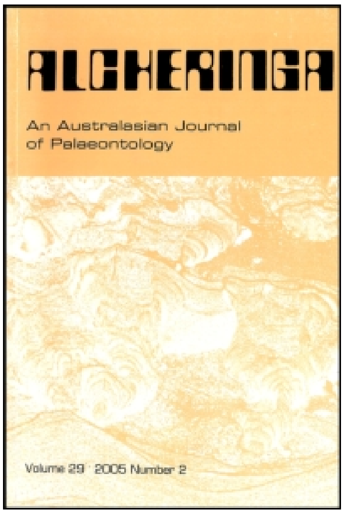

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Yagonia Roberts (Brachiopoda: Chonetidina) from the Malimán Formation, Lower Carboniferous of western Argentina: palaeobiogeographical implications

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Yagonia Roberts (Brachiopoda: Chonetidina) from the Malimán Formation, Lower Carboniferous of western Argentina: palaeobiogeographical implications

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A new anoplid chonetid species, *Yagonia furquei* sp. nov., is described from the Lower Carboniferous (late Tournaisian–early Viséan) Malimán Formation of western Argentina. The associated temperate 'Malimanian' fauna is suggested to indicate an initial biotic segregation that took place in western Gondwana (southwestern South America), a palaeobiogeographic event that predated the late Viséan global cooling and associated major palaeolatitudinal biotic differentiation. Occurrences of *Yagonia* are here interpreted as evidence of a 'south to north' faunal migration pathway, here named the Austropanthalassic–Rheic oceanic corridor, established in western Gondwana during the late Early Carboniferous.

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Key words: Brachiopoda, *Yagonia*, Malimanian fauna, Malimán Formation, Early Carboniferous, South America, palaeobiogeography.

YAGONIA was first discovered, with other fossil invertebrates, by Furque (1956, 1958), in the Mississippian deposits of western Argentina (Río Blanco Sub-basin) on the western flank of the Punilla mountain range, San Juan province (Fig. 1). Furque (1958) also referred to a small fauna he had collected from the Malimán Formation (*sensu* Scalabrini Ortíz 1972), which was mainly composed of bivalves and brachiopods, the latter including *Chonetes* sp., '*Spirifer*' sp. and *Camarotoechia* sp. Little detailed research has been undertaken on the chonetids of this marine fauna in the past 50 years due to a lack of sufficient material. However, several collections have been obtained recently from the type section of the Malimán Formation at the classic locality of the Cortaderas Creek (Limarino & Césari 1992; Fig. 1c, d). Although chonetids are abundant in the Malimán Formation, only one species has so far been recognized: *Yagonia furquei* sp. nov., which is fully described here.

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Palaeontological content and biostratigraphy

The Malimán Formation has yielded a relatively diverse fossil fauna in the Cortaderas, Chigua and Chavela creeks (see Fig. 1 for detailed location map), including brachiopods (Amos 1958, Cisterna & Isaacson

