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# FIRST RECORDS OF INTERTIDAL MITE SPECIES (ACARI: ACARIFORMES: ORIBATIDA) FROM HISPANIOLA'S COASTS WITH TWO NEW RECORDS FOR THE CARIBBEAN

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**Abstract:** Three species of intertidal oribatid mites are recorded for the first time from coasts of the Dominican Republic and Hispaniola: the fortuyniid *Alismobates inexpectatus* and the selenoribatids *Carinozetes mangrovi* and *Thalassozetes barbara*. At the same time, *A. inexpectatus* and *C. mangrovi* are recorded from the first time from the Caribbean. The species were found in six different coastal localities of the Dominican Republic, whereas in more than half of the locations at least two species occurred syntopically.
**Key words:** Acari, Oribatida, Fortuyniidae, Selenoribatidae, *Alismobates*, *Carinozetes*, *Thalassozetes*, Caribbean, West Indies, Hispaniola, Dominican Republic.

**Primeros registros de especies intermareales de ácaros (Acari: Acariformes: Oribatida) de las costas de La Española, con dos nuevos registros para el Caribe**
**Resumen:** Se registran por primera vez tres especies de ácaros oribátidos intermareales en costas de la República Dominicana y La Española: el fortúyniido*Alismobates inexpectatus* y los selenoribátidos *Carinozetes mangrovi* y *Thalassozetes barbara*. Al mismo tiempo, *A. inexpectatus* y *C. mangrovi* se registran por primera vez para el Caribe. Estas especies fueron encontradas en seis localidades de costas de la República Dominicana, mientras que en más de la mitad de las localidades al menos dos especies eran sintópicas.
**Palabras clave:** Acari, Oribatida, Fortuyniidae, Selenoribatidae, *Alismobates*, *Carinozetes*, *Thalassozetes*, Caribe, Indias Occidentales, La Española, República Dominicana.

## Introduction

Oribatid mites are very small arachnids and the majority of this group consists of typical terrestrial taxa, dwelling in soil, litter, trees, etc. where they play an important role in decomposition. Only a few have managed to colonize marine associated habitats, as for example sandy beaches, rocky shores or mangrove forests. The families of Fortuyniidae and Selenoribatidae represent two of these intertidal taxa and are characterized as stenotopic inhabitants of the marine littoral zone (Pfingstl, 2013a). Both show a transoceanic distribution but are restricted to coasts of the tropics and subtropics.

For a long time, the Caribbean area seemed to be devoid of these mites until Schuster (1977, 1989) provided first vague reports from St. Lucia and Costa Rica. Over twenty years later, further records of these mites from single islands were published (Pfingstl, 2013b; Pfingstl & Schuster, 2014) and consequently it became obvious that fortuyniid and selenoribatid mites may be distributed throughout the whole Caribbean area. Nevertheless, taxonomic knowledge about these Caribbean taxa was still largely incomplete as only the record from Barbados (Pfingstl, 2013b) was determined to species level, all other reports from Costa Rica, St. Lucia, Dominica and the Dominican Republic (Schuster, 1977, 1989; Pfingstl & Schuster, 2014) were only given at the genus or family level.

Based on rediscovered specimens (from 1993) contained in a private collection and on the results of a recent study, a preliminary list of intertidal oribatid species occurring on shores of the Dominican Republic is given.

## Material and Methods

Intertidal algae growing on sandy substrate, rocks and mangrove roots were scraped-off with a knife during low tide and these algae samples were afterwards put in a Berlese-Tullgren apparatus for the extraction of mites. For investigation in transmitted light animals were stored in ethanol (pure ethanol), then heated in lactic acid (80°C for about 20 minutes) and afterwards embedded in Berlese mountant (chloral hydrate, gum arabic in water). Depictions and photographs were made with an Olympus BH-2 Microscope equipped with a drawing attachment.

Based on our experience with island organisms and the occurrence of cryptic species (see Pfingstl *et al.*, 2014) we added the qualifier *cf.* (=*conformis*, meaning like or similar) to the species names in order to express that the determination is preliminary for now because an ongoing molecular genetic study of the respective material may show different results than present morphological investigations.

The examined material is deposited in the following collections:

UG: University of Graz, Institute of Zoology, Austria;

RS: private collection of Prof. R. Schuster, Graz, Austria;

MNHNSD: the Museo Nacional de Historia Natural "Prof. Eugenio de Jesús Marcano", Santo Domingo, Dominican Republic.

