

Burnupia ingae Lanzer, 1991 (Gastropoda: Ancyliidae): Current distribution in Brazil

Luiz Eduardo Macedo de Lacerda and Sonia Barbosa dos Santos*

Universidade do Estado do Rio de Janeiro, Instituto de Biologia Roberto Alcântara Gomes, Programa de Pós-graduação em Ecologia e Evolução, Departamento de Zoologia, Laboratório de Malacologia Limnica e Terrestre. Rua São Francisco Xavier, 524, PHL, sala 525/2. CEP 20550-900. Maracanã, Rio de Janeiro, RJ, Brasil.

* Corresponding author. E-mail: sbsantos@uerj.br

ABSTRACT: This paper describes the current distribution of *Burnupia ingae* Lanzer, 1991, a freshwater limpet, firstly described to Santa Catarina state, southern Brazil, showing literature revision and new records, extending the geographical distribution of *B.ingae* to all Brazilian regions.

Burnupia Walker, 1912, a freshwater limpet genera traditionally assigned to the family Ancyliidae, had been considered an exclusively African genus (Hubendick 1964; 1967; Albrecht *et al.* 2004). The first published work that mentions this genus to Brazil (Santos 1990) was based on specimens from Alagoas and Espírito Santo states, although an unpublished thesis from 1989 had already cited the presence of *Burnupia* in the states of Santa Catarina and Rio Grande do Sul (see Lanzer 1996). The following year *Burnupia ingae* Lanzer, 1991 was described to Sombrio lake, Santa Catarina state, south Brazil (Lanzer 1991). Santos (2003) reinforced *Burnupia* is one of the seven freshwater limpet genera found in the Neotropical

region.

Considering the relevance to systematic, phylogeny and biogeography this paper shows the current knowledge about the geographical distribution of *B. ingae* on Brazil, assigning to the species level samples not yet identified. Thereafter, we also describe some data on shell and soft parts (muscles scars and mantle pigmentation) morphology, in order to improve species knowledge.

A survey about freshwater snail of medical and veterinary importance in the surrounding areas of Serra da Mesa dam, state of Goiás, show the occurrence of *B. ingae* also to the Center-West region, extending the species distribution range (Thiengo *et al.* 2005).

