

**STRATIGRAPHIC STUDIES OF THE RELATIONSHIP BETWEEN ICHTHYOSAUR AND PLESIOSAUR SPECIES AND THE PALEO-ENVIRONMENT FOUND IN THE UPPER JURASSIC SUNDANCE FORMATION OF CENTRAL AND SOUTH CENTRAL WYOMING.**

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The Sundance Formation of Central and South Central Wyoming records a unique marine environment worthy of further study. Located below the familiar "Dinosaur Beds" of the Upper Jurassic Morrison Formation, the Sundance throughout Wyoming has variations in both thickness and lithology. One biological characteristic is outstanding: fossils of plesiosaur and ichthyosaur species are highly abundant within the boundaries of the Redwater Shale member of the Sundance Formation.

The Redwater Shale is one of 5 members of the Sundance located near the top of the formation, followed only by the Windy Hill member. It typically consists of soft grey-green marine shale incorporating fine-grain, calcareous, and glauconitic sandstones and fossiliferous limestones higher in the section. What is unique about the Redwater, isn't what it contains but more what it lacks. A rich marine fauna should include animals such as those commonly found in the Oxford clays- crocodiles, abundant fish, large sized reptiles, and a wide variety of ammonites. Many of these animals appear to exist in the Sundance, however, except for traces found in the stomach contents of the small marine reptiles, little was found in any of the study areas.

If these animals existed in the quantity to support two highly prolific predators, then why are their remains not as easily found? This study is an attempt to solve this dilemma.

By using stratigraphic techniques, each fossil locality in the test area was charted and individual environments recorded and compared. Through these comparisons, a closer look has been taken at the unique fauna of the Sundance Sea. The results indicate that the Sundance Sea was perhaps a hostile environment, allowing the fauna to survive only for brief intervals. This would explain the absence of the varieties normally associated with marine environments yet allow population explosions of non predated species. With this information and further study, a better understanding of the paleoecology of marine reptiles in North America can be obtained.