

Stratigraphy, vertebrate paleontology and economic significance of Zinda Pir anticline, Dera Ghazi Khan District, South Punjab, Pakistan

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Abstract

Zinda Pir anticline is doubly plunging anticline located in the easternmost part of Sulaiman Range. It is generally trending north south. The core formation exposed in the Zinda Pir Ziarat gorge is Early Paleocene Rakhi Gaj Sandstone and shale capped by the massive and thick limestone of Late Paleocene Dungan Formation. The Dungan Limestone forms the peaks of anticlinal axis extending more than 10 km north south. This limestone is also being used for D.G.Khan cement industry. Due to high affinity of erosion the Early Eocene Shaheed Ghat shales are found on the limbs and plunging areas. The limbs and plunging formations are Early Eocene Drug rubbly limestone and Baska gypsum and shales of Chamalang (Ghazij) Group, Middle Eocene Habib Rahi limestone, Domanda shale, Pirkoh marl/limestone and Drazinda shale of Kahan Group, Oligocene Chitarwata (ferruginous sandstone, conglomerate and shale), Miocene Vihowa (red muds and sandstone) and Litra (greenish grey sandstone with some red muds) and Pliocene Chaudhwan (alternated sandstone and maroon muds) of Vihowa Group and Pleistocene Dada (conglomerate) and Holocene Sakhi Sarwar (clays, sandstone and conglomerates) of Sakhi Sarwar Group. After the exposures of Sakhi Sarwar Formation, the eastern limb mostly covers by thick alluvium with some eolian deposits. The western limb shares with Baghal Chur-Barthi-Fazla Kach syncline. The Eocene and post Eocene rocks plunges in the south at Dalana, Sakhi Sarwar areas, etc and in the north at Sanghar, Satta post, Litra and Vihowa areas. The trends of Paleocene to Holocene rocks shifted from north south to gradually east west in the southern and northern plunge areas. The significance of this anticlinorium is many paleontological findings and economic commodities. Many vertebrates like rhinocerotoids, anthracotherids, proboscideans, carnivores, chalicotheres, deinotheres, bovids, suids, Creodonta, ruminantia, amynodontiae and crocodilians and also many invertebrates are reported. Recently the most famous vertebrates found in this and surrounding areas are middle Eocene walking whale, Basilosaurid (Sulaimanitherium dhanotri) the king of basal whales, Oligocene Baluchitheria (Buzdartherium gulkirao) the largest land mammals and crocodile (Asifcroco retrai) and Miocene large proboscideans like (Gomphotherium buzdari). The economic mineral and rock commodities are Petroleum (from Dhodhak and surroundings), fuller earth, gypsum and other cement raw materials like limestone and shale, building stone and construction materials like Dungan limestone and some beds of Habib Rahi Limestone and conglomerates of Pleistocene Dada and Holocene Sakhi Sarwar formations. Some coal showings are also found in the eastern limb.