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A NEW GENUS AND TWO NEW SPECIES OF NANORCHESTIDAE FROM PADRE ISLAND, TEXAS (ACARI : PROSTIGMATA)

BY B. McDaniel * AND Eric G. Bolen **

ABSTRACT: A new genus Neonanorchestes and two new species, Neonanorchestes pelosangulus and Neonanorchestes ammolitoreus are described from Padre Island, Texas.

INTRODUCTION

Padre Island is a narrow, linear island extending 182 km along the Texas coast in the Gulf of Mexico and separated from the mainland by a shallow embayment, the Laguna Madre. The island is a prime example of a maturely developed coastal-plain shoreline of emergence. For more than 5,000 years, ocean currents have deposited sands along the sloping shoreline forming a bar that gradually rose above the water's surface. In cross section, foredunes of 2-12 m rise above the beach, then give way to interior grasslands and smaller dunes leading to tidal mudflats along the Laguna Madre. A new genus and two species of the family Nanorchestidae were discovered at Padre Island during a survey of the island’s microarthropoda fauna.

Neunanorchestes n. gen.

Diagnosis: Posterior pair of sensilla capitate; chelicerae setae finely ciliate and may be furcate; setae in finely ciliate, situated behind bothridia and may be furcate.

Type-species: Neonanorchestes pelosangulus spec. nov.

Neunanorchestes pelosangulus spec. nov. (fig. 1)

Dimensions: length of body (incl. gnathosoma) 169 μm; breadth of body 85 μm; length of chelicerae 36 μm.

Gnathosoma: Palpi with four segments; palptarsus protuberance small with a single spine-like seta. Seven moderately long, curved setae situated at apex of palptarsus. Dorsal

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cheliceral seta long and not furcate. Striae on chelicerae and epistome, prominent without punctations. Ventrally, gnathosoma with prominent two-tined rutellum. Four pair of setae on anterior margin of hypostome. Lateral pair long and forked, middle pair finely ciliate, posterior pair short. Fourth pair placed more posteriorly has 2 branches. Rutellum two-tined, labrumepipharynx prominent, elongate, located between rutellum and chelicerae.

Propodosoma: Six pairs of setae of which two are sensillae (Fig. 1). Anterior sensilla ro consists of two setae ro and le, ro is elongate, finely ciliate, le is curved, very small and is considered to be the activator of ro. Posterior sensilla bo (bothridia) capitate with clublike region finely ciliate (Fig. 1). Three pairs of setae associated with sensilla, setae xa located at base of ro much shorter than setae xp, in and with branches (Fig. 1). Setae xp finely ciliate longer than in, located near post-ocular bodies. Setae in placed behind bases of bo, branched (Fig. 1). One pair of eyes associated with post-ocular bodies these located lateral to setae xp and sensillae bo. Naso pointed as shown in Fig. 1. Epistomal with striae. Propodosomal region with striae and a demarcation between this region and hysterosoma.

Hysterosoma: Body setae of this region branched tree-like uniformly scattered over hysterosoma.

Venter: Epimere arranged in two groups, with the following setal formula 3-1-2-3. Ventral setae of two types, those located between epimere III and IV larger and have longer branches than setae associated with genital region and posterior region of body. Striae run laterally between epimere II and III, longitudinal between epimere I and IV. Genital opening situated behind epimere IV with two genital papilla. Genital plates provided with 7 branched setae different from other ventral setae. Two pairs of eugenital setae are present in females, males have seven pairs of eugenital setae.

Legs: Tarsi I and II with a solenidon seta mid-dorsally Tarsus II with club-shaped solenidon with a curved elongated stem lying flush
with integument. Tarsus I, tibia I, II and III and genu I with sensory ridges. These ridges may be curved and raised as in tarsus I or lying flush with integument. Setal formulae are: tarsi 16-11-8-11; tibiae 6-5-3-3; genu 5-5-3-3; femora 5-3-3-0; trochanters 1-0-0-0; epimere 3-1-2-3. Tarsus terminates in a single curved empodial claw which has 6-8 rays on each side. Serpentine lines well developed, present on both tarsus and tibia, anterior line on tarsus enlarged and projected upward from leg surface.

