

# **Diversity and community structure of moss- and lichen-dwelling tardigrades (Tardigrada) along an altitudinal gradient in Cuba**

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Submitted: October 6, 2020. Final revision received: April 12, 2021. Accepted: May 29, 2021

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**Supplementary material**

**Table S1.**

Locations of sampling sites and sampling characterizations.

Features	Sampling sites			
	1	2	3	4
Altitude (m a.s.l.)	367	345	226	100
Number of samples	30	30	30	30
Sample type	Mosses and lichens above rock and tree bark	Mosses and lichens above rock and tree bark	Mosses and lichens above rock and tree bark	Mosses and lichens above rock and tree bark
Coordinates	20.098762, -75.805816	20.099279, -75.810474	20.095506, -75.807485	20.095500, -75.808520
Number of grouped houses	21–40	0	0	41–60
Number of isolated houses	1–20	0	1–20	21–40
Road density (m/km <sup>2</sup> )	5–9	0–4	5–9	10–14
Highway density (m/km <sup>2</sup> )	5–9	5–9	5–9	10–14
Anthropopression	Medium	Low	Medium	High

**Table S2.**

Characters observed in morphospecies found in Alturas de Boniato.

Morphospecies	Cuticle	Bucco-pharyngeal apparatus	Peribuccal structures	Placoids	Claws	Eggs
<i>Milnesium</i> sp.1 (tardigradum group)	Smooth	<i>Milnesium</i> type	Six peribuccal papillae and six peribuccal lamellae	Absent	<i>Milnesium</i> type with configuration [2-3]-[3-2]	Not found
<i>Milnesium</i> sp.2 (tardigradum group)	Smooth	<i>Milnesium</i> type	Six peribuccal papillae and six peribuccal lamellae	Absent	<i>Milnesium</i> type with configuration [3-3]-[3-3]	Not found
<i>Milnesium</i> sp.3 (tardigradum group)	Smooth	<i>Milnesium</i> type	Six peribuccal papillae and six peribuccal lamellae	Absent	<i>Milnesium</i> type with configuration [2-2]-[2-2]	Not found
<i>Macrobiotus</i> sp. (hufelandi group)	Smooth	<i>Macrobiotus</i> type	Peribuccal lamellae very small and difficult to observe	Two macroplacoids (1>2) and no microplacoid	<i>Macrobiotus</i> type	<i>Hufelandi</i> type
<i>Paramacrobiotus</i> sp. (subgenus <i>Paramacrobiotus</i> )	Smooth	<i>Paramacrobiotus</i> type	Ten large and evident peribuccal lamellae	Three rod-shaped macroplacoids	<i>Macrobiotus</i> type	<i>Areolatus</i> type

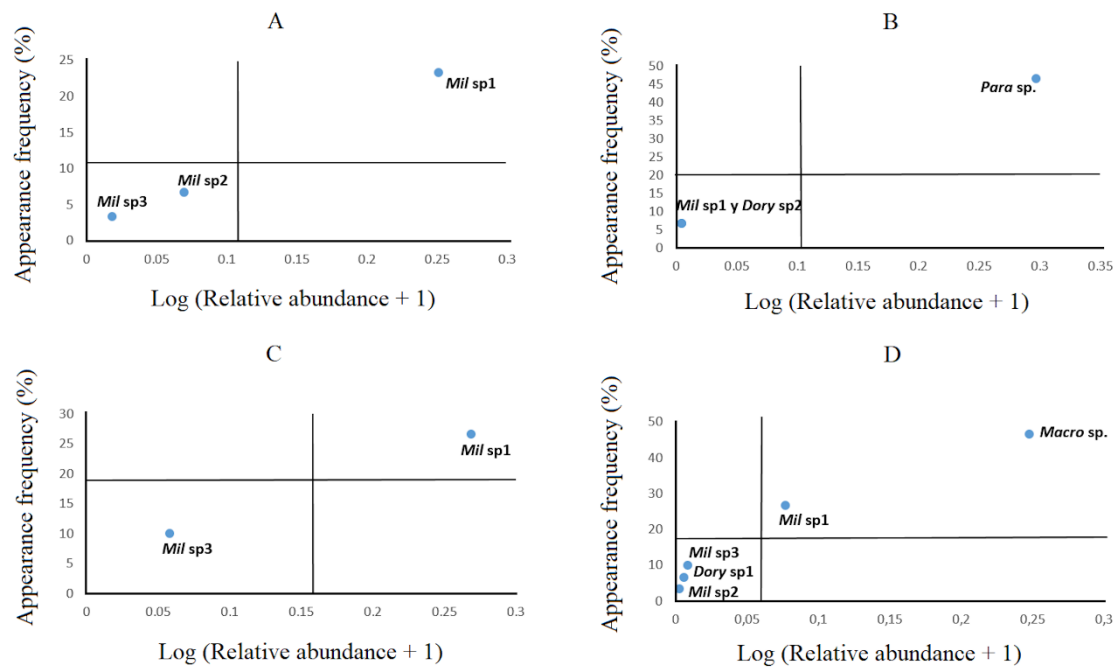
				and microplacoid clearly distant		
<i>Doryphoribius</i> sp.1 (doryphorus group)	With evident reticular sculpture	<i>Doryphoribius</i> type	Peribuccal papulae present, some of which were divided	Two macroplacoids and no microplacoid	<i>Isohypsibius</i> type	Not found
<i>Doryphoribius</i> sp.2 (vietnamensis group)	With granulation and dorsolateral gibbosities (X: 2-4-6- 4-6-4-6-2-2-3)	<i>Doryphoribius</i> type	Not observed	Three macroplacoids and no microplacoid	<i>Isohypsibius</i> type	Not found

