No Wild Rivers in South Jersey: An Environmental Biography
Claude Epstein
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If all you know about the geology of South Jersey is that it is sandy, has shallow groundwater, and overlies something called the Kirkwood–Cohansey Aquifer, then this is the book for you. Claude Epstein has done a remarkable job explaining the natural forces that created the coastal plain and the human factors that have shaped this unique place. The book begins about 120 million years ago, when the South Jersey Coastal Plate formed between what is today New Jersey and Morocco. The landscape we know now began to be formed in the fluctuations between the marine and riverine environments as sea levels rose and fell. The reader learns how the Kirkwood is the older coastal plain and how a shallow coastal environment created the Cohansey Formation in the Miocene epoch (23 to 5 million years ago). The reader can follow along as 9 to 10 million years ago the ancestral Hudson and other rivers ran down to what is today the Delaware River and the Delmarva Peninsula. Finally we learn that 2 to 4 million years ago, the Delaware River assumed its present course.

Having set the scene, Dr. Epstein gives the reader one of the most useful sections of the book. We learn how to look at a South Jersey river. The relationships such as stream flow and watershed area, stream-channel-to-depth ratio, and gradient and sinuosity are all explained in language a layman can understand. There is much to learn even for someone who is familiar with some basic hydrodynamics, such as the discussion of how the height of the bluffs above a stream is related to sediment texture. For the reader who prefers to skip the hydrology, very complete tables are provided listing multiple rivers.

Since the book discusses how humans shaped South Jersey, it is only logical that there is a discussion of the different European peoples who pushed into South Jersey. Purists might say that this is not properly part of such a book. However, *No Wild Rivers in South Jersey* is a refreshing change from more general histories that gloss over the Dutch, Swedes, and Finns. Each group receives consideration and their unique contributions are explained. When relations with the Native Americans are discussed, Dr. Epstein wisely confines himself to what can be known from the European's own historical record. Once again, very complete tables are provided summarizing what is known. The subsequent chapter on early European settlement is a bit rushed, but given the size of the subject, it could hardly be otherwise.

With the first Quakers arriving in 1675, these people quickly found themselves the most numerous settlers in the early years of South Jersey. The book thoroughly describes their impact on both the natural world and the colony's social structure. The reader will also learn how the arrival of such a large and homogenous people, almost all eager to acquire land, radically changed the European relationship with the Native peoples.

In a chapter about environmental law, we see how each group (Dutch, Swedes, Finns, and Quakers) brought their own ideas to South Jersey about protecting land, fisheries, timber resources, and marshes. Any reader assuming that marshlands were wild places and open to any human use will be surprised to learn that there were no fewer than 155 different laws passed between 1675 and 1900 that governed them.

Later chapters combine social history and geography discussing the unique characteristics of a stream's lower, middle, and upper reaches. The reader learns how these characteristics determine what uses people can make of a river. This may seem like basic hydrology and geography, but Dr. Epstein guides the reader into a deeper understanding. We learn, for example,

that there were an estimated 1,300 mills on South Jersey rivers between 1675 and 1875. The reader then learns the hydrological and topographical consequences of building so many mills.

Some will be disappointed that more pages were not devoted to the iron industry and, later, cranberry cultivation. The essential role played by the river systems is discussed in some detail, however. The extent of the canal digging and dredging to facilitate bog-iron collection is a topic overlooked in more general histories and will be an exciting discovery for many readers. In contrast, the description of industrial pollution from tanneries, sawmills, and paper factories could have benefited from more discussion.

Of all of the plant types in South Jersey, the Atlantic white cedar receives the most attention. Dr. Epstein quotes several period accounts lamenting the unchecked destruction of these trees but also quotes an account from a professor at Princeton University who delighted in his first visit to the cedar swamps. As with the book's other topics, we learn how the hydrology and soils govern the distribution of the cedars as well as other plants.

The Atlantic white cedar grows in boggy environments and this leads to a discussion of peat and its predecessor, dark organic muck. This reviewer's PhD research involved the organic geochemistry of estuary sediments. It was therefore delightful to see Dr. Epstein's detailed explanation of this fascinating sediment type. It was doubly delightful to know it was written to be accessible to the average reader. As with other chapters, there are practical bits of information. The person who carries this book into the field can learn how to distinguish whether a stream passes through a mucky soil or a sandy soil just by looking at the banks.

