PALAEOECOLOGICAL CHANGES AFTER THE END-PERMIAN
MASS EXTINCTION: EARLY TRIASSIC OSTRACODS FROM NORTHWESTERN
GUANGXI PROVINCE, SOUTH CHINA

SYLVIE CRASQUIN-SOLEAU¹, THOMAS GALFETTI², HUGO BUCHER²
& ARNAUD BRAYARD²

Received: July 25, 2005; accepted: October 20, 2005

Keywords: Ostracods, Early Triassic, Luolo Formation, South China.

Abstract. Early Triassic (Griesbachian to Spathian) ostracod faunas are here first discovered and described from the Guangxi Province, South China. Thirty-seven genera belonging to fourteen families are recognized. Seven species are new: Bairdia fengshanensis n. sp., Bairdia wuzhenshanensis n. sp., Luoshania fengshanensis n. sp., Luoshania guangxinensis n. sp., Psychobairdia luciae n. sp., Psychobairdia alidae n. sp., Paracypria jinyangensis n. sp. and Paracypria gaetani n. sp. The Griesbachian assemblage from the basal microbial limestone is well diversified and does not suggest any abnormal palaeoenvironmental conditions in terms of salinity, temperature or oxygen content. Particularly, the ostracods are typical of well oxygenated water and do not reflect any anoxia. Dienerian and Smithian assemblages are first described and the assemblages suggest less favourable palaeoenvironmental conditions. Diversity and abundance of ostracod assemblages recovered from the Spathian on the main taxonomic turnover among ostracod assemblages occurred seemingly between the Griesbachian and the Spathian.

Introduzione. Una fauna di ostracodi del Triassico inferiore (Griesbachiano – Spathiano), tra cui 37 specie appartenenti a 14 generi, è stata scoperta e descritta per la prima volta nella Provincia del Guanxi, Cina del Sud. Sette nuove specie sono riportate: Bairdia fengshanensis n. sp., Bairdia wuzhenshanensis n. sp., Luoshania fengshanensis n. sp., Luoshania guangxinensis n. sp., Psychobairdia luciae n. sp., Psychobairdia alidae n. sp., Paracypria jinyangensis n. sp. and Paracypria gaetani n. sp. Paradossalmente, il contenuto fossilifero estratto dalle strati basali di Griesbachiano risulta essere caratterizzato da una notevole diversità specifica. Il periodo in questione non appare quindi essere soggetto a alcun stress ambientale in termini di variabilità di salinità, di temperatura o di concentrazione in ossigeno. Più precisamente, la fauna del Triassico basale non rilevò condizioni anoxiche ma dimostra, al contrario, di essere tipica di un ambiente ben ossigenato. La bassa diversità degli ostracodi Dienerian e Smithian, riportati qui per la prima volta, suggerisce delle condizioni paleoambientali meno favorevoli rispetto al Triassico superiore. Un netto aumento della diversità e dell’abondanza relativa è osservato a partire dallo Spathiano. Il più importante sconvolgimento tassonomico del Triassico inferiore appare quindi avere luogo nell’intervallo tra Griesbachiano e Spathiano.

Introduction

In the entire marine realm, the end Permian mass-extinction is the most dramatic event of the Phanerozoic. At the end of the Permian, 49 to 57% of the marine families, 83% of the genera and 98% of the species, disappear (Sepkoski 1992; Erwin 1993; Jablonski 1994; Benton 1995; Lethiers 1998; the figures vary according to the different authors).

As other marine organisms, benthic ostracods are subject to the effects of calamitous events (among others, the great end Permian regression followed by the quick and dysoxic Lower Triassic transgression, the modifications of climates and oceanic circulation, the salinity drop, the volcanism, linked with Pangaea assemblage; synthesis in Lethiers 1998). Ostracods are, for the most part, benthic inhabitants and reflect the variations of palaeoenvironments. The analysis of ostracod assemblages through Permian – Triassic boundary could help us to understand what the most important events on the biophere are.

The abiotic events around the Permian – Triassic boundary left the marine biotopes severely shattered. Faunal recovery linked with the return to more hospi-

¹ CNRS, UMR 5143, Université Pierre et Marie Curie, Laboratoire de Micropaléontologie, 7546-56, E. S, case 104, 75252 Paris cedex 05, France. E-mail: crasquin@ccj.jussieu.fr
² Paläontologisches Institut und Museum, Universität Zürich, Karl Schmid-Strasse 4, CH-8006 Zürich, Switzerland.
table palaeoenvironmental conditions was seemingly very slow and progressive. The record of Early Triassic marine ostracods is generally poorly known. Some species have been mentioned, in more or less detail, from the Indian Olenekian of northwestern Australia (Jones 1970), Pakistan (Sohn 1970), Precaspian Depression (Schneider 1948, 1962; Khutkin & Crasquin-Soleau 1999), Nepal (Kozur 1971), Kashmir (Agarwal 1979, 1982, 1981), Germanic Basin (Kozur 1973), Israel (Hirsch & Gerry 1974), South China (Wang 1978; Wei 1981; Hao 1992, 1994), and Greece (Crasquin-Soleau & Baud 1998). More recently, sections of Permian - Triassic boundary sections from Turkey (Crasquin-Soleau et al. 2004a, b) and South China (Sichuan - Crasquin-Soleau & Kershaw 2005) brought new insights on the earliest Triassic ostracod faunas. Age constraints of the samples analysed in the present study are provided by ammonoids.

The ostracod faunas reported here contribute important new data to the benthic component during the Early Triassic and yield insights on palaeoenvironmental conditions.

**Geological setting**

The Jinya/Waili section presented in this study is located in the Fengshan District of northwestern Guangxi Province (Fig. 1). It belongs to the Nanpanjiang basin (Lehrmann et al. 1998) or to the Youjiang sedimentary province as defined by Tong & Yin (2002). Early Triassic marine rocks in the Jinya area belong to the Luolou Formation, which is essentially composed of outer platform, mixed carbonate and fine grained siliciclastic rocks. The basal Early Triassic strata of the Jinya section markedly differ from the rest of the Luolou Formation in that they are composed of thrombolitic limestone identical to that described from Sichuan (Kershaw et al. 1999; Ezaki et al. 2003). As previously reported by Chao (1959), the Luolou Formation contains a relatively comprehensive sequence of ammonoids, most of which being of Olenekian age (Smithian and Spatian).