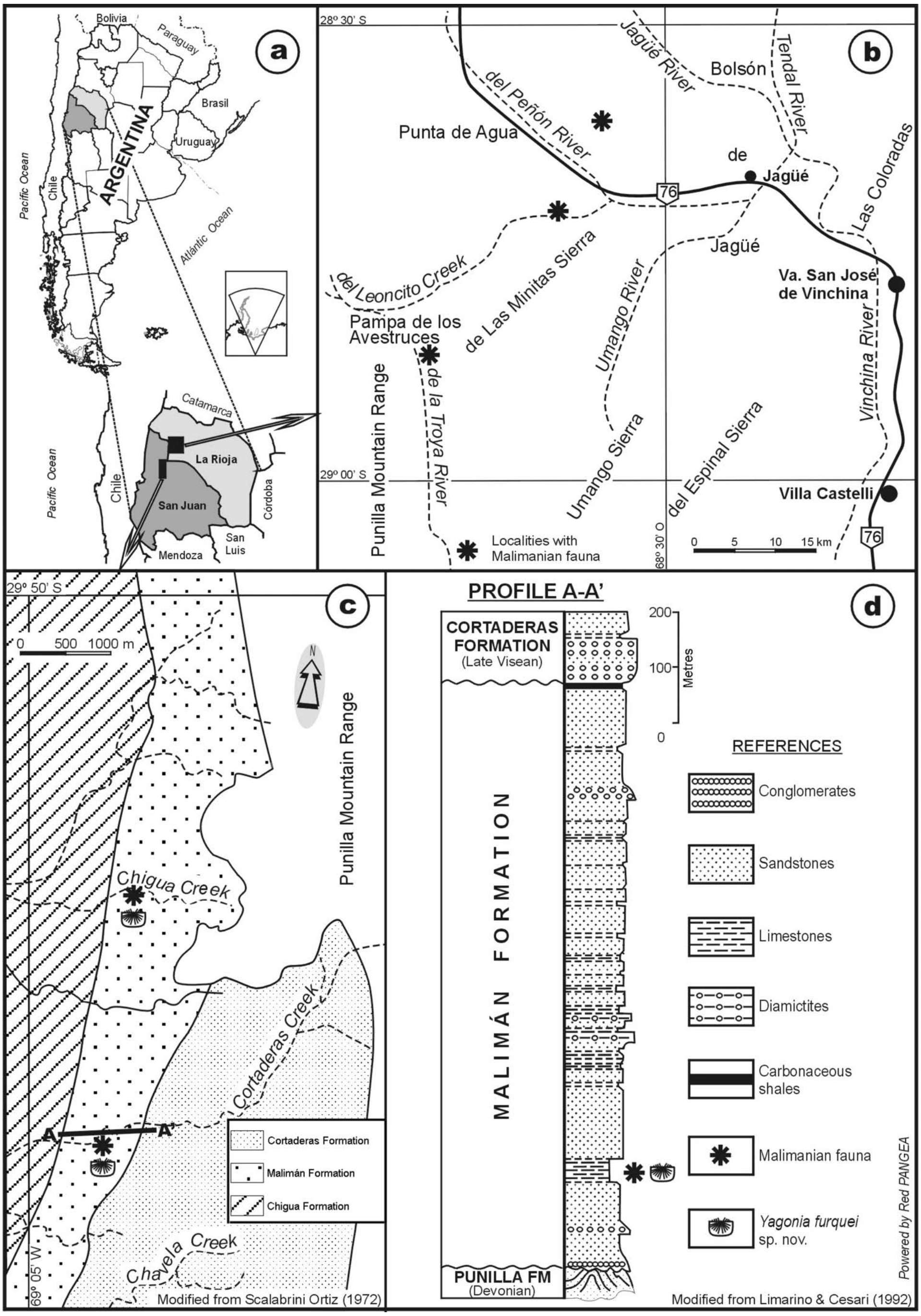

Fig. 1. Map showing fossiliferous localities of the Malimanian fauna and the stratigraphic position of *Yagonia furquei* sp. nov.

2003, Césari *et al*. 2007), goniatitids (Antelo 1969, 1970), nautiloids (Riccardi & Sabattini 1975, Césari *et al*. 2007), gastropods (Archangelsky *et al*. 1987, Sabattini *et al*. 2001), bivalves (González 1994), conulariids, and calyptotomatids (Sabattini *et al*. 2001; Table 1). Some elements of this fauna have been reported recently in the Chaco and Don Agustín creeks, located only a few kilometres to the south of the type locality in the Cortaderas creek area (Pazos *et al*. 2005, Amenabar *et al*. 2006a). Some previous studies have also indicated the presence of this fauna in the Punilla Formation (Furque 1956) exposed in the northernmost part of the La Troya River area (Fauqué *et al*. 1989, Azcuy *et al*. 1990, Cisterna & Isaacson 2003) and in the Agua de Lucho Formation (González & Bossi 1987) west of Jagüe (González & Bossi 1987, González 1994, Cisterna 1996, Cisterna & Isaacson 2003), both records located in the La Rioja province (Fig. 1b). The gradual deciphering of Lower Carboniferous deposits and fossils in the region has enabled the recognition of the informal *Protocanites* biozone by González (1981), a local biostratigraphic unit or range zone, restricted to a short stratigraphical interval within the Malimán Formation and its laterally equivalent strata. Later, González (1993) referred to the biozone as the 'Malimanian fauna' in recognition of its widespread occurrence and stability in western Argentina and he employed it to

Invertebrate taxa	Formations		
Bivalvia	1	2	3
Cypricardinia? sp. González, 1994		X	
Edmondia? sp. González, 1994		X	
Leptodesma? sp. González, 1994		X	
Malimania triangularis González, 1994	X	X	
Malimanina malimanensis (González) Waterhouse, 2001	X		
Palaeoneilo subquadratum González, 1994		X	
Phestia sp. González, 1994	X	X	
Sanguinolites punillanus González, 1994	X		
Schizodus sp. González, 1994	X		
Vacunella? sp. nov. González, 1994	X		
Volsellina? sp. González, 1994		X	
Cephalopoda			
Protocanites scalabrinii Antelo, 1969	X		
Pseudoorthoceras sp. Riccardi & Sabattini, 1975	X		
Gastropoda			
Bellerophon (Bellerophon) sp. Sabattini, Azcuy & Carrizo, 2001	X		
Mourlonia punillana Sabattini, Azcuy & Carrizo, 2001	X		
Conulariida			
Paraconularia anteloi Sabattini, Azcuy & Carrizo, 2001	X		
Hyolitha			
Hyolithes malimanensis Sabattini, Azcuy & Carrizo, 2001	X		
Brachiopoda			
Azurduya cingolanii Cisterna & Isaacson, 2003			X
Azurduya chavelensis (Amos) Cisterna & Isaacson, 2003	X	X	X
Pseudosyringothyris? sp. Cisterna, 1996		X	
Yagonia furquei sp. nov.	X		

