



A new endemic spiriferid genus from the Lower Devonian of Central Portugal



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Introduction

In the frame of the revision of Devonian Portuguese brachiopods, a new genus and species is identified in the Dornes Formation within the Dornes Syncline (Central Portugal) (Fig. 1). Its assemblage fauna pleads for a Siegenian to Emsian (middle to late Early Devonian) age. Due to its capillate microornamentation the new genus belongs to the northern Gondwana delthyridoid spirifer fauna, however, it resembles also *Australospirifer* from the Malvinokaffric Realm (Figs. 2-4). The relationship of the new genus with other genera in the capillate family Filispiriferidae and *Australospirifer* is discussed (Tab. 1). Implications of the palaeogeography of the Dornes Syncline during the Early Devonian are shortly introduced.

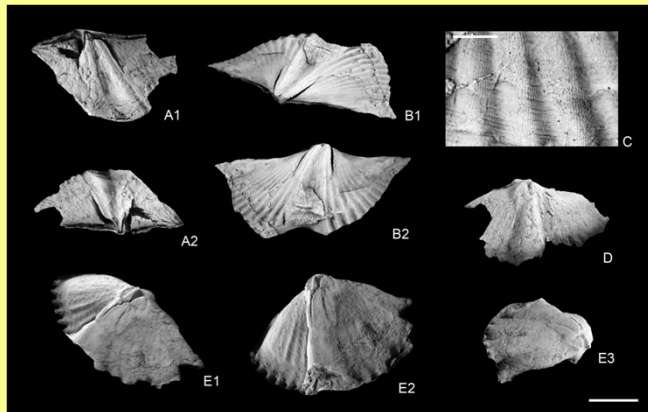
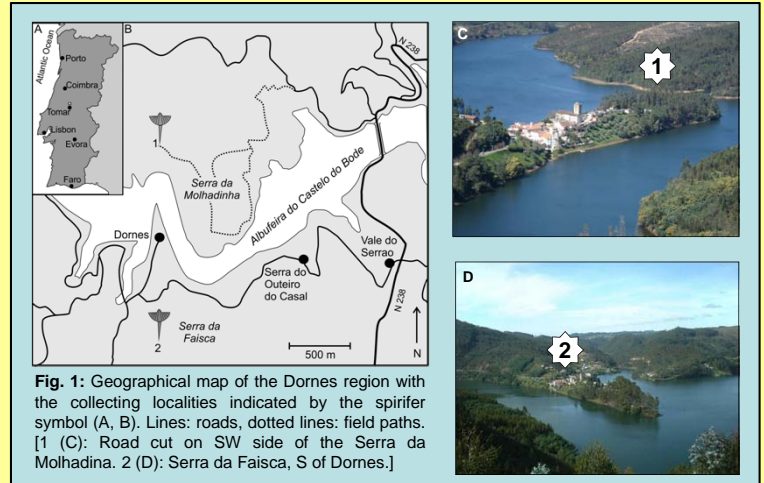


Fig. 2: Representatives of gen. et sp. nov. [Scale = 10 mm.] A: upper (1) and oblique posterior (2) views of ventral internal mould. B: Oblique posterior (1) and upper (2) views of ventral internal mould. C: Detailed view of micro-ornamentation. [scale = 2 mm]. D: Upper view of dorsal internal mould. E: Oblique anterolateral (1), upper (2), and oblique posterolateral (3) views of dorsal internal mould.

