

SURVIVAL OF THE LATE PERMIAN FORAMINIFERA FROM THE P-Tr CRISIS: EVIDENCE FROM THE TAURIDE CARBONATES, HADIM, SOUTHERN TURKEY

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The Latest Permian marks the greatest mass extinction in geologic history. Nearly 80% of the organisms at the species level became extinct at this boundary including advanced Late Permian foraminiferal fauna. In contrast, the foraminifera lived after the Permian period was simple. The turnover between advanced Late Permian foraminifers to simple Early Triassic organisms is observed in continuous and well-preserved P-Tr sections around the world. Some of these sections have shallow marine settings such as the Hadim Permian-Triassic boundary section (southern Taurides, Turkey).

The Late Permian rocks in the Hadim section are composed of subtidal carbonates and characterized by Upper Permian algal limestone rich in advanced foraminifera. P-Tr boundary is just above these subtidal carbonates and overlies them with a minor disconformity surface. The truncation surface is capped by Lower Triassic stromatolites containing simple foraminifers. The continuous shallowing of the Late Permian Sea caused disconformable surface. The Upper Permian subtidal carbonates represent a high-stand system tract deposit; the overlying represents a sequence boundary that is capped by transgressive Lower Triassic stromatolites, represents slightly deepening, characterized by simple foraminifers.

The advanced Late Permian fauna mainly consist of fusulinid foraminifers and algae. Early Triassic fauna, however, is primarily composed of simple Miliolid foraminifers. Previous studies have concluded that, the advanced fauna in the Late Permian rock died out at the Permian-Triassic boundary. In contrast, this study suggests that an advanced Late Permian foraminifer survived in the period of the formation of Lower Triassic stromatolite.

Recent stratigraphical and paleontological studies carried out in the Hadim area (Unal et al., 2003). This project concentrates on the survival of a Late Permian foraminifera and occurrence of a mixed fauna in the Lower Triassic stromatolites.

The Late Permian fauna mainly consist of Biseriamminid and Geinitzinid foraminifers, Nodosariida, Hemigordius and family Staffellidae. The Lower Triassic sediments mainly composed of Cyclogyra, Rectokornuspira and Earlandia. In the region studied in this research, the Late Permian Globivalvulinid (Biseriamminid) foraminifer was observed within the stromatolites occurring with the Early Triassic marker forms, *Rectokornuspira kalhori*.

Key words: *Late Permian, Early Triassic, mass extinction, P-Tr boundary, subtidal, stromatolites, disconformity, survival, mixed fauna*