Table 1. Invertebrate fossil record of the Malimanian fauna from Malimán (1), La Punilla (2) and Agua de Lucho (3) formations.

encompass coeval palaeontological records (Table 1) from western Argentina. More recently, Sabattini *et al*. (2001) formalized this biostratigraphic unit by proposing the *Protocanites scalabrinii–Azurduya chavelensis* (Amos) Assemblage Biozone containing more or less the same set of species as that of the *Protocanites* biozone or the 'Malimanian fauna'.

The age of the *Protocanites scalabrinii–Azurduya chavelensis* Biozone is generally regarded to be Early Carboniferous as initially suggested by Amos (1958). However, varied opinions exist as to its more refined age assignment. According to Amos *et al*. (1973) and González (1981, 1985, 1994), a Tournaisian age is preferable to Tournaisian–Viséan, the latter having been favoured by Antelo (1969), Azcuy *et al*. (1990), and Sabattini *et al*. (2001). A late Tournaisian–early Viséan age is also supported by macro- and microflora associations intercalated with levels bearing the Malimanian invertebrate fauna (Limarino & Césari 1992, Césari & Limarino 1995, Carrizo & Azcuy 1997, Césari & Gutiérrez 2000, Amenabar *et al*. 2006b, 2006c). In view of the known range of *Yagonia*, from late Tournaisian to early Bashkirian, we consider the age of the *Protocanites scalabrinii–Azurduya chavelensis* Biozone to be no older than Tournaisian.

Palaeobiogeographical considerations

The marine incursion characterized by the Malimanian fauna suggests the existence of an engulfment restricted to the northernmost part of the Argentine Precordillera in the Río Blanco Sub-basin during the Tournaisian–Viséan (González 1994, 1998). This engulfment was likely to have been connected with the Panthalassic Ocean through northern Chile where a close faunal association with the Zorritas Formation has already been documented (Isaacson *et al*. 1985, Dutro & Isaacson 1991). Both the Malimán and the Chilean Zorritas assemblages share common Malimanian species and genera such as the brachiopods *Azurduya chavelensis* (Amos) and possibly *Yagonia*, together with the gastropod *Bellerophon,* conularid *Paraconularia* and the bivalve '*Posidoniella*' (now *Malimanina* of Waterhouse 2001); see González (1994), Isaacson & Dutro (1999), Sabattini *et al*. (2001) and Cisterna & Isaacson (2003). The palaeoclimatic conditions of southwestern South America at this time have been interpreted as temperate and humid (i.e. palaeoclimatic phase I of López Gamundi *et al*. 1992), although episodic colder phases apparently also occurred, as evidenced from the sporadic dropstones found in association with elements of the Malimanian fauna (Carrizo & Azcuy 1997, Pazos *et al*. 2005, personal observations of ACT). The temperate Malimanian fauna and other slightly younger Gondwanan assemblages, are generally low diversity associations lacking warm-water fossils. The Malimanian fauna would thus indicate an incipient biogeographical segregation of the western margin of Gondwana (i.e. southwestern South America) from contemporaneous peri-Gondwanan and Northern Hemisphere regions, as suggested by Dutro & Isaacson (1991). The onset of this provincialism, as demonstrated by the characters of the Malimanian fauna, is likely due to the enhanced thermal gradient that predated the pronounced late Viséan global cooling and the major latitudinal biotic differentiation on a global scale.

In this context, the palaeogeographical distribution of *Yagonia* could be taken as evidence of a possible 'south to north' faunal interchange that became established along western Gondwana during the late Early Carboniferous, when the genus appears to have expanded its range from southwestern South America (northwestern Argentina/northern Chile) to the north, reaching the remnant Rheic Ocean and further to the northeast into the epicontinental Appalachian seaway (Fig. 2). The postulated interchange corridor, here named the 'Austro-Panthalassic-Rheic corridor', between southwestern South America and the remnant Rheic Ocean is corroborated by the presence of *Yagonia* in Mexico (Sour-Tovar & Martínez Chacón 2004) and central-eastearn USA (Carter 1990). A similar migration pathway throughout the Rheic Ocean, and the narrow Iberian seaway (García-Bellido & Rodríguez 2005) interpreted as a possible western connection of the trans-Pangaea seaway of Vai (2003), has also been suggested to explain the distribution of the Carboniferous brachiopod *Aseptella* in the Iberian Peninsula (Spain) and in western Argentina and Patagonia (Cisterna & Simanauskas 1999, Martínez Chacón & Winkler Prins 1999; Fig. 2). This suggested Austro-panthalassic-Rheic corridor also appears to have extended south and east along the southern panthalassic coastline of Gondwana as far as eastern Australia where *Yagonia* also occurred, albeit slightly later (late Viséan; Roberts *et al.* 1976). The marine biotic exchange between higher and middle palaeolatitudes of both hemispheres through this western Gondwanan corridor (Fig. 2) apparently intensified during and after the late Viséan with the onset of the late Palaeozoic Gondwana-wide glaciation, as evidenced by increasing numbers of Late Carboniferous–Early Permian cool to cold water brachiopod species shared between southwestern Gondwana and eastern Gondwana.

