Journal of Palaeogeography, 2017, ■(■): 1–9

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.journals.elsevier.com/journal-of-palaeogeography/

Biopalaeogeography and palaeoecology

A latest Permian non-reef calcisponge fauna from Laibin, Guangxi, southern China and its significance

Ya-Sheng Wu [a,b,c,*]

[a] *Key Laboratory of Petroleum Resource Research, Chinese Academy of Sciences, Beijing 100029, China*
[b] *Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China*
[c] *University of Chinese Academy of Sciences, Beijing 100049, China*

Abstract A calcisponge fauna occurs in uppermost Permian Conodont *Clarkina meishanensis yini* zone of the sequence exposed in the vicinity of Laibin, Guangxi Zhuang Autonomous Region, southern China. The fauna is dominated by one thalamid species, *Amblysiphonella vesiculosa* de Koninck, 1863, and one new sclerosponge genus and species, *Radiofibrosclera laibinensis* gen. et sp. nov. They are associated with a few other accessory species, including the thalamid sponges *Amblysiphonella laibinensis* Deng, 1981, *Colospongia* sp., *Polycystocoelia* sp., and the inozoan sponge *Acoelia discontinua* sp. nov. Though the individuals are abundant, the species diversity is very low. Without common calcisponge components of Changhsingian reefal faunas, the assemblage is interpreted as not a reefal fauna. The water depth at which they dwelled was less than 105 m, and more probably less than 40 m. Its occurrence indicates a significant sea-level drop at the end of Late Permian Changhsingian Age.

Keywords Upper Permian, Calcisponge, Laibin, Palaeoecology, Sclerosponge, Thalamid sponge, Guangxi, Southern China

Received 18 November 2015; accepted 28 December 2015; available online xxx

1. Occurrence of the fauna

The sponge fauna documented in this paper occurs in the uppermost Conodont *Clarkina yini* zone (Wu, 2005) of the Permian limestone of the Penglaitan section in the vicinity of Laibin, Guangxi Zhuang Autonomous Region, southern China (Fig. 1). The Changhsingian Stage of the Penglaitan section is mainly composed of clastic deposits. However, the

* Corresponding author: Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China.
E-mail address: wys@mail.igcas.ac.cn.
Peer review under responsibility of China University of Petroleum (Beijing).
http://dx.doi.org/10.1016/j.jop.2016.10.002