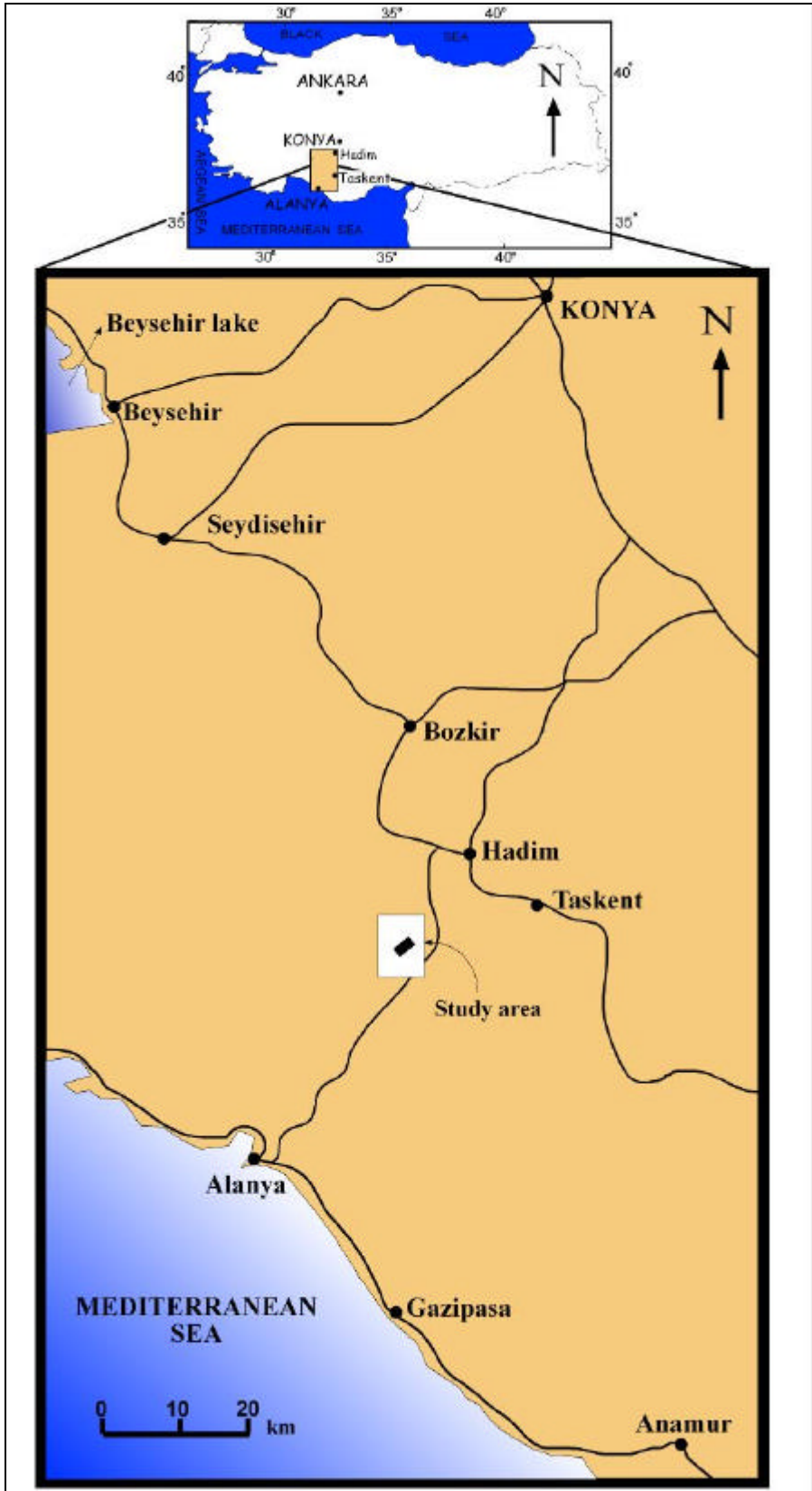


Figure 1. Geographic location of the study area and the location of measured stratigraphic section. Thick lines are highways.

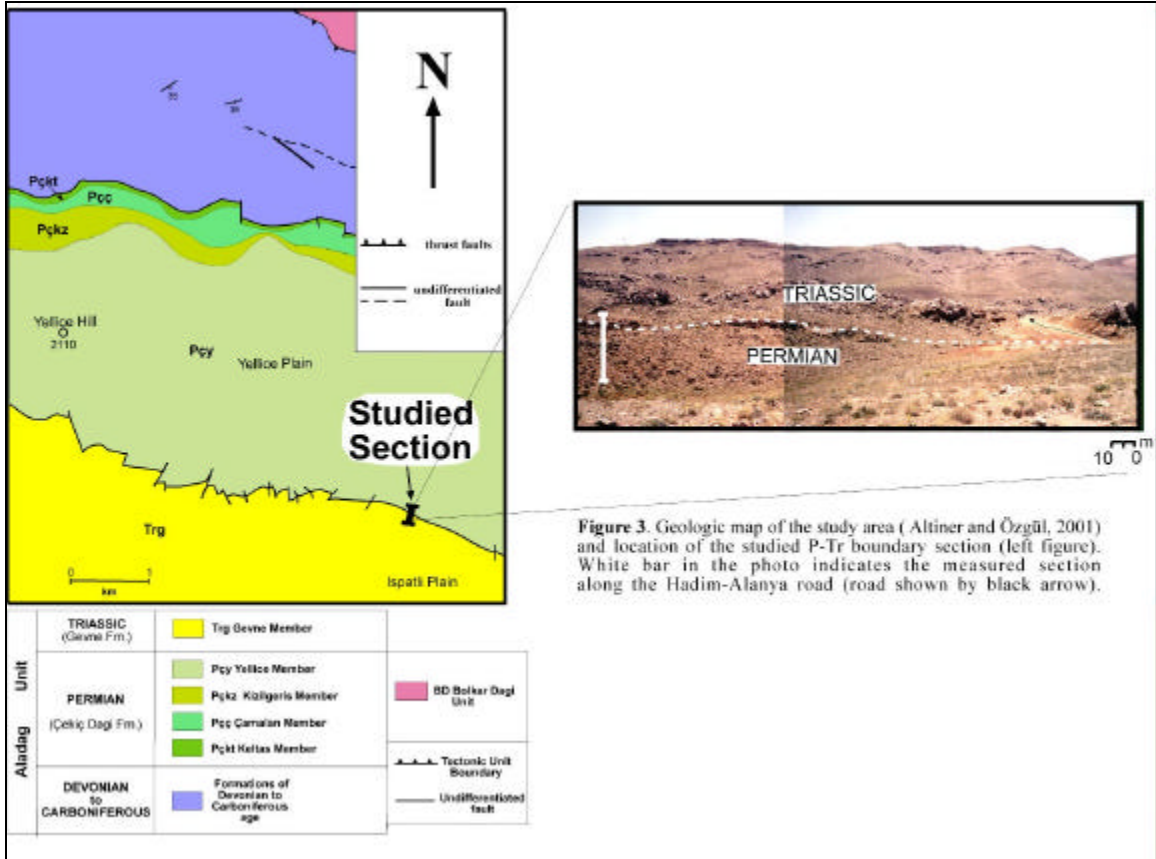


Figure 3. Geologic map of the study area (Altiner and Özgül, 2001) and location of the studied P-Tr boundary section (left figure). White bar in the photo indicates the measured section along the Hadim-Alanya road (road shown by black arrow).