The approximately 80 m thick, Early Triassic sedimentary succession of the Jinya area (Fig. 2) starts with a 7 m-thick sequence of a calcimicrobial limestone, which unconformably overlies shallow water limestone of Permian age. The unit is mainly composed by digitate

![Image](image_url)

Fig. 1 - South China map. Location of outcrops. Star marks the location of the Jinya - Waili section.
carbonate (sensu Kershaw et al. 1999), locally thrombolitic in its lower part, with lobate fabric. This facies displays strong similarities with the microbial crust discovered in the Huaying Mountains (eastern Sichuan, China) as described by Kershaw et al. (1999, 2002) and Ezaki et al. (2003) and indicates a vast lateral extension of microbial limestone in the South China Block. The Early Triassic recurrence of these so-called “post-mass extinction disaster forms” (Schubert & Bottjer 1992) is also well documented in other Tethyan basins (e.g. Southern Alps, Turkey, Iran, Afghanistan) by Baud et al. (1997). The microbial limestone in the Jinya area is assumed to be Griesbachian in age. Its age is also indirectly constrained by the occurrence of poorly preserved ammonoids of Dienerian age in the next overlying thin-bedded limestone and mudstone.

The overlying sediments are chiefly composed of shales alternating with thin-bedded, laminated, pyritic-rich (laminae), micritic limestones. These rocks yield rare ammonoids and benthic bivalves, thus allowing the recognition of the Dienerian and Smithian stages, although the Dienerian-Smithian boundary still needs to be precisely bracketed.

The next overlying unit is a prominent, about 4 m thick, slightly-silty, thin-bedded, ammonoid-rich, grey, laminated limestone of early Smithian age (“Flemingites beds”). Age diagnostic ammonoids include Pseudaspidites, Flemingites, Mesobedentroemia, Aspinites, Pseudaspinites, and Juvenites.

The “Flemingites beds” are overlain by thin-bedded ammonoid-rich, dark, laminated, micritic limestones alternating with dark shales devoid of bioturbation. The lower part of this unit yielded a rich Oweinites fauna (“Oweinites beds”) and the upper part contains a succession composed of two low diversified faunas, the Anasibrites and Xenocellites faunas, in ascending order. The Xenocellites fauna typically occurs within the few uppermost meters of this unit, within early diagenetic, small-sized limestone nodules embedded in laminated black shales.

The Smithian-Smithian transition is marked by an abrupt lithologic change to a 40 m thick series of medium bedded, light-grey, highly bioturbated, nodular limestone with dispersed, large neomorphic pyrite crystals. The middle part of the nodular limestone unit is characterized by a marly-dominated limestone. Ammonoid occurrences throughout the nodular limestone unit indicate that its deposition spanned almost the entire Smithian stage, from the “Tirolitites beds” up to the Hau gi Zone. The nodular limestone is also characterized by a significant bioclastic content including abundant ostracod assemblages, microbrachiopods, microgastropods and rare benthic bivalves.

The transition from the carbonate outer platform (Luolou Formation) to the overlying mudstone of Anisian age (Baifeng Formation) is marked by the intercalation of a dominantly siliceous, 5–6 m thick, nodular facies (“Transition beds”) containing abundant volcanoclastic beds. This siliceous, nodular facies indicates an obvious drowning of the platform and coincides with the change from a carbonate-dominated regime to a siliciclastic regime. Scarce ammonoid occurrences in the Transition beds suggest an early Anisian age.

The Baifeng Formation of Anisian age is composed of a very thick series (>1000 m) consisting of thickening and coarsening upward siliciclastic turbidites. Scarce ammonoid horizons (e.g. a Balatonites fauna of latest middle Anisian age) and thin-shelled bivalves (Daonella) of upper Anisian age occur in the Baifeng Formation.

**Palaeontology**

Twenty nine samples were treated by hot acetylation (Lethiers & Crasquin-Soleau 1988; Crasquin-Soleau et al. 2005) of which fifteen yielded ostracods (see Fig. 2).

Thirty-seven species belonging to fourteen genera were identified and most of them are figured (Pl. 1–4). Seven species are new and are described here. All the specimens are deposited in the Pierre et Marie Curie University (Paris, France) collection (numbers: P6M).

**Systematic Palaeontology**

Abbreviations: L: length, H: height, W: width.

Order **Podocopida** Müller,1954
Suborder Podocopina Sars, 1866
Superfamily Bairdiacea Sars, 1888
Family Bairdidae Sars, 1888
Genus **Bairdia** McCoy, 1844
Type species: **Bairdia corta** McCoy, 1844

**Bairdia fengshanensis** Crasquin-Soleau n. sp.
Pl. 1, figs 1–6

**Derivation of name.** From Fengshan area, locus typicus.

**Holotype.** One complete carapace figured Pl. 1, fig. 1; collection number P6M2164.

**Paratype.** One complete carapace figured Pl. 1, fig. 4, collection number P6M2167.

**Type-level.** Sample JINTUFF2, Jinya upper quarry section (GPS coordinates: N24°34’32" - E106°53’57"), Fengshan area, Guangxi Province, South China; “Hau gi” zone, Smithian, Early Triassic.

**Material.** 20 carapaces and some fragments

**Diagnosis.** A species of the genus *Bairdia* with regularly arched dorsal border and laterally compressed antero-ventral border.
Fig. 2a-b  - Jinya / Wali composite section with Early Triassic ostracod distribution
Early Triassic ostracods from South China
Description. Stocky carapace; dorsal border regularly convex; anterior border with relatively small radius of convexity, maximum of convexity located above mid-height, gently compressed laterally; ventral border almost straight; anterior border strongly compressed laterally, ventral part quite vertical; low overlap of right valve by left one, maximum in dorsal part; dorsal view biconvex, with ends laterally compressed.

Remarks. Bairdia fengshanensis n. sp. has the same outline than Bairdia balatonica Méhes, 1911 from Carnian of Balaton Highland (Hungary) (Méhes 1911; Monostori 1994) but here the ventral part of anterior border is more vertical. Bairdia fengshanensis n. sp. presents the same anterior and posterior lateral flattening as Bairdia (Rectobairdia) sandulescu Crasquin-Soleau & Gradinaru, 1996 from the Early Anisian of Rumania (Crasquin-Soleau & Gradinaru 1996) but has a convex dorsal border.


Stratigraphic and geographic distribution. Early Triassic (Dienonian - Spathian, see Tab. 1), Fengshan area, Guangxi Province, South China.