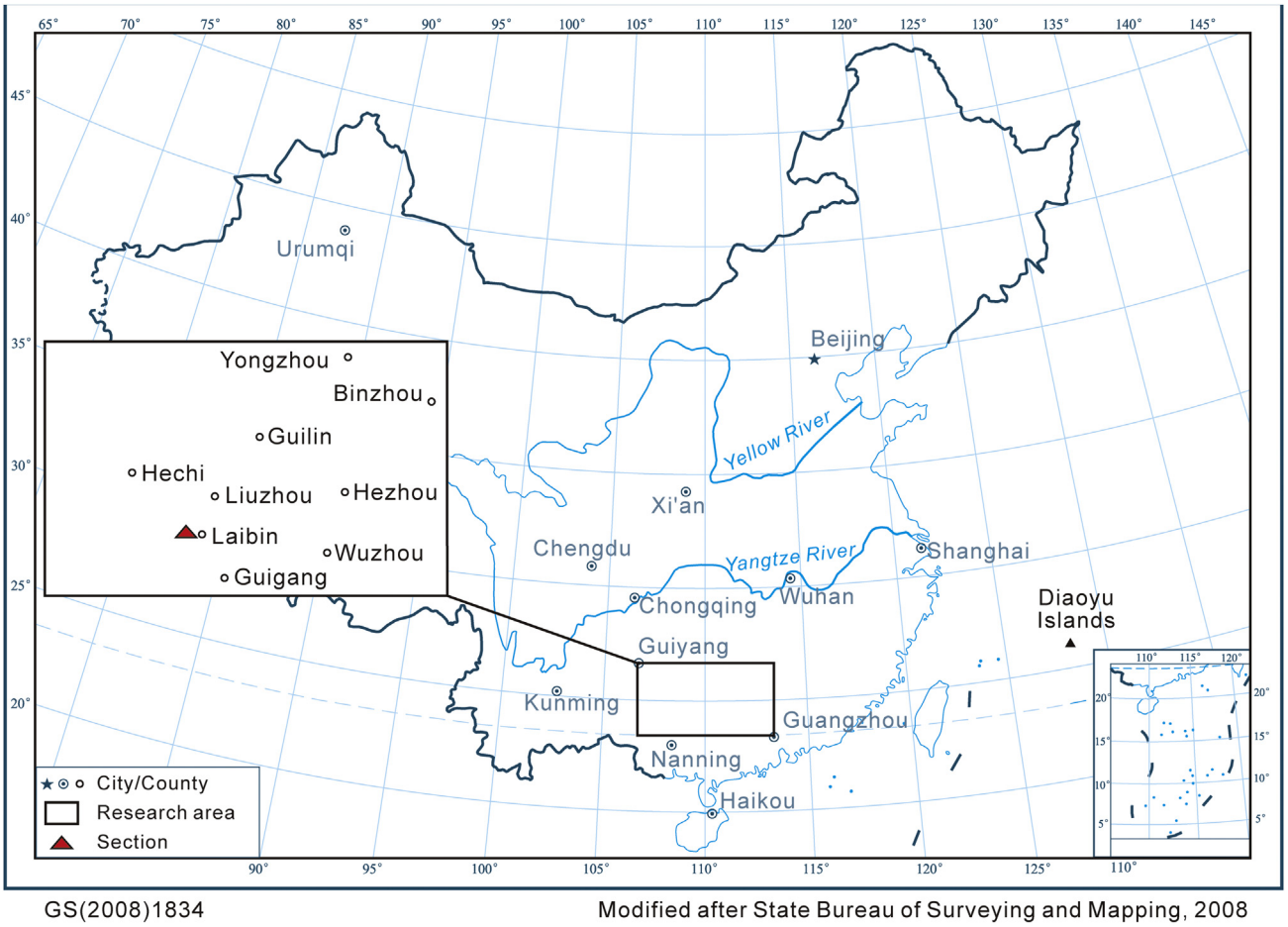

Fig. 1 Location of Laibin county, Guangxi Zhuang Autonomous Region, southwestern China. The calcisponge fauna occurs in the uppermost Permian limestone in a stratigraphic section about 8 km southeast to the Laibin county.

calcisponge fauna occurs in a limestone 1—2 m thick at the top part of the section. Examination of the outcrops documents the occurrence there of abundant calcisponge individuals. They are so common that some researchers have considered the limestones might be reef rocks. However, more detailed studies show that they are not reef rocks. The main evidence includes: (1) There are abundant fusulinids in this limestone. As we know, fusulinids are generally sparse in typical reef rocks. The abundant occurrence of fusulinids in this limestone suggests that it is not of reef facies. (2) As described in the following section, the fauna is not diverse, contrary to the fact that reefal faunas generally have high taxonomic diversity, as well as abundant individuals. (3) This fauna doesn't include the common components of Upper Permian Changhsingian calcisponge reefs. (4) This fauna lacks a most important element of Permian calcisponge reefs, calcareous algae, especially *Archaeolithoporella*, a probable red algae that is very common in Changhsingian reefs where it is a major encruster (Wu, 1991).

2. Significance of the fauna

The calcisponge fauna from the uppermost Permian *C. yini* zone of the Changhsingian section in Laibin is not very diverse. It is dominated by only two species: the thalamid species *Amblysiphonella vesiculosa* and the new sclerosponge *Radiofibrosclera laibinensis*, accompanied by other relatively rare species including the thalamid sponges: *Amblysiphonella laibinensis*, *Colospongia* sp., *Polycystocoelia* sp., and the inozoan sponge *Acoelia discontinua* sp. nov. Even so, individual abundance is high. This prompted some researchers to the question whether it is a reefal fauna. But, as mentioned above, this is not a reefal fauna. During the Late Permian Changhsingian Age, reefs mainly constructed by calcisponges developed in the border area between what is now Guangxi Zhuang Autonomous Region and Guizhou Province. This includes the famous Changhsingian reefs in Longlin, on which Fan and Wu have conducted detailed studies (Fan *et al.*, 1990; Wu,

Please cite this article in press as: Wu, Y.-S., A latest Permian non-reef calcisponge fauna from Laibin, Guangxi, southern China and its significance, Journal of Palaeogeography (2016), http://dx.doi.org/10.1016/j.jop.2016.10.002