As the text progresses, more attention becomes focused on environmental law and policy. But even this discussion of environmental policy comes back to the geological events explained in the early chapters. Even before European settlement, there was a distinct water-quality

difference between the inner and outer coastal plains. Soil conditions on the inner plain are more finely textured and tend to hold both naturally occurring and anthropogenic chemicals for longer periods of time. This has led to a marked difference in the number of New Jersey Pollution Discharge Elimination System (NJPDES) permits on the inner and outer plains.

Part five of the book explores the idea, or perhaps the ideal, of what South Jersey is and who the people of South Jersey are. Who people are, and what they believe about their landscape, ultimately influences what uses they will make of their rivers, lakes, and streams. It will also influence the actions they will take to protect their environment.

So who are the people of South Jersey? In the 1700s, condescending outsiders described them as disrespectful of authority, greedy, poor, criminal, and drunk. (If you do not believe this, Dr. Epstein provides a helpful table listing all the prison breaks, by county, between 1720 and 1745). Whatever their faults, they were not slaveholders. In 1800, only 504 of New Jersey's 12,000 enslaved persons were listed as living in South Jersey.

A region with such a reputation and a sparse population would naturally attract its share of runaway slaves, escaped indentured servants, Loyalist partisans during the American Revolution, and Patriot privateers. In our own era, illegal hazardous-waste disposal rounds out this list of crimes. Dr. Epstein argues that this negative perception of South Jersey led to the destruction of the rivers and the abuse of the environment.

The next chapter explores a more positive outlook. Naturalists were drawn to South Jersey as early as 1736. A number of famous botanists and naturalists came in the ensuing years. The famous pygmy pines in the Pinelands were introduced to the scientific community in 1833. Ornithologists Alexander Wilson and John James Audubon both worked in the region. The famous dinosaur paleontologist Edward Drinker Cope came to study the native fish. These people, and

poets such as Walt Whitman, laid the foundation of today's environmental consciousness. They did this long before John McPhee published *The Pine Barrens* in 1967, probably the single most important book ever written about South Jersey.

At the end of the book, *No Wild Rivers* returns to the topic of how the various human uses changed the waterways. Dr. Epstein continues to combine social history with hard science to explain the causes of why things are the way they are today. Whether those causes are commercial shipping and summer homes in the lower river reaches, water power and dams in the middle river reaches, or cranberry bogs and cultivated fields in the upper river reaches, they are all carefully explained. The subtitle of chapter 17 is "It Could Have Been Worse." By the end of the 1800s, not one river had escaped at least some form of environmental damage. Despite this, many rivers recovered. There are two officially designated Wild and Scenic Rivers in South Jersey, the Great Egg Harbor River and the Maurice River.

The book concludes with some observations about the spiritual value of nature in the human mind. We read quotes by authors as diverse as John Muir, Anne Frank, Rachel Carson, and Max Plank. Even the papal encyclical on environmental protection from Pope Benedict is included. As this document was issued in 2015, we can say the book covers a period from 120 million to seven years ago.

By focusing on the streams and rivers, Dr. Epstein has avoided retreading familiar historical topics and has added a truly unique book to the literature about New Jersey. Given the size of the topic, the writing had to be broken down into manageable pieces. This forces the writer to repeat himself in places. Some readers will find this tedious, but most will welcome the repetition of important points and pertinent facts.

For anyone working in environmental science, environmental history, or environmental policy in South Jersey, the tables alone will be worth the price of this book. Tables list watershed areas, tributary streams, dates of settlement, navigable rivers, mills, types of mills, ferries, maritime cargoes, government bodies, historic land use, dams, well depths, iron furnaces, canals, Superfund sites, and pollution-discharge permits, and these are only some of the topics. Listing them all would take several pages. The range of topics included in this book will make it a well-thumbed reference source.

For all of the exhaustive scholarship, this is not a technical treatise and remains accessible for the lay reader. Hikers, kayakers, and other outdoor enthusiasts will find it answering many of their questions about South Jersey's unique landscape. The history enthusiast will enjoy learning new things about the historic waterways.

And by the way, the Jersey Devil does not get a mention.

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