Bairdia wauliensis Crasquin-Soleau n. sp.
Pl. 1, figs 15-17

Derivation of name. From Wauli section, locus typicus.
Holotype. One complete carapace figured Pl. 1, fig. 15; collection number P4M2178.
Paratype. One complete carapace figured Pl. 1, fig. 16, collection number P4M2179.
Type-level. Sample W165, South Wauli section (N24°35′07″ - E104°52′59″), Fengshan area, Guangxi Province, South China; Griesbachian?, Early Triassic.
Material. 10 carapaces and some fragments.
Diagnosis. A species of the genus Bairdia with anterior border narrow and showing a maximum of convexity located high.

Description. Light carapace with arched dorsal border which could nevertheless be divided in three almost straight parts; anterior border with narrow radius of curvature with maximum located high, gently compressed laterally; ventral border concave, at both valves, maximum in front of mid-length; posterior border narrow with maximum of curvature located low (near lower ¼ of height); carapace biconvex in dorsal view, with anterior part gently compressed.

Remarks. This new species is very particular and no other species is closely related to it.


Stratigraphic and geographic distribution. Early Triassic (Griesbachian? - Spathian, see Tab. 1), Fengshan area, Guangxi Province, South China.

Bairdia finalyi (Méhes, 1911)
Pl. 1, figs 7-8

Stratigraphic and geographic distribution. Early - Middle Triassic (Olenekian, Smithian to Ladinian, Tab. 1), Fengshan area, Guangxi Province, South China, Hungary Balaton area (Méhes 1911; Kozur 1971; Monostori 1995).

Bairdia anisica Kozur, 1970
Pl. 1, fig. 9

Stratigraphic and geographic distribution. Early - Middle Triassic (Late Olenekian (Spithian) to Late Anisian, Tab. 1), Fengshan area, Guangxi Province, South China and Germany (Kozur 1970).

Bairdia (Urobairdia) angusta recta Monostori, 1995 = Bairdia sp. 7 sensu Crasquin-Soleau & Gradinaru, 1996
Pl. 1, figs 10-11

Stratigraphic and geographic distribution. Early - Middle Triassic (Late Olenekian (Spithian) to Late Anisian, see Tab. 1), Fengshan area, Guangxi Province, South China; Dobrogea (Rumania) (Crasquin-Soleau & Gradinaru 1996); Balaton Lake area (Hungary) (Monostori 1995).

Bairdia cf. humilis Monostori, 1995
Pl. 1, fig. 18

Stratigraphic and geographic distribution. Early Triassic (Late Olenekian (Spithian), see Tab. 1), Fengshan area, Guangxi Province, South China.

Bairdia sp. A
Pl. 1, fig. 19

Stratigraphic and geographic distribution. Early Triassic (Griesbachian?, Tab.1); Fengshan area, Guangxi Province, South China.

Bairdia sp. B
Pl. 1, fig. 20

Stratigraphic and geographic distribution. Early Triassic (Griesbachian?, Tab. 1); Fengshan area, Guangxi Province, South China.

Bairdia sp. C
Pl. 1, fig. 21

Stratigraphic and geographic distribution. Early Triassic (Griesbachian?, Tab. 1); Fengshan area, Guangxi Province, South China.
Early Triassic ostracods from South China

?Acritina nostonica Monosatori, 1994
Bairdia anisica Kozur, 1970
Bairdia cf. humilis Monosatori, 1996
Bairdia fengshansensis n. sp.
Bairdia finlayi (Méhes, 1911)
Bairdia sp. A
Bairdia sp. B
Bairdia sp. C
Bairdia sp. 6
Bairdia sp. 7
Bairdia wallinensis n. sp.
Bairdia (Unbradina) angusta recta Monosatori, 1996
Bairdiacypris galbruni Crasquin-Soleau & Gradinaru, 1996
Bairdiacypris sp.
Bairdiacypris sp. A
Bairdiacypris sp. B
Bythocypris sp. A
Bythocypris ? sp. B
Bythocypris ? sp. 3
Cannanikhtina? sp.
gen. sp. indet
*Hedalina* sp. A
Kercycythere sp. A
Liuzhnia antalyensis Crasquin-Soleau, 2004
Liuzhnia guangxiensis n. sp.
Liuzhnia cf. panwa Wei Ming, 1981
Microchelinella? cf. venusta Chen, 1958
Microchelinella? sp. 1
Ogyroconcha? sp. A
Paracypris guzaniensis n. sp.
Paracypris jinyaensis n. sp.
Paracypris ? sp. 1
Psychocypris ailaeae n. sp.
Psychocypris luciaeae n. sp.
Psychocypris sp. A
?Spinocypris vulgaris Kozur, 1971
Spinocypris ? sp. 1

Tab. 1 - List of encountered species and stratigraphic distribution.

Genus *Bairdiacypris* Bradfield, 1935
Type species: *Bairdiacypris deloi* Bradfield, 1935

*Bairdiacypris galbruni* Crasquin-Soleau & Gradinaru, 1996
Pl. 1, figs 13-14

Stratigraphic and geographic distribution. Early - Middle Triassic (Spathian (Tab. 1) to Early Anisian); Fengshan area, Guangxi Province, South China; Dobrogea, Rumania (Crasquin-Soleau & Gradinaru 1996).

*Bairdiacypris* sp. A
Pl. 1, fig. 12

Stratigraphic and geographic distribution. Early Triassic, Late Olenekian (Spathian, Tab. 1); Fengshan area, Guangxi Province, South China.

*Bairdiacypris* sp. B
Pl. 4, fig. 7

Stratigraphic and geographic distribution. Early Triassic, Late Olenekian (Spathian, Tab. 1); Fengshan area, Guangxi Province, South China.

Genus *Liuzhnia* Zheng, 1976
Type species: *Liuzhnia subrotata* Zheng, 1976

*Liuzhnia guangxiensis* Crasquin-Soleau n. sp.
Pl. 2, figs 11-18

Derivation of name. From Guangxi Province (South China) where the type level is located.

Holotype. One complete carapace, figured Pl. 2, fig. 11, collection number P4M2192.

Paratype. One complete carapace, figured Pl. 2, fig. 12, collection number P4M2193.

Type level. Sample JIN90, Early Triassic, Late Olenekian (Spathian, see Tab. 1); Jinya Upper Quarry section (N24°34'32" - E106°53'87"), Guangxi Province (South China).

Material. 450 carapaces and numerous fragments

Diagnosis. Species of *Liuzhnia* with high anterior border and tapering posterior border.