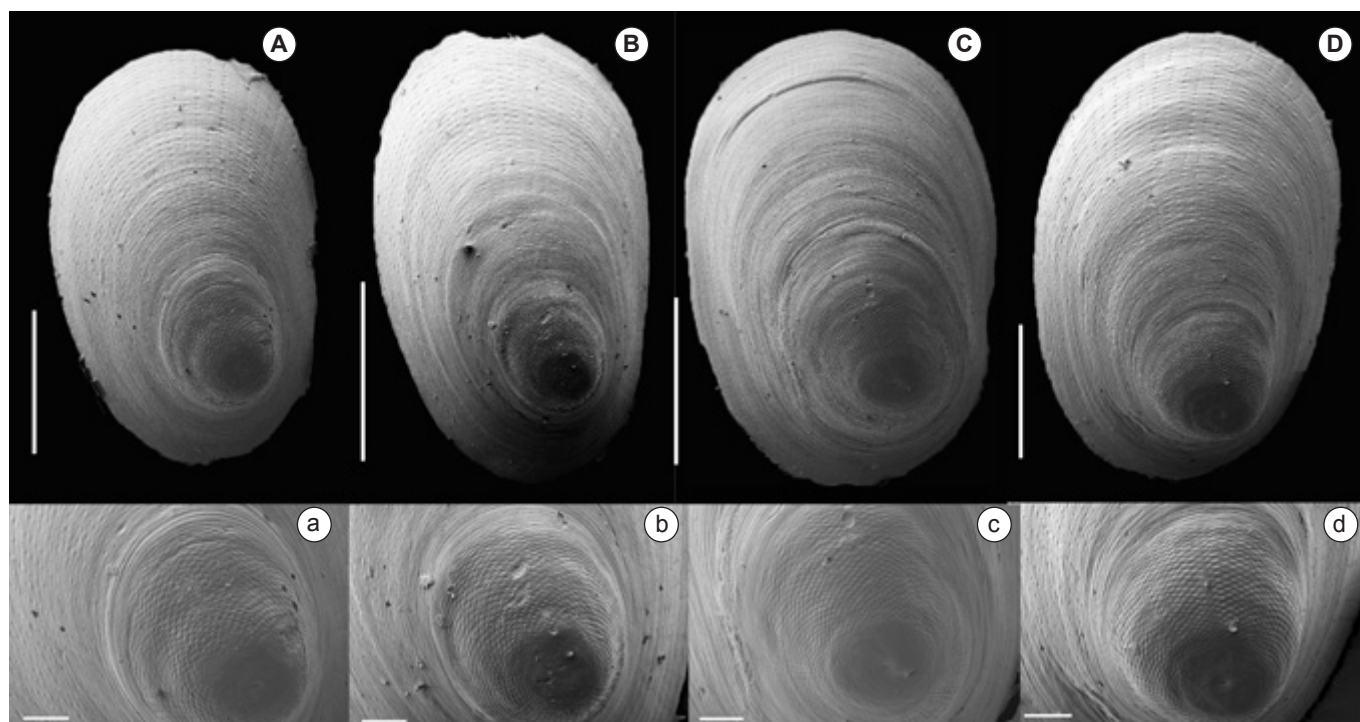


FIGURE 1. *Burnupia ingae* Lanzer, 1991. SEM of shell from A. Alagoas; B. Pará; C. Espírito Santo; D. Mato Grosso; (a-d) protoconch detail. Bar = 1mm.

We revised samples housed at the Malacological Collection at Universidade do Estado do Rio de Janeiro (Col. Mol. UERJ), Malacological Collection of Instituto Oswaldo Cruz (CMIOC) and literature data. Samples from UERJ were measured according to Santos (2003). To study shell microsculpture, not eroded shells were cleaned by 5% sodium hypochlorite to remove the periostracum, washed abundantly, dried and examined under a strong light stereomicroscope. Scanning electron microscopy (SEM) was done by Laboratório de Microscopia da UERJ (LABMEL), in order to obtain the diagnostic characters of the shells (teleoconch and protoconch morphology, with emphasis on the apical microsculpture). The muscle scars and adhesive area patterns as well as mantle and body pigmentation were studied by contrasting structures by immersion in lugol and drawn under a camera lucida.

Examined material: BRAZIL, Alagoas: Novo Lino, Fazenda Parati, 23 shells, 07.VI.1989, (Col. Mol. UERJ 26); Pará: Belém (Museu Emílio Goeldi), 5 shells, 01.V.1998, (Col. Mol. UERJ 2085); Espírito Santo: Cachoeiro do Itapemirim, São Vicente, 10 shells, 25.II.1989 (Col. Mol. UERJ 7056); Mato Grosso: Manso, 8 shells, VIII.2002 (Col. Mol. UERJ 1849). Data from 39 specimens from Santa Catarina were obtained from Lanzer (1991).

Geographical distribution: Pará: Belém (Col. Mol. UERJ 2085); Mato Grosso: Cuiabá (CMIOC 5632), Chapada dos Guimarães (CMIOC 5534, 5549), Nobres (CMIOC 5678) and Manso (Col. Mol. UERJ 1849); Goiás: Colinas do Sul (Colinas do Sul, Novo Oriente), Minaçu (Cana Brava, São Vicente), Uruaçu (Uruaçu) (Thiengo *et al.* 2005); Alagoas: Novo Lino (Santos 1990; 2003); Espírito Santo: São Vicente (Santos 1990; 2003); Santa Catarina: Sombrio Lake, between Campos Novos and Anita Garibaldi; Rio Grande do Sul: Torres, Viamão, Osório, Tramandaí, Gravataí, Cidreira, Palmares do Sul, Mostardas and São José do Norte. The last two records (Santa Catarina and Rio Grande do Sul) were obtained from Lanzer (1996).

