

## Biostratigraphy and palaeoecology of Tarbur Formation in Semirom area, southwest of Isfahan

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### Introduction

The Tarbur Formation is located in the interior of Fars region (east of Zagros Mountains) and is known as a carbonate unit with abundant larger benthic foraminifera, rudist and coral. This formation is exposed in the interior part of Fars and high Zagros zones and southwestward it laterally changes to thin limestone beds. The facies of this formation eventually changes into the Gurpi shale Formation. The purpose of this study is to assess the paleoecology and biostratigraphy of the Tarbur Formation based on present fauna (foraminifera) in Semirom area (SW of Isfahan). The study area with geographical coordinate of N: 31° 22' 48" and E: 51° 32' 01" is located at about 5kms southwest of Semirom area. The thickness of the Tarbur Formation in the study area is 462 meters. The formation mainly consists of carbonate and terrigenous rocks and has a gradual and conformable contact with underlying red shale unit (S<sub>2</sub>) while is overlaid by the Kashkan Formation which is marked by an erosional surface.

### Material and methods

Systematic sampling was conducted and 110 samples were collected from the selected section. Thin sections were prepared and studied with morphometrical and statistical analyses on some fossil samples (*Luftusia*, *Omphalocyclus*, and *Orbitoides*). The identification of larger benthic and small foraminifera are performed according to Leoblich & Tappan, 1989; Meric *et al.*, 2001; Özcan, 2007; Widmark, 1997; Algert & Thomas, 2001. The species of *Luftusia* and *Omphalocyclus* are identified based on personal communication and published papers of Görmüş (Ankara University) and Özcan (Istanbul Technical University)

### Discussion

Based on fossil content, the *Omphalocyclus* – *Loftusia* – *Siderolites calcitrapoides* Assemblage Zone is recognized in the Tarbur Formation. This assemblage zone is equivalent to biozone 37 of Wynd (1965) and confirms the Maastrichtian age for the study section. Considering the morphometric measurement and identification of index species of *Loftusia* (*Loftusia anatolica*, *Loftusia turcica* (B), *Loftusia kahtaensis*, *Loftusia baykali*), *Omphalocyclus* (*Omphalocyclus macroporus*), *Lepidorbitoides* (*Lepidorbitoides socialis*) and *Orbitoides* (*Orbitoides apiculata*), the age of Tarbur Formation can precisely be considered as late Maastrichtian at the study area. Regarding the type of fauna and location of the study area at lower latitude in that period of time, the chlorozoan and chloralgal carbonate assemblages can be considered as part of the Tarbur Formation. The occasional presence of foramol assemblage can be due to the increase of nutrient influx by the surface run-off.

**Keywords:** Biostratigraphy; Tarbur Formation; Semirom; Foraminifera; Rudist; Maastrichtian.

### References

- Alavi, M., 2004. Regional stratigraphy of the Zagros fold-thrust belt of Iran and its proforeland evolution. *American Journal of Science*, 304: 1-20.
- Alegret, L., & Thomas, E., 2001. Upper Cretaceous and lower Paleogene benthic foraminifera from northeastern Mexico. *Micropaleontology*, 47: 269-316.
- James, G.A., & Wynd, J.G., 1965. Stratigraphic nomenclature of Iranian oil consor-tium agreement area. *American Association Petroleum Geology Bulletin*, 49: 2182-2245.

- Loblich, A. R., & Tappan, H., 1998. Foraminiferal genera and their classification. *Van Nostrand Reinhold Company*, New York, 970 p.
- Meriç, E., Ersoy, S., and Görmüş, M., 2001. Palaeogeographical distribution of the species of *Loftusia* (Foraminiferida) in the Tethyan Ocean during the Maastrichtian (Late Cretaceous). *Cretaceous Research*, 22: 353-364.
- Mutti, M., & Hallok, P., 2003. Carbonate system along nutrient and temperature gradient: Some sedimentological and geochemical constraints. *International Journal of Earth-Science*, 92: 465-475.
- Özcan, E., 2007. Morphometric analysis of the genus *Omphalocyclus* from the Late Cretaceous of Turkey: new data on its stratigraphic distribution in Mediterranean Tethys and description of two new taxa. *Cretaceous Research*, 28: 621-641.
- Widmark, J.G.V., 1997. Deep-sea benthic foraminifera from Cretaceous-Tertiary boundary strata in the south Atlantic ocean. *Taxonomy and Paleoecology, Fossils & Strata*. 43: 1-94.
- Wynd, J.G., 1965. Biofacies of the Iranian consortium-agreement area. *Iranian Offshore Oil Company*, Tehran, Report 1082.