

## NEW RECORDS OF MYRIAPODA (CENTIPEDES AND MILLIPEDES) FROM THE GALÁPAGOS ISLANDS

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Earlier, we presented data and keys for the identification of Galápagos millipedes and centipedes (Shear and Peck 1987, 1992). The first author had the opportunity for an additional three months of field work in the Galápagos in 1996. Two previously unreported species of millipedes were found, as well as new island records. No new species of centipedes were found, but additional island records were found.

This raises the Galápagos totals to 12 centipede species (7 introduced, 5 endemic) and 10 millipede species (9 introduced, 1 endemic). We take this opportunity to present detailed data on the new species and island records, a revised key for the identification of Galápagos millipedes, and a summary of old and new records of millipedes and centipedes (Table 1).

The new millipede species records are *Nanostreptus geayi* (Brölemann) and *Cyrtodesmus* sp. The genus *Nanostreptus* (Family Spirostreptidae) contains six species, distributed through Brazil, Peru, and Venezuela (Hoffman 1979). *Nanostreptus geayi* has been widely introduced in the West Indies and Central America and has undoubtedly reached the Galápagos through human agency. *Cyrtodesmus* (Family Cyrtodesmidae) includes 25 described species (and many additional undescribed ones), ranging from Costa Rica to Peru (Hoffman 1979). Because a number of the described species are known only from females, or remain unillustrated in the literature, a revision of the genus would be required to establish the identity of the species collected in the Galápagos. The gonopods of the males do not match those of any of the species for which we were able to find illustrations. The metazonites of many of the species of *Cyrtodesmus* are set with long, specialized setae which gather a coat of soil and litter. The specimens from the Galápagos were entirely clean, despite the presence of such setae.

Our 1996 pitfall trapping on Santa Cruz found that the introduced millipede *Asiomorpha coarctata* has become extremely abundant in pasture lands in the agricultural zone and that the species has moved up into the *Miconia* zone, where it is also abundant. Farmers now commonly find this species in decaying vegetation and around the bases of banana plants. We think the species feeds as a general detritivore on decaying plant material, and we are not aware that it causes any economic or ecological harm. A comparative ecological study on the impact of introduced millipedes seems a good research topic.

The label data on the new species and island records are given below. Additional data from other collections

are available from SBP. The specimens have been placed in the collection of the American Museum of Natural History. Additional identified voucher material is in the collection of the Charles Darwin Research Station (CDRS).

### NEW ISLAND AND SPECIES RECORDS

#### CHILOPODA

##### Henicopidae

*Lamyctes coeculus* (Brölemann). New island record. San Cristóbal. 1 km W El Junco, *Miconia* and tree-fern litter, 540 m, 17.III.96, S.B. Peck, 10 (specimens).

##### Scolopendridae

*Scolopendra galapagoensis* Brölemann. New island record. Darwin. South side talus slopes, under *Croton* shrubs, 20 m, 11.V.96, S.B. Peck, 2.

##### Schendylidae

*Pectiniunguis albemarlensis* Chamberlin. New island record. San Cristóbal. 3 km SE Wreck Bay, littoral zone, soil washing under *Croton* shrubs, 16.III.96, S.B. Peck, 2.

*Pectiniunguis krausi* Shear and Peck. New island record. Fernandina. Cape Hammond, littoral zone, in cracks in sea cliff, 24.V.96, S.B. Peck, 1.

#### DIPLOPODA

##### Lophoproctidae

*Lophoturus drifti* (Condé and Terver). New island record. Santa Cruz. Cueva Iguana at CDRS, in litter at side of cave pool, 1 m, 4.V.96, S.B. Peck, 1.

##### Rhinocricidae

*Nanostreptus geayi* (Brölemann). New Archipelago record. Isabela. Santo Tomas, humid forest, 300 m, 4-15.III.89, Peck and Sinclair, 1 in pitfall trap. Santo Tomas, humid forest, 200 m, I.89, G. Reck, 10. Santo Tomas, on fungus on wood in Rose Apple grove, 300 m, S.B. Peck, 3. Santa Cruz. Puerto Ayora, CDRS, arid zone, 5 m, 13.III.91, S. Abedrabbo, 1. 4 km E Santa Rosa, in pitfall traps in roadside in agriculture zone, 350 m, 10.IV-4.V.96, S.B. Peck, 3.

##### Cyrtodesmidae

*Cyrtodesmus* sp. New Archipelago record. Santa Cruz. 4 km E Santa Rosa, in pitfall traps in roadside in agriculture zone, 350 m, 10.IV-4.V.96, S.B. Peck, 3.

##### Haplodesmidae

*Prosopodesmus jacobsoni* Silvestri. New island record. San Cristóbal. 3 km SE Wreck Bay, littoral zone, from soilwash of litter under *Croton*, 16.III.96, S.B. Peck, 2.

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**Table 1.** Status and distribution by main islands (excluding satellite islands) of Galápagos Myriapoda. Island abbreviations are: D, Darwin; E, Española; Fe, Fernandina; Fl, Floreana; G, Genovesa; I, Isabela; M, Marchena; Pa, Pinta; Pn, Pinzon; SCl, San Cristóbal; SCz, Santa Cruz; So, Santiago; Sr, Seymour; SFe, Santa Fe; W, Wolf. x indicates previous records; \* indicates new species or island records; ? indicates species possibly now extinct.

