

A Short History of Rivers

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Excerpted from Chapter 1 of Patrick McCully's:

Silenced Rivers: The Ecology and Politics of Large Dams

"To write history without putting any water in it is to leave out a large part of the story. Human experience has not been so dry as that."

Donald Worster

Rivers of Empire, 1985

All land is part of a watershed or river basin and all is shaped by the water which flows over it and through it. Indeed, rivers are such an integral part of the land that in many places it would be as appropriate to talk of riverscapes as it would be of landscapes. A river is much more than water flowing to the sea. Its ever-shifting bed and banks and the groundwater below, are all integral parts of the river. Even the meadows, forests, marshes and backwaters of its floodplain can be seen as part of a river – and the river as part of them. A river carries downhill not just water, but just as importantly sediments, dissolved minerals, and the nutrient-rich detritus of plants and animals, both dead and alive.

A watershed starts at mountain peaks and hilltops. Snowmelt and rainfall wash over and through the high ground into rivulets which drain into fast-flowing mountain streams. As the streams descend, tributaries and groundwaters add to their volume and they become rivers. As they leave the mountains, rivers slow and start to meander and braid, seeking the path of least resistance across widening valleys, whose alluvial floor was laid down by millennia of sediment-laden floods. Eventually the river will flow into a lake or ocean. Where the river is muddy and the land flat, the sediments laid down by the river may form a delta, splitting the river into a bird-foot of distributaries which discharge into the sea. The river's estuary, the place where its sweetwaters mix with the ocean's salt, is one of the most biologically productive parts of the river – and of the ocean. Most of the world's fish catch comes from species which are dependent for at least part of their life cycle on a nutrient-rich estuarine habitat.

The diversity of a river lies not only in the various types of country it flows through but also in the changing seasons and the differences between wet and dry years. Seasonal and annual variations in the amount of water, sediment and nutrients drained by a watershed can be massive, especially in dry areas where most of a year's rain may fall in just a few individual storms. On average 85 per cent of the annual discharge of the Limpopo in southern Africa flows from January through March; only one per cent from August through October. Rivers in the far north are also highly seasonal, with minimum flows during the frozen winter followed by huge floods during the summer melt.

The great milestones of human history took place by the banks of rivers. Fossilized remains of our earliest known hominid ancestor were found by Ethiopia's Awash River. Evidence of the momentous change from mostly nomadic hunting and gathering to sedentary farming first appears in the narrow river valleys of the mountains of the Near East at archaeological sites between nine and ten thousand years old. The first civilizations emerged in the third millennium BC along the Euphrates, Tigris, Nile and Indus, and a little later along the Yellow. Much later another momentous turning point in human history occurred along the rivers and streams of northern England which powered the early industrial factories.

Rivers, and the rich variety of plants and animals which they sustain, provide hunter–gatherer societies with water for drinking and washing, and with food, drugs and medicines, dyes, fibers and wood. Farmers reap the same benefits as well as, where needed, irrigation for their crops. For pastoral societies, who graze their herds over wide areas of often parched plains and mountains, perennial vegetation along the banks of rivers provides life–sustaining food and fodder during dry seasons and droughts. Towns and cities use (and misuse) rivers to carry away their wastes. Rivers also serve as roadways for commerce, exploration and conquest. With the exception of a few maritime societies, "all the great historic cultures," writes technology historian Lewis Mumford, "have thriven through the movement of men and institutions and inventions and goods along the natural highway of a great river."

The role of rivers as the sustainers of life and fertility is reflected in the myths and beliefs of a multitude of cultures. In many parts of the world rivers are referred to as "mothers": *Narmadai*, "Mother Narmada"; the Volga is *Mat Rodnaya*, "Mother of the Land". The Thai word for river, *mae nan*, translates literally as "water mother". Rivers have often been linked with divinities, especially female ones. In Ancient Egypt, the floods of the Nile were considered the tears of the goddess Isis. Ireland's River Boyne, which is overlooked by the island's most impressive prehistoric burial sites, was worshipped as a goddess by Celtic tribes.

The rivers of India are perhaps wrapped in more myths, epic tales and religious significance than those of any other nation. Environmentalist Vijay Paranjpye describes a sacred text which holds that "all sins are washed away by bathing thrice in the Saraswati, seven times in the Yamuna, once in the Ganges, but the mere sight of the Narmada is enough to absolve one of all sins!" Another ancient text describes the Narmada River as "giver of merriment", "flavorful", "of graceful attitude", and "one who radiates happiness".

Of the life sustained by rivers, salmon have perhaps been imbued with the most mythological significance. The "salmon of Knowledge", legend had it, swam in a pool near the source of the Boyne. Anyone who tasted the fish would acquire understanding of everything in the world, past, present and future. Native Americans in the Pacific Northwest believed salmon to be superior beings who ascended rivers for the benefit of people, died, and then returned to life in a great house under the ocean where they danced and feasted in human form. Some tribes welcomed the first salmon of the season with the ceremony due to a visiting chief.

While rivers provided life, they also brought death. Settlement on the plains, which enabled people to take advantage of the rich alluvial soils, also exposed crops and villages to the risk of catastrophic floods. Gilgamesh, the earliest surviving epic tale, tells of a great flood unleashed by God to scourge the sinful in Mesopotamia. Myths and legends of huge floods are common to many cultures around the world, from the Old Testament Jews to the pagan Norse and the indigenous people of the Americas.

The damming of the world has brought a profound change to watersheds. Nothing alters a river as totally as a dam. A reservoir is the antithesis of a river – the essence of a river is that it flows, the essence of a reservoir that it is still. A wild river is dynamic, forever changing – eroding its bed, depositing silt, seeking a new course, bursting its banks, drying up. A dam is monumentally static, it tries to bring a river under control, to regulate its seasonal pattern of floods and low flows. A dam traps sediments and nutrients, alters the river's temperature and chemistry, and upsets the geological processes of erosion and deposition through which the river sculpts the surrounding land.