subfamily Lohmannellinae. The genus was established by Monniot (1972) on the basis of the specimens collected from calcareous substrates in the Bermuda Islands. Thereafter, totally 11 species have so far been described from Atlantic, Pacific and Indian Oceans (Bartsch 1977, 1988, 1993, 1996, 2004; Otto 2000). In the Asian Pacific, however, only one species *S. hawaiiensis* has been known from the coast of Hong Kong (Bartsch 1991). Recently, the author collected two *Scaptognathides* specimens from a sandy beach at Okinawa Islands in southern Japan. The specimens were identified as *Scaptognathides ornatus*, which has been recorded from Hawaiian Islands and Western Australia (Bartsch 1988, 2003a). The present paper describes taxonomic characters of *Scaptognathides ornatus* on the basis of the Japanese specimens.

Measurements were made with an ocular micrometer and given in micrometers (μm). Materials examined in this study have been deposited in the National Museum of Nature and Science, Tokyo (NSMT).

Abbreviations: AD, anterodorsal plate; OC, ocular plate(s); PD, posterodorsal plate; AE, anterior epimeral plate(s); PE, posterior epimeral plate(s); GA, genitoanal plate; dp, dorsal pores; ds, dorsal setae; glp, gland pores; aes-i, anterior epimeral setae; aes-ii-lat (-v), lateral (ventral) setae of coxae II; pes-iii-lat (-v), lateral (ventral) setae of coxae III; pes-iv-a (-p), anterior

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(posterior) setae of coxae IV; p-1 to p-4, first to fourth segment of palp; L / W, the ratio of length to width.

DESCRIPTION

Genus *Scaptognathides* Monniot, 1972  
(Japanese name: Sunahama-dani)

[Type species: *Scaptognathides planus* Monniot, 1972]

*Scaptognathides ornatus* Bartsch, 1988  
(Japanese name: Kazari-sunahama-dani)

(Fig. 1)

Specimens examined. One female (NSMT-Ac 13616), in coarse sand at shore line, Kin (26°26′24″N, 127°55′51″E), Okinawa, Japan, 15 July 2004, H. Abé leg. One deutonymph (NSMT-Ac 13617), data same as the female.

Female: Idiosoma 268 long, 169 wide; color in life semitransparent. Dorsum (Fig. 1A): Dorsal plates delicately reticulate. Membranous cuticle ornamented with fine wavy striation. AD and PD separated by interval approximately half of a dorsal reticulation. AD 96 long, 109 wide, with almost truncate anterior and posterior margins. OC 59 long, 24 wide, with two pores; corneae not seen. PD 163 long, 126 wide. Dorsal pores distinct; dp-i on AD; dp-ii and dp-iii on OC; dp-iv and dp-v on PD. Chaetotaxy of dorsum: Dorsal setae short and filiform. Setae ds-i, ds-ii and ds-iii on AD; ds-iv and ds-v on PD; ds-vi (adanal setae) on anal papilla.

Venter (Fig. 1B): AE 98 long, 152 wide, with pair of subsurface pores between coxae of legs I and II. PE 163 long, 44 wide. Chaetotaxy of epimeral region: epimeral setae fine filiform; aes-i, aes-ii-lat, aes-ii-v on AE; pes-iii-lat on dorsal margin of PE; pes-iii-v, pes-iv-a and pes-iv-p on ventral side of PE.

Genitoanal region (Fig. 1B): Genital foramen 52 long, 26 wide. Genital sclerites elongate. Anal foramen terminally placed. Ovipositor and genital acetabula unclear. Chaetotaxy of genitoanal region: Perigenital setae fine filiform, two pairs arranged as in Fig. 1B. Subgenital setae one pair on genital sclerites.

Gnathosoma (Fig. 1C): 114 long, 71 wide; gnathosomal length / idiosomal length 0.43; base of gnathosoma with L / W 0.73, without setae. Rostrum 65 long, 9 wide. Rostral setae fine filiform, protorostrals and deutorostrals not clear; tritorostrals near tip; basirostrals placed on gnathosomal base. Palpi two segmented; p-1 short, cylindrical; p-2 longest, nearly four times as long as p-1; p-3 and p-4 fused. Palpal chaetotaxy as follows: p-1 without setae; p-2 with one short filiform seta antero-medially; p-3 and p-4 with four blade-shaped projections and two short filiform setae distally.

Legs (Fig. 1D-G): Length of legs I, II, III, IV = 190, 149, 172, 166, respectively. Particular ornamentation not seen. Tarsus I with umbrella-like lateral claws with pectens. The other tarsi
Fig. 1. *Scaptognathides ornatus* Bartsch, 1988. Female: A, idiosoma (dorsum); B, idiosoma (venter); C, gnathosoma (venter); D, leg I (left); E, leg II (left); F, leg III (left); G, leg IV (left). Deutonymph: H, idiosoma (venter). Scale bars: 50 μm.
with crescent-like lateral claws having faint accessory teeth and combs. Median claw absent. Chaetotaxy from trochanter to tibia as follows: Leg I, 1-2-5-4-5; Leg II, 1-2-5-3-4; Leg III, 1-2-2-3-5; Leg IV, 1-2-2-3-5. Tarsus I with one long filiform basidorsal seta, two filiform fossary setae, and two ambulacral setae. Solenidion and famulus not seen. Tarsus II with one filiform basidorsal seta, two filiform fossary setae, and two bacilliform ambulacral setae. Solenidion not seen. Tarsus III with one filiform dorsal seta, two filiform fossary setae, and two bacilliform ambulacral setae. Tarsus IV with one filiform basidorsal seta, two filiform fossary setae, and two fine ambulacral setae.