Description. Carapace smooth, very dissymmetric; anterior border with large radius of curvature, maximum of curvature located at or above mid-height; ventral border nearly straight at left valve and gently concave at right valve; posterior border tapering; dorsal border regularly arched; dorsal view biconvex with maximum of width around mid-length.
**Remarks.** Wei (1981) described two species (*Liuzhinia subovata* Zheng, 1976 and *Liuzhinia parva* Wei, 1981) from the Early and Middle Triassic from Sichuan (South China). The figured specimens (Wei 1981, pl. 2) seem to belong to the same species (*Liuzhinia parva* Wei, 1981) with only a difference of size. *Liuzhinia guangxiensis* n. sp. differs from this species and from *Liuzhinia antalyaensis* Crasquin-Soleau, 2004 (Pl. 3, fig. 12-13) from Induan of Western Taurus (Crasquin-Soleau et al. 2004b) by its posterior border more tapering and its anterior border higher.

**Size.** L = 280-590 μm, H = 205-330 μm, W = 185-240 μm (Fig. 3).

**Stratigraphic and geographic distribution.** Early Triassic, Late Olenekian (Spathian, see Tab. 1), Fengshan area, Guangxi Province, South China;

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**Fig. 3** - Height - length diagram of *Paracypris jinyaensis* n. sp.

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**Liuzhinia antalyaensis** Crasquin-Soleau, 2004

Pl. 3, figs 12-13

**Remark.** *Liuzhinia antalyaensis* was found in the parven zone in Western Taurus (Turkey) (Crasquin-Soleau et al. 2004b). This could give in first approximation a Griesbachian age to the sample W163. The Chinese species are reported in the H/L diagram of Turkish specimens (Fig. 4).

**Stratigraphic and geographic distribution.** Early Triassic (Griesbachian?, Tab.1), Fengshan area, Guangxi Province, South China and Western Taurus, Turkey.

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**Liuzhinia cf parva** Wei, 1981

Pl. 2, fig. 19

**Remark.** The specimens found here are close to *Liuzhinia parva* Wei, 1981 from Late Induan - Early

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**Fig. 4** - Height - length diagram of *Liuzhinia antalyaensis* Crasquin-Soleau, 2004. South China specimens (circles) are inserted into the original diagram of Turkey specimens (diamonds).
Olenekian from Emei (South China), but here the dorsal border is more regularly arched. The material discovered here is not sufficient to define its specific determination.

**Stratigraphic and geographic distribution.**
Early Triassic, Late Olenekian (Spathian, Tab. 1), Fengshan area, Guangxi Province, South China.

*Genus Bythyocypris* Brady, 1880
Type species: *Bairdia boospetana* Brady, 1866

**Bythyocypris** sp. A
Pl. 2, fig. 20

**Stratigraphic and geographic distribution.**
Early Triassic, Late Olenekian (Spathian, Tab. 1), Fengshan area, Guangxi Province, South China.

**Bythyocypris?** sp. B
Pl. 2, figs 9-10

**Stratigraphic and geographic distribution.**
Early Triassic, Late Olenekian (Spathian, Tab. 1), Fengshan area, Guangxi Province, South China.

*Genus Ptychobairdia* Tollmann, 1960
Type species: *Ptychobairdia knepfern* Tollmann, 1960

**Ptychobairdia luciae** Casquin-Soleau n. sp.
Pl. 3, figs 1-5

**Derivation of name.** Dedicated to Dr. Lucia Angiolini, Dip. Scienze della Terra “Ardo DeSio”, Milan, Italy.

**Holotype.** One complete carapace, figured Pl. 3, fig. 7, collection number P6M2208.

**Paratype.** One complete carapace, figured Pl. 3, fig. 6, collection number P6M2209.

**Type level.** Sample JIN90, Early Triassic, Late Olenekian (Spathian); Jinyu Upper Quarry section (N24°34’32” - E106°53’38”), Guangxi Province (South China).

**Material.** 8 carapaces and numerous fragments.

**Diagnosis.** Species of *Ptychobairdia* with narrow anterior and posterior borders and two lateral ridges.

**Description.** Massive carapace; dorsal border convex at right valve; straight to gently concave at left valve; anterior border with relatively small radius of curvature; ventral border nearly straight at right valve, gently concave at left valve; posterior border with small radius of curvature; dorsal and ventral ridges well developed, presence of two short arched lateral ridges; anterior and posterior borders strongly compressed laterally; secondary ornamentation not observable.

**Remarks.** *Ptychobairdia luciae* n. sp. is close to *Ptychobairdia rutnerni* Kristian-Tollmann, 1991 from Late Ladinian of Iran by the two lateral ridges. *Ptychobairdia rutnerni* Kristian-Tollmann, 1991 has an additional adventral ridge, dorsal and ventral ridges are more pronounced and are butt-jointed in posterior part of the carapace.

**Size.** L = 510-930 μm, H = 400-530 μm, W = 270-460 μm.

**Stratigraphic and geographic distribution.**
Early Triassic, Late Olenekian (Spathian, Tab. 1), Fengshan area, Guangxi Province, South China.

*Genus Spinocypris* Kozur, 1971
Type species: *Spinocypris vulgaris* Kozur, 1971

**Spinocypris vulgaris** Kozur, 1971
Pl. 3, fig. 14

**Stratigraphic and geographic distribution.**
Early - Middle Triassic (Scythian - Late Anisian, Tab. 1), Feng-
shan area, Guangxi Province, South China, Austria, Hungary, Nepal, Greece (Bunza & Kozur 1971), Romania (Crasquin-Soleau & Gradinaru 1996).

Genus Acratina Egorov, 1953
Type species: Acratina pestrovaetica Egorov, 1953

?Acratina nostorica Monostori, 1994
Pl. 4, figs 5-6

Stratigraphic and geographic distribution.
Early to Late Triassic (Smithian - Carnian, see table 1), Fengshan area, Guangxi Province, South China, Hungary (Monostori 1994).

Genus Paracypris Sars, 1866
Type species: Paracypris pohlia Sars, 1866

Paracypris jinyaensis Crasquin-Soleau n. sp.
Pl. 2, figs 1-8

Derivation of name. From Jinya area, locus typicus (Guangxi Province, South China).

Holotype. One complete carapace, figured Pl. 2, fig. 1, collection number PM2182.

Paratype. One complete carapace, figured Pl. 2, fig. 2, collection number PM2283.

Type level. Sample J291, Early Olenekeian, Smithian; Lower part of "Flemingites beds", Jinya section (N24°34'23" - E106°53'26"), Guangxi Province, South China.

Material. 12 carapaces and some fragments.

