

# Intraspecific variation in carapace morphology among fiddler crabs (Genus *Uca*) from the Atlantic coast of Brazil

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## Supplement. Habitat locations and features for *Uca* species from the Atlantic coast of Brazil.

Table S1. *Uca* spp. Site localities and principal habitat characteristics for *Uca* collected along the Atlantic coast of Brazil between May 2009 and August 2010. State abbreviations: AP = Amapá, BA = Bahia, CE = Ceará, ES = Espírito Santo, MA = Maranhão, PE = Pernambuco, PR = Paraná, RJ = Rio de Janeiro, SP = São Paulo, SC = Santa Catarina. Habitat abbreviations: mngv = mangrove. Subgenus/species abbreviations: bu = *Minuca (M.) burgersi*, cm = *Leptuca (L.) cumulanta*, lp = *(L.) leptodactyla*, ma = *Uca (U.) maracoani*, md = *(M.) mordax*, rp = *(M.) rapax*, th = *Boboruca (B.) thayeri*, ur = *(L.) uruguayensis*, vc = *(M.) vocator*, and vi = *(M.) victoriana*

State	Site designation (municipality/feature)	Georeference (latitude, longitude)	Habitat osmolality (mOsm kg <sup>-1</sup> H <sub>2</sub> O)	Habitat type	Species
AP	Calçoene, Goiabal, river	02.59653, -50.84833	105	sandy-mud	ma, md
	Amapá, Amapá R.	02.14724, -50.69581	463	open mud flat, mngv	ma, md, rp, th, vc
	Amapá, Amapá R.	02.13643, -50.69782	270	clay flat	cm, ma, md
	Amapá, Amapá R.	02.11987, -50.71415	487	bamboo stand	md, rp
	Amapá, Amapá R.	02.08035, -50.76265	75	low tide bar	ma, md
	Amapá, Amapazinho R. bridge	02.05352, -50.81042	54	mud/clay river	md
MA	Raposa, Caêma R.	-02.41575, -44.10077	930	exposed sand	cm, lp, ma, th, rp
	São José do Ribamar	-02.53871, -44.10903	58	clay/mud	md
	São José do Ribamar	-02.56377, -44.05370	825	exposed sandy mud	cm, lp, ma, th
	São José do Ribamar, port	-02.54966, -44.05538	80	muddy, mngv	rp
	Icatu, Munim R.	-02.77549, -44.06629	80	humus, mngv	bu, cm, ma, md, rp, th, vc

CE	Fortaleza, Ceará R. mouth	-03.70214, -38.59650	590	mngv, open flat	cm, ma
	Fortaleza, Cocó R. bridge	-03.77514, -38.43887	61	sandy mud	bu, lp, rp, th, vc
	Fortaleza, upper Cocó R.	-03.76818, -38.45075	60	mngv mud	ma, th
	Fortaleza, Eça de Queirós R.	-03.77583, -38.46103	40	clay stream bank	md, rp, vc, vi
PE	Itamaracá, Sta. Cruz R. channel	-07.77091, -34.87943	350	sand flat, mngv	rp
	Itamaracá, Sta. Cruz R. channel	-07.81853, -34.86131	716	open sand-mud flat	lp, ma
	Itamaracá, Ft. Orange	-07.81045, -34.84285	960	mngv mud	ma, rp, th
	Recife, Jordão R.	-08.09838, -34.90728	460	mngv mud	bu, rp, th, vc, vi
	Maracaípe, river mouth	-08.53787, -35.00800	350	sandy knoll, mngv	bu, lp, th
BA	Cachoeira, Paraguaçu R.	-12.60449, -38.96550	26	sand clay river bank	md, vc, vi
	Maragogipe, Coqueiros	-12.72338, -38.93838	38	open sand flat	lp, rp
	Madre de Deus, Baía Santos	-12.73657, -38.60433	951	open sand/mud	bu, lp, ma, rp, th, vi
	Maragogipe, Iguape bay	-12.78070, -38.90875	827	sand, mngv	lp, ma, th
	Salvador, Aratu bay, marina	-12.81383, -38.45294	675	mngv, humus, mud	lp, ma, rp, th
	Salvador, Plataforma Lobato	-12.90280, -38.47627	28	stream, mngv	bu, md, rp, vc, vi
ES	Aracruz, upper Sta. Cruz R.	-19.86007, -40.28065	83	clay-mud river bank	md
	Santa Cruz, Sta. Cruz R.	-19.92383, -40.17959	221	sand flat	lp, rp, th
	Coqueiral, Piraquê-açu R.	-19.92683, -40.17634	641	sand flat, mngv	lp, rp, th, vi
	Santa Cruz, Sta. Cruz R. mouth	-19.95283, -40.16599	900	mngv mud	bu, rp, th, vi
	Santa Cruz, Sta. Cruz R.	-19.95320, -40.16842	791	mngv mud	ma
	Vitória, BR101 hwy, ditch	-20.22657, -40.36484	78	muddy ditch	md, vi
	Vitória, Fed. Univ. ES	-20.28441, -40.30403	673	mngv, mud	vi
	Vitória, Joana D'arc	-20.28357, -40.31325	675	mngv mud	bu, lp, ma, vi, rp, th, vi
	Vitória, Santo Antônio	-20.30778, -40.35543	675	open mud flat	lp, ma, th
	Guarapari, Morro beach	-20.66475, -40.49978	706	mngv, dry sand	bu, rp
	Guarapari, Lameirão	-20.69053, -40.52399	796	sandy mud	bu, lp, rp, th, vi
RJ	Cabo Frio, Ararauma Lake	-22.86256, -42.03558	1203	sand, mud flat	lp, rp, th, ur
	Maricá, Guarapina Lake	-22.94888, -42.70104	508	mngv mud	cm, rp, th, vc, vi
	Sta. Clara, Capelinha R.	-22.99404, -43.60621	144	river bank, mud	rp