## Records for the Dominican Republic

### Family FORTUYNIIDAE Hammen, 1963

#### Genus *Alismobates* Luxton, 1992

● ***Alismobates cf. inexpectatus*** Pfingstl *et* Schuster, 2012 (Fig. 1)

REMARKS: *Alismobates inexpectatus* is dark brown to black in colour and shows an average body length of 360 µm (Pfingstl & Schuster, 2012).

REVIEWED MATERIAL: **María Trinidad Sánchez Province**: Río San Juan, Playa Grande, intertidal algae growing on rock, May 1993, *leg*. A. Hlebajna, 6♂ 14♀ (RS-1609); 1♂1♀ with same collecting data (MNHNSD 08.432, 08.433). Río San Juan, Gri Gri Lagoon, intertidal algae growing on pneumatophores of red mangrove (*Rhizophora mangle*), May 1993, *leg*. A. Hlebajna, 1♂ 2♀ (RS-1611); 1♂1♀ with same collecting data (MNHNSD 08.434, 08.435). **Santo Domingo Este Province**: Boca Chica, algae (*Bostrychia* sp.) growing on rocky substrate (18°26'52"N 69°37'10"W), II.08.2016, coll. T. Pfingstl and A. Lienhard, 20 specimens (UG DR_03-PL). **Samaná Province**: Samaná, Puerto Santa Bárbara, algae (*Bostrychia* sp.) growing on intertidal rocks (19°12'05"N 69°19'33"W), II.11.2016, coll. T. Pfingstl and A. Lienhard, 39 specimens (UG DR_10-PL).

COMMENTS: This species prefers rocky coasts as habitats where it grazes on intertidal algae, predominantly on *Bostrychia tenella* (Pfingstl, 2013a).

DISTRIBUTION: This is the first official record of this species from the Caribbean area, prior to this *A. inexpectatus* was only reported from the archipelago of Bermuda in the Western Atlantic (*e.g.* Pfingstl & Schuster, 2014).

### Family SELENORIBATIDAE Schuster, 1963

#### Genus *Carinozetes* Pfingstl *et* Schuster, 2012

● ***Carinozetes cf. mangrovi*** Pfingstl, Lienhard *et* Jagersbacher-Baumann, 2014 (Fig. 2)

REMARKS: *Carinozetes mangrovi* is a brown mite with an average body size of 350 µm. This species is closely related to *Carinozetes bermudensis* Pfingstl & Schuster, 2012. Both species show nearly identical morphologies and hence can be easily confused. The main distinguishing character is the angle and distance between the ventral name giving carinae. In *C. bermudensis* the distance between the posterior edges of the carinae is <55µm and in *C. mangrovi* >60µm (Pfingstl *et al.*, 2014).

REVIEWED MATERIAL: **María Trinidad Sánchez Province**: Río San Juan, Gri Gri Lagoon, intertidal algae growing on pneumatophores of red mangrove (*Rhizophora mangle*), 3♂ 1♀, May 1993, *leg*. A. Hlebajna (MNHNSD 08.428 - 08.431); 3♂ 8♀ with same collecting data (RS-1611). **Santo Domingo Este Province**: Boca Chica, on algae (*Bostrychia* sp.) growing on rocky substrate, (18°26'52"N 69°37'10"W), 1 specimen, II.08.2016, coll. T. Pfingstl and A. Lienhard (UG DR_03-PL). **Samaná Province**: Samaná, Puerto Santa Bárbara, algae (*Bostrychia* sp.) growing on intertidal rocks (19°12'05"N 69°19'33"W), 3 specimens, II.11.2016, coll. T. Pfingstl and A. Lienhard (UG DR_10-PL).

COMMENTS: *Carinozetes mangrovi* also occurs predominantly in algae growing on mangrove roots whereas *C. bermudensis* prefers algae growing on boulders, rocks and muddy substrate (Pfingstl *et al.*, 2014).

DISTRIBUTION: Before the present record, *C. mangrovi* was only known to occur on Bermuda (Pfingstl *et al.*, 2014).

#### Genus *Thalassozetes* Schuster, 1963

● ***Thalassozetes cf. barbara*** Pfingstl, 2013 (Fig. 3)

REMARKS: *Thalassozetes barbara* is a dark brown coloured small mite with an average body size of 274 µm.