Diagnosis. Species of Paracypris with very elongate carapace, small height and anterior border with small radius of curvature.

Description. Smooth carapace elongate (0.41<H/L<0.49); posterior part of dorsal border long and straight; maximum of height located at or a little bit in front of anterior third of length; anterior border with small radius of curvature, slightly compressed laterally; ventral border long, nearly straight at right valve, gently concave at left valve; posterior border with very small radius of curvature; in dorsal view carapace biconvex, not very thick, maximum of thickness located around mid-length; left valve overlaps right valve with a maximum on ventral border.

Size. L= 320-400 μm, H= 145-200 μm, W= 140-158 μm.

Stratigraphic and geographic distribution.
Early Triassic, Olenekeian (Smithian - Spathian, Tab. 1), Fengshan area, Guangxi Province, South China.

Paracypris gaetanii Crasquin-Soleau n. sp.
Pl. 4, figs 1-4

1999 Paracypris sp. Hao Wei-cheng p.42, pl.1, fig. 24

Derivation of name. Dedicated to Prof. Maurizio Gaetani, Dip. Scienze della Terra "Ardeno Desio", Milano, Italy.

Holotype. One complete carapace, figured Pl. 4, fig. 1, collection number PM2217.

Paratype. One complete carapace, figured Pl. 4, fig. 2, collection number PM2218.

Type level. Sample W163, Griesbachian?, South Wäli section (N24°15'07", E106°52'59"), Guangxi Province, South China.

Material. 12 carapaces and some fragments.

Diagnosis. A species of Paracypris with straight and long dorsal border, anterior border large and regularly arched, maximum of height located at the anterior quarter of length.

Description. Smooth carapace elongate (0.48<H/L<0.55); dorsal border very long (~ 70% of length) and straight; anterior border with large radius of curvature, with maximum of curvature located around mid-height; ventral border long and straight; posterior border regularly arched with small radius of curvature, maximum of curvature located near lower ¼ of height; left valve faintly overlaps right one on free margins; carapace biconvex in dorsal view.

Remarks. Hao (1992) figured an incomplete specimen (pl.1, fig. 24) from the Early Triassic of Guizhou (South China). Although, the specimen is larger (L= 590 μm, H= 270 μm; Hao, p.42), the ratio H/L is perfectly in accordance with measurements of the new species.


Stratigraphic and geographic distribution.
Early Triassic (Griesbachian?, Tab. 1), Fengshan area, Guangxi Province, South China.

Paracypris? sp.1
Pl. 4, figs 8-9

Stratigraphic and geographic distribution.
Early Triassic (Griesbachian?, Tab. 1), South Fengshan area, Guangxi Province, South China.

Superfamily Sigilliacea Mandelstam, 1960
Family Microcheilinellidae Gramm, 1975
Genus Microcheilinella Geis, 1933
Type species: Microcheilinella distorta Geis, 1932

Microcheilinella cf. venusta Chen, 1958
Pl. 4, fig. 12

Remarks. Our species is compared to Microcheilinella venusta Chen, 1958 from Early Permian of Lungtan (Qixia Formation; Chen 1958). Here, the posterior border is higher and compressed laterally.

Stratigraphic and geographic distribution.
Early Triassic (Spathian, Tab. 1), Fengshan area, Guangxi Province, South China.
Superfamily Cytheracea Baird, 1850
Family Kerocyclidae Kozur, 1971
Genus Kerocythere Kozur & Nicklas, 1971
Type species: Kerocythere rhabdiana (Gümbel, 1869)

Kerocythere sp. A
Pl. 3, fig. 6

Stratigraphic and geographic distribution.
Early Triassic (Griesbachian?, see Tab. 1), Fengshan area, Guangxi Province, South China.

Genus Omoconcha Triebel, 1941
Type species: Omoconcha contracta Triebel, 1941

Omoconcha? sp. A
Pl. 4, fig. 10

Stratigraphic and geographic distribution.
Early Triassic (Griesbachian?, Tab. 1), Fengshan area, Guangxi Province, South China.

Suborder Metacopina Sylvester-Bradley, 1961
Superfamily Healdiacae Harlton, 1933
Family Healdidiidae Harlton, 1933
Genus Healdia Roundy, 1926
Type species: Healdia simplex Roundy, 1926

“Healdia” sp. A
Pl. 4, fig. 11

Stratigraphic and geographic distribution.
Early Triassic (Griesbachian?, Tab. 1), Fengshan area, Guangxi Province, South China.

Order Palaeocopida Henningsmoen, 1953
Suborder Kloedenelloeopina
Scott, 1961 emend. Lethiers, 1981
Superfamily Kloe denellaceae Ulrich & Bassler, 1908
Genus Carinaknightina Sohn, 1970
Type species: Carinaknightina carnata Sohn, 1970

Carinaknightina? sp.
Pl. 4, fig. 13

Stratigraphic and geographic distribution.
Early Triassic (Spa thian, Tab. 1), Fengshan area, Guangxi Province, South China.

Ostracoda incertae sedis
Genus and species indet.
Pl. 3, fig. 15

Stratigraphic and geographic distribution.
Early Triassic (Griesbachian?, Tab. 1), Fengshan area, Guangxi Province, South China.

Remarks on the stratigraphic distribution of species

The oldest assemblage is of probable Griesbachian age and is composed of thirteen species. The Griesbachian age assignment is linked to the presence in the level W163 (Fig. 2a) of Liuzhinia antalyaensis Crasquin-Soleau, 2004, which is so far only known from this time interval from Turkey (Crasquin-Soleau et al. 2004a) and to the location of the sample just above the “microbialites”. Indeed, in Huaying Mountains (Eastern Sichuan Province), Liuzhinia antalyaensis and the conodont Hindeodus parvus were documented in association around the upper boundary of the microbial limestone (Kershaw et al. 2002; Ezaki et al. 2003). With the exception of Bairdia waltensis n. sp. which ranges up to the Spathian (Fig. 2a, b), all the other species occurring in the basal microbial limestone in the Jinaya area do not extend higher up in the section and have a Permian stamp.

---

PLATE 1

All the specimens from Fengshan area, Guangxi Province, South China. Scale bar 100 μm.

Figs 1-6 - Bairdia fenghanensis Crasquin-Soleau n. sp. Fig. 1 - Holotype, collection number: P6M2164, right lateral view of complete carapace; fig. 2 - Collection number: P6M2165, right lateral view of complete carapace; fig. 3 - Collection number: P6M2166, left lateral view of complete carapace; fig. 4 - Paratype, collection number: P6M2167, right lateral view of complete carapace; fig. 5 - Collection number: P6M2168, right lateral view of complete carapace; fig. 6 - Collection number: P6M2169, dorsal view of complete carapace.