	Rio de Janeiro, Guaratiba	-23.02868, -43.56275	33	sandy mud	bu, cm, lp, ma, md, rp, th, ur, vc, vi
	Rio de Janeiro, Guaratiba	-23.02518, -43.56263	317	mngv, mud	cm, md, rp, th, vc, vi
	Itacuruçá, boat repair dock	-22.92418, -43.89756	33	mngv, mud	cm, lp, rp, th, vi
	Paraty, Jabaquara beach	-23.20164, -44.72115	800	mngv, mud	cm, ma, rp, th, ur
SP	Ubatuba, Itamambuca R.	-23.40722, -45.01246	30	exposed sand	bu, lp, md, ur, vi
	Caraguatatuba, Juqueriquerê R.	-23.68952, -45.43832	133	mud, river bank	md
	Caraguatatuba, Juqueriquerê R.	-23.70737, -45.42806	692	river mouth, mngv	rp, th, vc
	São Sebastião, Enseada beach	-23.72591, -45.42013	136	muddy ditch	bu, lp, rp, md, ur, vi
	São Sebastião, ferry dock	-23.80845, -45.39711	1037	reclaimed mngv	bu, lp, rp, th, ur, vc, vi
	São Sebastião, Araçá beach	-23.81261, -45.40833	1010	sand beach, mngv	lp, th, ma, th, ur
	Bertioga, Itapanhaú R.	-23.81217, -46.11851	28	river bank	md, vi
	Bertioga, Itapanhaú R.	-23.83626, -46.15232	220	mud, exposed	bu, rp, th, ur, vc
PR	Guaratuba, bay, Chapeuzinho	-25.86486, -48.71211	55	muddy island mud	md
	Guaratuba, bay, Guaxumã	-25.85691, -48.66185	92	muddy mngv	md, th
	Guaratuba, bay, Ilha Garcinhas	-25.87136, -48.63449	328	mngv roots, mud	ma, th
	Guaratuba, bay, Baixio-mirim	-25.87388, -48.60798	650	sand flat	ma
	Guaratuba, bay, Ponto Venda	-25.85409, -48.58723	650	mud/sand	bu, lp, rp, th, ur
	Guaratuba, bay, Rio Fundo	-25.84030, -48.58309	715	shelly sand	lp, ma, th, ur
SC	Itajaí, Itajaí-mirim R.	-26.89005, -48.68400	18	muddy river	bu, md, ur
	Itajaí, Saco da Fazenda	-26.91747, -48.65108	43	sandy, clay	bu, md, rp, ur
	Florianópolis, Barra da Lagoa	-27.57778, -48.43006	978	mud, sand, flat	bu, md, rp, ur
	Florianópolis, Daniela	-27.44958, -48.52625	397	mngv, mud, humus	bu, rp, th, ur
	Florianópolis, Armação	-27.75358, -48.50461	44	sandy river bank	bu, ur
	Palhoça, Maciambu R. mouth	-27.82494, -48.61967	320	muddy sand	lp, ur

Table S2. Data matrix used to establish the phylogeny of *Uca Minuca victoriana* von Hagen, 1987 in a morphologically based tree for *Uca* (Rosenberg 2001, his Appendix II). States of the 236 characters: present = 1, absent = 0, unscorable/inapplicable condition = N