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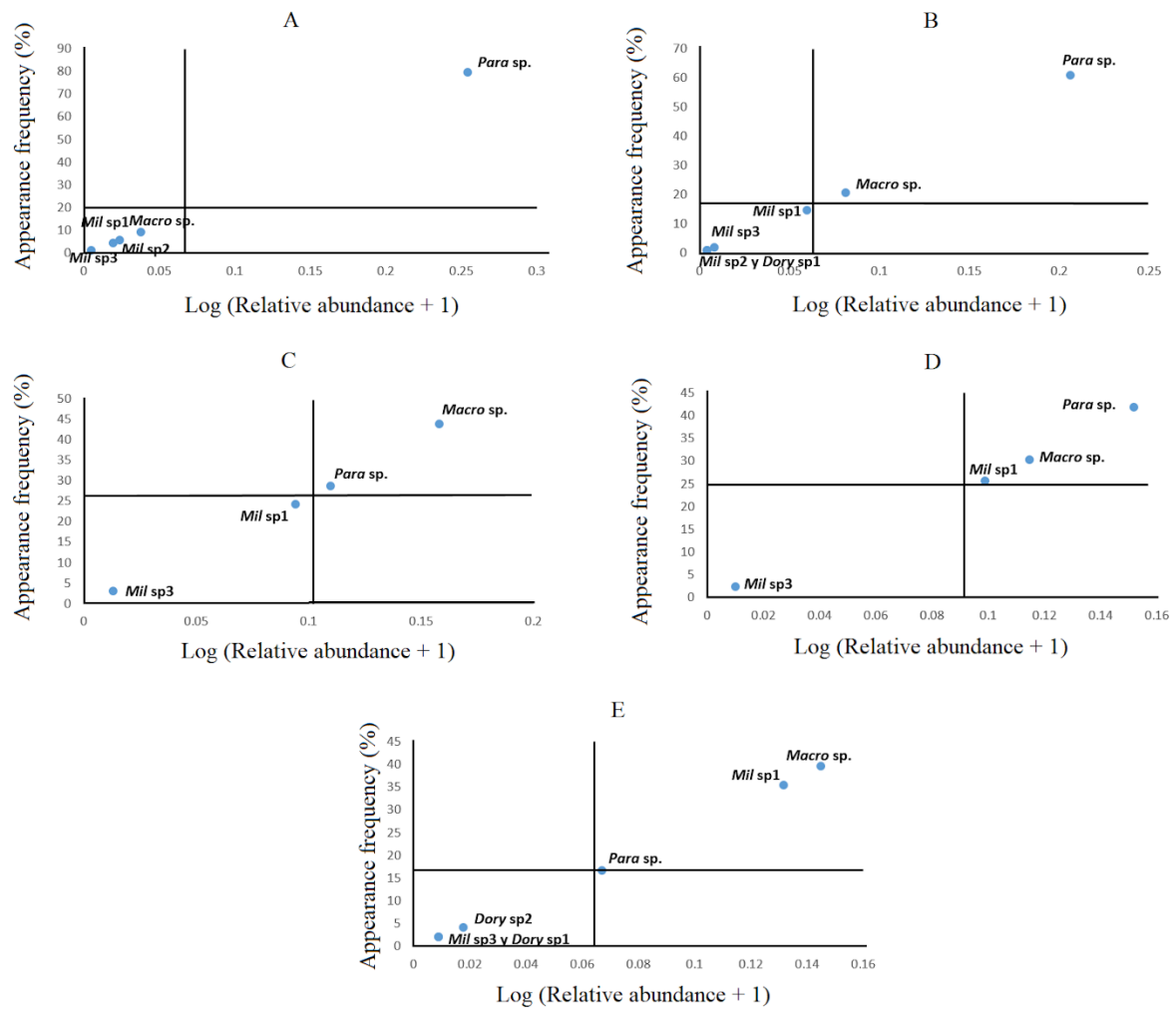
**Table S3.**

Obtained values of True Diversity (Hill serie).