The studied specimens fit well *B. ingae* diagnosis (Lanzer 1991): oval-shaped shell aperture (Figures 1A-D), rounded apex with smooth apical depression followed by irregular punctuations regularly arranged in radial lines (Figures 1a-d); teleoconch covered by radial lines; mantle

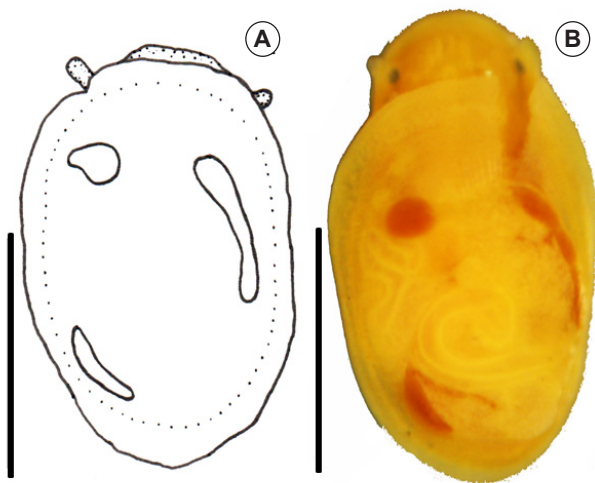


FIGURE 2. *Burnupia ingae* Lanzer, 1991. A. Drawing showing absence of mantle pigmentation and pattern of muscle scars; B. Photo of specimen Col. Mol. UERJ 2085 in dorsal view, stained by Lugol's iodine. Bar = 1mm.

without pigmentation; three muscle scars, the right anterior one longitudinally elongated, the left anterior one rounded and the posterior one elongated-oval shaped (Figure 2). The sample from Espírito Santo do not show radial lines on the teleoconch (Figure 1C), probably representing a shell variation.

The confirmation of the specific identification of specimens from Alagoas, Espírito Santo, Pará and Mato Grosso as *B. ingae* allowed the expansion of the geographic distribution of this species (Figure 3) to all Brazilian regions. On the other hand, *Burnupia* sp. cited by Thiengo *et al.* (2001; 2002) to Rio de Janeiro is quite different from *B. ingae* considering shell apical microsculpture. The punctuations in *Burnupia* sp. are relatively bigger and more spaced. Anatomical studies are necessary to correctly identify these specimens. The occurrence and affinities among South American and African *Burnupia* must be better investigated to contribute to systematic and biogeography of these group freshwater limpets.

Table 1 provides the shells measures. Total length ranges from 1.45 mm (smallest individual measured from Alagoas, Col. Mol. UERJ 26) to 3 mm (largest specimen collected at the type locality of the species, Sombrio Lagoon). The small size of *B. ingae*, that rarely reaches 3mm length, could explain its absence on regional faunal lists.

