

An Overview and Chronological History of the Humboldt River and Related Water Issues

Introduction

Nevada is truly a land of contrasts and contradictions. As the driest state in the nation, it may seem somewhat peculiar for the State of Nevada to claim the remains of a prehistoric marine reptile as the official state fossil. Over 200 million years ago, in the Late Triassic period, the sixty-foot long Ichthyosaur—a term meaning “fish-lizard”—ruled the earth’s oceans as the pre-eminent marine predator. Of course, Nevada was considerably different in those days and was actually the floor of an ancient equatorial sea. In fact, the west coast of the continental United States at that time was very near the western border of the State of Wyoming, and a continental shelf covered much of eastern Nevada and western Utah with the deep ocean stretching from central Nevada westward.

It was in these warm, shallow equatorial waters of central and eastern Nevada that the prehistoric Ichthyosaurs roamed at will. As the land mass gradually rose and the seas receded ever westward, some 40 of these giant creatures became stranded in shallow mud flats in what is now the northwest corner of Nye County in central Nevada. Here they would remain, to be covered by thousands of feet of sediment, which gradually compressed into rock, and then to be thrust violently upward as part of the formation of the Shoshone Mountain Range, finally coming to rest 7,000 feet above the level of the sea in which they once lived and ruled. Their final resting place would eventually be uncovered in 1926 through geological exploration in the Union Mining District near the town of Berlin. In 1977, after reigning the world’s oceans for approximately 135 million years, and some 200 million years after their final entombment, *Ichthyosaurus shonisaurus popularis*, named after the mountain range in which it was discovered, became immortalized as Nevada’s official state fossil.

From this ancient seabed, Nevada was formed by a gradual uplifting of the ocean floor and the effects of plate tectonics, a geological process which, on several occasions, fused huge land masses appearing out of the western ocean to Nevada’s western shoreline. These continental collisions not only added to Nevada’s land mass, moving the continent’s coastline ever westward to its present location, but through the subduction process, or the sliding of older, heavier plates under newer, lighter plates, land masses were buckled and mountain ranges were thrust upwards. As these submerging land masses were pushed ever deeper into the earth’s molten depths, they were heated to such extremes that they caused volcanic eruptions and hydrothermal venting across vast portions of the State. Today, Nevada’s geologic foundations consist primarily of igneous rock formations as the result of extensive volcanic activity (the ranges), and sedimentary layers (the basins) created as a by-product of its early existence as a sea bed and the eventual wearing down and deposition of the mountain ranges that were subsequently created.

The Nevada we know today has existed for only the last few seconds on the geologic clock of time. As recently as 12,000 years ago Nevada was considerably wetter than today and much of the land was covered with ancient lakes and expanses of lush grasslands formed during the last Ice Age. The largest of these lakes were the prehistoric Lake Lahontan in northwestern Nevada and Lake Bonneville, which covered most of northwestern Utah and extended into northeastern Nevada as well.

As the massive ice sheet receded northward, the land dried, withering the abundant vegetation and leaving Nevada's water resources located primarily in shrinking desert lakes and locked beneath the sedimentary layers of the State's numerous elongated valleys.

Today, only Pyramid Lake and Walker Lake in west-central Nevada provide an indication of the prior existence of Lake Lahontan and this glacial epoch period. Surrounding these few remaining remnants of this bygone era, the watermarks etched high above the present lake levels provide a fleeting testament of the significant environmental changes Nevada has undergone.

Geology, geography, and climate would combine to have profound effects on the nature of Nevada's future development. The lofty peaks of the Sierra Nevada Mountains, stretching along much of Nevada's western border, would interrupt the State's access to natural precipitation from the prevailing easterly flow of storm systems coming in off the Pacific Coast. The resultant "rain shadow" rapidly dried up the land. The lush expanses grasslands withered and turned into fragile plant systems, such that the region's large herbivore species, like the mastodon, camel, three-toed horse and giant ground sloth, all eventually became extinct. Over much of Nevada a massive elevated bowl formed, an area we now call the Great Basin. This relatively high, but inward sloping "basin and range" topography effectively stretched from the City of Reno in the west to Salt Lake City in the east and from Southern Oregon in the north to Death Valley, California in the south. From within this vast expanse, no surface waters flow outward to the sea.

The only readily available surface waters entering this huge depression are the seasonal rivers fed by melting snow and flowing from the mountain ranges along Nevada's western frontier and out of a range of lofty peaks in north-central Nevada called the Ruby Mountains. The resultant rivers consist principally of the Humboldt River, the only major river wholly contained within Nevada, flowing out of the Ruby, Jarbidge, Independence, and East Humboldt Mountain ranges and running over 300 miles mostly westward towards the Humboldt Sink, and the Truckee, Carson, and Walker rivers which flow eastward out of the Sierra Nevada Mountains.

These river systems would become crucial to the future development of Northern Nevada. The Truckee River, flowing out of the Sierra Nevada Mountains above Lake Tahoe and draining the Lake Tahoe Basin, courses its way over 140 miles to its terminus at Pyramid Lake. The Carson River drains an area south of Lake Tahoe and flows over 180 miles to the Carson Sink (Playa) and provides waters to important wetland habitat in that area. The Walker River drains an area in the Sierra Nevada Mountains southeast of Lake Tahoe and flows almost 160 miles to its terminus at Walker Lake. Eventually, all these river terminus locations have become stressed and natural habitat and animal species threatened, as ever greater human demands are placed on the available flows of these river systems.

[The above introduction was provided courtesy of Gary A. Horton and was extracted from his *NEVADA: A Historical Perspective of the State's Socioeconomic, Resource, Environmental, and Casino Gaming Development*, © July 1995, Nevada Research Associates.] Various maps and schematic stream flow diagrams for the Humboldt River Basin were provided courtesy of U.S. Geological Survey (USGS), Water Resources Division, Nevada District Office, Carson City, Nevada. The Nevada base highway map was provided courtesy of the Nevada Department of Transportation (NDOT). Other maps of the Great Basin and Pleistocene Epoch lakes were provided by referenced sources.