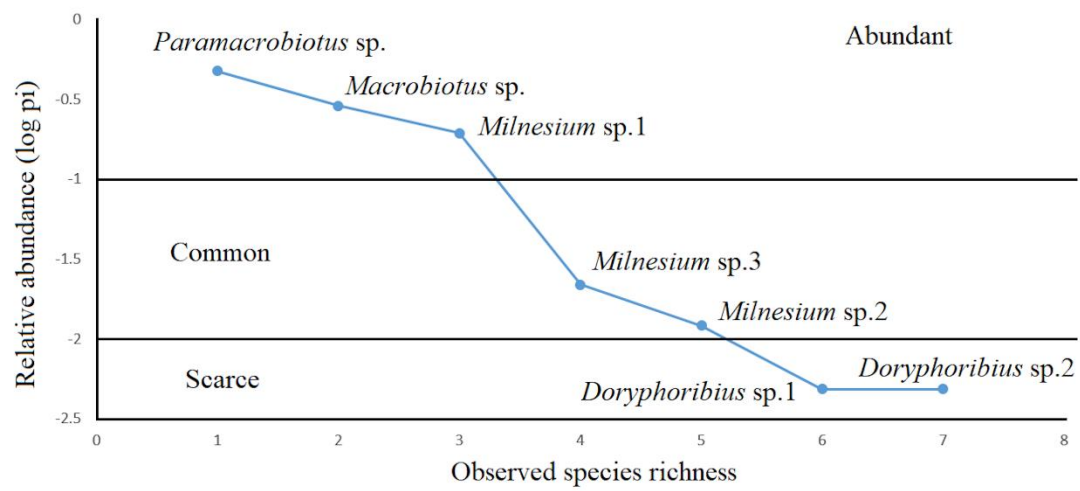
Order of diversity ( $q$ )	Effective number of species			
	Site 1	Site 2	Site 3	Site 4
	Observed			
0	3.00	3.00	2.00	5.00
1	1.88	1.12	1.51	1.99
2	1.55	1.04	1.32	1.59
	Estimated			
0	3.00	3.00	2.00	5.50
1	1.97	1.24	1.53	2.02
2	1.59	1.04	1.34	1.60



**Figure S1.** Olmstead–Tukey correlation for each sampling site showing the hierarchical organization of taxa in the community. (A) Site 1, (B) Site 2, (C) Site 3, (D) Site 4.

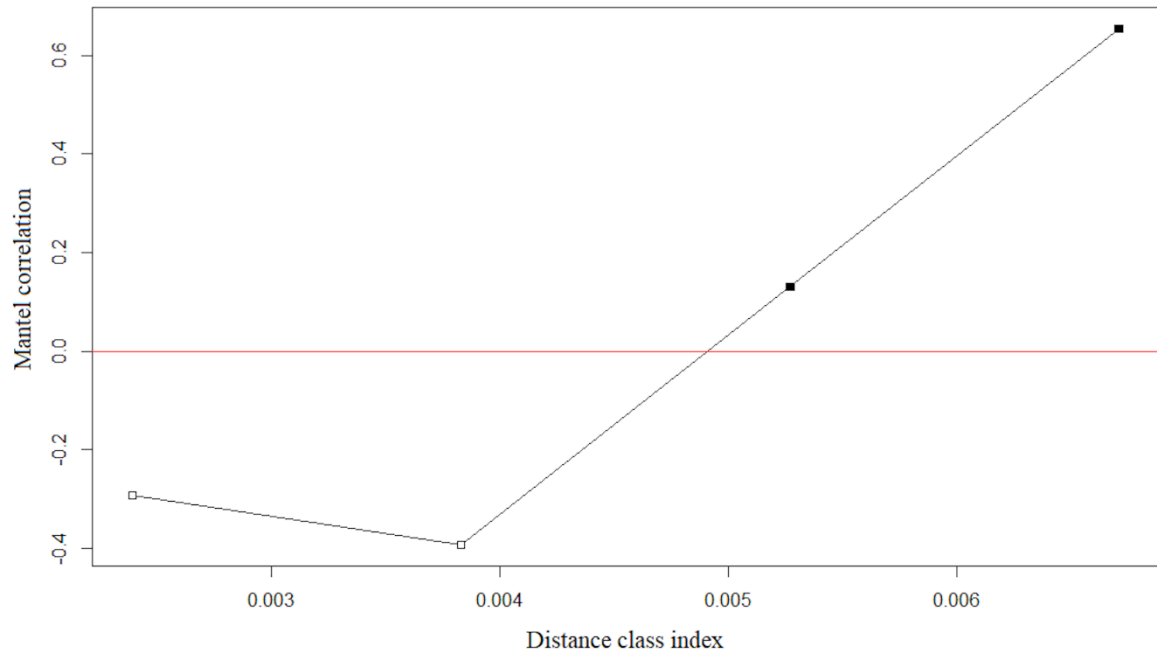


**Figure S2.** Olmstead-Tukey correlation for each collection month showing the hierarchical organization of taxa in the community. (A) November, (B) December, (C) January, (D) February, (E) March.



**Figure S3.** Rank–abundance curve (95% confidence limits obtained by bootstrap) of the communities showing an equitable abundance pattern.





**Figure S4.** Mantel correlogram for tardigrade data. Squares above the red line represent a positive spatial association, those located below it indicate a negative spatial association. Filled squares indicate significant correlations ( $P < 0.05$ , after Bonferroni correction for multiple comparisons).