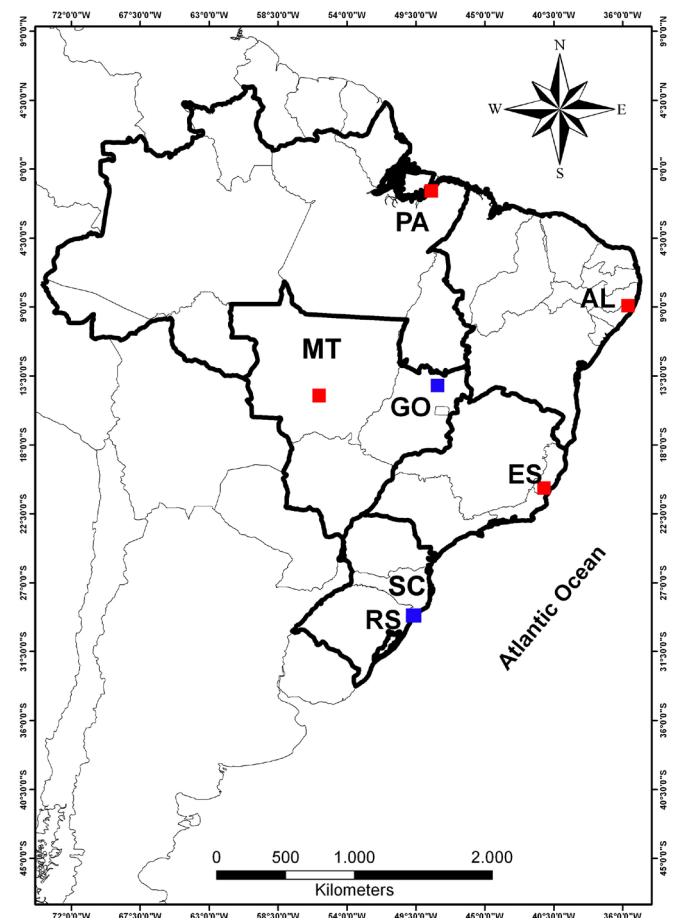


FIGURE 3. Map of Brazil showing the localities where *Burnupia ingae* has been recorded. Blue square = Lagoa do Sombrio (type locality) state of Santa Catarina (southern region) by Lanzer (1991); Serra da Mesa, Goiás (central-western region) by Thiengo *et al.* (2005). Red square = new records: Belém, Pará (northern region); Novo Lino, Alagoas (northeast region); São Vicente, Espírito Santo (southeastern region) and Manso, Mato Grosso (central-western region).

TABLE 1. Conquiliometry of *Burnupia ingae* Lanzer, 1991. Shell descriptive statistics. (L) length; (W1) anterior width; (W2) posterior width; (H) height; (W1/L) anterior width/length; (W2/L) posterior width/length; (H/L) height/length; (H/W1) height/anterior width; (W2/W1) posterior width/anterior width; (min) minimum value; (av) average \pm SD; (max) maximum value. (AL) Alagoas; (PA) Pará; (ES) Espírito Santo; (MT) Mato Grosso; (SC) Santa Catarina.

LOCALITY		Novo Lino (AL)	Museu Goeldi (PA)	São Vicente (ES)	Manso (MT)	Lagoa Sombrio (SC)
		08°56'00" S 35°38'33" W	01°27'07" S 48°28'38" W	20°50'49" S 41°06'52" W	13°33'49" S 48°13'19" W	29°08'00" S 49°36'00" W
Number of shells		23	05	10	11	39
L	min	1.60	1.55	1.45	1.55	1.70
	av	2.14 \pm 0.27	1.90 \pm 0.25	1.74 \pm 0.32	1.88 \pm 0.30	2.28 \pm 0.28
	max	2.65	2.20	2.60	2.55	3.00
W1	min	1.10	1.05	0.95	1.00	1.00
	av	1.34 \pm 0.15	1.24 \pm 0.14	1.13 \pm 0.17	1.14 \pm 0.19	1.39 \pm 0.18
	max	1.70	1.40	1.55	1.60	1.90
W2	min	0.90	0.75	0.75	0.75	0.80
	av	1.14 \pm 0.13	1.06 \pm 0.18	0.94 \pm 0.16	0.86 \pm 0.14	1.04 \pm 0.16
	max	1.40	1.20	1.35	1.15	1.50
H	min	0.55	0.55	0.45	0.65	0.50
	av	0.75 \pm 0.11	0.66 \pm 0.10	0.56 \pm 0.11	0.74 \pm 0.06	0.71 \pm 0.11
	max	0.95	0.75	0.85	0.85	0.90
W1/L	min	0.58	0.63	0.58	0.56	0.52
	av	0.63 \pm 0.03	0.65 \pm 0.02	0.66 \pm 0.05	0.61 \pm 0.04	0.61 \pm 0.04
	max	0.69	0.68	0.72	0.68	0.74
W2/L	min	0.71	0.71	0.75	0.71	0.64
	av	0.85 \pm 0.05	0.85 \pm 0.08	0.83 \pm 0.04	0.76 \pm 0.04	0.71 \pm 0.06
	max	0.93	0.92	0.87	0.83	0.87
H/L	min	0.53	0.52	0.50	0.74	0.21
	av	0.66 \pm 0.06	0.63 \pm 0.08	0.60 \pm 0.05	0.87 \pm 0.08	0.31 \pm 0.04
	max	0.79	0.73	0.65	1.00	0.40
H/W1	min	0.65	0.83	0.70	0.74	0.36
	av	0.85 \pm 0.15	1.02 \pm 0.19	1.21 \pm 0.21	0.83 \pm 0.11	0.51 \pm 0.06
	max	1.25	1.23	1.45	1.04	0.64
W2/W1	min	1.10	1.05	1.06	1.05	0.64
	av	0.80 \pm 0.05	1.31 \pm 0.16	1.28 \pm 0.13	1.24 \pm 0.11	0.75 \pm 0.06
	max	1.59	1.48	1.46	1.40	0.87

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