Fig. 7-8 - Bairdia fini alyi (Máka, 1911). Fig. 7 - Collection number: P6M2170, right lateral view of complete carapace; fig. 8 - Collection number: P6M2171, right lateral view of complete carapace.

Fig. 9 - Bairdia amica Kozur, 1970. Collection number: P6M2172, right lateral view of complete carapace.

Figs 10-11 - Bairdia (Uro bairdia) angusta reta Monostori, 1995. Fig. 10 - Collection number: P6M2173, right lateral view of nearly complete carapace; fig. 11 - Collection number: P6M2174, right lateral view of complete carapace.
Fig. 12 - *Bairdicypris* sp. A. Collection number: P6M2175, right lateral view of complete carapace.

Figs 13-14 - *Bairdicypris gabrieni* Crasquin-Soleau & Gradinaru, 1996. Fig. 13 - Collection number: P6M2176, right lateral view of complete carapace; fig. 14 - Collection number: P6M2177, right lateral view of complete carapace.

Figs 15-17 - *Bairdia wallemi* n. sp. Fig. 15 - Holotype, collection number: P6M2178, right lateral view of complete carapace; fig. 16 - Paratype, collection number: P6M2179, right lateral view of complete carapace; fig. 17 - Collection number: P6M2180, right lateral view of complete carapace.

Fig. 18 - *Bairdia cf. humilis* Monostori, 1995. Collection number: P6M 2181, right lateral view of broken carapace.

Fig. 19 - *Bairdia* sp. A. Collection number: P6M2230, right lateral view of complete carapace.

Fig. 20 - *Bairdia* sp. B. Collection number: P6M2231, right lateral view of complete carapace.

Fig. 21 - *Bairdia* sp. C. Collection number: P6M2232, right lateral view of complete carapace.

PLATE 2

All the specimens from Fengshan area, Guangxi Province, South China. Scale bar 100 μm.

Figs 1-8 - *Paracypris jinyaensis* Crasquin-Soleau n. sp. Fig. 1 - Holotype, collection number: P6M2182, right lateral view of complete carapace; fig. 2 - Paratype, collection number: P6M2183, right lateral view of complete carapace; fig. 3 - Collection number: P6M2184, right lateral view of complete carapace; fig. 4 - Collection number: P6M2185, right lateral view of complete carapace; fig. 5 - Collection number: P6M2186, right lateral view of complete carapace; fig. 6 - Collection number: P6M2187, left lateral view of complete carapace; fig. 7 - Collection number: P6M2188, dorsal view of complete carapace; fig. 8 - Collection number: P6M2189, ventral view of complete carapace.

Figs 9-10 - *Bythocypris?* sp. B. Fig. 9 - Collection number: P6M2190, dorsal view of complete carapace; fig. 10 - Collection number: P6M2191, right lateral view of complete carapace.

Figs 11-18 - *Linzyhnia guangxiensis* Crasquin-Soleau n. sp. Fig. 11 - Holotype, collection number: P6M2192, right lateral view of complete carapace; fig. 12 - Paratype, collection number: P6M2193, right lateral view of complete carapace; fig. 13 - Collection number: P6M2194, right lateral view of complete carapace; fig. 14 - Collection number: P6M2195, left lateral view of complete carapace; fig. 15 - Collection number: P6M2196, dorsal view of complete carapace; fig. 16 - Collection number: P6M2197, dorsal view of complete carapace; fig. 17 - Collection number: P6M2198, ventral view of complete carapace; fig. 18 - Collection number: P6M2199, ventral view of complete carapace.

Fig. 19 - *Linzyhnia cf. parauii* Wei, 1981. Collection number: P6M2200, right lateral view of complete carapace.

Fig. 20 - *Bythocypris?* sp. A. Collection number: P6M2201, right lateral view of complete carapace.

PLATE 3

All the specimens from Fengshan area, Guangxi Province, South China. Scale bar 100 μm.

Figs 1-5 - *Ptychothorax luciae* Crasquin-Soleau n. sp. Fig. 1 - Holotype, collection number: P6M2222, right lateral view of complete carapace; fig. 2 - Paratype, collection number: P6M2223, dorsal view of complete carapace; fig. 3 - Collection number: P6M2224, right lateral view of complete carapace; fig. 4 - Collection number: P6M2225, right lateral view of complete carapace; fig. 5 - Collection number: P6M2226, right lateral view of complete carapace.

Fig. 6 - *Keryocythere?* sp. A. Collection number: P6M2227, right lateral view of complete carapace.

Figs 7-11 - *Ptychothorax aldii* Crasquin-Soleau n. sp. Fig. 7 - Holotype, collection number: P6M2228, right lateral view of complete carapace; fig. 8 - Paratype, collection number: P6M2229, right lateral view of complete carapace; fig. 9 - Collection number: P6M2230, right lateral view of complete carapace; fig. 10 - Collection number: P6M2231, dorsal view of complete carapace; fig. 11 - Collection number: P6M2232, ventral view of complete carapace.

Figs 12-13 - *Linzyhnia antalyaeensis* Crasquin-Soleau, 2004. Fig. 12 - Collection number: P6M2233, right lateral view of complete carapace; fig. 13 - Collection number: P6M2234, right lateral view of complete carapace.

Fig. 14 - *Spinocypris bulbjarvi* Kozur, 1971. Collection number: P6M2235, right lateral view of complete carapace.

Fig. 15 - *gen. and sp. indet.* Collection number: P6M2236, lateral view of complete carapace.

PLATE 4

All the specimens from Fengshan area, Guangxi Province, South China. Scale bar 100 μm.

Figs 1-4 - *Paracypris gaetanii* n. sp. Fig. 1 - Holotype, collection number: P6M2217, right lateral view of complete carapace; fig. 2 - Paratype, collection number: P6M2218, right lateral view of complete carapace; fig. 3 - Collection number: P6M2219, left lateral view of complete carapace; fig. 4 - Collection number: P6M2220, dorsal view of complete carapace.

Figs 5-6 - *Atractina noctonica* Monostori, 1994. Fig. 5 - Collection number: P6M2221, right lateral view of complete carapace; fig. 6 - Collection number: P6M2222, right lateral view of complete carapace.

Fig. 7 - *Bairdicypris?* sp. B. Collection number: P6M2223, right lateral view of complete carapace.