Systematic palaeontology

Superfamily CHONETOIDEA Bronn, 1862
Family ANOPLIIDAE Muir-Wood, 1962
Subfamily ANOPLIINAE Muir-Wood, 1962

Yagonia Roberts (in Roberts *et al.* 1976)

?1999 *Chilenochonetes* Isaacson & Dutro, p. 627–629, fig. 2, 1–9.

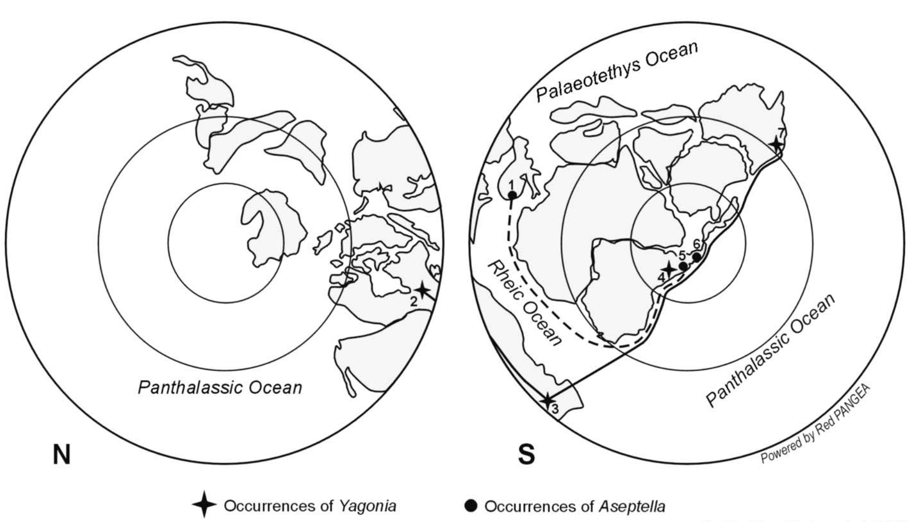

Fig. 2. Late Mississippian global palaeogeographic maps of the Northern and Southern hemispheres showing possible interchange pathways for *Yagonia* and *Aseptella*. 1–Spain; 2–Central-east USA; 3–Mexico; 4–Northern Chile and NW Argentina; 5–Western Argentina; 6–Patagonia; 7–East Australia.

Type species. *Yagonia gibberensis* Roberts (in Roberts *et al*. 1976), from the Booti Booti Sandstone and Yagon Siltstone, late Viséan–Bashkirian, Newcastle, eastern Australia.

Discussion. *Yagonia* Roberts (in Roberts *et al*. 1976) is a relatively large anoplid brachiopod with gentle concave-convex profile, externally smooth except for concentric growth lines, commonly pseudocapillate by shell decortication. Significant internal diagnostic features include a relatively strong ventral median septum and the flabellate impressions of diductor scars with conspicuous radial ridges, and two prominent accessory radial septa in the dorsal valve interior. In addition to the Australian type species, *Yagonia collinsoni* Carter 1990, is also known from the Osagean (late Tournaisian–early Viséan) of North America (USA) and Mexico (Sour Tovar & Martínez Chacón 2004).

Specimens originally described as *Tornquistia* sp. (Amos 1960) from the Early Permian Mojón de Hierro Formation of Patagonia, were reassigned to *Yagonia* by Roberts (in Roberts *et al*. 1976). This taxonomic re-allocation was subsequently accepted by Amos (1979). As a result, other Patagonian specimens found more recently from the Río Genoa Formation have also been assigned to *Yagonia* (Cúneo & Sabattini 1987). On the other hand, Simanauskas (1991) regarded all the described Patagonian specimens of *Yagonia*, and others from a locality 4 km to the east-northeast of La Carlota Post (Mojón de Hierro Formation), as juvenile forms of '*Lissochonetes' jachalensis* (Amos). More recent studies, however, have shown that type '*Lissochonetes' jachalensis* (Amos) is restricted to the Precordilleran Uspallata-Iglesia Basin (western Argentina) and belongs to *Tivertonia* Archbold, 1983 (Archbold & Gaetani 1993, Taboada 1997, 1998, 2006, Cisterna & Simanauskas 2000, Cisterna *et al*. 2002). The rugosochonetid *Quinquenella* Waterhouse (1975) is here tentatively suggested to include the mentioned Patagonian material previously referred to *Yagonia* by Amos (1960, pl. I, figs. 7–9, 1979, p. 130), Archangelsky *et al*. (1987, pl. 4, fig. 2), Cúneo & Sabattini (1987, pl. I, fig. 6) and Simanauskas (1991, pl. II, figs. 2, 7). It should be noted that *Quinquenella,* when compared with *Yagonia,* is smaller, less transverse having its maximum width at the hinge line and, internally, possesses a well-marked brachial crest and field, and has weaker accessory septa and small feeble diductor scar impressions without longitudinal ridges.