	Status	ISLAND RECORDS														
		D	E	Fe	Fl	G	I	M	Pa	Pn	SCl	SCz	SFe	So	Sr	W
Class Symphyla																
Family Scutigereidae																
<i>Hanseniella caldaria</i> (Hansen)	probably introduced										x	x				
Class Chilopoda																
Order Lithobiomorpha																
Family Henicopidae																
<i>Lamyctes coeculus</i> (Brölemann)	introduced										*	x				
<i>L. fulvicornis</i> Meinert	introduced						x		x		x	x				
Order Scolopendromorpha																
Family Scolopendrididae																
<i>Cormocephalus andinus</i> Kraepelin	introduced				?							?				
<i>Scolopendra galapagoensis</i> Brölemann	probably extinct probably endemic	*	x	x	x	x	x	x	x	x	x	x	x			x
Family Cryptopidae																
<i>Cryptops beebei</i> Chamberlin	possibly endemic					x	x		x	x	x	x				
<i>Newportia monticola</i> Pocock	probably introduced						x				x	x				
Order Geophilomorpha																
Family Oryidae																
<i>Orphnaeus brevilabiatus</i> (Newport)	introduced		x		x		x		x	x		x			x	
Family Chilenophilidae																
<i>Pachymerium perei</i> Shear and Peck	probably native				x		x				x	x				
Family Schendylidae																
<i>Pectiniunguis albamarlensis</i> Chamberlin	possibly endemic	x	x			x	x		x		*	x			x	
<i>P. krausi</i> Shear and Peck	possibly endemic			*		x	x					x				
<i>Nannopodellus purpureus</i> Chamberlin	introduced														?	
<i>Nesondyla nealota</i> Chamberlin	probably extinct possibly endemic		x				x					x				
Class Diplopoda																
Order Polyzenida																
Family Lophoproctidae																
<i>Lophoturus drifti</i> (Condè and Terver)	probably introduced										x	*				
Order Polyzoniida																
Family Siphonotidae																
<i>Rhinotus purpureus</i> (Pocock)	introduced											x				
Order Spirobolida																
Family Rhinocricidae																
<i>Nanostreptus geayi</i> (Brölemann)	introduced							*				*				
Order Polydesmida																
Family Cyrtodesmidae													*			
<i>Cyrtodesmus</i> sp.	introduced												*			
Family Furhmannodesmidae																
<i>Agenodesmus nullus</i> Shear and Peck	introduced												x			
<i>Hexadesmus latridens</i> Loomis	introduced												x			
Family Haplodesmidae																
<i>Cylindrodesmus hirsutus</i> Pocock	introduced												x			
<i>Prosopodesmus jacobsoni</i> Silvestri	introduced							x			*	x				
Family Paradoxosomatidae																
<i>Asiomorpha coarctata</i> (Saussure)	introduced												x			
Family Pyrgodesmidae																
<i>Nesodesmus insulanus</i> Chamberlin	endemic				*		x				x	x				

El Junco, *Miconia* litter near road, 560 m, 15.III.96, S.B. Peck, 20. El Junco summit, 640 m, in guava-fern litter of humid forest, 14.III.96, S.B. Peck, 10. El Junco summit, 640 m, in horse dung and grass litter, 14.III.96, S.B. Peck, 10. 1 km W El Junco, 540 m, *Miconia* tree-fern litter, 17.III.96, S.B. Peck, 20.

#### Pyrgodesmidae

*Nesodesmus insulanus* Chamberlin. New island record. Floreana. Cerro Pajas crater bottom, pitfall traps in *Scalesia* forest, 325 m, 18-22.IV.96, S.B. Peck, 1.

### REVISED KEY TO GALÁPAGOS MILLIPEDES

For the convenience of future researchers, we present the following key, by which the known species of the Galápagos Islands may be separated.

- 1a. Body covered with tufts of serrate setae; 11 segments  
..... *Lophoturus drifti* (Condé and Terver)
- 1b. Body without dorsal setae, or if present, the setae are not in tufts; 18-50 body segments ..... 2
- 2a. Adults with 35 or more body segments; color often purplish ..... 3
- 2b. Adults with 18-20 body segments, less than 10 times as long as wide, not marked with purple ..... 4
- 3a. Adults small, body to 7 mm long; generally marked with purple, without dorsal midline stripe .....  
..... *Rhinotus purpureus* (Pocock)
- 3b. Adults large, body 20-30 mm long; generally brown-purple color, with dorsal midline yellowish stripe ..  
..... *Nanostreptus geayi* (Brölemann)
- 4a. Able to roll into a thick disk, with notably enlarged side lobes (paranota) of second body segment covering the space in the centre of the disk .....  
..... *Cyrtodesmus* sp.
- 4b. Not rolling into a thick disk and without notably enlarged side lobes on second body segment ..... 5
- 5a. Adults less than 4 mm long, unpigmented, males with 18 segments, females with 18 or 20 ..... 6
- 5b. Adults more than 4 mm long, often with pigment, with 19 or 20 segments ..... 7
- 6a. Adults about 2.5 mm long, setae of dorsum club-shaped ..... *Agenodesmus nullus* Shear and Peck
- 6b. Adults about 3.5 mm long; setae of dorsum sharply pointed ..... *Hexadesmus lateridens* Loomis
- 7a. Body roughly cylindrical, densely pilose; color creamy white ..... *Cylindrodesmus hirsutus* Pocock
- 7b. Body flattened, not densely pilose ..... 8

8a. Dorsum mostly smooth, shiny, black with yellow paranota (side-lobes); adult length greater than 15 mm  
..... *Asiomorpha coarctata* (Saussure)

8b. Dorsum with series of tubercles, often with adhering soil, ozopores (openings of repugnatorial glands) on elevated porosteles (tubercles) ..... 9

9a. Ozopores in a continuous series from segment 7 posterior; color usually cream white; 5-6 mm long  
..... *Prosopodesmus jacobsoni* Silvestri

9b. Ozopores in a continuous series from segment 15 posterior; color usually gray or black; 9-11 mm long  
..... *Nesodesmus insulanus* Chamberlin

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