**Male**: The male is essentially similar to females and differs in that it has 7 pairs of eugenital setae.

**Type**: Female holotype, single specimen collected from Bird Island road, Padre Island, Kleberg County, Texas, August 8, 1978, by Eric G. Bolen and B. McDaniel. The slide-mounted holotype will be deposited in the U.S. National Museum of Natural History, Washington, D.C. Allotype male collected at same location and date as holotype. Four paratypes, all females collected Bird Island road, Padre Island, Kleberg County, Texas, October 16, 1978, by Eric G. Bolen and B. McDaniel are deposited in the collection of the senior author.

**Habitat**: Holotype, allotype and paratypes were collected from the leeward or western edge of Padre Island approximately 200 m from the island’s interface with the Laguna Madre. The site was a shallow depression, or panne, of about 30 m diameter and virtually free of permanent vegetation. Vegetation rimming the panne is tolerant of highly saturated soils and influenced by fluctuating salinities. Plants associated with the area are sea ox-eye (*Borrichia frutescens*), shoregrass (*Monanthochloe littoralis*) and glassworts (*Salicornia* spp.). With increasing elevation and drainage, the vegetation advances to a grassland dominated by seacoast bluestem (*Schizachyrium scoparium* var. *littoralis*) and seashore dropseed (*Sporobolus virginicus*). Soils at the site were a heavy mud and sand mixture overlying the marine sands from which the island was geologically developed.

**Remarks**: *Neonanorchestes pelosangulus* resembles *N. ammolitoreus*, but differs in the structure of the dorsal cheliceral seta being a single non-branched seta.

**Neonanorchestes ammolitoreus** spec. nov. (fig. 2)

**Dimensions**: length of body (incl. gnathosoma) 209 μm; breadth of body 101 μm; length of chelicerae 39 μm.

**Gnathosoma**: Palpi with four segments; palptarsus protuberance with a single spine-like seta. Seven curved setae situated at apex of palptarsus. Dorsal cheliceral seta long bifurate with anterior arm much longer than posterior arm. Striae on chelicerae and epistome prominent, without punctations. Ventrally, gnathosoma with prominent twotined rutellum, 2 pairs of setae on anterior margin of hypostome.

**Propodosoma**: Six pairs of setae of which two are sensillae (Fig. 2). Anterior sensilla ro consists of two setae ro and le, ro is elongate, finely ciliate, le is curved, very small and is the activator of ro. Bothridia capitate, club with dense hairs (Fig. 2). The eyes are situated lateral to the propodosoma, are difficult to observe. The sensory area is not plainly marked except for the curved nature of the striated lines.

**Hysterosoma**: Covered with branched setae, oval in shape, single holotype specimen does not show details of placement of branched setae.

**Venter**: The genital covers are poorly defined, each with a row of setae. No punctulate striae were observed. Anal opening situated midway between genitalia and posterior region of body, appearing only as a small longitudinal slit. Between epimere I and II are larger branched setae, these larger than other ventral setae.

**Legs**: Femora I-II are partially divided into a basi and telofemora. Femora III & IV were not in a position to observe this region. The epimeral and femoral setae are furcate on legs I & II. Tarsus II bears a club-shaped solenidion that lies flush with the leg segment. Tarsus I, tibia I, II and genu I with sensory ridges.
sus terminates in a single curved empodial claw which has 7 rays on each side. Serpentine lines observed on tarsus of leg I, enlarged and projected upward from leg surface; setal formulae are: tarsi: 14-11-5-11; tibiae 6-4-2-2; genu 5-5-3-3; femora 5-3-3-0; trochanters 1-0-0-0; epimeres 3-1-2-3.

Type: Female holotype single specimen collected at Malequite Beach on Padre Island, Kleberg County, Texas, July 11, 1978 by Eric G. Bolen and B. McDaniel. The single slide of the holotype will be deposited in the U.S. National Museum of Natural History, Washington, D.C.

Habitat: *N. ammolitoreas* was collected in the foredunes of Padre Island immediately facing the Gulf of Mexico. The habitat is unstable and subject to both storm surges and heavy winds that constantly shift the fine sand substrate forming the foredunes. Soil organic matter is virtually absent, and the site is greatly influenced by salinity. Vegetation is limited in both density and species diversity with sea oats (*Uniola paniculata*) and railroad vine (*Ipomoea pes-caprae*) representing the major species; saltmeadow cordgrass (*Spartina patens*) was also present.

Remarks: *Neonanorchestes ammolitoreas* resembles *N. pelosangulus*, but differs in the structure of the dorsal cheliceral seta, being bifurcate with the posterior directed branch shorter than the anterior directed branch.

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