Tornquistia Paeckelmann (1930) has a strong concave–convex profile and stout accessory septa in the dorsal valve, unlike the low profile and weaker accessory septa of *Quinquenella* sp. of Amos (1960). Furthermore, *Yagonia* has a larger size, strong impressions of diductor scars with prominent radial ridges inside the muscle field and well-developed accessory septa compared with *Tornquistia*.

Chilenochonetes Isaacson & Dutro (1999) from the Zorritas Formation (Lower Carboniferous) of northern Chile shares significant diagnostic features with *Yagonia,* such as shape and profile, and it bears short anderidia and well-developed accessory septa internally (Isaacson & Dutro 1999, Sour Tovar & Martínez Chacón 2004). However, the two differ significantly in that *Chilenochonetes* is characterized by well-developed capillate ornamentation, a less robust ventral median septum, a more prominent cardinal process and the presence of an alveolus in the dorsal valve (Isaacson & Dutro 1999). Furthermore, *Chilenochonetes* lacks an internal marginal crest and the conspicuous radial ridges inside the diductor scars, both of which are characteristic features of *Yagonia* (Sour Tovar &

Martínez Chacón 2004). However, the supposed difference in terms of the capillate ornamentation between the two genera should be used with extreme caution as it very much depends on the type and quality of preservation. *Chilenochonetes* was defined on the basis of internal moulds of both valves, with the exception of a single external mould of a ventral valve whose apparent capillation could be due to the extreme thinness of the shell. Likewise, the supposed smooth external condition of *Yagonia* could be an artefact of preservation, as *Yagonia* commonly occurs partially to totally decorticated. This apparent difference in capillation could explain why the Chilean material with apparently capillate external appearance was assigned to *Chilenochonetes*. Although *Chilenochonetes* is understood to lack longitudinal radial ridges inside the diductor muscle field, some tenuous longitudinal radial striae could be present as shown in one of the specimens (ventral internal mould) figured by Isaacson & Dutro (1999, fig. 2, 8). Further, it should be noted that the presence of an alveolus and the absence of the internal marginal crest in the material assigned to *Chilenochonetes* also appear to be rather variable features likely to be of taxonomic significance only at species level. Consequently, *Chilenochonetes* is here considered tentatively a subjective synonym of *Yagonia*, until such time as additional material of *Yagonia*? *annae* (Isaacson & Dutro 1999), especially exteriors of both valves, become available for comparison. Other significant circumstances indirectly supporting a condition of synonymy between *Chilenochonetes* and *Yagonia* are the similar associated faunas (common species and genera), equivalent age and relative geographic proximity (600 km apart, in modern distance) of the Zorritas Formation in northern Chile and the Malimán Formation in western Argentina, that host these genera.

Yagonia furquei sp. nov. (Figs 3A–U; 4A–P)

1958 *Chonetes* sp. cf. *Ch. chesterensis* Weller; Amos, p. 839.

2007 *Chilenochonetes* sp. Césari *et al.*, p. 37, figs 2. 1, 9–10.

Derivatio nominis. Dedicated to Dr Guillermo Furque, pioneer of Lower Carboniferous studies in Argentina.

Repository. Invertebrate fossil collections of the Laboratory of Research in Evolution and Biodiversity (LIEB-PI) of the Natural Science Faculty at Esquel, 'San Juan Bosco' Patagonian National University and the Miguel Lillo Foundation Paleontological Institute (FML-PI).

Material. One hundred specimens, mostly moulds of ventral and dorsal interiors and articulated internal moulds of both valves, a few specimens with exterior and interior shell remains. Holotype FML-PI 4151; Paratypes: FML-PI 310, 332, 334, 336, 338, 341, 351; LIEB-PI 80, 83–85, 110, 113, 4150, 4156–4158, 4160, 4164, 4171. Other material: FML-PI 309, 331, 333, 335, 337–340, 342–350, 352–359, 4152–4155, 4159, 4161–4163, 4165–4170, 4172–4187; LIEB-PI 78–79, 81–82, 86–89.