REVIEWED MATERIAL: **María Trinidad Sánchez Province**: Río San Juan, Playa Grande, intertidal algae growing on rock, May 1993, *leg*. A. Hlebajna; 1♀ with same collecting data (MNHNSD 08.426). **Samaná Province**: Samaná, Cayo Levantado (Bacardi Island), intertidal algae growing on sand, May 1993, *leg*. A. Hlebajna, 2♀ 1♂ (RS-1610); 1♂ with same collecting data (MNHNSD 08.427). Las Terrenas, El Portillo, Playa El Portillo, algae (*Bostrychia* sp.) growing on roots of red mangrove (*Rhizophora mangle*) [19°19'25"N 69°29'00"W], II.11.2016, 2 specimens, coll. T. Pfingstl and A. Lienhard (UG DR_11-PL). **Santo Domingo Este Province**: Boca Chica, algae (*Bostrychia* sp.) growing on rocky substrate (18°26'52"N 69°37'10"W), II.08.2016, 7 specimens, coll. T. Pfingstl and A. Lienhard (UG DR_03/04-PL).

COMMENTS: This species preferably inhabits intertidal algae growing on rocks (Fig. 4, A-B) or sandy substrate therefore the record of two specimens from mangrove roots in El Portillo (Fig. 4, C-D) represents a rather exceptional case.

DISTRIBUTION: Prior to this record, *T. barbara* was only found on coasts of Barbados. The present findings suggest that this species may be distributed throughout the Caribbean.

## Concluding remarks

The present records of intertidal oribatid mites from the Dominican Republic (Fig. 5) are the results of small-scale investigations conducted in a few places and hence only give a very limited insight into the Hispaniolan intertidal mite fauna. Given the vast number of potential habitats (*e.g.* rocky coasts, mangrove forests) present on this island, it is assumable that fortuyniid and selenoribatid mites are occurring in most coastal areas of Hispaniola. Future studies may confirm this assumption and may further reveal the existence of new and yet undiscovered species.


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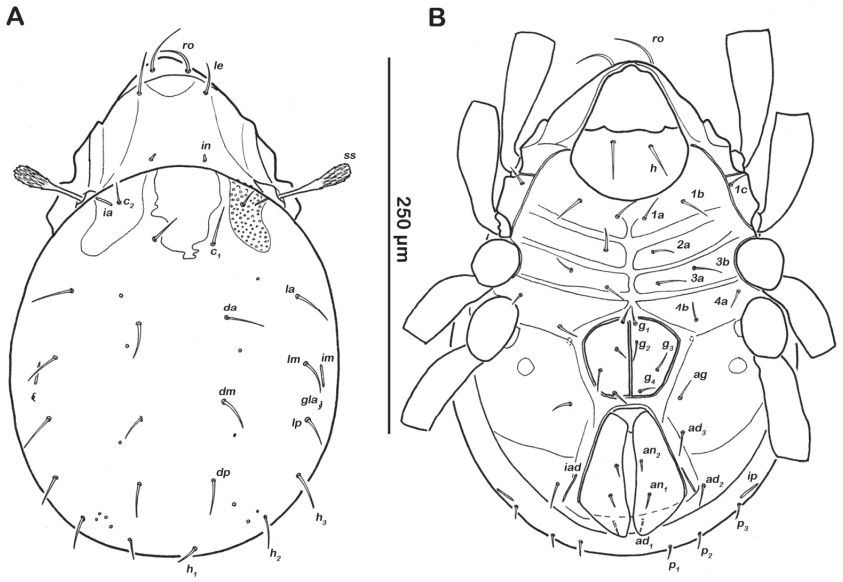



**Fig. 1**. *Alismobates cf. inexpectatus*, adult male from Dominican Republic. **A**: dorsal view, legs not drawn; **B**: ventral view, only trochanters and femora of legs are shown.

