

# Ediacaran fauna of the Jodhpur Group (Marwar Supergroup) in Jodhpur city, western Rajasthan, India: Implication for potential Geoheritage sites

## *Fauna ediacárica del Grupo de Jodhpur (Supergrupo de Marwar) en la ciudad de Jodhpur, al oeste de Rajasthan, India: Implicación para la selección de posibles sitios geopatrimoniales*

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### ABSTRACT

The Ediacaran fossil record of the Jodhpur Group in the surroundings of Jodhpur city, western Rajasthan, is revised. Their best exposures are considered as potential Geoheritage sites. A specific protection from quarrying is envisaged.

**Keywords:** Metazoans; Jodhpur Group; Rajasthan; Ediacaran; Geoheritage sites.

### RESUMEN

Se revisa el registro fósil ediacárico del Grupo de Jodhpur en los alrededores de la ciudad de Jodhpur, al oeste de Rajasthan. Sus mejores afloramientos son considerados como sitios potenciales de Geopatrimonio. Se prevé una protección específica contra la explotación de sus canteras.

**Palabras clave:** Metazoos; Grupo de Jodhpur; Rajasthan; Ediacárico; Geopatrimonio.

### Introduction

Culturally vibrant Jodhpur city, also referred as “Blue City” and “Sun City”, covers about 100 km<sup>2</sup> and represents a gate way to the Great Thar Desert situated in the Marwar region of northwestern India

(Fig. 1A). Geologically, it is represented by the basement rocks of the Malani Igneous Suite (MIS) of 745-681 Ma age, overlain by the Jodhpur Group (JG) rocks of Ediacaran age, which marks the lowermost part of the Marwar Supergroup (MSG; Pareek, 1984; Kumar & Pandey, 2009).

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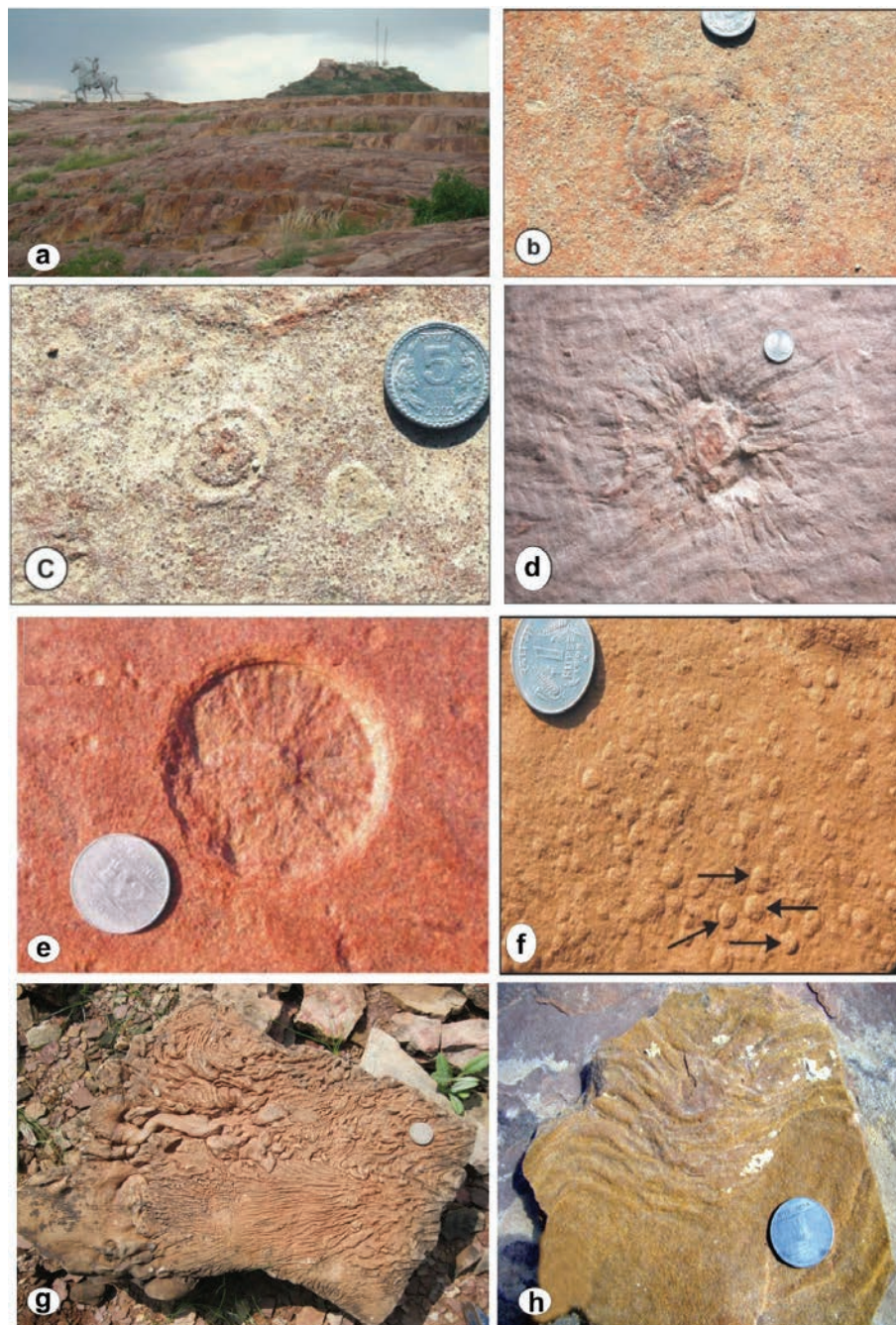