Geographic and stratigraphic distribution. Cortaderas (LIEB-PI 078–089, 110, 113; FML-PI 331–359, 4150–4187) and Chigua norte (FML-PI 309–310) creeks, about 5 km to the northeast of Malimán locality, western flank of the Punilla Range, San Juan province, Argentina (Fig. 1c–d). Lower section of the Malimán Formation; late Tournaisian–early Viséan.

Diagnosis. Transverse *Yagonia* one-quarter to one-half wider than long, with gentle concave-convex profile and at least six pairs of oblique orthomorph short spines along

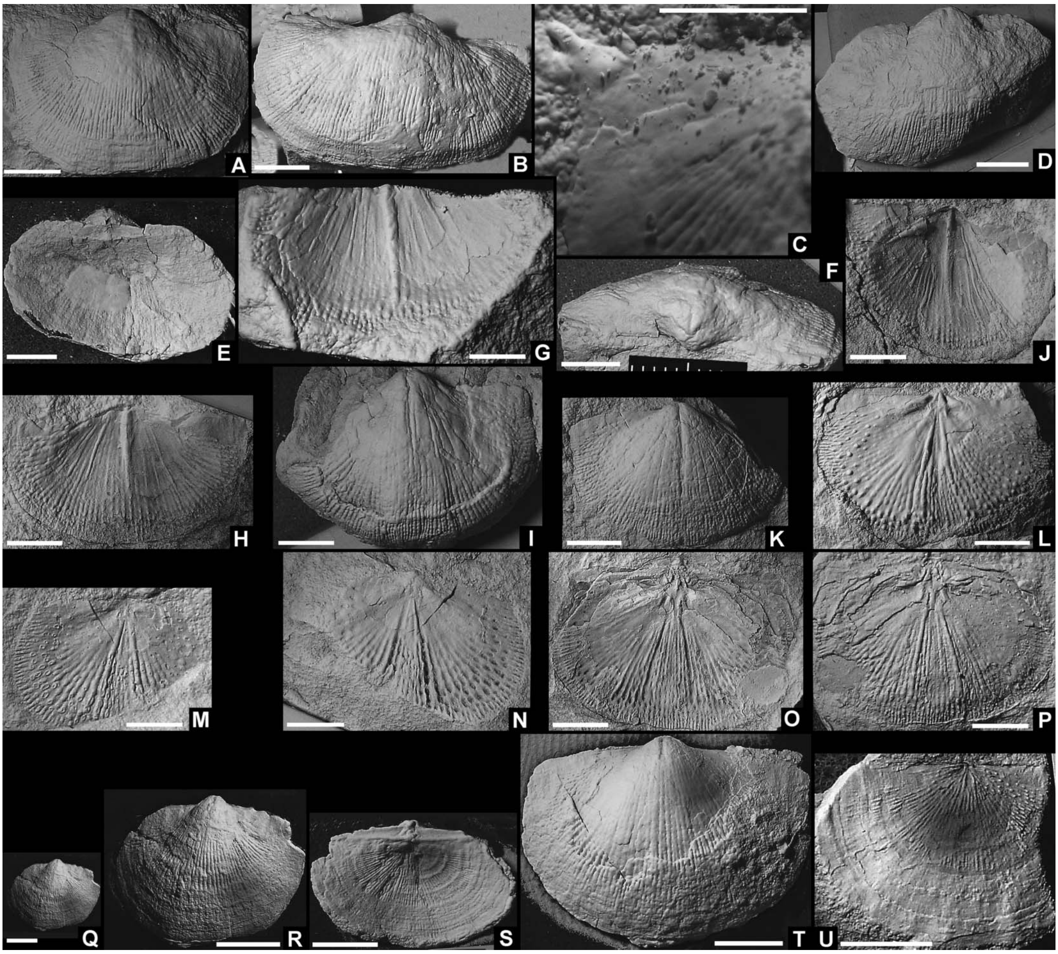

Fig. 3. *Yagonia furquei* sp. nov. **A**, FML-PI n° 334, partially decorticated ventral valve exterior. **B**, FML-PI n° 338, paratype, decorticated ventral valve exterior. **C**, FML-PI n° 341, paratype, partially decorticated ventral valve exterior showing short hinge spines. **D–F**, FML-PI n° 310, paratype, distorted and decorticated articulate specimen in ventral, dorsal and posterior view. **G**, FML-PI n° 331, paratype, ventral interior. **H**, FML-PI n° 332, ventral interior. **I**, LIEB-PI n° 110, paratype, ventral valve internal mould. **J**, LIEB-PI N° 83, paratype, ventral interior. **K**, LIEB-PI n° 85, paratype, ventral valve internal mould. **L**, LIEB-PI n° 84, paratype, dorsal interior. **M–N**, FML-PI n° 336, paratype, latex cast dorsal valve interior, dorsal valve interior. **O–P**, LIEB-PI n° 80, paratype, dorsal valve interior, latex cast dorsal valve interior. **Q–S**, FML-PI n° 4151, holotype, partially decorticated articulate specimen in ventral and dorsal view. **T**, FML-PI n° 4150, paratype, partially decorticated ventral valve. **U**, FML-PI n° 4160, paratype, decorticated dorsal valve interior, showing smooth external ornamentation impression antero-laterally. (Scale bar= 5 mm).