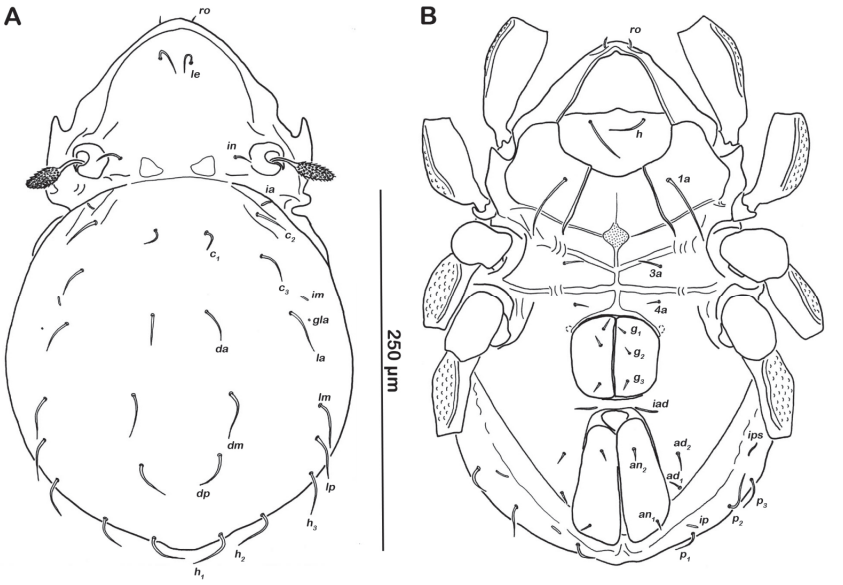



**Fig. 2**. *Carinozetes mangrovi*, adult female, drawing of paratype from Bermuda. **A**: dorsal view, legs not drawn; **B**: ventral view, only trochanters and femora of legs shown.

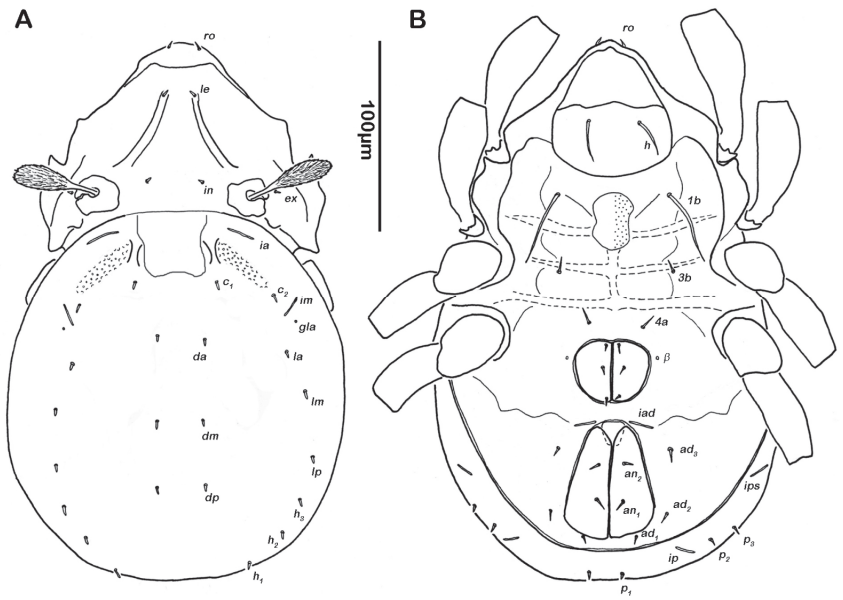



**Fig. 3**. *Thalassozetes barbara,* adult male, drawing of paratype from Barbados. **A**: dorsal view; **B**: ventral view.