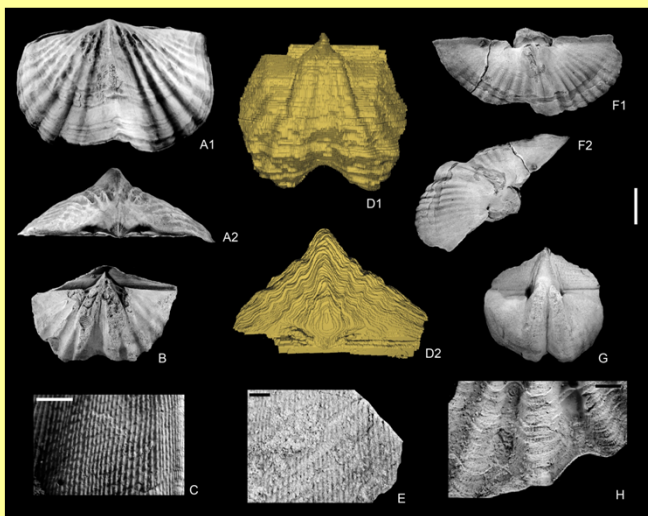


Fig. 3: A-C: *Filispirifer merzakhshaiensis*. [Scale = 10 mm] Upper (A1) and posterior (A2) views of dorsal internal mould. Upper view of ventral internal mould (B). Detailed view of micro-ornamentation (C, scale 2 mm). D-E: *Leonospirifer leonensis*. Upper view of ventral (1) and posterior view of 3D reconstruction of dorsal internal mould (2). Detailed view of micro-ornamentation (E, scale 2 mm). F-H: *Australospirifer kayserianus*. Upper (F1) and oblique posterolateral (F2) views of internal mould of articulated shell. Upper view of ventral internal mould (G). Detailed view of micro-ornamentation (H, scale 2 mm).

	gen. nov.	<i>Filispirifer</i> Schemm-Gregory, 2001	<i>Leonospirifer</i> Schemm-Gregory, 2010	<i>Australospirifer</i> Casier, 1939
size	small to large	medium to large	medium to large	medium to large
curvature	equi- to ventricconvex	equi- to dorsobiconvex	strongly dorsobiconvex	ventricconvex
micro-ornamentation	capillate and fimbriate	capillate, capillate interspersed	capillate, capillate not interspersed	capillate and fimbriate
no. of ribs on ventral external flank	10 to 14	5 to 15	4 to 7	7 to 11
median rib	absent	present to absent	absent	absent to present
sulcus bordering ribs	not included, not weakened	included, weakened	included, weakened	not included, not weakened
secondary shell material in ventral apical region	absent	strong	moderate	strong
septal pillow	small	large	Large	large to very large
free portions of dental plates	moderate long, thin, straight	short to long, wedge-like, curved	short, wedge-like, curved	short to lacking, wedge-like, straight to curved
muscle bounding ridge	absent	present	present	present
notothyrial shelf	weakly developed to absent	absent to weakly developed	absent	present
cranial plates	present to absent	absent	absent	absent
dorsal median process	broad, coarse, short	absent	absent	broad, coarse, long
dorsal adductor field	posterior imbedded and with horn-like projections, without muscle bounding ridge	not imbedded, with very faint or without muscle bounding ridge	not imbedded, without muscle bounding ridge	posterior imbedded and with horn-like projections, with muscle bounding ridge
Geographical distribution	Portugal	Morocco, Spain, Germany, Belgium	Spain, ?Morocco	Brazil, Argentina, Falkland Islands, Bolivia, South Africa, Antarctica
Stratigraphical distribution	Siegenian to Emsian	Lower Siegenian to Lower Emsian	?Siegenian, Emsian	Emsian

Tab. 1: Morphological comparison of gen. et sp. nov. with *Filispirifer*, *Leonospirifer*, and *Australospirifer*.

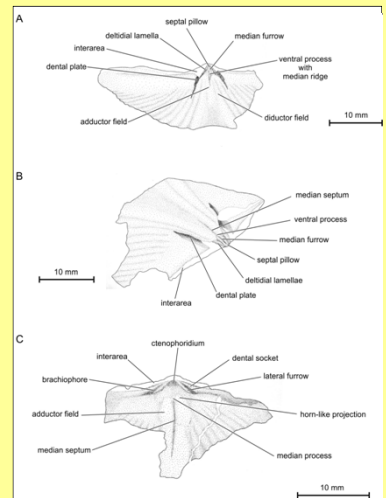


Fig. 4: Morphological terms of gen. et sp. nov. Upper (A) and oblique posterolateral (B) views of ventral internal mould and upper view of dorsal internal mould (C).

Conclusions

1. The capillate micro-ornamentation shows that gen. et sp. nov. a) belongs to the Filispiriferide. b) belongs to northern Gondwanan brachiopod fauna.
2. The form of the dorsal adductor field and the micro-ornamentation suggests a relationship to *Australospirifer*. However, *Australospirifer* occurs only in the Malvinokaffric Realm that is a cold water environment in which brachiopods are characterized by in general large forms with thick shells. The new genus is rather small and thin-shelled. The distinct morphology of the dorsal adductor field resembling *Australospirifer* is interpreted, therefore, as homoplasy.
3. Gen. et sp. nov. is only reported from Portugal and confirms the development of endemism during the Early Devonian. The assemblage fauna with *Turcispirifer*, *Torosospirifer*, and *Ctenochonetes* shows affinities to Gondwanan terranes rather than to today's Central European faunas.