hinge. Ventral interior with median septum varying between 1/3 and 4/5 of valve length, each diductor scar marked with 6–8 longitudinal radial ridges. Dorsal interior with 8–12 pairs of accessory septa, of which the two strongest pairs diverge from each other at 15° to 20°.

Description. Chonetid of medium size with gentle concave-convex profile, subelliptical to subrectangular transverse outline, one-quarter to one-half wider than long. Maximum width and length of 31 mm and 21 mm (FML-PI 4164) respectively, with a length/width ratio between 0.75 (FML-PI

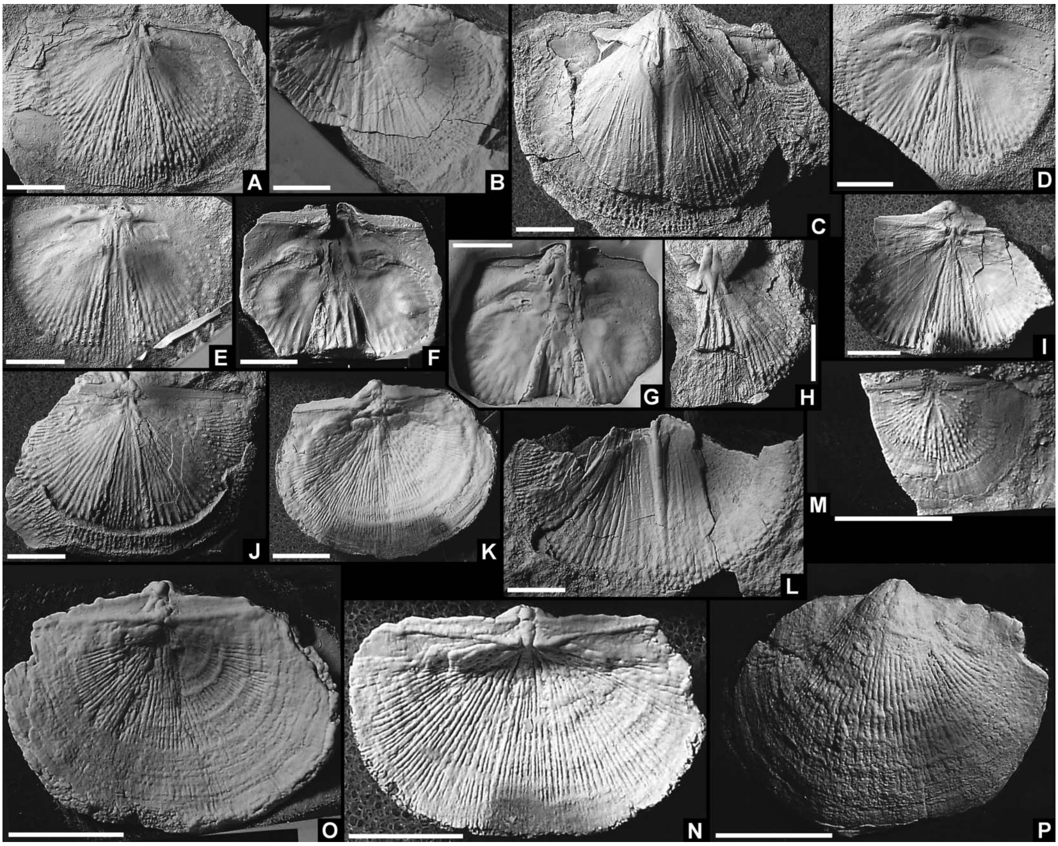

Fig. 4. Yagonia furquei sp. nov. **A**, FML-PI n° 4152, dorsal valve interior. **B**, FML-PI n° 4162, ventral valve interior. **C**, FML-PI n° 4164, paratype, ventral valve internal mould. **D–E**, FML-PI n° 4157, paratype, dorsal valve internal mould, latex cast dorsal valve interior. **F–G**, FML-PI n° 4158, paratype, dorsal valve internal mould, latex cast dorsal valve interior. **H**, FML-PI n° 4154, fragment of a dorsal valve interior. **I**, FML-PI n° 4167, composite internal mould of an articulate specimen in dorsal view. **J**, FML-PI n° 4168, dorsal valve interior. **K**, FML-PI n° 4171, paratype, composite internal mould of an articulate specimen in dorsal view. **L**, FML-PI n° 4165, ventral valve interior. **M**, FML-PI n° 4161, juvenile decorticated dorsal valve interior, showing impression of smooth external ornamentation antero-laterally. **N**, FML-PI n° 4156, composite internal mould of an articulate specimen in dorsal view. **O–P**, FML-PI n° 4151, holotype, partially decorticated articulate specimen in ventral and dorsal views. (Scale bar=5 mm).

