

TURTLES OF THE SANTANA FORMATION

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The Santana turtle fossils offer an exciting glimpse of evolutionary stages that are not found anywhere else. Both major turtle groups, cryptodires and pleurodires, are present, but all the turtles are unique to the Santana Formation. The sole Santana cryptodire is *Santanachelys gaffneyi* Hirayama, a small sea turtle belonging to the often gigantic Protostegidae. It has well developed flippers and other apparent marine adaptations. The Santana pleurodires, all members of the Hyperfamily Pelomedusoides, are much commoner and more diverse. *Araripemys barretoii* Price is the commonest and best known turtle in the Santana. Although highly derived in such areas as the neck and shell, the skull morphology reveals it as a primitive sister group to Bothremydidae plus Podocnemididae. An as yet unnamed Santana pelomedusoid is more generalized morphologically than *Araripemys* but is closer to the common ancestor of Podocnemididae and Bothremydidae. Another unnamed Santana pelomedusoid is a primitive member of the Bothremydidae, an extinct group of very diverse pleurodires that were both marine and freshwater. All of these taxa are represented by nearly complete, articulated skeletons with good skulls as well as shells and limbs, providing an abundant source of characters for analysis. The pleurodires particularly have significantly altered previous ideas of turtle evolution. The biogeographic relations of the Santana turtles are diverse. The protostegid has near relatives in Australia, North America, and Europe. Among the pleurodires only the bothremydid has close relatives and these are North African.