*Minuca victoriana*

0100011100 0000110011 1010001100 0010001111 1111101011 0011101101 0N01101000 1010011011 11110NN010  
0010000001 1011111111 0100011111 1111000000 0001000100 0100011101 0001010000 0000100011 0111110111 0001111010  
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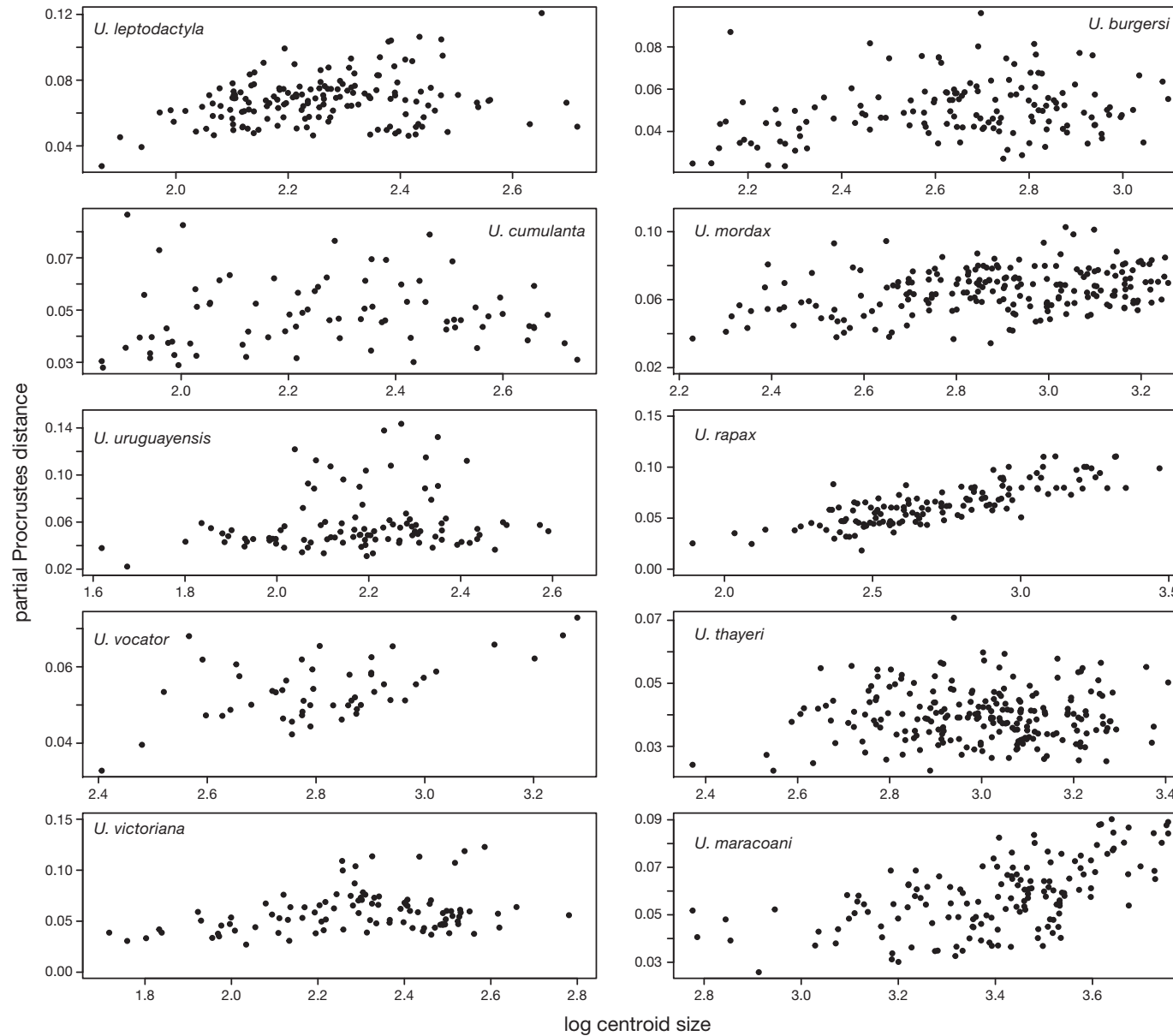


Fig. S1. *Uca* spp. Allometric growth in each species of *Uca* from Brazil. The y-axis is Procrustes distance between each specimen and the mean shape of the smallest 3 specimens, and the x-axis is natural log of centroid size. Where allometric growth occurs, distances increase with size. Some species show tightly constrained allometric growth (e.g. *U. rapax*). Others have much less allometric growth (e.g. *U. cumulanta*). However, as long as the relationship between partial and uniform warp scores is log-linear with centroid size, variation due to allometric growth can be removed by regressing each against size, as implemented in Standard6 (Sheets 2001–2007). Also see Hopkins & Thurman (2010)

## LITERATURE CITED

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