4171) and 0.56 (FML-PI 338) and an average of 0.65. Hinge width less than maximum width placed near the posterior third of shell length. Anterior margin slightly curved, lateral margins rounded and forming an obtuse angle with the hinge line. Ventral valve gently convex with incurved prominent umbo. Ventral interarea apsacline, longitudinally striate. Dorsal valve slightly concave. Shell externally smooth except for weak concentric growth lines that are visible only when shell is exceptionally well preserved (FML-PI 331, 334, 4150, 4151). Both valves usually decorticated, exhibiting pseudofissicostulate appearance with bifurcate radial capillae (density of 14–16 per 5 mm in the antero-ventral region of the valve). At least six oblique orthomorph short hinge spines (2–3 mm) present in each flank at 35° to the hinge line, hinge spines only rarely preserved.

Ventral interior. Long median septum varying from 0.64 to 0.80 valve length, with subtriangular cross-section, posteriorly robust but thin anteriorly. Adductor scars of subtriangular elongate outline, 5 mm long and 2 mm wide (FML-PI 4164); wide subtriangular flabellate diductor scars with 6–8 longitudinal radial ridges reaching the anterior third of the valve. Robust specimens show a longitudinal crest at 60° to the median septum limiting postero-lateral diductor scars (LIEB-PI 83, FML-PI 4164). Numerous endospines are densely grouped in an antero-lateral marginal band. Other features are not observed.

Dorsal interior. Oblique dental crests to hinge line. Cardinal process bilobed posteriorly and in some cases with a shallow longitudinal or subtriangular depression at its base but without true alveolus. Median crest commonly ill-defined, but exceptionally well-preserved interiors (FML-PI 4157–4158) exhibit a thin median ridge reaching half valve length, short anderidia at 25° to the median line of the valve, and with numerous accessory septa in each flank (8–12 each side), the two strongest diverging at 15–20°. Inner adductor scars subrectangular in outline, 2 mm long and 1 mm wide; outer adductor scars oval in outline, 2 mm long and 3 mm wide. Brachial crests start at right angles to the median ridge just below outer adductor scars, curved antero-laterally in a wide loop, then ending parallel to the strongest divergent accessory septa; brachial field smooth posteriorly but marked with radial ridges and by accessory septa anteriorly. Pustules radially arranged, more densely grouped over the anterior region of the valve and in a peripheral marginal band but without a marginal crest.

Discussion. *Yagonia furquei* sp. nov. has similar dimensions to the type species *Yagonia gibberensis* Roberts (in Roberts *et al*. 1976), but the Argentinean species is wider and more transverse. This new species also has a shorter ventral median septum, less robust and extended cardinal process, and accessory septa that are less prominent and lack a marginal crest compared with the type species. *Yagonia collinsoni* Carter (1990, Sour Tovar & Martínez Chacón 2004) can be differentiated from *Yagonia furquei* sp. nov. by its smaller size, less transverse outline, less convex ventral valve and stronger internal structures.

Yagonia furquei sp. nov. is similar to *Yagonia*? *annae* (Isaacson & Dutro 1999) especially in dorsal interior characters, but the Chilean species is relatively small and less transverse; it has a well-developed alveolus and anderidia, more divergent accessory septa, and a shorter and weaker ventral median septum. The close similarities between the Chilean and Argentinean material here assigned to *Yagonia* were first noticed by Dutro (in Isaacson *et al*. 1985) although Dutro later assigned the Chilean species to other genera (Dutro & Isaacson 1991, Isaacson & Dutro 1999). Amos (1958) had earlier also described (but not figured) the 'exterior' of one ventral valve as *Chonetes* sp. cf. *Ch. chesterensis* Weller. This specimen was later assigned to *Rugosochonetes* cf. *chesterensis* (Weller) by Amos (1979) and Sabattini *et al*. (2001). This specimen is deduced to have come from the same stratigraphic levels that bear *Yagonia furquei* sp. nov. described here. Based on our detailed examination of more material from the type locality, we now propose that Amos's single specimen is very likely a decorticated ventral valve of *Yagonia furquei* sp. nov. Other topotypic and conspecific material with the new species includes *Chilenochonetes* sp. of Simanauskas (in Cisterna & Isaacson 2003), Cisterna *et al*. (2006), Azcuy *et al*. (2007), Césari *et al*. (2007) and *Yagonia* sp. of Taboada (2008).

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