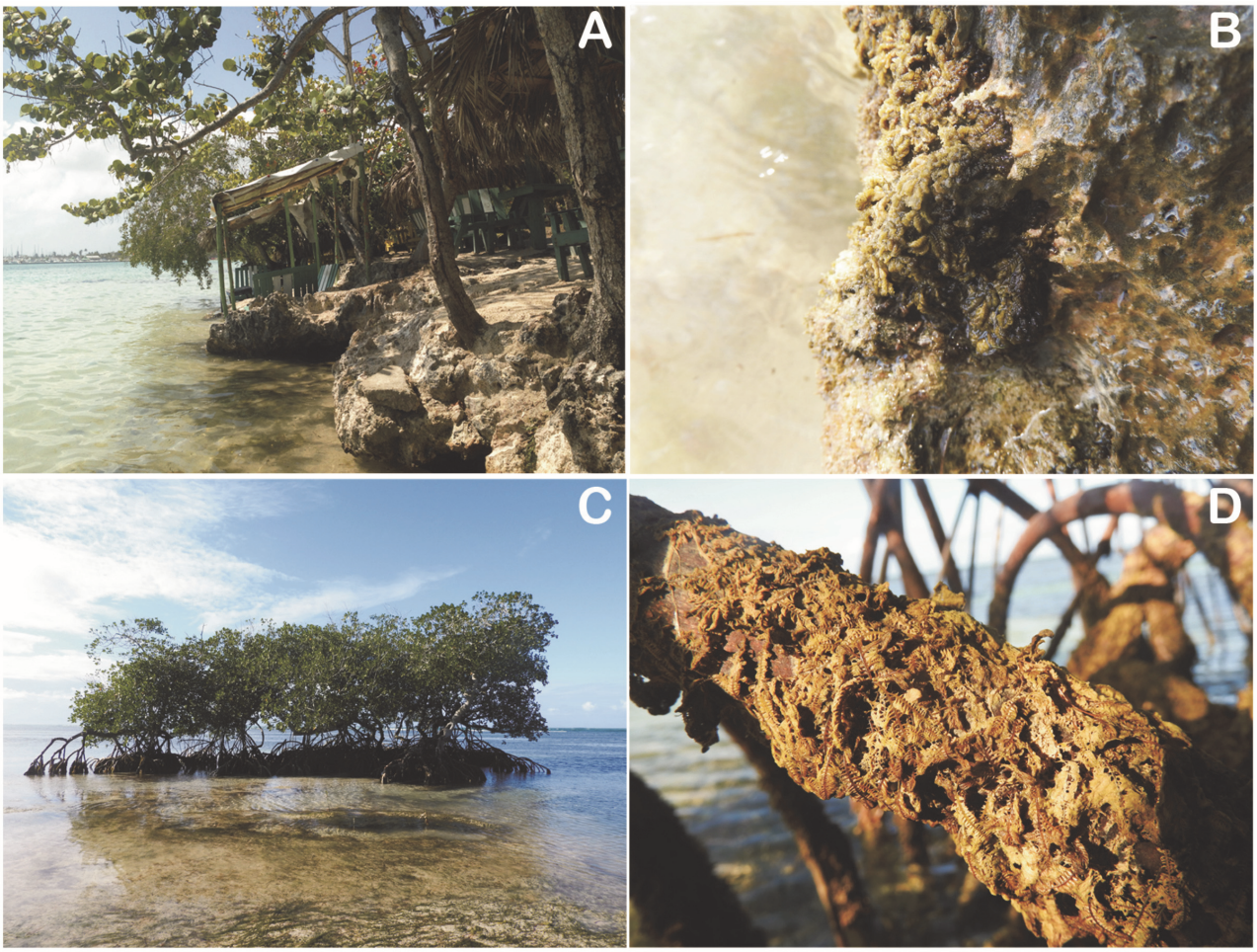



**Fig. 4**. Examples of typical habitats and sample locations of littoral oribatid mites. **A**, rocky shore overgrown with algae in Boca Chica; **B**, detailed view on algae (*Bostrychia* sp.) shown in A; **C**, red mangrove (*Rhizophora mangle*) with algal growth on roots in El Portillo; **D**, detailed view of algae (*Bostrychia* sp.) growing on root.

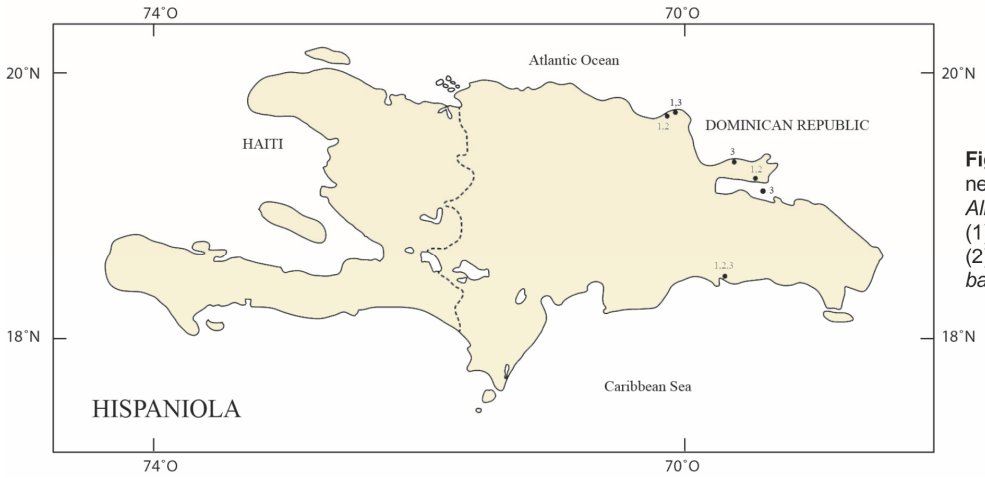



**Fig. 5**. Collecting sites of the new records from Hispaniola. *Alismobates cf. inexpectatus* (1), *Carinozetes cf. mangrovi* (2) and *Thalassozetes cf. barbara* (3).

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