Figs 8-9 - *Paracypris?* sp. 1. Fig. 8 - Collection number: P6M2224, right lateral view of complete carapace; fig. 9 - Collection number: P6M2225, right lateral view of incomplete carapace.

Fig. 10 - *Ogmoconcha?* sp. A. Collection number: P6M2226, left lateral view of complete carapace.

Fig. 11 - *"Healdia?* sp. A. Collection number: P6M2227, right lateral view of complete carapace.

Fig. 12 - *Microbelinella cf. venusta* Chen, 1958. Collection number: P6M2228, right lateral view of complete carapace.

Fig. 13 - *Carnacknightinia?* sp. A. Collection number: P6M2229, right lateral view of complete carapace.
PLATE 2
Hitherto, Dienerian and Smithian ostracods were basically unknown. In the Jinya/Waili section (Fig. 2a,b), we recognized three species in the lower Dienerian (sample W81): *Bairdia fengshanensis* n. sp., *Bairdia wailiensis* n. sp. and *Psychobairdia luciae* n. sp. These three species show a highly discontinuous distribution, being absent in the Smithian but re-occurring in the Spathian. In the Dienerian-Smithian time interval, and with the noticeable exception of the well-oxygenated *Flemingites* beds, all 13 intervening samples were barren. *Bairdia fengshanensis* n. sp., is documented in the *Flemingites* beds in association with *?Acrattia nostorica* Monostori, 1994, *Bythocypris* sp. 3, and *Paracypris ji-ynyenss* n. sp. (Fig. 2a,b). Such discontinuous distributions suggest ecological exclusions due to temporarily poorly-oxygenated bottom waters, with the exception of the better oxygenated *Flemingites* beds. A significant rise in ostracod abundance and diversity coincides with the restoration of well-oxygenated bottom waters from the Smithian-Spathian boundary on.

**Palaeoecology**

Some palaeoecological interpretations can be proposed for the analysed samples. All the ostracod genera encountered recovered from the Jinya/Waili section are typically marine benthic forms.
The main characteristics of genera, families and/or superfamilies could be summarized as follows. The Bairdiacea are present in shallow to deep, open carbonate environments with normal salinity. Ornanimented and thick-shelled Bairdiacea are diagnostic of relatively high energy environments. The Kloedenellacea characterize very shallow, euryhaline environments. The genus *Kerocythere* is a shallow marine, euryhaline, and soft substratum dweller. The "simple" Healdiacea, with massive shell and without long spines, appear to be related to shallow infralittoral environments.

All the ostracods reported here are typical of intertropical warm waters.

Some taphonomic informations can be added. Almost all the specimens are represented by closed carapaces. This indicates a limited transportation and/or burying into a soft substratum (Oertli 1971).

The various documented assemblages are predominantly composed quite exclusively of Bairdiacea which are deposit feeders. Only two species are filter feeding ostracods: *Carinaknightina* sp. in sample JIN90 and "Healvida" sp. A in sample W163. According to the Lethiers & Whatley's model (1994), which uses the percentage of filter feeding ostracods in regard of deposit feeders (Fig. 5), we can estimate that, in all the samples with ostracods, the oxygen concentration in the bottom water is about 6-7 ml/l. The absence of ostracods in most of the Dienerian and the Smithian samples cannot be easily explained by oxygen concentration. Indeed, ostracods can withstand an important drop of oxygen concentration. In theory, oxygen depletion leads to the progressive replacement of deposit feeders by filter feeding ostracods.

From these observations, we can deduce that in the ostracod productive samples (i.e. Griesbachian, early Dienerian, Smithian "Flemingites beds", and Spathian - Fig. 2a,b), the Early Triassic palaeoenvironments of Fengshan area were open marine, well oxygenated, with epibenthic ostracods dwelling on a soft substratum. On the other hand, absence of ostracods in most of carbonate samples of Dienerian and late Smithian age is compatible with the poorly oxygenated facies characterized by dark, laminated, pyrite-rich micritic limestone devoid of bioturbation.

In this palaeoecological analysis, we take into account only assemblages with more than 50 specimens, i.e. samples W163, W42, W44A, JIN90, W330, JIN206 and JINYTF2 (Tab. 2). In detail, we can observe that the ostracod assemblage is composed as shown on Fig. 6.

From bottom to top, we can propose the following interpretations of palaeoenvironments.

- Sample W163 (Griesbachian?): circalittoral, with low energy shallow well oxygenated water. This assemblage is well diversified and does not reflect any stressful condition i.e. no variation of salinity, of temperature and/or of oxygen drop. These observations differ from the general interpretation of microbial limestone deposition, which are considered as opportunistic disaster forms. Our data could be in agreement with two points of view. Wignall & Hallam (1993) argued that extinction of the marine benthos followed the diachronous onset of anoxia, therefore leading to diachronous extinctions. According to Pruss & Bottjer (2004), the Early Triassic stromatolites "formed as reef mounds and level-bottom individual domes, with an overlying template of ecological relaxation. These conditions of ecological relaxation may be interrupted by repeated periods of additional environmental stress, such as incursion of anoxic and/or CO₂-rich deep-water into shelf environments". The levels where ostracods were recovered could correspond to relaxation periods. It is also important to note that the ostracod assemblage does not show significant differences from Late Permian ones. Data obtained in Early Triassic equivalent strata in Pakistan (Sohn 1970), in Western Taurus (Crasquin-Soleau et al. 2004a, b) and in Eastern Sichuan (Crasquin-Soleau & Kershaw 2005) exhibit exactly the same features: composition similar to Late Palaeozoic assemblages and open marine environments. Twitchett et al. (2004) stated that "the hypothesis that the apparent delay in the recovery after end-Permian mass extinction event was due to widespread and prolonged benthic oxygen restriction and in the absence of anoxia, marine recovery is much faster", a statement which may well apply to our data. But, contrary to those authors, the "pre-extinction fauna" of Late Palaeozoic aspect exists on the borders of Neo-Tethys, at least in South China,

<table>
<thead>
<tr>
<th>Environments</th>
<th>Biotrome</th>
<th>open – carbonate platform</th>
<th>+/- restricted</th>
<th>Mud zones</th>
<th>Black shales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimen abundance</td>
<td>+/- high according to energy levels</td>
<td>often very high</td>
<td>low</td>
<td>very low</td>
<td></td>
</tr>
<tr>
<td>Percentage of filter-feeding species</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Approximate oxygen concentration (ml/l)</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