**Deutonymph**: Idiosoma 241 long, 137 wide (Fig. 1 H); gnathosoma 96 long, 61 wide. AD 76 long, 74 wide. PD 130 long, 83 wide. OC 37 long. Dorsal chaetotaxy not clear due to deteriorated condition of the specimen. AE 89 long, with three pairs of epimeral setae. PE 122 long, with three ventral setae. Genitoanal region: GA 85 long, 68 wide; primordial genital slit 14 long. Perigenital setae filiform, two pairs arranged as in Fig. 1H. Subgenital setae absent. Genital acetabula in two pairs. Leg chaetotaxy obscure owing to bad condition of the specimen. Only perceptible chaetotaxy from trochanter to tibia as follows: Leg I, 1-2-4-2-3; Leg II, 1-1-3-2-3; Leg III, 1-1-3-2-3; Leg IV, 1-1-2-3-3.

**Distribution.** Hawaiian Archipelago, Dampier in Western Australia, Okinawa Islands in southern Japan.

**Remarks.** The noticeable taxonomic features of *Scaptognathides ornatus* are (1) ds-ii is placed on PD, (2) OC is furnished with two gland pores, (3) dorsal plates are reticulated, and (4) tarsus III is furnished with three dorsal setae. The body size of Japanese specimen (idiosomal length: 268, gnathosomal length: 114) is larger than that of Hawaiian (Idiosomal length: 207, gnathosomal length: 102) and Australian (idiosomal length: 217, gnathosomal length: 104) specimens. In addition, the genu and tibia of leg II have three and four setae respectively, instead of four and five setae in Hawaiian and Australian specimens. These discrepancies are considered as individual variations. Deutonymph of *S. ornatus* is firstly recorded in the present study. However, this is an only specimen available for study. Therefore, the geographic variation of taxonomic characters in deutonymph is not mentioned here.

The global distribution of so far known *Scaptognathides* species including one unidentified species (Bartsch 2003b) is summarized in Table 1 and Fig. 2. The genus is said to be exclusively arenicolous, and members have been found from the supralittoral to the sublittoral zones. The presence of the genus depends on sand interstices of a suitable size which is determined by the size and quality of the substrates, and any heterogeneity in the geographical distribution of *Scaptognathides* species is related to a confinement to this habitat condition.

The global distribution of *Scaptognathides* is rather restricted to tropical or subtropical regions ranged between 35°N and 35°S. This distributional range generally coincides with the area of which surface water temperature is more than 20°C (National Astronomical Observatory of Japan 2009) and the integrated primary production is less than 0.06 mg chlorophyll m$^{-3}$ (Longhurst 1998). Moreover, this distributional range accords well with the coral reef distributions. The limits for normal growth of corals are 17-18°C and 33-34°C (Guilcher 1988). The Bermuda Islands and Great Meteor Seamount receive warm water flowing along the Gulf Stream (19-27°C) and Okinawa Islands are favored by the warm Kuro Shio current (20-28°C). The thermal range
of Hawaiian waters is 18 to 27°C. The Leeuwin current carries warm equatorial Pacific water, never less than 20°C, to the coast of Western Australia (Guilcher 1988).

The *Scaptognathides* has a lot of morphological resemblance with *Scaptognathus* and these two taxa seem to be a sister group. From the view of the geographical distribution, *Scaptognathus* has world wide distribution from boreal to tropical waters. On the other hand, *Scaptognathides* has a limited distribution only in warm water areas and mainly appears in the Indo-Pacific region (Fig. 2). Taking their distributional patterns into consideration, *Scaptognathides* is possibly diverged from an ancestral population of *Scaptognathus* in the Pacific Ocean or its ancient form, Tethys Sea.

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REFERENCES


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**補要**

スナハマダニ属（新称）（ダニ目：ウシオダニ科）の日本からの新記録と属の地理分布について

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日本から未記録であったスナハマダニ属が沖縄の沿岸から初めて記録された。分類学的な検討を行った結果、得られた個体はオーストラリア南西部沿岸とハワイから報告されているカザリスナハマダニ（新称）であることが判明した。得られた日本産個体に基づいて、本種の分類形質の記載を行った。また、スナハマダニ属の世界的な地理分布について検討した結果、本属の分布は年平均水温が 20℃以上で一次生産量が 0.06 mg chlorophyll m⁻³に満たない海域に限られ、この分布はサンゴ礁の分布とはほぼ一致することが示唆された。