

Virtual Rivers by Ellen E. Wohl- Kristin Stephens

In the preface to *Virtual Rivers*, Ellen Wohl describes rivers in the mountainous upper South Platte basin as being “virtual” meaning that they look pristine, but they have lost much of a natural river’s ecosystem functions. Wohl uses subsequent chapters to discuss how human land-use patterns have changed these once pristine streams.

The native people, Ute, Arapahoe and Cheyenne, who populated the Northern Front Range mountains before 1811 did little to change the rivers. Major changes began to occur with the advent of European settlers. The “Beaver Men”, who inhabited the area from 1811-1859, killed off hundreds of thousands of beaver which began to affect the rivers because beaver dams promote diverse ecosystems, and more uniform stream flow. While the beaver populations eventually returned after the fur trade boom, they returned at much lower populations, 1/10 of what they had been. By the 1860’s gold mining was booming in Colorado. Mining operations in Colorado did some irreparable damage to Northern Colorado rivers, especially Clear Creek, which may still look clear, but still has high levels of toxic heavy metals. While there was little mining done in and around the Poudre, timber harvests for Railroad ties deforested a lot of land in this area. The “tie drive” of 1868-69 sent 200,000 ties down the Poudre River which led to bank destabilization and loss of channel diversity. Urbanization and the building of roads in mountainous areas have led to constricted rivers with more sediment. Livestock grazing and has added to bank instability and more nitrogen in the river which has also led to diminished habitats.

The key issues affecting mountain rivers in the 21st century are instream flow, urbanization and the building of roads, and ecotoxicology, all of which affect the river ecosystem. It is possible to do some work with channel restoration, but Federal legislation like the Wild and Scenic Rivers act, and intervention by the EPA may be the only hope for keeping guaranteed levels of instream flow. It is also advantageous to build trails and roads further away from rivers, and designate open space lands along the riparian corridors that serve as a buffer for streams and rivers. The issues of water quantity and quality, and channel restoration are critical to the future of our rivers.

I would recommend this book because it is short, concise and fairly easy to read. Also there are a lot of historic and contemporary pictures which make it easier to understand and visualize the effects of mining and urbanization on rivers. I also enjoyed this book because it concentrates on rivers in the mountainous upper South Platte basin, so there is a lot of information about rivers in our area including the Poudre, and the Big Thompson.

I emailed the author, Dr. Wohl, and she also recommended “*Wide Rivers Crossed*” (2013, University Press of Colorado), which deals with the plains portions of the South Platte River drainage. She said this book “spends more time on issues such as channel change in the lower gradient rivers of the plains, as well as the many water-quality challenges in the urban and agricultural portions of the plains.”

Three points I’d like to discuss with the class are:

1. Urbanization and the health of our rivers
2. Instream flow. What does this mean and how do we ensure minimum flows to protect fish habitat, and streamside vegetation?
3. How do we balance environmental concerns with our increased need for municipal water?