Figure 1.—A. Panoramic view of outcrops of MIS (foreground) and Jodhpur Group of rocks (background). B-C. *Aspidella*. D. *Heimalora*. E. *Cyclomedusa*. F. *Beltanelliformis*. G. *Arumberia banksi*. H. Mat-wrinkle marks Ediacaran fossil from Jodhpur Sandstone in Sursagar area (Kumar & Pandey, 2009; Srivastava, 2012; Sharma and Mathur, 2014).

## Results

JG in Jodhpur city is divided into three distinct siliciclastic sequences having different geological characters, sedimentary structures, Ediacaran fauna and

palaeoenvironmental features. These three sedimentary sequences are the Umaid Bhawan Formation (UBF), followed by the Ediacaran fauna-bearing Sursagar Formation (SF) and the Motisar Formation (MF). JG is unconformably overlain by the Cambrian Bilara Group

(Maheshwari *et al.*, 2003). The rocks of MIS and JG in the Jodhpur city are well endowed with marvels of landscape in form of four NNE-SSW trending prominent ridges and remarkable Georesources both of intrinsic and extrinsic values. The northern part of Jodhpur city (Lalsagar to Sursagar), covering about 30 km<sup>2</sup>, is famous for sandstone mining of Jodhpur sandstone (Chittar Ka Pathar; Fig.1A) of SF. This area is also known for treasure of text book style sedimentary structures, spectacular erosional landform features and excellent preservation of Ediacaran fossils; this framework constitutes geoheritage resources of Jodhpur city (Fig. 1A). These geoheritage sites include Sursagar, chopar, Keroo, Beroo, Keru, Bhuri Beri, Manore, Balsamand and Motisar In these sites, beside sedimentary structures excellent preservation of Ediacaran assemblage, such as *Aspidella*, *Heimalora*, *Cyclomedusa*, *Beltanelliformis*, *Arumberia banksi* and macroalgal Ediacaran fossils has been reported (Fig. 1B) (Kumar and Pandey; 2009; Kumar *et al.*, 2012; Srivastava, 2012; Parihar *et al.*, 2015; Sharma & Mathur, 2014; Mathur *et al.*, 2017). Sedimentological and palaeontological analysis of rocks of SF reveals shallow-water conditions near coastal to beach dominated deposition.

## Conclusions

Jodhpur being a gateway to the Thar Desert is a famous tourist place of India. These significant geoheritage sites, especially palaeontological geosites, are threatened due to massive mining activities in Ediacaran landscapes, which need to be studied for their geoheritage values and conservation. The present paper embodies geological study of spectacular landscapes of rocks of JG as well as impact of large scale mining activities and urbanization since last thirty years on these significant geoheritage sites utilizing various geological and remote sensing tools.

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