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Fig. 5 - Lethiers and Whatley (1994) proxy model of oxygen levels linked to ostracod abundance and type.
<table>
<thead>
<tr>
<th>Species</th>
<th>nb spec.</th>
<th>samples</th>
<th>Family</th>
</tr>
</thead>
<tbody>
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<td>++</td>
<td>JINYATUF2</td>
<td>OB</td>
</tr>
<tr>
<td>Ptycho Barboidia alidae n.sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bairdia fengshanensis n.sp.</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bairdia wallensis n.sp.</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bairdia sp.6</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bythocypris? sp. B</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microchelinella? sp. 1</td>
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<td></td>
</tr>
<tr>
<td>Paracypris jinyaensis n.sp.</td>
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<td></td>
</tr>
<tr>
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<td>Spathian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bairdia cf. humilis Monostori, 1995</td>
<td>++</td>
<td>JIN206</td>
<td>B</td>
</tr>
<tr>
<td>Bairdia sp.</td>
<td>B</td>
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<td></td>
</tr>
<tr>
<td>Bairdia cypris galbruni Crasquin-Soleau &amp; Gradinaru, 1996</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liuzhina guangxiensis n.sp.</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ptycho Barboidia luciae n.sp.</td>
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<td></td>
<td></td>
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<tr>
<td>Ptycho Barboidia alidae n.sp.</td>
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<td></td>
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<td>Bairdia cypris sp. A</td>
<td>Spathian</td>
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<td></td>
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</tr>
<tr>
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<td>Ptycho Barboidia alidae n.sp.</td>
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<td>Bairdia (Urobaridia) angusta recta Monostori, 1995</td>
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<td>B</td>
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<td></td>
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<td>Carinaknightia? sp.</td>
<td>Spathian</td>
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<td>+</td>
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<td>W444A</td>
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<tr>
<td>Liuzhina cf. perve Wei Ming, 1981</td>
<td>B</td>
<td></td>
<td></td>
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<tr>
<td>?Spinoocypris vulgans Kozur, 1971</td>
<td>B</td>
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<td></td>
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<td>Bairdia finalyi (Meheș, 1911)</td>
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<td>Paracypris jinyaensis n.sp.</td>
<td>Spathian</td>
<td></td>
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<tr>
<td>Ogmocloncha? sp. A</td>
<td>C</td>
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</tr>
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<td>Bairdia finalyi (Meheș, 1911)</td>
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<td>W42</td>
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<td>Bairdia wallensis n.sp.</td>
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<td>Bairdia cypris galbruni Crasquin-Soleau &amp; Gradinaru, 1996</td>
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<td>Bythocypris sp. A</td>
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<td>Bairdia enisica Kozur, 1970</td>
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<td>?Acratina nostorica Monostori, 1995</td>
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<td>Ptycho Barboidia luciae n.sp.</td>
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<td>Bairdia sp. C</td>
<td>B</td>
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<td>Bairdia sp. indet.</td>
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<td>Gen et sp. indet.</td>
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<td>Bairdia cypris sp. B</td>
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<td>Bairdia cypris sp.</td>
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<td>Kerocythere sp A</td>
<td>C</td>
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<td>Liuzhina antalyaensis Crasquin-Soleau, 2004</td>
<td>B</td>
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<td></td>
</tr>
</tbody>
</table>

Tab. 2 - Ostracod composition per sample with superfamily attribution.

+++ more than 300 specimens; +++ 100 to 300 specimens; ++ 50 to 100 specimens; + less than 50 specimens; B: Smooth Bairdinae; OB: ornamented strong shelled Bairdinae; K: Koedensellacea; H: Healdia; C: Cytherae (Kerocytheridae); ?: undetermined
Tibet, and Western Taurus. The turnover of ostracod faunas took place later in the Early Triassic (Crasquin-Soleau et al., submitted).

- **Sample W42** ("Tiroliites beds" - Early Spathian): open marine, external platform, stenohaline environment, low energy depositional setting.

- **Sample W44A** ("Tiroliites beds" - Early Spathian): circalittoral with low energy well oxygenated shallow water.

- **Sample JIN90** ("Fengshanites beds" - Middle Spathian): internal part of circalittoral zone, maybe with variations of salinity, moderate energy well oxygenated water; this level could be the shallowest among the studied samples.

- **Sample W330** ("Fengshanites beds" - Middle Spathian): open marine, external platform, stenohaline environment and low energy depositional setting.

- **Sample JIN206** ("Hellemites beds" - Late Spathian): open marine, external platform, stenohaline environment, moderate energy depositional setting.

- **Sample JINTUF2** (Haugi Zone - Late Spathian): open marine, external platform, stenohaline environment, and moderate to high energy depositional setting.

- With its Permian stamp, the Griesbachian ostracod assemblage remains well diversified and suggests a well oxygenated open marine environment, without any obvious indication of ecological stress on the ostracod community. Griesbachian assemblages are similar to Late Palaeozoic ones. Late Palaeozoic pre-extinction fauna exists on the borders of Neo-Tethys, at least in South China, Tibet, and Western Taurus. Even if the Permian - Triassic events destroy at least 95% of ostracods fauna, the Mesozoic turn-over in this group takes place later in the Early Triassic.

- Dienerian and Smithian ostracods are recorded for the first time.

- Intermittent poorly oxygenated bottom waters during most of the Dienerian and the late Smithian co-incide with the local non occurrence of ostracods.

- A significant increasing in abundance and diversity of ostracods occurs from the Smithian-Spathian boundary onward, which corresponds to the withdrawal of anoxic bottom waters.

- The palaeoenvironmental interpretation of ostracod assemblages suggests a warm open, well oxygenated, marine depositional setting, recording also small variations of energy and bathymetry.

**Conclusions**

The ostracods discovered in Jinya/Walli section (Guangxi Province, South China) allow a significant progress in the knowledge of Early Triassic ostracod faunas. Seven new species are described among thirty seven recognized throughout this Early Triassic section.

Acknowledgements. This work was supported by the Swiss NSF project n°200020-105090/1 (T.G., HB, A.B.), by the PRA ST03-01 of AFCRST (Association Franco-Chinoise pour la Recherche Scientifique et Technique) and ECLIPSE 2 Programme (CNRS-INSU) (S.C.).

The authors are very grateful to Dr. David J. Horne (Queen Mary University, London, GB) and Dr. Avraham Honigstein (Oil and Gas section, Ministry of National Infrastructures, Jerusalem, Israel) for their constructive remarks which helped us to improve the manuscript.
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